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AlixPartners

Post Office Horizon IT Inquiry

Expert Witness Report of Charles Cipione

14 September 2022

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1. Executive Summary

1.1.1 The Horizon IT System envisaged modernising the UK's Post Office branches. This was an ambitious goal: placing hardware and software in c. 18,000 branch locations to allow subpostmasters and subpostmistresses ("**SPMs**") the convenience to reliably store and transmit electronic records of their daily business activities.

1.1.2 The technical aspects of the Horizon IT System were significant but did not account for all of the complexities of a successful implementation. There were additional organizational factors that required attention. Both the technical and organizational dimensions of the Horizon IT System also required vigilance. An IT system is a "living" entity. It needs care and attention beyond its initial rollout.

1.1.3 The Horizon IT System had multiple constituencies that needed to be both strategically and tactically aligned. Sponsors and suppliers all played key roles in defining and delivering the Horizon IT System.

1.1.4 The Horizon IT System's design and implementation needed to account for real-world contingencies. Many designs are very elegant, but they only maintain their elegance if the implementation withstands practical realities and concerns.

1.1.5 The Horizon IT System's user support mechanism needed to assist the users as they migrated from a paper-based process to a computer-based process or switched from using one system to another. Continuous training for all versions of the Horizon IT System needed to be available. The support structure needed to cater to end-users (e.g., the SPMs and clerks working in the branches) who might struggle to adapt to changes from the manual processes they had undertaken for many years. The support structure needed to be able to service a high volume of users. The support structure needed to be designed to adapt to the needs of the users as the IT system evolved through its different versions.

1.1.6 The Horizon IT System's internal error resolution mechanism needed to be able to quickly resolve reported errors through identifying root causes, methodically correcting these errors, and distributing the remedies in a timely and efficient manner.

1.1.7 The Horizon IT System's functionality needed to maintain accounting integrity. The Horizon IT System was the origin of sales and inventory information that flowed into the financial systems of Post Office Counters Limited ("**POCL**"). Consequently, it was intended to be a "source of truth" for these fundamental accounting facts. Any errors deriving from the Horizon IT System would, if not otherwise rectified, be reflected in all downstream processes and systems.

1.1.8 Throughout my review, I identified shortcomings in each one of these key areas:

(a) Constituency alignment: The tenuous relationship between ICL Pathway, its suppliers, and its sponsors were often topics of concern for ICL Pathway's management team; the Helpdesk was often the root of Service Level Agreement

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("**SLA**") issues with POCL; Acceptance Incidents ("**AI**") were a gating issue to the financial success of ICL Pathway;

(b) Design and implementation: Hardware issues were prevalent during national rollout; many post offices were disconnected for extended periods of time; the persistence of reference data mismanagement degraded the integrity of the Horizon IT System;

(c) User support: SPM training experienced difficulties during national rollout; the Helpdesk was often the root of SLA issues with POCL;

(d) Error resolution: The System Management Centre ("**SMC**") was frequently cited for not properly filtering calls to the System Support Centre ("**SSC**"); the SSC was overwhelmed with escalated issues, as captured in PEAKs and PinICLs ("**PPs**"), but were earnest in their efforts to perform their duties; and

(e) Accounting integrity: The persistence of reference data mismanagement degraded the integrity of the Horizon IT System. A persisting issue related to AI 376 (accounting integrity); payment and receipt imbalances were common symptoms with varied causes.

1.1.9 In my opinion, the stability of the Horizon IT System was affected by these shortcomings. The sometimes-conflicting expectations between ICL Pathway and POCL introduced a disruptive element at the management level. The effects of these disruptions manifested itself throughout the implementation of the Horizon IT System. Other ICL Pathway self-inflicted wounds included suboptimal support from ICL Pathway's program for training of SPMs, the Helpdesk support of SPMs, and the Helpdesk support of ICL Pathway's error resolution function. A noticeable symptom of these issues was a recurrent balancing problem experienced by the SPMs, which directly degraded the accounting integrity of the Horizon IT System.

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2. Introduction and background

2.1 My biography

2.1.1 I, Charles Cipione, have been appointed by the Post Office Horizon IT Inquiry ("**the Inquiry**") to act as an Expert Witness to independently review and analyse evidence the Inquiry has received on the Horizon IT System.

2.1.2 By way of introduction, I am a Managing Director within the Risk Analytics group at AlixPartners. I have been a Managing Director at AlixPartners for over fifteen years. I have over thirty years of experience in information technology.

2.1.3 I started my career at Arthur Andersen within their Information Systems Risk Management business unit where I performed various general controls and application controls reviews. At Arthur Andersen I also developed and implemented various database applications and analyses related to litigation and bankruptcy clients.

2.1.4 I left Arthur Andersen to start my own consulting venture, Cipione & Associates. This venture designed, developed, and maintained commercial software. This software was originally DOS-based (pre-Microsoft Windows) but was then versioned to migrate to the Microsoft Windows platform. My preferred development environment for Microsoft Windows applications was Microsoft Visual Basic.

2.1.5 In 2001 I joined AlixPartners to help establish the Claims Management Services business unit. Our responsibility was to develop and operate systems to support the reporting responsibilities of U.S. Chapter 11 (bankrupt) clients. Examples of these clients include WorldCom and General Motors. This involved interrogating, collecting, and organizing vast amounts of disparate financial and operational data from our clients' systems. I am the original architect of AlixPartners suite of claims management systems. These systems are currently still utilized.

2.1.6 Utilizing my software design, development, and implementation background, I also have been retained by clients to provide factual and expert testimony regarding the efficacy of application systems and the management and analysis of data sets pertinent to various litigation and regulatory issues.

2.1.7 I hold a Bachelor of Science in Chemistry and a Master of Business Administration from Texas A&M University.

2.2 Background to the Report

2.2.1 My review was conducted between the months of June 2022 and September 2022. I have been supported by a team from AlixPartners.

2.2.2 The evidence I have reviewed has been provided to me by the Core Participants, principally Fujitsu Services Limited ("**Fujitsu**"), in response to formal requests made by the Inquiry Legal Team. In addition, the Inquiry Legal Team have directed me to certain public

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documents that have provided me with background information on the Inquiry as well as background information, from prior legal judgements, on the Horizon IT System. As part of my review, I have had the opportunity to pose questions to the Inquiry team, which have, where appropriate, been passed to the relevant Core Participant to respond to. A list of the information that I have relied on as part of my review is included in Appendix A.

2.2.3 Based on my review of the available evidence I have produced this expert report, which contains my observations and conclusion ("**the/my Report**") and I will provide oral expert testimony ("**the/my Testimony**") to the Inquiry on this in due course.

2.2.4 The intended audience for the Report is primarily the Chair of the Inquiry, and as part of this it will be made available to the Core Participants in the Inquiry as well as to the public.

2.3 My instructions

2.3.1 My work has been informed by a formal set of instructions provided to me, in two parts, by the Inquiry Legal Team:

(a) An initial set of instructions dated 27 May 2022 which were provided to me on 02 June 2022.

(a) An addendum to these Instructions dated 27 July 2022 which were provided to me on 27 July 2022.

2.3.2 Collectively these two documents are my instructions from the Inquiry ("**the/my Instructions**"). Whilst the Instructions provide the basis for determining the scope of my work, I have, as an independent expert, been responsible for developing my own approach to responding to the questions posed in my Instructions.

2.3.3 Broadly, my Instructions state that my Report and Testimony should include:

(a) An introduction to the Horizon IT System and other key terms that will assist the Inquiry in understanding the substance of my Report, and potentially other future submissions that are made to the Inquiry. I was instructed that this introduction of the Horizon IT System should be tailored so as to be understandable to the Inquiry, the Core Participants to the Inquiry, and to members of the public, who may not have prior knowledge of the Horizon IT System;

(b) Analysis to identify and illustrate any themes in the problems that were being experienced by users in the period up to and including the roll out of the Horizon IT System, including how these problems were resolved or escalated, and the key individuals who were involved in these processes.

(c) Any overall observations or conclusions, that are within my professional expertise, as to the themes I identify and the potential reasons for these.

2.3.4 The purpose of this Report is therefore two-fold, which I will set out in two distinct parts:

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(a) **Part 1**: To provide an introduction to systems design and development and to the Horizon IT System specifically, with the express purpose of providing a suitable foundation of knowledge for an audience that does not have prior knowledge of the Horizon IT System such that they can better understand both this Report, and the subsequent phases of the Inquiry; and

(b) **Part 2**: To set out, in detail, the information I was provided with, how I reviewed this information, and the observations and conclusions I have reached.

2.3.5 Whilst I was born in Europe, I have spent all of my professional working career in the United States of America. I am very conscious that the vast majority of the people reading this Report will be from the UK, and therefore I have adopted UK English spellings and have, with the help of my UK-based colleagues, attempted to ensure I use a style that will hopefully be familiar to a UK audience.

2.4 Scope of work and information relied upon

2.4.1 The Inquiry is approaching the hearings in phases and there are seven phases that have been defined (a full list of which can be found on the Inquiry's website under 'Phases of the Inquiry' section[1]). In addition, the Inquiry has identified a list of 218 issues (the "**Completed List of Issues**") which reflect the key themes on which the Inquiry intends to focus its investigative work. The Completed List of Issues is available on the Inquiry's website[2].

2.4.2 My Instructions specifically relate to Phase 2 of the Inquiry, which deals with "Horizon IT System: procurement, design, pilot, roll out and modifications." The Instructions also identified that issues 1 to 28 from the Completed List of Issues are relevant to Phase 2 of the Inquiry.

2.4.3 The Inquiry has adopted the definition of the Horizon System which was used by Mr Justice Fraser in his Judgment (No. 6) "Horizon Issues", being:

> *"the Horizon computer system hardware and software, communications equipment in branch and central data centres where records of transactions made in branch were processed".*

2.4.4 My Instructions adopt the same definition of the Horizon IT System. It is worth noting that the terms "**Horizon system**" and "**Horizon IT System**" are often used interchangeably: they refer to the same thing, as defined above. In this Report I will use the term Horizon IT System as I believe this to be a more fulsome description.

2.4.5 In section 4 of this Report I will explain, in summary terms, what the Horizon IT System is, what it did, how it was structured, and how the system evolved over time. At a very high level, the Horizon IT System is an Information Technology ("**IT**") system that was installed, in phases, into every Post Office branch in the United Kingdom (UK). The Horizon IT System was installed into Post Office branches in the period 1999-2000 and is still in use in branches

1 https://www.postofficehorizoninquiry.org.uk/key-documents
2 https://www.postofficehorizoninquiry.org.uk/publications/completed-list-issues

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today. Its function was to help digitise certain activities that took place in Post Office branches, that is to say moving branches' processes away from paper-based systems to a system where all transactions undertaken in a branch, as well as the resulting financial accounts, were recorded electronically in the Horizon IT System. As with any IT system (old or modern) the Horizon IT System had been updated frequently to add new functions and to fix some identified issues (commonly referred to as "software bugs") in the system. Whilst there have been numerous updates to the Horizon IT System over the years, it is generally agreed that there have been three major versions of the Horizon IT System:

(a) The original system, which was introduced into branches from 1999 onwards and which was active until c. 2010. This is commonly referred to as "**Legacy Horizon**".

(b) The first major iteration of the Horizon Online system (referred to as "**HNG-X**"), which was introduced in 2010 and was active until c. 2017.

(c) The second major iteration of the Horizon Online system (referred to as "**HNG-A**"), which was introduced in 2017 and is still active and in use in branches today.

2.4.6 Part One of this Report will provide further detail on the Horizon IT System and its various iterations. The important point to note however is that my work, and therefore my Report and my Testimony, is focused solely on Legacy Horizon, in accordance with my Instructions and the temporal scope of the documentation that I received.

2.4.7 My work, and therefore the observations and conclusions in this Report, are based solely on documentary evidence and data provided to me by the Core Participants, being primarily in this case, Fujitsu. The information I have been provided with are primarily contemporaneous documentation and data that were created in the period 07 July 1996 to 31 December 2000 and are therefore between 21 and 26 years old as of the date of this Report. A list of the documentation I have relied on as part of my review is listed in Appendix A.

2.5 Approach

2.5.1 Three primary categories of documents were provided for me to review. These documents represent the different lenses available to me as I collected observations and developed themes about the Horizon IT System.

(a) Monthly Reports ("**MRs**") –Various internal ICL Pathway management reports as well as some joint ICL Pathway and POCL implementation reports.

(b) PEAKs and PinICLs ("**PPs**") – ICL Pathway's error logging and remediation tickets.

(c) Known Error Logs ("**KELs**") – ICL Pathway's known errors.

2.5.2 I will describe these documents in greater detail further in my Report, but I wanted to highlight that these documents are my main source of facts for accumulating observations and synthesising themes. All other documents cited in this Report were used to gain an understanding of the concepts and terms resident within the MRs, PPs and KELs.

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2.5.3 In addition to reading, I incorporated a series of computer-assisted technologies to assist in reviewing these documents. These methods will be described later in the Report, but the volume of information required me to utilise multiple approaches to efficiently manage the volume of content provided. A brute force approach to reading over 55,000 error log entries was not only impractical, but inadvisable.

2.6 Structure of the Report

2.6.1 The balance of my Report is organised in the following manner:

(a) Part One:

(i) A General Overview of Systems Design, Development, and Implementation

(ii) A Description of the Horizon IT System

(iii) A Description of ICL Pathway's Error Logging and Remediation Policies and Procedures

(iv) A Description of the Materials Reviewed

(b) Part Two:

(i) A Description of how I organised the materials for further analysis

(ii) An overview of Analyses Performed

(iii) An itemised discussion of observations and themes

(iv) Supporting Appendices

2.7 Limitations

2.7.1 The primary documents in this review generally spanned the time frame of 1996 through the end of 2000. Up to a quarter of a century has passed since these documents were written. Many of these documents were intended for internal consumption by ICL Pathway; consequently, I must account for the authors' possible intentions and motivations. These documents were not written with me as the intended audience; they were written for audiences with an intimate understanding of the technological, operational, and political considerations of their era.

2.7.2 As the documents provided only relate to the period 1996 to 2000 my review solely concerns the roll-out of the Legacy Horizon IT System, not that of subsequent iterations of the system (e.g., Horizon Online).

2.7.3 As my review progressed, more questions came to mind: I asked the Inquiry to provide more supporting information or clarifications. As this supporting material arrived, it often generated more questions. This iterative process could have proceeded indefinitely, but

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time constraints limit the amount of "peeling the onion". A deeper understanding of the system is always possible, but practical concerns demand a point of closure.

2.7.4 These documents focus either on high-level managerial issues (as captured in the MRs), or very detailed discussions of specific perceived errors (as captured in the PPs and KELs). They only provide a partial view of the actual design, development, and implementation of the Horizon IT System: they do not cover every facet of the technology's inception through realisation. These documents overwhelmingly described the problems within the Horizon IT System implementation; their purpose was to rectify problems, not laud accomplishments.

2.7.5 The volume of documents, particularly the PinICLs and PEAKs was high. My review did not consist of reading every one of these documents as I believe this would not be pragmatic or an efficient use of time. I used a targeted approach for my review.

2.7.6 The PinICLs, PEAKs, and KELs are very technical. The esoteric nature of these documents (see example in Appendix C) means that nuances could have been missed. Conclusions have been reached based on a review of the available material and my interpretation of these. Others with different or specific experience may have differing interpretations of these issues.

2.7.7 I have not been able to quantify the frequency of occurrence of specific issues with the Horizon IT System, other than based on the available materials. As described later in the Report, the PPs relate to the activities of the third line of IT support. The first and second lines of IT support are responsible for filtering out and de-duplicating reported incidents so only a subset reaches the third line; therefore the PPs only present a partial picture of the reported issues. I was not provided with the records relating to the first and second line of IT support, which would presumably contain information on all of the IT incidents being raised by the SPMs.

2.7.8 Most of these documents represent ICL Pathway's perspective. Other than a few of the Monthly Reports that were jointly issued by ICL Pathway and POCL, I do not have any insight into POCL's view during this time period.

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Part One:

Theory of system design and development and Introduction to the Horizon IT System

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3. The theory of system design and development

3.1 Enterprise Execution

3.1.1 To properly understand software systems, it is important to appreciate how they fit into the overall execution of the enterprise they support. Software systems are enablers, not panaceas. In the best situations, software applications can decisively improve the execution of the enterprise's strategy by streamlining operations. This often includes providing complete and accurate reporting that informs decision makers in a timely manner. In the worst situations, mismatched expectations and/or faulty designs and implementations degrade the execution of the enterprise.

3.1.2 The following five component model is intended to illustrate how software systems fit into the broader execution of the enterprise:

3.2 Model Components

Strategy:

3.2.1 The enterprise's purpose for existence and ability to persist is guided by its strategy. High level concepts such as mission and purpose statements are the guidelines that inform all other aspects of the enterprise. The following text is the UK Post Office's purpose as of the time of this writing[3]:

> *"We're here, in person, for the people who rely on us*
>
> *Our Purpose has three equally important but distinct parts.*
>
> *The first – "We're here" – recognises that Post Office is unique as the only retailer in each nation and every community across the UK. With over 11,500 branches, we're at once universal and yet fundamentally local. And this is only possible because our Postmasters are here for our customers – much as Post Office is here to serve and support our Postmasters. Without our postmasters, there would be no Post Office.*
>
> *Next – "in person". Located in communities across the UK, Post Office remains a vital part of the British high street even as many retailers continue to leave it. Despite the recent acceleration of digital services brought about by the pandemic, the simple reality is there will always be some things that you can't do easily online – whether sending a parcel or having a chat face-to-face. Our Purpose highlights the human connection – the personal touch – we offer as a business.*

[3] https://corporate.postoffice.co.uk/en/purpose-strategy/purpose/our-purpose/

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> *And last, but certainly not least, we're there "for the people who rely on us". Although the Post Office is for everyone, we know some parts of society rely on us more than others. For the people that need us most, we're proud to provide vital, trusted services that allow them to operate in cash, pay their bills in person, verify their identity, and more as their needs change."*

Tactics – Business Operations:

3.2.2 To execute the strategy, it is important to have a mature and well-understood set of policies and procedures. Designing, developing, and implementing the tactical playbooks that control the day-to-day business operations across all aspects of the enterprise takes considerable effort. The balance between aspirational goals and realistic constraints is the responsibility of those put in charge of making "real-world" decisions that affect how an enterprise is operated.

Software Systems:

3.2.3 Supporting technologies buttress the business tactics defined by the enterprise's policies and procedures. A software system's sole purpose is to efficiently reinforce the business operations.

Data Management (Facts):

3.2.4 Software systems collect data (facts) relevant to the operations of the business. The management of these facts requires alignment of the software systems to the business operations and anticipates downstream analytics and reporting.

Analytics and Reporting:

3.2.5 The enterprise consumes the facts, as represented by its data, through analytics and reporting. This component of the model represents how the enterprise understands the data collected and managed through a series of manipulations and summarisations of the facts.

3.3 Component Interdependence

3.3.1 As implied by their definitions, there is a strong relationship between the components of this model. The strategy guides the tactics. The software systems support the tactics and collects the facts. The data management organizes these facts. The analytics and reporting interpret the facts. The tactics and strategy components then consume these interpretations and adjusts as necessary based on these interpretations. In a healthy enterprise, this cycle is transparent. All components understand and support each other.

3.4 Component Hierarchy

3.4.1 It is important to understand that a clear pecking order exists between these components. Strategy guides tactics. Tactics selects software systems based on their ability to conform to defined business operation requirements. Data management is governed by the design

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specifications of the software systems. Analytics and reporting rely on the rules employed by the data management function.

3.4.2 Considering this hierarchical relationship, two concepts should be considered that affect a healthy long-term relationship between the components: adaptability and complexity.

(a) Adaptability:

(i) The downstream components should respond to the requirements of the upstream components, not dictate them (e.g., the reporting requirements should not dictate the business's strategy) otherwise, instability would be introduced vis-a-vis the "tail wagging the dog".

(ii) An example of an unstable situation would occur if the Analytics and Reporting component took on the responsibility of collecting ancillary data that was not represented by the requirements defined by the business operations. In this example, Analytics and Reporting would be infringing on the responsibilities that should be the purview of other components. This would be a clear violation of the proper segregation of duties. The collateral consequences of this type of situation are inefficiencies of communication, maintenance, and costs.

(b) Complexity:

(i) Current efficiency and future flexibility benefit from complexity being localised as far downstream as possible. Strategy should be high-level and easily comprehended. Tactics should be well-defined and as simple as possible to achieve strategic goals. Software systems should strictly conform to the business's operational needs. Data management should be tightly governed by a set of data definitions. These definitions should anticipate the need for reference information for future analytics and reporting updates. Analytics and reporting should assume the responsibility for as much complexity as possible. This waterfall approach optimizes the responsiveness capability of the model.

(ii) An example of not adopting this philosophy is represented by the Tactics component requiring the recording of information by the software system that could easily be derived through downstream methods. Let's consider a requirement that wanted to isolate the reporting of sales by groups of postal codes. The business operations might put forth a requirement to the software system to not only record the postal code, but to also record whether those postal codes were offshore isles. Given this requirement, the software system would need to not only create the ability to record this data item, but also create the appropriate user input screens for the input of these indicators.

(iii) Obviously, the offshore isle indicator is strongly aligned with the postal code, and therefore is redundant with the postal code. This complexity should not be the responsibility of either the business operations nor the software

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systems. Rather, this is clearly the responsibility of the data management component. A reference table located within the data management component could be created to store this indicator that could then be used by analytics and reporting. The expected consequences of having this complexity too far upstream is the increased cost of implementation along with the possibility of faulty data due to the fact that users can input errors.

3.5 Systems Development

3.5.1 At the outset, I want to clarify the distinction between the terms software and system. Software is a computer program (application) that directs the operation of a computer's hardware (e.g., monitors, hard drives, printers, networking equipment). System is how the software and hardware perform in a holistic manner. Unless specifically discussing a computer program, I will use the more universal concept of a system.

3.5.2 Systems development can be difficult to comprehend. This is understandable. The terms, concepts, and methodologies are esoteric, myriad, and evolving. Consequently, I am dedicating a few paragraphs to expound on a few fundamental topics and how they can be apprehended.

3.5.3 Basics:

(a) At the most abstract level, everything in a system can be characterized as building blocks: input, processing, and output. Let's consider a simple electronic calculator.

(i) The input is the keypad where you enter the keystrokes "2+2=".

(ii) The processing is the computer chip that performs the arithmetic calculation.

(iii) The output is the panel that hopefully displays "4".

3.5.4 One might think of a "System" as being an extremely expansive network of these atomic elements: input, processing, and output.

3.5.5 Hardware devices:

(a) At a tangible level, systems can be categorized by their hardware devices. My examples span across time and are intended as a representative, not comprehensive.

(i) Input Devices – Keyboards, mice, touch screens, card readers, Storage Devices

(ii) Processing Devices – Central processing unit ("**CPU**") (the "brain" of the computer)

(iii) Storage Devices – Hard drives, memory (e.g., RAM), CD-ROMs, magnetic tapes

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(iv) Communication Methods and Devices – Modems, ISDNs (Integrated Services Digital Network), the Internet, Bluetooth

(v) Output Devices – Monitors, Printers, Storage Devices

(b) Note: Storage Devices could be either an input or an output. For example, I might want to save a spreadsheet to my hard drive today, only to retrieve it for further work tomorrow. Today the hard drive would be considered an output because it is the destination of my processing. Tomorrow, it would be considered an input as I retrieve my spreadsheet for further processing. Then, as I save my changes, the hard drive would once again revert to its output function. In both instances it is a Storage Device, but Storage Devices can perform both the input and the output function. I am using this example for the purpose of illustrating the need for understanding the contextual nature of the use of terms. Even in this very basic explanation, we can foretell the bleeding of meanings.

3.6 Software Types

3.6.1 As stated above, software is a computer program that directs the operations of the computer's hardware. There are many different types of software, and they sometimes interact directly with the hardware, sometimes interact with other pieces of software, and sometimes they interact with the users.

(a) Operating System ("**OS**") Software – The OS is the low-level software that allows all other software to interact with the computer's hardware. Examples include Microsoft's Windows, Linux, and Apple's MacOS.

(b) Database Management System ("**DBMS**") Software – DBMS software specializes in managing large amounts of data, usually (but not always) in a structured set of tables. This type of organization allows other programs and users to query and analyse the data resident within and across these structures. Examples of DMBS's include Microsoft SQL Server and Oracle Database.

(c) Application Software – Application software, as the name implies, is software made for a special purpose and is the type of software computer users interact with most. Microsoft's Word and Excel are examples of application software. The Counter component of the Horizon IT System (described in detail later in this Report) is also a type of application software.

(d) Application Development Software – This is a type of software used by people and teams to create application software. It allows teams to efficiently manage the division of labour throughout the development process and assists with version control (the ability to identify the exact code related to each application program release). Examples of application development software include Microsoft Visual Studio and Android Studio.

3.6.2 Certainly, there are many other types of software, but these four categories allow me to illustrate how software types interact with each other.

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3.6.3 Let us consider an accounting application. This piece of software would have been developed using an application development software and would likely be supported by a DBMS to record and retrieve the accounting transactions entered by its users. Both the accounting application and the DBMS will rely on the OS to coordinate all interactions between the individual software and the hardware.

3.7 SDLC

3.7.1 SDLC can stand for either Software Development Life Cycle or Systems Development Life Cycle. Software Development Life Cycle is narrowly focused on the development of the software application. Systems Development Life Cycle casts a wider net and includes the associated hardware being directed by the software. For purposes of this explanation, I will be referring to Systems Development Life Cycle.

3.7.2 There are a variety of approaches to SDLC. Different teams determine which is appropriate based on their situation. I will explain SDLC across seven commonly used stages.

(a) **Planning** – This stage of the life cycle includes determining what is being requested and putting together a project plan to deliver the requested system. The project plan estimates the amount of resources (people, time, and cost) required to complete the remaining stages of the life cycle.

(b) **Analysis** – This stage is where the design team gathers as much information as possible about every detail of the requested system. This covers issues such as functionality, performance, equipment, and cost.

(c) **Design** – After the planning stage is complete, the technical design of the system is documented. This is also the stage where it is determined what functionality will be designed and developed internally, and what functionality exists externally and can be purchased and incorporated into the overall solution. If an external resource is determined to be appropriate, an integration portion of the design will be documented. This also includes hardware selection. All other stages are dependent on clear communication between the design team, the client, and the development team. If there are miscommunications, functionality, time, and money will be at risk.

(d) **Development** – Using the technical design document from the previous stage, the development team will transform the design into a functioning system.

(e) **Testing** – This phase is used to ensure that the results of the development phase align with the expected functionality, performance, and hardware described by the technical design document. There are usually two levels of testing.

(i) Quality Assurance ("**QA**") – Carried out by a separate group of professionals associated with the development team prior to exposing the system to the user community. QA must approve the efficacy of the system before promoting it to the next testing level.

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(ii) User Acceptance Testing ("**UAT**") – A small group of users from the group requesting the system then performs "real world" testing to make sure that the system meets their expectations.

If there are issues at either level of testing, the development team is engaged to remediate the issues, or to discuss any miscommunications that might be the source of the identified issues. Oftentimes, there are certain benchmarks that define whether the system can be promoted to the deployment stage. In other words, the system does not need to be perfect to be deployed, but it does need to be acceptable to the user community.

(f) **Deployment** – Once the system has been promoted from the testing stage, it is then ready to be deployed to the wider user audience. This can be done all-at-once, or in stages. This is usually decided in the planning stage of the SDLC. As the system is deployed, users also receive documentation and training on the use of the system along with a contact mechanism for the system's helpdesk.

(g) **Maintenance** – Issues missed in testing, new desired requirements, and general operations questions are identified as a wider audience of users interact with the system. These are usually captured and addressed by two support groups related to the development team.

(i) Helpdesk – This is the first point of contact for any user having issues with the system. General operational questions are addressed directly. Requests for new functionality are logged. Perceived errors in the system are initially assessed. If the perceived error goes beyond the ability of the helpdesk to resolve, it is promoted to the error logging and remediation team.

(ii) Error Logging and Remediation – A perceived error promoted from the helpdesk is further evaluated by this function. If the perceived error is deemed to be valid, it is sent to the development team for remedial treatment. Depending on the type of error, the remediation could be quickly addressed, or require an indefinite amount of time to resolve. A communication back to the helpdesk occurs so that the reporting user can be alerted to the status of the remediation. If the perceived error is considered not to exist, advice is then reverted to the helpdesk. Important to the process is the ability to track symptoms and causes as the errors are identified and resolved.

3.7.3 As the last stage of the SDLC initiates, it connects back to the planning stage to assess its efficiency and to determine if new functionality should be pursued vis-à-vis new versions of the system. If new versions of system are deemed appropriate, the process starts again.

3.8 Approaches to SDLC

3.8.1 Over time, there has been an evolution of how the stages of the SDLC are modelled. The oldest model, waterfall, required each step to be performed in sequence. Newer models (e.g., Agile development) allow for subdividing the system and moving pieces to UAT as

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quickly as possible. These approaches are iterative in nature, but benefit from increased feedback from users to developers.

3.9 Possible Points of Failure

3.9.1 As you might already have surmised, systems development covers a wide range of considerations: hardware, software, desired functionality, SDLC approach, clear communications between constituencies, adherence to timelines and budgets, etc.

3.9.2 Any missteps within or across any of these considerations will create a situation where the system appears to be (or could in fact be) deficient. Constant attention to all details is a necessary and understood regimen to delivering a stable system.

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4. Introduction to the Horizon IT System

4.1 Overview

4.1.1 The Horizon IT System is an information technology ("**IT**") system that was implemented by the Post Office and installed into an estimated 18,000 Post Office branches throughout the United Kingdom ("**UK**"), between 1999 and 2000. The system is still in use in Post Office branches today, although it has been upgraded several times during its 20+ year lifetime. Later in this section I will describe the Horizon IT System in greater detail, but before I do I would like to provide some background to the Post Office and the services that its branches supported, as this background will make it easier to understand the role and purpose of the Horizon IT System.

4.1.2 There have been a great many changes to the Post Office since 1999/2000, both IT-related and non-IT related, and it is therefore impractical to encompass all of these in this background section. This background section focuses on the structure and services of Post Office branches in the period 1999-2000, being the period in which the Horizon IT System was being introduced into Post Office branches for the first time.

4.1.3 This section draws heavily on five documents that I was provided with:

(a) the 'Technical Appendix to Judgment (No.6) "Horizon Issues"' ("**TABJ**")[4];

(b) the 'Horizon System User Guide / Balancing with Horizon Guide' ("**HSUG**"), version 1.0 dated 28 July 2000[5];

(c) the 'Technical Environment Description' ("**TED**"), version 4.8 dated 22 October 2002[6];

(d) The 'Horizon OPS Reports and Receipts' ("**HRR**"), version 8.0 dated 08 August 2000[7];

(e) The 'HNG-X Architecture - Counter Business Application' ("**HXA**"), version 5.0 dated 04 August 2017[8]; and.

(f) The 'Horizon Online Induction Training' presentation ("**HOIT**"), which is not dated but is believed to have been produced in around August 2009[9].

4.1.4 I have endeavoured to summarise these documents to what I consider an appropriate level of detail for the Inquiry, but this has necessarily required me to omit some of the extensive technical details of the system (the HSUG runs to some 819 pages, and the TED runs to

4 https://www.judiciary.uk/wp-content/uploads/2019/12/bates-v-post-office-appendix-1.pdf
5 POL00038868
6 FUJ00079645
7 FUJ00119554
8 FUJ00118200
9 POL00089726

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some 476 pages). I trust the readers will forgive, and indeed hopefully appreciate, this simplification.

4.2 The Post Office and its branches

4.2.1 The Post Office is responsible for operating a network of branches throughout the UK through which it offers postal and other services to the general public. Although the formal company name and structure of the Post Office have changed several times over the years, it has remained, in essence, a government-owned company, and remains so today. For the purposes of the period that is relevant to this Report, the Post Office had two main formal names:

(a) Between 1986 and 2001: Post Office Counters Limited ("**POCL**"); and

(b) From 2001 onwards: Post Office Limited ("**POL**")

4.2.2 In this Report where I refer to a "Post Office" I am referring to the physical branch and the activities that took place there, rather than the actual organisations described above. Where I do need to refer to the Post Office organisation, for ease and to avoid confusion, I will refer to this as POCL.

4.2.3 A Post Office branch is a physical location (albeit mobile branches also support some rural communities) that members of the general public can visit in order to use various services. Post Office branches can be classified into three broad groups, depending on who was responsible for operating them:

(a) Crown Post Office branches: these branches are directly managed by POCL and are known as "**Crown**" post offices. They are run by employees of POCL (commonly known as "**Crown Office**" employees).

(b) Agency Post Office branches: these branches are owned by SPMs who are agents of POCL. These were typically located within a shop or other small business. The SPM receives payment from POCL for running the local branch, with their level of remuneration depending upon the amount of business which is performed at the branch. In some cases, the SPM would be supported by a manager or assistant.

(c) Outreach services: these are typically small part-time branches that may use a village hall or mobile van to provide post office services to communities that might not otherwise receive them.

4.2.4 The graph below illustrates the overall number of branches and their split between Crown, Agency, and Outreach for the period 2000 to 2021[10]:

[10] https://researchbriefings.files.parliament.uk/documents/SN02585/SN02585.pdf

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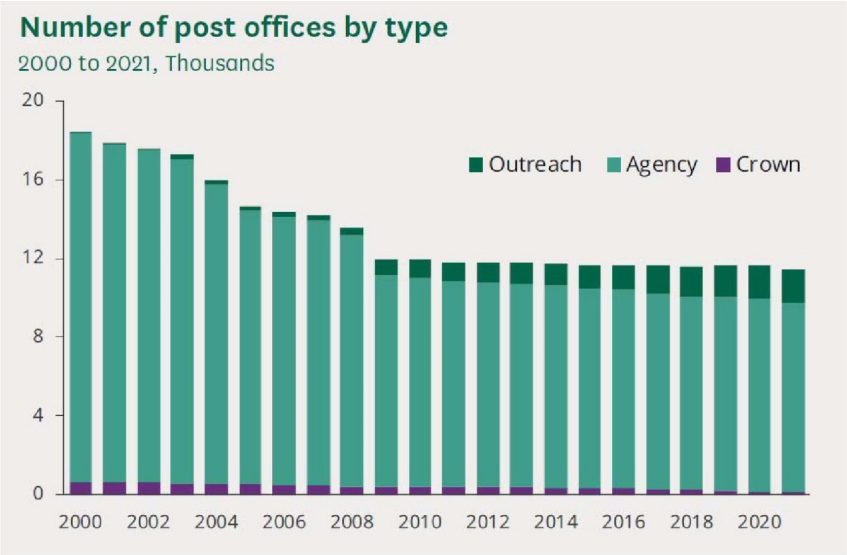
Figure 4.1 Number of post offices by type 2000-2021



4.2.5 The figure above shows that that vast majority of Post Office branches are Agency branches. However, a POCL statement in 2003 indicated that, despite Crown branches only representing some 3% of branches by number, they accounted for over 20% of the transaction volume[11]. In 2000 the Post Office had around 28 million customer visits each week, across its branch network[12].

4.3 Services available to customers at Post Office branches

4.3.1 A Post Office branch provides a wide range of products and services to its customers. It is estimated that a Post Office branch offered in excess of 170 different products and services[13]. Examples of services that a customer can use at a branch include:

(a) Send parcels

(b) Purchase stamps

(c) Purchase lottery tickets

(d) Pay utility bills (such as British Telecom ("**BT**") telephone bills)

(e) Pay their car (vehicle) tax

(f) Withdraw and deposit cash into their Girobank[14] account

11 https://publications.parliament.uk/pa/cm200203/cmselect/cmtrdind/718/718we17.htm

12 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/31809/10-1260-securing-the-post-office-network.pdf

13 https://publications.parliament.uk/pa/cm200203/cmselect/cmtrdind/718/718we17.htm

14 at this point in time Girobank was owned by Alliance and Leister, now part of the Santander Group

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(g) Withdraw and deposit cash into their account that they hold at certain high-street banks.

4.3.2 The above are all examples of transactions that a customer could complete in a Post Office branch. In this Report, when I refer to "transactions," I am referring to any event in which a customer used a Post Office service in a branch that needed to be recorded in a system. For example, when a customer purchases stamps and pays for this purchase in cash. These transactions would not include a customer doing something that did not result in the need for this to be recorded in a system. For example, making an enquiry about the cost of stamps. These transactions would also specifically not include the customer making a purchase of items from the shop (such as bread or milk) in which the Post Office branch happened to be located in.

4.3.3 Customers could pay for their transactions using several different methods, such as:

(a) Cash

(b) Debit card

(c) Cheque

4.3.4 A Post Office branch would commonly have a shop associated with it, typically selling everyday items, such as bread, milk, and newspapers. Transactions associated with the shop would be kept separate from that of the Post Office branch, as they were, in effect, run as two separate businesses. In fact, it was common for branches to have two physically separate counters, one for shop transactions and one for Post Office transactions. Each counter would have its own till for recording transactions and keeping cash and receipts. If a customer wanted to buy a loaf of bread and also pay a BT telephone bill, they would need to complete two separate transactions, each at different tills.

Figure 4.2 A Post Office branch located within a local shop



4.3.5 The majority of Post Office branches were Agency branches, owned and managed by SPMs. As such, the cash and stock in the branch were owned by POCL but managed day-to-day by the SPMs. Both cash and stock could periodically be sent centrally from POCL to the Post Office branches if they were running low and could also be returned if the branch was holding too much stock or cash.

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4.3.6 As can be seen from the list of services above, not all transactions that a Post Office offered were internal to POCL. POCL was also providing services to other entities, both public sector (e.g., Driver and Vehicles Licensing Agency ("**DVLA**"), Department of Work and Pensions ("**DWP**")) and private sector (e.g., Camelot, BT and Girobank). POCL referred to these other entities as "**Clients**". As such, some of the money transacted in the Post Office branch would need to be subsequently sent to or obtained from Clients by POCL (e.g., if cash had been deposited into a Girobank account by a customer of Girobank then POCL would need to send this money to Girobank).

4.3.7 It was important to keep a record of all transactions that were occurring in the branch, so that POCL could work out which Clients it needed to pay money to, or claim money from, as well as ensuring that its cash and stock could be accounted for.

4.3.8 Prior to the introduction of the Horizon IT System, a Post Office branch would record transactions in paper-form, and/or enter them into their own electronic point of sale ("**EPOS**") system. I understand that prior to the introduction of the Horizon IT System some branches used the ECCO+ EPOS system[15].

4.4 The Horizon IT System

4.4.1 The Horizon IT System was installed (also referred to as being "implemented") into all Post Office branches across the UK. The system was introduced in stages (also referred to as "rolled out") between 1999 and 2000. The objective of the Horizon IT System implementation was to modernise the point-of-sale and managerial accounting functions across the network of Post Office branches. In modern terms this might be described as the process of 'digitising' the Post Office branch network.

4.4.2 The Horizon IT System is still in use in Post Office branches today, although the system has been updated on many occasions throughout its 20+ year lifetime. Whilst there are many different upgrades that have been made to the system, it is generally accepted that there are three major versions of the system:

(a) Legacy Horizon IT System ("**LHITS**"): First introduced in 1999

(b) Horizon Online HNG-X ("**HNG-X**"): Introduced in 2010

(c) Horizon Online HNG-A ("**HNG-A**"): Introduced in 2017

4.4.3 Legacy Horizon, when it was first introduced, was known as the Horizon IT System, the Horizon system, or simply Horizon. I assume that it became known as Legacy Horizon when it was superseded by Horizon Online in 2010. The following section focuses on the structure and workings of LHITS. In a later section I will briefly describe my understanding of the two versions of Horizon Online.

[15] Explanation of Local P.O. Reconciliation and Administration, page 13 (FUJ00079193)

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4.5 Legacy Horizon (LHITS)

A brief history of LHITS:

4.5.1 The table below briefly outlines some of the key events in the development of LHITS:

Table 4.1 A brief history of LHITS

Date	Event
May 1996	The Department of Social Security[16] (**"DSS"**) and Post Office Counters Ltd (**"POCL"**) jointly awarded a contract to ICL Pathway Limited (**"ICLPL"** or **"ICL Pathway"**) under the Private Finance Initiative (**"PFI"**) to develop an IT system that would: • replace the existing paper-based method of paying social security benefits; and • automate the national network of Post Offices. The project was called **"the Pathway Project"**, and the IT system it was to develop is variously referred to as **"Pathway Horizon"**, **"Pathway"**, **"Horizon IT System"**, **"Horizon system"** or **"Horizon"**. At this time ICL Pathway Limited was a wholly owned subsidiary of International Computers Limited (**"ICL"**). Fujitsu Limited (**"Fujitsu"**) acquired 80% of ICL's shares in 1990, later purchasing the remainder in 1998. ICL was fully integrated into Fujitsu in 2002 and renamed Fujitsu Services Limited.
September 1996	A limited pilot stage known as "Initial-Go-Live" was implemented in 10 Post Office branches in Stroud, Gloucestershire. The initial pilot was an interim system for the payment of Child Benefit only and did not offer full functionality.
November 1997	The IT system was extended to over 200 post office branches in the North-East and South-West of England but still only provided for the payment of Child Benefit. The deadline for completion of the operational live trial of the IT system was missed by ICLPL.
March 1998	An interdepartmental working group was established to review the viability of the Pathway Project and the consequences of cancellation. The working group comprised officials from the Treasury, Cabinet Office, the Department of Trade and Industry (**"DTI"**) and the DSS.
July 1998	The interdepartmental working group reported that the Pathway Project remained feasible but required successful re-negotiation of the contract with ICLPL.
October 1998	Attempts to renegotiate the terms of the contract between the DSS, POCL and ICLPL failed.
May 1999	The original PFI contract awarded to ICLPL by DSS and POCL was terminated. The DTI announced a new partnership agreement between POCL and ICLPL.
July 1999	POCL and ICLPL agreed a fixed payment contract to automate the national network of Post Offices.
Late 1999	The roll-out of the Horizon IT System commenced in Post Office branches nationwide (referred to as the **"National Rollout"**).

[16] Now the Department of Work and Pensions ("DWP"). Note that ICLPL also referred to this as the Benefits Agency (**"BA"**) which was an executive agency of the DSS.

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Functionality of LHITS

4.5.2 The Horizon IT System delivered in late 1999 was designed to provide two functional services:

(a) Electronic Points of Sale ("**EPOS**"): this function was to record, via electronic (rather than paper) means:

(i) purchases of Post Office products (such as stamps and stationery) made by customers of the branch; and

(ii) transactions carried out by customers in the branch for the purchase of products or use of services provided by the Clients of the Post Office (e.g., banks, National Lottery, DWP, DVLA etc).

(b) Management accounting: this function effectively provided the SPMs and POCL with accounts which summarised the cash and stock positions and payments and receipts activity within a branch.

4.5.3 The data processed by LHITS is high volume (in 2003 POCL stated that Horizon processed nearly two billion transactions per year[17]) but is computationally relatively simple, that is to say, it does not need to perform complex calculations on the data in order to fulfil its role. Nonetheless, due to the number of branches, products, and customers it supports, the Horizon IT System has been characterized as highly complex, but no more complex than those used by multi-national banking institutions[18]. It is estimated the Horizon IT System had over 3.5 million lines of programming code[19] and that its documentation runs to more than 100,000 documents[20]. Fujitsu had publicly stated that when they were awarded the contract, in May 1996, Horizon was "…Europe's largest non-military IT contract"[21].

4.5.4 It is worth noting however that the Horizon IT System was created specifically for the purpose of servicing the Post Office branches. It did not have the burden of integrating existing technologies, except where it chose to do so, which limited the possibility of extra complexity.

Ambitious scale and scope

4.5.5 In my view, the project to deliver the Horizon IT System was ambitious in both its scale and its scope. It is worth reflecting on the state of technology around 1999, when the LHITS was rolled-out:

(a) The best-selling mobile phone of 1999 was the Nokia 3210[22]. This had a monochrome screen, did not support touch-screen navigation, and did not support internet access

17 https://publications.parliament.uk/pa/cm200203/cmselect/cmtrdind/718/718we17.htm
18 TABJ, paragraph 16.
19 Fujitsu case study: https://www.fujitsu.com/uk/Images/postoffice-customer-experience.pdf
20 TABJ, paragraph 15.
21 Fujitsu case study: https://www.fujitsu.com/downloads/SVC/fs/casestudies/uk-postoffice2.pdf
22 https://en.wikipedia.org/wiki/List_of_best-selling_mobile_phones#1999

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through a browser. The first iPhone with a touch screen would not be released until 2007[23].

(b) In 1998 it was estimated that only 31-33% of UK adults had a personal computer ("**PC**") at home[24].

(c) In 2000 it was estimated that only c. 30% of the UK adults had internet in their homes[25].

(d) Modern social media had not yet been invented (Facebook was only founded in 2004).

(e) The IT sector had invested heavily in addressing the "Millennium Bug" (also known as the "Y2K" bug). At the time, some systems in use only stored the last two digits of a year instead of the full four digits (e.g., 99, instead of 1999). If was feared that at the turn of the new century this could cause code to malfunction. The original reason for only using two digits was to save memory, as memory was expensive and limited in the early days of computing.

