Reverse Engineered Composite Applications (RexApps™)

Kartik Iyengar, Enterprise SOA Practice Head

Wipro Technologies
SAP Tech Tour 2007
Defining Reverse Engineered xApps: RexApps™

An Acceptable Definition

1. Any business process supported by the underlying 3rd party, best-of-breed, custom-built or any applications, can be taken down and be composed as an xApp.

2. Using the SAP NetWeaver Composition Environment to provide a retrofit Delta functionality to ensure the retrieval of applications that support a business process.

3. The driver being business processes, RexApps™ will help bring together the processes, better it, and help such applications to be retired in a phased manner.

4. Any composite that considers multiple SAP/non-SAP applications in the landscape, agnostic of the platform they are built on, can be collapsed into logical processes that are rendered by the UI, consuming services and use the ERP as a system of reference.

5. RexApps™ is an ESOA-based application retirement strategy that provides a long-term approach for retiring applications.

6. At 1/4th the cost of implementing a new solution, there is no or little disruption to day-to-day business.

7. Provides quick returns for your ESOA initiatives.
Driving an Enterprise-wide Services Meta-model

The RexApps™ Strategy can help:

Technology:
- Drive a SaaS based Initiatives with ESR
- Define operations in a multi-platform environment
- Define ES-Bundles creation and consumption as a long-term strategy
- Define a strategy to take ABAP out of customizations
- Prioritize at IT Initiatives post Upgrade Initiatives
- Leverage BPP for new Composite development
“Monetizing ESOA” Initiatives with RexApps™

Business Strategy & Initiatives

**Innovate**
- Applications Retiral
- Objective process with ROI calculator identify savings
- Create an SOA Roadmap

**Retire**
- Reduce complexity
- Align to business transformation
- Customization in ABAP

**Align**
- Shift budget from supporting legacy applications to creating functionality leveraging SAP BPP
- Minimize customizations in core SAP business applications

---

**RexApps™ NPV Calculations, Cash-Flow Non-Discounted**

**ESOA Monetization with RexApps™**

<table>
<thead>
<tr>
<th>Year</th>
<th>RexApps Project Costs</th>
<th>RexApps Forecasted Benefit</th>
<th>RexApps NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$100,000</td>
<td>$200,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>2</td>
<td>$300,000</td>
<td>$400,000</td>
<td>$200,000</td>
</tr>
<tr>
<td>3</td>
<td>$500,000</td>
<td>$600,000</td>
<td>$400,000</td>
</tr>
<tr>
<td>4</td>
<td>$700,000</td>
<td>$800,000</td>
<td>$600,000</td>
</tr>
<tr>
<td>5</td>
<td>$900,000</td>
<td>$1,000,000</td>
<td>$800,000</td>
</tr>
</tbody>
</table>

---

**Legacy Application NPV Calculations, Cash-Flow Non-Discounted**

**Non-Retiral Stage without ESOA**

<table>
<thead>
<tr>
<th>Year</th>
<th>Legacy Project Costs</th>
<th>Legacy Forecasted Benefit</th>
<th>Legacy NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$100,000</td>
<td>$200,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>2</td>
<td>$300,000</td>
<td>$400,000</td>
<td>$200,000</td>
</tr>
<tr>
<td>3</td>
<td>$500,000</td>
<td>$600,000</td>
<td>$400,000</td>
</tr>
<tr>
<td>4</td>
<td>$700,000</td>
<td>$800,000</td>
<td>$600,000</td>
</tr>
<tr>
<td>5</td>
<td>$900,000</td>
<td>$1,000,000</td>
<td>$800,000</td>
</tr>
</tbody>
</table>
Driving an Enterprise-wide Services Meta-model

Custom Code KPI

- Average Share of Custom Code
- Best Practice

Source: 2006 West Trax study of over 300 SAP customers in 40 countries.
Business Enablement by Reverse Engineered xApps

IT Strategy / Initiatives

Innovate
- Extend the business process and enabling business unit level pre and post processing
- Process Re-engineering
- RexApps™ is NOT an “IT thing”

Retire
- Drive TCO down by leveraging existing investments (SAP)
- Removed software licenses and hardware from our footprint
- Monetize ESOA Investments

Align
- Aligns with Customer long term ESOA Roadmap
- Migration of functionality coincided with business transformation

Why SOA?

