JORD

DRAFT Final Programme Report

JORD (Joint Operational Reference Data) Project
enhancing the
PCA Reference Data Service (RDS) Operation
in partnership with FIATECH

Summary

This document is the summary report from JORD Phase 1 and 2. It gives a summary of the work done and an overview of project results.

The overall objective of JORD was to deliver an operating Reference Data Services Entity – a scalable and sustainable PCA RDS service and business operation. Phase 1 of the project was started in May 2011, and ran until the end of 2012. In Phase 2 the project was reorganized into a program – which was restarted in the beginning of 2013, and is coming to completion in August 2014.An optional Phase 3 is planned to start later this year.

The current report provides an overview of the overall program, together with a summary of work and resulting deliverables for each project.

Rev	*Date*	*Description*	*By*	*Check*
Ver. 0.5	July 2013	Initial version with summary of project work	NSAN	
Ver. 1.0	July 2013	Added material and text	TCHR	
Ver. 2.0	July 2013	Updated version sent out for review in July SCM	NSAN	
Ver. 3.0	August 2014	Minor corrections before final JORD SCM	TCHR	
Ver 4.0	August 2014	Minor corrections and updated hyperlinks	NS, HMO	

Contents

1 Overall JORD Overview

The JORD project is a three-year project to develop and deliver scalable & sustainable Reference Data Service (RDS) Operations within 5 years. Phase 1 of the project was started in May 2011, and ran to the end of 2012. In Phase 2 the project was reorganized into a program – which was restarted in the beginning of 2013, and completed in August 2014. An optional Phase 3 is planned to start later this year.

1.1 Objective and Goal

The overall project objective is to (1) achieve "Scalable and sustainable PCA RDS Operation enhanced in partnership with Fiatech" – through delivery of quality-managed reference data, and (2) to provide ISO15926 compliance validation of user products, content and interfaces.

A key goal was to achieve Phase-1 in a way that offered PCA greater operational independence. The history of the PCA RDS is a long-standing connection with DNVGL - as collaborative supporter and sponsor, as well as supplier of specialist services fromISO15926experts. This includes specification and development of general infrastructure and substrate services for web-based content publication, service delivery and user management available through commercial service providers, managed directly by PCA (with only limited specialist ISO15926 contracting).

1.2 Scope and Organization

The scope and duration for the three planned phases of the project was -

- Phase 1: "Technical Fixes & Enhancements" from May 2011 through December 2012.
- Phase 2: "Scalable Platform & Organization" from January 2013 through July 2014.
- Phase 3: "Self-Sustaining Services Operation" planned to start autumn 2014.

During the first half of 2013 the JORD project was reorganized from a project with several part-projects to a program with five technical projects and a separate project for Program Management, Administration and Coordination –

- Project A: Methodology for Compliance Assessment
  (original name Compliance Validation &Methodology)
- Project B: Services Platform & Publishing Tools
- Project C: Instruction, Consulting and Training Resources
  (original name Training Resources)
- Project D: Services Organization & Business Resources
- Project O: RDS Operations
- Project P: Program Management, Administration and Coordination

The program period was divided into three milestones, with specified budgets and deliverables -

- Milestone 2.2 – end June 2013
- Milestone 2.3 – end December 2013
- Milestone 2.4 – end June 2014

1.3 Results and Deliverables

In sum, JORD has produced a series of tangible and intangible results– which will allow high quality development and maintenance of Reference Data (RD), and professional operation and maintenance of Reference Data Services (RDS) for the project sponsors, ISO 15926 community and industry at large.

The tangible deliverables from the various projects include

- A JORD TSP Specification for a set of basic Template Patterns.
- A JORD TSP Methodology for composing Template Signatures from basic Patterns.
- A set of examples of basic and composite Templates Instances.
- A JORD ID specification for new and existing Reference Data.
- A technical infrastructure scoped and aligned with publishing process needs.
- A System Infrastructure balanced against usage and prepared for transition.
- Operational Support Services responding to critical sponsor issues and priorities.
- A template implementation survey created to scope template training.
- Procedures and methodology for validating RDL content.
- Improvements in PCA RDL change control.
- Procedures and Tools for content updates and corrections to the PCA RDL.
- Continuous coordination and collaboration with OGI, EDRC and other projects.
- Training program design document deliverable
- Stakeholder engagement process
- Training program course 1 module 1 presentation deliverable
- Summary report and future funding requirements
- Business model canvas deliverable
- Business model presentation deliverable
- Revenue and expenses spreadsheet
- Summary report and recommendations

Various projects results are described in the chapters below. Together, the results form the basis for building operational services based on reference data collaboration and publishing, which form the basis for technical leadership and a sustainable business model.

