



# FTA Technology 2009 IT Modernization and Business Rules Extraction

August 5th, 2009



\_experience the commitment™

# Agenda

- IT Modernization
- Business Rules Extraction
- Automation Tools for BRE
- BRE Cost and Size Models
- BRE Work Plans
- Lessons Learned
- Questions

# IT Modernization

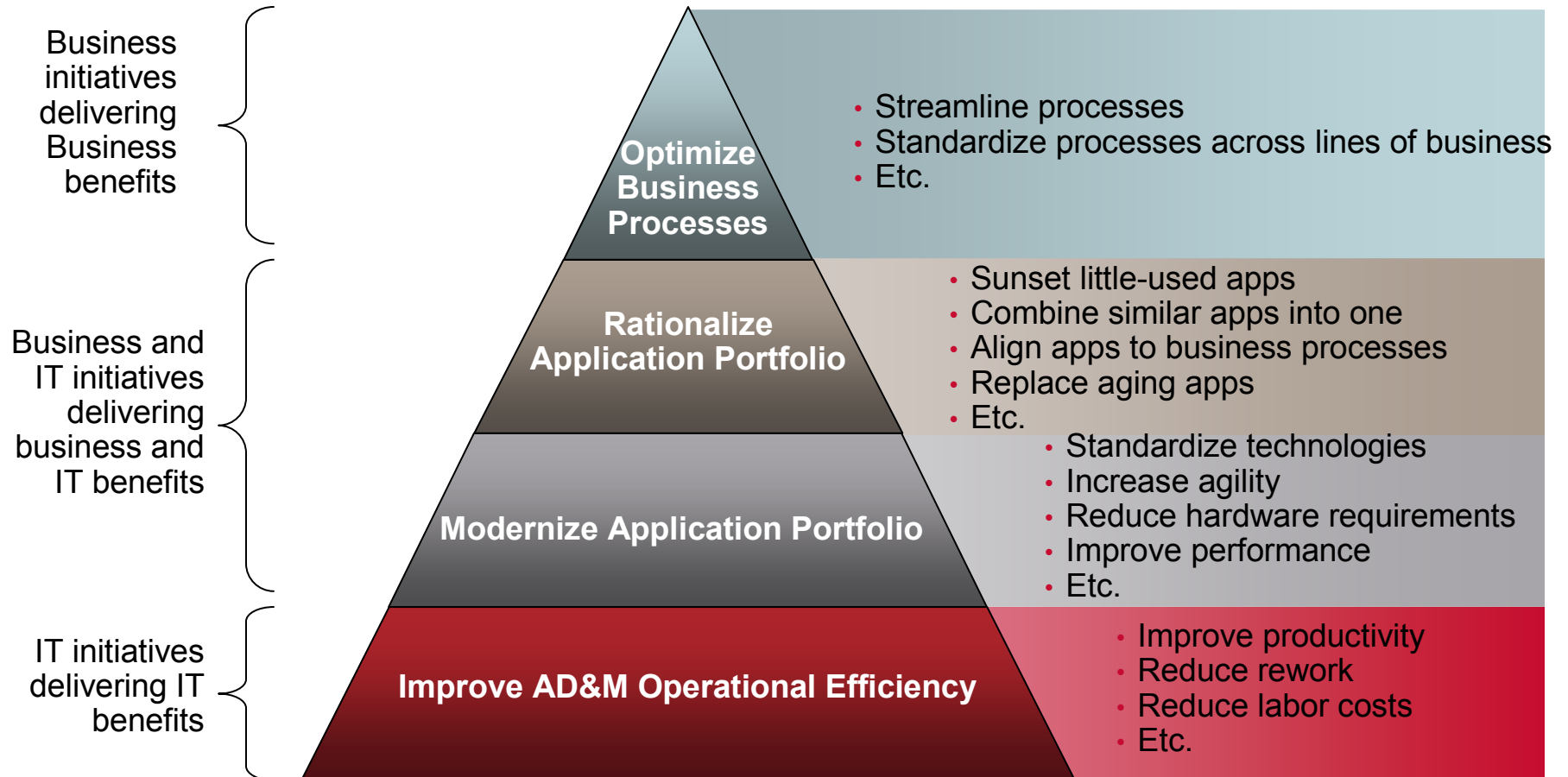
Modernization and transformation are integral parts of the majority of our engagements and core competency used to manage and maintain our own business solutions.

CGI has developed a holistic approach to transformation that enables us to help our clients quickly identify and efficiently capture the transformation, modernization, and rationalization opportunities that exist.

We classify transformation initiatives into four broad categories:

- Optimize Business Processes
- Rationalize Application Portfolio
- Modernize Application Portfolio
- Improve Application Delivery and Maintenance