Innovate
- Lower Training costs
- Shorter time to build
- Business Analysts and Enterprise Architects drive RexApps

Retire
- Use existing Services to build composites
- Reusability and ease of use of this approach makes it a sound application retirement strategy

Align
- Adopted a standard application for TCO/TBO
- Calculation for every Composite to drive business benefits and assessing financial Impact and business value as a process
RexApps Business Case Builder and ROI Calculator

A Wizard based intuitive menu driven tool

Runs through defined steps which:
- Qualifies the retirement opportunity from a ROI and a TCO point of view
- Calculates TCO, TMB, ROI and creates a Business Case
- Spawning an Open Source BPX Project
- To be launched on BPX Community on Visual Composer 7.0 & 7.1 shortly
- Next steps defined for SOA Journey with ES-Bundles
- Excel based version to be made available for download as well

DEMO
Guided procedure solution for RexApps business case and ROI calculation

Considers both the TCO and TMB [Total Monetization of benefits] for the ROI calculation

Captures data to the detail level for the TCO, TMB and ROI calculations

Comparison of the RexApps data with that of the current legacy application possible

Guidelines for RexApps decision making

Generates standard Reports – print friendly format

Download the Application and edit the wiki on BPX @
### TO-BE STATE OBJECTIVES

1. Streamline the end-to-end process
2. Keep the business logic in central location
3. Reduce TCO on implemented solution
4. Avoid errors & improve process efficiency by eliminating reentry of information
5. Align with future state strategy

### KEY TECHNOLOGY ASPECTS

1. Same look and feel from usability point
2. GP Driven (Wizard driven)
3. Sleek UI
4. UI Composed than coded
5. Completely Reusable
6. Thin Client Approach (no business logic in UI)

(Capital Appropriation Request)
RexApps: Sample Technical Architecture
Benefits and Proof Points

Business Benefits

CAPEX Automation process built as RexApps
- Approval of Capital up to 50% quicker allowing Customer to realize the return on the committed capital sooner
- Tighter integration to enterprise org. plan requires less maintenance
- Elimination of manual processes

General xApp benefits for Customer
- Pulls much of the customization out of mySAP business suite and into SAP’s composite framework
- Enables business unit specific rules and workflows to occur prior to the core ERP workflows which are typically standardized for the enterprise
- Ease of use by making custom Web dynpro screens to improve usability

Proof Points

- RexApps as an application retirement strategy enabling analysis, identification of candidates and ultimately application retirement as the business functionality migrates to SAP
- Business Case Builder and TCO calculator for RexApps being evaluated and piloted by Customer
- CAPEX Automation Composite, Master data Creation composite showcasing monetization of ESOA with the Composite Application Framework
Reverse Engineer - 2: Compose to extend

**APPROVAL ANALYTICS**

1. Value addition from the existing application
2. Offer real time analytics to the user to help in decision making
3. User Centric analytics
4. Uses xApp Analytics

Sample Screenshots

(Revenue Recognition Composite)
Reverse Engineer – 3 (Proposed Architecture using ES-Bundles for RRC)

- SD, FI & CO Consultants
- SD Users
- FI Users
- Revenue Recognition xAPP Users

- Process Configuration
- Sales Process Cycle
- Revenue Accounting Process
- Revenue Recognition and Analysis

- Standard SAP UI Screens
- Standard ABAP Interfaces
- Revenue Recognition ES Bundle

CE 7.1 Environment

- Portal
- Enterprise Services Repository

SAP Backend

- SAP ERP 2005

SAP AG 2007. SAPPHIRE / SLGT # / Speaker Name / 13
Reverse Engineer – 4: Extend the Application