Beyond these concrete deliverables, there are intangible results that provide solid argument for investment in reference data collaboration. These include validation technology that can be incorporated into custom integration; change control and new content that together set a stable pattern for growth; professional training offerings to demonstrate revenue capability; case studies and other promotional material for education and adoption; and a cohesive business and pricing model.

2 Project A: Methodology for Compliance Assessment- by Tore Christiansen

This chapter is the summary report from JORD Breakdown A: Methodology for Compliance Assessment, (formerly known as "Compliance, Validation and Methodology"). It gives a summary of the work done, and an overview of project results.

2.1 Phase 1 Deliverables

The starting point for both Compliance and Validation Methodology was a draft Template Usage Methodology & Compliance Checklist from previous IDS/ADI Projects, which formed part of the JORD Prospectus (available on both the PCA and Fiatech web sites).

The deliverables from JORD Phase 1 were:

- Conformance specification from Project A2: A technical definition of compliance.https://www.posccaesar.org/attachment/wiki/FiatechJord/JORDComplianceSpecification.doc

- Validation methodology from Project A2: A basis for ensuring compliant usage.https://www.posccaesar.org/attachment/wiki/FiatechJord/JORD-ISO15926-Mapping-Methodology-V2.doc

These documents are available on the PCA web site and by hyperlink from the Fiatech web site.

In addition, the JORD ID specification was developed. This specification has been improved several times in project O: RDS Operations during Phase 2, see chapter 6.1 Main Activities.

2.2 Phase 2 Deliverables

The results for JORD A: Compliance, Validation & Methodology project are as follows:

- Specifications of a set of Template Signature Patterns (TSP) from Project A3.
- Overview of TSP contents and required enhancement in the RDL from Project A4.
- Procedures to verify TSP content and validate business interfaces from Project A5.

The deliverables from JORD A consist of three reports, with an accompanying endpoint (and an associated information model):

The ***TSP Specification Report*** from Project A.3 contains introductory sections with definitions, a set of basic patterns covering Basic types of information, an outline methodology for creating Composite Patterns and examples of Composite Patterns, and a set of Appendices with details on 15 Basic Patterns. A PDF version of this report can be found athttps://www.posccaesar.org/svn/pub/JORD/A/20140701%20TSP%20Specification%20-%20version%201.3.pdf

The ***PTRN Endpoint*** representing the TSP Specification contains the full set of Patterns (type Template Pattern in the browser), Signatures (type Template Signature in the browser) and Instances (type Template Instance in the browser).This endpoint can be found at http://staging.data.posccaesar.org/ptrn/.

An accompanying Visio model with figures illustrating all Template Patterns, Signatures and Instances, with hyperlinks to all entities in the PTRN endpoint, is available upon request.

The ***TSP Contents, Fixes and Enhancements Report*** contains an overview of template related content from various sources, as well as a brief summary of required fixes, enhancements and extensions to the PCA RDL**.** A PDF version of this report can be found at https://www.posccaesar.org/svn/pub/JORD/A/20140627%20TSP%20Content%20-%20version%201.0.pdf

The ***TSP Verification and Validation Report*** gives an overview to the work required to verify conformance with requirements and validate compliance with business needs of Template related content (and the PCA RDL in general).A PDF version of this report can be found at https://www.posccaesar.org/svn/pub/JORD/A/20140628%20TSP%20Validation%20-%20version%201.0.pdf

2.3 Remaining work

To bring the PCA RDL into full compliance several updates and additions are necessary

- Include Reference Data classes to implement the Registration TSP: Reference Data Classes for registering new Templates (and other Reference Data), including Generic Type, Realization Level and Lifecycle Whole Part).
- Include various additions and corrections identified when trying to use the TSP as a basis for describing Templates for the EDRC Use Cases by extension and assembly.
- Include correction of critical issues described in the Content Fixes and Enhancements report, using the queries and procedures defined in the TSP Validation report.
- Implement and test the various SPARQL queries required to check existing and new Templates against the TSP Specification (verify conformance) and appropriate business requirements (validate compliance).