(f) The prevailing IT development methodology was the waterfall model in which development progressed monolithically through a linear process, from design, to build, to test and then to release. The modern concept of agile development was not mainstream at that time.

Figure 4.3 The Nokia 3210, the best-selling handset of 1999



4.5.6 Some of the aspects of the LHITS development that I believe drove the complexity of the system and its implementation were:

(a) The need to design a system that connected all Post Office branches to a central server but could also withstand a loss of connectivity, without impairing the ability of

23 https://www.apple.com/uk/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone

24 https://webarchive.nationalarchives.gov.uk/ukgwa/19991013043222/http://www.dti.gov.uk:80/iwfreview/iwfreview1.html

25 https://web.archive.org/web/20090905171759/http://www.ofcom.org.uk/research/cm/cmpdf/cmr04_print/cm_2004.pdf

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the SPMs to serve their customers and allow the system to correctly synchronise once connectivity to the central server was re-established.

(b) The need to integrate a variety of software (e.g., Riposte and Tivoli) and hardware (e.g., touch-screens, printers, communications equipment, bar code scanners, weigh scales, PIN pads etc).

(c) The need to accommodate hardware failures, as hardware components in the 1990s were not as reliable as they are nowadays.

(d) A large and diverse user base in the SPMs and the staff they employed, which would have included varying levels of comfort using 'modern' IT systems. Fujitsu notes itself that "Training was provided to 63,000 staff members from the age of 16 to 87 with various skills levels."[26] This would have presented, I believe, a significant training, roll-out and support challenge.

(e) Between August 1999[27] and December 2000[28], over 14,000 branches had LHITS installed (see Table 4.2 below).

(f) The physical challenges of installing bulky IT hardware into branches.

(g) The need for the system to be very secure, as it dealt with the transfer of money as well as holding personal details about Post Office customers[29].

4.5.7 All of these challenges made, in my view, the design, build and roll-out of the LHITS very ambitious.

Table 4.2 LHITS Number of Installed Branches

Month	Cumulative Installed/Live base (Post Offices)[30]	Cumulative Counters installed
Aug-99	321	819
Sep-99	749	1,819
Oct-99	1,596	3,558
Nov-99	1,859	4,122
Dec-99	N/A	N/A
Jan-00	1,966	4,413
Feb-00	3,010	6,658
Mar-00	N/A	N/A
Apr-00	N/A	N/A
May-00	N/A	N/A

26 Fujitsu case study: https://www.fujitsu.com/downloads/SVC/fs/casestudies/uk-postoffice2.pdf

27 ICL Pathway Bringing Technology to Post Office Counters & Benefit Payments - Monthly Progress Report, August 1999 (FUJ00058185)

28 ICL Pathway Bringing Technology to Post Office Counters & Benefit Payments - Monthly Progress Report December 2000 (FUJ00058197)

29 TABJ, paragraph 80.

30 N/A indicates where monthly figures are not available from these reports.

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Month	Cumulative Installed/Live base (Post Offices)[30]	Cumulative Counters installed
Jun-00	8,532	18,841
Jul-00	9,814	22,198
Aug-00	11,181	24,674
Sep-00	N/A	N/A
Oct-00	13,686	30,025
Nov-00	14,841	32,727
Dec-00	15,142	33,369

LHITS high-level design

4.5.8 In systems considered modern in the late 1990s, architecture often was enacted among three layers: user interface, business logic, and data. The business logic layer controls the flow of data to and from the user interface layers. This division of labour sets boundaries of responsibilities between development teams, consequently speeding the delivery of the unified product.

4.5.9 These systems, including LHITS, used data-driven logic as much as possible. Data driven logic is where the mechanisms for computer algorithms refer to values stored in data structures, rather than referring to application source code. This allows for changes to be made to the data in the structures, without the need to alter existing application source code. When applied properly, this approach bypasses source code related testing and distribution activities, which often are very time consuming.

4.5.10 An example will illustrate how data-driven logic compares to source code encapsulated logic.

4.5.11 Let us consider the sales price for three products: hammer, screwdriver, and pliers. For the purposes of this example, the sales price for a hammer is £5. The sales price for a screwdriver is £7. The sales price for pliers are £6. Let us also assume a customer wanted to purchase two hammers, three screwdrivers, and one pair of pliers.

4.5.12 A computer application could deal with these prices in its source code. I will use pseudo-code (a plain language description of what the code is supposed to do) to represent how the source code might work.

Set the total basket amount to £0

If the product is a hammer, then

Multiply the quantity of hammers by £5 and add this amount to the total basket amount

If the product is a screwdriver, then

Multiply the quantity of screwdrivers by £7 and add this amount to the total basket amount

If the product is a pair of pliers, then

Multiply the quantity of pliers by £6 and add this amount to the total basket amount

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If the product is not a hammer, screwdriver, or pliers
Send a series of alert messages to rectify the issue

4.5.13 This process would perform as intended. However, if the sales price for any of the products changed, a change to the source code would be required. For simple computer applications, this would be a trivial task that could be performed in a small amount of time. Conversely, if the application was complex, changing, testing, and deploying the new version could take a significant amount of time.

4.5.14 Since price changes can be frequent, a data-driven logic approach is appropriate. In this approach a data table with the item names and their prices is maintained and made available to the computer application.

Table 4.3 Product Master Table

Product	Price
Hammer	£5
Screwdriver	£7
Pliers	£6

4.5.15 The code for the application could now resemble.

Set the total basket amount to £0
For every product purchased
Look for the product in the Product Master table
If the product is found
Multiply the quantity by the price and
add the amount to the total basket amount
If the product is not found
Send a series of alert messages to rectify the issue

4.5.16 In this approach, price changes are dealt with by maintaining the Product Master table: changes to the source code are not needed. This does imply that the functioning of the system is reliant on the integrity of information in the Product Master table. If the table is updated in a timely manner, and maintains its informational integrity, the system is more responsive to price changes.

LHITS high-level structure

4.5.17 There are many ways to describe the structure of the LHITS, but for simplicity I have categorised these into four main components:

(a) Counter and peripherals: These were the system components that were located in branch, consisting of hardware and software;

(b) Communications network: This was the network connection (functionally akin to the communication role of an internet connection) which allowed data to be sent between the branch and the LHITS Campuses (see below). This was commonly an ISDN

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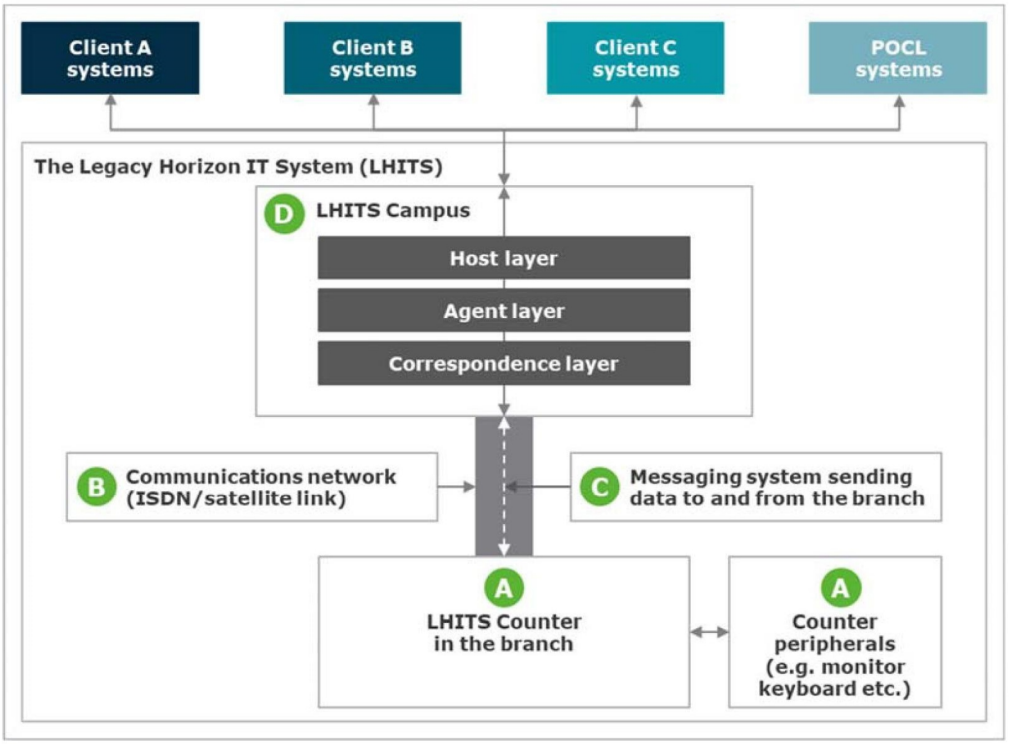
connection (a type of communications connection), although some rural branches used a satellite link;

(c) Messaging system: this was the software and protocols responsible for encapsulating data that was then communicated between branches and the LHITS Campuses (see below); and

(d) LHITS Campuses: these were locations that centrally collected, stored, and processed data on transactions from across the Post Office branch network and communicated with POCL's systems and those of POCL's Clients. These campuses were located in Bootle and Wigan.

4.5.18 This diagram shows a simplified representation of how these components worked together.

Figure 4.4 Components of LHITS



4.5.19 The system was designed to operate with an available network connection ("**Online mode**"), but also to allow the Post Office branch to carry on serving customers, even if the network connection was not available ("**Offline mode**"). In this Offline mode the Counter was designed to accumulate transactions and synchronize with the broader system once the communication connection had been re-established. The Counter kept enough information to perform most tasks, regardless of connectivity status, but not all transactions could be completed in Offline mode. Two notable transaction types that required the system to be in Online mode were:

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(a) Network Banking Service ("**NBS**"): Withdrawals of cash from the customer's high-street bank accounts required an active network connection as funds availability verification prior to withdrawal was only possible when in the Online mode.

(b) Debit Card Service ("**DCS**"): Use of debit cards to pay for transactions also required an active network connection as transaction authorisation was only possible when in the Online mode.

4.5.20 I will now explain in more detail components A, C and D. A further explanation of component B (the communications network) is not, in my view, necessary in order to understand the LHITS. The communications network was provided by a combination of BT and Energis and was essentially a purchased service that the LHITS made use of, in much the same way as a household pays for the use of an internet connection.

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Component A - Counter and peripherals

4.5.21 The physical components of the Horizon IT System that were located in branch were:

(a) Counter: A personal computer ("**PC**") running the Windows NT operating system. This was loaded with various pieces of Horizon software, most notably Riposte;

(b) Screen: A 10-inch colour touch screen or 12-inch flat panel screen;

(c) Keyboard: A specialised financial keyboard with magnetic stripe reader and Smart Card reader;

(d) Bar code reader: A handheld bar code reader that could be used to read pre-printed barcodes on items such as utility bills;

(e) Weigh scales: Scales for weighing postal items (e.g., parcels);

(f) Tally roll printer: A printer used for producing customer receipts as well as some summary reports for the SPM;

(g) PIN pad: Number pad used by customers for entering their Personal Identification Number ("**PIN**") to verify debit card transactions; and

(h) A4 printer: A printer used by the SPM for non-customer administration tasks (e.g., printing summary reports).

4.5.22 I understand that approximately 46% of branches had only one Counter installed, with approximately 33% having two Counters installed, and the remaining having three or more Counters. Some branches had twenty Counters installed. Across the approximately 18,000 branches in which the LHITS was installed there were approximately 38,000 Counters. At any given branch there was only one Counter that was connected to the LHITS Campuses; this Counter was referred to as the "**Gateway Counter**" or "**Gateway PC**".

4.5.23 In order to use a Counter the SPM or a member of the branch staff (collectively referred to hereafter as "**Clerks**" or "**Counter Clerks**") would need to log in to the Counter using their assigned username and password.

Single-Counter branches

4.5.24 Smaller branches, such as those located in rural villages, would typically only have one Counter in them. The diagram below shows the Counter setup in a single-Counter branch, along with the other devices connected to it (e.g., keyboard, screen etc, collectively referred to as "**Peripherals**"). Also included below are photos of the LHITS Counter and Peripherals in a branch.

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Figure 4.5 Counter setup in a single-counter branch

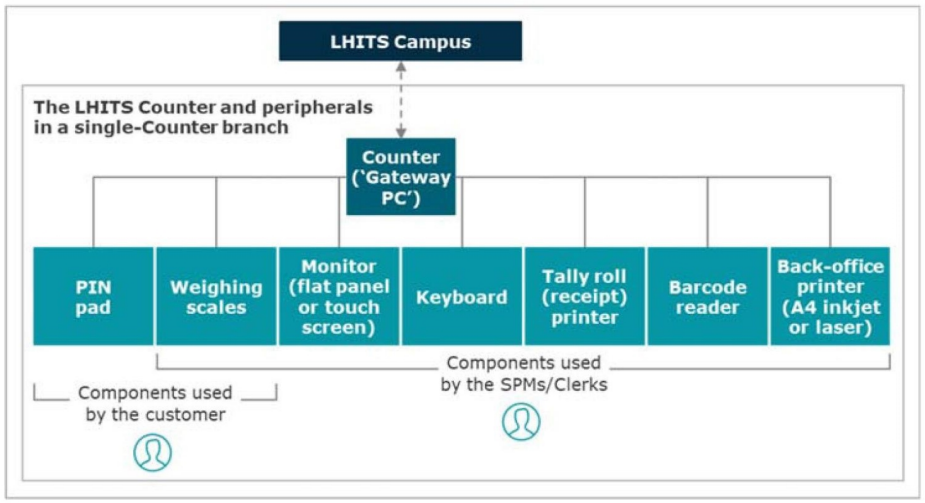
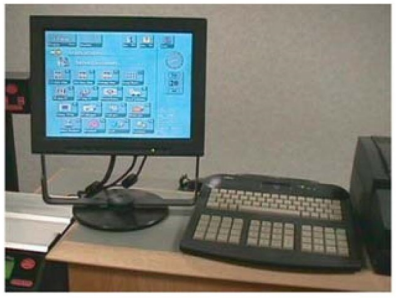


Figure 4.6 The LHITS Counter in a branch







Multi-Counter branches

4.5.25 Larger Post Office branches could have multiple Counters in them. The diagram below shows the Counter setup in a multi-Counter branch, illustrating the importance of the Gateway PC in providing a connection to the LHITS Campuses.

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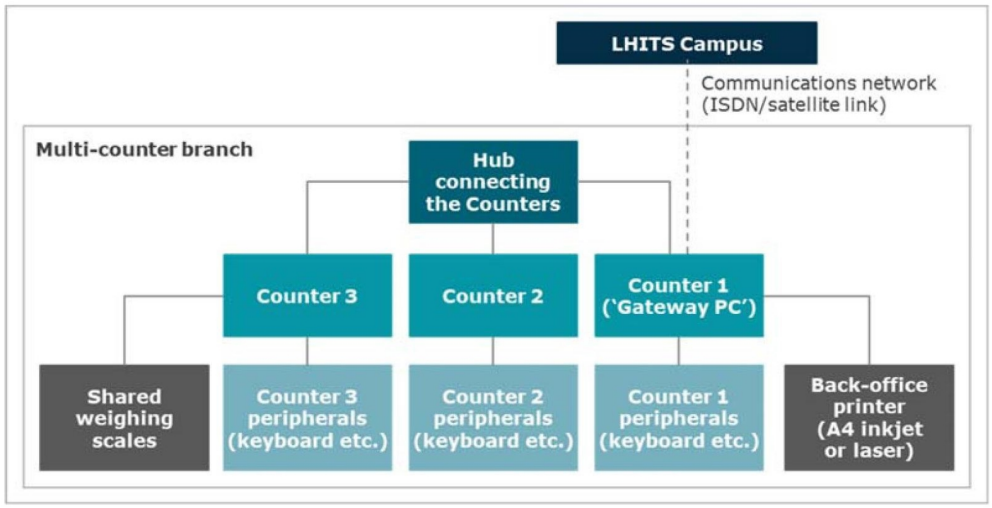
Figure 4.7 Counter setup in a multi-counter branch



4.5.26 Multi-Counter branches could make use of additional LHITS functionality, such as the ability the transfer an open session between Counters, that is to say if a Clerk starts serving a customer on one Counter (Counter 2), but then logs on to another Counter (Counter 3), the current customer session, containing the purchases they have selected so far, is automatically transferred to Counter 3 and the Clerk is automatically logged out of Counter 2.

Software - The Riposte Desktop

4.5.27 The Counters ran on the Windows NT operating system, but a user was prevented from directly accessing Windows. Instead, when logging in to a Counter they were automatically directed to a piece of software that had been specifically configured for the Post Office, the Riposte Desktop. This was largely based on a commercial product named Riposte from the Escher Group. The Escher Group is a separate company from ICLPL and Fujitsu. The Counter User Interface ("**UI**") was designed to be as simple and intuitive as possible and is specifically tailored for use in a retail environment. The intention is that unless absolutely necessary, the Clerk should not have to type in any data on the terminal. Many transactions are initiated automatically by the Clerk swiping a magnetic card or reading a bar code using the Counter's bar code reader. Interaction with the system is achieved by using the keyboard or the touch screen.

4.5.28 The screen is split into two parts. The left-hand portion contains a number of menu buttons which are valid in the context of the transaction (though some may be marked with a "stop sign" which indicates that they cannot be used in this particular transaction.) The right-hand side of the screen is a "stack" showing, for example, the purchases made by the customer so far.

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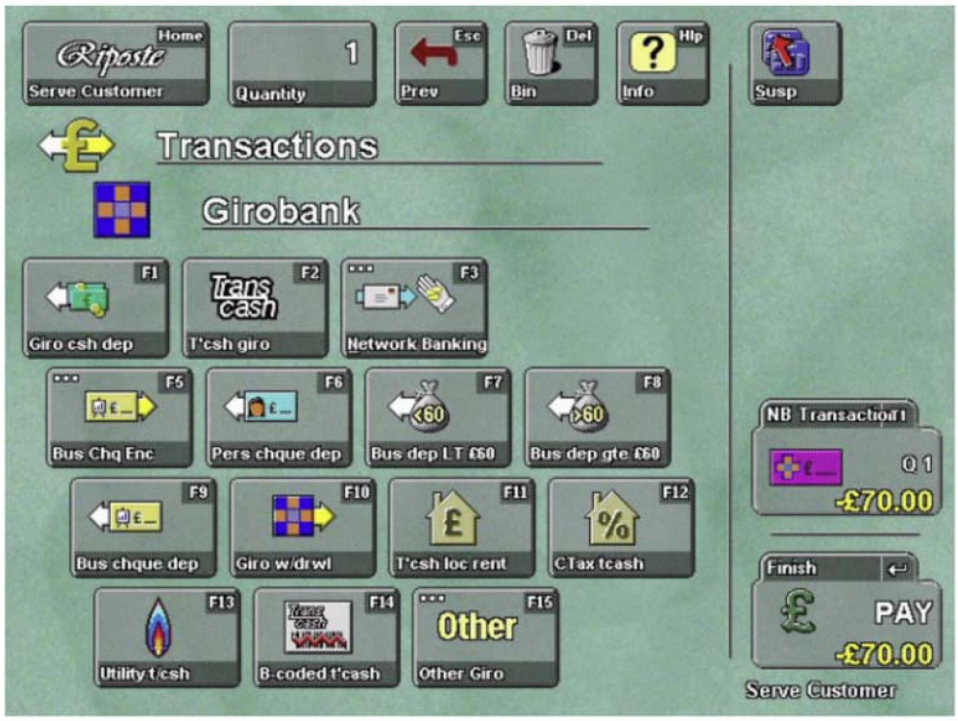
Figure 4.8 Screenshot of LHITS's UI



Stock Units

4.5.29 An important concept to understand is that of Stock Units ("**SUs**"). A Stock Unit is a unit, created on the LHITS system to which cash and stock (e.g., stamps and stationery) are assigned and to which transactions are associated. The Stock Unit mirrors how stock and cash were physically managed in the branch (i.e., they could, depending on how the branch was managed, represent the contents of the till tray). Each branch will have at least one Stock Unit, and multi-Counter branches may have multiple Stock Units, possibly aligned to the different Counters. Stock Units are a way of managing cash and stock and these Stock Units can be allocated by the SPM on a medium-term basis, to individual Counter Clerks. The Counter Clerk is then responsible for ensuring that the Stock Unit balances at the end of the week, or whenever the Stock Unit is de-allocated from them. I describe the process of Stock Unit balancing in section 4.7. Stock Units are assigned identifiers such as "DD" or "AA". The SPMs can transfer stock between Stock Units using a function on the Counter. Stock Units can be individual (i.e., assigned to one Counter Clerk only) or can be shared between multiple Counter Clerks. In some circumstances the SPM may choose to allocate a Stock Unit to certain specific stock, such as Lottery scratch cards.

Modes

4.5.30 Another important concept to understand is that of modes. The Counter supports the concept of Modes. Examples of modes are "Serve Customer" ("**SC**"), "Transfer Stock In" ("**TSI**"), "Rem Out Supply Division" ("**ROSD**"), "Rem In Supply Division" ("**RISD**") and "Housekeeping" ("**HK**"). The mode is selected by the user on the Counter applications as they see fit. The current mode is indicated at the top left-hand corner of the Desktop screen

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(e.g., in Figure 4.8 the Counter is in the "Serve Customer" mode as indicated in the top left-hand corner of the screen). A Counter is in only one of a small set of predefined modes. A mode may have the effect of making certain desktop functions unavailable. For example, the Logout function is not available while the Counter is in Serve Customer mode; the Clerk has to settle (complete) the current session before they can log out.

Remming in and remming out

4.5.31 The Counter supported the activity of recording the movement of cash and stock from the branch to POCL or vice versa. Stock and cash might be returned to POCL if the branch was carrying an excess, or certain stock items had expired (e.g., stamps being taken out of circulation). The term used for accepting a delivery of cash or stock from POCL by the branch is called "**remming in**"; the term used for delivering cash or stock from the branch to POCL is called "**remming out**".

Horizon Transaction Data

4.5.32 There are three types of transactional data in the Horizon IT System[31]: Manual entries, TCs, and Fujitsu entries:

(a) Manual entries are the data entered by the SPMs through the normal course of utilising the Counter.

(b) Transaction Corrections ("**TCs**") are produced by the Post Office to be accepted by a user at the Post Office branch to correct discrepancies in accounting.

(c) Fujitsu entries are injected into the Horizon IT System directly by Fujitsu and may be used to balance discrepancies.

Coding of the Counter in LHITS

4.5.33 LHITS was coded in Visual Basic, C, and C++. LHITS also utilized Oracle development tools and the Riposte product.

Component C - Messaging system

4.5.34 The Counter uses a messaging infrastructure provided by a system called Riposte (and later WebRiposte), provided by Escher. Everything that Riposte handles is stored as a message. Messages are constructed using a format known as Attribute Grammar. This is a self-defining and nested record format that is technology independent. Data fields (or attributes) are not positional but are identified by a preceding attribute name. They are a tree-like structure and could be considered a proto-markup language (akin to the XML format we are more familiar with today). Attributes can be optional and new attributes can be added over time without existing applications being affected. Applications use just those attributes they are interested in and are not 'aware' of the rest.

[31] TABJ, paragraph 61. A fourth type, "Transactions Acknowledgement" ("TAs") was introduced in 2012.

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4.5.35 Let us continue to use our hammer, screwdriver, and pliers transaction to illustrate what a tree-like structure might look like. As a reminder, a purchase of two hammers, three screwdrivers, and one pair of pliers is our example.

4.5.36 The tree-like structure might use the relationships.

Sales transaction
Customer
Items Purchased
Item 1
Item 1 Quantity
Item 1 Price
Item 1 Total Purchase Amount
Item 2 ....
Item 3 ...
Total Basket Purchase Amount

4.5.37 In our example, this could be represented as follows.

<Sales Transaction Start>
<Customer Name> "John Doe"
<Items Purchased> 3
<Item 1 Name> "Hammer"
<Item 1 Quantity> 2
<Item 1 Price> £5
<Item 1 Total Purchase Amount> £10
<Item 2 Name> "Screwdriver"
<Item 2 Quantity> 3
<Item 2 Price> £7
<Item 2 Total Purchase Amount> £21
<Item 3 Name> "Pliers"
<Item 3 Quantity> 1
<Item 3 Price> £6
<Item 3 Total Purchase Amount> £6
<Total Basket Purchase Amount> £37
<Sales Transaction End>

4.5.38 An example of an Attribute Grammar is contained in Appendix B.

4.5.39 Normal transactions at the Counter take place within a customer session. Each physical transaction with the customer (e.g., stamp sale, benefit book encashment, postal order sale) results in the creation of one or more messages depending on the complexity of the transaction. For example, a stamp sale has one message, and a postal order results in two messages (one for the postal order and one for the fee). None of these messages is normally written to the message store until the customer "settles" the session. This results in an additional transaction for each Method of Payment ("**MoP**") used. A key feature of each session is that they are 'zero-sum' that is to say the debits and credits of the transactions must sum to zero (e.g., if a session has transactions for the purchase of £5 of stamps and £2 of envelopes then the same session must contain a payment, such as cash, for £7).

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4.5.40 When a Clerk completes a session then the resulting transactions, in the form of Attribute Grammars, are saved locally on the Counter in the "**Counter Message Store**" (also known as the "**Riposte Message Store**"), a local repository of all transactions executed on that Counter. Where there is more than one Counter in an Outlet, the Riposte Message Store is replicated across all of the Counters. Where there is only one Counter, the Counter contains two mirrored disks, one fixed and one exchangeable, so that the message store can be recreated on a replacement Counter if necessary (e.g., in the case of a hardware failure).

4.5.41 Riposte had a data replication facility. In the event the wide area network was unavailable, the Counter would accumulate messages in the Counter Message Store until the communication facility was reconnected. When the reconnection was established, the Counter's messages would be synchronized with a version of the message store saved on the LHITS Campuses, in their Correspondence Servers (the "**Correspondence Server Message Store**").

4.5.42 Much of the data required by Counter applications, including much of the way in which they operate, is passed in "**Reference Data**", which is distributed via the same Riposte messaging mechanisms. Reference data originates with either:

(a) POCL: reference data from POCL providing, for example, product lookup data containing prices etc.;

(b) Client: reference data from Clients containing information specific to them, such as Stop Lists[32]; or

(c) Application: reference data from LHITS itself which tells the system how to operate (e.g., what options to make available in certain screens).

4.5.43 This Reference Data is distributed to all relevant branches. It enables the construction of "soft centred" (data driven logic) applications whose operation can very easily be modified by changes to the Reference Data (as discussed earlier). A copy of the Reference Data is saved locally on each Counter in the Counter Message Store. This local copy enables the branch to carry on operating and completing customer transactions, even if the connection with the LHITS Campuses is not available (for instance, if the network communication is lost).

[32] A list of pension and allowance order books on which payment must not be made: HSUG, page 20

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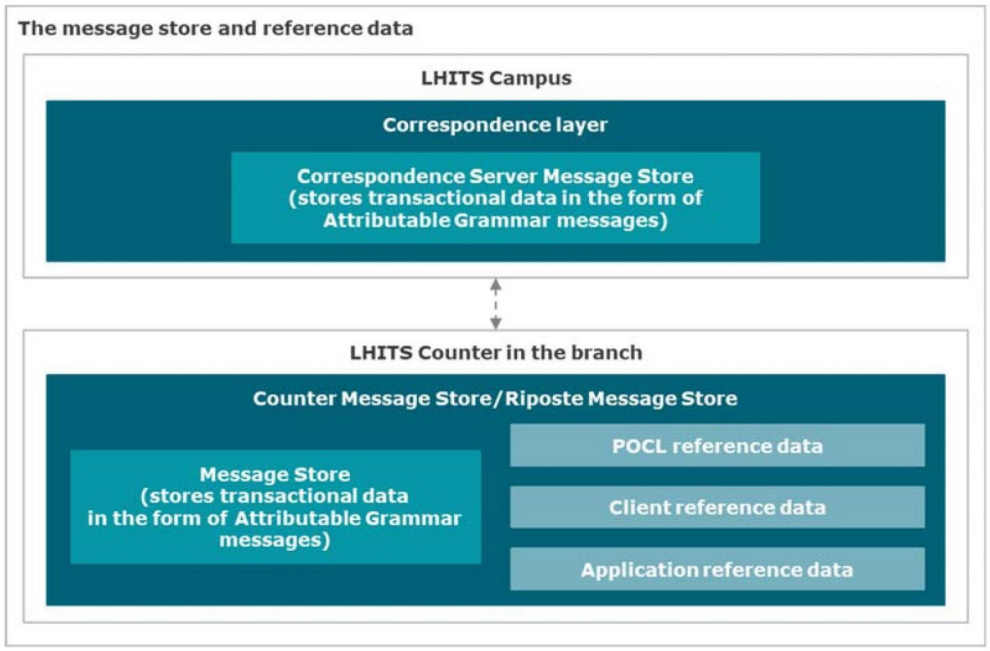
Figure 4.9 Counter and Correspondence Message Store



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Component D - LHITS Campuses

4.5.44 The LHITS Campuses are actually a collection of different IT components that supported the 'back-office' of the Post Office. They were located at two sites referred to as "**Campuses**" located in Bootle and Wigan. Resident within the Campuses were several important functions/processes:

(a) The Correspondence Layer;

(b) The Agent Layer;

(c) The Host Layer;

(d) Reference Data Management System; and

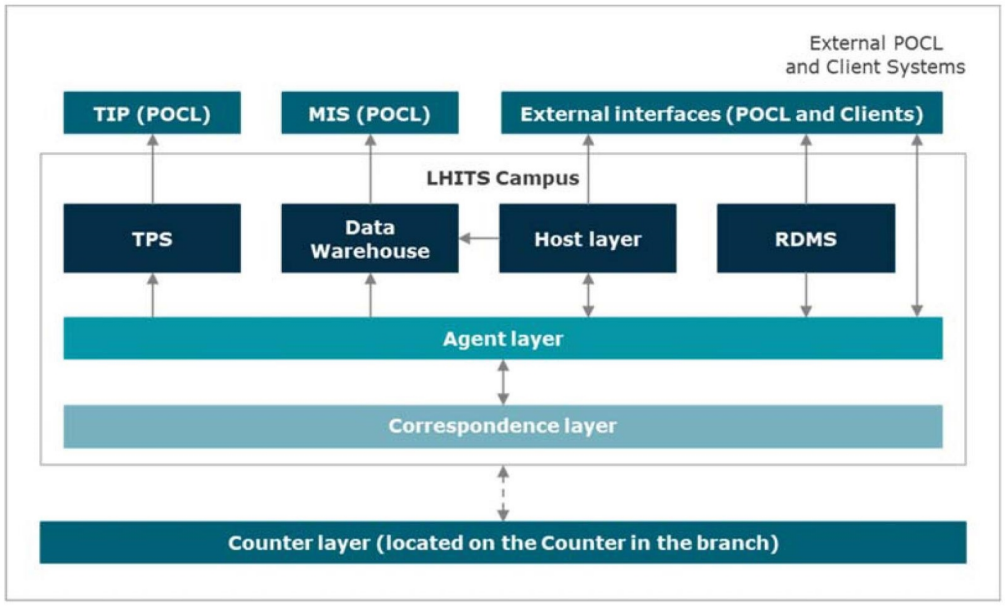
(e) Data Warehouse.

4.5.45 Two important external services[33] that the LHITS Campus supported were:

(a) Transaction Information Processing; and

(b) Management Information Services

Figure 4.10 The LHITS Campus



4.5.46 The Correspondence Layer handled communications of the network. The Correspondence Layer and Counter Layer share the use of the Riposte Message Service ("**RMS**"), a message storage and replication mechanism, as previously described, which runs on the Correspondence Servers and the Counter. This supports a shared, distributed message store

[33] I note that it could be argued that some elements of these services were contained within the LHITS Campus, but for simplicity I describe them as external services.

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to ensure that information generated at the Counter is replicated in the Campuses and vice versa. These Riposte mechanisms interact directly with the Agent Layer. A specialised Riposte Archiver, running on the Correspondence Servers, is used to ensure that all Riposte messages are written to tape for audit purposes.

4.5.47 The Agent Layer is responsible for transforming the message-based view that is appropriate for the Counter application into a file view of the Host Layer. It provides facilities to pass data in both directions: from the Host layer to the Counter, and vice versa. It also provides facilities to pass messages directly to third party Clients, and to return the Client response to the Counter. The Host Layer applies any business rules to the information being received from or sent to the external client system.

4.5.48 The Reference Data Management System ("**RDMS**") manages all reference data such as product information and operational elements. POCL's Reference Data Management Centre ("**RDMC**") supports the loading and release of reference data. The Reference Data Distribution Service ("**RDDS**") distributes reference data to all branches and data centres. RDMS is utilised by many elements of the LHITS. It is an example of LHITS's data-driven logic; therefore, its integrity is important for the proper operation of LHITS.

4.5.49 The Data Warehouse is a database, or set of databases, used by POCL for querying and reporting purposes. The Data warehouse is populated from different sets of information flowing through the hosts.

4.5.50 The Transaction Processing System ("**TPS**") harvests transactions from the Counters at all branches and passes them along to POCL's Transaction Information Processing ("**TIP**") system via the TIP interface.

4.5.51 The Management Information Services ("**MIS**") is a component built onto the Data Warehouse to detect errors (including programmatic errors) in the LHITS through a series of reports and spreadsheets.

4.5.52 TIP was a system used by POCL to collect transaction records about all transactions that occur at all branches. Transactions are gathered in the first instance by the TPS (once the Counter has set the End-of-Day ("**EoD**") marker) which collects all messages that result from Counter transactions, stock unit balancing and branch cash accounting, and feeds them into the TPS database, from where they are fed to TIP. TIP was used to feed POCL's accounting system and to reconcile transactions with its Clients. While LHITS is not an end-to-end accounting system, the data it passes to POCL and its Clients must be sufficient to enable them to balance their own books and settle accounts between them.

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Updates to LHITS

4.5.53 I understand that there were several software updates made to LHITS between its initial roll-out in 1999-2000 and Horizon Online being introduced in 2010. Paragraph 97 of the TABJ lists these updates; however, little detail is provided as to the nature and content of these updates. I will highlight a few of these updates.

(a) Starting in August 2000, the Core Systems Release ("**CSR**") introduced Automated Payment Service ("**APS**"). APS supports payments by customers to utility companies (e.g., BT, electricity companies, water companies etc) and other Clients of POCL using bar-coded bills, magnetic cards or smart cards. In addition, this release introduced reconciliations between the APS data harvested by the APS Agents and the data harvested by TPS. I understand that there was a subsequent Core Systems Release Plus ("**CSR+**"), however I do not have information as to the nature of this software update.

(b) In February 2001, an upgrade to LHITS, called Maintenance Release M1, was rolled out. The main purpose of this upgrade was enhancements of the CSR+ applications.

(c) In June 2001, the S06 Release Day D rectifications were released. This included, amongst other things, a receipts and payments fix.

(d) In 2002/2003 Network Banking Service ("**NBS**"), Debit Card Service ("**DCS**"), and Data Reconciliation Service ("**DRS**") were introduced.

(i) NBS provides facilities for customers of selected banks and building societies (those with which POCL had reached an agreement with) to withdraw money from and deposit funds into their bank accounts.

(ii) DCS enables customers to pay for goods and services using Debit Cards. A card may be used for some or all of the value of a customer session. The transaction is verified by online reference to a merchant acquirer who either approves or declines it.

(iii) DRS takes information relating to all NBS and DCS transactions and reconciles the different data flows. It maintains data about transactions until they are reconciled (this may take some days) and for 90 days thereafter.

(e) I note that the TED states that NBS and DRS were delivered as part of release BI3 and that DCS was delivered as part of release S30.

(f) In 2004 the Post Office Ltd Finance System ("**POLFS**"), a SAP accounting system, was implemented. LHITS TPS delivered data directly to POLFS. The following text comes from an Operations Manual dated December 2006[34]: "The introduction of the Post Office Ltd Finance System (POLFS) in Product and Branch Accounting (P&BA), Chesterfield means that the finance teams can no longer adjust client and/or branch

[34] 'Operations Manual - Branch Trading: balancing and despatch', version 7 dated December 2006, section 7 (POL00086704).

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accounts on site. The adjustments have to be made at your branch and are necessary when branch transaction data does not align with client or supplier data.".

(g) Although no date is explicitly cited in the TABJ, at some point in 2004, I believe, a programme called IMPACT was delivered. This programme included several updates to LHITS[35], including:

(i) rollovers will subsequently be based on a Trading Period ("**TP**") that lasts 4 to 5 weeks instead of the weekly Cash Accounting Period ("**CAP**") used previously in the LHITS;

(ii) non-value stock declarations were removed and stock balancing no longer checked that such declarations have taken place;

(iii) the new concept of Local Suspense account was introduced for the processing of variances (or discrepancies as they were formerly known);

(iv) Stock Units will subsequently no longer be allowed to carry discrepancies over and any discrepancies will be moved into Local Suspense when the Stock Unit rolls over;

(v) Additional checks were carried out in order for the final Stock Unit to roll over: (1) the last Stock Unit was not allowed to roll over if there were outstanding Transaction Corrections (TCs); (2) Local suspense must be cleared (settled) before the final stock unit could roll over to the next Trading Period; and

(vi) Changes to the data server were made to reduce the number of times that the message store was scanned to pick up transactions during balancing. A Riposte mechanism known as "Notifications" was used to add new transactions to the existing totals as further transactions were generated during the balancing process[36].

(h) In around 2010, POLFS and SAPADS were merged to make POLSAP. I understand that SAPADS was POCL's stock control system (in conjunction with the Logistics Feeder System ("**LFS**")), responsible for ensuring that branches maintained adequate and appropriate levels of stock and cash.

35 Impact Release 3 - Balancing and Trading - Statement Production User Interface, Section 2.1.1 and 4.7 (FUJ00085125) and Branch Trading Transition Guide, page 28 (POL00089708).

36 TABJ, paragraph 241.

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4.6 Horizon Online

4.6.1 I understand that the original Horizon Online system (HNG-X) was piloted in late 2009 and rolled out in the spring of 2010. HNG-X replaced LHITS. I understand that there were several reasons for the release of HNG-X, including:

(a) **Reducing the cost of running Horizon:** A Post Office branded document titled 'Introducing Horizon Online' and dated September 2009 contains the following passage[37]: "Why is the Post Office® making changes to Horizon. The Post Office in recent years has made significant losses. The current Horizon application contributes to this financial position by being a major cost to the Post Office. Horizon Online will cost significantly less to run, maintain and change. These savings will improve our commercial position increasing our opportunities to retain current work and to bring in new business."

(b) **Taking advantage of improved communication technology reliability:** The improved reliability of network technology meant that it was feasible to have branches that were "online" the vast majority of the time. This benefited a wider change in the business as an increased proportion of transactions involved NBS and DCS, which required an active connection to the Data Centre.

(c) **Simplify the design of the User Interface:** A Post Office branded document titled 'Introducing Horizon Online' and dated September 2009 contains the following passage[38]: "Horizon Online has a more logical grouping of products and services as well as fewer product screens to navigate overall. This means that the buttons for the majority of products and procedures may be found within three screens."

(d) **Simplify business process:** I understand that HNG-X also simplified some of the processes that an SPM was required to complete as part of the back-office administration of the branch. A Post Office branded document titled 'Introducing Horizon Online' and dated September 2009 contains the following passage[39]: "…the maximum number of branch reports that may need to be produced has been reduced from 85 to 44".

4.6.2 In describing the differences between LHITS and HNG-X I will revert to the four component model I used to describe LHITS.

Component A – Counter and Peripherals

4.6.3 The hardware components of HNG-X were almost identical to that for LHITS. I understand that new Tally roll printers were installed but beyond that the hardware remained largely the same and the Counter continued to run the Windows NT operating system.

4.6.4 One important change was that every branch received a new router, a piece of hardware which allowed the branch to connect to the Data Centre. This router had a physical line

[37] 'Introducing Horizon Online' dated September 2009, page 24 (POL00086712).
[38] 'Introducing Horizon Online' dated September 2009, page 24 (POL00086712).
[39] 'Introducing Horizon Online' dated September 2009, page 24 (POL00086712).

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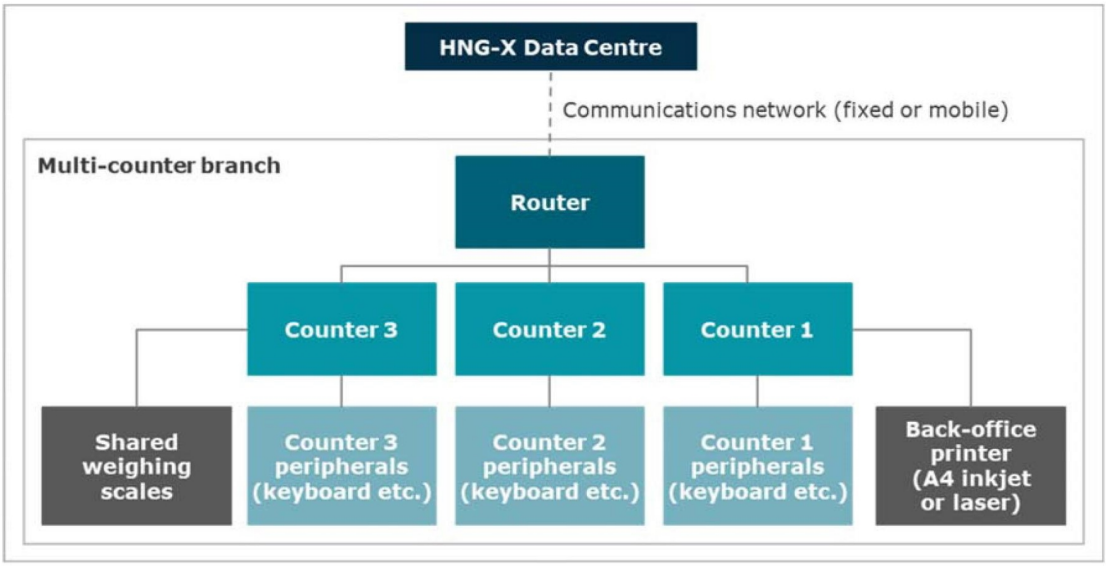
connecting it to the Data Centre but it would automatically switch over to a mobile backup network, via either Orange or Vodafone (subject to network coverage) if the primary communication link went down. A related change was that multi-Counter branches were no longer connected to the Data Centre via the Gateway PC, they connected directly to the router.

Figure 4.11 HNG-X Counter setup in a multi-counter branch



4.6.5 HNG-X's new architecture had four layers: Presentation, Interaction, Business, and Services.

(a) The presentation layer is responsible for displaying information to the user and accepting user inputs.

(b) The interaction layer provides the foundation for the presentation layers, such as menus. The combination of the presentation and interaction layers was a replacement for the Riposte technology.

(c) The business layer provides the business applications in an object-oriented manner.

(d) The services layer provides a set of software objects that support many business applications. Within the service layer exists a process engine. The process engine provides a simplified sequence of steps for the counter to deliver services.

4.6.6 Some data is stored persistently at the Counter, such as reference data, process definitions, and report definitions. Customer transactions are not stored at the Counter.

4.6.7 The service layer is the only layer that communicates with the data centre. The service layer also provides the interface for on-line services, which includes banking, the use of debit/credit cards, and mobile phone services.

4.6.8 The biggest change to a Counter Clerk would have been the UI, which changed significantly.

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Figure 4.12 Changes in the UI between LHITS and HNG-X

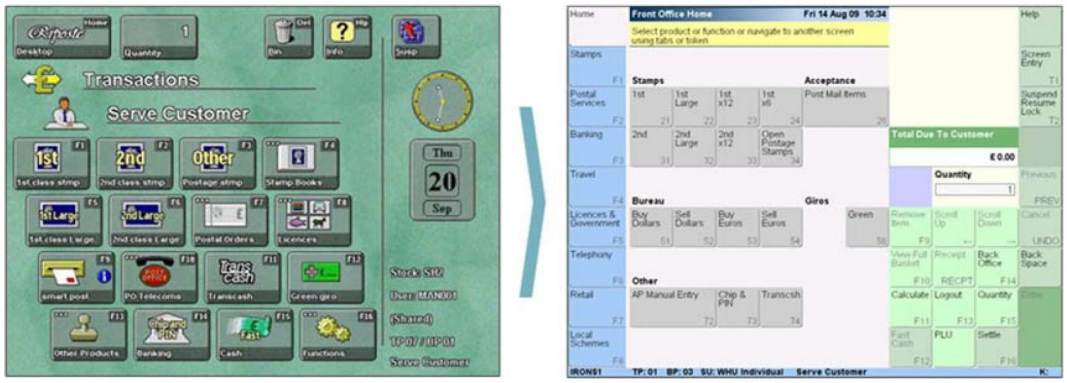
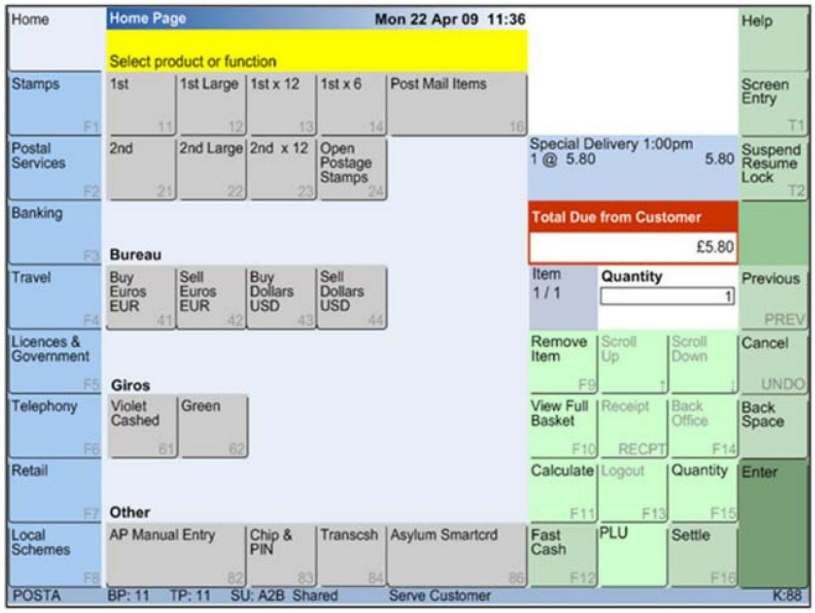


Figure 4.13 Screenshot of HNG-X



4.6.9 In addition, I understand that there were some changes to the available functionality, for example the ability to transfer sessions between Counters was removed in HNG-X.

