Understanding SAP xApps
The Development Lifecycle & Methodology

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Enterprise Services Partner Summit
April 18-19, 2006
San Francisco, California

Agenda

ESA Enables Change
Understanding ESA & xApps
Developing xApps
Demo
Summary
Turning IT Into a Strategic Weapon

Need an Architecture to Support Adaptive Business

**BUSINESS DEMANDS**

- **CEO**
  - Flexibility & Speed

- **LOB**
  - Productivity & Insight

- **CFO**
  - Consolidation & Control

**CIO CHALLENGES**

- Business process change still takes years due to inflexible IT
  - Thousands of non-integrated systems, not built for change

- ~40% of IT budget spent by LOBs without IT input
  - “Tons” of shelf ware…
  - …and still can’t find information

- ~60% IT budget spent on operations, not innovation
  - Cost pressure and outsourcing
  - Risk and Governance
Service-Oriented Architecture (SOA) Expected to Deliver Required Flexibility

IT Industry is pushing and enterprise customers are adopting service-oriented architecture (SOA) as a way to break through the “efficiency-flexibility barrier”

- Superior recomposition capabilities and greater flexibility through extraction of business process logic from underlying applications
- Built on open standards (e.g., XML, WSDL)
- Widespread adoption driven by strong push from major vendors
- Expected shift from data-centric to process-centric enterprise computing
Enterprise Services Architecture (ESA)

ESA is SAP’s business driven approach to architecture based on the principles and standards of SOA. ESA enables the next generation of adaptable enterprise applications called xApps through:

- **Enterprise Services**, which are the building blocks
- **Model driven tools** that promote assembly versus coding
- **Business Analyst** friendly programming model
# Agenda

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Definition
SAP xApps are highly **dynamic and adaptable** applications, that automate **business scenarios** and/or **user specific processes spanning multiple functional areas**, and are **assembled** using **reusable services** from existing packaged and custom built applications.

Technical Characteristics
- Model-driven Architecture
- Web-services enabled
- Own lifecycle
- Loosely coupled with backend systems allowing independent evolution of composed services
- Backend independency
- Not a system of record for any business data
- Assembly versus coding intensive
- Easy to adopt & configure
What is an Enterprise Service?

Enterprise Services are **reusable building blocks** of data, logic, processes, UI, or events **published by existing enterprise applications** as **web services**. Enterprise Services allow for independent evolution of underlying applications and the xApps assembled using them.
Example SAP xApps Patterns

RPAU
Request – Process – Approval – Update

SUG / MUG
Single / Multi User Guidance

Roles-based Dashboard

Analyze & Take Action
Understanding Enterprise Services Architecture

The “Consumer” Application

Platform for ESA

Building Blocks

The “Provider” Application

xApps
Composites powered by SAP NetWeaver

SAP NetWeaver
Business Process Platform

Process Components

Enterprise Service Repository

Home Grown
SAP

3rd Party
Partner
## SAP xApps Development Roles and Skills

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<tr>
<th>Role</th>
<th>Skills</th>
<th>What they do?</th>
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| Business Analyst          | Visio, High-Level Block Diagrams, Business process understanding | Solution description  
                             |                                                                             | Process component model       |
| Business Process Expert   | Graphical process modeling                  | Process choreography and service consumption                                |
|                           | UI and interaction design + Service Composition | UI modeling                                                               |
| Application Service       | ABAP Programming                             | UI programming  
                             | Developer                  | Service programming  
                             |                                                                             | Business Rules and Logic  
                             |                                                                             | Extensions to SAP enterprise services |
|                           | Java Programming                             | UI programming  
                             |                           | Service programming  
                             |                                                                             | Business Rules and Logic |
|                           | Data Model                                   | Service Composition  
                             |                           | Data Modeling             |                                                                             |
Life Cycle of an xApp

Define Solution Outline

- xApp Modeling
  - Process Modeling
  - Service Composition

xApp Monitoring

- xApp Testing
- UI Modeling

xApp Runtime

xApps Packaging & Deployment
xApp Development Methodology

**Compose**
1) Model abstract process flow
2) Search and assign appropriate reusable building blocks
3) Simulate / Prototype missing building blocks
4a) Model missing building blocks
4b) Initiate development request for missing building blocks
5) Develop missing building blocks
6) Publish building blocks to component repository
7) Replace simulated place-holders with implemented building blocks
8) Validate with end-users, and iterate from step 1 if necessary

**Enable**
9) Deploy in test or dev. landscape
10) Simulate Partial Process
11) Configure

**Validate**
12) Packaging
13) Deployment

**Deploy**
14) Monitoring
15) Change Mgmt.

**Sustain**
16) Monitoring
17) Change Mgmt.

- Business Analyst & Business Process Expert
- Application Developer
- System Admin
Architecture of an SAP xApp

Portal Access Layer

Role 1  Role 2

Process Choreography

Composite Application

<<Step>> Request Appointment

<<Step>> Find Patient

Patient Exists?