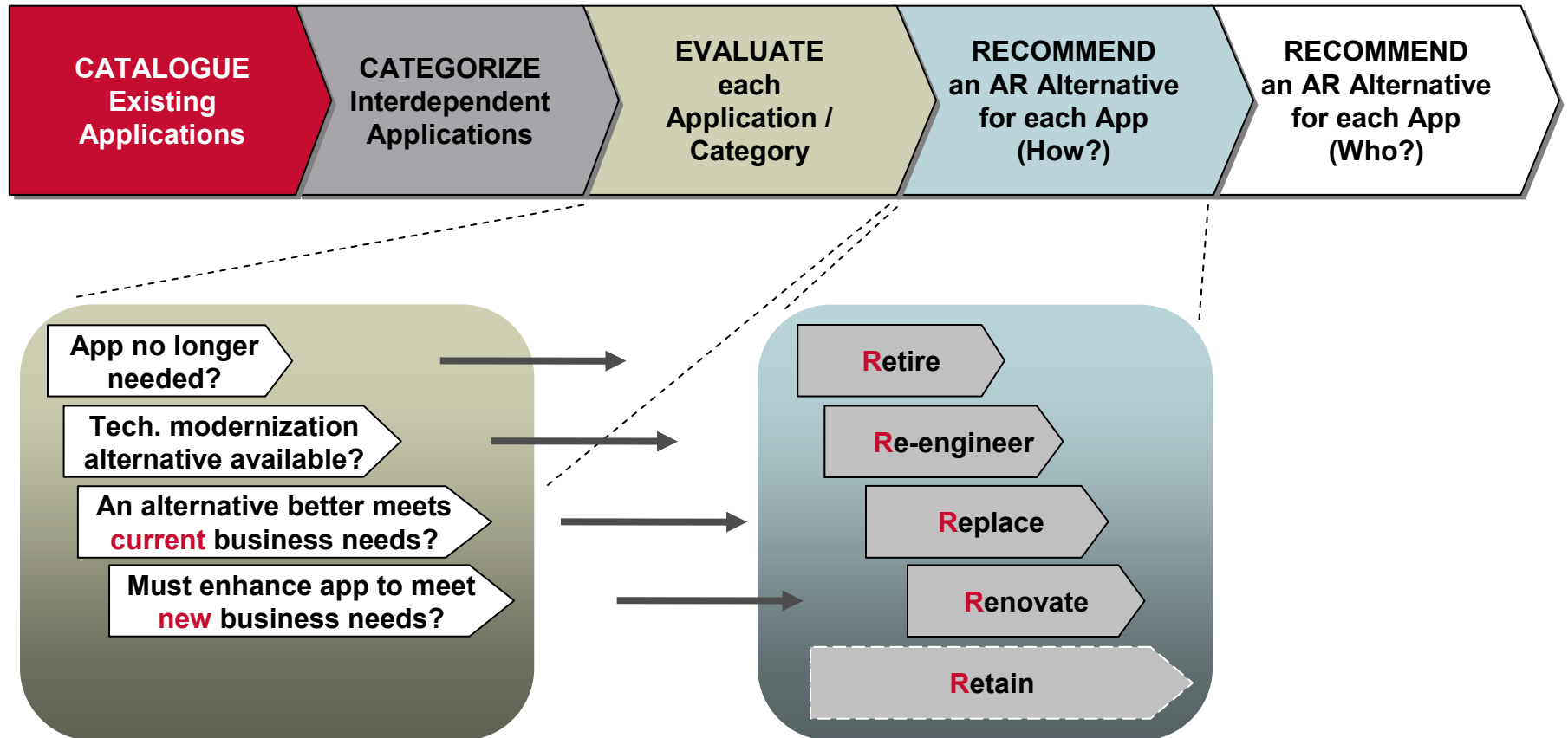
# CGI's Holistic Approach to Modernization



# Legacy Modernization (LIM)

- Legacy System = “A System That Works”
- Legacy Modernization is the process of transforming systems with unsuitable architectures or technologies to remove those constraints that present obstacles to achieving business goals
- Drivers for Legacy Modernization
  - ✓ Skills shortage
  - ✓ Lack of visibility into business processes
  - ✓ Systems are inflexible, brittle, and complex
  - ✓ Danger of technology obsolescence
  - ✓ Siloed implementations that lack interoperability
  - ✓ Batch vs. real time transactions capability

# Application Rationalization (AR) Options



# The 5 R's of Rationalization

## Retire

- Application is no longer required, or its costs and risks exceed business benefits
- Plan for phasing out and sun-setting the application

## Replace

- A better solution is available, which meets current business needs and has similar functionality
- There is an opportunity to consolidate or standardize
- Plan implementation of replacement application

## Re-Engineer

- Technology transformation to a more up-to date platform is feasible and cost-effective
- Plan to modernize the application

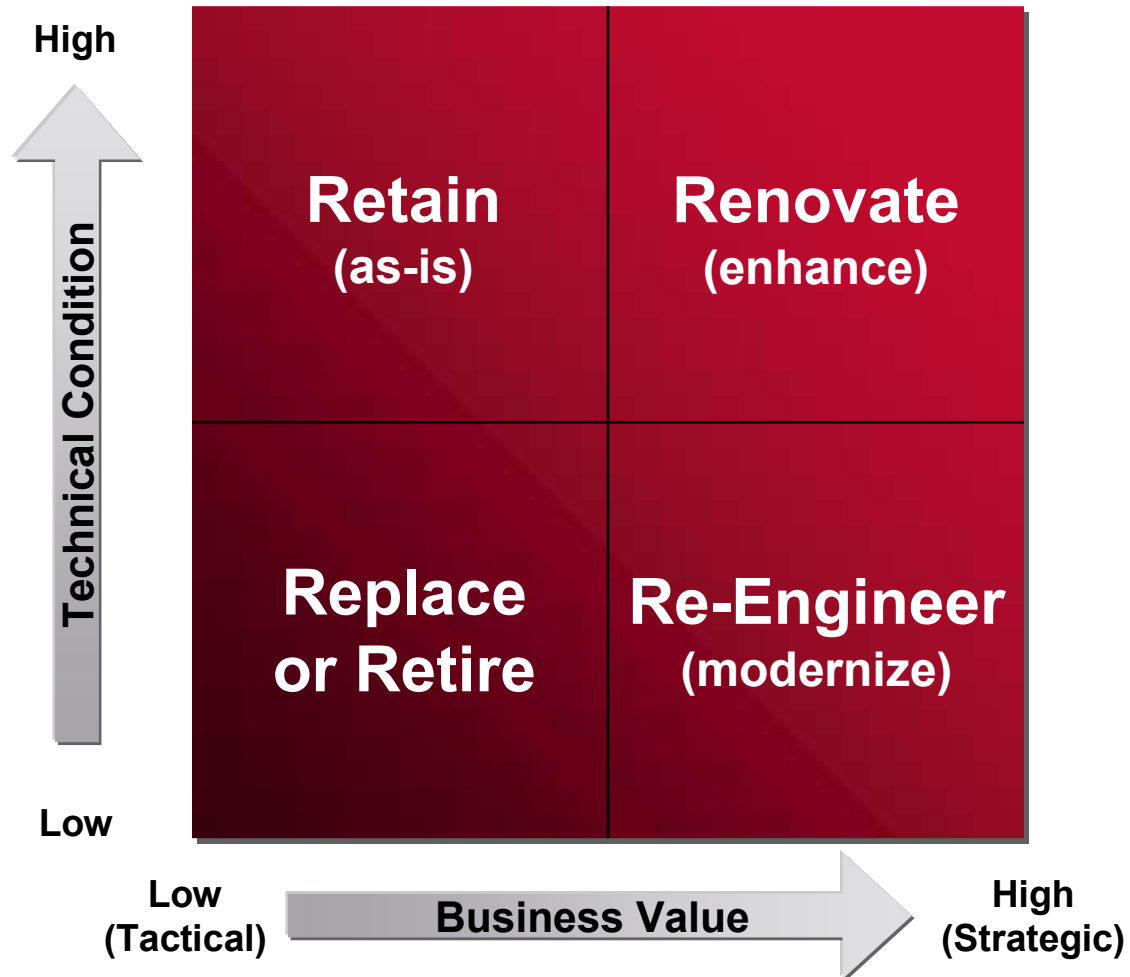
## Renovate

- Enriched functionality is needed to support the business
- Plan enhancements – make or buy