Coding of the Counter in HNG-X

4.6.10 HNG-X was coded predominantly in Java, replacing the Visual Basic components used in LHITS.

Component C - Messaging system

4.6.11 As HNG-X only stored transaction data at the Data Centre, and not locally on the Counter, the Riposte message store was no longer required. Reference data was still stored locally on the Counter. The messaging system used the XML format (instead of Attribute Grammars used in LHITS) and used the TCP/IP protocol (instead of UDP/IP in LHITS) to send data between the Counter and the Data Centre.

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Component D – HNG-X Data Centres (nee Campuses)

4.6.12 As part of the move to HNG-X there were various updates made to the Data Centre, however for the purposes of simplicity I will highlight only two. The Branch Access Layer ("**BAL**") and the Branch Database ("**BRDB**") were new elements introduced in HNG-X. BAL's function was to exchange messages with the counter software and to perform audit and validation functions. BRDB was a high-performance Oracle database used to store customer transactions from all branches.

Updates to Horizon Online

4.6.13 I have only been provided with very limited documentation related to updates made to HNG-X and therefore the below is by no means a comprehensive list of the changes, let alone changes that I might consider to be material enough to warrant highlighting.

(a) In 2012, a fix was introduced (known as the "Ping fix") which was related to Camelot accounting for the National Lottery. I understand that as part of this fix Transaction Acknowledgements ("**TAs**") were introduced. TAs are non-counter transactions and typically initiate from somewhere else. This is from another area outside the Horizon IT System. These transactions are typically relayed to POCL or Fujitsu and need "accepting" into Horizon before forming part of the branch's transaction data. This is done by means of TAs sent to each branch. The SPM does not have the option to reject them.

(b) In 2017 a new version of Horizon was released, HNG-A. I have not been provided with any substantial documents which detail the changes delivered as part of this upgrade; however, I understand that one of the major changes was that the operating system that the Counters used was upgraded from Windows NT to Windows 10. This was necessary due to the obsolescence of Windows NT.

4.7 Balancing and Roll-over

4.7.1 POCL procedures required that SPMs undertake various regular processes on the LHITS. One of the prominent ones I see referenced in the PEAKs, PinICLs and KELs ("**PPKs**") is in relation to the Cash Account Period ("**CAP**"). This was a weekly cycle that started at the start of business on a Thursday and ran through to close of business on the following Wednesday[40] (in 2004 I understand that POCL moved to a monthly Trading Period ("**TP**") cycle, with months made up of 4 or 5 weeks[41]).

4.7.2 The CAPs are numbered sequentially, (e.g., CAP1 is followed by CAP2, and so on) and mirror the financial year of POCL which starts at some point in March each year and runs to 52 or 53 weeks. The CAP is of particular interest as it acted as a weekly reconciliation point for a branch. The data stored in LHITS was compared to the cash and stock physically held in the branch at the end of the CAP. I understand that this weekly reconciliation process is referred to as "**balancing**", and this was undertaken for each Stock Unit in the branch. Only

40 Explanation of Local P.O. Reconciliation and Administration, page 8 (FUJ00079193).

41 TABJ, paragraph 241.

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once the SPMs had balanced all of their Stock Units were they permitted to roll-over the branch to the next week (i.e., the next CAP). The process of balancing their Stock Units and moving to the next CAP were commonly referred to as "**roll-over**" or "**rolling over**".

4.7.3 A CAP is further divided into Balance Periods ("**BPs**"). Each CAP must have at least one BP but can have more than one. BPs allow an SPM to balance their Stock Units without rolling over to the next CAP. This could be used, for example, to perform an interim mid-week balancing, or to balance a shared stock unit when one Clerk handed this over to another Clerk.

4.7.4 The CAP and BP were displayed on the LHITS screen (see Figure 4.8)[42] and the TP and BP were displayed on the HNG-X screen (see Figure 4.13).

4.7.5 In order to balance and roll-over an SPM had to undertake various steps, a summary of which I have reproduced here[43]. This process would be undertaken for each Stock Unit that the branch operated:

(a) check all of the stock (e.g., envelopes etc) they held in branch against the system held values and adjust these values in the system where required;

(b) declare the stamps that they held in branch (i.e., count up each denomination of stamps they held and enter these into the LHITS);

(c) declare the cash they held in branch (i.e., count up each denomination of coins and notes in the till and enter these into the LHITS);

(d) produce the 'balance snapshot report' and complete all mandatory checks, making adjustments to transactions or stock and cash declarations where inconsistencies are identified, or accepting any discrepancies that LHITS identified between its calculated values and those from the declarations; and

(e) confirm in LHITS that they wished to roll-over the Stock Unit to the next CAP.

4.7.6 Any loss or gain that was identified through this process must be either posted to the Suspense Account (pending a correction to the system or an agreement to repay the amount) or had to be corrected by the SPM adding funds to the till (if a loss) or removing funds from the till (if a gain)[44].

4.7.7 The posting of discrepancies to the Suspense Account was only made once the Stock Unit had rolled over to the next CAP[45].

4.7.8 Once all Stock Units have been balanced and rolled-over an SPM would produce the Cash Account report for the branch, which would summarise the position across all Stock Units.

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42 After the IMPACT change was implemented the screen would have shown the TP and BP, as CAP was no longer used.
43 HSUG, page 627.
44 HSUG, page 797 to 804.
45 HSUG, page 516.

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The SPM would check this report and if they were happy with this would roll over the branch to the next CAP.

4.7.9 Whilst this is not intended as a comprehensive list of the tasks an SPM was required to undertake to roll-over, it is intended to provide an overview of what steps were followed as part of roll-over and provides the context for the process of checking that receipts and payments matched.

4.7.10 The Stock Unit balancing process consists of accumulating all the receipts for the Stock Unit and all the payments for the Stock Unit in the period for which the report is being produced and ensuring that the total value of receipts matches the total value of the payments. When this state is reached, the stock unit is said to be 'balanced'[46].

4.7.11 I understand the definitions of payments and receipts to be:

(a) Payment: "… a transaction resulting in a payment to the customer (for example, Alliance & Leicester Giro withdrawals, National Savings withdrawals, Co-op cheque encashment)"[47] "**Customer Payments**"); and

(b) Receipt: "… a transaction resulting in a payment from the customer (for example, an MVL, TV Licence, Alliance & Leicester Giro deposit, Insurance)"[48] ("**Customer Receipts**").

4.7.12 Ordinarily it is not intuitive that payments and receipts should match one another, however it is my understanding that the balancing of payments and receipts factored in the cash and stock balance at the start of a CAP (the so-called "**brought forward balance**") as well as the cash and stock balance at the end of a CAP (the so-called "**carried forward balance**").

4.7.13 Payments and Receipts balancing also factors in remittance (remming) activity, revaluations of stock and internal transfers made between Stock Units.

4.7.14 The balance equations for a Stock Unit are therefore[49]:

(a) Receipts = Customer Receipts + Transfers In + Remittances In + Revaluations Up

(b) Payments = Customer Payments + Transfers Out + Remittance Out + Revaluations Down

(c) Total Receipts = Receipts + Brought forward balance

(d) Total Payments = Payments + Carried forward balance

46 EPOSS Functional Description, section 11.1 (FUJ00079277).
47 HSUG, page 358.
48 HSUG, page 354.
49 HRR, page 235-236.

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(e) Carried forward balance = Stock on hand + Net discrepancies[50]

(f) Total Receipts = Total Payments

[50] In effect this is the result of undertaking the comparison of physical stock to that held in the system and making any required adjustments to get these to balance

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4.7.15 The process of reconciling payments and receipts is perhaps best explained through an illustration using a simplified and fictional payments and receipt account for a specific Stock Unit and CAP, in this example Stock Unit AA and CAP15. Note that in this example all transactions are settled for cash.

Table 4.4 Receipts and Payments Account for AA in CAP15

Brought forward balance from CAP14 into CAP15 for AA:			
Cash	£5,000		
Stock (stamps)	£500		
Receipts	**Receipt amount**	**Payments**	**Payment amount**
Payment for TV Licence	£100		
Payment of road tax	£75		
Alliance & Leicester Giro deposit	£150		
Purchase of 20 x 1st class stamps for cash	£5		
Additional money received ("remmed in") from POCL	£100		
		A&L Giro withdrawals	£50
		Pension payment	£25
		National Savings withdrawals	£100
		Issue of 20 x 1st class stamps to a customer	£5
		Carried forward balance from CAP15 to CAP16 for AA:	
		Cash	£5,255
		Stock (stamps)	£495
Total	**£5,930**		**£5,930**

4.7.16 There are a few important assumptions I have made as part of this example:

(a) the 'brought forward balance' is obtained from the LHITS, based on the agreed position when the SPM rolled over from CAP14 into CAP15.

(b) the 'carried forward balance' is calculated by the LHITS based on the manual cash and stock declarations made by the SPM at the end of CAP15 and any discrepancies they accepted as part of the process[51].

(c) the payments and receipts are those that have been recorded in the LHITS by the Clerks; and

[51] EPOSS Functional Description, page 68 (FUJ00079277).

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(d) as the purchase of stamps by a customer is a purchase of stock, then the item needs to appear as both a receipt of cash and a payment (representing the value of the stamps 'paid' to the customer).

4.7.17 In this example the total for the Receipts (£5,930) matches that for Payments (£5,930) so this Stock Unit is balanced and can therefore be rolled-over without the need for further action.

4.7.18 The format of an actual Stock Unit Balance Report produced by LHITS is somewhat different as it was, for example, produced on the Tally printer and is therefore a sequential list, rather than a table.

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5. ICL Pathway's error logging and remediation

5.1 Organisational design

5.1.1 As part of the incident management process for Legacy Horizon, ICL Pathway utilized a Fujitsu proprietary call management system for logging errors and defects. The system, known as PinICL, was created from another ICL custom program with changes made at the request of ICL Pathway. PinICL was accessible to all Pathway members and used from 1996 to 2003, prior to the PEAK system being introduced.

5.1.2 Internal issues were raised directly into PinICL. These could have been identified during testing or routine monitoring of the system by ICL Pathway. POCL could also raise incidents that they themselves found or which could have come from feedback from SPMs. External users, SPMs, who experienced issues would contact the Horizon Systems Helpdesk ("**HSH**") who log the incident via their own dedicated system ("**PowerHelp**"). If the issue was deemed necessary for escalation, it would then be recorded in PinICL.

5.1.3 The HSH was the first line of support and were responsible for recording the details of the incident, diagnosing the problem and attempting to resolve the issue. If the HSH was unable to resolve the problem, the incident would be routed to a second level support group called the System Management Centre ("**SMC**").

5.1.4 The SMC would determine if the incident was a software code problem. If the problem was a known error, the SMC would determine if there was a workaround recorded in the KELs. If so, the workaround was communicated to the customer. If no workaround was available, the SMC ensure there were no duplicate calls for the same problem. If a duplicate call was identified this incident would be attached to the existing duplicate call. If no duplicate incident was identified, and the incident was identified to be a software code problem, the SMC would follow internal procedures and route the call to the System Support Centre ("**SSC**"), considered third level support. Hardware issues were generally not routed to the SSC, although exceptions to this rule exist.

5.1.5 The SSC was responsible for resolving the incidents promoted by the SMC. This was recorded in the PinICL system. The maintenance of PinICLs was the responsibility of the SSC through resolution and closure with communications passed back to PowerHelp. If additional evidence was required, the SMC would be engaged to gather the evidence.

5.1.6 The SSC was tasked with resolving any incidents to the best of their ability and then passing back the resolution to the SMC. The SSC would triage the incident to determine what other internal development groups were needed to resolve the incident. Once incidents were resolved, communications back to the SMC were provided. The SSC also assisted in maintaining the KELs.

5.1.7 In the event the SSC needed assistance from third party vendors, they escalated calls to "4th line support" which dealt with technology from outside suppliers. The "4th line support" was also responsible to the SSC in terms of updating PinICLs and entering resolutions into

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the KEL database. They ensured fixes or workarounds have been tested prior to passing to the SSC.

5.2 PinICLs and PEAKs

5.2.1 Each incident logged in the PinICL system is referred to as a PinICL. As noted above, sometime in 2003 ICL Pathway began using the PEAK system for incident management and thereafter each logged incident was referred to as a PEAK. There appears to be no significant difference in content between a PinICL and a PEAK. The only difference is the PEAK system was a web-based system and utilized Hypertext Markup Language (HTML).

5.2.2 As new PPs are logged by a Team Member ("**TM**") they are assigned a unique reference number. Additional attributes are captured such as who logged the PP, when it was opened, the last update date, open/closed status, summary of the issue, and product group. If available, information is captured relating to work packages, fixes, other PPs to reference, etc.

5.2.3 The body of a PP is chronological and typically begins with the TM describing the issue that was identified, assigning a call priority, call type, estimated completion date, and routing to a Team Leader ("**TL**"). The TL reviews the call, provides approval or rejection (return to TM for further action or close if not valid) then routes the call back to the relevant TMs as defined by the products being impacted.

5.2.4 When a TM received a PP, they attempted to diagnose the error and identify a fix. If more information was required, they would request additional evidence when needed to recreate the incident. TMs also checked KELs to ensure that the incident was not already addressed.

5.2.5 Calls were passed between TMs as they diagnosed the issue and attempted to resolve it. Often this would be represented with an update to a Response Category recorded within the PP.

5.3 KELs

5.3.1 ICL Pathway and Fujitsu maintained a knowledge base of information that included known issues in the Horizon IT System. This knowledge base was referred to as the Known Error Log ("**KEL**"). Individual entries are referred to as KELs. KELs contain information on how to address or rectify issues that have previously been identified within the Horizon IT System.

5.3.2 KEL maintenance is the responsibility of both the SSC and "4th line support." They can be referenced during the resolution of a PP. They contain structured attributes such as type, summary, open/closed date, status, and visibility. The body of a KEL contains information covering the symptoms, problems, solutions, and related evidence.

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6. Materials provided to me

6.1 Overview

6.1.1 This section of the Report outlines the documents and data (collectively referred to as "**Materials**") that I was provided. These materials were provided to me by the Inquiry.

6.1.2 I characterize the Materials into two categories:

(a) Primary Materials: These relate directly to the period up to and including the Roll Out of the LHITS; and

(b) Background Materials: These provide both background on the LHITS system and processes and procedures.

6.1.3 In summary, the Primary Materials include:

(a) Extracted IT incident tickets ("**PinICL(s)**") from Fujitsu's original proprietary call management system ("**the PinICL System**");

(b) Extracted IT incident tickets ("**PEAK(s)"**) from Fujitsu's successor proprietary call management system ("**the PEAK System**");

(c) Two archived PinICL databases (in Microsoft Access format) (the "**PinICL archive databases**");

(d) Extracted records ("**KEL(s)**") from Fujitsu's knowledge management tool ("**the KEL System**"); and

(e) A collection of monthly reports prepared by ICLPL in relation to the development and roll-out of the Horizon IT System ("**the Monthly Reports**").

6.1.4 I understand that documents from the PinICL System, the PEAK System, the KEL System, and the Monthly Reports were produced by Fujitsu in response to the request submitted to them by the Inquiry.

6.1.5 The main Background Materials I relied on are those documents referred to in section 4.1.3.

6.1.6 In addition, the Inquiry directed me towards the following publicly available documents as further Background Materials:

(a) The 'Terms of Reference (updated)' for the Post Office Horizon IT Inquiry;

(b) The 'Completed List of Issues' for the Post Office Horizon IT Inquiry;

(c) Bates & Ors v Post Office Ltd ((No.3) "Common Issues") [2019] EWHC 606 (QB) (15 March 2019) (Common Issues Judgment);

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(d) Bates & Ors v the Post Office Ltd (No 6: Horizon Issues) (Rev 1) [2019] EWHC 3408 (QB) (16 December 2019) (Horizon Issues Judgment);

(e) The Horizon Issues Judgment Technical Appendix,

(f) The Horizon Issues Judgment Appendix 2 – 'Summary of Bugs, Errors, Defects'; and

(g) The Horizon Issues Judgment Appendix 3 – 'Glossary'.

6.1.7 An inventory of all of the documents I relied on in producing this Report is provided in Appendix A.

6.2 PinICLs and PEAKs

PinICLs

6.2.1 The PinICL System was the customised incident logging and resolution tracking system adopted for use by ICLPL to support the Horizon IT System during the period 1996 to 2003, prior to the introduction of the PEAK System in 2003[52].

6.2.2 Each ticket logged on the PinICL System is referred to as a "**PinICL**" within my Report.

6.2.3 PinICLs recorded (amongst other things) incidents:

(a) identified by ICL Pathway in test systems;

(b) identified by ICL Pathway during routine system monitoring;

(c) raised by POCL, some of which may have resulted from feedback received from SPMs; and

(d) resulting from certain calls made to the Horizon System Helpdesk by SPMs, which were deemed necessary for escalation through ICL Pathway's incident management process.

6.2.4 The standard format of a PinICL is divided into four major sections:

(a) the header which contained summary level information;

(b) the reference table, which contained data points such as customer reference, fast track, and work numbers;

(c) the products table, which contained product groups, product names, and product versions; and

(d) the activities log, which contained the running commentary about the PinICL.

[52] Submissions on behalf of Fujitsu Services Limited dated 13 September 2022 (in response to a Rule 9 Request dated 29 April 2022) (FUJ00119556).

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6.2.5 An example PinICL is included in Appendix C.

6.2.6 There were 56,489 PinICLs produced to me, and all were provided as PDFs.[53] The PinICLs provided were opened between 7 July 1996 and 31 December 2000. I understand that Fujitsu chose the upper date limit (31 December 2000) when deciding which documents were responsive to the Inquiry's Rule 9 request. I understand that the PinICL System allowed a user to attach supporting documents to each PinICL, however these supporting documents were not readily available[54] and therefore, they were not included as part of the production by Fujitsu.

PEAKs

6.2.7 In 2003, ICLPL replaced the PinICL System with the PEAK System. The PinICL System was archived and open tickets from the PinICL System were migrated (transferred) to the PEAK System.

6.2.8 Each ticket logged on the PEAK System is referred to as a "**PEAK**" in my Report.

6.2.9 It is my understanding that the PEAK System served a similar, if not identical purpose, to the PinICL System and therefore the origins of the tickets within it would be much the same as those identified above for the PinICL System. As the function and content of the PinICLs and PEAKs are the same I will refer to these collectively in this Report as "**PP(s)**".

6.2.10 The standard format of a PEAK is similar in layout to a PinICL with the main exception being the layout of the activities log.

6.2.11 An example PEAK is included in Appendix C.

6.2.12 There were 16,530 PEAK related documents produced in various file formats (HTM, DOC, XLS, BMP, and TXT)[55]. I understand that the PEAK System allowed a user to attach supporting documents to each PEAK. These documents were produced by Fujitsu. This document population represented 13,442 PEAKs and 3,088 supporting documents.

6.2.13 The PEAKs provided were opened between 29 May 1997 and 31 December 2000.

Replacement PinICLs and duplicate PinICL/PEAKs

6.2.14 During the initial review of the PinICLs two observations were made:

(a) An issue with the ordering of the 'Activities' table[56] was identified. This issue meant that it was not possible to easily read the entries within the comments field.

(b) The 13,442 PEAKs were duplicated in the PinICL population.

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53 Portable document format.

54 Submissions on behalf of Fujitsu Services Limited dated 13 September 2022 (in response to a Rule 9 Request dated 29 April 2022) (FUJ00119556).

55 These extensions are: Hypertext markup, Microsoft Word, Microsoft Excel, Bitmap image file, and a text file respectively.

56 A table in each PinICL that provides a sequential log of activities recorded in relation to customer calls.

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6.2.15 These observations were raised with the Inquiry who then communicated them to Fujitsu. Fujitsu responded that:

(a) They had identified 17,537 PinICLs with the ordering issue and subsequently reproduced 17,537 PinICLs.

(b) They recommended I use the PEAK version[57].

6.2.16 None of the 17,537 Replacement PinICLs had duplicate PEAKs versions (i.e., these two document sets were mutually exclusive).

PinICL archive databases

6.2.17 In response to queries raised with Fujitsu, two archive databases (in Microsoft Access format) were produced:

(a) 'PinArchive1', being a .MDB file; and

(b) 'PinArchive2', being a .MDB file.

6.2.18 Collectively these two databases are referred to as the "**PinICL archive databases**".

6.2.19 PinArchive1 contained 12 different data tables, while PinArchive2 contained 127 different data tables. Fujitsu confirmed that both databases were archives from the PinICL system, these standalone archives do not share PinICL reference numbers with each other (i.e., the PinICL records they contain are mutually exclusive), and the PDF PinICL documents provided were derived from these databases.

6.2.20 The PinICL archive databases were received late in my review. I therefore decided, in consultation with the Inquiry team, not to fully investigate the databases as this would have unduly delayed the completion of this Report, which could have had knock-on consequences for the Inquiry's timetable. In addition, I noted that Fujitsu had not produced these PinICL archive databases in response to the original Rule 9 request submitted by the Inquiry in December 2021. Therefore, I deduced the incremental information not to be responsive to the original request from the Inquiry.

Summary of the PP data used to undertake my review

6.2.21 The dataset changed over the course of the review as I received multiple copies of the same (or very similar) data across different deliveries. I therefore had to make decisions as to what datasets to use. I also had two analysis workstreams, which were at different states of progression when some of the additional data was provided. I decided that these workstreams should, in some cases, use different datasets. The two workstreams were:

[57] Fujitsu cited two reasons for this recommendation – (a) PEAK is a live database and will therefore capture any updates to the equivalent PinICL record after it was migrated; and (b) Records extracted from the PEAK database also contain their attachments as family member documents, where available. No such attachments are readily available in relation to records held in the PinICL archive.

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(a) Analytics: This workstream was focused on structuring the PP data using the Microsoft Azure services so it could be analysed en masse for the entire PP population.

(b) Document Review: This workstream was focused on using industry standard document review and machine-learning tools, in conjunction with manual document reviews, to analyse the unstructured components of the data (i.e., the human generated comments) to identify themes within the PP population.

6.2.22 This table summarises the PP documents and data that I relied upon as part of my review:

Table 6.1 PP documents used in the review

Document type	Production	File format	Reference and description	Total documents (files/ records)	Used for Analytics?	Used for Document Review?
PinICL ticket	First PinICL production	.PDF	A1. Incorrectly ordered PinICLs	17,537	No	No
		.PDF	A2. Correctly ordered PinICLs (duplicates)	13,442	No	No
		.PDF	A3. Correctly ordered PinICLs (non-duplicates)	25,510	No	Yes
	Second PinICL production	.PDF	A4. Replacement PinICLs	17,537	No	Yes
	Third PinICL production	.MDB	A5. Microsoft Access database PinICLs	56,489[58]	Yes	No
PEAK ticket	First PEAK production	.HTM	B1. PEAK - Tickets	13,442	No	Yes
PEAK attachment	First PEAK production	.DOC .XLS .BMP .TXT	B2. PEAK - Attachments	3,088	No	Yes

6.2.23 Neither the Analytics nor the Document Review workstreams used the following documents sets:

(a) A1, as it was agreed with Fujitsu that these contained errors and were therefore replaced by document set A4;

(b) A2, as it was recommended by Fujitsu that I use the PEAK versions of these, contained in dataset B1.

6.2.24 The Analytics workstream solely relied on the PinICL data that was obtained from the Archive PinICL databases (A5), as the objective of this workstream was to structure the data, as

[58] This database also contained PinICLs that were opened on or after 01 January 2001.

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best as possible, before analysing it. The Archive PinICL databases were better structured than the PDF PinICL documents provided, so it was decided to use the databases for this workstream. Owing to the non-standard format of the PEAK attachments these were not used in the Analytics workstream.

6.2.25 Upon analysis of the contents of the PinICL archive databases it was discovered that all 13,442 of the PEAKs were also contained in them, which is consistent with our understanding that these were open PinICLs at the point of migration to the PEAK System. It was decided to use the data from the PinICL archive database for the PEAKs to undertake quantitative analysis, as this was in a readily interrogable format[59].

6.2.26 The Document Review workstream was already well advanced by the time the Archive PinICL databases had been received and analysed. In addition, this workstream required data files to be produced from the Analytics workstream to consolidate the searchable text (principally the 'Comments') into a single text string. For these reasons I decided that the Document Review workstream should continue to use the PDF PinICL documents (datasets A3 and A4) and the HTM PEAK documents (dataset B1) as its data source. In addition, the PEAK attachments (dataset B2) were made available to the reviewers in the Relativity platform.

6.3 Known Error Logs ("KELs")

6.3.1 The "**Known Error Log**" was a knowledge management tool used by both ICLPL and Fujitsu to explain how to deal with, or work around, issues that arose in the Horizon IT System.

6.3.2 It is my understanding that the KEL system was available (in read-only mode) to the following support teams: the Horizon System Helpdesk ("**HSH**") and the System Management Centre ("**SMC**"). Only the System Support Centre ("**SSC**") team were permitted to create new KELs and update existing ones.

6.3.3 The structure of a typical KEL contains the following sections:

(a) Header: This section contains the meta data for the KEL including the name of the Fujitsu employee who raised it, identifier for the PEAK or PinICL that originated the KEL, version number of the KEL, etc.

(b) Symptoms: This section describes the issues experienced by the SPM in the Horizon IT system.

(c) Problem: This section describes the underlying cause for the symptoms experienced, as diagnosed by the SMC or SSC. This would also be reflected in the underlying PEAK or PinICL.

(d) Solution: This section explains how to deal with, or work around, the issues that arose in the Horizon IT System.

[59] Checks were performed to compare equivalent records in the PinICL archive database against those from the HTM PEAKs documents.

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(e) Evidence: This section generally lists the log files reviewed to investigate the issue(s) and provide the solution(s).

6.3.4 I note that not all sections are completed in all of the KELs, indicating that not all of the sections were mandatory when creating or updating a KEL. The typical naming convention for the KELs is as follows: <Initials of first name of the Fujitsu employee who raised the KEL><Last name of the Fujitsu employee who raised the KEL><3-4 numbers><A letter> e.g., "SParker538M". A KEL can have multiple versions during its lifecycle. For example, KEL "rcoleman1253j" appears to have two versions.

6.3.5 An example KEL is provided in Appendix C.

6.3.6 The term Known Error Log or KEL was replaced in around July 2019 by the term "Knowledge Base" or "KB".

6.3.7 There were 656 KELs produced in HTM format.

6.3.8 The KELs provided were opened between the dates of 26 May 1998 and 28 December 2000.

6.4 Management Reports ("MRs")

6.4.1 105 management reporting documents were produced.

(a) 19 'Pathway Programme Monthly Reports': These documents summarize the business development activities of the Pathway Programme.

(b) 13 'Monthly Joint Implementation Reports': These documents are implementation reports jointly issued by ICL Pathway and POCL.

(c) 4 'ICL Pathway Customer Service Reports': These documents contain summaries of the performance of the ICL Pathway Customer Service Business Support Unit.

(d) 44 'Pathway Monthly Reports': These documents are comprehensive management reports for ICL Pathway ranging from October 1996 through December 2000. I was not provided reports for every month in this time range. Two Managing Directors were the approval authorities for these reports. J. H. Bennett was the approval authority up to November 1999; M. Stares was the approval authority beginning in January 2000. They typically cover the following areas:

(i) Managing Director's Summary

(ii) Systems Report

(iii) Commercial and Financial Report

(iv) Customer Requirements Report

(v) Customer Service Report

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(vi) Quality and Risk Report

(vii) Business Development Report

(viii) International Sales Report

(ix) Organisation & Personnel Report

(x) Post Office Client Report

(e) 17 'Monthly Reports': These documents are short reports related to ICL Pathway.

(f) 8 'Monthly Performance Reports': These documents are short reports related to ICL Pathway performance.

6.4.2 Based on the richness of content, my primary focus was on the Pathway Monthly Reports. Four of these reports appeared duplicative of other reports in the set; consequently, forty Pathway Monthly Reports were in my final review set.

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PART 2:

My review and observations

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7. Pre-processing of documents

7.1 Overview

7.1.1 This section describes how the source data I received was processed, in preparation for it to be analysed.

7.2 Analytics workstream

PEAKS and PinICLs

7.2.1 A DAT file (a structured text file) was provided that served as a manifest for the delivery of PPs and KELs. The original file name acted as the reference number. Additional metadata fields including a custodian field which indicated the report type (e.g., PEAK, PinICL, or KEL). The DAT file also provided parent child relationships which associated supporting documents to their PP.

7.2.2 The PPs were processed through Microsoft Azure's Form Recognizer ("**Form Recognizer**") service to organize the components of these reports for further analysis.

7.2.3 Form Recognizer is an Artificial Intelligence ("**AI**") service that applies advanced machine learning to transform unstructured documents into actionable datapoints/datasets by extracting text, key value pairs, tables, and structures from documents.

7.2.4 Form recognizer can accept many different file formats; since the largest portion of delivered documents (PinICLs) were PDFs, it was decided to standardize the PEAKs (and KELs) into PDFs. The PEAKs and KELs were in HTM format.

7.2.5 The transformation of PEAKs and KELs was accomplished through a series of Python libraries that rendered the HTM files into PDFs.

7.2.6 Once form recognizer processed a document, the OCR[60] text, key value pairs, table structures, and named entities were returned in a structured text format known as a JSON file. One JSON file was returned for every document put through the form recognizer. These JSON files were then ingested into a Microsoft Azure Databricks repository for further analysis.

7.2.7 This process was successful for 57,137 documents. Seven documents could not be processed, despite multiple attempts to reformat the files. They were omitted from further analysis.

[60] Optical character recognition

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7.3 Document Review workstream

Introduction - Software used to analyse the PPs

7.3.1 Owing to the number of PPs to be reviewed and their esoteric nature, it was quickly determined that a linear review would be impractical and inefficient. The following industry-standard software platforms were used for the analysis and review of PPs:

(a) Relativity is a market leading document review platform used to display metadata and enable searching and review of documents in an efficient and audited manner. Relativity allows for multiple people to look at documents concurrently and to save decisions in coding fields to classify and group documents accordingly.

(b) Brainspace is an advanced data analytics platform available for investigations, eDiscovery, intelligence mining, and compliance reviews. Brainspace uses machine learning technology to provide information on a set of documents.

PPs - Document Review Setup

7.3.2 The documents and the related DAT file were loaded into Relativity for searching and review. Further fields which had not been provided in the DAT file were extracted from the PPs by the Analytics workstream. Additionally, the primary content of the PPs were processed for consumption by Brainspace. This was necessary because the original format of the PPs was not an optimal format for Brainspace to analyse.

7.3.3 As mentioned above, there were seven PinICLs which were not included in the Brainspace build as their text extraction caused errors.

7.3.4 In order to facilitate the review of the PPs, a set of Response Categories and Defect Causes were extracted from the following source documents, as described in correspondence received from Fujitsu[61]:

(a) Section 15 of the 'PinICL Incident Management Process', dated 30 January 1998[62]

(b) Section 8 of the 'PinICL User Guide', dated 15 February 2000[63]

7.3.5 Searches were run to identify instances of Response Categories and Defect Causes within documents which were then highlighted in the Relativity document review screen so that they could be easily identified when undertaking manual review, as illustrated here:

61 Submissions on behalf of Fujitsu Services Limited dated 13 September 2022 (in response to a Rule 9 Request dated 29 April 2022) (FUJ00119556).

62 PinICL Incident Management Process, Section 15 (FUJ00098253)

63 PinICL User Guide, section 8 (FUJ00098255)

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Figure 7.1 Example of highlighted codes in Relativity

Responded to call type B as Category 30 -TL confirmed
The response was delivered on the system
The Call record has been transferred to the Team: QFP
Hours spent since call received: 0.3 hours
Target Release updated to IR - NR2
F} Response :
PLease investigate ...
[END OF REFERENCE 8068675]
Responded to call type B as Category 38 -Potential Problem Identified

KELs - Document Review Setup

7.3.6 As with the PPs, the raw data provided by Fujitsu was loaded into Relativity for searching. Based on an initial review of the KEL documents it was decided that analysis in Brainspace would not yield meaningful insight. Relativity was used to undertake a review of the KELs.

Supervised Learning using Brainspace

7.3.7 Supervised learning (a type of machine learning) is a process through which Brainspace is provided with examples of relevant and non-relevant documents. Using those examples, the system identifies other documents which are conceptually similar and may also be considered "relevant." This process involves the following steps:

(a) Seed set documents are identified, to include both positive and negative examples of an issue, usually referred to as "Relevant" and "Not Relevant" documents respectively.

(b) A Continuous Multi Modal Learning ("**CMML**") model is set up within an existing dataset, using the seed set documents which are compared against the rest of the population.

(c) The CMML model assigns a relevance rank to all documents which can be analysed within the population, where the scores depict the following:

(i) Relevance rank 0.0 to 0.4: Documents are likely to be Not Relevant;

(ii) Relevance rank 0.4 to 0.6: The model requires more information to make a decision on these documents; this is known as the "uncertain zone";

(iii) Relevance rank 0.6 to 0.8: Documents are likely to be Relevant; and

(iv) Relevance rank 0.8 to 1.0: Documents are very likely to be Relevant.

(d) The CMML model continues to be trained through further review of documents and identification of both positive and negative examples

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7.3.8 The model also tracks consistency of review, to identify examples of documents which are inconsistent between how the model believes it should be tagged, and how a reviewer has tagged it.

Keyword searches using Relativity

7.3.9 In order for the PPs to be searched with keywords, the Extracted Text field (that is, the body text of the PP) was added into an index using dtSearch; an industry standard search engine used by Relativity.

7.3.10 Specific keywords were selected to target PPs which were likely to provide examples of a theme, such as searching for the following keywords to identify PPs relating to connection issues experienced:

(a) (network OR isdn OR polling) AND (issue OR error OR failure)

7.3.11 PPs returned by these keywords were subsequently reviewed and coded where a good example was identified.

7.4 Review Approach

Monthly Reports

7.4.1 I reviewed these documents using a manual process. This manual process consisted of reading each document, assessing the information in the document, noting sections that I wanted to revisit, and then organising these notes for further review. I then iterated through the documents again to refine my notes that eventually resulted in the themes and observations documented later in this Report.

PinICLs and PEAKs (PPs)

7.4.2 PPs that were identified for review (either by Brainspace's Supervised Learning or Relativity key word searches) were manually reviewed in Relativity. Each PP would be classified as 'Relevant' or 'Not relevant' depending on the particular theme that was being investigated.

KELs

7.4.3 In order to focus the review of the KELs, an analysis of the PPs was performed. This analysis used a Regular Expression (regex) pattern to identify KEL references within the PPs. A regex is a sequence of characters that specifies a search pattern in text.

7.4.4 This resulted in 1,380 KELs identified in the text of the PPs, only 332 of these were contained within the KELs produced to me.

7.4.5 In response to my question on the missing KELs, Fujitsu explained, in their correspondence dated 12 August 2022, that some KELs may have been deleted and therefore only the recoverable KELs for the Relevant Period[64] were provided.

[64] Period on or before 31 December 2000

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7.4.6 The 332 KELs were manually reviewed in Relativity and were classified in two ways according to the element of LHITS that they related to:

(a) **Responsiveness**: This is a classification of whether the KEL related to a recognised issue in any part(s) of the LHITS. The two different options were:

(i) **Responsive:** If the KEL did relate to a recognised issue in any part(s) of the LHITS then the KEL was classified as "Responsive";

(ii) **Non-responsive:** If the KEL did not relate to an issue with LHITS then the KEL was classified as "Non-responsive". The scenarios identified were as follows: the KEL related to identified human errors by branch staff; the KEL related to a clarification of the exact process required to correctly operate the Counter system; or it was not possible to determine from the text of the KEL what the KEL related to.

(b) **Nature of the KEL**: For responsive KELs this is a classification of the part of LHITS that the KEL related to, or for non-responsive KELs it was the reason the KEL was determined to be non-responsive. The different options for responsive KELs were:

(i) **Hardware**: A recognised issue with the hardware components of LHITS;

(ii) **Software**: A recognised issue with the software components of LHITS;

(iii) **Download / Synchronisation / Roll-out**: A recognised issue with the synchronisation components of LHITS that exchanges data or updates between the different components of LHITS;

(iv) **Communications / Network**: A recognised issue in the internet connection or a system communication issue that permits the different components to communicate with each other;

(v) **Central servers**: A recognised issue with the central server components of LHITS;

(vi) **Process related**: A recognised issue in the standard processes that support the correct running and operation of the LHITS (e.g., distributing software updates, distributing reference data updates);

(vii) **Operating System / Disk full**: Issues with the OS or memory issues on the Counter;

(viii) **Corrupt message store**: Issues with the message store corrupting; and

(ix) **Other**: An issue not falling into one of the above categories

7.4.7 Based on the review it was determined that, for some KELs, multiple 'Nature of the KEL' classifications were appropriate as the KEL related to more than one component of the LHITS.

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7.4.8 Where relevant I have included the results of the KEL review in the overall themes I identified.

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8. SPM training experienced difficulties during National Rollout

8.1.1 As noted in my theory section, systems raison d'etre is to serve the enterprise's business processes. An important aspect of this endeavour is that the users of these systems understand how they operate. Training is the first step of this educational process. It is apparent from reading the ICL Monthly Reports that there were significant problems in training the SPMs as they adopted the Horizon IT System.

8.1.2 In addition to the challenge of training users on the Horizon IT System, there was also a challenge of training users on computers in general, as acknowledged publicly by Fujitsu in their case study for the Horizon IT System[65]:

> "Before Horizon can be installed, a great deal of groundwork has to take place. Each Post Office branch is surveyed and prepared, with the new electrical cabling and counter space being installed where necessary. Counter staff receive a day's training and office managers and subpostmasters attend a one-and-a-half day course, delivered around the country. At the height of automation, over 300 branches were automated per week. Training was provided to 63,000 staff members from the age of 16 to 87 with various skills levels (this number includes 2,000 staff members who were over 80 years old). Approximately five thousand calls were received each week by the Helpdesk, due to the Counter staffs' lack of computer experience." (emphasis added).

8.1.3 As illustrated in the following table, ICL Pathway was aware of the importance of training the SPMs. They noted early (April 1999) in the national rollout that SPMs were facing difficulties in moving from a paper based balancing process to the automated balancing process resident in the Horizon IT System. To address this situation, ICL Pathway emphasized the importance of increasing the training available to SPMs. However, as the summer months proceeded, these balancing issues persisted. By the autumn of 1999, a joint report issued by ICL Pathway and POCL acknowledged that training continued to cause major difficulties. These difficulties continued into 2000 resulting in ICL Pathway believing that POCL was so dissatisfied with training (among other issues) that POCL would pursue commercial remedies.

8.1.4 The following tables contain verbatim extracts from the monthly reports (MRs) and PinICLs and PEAKs (PPs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

[65] Fujitsu case study: https://www.fujitsu.com/downloads/SVC/fs/casestudies/uk-postoffice2.pdf

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Table 8.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058181	ICL Pathway Monthly Report - April 1999	April-99	In the first 4 weeks of live NR2 service, it has become evident-that postmasters have been experiencing difficulty managing the change from a manual balancing process to automated balancing. To address this concern improvements in training have been made to put a greater emphasis on practical experience in balancing. HFSOs, supporting first office balances, have received a refresher course with the focus being on balancing. The Sub-postmasters managers course has been extended to two days, with the extra half day being used to provide additional time on the topic of balancing and practical experience-in the balancing process.
FUJ00058183	ICL Pathway Monthly Report - June 1999	June-99	From Pathway's perspective, CSR (LT1) has continued to perform reliably. POCL's perception is dominated by continuing end-user problems with stock balancing and cash account production on Wednesdays. Although many software fixes have been applied to LT1, there remain several outstanding that will not be implemented until LT2. The majority of problems relate to: 1. Payments not equal to Receipts 2. Printing/printer performance 3. Effectiveness of Training
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	Although National Roll out rates have risen to 200 Post Offices per week, the level of issues occurring on installation day and the level of training scheduling failures puts achievement of the 300 offices per week roll-out rate required in 2000 at risk. Knowledgepool are introducing new scheduling software and a plan of activity to remove/reduce the causes of the other issues is being put in place for the November to January break in National Roll-out.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	There is currently a serious issue relating to the scheduling of training events within the Implementation programme. The training scheduling system of Pathway's training sub-contractor, Knowledgepool, has been struggling to cope during the early part of national rollout, although a planned system replacement was imminent. During September the training scheduling system crashed resulting in a loss of data and some data corruption. The new system was introduced over the weekend 2/3 October, with some teething troubles. Recent training scheduling failures (late training invites. or no training prior to installation in a small number of cases) were caused from the data loss and data corruption of-the original system. Manual checks have, been implemented to minimise further disruption and the benefits of the superior replacement system will be available for future training scheduling, although the main benefits will only be seen after the Xmas break.

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URN	Title	Date	Extracted Text
NFSP00000065	ICL and Post Office Monthly Joint Implementation Report covering 27 September 1999 to 24 October 1999	27 September 1999 to 24 October 1999	Training continues to cause major difficulties. A variety of different issues have been encountered including, outlets not contacted to book training, outlets turning up to non-existent courses, outlet staff being booked onto wrong course type. This is compounded by the fact that the daily & weekly reports are not received at the scheduled times. This is further compounded by the reports being inaccurate. KPL have also been unable to respond to issue raised by the TLM in a timely fashion, or occasionally at all.
FUJ00058191	ICL Pathway Monthly Report - May 2000	May-00	POCL perception of SLAs and Training, and also of our commercial attitude to risk taking on new business: all negative as epitomised by the recent Dave Miller letter. Hopefully the away day will improve that perception: Risk remains that POCL will extract commercial concessions out of us (meaning unbudgeted cost).
FUJ00058191	ICL Pathway Monthly Report - May 2000	May-00	POCL are shaping up to hit us on SLAs and Training. This was predicted for about now on the basis that, in the case of help desk metrics, we will have failed to meet all criteria for three successive quarters. That gives POCL the right to terminate the contract. We don't expect them to want to do that, but they can be expected to use the 'default' as a lever to force us to do better and make concessions.
FUJ00058197	ICL Pathway Monthly Report - December 2000	December-00	A settlement for the projected shortfall in training courses against the contracted number, arising from low course occupancy levels, has been agreed with the Post Office. As part of a package to achieve relaxations against existing service SLAs, Pathway will pay the first £1M of the training shortfall. Beyond this PON and Pathway will share the shortfall equally. Measures to improve occupancy levels have been implemented and consequently reductions in the estimated shortfall have been achieved in each of the last three months. Initial occupancy levels in January are also favourable. The cost of the projected shortfall has therefore fallen from £1.3M to £1M. Efforts continue to improve this with the aim of reducing Pathway's contribution. This improvement however represents a £300K saving compared to last month's financial forecast.

8.1.5 A review of the PPs reinforces the theme that the SPMs were reporting that the lack of training was problematic in their execution of business activities. Additionally, SSC staff were also raising concerns about the ineffectual nature of training. In these examples, I have emboldened some sections of each entry, but have included wider passages for context.

Table 8.2 Verbatim extracts from PPs

URN	Ticket Source	Date	Extracted Text
FUJ00029755	PinICL	24/09/1999	"**I do not think that the documentation covers this type of transaction and there is no mention of it in the training manual**.... I have spoken to Audrey Adams and she will liaise with POCL and if necessary raise a note for distribution to POs."