Enterprise Service Bundle - RRC

Business Scenarios
- Billing Related Rev. Recognition
- Time Based Rev. Recognition
- Service based Rev. Recognition
- Service based Rev. Recognition with Contract call-of
- Time & Billing based Rev. Recognition
- Time based Rev. Recognition with Credit/Debit Memo Processing
- Credit/Debit based Rev. Recognition with reference to preceding document

Process Components
- Deferred. Revenue Recognition Process
- Unrecognized Revenue Recognition Process
- Revenue Recognition Process
- Consistency Check Process
- Revenue Reconciliation Process
- Revenue Recognition Error Log Process
- Revenue Recognition Rollback Process

Business Objects
- Customer
- Deferred Revenue Account
- Unrecognized Revenue Account
- Revenue Recognition
- Revenue Recognition Discrepancy Register
- Revenue Reconciliation Register
- Material

Enterprise Services
- Deferred & Forecast Data Query
- Revenue Recognition processing
- Revenue Recognition Process Error Log
- Reconciliation
- Consistency Check
- G/L Accounts List and Details
- Customer List & Details
- SD Configuration of Master Data
- FI Configuration of Master Data
- Sending Email Service
### RexApps™: Sample Pharmaceutical Value Chain

#### Pharmaceutical Value Chain

<table>
<thead>
<tr>
<th>Suppliers,Partners &amp; Regulatory Agencies</th>
<th>R&amp;D</th>
<th>Operations</th>
<th>Distribution</th>
<th>Sales &amp; Marketing</th>
<th>Service</th>
<th>Customers,Channels &amp; Regulatory Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time to Market</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R&amp;D Administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Discovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical Development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Trial Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Trial Supply Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory Submission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Product Quality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Qualification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conformity Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enterprise UMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment Maintenance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time to Value</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Chain Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order to Cash</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales Operations and Performance Analytics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field Sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Product Safety</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Inquiry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complaint Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incident Reporting &amp; CAPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Tracking and Testing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Wipro**

© SAP AG 2007, SAPPHIRE / SLOT # / Speaker Name / 15

**THE BEST-RUN BUSINESSES RUN SAP™**
**RexApps™:** Why contemplate Reverse Engineering at all?

**Pharmaceutical: SAP Published “white-spaces”**

<table>
<thead>
<tr>
<th>Lab Scheduling</th>
<th>Government Pricing</th>
<th>Customer event Management</th>
<th>Territory Optimization</th>
<th>Complaints – Adverse Events</th>
<th>Weight &amp; Dispense</th>
</tr>
</thead>
</table>

![Diagram](image_url)

<table>
<thead>
<tr>
<th>User Productivity Acceleration</th>
<th>Enterprise Workforce</th>
<th>Business Task Management</th>
<th>Enterprise Knowledge Management</th>
<th>Enterprise Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Unification</td>
<td>Master-Data Harmonization</td>
<td>Master-Data Consolidation</td>
<td>Centralized Master-Data Management</td>
<td>Enterprise Data Warehouse</td>
</tr>
<tr>
<td>Business Information Management</td>
<td>Enterprise Reporting, Query, and Analysis</td>
<td>Business Planning and Analytical Services</td>
<td>Enterprise Data Warehouse</td>
<td>Enterprise Knowledge Management</td>
</tr>
<tr>
<td>Business Event Management</td>
<td>Business Activity Monitoring</td>
<td>Business Task Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Development</td>
<td>Developing, Configuring, and Adapting Applications</td>
<td>Enabling Platform Interoperability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unified Life-Cycle Management</td>
<td>Software Life-Cycle Management</td>
<td>SAP NetWeaver Operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application Integration and Management</td>
<td>Authentication and Single Sign-On</td>
<td>Integrated User and Access Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultation</td>
<td>Enabling Platform Interoperability</td>
<td>SAP NetWeaver Operations</td>
<td>Master-Data Consolidation</td>
<td>Enterprise Knowledge Management</td>
</tr>
<tr>
<td>Link Design and Deployment</td>
<td>Enabling Enterprise Services</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure out standard SAP portfolio fitment first