Yes

STEP>

Create Appointment

<<Step>> Notify

No

STEP>

Create Patient

Role 1

Role 2

UI Layer

Service Authoring

Service Composition

Business Logic

Back End

Services

Services

Services

Service Enablement

mySAP CRM

Non SAP

mySAP ERP

Business Processes

UI Building Blocks

Web Services

Services

mySAP CRM

Non SAP

mySAP ERP

THE BEST-RUN BUSINESSES RUN SAP™
Tools for SAP xApp Development

Service Enablement

Back End
- Services
- mySAP CRM
- mySAP ERP
- Non SAP

Business Logic
- Java/ABAP
- CAF-Core
- Service Authoring
- Service Composition

UI Layer
- Visual Composer
- Adobe Forms
- Web Dynpro Java

Process Choreography
- Request Appointment
- Find Patient
- Create Appointment
- Notify
- Yes
- No
- Patient Exists?
- Role 1
- Role 2
- Portal Access Layer

Composite Application
- Design: VC GP Kit
- Runtime: GP

Portal Access Layer
- "<<Step>> Request Appointment"
- "<<Step>> Find Patient"
- "<<Step>> Create Appointment"
- "<<Step>> Notify"

Business Processes
- UI Building Blocks
- Web Services
Service Enabling the “Provider” Application

Guided Procedure:

1. <<Step>> Request Appointment
   - Patient Exists?
     - Yes
       - <<Step>> Notify Patient
     - No
       - <<Step>> Find Patient
2. <<Step>> Find Patient
   - Name Title Check
3. <<Step>> Create Appointment
   - Yes
     - <<Step>> Notify Patient
   - No
     - <<Step>> Create Patient

Services Enabling the Application:

- UI (iViews)
- Business Logic (web services)
- Data / Object Model (web services)

Business Processes

- UI Building Blocks
- Web Services

Consumption:

- SAP Portal
- Role 1
- Role 2

Guided Procedure Tools:

- Adobe Forms
- Web Dynpro Java
- Visual Composer

Service Enabling Tools:

- xMII
- CAF-Core

Publish to ESR:

- mySAP CRM
- Non SAP
- mySAP ERP

The Best-Run Businesses Run SAP™
**Composite Process Layer**

Guided Procedures are used for role-based process choreography. (Abstracts underlying workflow engines)

**Usage guidelines:**

- A step should be designed with reusability in mind, and if possible it should include actions on the process level (for example, approve or reject).
- Process flow logic is implemented as an embedded logic (Independent of UI).
- Composite processes can be published (and later initiated and consumed) as a service.
- The passing of data between components is managed by the process context.
- User assignment to roles and security / IDM are resolved by using system services.
Available options:

- **SAP NetWeaver Visual Composer freestyle modeling:**
  - Flex runtime (mainly for analytics steps)
  - Web Dynpro for VC runtime (WD4VC)

- **Web Dynpro Freestyle**

- **Interactive Forms based on Adobe software:**
  - Offline usage
  - Online usage

Usage Intention:

- Default approach – “Visual Composer unless” → use of Flex/WD4VC runtime based on UID recommendation
- Offline interaction → Interactive Forms
- Make UI reusable through design-time parameters
- Form-based process (for legal reasons) → Interactive Forms
- Complex UI that can’t be modeled using Visual Composer → Web Dynpro freestyle
How do I work with SAP CAF Core?

- Import external services to consume enterprise services provided by the back end
- Model entity services to store data only existing in the composite
- Use application services to implement business logic that is specific to the composite using entity and external services
- Republish to the ESR as a new services

Usage rules:

- Application services shall behave like enterprise services
- Process logic and user interface layer only use these application services as interface to business logic layer of the composite.
- It should be transparent to the layers above, if they use services from the back end or the composite.
Deploying the “Provider” Application – Options

This slide needs to get some mental and look boost!
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SAP xApp Flexibility Demo Scenario

Original Process:

Required Modification:
Add an approval step in case the requesting user is a contractor.
Start Demo
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ESA Roadmap - 2005-2007

mySAP Business Suite 2005
- ~ 300 productized Enterprise Services (service enabled suite)

Mendocino 1.0 (f. ERP 04 & 05)
- Running on ~100 productized Enterprise Services

mySAP ERP 2004
- Preview of 500 Enterp. Services (not productive)

Availability:
- Q2/2005 (Sapphire)
- Q1 & Q2 2006
- Q2/2006 (Sapphire)
- Q2/2006
- Q2 & Q3 2006
- Q3/2006
- Q4/2006
- 2007

NetWeaver - Next major release
- Extending Enterprise Services repository
- Mid market focus
- Partners receive early access to hosted Enterprise Services system

Composite Applications
- ~ 50 SAP xApps
- Modeled by BP Experts

SAP Analytics
- ~ 100 Analytical Applications

Composite Applications
- ~ 300 productized Enterprise Services
- (service enabled suite)

* Functional scope & downwards compatibility currently in definition
Summary – Co-Innovation is How we Succeed

- Learn and embrace the vision of ESA
- Service enable your existing solutions
- Get trained and plan for SAP xApps development using our new tools
- Get SAP xApps certified
- Deliver on the most compelling roadmap and ecosystem in the industry
Q&A

- SAP Powered by Netweaver Program
  https://www.sdn.sap.com/irj/sdn/pbnw

- ESA Preview System
  https://www.sdn.sap.com/irj/sdn/developerareas/esa/esapreview

- xApp Development
  https://www.sdn.sap.com/irj/sdn/developerareas/xapps

- J2EE, Open Source Technologies, & Integration with NetWeaver
  https://www.sdn.sap.com/irj/sdn/docs?rid=/webcontent/uuid/e081a4b6-0801-0010-7fa4-c3c7a0454815