All of these issues were identified in Project A and described in the above reports -but due to lack of resources and bandwidth they have not (ye)t been included in the PCA RDL as planned.

3 Project B: Service Platform and Tools– by David Leal/Lillian Hella

This chapter reports on Project B in JORD Phase 1 and 2, which consisted of three part projects:

- B1 - Platform Infrastructure and Substrate
- B2- RDL Expert Manager Tool(s)
- B4 – Other Tools

Part project B3 - RDL User Domain Expert Tool(s) was originally on the plan, but was taken out of scope due to reduction in budget. The tasks for a *RDL User Domain Expert Tool* were removed from scope, and hence no results are reported for this part.

The focus for the work on JORD B for Phase 2 has been on *infrastructure and substrate, RDL Expert Manager Tool* and a set of *Other Tools*. The deliverables from project B are listed below for each part project:

3.1 Phase 1 Deliverable

One of the key challenges to the former PCA RDS was to provide supportable publishing of RDL as an Endpoint. Two generations of Endpoint implementation were achieved in Phase 1, the second version of which is implemented in a commercially hosted environment giving flexibility and independence in how future enhancements are managed by PCA. This final Phase 1 version also supports "Sandboxes", where users may immediately create and use their own interim reference data extensions, in advance of the PCA and ISO validation processes.

The Phase 1 Endpoint implementation did not provide the fully scalable and sustainable business capability, but already provides the PCA RDS with supportable enhanced RDL web publishing

3.2 Part project B1 - Platform Infrastructure and Substrate

Deliverable: Functional and Supportable Infrastructure and Substrate Capability that is Implemented Accepted & Deployed. As a part of achieving this main deliverable, a set of tasks were executed. This has resulted in partial deliverables listed below.

B.1.4– Production Implementation

- Experience report to summarizes experiences with supplier Dreamhost and arrangements for that were used for the V2 endpoint https://www.posccaesar.org/svn/projects/JORD/B_ServicesPlatformPublishingTools/DreamhostEvaluation.docx
- Requirement specification for platform infrastructure and substratehttps://www.posccaesar.org/svn/projects/JORD/B_ServicesPlatformPublishingTools/service-requirements.docx
- Report that documents the selection process for the alternatives and the results of the selection

3.3 Part project B2- RDL Expert Manager Tool(s)

Deliverable: Implemented and tested RDL Expert Manager Tool

- Related documentation: Procedures for handling change requests -see PCA wiki: https://www.posccaesar.org/wiki/RdsMaintenanceProcedure
- Coordination with simplified procedures needs to be addressed https://www.posccaesar.org/wiki/RdsMaintenanceProcedure/simplified
- Information about different types of information related to a change request should be documented here (hopefully with a spreadsheet format that reflects this): https://www.posccaesar.org/wiki/ChangeRequest

B.2.1 - Interim Production Enhancements (Initial Functional Capabilities)
Deliverables:

- Experience report summarizing experience with the interim editing capabilities during internal testing https://www.posccaesar.org/svn/projects/JORD/B_ServicesPlatformPublishingTools/ExperienceReportInterim.docx
- Some additional information about the steps (1-6) for the interim solution is documented in the repository https://www.posccaesar.org/svn/projects/JORD/B_ServicesPlatformPublishingTools/

B.2.2 -Long term RDL Expert Manager Tool (Implemented, Accepted & Deployed)
Deliverables:

- User manual for functionality and operation of the interim capabilities for the PCA RDL accessible through endpoint https://www.posccaesar.org/svn/projects/JORD/B_ServicesPlatformPublishingTools/JIEUserManual.docx
- Final requirement specification for the full RDL Expert Manager Toolhttps://www.posccaesar.org/svn/projects/JORD/B_ServicesPlatformPublishingTools/RequirementsRDLExpertTool.docx
- Report that documents the selection process for the alternatives and the results of the implementation. This process includes a prioritization of the requirements.

