

iSeries Modernization: RPG/400 to Java Migration

eCube transformation process for legacy RPG applications



Application Transformation:
Analysis, Remediation and Modernization
Phased Code Migration and Implementation

Summer 2010

Session Overview



- ❖ Introduction
- ❖ Typical Background Summary
 - Current state and modernization goals
- ❖ Executive Summary
 - Transformation components
 - Process: Assess, Remediation, Modernization (ARM)
 - Steps: Assessment, Proof-of-Concept and Transformation
- ❖ Enterprise/Application Assessment
- ❖ Modernization: Automated Transformation process
 - RPG to Java Specifics
 - Migrated Application Architecture
 - Overview of outputs and customer involvement
 - Modernized User interface

Introductions



eCube Systems and the eCube Team

❖ eCube Systems, LLC

- Leader in Enterprise Evolution and Modernization services
- IBM Advanced Business Partner
 - IBM SOA Ready
 - IBM Linux Ready
- HP Business Partner
- Member OMG Architecture-Driven Modernization Task Force
- Member OMG SOA Consortium



Business Partner



Ready for

IBM. | SOA

Specialty

Ready for

IBM. | Systems

with Linux.

Background Summary



Typical Scenerio Overview

- ❖ Client is running numerous applications across various business units
 - Hundreds of users across the company
- ❖ Typical application characteristics:
 - Run in iSeries / AS400 environment
 - Primarily built in RPGIV, with some COBOL or RPG III
 - Data primarily resides in IBM DB2 Universal Database
 - Comprised
 - 2,000+ logical file, 1,500+ physical files, 5 Million lines of code
 - Have undergone multiple iterations over past 15-20 years

Background Summary



Typical Application Modernization Goals

- ❖ Modernization considerations under discussion include:
 - RPG migration to Java / J2EE or .NET
 - Re-architecting database environment based on standard data architecture principles
 - Web-enable with framework/pattern like Model/View/Controller architecture

Background Summary



Typical Application Modernization

- ❖ Objectives include:
 - Ability to assess situation and develop modernization plans quickly
 - Establish modernization roadmap and proof-of-concept reference implementation that can be adjusted as additional analysis and business requirements are identified

Background Summary



About RPG

- ❖ RPG is a fixed format programming language. It has following characteristics:
 - It has a set of opcodes corresponding to statements or verbs in other languages
 - It's operands are in fixed positions (factor1 and factor2 operands)
 - It uses indicators to check the result of previous operations and also function keys pressed by user
 - RPG runs on the OS/400 operating system with Control Language (CL)

Background Summary/RPG/400 Migration



Typical RPG Migration

❖ Why RPG Migration?

- High cost of operations, upgrades
- High price-performance of AS/400 ecosystem
- Lack of flexibility to meet business needs
- Long time-to-market for new products – slow to change
- Poor Supportability
- Lack of available resources on AS/400 and RPG/400

Background Summary/RPG/400 Migration



Benefits of eCube 's migration service ARM

❖ Objectives include:

- RPG application is migrated to a web application based on open standards:
- J2EE, Struts, Hibernate, etc
- Provides an agile platform, responsive and aligned to business requirements
- Tool based migration ensures
 - Quick turn-around
 - Considerable ROI and reduction of TCO
 - Reduced risk due to
 - Pre-transformation analysis and remediation
 - Transformation automation
 - Proven business logic remains unchanged
 - Problematic business logic remediated/improved
 - Post-transformation analysis and remediation

Executive Summary



Modernization Road Map

- ❖ General Survey: Enterprise Assessment
 - Focused on business/architecture
 - Supports planning and strategy
- ❖ In-depth Survey: Project/Application-Level Assessment,
 - Technical, supports consolidation, remediation and scenario modeling
 - Representative code inventory and analysis
- ❖ Confirmation: Demonstrating capabilities
 - Proof-of-Concept transformation,
 - Design and implement Proof-of-Concept applications to validate modernization models and target solution capabilities
- ❖ Transformation: Full process
 - Based on assessment and clients business needs targeted incremental transformation or phased complete transformation

