

Custom Composite Applications – Exploit the power of ESA & SAP NetWeaver™

A Case Study

Business Scenario

- *A buyer orders goods or services by sending a PO*
- *A seller accepts the order for goods and services by sending a response*
- *Changes may occur*
- *Sellers are located in different regions around the globe*



Current situation:

- *All communications exchange between the parties is conducted using phone and fax.*
- *This process is labor-intensive since the communication is not automated.*
- *Purchase order approval is backed up by legacy system workflow.*

Desired situation:

- *Streamline and automate the communication between the parties.*
- *Automation of processes will require less resources and is less prone to human error.*
- *Extend the functionality of legacy systems.*
- *Lower TCO*

Solution:

- *The solution is based on the approach to deliver a composite application that leverages an Enterprise Services Architecture model.*
- *This application will encapsulate all necessary core business functions and logic to manage and perform the communication between Headquarters Offices and various remote factories during the purchase order lifecycle.*

- *As part of the full solution, this composite application must be integrated into the Enterprise Portal using backend data from SAP backend systems (R/3 and BW) as well as from 3rd party systems using SAP Exchange Infrastructure (XI).*



What is ESA ?

Enterprise Services Architecture is a service-oriented architecture (SOA) which merges SAP's enterprise *applications content* with the open *composition platform* SAP NetWeaver™ to enable *flexible business processes* by SAP, partners, and customers

Why use ESA?

1. **Abstraction** — *hiding confusing details*
2. **Modularity** — *breaking down complexity, resulting in reusable pieces*
3. **Standardized connectivity** — *enabling flexible composition of services to create bigger processes and scenarios*

Why use ESA?

4. *Loose coupling* — allowing for separate evolution of the various components without breaking any points of integration

5. *Incremental design* — enabling changes to composition and configuration without affecting the interior of components, and vice versa



Custom Composite Application

Composite applications are an ideal method for achieving IT innovation and process automation in an environment of matured system Landscapes, in order to adapt in a fast changing business environment.



Which SAP NetWeaver™ components to use?

- ✓ *People Integration - SAP Enterprise Portal (EP)*
- ✓ *Information integration - Business Information Warehouse (BW)*
- ✓ *Process integration - SAP Exchange Infrastructure (XI)*
- ✓ *Application Platform - Web Application Platform (WAS)*

Which SAP NetWeaver™ components to use?

- ✓ Development infrastructure - JDI (CBS,DTR,SLD,CMS)*
- ✓ SAP NetWeaver™ Development Studio - IDE (Eclipse based)*
- ✓ CAF – Composite Application Framework*

SAP NetWeaver™ - Standards

Organizations:
 UN/CEFACT
 DMTF
 Open Group
 WfMC
 W3C
 OASIS
 JCP
 WS-I
 Eclipse
 .org
 mySQL
 OMG

SAP NetWeaver™

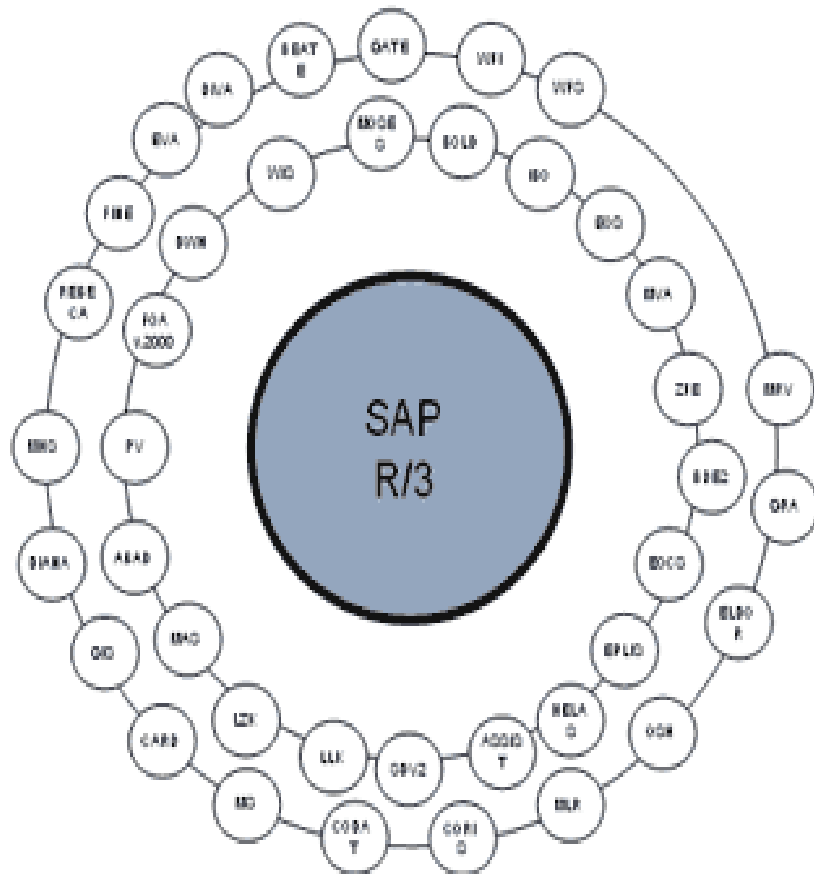
Standards Supported (Selection)

