



Bringing Technology to Post Offices and Benefit Payments

THE ROUTE TO ACCEPTANCE THROUGH ASSURANCE AND TESTING

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1. PURPOSE

- 1.1. This paper outlines an approach to bring together the activities of Assurance and Testing in the PDA as a vehicle to achieving Acceptance of the Pathway service. The paper has been written as a joint production by members of the three groups in the PDA, in response to a request from the PDA Programme Management Team (PMT) at their meeting in December 1997.

2. BACKGROUND

- 2.1. Within the PDA there have traditionally been two separate activities relating to the “proving” of the service being developed by ICL Pathway - Product Assurance, formerly known as Service Development, and Testing.’
- 2.2. In the context of Release 1c, these activities have largely been focused on “Release Authorisation”, however with Release 2, there is a need to consider the critical activity of Contractual Acceptance. Product Assurance have traditionally been involved in the review of both Testing and draft Acceptance materials, however for historical reasons there has been a lack of connection between the Acceptance and Testing activities themselves.
- 2.3. Given that Acceptance Trials - effectively witnessed tests - form a major part of the Acceptance process, it is considered vital that the Acceptance and Testing activities, together with Assurance, are brought into a single coherent framework.
- 2.4. This paper initially describes Acceptance, Assurance and Testing, and then goes on to explore the linkages and relationships between the activities. At this stage, the document contains a large number of Drafting Notes (DN’s) highlighting areas of uncertainty or concern.

3. REFERENCES

[ACCPRO] - Schedule A11 - “*Acceptance Procedures*”

[DOCUM] - Schedule B3 - “*Documentation*”

[HARDWR] - Schedule B2 - “*Hardware*”

[HLACC] - DSS Schedules B5, D2 and E2, POCL Schedules B5, D2, E2, F2, G4 and H2, “*Acceptance Criteria*”

[OPTRAC] - Schedule C3 - “*Operational Trial Acceptance*”

[POLSTD] - Schedule A2 - “*Policies and Standards*”

[REQS] - Schedule A15 - “*Requirements*”



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[ROLL] - Schedule B6 (DSS) “*Roll-Out of DSS Service Infrastructure*” and Schedule G6 (POCL) “*Roll-Out and Implementation*”

[SOFTWR] - Schedule B1 - “*Software*”

[SOLNS] - Schedule A16 - “*Solutions*”

4. ACCEPTANCE OVERVIEW

4.1. What is acceptance?

4.1.1. Acceptance - or more fully “Acceptance of Deliverables and Services provided under the terms of the agreement”, is a contract defined activity [ACCPRO], through which the contracting authorities formally confirm that ICL Pathway have met the terms of the contract.

4.1.2. Acceptance is a ICL Pathway “owned” activity.....

4.2. Acceptance Method - Tests, Trials and Reviews

4.2.1. An Acceptance Test consists of a combination of Acceptance Trials and Acceptance Reviews. In general, acceptance of services will be performed by Trials, however Reviews will be used deemed appropriate.

4.2.2. An Acceptance Trial consists of a combination of inspection, demonstration, test running or monitoring of an element of the service; in general this, in conventional terms, can be considered to be based on the execution of a test in controlled circumstances.

4.2.3. An Acceptance Review consists of a combination of a review of a deliverable, inspection of evidence, or a presentation given by ICL Pathway.

4.2.4. For the avoidance of doubt, note that “Acceptance Test” does not directly correspond to the conventional use of the word “test”; “tests” are, in acceptance parlance, more appropriately compared to “Acceptance Trials”.

4.3. Acceptance Specifications

4.3.1. Acceptance Tests are defined in Acceptance Specifications, which are produced by Pathway but reviewed and agreed by the Contracting Authorities. At present Pathway are proposing some 23 Acceptance Specifications, broken down by ‘subject’ area (eg POCL Infrastructure, Security, etc).

4.3.2. These specifications define the purpose and scope of the Tests, identify the deliverables and services concerns, and which method - Trial or Review - is to be



used, for each Acceptance Criteria, together with the Acceptance Test Conditions which are used to establish whether or not the Criteria is met.

4.4. Acceptance Criteria

- 4.4.1. Fundamental the Acceptance process is the concept of Acceptance Criteria; these are the individual items which need to be “accepted”. Acceptance Criteria are bundled up into the Acceptance Specifications by subject.
- 4.4.2. The initial list of Acceptance Criteria used in the first drafts of the Acceptance Specifications (reviewed during Summer 1997) was based purely on a decomposition of the formal Requirements [REQS]; in general a number of Criteria were generated by each Requirement, for instance one Criteria per sentence or paragraph of each Requirement.
- 4.4.3. However, as defined in [OPTRAC], the full list of Criteria will need to be expanded to include:
- (a) requirements [REQS]
 - (b) policies and standards [POLSTD]
 - (c) solutions [SOLNS]
 - (d) software [SOFTWR] and hardware [HARDWR]
 - (e) documentation [DOCUM]
 - (f) roll out criteria [ROLL]
 - (g) ‘high level’ acceptance criteria defined explicitly per service [HLACC], covering ability infrastructure, ability to interwork with sponsor environment, data security, resistance to fraudulent attack, resilience/contingency and service levels/minimum acceptable thresholds.