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URN	Ticket Source	Date	Extracted Text
FUJ00032293	PinICL	19/10/1999	"All SU's are apparently in CAP31 at present. I have agreed with the PM to try and arrange for HFSO[66] Andrew Perkins to visit the site next week to try and resolve the various issues the PM has. Will call PM back later today to try and confirm that arrangements have been made." "NBSC have stated there are no HFSOs available to help this PM**. At present he does not have enough knowledge of the system for SSC/HSH to advise him. He requires onsite training and until this is provided by POCL** SSC are unable to help him. This is not a software issue, **it is a training issue and the PM is aware of this**. I have spoken to the PM and he has agreed to fax his last CAFinal report to us." "**PM is not happy with the service he is receiving.** He has not heard from anyone and it will soon be Wednesday again. He advised that it is so frustrating when no-one tells you the answer. PLEASE CAN PM BE CONTACTED." "I have looked at the message store for this FAD, the problems mainly arise from use of the suspense account over the last 4 or 5 weeks. This is not a software issue and as such should be dealt with by POCL, in particular, an HFSO needs to visit the site asap. I have voiced Julie Welch about these problems."
FUJ00030982	PinICL	23/10/1999	"Looked at outstanding call ''9910010196' - the PO still has an outstanding descrepancy of £47,000 - which the HFSO and SSC has been investigating." "PM very unhappy with situation - stated she has had this problem for approx three weeks. Is not satisfied as she was advised to call back today - and the problem is still unresolved. Reluctantly agreed to wait until the HFSO is arranged. - previous HFSO was S. Warwick." "On checking open calls troubleshoot it appears that this PM has problems each week with balancing. Is there a system problem or a training issue. Please investigate." "The original problem with zeros on the trial balance and balance shapshot is described in KEL "All entries on report are zero". This will have been corrected by now. The other problems reported on this call appear to have been copied from other calls and will be dealt with under their original call**. If the PM is having big problems each week, then yes, we would agree that there is a training problem here.** Especially since the PM appears to be requesting an HFSO, that will be the best way forward. The Pm has not been contacted."
FUJ00031101	PinICL	24/10/1999	"No fault in product. The system is working as designed. The PM has declared his cash as a loss, and posted this to the suspense account as a loss, these are both for £2.52 giving a net of £5.02. PM is not understanding how the suspense account works. PM needs to be advised on how the suspense account works. **This is not a software fault. PM not contacted. Closing call as no fault in product. Training issue**"

[66] Horizon Field Service Officer

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URN	Ticket Source	Date	Extracted Text
FUJ00045829	PinICL	26/11/1999	"Please confirm that there will be some sort of training in the outlets to warn PO clerks about the change in trans id format & we will happily close this pinicl as no fault in product" "**Training is one-hit only, i.e. staff are trained by Pathway on ONE release of Horizon only, CSR or CSR+. Therefore, unless POCL specifically require us to do "backfill" training, CSR trained staff are not retrained on CSR+, so there is no switchover training issue to consider. At CSR+ we will train on the new transaction id formats." "This is not the answer we expected. Is there no way (Memoview for example) in which PO staff can be advised of such changes?** Should this be chased or not?" "Given the lack of progress to resolve this issue it is suggested that it becomes a problem that requires a design statement to be made...As such it will be assigned as a design problem for documentation and then if required softwre resolution."
FUJ00040054	PinICL	30/03/2000	"Call raised to look at issues at this site as PM believe there are software problems." "Information: Update from Peritas: PM has had system problems for several weeks. system seems to alter figures at random. having taken advice, I told PM that I have to pass the call over to systems staff, as all payment, reciepts and reports were correct. Please investigate." " As per telecon with Gary @ NBSC this call is being transferred to SSC for investigation." "**In all cases Payments and Receipts match. As I suggested on an earlier call for this PO, I believe that the PM is in need of training, to understand how the balancing process works**."
FUJ00066611	PEAK	30/08/2000	"**He feels that he has not received sufficient training**, and admits that if he was trained properly, he may be able to get through balancing a bit quicker. The PM has requested additional training, which was granted, but his RNM cancelled it without letting him know, then denied cancelling it??? The PM seems to have an issue with the RNM, in that he feels that he is not helping him resolve any issues." "Have escalated the PM's concerns about his RNM to Julie Welsh to flag a complaint through POCL. I have explained to the PM that as there is nothing wrong with his sytem (software wise) we are unable to help him." "**This may be a training issue with PM. Have noticed he has logged a lot of calls, and some days more than one. On one day in particular he logged 4 calls, and most of the others there are 2 to 3 calls logged since the beginning of this month**."

8.1.6 I surveyed the PP population for any final defect cause being assigned "General – User" or "General – User Knowledge" which resulted in 435 PPs being identified across a variety of products. Please keep in mind that the SMC was supposed to resolve user issues. These PPs were promoted to the SSC.

8.1.7 This figure indicates a wave of user issues around September 1999, March 2000, June 2000, and November 2000 during the national rollout period.

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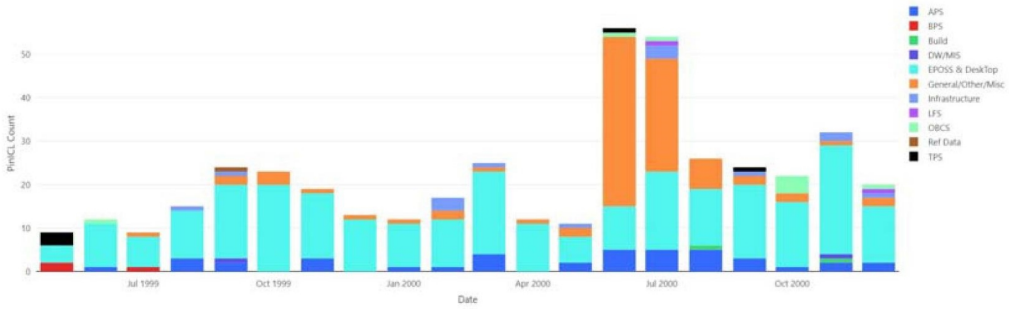
Figure 8.1 Monthly volumes of PPs



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9. Hardware issues were problematic during National Rollout

9.1.1 Failure of hardware components in a system can frustrate users and impede the utility of the system.

9.1.2 In the national rollout of the Horizon IT System, there was a discrete period (August 1999) where hardware issues rose to the level of being a "serious acceptance incident." According to ICL Pathway's Monthly Reports, some issues persisted through October 1999, but appear to have subsided to acceptable levels by January 2000.

9.1.3 The following tables contain verbatim extracts from the monthly reports (MRs) and PinICLs and PEAKs (PPs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

Table 9.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058185	ICL Pathway Monthly Report - August 1999	August-99	As anticipated last month, the problems experienced by the live trial outlets with the Epson back office printer 'hanging' during the production of the weekly cash account became a **serious acceptance incident** which is proving extremely difficult to resolve.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	Another problem, which occurred at the same time, was disk time-outs being reported on the Wigan Correspondence Server. This is suspected as a hardware fault and is being investigated as such.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	298: (Tony H and Dave H) The four week observation period will start on 21/10. (CCN555 has been raised to make the observation Cash Account Week integral.) All fixes are available and a tracking document to record progress set up. On the cut off date of 1/10 the test-sample was established as 782 eligible rolled-out outlets representing 1777 eligible counters. The target is a figure of merit of four units per counter per year, a unit being an authorised reboot or various numbers of workaround. The CAP 28 figure result was around five units on a very good trend. For CAP29 the result rose to around seven units because of 376-type issues (see above), new offices not being brought up to current software revision levels immediately before first use and some offices not yet equipped with fixes for printer incidents.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	I was very pleased that we were able to meet the demanding reboot levels categorised under acceptance incident 298. This was achieved in spite of the serious Energis switch problem which generated a large number of NT blue screen incidents. The team is now focusing on one outstanding counter printer issue, which if resolved, will ensure that the level of reboots is well within the long-term objectives.

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URN	Title	Date	Extracted Text
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	Eicon believe that the current connection issues will be resolved by upgrading the drivers within the Counters. This is currently under test and distribution to a sample of 200 Outlets is planned over the next few days.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	There have been a number of incidents requiring code fixes to the EPOSS reconciliation reports facility introduced into the network in late December, and a few faults identified in the counter applications themselves, otherwise the 4th line support effort for the live system is in line with our resource planning expectations. The recent fix to the counter printer has reduced the number of reboots occurring in the outlets to a level far exceeding the target agreed with Post Office.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	AI 298 authorised reboot counts were down to half the limit in January and further declined following changes for the counter printer faults, which had represented about 60% of the problem. CS is replacing the current manual reporting process with automated weekly reports covering the whole estate now that roll out has restarted.
FUJ00058190	ICL Pathway Monthly Report - February 2000	February-00	Data Centre performance has been very good with the only problems reported being hardware failure on the Correspondence Servers at Wigan which were quickly repaired. There is still an outstanding issue with the Audit Servers, which appear not to be built in accordance with the Technical Description. OSD are investigating.

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9.1.4 It should be noted that in May 2000, there were still hardware issues being raised in PinICLs.

Table 9.2 Verbatim extracts from PPs

URN	Ticket Source	Date	Extracted Text
FUJ00029091	PinICL	11/08/1999	"PM has said that this is the 3rd week that his system has hung at this point, he said that if he usually leaves it for 15mins and it continues working - so I advised him to wait another 10 mins and to call back if it hasn't worked by then. He isn't very happy that this happens week after week and would like it investigated please." "Have spoken to PM. He is concerned that this has happened for the last 3 weeks. He does his balancing and gets to the part of printing the cash account off and it does not print. He has been leaving the system for a long time and it still does not print. He eventually gets fed up and does a soft reboot and then everything is fine. He states that an engineer has been to site to check his printer and the engineer says that nothing is wrong with the printer so it is not a hardware fault." "PM knows how to get out of the problem but is fed up with it and would like to know when the problem is going to be sorted." "I have spoken to the PM who has advised that four the last four weeks he is having problems printing his Cash Account. What happens is that for yesterday at approx 2-20 to 2-40pm when he has pressed CA and the trial balance printing is iniated it takes some 10-12 mins to print. This he finds unacceptable (as he has waited up to 6 o'clock and he then re-boots the PC and follows the CA process again and this time the whole 18 pages of the CA final including the trial is printed in some 10-15 mins! This he has done for the last four weeks."
FUJ00030674	PinICL	18/10/1999	""printer offline" message when using APS cards" "barbara suggested that i chase smc regarding engineer, going out to site." " |n the light of this conversation, I am returning this call to SMC as hardware issue." "Defect cause updated to 38:General - Hardware fault"
FUJ00030930	PinICL	22/10/1999	"I have spoken to the PM who has advised that they are experiencing a hardware issue with counter 3. ie they cannot seem to shut off the power to the counter." "SMC could you arrange for an engineer to visit this site 306511 to check counter 3. I believe the PM has not contacted HSH still regarding this hardware issue against my advice."
FUJ00031124	PinICL	27/10/1999	"the horizon system that she has is extremely faulty, touch screen has things appearing on it for no apparent reason. also pm has reported that scanner does not scan. pm also cannot swipe any cards. pm has tried to enter them manually, but system will not accept details manually." "Defect cause updated to 38:General - Hardware Fault"
FUJ00034604	PinICL	24/12/1999	"Phantom transactions appearing on the stack...She says that this is occurring on all counters. She also mentioned the system going to a different screen when she was in the middle of 5 P & A transaction. This type of problem is suggesting keystrokes being generated by the hardware."
FUJ00042700	PinICL	17/05/2000	"Critical TEC messages received for H38442200109 - An unexpected error occurred while attempting to insert a message" "I beleive that this counter is suffering a hardware issue" "Defect cause updated to 38:General - Hardware Fault"
FUJ00046317	PinICL	22/05/2000	"The hardware reliability of the MCPERSON touch screens needs to be investigated. Evidence of usage during the testing phases has shown them to deteriorate with vertical lines obscuring the display. Of the 10 flat screens on the BTC6 test rig 1 is showing

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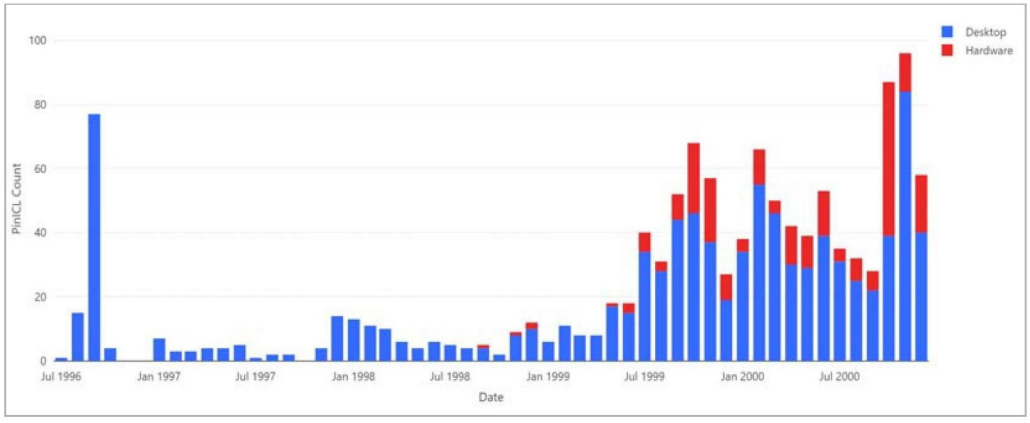
URN	Ticket Source	Date	Extracted Text
			signs of deterioration after 6 months usage. A similar percentage can be seen on other rigs. In the live this would represent replacing 10% of the screens every 6 months." "Has a similar tend been shown in live? Do we have a reliability problem with these screens?" "The McPerson FPD unit was one of two possible units that we were considering fo rthe roll out. As it turned out, we only ever bought a few hundred of these, due to comercial issues and the inability to resolve certain design changes / requests. McPerson are not providing any support to us, and therefore whilst we would normally be keen to determine whether a product is failing and what levels of failures, this information will go no where and we have "got what we have got" in this case. Thanks for the feedback though - is the CTX better in your experience?"
FUJ00045452	PinICL	23/05/2000	"reports at office 070116 that the total no of tps transactions totals 169, while the counter totals 1268.i can not account for this difference on any other reconciliation report. please investigate" "The fact that there were hardware problems with this counter position around the time of the 'rogue' message being inserted indicates that this is probably the cause of the out of sequence message." "Closing call as hardware fault." "Defect cause updated to 38:General - Hardware Fault"

9.1.5 I surveyed the PPs for the Product at Fault being either "Desktop" or "Hardware". 1,281 PPs were identified. There were noticeable maximums in 1996 and then throughout the national rollout period.

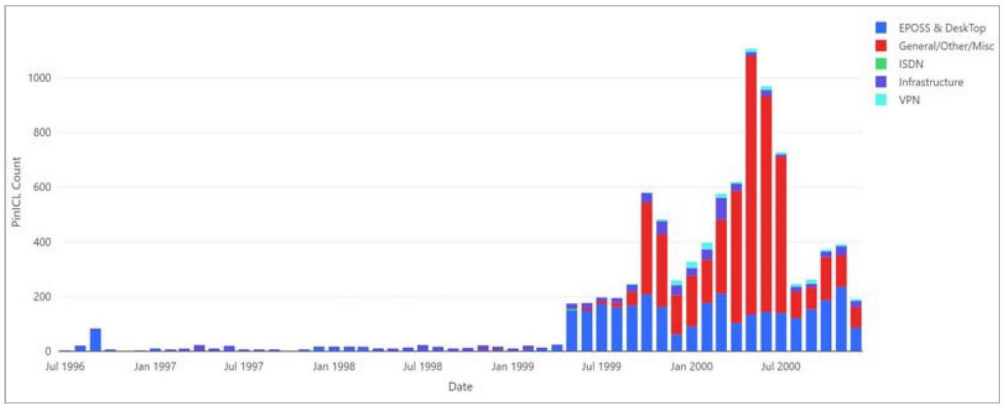
Figure 9.1 Monthly volumes of PPs



9.1.6 I surveyed the PP population for any Product Groups listed in the following figure's legend. For the General/Other/Misc legend entry, only PPs where the Product at Fault value was either "Hardware", "ISDN", or "ISDN Adapter/Driver" were included. Similar to the prior figure, maximums existed in 1996 and through the national rollout period.

EXPG0000001

Figure 9.2 Monthly volumes of PPs



9.1.7 Of the 332 KELs reviewed 35 of these were coded as Responsive and the Nature of the KEL was recorded as being hardware-related (i.e., the known issue related to previously identified hardware issues).

EXPG0000001

10. Many Post Office branches were disconnected from the central system during national rollout.

10.1.1 The ambition of the LHITS was to allow branches to communicate their information to a central system (the LHITS Campuses, as described in section 4.5). It also allowed for software and reference data updates to be distributed from the campuses to the branches.

10.1.2 To accomplish this design feature, a telecommunications system was incorporated into LHITS. The telecommunications design depended on ISDN lines (or in some cases satellite links) being installed at each branch with BT and Energis providing the backbone infrastructure to utilize this hardware. It also relied on each branch's equipment to be available for polling (a term that is used when a central system tries to communicate with a remote system, in this case the hardware installed at the branch).

10.1.3 The Monthly Reports indicate throughout 1998 and 1999 that ICL Pathway was concerned with their ability to effectuate this design feature: they were concerned with BT's coverage of the UK as well as other technical issues related to their standards.

10.1.4 During the national rollout these problems were realized. Hardware, network availability, and user issues combined to create a situation where ICL Pathway was occupied with a higher-than-expected amount of non-polling branches. This was problematic because the LHITS relied on this telecommunication design aspect to not only to collate and centralise information on all of the activity of the branches, but to also allow for efficient updates of software to the branches.

10.1.5 Additionally, ICL Pathway was compelled to raise and resolve an issue for any branch whose non-polled status was 24 hours in duration. It is important to understand that this situation included branches who simply powered down their equipment for a day.

10.1.6 The following tables contain verbatim extracts from the monthly reports (MRs) and PinICLs and PEAKs (PPs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

Table 10.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058161	Pathway Monthly Report - March 1997	March-97	We resolved the migration issue which threatened to increase our implementation costs but have still to find an acceptable solution to the limited counter space issue. I am concerned that BT are failing to implement ISDN across the UK in the expected timescales. Observers believe that they could be as much as 2 years behind schedule which could obviously have serious implications on our roll out plan.

EXPG0000001

URN	Title	Date	Extracted Text
FUJ00058170	Pathway Monthly Report - March 1998	March-98	The inability of the current counter configuration to work with BT's new ISDN standard is of considerable concern. We are considering proposals for resolving this but in the mean-time our ability to deliver operational business change is significantly hampered.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	The expansion of the live estate has meant that the number of outlets not returning transaction details to TP, due to ISDN problems or simply that the terminal is powered down, has increased. This is becoming a job in itself to track and resolve. We are obliged under the rectification plan for AI376 to raise an incident on each office that hasn't polled. This is time consuming and probably pointless for those offices only down for 24 hours. Richard Brunskill is due to talk to the customer (with the Requirements team) to try and find a more efficient way of tackling this problem.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	The number of non-polled Post Offices has been increasing in line with rollout. The task in managing these is increasing and we need to improve the process and root cause analysis before we have a significant increase in the numbers.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	A very busy month in the incident management and MIS areas. We have been dealing with a large number of 'non polled' Post Offices as the live estate has rolled out, causing a bottleneck of incidents which we are only now beginning to clear. As more offices have become live, the demands on the MIS team have increased, as there is a need to monitor the performance of the system for the acceptance rectification plan. There has also been a significant amount of time spent re-working SLAs to portray the accurate values for the SRB.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	Energis/BT have just informed us that there are many more Post Offices which cannot be connected to the ISDN network despite all their previous work over the last three years. We are now pressing hard to get a clearer understanding of the issue and to work out what a resolution plan would need to be.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	A fault has been identified in the EICON card which supports the ISDN communications protocol. This is seriously impacting our ability to distribute software updates to the counters in an efficient manner. It is also responsible for generating many unnecessary and long calls resulting in additional network charges. We have been in contact with the European Service Organisation and EICON support in Montreal to help resolve the problem quickly.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	As part of the AI376 rectification plan, MSU presented to POCL TIP the incident management process for business critical incidents raised by POCL or via the newly developed EPOSS exception report set. Initial comments received from TIP were favourable and they applauded the tighter management controls that ICL Pathway is introducing.

EXPG0000001

URN	Title	Date	Extracted Text
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	Non-polled offices are still creating a large number of incidents. MSU are identifying where there is a specific system problem preventing the Outlet from polling. However there is still the problem where MSU suspect that Outlets are turning the Counter equipment off evident from Mondays reports which contain 3 to 4 times the number of non-polled Outlets than other days within the week.
POL00029222	Monthly Incident Review - March 2000	March-00	The most numerous incidents were for the Non-polled incident class, accounting for 245 incidents received or 56.5%. This was followed by "receipts and payments" (migration) comprising 140 of all incidents received, or 32.3%. Please refer to table and reports 3.1 to 3.3 for further detail.
FUJ00058191	ICL Pathway Monthly Report - May 2000	May-00	The War Room set up to address the issue of non-polled offices has been successful in removing all FADs that were not polled for over 10 days and the effort is now geared to get those over 5 days removed.
FUJ00058191	ICL Pathway Monthly Report - May 2000	May-00	Following the non-polling exercise conducted with the involvement of key areas within Pathway, MSU are now using the revised processes to initiate the resolution of problems causing Outlets to fail to poll. Early indications show that the number of non-polled Outlets appearing on the non-polling report in excess of 5 days is now reducing.
FUJ00058192	ICL Pathway Monthly Report - June 2000	June-00	We are still experiencing a number of non-polled outlets in the live estate. This impacts our file delivery service level agreements because the transactions cannot be harvested from these outlets in the required timeframe. The current t-rust is to ensure that we have resolve all the system issues and to improve the quality of the various reporting facilities available to customer services.
FUJ00058192	ICL Pathway Monthly Report - June 2000	June-00	Improvements in management processes around the identification and resolution of non-polled offices have significantly reduced the amount of offices appearing on the report. Developments are being identified which should give earlier warning of Outlets that have lost communication with the Data Centres. There is an issue with regard to 100% achievement of 'day D' data deliveries, which needs to be resolved with POCL.
FUJ00078051	ICL Pathway Monthly Report - July 2000	July-00	We are still experiencing a number of non-polled outlets in the live estate. This impacts our file delivery service level agreements because the transactions cannot be harvested from these outlets in the required timeframe. The current thrust is to ensure that we have resolve all the system issues and to improve the quality of the various reporting facilities available to customer services.
FUJ00058196	ICL Pathway Monthly Report- November 2000	November-00	The second problem is the increase in the number of post-offices remaining on the non-polled list. This is mainly due to problems in SMC staffing due to sickness and time spent on counter migration activity. A number of mitigation measures have been put in place.

EXPG0000001

URN	Title	Date	Extracted Text
POL00029221	Monthly Incident Review - November 2000	November-00	The most frequently occurring incidents in November were both types of Receipts and Payments Incidents (Migration and Post Migration), with 31 incidents per category. The Migration incidents have remained at the same level, whereby the Post Migration occurrences have increased. This was followed by 17 Transactions Polled by TIP but not by HAPS, these were due to delayed transactions as reported on APSS 2133c. These transactions are added back into normal processing.
FUJ00058197	ICL Pathway Monthly Report - December 2000	December-00	Non-polled offices and Day D: John Pope continues his work with Customer Service and Development to identify the key issues affecting these areas and helping to identify solutions such that we can achieve our contractual SLA's.
FUJ00058197	ICL Pathway Monthly Report - December 2000	December-00	The non-polled Outlets continue to be high for this period. A new resource has now been drafted in to aid with the Non-Polled Outlets that will input further into the investigation and resolution of these offices.

Table 10.2 Non-Polled Offices – November 2000[67]

DATE	01-NOV	02-NOV	03-NOV	06-NOV	07-NOV	08-NOV	09-NOV	10-NOV	13-NOV	14-NOV	15-NOV
1 DAY	86	70	77	248	118	95	94	119	383	164	195
2-3 DAYS	83	61	40	130	47	61	64	57	112	45	52
4-9 DAYS	28	22	43	69	67	61	49	53	85	66	53
10-19 DAYS	0	1	1	6	4	5	8	11	13	12	8
20+ DAYS	0	0	0	0	0	0	0	0	0	0	1
TOTAL	197	154	161	453	236	222	215	240	593	287	309

DATE	16-NOV	17-NOV	20-NOV	21-NOV	22-NOV	23-NOV	24-NOV	27-NOV	28-NOV	29-NOV	30-NOV
1 DAY	115	137	481	284	429	150	141	921	234	151	261
2-3 DAYS	70	65	160	75	76	86	83	153	80	77	92
4-9 DAYS	39	35	74	66	61	51	70	150	128	118	104
10-19 DAYS	8	4	3	2	4	5	3	9	11	8	6
20+ DAYS	1	0	0	0	0	0	0	0	0	1	1
TOTAL	233	241	718	427	570	292	297	1233	453	355	464

10.1.7 A review of the PPs shows that issues were raised and resolved for branches whose equipment had been offline. One example in the chart indicates that a non-polling issue

[67] Monthly Incident Review - November 2000 (POL00029221).

EXPG0000001

was related to the LHITS. Other non-polling issues were due to factors outside of ICL Pathway's control, such as power outages and BT-related circumstances.

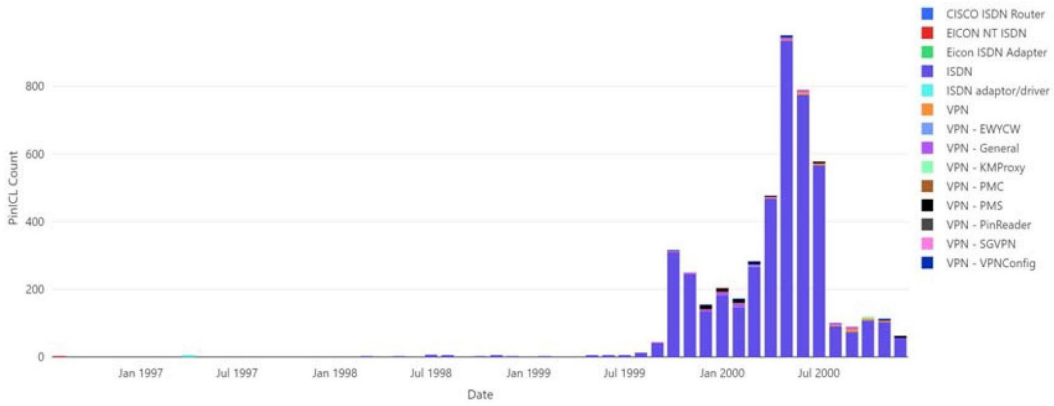
Table 10.3 Verbatim extracts from PPs

URN	Ticket Source	Date	Extracted Text
FUJ00032275	PinICL	04/10/1999	"FAD 223329 - has appeared on a non polled report, it is one day late, can it be pinged and why has it not been polled." "I will check that the pm has rebooted the counters. all four counters have pinged and the OD is alive on all four counters." "Comms issue - now resolved. PO has polled, request call closure."
FUJ00031206	PinICL	25/10/1999	"Office has appeared on the non poll report it is 1 day late" "BT see line as 'out of order' and will investigate" "This was a comms issue that has now been resolved, PO has polled OK."
FUJ00031675	PinICL	27/10/1999	"office 265511 has appeared on non polled report, this is one day late, this is the first day, can it be pinged and why has it not been polled." "have spoken to PM who advised that there is a PO sign outside and also that BT were working up the pole outside yesterday and cut off his other lines as well as the pub next door" "This fault is still in hand with BT it looks like a problem between the customer site and the BT exchange. BT are treating this as their fault and still have this in hand." "This Office has not polled for 2 days"
FUJ00032062	PinICL	10/11/1999	"fad 172401 has appeared on the non polled report on 2 separate occasions between the 3rd and 10th of November." "The non-polling can be attributed to power cuts and comms probs over the last week. PO has now polled OK - request call closure."
FUJ00035068	PinICL	04/01/2000	"This office is still not polling and hasn't polled for 11 days - please resolve asap." "Missing objects relating to EPOSSRec were inserted today by P. Carroll. The PO should disappear from the non-polling report tomorrow." "The FAD is still on the non-polling report but the number of days has decreased to 4. The underlying data when looked at this morning shows the PO to no longer be a non-polling PO. This means that the non-polling report is being run too early in the harvesting schedule and is thus not producing reliable figures." "FAD 181611 still not polling" "This site is no longer on today's non polling report for 5/1"
FUJ00046403	PinICL	27/06/2000	"FAD 358136 on non polling report for 3 days." "BT have advised jumpers and modules have been reterminated at site." "Comms to outlet now re-established. However, have checked POStatus object on correspondence server and this has not yet been updated with missing EOD's." "POStatus object now updated at the correspondence server. FAD is not on today's non-polled report."
FUJ00062520	PEAK	27/06/2000	"FAD 132859 on non polling report for 3 days." "Office had not been polling due to a comms issue - destination out or order. This has now been fixed and the office is no longer on the non polling report."

10.1.8 I surveyed the PP population for entries where the Product at Fault contained "ISDN" or "VPN" within their values. ISDN and VPN are both related to connectivity. This query resulted in the 4,733 entries shown in the figure below, with their specific Product at Fault values shown in the legend. This problem manifested during the national rollout period.

EXPG0000001

Figure 10.1 Monthly volumes of PPs



EXPG0000001

11. Financial concerns were considered by ICL Pathway throughout the time period reviewed

11.1.1 ICL Pathway is a profit seeking entity. I assume that ICL Pathway was motivated to deliver the system and make a profit.

11.1.2 The ICL Pathway Monthly Reports had two sections ('Commercial and Financial Report'; 'Business Development Report') that assessed how the Horizon project was tracking against internal financial goals and how the Horizon project could be used for other commercial pursuits.

11.1.3 The financial success of the Horizon IT System relied on ICL Pathway orchestrating many different constituencies: sponsors, suppliers, and their many internal groups. Benchmarks relating to acceptance, the timing of rollout coverage, and adherence to SLA requirements were topics of discussion as they were directly connected to revenue, cost, and profit realisation. The balancing act between operational and technical activities and their financial ramifications was highlighted in the April 1998 report: "Should the pressures mount, the temptation to hold to NR2 dates at all costs is immense. If we were to (purely theoretically) compromise NR2 quality in order to hold the timescales, we would almost certainly be worse off in the long run."

11.1.4 Acceptance was achieved on 24 September 1999, triggering the first invoice to be issued by ICL Pathway. The rollout coverage incentive for 1,800 outlets was achieved on 5 November 1999. The first payment (£105 million) was received in early December 1999.

11.1.5 The items I have included in this table illustrate some financial wins and some financial losses from ICL Pathway's perspective. Financial concerns were weighed against the resource allocations to deliver the Horizon IT System. It is my opinion that the financial aspects of delivering the Horizon IT System affected the decision-making process.

11.1.6 The following table contains verbatim extracts from the monthly reports (MRs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

EXPG0000001

Table 11.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058160	Pathway Monthly Report - February 1997	February-97	We have issued the next full risk report on the programmed and this now includes not just the high level risks but the comprehensive analysis of all known risks. This at a high level shows that we start the year with some £80m worth of risk and that if we pursue our mitigation actions as currently defined, we can bring this down to £27m by the end of this year. There is the management view that there is scope within this to be more aggressive in reducing risks and this will be driven through during Q2, Q3 this year.
FUJ00058161	Pathway Monthly Report - March 1997	March-97	The Change Control process is now underway. Suppliers have been given planning data from which to assess the impacts of the delays. The Suppliers Forum has been notified of the solid state of the Replan and committed itself to facilitating the changes. However, the indications are that we will come under pressure to recompense suppliers for moneys lost today, never mind the claw back in eight years time. As predicted last month, this is likely to be a tough round of negotiations.
FUJ00058166	Pathway Monthly Report - December 1997	December-97	Holding our suppliers is becoming increasingly costly and fraught for them and our own people who have to deal with them. **We must strike a balance between saving money and keeping core programme capability intact.** On the one hand, we must resist paying people simply to stand by and filling warehouses with equipment we do not need for another year. On the other, we cannot afford to throw away supplier goodwill or make life impossibly difficult for our own staff.
FUJ00058166	Pathway Monthly Report - December 1997	December-97	We declared our contractual position formally on 19th December. In short, we have said that to compensate us for the programme delays we require either: o A 30% price increase, or o A 5% price increase plus a 5 year extension of term.
FUJ00058169	Pathway Monthly Report - February 1998	February-98	We are now in major dispute with POCL on the condition of their physical estate. This has been building up for over a year and we now have facts and figures to substantiate the argument that the total cost for putting their estate into a fit purpose for automation is on the wrong side of £40m. They appear to have provided no budget for this, yet their contribution needs to be close on to £20m.
FUJ00058173	Pathway Monthly Report - May 1998	May-98	More supplier tensions are probable over the summer. Cumulative delays are testing their patience and they are increasingly looking for near term cash returns.

EXPG0000001

URN	Title	Date	Extracted Text
FUJ00058171	Pathway Monthly Report - April 1998	April-98	NR2 versus NR2+: **Should the pressures mount, the temptation to hold to NR2 dates at all costs is immense. If *we were* to (purely theoretically) compromise NR2 quality in order to hold the timescales, we would almost certainly be worse off in the long run**. We are only allowed 11 high or medium severity Acceptance faults in total: if we fall foul of Acceptance, we will have to do remedial work and go round the loop all over again: the delay would be greater than if we had got it right first time. Unless NR2 is truly scalable it will need to be replaced very quickly. If we push too much work out of NR2 into 2+, the time gap between 2 and 2+ will inevitably increase. Having NR2 available early but with a dependency on a rapid follow-on NR2+ does us no good whatever. There is no point starting rollout unless we know we can keep it going: start/stop/start would kill us.
FUJ00058173	Pathway Monthly Report - May 1998	May-98	The design and build cost profile of the business case has deteriorated further as a consequence of the cost increases, placing further demands on additional funding. Submissions are being prepared to secure these. The Treasury review will play in.
FUJ00058158	Pathway Monthly Report - August 1998	August-98	We continue to underspend forecast because of recruitment lag. In August, the underspend was £1m out of £10m. That saves us money in the short term but means we are not consuming the work at the required rate.
FUJ00058158	Pathway Monthly Report - August 1998	August-98	The cost to date of putting back the programme in terms of subcontractor settlements now runs into many £m's. We have budgeted for more to come over the next 18 months.
FUJ00058198	Pathway Monthly Report- December 1998	December-98	We have also included within our business plan contingency funds to cover the critical known risks. The single largest of these is any risk or delay to the beginning of National Roll-out and possible problems in maintaining the beat rate of implementation. These contingency plans are an essential component of Risk Management which we must have in a programme which has elements of risk between medium and in some cases high severity.
FUJ00058183	ICL Pathway Monthly Report - June 1999	June-99	We are determined to meet the cash payment points which follow Acceptance (£68m) and successful Roll-out to the first 1,800 Post Offices (£90m) which are vital payment points in 1999 both for ICL/Fujitsu funding and of course for the credibility of the new programme moving forward. All staff are focused on the criticality of meeting these milestones.
FUJ00058184	ICL Pathway Monthly Report - July 1999	July-99	We are still determined to meet the cash payment points which follow Acceptance (£68m) and successful Roll-out to the first 1,800 Post Offices (£90m) which are vital payment points in 1999 both for ICL/Fujitsu funding and of course for the credibility of the new programme moving forward. All staff are focused on the criticality of Meeting these milestones
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	Acceptance was achieved on 24 September and the resultant invoice for £68m delivered on 27 September for payment within 30 days.

EXPG0000001

URN	Title	Date	Extracted Text
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	The 'upside' roll out target of 1800 post offices was achieved on 5th November, enabling us to invoice the higher figure of £90m. rather than the alternative Of £80m for 1600 post offices. An invoice for the £105,162,500 including VAT was couriered to POCL on Monday 8th November, and POCL's confirmation of receipt was received on 9th November. Payment is due on 5th December, which is another Sunday.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	As doubtless reported elsewhere by my colleagues, there has been intense activity on the post Acceptance/ pre January roll out decision front, and this will intensify further in the run up to 24th November and beyond. Reference data is the big issue. Some resolutions must be found before roll out can safely restart on 24th January. As a measure of the exposure, we face a claim from POCL (which we are disputing on the grounds that they authorised it) of some £300k in respect of just one reference data error.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	£105m payment for the full first Roll-out milestone was received on time in early December.
FUJ00058191	ICL Pathway Monthly Report - May 2000	May-00	Weekly service performance is a key issue and recent problems with Help Desk service have significantly dented PO confidence. March and April were disastrous months on OSD service levels, driven by major resource issues (staffing levels) on the Horizon System Help Desk. Nearly all Of the SLA's have been missed and significant penalties incurred. This is an own goal and should have been prevented. As reported last month it is on Red Alert and OSD have reacted decisively and professionally to implement corrective action. Their management has been changed and over 40 new help desk staff recruited along with a plan to recruit at a pace to handle the weekly increase in Post Offices and to cover for attrition. This has driven a dramatic improvement and this week we are now back on target with 7 of the 10 key SLA's. The sensitivity of this situation cannot be overstated. It is highly visible and has brought firm reaction from PO Directors. It will take week on week, month on month good performance to recover our position.
FUJ00058195	ICL Pathway Monthly Report - October 2000	October-00	Weekly service performance remains a key issue and although we are back on track and demonstrating consistent performance we are missing some of the very challenging SLA's: As expected PO have now placed us in formal Breach of Contract (they can do this if we miss any three quarters in 24 months) although they currently appear to be genuinely seeking contractual compliance rather than financial recompense. A meeting is fixed for mid November with the customer to try and finalise a way ahead on this. My concern is that we have breach and termination hanging over us on an ongoing basis. Also that we establish a methodology that avoids the withholding of our second £60M retention by PO from July 2001.

EXPG0000001

URN	Title	Date	Extracted Text
FUJ00058196	ICL Pathway Monthly Report- November 2000	November-00	CSR+ counter migration has been largely completed. Acceptance of CSR+ has triggered payment of the first £60M retention starting in January 2001 at £1.25M per month. The quality of CSR+ appears robust (as evidenced by help desk calls). Work is underway to crystallise and achieve the requirements for the second £60M retention due in Q2 next year.

11.1.7 Based on my understanding of the content of the PPs, I do not believe any of their content would be relevant to ICL Pathway's financial concerns, and therefore I did not undertake searches of the documents for this theme.

EXPG0000001

12. The tenuous relationship between ICL Pathway, their sponsors (BA and POCL) and suppliers were often topics of concern for ICL Pathway's management team

12.1.1 ICL Pathway dealt with many different groups during the design, development, and deployment of the Horizon IT System. Throughout this period, I noted that ICL Pathway had recurring communication and expectation management concerns with these groups.

12.1.2 Early in the process (1997) ICL Pathway's interactions focused mainly on sponsors. It is clear from the March 1997 entry that ICL Pathway believed much of the responsibility for preparing the branches for automation lies with the Post Office network itself. This indicates an initial mismatch in the expectations of the Horizon project. ICL Pathway was not comfortable with the Post Office network's position on its readiness.

12.1.3 The timeline slippage also concerned ICL Pathways' suppliers, who had invested in equipment and were now told they need to keep this inventory longer than expected.

12.1.4 Continuing the timeline slippage motif, August 1997 saw the three partners (ICL Pathway, POCL and the Benefits Agency ("**BA**")) experiencing damage to their business cases. At this point ICL Pathway speculated that POCL and BA might be considering alternatives.

12.1.5 In February 1998, ICL Pathway's difference of opinion with POCL about counter space problems rose to the level of sending "legal letters."

12.1.6 In May 1998, ICL Pathway predicted more supplier issues over the summer due to cumulative delays in the timeline.

12.1.7 In December of 1998, ICL Pathway and POCL targeted August 1999 for national rollout. In January 1999, BA "unilaterally" pushed out their timeline by six months. ICL Pathway and POCL represented against this decision, "some of it quite legal in nature".

12.1.8 In April 1999, BA (DSS) removed themselves from the Pathway project.

12.1.9 In May 1999, ICL Pathway found itself needing to "rebuild customer relations following the traumatic arrangements that brought the new contract into force".

12.1.10 In June 1999, ICL Pathway indicates that POCL still harbour negative feelings toward them, believing that POCL blames ICL Pathway for the way POCL has been treated publicly.

12.1.11 In October 1999, POCL accused ICL Pathway of resorting to undue escalation related to addressing reference data issues.

12.1.12 These relationships needed to maintain a healthy hygiene of clear communication and orchestrated manoeuvring as issues presented themselves. It is my opinion that at several points in time, the parties' individual goals and expectations were at odds with each other. This diversion of focus could not have benefited the implementation of the Horizon IT System.

EXPG0000001

12.1.13 The following table contains verbatim extracts from the monthly reports (MRs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

Table 12.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058161	Pathway Monthly Report - March 1997	March-97	As we survey the first 200 offices the extent of this problem is becoming clearer and worse. We have formally lodged with PDA that the Post Office network is not fit for the purpose of automation and that this responsibility clearly lies with the sponsor. Difficult negotiations must be anticipated.
FUJ00058162	Pathway Monthly Report - June 1997	June-97	The programme review has been presented to PDA, POCL, BA, ITSA and SSA [Northern Ireland]. The consistent response has been one of disappointment and shock that yet another slippage has come to the surface so soon after two previous replans.
FUJ00058162	Pathway Monthly Report - June 1997	June-97	We have fully briefed our principle suppliers on the current position and not surprisingly this causes many of them serious problems particularly where they have invested in equipment, resources and capability against a plan which has moved smartly to the right. Different mitigation actions are called for with different suppliers but this will be a rough task to get straightened out before we can move forward with confidence.
FUJ00058163	Pathway Monthly Report - August 1997	August-97	This has been another difficult month for Pathway, BA and POCL. There have been further programme delays and difficulties with Release 1c and the potential release date for Release 2. This has caused further damage to the business cases of all parties and within the Sponsors there is a body of people who are pressing and looking for a way out the contract.
FUJ00058163	Pathway Monthly Report - August 1997	August-97	We know that the BA and POCL business cases have been badly damaged and that there are elements within both organisations which are now looking for out or at least are thinking about alternatives. BA will maintain that they have not slipped since the last replan in April (CCN105): essentially true as far as we can tell.
FUJ00058163	Pathway Monthly Report - August 1997	August-97	Another very difficult month for the programme. There is no disguising the perception that we are in the dock for the latest slippage and the fact that the damage to business cases all round is immense. On the plus side, our new openness and realism about the state of the programme has been met with a positive response from the other side and a preparedness to work with us to find a way through.
FUJ00058169	Pathway Monthly Report - February 1998	February-98	The counter space problem has been better defined and is more serious than we had previously thought. We have gone on the attack with legal letters, which make it clear that, beyond a certain point, we consider this to be a matter for POCL to face up to (and pay for). The current prognosis for an early and amicable resolution is not good. Meanwhile, we need to be even more creative and determined to find ways to address the problem (moneys aside).

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URN	Title	Date	Extracted Text
FUJ00058173	Pathway Monthly Report - May 1998	May-98	More supplier tensions are probable over the summer. Cumulative delays are testing their patience and they are increasingly looking for near term cash returns.
FUJ00058198	Pathway Monthly Report- December 1998	December-98	The key event is the start of National Roll-out, since this is the time when we begin to implement the critical infrastructure in the Post Office Network and on the completion of this, then the revenue flows to ICL-Pathway begin in earnest. We and Post Office Counters Ltd are in agreement that August 1999 is the appropriate date to start National Roll-out with sufficient contingencies to cover the likely problems we will encounter. We believe that National Roll-out can begin in early August, where as POCL view that it is more likely to be the last week in August. We continue to press for a more aggressive plan to avoid any unnecessary delay to this activity.
FUJ00058168	Pathway Monthly Report - January 1999	January-99	All plans work towards a National Roll-out date for NR2 in August 1999. Nevertheless there has, during the last two weeks, been a major confrontation with the Benefits Agency who have abruptly and unilaterally moved their multi-benefit Model Office plans by six months. Following strong representation from ourselves and POCL some of it quite legal in nature, DSS have become defensive and attempt to retreat on the issue. Nevertheless the issue remains untidy, could lead to press leaks and needs rapid and complete resolution. This will need to be watched extremely carefully.
FUJ00058182	ICL Pathway Monthly Report - May 1999	May-99	We need a major programme to re-build customer relations following the traumatic arrangements which brought the new contract into force. We have a substantial way-to go on this with POCL before this contract is in good order.
FUJ00058182	ICL Pathway Monthly Report - May 1999	May-99	The withdrawal of DSS from the Agreements removed seven of the 25 Acceptance areas. In addition Horizon has indicated that a further area will not now be pursued. The DSS withdrawal has also removed the two Acceptance Specifications that DSS and POCL refused to approve, and several of the issues that were previously a concern.
FUJ00058183	ICL Pathway Monthly Report - June 1999	June-99	Although we are now some six weeks into the new contract arrangements POCL continue to remain negative and critical towards the programme and have not yet got over their bitterness on the way they have been treated within the public sector, for which unfortunately they continue to hold us partially to blame. We have to work at this as we make progress with the commercial, financial and programme matters in order to find a more positive and long term relationship.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	We were unable to convince POCL of our case over reference data without resorting to what POCL regarded as undue escalation. That went down badly and caused a negative reaction. The right actions now appear to be underway but we need to establish new conduits for better day to day communication and `step-by-step escalation'. The actions have Operations leading, with Programmes in support: this is a significant change which calls for changes in the ways we do things internally as well as between ourselves and POCL.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	We must keep pushing for a joined up campaign internal to Post Office to promote Horizon. There are far too many misconceptions about which vary from out-of-date technology to a batch system to "it will take 3/4 years to complete roll-out."