WS-Security, SAML, SSL, X.509 ...	PEOPLE INTEGRATION	Multi-channel Access Portal Collaboration	JAAS, JSR168, PersonalJava
	INFORMATION INTEGRATION	Knowledge Management Business Intelligence Master Data Management	ICE, WebDav, XML/A, JMI, XMI, CWM, ODBO
	PROCESS INTEGRATION	Integration Broker Business Process Management	BPEL4WS, CIDX, RosettaNet
	APPLICATION PLATFORM	J2EE ABAP DB and OS Abstraction	J2EE, HTTP, SMTP, XML, XSLT, WSDL, SOAP, UDDI

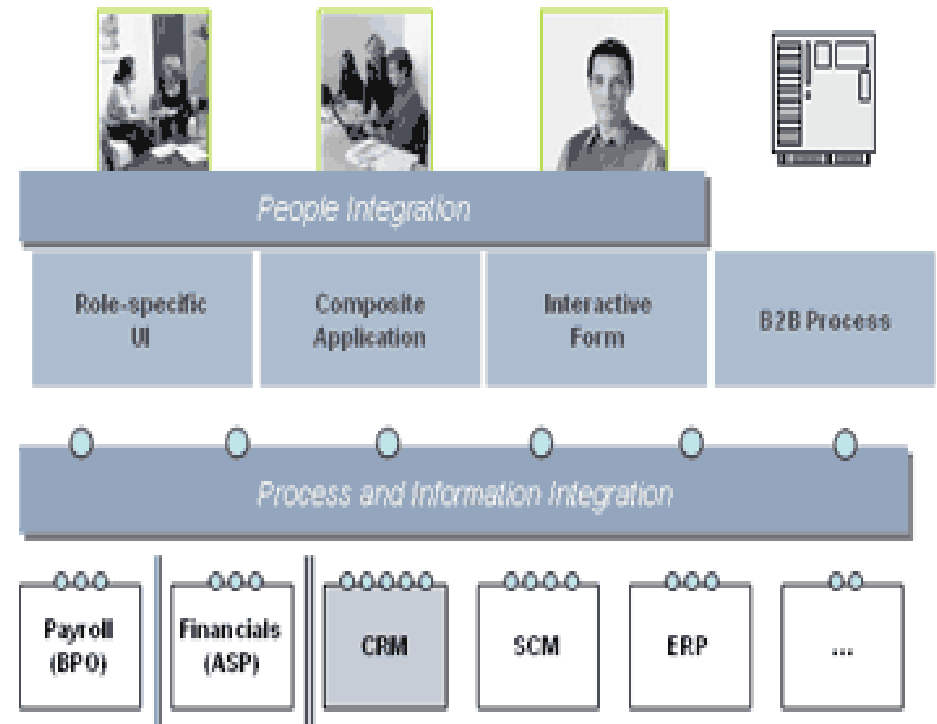