4.5. Timing of Acceptance

<< Acceptance Periods, and how they relate to test phases?? >>

4.6. Current Status of Acceptance Preparation

<< Where are we at - some AccSpecs reviewed, all need revisiting, only Reqs in so far, additional specs needed, etc >>

DN: Pathway have chosen to base the Trials in their Acceptance Spec drafts on the existing portfolio of tests which they have created - independently - for Testing. The tests have therefore not been created for the purpose of testing. This approach is “bottom up” - start with a bucket of tests and assemble into Specs -



rather than “top down” - start with a set of Criteria/Specs and define the Trials required.

DN: Pathway originally assumed that there would be relatively few test scripts required within Acceptance, and that therefore Acceptance could be run as a separate activity. However, when the Acceptance Specifications were produced (by Pathway) it transpired that they referred to a large proportion of the available test scripts (a consequence of Pathway choosing to build on existing scripts not designed for the purpose), which reduced the viability of running it as a separate activity - and hence Pathway have proposed (in their “Principles of Acceptance Trials for Pathway Release 2”) to host Acceptance on existing test phases.

DN: The responsibility for defining and running Acceptance Trials falls with Pathway; PDA/Sponsors should not pick up any contractual responsibility. It is likely that some trials will need to be performed in End to End or Model Office, however the final passes of these are PDA owned - potential issue. PDA Testing had not planned for any Acceptance Trial demonstrations to take place during MOT (as a PDA owned phase) - indeed, this would be PDA demonstrating to PDA.

4.7. Partial Acceptance

DN: How are we handling “partial acceptance”, where the R2 functionality is insufficient to meet the criteria?

5. ASSURANCE OVERVIEW

5.1. Product Assurance Group

5.1.1. The Product Assurance Group - formerly known as Service Development Group - in the PDA is constituted into three teams:

- Product Management (Business Assurance)
- Fraud & Security (Security Assurance)
- Technical Assurance

engaged, from their respective viewpoints, in providing assurance

<< Fill this out... What do we want to say about Product Assurance?>>>

5.2. Product Assurance - Test Responsibilities

5.2.1. Product Assurance have the following involvement in testing:



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- (a) agreement of the scope and purpose of each phase of testing
 - (b) assurance of the test preparation (*preparation itself performed by Testing*)
 - (c) assistance with fault analysis/query resolution (*when requested by Testing*)
 - (d) evaluation of impacts of faults
 - (e) brokering of workarounds with Pathway and sponsors
 - (f) [evaluation of results for Acceptance purposes]

5.3. Constraints on Assurance

Design

The traditional SDLC involves an on-going process of Validation and Verification, to ensure that the emerging system both meets the underlying business requirements ("right system") and that it conforms with earlier stages in the SDLC ("system right"). The need for V&V is not invalidated through the use of RAD, however this is largely irrelevant as there is little similarity between the development process used by Pathway for Horizon and industry-standard RAD.

This V&V process provides traceability from the top level requirements (in our case, The Contract) against which final testing will be performed (in our case, Acceptance) down into the product, and back up through the various stages of Integration and Test.

However, on Horizon the design has not been independently (PDA) validated against the Requirements/SADD, and SADD itself is weak in some areas. Pathway have proceeded, at their own risk, with the design and coding without this validation and now claim to have completed almost all design/development and be at a "code freeze".

At this stage it is considered too late for such validation to be usefully retrofitted into the SDLC (it would be very unlikely that problems found during such a validation would be sympathetically received by Pathway, and any problem would anyway be portrayed as causing slippage), and any such validation activity would only serve to give credibility to an otherwise dubious SDLC.

However, access to design by Assurance would still be useful for:

- early visibility of non-conformities (even if too late to achieve rectification prior to test) - to obtain a view as to the scale of a problem and likely state of readiness of conformant product



- to pre-warn testing of “sensitive areas”, to ensure appropriate tests are formulated to exercise and flush out, in the testing domain, problems which would have ideally (in a traditional SDLC) have been detected and resolved in the design validation.

to inform the review and assurance of the test prep, to ensure that testing is adequate (very difficult to do on a black-box basis, especially in off main-thread and exception handling areas - which potentially account for the majority of both development and test effort)

6. TESTING OVERVIEW

6.1. Introduction

- 6.1.1. The term “testing” is used to cover a multitude of different testing activities, with different ownership, purposes and organisational structures. This section attempts to provide a very high level overview, as an aid to the consideration of the relationship with Acceptance et al.
- 6.1.2. PDAs interest in testing has, to date, been primarily based around informing the Release Authorisation decision, in other words determining whether the product as tested is fit for release into the field.