EXPG0000001

URN	Title	Date	Extracted Text
FUJ00058190	ICL Pathway Monthly Report - February 2000	February-00	There were no Network incidents requiring Energis involvement during the reporting period. However there have been occasional incidents at Post Offices that are taking too long to resolve. A letter of complaint has been sent and a meeting is planned with Energis and BT in order for both to explain their lack of action.
FUJ00058192	ICL Pathway Monthly Report - June 2000	June-00	On a broader front in the Post Office, business is proving difficult and ICL is not seen as a strategic supplier in Parcel Force nor Royal Mail. We are still tarnished with the history. Our PC Supply contract has hit severe difficulties this month with supply issues from MVC and PO have expressed major dissatisfaction.
FUJ00058194	ICL Pathway Monthly Report - August 2000	August-00	There are some supplier issues also: • Flat screen quality - Optoma have produced a firmware mod but site visits are required - there is bound to be a fight over costs (estimated at circa £1m) • Ntl final payment - £800k claim of which we judge perhaps 25% to be fair • KPL - our claim in respect of wasted course places (as above - their share could amount to £400k) • Celestica - mobiles cost- £130k disputed cost hike
FUJ00058195	ICL Pathway Monthly Report - October 2000	October-00	We have invoked Masons to write to ntl: to knock them back from their £800k claim for standby charges. We feel strongly that their claim should be more like £250k. Our action may provoke some reaction because ntl: are a strategic customer. We will also be writing to Energis to claim back costs which have resulted from what we assert were their breaches of contract with respect to ISDN line installations.
FUJ00058196	ICL Pathway Monthly Report- November 2000	November-00	Agreement has been reached with ntl: regarding their £800k claim. The outcome is circa £350k. This is very close to the latest (tasked) forecast.
FUJ00058197	ICL Pathway Monthly Report - December 2000	December-00	Although we are demonstrating consistent and good quality operational performance we are missing some of the very challenging SLA's and as expected PO have placed us in formal Breach of Contract (they can do this if we miss any three quarters in 24 months). We are trying to negotiate a reduced SLA breach trigger for the future that also sweeps up the training occupancy issue. A proposal is currently being considered by the Post Office and we appear to be homing in on a mutually acceptable solution.
FUJ00058197	ICL Pathway Monthly Report - December 2000	December-00	Negotiations with Energis for compensation relating to failure to install ISDN lines as required by the contract remains ongoing. An offer of £50K has been received and rejected on the basis that it is a significant under estimation by Energis of the costs incurred.

12.1.14 Based on my understanding of the content of the PEAKS and PinICLs, I do not believe any of their content was relevant to ICL Pathway's relationships with their sponsors and suppliers.

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13. The persistence of reference data mismanagement degraded the integrity of Horizon

13.1.1 ICL Pathway designed the Horizon IT System to utilise data driven logic. This design feature's benefit was to efficiently update the Horizon IT System's functionality without the need to develop, design, test, and deploy new versions of the software.

13.1.2 POCL was responsible for maintaining portions of the Horizon IT System's Reference Data. Reference Data maintained pricing information for the different types of stock sold at the branches. It also contained behind-the-scenes information that was needed by the Horizon IT System to map accounting transactions properly.

13.1.3 The advantages of data driven logic rely upon its custodianship. If the "data" in the data driven logic is not timely, accurate, and complete, the system it supports will not operate as intended.

13.1.4 In early 1997, ICL Pathway identified the need to incorporate POCL's Reference Data into the Horizon IT System. By late 1997, ICL Pathway characterised its contractual obligations regarding Reference Data as "poorly defined" but acknowledged the significance of the issue as crucial.

13.1.5 The Pathway Monthly Reports clearly represent that ICL Pathway believes the maintenance of some of the Reference Data is the responsibility of POCL. These same reports also describe a litany of instances where, according to the ICL Pathway reports, POCL failed in this responsibility. The resulting Reference Data issues caused errors in the Horizon IT System.

13.1.6 The following tables contain verbatim extracts from the monthly reports (MRs) and PinICLs and PEAKs (PPs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

Table 13.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058160	Pathway Monthly Report - February 1997	February-97	There is potential issue concerning the acquisition and distribution of BPS Reference Data. It needs to join the POCL Reference data stream at some point.
FUJ00058166	Pathway Monthly Report - December 1997	December-97	Reference data is poorly defined in the contractual requirements but is crucial for the proper control of changes to outlet/product data. POCL are only now realising its significance and we must be vigilant if we are to avoid requirements creep.

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URN	Title	Date	Extracted Text
FUJ00058169	Pathway Monthly Report - February 1998	February-98	The CARs were brought up to date. I sent a letter withdrawing our approvals for CARs relating to Reference Data. The subsequent muscular correspondence has led to a letter to Tony O asking him to intercede with me on the customer's behalf. This issue will either resolve itself with deliveries by POCL of satisfactory Reference Data by the end of March or will become a severe embarrassment to POCL if they miss either or both of the quality or the date.
FUJ00058170	Pathway Monthly Report - March 1998	March-98	As reported in last months report, the focus of attention is now the main pass stages of BPS and EPOS system testing. These activities have been seriously impacted by a series of problems related to the mapping of 'reference data to the EPOS counter application. A number of corrective actions have been implemented and recovery options are now being evaluated. The Direct Interface Testing with BA (CAPS & OBCS) and POCL (RDMC & TIP) has gone well and we are now poised to start the final stage (i.e. DIT2).
FUJ00058170	Pathway Monthly Report - March 1998	March-98	The last month has not been an easy one for the work on New Release 2 planning and progress. Severe problems with EPOSS testing within Pathway and linking through to reference data within POCL have caused a delay of between three and five weeks to the schedule. A mitigation plan has been drawn up although this has high risk and low confidence and discussions are now in hand with the sponsors to open up the debate on a better plan to get to LiveTrial in January 1999. This area will remain extremely difficult for some time.
FUJ00058171	Pathway Monthly Report - April 1998	April-98	This has been a busy month to reshape the NR2 planning to achieve the January Live Trial date, which, due to stress points within EPOSS/Reference Data, has meant a moving around of internal milestones and the need for all parties to reconnect on a different schedule for Model Office testing. The most difficult area here, will be with BA who saw the contingency owned more by them than by us and are therefore somewhat reluctant to co-operate.
FUJ00058173	Pathway Monthly Report - May 1998	May-98	For ICL Pathway the stress points in this plan are the satisfactory completion of the EPOSS system testing which has been a difficult area with its tight interfaces to the POCL reference data system. In addition we are scheduled to enter the direct interface testing of our systems with POCLs starting on the 16th June and currently we have a small number of critical software fixes to complete.
FUJ00058174	Pathway Monthly Report - June 1998	June-98	We have received updated versions of the Reference Data from POCL but the quality is below that expected. Meetings have been arranged with POCL in an attempt to resolve these problems before the start of model office rehearsals.
FUJ00058175	Pathway Monthly Report - July 1998	July-98	The quality and the change control processes associated with POCL reference data is causing a considerable amount of rework for the programme. This is delaying progress on a number of fronts and must be addressed urgently.

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URN	Title	Date	Extracted Text
FUJ00058175	Pathway Monthly Report - July 1998	July-98	Reference data continues to be a source of concern even though we have received several updates from POCL for the model office and live versions. The end to end control of this critical data is not adequate but we expect POCL to make vital organisational changes in August in an attempt to address this issue.
FUJ00058176	Pathway Monthly Report - September 1998	September-98	POCL are finally getting to grips with the end to end procedures and disciplines required to manage their Reference Data. The progress over the past few weeks has been encouraging and if maintained, will ensure we develop a workable process.
FUJ00058177	Pathway Monthly Report - October 1998	October-98	The data transferred to TIP contains transaction details (ITM's) created by the Pathway solution. These are inconsistent with the details passed to TIP by POCL reference data. Discussions with POCL are being held to determine how this problem can be resolved.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	Major operational problems were experienced with Rem In/Rem Out, Stock-unit. Transfers and scales. On Friday 1 October a number of outlets experienced problems Rem'ing in and out, transferring stock between stock units and scales functionality. This was diagnosed as the office details having a change in the Reference Data pipeline that caused a previous change to be released with an end date on the data when the actual change containing this end date had not been released. Although the Rem and scales problems were resolved, the stock transfer amendments were not made until Monday, which resulted in the number of outlet calls raised on that day. A resolution plan is in place to ensure there will be no cash account balance problems on Wednesday.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	The performance of delivering reference data is cause for concern. The impact of reference data failure has been evident over the past two weeks where recent failures have had a major impact at the Post Office counter. Given an estate of 20,000 Post Office outlets any reference data failure will cause enormous problems for the postmaster, the HSH and support teams. The end-to-end reference data System needs to be fault tolerant - at present it is not.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	Too many reference data errors are being distributed to the counter. End to end design reviews are being held to establish what action can be taken swiftly to prevent these occurring in the future. These are having a major impact on Acceptance Incident 376. In addition, the performance of the data distribution process is inadequate and must be improved before roll-out commences in late January 2000.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	As doubtless reported elsewhere by my colleagues, there has been intense activity on the post Acceptance/ pre January roll out decision front, and this will intensify further in the run up to 24th November and beyond. Reference data is the big issue. Some resolutions must be found before roll out can safely restart on 24th January. As a measure of the exposure, we face a claim from POCL (which we are disputing on the grounds that they authorised it) of some £300k in respect of just one reference data error.

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URN	Title	Date	Extracted Text
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	We were unable to convince POCL of our case over reference data without resorting to what POCL regarded as undue escalation. That went down badly and caused a negative reaction. The right actions now appear to be underway but we need to establish new conduits for better day to day communication and `step-by-step escalation'. The actions have Operations leading, with Programmes in support: this is a significant change which calls for changes in the ways we do things internally as well as between ourselves and POCL.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	The monitoring of the three big Acceptance Incidents (AI298, A1376 and AI408) have all run into difficulties in varying degrees with the common theme being the potentially unsafe state of operation of Reference Data within the end-to-end model. As mentioned already the end-to-end workshop is the critical process for finding an acceptable resolution to this complex area.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	Too many Reference Data errors are being distributed to the live estate which has been causing major problems with reconciliation and cash account production. We are pressing for a full end-to-end review across Horizon as well as Pathway such that solutions can be found and implemented prior to a roll-out restart in January 2000.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	The "big three" Acceptance issues have been reduced to the "big two" with the clearance of 298 (Counter Stability). Actions have been developed for handling the issues on EPOSS Reconciliation and Reference Data sufficient to get us to the decision to restart the rollout on 24 January. There are new starts on Network Banking and Euro study.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	The third meeting of the Reference Data get-well plan was held last week. Attendees included Keith Baines, Tony Qppenheim, Mike Coombs and Martin Riddell. The meeting was very positive and hopefully increased the onus on POCL to produce specific action plan to address data quality issue. Data assumptions document has been sent to POCL. CS has received POCL Business Rules document and comments have gone back to POCL. There is a problem relating to change in passport price data received from POCL on 29th November. The price change was linked in to other changes for which additional work was required and for which we had an OLA of 4 weeks. The change is required for 16 December. There is a risk that we will be unable to complete this change for the 16th December. POCL have been informed and a response is awaited. SIP 16 data has been delivered to all outlets and a selected number have been supplied with the code and activated. Development work on CP2298, the change to RDDS/RDMC is reported to be progressing to plan.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	After only two incidents, one resulting from a mistake by PO and another from an error in Pathway's systems, it was clear that the processes for Reference Data Management and Authorisation were inadequate. The key issues of verifying the accuracy of reference data before its authorisation by PO for propagation to the live estate, was jointly reviewed and new plan was produced to enable National Rollout to recommence by 24th, January. A more robust interface agreement was agreed on 14th January.

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URN	Title	Date	Extracted Text
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	There have been a number of problems with the processing of Reference Data in the last two weeks. These include: A number of files were sent to RDMC that were thought to be benign to the Horizon system. This was not the case as it caused some changes to occur in the Horizon counters that may not have been expected. The problem was due to POCL failing to supply required data to a previous OBC in September 1999 to ensure that a change in AP client names was propagated to all associated AP tokens. The Reference Data Comparison tool successfully identified this problem. A number of files were sent to RDMC that contained a change to the Cash Account type for both live and non-Live outlets. Unfortunately a process issue had allowed these changes to he supplied by POCL as Help Desk changes only and RDT were also not informed that the files contained such data. As a consequence RDT were unaware of the urgency with which the files were required and had not progressed them for release. The problem was further complicated in that some of the files had dependencies on others for which RDT were awaiting action both from POCL and from ICL Pathway. RDT were able to progress the files slightly later than required but we believe that this has not caused any problems to Live outlets. The underlying cause of the problem is being addressed and additional processes are being established within POCL to ensure that this does not happen in the future. An outlet's FAD code was changed in anticipation of-the outlet moving to a new location and franchise however the actual change was delayed but this was not reflected by POCL within the Reference Data. This caused problems for ICL Pathway data processing. The immediate problem was overcome by provision of corrective Reference Data however the underlying issue is still under investigation.
FUJ00058190	ICL Pathway Monthly Report - February 2000	February-00	Late delivery of Reference Data or Reference Data Amendments by POCL causes Pathway problems in maintaining the scheduled timescales. A process is being. introduced to trigger an E-Mail to POCL QSG every time they are. late with these deliveries.
FUJ00058192	ICL Pathway Monthly Report - June 2000	June-00	There are still concerns regarding the quality of Reference Data received from POCL, in particular regarding the actual volume of errors and the amount of rework resulting from last minute changes. It is difficult to identify ownership within POCL to take this forward. This is being addressed through the HSRF.
FUJ00058194	ICL Pathway Monthly Report - August 2000	August-00	There is concern over the performance of the Data Centre with large volumes of non-core Reference Data remains, even with 64 Agents at CI_4. Changes may need to be made to the processing mechanisms. This is being monitored.
FUJ00058196	ICL Pathway Monthly Report- November 2000	November-00	Quality of Reference Data from POCL and time taken to resolve the problem remains a concern. This has been escalated within POCL.
FUJ00058197	ICL Pathway Monthly Report - December 2000	December-00	Quality of reference data remains an issue. Insufficient progress is being made by POCL in this area and has been escalated to BSM.

13.1.7 A review of the PPs supports the contention that Reference Data was a cause of problems in the Horizon IT System.

EXPG0000001

Table 13.2 Verbatim extracts from PPs

URN	Ticket Source	Date	Extracted Text
FUJ00038157	PinICL	30/06/1999	"Due to a historical problem with reference data, 39 bus ticked products will not have been appearing on the balance report causing a misbalance as they will have been transacted at the counter. A fix for this problem has been developed and is currently undergoing testing within ICL Pathway." "**Product 2533 reference data contains no Primary Mapping attributes.** ICL Pathway has identified that this product (and approx. 38 other 'Local Products') has never had a set of Primary Mappings applied since the data was delivered from POCL. A correction to this reference data has been delivered in WP5759, which has been applied to the live system on 24/9/99." "Inspection of the message store shows that P&A transactions undertaken on 28.10.99 did not contain any 'Primary Mapping' attributes, indicative that the reference data for the P&A products was not present when the transactions took place." "The reason that the value was added to line 5002 was that the update of the Cash Account mapping reference data for Product 21 which added the new mappings for revaluation failed to update correctly at the office (known problem already being addressed at 300+ outlets), the system therefore added the value to the 'default' line which is line 5001." "The reference data problem where mixed mode data was recorded, was resolved under the reference data change in wp 5760 & 5817, that prevents movement from revaluation to housekeeping."
FUJ00039293	PinICL	01/09/1999	"The error in the system which allowed the P&A transactions in the above outlets to be recorded while in 'Remittance' mode has already been identified and revised Type 'C' reference data has been delivered to correct the problem."
FUJ00075020	PEAK	13/10/1999	"It is also possible that since the outlet was migrating on 1.10.99 when there was a known problem with the Mode Parameters reference data and the Pathway Settlement Products Reference Data that the migration of any Remittances and Transfers from the ECCO+ system may not have been handled correctly - again, I would need to see the correspondence server node messages in order to determine this." "Have not yet been able to devote any further time to anlysing the source of the final element of the misbalance, but it is undoubtedly tied up with the reference data issues which caused the Transfer and Remittance issues identified in the earlier update."
FUJ00038613	PinICL	22/10/1999	"The differences reported on the Cash Account originated in CAP 28 when two transfers of cheques (£2252.59 and £2168.89) were corrupted due to the transfer reference data deletion during the period 1st to 4th October. As a result, the values for Cash And Cheques reported on the CAP 28 Cash Account were incorrect (Cash was reported £4421.48 higher than it should have been, Cheques £4421.48 lower than it should have been). This had a knock on effect on TIPs calculation of the CAP 29 Cash Account values since the starting position taken from the previous Cash Account was already incorrect."
FUJ00039673	PinICL	23/10/1999	"The remaining 24 FAD Codes involved in the call were all affected by the transfer problems in CAP 28. Because transfers between 1st and 4th October were incorrectly recorded in the message store (caused by the deletion of the Transfer reference data) the values of transferred items of STOCK (not Cash) were incorrectly added onto the declared stock amounts for the office when the Cash Account was produced for CAP 28. As a result, TIP used these as the starting stock figures for the CAP 29 Cash Account and identified the indicated differences during CAP 29."

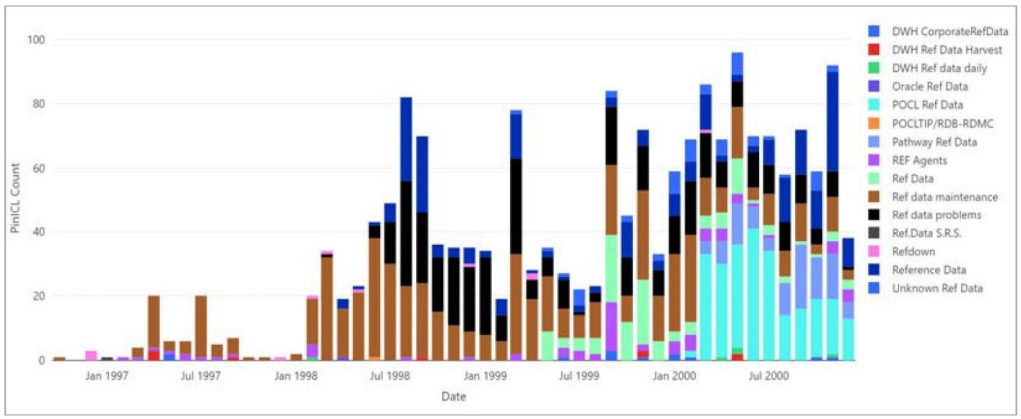
EXPG0000001

URN	Ticket Source	Date	Extracted Text
FUJ00032563	PinICL	11/11/1999	"Inspection of the message store shows that P&A transactions undertaken on 28.10.99 did not contain any 'Primary Mapping' attributes, indicative that the reference data for the P&A products was not present when the transactions took place. The P&A Product Reference data appears to have been loded onto Node 38 (the correspondence server) at c. 15:00 on 28.10.99. SSC/Customer Services need to explain why this reference data was not available at the outlet from the point of installation." "A reference data change (from Pathway) is required to prevent users from navigating between Housekeeping and Revaluation while there are transactions on the session stack." "The reason that the value was added to line 5002 was that the update of the Cash Account mapping reference data for Product 21 which added the new mappings for revaluation failed to update correctly at the office (known problem already being addressed at 300+ outlets), the system therefore added the value to the 'default' line which is line 5001." "The reference data issue identifed earlier in this call where mixed-mode transactions were able to be recorded, is being fixed by Peter Morgan with a release of reference data."
FUJ00040565	PinICL	24/03/2000	"Under normal circumstances when the user selects the 6p Stamp button on the Remittance out menu, the system actually records a sale against Product 21. In this particular case it looks as though the user may have made use of the PLU number to directly sell product 609 itself - a PLUImplulses Collection record for ObjectName 609 was delivered to the outlet on 23rd February 2000. Since product 609 is not normally sold under its own product number, transactions against the product number will fail to report correctly to the Cash Account (there is no CA Mapping provided to report the decrease in stock to Tables 5b and 5), causing Receipts to not equal Payments on these reports." "The solution to this issue would appear to be for POCL to delete the PLUImpulse records from their reference data for those products which are not genuine 'Customer Service' products."
FUJ00065150	PEAK	28/07/2000	"I know what caused this problem. It was because reference data was not sent to the outlets concerning P&A products--The cash settlement was mapped to the CA, but the corresponding transaction was not." "This difference in the receipt and Payment totals was caused by the fact that non-core reference data was not delivered to this office in time. The reference data was for OBCS products 177 to 185. As this reference data included primary mappings for these products these products could not be mapped to the cash account at stock unit rollover." "All the offending transactions took place 21/7/00-- when there was not reference data at the outlets. The correct reference data was delivered for business on 22/7/00."
FUJ00066141	PEAK	11/08/2000	"The original MiECCO unpaid cheque is in mode RISD. This is not a defined mode for EPOSS and the Cash Account mappings for product 5 do not have a place defined for RISD and hence the action is undefined; but (and I will confirm this later) probably use SC serve customer as default which maps it to stock. If it had been mapped as a ROOP instead then the cash account would have balanced." "One way of preventing this problem in the future would be for POCL to provide a sensible RISD mapping for product 5 mapping it on the receipts side of the cash account (rather than it being treated as server customer which puts it on the payments side causing the misbalance)."

EXPG0000001

13.1.8 I surveyed the PP population for any Product at Fault value where Reference Data was indicated. I identified the 1,863 PPs in the chart below, whose legend itemizes the Product at Fault values. Reference data problems began manifesting in 1998 and were prevalent during the national rollout period. Interestingly, a Product at Fault value of "POCL Reference Data" seems to appear in February 2000 and from that point forward occupies a significant portion of the chart. Prior to this period, more generic descriptions are used.

Figure 13.1 Monthly volumes of PPs



EXPG0000001

14. The Horizon IT System Helpdesk was often the root of SLA issues with POCL

14.1.1 The HSH was responsible for frontline support to users of the Horizon IT System. Contractually, ICL Pathway's SLA included items regarding the HSH, such as time to answer a call and carrying through with a call (not abandoning it). The ICL Monthly Report discussed the failings of the HSH, in regard to SLA requirements, for a significant amount of the review period. Concerns were first raised in September 1998 and carried through the national rollout. The same issues that triggered SLA concerns also "dented" confidence from POCL.

14.1.2 In May 2000, ICL Pathway declared an "own goal" based on HSH performance. The management team was replaced, and improvements were noted in June 2000.

14.1.3 The following table contains verbatim extracts from the monthly reports (MRs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

Table 14.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058176	Pathway Monthly Report - September 1998	September-98	The pressure on HSH to improve upon the 5 and 10 minute call answering SLAs has been intensified. The dip in July's performance has been rectified but both SLAs remain well below Minimum Acceptable Level.
FUJ00058183	ICL Pathway Monthly Report - June 1999	June-99	The present performance of HSH gives cause for concern in 3 areas: Achievement of Service Levels. Management Intervention. Openness when dealing with ICL Pathway Service Management.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	The SLAs being monitored are as follows: • Calls answered within 20 seconds. Measures for the Cash Account Period (Wednesday/Thursday) have been revised as follows: • Availability of trained staff to answer a Postmasters query. • 100% of calls answered by a person trained in using the cash account scripts. • No more than 5% of calls must cause a ring-back to the Postmaster due to the first level resource exhausting their knowledge and a higher level resource not being available. • Where a ring-back is required as described above it must occur within 20 Minutes.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	The Corporate Red Alert with OSD for poor SLA performance has been re-graded to Divisional Alert. HSH Service improvements. are still necessary in the areas of call answering and call abandonment and second line support filtration rates.

FUJ00058190	ICL Pathway Monthly Report - February 2000	February-00	A number of the SLAs on the HSH are extremely demanding, being beyond the normal industry standards. Tony H prepared a document proposing ways in which the service targets could be more easily Met, and investigated the contractual issues (Pathway to POCL, and Pathway to OSD). The document sets out 18 recommendations for action. Legal opinion is that although repeated failure to meet the SLAs concerned will nor give grounds for termination by POCL, it can hold our feet to the fire and suspend the rollout.
FUJ00058191	ICL Pathway Monthly Report - May 2000	May-00	POCL are shaping up to hit us on SLAs and Training. This was predicted for about now on the basis that, in the case of help desk metrics, we will have failed to meet all criteria for three successive quarters. That gives POCL the right to terminate the contract. We don't expect them to want to do that, but they can be expected to use the 'default' as a lever to force us to do better and make concessions.
FUJ00058191	ICL Pathway Monthly Report - May 2000	May-00	Weekly service performance is a key issue and recent problems with Help Desk service have significantly dented PO confidence. March and April were disastrous months on OSD service levels, driven by major resource issues (staffing levels) on the Horizon System Help Desk. Nearly all of the SLA's have been missed and significant penalties incurred. This is an own goal and should have been prevented. As reported last month, it is on Red Alert and OSD have reacted decisively and professionally to implement corrective action. Their management has been changed and Over 40 new help desk staff recruited along with a plan to recruit at a pace to handle the weekly increase in Post Offices and to cover for attrition. This has driven a dramatic improvement- and this week we are now back on target with 7 of the 10 key SLA's. The sensitivity of this situation cannot be overstated. It is highly visible and has brought firm reaction from PO Directors. It will take week on week, month on month good performance to recover our position.
FUJ00058192	ICL Pathway Monthly Report - June 2000	June-00	As previously reported, weekly service performance is a key issue and recent problems with Help Desk service have significantly dented PO confidence. However, I am pleased to report that OSD service levels are now much improved and we are getting back towards a reasonable SLA performance. The poor service in Q1 has cost ICLI- over £200K in penalties. It is intended to remove the Red Alert within the next three weeks once we have demonstrated consistent performance. It will take week on week, month on month good performance to fully recover the confidence of PO Directors.

14.1.4 Based on my understanding of the content of the PPs, I do not believe any of their content would be relevant to ICL Pathway's helpdesk concerns, and therefore I did not undertake searches of the documents for this theme.

EXPG0000001

15. The Horizon SMC was frequently cited for not properly filtering calls to the SSC. This lack of filtering delayed the SSC from resolving technical problems

15.1.1 ICL Pathway had an error escalation process. Users that experienced problems with LHITS were first directed to the HSH who logged the incident via PowerHelp. The SMC was responsible for determining if the problem required the SSC to become involved. If the issue was deemed necessary for escalation to the SSC it would then be recorded in the PinICL system.

15.1.2 The SSC was responsible for the maintenance of PinICLs.

15.1.3 The ICL Monthly Reports discuss the topic of the SMC not properly filtering calls. Consequently, the SSC was responsible for resolving an excess of PinICLs. The purpose of the SSC was to resolve technical issues with the LHITS. The fact that the SMC did not filter lower-level issues meant that the SSC was burdened with performing this triage. This extra work delayed the SSC from addressing the true technical issues within the Horizon IT System.

15.1.4 This problem persisted throughout the national rollout.

15.1.5 The following tables contain verbatim extracts from the monthly reports (MRs) and PinICLs and PEAKs (PPs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

Table 15.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058158	ICL Pathway Monthly Report – August 1998	August-98	The Horizon Systems Helpdesk performance deteriorated over the past two months and is being monitored very closely. A number of corrective actions are planned. This is part of a broader scrutiny of HSH and SMC operation being undertaken in readiness for full NR2 service.
FUJ00058168	ICL Pathway Monthly Report – January 1999	January-99	Actions to address underlying concerns with SMC performance have been identified and staff secondments are being arranged to aid skills transfer.
FUJ00058181	ICL Pathway Monthly Report – April 1999	April-99	The continuing failure of the SMC to adequately filter calls to SSC was escalated to Kevin Dowling (OSD Service Director). Kevin has promised an improvement plan by mid May.
FUJ00058182	ICL Pathway Monthly Report – May 1999	May-99	SMC performance continues to be less than satisfactory. A service improvement plan has been produced and will be managed by Kevin Dowling. Further secondments from the SMC to the SSC have been identified.

EXPG0000001

URN	Title	Date	Extracted Text
FUJ00058186	ICL Pathway Monthly Report – September 1999	September-99	The workload pressure on SSC has intensified through September with high volumes of calls being received. SSC are struggling to contain the workload: the WIP is in three figures. Also a number of additional tasks were undertaken to support the resolution of Acceptance Incidents. SSC had significant involvement in the management and resolution activities for the Correspondence Server index corruption problems that occurred over the last week of the month. A major factor in this is the overall performance of the SMC. A pre-scan function is being put in place to ensure that calls get the appropriate level of attention, but a tougher stance will be taken on "invalid" calls passed across by SMC. A RAR has been raised to recruit additional resource.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	The SSC remains under enormous workload pressure. The number of calls received in October was 1123 (compared with 815 in September and 536 in August). Poor filtration at SMC is a major contributor to this problem and that aspect is part of the current OSD Red Alert. A number of management and working level meetings have been held with OSD and although a plan to address the SMC failings is expected imminently from OSD its appearance seems slow. As a temporary measure overtime arrangements are being put in place within the SSC to help handle the extra load.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	Filtration at SMC remains a concern although the implementation of a higher level of checking prior to calls being escalated to SSC has certainly helped to reduce the flow. A short secondment of one of the key technical staff from the SMC to the SSC is also a welcome move. A comprehensive plan for how OSD expect to be able to improve the overall performance of the SMC is still awaited.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	The Corporate Red Alert with OSD for poor SLA performance has been re-graded to Divisional Alert. HSH Service improvements. are still necessary in the areas of call answering and call abandonment and second line support filtration rates.

Table 15.2 SSC management information

URN	Document Title	Calls raised through SSC	Calls closed through SSC	Calls closed by SSC as Known Error/Duplicate Call/No Fault in Product
FUJ00058183	ICL Pathway Monthly Report - June 1999	410	498	158
FUJ00058184	ICL Pathway Monthly Report - July 1999	496	427	124
FUJ00058185	ICL Pathway Monthly Report - August 1999	536	529	159
FUJ00058186	ICL Pathway Monthly Report - September 1999	815	737	***N/A***
FUJ00058187	ICL Pathway Monthly Report - October 1999	1123	1070	639

EXPG0000001

URN	Document Title	Calls raised through SSC	Calls closed through SSC	Calls closed by SSC as Known Error/Duplicate Call/No Fault in Product
FUJ00058188	ICL Pathway Monthly Report - November 1999	865	1068	510
FUJ00058190	ICL Pathway Monthly Report - February 2000	1555	1677	536
FUJ00058191	ICL Pathway Monthly Report - May 2000	1595	1668	552
FUJ00058192	ICL Pathway Monthly Report - June 2000	1531	1662	1067
FUJ00058193	ICL Pathway Monthly Report - July 2000	1293	1662	1040
FUJ00058194	ICL Pathway Monthly Report - August 2000	721	853	413
FUJ00058195	ICL Pathway Monthly Report - October 2000	987	1136	532
FUJ00058196	ICL Pathway Monthly Report- November 2000	1244	1411	684
FUJ00058197	ICL Pathway Monthly Report - December 2000	812	884	383

15.1.6 Commentary about misdirected calls from the SMC to the SSC are also captured in the PPs.

Table 15.3 Verbatim extracts from Monthly Reports

URN	Ticket Source	Date	Extracted Text
FUJ00027211	PinICL	27/05/1999	"The previous text in this call states - Andrew at ITSA suggested we return this call so that PO info can be added and the correct referance no can be supplyed. WHY WAS THE CALL NOT RETURNED TO ITSA ? Contacted Emma at ITSA. The ITSA ref is incorrect. Suggest we keep call open until ITSA chase HSH - THEN WHAT ? ITSA have suggested that the call be retunred to them in order for them to add information which was necessary for the diagnosis - **why was the call sent to the SSC** ?"
FUJ00027003	PinICL	17/06/1999	"This problem has already been investigated. It says in the KEL: "This will be fixed in LT2 (see pc24986)." The advice for the PM is also included in the KEL as has already been noted: "The figures for the following week will not be affected." **I am unsure why this was sent to the SSC**."
FUJ00030450	PinICL	13/10/1999	"**I do not understand why this call has been sent to SSC**. There was a comms problem, this was apparently sorted out by CFM. SMC has confirmed that the health checks on all counters were OK. What is the problem now?"
FUJ00032423	PinICL	11/11/1999	**"Why has this call been sent to SSC?"**
FUJ00043195	PinICL	19/05/2000	"**SMC1 Information: sent to SSC in error** - please send back over OTI when it appears - Thanks.
FUJ00062974	PEAK	12/07/2000	"Called PM who says user is no longer locked, therefore no action is necessary. I assume user logged back onto original counter where report was processed as per kel, Richard10.htm PM happy to close call. (...**Why was call sent to SSC**, and given that call was sent, why did it take 6 days???)"

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URN	Ticket Source	Date	Extracted Text
FUJ00066464	PEAK	25/08/2000	"Unable to ping this SCO. **Call should not have been sent to SSC**, according to the new non-polling procedures the next stage is to send an engineer to site."
FUJ00068089	PEAK	25/09/2000	"PRESCAN:Before the call was sent to us, it was updated as follows: -25/09/00 11:42 GB082641 Information: This error relates to KEL Reference: PCarroll1535R.htm , which states that the Patch should be regressed and re-applied. The counter should NOT be swapped. This is not a CI4 site. **Why has the call been sent to SSC? I thought that SMC was tasked with the patching process.**"
FUJ00073008	PEAK	13/12/2000	"From the call log it seems that the transactions in question had been done on counter 4. The update on 11/12 at 15:42 says that counter 4 was not comunicating. This would cause the transactions that had been done on counter 4 to be 'missing' on the reports done on any of the other counters. The call text also says that the rmn has recified the situation. **Therefore I am not sure why this call has been sent to SSC**."

EXPG0000001

16. The SSC was overwhelmed with PPs but was earnest in its effort to perform its duties

16.1.1 The SSC was responsible for the resolution of PPs. The SSC also maintained the KELs. The SSC was tasked with resolving PPs to the best of its ability and then communicating resolutions to the SMC.

16.1.2 The ICL Monthly Reports often call attention to the workload of the SSC.

16.1.3 Over the course of reviewing the PPs provided to me for this Report, I recognized the complexity of some of the issues the SSC was responsible for resolving. Throughout the course of my review, most of the entries I read appeared to be written by SSC staff and demonstrated to me that they were earnest in their efforts to resolve these issues.

16.1.4 The following table contains verbatim extracts from the monthly reports (MRs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

Table 16.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058166	Pathway Monthly Report - December 1997	December-97	In December, 213 PinICLs were raised. 103 PinICLs were closed by the SSC and 74 transferred to Development for resolution. This must be seen as a serious distraction to the development teams who, are focused on Release 2.
FUJ00058177	Pathway Monthly Report - October 1998	October-98	Model Office is providing a very high workload for the SSC and I am concerned that NR2 software quality should show significant improvement for MOT in order that we can achieve Release Authorisation.
FUJ00058182	ICL Pathway Monthly Report - May 1999	May-99	SSC staff have been under considerable workload pressure from the Data Centre Migration weekend onwards. They have been called out most nights to deal with system problems although most of these have been repeat problems rather than lots of new issues. The PinICL stack has regularly exceeded 100 calls.

EXPG0000001

URN	Title	Date	Extracted Text
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	The workload pressure on SSC has intensified through September with high volumes of calls being received. SSC are struggling to contain the workload: the WIP is in three figures. Also a number of additional tasks were undertaken to support the resolution of Acceptance Incidents. SSC had significant involvement in the management and resolution activities for the Correspondence Server index corruption problems that occurred over the last week-of the month. A major factor in this is the overall performance of the SMC. A pre-scan function is being put in place to ensure that calls get the appropriate level of attention, but a tougher stance will be taken on "invalid" calls passed across by SMC. A RAR has been raised to recruit additional resource.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	The workload pressure on SSC has intensified through September with high volumes of calls being received. SSC are struggling to contain the workload: the WIP is in three figures. A major factor in this is the overall performance of the SMC.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	The SSC remains under enormous workload pressure. The number of calls received in October was 1123 (compared with 815 in September and 536 in August). Poor filtration at SMC is a major contributor to this problem and that aspect is part of the current OSD Red Alert. A number of management and working level meetings have been held with OSD and although a plan to address the SMC failings is expected imminently from OSD its appearance seems slow. As a temporary measure overtime arrangements are being put in place within the SSC to help handle the extra load.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	The number of special Acceptance Incident related reports that the SSC has had to produce has reduced somewhat this month. However, the administrative overhead of handling calls raised, as a result of the Non-polled Offices Report remained significant.

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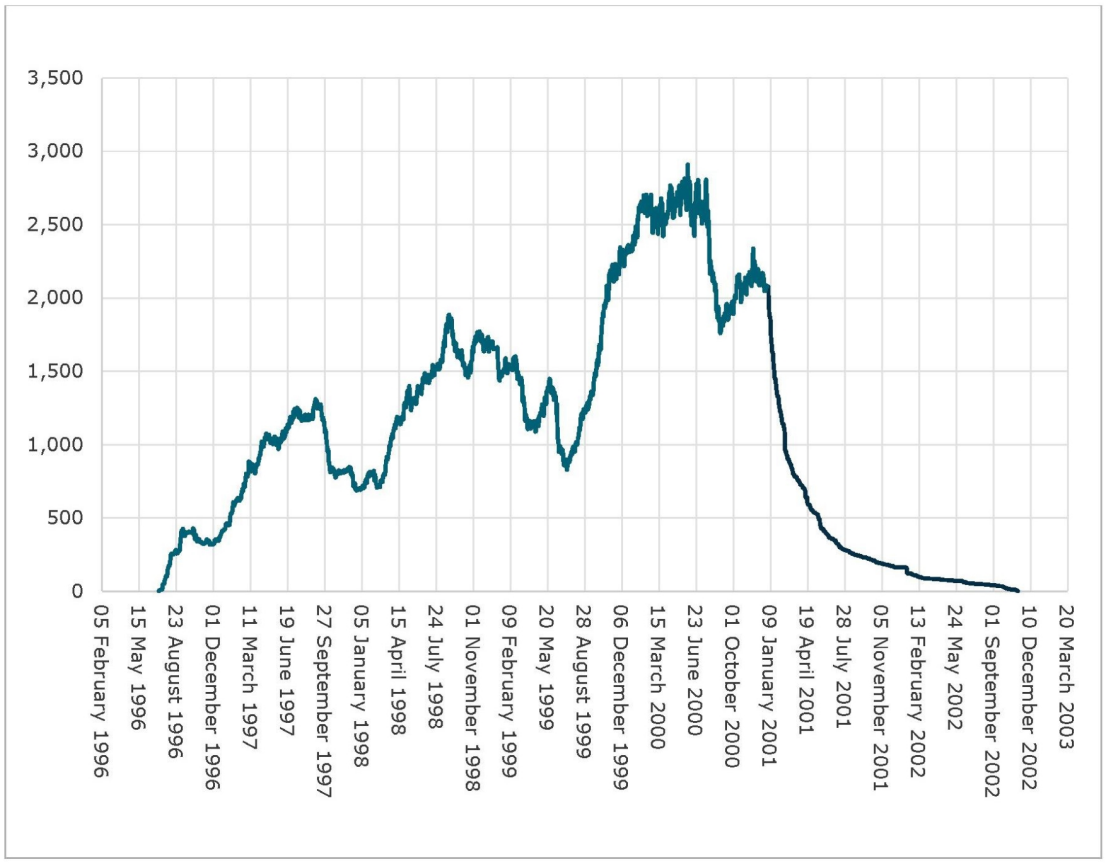
URN	Title	Date	Extracted Text
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	There was some slight relief in the workload pressure on the SSC, particularly over the last ten days of the month. The number of calls received in November was 865 compared with 1123 in October. SMC filtration remains a concern although implementation of a higher level of checking, prior to calls being escalated to SSC, has certainly helped to reduce the flow. SSC successfully achieved the clearance of the outstanding Counter index corruptions at some 300 Outlets a commendable achievement in co-operation with design and development.
FUJ00058194	ICL Pathway Monthly Report - August 2000	August-00	The SSC have been heavily involved in dealing with Correspondence Server related issues, the stability of which has been causing concern. The Wigan Bootserver is now more stable; following a significant reduction by Energis of incorrectly routed "rogue" calls from live Outlets.
FUJ00058196	ICL Pathway Monthly Report-November 2000	November-00	There have been a number of issues on a small proportion of Counters as they migrate from CI_3 to CI_4, which has resulted in a high urgent workload for SSC staff.

16.1.5 The following figure's line shows the open balance of PPs by day. There are maximums in the autumn of 1997 and the autumn of 1998. There is a noticeable downward trend that produces a minimum in July 1999, followed by a steep rise, cresting in May 2000. This is followed by a moderate reduction through September 2000. The remainder of the data shows another rise until the end of 2000, which is where the PP production ends. The remainder of the figure's line shows how this PP balance is fully closed in November 2002. For the review period, the average open PP balance was almost 1,400. In my opinion, this is a high amount.

EXPG0000001

Figure 16.1 Open PP Balance By Day



16.1.6 The persistent high balance was a combination of new PPs being raised and the amount of time it took to resolve existing PPs. The following figure shows a distribution of the amount of time to fully close PPs. On average, 43 days were required to close a PP, with almost 3,000 PPs requiring more than 180 days to resolve.

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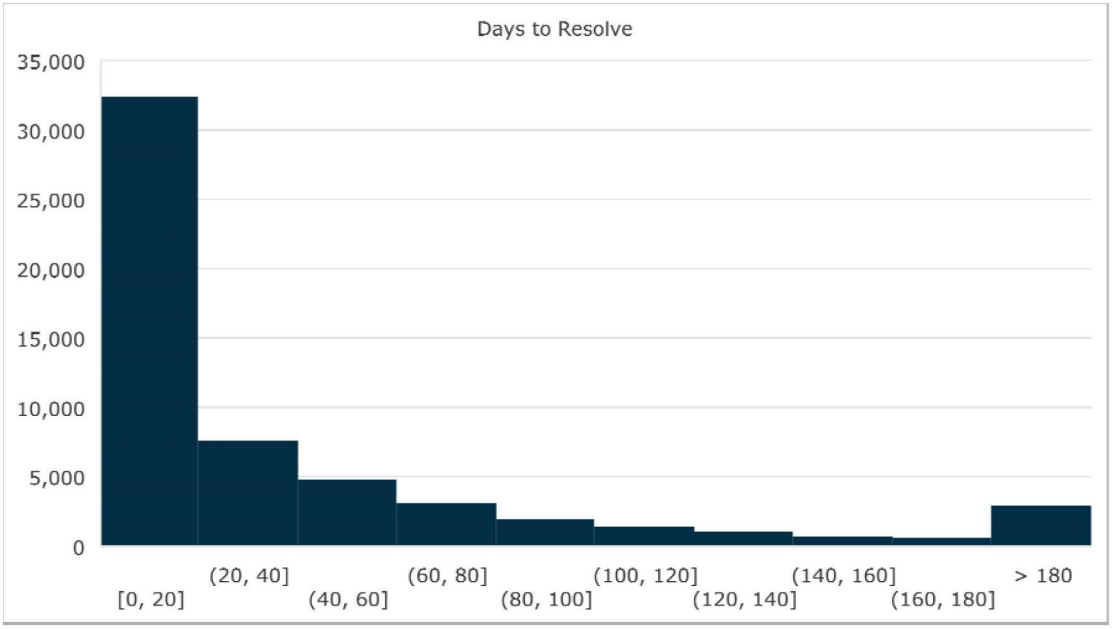
Figure 16.2 Days to resolve PPs



16.1.7 I identified 48 individuals that were involved in the resolution of at least 1,000 PPs. Between these 48 individuals, 50,983 PPs were resolved. This represents 90.25% of all PPs in my review set.

Table 16.2 Users involved in PPs

PP Count	User Name
17,357	Barbara Longley
11,377	Lionel Higman
7,382	Patricia McLoughlin
4,412	Kevin Barrett
3,894	Richard Coleman
3,189	John Simpkins
3,027	Diane Rowe
2,988	Les Ong
2,909	Nikki O'Sullivan
2,584	Paul Steed
2,535	John Moran
2,533	Eric Jennings
2,506	Shehbaz Ziauddin
2,480	Mike Holms-Sharp
2,372	Mike Croshaw
2,250	John McLean
2,168	Pat Carroll
2,133	Steve Warwick

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PP Count	User Name
2,045	Catherine Obeng
2,023	Glynne Rogers
1,822	Peter Morgan
1,801	Nam Pandher
1,789	Steve Parker
1,756	John Budworth
1,751	Mark Wright
1,743	Angela Shaw
1,721	Tim Canniffe
1,701	Walter Wright
1,652	Dave Colclough
1,623	Deirdre Conniss
1,610	Ajay Nehra
1,563	Rakesh Patel
1,403	Ken Wood
1,400	Kevin McKeown
1,362	Jim Anscomb
1,351	Doug Jones
1,299	Cliff Sawdy
1,149	Dave Royle
1,145	Garrett Simpson
1,126	Denise Jackson
1,121	Asim Mushtaq
1,108	Phil Hemingway
1,026	Miho Fujii
1,020	Anna Croft
1,020	Dao Ly
1,019	Peter Jobson
1,016	Bill Hillyard
1,000	Michael Howell

EXPG0000001

17. Acceptance Incidents were a gating issue to the financial success of ICL Pathway. A persisting issue related to AI 376.