## Retain

- Application is doing what it is supposed to do
- Users currently are satisfied
- Maintain the application, mitigate risks

# Making Effective Decisions



# How does an Organization Prepare for IT Modernization?

- Clearly defined project goals
- Complete IT Audit and Planning Study
- Evaluate New Technologies
- Assess Architectural Changes
- Choose the Correct Modernization Approach
  - Non-invasive reuse
  - Automated migration
  - System Reengineering
- Determine if Projects can be broken into Implementation Groups
- Determine the Correct Approach for each part of the Project
- Conduct a Pilot Test
- Define a Testing and Validation Strategy
- Select the Right Resources



# Legacy Modernization Process

## Legacy System Assessment

- Rationalize IT Portfolio
- Information collection
- Create inventories for HW, SW, & apps
- Abstract system functions
- Create physical system model
- Assess development and operation environment
- Legacy to target system mapping

## Modernization Drivers

- New system requirements
- New business requirements
- Enterprise Architecture
- Standards & Policies
- New technologies

## Target Architecture Consolidation

- Identify modernization scenarios
- Identify technical solution options
- Create target architecture with reference to EA (if available)
- Refine target architecture based on detailed and new system requirements
- Update target architecture based on legacy system assessment results if necessary
- Keep target architecture alive by using feed back, update, and review cycles

## Transition Planning

- Perform gap analysis
- Define transition roadmap
- Identify stake holders
- Identify initiatives
- Create system transition and operation migration plan
- Document ROI
- Validate the plans

## Migration Execution

- Define system implementation projects based on initiatives
- Create project plans
- Execute projects
- Perform system transition
- Perform operation migration

# What is Business Rules Extraction (BRE)?

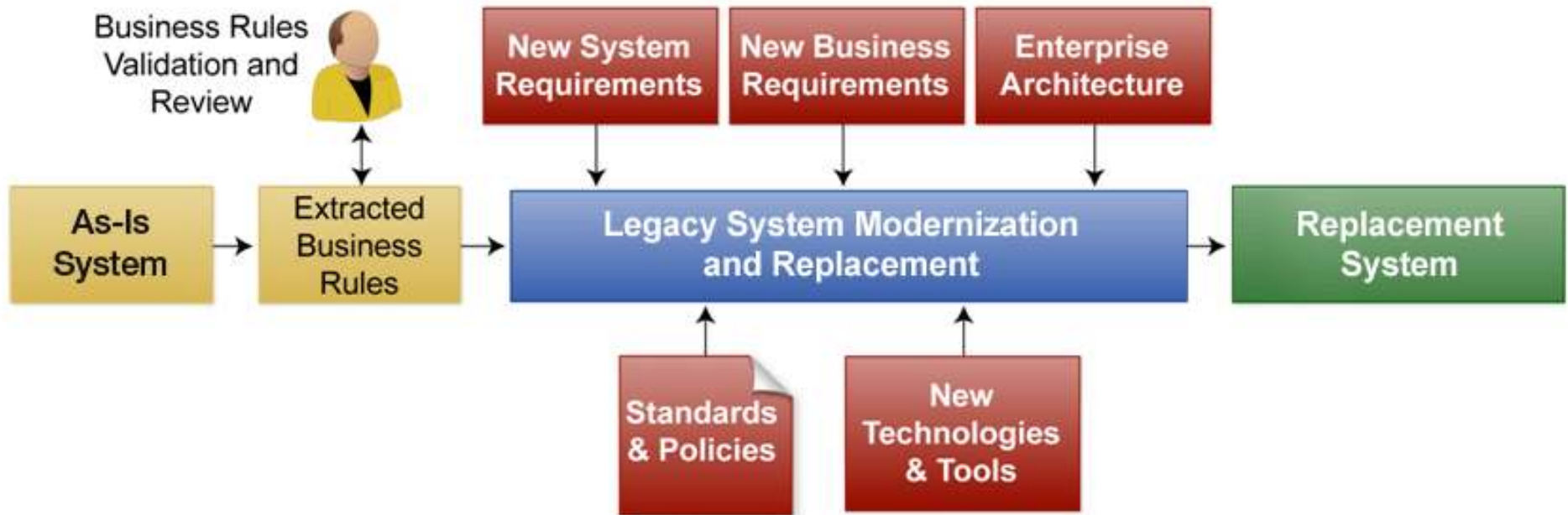
Business Rules Extraction is one of the components of legacy modernization. It is the extraction of business rules from the legacy system in order to **document/annotate, tag, update, or enrich** them.

These business rules may then be **transformed** so they can be incorporated into the target application architecture either in the form of **externalized business rules** (within a rules engine) or **internalized business rules** (as program logic within a Java/J2EE or .Net application).

The extracted knowledge is comprised of:

- Application Inventory
- Business Rules
- Program Logic
- Data Model

# Business Rules Extraction Logical View



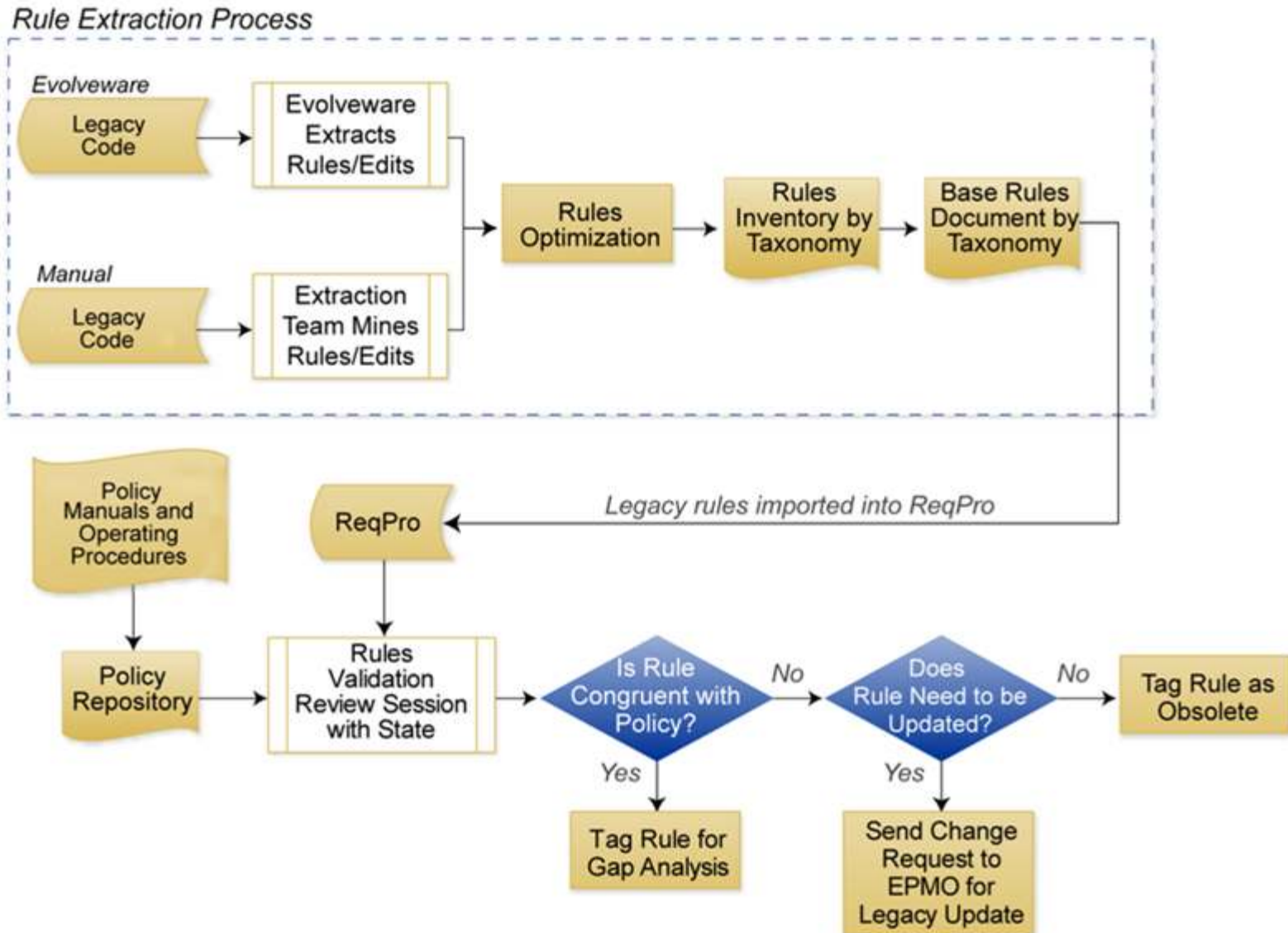
# When do automated BRE engagements make sense?

- **Recovering investments** in years of business rules implementations in mission critical software
- **Aging Information Systems** that have code and policy drift
- Software Portfolio's that have **inadequate documentation**
- **Complex** Systems that are hard to support or make changes in
- **Unstructured software** not understood or easily modified
- Critical applications that require **expensive modifications**
- Knowledge Loss due to an **aging work force**
- **Few knowledgeable individuals** to make modifications
- Applying **modern frameworks** to legacy applications such as SOA and Web Enablement

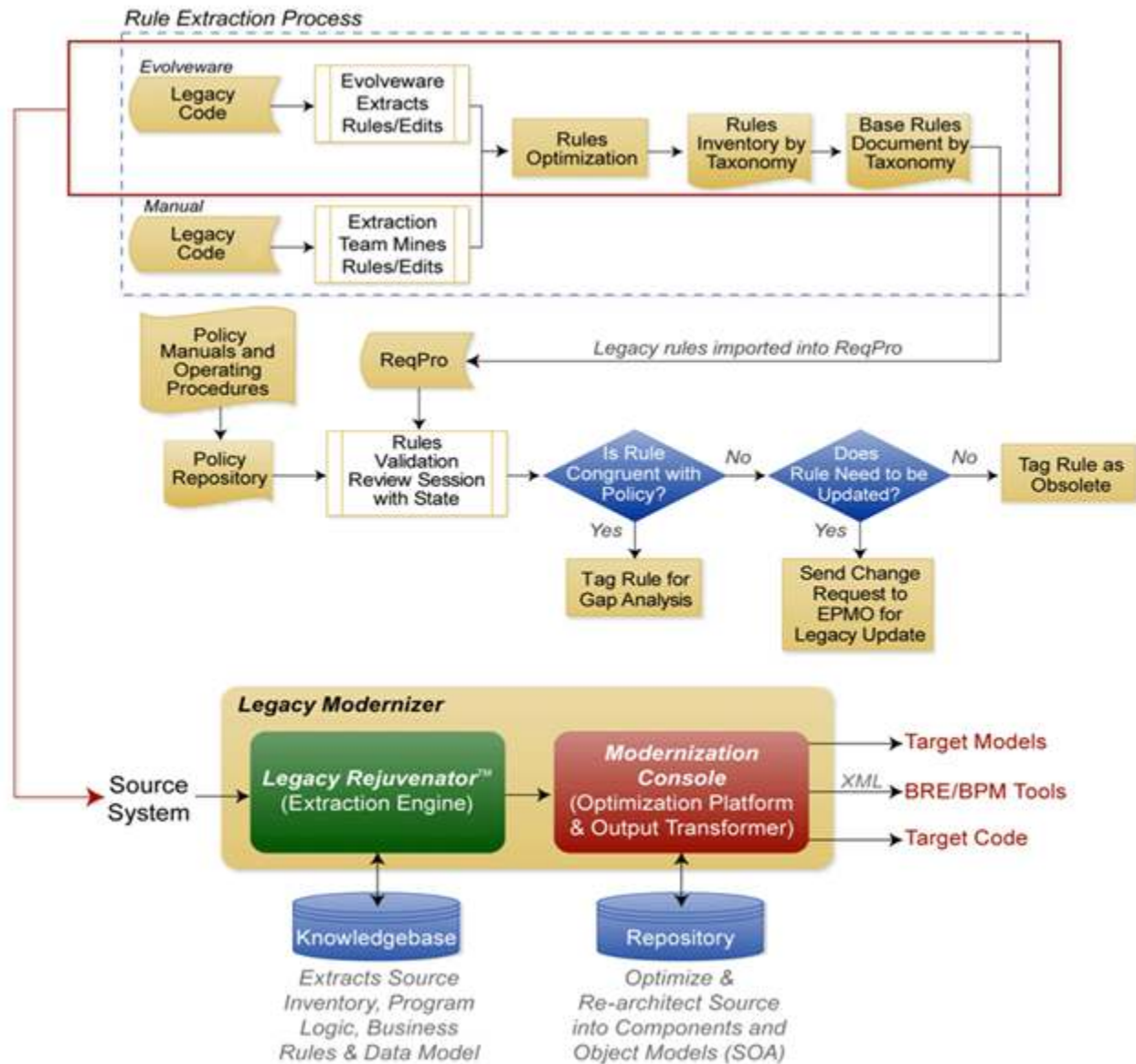
# How does an Organization Prepare for BRE?