© SAP AG 2007, SAPPHIRE / SLOT # / Speaker Name / 16
RexApps™ approach as an application retirement strategy

**Production Planning Systems**
- Transfer Planned Demand To Demand Management
- Evaluate Planned Independent Requirement
- Material Requirements Planning (MRP)
- Evaluate MRP Results / MRP Lists
- Perform Interactive Planning Of Planned Orders
- Convert Planned Orders To Process Orders
- Convert Planned Orders To Purchase Requisitions
- Perform Interactive Planning Of Purchase Requisitions

**Inspection Recording Systems**
- Create Inspection Plan
- Generate Worklist For Inspections
- Create / Process Work Order
- Determine Optimum Route For Inspection Round
- Plan And Schedule Work Order
- Perform Work Clearance Management
- Put Order In Process And Print Or Download To Mobile Device
- Post Material Movements
- Perform Interactive Planning Of Purchase Requisitions

**Quality Assurance Systems**
- Trigger Inspections
- Draw Samples
- Confirm Samples (Optional)
- Record Results (Optional)
- Statistical Process Control (Optional)
- Confirm Inspection Costs (Optional)
- Record Defects (Optional)
- Record Usage Decision

**Manufacturing Control Systems**
- Reporting Of Batch Related Objects
- Reporting Batch Where-Used List
- Top Down Analysis
- Bottom Up Analysis
- Pick Up List
- Traceability With Documentary Batches
- Create / Process Order
- Plan And Schedule Order
- Perform Work Clearance Management

**Equipment Management Systems**
- Process Measurement Document
- Schedule And Monitor Maintenance Plans
- Create / Process Notification
- Generate Worklist For Notifications
- Print Notifications

---

The diagram illustrates the integration of various systems and processes through the W-CAF Model.
## RexApps™ – Leverage, Replace, Retire, Migrate, Compose...

### SAP NetWeaver Composition Environment

<table>
<thead>
<tr>
<th>Service Area</th>
<th>PBNW Application</th>
<th>CAF based Application</th>
<th>VC based Application</th>
<th>GP based Application</th>
<th>CFNW Application</th>
<th>SAP/Partner xApp</th>
</tr>
</thead>
<tbody>
<tr>
<td>End-User Service Delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analytics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategic Enterprise Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Analytics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operations Analytics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workforce Analytics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Supply Chain Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Accounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management Accounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate Governance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Capital Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talent Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workforce Process Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workforce Deployment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurement and Logistics Execution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplier Collaboration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory and Warehouse Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inbound and Outbound Logistics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Development and Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing Execution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life-Cycle Data Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales and Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales Order Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aftermarket Sales and Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional-Service Delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real Estate Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enterprise Asset Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project and Portfolio Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment, Health and Safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Trade Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© SAP AG 2007, SAPPHIRE / SLOT # / Speaker Name / 18
### Why RexApps™ – The value proposition

#### Pharmaceutical Value Chain

<table>
<thead>
<tr>
<th>Suppliers, Partners &amp; Regulatory Agencies</th>
<th>R&amp;D</th>
<th>Operations</th>
<th>Distribution</th>
<th>Sales &amp; Marketing</th>
<th>Service</th>
<th>Customers, Channels &amp; Regulatory Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to Market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R&amp;D Administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Discovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical Development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Trial Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Trial Supply Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory Submission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procure to Pay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compliant Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enterprise LIMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment Maintenance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Chain Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order to Cash</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales Operations and Performance Analytics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field Sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Inquiries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complaint Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incidence Reporting &amp; CAPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Tracking and Tracing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© SAP AG 2007, SAPPHIRE / SLOT # / Speaker Name / 19

THE BEST-RUN BUSINESSES RUN SAP™
### Product Quality: Procure-to-pay Business Scenario