6.2. Pathway Owned Testing

- 6.2.1. The contracted BA/POCL service is being delivered by Pathway, and it is therefore their responsibility to test the system and service to ensure that they can deliver the contracted service.
- 6.2.2. However, the PDA has involvement in these Pathway phases as follows:
 - (a) through Joint Business Testing, the injection of business knowledge
 - (b) through Joint Security/Technical testing, the injection of expertise
 - (c) through review, managed by PDA Testing, of test preparation (in particular High Level Test Plans - HLTPs - reviewed by Product Assurance)
 - (d) through review of test outputs
 - (e) visibility of test progress

DN: There is still the danger that we are “injecting” knowledge at this stage to testing, whereas Pathway have denied us access at any sensible level of detail to the emerging product for Assurance?



DN: What is contractual basis for our review and any sign off of these test phases, in prep or execution?

DN: Acceptance must be done within a Pathway owned phase?

6.3. PDA Owned Testing

6.3.1. The PDA has an “end to end” role (integration of Pathway with sponsor systems and with sponsor business processes) and therefore has its own test phases (E2E/MOT) but these are not primarily intended to test the workings of the Pathway service per se.

DN: Is this true? Does E2E/MOT assume a fully working and tested Pathway service, and that they are only testing the service in the round? Certainly the level of specification inferred by the High Level matrix suggests that E2E/MOT is covering much which is wholly within the Pathway service.

6.4. Test Phases

This table summarises the various test phases visible to the PDA - phases totally within Pathway’s control (such as PIT) are not shown:

Phase	Managed by	Prep by	PDA Testing Involvement	Testing Against	Scope
System Test	Pathway	Pathway	Through JBT	Design	Pathway Service - as separate vertical services (eg APS, BPS etc)
Business Integration Test	Pathway	Pathway	Through JBT	SADD	Pathway Service - as integrated horizontal and vertical service (eg APS within full counter system) “Architectural Conformance”
Security Test	Pathway	Pathway	Through S&T	SFS/ACP	Pathway Service - Infrastructural Security Functionality
Technical Test	Pathway	Pathway	Through S&T	?	Pathway Service
Direct Interface Test	Pathway/ PDA (?)	All suppliers	Direct involvement	SADD Interface Specs	Interfaces between Pathway and sponsor system
End to End	PDA (final phase)	PDA	Managing	? R/S/SADD	Sponsor systems and Pathway Service operating in “live” configuration
Model Office Test	PDA (final phase)	PDA	Managing	? Procedures	Pathway Service operating in business environment, against procedures, training



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					and business processes
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DN: What does Technical Test test against?

- 6.4.1. Pathway have responsibility for executing all but the final stages of E2E and MOT (ie E2E rehearsal and MOR), however the tests will have been specified by PDA.

DN: If PDA are specifying the tests for E2E/MOT, how can they be used for Acceptance - as Acceptance is a Pathway responsibility - even if Pathway are executing these pre-final passes?

7. RELATIONSHIP BETWEEN THE ACTIVITIES

DN: Currently very little between PDA Testing and Acceptance - eg PDA "End to End Interface and Model Office Testing" approach paper makes no mention of Acceptance.

Product Assurance:

- review Acceptance Specs ("own" the majority - but not all - of the requirements and therefore now the Acceptance Criteria - but ownership is not well define concept at the moment. Ownership needs to be at AC level.)

- review HLTPs

- review test outputs

8. OUTSTANDING ISSUES

Issues

- PDA have not been permitted to validate/verify the design against the Requirements/SADD; we cannot confirm that the design will meet the contracted requirements or that the design when implemented would provide a service which met the Acceptance Criteria [note - this is Pathway's call]. However, JBT appear to be involved (at System Test) in testing the service against this, invalidated, design. This may give this unvalidated design false credibility and may weaken PDA position when aspects of the product are found to be unacceptable (at Acceptance).



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=> PDA Testing and PDA Assurance should operate at the same "level" (the line across the V-diagram should be horizontal, not sloping)

- Ditto, if PDA involved in fault analysis against the design, if the design is unvalidated.
- The level of detail in the SADD is highly variable, and in particular is thought insufficient in the EPOSS area to enable sensible business tests to be constructed. There is a temptation to make up this shortfall by constructing tests against the (unvalidated) design, rather than by correcting the position by bringing the SADD up to a consistent and satisfactory level.
- Business Threads for EPOSS seen to date are at the wrong level (too detailed for a business thread), again danger of underwriting Pathway's unvalidated design (and undocumented system specification due to SADD weaknesses).
- Should the PDA "sign off" the test prep for either ST or BIT in JBT, or Sec or Technical in S&T?
What does sign off mean, for a Pathway owned phase?
What level should be signed off - HLTPs or down to individual scripts? [*some have apparently been signed off already?*]
Who should sign it off - PDA Assurance or PDA Testing (or both)?
- What is the split between JBT and S&T regarding technical failures (how does the application respond to known and likely failures, eg ISDN down, server down)? Wish to avoid these critical areas falling down the cracks.

9. RECOMMENDATIONS

10. CONCLUSION