1. Review IT Modernization Preparation Steps
2. Work with the selected vendor and product sets
3. Develop the test and pilot plan and the targeted project outcomes
4. Develop a process design for BRE
5. Select the Source Code and all components of that code base (copy books, called subroutines, etc.)
6. Copy the code base to a test environment and physical work location
7. Set up and begin the Extraction Process
8. Execute the process design for Business Rule validation and modifications
9. Execute the Modernization Process
10. Work the final remediation steps and the test plan
11. Plan for the implementation of the targeted project outcomes

# Business Rules Extraction Process Flow Example Using EvolveWare as a product example



# Business Rules Extraction Process Flow with Automated Legacy Transformation Example



# BRE Extraction and Modernization Console Outcomes

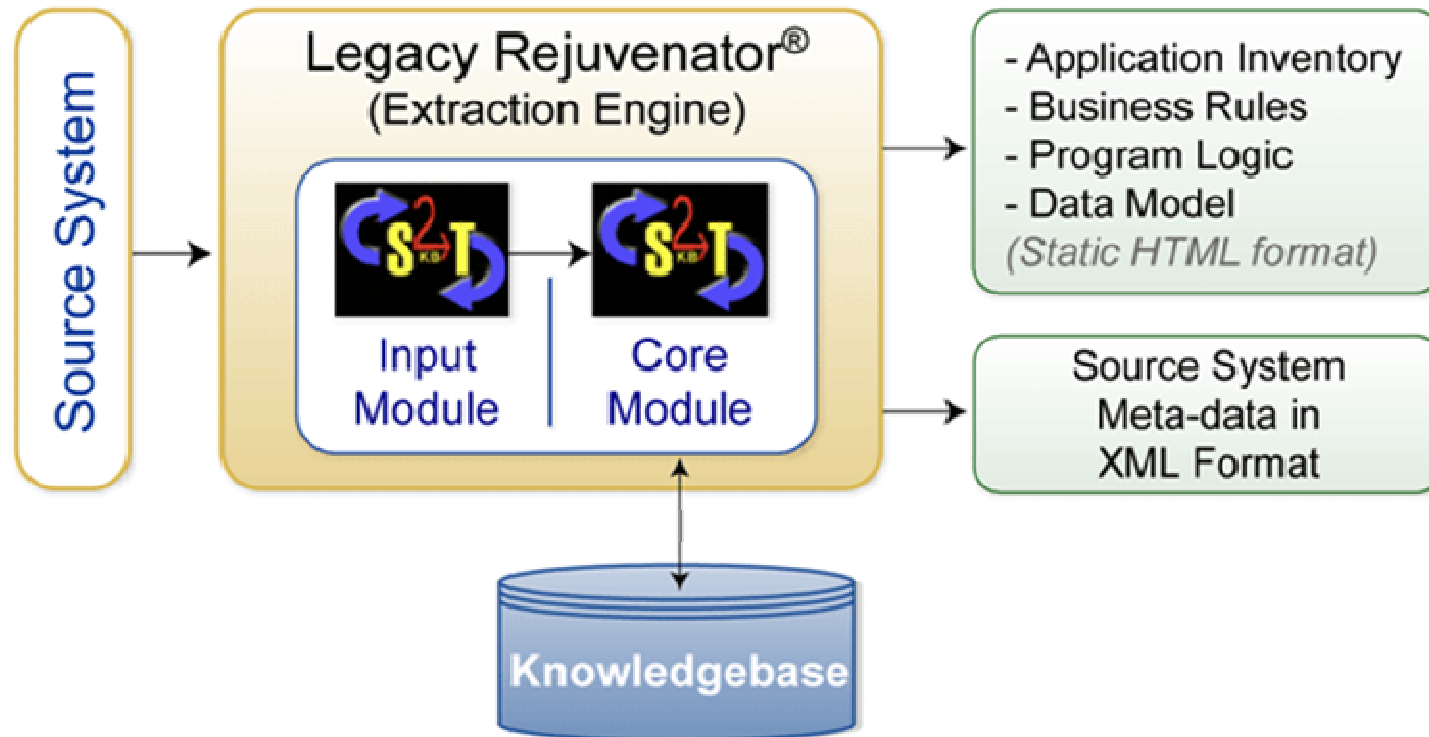
- **Visualize**
  - Business rule linkages within a program and program linkages within applications (graphically)
  - Individual business rules – text and flowcharts
- **Search** for business rules by entities, variables and business rule names
- **Rename**
  - Dynamically, variable names in business rules with analyst friendly descriptions
  - Business rules so that an analyst may better understand its functionality
- **Tag or Annotate**
  - For Policy staff to Group (merge), modify or deactivate business rules within a program
  - For Policy staff to Group business rules across programs and tag them as a single set – Group Rules
- **Tag** business rules in accordance with the establish rule taxonomy
- **Group programs** to generate a single component or application in .Net/Java
- **Form services** from grouped rules – Service Components
- **Generate SOA** components (Web Services) from derived Service Components