#### Pharmaceutical Value Chain

<table>
<thead>
<tr>
<th>Suppliers, Partners &amp; Regulatory Agencies</th>
<th>R&amp;D</th>
<th>Operations</th>
<th>Distribution</th>
<th>Sales &amp; Marketing</th>
<th>Service</th>
<th>Customers, Channels &amp; Regulatory Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Product Quality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Procure to Pay</strong></td>
</tr>
<tr>
<td><strong>Compliant Manufacturing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Enterprise LIMS</strong></td>
</tr>
<tr>
<td><strong>Equipment Maintenance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Sourcing & Planning
- Supplier Qualification
- Procurement Planning

#### Supplier Collaboration
- Design Collaboration
- Inventory Collaboration

#### Procurement
- Contract Management
- Purchase requisitions
- Purchase Orders
- Accounts Payable
- Supplier Payment

#### Receiving & Inspection
- Receive Materials
- Material Inspection

#### Inventory Management
- Inventory Control
- Stock Transfers
- Physical Inventory

#### Reporting
- Inventory Visibility
- Supplier Scorecard
- Proactive Monitoring
### Product Quality: Procure-to-pay Business Scenario

**RexApps™**

<table>
<thead>
<tr>
<th>Purchasing Planning</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchasing Governance</td>
<td>Strategy Development</td>
<td>Risk Management</td>
<td>Procurement Office Planning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category Management</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Management</td>
<td>Data Improvement</td>
<td>Spend &amp; Opportunity Analysis</td>
<td>Supplier Development</td>
<td>Purchasing Controlling</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supplier Qualification</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand &amp; Market Analysis</td>
<td>Specification Development</td>
<td>Supplier Identification</td>
<td>Supplier Evaluation</td>
<td>Approved Vendor List</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supplier Negotiation</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Event Preparation</td>
<td>Request for Quotation</td>
<td>Reverse Auction</td>
<td>Bid Evaluation &amp; Awarding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contract Management</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Development</td>
<td>Contract Execution</td>
<td>Contract Monitoring</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requisitioning</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement Definition</td>
<td>Requisition Approval</td>
<td>Requisition Analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order Management</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of Supply Assignment</td>
<td>Restriction Validation</td>
<td>Order Generation &amp; Tracking</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Receiving</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgement &amp; Delivery</td>
<td>Quality Assessment</td>
<td>Returns Handling</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial Settlement</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Invoice Verification</td>
<td>Evaluated Receipt Settlement</td>
<td>Invoice Payment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supplier Enablement</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Document Exchange</td>
<td>Supplier Network</td>
<td>Supplier Portal</td>
<td>Supplier Collaboration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Product Quality: Procure-to-pay Business Scenario
Business Application fitment with RexAppsTM

<table>
<thead>
<tr>
<th>Requisitioning</th>
<th>Requirement Definition</th>
<th>Requisition Approval</th>
<th>Requisition Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving</td>
<td>Acknowledgement &amp; Delivery</td>
<td>Quality Assessment</td>
<td></td>
</tr>
<tr>
<td>Supplier Enablement</td>
<td>Document Exchange</td>
<td>Supplier Network</td>
<td>Supplier Portal</td>
</tr>
</tbody>
</table>

Role
- Requestor
- Approver
- Buyer
- Receiving
- Finance

Process Step
- Step 1: Request
  - Brows Catalog, add items to cart with split line accounting and shipping and submitting for approval
- Step 2: Approve
  - Configurable based on commodity, supplier or any specific rates that may be required
- Step 3: Order
  - Order
- Step 4: Receive
  - Receive
- Step 5: Invoice
  - Display Invoices, Reporting and Allow for Invoice Settlement through EPP

What happens? How?

