Migration Strategy Template for Feasible Outcome

Date: *[Report Date]*

ORGANIZATION: *[Organization Name]*

ORGANIZATION POC: *[Organization POC Name]*

SMART TEAM

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Executive Summary

The migration of legacy systems to service-oriented architecture (SOA) environments is a task that requires upfront and hands-on analysis of the technical feasibility and the potential return on investment of this effort. The Service Migration and Reuse Technique (SMART) is a way of making this initial analysis.

A preliminary analysis of the feasibility of the migration of *[Legacy System Name]* to expose services in a SOA environment shows that it is feasible given the organization’s business and technical environment and constraints. Several assumptions were made in this assessment.

* *[List of Assumptions]*

The proposed migration strategy for *[Legacy System Name]* can be summarized as follows:

1. *[List of Migration Strategy Steps/Elements]*

# Development Approach for Migration Strategy

The analysis of *[Legacy System Name]* was conducted using the Service Migration and Reuse Technique (SMART) [Lewis 2008]. The end goal for SMART is the identification a pilot project that will help shape a migration strategy for an organization, along with an understanding of cost and risk involved. SMART analyzes the viability of reusing legacy systems in SOA environments by answering these questions:

* Does it make sense to migrate the legacy system to an SOA environment?
* What services make sense to develop?
* What legacy system components can be used to implement these services?
* What changes to components are needed to accomplish the migration?
* What migration strategies are most appropriate?
* What are the preliminary estimates of cost and risk?
* What is an ideal pilot project that can help address some of these risks?

SMART consists of three elements

* A process that gathers information about the goals and expectations of the migration effort, candidate services, legacy systems and the target SOA environment. The process uses this information to analyze the gap between the legacy and target state
* A SMART Interview Guide (SMIG) that guides discussions for the SMART activities
* Templates for output products

In addition, there is a tool to support the information gathering portion of the process.

The SMART process has six activities and one major decision point, as presented in Figure 1.

* *Establish Migration Context:* The goal is to understand the business and technical context for migration, including a high-level understanding of stakeholder goals, the business context, candidate services, legacy system and target SOA environment.
* *Migration Feasibility Decision Point*: After the *Establish Migration Context* activity, there is an explicit decision point to determine if the legacy system is a good candidate for migration.
* *Define Candidate Services*: The goal of this activity is to select a small number of services (usually 3 to 4), from the initial list of candidate services that had been identified as part of *Establish Migration Context*.
* *Describe Existing Capability*: The goal of this activity is to gather information about the legacy system components that contain the functionality to meet the needs of the selected services.
* *Describe Target SOA Environment*: This activity gathers information about the target SOA environment for the selected services including major components of the SOA environment, the impact of specific technologies and standards used in the environment, and the state of target environment.
* *Analyze the Gap:* This activity provides preliminary estimates of the effort, risk and cost to expose functionality from the candidate legacy components as services, given the candidate service requirements, the legacy system characteristics and the target SOA environment characteristics. The discussion of the changes that are necessary for each component is used as the input to calculate these preliminary estimates.
* *Develop Migration Strategy:* The information gathered in the previous activities generates migration issues that need to be addressed by the migration strategy, which includes the selection and setup of an initial pilot project. This information also provides the basis for estimates of cost, effort and risk of migration, which will place constraints on the migration strategy.



Figure 1. SMART Process Activities

The first four activities, *Establish Migration Context*, *Define Candidate Services*, *Describe Existing Capability*, and *Describe Target SOA State*, were executed through direct interviews and presentations by *[List of Presenters and Presentations. Documentation Reviewed. Any Other Information Sources.]*. The selected target SOA environment for this effort was *[High-Level Name for Target SOA Environment, e.g. Web Services, Proprietary, Organization’s Existing Infrastructure]*.

For the *Analyze the Gap* activity, we relied on information from *[All Information Sources, e.g. Interviews, Code Reviews, Code Analyses, Documentation Reviews]*.

Section 2 contains the proposed migration strategy, as well as a set of migration issues identified during the process. Section 3 contains the detailed findings that support the migration strategy. Section 4 contains general conclusions and next steps.

# Migration Strategy

The following migration strategy follows the SMART approach in analyzing the feasibility of migrating *[Legacy System Name]* to a [*High-Level Name for Target SOA Environment, e.g. Web Services, Proprietary, Organization’s Existing Infrastructure]* SOA environment. The rationale and details for the migration strategy can be found in Section 3.



## Migration Strategy Elements

*[Legacy System Name]* contains legacy components with functionality that supports the selected candidate services.

* *[Candidate Service 1 Name from Service Table]: [Candidate Service 1 Short Description]*
* *[Candidate Service 2 Name from Service Table]: [Candidate Service 2 Short Description]*
* *[Candidate Service N Name from Service Table]: [Candidate Service 1 Short Description]*

A high-level mapping between candidate services and legacy components, as well as service consumers and other elements of the target state is presented in the notional service-oriented system architecture depicted in Figure 2.

*[Notional Service-Oriented System Architecture]*

Figure 2. Notional Service-Oriented System Architecture



### Migration Strategy Step/Element 1

*[Rationale for Migration Strategy Step/Element 1]*

### Migration Strategy Step/Element 2

*[Rationale for Migration Strategy Step/Element 1]*

### Migration Strategy Step/Element N

*[Rationale for Migration Strategy Step/Element 1]*

## Migration Issues

What follows is the list of migration issues that were captured during the SMART engagement. The above migration strategy contains mitigation strategies for each of these issues.

Table 1. Migration Issues

*[Migration Issues List; Add/Modify/Delete Column Names as Fit]*

# Summary of Findings



## Migration Context

### Business and Technical Context

*[Content of Discussion Topics from SMIG that are Relevant to Support Migration Strategy]*

### Stakeholders

*[Content of Discussion Topics from SMIG that are Relevant to Support Migration Strategy]*

## Candidate Services

*[Content of Discussion Topics from SMIG that are Relevant to Support Migration Strategy]*

## *[Legacy System Name]* Legacy System

### Legacy System Characteristics

*[Content of Discussion Topics from SMIG that are Relevant to Support Migration Strategy]*

### Legacy System Architecture

*[Content of Discussion Topics from SMIG and System Architecture Views that are Relevant to Support Migration Strategy]*

### Legacy Code Characteristics

*[Content of Discussion Topics from SMIG that are Relevant to Support Migration Strategy]*

## Target SOA Environment

### Target SOA Environment Characteristics

*[Content of Discussion Topics from SMIG that are Relevant to Support Migration Strategy]*

### Support

*[Content of Discussion Topics from SMIG that are Relevant to Support Migration Strategy]*

# Conclusions and Next Steps

*[High-Level Summary of Migration Strategy]*

*[High-Level Summary of Cost and Effort Estimates According to Component Table and Service-Component Alternatives. Additional Cost Items Identified Not Included in Previous Amount.]*

*[Recommended Next Steps]*

References

[Lewis 2008]

Lewis, Grace, Morris, Edwin J., Smith, Dennis B., & Simanta, Soumya. SMART: Analyzing the Reuse Potential of Legacy Components in a Service-Oriented Architecture Environment (CMU/SEI-2008-TN-008). Software Engineering Institute, Carnegie Mellon University, 2008. http://www.sei.cmu.edu/library/abstracts/reports/08tn008.cfm

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