3.4 Part project B4 - Other Tools

Deliverable:
B.4.1 - RDL Content Validation Tool(s)
B.4.2 -Business Interface Compliance Validation Tool(s)
B.4.3 -Business Substrate Application & Tools

- Document developed by Julian on "intended publishing process of the RDS. This contains the central procedure relating to RDS operation and interaction with contributors, and thus this document precedes and informs all parts of the JORD project."https://www.posccaesar.org/svn/projects/JORD/B_ServicesPlatformPublishingTools/publishing-practices.docx

3.5 Remaining work

To complete the Service Platform and Tools a couple of additions are necessary:

- Acquiring licenses and implement software for improved version control, backup, achieving and security
- Some improvements to TopBraid Composer from TopQuadrant, which has been chosen as the RDL Expert Manager Tool.

4 Project C: Instruction, Consulting and Training Resources – by Julian Bourne

This chapter reports on the work undertaken under JORD C during Phase 2 of the project in the first half of 2014, and provides information about the deliverables and remaining work.

4.1 Deliverables

The main deliverables were:

- First course module "Introduction to Templates" presentation.https://www.posccaesar.org/svn/projects/JORD/C_TrainingResources/jord-course-1-module-1.pptx
- Training program design.https://www.posccaesar.org/svn/projects/JORD/C_TrainingResources/jord-training-program-design.xhtml(if you can not view this document, download it and open it in your browser)

The first course module is:

- Usable, though could do with some minor work.
- A practical component that should be implemented.

The training program design includes:

- The second course module "Classes and Instances" defined with topic level descriptions, (ready to be developed).
- The rest of the first course "Reference Data Readiness" (defined and ready to be discussed and developed for a classroom setting).
- A second course "Ontology and Cohesion" (defined for a classroom setting).
- A third course "Technical Deployment of ISO 15926" (defined as self-service).
- Scoping for all of the above.
- List of existing public materials relevant to training.
- Identification and analysis of material gaps for specific audiences.

4.2 Development approach

- Serve most in-need audiences first.
- Do simplest and most concrete concepts and material first.
- Engage audience-appropriate stakeholders from the outset.

4.3 Remaining work

- 560 hours to complete the first course.

- 2190 hours to complete the second and third courses and provide supporting material.

5 Project D: Services Organization & Business Resources – by Julian Bourne

This chapter reports on the outcome of JORD Project D, which was tasked with describing the organization and resources required for a professional business for reference data services.

5.1 Main Deliverables

The main elements proposed are summarized in the following documents:

- Business Model Development Report https://www.posccaesar.org/svn/projects/JORD/D_ServicesOrganizationBusinessResources/business-wrapup.docx
- Business Model Canvas – released 2014-01-16 - describing the overall features of the business, revenue sources, functions and costs for an internal JORD audience.https://www.posccaesar.org/svn/projects/JORD/D_ServicesOrganizationBusinessResources/business-model-canvas.xhtml
- Business Model Presentation – presented 2014-03-31 - intended to explain the challenges, principles and solution to a general audience.https://www.posccaesar.org/svn/projects/JORD/D_ServicesOrganizationBusinessResources/jord-business-fiatech-insert.pptx
- Revenue and Expenditure Spreadsheet – supporting material pivotal to the costs and income provided in the business model presentationhttps://www.posccaesar.org/svn/projects/JORD/D_ServicesOrganizationBusinessResources/costs-revenue-pricing.xlsx

Participants in JORD can refresh their memories with the first document, the Business Model **Canvas**, while those new to JORD should start with the Business Model **Presentation**. The **spreadsheet** is for those who want to understand the figures, and perhaps experiment with them.

5.2 Main recommendations

The main recommendations from the project were:

- Maximize reference data throughput by prioritizing collaboration.
- Earn scalable income by charging for publishing each definition.
- Drive publishing by helping contributors tie costs to capital projects.

This approach results in a business model that requires operations, marketing and instructional teams facing the industrial customer:

- Operations scales with the collaborative effort that it supports.
- Publishing income trails that growth, so needs to be priced to fund expansion.
- The bulk of income is directly tied to performance and therefore makes the business accountable.