Executive Summary



Modernization Road Map

Phase I Enterprise Assessment

- Interview based
- Cross-functional
- Engages key stakeholders
- Business view of enterprise architecture
- Maps to business lines & units
- Provides planning & strategy baseline

Phase II Assessment and Remediation

- In-depth technical analysis
- Addresses technical, data & application architecture
- Tool and meta-model based
- Driven by modernization projects
- Remediation may be required at this phase of the process

Phase III Modernization and Transformation

- Automated modernizing of data, application, user interface and platform
- Remediation may be required at the end of this process
- May be delivered in a targeted fashion, with Phase 3 iterated through several times for individual business components. The most critical delivered first.

Enterprise and Project/Application Assessment



Goals

- ❖ Uncover and articulate business and IT requirements
- ❖ Develop holistic view of existing inventory and enterprise architecture
 - Business architecture
 - Application architecture
- ❖ Create foundation and framework for subsequent, transformation efforts
 - Use and test case development
- ❖ Plan Proof-of-Concept modernization implementation and deployment strategy
- ❖ Draft follow-on application modernization implementation and deployment strategy

RPG/400 Migration Process

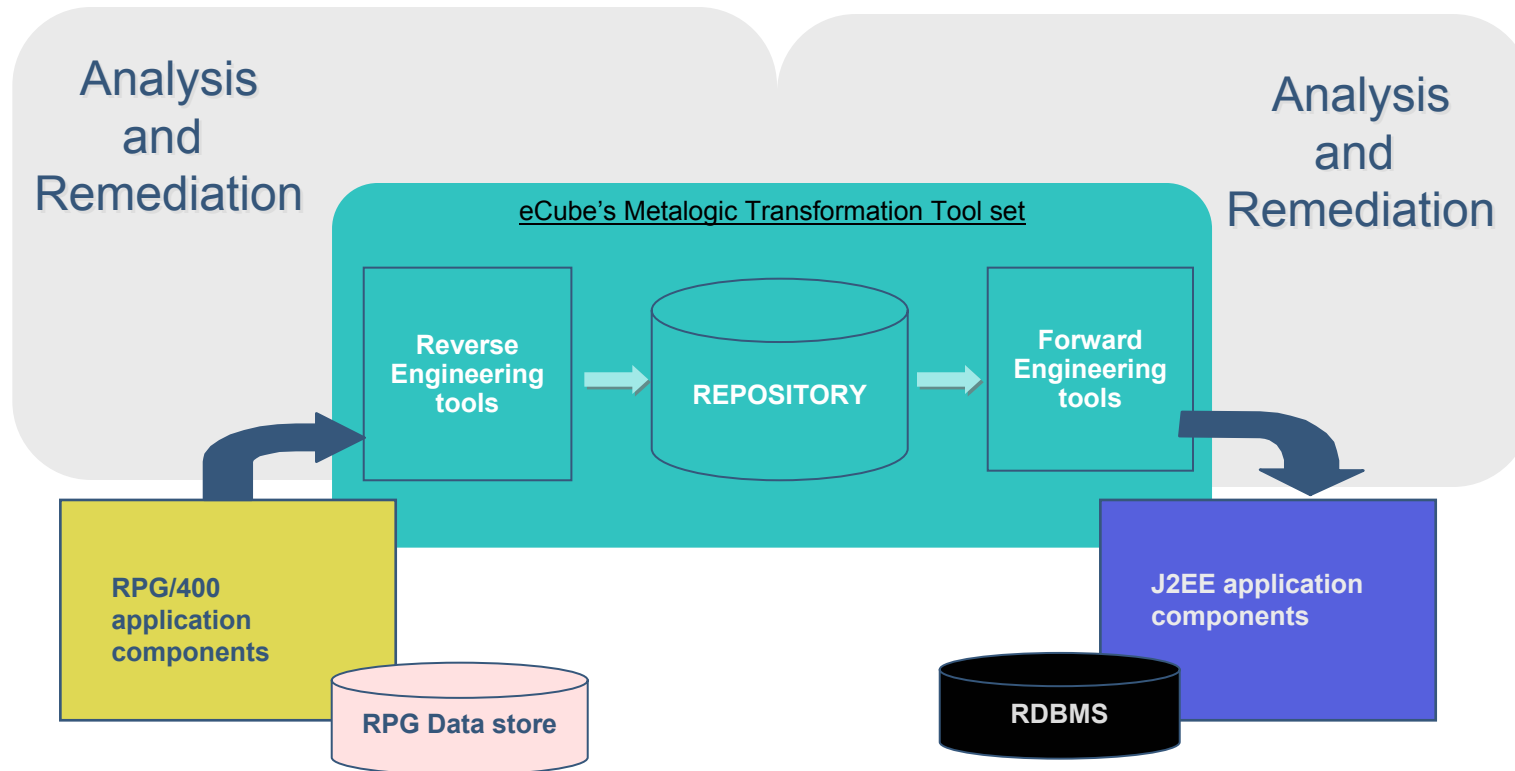


A typical source and target matrix:

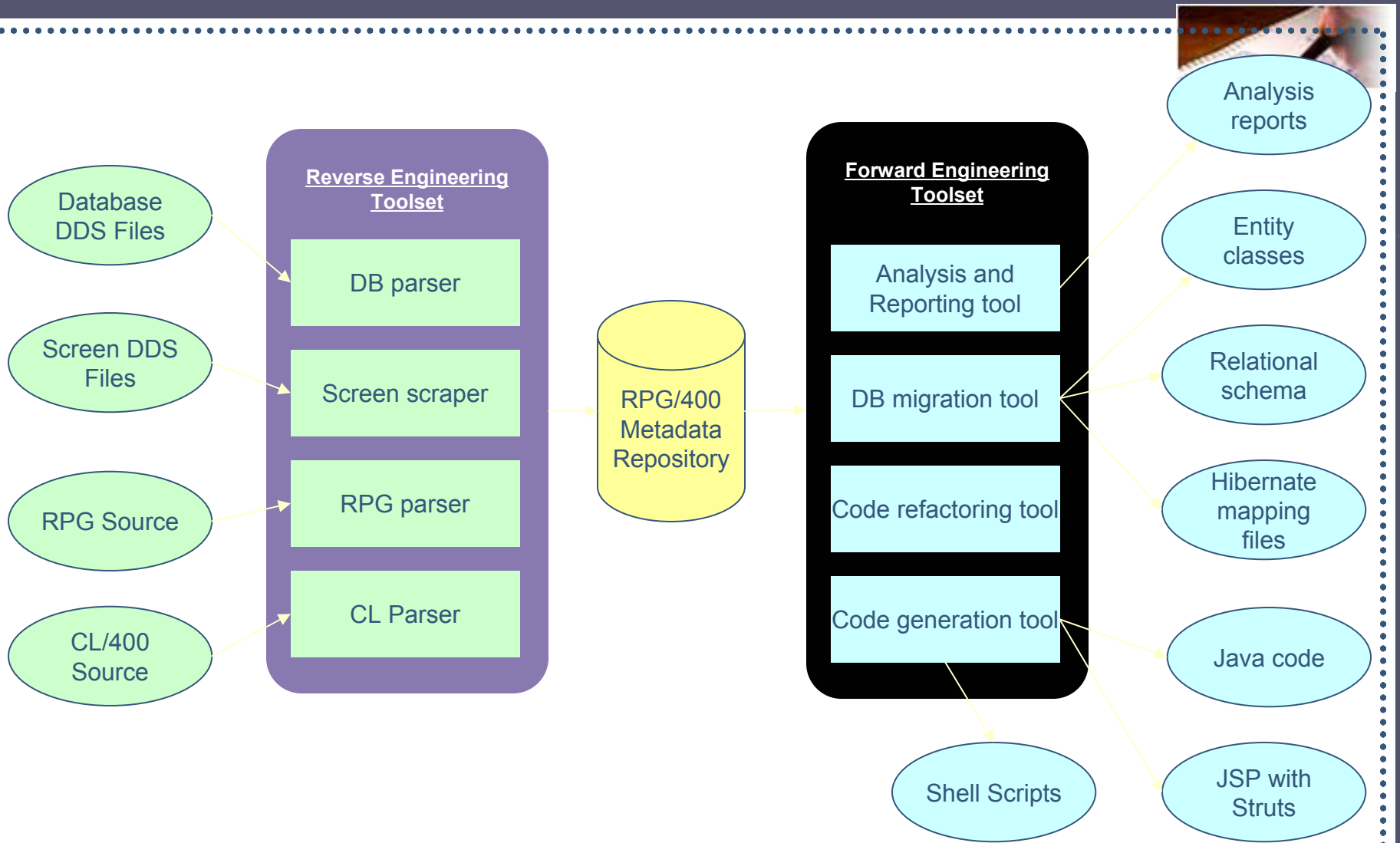
Source	Target
RPG Display file	JSP pages with Struts
RPG Program	Service class, DAO class, Struts controller classes (Action and ActionBean)
RPG database	Relational Schema, Entity classes, Hibernate mapping xml
CL/400 scripts	UNIX/Windows Shell scripts

