Reusability Assessment Framework

A Practical Approach to Assess IT Project Components for Reusability

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Presentation Outline

1. Purpose
2. Key Terms
3. Assumptions and Constraints
4. Reusability Assessment Methodology
5. Ecosystem Factors for Reuse
6. Call to Action
PURPOSE

• To demonstrate a method for assessing project artifacts, components and services for their reusability.
  - Applicable to any type of system project
  - Reuse can occur between systems within state (internally) and between states (externally)
  - Can be used by a state that wants to develop reusable project items or a state that wants to consume project items

• The assessment outcome is a quantitative “Reuse Value” that indicates “If I were to reuse this item, approximately xx% of the work is already done.”
  - A Reuse Value of 75 means if I reuse the item, I’m about 75% complete to using it in my environment.
  - A Reuse Value of 25 means if I reuse the item, I’m about 25% complete to using it in my environment.
ASSUMPTIONS AND CONSTRAINTS

• In order to fully assess project items for Tier 2 and 3 reusability, the software vendor must provide “reusability metrics” based on ISO standards.

• Detailed system and technical design artifacts are available for review.

• Can assess reusability one or more times during the project lifecycle; as early as after detailed technical design is complete and/or any time after the system is in production.

• Reuse Value is a point-in-time assessment; it can change.

• ARIES is the core of a reusability assessment.
KEY TERMS

- Project Topic
  - Project Artifact
    - Project Item
    - Project Item
    - Project Item
  - Project Artifact
    - Project Item
REUSABILITY ASSESSMENT METHODOLOGY

- Step 1: Identify the Project Items to Assess
- Step 2: Determine the Reusability Tier
- Step 3: Assess the Reusability Factors
- Step 4: Calculate the Reusability Score
- Step 5: Process the Reuse Value
Step 1: Identify the Project Items to Assess

Project Topic
Identity Management Service

Project Artifact
TDDD

Project Item
Provisioning Web Service

Project Item
Self-service Web Service

Project Artifact
SDD

Project Item
SDD

A Project Artifact may also be a reusable project item
Step 2: Determine the Reusability Tier

What is the Tier and technical scope of the item?

Source: Commonwealth of Massachusetts
Step 3: Assess the Reusability Factors

Based on the Tier and technical scope of the item, complete the relevant score sheet, assessing and scoring each Reusability Factor.

### Reusability Factor Score Definitions

<table>
<thead>
<tr>
<th>Reusability Factor Score Value</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td>1</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>Medium</td>
</tr>
<tr>
<td>3</td>
<td>High</td>
</tr>
<tr>
<td>NA</td>
<td>Not Applicable (and excluded from scoring)</td>
</tr>
</tbody>
</table>

**Reusability Factor Score Definitions**

<table>
<thead>
<tr>
<th>ID</th>
<th>Reusability Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1.1</td>
<td>Is there an index and/or tag that clearly designates the area of relevance/project activity and perspective audience (e.g., a Use Case for the Federal Hub X transaction)?</td>
<td></td>
</tr>
<tr>
<td>T1.2</td>
<td>Is there a concise, coherent description of the item and its reuse value?</td>
<td></td>
</tr>
<tr>
<td>T1.3</td>
<td>Does the item utilize a CMS or industry standard template? If so, what is the level of compliance with the template?</td>
<td></td>
</tr>
<tr>
<td>T1.4</td>
<td>Is the item available in a source format that is industry standard?</td>
<td></td>
</tr>
<tr>
<td>T1.5</td>
<td>Is the artifact available on CALT and easy to find (e.g., located in appropriate folder and searchable)?</td>
<td></td>
</tr>
<tr>
<td>T1.6</td>
<td>Is there concise, coherent guidance on how to utilize the item?</td>
<td></td>
</tr>
<tr>
<td>T1.7</td>
<td>Is there a method or plan to collaborate with the parties reusing the item (coordinate updates, support, etc.)?</td>
<td></td>
</tr>
<tr>
<td>T1.8</td>
<td>Are there requirements and/or dependencies affecting the item?</td>
<td></td>
</tr>
</tbody>
</table>
Step 4: Calculate Reusability Score

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<tr>
<td>T1.8</td>
<td>Are there requirements and/or dependencies that are essential to reusing the item?</td>
<td></td>
</tr>
</tbody>
</table>