Traditional vs. New Architecture

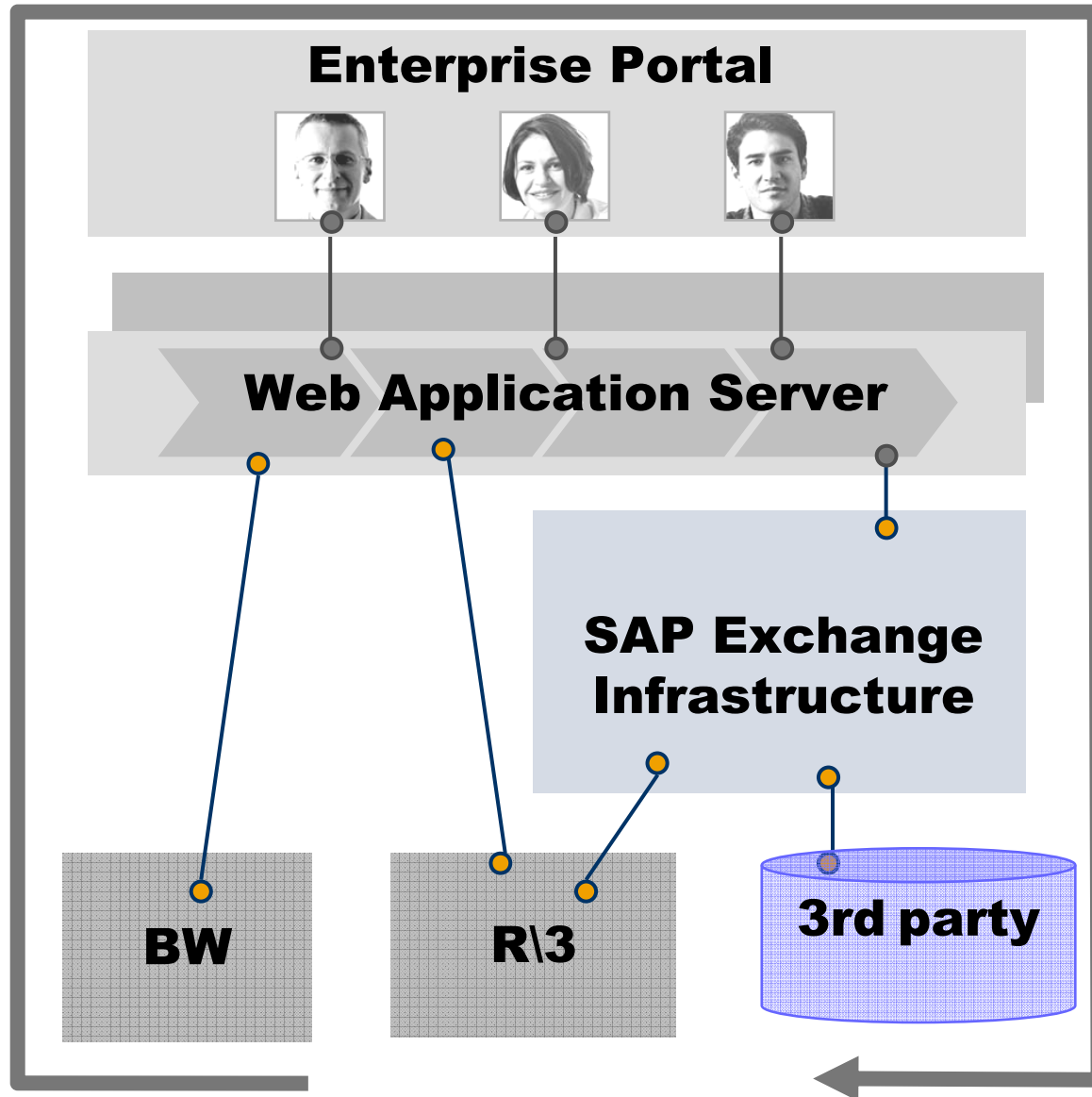
Traditional



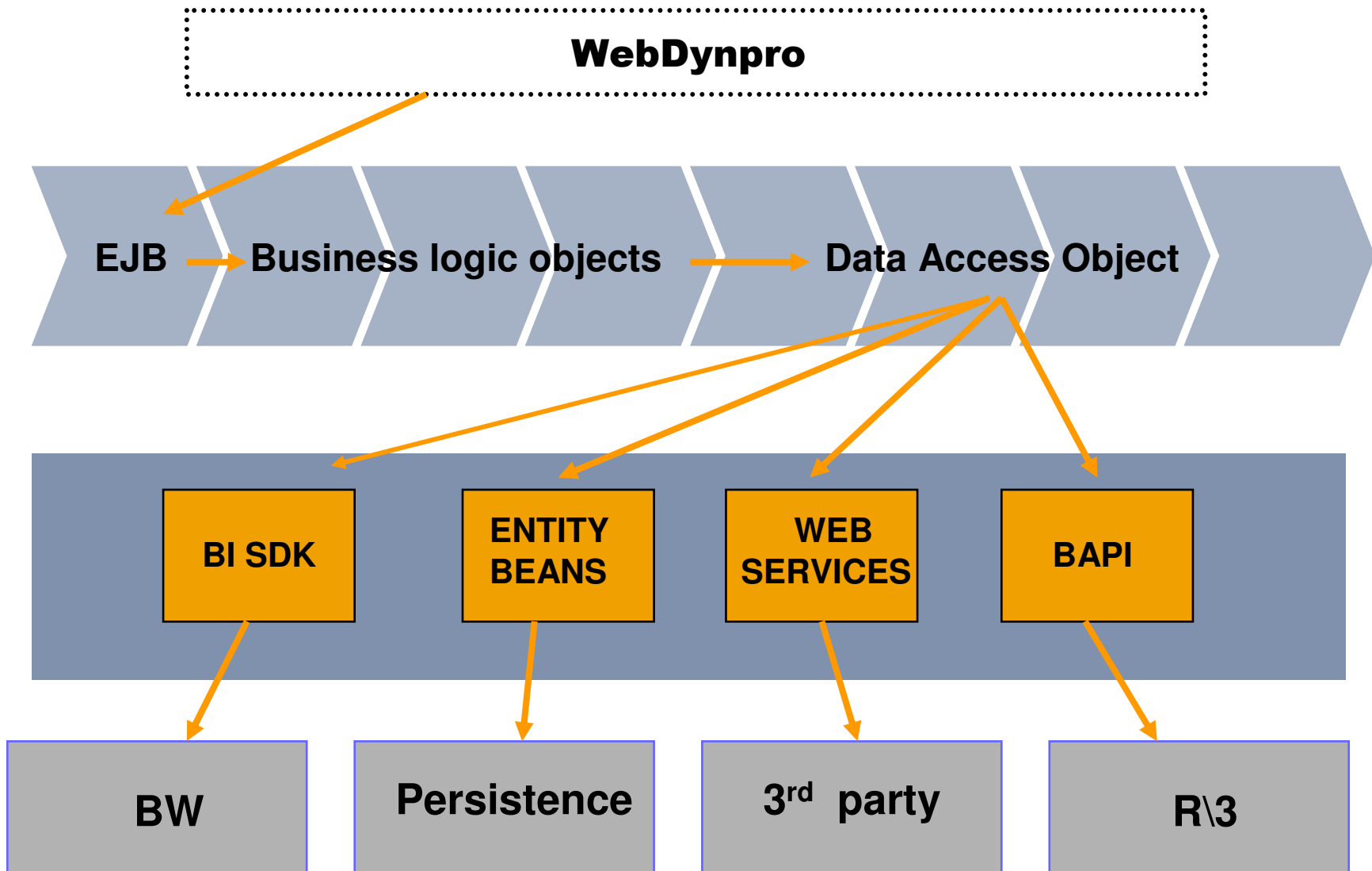
New



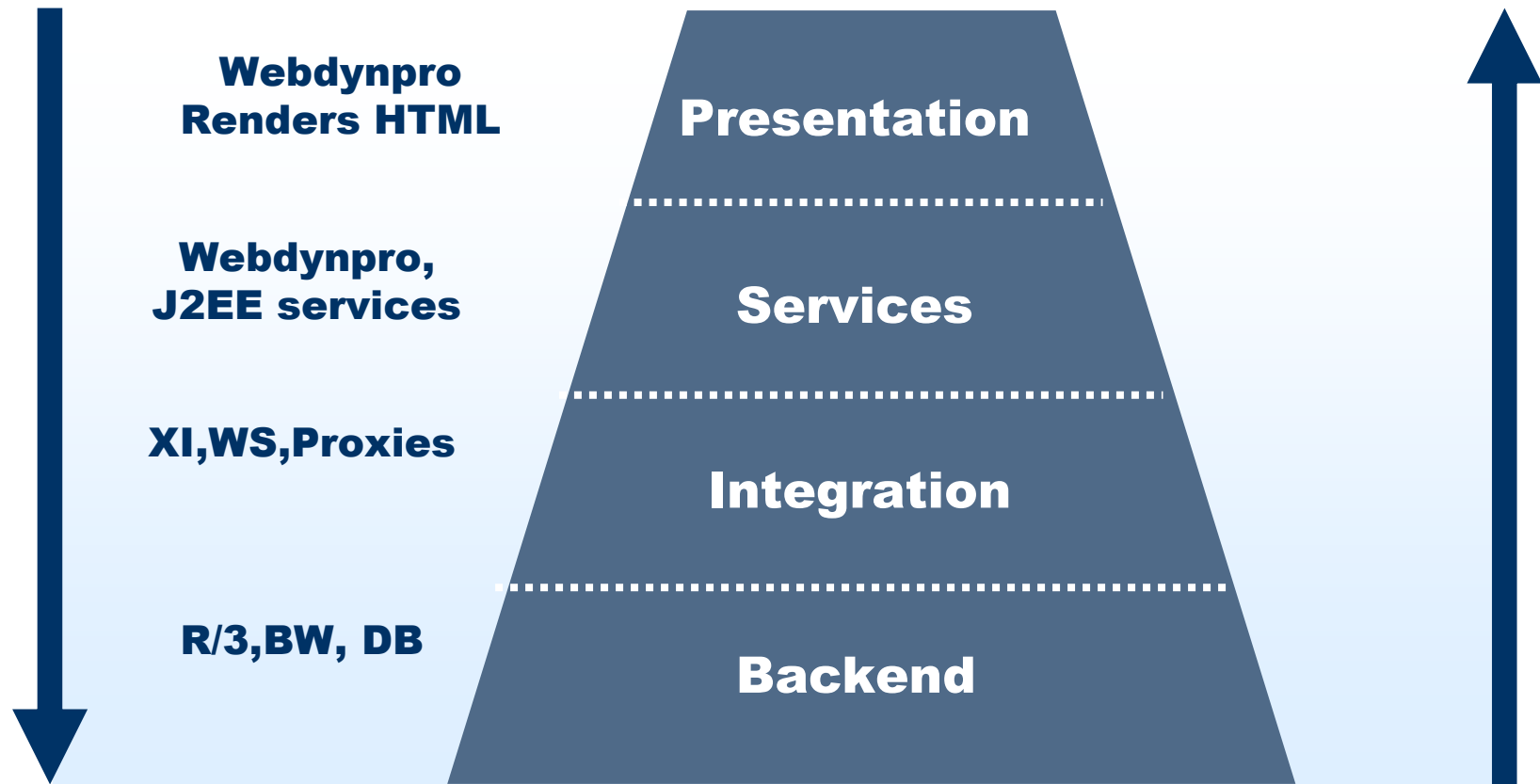
Architecture based on SAP NetWeaver™ components