Business Logic to be developed in Composite
- Adding items to catalog based on requestor's dollar limit & generate approval process. Post catalog check
- Configurable based on commodity, supplier or any specific rates that may be required
- Convert PR into PO & push to PO for Next step along with e-mail notifications
- GR/IR process with Settoll tolerances defined in R/3 through IPRO With display to supplier

Enterprise Services

Backend System Functional Area

Purchasing
- ERP

B2B

3rd Party

THE BEST-RUN BUSINESSES RUN SAP™
Functionality overview – Available (Formulating the Functional specifications)

**CREATE A REQUISITION**

- Creating a Requisition
- Creating a Requisition Using the Summary Screen
- Commodity Specific Information (B-Form) - For Desktops/Laptops
- Commodity Specific Information (B-Form) - For Software
- Catalog & Non-Catalog (B-Form)
- Browsing the Catalog (MDM 5.5)
- Searching the Catalog
- Ordering Non-Catalog (Ad-Hoc) Items through iPRO
- Adding Items to Favorites
- Using Favorites
- Adding Attachments in iPRO
- Adding Split Accounting
- Shipping by Line Item

**CANCEL, EDIT AND WITHDRAW REQUISITIONS**

- Cancel a Requisition
- Editing a Requisition
- Withdrawing a Requisition

Etc.....

- Requisition create based on dollar limits
- Approval generation based on configured rules
- GP driven customizable approval process/scalable for use with Flow-Brix
- Ad-Hoc requisitions capturing additional details for business justification based on commodity code
- Prevent users from creating Ad-hoc requisitions for catalog items
- Shipment track and trace
- Approval process for Supplier catalog maintenance
- Custom reporting using BEx query iViews for purchasing
- Supplier onboarding through e-form process
- EFP based Catalog maintenance
Administering RexApps from with a “Product” Approach (To-Be process)

- Login through SAP NetWeaver Portal,
- Select items from Catalog hosted on MDM 5.5 or any other Cataloguing tool,
- Use CAF 7.0 and Guided Procedures to enhance User experience, enhance UI with Visual composer
- Push Purchase requisitions in R/3 or ECC, proceed with approval workflow in CAF 7.0,
- Leverage services to approve and create Pos into R/3 or ECC seamlessly without Integration headaches and
- Have Role-specific business content for the same

Requestor

• Login through SAP NetWeaver Portal,
• Select items from Catalog hosted on MDM 5.5 or any other Cataloguing tool,
• Use CAF 7.0 and Guided Procedures to enhance User experience, enhance UI with Visual composer
• Push Purchase requisitions in R/3 or ECC, proceed with approval workflow in CAF 7.0,
• Leverage services to approve and create Pos into R/3 or ECC seamlessly without Integration headaches and
• Have Role-specific business content for the same

Approver

• Receive in EP
• Leverage CAF/GP
• Reporting through BI
• Data in R/3 or ECC

Yes

Is additional Approval Required?

Buyer Assistant

• Receive in EP
• Leverage CAF/GP
• Reporting through BI
• Data in R/3 or ECC

No

Buyer

• Login through SAP NetWeaver Portal
• All data accessed through R/3 and BI
• Scalable to SRM Sourcing

• Create PO without any EAI
• Use BI for reporting
• Change PO process issue non-existent
• Enhance with xApp Analytics

Wipro

Req to Order = 6 minutes

© SAP AG 2007, SAPPHIRE / SLOT # / Speaker Name / 24
The Anatomy of an RexApps™: Sample iPRO

Procure to Pay
- Sourcing & Planning
  - Supplier Qualification
  - Procurement Planning
- Supplier Collaboration
  - Design Collaboration
  - Inventory Collaboration
- Procurement
  - Contract Management
  - Purchase Requisitions
  - Purchase Orders
  - Accounts Payable
  - Supplier Payment
- Receiving and Inspection
  - Receive Materials
  - Material Inspection
- Inventory Management
  - Inventory Control
  - Stock Transfers
  - Physical Inventory
- Reporting
  - Inventory Visibility
  - Supplier Scorecard
  - Proactive Monitoring