17.1.1 Acceptance was the term used by ICL Pathway and POCL to indicate the Horizon IT System operated in a manner that was acceptable by POCL. Acceptance Incidents ("**AIs**") were identified shortcomings of the Horizon IT System that required resolution prior to Acceptance being confirmed by POCL.

17.1.2 Acceptance was financially significant to ICL Pathway. ICL Pathway was paid once Acceptance was achieved. It received a high degree of attention by ICL Pathway.

17.1.3 The Monthly Reports describe existing AIs, and ICL Pathway's efforts resolve them. AI 376 (Accounting Integrity) caught my attention. Accounting integrity is a fundamental requirement of the LHITS. AI 376 was one of the final AIs to be closed.

17.1.4 24 September 1999 marked the day Acceptance was granted, triggering a £68m invoice delivered to POCL on 27 September 1999 to be paid in 30 days.

17.1.5 In November 1999, at least one full month and possibly two full months after acceptance was granted, ICL Pathway reported that "POCL have come round to the understanding that dealing with residual AI 376 concerns in the short to medium term will rely on processes and tools but no new software features as such."

17.1.6 In January 2000, ICL Pathway states "If pressed POCL would agree that Als 342, 372, 376, 378, 218, 391 are Closed / incapable of further update. Their Acceptance Manager is leaving the project at the end of February." Further in the same report it states "The outturn on AI376 was 0.06% Cash Account Discrepancies, exactly an order of magnitude better than the target. Under this activity John P made significant contributions to the Third Supplemental agreement, specified the committed CS Repair Facility, aligned the operating agreement on Reconciliation to support the contract, and sorted out the necessary PinICLs to clear."

17.1.7 In February 2000, ICL Pathway declared that the POCL Acceptance Manager has left the project and transferred the residual actions to "business-as-usual".

17.1.8 It is unclear to me what exactly took place to close AI 376. The reading of these entries leaves much room for interpretation.

17.1.9 Regardless, the fact that accounting integrity was a persistent issue in the national rollout of the LHITS cannot have been the intention of the sponsors nor the goal of ICL Pathway.

17.1.10 The following tables contain verbatim extracts from the monthly reports (MRs) and PinICLs and PEAKs (PPs) which I relied on in identifying this theme. I have intentionally not made any corrections to grammar or spelling. Where I deemed it helpful, I have highlighted certain sections in **bold**. The views expressed in these extracts are that of the authors, being principally ICL Pathway, but in some cases ICL Pathway and POCL.

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Table 17.1 Verbatim extracts from Monthly Reports

URN	Title	Date	Extracted Text
FUJ00058168	Pathway Monthly Report -January 1999	January-99	Management has bought into the need to find new ways to reduce costs. The immediate problem is that, in the short term, the pressures to achieve Acceptance and the required rate of roll out continue to drive demands up not down. The challenge right now is to hold to the current net spend forecast (after revenue recoveries) and at the same time hold to Programme milestones: Cost Down measures will be required to achieve this.
FUJ00058182	ICL Pathway Monthly Report - May 1999	May-99	CASH FLOW VERY SENSITIVE TO DELAY • Acceptance = £68m • 1800 post offices (300 +1500) = £90m • 2 month slip = > £10m - £100m impact in 1999/2000 • N.B. Peak cash goes from £370m to £470m • vs. ICL Treasury assumption of £420m
FUJ00058183	ICL Pathway Monthly Report - June 1999	June-99	We are determined to meet the cash payment points which follow Acceptance (£68m) and successful Roll-out to the first 1,800 Post Offices (£90m) which are vital payment points in 1999 both for ICL/Fujitsu funding and of course for the credibility of the new programme moving forward. All staff are focused on the criticality of meeting these milestones.
FUJ00058183	ICL Pathway Monthly Report - June 1999	June-99	Banking arrangements remain to be restructured satisfactorily bridging finance from Fujitsu may be required to provide the short term cash required pre Acceptance and possibly pre the first £90m progress payment. Stringent cash controls are in place. The subcontractor termination negotiations have taken account of the need to defer cash payments.
FUJ00058184	ICL Pathway Monthly Report - July 1999	July-99	The number of Acceptance Incidents POCL raised to high (plus medium tending to high) presents a real difficulty in completing the Acceptance Process to time (i.e. a decision on 18th August). The whole team are re-doubling their efforts to achieve this.
FUJ00058184	ICL Pathway Monthly Report - July 1999	July-99	Problems still exist in Live Trial operation where over 50 "printer hang" problems are being raised weekly and System "freezes" are occurring. To clear these Postmasters are rebooting, sometimes without first contacting the HSH, which impacts POCL's service to its customer. This is now the most critical issue and has resulted in the Acceptance Incident relating to system stability being raised to high (AI298). Analysis of incidents, both reported and not reported, is in hand along with investigation of potential root causes.
FUJ00058184	ICL Pathway Monthly Report - July 1999	July-99	We now have to work with no overdraft facilities at all, and cash flows up to the receipt of the first acceptance payment and in the voids between subsequent stage payments will be tightly rationed and monitored.

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URN	Title	Date	Extracted Text
FUJ00058185	ICL Pathway Monthly Report - August 1999	August-99	The speed of turnaround required for acceptance incidents is straining the Release Management processes to the limit, however the software distribution mechanism continues to operate well with distributions successfully committing to approximately 780 (out of 820) counters on the first pass.
FUJ00058185	ICL Pathway Monthly Report - August 1999	August-99	211: Receipts and Payments not equal in the double entry. Although this AI was cleared there has been some regression and not all of the new incidents are yet fixed.
FUJ00058185	ICL Pathway Monthly Report - August 1999	August-99	As anticipated last month, the problems experienced by the live trial outlets with the Epson back office printer 'hanging' during the production of the weekly cash account became a serious acceptance incident which is proving extremely difficult to resolve.
FUJ00058185	ICL Pathway Monthly Report - August 1999	August-99	OpCo now has to live without an overdraft facility, and until the acceptance payment is received from POCL, there will be partial reliance on ICL Group to settle intercompany liabilities on our behalf.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	SMC's performance in catching up on delivering outstanding fixes to newly-installed counters and to replacement counters is unsatisfactory and this is likely to cause problems during the Acceptance monitoring period. Proposals are therefore being worked on to install all fixes to such counters at the time of their installation/replacement.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	The Acceptance Resolution Timetable contains some 300 activities and events that are pacing items for the restart of National Roll-out on 24 January 2000. Amongst these are performance measures relating to Acceptance Incident 298 (System Stability), 376 (Accounting Integrity) and 408 (Help Desk) which will be monitored during October and the first half of November and reviewed to see if the criteria have been achieved on 24 November.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	**Acceptance was achieved on 24 September and the resultant invoice for £68m delivered on 27 September for payment within 30 days.**
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	Acceptance was achieved on 24 September triggering the 1999 element of National Roll-out. The Roll-out ramp up has progressed better than expected given the potential impact of compressed time for the processes and the start stop nature of decision making resulting from the difficulties experienced during the Acceptance Process. As at the 10 October 978 offices had been installed and migrated in total with 199 installations being completed the previous week.

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URN	Title	Date	Extracted Text
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	The expansion of the live estate has meant that the number of outlets not returning transaction details to TP, due to ISDN problems or simply that the terminal is powered down, has increased. This is becoming a job in itself to track and resolve. We are obliged under the rectification plan for AI376 to raise an incident on each office that hasn't polled. This is time consuming and probably pointless for those offices only down for 24 hours. Richard Brunskill is due to talk to the customer (with the Requirements team) to try and find a more efficient way of tackling this problem.
FUJ00058186	ICL Pathway Monthly Report - September 1999	September-99	A Second Supplemental Agreement resulted from Acceptance and introduces an optional 1600 milestone for National Roll-out prior to Christmas. This yields a £80m payment, with £10m held over to the next milestone (May), but we would still get the full £90m in December if we were to achieve 1800. In addition this Agreement introduced an Acceptance Resolution Timetable into the contract.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	298: (Tony H and Dave H) The four week observation period will start on 21/10. (CCN555 has been raised to make the observation Cash Account Week integral.) All fixes are available and a tracking document to record progress set up. On the cut off date of 1/10 the test sample was established as 782 eligible rolled-out outlets representing 1777 eligible counters. The target is a figure of merit of four units per counter per year, a unit being an authorised reboot or various numbers of workaround. The CAP 28 figure result was around five units on a very good trend. For CAP29 the result rose to around seven units because of 376-type issues (see above), new offices not being brought up to current software revision levels immediately before first use and some offices not yet equipped with fixes for printer incidents.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	The monitoring of the three big Acceptance Incidents (AI298, A1376 and AI408) have all run into difficulties in varying degrees with the common theme being the potentially unsafe state of operation of Reference Data within the end-to- end model. As mentioned already the end-to-end workshop is the critical process for finding an acceptable resolution to this complex area.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	It is essential that the estate software revision levels are complete and operations stabilised, such that 376 and 218-type incidents are minimised.

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URN	Title	Date	Extracted Text
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	376: (John P) This area is of particular concern. The six-week observation period has started. The work is in three parts: fixes yielding a target stability figure of merit of a maximum 0.6% of Cash Accounts in error (approximately 42); additional reconciliation facilities; and new Operational Business Change (OBC) procedures. Although all fixes are implemented, problems arising from Pathway Reference Data handling were encountered and are proving difficult to solve without letting through Cash Accounts in error. The definition work for additional reconciliation is on plan and design is in progress. All the OBC procedure work is completed. The POCL Acceptance Test Manager has left the project and several new people are now involved and are not yet familiarised.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	Too many reference data errors are being distributed to the counter. End to end design reviews are being held to establish what action can be taken swiftly to prevent these occurring in the future. These are having a major impact on Acceptance Incident 376. In addition, the performance of the data distribution process is inadequate and must be improved before roll-out commences in late January 2000.
FUJ00058187	ICL Pathway Monthly Report - October 1999	October-99	Managing the Acceptance Resolution Plan during the balance of 1999 will be critical to our clean start in year 2000. Within this the Reference Data end-to-end concerns are the most important and do require a positive joint attitude from POCL as well as careful planning and defensive mechanisms from within ICL Pathway.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	The focus of work has remained the resolution of residual Acceptance incident hurdles such that both POCL and Pathway are happy for roll out to re-commence on 24th January. POCL have confirmed that that is still their intention subject to being satisfied as to progress on AI 376 in particular.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	The most serious issue on acceptance resolution concerns AI376 and the integrity of accounting data being managed from the end to end basis with Horizon. This in turn requires more disciplined and strict accounting integrity controls, some of which can be achieved through the EPOSS reconciliation software and others through process and independent tools and the balance through stronger end to end control of the reference data processes. The plan to handle the main problem area and indeed the lower level actions across a range of AI issues is well constructed, being followed and is capable of achievement. However, there is little contingency in the plan with respect to timescale and we do need a formal agreement with POCL, particularly in the case of reference data procedures which have been defined during workshops. These need to be drawn together into an agreed Change Control document, probably a further Supplemental Agreement.

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URN	Title	Date	Extracted Text
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	AI408 for Help Desk procedures is a second but important acceptance resolution plan, where we now have a new set of measures for calls answered within 20 seconds, cash account response times and cash account script compliance. This is largely a subset of the original SLA measures and will be reviewed on a weekly basis between the 3rd December to mid January.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	As part of the AI376 rectification plan, MSU presented to POCL TIP the incident management process for business critical incidents raised by POCL or via the newly developed EPOSS exception report set. Initial comments received from TIP were favourable and they applauded the tighter management controls that ICL Pathway is introducing. Non-polled offices are still creating a large number of incidents. MSU are identifying where there is a specific system problem preventing the Outlet from polling. However there is still the problem where MSU suspect that Outlets are turning the Counter equipment off - evident from Mondays reports which contain 3 to 4 times the number of non-polled Outlets than other days within the week.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	As part of the A1376 rectification plan, MSU presented to POCL TIP the incident management process for business critical incidents. Initial comments from TIP were favourable and they applauded the tighter management controls that ICL Pathway is introducing.

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FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	ACCEPTANCE RESOLUTION TIMETABLE Progress against the 13 Acceptance Incidents, forming the core of the Acceptance Resolution Timetable, is reviewed below in Acceptance Resolution order: A Red Flag issue is that TIP has apparently not developed the manual input facility for low volume corrections. There is a short list of PinICLs that we must deal with to clear up the Acceptance Resolution Timetable and make it possible for POCL to approve clearance of individual elements. This will be circulated separately. A meeting to establish status and actions on 211, 342, 376 and 378 was held 7/12 with the POCL Acceptance Test Manager. 211: POCL commented to ICL Pathway on 1/12 that mismatches continued to occur for a number of reasons, that it required. Payments and Receipts always to be in sync and that the incident was not ready for closure. A more detailed description of POCL's intent was provided on 30/11, in effect asking for Payments and Receipts to be forced equal through some form of automated suspense account entry. The only current instances of Payments and Receipts being unequal are where the Horizon system has to inherit a manual or ECCO system that was unbalanced before migration. The issue was discussed on 2/12 in a full forum and POCL reconfirmed its position that such unbalanced migrations were preferable to making an automated suspense account transfer. Closure continues to be sought. 342: POCL commented to ICL Pathway on 1/12 that TIP references 986 and 995 had occurred and were awaiting analysis and rectification plans. In the case of reference 986 the office was on an extended CAP, which should have been known to POCL. Reference 995 was caused by the outlet having fewer counters installed than were previously scheduled and the system controls will not initiate polling until all counters have participated in a first end of day. In summary, there is no problem with ICL Pathway software. Closure continues to be sought. 390: The APS recovery software enhancement was distributed 29/11 and monitoring is now in progress as scheduled. 376: The POCL action to approve clearance of all incremental fixes installed by 14/9 from field evidence remains open. The Pathway procedures for manual input were presented to TIP/TP on 1/12 and material for the test of manual input has been prepared. However, POCL has not performed activity 376.371 "POCL Develop and Test manual input facility" and so this is now a Red Flag issue. Cycle 3 testing of the Additional EPOSS Reconciliation Testing started on 3/12 and should complete 10/12. Software distribution is scheduled for 17/12 about 10 days ahead of plan.

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The measurements will continue for the period 2/12 to 12/1 and will exclude items that would have been prevented by a range of additional Reference Data controls being introduced before the rollout.

378: Improved diagnostic/defensive code has been produced and will be distributed at the same time as the Additional Reconciliation. There are no instances yet trapped.

369: Further tests following the 'Pilot' scheme were on schedule to complete 8/12. POCL is producing a report, which it will review with DSS on 22/12, including an analysis of impounded OBCS books and logistics of re-supply. ICL Pathway understands that POCL will request DSS to close this incident.

There were 119 impounds in the first three weeks. ICL Pathway understands this is a slightly lower rate than during the first pilot and that analysis of books by PIRA shows the quality of the offending printed bar-codes to be still poor.

POCL commented to ICL Pathway on 1/12 that it required an update on Pathway's investigations into the problem of bar-code reading after a manual scales transaction. An update was provided at the Delivery Meeting of 24/11. A PinICL to resolve the issue of scanning after manual scales is in progress. A simple workaround is available. POCL also stated on 1/12 that Pathway had failed to produce statistics for the first two weeks of the four-week trial as agreed. In fact ICL Pathway had delivered the statistics POCL had asked for covering the first two weeks on 30/11. POCL has since asked for a daily level of analysis. The final two weeks totals will be available in a few days time - the daily OBCS transaction counts will also be provided.

John C provided POCL with a paper, which was well received, describing potential improvements to the OBCS scanner/bar-coding system.

372: A review of the distributions for Riposte 5.4.10 and EPOSS.3_20 rollup was conducted successfully. A final report on software distribution was provided 1/12.

298: The target was that there should be no more than 560 qualifying incidents between CAP31 and CAP34. In fact, there were 551.5 qualifying incidents, including a spike of Blue Screen incidents associated with a major switch failure within the Energis network. The weekly incidents since the end of the monitoring period have remained below the equivalent weekly level of 140 incidents per week (89.5 for CAP35, 114.5 for CAP36, 94 for CAP37).

The review of Revisions to the Testing & Integration Approach for Pathway Release C$R+ was completed successfully.

Closure continues to be sought.

218: All Pathway's actions were confirmed by POCL as completed, on 22/11. There are still some POCL actions not yet complete. The Performance Review Report has been produced.

There are two open Low incidents (364 & 365) linked to AI 218, relating to training mode and these may hamper closure of 218 itself.

CCN566a (Training Window) was approved 3/12.

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URN	Title	Date	Extracted Text
			POCL Post installation processes have been defined in Operational Performance Assessment, post installation questionnaires and training mode documents and processes produced. These will be implemented from the restart of rollout. 391: The Wigan exclusion zone fence structure is complete and the alarm system installation is forecast 10/12, two weeks or so earlier than plan. Installation of the card access controls for the Wigan back gate is now complete. Fire regulation issues have hampered installation of the new palisade fence at Bootle: this is forecast to complete 17/12. 314: The draft document (without Appendices) was completed ahead of schedule 22/11 and formally first reviewed on schedule 1/12. POCL wants to extend the reviews beyond the period planned. We have notified them that such extended reviews must be accommodated within the overall schedule. 408: A new set of measures for calls answered within 20 seconds, cash account first and second line responses, and cash account script compliance have been agreed for the period 3/12 to 13/1. 412: Closure continues to be sought.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	The "big three" Acceptance issues have been reduced to the "big two" with the clearance of 298 (Counter Stability). Actions have been developed for handling the issues on EPOSS Reconciliation and Reference Data sufficient to get us to the decision to restart the rollout on 24 January. There are new starts on Network Banking and Euro study.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	POCL decided not to stop roll out on 24th November or ten days later having explored with us the way forward on outstanding AI issues.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	**POCL have come round to the understanding that dealing with residual AI376 concerns in the short to medium term dual will rely on processes and tools but no new software features as such**.
FUJ00058188	ICL Pathway Monthly Report - November 1999	November-99	We now move on to the EPOSS reconciliation facility, which is required for AI376 and is one of the other critical criteria to be reached to enable National Rollout to restart. This is a much more complex facility than SIPI6 and needs to be satisfactorily and safely delivered to all the live post offices before the 28th December such that we can have two clear weeks of cash account running to ensure accuracy, stability and effectiveness. The plan is tight, manageable but not without risk.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	ACCEPTANCE LOOSE ENDS If pressed POCL would agree that AIs 342, 372, 376, 378, 218, 391 are Closed / incapable of further update. Their Acceptance Manager is leaving the project at the end of February. The formal timetable was updated, and we are down to minor points. The formal measurements for AIs 376, 408 and 298 continued until the end of CAP42 (12/1) and are now completed.

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URN	Title	Date	Extracted Text
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	NEW BUSINESS Now that Acceptance has been achieved and National Roll-out continues, there are signs that discussions will take place again on developing the service. The main forward move is a joint team meeting with the Post Office Network on 8th February. The principal aims of this event are to lay the ghosts of the past to rest and to develop a more positive approach to the future, specifically we want to establish an MD level Steering Board. We have been warned by PO to expect a difficult meeting.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	The outturn on AI376 was 0.06% Cash Account Discrepancies, exactly an order of magnitude better than the target. Under this activity John P made significant contributions to the Third Supplemental agreement, specified the committed CS Repair Facility, aligned the operating agreement on Reconciliation to support the contract, and sorted out the necessary PinICLs to clear.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	Discussions to change to the migration utilities and EPOSS for force-balancing under Al 211, Receipts not equal to Payments, have continued to the present-day and now require a paid study before the CRs can be raised.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	MSU has been working successfully with POCL to close down long outstanding PinICLs and issue final versions of all outstanding RED reports. The team is now getting ready for the introduction of new incident management procedures following the resolution of AI376.
FUJ00058189	ICL Pathway Monthly Report - January 2000	January-00	Since our last report, much of CS energy has been directed at addressing Acceptance and resolving problems with the Reference Data interface to PO.
FUJ00058190	ICL Pathway Monthly Report - February 2000	February-00	There is, of course, much sweep-up work on Acceptance and CSR and CSR+.
FUJ00058190	ICL Pathway Monthly Report - February 2000	February-00	ACCEPTANCE LOOSE ENDS **The POCL Acceptance Manager has now left the project and handed over the residual actions to business-as-usual.** We have dealt with queries from POCL concerning AI376. One formal letter has been responded to attempting to avoid the conclusion that we had not found EPOSS reconciliation incidents that we should have found or that we have not reported those we did find. In reality CS are greatly hampered in "spotting the incident" because the reports have not had fixes implemented and report large amounts of do-nothing information. We have attended the Release Management Forum and proposed some re-ordering of the fix backlog, but it will be at least until the first week of March before this situation improves. Also the requirements of security have caused reports to be retrieved manually rather than by automated mail and handling mistakes are inevitable. In addition some changes to the CS procedures on Reconciliation have been devised. The CP to provide CS with a TIP file Repair Facility is provisionally approved pending OTT impact. Extensions to it sought by CS will be the subject of separate CPs.

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17.1.11 Acceptance and the related acceptance incidents directly impacted ICL Pathway's financial goals. As such, SSC team members acknowledged the importance of PPs related to acceptance incidents.

Table 17.2 Verbatim extracts from PPs

URN	Ticket Source	Date	Extracted Text
FUJ00029789	PinICL	30/06/1999	"Call is currently under investigation by EDSC Team Member: Paul Sausman""TIP may have observed the session 72134 did not balance. Please arrange reconciliation then return for investigation into the underlying fault.""There have been several calls where we in SSC believe the call can be closed but TIP have refused to agree closure "because we are approaching a crucial date"."I have spoken to Ian Senior about closure but he refuses to agree as it is the subject of an acceptance incident."
FUJ00029832	PinICL	12/08/1999	"tip reconciliation missing transactions. live trial:miss match for fad code 181329 cash account week 19 for cash account line 2050 as follows: pathway derived =£36258.48, and tip derived = £34808.15: a difference of £1450.33. this indicates that a transaction totalling £1450.33 has not been passed to tip. this anomolly is repeated for the following offices - 261329 (line 2051£44360.00), 310329 (line 2050£3750.25), 402329 (line 2051 £6533.90) and office 209511 (line 2050 £40.00).""Incident under investigation""I have rasied RED 527 to infirm POCL that this is being invetigated. Please find out what the differences are and the reason fior the mismatch.""All missing transactions are related to AI 376. Can we please estanlish what the missing transactions were? What was the cause of the problem?"
FUJ00034968	PinICL	13/10/1999	"a comparison between values received within cash account files, and those derived from the transaction stream have id'd the following anamolies...""This has the potential to cause us to fail to meet the AI376 rectification plan and need urgent resolution.""This change is to reduce possible occurrence under Acceptance Incident 376."
FUJ00032246	PinICL	12/11/1999	"comparison values was made betwen the cash account file and those derived from the transaction stream has identified a problem""PLEASE NOTE THAT THIS COMES UNDER THE REMIT OF AI376. PLEASE INVESTIGATE ASAP. THIS MAY NEED TO GO TO STEVE WARWICK/PHIL HEMINGWAY (DEVELOPMENT) AFTERWARDS FOR FURTHER COMMENT.""This is the latest occurrence of this type of misbalance that requires investigating also as part of this system call. This occurred under pc33269.""This is an acceptance issue - please deal with appropriately.""Investigation of the issue at these two offices indicates that the problem lies with transactions recorded at each office against product 2289 in Recovery Mode. The Pathway system has (correctly) mapped these transactions to the AP line (0009) of the Cash Account but TIP have assumed that these transactions should map to the Local Products line (0059). This has been discussed and confirmed with Dave Salt of POCL TIP Project."
FUJ00034278	PinICL	15/11/1999	"THIS CALL NEEDS INVESTIGATION BY SSC, THEN IT MAY NEEDD TO GO TO STEVE WARWICK (DEVELOPMENT) FOR FURTHER INPUT. THIS IS COVERED BY AI376."" I can find no explanation for why TIP have calculated a value different to that reported on the Cash Account" Issue attempted to be closed but then: "This incident has NOT been resolved. Steve Warwick said they only explanation we could see was that the transactions were either not sent to TIP or were not accounted for correctly by them, and TIP's response is that they both received them and correctly accounted for them."
FUJ00034731	PinICL	15/11/1999	"comparison was made between the values recieved within the cash acc files and those derived from the trans stream""THIS CALL NEEDS INVESTIGATION BY SSC, THEN IT MAY NEEDD TO GO TO STEVE

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URN	Ticket Source	Date	Extracted Text
			WARWICK (DEVELOPMENT) FOR FURTHER INPUT. THIS IS COVERED BY AI376""I can find no explanation for why TIP have calculated a value different to that reported on the Cash Account.""The transactions recorded at the counter are entirely consistent with the Cash Account data recorded at the counter.""Can SSC please check to see whether the 2 transactions at FAD 183306, as mentioned in John's comments, were correctly sent to TIP.""As was explained to Nicole, David Salt (POCL-TIP) supplied the detailed info about the 2 transactions (08/11/1999 13:24:03 3.00 and 10/11/1999 14:28:40 441.40) which was used in John Pope's comment. Therefore, TIP has received the 2 transactions. Routing call back to Nicole Meredith.""POCL have now been updated on the above responses via RED 1355. Awaiting confirmation of closure." Ticket then closed with no clear resolution. "This incident has NOT been resolved. Steve Warwick said they only explanation we could see was that the transactions were either not sent to TIP or were not accounted for correctly by them, and TIP's response is that they both received them and correctly accounted for them."
FUJ00036136	PinICL	04/12/1999	"A misbalance to stock unit was caused by cheque settlement of P&A transactions. When balancing the stock unit, a warning message that receipts did not equal payments was not ouptut. The message did appear for the Trial Cash account.""It is acutely embarrassing that this has stopped working - that it should work is a specific contractual requirement."
FUJ00036863	PinICL	09/12/1999	"This call is related to AI376 and will require resolution before the recommencement of Rollout in January.""Acceptance Incident: AI0376H""Problem in a Scales transaction""The APS transactions are all occurring in recovery mode and the APS team has been asked to look into the problem."
FUJ00034224	PinICL	13/12/1999	"When I looked in the message store for £4.16 or -£4.16 I found under <Id:2> an instance of selling product260 and its settlement - looks innocuous.""The problem at outlet 8323 appears to have originated in CAP 35 and was caused by a transfer of stock between two stock units for a total value 0f £428.10. The transfer appears to have caused an imbalance in the office during CAP 35 with the total Payments being greater than total Receipts by £528.20 (twice the value of the transfer). This therefore meant that the Balance Due to Post Office (line 1085) on the CAP 35 Cash Account was £528.20 higher than it should have been, causing the Balance Brought Forward (line 0001) on the CAP 36 Cash Account to be similarly affected. The stock lines on table 5 of the CAP 35 and Cap 36 Cash Accounts were similarly affected.""The cause of the imbalance in CAP 35 at 008323 was that a 'Session Swap' was made between nodes 7 and 1 while the user was in the middle of the Transfer In.""The discrepancy of £4.16 at 322420 arose from the reversal of an APS transaction.""Acceptance Incident : AI0376H"

17.1.12 I surveyed the PPs for the pattern of "Acceptance Incident" followed by a numeric or "AI" followed by a numeric to identify PPs that dealt with Acceptance Incident issues. The following figure shows that 358 PPs were related to Acceptance Incidents and 223 PPs were specifically associated with AI 376 (accounting integrity). The pattern on this figure follows the narrative derived from the monthly reports.

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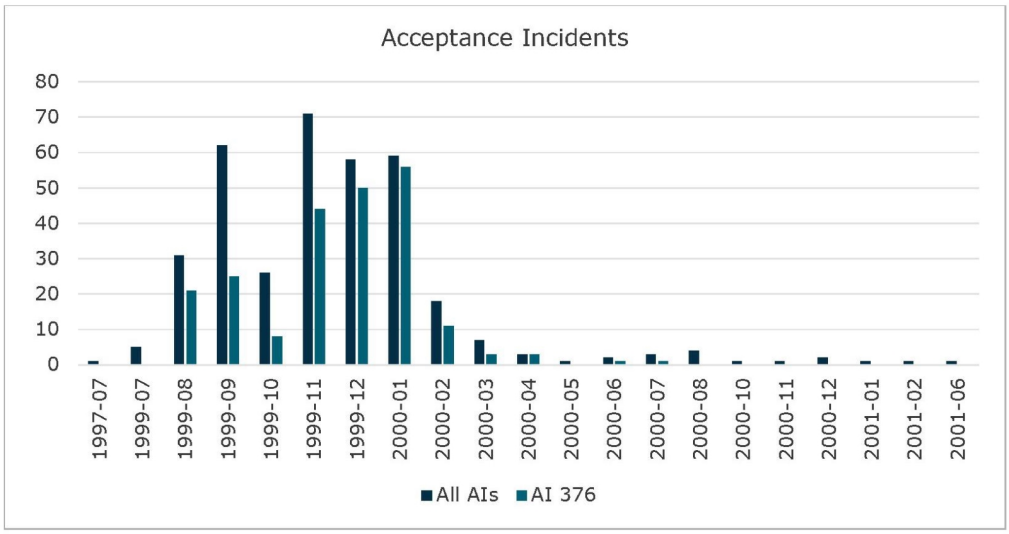
Figure 17.1 Monthly references to AIs in the PPS



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18. Payment and receipt imbalances were common symptoms with varied causes

18.1 Background

18.1.1 The accounting integrity issue highlighted in the previous section directed me to identify examples of accounting issues within the PPs. This section of the Report explores the selected examples of accounting issues as represented by payment and receipt imbalance issues.

18.1.2 Section 4.7 of this Report provided an overview of the balancing and roll-over process that was used in LHITS. I have reproduced the example from that section for ease of reference, but I have updated it to show how a payment and receipt imbalance could occur.

18.1.3 In this example a bug in the system causes the brought forward balance to be incorrectly calculated as three times the correct value (later in this section are details of a PP (PC0027139) where it is documented that a scenario akin to this occurred in LHITS). The brought forward balance was calculated as £16,500, rather than the correct value of £5,500 (the red text shows where the error occurs).

Table 18.1 Receipts and Payments Account for AA in CAP15

Brought forward balance from CAP14 into CAP15 for AA:			
Cash	~~£5,000~~ £15,000		
Stock	~~£500~~ £1,500		
Receipts (debits)	**Receipt amount**	**Payments (credits)**	**Payment amount**
Payment for TV Licence	£100		
Payment of road tax	£75		
Alliance & Leicester Giro deposit	£150		
Purchase of 20 x 1st class stamps for cash	£5		
Additional money received ("remmed in") from POCL	£100		
		A&L Giro withdrawals	£50
		Pension payment	£25
		National Savings withdrawals	£100
		Issue of 20 x 1st class stamps to a customer	£5
		Carried forward balance from CAP15 to CAP16 for AA:	
		Cash	£5,255
		Stock	£495
Total	~~**£5,930**~~ **£16,930**		**£5,930**

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18.1.4 This shows an imbalance of £11,000 (payments greater than receipts). If the LHITS error was not known, this would appear as a shortfall of £11,000.

18.1.5 What is also apparent from this example is that there are various other issues that could result in an imbalance, for example:

(a) There are payments that were not recorded in the LHITS, or payments that were erroneously recorded in the LHITS;

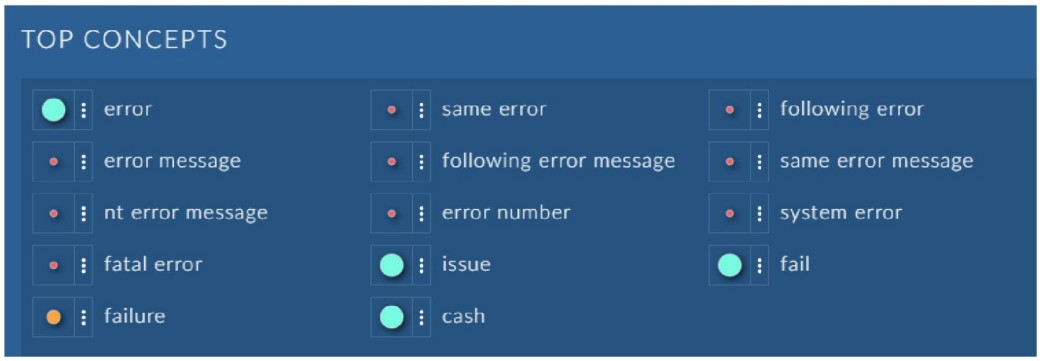
(b) There are receipts that were not recorded in the LHITS, or receipts that were erroneously recorded in LHITS;

(c) The carried forward balance was incorrect because the cash and/ or stock were not correctly declared by the SPM, or there have been cash and stock changes that cannot be accounted for.

Methodology

18.1.6 Working with the PPs loaded into Brainspace, an initial search was run over the PPs to identify those which contained the Concepts of: error, cash, issue, fail, and others as shown in the figure below:

Figure 18.1 Brainspace concept search results



18.1.7 This search returned 38,803 PPs, however only a small number of these were weighted highly relevant to each of the displayed concepts.

18.1.8 Reviewing those at the top of the distribution revealed an issue mentioned in several PPs, namely cash or stock not balancing, with a common phrase used being "receipts vs payments". This was input into a new, more focused search, which included the following additional concepts as being closely linked:

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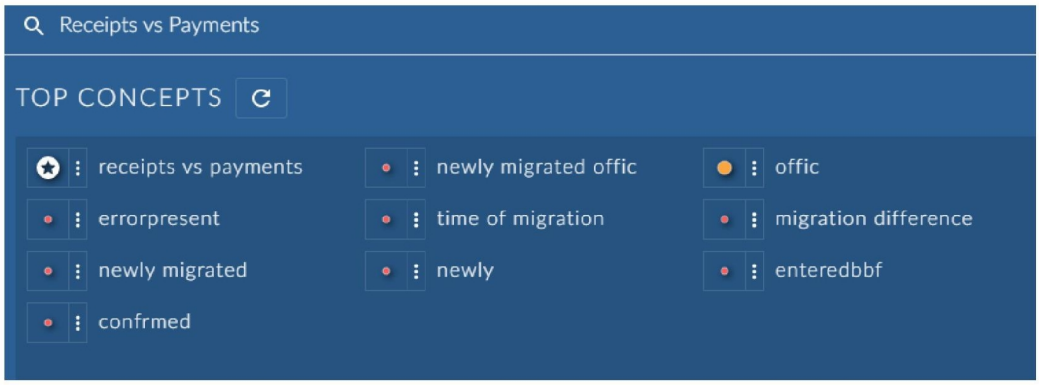
Figure 18.2 Brainspace concept search results



18.1.9 It is worth noting that "EnteredBBF" is commonly found in the PPs when pasting in error messages from a manual migration ("MiMan") message store.

18.1.10 This search returned 67 documents, which were manually reviewed in order of descending likely relevance. Once 11 documents were identified as relevant, a CMML model was created, which identified a set of documents likely to also be relevant to the same concept.

18.1.11 Three additional rounds of training were undertaken, as set out in the table below:

Table 18.2 Verbatim extracts from Monthly Reports

Round	Type	Coded (T: P/N)	Docs in 0.8-1.0 Range	Comments
1	Manual	22: 11 / 11	1,334	Example documents were provided to the model for the first round, resulting in a high number of likely relevant documents and additional refinements required.
2	Top Scores	32: 16 / 16	576	The ten documents with the highest scores were reviewed, resulting in five documents being coded positive, and five documents coded negative.
3	Top Scores	42: 26 / 16	955	The ten documents with the highest scores were reviewed. This time all 10 documents were coded positive.
4	Diverse Active	51: 28 / 23	386	To further refine the model, we ran a "diverse active" round to sample a mixture of ranked documents. Two were coded positive, and seven coded negative. The model was refined and resulted in 386 documents being ranked in the highest relevancy tier.

18.1.12 Due to the differences in how each system stores the rank number (Brainspace assigns a cut-off from 0.8000 whereas Relativity rounds up from 0.7950), there were 399 documents ranked 0.8 or higher (highly relevant to this concept). This is not necessarily all "relevant" documents however it is the set which are most likely to be relevant based on the seed documents provided to Brainspace.

18.1.13 Of the 399 PPs, 137 were selected for review by my team, which identified 127 PPs as relevant to the concept of payment and receipt imbalance. The following section contains an analysis of this population.

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Quantitative observations

18.1.14 We targeted two standard codes present in the PP text:

(a) Response Category: I understand that this denotes "the call status within the lifecycle"[68], with different options available depending on the call type of the PP.

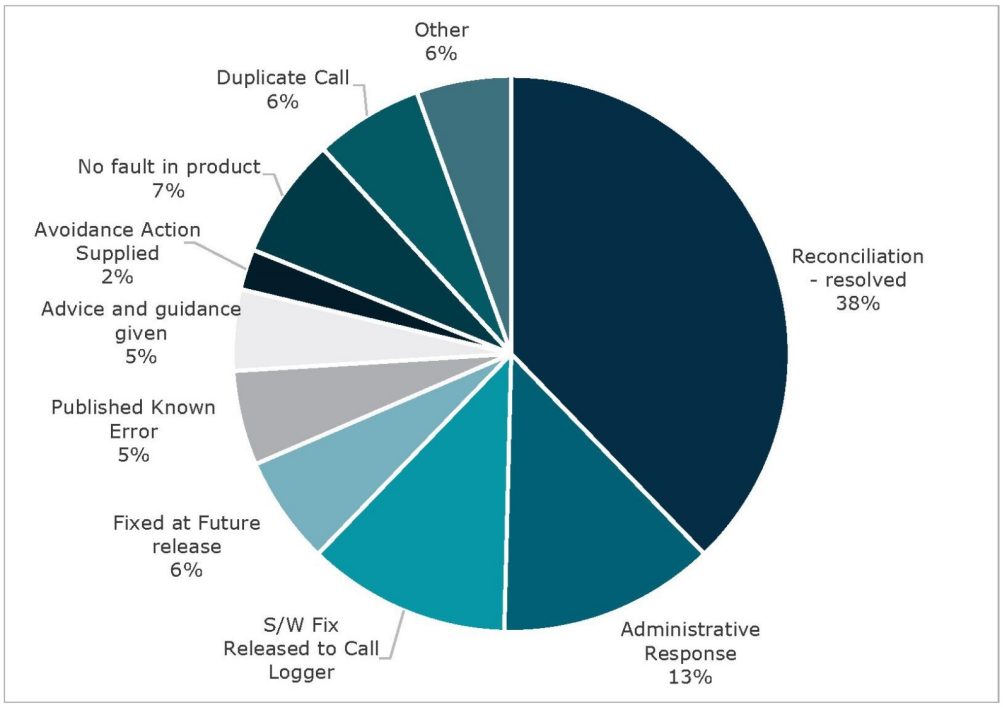
(b) Defect cause (note this term is used interchangeably with 'root cause'[69]): I understand this was captured for the purpose of supporting root cause analysis so as to "… ensure the same errors do not occur twice.". A defect cause value is mandatory for all new calls and the defect cause may change during the life cycle of the call as investigation matures and a better view of the problem is identified[70].

18.1.15 Since the 'Response Category' and 'Defect cause' are refined during the lifetime of a PP, I selected the final chronological values for these analyses.

Analysis of 'Response Category'

18.1.16 The figure below shows the final 'Response Category' extracted from the PPs.

Figure 18.3 Response categories for the reviewed payment and receipt imbalance PPs



Based on this data I make the following observation:

68 PinICL Reference Data Guide, version 2.0 dated 18 February 2002, section 8 (FUJ00098258).

69 Submissions on behalf of Fujitsu Services Limited dated 13 September 2022 (in response to a Rule 9 Request dated 29 April 2022) (FUJ00119556)

70 PinICL Reference Data Guide, version 2.0 dated 18 February 2002, page 10 (FUJ00098258).

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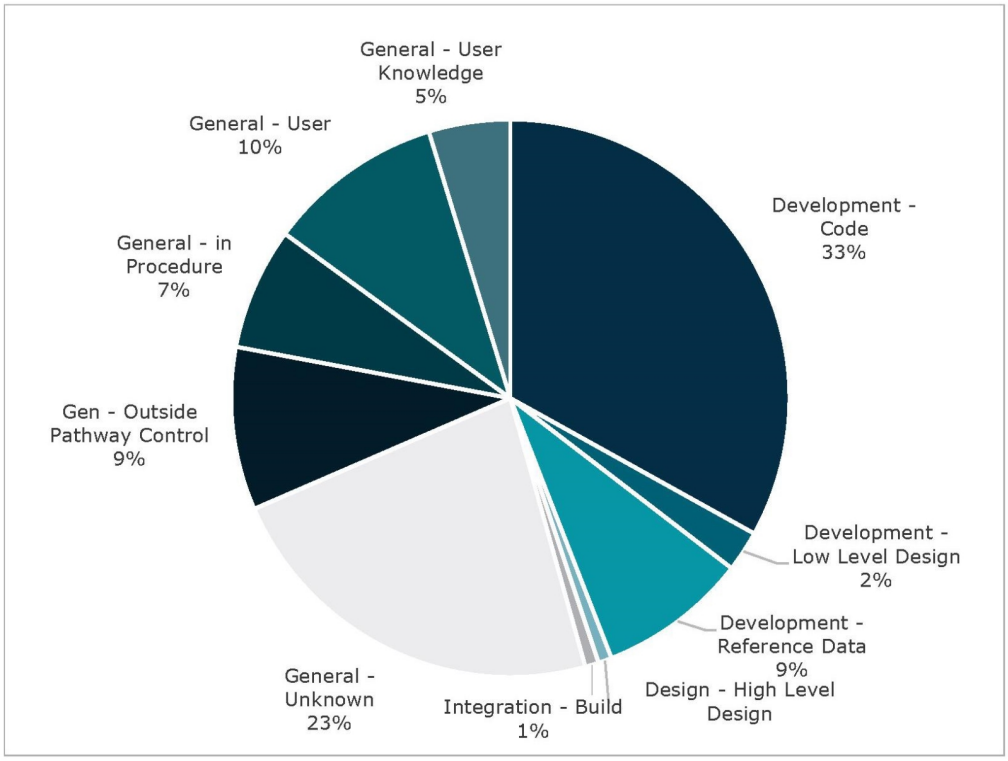
18.1.17 Whilst I do not have formal definitions for the values shown in the figure above, I conclude that 19% of the closure reasons (Administrative Response, Other) do not provide much insight into the investigation process.

Analysis of 'Defect cause'

18.1.18 The figure below shows the final 'Defect cause' extracted from the PPs.

Figure 18.4 Defect causes for the reviewed payment and receipt imbalance PPs



18.1.19 Based on this data I make the following observation:

(a) A significant proportion of these PPs had defect causes that were recognised as being related to the design or development of LHITS (45%)[71]. This indicates to me that there were acknowledged bugs, errors, or defects in LHITS that were capable of giving rise to a payment and receipt imbalances.

Days to resolve:

18.1.20 The figure below shows how long the reviewed PPs remained open.

[71] Whilst formal definitions of these defect codes were not available to me, I have assumed, prima facie, that the defects of 'design – high level design', 'Development – code', 'Development – low level design', and 'Development – reference data' all relate to acknowledged bugs, errors, or defects in the LHITS.

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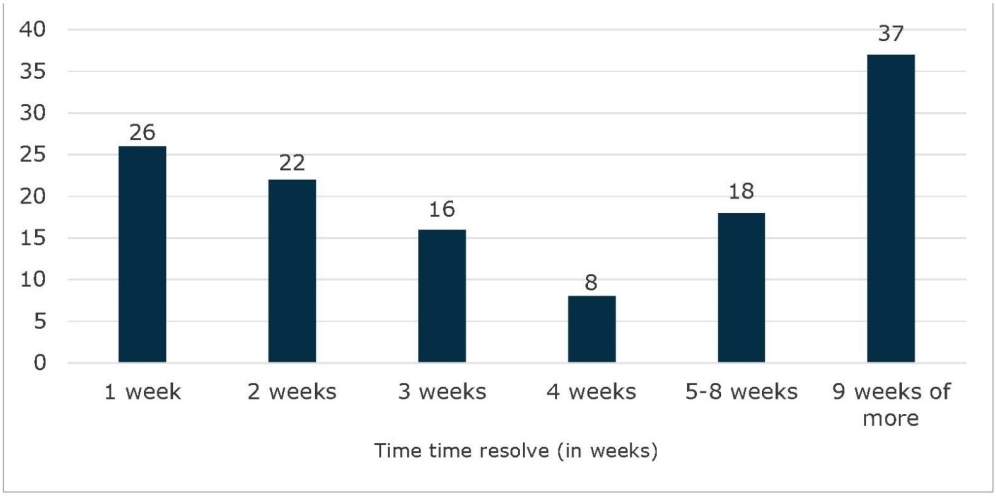
Figure 18.5 Time to resolve PPs



18.1.21 Based on this data from the figure above, I make the following observations:

(a) Only 26 PPs (20%) were fully closed within a week.

