

## Statement of Work

### JavNat

### Natural/Adabas to Java/RDBMS

### Discovery aNd Analysis Project

#### Introduction

<Insert Customer Name> (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.

Customer wishes to implement a JavNat™ Discovery aNd Analysis ("DNA") project to assess the feasibility of migrating of the application portfolio from Natural/Adabas to the Java/RDBMS technology platform using the JavNat migration tools.

The DNA project will be implemented in accordance with the detailed requirements of this SOW

#### Scope

JavNat provides a suite of tool generated reports for analysis of legacy Natural/Adabas systems. These tools provide a wide variety of quantitative and design information about Natural/Adabas applications. In addition the JavNat tools provide a comprehensive repository for the ongoing storage and subsequent retrieval of information regarding Natural/Adabas applications.

The JavNat migration tools can support the automated migration of Natural/Adabas applications to a functionally equivalent Java/RDBMS implementation.

Through this DNA project, Customer can assess the feasibility, scope and cost of migrating their Natural/Adabas applications using the JavNat tools. Data and analysis derived from this DNA project will be used to develop budgetary cost and schedule estimates for JavNat migration implementation.

#### Project Plan

This SOW specifies the services to be provided to the Customer during the DNA project including the task descriptions, deliverables and schedule. The intent of this DNA 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**

The JavNat will be used to implement a comprehensive analysis of the Customer application source code in accordance with the detailed requirements specified in Attachment 1.

**Deliverables:** - JavNat source code analysis reports and repository per Attachment 1.

##### **Task 2: - Adabas Data and Baseline Source Code Transformation**

Transformations of selected application data and source code components in accordance with the detailed requirements specified in Attachment 2.

**Deliverables:** - functionally equivalent normalized RDBMS schema DDL<sup>1</sup>, test data in RDBMS load format; a baseline conversion<sup>2</sup> of the Customer's Natural source code to Java source code; and cost and schedule estimates for full source code transformation.

### **Task 3: - Project Summary Report**

An informal report summarizing DNA results in sufficient detail to allow for Customer use of the analysis and sample transformations to develop its internal migration project cost and schedule estimates.

### **Schedule**

This DNA project will be completed within eight (8) weeks after the later of authorization to proceed or the receipt of the application source code.

### **Customer Project Support**

Customer support requirements for the DNA activities are detailed in Attachments 1 and 2.

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<sup>1</sup> DDL will be generated using default naming conventions and only where the relationship between the FDT and its corresponding DDMs allows this strategy, unless additional work is authorized via an appropriate change order after initial FDT analysis. Oracle, DB2 and MYsql are supported presently but others RDBMS solutions are available on special order.

<sup>2</sup> Baseline Conversion - means the conversion of the Customer's Natural source code to functionally equivalent Java which is suitable for subsequent remediation, compilation, debug, test and deployment to production.

## Attachment 1 – Detailed Task Description

### Source Code Analysis and Partitioning

The JavNat source code analysis reports will provide the Customer access via a web browser to a JavNat Natural/Adabas application analysis facility. The JavNat 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.

JavNat 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 a relational database.

The JavNat 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 NatLink™ 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.

These reports also identify statements which require JavNat updates to facilitate project planning and sequencing of applications to be converted for optimum resource allocation.

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

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

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

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

Analysis of 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.

### **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 SYSTRANS or ADAREP format.

Provide the application STEPLIB information.

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

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

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

## Attachment 2 – Detailed Task Description

### Data and Source Code Transformation

Selected components of the Adabas data and Natural source code will be transformed to produce a functionally equivalent Java/RDBMS implementation using the JavNat tools.

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

**Schema Migration** – FDBA will develop a RDBMS relational schema equivalent to the Adabas file structures of the Customer's application components.

**Sample Data Migration** – a series of parameters will be generated from JavNat 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<sup>3</sup>.

**Natural Source Code Baseline Conversion** – the Customer's source modules will be converted to Java to allow the Customer to assess the quality, "look and feel", and syntax of the converted code, as well as to support the timely implementation of a production migration project.

#### 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 for the selected FDTs to be transformed.

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<sup>3</sup> Some exceptions will apply in cases for example where Adabas FDTs make particularly complex use of MUs and PEs. These cases will be identified via the complexity analysis components of the JavNat DNA tools and recommendations provided for alternative data migration strategies – in many cases via the creation of special purpose Natural programs for batch data migration.