All other costs are either:

- largely fixed (research, management, administration, marketing, instructional preparation, software maintenance)
- capital investments (initial software development and marketing collateral)
- mostly self-sustaining (consulting and training delivery)
- scale with operations, but trail publishing income (legal)
- scale with operations, but are not a significant proportion (technology services)

5.3 Primary Challenges

- The stakeholders are diverse and their needs conflict: this is especially the case with quality versus availability; but it also applies to usage, subject area and depth.
- Very large amounts of reference data are required: it will always be in development. As technology continues to expand, reference data will be needed to describe it.
- The cost of reference data development for a quality level acceptable to all stakeholders is significant and not understood consistently between stakeholders.
- The operational cost of supporting development scales with volume and will eventually scale to be the greatest single portion of expenditure.
- Large sets of external data need to be licensed and available for development, validation and testing.

6 Project O: RDS Operations – by Håvard M. Ottestad/Lillian Hella

This chapter reports on the outcome of JORD Project O RDS Operations, which was required to maintain and support services developed in other JORD projects. The project provided support for the various services developed under JORD to existing users as well as project participants, since one of the benefits of project participation included a pre-paid services element.

6.1 Main activities

The most important activities for Phase 2 have been:

- Namespace discussion – resulted in an updated JORD ID spechttps://www.posccaesar.org/svn/pub/JORD/JORD%20RDS%20ID%20Spec.pdf
- Implementation of *defaultRdsId* and the ID spec
- Making sure systems are available
- Monitoring use of resources on server
- Fixing other problems
- Monitoring the use of the services
- Setting up of new sandboxes
- Sandbox support when requested
- Improving and simplifying services for internal use
- Responding to requests/tickets
- Administrating services and requests
- Following up implementation issues
- Backing up systems

6.2 Main deliverables

Automated setup of sandboxes (saves time and avoid mistakes that take time to correct)

- Start-up scripts have been improved, and all endpoints for sandboxes now start automatically when the server is rebooted. This is very useful for unplanned reboots by supplier Dreamhost.

- The timeout for Fuseki have been tweaked so that it better matches the memory assigned and the resources available. This also gives us the possibility to differentiate different sandboxes. The timeouts and memory allocations need review when there is more usage. For now it seemslike theconfigurationworkwell.

- SPARQL Endpoints that have been set up for projects:

    - EqHub (http://posccaesar.org/sandbox/eqhub/ for humans)

    - Geometry SIG (http://posccaesar.org/sandbox/geosig/ for humans)

  - IIP (http://posccaesar.org/sandbox/iip/ for humans)
  - IIP temp (http://posccaesar.org/sandbox/iiptemp/ for humans)
  - O&M SIG (http://posccaesar.org/sandbox/omsig/ for humans)
  - Part 8 (http://posccaesar.org/sandbox/p8/ for humans)
  - Part 8 Implementation Workgroup (http://posccaesar.org/sandbox/p8iwg/ for humans)
  - Proteus (http://posccaesar.org/sandbox/proteus/ for humans)

- The sandbox approach has also been used for the PCA development and staging areas and other experimentation areas
- Received and comprehended feedback on the JORD ID spec
- Aveva and Bentley reported that they have switched the PCA RDL endpoint at Semantic Days
- The OGI pilot has stated that they are going to switch to the PCA RDL endpoint and also wants to submit new reference data
- Logs from the Fuseki SPARQL endpoint used to generate usage statistics. A web interface shows graphs for number of queries (with type) per day/hour/minute, query execution time (average, min, max) and HTTP status for every query to see if the server has crashed or there is a syntax error in the query.

6.3 Open issues

- Implementation of remaining parts of JORD ID Spec (any unresolved issues).
- Handling of "old" sandboxes
- Communication of old/new PCA RDL endpoint - e.g. how to handle namespaces in the future.

References

- JointRDS/WIP-HighLevelPlanV1-3 - original definition of the project scope
- JORDProjectProspectusV5
- JORDBusinessDefinitionV6 front-end Phase-F in December 2010
- JORDDeliverablesScopeMilestonesJune2012. Phase-1:5th May 2011 to 29th June 2012