(b) 55 of the PPs (43%) took 5 weeks or more to fully close.

(c) 37 of the PPs (29%) took 9 weeks of more to fully close.

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18.2 Qualitative observations

18.2.1 PPs are technical documents: their interpretation is sometimes difficult. I have provided an example PinICL and PEAK in Appendix C in order to fully illustrate the challenges of interpreting these.

18.2.2 To illustrate the payment and receipt imbalances that occurred during the national rollout, it is useful to examine individual PPs. Therefore, in this section I have selected seven PPs that highlight the varied causes of the payment and receipt imbalances.

18.2.3 For the benefit of the reader, I have structured my review of the seven PPs into the following form:

(a) Summary – High-level information relating to the PP

(b) Chronology – Selected excerpts from the PP's comments

(c) My observations

18.2.4 Based on my review of these documents I make the following general observations:

(a) Many of these PPs seem to have been raised as a result of internal reconciliations.

(b) There does appear to be an earnest effort, on the part of the SSC, to investigate these issues, identify a root cause, and mitigate future recurrences.

(c) The tickets show that different teams were involved when investigating these issues.

(d) In the majority of these PPs, it is not evident that the identified issue was resolved.

(e) In a majority of these PPs, the root cause is related to LHITS.

18.2.5 The following tables contain verbatim extracts from the PinICLs and PEAKs (PPs). I have intentionally not made any corrections to grammar or spelling. The views expressed in these extracts are that of the authors.

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Table 18.3 (1) ECCO Migration – User error or ECCO system issue

Summary		
Reference (PP / URN)	PC0038771 / FUJ00037419	
Format	PinICL	
Date opened	18 February 2000	
Date closed	25 February 2000	
Days open for	8	
Original call priority	C	
Final Category	Category 68 - Administrative Response	
Final defect cause	40:General - User	
Chronology		
Team (Member)	**Date Entered**	**Extracted Comments**
Customer Call	2000-02-18 13:48:26	this is a system call related to tip 1052. please route this call to john moran in edsc 18/02/00 13:39 uk080008 Advice: asked to reassign by lohn moran
MSU (John Moran)	2000-02-18 14:31:03	F} Response : ********** The following has been copied from business call e-0002180320/pc0038730 TIP incident 1052. Descrepency in Cash Account for week 46 (Week ending 9/2/00) a comparison between values recieved within the cash account files and those derived from the transaction stream for FAD 0051136 ORG unit 17831 identified the following differences: Cash Account line 2050 declared amount 125780.59 derived amount 125683.20 diff of 97.39, Cash account line 2051 declared amount 0 derived amoutn 97.39 difference -97.39. Reasons are required. ********** SSC Please investigate and attach message store. I suspect Steve Warwick will want a look at this...
EDSC (Garrett Simpson)	2000-02-21 10:19:31	F} Response : This is an illustration of the stupidities that ECCO software allows. A clerk can transfer cash and cheques between stock units without bothering to make sure they match up. The result shows up when the transaction data is migrated to Horizon which insists on clear demarcation between cash and cheques. In this case the critical transactions are Transfers In of two cheques whose total amount exactly equals the discrepancy noted. Details are attached in file DuffTrans.txt. No fault in Horizon product.
MSU (John Moran)	2000-02-22 09:05:47	F} Response : I think Steve Warwick is aware of the ECCO problem here but as a matter of course I will route the call to him to allow him to comment...
QFP (Steve Warwick)	2000-02-22 10:36:51	F} Response : This issue is well documented in previous incidents with TIP. The effect is that the Pathway system reports the values of the affected products (in this case Cash and Cheques) incorrectly on

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		the Cash Account for the migration CAP, although the Cash Account still balances. TIP then use the Cash Account figures from the migration CAP as the start point for validating the next Cash Account received from the outlet and report a discrepancy between the transactions received in week 2 and the Cash Account for week 2. This is a user error pre-migration of an ECCO+ Office.
EDSC (Garrett Simpson)	2000-02-22 16:13:12	F} Response : Passing to MSU for issue of RED.
MSU (John Moran)	2000-02-25 11:39:40	F} Response : Final red 2078 issued to customer. Not data error. please close this call.
Customer Call	2000-02-25 11:48:57	Date and time complete: 25/02/2000 11:45:21 Service Complete (Confirmation) Received

My observations	
Was the immediate issue fixed?	If I assume that the issuing of the RED 2078 notice to the customer resolved the PP, then yes.
Was a defect/ root cause identified?	It appears from the text that this is a known issue with the ECCO software used in the branch pre-Horizon and that the TIP reconciliation process had previously identified instances of this.
Was this defect/ root cause correctly recorded in the PP?	The root cause is identified as '40:General – User'. Based on the text this would appear to be correct.
Is there evidence that this defect/ root cause was addressed?	As this is a user error, I would not necessarily expect the root cause to be addressed, especially given that migration from ECCO to LHITS is a one-off event
Observations on the management and closure of the issue.	It appears from the text that the origin of the PP was an internal reconciliation control, so no response to an SPM was required. The linked PinICL (pc0038730) was closed on 06 March 2000 with the final status of 'Category 90 -Reconciliation – resolved'.
Observations on defect / root cause	Based on the text of the PP I agree that a '40:General – User' defect cause is correct.

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Table 18.4 (2) TIP-related issue with existing reversal transactions

Summary		
Reference (PP / URN)	PC0028847 / FUJ00034029	
Format	PinICL	
Date opened	20 August 1999	
Date closed	30 December 1999	
Days open for	133	
Original call priority	B	
Final Category	Category 60 - Fix Released to Call Logger	
Final defect cause	14:Development - Code	
Chronology		
Team (Member)	**Date Entered**	**Extracted Comments**
Customer Call	1999-08-20 14:18:50	Incorrect CA value. Live trial, the CA sub file for org units 12609 (FAD 316523) CA week 21 contains an entry for line 2050 with a value of £17181.05. However, TIP has calculated from the transactions it has received that the value of the line should be £17642.31. This leaves a difference of £461.26. 20/08/99 15:12 UK061354
MSU (Angela Shaw)	1999-08-23 16:10:20	F} Response : Barbara, I have just spoken to John Pope (Requirements) this is classified unde r Acceptance Incident 376 (AI). Would you please raise the level to an A / AI incident. Would John Simpkins please take a look, then send to EPOSS Dev. Thanks
EDSC (John Simpkins)	1999-08-23 16:44:59	I have checked the agent boxes at wigan for any T_HV_ALL event for this office between 12-Aug-1999 and 18-Aug-1999 and did not find any.
EDSC (Jim Anscomb)	1999-08-24 10:33:50	F} Response : There is a null transaction Mode on -1-117305 - <Mode:> for a cash credit of gbp 143.22, though this is now not a problem for the harvester. No delays shown in the APR db. Send to EPOSS-dev
EPOSS (Mark McGrath)	1999-08-24 11:18:27	The erroneous message was 117938 not 117305 - in case any one else is relying on this info. We released a fix for this 20/8/99 into WP 5406 which went to OTT and is due to be released in Tivoli package EPOSS_COUNTER_CORE version 3_3. Thus, it has not made it to live yet. The problem message is unfortunately an Exisitng Reversal messsage so the harvesters automatic assignment to Serve Customer is likely to provide

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		problems, some one will need to amend this. Routing to EDSC for them to solve the procedural problems. - and check when the Tivoli package is due for release. ..Austin
EDSC (Jim Anscomb)	1999-08-24 12:32:24	F} Response : The total discrepancy is for GBP 461.26, 143.22 has been accounted for above - can someone assist with any of the remaining 318.04.
EPOSS (John McLean)	1999-08-24 14:11:46	THIS CALL IS ASSOCIATED WITH HIGH PRIORITY ACCEPTANCE INCIDENT 376. PLEASE PROGRESS RAPIDLY
Unknown (John Pope)	1999-08-24 18:31:07	Just a thought, but the sign reversal mentioned above (serve customer setn to TIP instead of Existing Reversal)may explain 2 X 143.22 = 286.44 Can anybody help with £174.82 ?
QFP (Steve Warwick)	1999-08-25 18:01:56	F} Response : It may be of interest that the value of the discrepancy between the TIP and Pathway figures appears to correspond to 2 x £230.63. During the balancing of stock unit AA on 18.8.99, a stock adjustment was made to reduce the value of Cheques (Product 2) by this amount, with a corresponding increase in Cash. These two stock adjustment records were later individually reversed, generating a further 4 transactions for £230.63, 3 against Cash (Product 1) and 1 against Cheques (Product 2). Therefore in total 4 Cash transactions (two positive, two negative) and two Cheques transactions (one positive and one negative) were written. Given that there have previously been issues with TIP's rejections of 'Existing Reversal' transactions where the reversal settlement contained no cross-reference details, is it possible that this has caused the reconciliation failure? According to the message store data, the Cash Account for CAP 21 reported Total Receipts = Total Payments, indicating that the message store data is complete and accurate. The response has been flagged to the gateway team for validation
QFP (Steve Warwick)	1999-09-07 15:58:10	F} Response : From further information received from TIP, the sequence of events seems to be as follows: 1. At 17:21:20 on 18.8.99 a stock adjustment was carried out to reduce the value of cheques by £230.63. This wrote two transactions - one to reduce the value of cheques (17:21:20), one to increase the value of cash (17:21:20) by the same amount, both transactions carried the mode 'SAN' (TIP - 18). 2. At 18:22:27 on 18.8.99 a reversal of THE CASH SETTLEMENT transaction for the Cheque adjustment took place resulting in two transactions being written against Cash, one to reduce the value of cash (18:22:27) and one to increase the value of cash to settle the reversal (18:22:49), both

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		transactions carried the mode 'ER' (TIP - 1 with reversal indicator). 3. At 18:24:32 on 18.8.99 a reversal of the CHEQUE ADJUSTMENT transaction (see 1 above) was carried out, generating two transactions - one to increase the value of cheques (18:24:32) and one to reduce the value of cash by the same amount (18:24:37). These transactions are recorded in the message store with the correct signs. From the information supplied by TIP it seems as though they have received/treated the transaction at 18:24:32 (a reversal of a previous reduction in the value of cheques) as though it was a reduction in value rather than an increase in value, therby calculating a discrepancy of twice the amount. Either the sign on the transaction value sent to TIP was incorrect, or TIP have misinterpreted the data sent.
EDSC (Jim Anscomb)	1999-09-15 13:48:14	F} Response : Looking at the tip file there were 2 reversals for 230.63 in quick succession, the first is translated for tip as balancing + and - entries, the second however is translated into two + entries, which would account for the error. See extract of tip file and message store attached.
EPOSS (Mark McGrath)	1999-09-16 16:18:33	Changes to be made to clsEPOSS and clsTransaction in EPOSSCore. Fix applied to EPOSSCore. You should get in the attribute grammar for a cash settlement for an ER transaction the additional data of CrossReference.Omode:<what ever the original mode was> The harvesters need this. ..Austin
EPOSS (Mark McGrath)	1999-09-16 16:34:22	testing of this should include transacting in each mode: the messages shoul dbe as they were. Then performing a reversal of each mode and checking that the new attribute grammar exists in the cash settlements ofthe reversals. ..Austin
Unknown (Gurdeep Atwal)	1999-09-17 11:57:03	Link tested OK on CSR dev counter (WP 5767) Performed a tranaction followed by a exisiting reversal for each of the following modes : Serve customer, Rems (all modes), reval up/down, House keeping, non-acc data, parcel traffic, bulk input. On each exsisting reversal the message store was checked for the new attribute grammer. CrossReference.OMode - Followed by the corresponding mode of the reversal.

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Live Supp.Test (Nicola Lambert)	1999-10-26 14:39:35	WP_5766 has been applied to live. Routing call back to call logger for closure.
EDSC (Garrett Simpson)	1999-10-27 09:17:51	F} Response : We have seen that when a call is the subject of an acceptance incident (as this call is) then there is no point in us ringing the originator to ask for closure. They always say that such calls are the subject of regular discussions between John Pope at FEL01 and Martin Box of TIP. Eventually somebody at TIP rings us with a list of calls which can be closed. Accordingly I shall send this call to our holding stack to await such closure.
SSC Holding (Catherine Obeng)	1999-12-30 14:19:02	F} Response : Call closure agreed by call raiser, David Salt.

My observations	
Was the immediate issue fixed?	Yes, on the basis that the call raiser (David Salt) agreed to close the call on 30 December 1999.
Was a defect/ root cause identified?	A clear root cause was identified, being an issue with the data delivered to TIP.
Was this defect/ root cause correctly recorded in the PP?	A defect cause of "14: Development – Code" would seem consistent with the root cause identified in the text.
Is there evidence that this defect/ root cause was addressed?	The text indicates that a software update was made and tested, albeit the text only indicates that the testing occurred, not the results of this. However, I note that the text does not indicate that the tests failed, which I would expect it to say had this been the case. The text also indicates that the software fix was implemented.
Observations on the management and closure of the issue.	The closure of the PinICL once the fix had been implemented and the original raiser's approval was obtained seems appropriate to me.
Observations on defect / root cause	There is evidence in the ticket that a fix was implemented in LHITS to remediate the identified issue.

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Table 18.5 (3) Reference data delivery issue

Summary		
Reference (PP / URN)	PC0051382 / FUJ00064777	
Format	PEAK	
Date opened	28 July 2000	
Date closed	01 August 2000	
Days open for	5	
Original call priority	B	
Final Category	Category 90 -Reconciliation - resolved	
Final defect / root cause	99: General - Unknown	
Chronology		
Team (Member)	**Date Entered**	**Extracted Comments**
Customer Call	2000-07-28 15:52:22	28/07/00 16:48 office 91008 reports a difference in its reciept & payment totals for cap18 . please send this call to john moran
MSU (John Moran)	2000-07-31 12:53:40	I know what caused this problem. It was because reference data was not sent to the outlests concerning P&A products--The cash settlement was mapped to the CA, but the corresponding transaction was not. If these transactions were recorded by in the Counter Transaction Exceptions report I could supply POCL TP with this information myself, but they have not been recorded. Can you supply the offending non mapped transactions to this PinICL in message store extact so I can reconcile with Chesterfield?
MSU (John Moran)	2000-08-01 13:23:45	F} Response : This difference in the receipt and Payment totals was caused by the fact that non-core reference data was not delivered to this office in time. The reference data was for OBCS products 177 to 185. As this reference data included primary mappings for these products these products could not be mapped to the cash account at stock unit rollover. This is what caused the difference in the receipt and payment totals. ********** This incident is related to 9 others all caused by this same problem. All the offices effected were migrated to Horizon on 20/7/00. All the offending transactions took place 21/7/00-- when there was not reference data at the outlets. The correct reference data was delivered for business on 22/7/00. ********** I have provided with the final BIM report an excel spread sheet (with the same file name as the BIM report) listing the offending transactions which were not mapped to the cash account.
EDSC (Paul Steed)	2000-08-01 14:05:02	F} Response : Caller has raised the BIM based on the evidence extracted and so call can be closed (Reconciliation Resolved).
Customer Call	2000-08-01 14:10:32	Date and time complete: 01/08/2000 15:07:08 Service Complete (Confirmation) Received

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My observations	
Was the immediate issue fixed?	Whilst the text states that a BIM was raised and the impacted transactions were identified and included with the BIM, it is not possible to determine, from the PP, whether the transactions were updated to map them correctly. If I assume that the BIM process would rectify this issue, then it appears that the appropriate steps were taken to rectify the issue.
Was a defect/ root cause identified?	The text indicates that this was a known issue and a clear root cause is provided (i.e., the product reference data required to correctly map the transactions to the cash account had not been delivered to the branches, so the transactions were not mapped).
Was this defect/ root cause correctly recorded in the PP?	The root cause recorded in the PP is "General – Unknown". The root cause is clearly defined in the PP and therefore a root cause more akin to 'Product reference data not delivered in time' would seem like a more accurate and useful root cause.
Is there evidence that this defect/ root cause was addressed?	The text references the fact the branches had now received the required reference data.
Observations on the management and closure of the issue.	The specific issue was fixed in that the reference data was delivered to the branch.
Observations on defect / root cause	There is evidence in the ticket that a fix was implemented in LHITS to remediate the identified issue. It is unclear to me why the reference data required was not timely delivered to this branch, and nine others.

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Table 18.6 (4) Stock unit deletion

Summary		
Reference (PP / URN)	PC0028263 / FUJ00029840	
Format	PinICL	
Date opened	04 August 1999	
Date closed	29 September 1999	
Days open for	57	
Original call priority	B	
Final Category	Category 60 - Fix Released to Call Logger	
Final defect / root cause	14:Development - Code	
Chronology		
Team (Member)	**Date Entered**	**Extracted Comments**
Customer Call	1999-08-04 11:31:23	TIP- reconciliation - missing transactions live trial : cash account week 18 office 230511, pathway derived cash account line 2050 value = £36272.65 , TIP derived value = £36133.20, difference of £139.45. this has a knock on affect to line 1085, 1700, 2072 and 2700. this is probably attributable to missing transactions, although identical problems were also identified at offices 013523 (£1936.38), 278523(£155), 101114(£15.41). PLS INVESTIGATE 04/08/99 12:26 UK061356 Information: Reconciliation issue - passing for investigation.
EDSC (Paul Sausman)	1999-08-09 14:19:22	These outlets do not appear to have been affected by the harvesting issue of 28218 nor are they in the spreadsheet of errant transactions.
EDSC (Paul Sausman)	1999-08-09 15:03:15	Null modes (27321) appear to account for the transactions lost from 230511: -- AA, 26/07/99 12:36:19, product 1, quantity -1, amount -46.20; -- AA, 24/07/99 09:15:00, product 1, quantity -1, amount -93.25.
EDSC (Paul Sausman)	1999-08-09 15:13:48	A null mode (27321) appears to account for the transaction lost from 101114: -- AA, 23/07/99 18:08:53, product 1, quantity -1, amount -15.41.
EDSC (Paul Sausman)	1999-08-09 15:29:40	A null mode (27321) appears to account for the transaction lost from : -- AA, 26/07/99 11:16:59, product 1, quantity -1, amount -1936.38.
EDSC (Paul Sausman)	1999-08-09 15:41:43	Please arrange reconciliation then return for investigation into 278523.
MSU (Angela Shaw)	1999-08-10 17:07:52	F} Response : Paul, have raised RED 515 for this call. Would you please send back to me when you have more info and a reason why these transaction were not included. Thanks
MSU (Angela Shaw)	1999-08-11 13:34:09	Will these transactions ever get returned to TIP & HAPS? Please update.

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EDSC (Paul Sausman)	1999-08-11 15:36:59	Transactions not sent because mode attribute was null. They will not be sent by the system to TIP or HAPS.
EDSC (Jim Anscomb)	1999-08-23 13:47:03	F} Response : Cash Account week 18 was the first week for FAD 278523 - small discrepancies are acceptable during that week.
MSU (Angela Shaw)	1999-08-24 11:28:55	F} Response : Paul orginally provided me with the missing transaction details for 3 of the 4 fads listed. I still need the missing transaction details for 278523, as I have to send the details to POCL for reconciliation purposes. Is it not possible to resend the transactions to TIP in this case? Can we progress these missing transactions asap, as they come under AI 376. please route back to MSU afterwards. Thanks
Unknown (John McLean)	1999-08-24 14:11:03	THIS CALL IS ASSOCIATED WITH HIGH PRIORITY ACCEPTANCE INCIDENT 376. PLEASE PROGRESS RAPIDLY.
EDSC (Garrett Simpson)	1999-08-25 09:31:52	I have checked this message store but can find no reason for the problem complained of in 278523. Passing to development for further investigation.
QFP (Steve Warwick)	1999-08-26 09:02:37	F} Response : The £155 error reported by TIP at FAD Code 278523 is almost certainly related to an MVL transaction (Product 125 or 128). A number of these transactions took place in the week and there was also a Loss declared the previous week for this value against Cash. The value of £155 was also transferred between two stock units during the week and a gain of £155 was recorded when balancing at the end of CAP 18 (offsetting the Loss of £155 declared at the end of CAP 17). Since there was no failure of the office to balance its Cash Account, it would seem that either one of these transactions has not been sent to TIP or TIP have miscalculated the value of the transactions reporting to the Cash Account.
EDSC (Garrett Simpson)	1999-08-26 11:10:27	F} Response : We have now had an explanation from development for the final office in this call. Passing to management support for reconciliation.
MSU (Angela Shaw)	1999-08-26 15:20:08	F} Response : Can SSC re-check for the last FAD details as per Steve Warwick's last update. I am also requesting that TIP re-investigate their findings too, as this is due to the possibility of the above 2 scenarios. Please re-send back to MSU. Thanks
QFP (Steve Warwick)	1999-09-14 13:00:27	F} Response : The cause of the imbalance at FAD Code 278523 was the deletion of Stock Unit ZZ on 29th July 1999 before the EOD marker for the outlet had been

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		written. This meant that transactions carried out on the stock unit totalling £155.00 (Declaration Discrepancy) in CAP 19 were not reported to TIP.
EDSC (Garrett Simpson)	1999-09-16 10:51:32	I have told the originator that the cause of this problem was the deletion of the relevant stock unit and asked him to agree closure. He wanted to know if there is going to be a change in the software to prevent such deletion and when it is going to arrive. It sounded as though he would agree closure once he has a date. This is not relevant to this call: we have explained the discrepancy in the figures which is what, strictly, is required.
EDSC (Garrett Simpson)	1999-09-16 11:03:07	F} Response : David Salt rang back. I had spoken to Steve Warwick in the meantime and found that the fix to prevent such stock unit deletion went out to the live estate on 15-Aug - so it has been in place now for a month. David wants to wait until the end of September before agreeing a close.
QFP (Steve Warwick)	1999-09-21 18:01:52	F} Response : The original response given to TIP was based on the fact that the symptom of the call appeared to be similar to other calls which had been identified as being signing problems. This initial view was provided along with the statement that the incident was still under investigation and that once the evidence had been examined the root cause would be setermined. The root cause has now been determined and John Pope has updated the spreadsheet shared with POCL re. AI376. Closure will be agreed between John Pope and Calum Craig (POCL). Passing the call to John Pope for confirmation of the above.
Unknown (Sampath Kumar)	1999-09-28 16:55:06	F} Response : Fix applied to the live system. David Salt (POCL TIP - customer) agrees to close the call. Waiting to discuss closure with John Pope, before closing call.
Unknown (Sampath Kumar)	1999-09-29 13:30:50	F} Response : Fix applied to the live system. David Salt (POCL TIP - customer) agrees to close the call.
Customer Call	1999-09-29 13:34:17	Date and time complete: 29/09/1999 14:32:17 Service Complete (Confirmation) Received

My observations	
Was the immediate issue fixed?	<u>FADs 230511, 13523 and 101114:</u> If I assume that the issuing of the RED 515 notice to the customer resolved the PP, then yes. <u>FAD 278523:</u> From my reading of the text, I do not see clear evidence that the deleted Stock Unit ZZ issue being fixed for this FAD. However, David Salt agreed to close the issue.

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Was a defect/ root cause identified?	FADs 230511, 13523 and 101114: The root cause was identified as mode attributes on the transactions had 'null' values, which resulted in the transactions not being sent to TIP. FAD 278523: The root cause was identified as a stock unit ZZ deletion before the EOD marker had been written, which resulted in transactions not being sent to TIP.
Was this defect/ root cause correctly recorded in the PP?	The defect cause recorded was "14: Development – Code". I assume that this applied solely to FAD 278523. If this assumption is correct, this seems like an appropriate defect code for FAD 278523. It is unclear whether this also applied to FADs 230511, 13523 and 101114 which were a different issue.
Is there evidence that this defect/ root cause was addressed?	FADs 230511, 13523 and 101114: There is no discussion in the PP related to any action being taken to investigate why the mode attribute values were "null." FAD 278523: The root cause for FAD 278523 was addressed through the fix rolled out on 15 August.
Observations on the management and closure of the issue.	The PP is somewhat difficult for me to follow as two distinct problems are being discussed on a single PP. Regardless, it does appear that the SSC properly closed the two problems discussed.
Observations on defect / root cause	FADs 230511, 13523 and 101114: This PP contains no information regarding "null" values present in the mode data. FAD 278523: The root cause is clearly identified and based on the text of the PP, would be prevented in the future via an update to LHITS.

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Table 18.7 (5) Brought forward balance multiplied causing a payments and receipts imbalance.

Summary	
Reference (PP / URN)	PC0027139 / FUJ00027630
Format	PinICL
Date opened	24 June 1999
Date closed	06 July 1999
Days open for	11
Original call priority	A
Final Category	Category 68 - Administrative Response
Final defect / root cause	14:Development – Code

Chronology

Team (Member)	**Date Entered**	**Extracted Comments**
Customer Call	1999-06-24 15:22:00	cross refered to e-9906230224 , the receipts and payments table's do not match at office 176328 when rolling over the cash account, even though the bought forward figure is correct - this call needs to be sent to ssc to attatch the messagedoor extract for this post office, and then to development for investigation24/06/99 16:16 UK061815 Information: paged pathway duty manager and voiced smc1 duty team leader (Chris Gulliver) regarding this call
Customer Call	1999-06-24 15:28:30	HSH1 Information: Voiced Julia Bowes regarding this call. 24/06/99 16:21 uk061537 HSH1 Information: If this problem is not resolved in a couple of hours, please contact Julia Bowes, Duty Manager, and inform her.
BusinessSupprt (Nicole Meredith)	1999-06-24 15:57:03	We need to know the exact cause of this incident and find out whether it should have been fixed already.
Unknown (Barbara Longley)	1999-06-24 15:58:47	F} Response : Nicole Meredith has returned call to Diane Rowe (EDSC) as she needs to know the exact cause of this incident and find out whether it should have been fixed already.
EDSC (Diane Rowe)	1999-06-24 16:40:35	The receipts and payments do not match. The brought forward figure appears to be correct. The details of the figures are on pc27105. Nicole needs this investigating. I have voice promted Steve Warwick. I have attached the complete message store.
Unknown (Barbara Longley)	1999-06-25 14:15:32	F} Response : Have spoken to Steve Warwick in QFP and he is curently investigating the call.
QFP (Steve Warwick)	1999-06-28 08:07:40	F} Response :

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		Initial investigations have shown that the problem arose at the time that the Office Trial Balance report was produced. On the Office Trial Balance report the brought forward value was £71k instead of £14k. This appears to have been caused by the creation of a correctional stock unit (Stock Unit 22) which was additional to the normal stock unit (AA). Due to an error in the code, when the stock unit balance records are read the first stock unit (22 - first in alphabetical sequence) is correctly identified as having no 'Brought Forward' value from the previous week, the system then incorrectly assumes that this must be the migration week and generates a brought forward value for the stock unit which is incorrect. This error is being investigated for urgent correction. Further investigation of the discrepancy on the Cash Account is continuing to make sure that this is the only issue at the root of the problem.
QFP (Steve Warwick)	1999-06-28 11:46:39	F} Response : Investigation of the Cash Account Receipts/Payments mismatch shows: 1. The CA Snapshot was prepared (but not printed) on 23.6.99 2. The CA Trial Report was prepared and printed on 24.6.99 The records generated fro the Trial print on 24.6.99 did not include the Remittance totals (In, Out or to CHEC), giving incorrect Receipts and Payments totals and a mis-match of £5709.01 (Payments lower than Receipts). This appears to be an error in the CA preparation process since the same set of records prepared for the CA Snapshot the day before DID include the remittance records. Re-running the message store data on our development system did not replicate the problem and the Cash Account was correctly produced in a balanced state. Investigation of how this occured will continue, however in the meantime if the office has not yet rolled into CAP 14 then I suggest that they re-run the CA Snapshot, CA Trial and Rollover the office. On the evidence we have seen, I would expect this to produce a correctly balanced Cash Account.
Unknown (Lionel Higman)	1999-06-28 12:22:24	QFP decision no further LT1 fixes will be produced between now and LT2 delta application. Resetting target release to CSR.
EDSC (Paul Steed)	1999-06-28 12:52:18	I have spoken to Nicole and she is going to check with the PO that the office has rolled over (or is rolled over if it hasn't).
BusinessSupprt (Nicole Meredith)	1999-06-28 13:14:03	The PM has confirmed that the office has now been rolled over to CAP14, so the CA snapshot and CA trial cannot be re-run for the previous CAP.

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QFP (Steve Warwick)	1999-06-28 14:26:16	F} Response : Please confirm whether the Receipts and Payments totals matched when the Final Cash Account was produced (this can be determined from the messages in the message store - look for attributes <CashAccLine:700> and <CashAccLine:1700>)
QFP (Steve Warwick)	1999-06-28 17:13:36	F} Response : The doubling (or multiplying) of the brought forward value on the Cash Account has been traced to an error in the changes which were delivered to correct the previous problem related to the previewing of the 'Final' Cash Account. THIS WORK-AROUND NEEDS TO BE BROUGHT TO THE ATTENTION OF THE NBSC AND HSH HELPDESKS AS A MATTER OF URGENCY IN ORDER TO AVOID CASH ACCOUNT IMBALANCES DURING THE NEXT TWO CASH ACCOUNT PERIODS. Part of the changes allowed the user to re-start the production of the CA Snapshot, Trial or Final if the process was interupted by returning to the menu. Previously, if the process was interupted then the user was required to re-run the Office Balance Trial, Final, CA Snapshot, CA Trial and then the CA Final (Rollover). Due to an error, if the user does not run the CA Snapshot process followed immediately by the CA Trial and Final reports then the system writes a further 'Brought Forward' transaction record each time the process is interupted and re-started. This causes the Cash Account Brought Forward value to be multiplied up as many times as the process is re-entered. This problem does not occur in the LT2 software (due for release on 10.7.99) due to the restructuring of the Cash Account production process in line with the recent CRs. Tests have been conducted to demonstrate that LT2 does not exhibit the same behaviour. In the meantime, for the remaining two Cash Account Periods on LT1, the work-around is to re-run the Office Balance Trial and Final reports, re-run the CA Snapshot process and follow this immediately with the CA Trial and Final prints.
EDSC (Paul Steed)	1999-06-29 13:45:42	F} Response : Forwarding to Nicole with information provided by Steve Warwick.
Unknown (Barbara Longley)	1999-06-29 15:21:14	F} Response : Nicole Meredith has requested that this call be downgraded to 'B' priority.
BusinessSupprt (Nicole Meredith)	1999-06-30 12:35:39	F} Response : Is there still a problem with the creation of a correctional stock unit? If so, then this needs to be fixed for LT2. Please pass to Development for the attention of Steve Warwick.
QFP (Steve Warwick)	1999-07-01 08:18:28	F} Response : The issue with the correctional stock unit has been tested on the LT2 software and the situation is handled correctly, no imbalance is caused.

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EDSC (Paul Steed)	1999-07-01 14:56:43	F} Response : Nicole, Steve has added comments as requested. Can you please agree closure.
BusinessSupprt (Nicole Meredith)	1999-07-06 08:13:06	F} Response : I agree closure of this call, on the basis that the problem will not re-occur in LT2.
EDSC (Paul Steed)	1999-07-06 08:35:24	F} Response : Closing call following Nicole Meredith's agreement. Closure Code:Software Error Repair Code:Fixed in Next Release
Customer Call	1999-07-06 08:39:35	Date and time complete: 06/07/1999 09:39:18 Service Complete (Confirmation) Received

My observations	
Was the immediate issue fixed?	I do not see evidence in the PP that suggests that the issue at FAD was fixed, although the text does note that the FAD completed their roll-over, presumably with the imbalance still in place. Perhaps the alert to the Horizon Helpdesk indicates that the corrective procedures were communicated and executed.
Was a defect/ root cause identified?	Yes, the root cause was an unforeseen consequence of the current LT1 fix.
Was this defect/ root cause correctly recorded in the PP?	The defect cause recorded was "14:Development – Code". This seems like an appropriate code as software fixes were required to address the root cause.
Is there evidence that this defect/ root cause was addressed?	Yes, a correction was present in LT2 that corrected this issue.
Observations on the management and closure of the issue.	The root cause was identified, addressed in the upcoming LT2 release, and a workaround was communicated to the helpdesk.
Observations on defect/root cause	The root cause was identified and addressed in release LT2.

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Table 18.8 (6) Navigating to a different 'mode' while transactions are on the stack

Summary		
Reference (PP / URN)	PC0032855 / FUJ00039260	
Format	PinICL	
Date opened	05 November 1999	
Date closed	23 March 2000	
Days open for	140	
Original call priority	B	
Final Category	Category 90 - Reconciliation - resolved	
Final defect / root cause	16:Development - Reference Data	
Chronology		
Team (Member)	**Date Entered**	**Extracted Comments**
Customer Call	1999-11-05 12:27:41	05/11/99 12:08 There has been a receipts and payments misbalance in CAP 31 where 28 offices in the first CA week after migration had this problem. Please investigate why this has happened. Evidence will be sent to SSC.
MSU (Angela Shaw)	1999-11-05 13:29:29	F} Response : this call is the system incident for pc32811. route back to msu for closure afterwards.
MSU (Angela Shaw)	1999-11-05 13:45:43	PLEASE NOTE THAT THIS NEED PROGRESSING RAPIDLY UNDER AI376. THANKS
EDSC (Richard Coleman)	1999-11-09 09:57:13	F} Response : PRESCAN: Possibly due to errors accepted at migration
EDSC (Lina Kiang)	1999-11-10 11:10:11	F} Response : As suspected, 24 of the 28 FADs had their differences accepted at migration. The remaining 4 FADs (097136, 265420, 006434 and 249715) should be investigated by EPOSSDev, however the following was noticed and Dev should determine if relevant and what it means: 263420 Table 3 UNCHARGED Receipts: Migration of 15.20 249715 <Application:MiMAN> <Table:Table3><Prod:2654><Value:18.28> Routing to EPOSSDev along with 4 message stores as evidence.
Unknown (Barbara Longley)	1999-11-26 11:34:58	F} Response : Acceptance Incident p MSU would like this to be progressed quickly.
MSU (Angela Shaw)	1999-12-15 15:15:28	Can the remaining 4 offices be investigated and returned to MSU with update. Thanks
QFP (Steve Warwick)	2000-01-11 14:53:13	F} Response : Having discussed this issue with Roger Donato and the EPOSS Development team it is clear that this call is a dupliacte of PC0035507. The code which retrieves transactions at the end of day, creates both the daily transaction count and the daily cash account table totals. Therefore any transaction omitted from the daily count will also be omitted from the daily CA Table totals.

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QFP (Steve Warwick)	2000-01-11 14:54:20	F} Response : Apologies, the last update was related to a different call, please ignore.
QFP (Steve Warwick)	2000-01-11 15:14:57	F} Response : At FAD Code 006434 a Housekeeping transaction was carried out on 27.11.99 for a value of £400.00. This transaction was not settled and the user navigated to the Revaluation Up menu and carried out a transaction to revalue stamps up by £5.88. These two transactions were then settled against the revaluation settlement product (which does not accumulate to the balance). The Housekeeping transaction for £400.00 should have been settled by Cash. This error (allowing the user to navigate to a different 'mode' while transactions are on the stack) has now been corrected in the Live software.
QFP (Steve Warwick)	2000-01-11 16:34:42	At FAD Code 097136 there was a recorded discrepancy at migration of £19.46 (the RED report indicates a Receipts <> Payments difference of £18.46). Unless pressed by POCL, pursuing the cause of the migration discrepancy being reduced by £1.00 appears to be a pointless exercise. The cost of investigation has already exceeded this value many times.
QFP (Steve Warwick)	2000-01-11 16:42:09	F} Response : At FAD Code 249715 a Housekeeping transaction at 07:48 on 6th October against product 2655 for £18.28 was settled by the settlement product for 'Revaluation Up'. This was probably caused by the user navigating to the Revaluation menu after adding the Housekeeping transaction to the stack and then settling while in the Revaluation menu. (See above for a similar scenario at 006434). This navigation problem has already been addressed in the software which is now live at CI2_2.
QFP (Steve Warwick)	2000-01-11 16:48:28	At FAD Code 265420, a Housekeeping transaction was carried out on 27.11.99 for a value of £15.20. This transaction was not settled and the user navigated to the Revaluation Up menu and carried out a transaction to revalue stamps up by £15.20. These two transactions were then settled against the revaluation settlement product (which does not accumulate to the balance). The Housekeeping transaction for £15.20 should have been settled by Cash. This error (allowing the user to navigate to a different 'mode' while transactions are on the stack) has now been corrected in the Live software.
MSU (Angela Shaw)	2000-03-15 12:06:56	F} Response : Final update sent to POCL on the 15/3/00. Awaiting closure.
MSU (John Moran)	2000-03-23 13:15:32	F} Response : No longer of interest to POCL. This incident was not included on the list of call to remain open. I received this list at the monthly Incident Mgt review meeting from Jacqui Cave. As it is not on the list please close this call.
Customer Call	2000-03-23 14:24:44	Date and time complete: 23/03/2000 14:20:45 Service Complete (Confirmation) Received

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My observations	
Was the immediate issue fixed?	For 25 of the 28 FADs the differences had been handled at the time of migration. For the remaining 3, I do not see explicit evidence in the PP that suggests that the issue with the FADs was fixed, but POCL's exclusion these FADs from their "list of call to remain open" seems to indicate that the issue was resolved to their satisfaction.
Was a defect/ root cause identified?	The root cause for 25 of the 28 FADs related to issues in their initial migration. For the remainder, the root cause was identified, namely that LHITS allowed a user to navigate to a different mode while transactions were on the stack, which would then be subsequently settled incorrectly.
Was this defect/ root cause correctly recorded in the PP?	The defect cause recorded was "16:Development - Reference Data". Without a comprehensive understanding of which component of the system contained the error it is not possible for me to say whether this is an appropriate code.
Is there evidence that this defect/ root cause was addressed?	The PP states that the error was corrected in the Live software.
Observations on the management and closure of the issue.	This PP was closed without positive confirmation that the imbalances were properly addressed.
Observations on defect / root cause	The root cause appears to have been identified and remedied.

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Table 18.9 (7) DataServer tree build failure

Summary	
Reference (PP / URN)	PC0045061 / FUJ00067416
Format	PEAK
Date opened	16 May 2000
Date closed	14 September 2000
Days open for	122
Original call priority	B
Final Category	Category 90 - Reconciliation - resolved
Final defect / root cause	41:General – in Procedure

Chronology

Team (Member)	Date Entered	Extracted Comments
Customer Call	2000-05-16 15:46:45	THe host generated cash account line comparisons report dated 15/5 where post office 169207 has a difference in the recipts and payments total for cap 06.Please investiagte"
EDSC (Diane Rowe)	2000-05-19 07:55:55	F} Response : This office did not have a migration discrepancy.
EDSC (Diane Rowe)	2000-05-19 09:42:06	F} Response : This office has had big problems with its receipts and payments. Cap 5, 6 and 7 did not match. The differences are: CAP5 16284.72 CAP6 -19296.15 CAP7 14526.08. The office has already reported problems balancing which are being investigated by development - see pc43811 (E-0004271707). I have attached the complete messagestore.
QFP (Steve Warwick)	2000-05-23 17:09:58	F} Response : This is a duplicate of PinICLs 43811 and 45061 which are already under investigation
QFP (Steve Warwick)	2000-05-23 17:10:45	F} Response : My apologies, this IS 45061!
QFP (Steve Warwick)	2000-05-24 10:32:04	F} Response : "The cause of the problems in all three CAPs at this outlet was the fact that Stock Unit DD's rollover records from CAP 5 to CAP 6 represented a 'nil' balance (the total stock holding was nil, no receipts or payment transactions were recorded) despite the fact that the stock unit had been trading normally during the period. This issue was raised in PinICL 43811 and is still under investigation within the EPOSS Development team. The fact that Stock Unit DDs transactions and stock holdings were omitted from the CAP 5 Cash Account meant that the Brought Forward value for the Office in CAP 6 was incorrect. This caused the CAP 6 Cash Account to misbalance. I am still investigating why the CAP 7 Cash Account misbalanced, but I note that the office returned to a balanced position in CAP 8.
QFP (Steve Warwick)	2000-05-30 13:34:57	F} Response : 30/5/00: On further investigation, the same problem that affected stock unit DD in CAP5 affected Stock Unit TT in CAP 6, i.e. at balancing time the system failed to record the correct stock

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		holding for the stock unit and failed to write the summary totals for the Receipts and Payments products. The only records written were the declared Cash and Stamp holdings with a discrepancy equivalent to these amounts. This failure will have compounded the CAP 6 problem with stock unit DD and then generated a further discrepancy in CAP 7. I am passing the call to EPOSS-FP so that the message store evidence of the problem in both these CAPs can be examined.
EPOSS (Les Ong)	2000-07-04 17:57:23	F} Response : This problem is the same as that already resolved on PinICLs 37884 & 37663, namely that of DataServer not tree building & populating correctly. A diagnostic has been put into DataServer to detect any such problems.
EDSC (Diane Rowe)	2000-07-05 12:53:49	F} Response : Please can we agree closure on this now? See previous updates for details.
MSU (John Moran)	2000-07-05 16:09:30	F} Response : I thought diagnostic code was delivered in early May to alert the PO to do the roll over again and also to aid in tracking the fault. theis incident happened in mid may. What was the point of the code delivered in 5_2?
QFP (Steve Warwick)	2000-07-06 16:17:59	Passing to EPOSS-FP to explain to John exactly what has been delivered to CI3R in the way of diagnostic code for this issue.
EPOSS (David Linten)	2000-07-10 13:26:19	F} Response : This validation was release in WP 7865 on the 4th April 2000 from development.
EDSC (Diane Rowe)	2000-07-12 09:12:03	F} Response : Development have given you an answer, but I'm not sure that it helps. What do you think?
MSU (John Moran)	2000-07-12 09:47:52	F} Response : 1. I need to know what the correct Cash Account figures should have been were it not for the Dataserver failure. Can these be derived from the transactios in the message store, or the trial cash account. 2. The diagnostic code which was delivered before this incident happened was promised to aid in investigating the cause of this problem. Has this code helped? How? 3. At some point a WP was delivered that would alert the user that there was a problem with the SU roll over and the user woulf be promted with a message to re do the roll over. Has this been delivered? If so why did the roll over process not cease and promt the user to try again?
EDSC (Martin McConnell)	2000-07-12 12:29:00	I have been asked by Walter Wright to submit more detail and I also note John's queries; in response to these first: 1. We can reconstruct the Cashaccount at some point but I do not believe this to be an 'L1HOT' issue, I think this will have to queued up and reprioritised (or cloned specifcally for this issue). 2. The diagnostics have been useful for PINICLs such as this becuase have have confirmed what we have suspected, in that records have failed to be retrieved from Riposte calls (when they work perfectly well in development).

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		3. Code has been issued at CI4 which will back the user out from key phases of rolover should the system detect that rposte readied retrievals have failed to yield data. I don't think I'm being premature in revealing that we think we know know why these failures with Dataserver are occrring. Steve Warwick experienced such a failure on a rig he was testing against and found the root cause was that Archiving was active during a riposte query; this only occurs 'out-of-hours' at the end of each working day. Archiving will occur 'in-hours' should the counter have been switch off over night for 7 condecutive days and hence the sprordic nature of these incidents (or where PM's do their balancing near the archiving time at 10pm.)
EDSC (Jim Anscomb)	2000-08-08 14:07:20	F} Response : PRESCAN: Diane's away, Steve Warwick is definitely not looking at this call, need to check out what to be done as corrected CA details may be required. Any problems contact L. Higman.
EDSC (John Ballantyne)	2000-08-08 14:35:34	F} Response : I have spoken to Martin McConnell who advised call to be routed to EPOSS-FP for assistance to re-produce the Cash account as per John Moran's requirements.
EPOSS (Gerald Barnes)	2000-09-13 14:18:44	F} Response : It proved to be very difficult to resurrect the cash account data for week 5. Steve Warwick's analysis tool showed that not only was stock unit DD corrupt but also stock unit XXX. EPOSS nodes 91579999 and 90029999 were missing and had to be resurrected. In the end the reconciliation code was adapted to give data for every CashAccLine with the exception of 99990001 which is the receipts balance bought forward; but that can be calculated by looking at the receipts total from the previous CAP CashAccLine 99990700. The resurrected figures are given in the attached file CAP5. The lines containing <Application:EPOSSWeeklyDump> <DumpOf:AccumulatedFigures> give the recalculated values for each CashAccLine. They contain the CashAccLine number with a prefix giving the table number. Note that lines 99990701 and 99990702 can not be trusted absolutely but their sum will be correct for the overall discrepancy table value. An alternative way of looking at the results is to look at the lines Containing <Application:EPOSSWeeklyRecon> <EPOSSTransaction:<TranType:WeeklyCAErr>. They give the original and recalculated CashAccLine data for each line that was wrong - all other lines in the cash account would have been correct. Note that lines 99990701 and 99990702 are not included in this set.
EPOSS (Gerald Barnes)	2000-09-13 14:43:18	F} Response : I am not sure it is worth spending time trying to resurect the other CAPs. The method I have derived assumes that the CashAccLines for the previous CAP. I see from Steve Warwicks's analysis that CAP 6 was not correct as well. Now if I rerun the tool I have developed on CAP 6 it will use as its base line the CashAccLine figures in CAP 5 which we know are wrong and I have just recalculated. I think therefore that enough time has been spent on

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		his problem and it is not cost effective to proceed further. However in future where there is a problem with just one CAP we should be able to resurect the figures more easily.
EDSC (John Ballantyne)	2000-09-13 15:38:06	F} Response : John can we kill this one off?
MSU (John Moran)	2000-09-14 11:14:08	Thanks for all the effort. For the time being I have agreed that reconstructed cash accounts will not be needed all the time, but only by special request of POCL. I have already issued the final BIM report. As such please close this call, and hope for the best with the CI4 code which should make this type of incident very rare.
EDSC (John Ballantyne)	2000-09-14 12:30:27	F} Response : As per Johns comments closing call
Customer Call	2000-09-14 12:49:37	Date and time complete: 14/09/2000 13:34:45 Service Complete (Confirmation) Received

My observations	
Was the immediate issue fixed?	It appears that the CAP5 account was reconstructed but that the CAP6 and CAP7 accounts were not.
Was a defect/ root cause identified?	A root cause was identified, namely that the archiving process was active during a Riposte query.
Was this defect/ root cause correctly recorded in the PP?	The defect code "14: Development – Code" was recorded in the text which is consistent with the text of the PP.
Is there evidence that this defect/ root cause was addressed?	The reference to release CI4 suggests that they believed a code fix would address this.
Observations on the management and closure of the issue.	It appears that the investigation into the root cause of this PP was carried out with proper diligence.
Observations on defect / root cause	A root cause was identified and there was an expectation that release CI4 contained the proper detection and remediation procedures to prevent this issue from recurring.

