

Statement of Work

Natural/Adabas Migration Assessment

Introduction

This Statement of Work (SOW) by and between <Customer Name> (the “Customer”) and FBD Inc. Associates (“FBDA”).

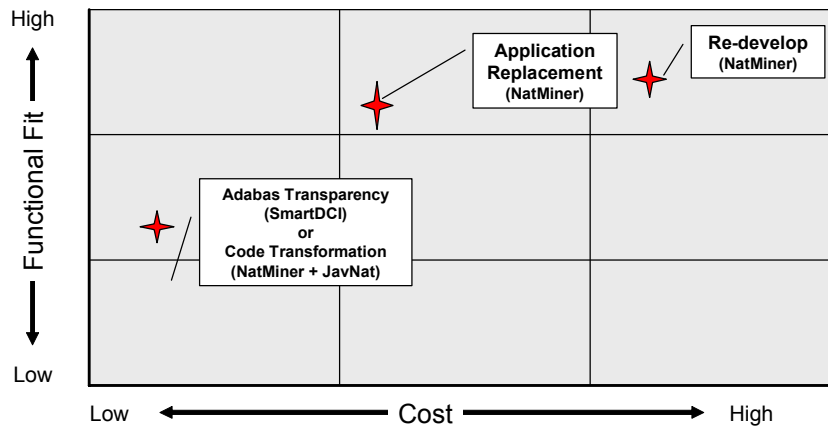
The Customer has a portfolio of legacy Natural/Adabas applications that provide critical business functionality and interface with a variety of internal and external systems. The functional features of the application portfolio are generally satisfactory but the Natural/Adabas implementation technology inhibits improvements and results in higher costs for operations and maintenance.

The Customer would like to task FBDA with assessing the options and feasibility for migration of the application portfolio off the Natural/Adabas technology platform in accordance with the detailed requirements of this SOW

Background

As illustrated in Figure 1, the migration strategy options available to the Customer generally provide for a trade-off between functional capabilities and migration project cost.

Figure 1 - Migration Strategy/Tools Positioning



The general qualitative characteristics of the options shown in Figure 1 are as follows:

1. **Adabas Transparency:** a solution whereby the Adabas database is replaced with an equivalent RDBMS implementation accessed via the SmartDCI interface software. The Natural application (or COBOL and other 3GL applications accessing Adabas) runs unmodified providing a low risk phased migration from Adabas to the selected RDBMS.

Subsequently the application modules can be migrated to the target application development language such as Java or EGL in a similar phased fashion.

2. **Application Source Code Transformation:** a simple statement-to-statement transformation of the Natural source code to Java or EGL can provide a timely, low cost migration of the Natural/Adabas application to a functionally equivalent Java/RDBMS or EGL/RDBMS implementation. The trade off is that the Customer will not gain any immediate new functional capabilities but for the existing applications the combination of low cost and speed of migration may provide a cost effective solution. In addition, this solution provides the Customer with modern database and programming language environments that can serve as a platform for evolution of the applications to meet future technology requirements and capabilities.
3. **Application Replacement:** replacement of the Natural/Adabas applications with Commercial off the Shelf (COTS) applications can deliver robust functionality at moderate cost. These higher migration costs will be offset by the lower ongoing support costs typically experienced by use of COTS packages because of a potentially large user base. However this choice limits the Customer's ability to modify the application to meet future new requirements and in many cases there may not be a suitable COTS application available.
4. **Application Re-development:** a complete re-development of the Natural/Adabas application(s) to enhance the current functionality while re-implementing the application in more modern software development technologies. The higher migration project costs may well be worth the investment if the application addresses strategic Customer needs not directly satisfied by either the current Natural/Adabas implementation or available COTS applications.

The challenge facing the Customer is to select the optimum migration strategy for each application in the portfolio. The strategic purpose of this Migration Assessment Study is to generate the technical and quantitative data necessary to support a definitive programmatic decision which will result in the optimum migration option for each application or to develop alternative strategies where appropriate.

Scope

FBDA has a suite of tools for analysis and migration of legacy Natural/Adabas systems. These tools provide a wide variety of quantitative and design information about Natural/Adabas applications. In addition the tools provide a comprehensive repository for the ongoing storage and subsequent retrieval of information to support a possible migration to alternative platforms.

The FBDA migration tools can support all of the migration strategies outlined above. For this Customer FBDA will develop an assessment of the feasibility, scope, cost and schedule for a Natural/Adabas applications migration based on the Options 1 and 2 strategies outlined above. Data derived from this assessment will be used to develop budgetary cost and schedule estimates for implementation of the selected migration strategies.

Note: This SOW specifies tasks and deliverables for both a basic Level 1 Assessment and for, optionally, a more detailed and comprehensive Level 2 Assessment.

Tasks and deliverables which are unique to a Level 2 Assessment are so indicated in this SOW and these tasks and deliverables will be implemented if authorized by the scope of the Service Agreement or Customer purchase order.

Project Plan

This SOW specifies the services to be provided to the Customer by the FBDA team including the task descriptions, deliverables and schedule. The intent of this assessment project is to undertake sufficient analysis to support the Customer's administrative processes related to planning and funding the portfolio migration project. This objective will be accomplished by execution of the following tasks:

Task 1: - Source Code Analysis (Level 1 and 2 Assessments)

FBDA will implement a detailed analysis of the Customer application source code in accordance with the detailed requirements as specified in Attachment 1.

Deliverables: - NatMiner source code analysis reports per Attachment 1.