# What does a BRE Automated Console look like?

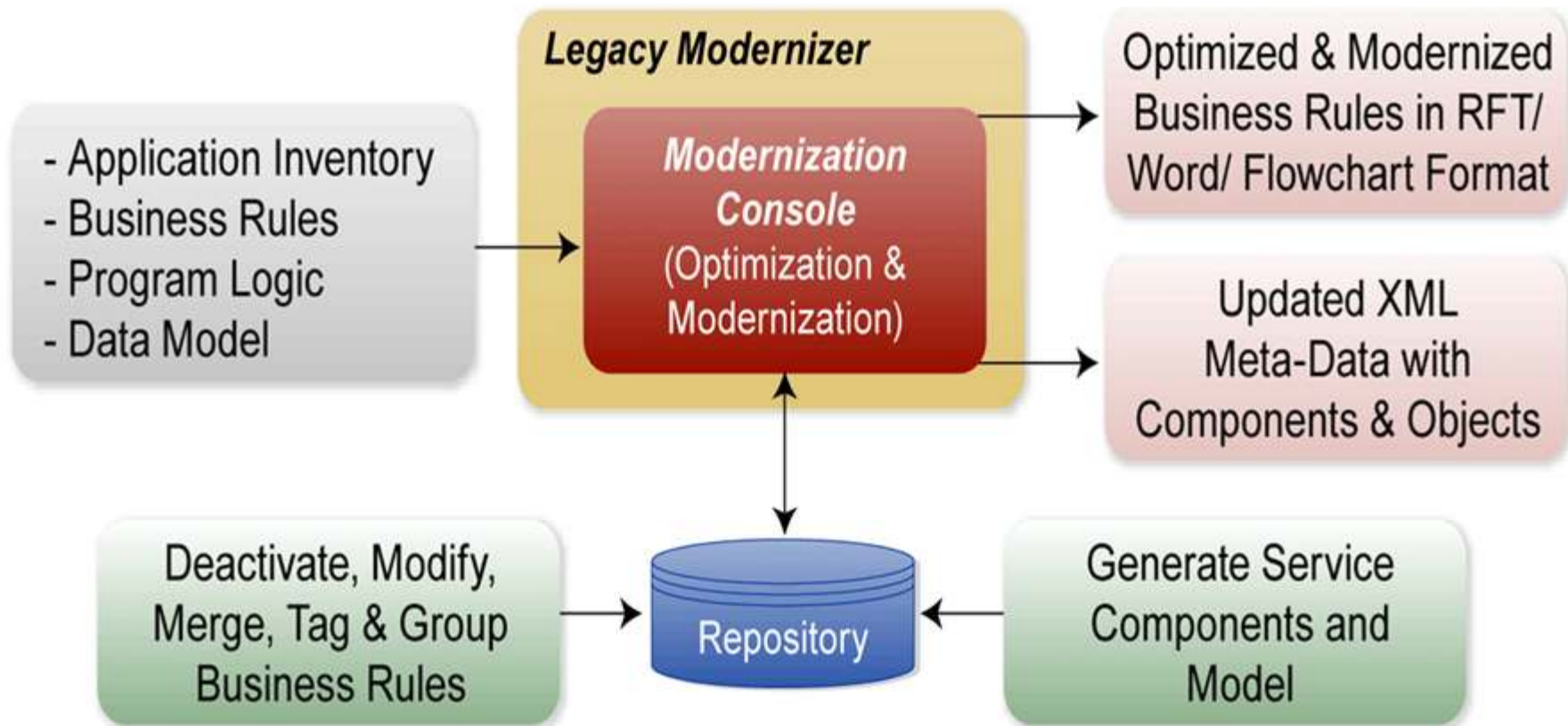
- **Extraction Engine for Business Rules Extraction**
  - Input Module
  - Core Module
  - Output Documentation and Source System Metadata
- **Modernization Console for Business Rules Optimization and Modernization**
  - Optimized and Re-architected Source code into Components and Object Models (SOA)
- **Outcomes**
  - Optimized Business Rules
  - Updated XML Metadata with Components and Objects
  - Target Models
  - BRE/BPM Tool Integration
  - Target Code

# Extraction Engine

- Uses a knowledge base to abstract source COBOL, Assembler, PL1, Natural, etc. into XML
- Can view the business rule as a graph or MS Word document



# Modernization Console



The Modernization Console enables staff to optimize and modernize the extracted business rules.

# Working with Business Rules

The screenshot displays a business rule editor interface with the following elements:

- Toolbar:** Annotate, Keyword Dictionary, Restore Keywords, Refresh, Save, Close.
- Buttons:** Assign Tag, Assign to Groups (Services).
- Deactivation:**  Deactivate this business rule. **Deactivate check marked business statements in this rule** [Select All] [Unselect All] [Restore].
- Rule Name:** 13990-PROCESS-UNAUTH-PLAN-TAR [Edit Name] [Export to RTF Format] [View Flowchart] [View Source].
- Legend:** Process Name - Dark Green, Variable Name - Blue, Constant/Entity Name - Brown.
- Rule List:**
  - Check if CF1-P-OUT-OF-STATE-IND is equal to 2 OR CF1-P-OUT-OF-STATE-IND is equal to 3 OR CF1-P-OUT-OF-STATE-IND is equal to 4
  - Check if **Claim Type** is equal to 2 OR **Claim Type** is equal to 3
  - NEXT SENTENCE
    - Otherwise
      - Check if **Claim Type** is equal to 1
        - Check if CF1-CLM-MEDI-TAR-IND is equal to 0
          - Call Business rule in 13990-EXIT [Replace]
          - Otherwise
            - NEXT SENTENCE
        - Otherwise
          - Check if CF1-CLM-MEDI-TAR-IND is not equal to 3
            - Call Business rule in 13990-EXIT [Replace]
  - Set ERR-CLM-ERR-CD equal to 0638
  - Call Business rule in 13800-HCP-ERROR [Replace]
  - Call Business rule in 13890-EXIT [Replace]
  - Exit from the business rule

# Annotating and Tagging Business Rules

The screenshot displays a web-based interface for managing business rules. At the top, there are several buttons: **Annotate**, **Keyword Dictionary**, **Restore Keywords**, **Refresh**, **Save**, and **Close**. Below these, there are two more buttons: **Assign Tag** and **Assign to Groups (Services)**. The main area contains a list of business rules, with the selected rule being **13990-PROCESS-UNAUTH-PLAN-TAR**. A **Legend** indicates that **Process Name** is dark green, **Variable Name** is blue, and **Constant** is red. Below the legend, there are several conditions for the rule, each with a checkbox and a small icon:

- Check if CF1-P-OUT-OF-STATE-IND is equal to **2** OR CF1-P-
- Check if **Claim Type** is equal to **2** OR **Claim Type** is equal to
- NEXT SENTENCE
- Otherwise
  - Check if **Claim Type** is equal to **1**
  - Check if CF1-CLM-MEDI-TAR-IND is equal to **0**
- Call Business rule in **13990-EXIT** **Replace**