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Appendix A – Inventory of documents relied on

Document Type	Document Title	URN / URL
PinICL / PEAK	PC0026873	FUJ00027003
PinICL / PEAK	PC0026195	FUJ00027211
PinICL / PEAK	PC0027139	FUJ00027630
PinICL / PEAK	PC0028477	FUJ00029091
PinICL / PEAK	PC0030182	FUJ00029755
PinICL / PEAK	PC0027321	FUJ00029789
PinICL / PEAK	PC0028528	FUJ00029832
PinICL / PEAK	PC0028263	FUJ00029840
PinICL / PEAK	PC0031280	FUJ00030450
PinICL / PEAK	PC0031549	FUJ00030674
PinICL / PEAK	PC0031834	FUJ00030930
PinICL / PEAK	PC0031939	FUJ00030982
PinICL / PEAK	PC0031947	FUJ00031101
PinICL / PEAK	PC0032182	FUJ00031124
PinICL / PEAK	PC0031996	FUJ00031206
PinICL / PEAK	PC0032173	FUJ00031675
PinICL / PEAK	PC0033082	FUJ00032062
PinICL / PEAK	PC0033250	FUJ00032246
PinICL / PEAK	PC0030628	FUJ00032275
PinICL / PEAK	PC0031636	FUJ00032293
PinICL / PEAK	PC0033152	FUJ00032423
PinICL / PEAK	PC0033173	FUJ00032563
PinICL / PEAK	PC0028847	FUJ00034029
PinICL / PEAK	PC0034961	FUJ00034224
PinICL / PEAK	PC0033339	FUJ00034278
PinICL / PEAK	PC0035599	FUJ00034604
PinICL / PEAK	PC0035901	FUJ00034731
PinICL / PEAK	PC0031395	FUJ00034968
PinICL / PEAK	PC0035708	FUJ00035068
PinICL / PEAK	PC0034505	FUJ00036136
PinICL / PEAK	PC0036526	FUJ00036863
PinICL / PEAK	PC0038771	FUJ00037419
PinICL / PEAK	PC0027324	FUJ00038157
PinICL / PEAK	PC0031884	FUJ00038613
PinICL / PEAK	PC0032855	FUJ00039260
PinICL / PEAK	PC0029148	FUJ00039293
PinICL / PEAK	PC0031907	FUJ00039673
PinICL / PEAK	PC0041919	FUJ00040054
PinICL / PEAK	PC0041477	FUJ00040565
PinICL / PEAK	PC0045090	FUJ00042700
PinICL / PEAK	PC0045309	FUJ00043195
PinICL / PEAK	PC0045580	FUJ00045452
PinICL / PEAK	PC0034036	FUJ00045829
PinICL / PEAK	PC0045546	FUJ00046317
PinICL / PEAK	PC0048718	FUJ00046403
PinICL / PEAK	PC0048716	FUJ00062520

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Document Type	Document Title	URN / URL
PinICL / PEAK	PC0050081	FUJ00062974
PinICL / PEAK	PC0051382	FUJ00064777
PinICL / PEAK	PC0051361	FUJ00065150
PinICL / PEAK	PC0052148	FUJ00066141
PinICL / PEAK	PC0053061	FUJ00066464
PinICL / PEAK	PC0053216	FUJ00066611
PinICL / PEAK	PC0045061	FUJ00067416
PinICL / PEAK	PC0054604	FUJ00068089
PinICL / PEAK	PC0059762	FUJ00073008
PinICL / PEAK	PC0031313	FUJ00075020
Monthly report	Pathway Monthly Report- December 1998	FUJ00058198
Monthly report	Pathway Monthly Report - August 1998	FUJ00058158
Monthly report	Pathway Monthly Report - February 1997	FUJ00058160
Monthly report	Pathway Monthly Report - March 1997	FUJ00058161
Monthly report	Pathway Monthly Report - June 1997	FUJ00058162
Monthly report	Pathway Monthly Report - August 1997	FUJ00058163
Monthly report	Pathway Monthly Report - December 1997	FUJ00058166
Monthly report	Pathway Monthly Report -January 1999	FUJ00058168
Monthly report	Pathway Monthly Report - February 1998	FUJ00058169
Monthly report	Pathway Monthly Report - March 1998	FUJ00058170
Monthly report	Pathway Monthly Report - April 1998	FUJ00058171
Monthly report	Pathway Monthly Report - May 1998	FUJ00058173
Monthly report	Pathway Monthly Report - June 1998	FUJ00058174
Monthly report	Pathway Monthly Report - July 1998	FUJ00058175
Monthly report	Pathway Monthly Report - September 1998	FUJ00058176
Monthly report	Pathway Monthly Report - October 1998	FUJ00058177
Monthly report	ICL Pathway Monthly Report - April 1999	FUJ00058181
Monthly report	ICL Pathway Monthly Report - May 1999	FUJ00058182
Monthly report	ICL Pathway Monthly Report - June 1999	FUJ00058183
Monthly report	ICL Pathway Monthly Report - July 1999	FUJ00058184
Monthly report	ICL Pathway Monthly Report - August 1999	FUJ00058185
Monthly report	ICL Pathway Monthly Report - September 1999	FUJ00058186
Monthly report	ICL Pathway Monthly Report - October 1999	FUJ00058187
Monthly report	ICL Pathway Monthly Report - November 1999	FUJ00058188
Monthly report	ICL Pathway Monthly Report - January 2000	FUJ00058189
Monthly report	ICL Pathway Monthly Report - February 2000	FUJ00058190
Monthly report	ICL Pathway Monthly Report - May 2000	FUJ00058191
Monthly report	ICL Pathway Monthly Report - June 2000	FUJ00058192
Monthly report	ICL Pathway Monthly Report - July 2000	FUJ00058193
Monthly report	ICL Pathway Monthly Report - August 2000	FUJ00058194
Monthly report	ICL Pathway Monthly Report - October 2000	FUJ00058195
Monthly report	ICL Pathway Monthly Report- November 2000	FUJ00058196
Monthly report	ICL Pathway Monthly Report - December 2000	FUJ00058197

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Document Type	Document Title	URN / URL
Monthly report	ICL Pathway Monthly Report - July 2000	FUJ00078051
Monthly report	Monthly Joint Implementation Report - Sept 27, 1999 - Oct 24, 1999	NFSP00000065
Monthly report	Monthly Incident Review - November 2000	POL00029221
Monthly report	Monthly Incident Review - March 2000	POL00029222
Background materials	CS Support Services Operations Manual, version 3.0 dated 07 February 2000	FUJ00079816
Background materials	ICL Pathway Customer Service Incident Management Process, version 1.0 dated 13 November 2000	FUJ00079865
Background materials	End to End Support Process, Operational Level Agreement, version 2.0 dated 17 June 2003	FUJ00079897
Background materials	NR2 HORIZON SYSTEM HELPDESK: Processes and Procedures Description, version 1.0 dated 15 June 1999	FUJ00080410
Background materials	Horizon System Helpdesk Call Enquiry Matrix, version 1.0 dated 13 March 1997	FUJ00080486
Background materials	PinICL Incident Management Process, version 3.0 dated 30 January 1998	FUJ00098253
Background materials	PinICL User Guide, version 0.1 dated 15 February 2000	FUJ00098255
Background materials	PinICL Reference Data Guide, version 2.0 dated 18 February 2002	FUJ00098258
Background materials	Horizon System User Guide / Balancing with Horizon Guide ("HSUG"), version 1.0 dated 28 July 2000	POL00038868
Background materials	Technical Environment Description ("TED"), version 4.8 dated 22 October 2002	FUJ00079645
Background materials	Horizon OPS Reports and Receipts ("HRR"), version 8.0 dated 08 August 2000	FUJ00119554
Background materials	HNG-X Architecture - Counter Business Application ("HXA"), version 5.0 dated 04 August 2017	FUJ00118200
Background materials	Horizon Online Induction Training ("HOIT"), which is not dated but is believed to have been produced in around August 2009	POL00089726
Background materials	IMPACT Release 3 Counter Design for Balancing, Rollover and Stock Processing, version 2.0 dated 12 September 2005	FUJ00085124
Background materials	Impact Release 3 - Balancing and Trading Statement Production User Interface, version 2.0 dated 31 October 2005	FUJ00085125
Background materials	IMPACT Release 3 Design Proposal, version 2.0 dated 20 December 2004	FUJ00088336
Background materials	Explanation of Local P.O. Reconciliation and Administration	FUJ00079193
Background materials	Operations Manual - Branch Trading: balancing and despatch', version 7 dated December 2006	POL00086704
Background materials	Horizon Online: Introducing Horizon Online	POL00086712

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Document Type	Document Title	URN / URL
Background materials	Branch Trading Transition Guide, dated September 2005	POL00089708
Background materials	EPOSS Functional Description, version 4.0 dated 03 March 1999	FUJ00079277
Correspondence	Submissions on behalf of Fujitsu Services Limited dated 13 September 2022 (in response to a Rule 9 Request dated 29 April 2022)	FUJ00119556
Publicly available document	The 'Terms of Reference (updated)' for the Post Office Horizon IT Inquiry	https://www.postofficehorizoninquiry.org.uk/publications/terms-reference
Publicly available document	The 'Completed List of Issues' for the Post Office Horizon IT Inquiry	https://www.postofficehorizoninquiry.org.uk/publications/completed-list-issues
Publicly available document	The seven phases of the Inquiry	https://www.postofficehorizoninquiry.org.uk/key-documents
Publicly available document	Bates & Ors v Post Office Ltd ((No.3) "Common Issues") [2019] EWHC 606 (QB) (15 March 2019) (Common Issues Judgment)	https://caselaw.nationalarchives.gov.uk/ewhc/qb/2019/606
Publicly available document	Bates & Ors v the Post Office Ltd (No 6: Horizon Issues) (Rev 1) [2019] EWHC 3408 (QB) (16 December 2019) (Horizon Issues Judgment)	https://caselaw.nationalarchives.gov.uk/ewhc/qb/2019/3408
Publicly available document	Technical Appendix to Judgment (No.6) "Horizon Issues"	https://www.judiciary.uk/wp-content/uploads/2019/12/bates-v-post-office-appendix-1.pdf
Publicly available document	Appendix 2 - Summary of Bugs, Errors, Defects - Judgment (No.6) "Horizon Issues"	https://www.judiciary.uk/wp-content/uploads/2019/12/bates-v-post-office-appendix-2-1.pdf
Publicly available document	Appendix 3 - Glossary - Judgment (No.6) "Horizon Issues"	https://www.judiciary.uk/wp-content/uploads/2019/12/bates-v-post-office-appendix-3-1.pdf
Publicly available document	Post Office - Our Purpose	https://corporate.postoffice.co.uk/en/purpose-strategy/purpose/our-purpose/
Publicly available document	Fujitsu case study - Fujitsu's Systems and Operational Services to UK Post Office and the Worldwide Trend of Post Offices	https://www.fujitsu.com/downloads/SVC/fs/casestudies/uk-postoffice2.pdf
Publicly available document	Fujitsu case study - Post Office Limited, 07 November 2007	https://www.fujitsu.com/uk/Images/postoffice-customer-experience.pdf
Publicly available document	Post office numbers, 21 February 2022	https://researchbriefings.files.parliament.uk/documents/SN02585/SN02585.pdf
Publicly available document	Select Committee on Trade and Industry Written Evidence - Appendix 16 - Memorandum by Post Office Ltd, 12 May 2003	https://publications.parliament.uk/pa/cm200203/cmselect/cmtrdind/718/718we17.htm
Publicly available document	Securing the Post Office network in the digital age, November 2010	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/31809/10-1260-securing-the-post-office-network.pdf
Publicly available document	Wikipedia article	https://en.wikipedia.org/wiki/List_of_best-selling_mobile_phones#1999
Publicly available document	Apple press release, 09 January 2007	https://www.apple.com/uk/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone

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Document Type	Document Title	URN / URL
Publicly available document	Review of the Internet Watch Foundation - A report for the DTI and Home Office by KPMG and Denton Hall	https://webarchive.nationalarchives.gov.uk/ukgwa/19991013043222/http://www.dti.gov.uk:80/iwfreview/iwfreview1.html
Publicly available document	Ofcom Report - The Communications Market 2004, 11 August 2004	https://web.archive.org/web/20090905171759/http://www.ofcom.org.uk/research/cm/cmpdf/cmr04_print/cm_2004.pdf

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Appendix B – Example Attribute Grammar

Shown below is an example of an Attribute Grammar:

<Message:<GroupId:23422><Id:8><Num:363><Date:22-Jul-2000><Time:10:37:11><User:SGR001><Expiry:35><TxnData:<Container:FF>><EPOSSTransaction:<CutOffID:20><TranType:C><Summary:<SU:FF><CAP:18><BP:02><SV:1250.6><Qty:4><LTSV:1>><PM:<L1:><L2:><L3:3181><L4:><L5:>><SM:>><CRC:EB8BF000>>

<Message:<GroupId:23422><Id:8><Num:480><Date:22-Jul-2000><Time:11:05:42><User:SGR001><Expiry:35><TranStartNum:480><TxnData:<SessionId:23422-8-480><TxnId:23422-8-480><Container:FF><Start:<Date:22-Jul-2000><Time:11:05:26><TF:5>><End:<Date:22-Jul-2000><Time:11:05:39><TF:1>><Mode:SC>><Application:EPOSSAppMain><EPOSSTransaction:<ProductNo:262><Qty:1><PVer:33><SaleValue:377.3><BlackBoxData:<M:SC><UnitPrice:377.3><S:1>><AdditionalData:<ACC_NO12:[REDACTED]>><TranType:S><PM:<L1:><L2:20><L3:3006><L4:3013><L5:3017>><SM:><Discounted:False>><Credit:37730><CRC:4D7F7DA6>>

<Message:<GroupId:23422><Id:8><Num:531><Date:22-Jul-2000><Time:11:34:09><User:SGR001><Expiry:35><TranStartNum:531><TxnData:<SessionId:23422-8-531><TxnId:23422-8-531><Container:FF><Start:<Date:22-Jul-2000><Time:11:29:37><TF:9>><End:<Date:22-Jul-2000><Time:11:29:46><TF:4>><Mode:SC>><Application:EPOSSAppMain><EPOSSTransaction:<ProductNo:261><Qty:1><PVer:23><SaleValue:46.4><BlackBoxData:<M:SC><UnitPrice:46.4><S:1>><AdditionalData:<ACC_NO12:[REDACTED]>><TranType:S><PM:<L1:><L2:20><L3:3006><L4:3013><L5:3017>><SM:><Discounted:False>><Credit:4640><CRC:AC9978C7>>

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Appendix C1 – Example PinICL

Shown below is an example of a PinICL with some of the challenges of interpreting this highlighted as call-outs. We have deliberately selected an example PinICL which contains more fulsome descriptions (some PinICLs are a lot more challenging to interpret). It is important to note that a PinICL was written for internal tracking purposes by the team trying to investigate and resolve the identified issues. They were, presumably, not written is such a way as to provide a complete and accurate explanation of all investigatory steps such that someone reviewing these some 20+ years later could fully understand what had occurred. The PinICL should be viewed with this context in mind, but nonetheless the challenge of interpreting these documents remains relevant to my review and therefore the approach adopted.

Figure 18.6 Example PinICL (1 of 8)

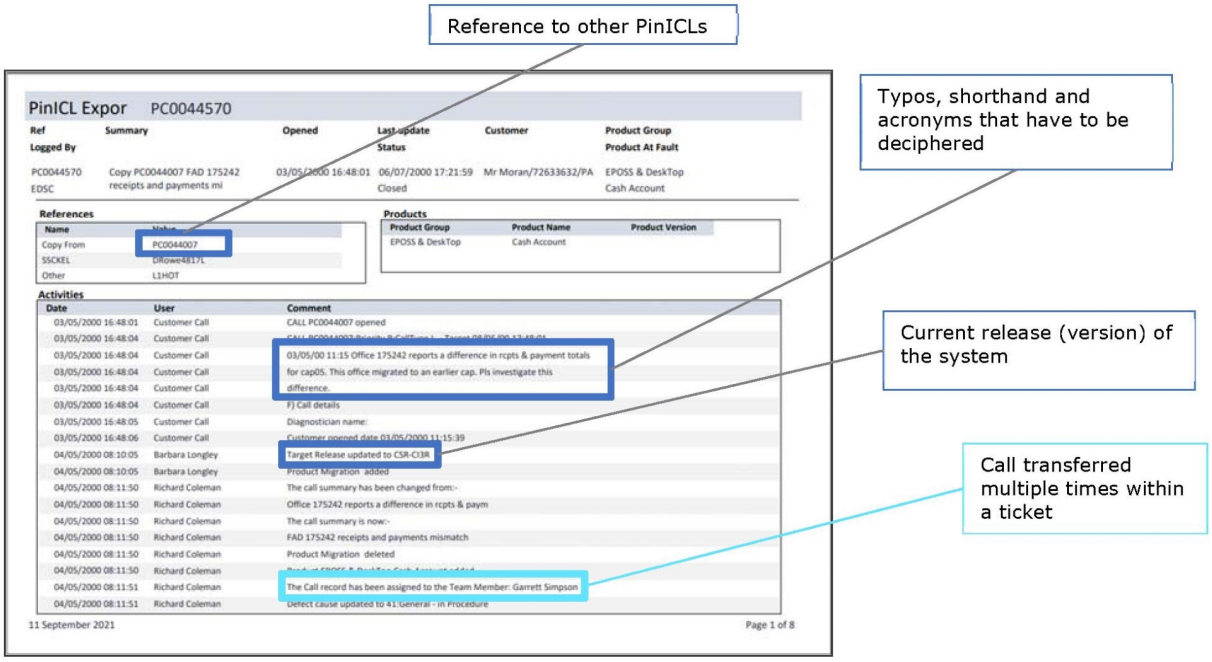

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Figure 18.7 Example PinICL (2 of 8)

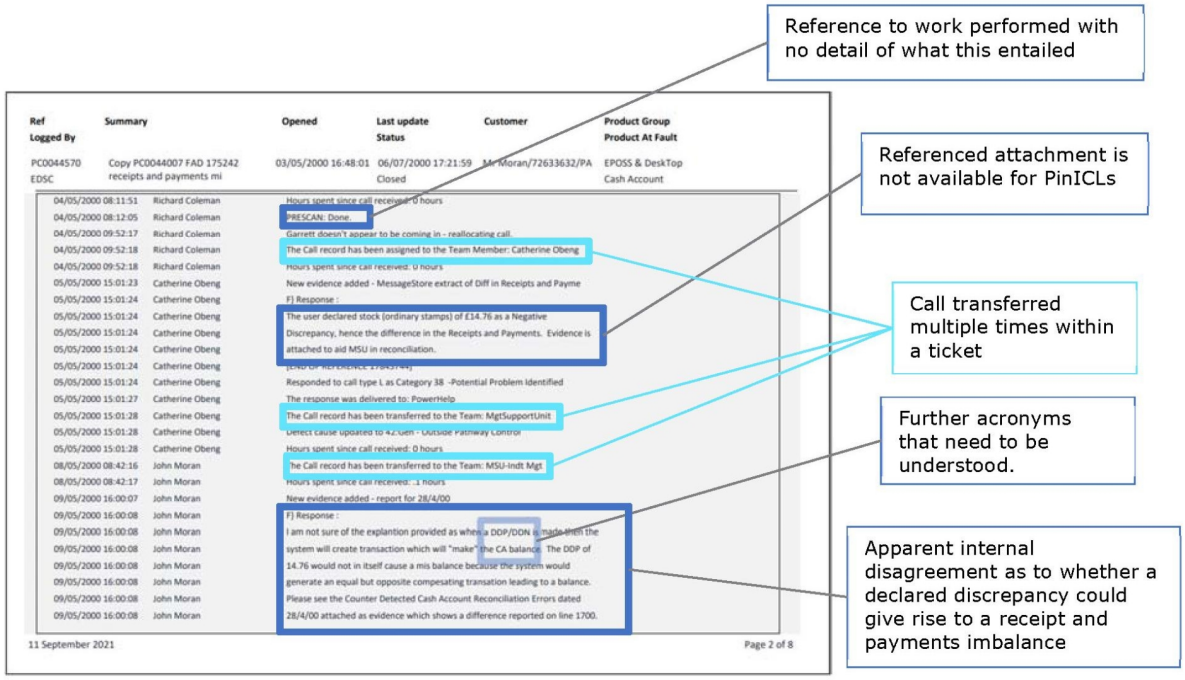

Figure 18.8 Example PinICL (3 of 8)

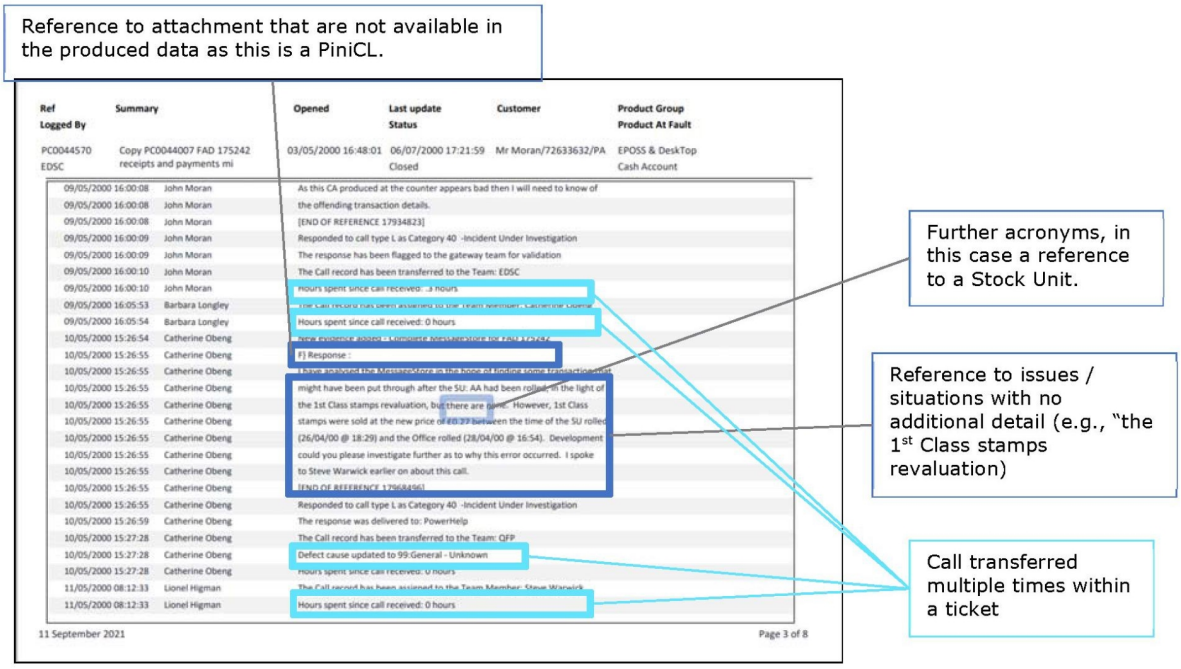

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Figure 18.9 Example PinICL (4 of 8)

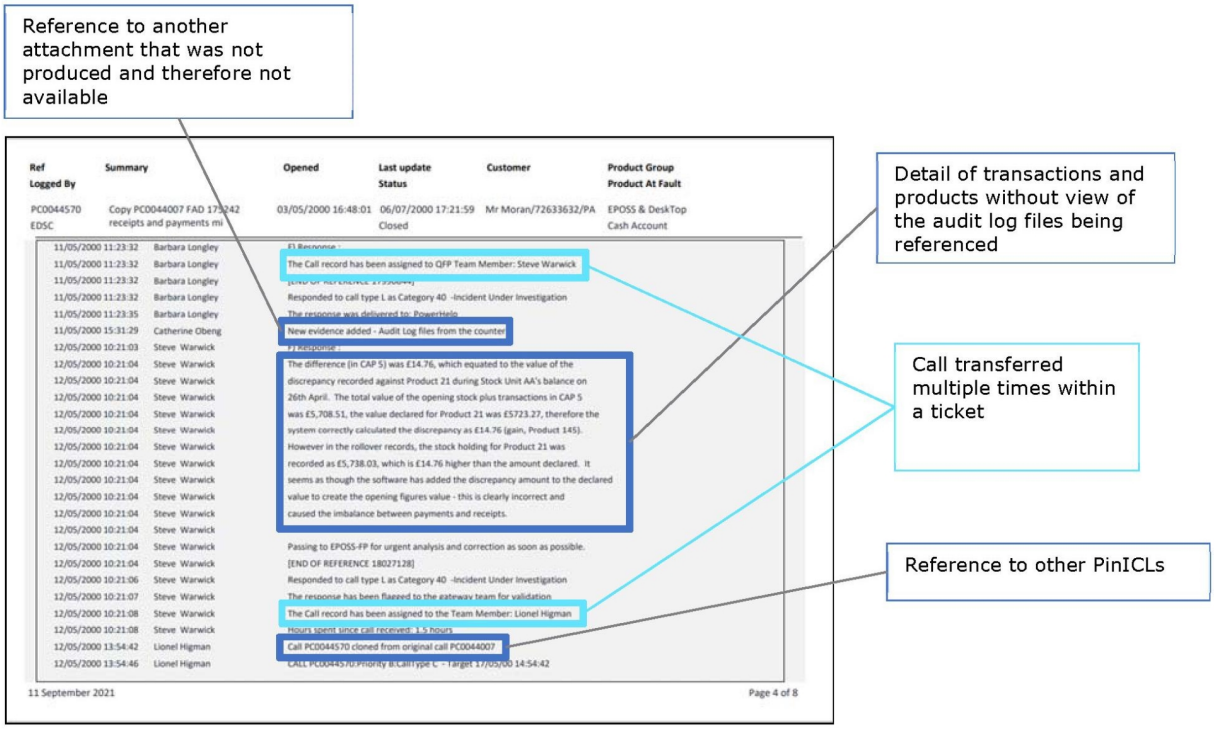

Figure 18.10 Example PinICL (5 of 8)

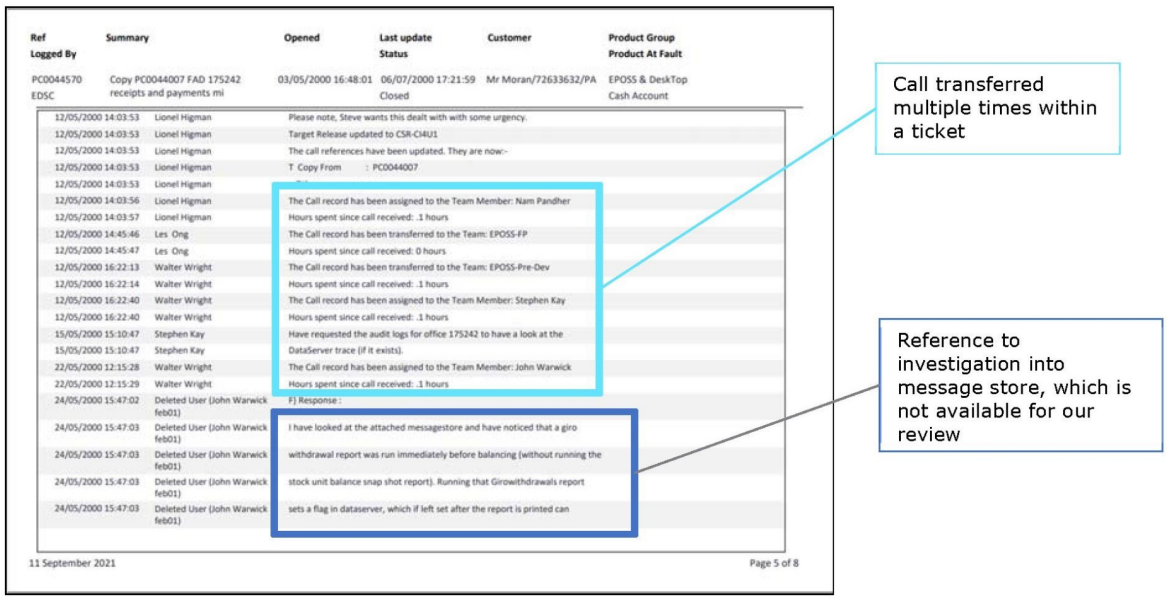

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Figure 18.11 Example PinICL (6 of 8)

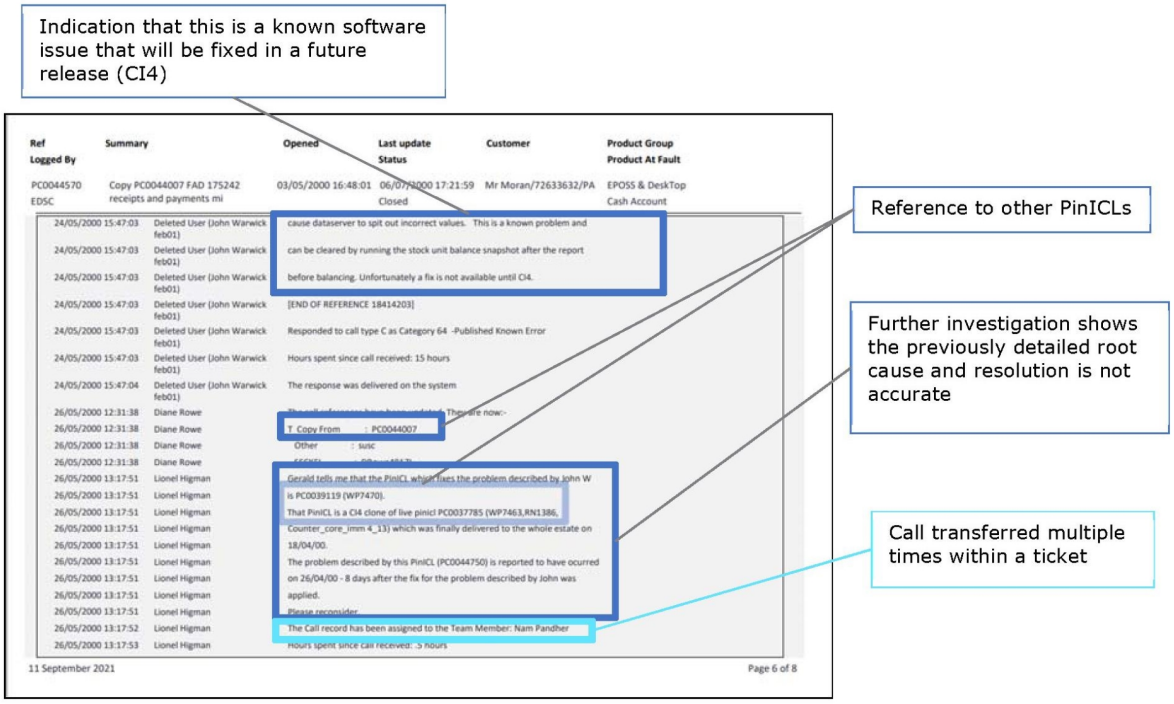

Figure 18.12 Example PinICL (7 of 8)

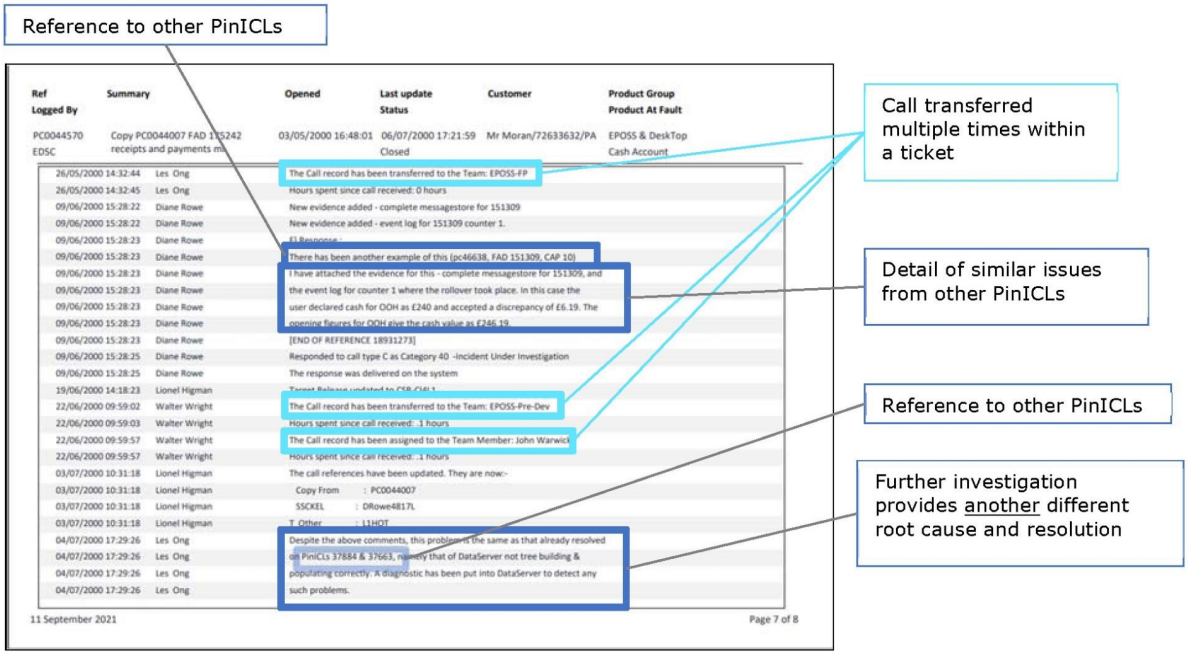

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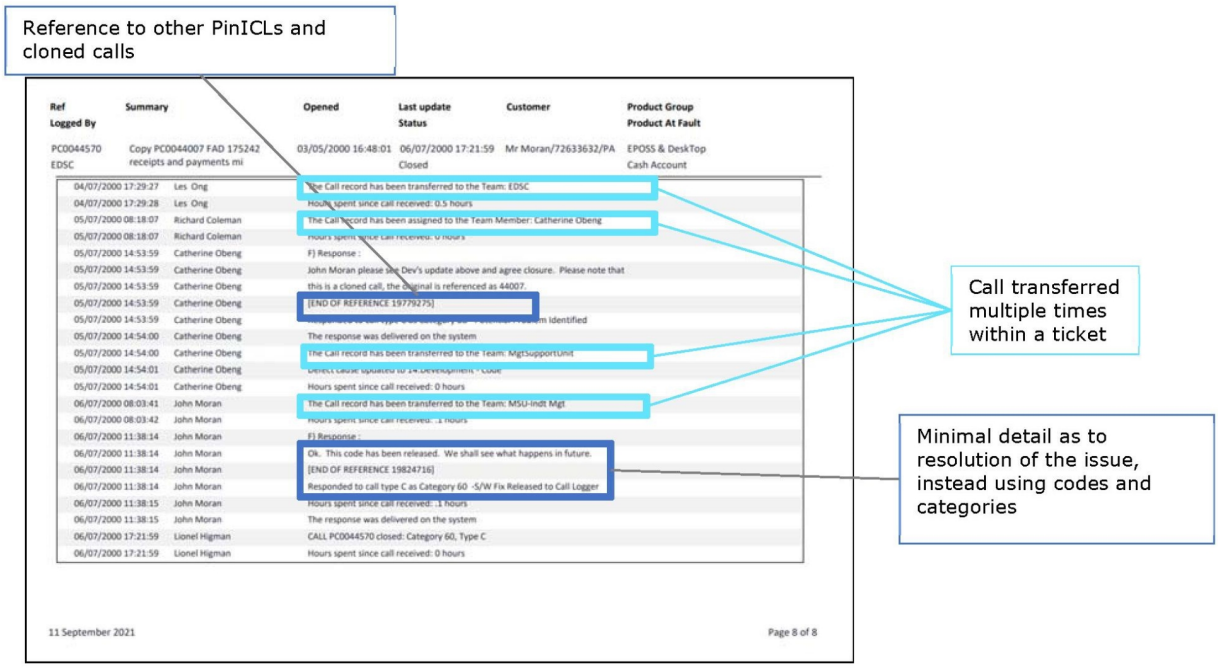
Figure 18.13 Example PinICL (8 of 8)



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Appendix C2 – Example PEAK

Figure 18.14 Example PEAK (1 of 2)

Acronyms often used that we had to lookup (e.g., EDSC)

Export

Peak Incident Management System

Call Reference	**PC0045077**	Call Logger	_Customer Call_ -- EDSC
Release	Targeted At -- CSR-CI3_2R	Top Ref	E-0005162468
Call Type	Live Incidents	Priority	B -- Business restricted
Contact	EDSC	Call Status	Closed -- Reconciliation - resolved
Target Date	19/05/2000	Effort (Man Days)	0
Summary	Raising call on the back of closed call e-00050908		

Progress Narrative

Date:16-May-2000 16:35:00 User:_Customer Call_
CALL PC0045077 opened

Date:16-May-2000 16:36:00 User:_Customer Call_
16/05/00 17:29 Raising call on the back of closed call e-0005090848. This call was closed in error so raising this call with closed call updates in it FAO Barbara Longley@SSC.
16/05/00 17:32 UK061916
Information: Details of closed call e-0005090848:
This is a system incident for SSC aps reconcilliation report (national totals) shows 33tps delays enter date 4/5/00
harvest date 4/5/00 . please investigate and resolve.
By Garrett Simpson at 12-may-2000 15:44:00 Category 40 - Incident Under Investigation There can be up to 500,000 APS transactions on a particular day. Trying to pick out 33 of them without further information is almost impossible.
NO TRANSACTION DATE AND TIME WAS PROVIDED FOR THIS ACTION
USING CURRENT DATE AND TIME
By Barbara Longley at 16-may-2000 14:36:00 Category 68 -

Ticket refers to another closed call

MSU for call raiser Please close call. Please see previous calls for reason Closing as -Administrative Response.
16/05/00 17:34 UK061916
Information: Will reassign FAO Barbara Longley@SSC as requested so call can be continued.
F} Call details
Diagnostician name:
Customer opened date 16/05/2000 17:29:51

Ticket is advised to close then gets reassigned but no detailed explanation

Date:17-May-2000 08:33:00 User:Barbara Longley
Target Release updated to CSR-CI3R
Product APS added
F} Response :
Routing call back to Garrett Simpson in EDSC so that call can now be progressed correctly.
[END OF REFERENCE 18159184]
Responded to call type L as Category 40 -Incident Under Investigation
The response was delivered to: PowerHelp

Date:17-May-2000 08:54:00 User:Barbara Longley
The Call record has been assigned to the Team Member: Garrett Simpson
Defect Cause updated to 99:General - UNKNOWN
Hours spent since call received: 0 hours

Date:17-May-2000 13:29:00 User:Garrett Simpson
F} Response :
The previous call closed in error was PC0044400.
My initial response was :-
"12/05/2000 15:44:29 - By Garrett Simpson
F} Response : Response Ref: 18053988 - Displayed
There can be up to 500,000 APS transactions on a particular day. Trying to pick out 33 of them without further information is almost impossible.
[END OF REFERENCE 18053988]"
[END OF REFERENCE 18177496]
Responded to call type L as Category 40 -Incident Under Investigation
The response was delivered to: PowerHelp

Repetitive / copied & pasted text throughout the ticket

Date:25-May-2000 09:32:00 User:Garrett Simpson
F} Response :
I realise now that further detail about these missing transactions should be available from your 10-day report.
If these transactions are still missing, please tell me which FAD is

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Figure 18.15 Example PEAK (2 of 2)

Ticket gets transferred to other teams / team members multiple times within a ticket

```
concerned and I can investigate further.
If the transactions have now turned up then please close the call.
[END OF REFERENCE 18432949]
Responded to call type L as Category 40 -Incident Under Investigation

Date:25-May-2000 09:33:00 User:Garrett Simpson
The response was delivered to: PowerHelp
The Call record has been transferred to the Team: MSU-Indt Mgt
Hours spent since call received: 0 hours

Date:12-Jun-2000 10:37:00 User:Angela Shaw
The Call record has been assigned to the Team Member: Angela Shaw
Hours spent since call received: 0 hours

Date:05-Jul-2000 16:08:00 User:_Customer Call_
EMPTY 05/07/00 17:04 GB082158 HSH1 Information: 12/06/2000 11:37:56 - By
Angela Shaw
The Call record has been assigned to the Team Member:
Angela Shaw
pasted from pinICL.

Date:17-Jul-2000 14:58:00 User:Barbara Longley
F) Response :
Call assigned to Angela Shaw - MSU-Indt Mgt
[END OF REFERENCE 20171699]
Responded to call type L as Category 40 -Incident Under Investigation
The response was delivered to: PowerHelp

Date:18-Aug-2000 16:33:00 User:Angela Shaw
F) Response :
This call can now be closed as txns have been returned & matched.
Thanks
[END OF REFERENCE 21219754]
Responded to call type L as Category 40 -Incident Under Investigation
The response has been flagged to the gateway team for validation
The Call record has been transferred to the Team: EDSC
Hours spent since call received: 0 hours

Date:21-Aug-2000 08:25:00 User:Paul Steed
The Call record has been assigned to the Team Member: Garrett Simpson
Hours spent since call received: 0 hours

Date:21-Aug-2000 08:27:00 User:Barbara Longley
Target Release updated to CSR-CI3_2R
F) Response :
The Call record has been assigned to EDSC Team Member: Garrett Simpson
[END OF REFERENCE 21238525]
Responded to call type L as Category 40 -Incident Under Investigation
The response was delivered to: PowerHelp

Date:21-Aug-2000 11:48:00 User:Garrett Simpson
F) Response :
Call logger has requested closure.
[END OF REFERENCE 21247058]
Responded to call type L as Category 90 -Reconciliation - resolved
Hours spent since call received: 0 hours

Date:21-Aug-2000 11:49:00 User:Garrett Simpson
CALL PC0045077 closed: Category 90, Type L
The response was delivered to: PowerHelp

Date:21-Aug-2000 12:00:00 User:_Customer Call_
Date and time complete: 21/08/2000 12:57:59
Service Complete (Confirmation) Received
```

Root Cause	General - Unknown
Logger	_Customer Call_ -- EDSC
Subject Product	APS -- (version unspecified)
Assignee	Deleted User -- EDSC

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Appendix C3 – Example KEL

Figure 18.16 Example KEL



SSC DELETED KELs Saturday 11 Sep

HORIZON KEL rcoleman3549n

KEL type:	Information
Title:	Have message exceeded CM_IO_WAIT
Summary:	Have message exceeded CM_IO_WAIT
Raised:	by Richard Coleman on 11/10/1999
Last updated:	by Richard Coleman on 08/01/2004
Release:	BI3
System product:	Counter
Keywords:	index, disc, disk, CM_IO_WAIT, An unrecoverable er
Status:	Authorised
Visibility:	Medium
Peak:	PC31008
TfS:	9910090003
Version:	1

Symptoms

Riposte error DEMODIFY operation failed. The I/o completion wait operation timed out (exceeded CM_IO_WAIT)

An unrecoverable error occurred within the cache manager. The I/o completion wait operation timed out (exceeded CM_IO_WAIT) (0xC10A0020) The message server will be shutdown abnormally.

An error occurred while waiting for an I/o completion on volume 1 for unit LPN 35168. The I/o completion wait operation timed out (exceeded CM_IO_WAIT) (0xC10A0020

Problem

Probable disc problems

Solution - Helpdesk

Reboot counter
If message reappears then send engineer.
If a Single Counter Outlet engineer is to replace the mirror disc first and if the message reappears to then replace the base unit.

<kel>BEFORE the base unit is replaced (at a SCO) the engineer MUST contact the SMC to synchronize the messagestores.
See KEL PCarroll919Z for further details.</kel>

On a Multi Counter Outlet replace the base unit.

Evidence

None. Raise no calls.