Task 2: - Sample Data and Source Code Transformation (Level 2 Assessments Only)

FBDA will implement sample transformations of selected components of the application data and source code in accordance with the detailed requirements specified in Attachment 2.

Deliverables: - functionally equivalent normalized RDBMS schema DDL, test data in RDBMS load format, sample Java or EGL source code, cost and schedule estimates for full source code transformation.

Task 3: - Project Summary Report (Level 2 Assessments Only)

During the Task 1 and 2 activities, FBDA will carefully record the various resources devoted to each task and the time taken to complete each task. FBDA will prepare and present an informal report summarizing these metrics in sufficient detail to allow for Customer use of these metrics for developing its internal migration project cost and schedule estimates.

Schedule

This assessment project will be completed within 6 (six) weeks after the letter of authorization to proceed or the receipt of the application source code.

Customer Project Support

The requirements for Customer support to the FBDA team activities are detailed in Attachments 1 and 2.

Attachment 1 – Detailed Task Description

Source Code Analysis and Partitioning

FBDA will provide the Customer access via a web browser to a NatMiner™ Natural/Adabas application analysis facility. The NatMiner facility shall be capable of parsing all components of the Customer applications including all programs, sub-programs, subroutines and help routines, all MAPS, all data areas, all FDTs and all DDMs used by the applications.

NatMiner shall be capable of analyzing Natural source code and Adabas FDTs by parsing and creation of a parsed source code data repository. This repository will contain sufficient data to re-create the source code without reference to the original source text and will be referred to as the Syntax Analysis Repository (SAR). The SAR will be implemented as an Oracle relational database.

The NatMiner facility shall be capable of creating a series of static HTML reports with contents to include as a minimum the following:

- **Project Inventory Summary Report**
 - Number of Natural libraries.
 - Total number, total lines and counts of each Natural module by library and module type.
 - Number of external calls (calls to non-Natural modules).
 - Number of FDTs and DDMs actually used in the code base.
- **Non-Natural Calls Report**
 - Detailed list of calls to non-Natural modules showing passed parameters.
- **Missing Objects Report**
 - Provides information about objects that are referenced but not included in the delivered source code. Includes all:
 - DDMs that are referenced but not included.
 - FDTs that are referenced but not included.
 - Data areas that are referenced but not included.
 - Executable modules that are referenced but not included.
- **Project File Usage Report**
 - Provides a summary by FDT for each DDM, showing the number of instances of Read, Update, Delete, and Store.
- **Data Area Usage Report**
 - For each LDA, PDA or GDA, a list showing all modules in which it is referenced.
- **MAP Usage Report**
 - For each MAP, a list showing all modules in which it is referenced.
- **FDT Analysis Reports**
 - For each FDT, an analysis showing FDT complexity and use of Adabas features such as descriptors, MUs and PEs which may impact suitability for a SmartDCI Adabas Transparency implementation.
- **Parsing Exception Report**
 - This report lists all modules that failed parse, indicating the cause of failure.

- **Migration Issues Reports**

These reports identify problematic statements such as REINPUT that will require manual inspection or editing after translation.

The NatMiner facility reports will provide for navigation via hyperlinks to allow FBDA and Customer analysts to review the data and conduct detailed analysis tasks. The NatMiner facility shall be capable of delivery of these reports via a web server and client browser.

The NatMiner will be delivered with query templates for search of the SAR database for module by name and for field by name. Additional query templates may be developed by FBDA to support the project objectives.

Additional automated reports may be delivered depending on the complexity of the Customer application environment.

(Level 2 Assessments Only)

The NatMiner facility will be used by FBDA, with support from Customer as required, to implement the following project activities:

Auditing the source code libraries to identify and delete obsolete and non-compileable source modules.

Analysis of all applications external interfaces to determine the optimum technical approach for supporting these interfaces in the recommended target environment.

Level 1 (major functional components) partitioning of the application source code and Adabas files.

Analysis of CLOG data to assess suitability of the application for a SmartDCI Adabas Transparency implementation.

Customer Support Requirements

To support the above Task 1 activities the Customer shall:

Provide the complete source code in SYSTRANS format including all Natural source modules, MAPS and DDMs.

Provide the application FDTs in ADAREP format.

Provide the application STEPLIB information.

Provide CLOG data for representative production operations

Support the review of modules not parsed by the NatMiner due to source code defects.

Support the review and confirmation of obsolete or missing modules identified by the NatMiner.

Support the analysis to confirm the scope of the application components to be converted to Java.

Attachment 2 – Detailed Task Description

Sample Data and Source Code Transformation

FBDA will transform selected samples of the Adabas data and Natural source code components to produce a functionally equivalent Java/RDBMS or EGL/RDBMS implementation using the JavNat™ or Nat2EGL tools.

This task will be implemented using a phased approach as follows:

Sample Schema Migration – FBDA will develop a relational schema equivalent to the Adabas file structures of the selected sample application components.

Sample Data Migration – FBDA will generate a series of parameters to interface with the data migration tools to extract Adabas sample data from ADAULD file(s) and transform it into a relational form suitable for processing by the target load utility to create a data repository in the target RDBMS environment.

Sample Natural Source Code Transformations – FBDA will transform a selected sample of source modules to illustrate the quality, “look and feel” and syntax of the converted code. Representative samples of each module type will be transformed.

Customer Support Requirements

To support the above Task 2 activities the Customer shall:

Provide policy guidance for naming standards and file/field selection during the schema migration process.

Provide a small-scale test database, in ADAULD format, representative of the production database environment