High Level Design



The 4 tier solution



4 tier solution – Backend layer

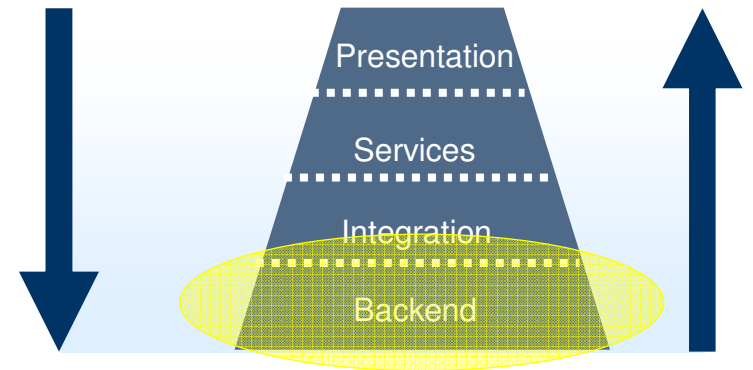
Backend tier

➤ *R3 used as data repository.*

➤ *BW Data load transfers from R/3 to BW will be done in order to avoid additional load on R/3.*

➤ *3rd party backend system.*

➤ *In the future any new backend system can be easily plugged in.*



4 tier solution – Integration layer

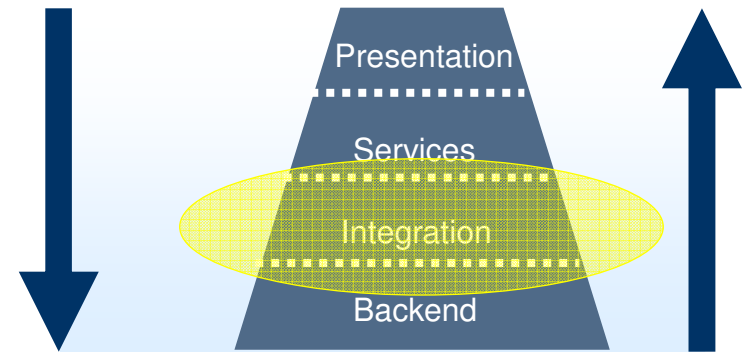
Integration tier

➤ *XI 3.0 is used for messaging to SAP synchronously and to 3rd party back-end components.*

➤ *The link between the middle tier & XI is done via web service.*

➤ *The link between the middle tier and R/3 is done via BPAI calls.*

➤ *The link between the middle tier and BW is done via BI SDK and XMLA web service.*



4 tier solution – Services layer

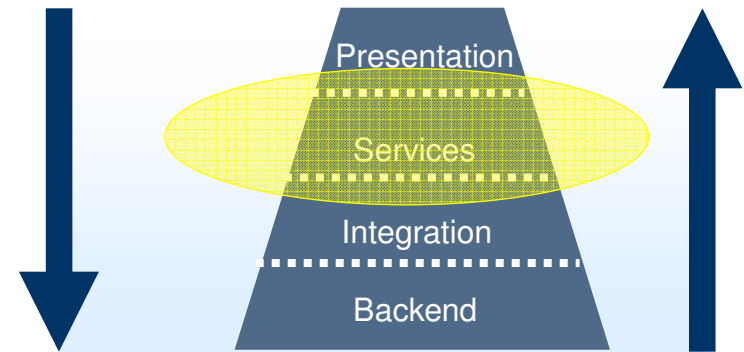
Services tier

➤ *The Service layer is a Custom Composite Application (CCA) deployed on top of the WAS6.40.*