RPG/400 Migration Process

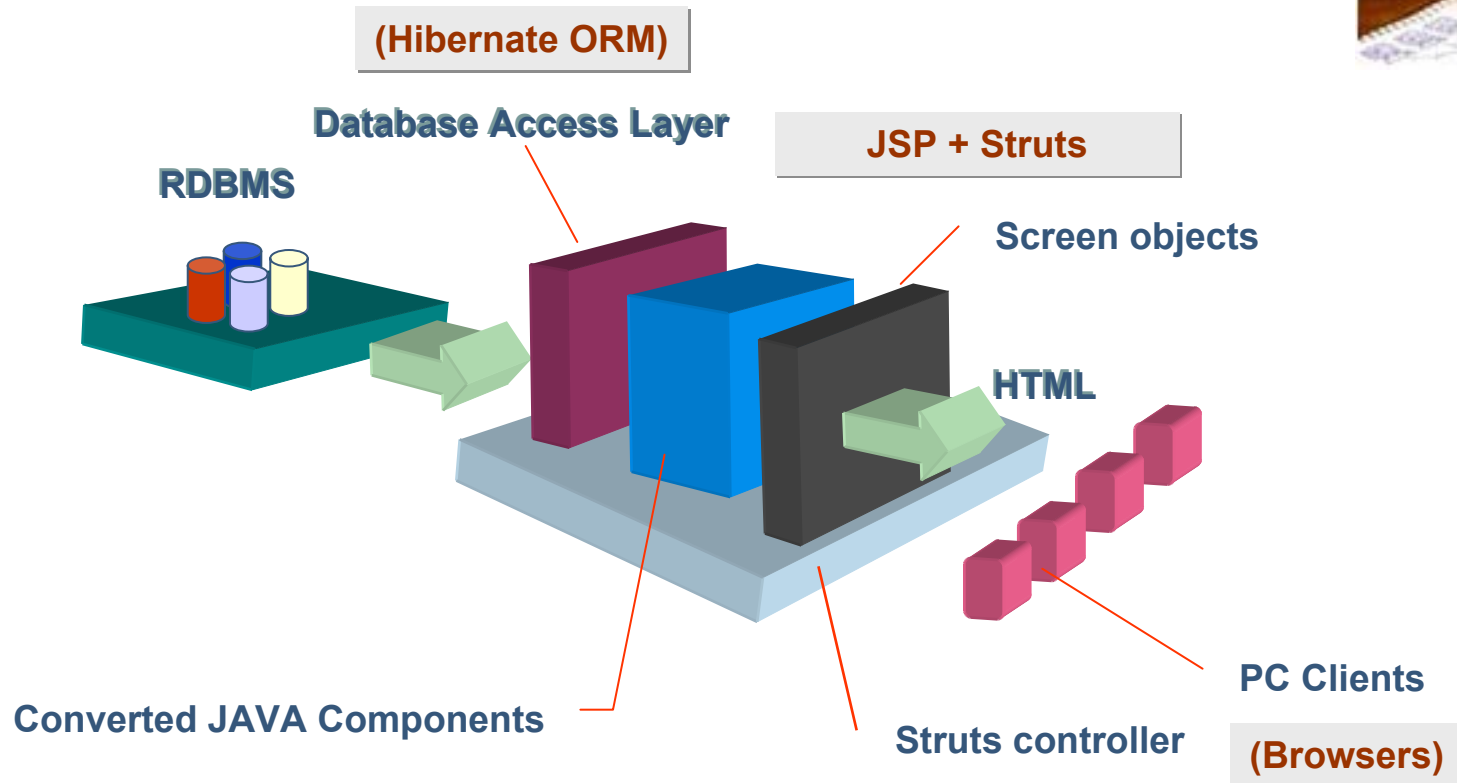
Transformation Overview
with ARM Analysis and Remediation:



RPG/400 Migration Process



Migrated Application Architecture

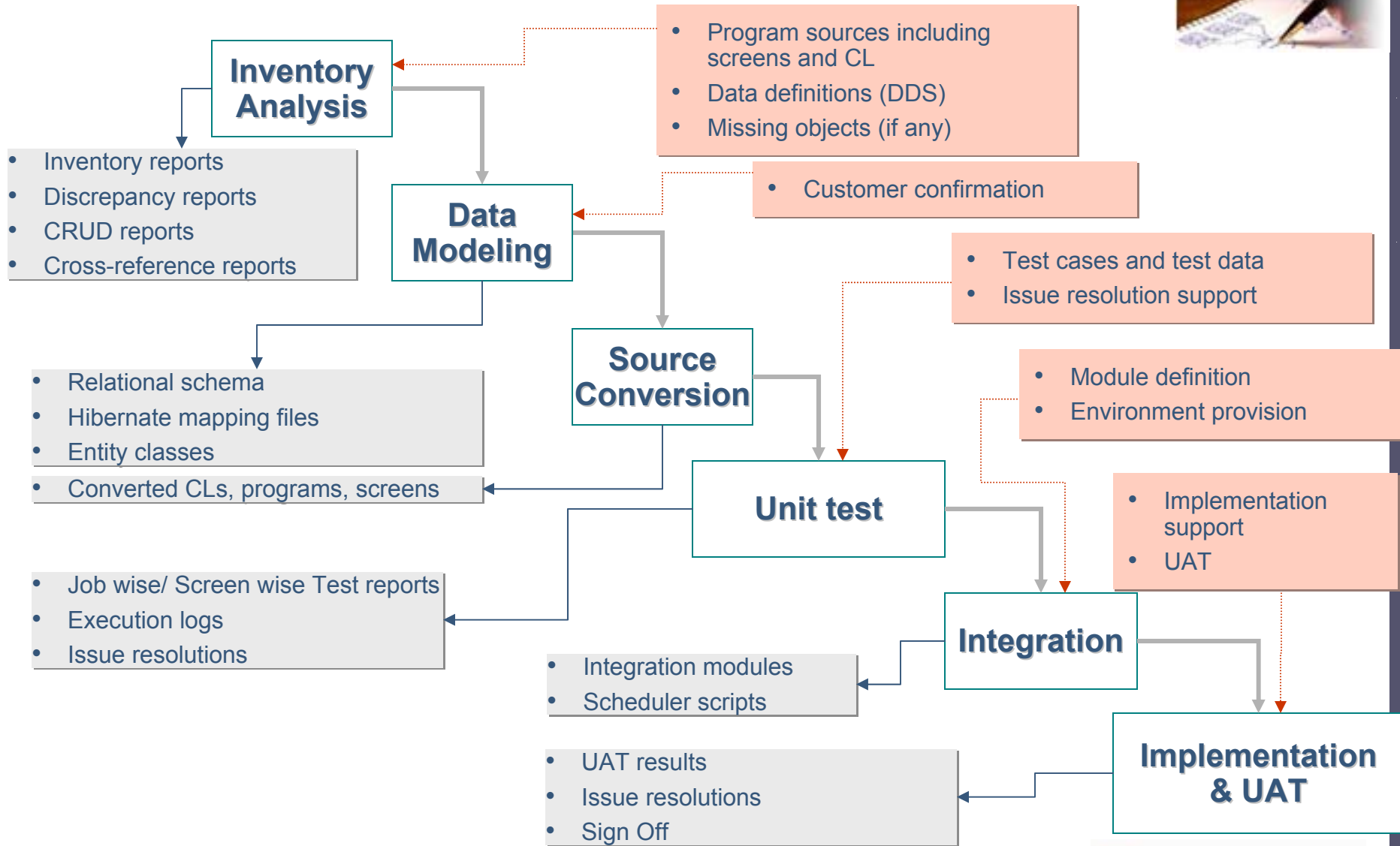


Monolithic Legacy application is partitioned into

- Presentation layer in JSP with Struts
- Data store in Relational Database (Oracle/ DB2)
- Core business logic in Open Systems Java
- Data Access Layer in Hibernate ORM

- The architecture supports popular frameworks like Struts and Hibernate
- The migrated application runs in a J2EE container
- Hibernate handles object to relational data mapping (ORM)

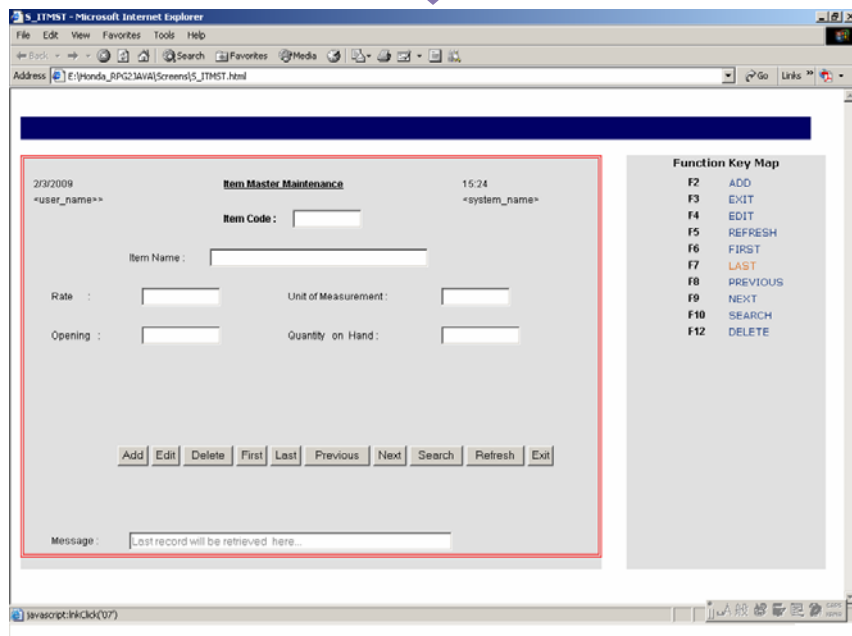
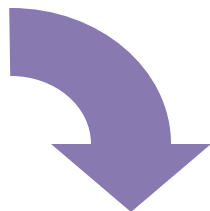
Outputs and Customer Interaction



Modernized User interface



RPG Screen DDS



❖ Modernized User Interface

- Browser enabled
- Independent presentation layer
- Leverages JSP/Struts
- Designed to replicate iSeries terminal screens
 - Minimizing training
 - Ensures immediate productivity
- Easily customizable with cascading style sheets (CSS)



Thank You
for viewing this quick overview of the
eCube Systems iSeries Modernization
Process for RPG/400 to Java Migration.

If you have any questions please contact eCube Systems.