Final Report Template for a Non-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. The first step of SMART, *Establish Migration Context*, includes a series of questions to determine quickly if a system is a good candidate for migration.

After the execution of this first step, it was determined that *[Legacy System Name]* was not a good candidate for migration given the organization’s current business and technical environment and constraints. Several assumptions were made in this assessment.

* *[List of Assumptions]*

The rationale for deciding that the migration is infeasible is *[include summary rationale for decision].*

**[If Additional Information Needs to Be Gathered]**

Before making a decision on the feasibility for migration, the following information needs to be obtained:

1. *[Include list of information to be obtained]*

# 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

In the case of *[Legacy System Name]*, the *Establish Migration Context* activity gathered enough information to determine that this system was not a good candidate for migration. This decision resulted from through direct interviews and presentations by *[List of Presenters and Presentations. Documentation Reviewed. Any Other Information Sources].*

Section 2 contains the results of the *Establish Migration Context* activity. Section 3 contains the details that support the findings. Section 4 contains general conclusions and next steps.

# Results of the Application of SMART to *[Legacy System Name]*

After the execution of the Establish Migration Context step of the SMART process, it was decided not to continue with the process because *[High-Level Description of Rationale; preferably one sentence]*. This section explains the *Establish Migration Context* step in greater detail and presents a summary of the results for *[Legacy System Name]*. Additional rationale and details for these results can be found in Section 3.



## Establish Migration Context

The Establish Context activity has the following tasks:

* Understand the business and technical context for migration. In this activity, information is gathered about the rationale, goals, and expectations for migration to an SOA environment, the technical and business drivers, programmatic constraints such as budget and schedule, and any previous related efforts or analyses.
* Identify stakeholders. Information is gathered to identify who (1) is driving and paying for the effort, (2) knows about the legacy system and the target SOA environment (and what they know), and (3) creates the demand or need for potential services.
* Understand the legacy system and target SOA environment at a high level. Basic information about the legacy system is gathered, such as main functionality, size, technologies, age, history, and users. Of interest about the target SOA environment at this point are status, technologies, main components, and history.
* Identify a set of candidate services for migration. The selection of candidate services is both a top-down and a bottom-up approach guided by business or mission goals and the functionality that exists in the legacy system, as indicated by the following steps:

1. Identify business or mission goals
2. Identify key business processes or mission threads that support these goals
3. Identify common steps or tasks in these processes or threads
4. Identify functionality from the legacy system to support these steps/tasks
5. Negotiate to select a number of the steps as candidate services

After the Establish Context activity, there is an explicit decision point to determine if the legacy system is a good candidate for migration to services. If the legacy system is not a good candidate, stopping at this point will save time and money. A decision to stop is a positive outcome of the SMART analysis because it preserves valuable resources for other activities.

Potential determinations are

* There is enough migration potential to continue the analysis.
* Migration goals are clear and shared among stakeholders.
* There is a high-level understanding of the legacy system and the target SOA environment.
* Candidate services and potential service consumers have been identified.
* A very preliminary mapping of services to legacy components has been done.
* The migration has potential but requires additional information to make an informed decision and continue with the SMART process. This additional needed information may include
* greater articulation of business goals needed to in order to clearly understand what is expected from the migration
* identification of potential service consumers in order to provide a clear justification of the need for the services
* availability of key stakeholders to support the process: project sponsors, legacy system developers/maintainers, future service developers, and target SOA environment owners
* identification of target SOA environment
* The migration is not feasible. Some indications that the migration is not feasible are
* There are no identifiable consumers for the services to be migrated from the legacy system.
* Functionality in the legacy system does not have potential for use by multiple consumers.
* No functionality in the legacy system of a stateless nature.
* Adequate input for the candidate services would require the construction of very complex applications.
* There appears to be incompatibility between the legacy system and the target SOA environment.



## Results

The outcome of the analysis is that *[Legacy System Name]* is not a good candidate for migration.

*[Summary of Results; Refer to Section 3 as necessary].*

# Detailed Findings



## Business and Technical Context

*[Content of Discussion Topics from SMIG]*

## Stakeholders

*[Content of Discussion Topics from SMIG]*

## Legacy System and Target SOA Environment

*[Content of Discussion Topics from SMIG]*

## Candidate Services

*[Content of Discussion Topics from SMIG]*

# Conclusions and Next Steps

The initial analysis performed in the *Establish Stakeholder Context* step of the SMART process indicated that the *[Legacy System Name]* does not have the potential for migration to SOA environments.

*[High-Level Summary of Results]*

*[Optional: Other Options for Legacy System]*

*[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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