➤ *Business objects is where most of the business logic is implemented.*

➤ *Data access Objects containing proxies to the integration layer.*

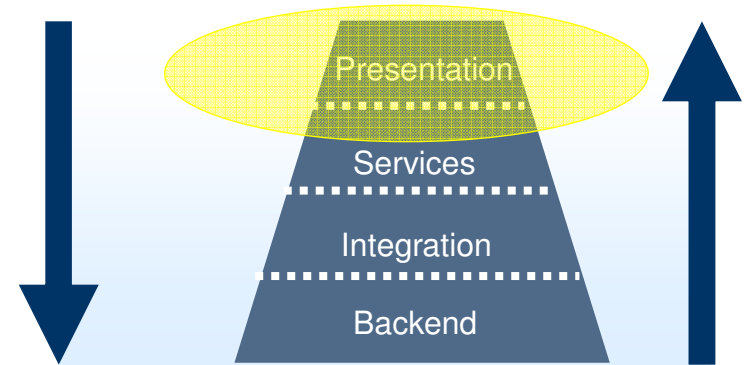
➤ *The middle tier returns only data objects which are simple java beans.*



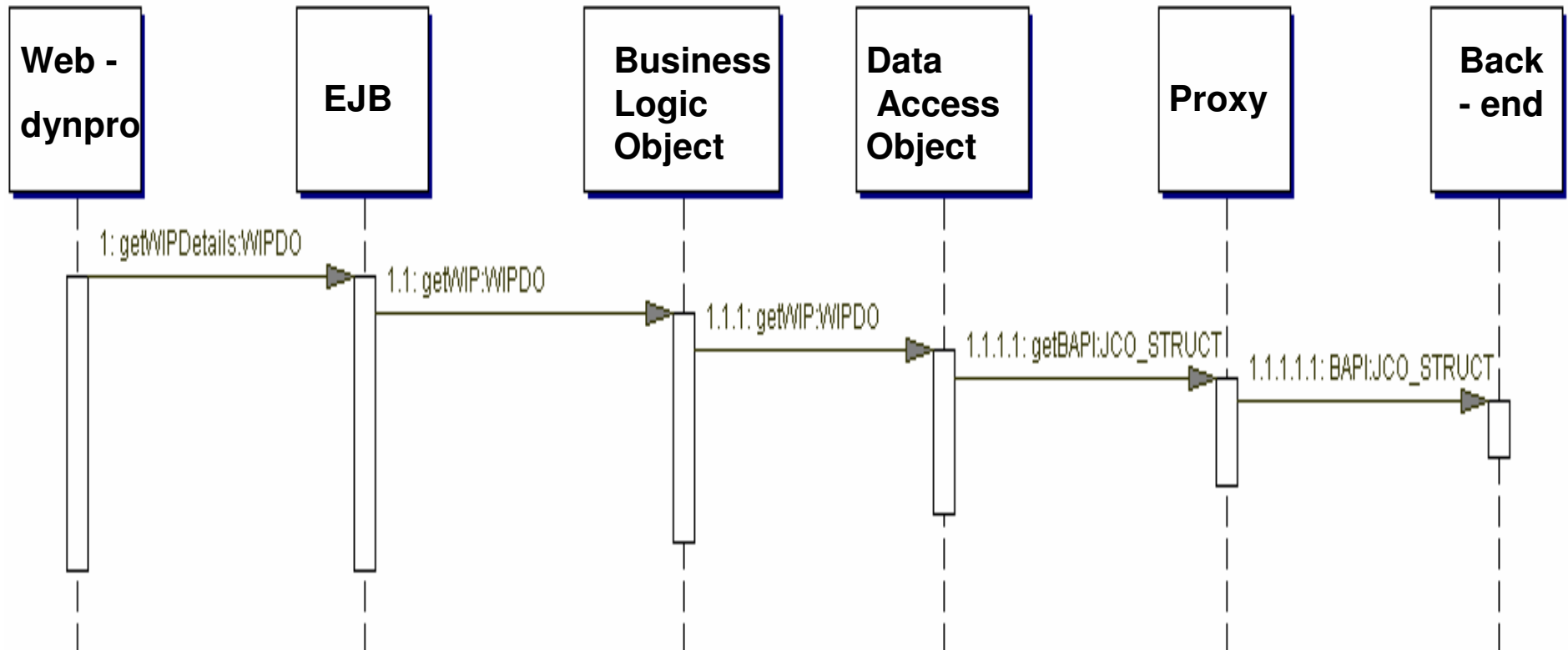
4 tier solution– Presentation layer

Presentation tier

- *UI leveraged the WebDynpro technology.*
- *WebDynpro integration with EJB is via XML*
- *All interaction to the services tier is made via calls to the EJB session beans.*
- *WebDynpro is integrated into EP 6.0 via WebDynpro iViews.*