Reusability Score Calculation

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Score</td>
<td></td>
</tr>
<tr>
<td>Total Score-Weighted</td>
<td></td>
</tr>
<tr>
<td>Total Score-Weighted Maximum</td>
<td></td>
</tr>
<tr>
<td>Reuse Value:</td>
<td>#%</td>
</tr>
</tbody>
</table>

*Total Score-Weighted*

*Total Score-Weighted Maximum*
Step 5: Process Reuse Value

<table>
<thead>
<tr>
<th>Reusable Item Name</th>
<th>Tier</th>
<th>RV</th>
<th>Reusability Result</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Cases Document</td>
<td>1</td>
<td>42%</td>
<td>Low</td>
<td>Reusability is maximized for enterprises with Oracle OIM/OAM implementations. Reuse Value will increase once the item is available on CALT.</td>
</tr>
<tr>
<td>System Design Document</td>
<td>1</td>
<td>61%</td>
<td>Medium</td>
<td>Reusability is maximized for enterprises with Oracle OIM/OAM implementations. Reuse Value will increase once the item is available on CALT.</td>
</tr>
<tr>
<td>Technical Detailed Design Document (AIMS-OIM-TDDD)</td>
<td>1</td>
<td>43%</td>
<td>Low</td>
<td>Reusability is maximized for enterprises with Oracle OIM/OAM implementations. Reuse Value will increase once the item is available on CALT.</td>
</tr>
<tr>
<td>OIM Self-Service</td>
<td>2</td>
<td>18%</td>
<td>Low</td>
<td>This is an Oracle provided service with custom extensions via software development kit (SDK). Reusability is maximized for enterprises with Oracle OIM/OAM implementations. Reuse Value will increase once the item is available on CALT.</td>
</tr>
<tr>
<td>OAM Access Management Web Services</td>
<td>2</td>
<td>18%</td>
<td>Low</td>
<td>This is an Oracle provided service with custom extensions via SDK. Reusability is maximized for enterprises with Oracle OIM/OAM implementations. Reuse Value will increase once the item is available on CALT.</td>
</tr>
<tr>
<td>OIM Self-Service</td>
<td>3</td>
<td>21%</td>
<td>Low</td>
<td>Hosting this as a service for external use would require the implementation of external entities.</td>
</tr>
<tr>
<td>OAM Access Management Web</td>
<td>3</td>
<td>21%</td>
<td>Low</td>
<td>Hosting this as a service for external use would require the implementation of external entities.</td>
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Reuse Value Parameters

<table>
<thead>
<tr>
<th>Reuse Value</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>74 – 100</td>
<td>High reuse value</td>
</tr>
<tr>
<td>46 – 73</td>
<td>Medium reuse value</td>
</tr>
<tr>
<td>&lt; 46</td>
<td>Low reuse value</td>
</tr>
</tbody>
</table>
# ECOSYSTEM FACTORS FOR REUSE

<table>
<thead>
<tr>
<th>Factor</th>
<th>Current</th>
<th>Future (For Group Discussion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory Guidance</td>
<td>- 7 Standards and Conditions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Federal funding guidelines do not reward reuse or penalize lack of reuse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Technical Reference Architecture (Exchange, MITA)</td>
<td></td>
</tr>
<tr>
<td>State and Federal Experience</td>
<td>- Limited experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Some “transfer systems,” common core systems, and shared services in MMIS</td>
<td></td>
</tr>
<tr>
<td>Industry Experience</td>
<td>- Little/no incentive for vendors to reuse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Little technical expertise in assessing and promoting reusability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Service Oriented Architecture</td>
<td></td>
</tr>
<tr>
<td>Standard Artifact Templates</td>
<td>- CMS has created many; need for TDDD support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Not consistently used by states and vendors</td>
<td></td>
</tr>
<tr>
<td>Vendor RFPs and Contracts</td>
<td>- Little/no incentive for vendors to reuse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Little/no guidance for vendors to create reusable artifacts, components and services</td>
<td></td>
</tr>
<tr>
<td>Venue for Sharing: CALT</td>
<td>- States are not using consistently or uniformly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Lacks coherent document and file standards, conventions and controls</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Lacks coherent structure for communicating information</td>
<td></td>
</tr>
</tbody>
</table>
CALL TO ACTION

Tremendous opportunities to...

• Optimize and accelerate software development projects and innovations
• Save state and federal dollars
• Promote federal-state-industry Reusability Work Groups / Collaboration Environments with incentives to institutionalize and operationalize reusability