SAP Enterprise Portal 7.0

iPRO Core Components

JCO/RFC

http

MDM

iPRO Core on SAP Web AS 7.0

SAP BW 3.5

SAP XI (Optional)

Base Systems

SAP 4.6c

BAPI
Approach 5: Retire Best of Breed Applications

Step 0 – The Ariba Buyer swoosh screen
Administering RexApps™: Reuse

Complete Reuse of xApps Anatomy with RexApps as an Application Retirement Strategy with ESOA

Administering RexApps™: Reuse

1. Engineering
   • Login through SAP NetWeaver Portal
   • Work on Sales Forecast on ECC or Legacy as PBNEW with CAF & GP
   • Access pre-configured BOM through R/3 or ECC
   • GP for NPI
   • Reporting through BI on xApp Analytics & other activities

2. Telesales
   • Login through SAP NetWeaver Portal & Enter Order with GP & Custom Webdynpros
   • ATP Check through SAP NetWeaver Portal – Transaction call via ITS on Netweaver Application Server
   • Enter Specific Instructions on Adobe forms
   • CAF Background Objects process other Interface processing (Wrapper BAPIs as services)
   • Reporting through BI on xApp Analytics & other activities

3. Shop Floor
   • Login through SAP NetWeaver Portal & Enter Order with GP & Custom Webdynpros
   • Work SAP/Partner xApps – xS&OP and xMI
   • MRP Run, Job Scheduling, Work Center allocation etc. as Guided Procedures on CE
   • Access 3rd party or custom applications for Drawings, spare parts (If needed) on Portal
   • Parts Database on MDM 5.5
   • Interfaces via PI

4. Finance
   • Login through SAP NetWeaver Portal & Use GP & CAF for processing Financials as PBNW
   • Credit Card settlement through external web service called via VC or CAF
   • Customer Master data accessed on MDM
   • Reporting through BI on xApp Analytics & other functions
   • Settlement & corrections through CAF & GP accessing database of earlier issues

5. BackOffice
   • Access – SAP Netweaver Portals, Process – Through GP & CAF, Reporting – on BI & xApp Analytics,
   • UI – design on VC, Core – ECC or R/3, Interfaces – PI, Master Data – MDM, PBNW/CFNW – WAS

© SAP 2007, SAPPHIRE / SLOT #7 / Speaker Name / 27
Business Impact with RexApps as a Strategy

Total Cost of Ownership

Cost of Implementation

- 21% Accelerated Deployment and faster time to value
- 12%
- 3%
- 3%
- 3%

Advantageous Licensing Model

- 3%

Better performance = Lower hardware requirement

- 3%

Reduced custom code = Lower cost to maintain

- 42%

Advantageous Licensing Model

- 10%

Integrated Tooling and Monitoring Multi-platform support

- 9%

Cost of Operations

- 79%
Choose the RexApps™ category

Ultra Light Composite
- Process, UI

Light Composite
- Process, UI
- BO Model

Medium weight Composite
- Process, UI
- BO Model
- DB

Heavy weight Composite
- Process, UI
- BO Model
- DB
- DB

- Business model required (backend abstraction)
- Simple business logic
- Model-based – process flows
- Simple conditions

- Persistancy for new business objects in composite
- More complex business logic

- Additional data about backend business objects in composite
- Very complex business logic

Demo
Methodology for creating Reverse Engineered Composites

- Process charts, Activity Diagrams
- Business Modeling
- Functional Specification
- Technical Design
- Service Enablement
- BAPI, Web Services, Enterprise Services
- Develop UI
- Develop Services
- Configure Blocks
- Configure GP
- Integrate with EP
- Integrates with EP
- Testing
- Go Live
- Create Callable Objects
- Application Services, Entity services
- VC, WDP, Adobe
- Application Services, Entity services
- UI, Background, Notification
- Process instantiation, URL iView, Pages, Worksets, Roles
THANK YOU FOR YOUR ATTENTION!

For more details on RexApps: http://wipro-on-sdn.com

E-mail: kartik.iyengar@wipro.com