Sequence Diagram Flow - Example

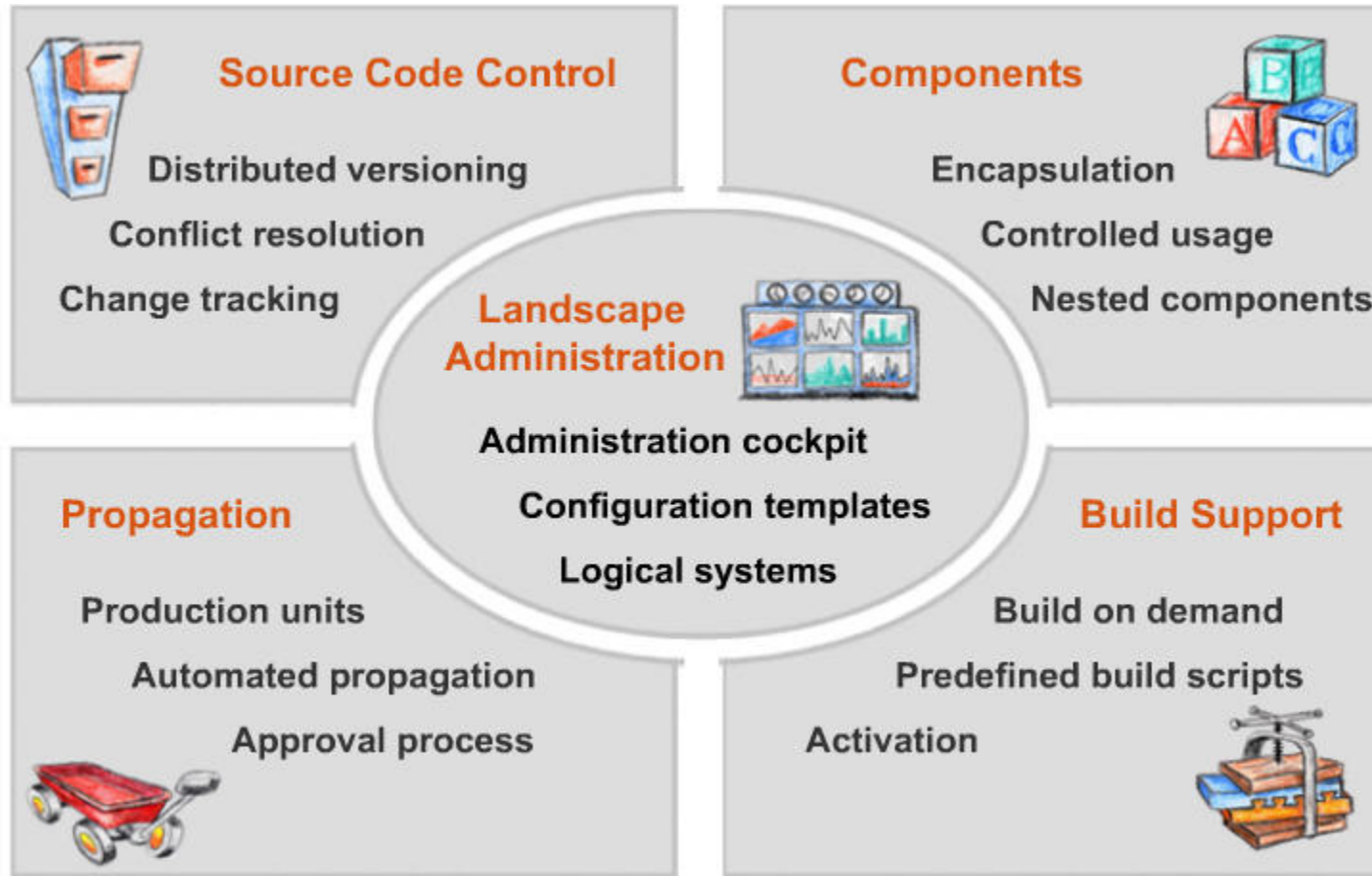


Security - Single Sign On

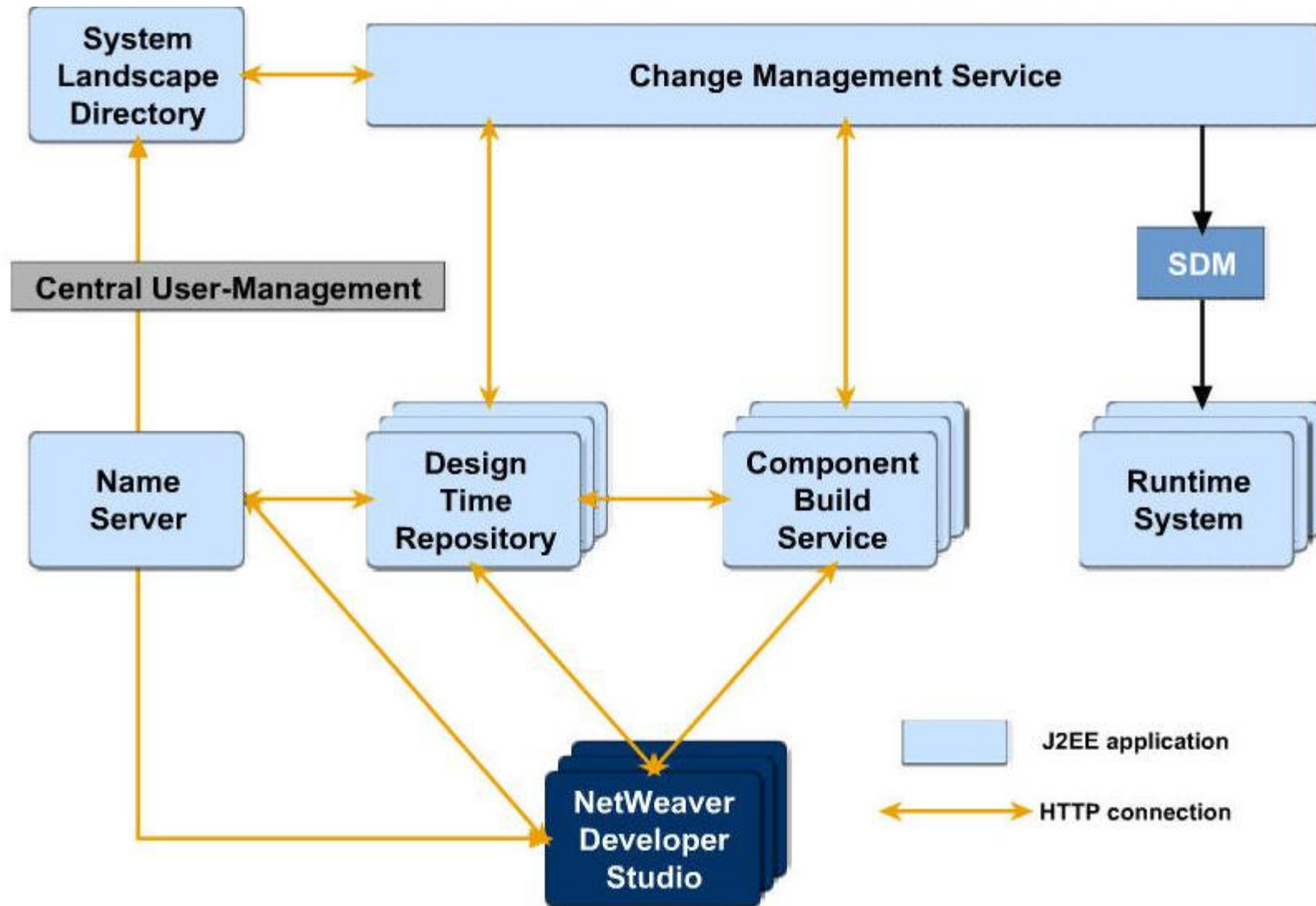
- *SSO Authentication and authorization through the entire SAP NetWeaver™ stack*
- *User authenticated in the portal*
- *Portal issues a logon ticket*
- *Ticket is passed from WAS to backend system (BW , R3)*
- *SSO to 3rd party system - only if 3rd party app supports SSO*



SAP NetWeaver™ Development infrastructure



SAP NetWeaver™ Development infrastructure: Big picture



SAP NetWeaver™ Development Infrastructure

- *System Landscape Directory (SLD) as a one point of configuration for the entire SAP NetWeaver™ stack.*
- *Java development infrastructure used as central development component.*
- *DTR and CBS as the source code control and versioning systems.*
- *SAP NetWeaver™ Development Studio is a central place for developers to develop deploy build and test locally*

Further Information

<http://service.sap.com/NetWeaver>

<http://service.sap.com/J2EE>

<http://sdn.sap.com/sdn/developerareas/was.sdn>

<http://service.sap.com/security>