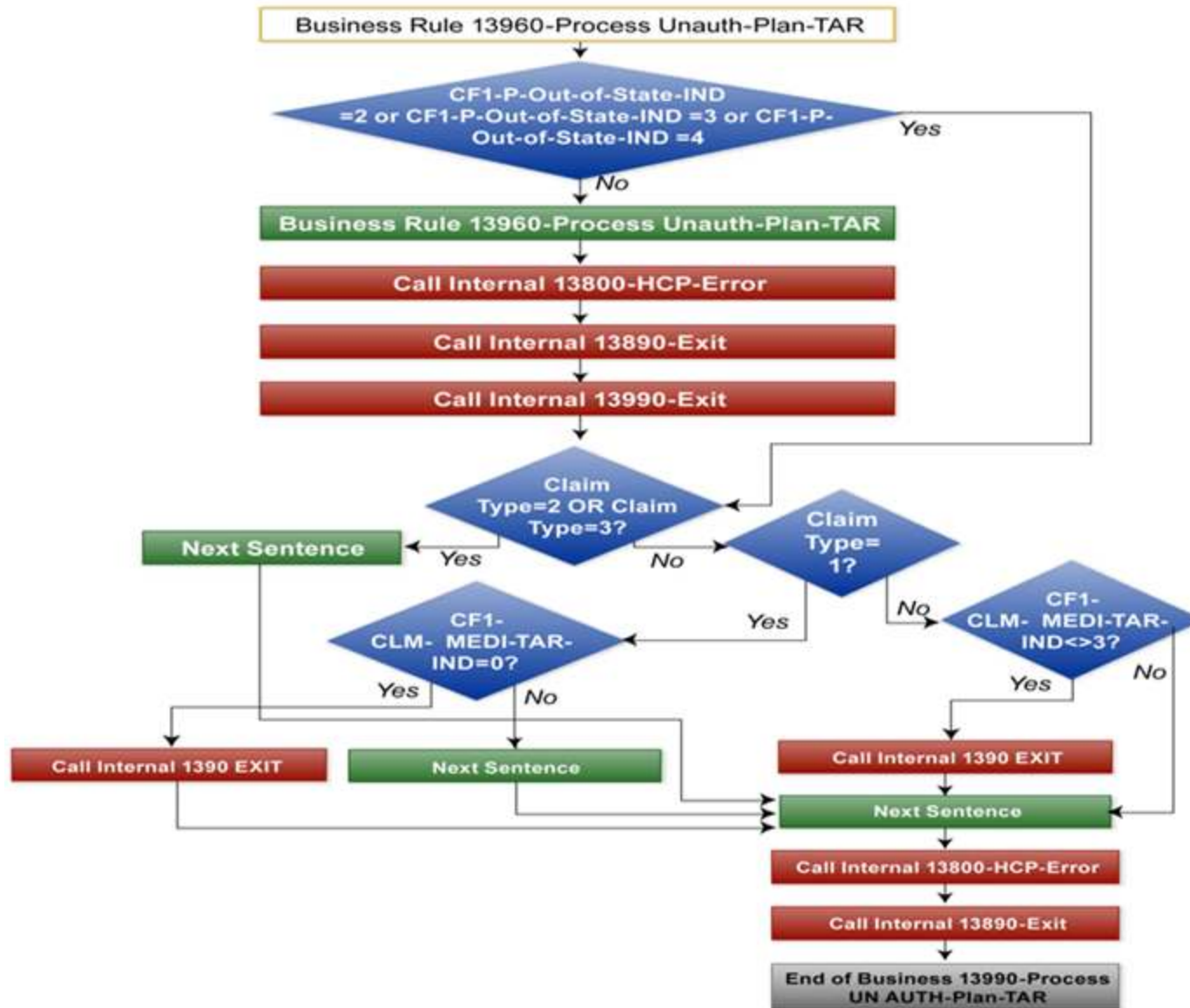
Two windows are open over the main interface. The top window, titled **Notes for 13990-PROCESS-UNAUTH-PLAN-TAR**, contains the following text:

Program Name : MCD290  
Process Name : 13990-PROCESS-UNAUTH-PLAN-TAR

This business rule is in accordance with the policy specified in Section 1.a.ii of the MMIS policy manual.

The bottom window, titled **Assign Tag to Business Rule**, shows the **Assign Tag** dialog. It has two sections: **Current Assignment:** and **Provider**. The **Current Assignment:** section is currently empty. The **Provider** section has a dropdown menu with the following options: **Provider**, **Provider**, **None**, **Member**, **Operations**, and **Managed Care**. There is a **Cancel** button next to the dropdown.

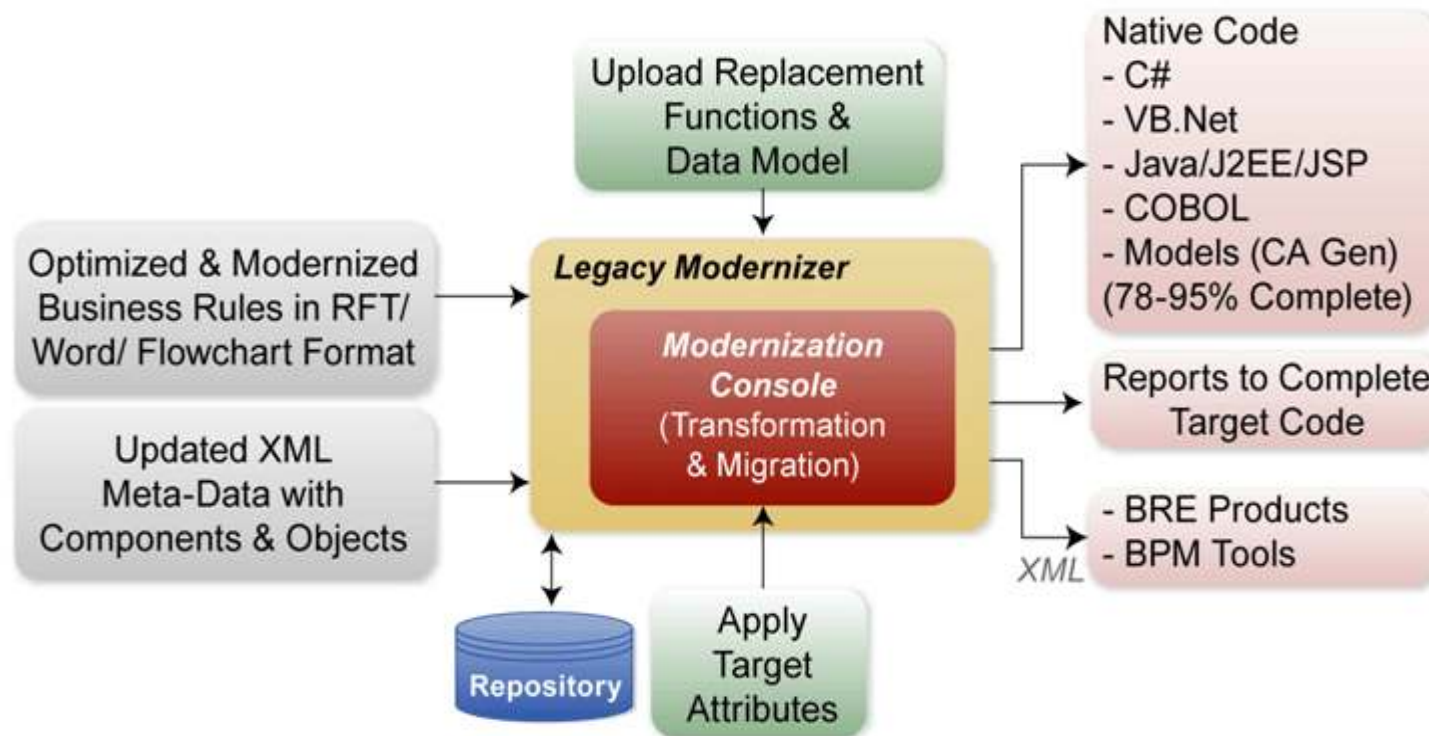
# Graphical View of Business Rule



# Exporting Business Rules

In the final phase:

- The optimized and modernized business rules can be processed and loaded into Business Rules Engines and Business Process Management Tools
- The optimized and modernized business rules can be generated into native code in multiple code bases with completion rates from 78 to 95%



# Duration, size, and cost models of BRE engagements

## Duration of Engagement Examples

- Depends on the Lines of Code and Different Code Bases
- 3 to 4 Months to 16 Months Total
- 1 Month Planning and Set-up
- 1 to 6 Months Rules Extraction
- 1 to 6 Months Rules Validation
- 1 to 2 Months Documentation and Migration
- 1 to 6 Months manually complete unconverted code, add functionality & deploy

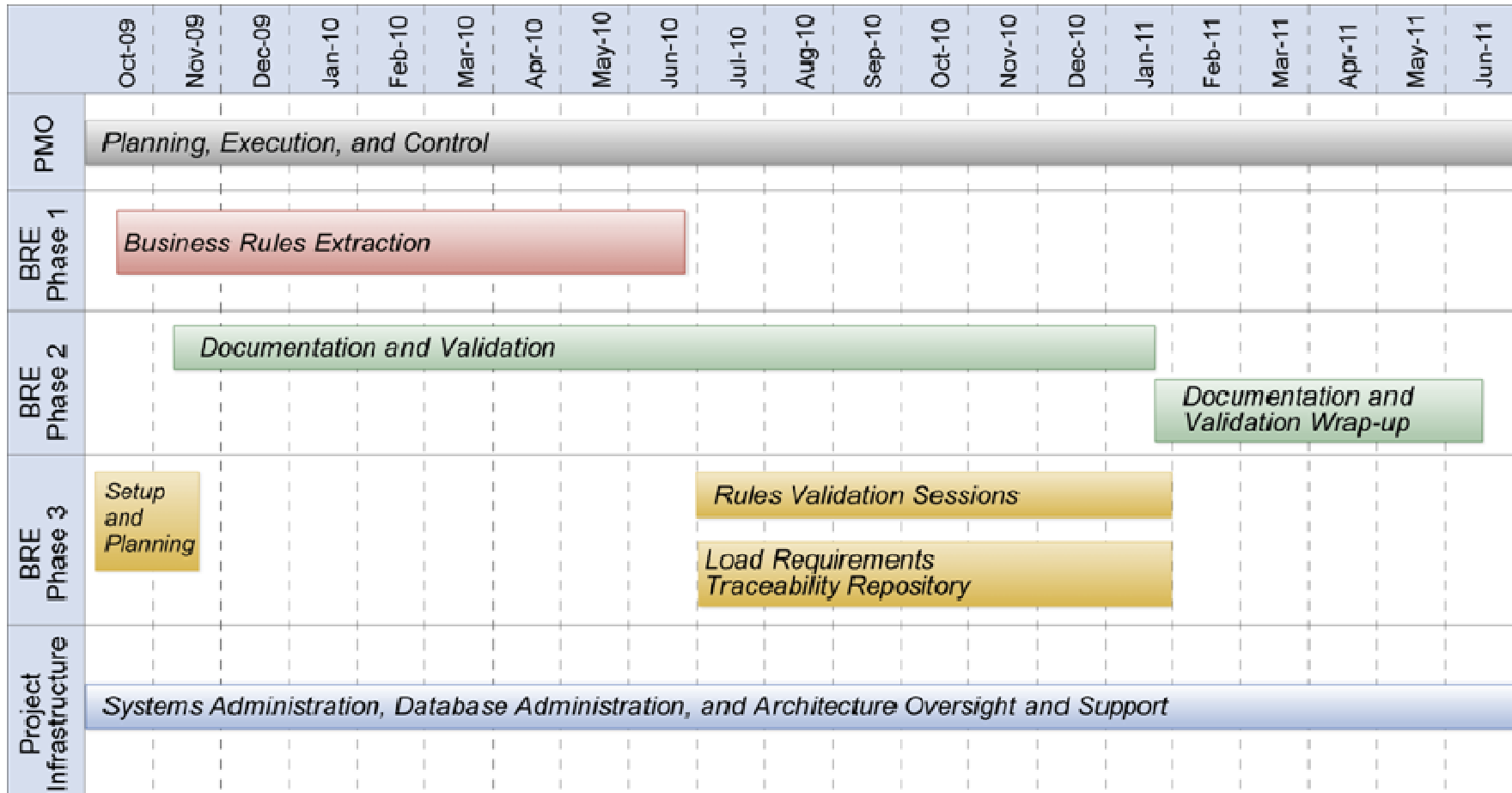
## Size of Engagement Examples

- 5 Contract and Tool Expertise Staff
- 3 to 5 Engagement Staff
- 5 to 10 Subject Matter experts and Policy Staff (rules validation)

## Cost Models of Engagement

- Priced by Lines of Business Rule Code (executable lines of code)
- Fixed price
- Time and materials

# Example of large BRE High Level Project Plan



# Lessons Learned

- ✓ LIM and BRE are available and viable options for modernization
- ✓ Automated tools are critical, powerful, and available
- ✓ Knowledgeable experts are important to these engagements
- ✓ Tool expertise is critical to success
- ✓ BRE is a smaller component to a larger plan for LIM
- ✓ Modernization efforts can salvage years of imbedded knowledge and business rules
- ✓ These engagements are short in relative terms
- ✓ Modernization can take several forms and be done in increments
- ✓ Older systems can be modernized with SOA and Web services
- ✓ Legacy systems can be improved through code consolidation, code redundancy removal, and optimization



# Contact Information

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## About the Presenter

- 32 Years in Information Technology Development, Management, and Leadership with State Government
- Member of CGI's Tax and Revenue Practice
- Experience with Local, State, Federal, and International tax agencies
- Focused in Business Development and delivery of CGI Practices, Products, and Systems Implementations
- Specializing in Technical Architecture