mySAP Enterprise Portal
-SAP EP 6.0 Technology-

Version: March 20, 2003

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Content

- Overview and Positioning
- Supported Standards
- Technical Infrastructure
- Building Blocks of the Portal Platform
  - Portal Runtime
  - PageBuilder
  - Portal Content Directory
  - User Management & Security
  - Connectivity, Unification

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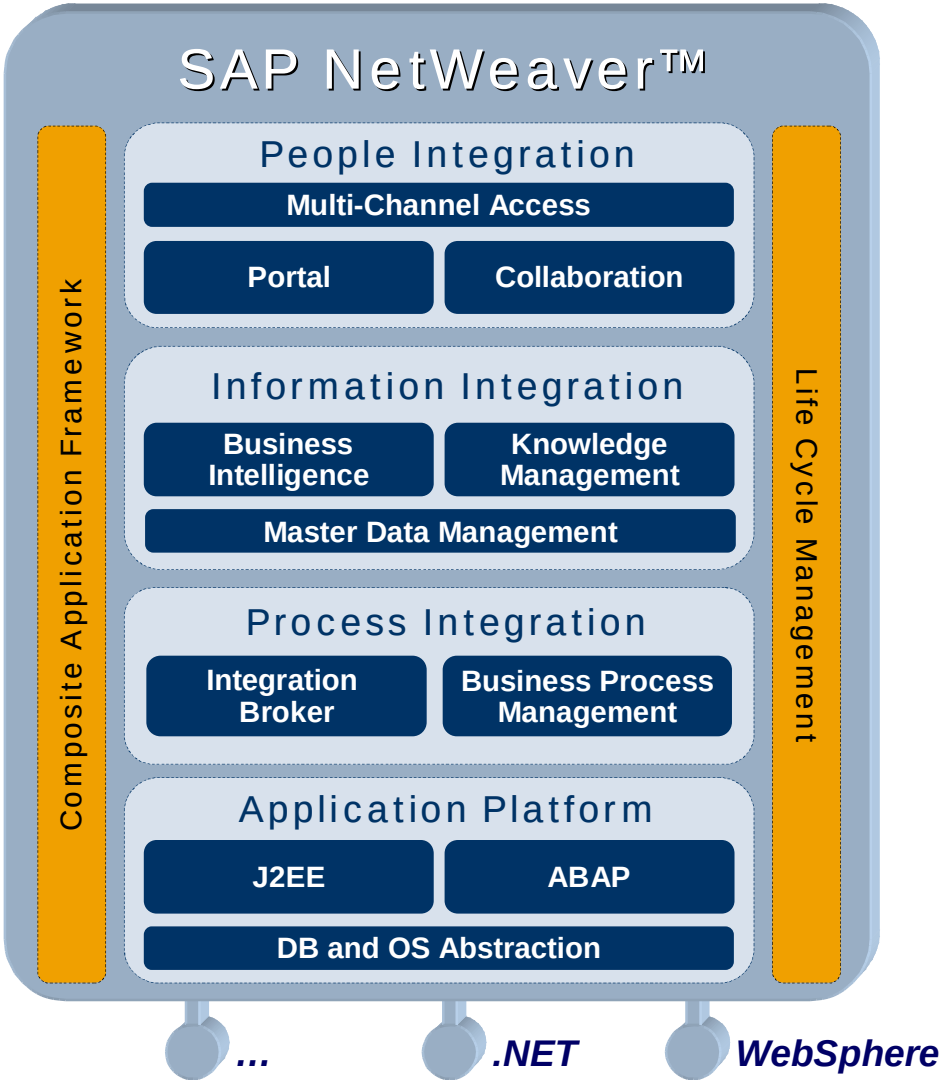
SAP NetWeaver™
The integration and application platform for lower TCO



Unifies and aligns people, information and business processes

- Integrates across technologies and organizational boundaries
- A safe choice with full .NET and J2EE interoperability

The business foundation for SAP and partners

- Powers business-ready solutions that reduce custom integration
- It's Enterprise Services Architecture increases business process flexibility

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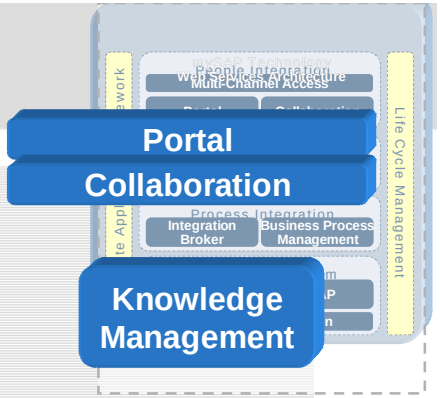
Positioning



SAP Enterprise Portal 6.0

Portal Platform

- Portal Framework
- Unification
- Connector Framework

Knowledge Management Platform

- Retrieval & Classification (TREX)
- Content Management (CM)
- Real-Time Collabo-ration

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SAP Enterprise Portal 6.0 - Architecture

Open Portal Platform

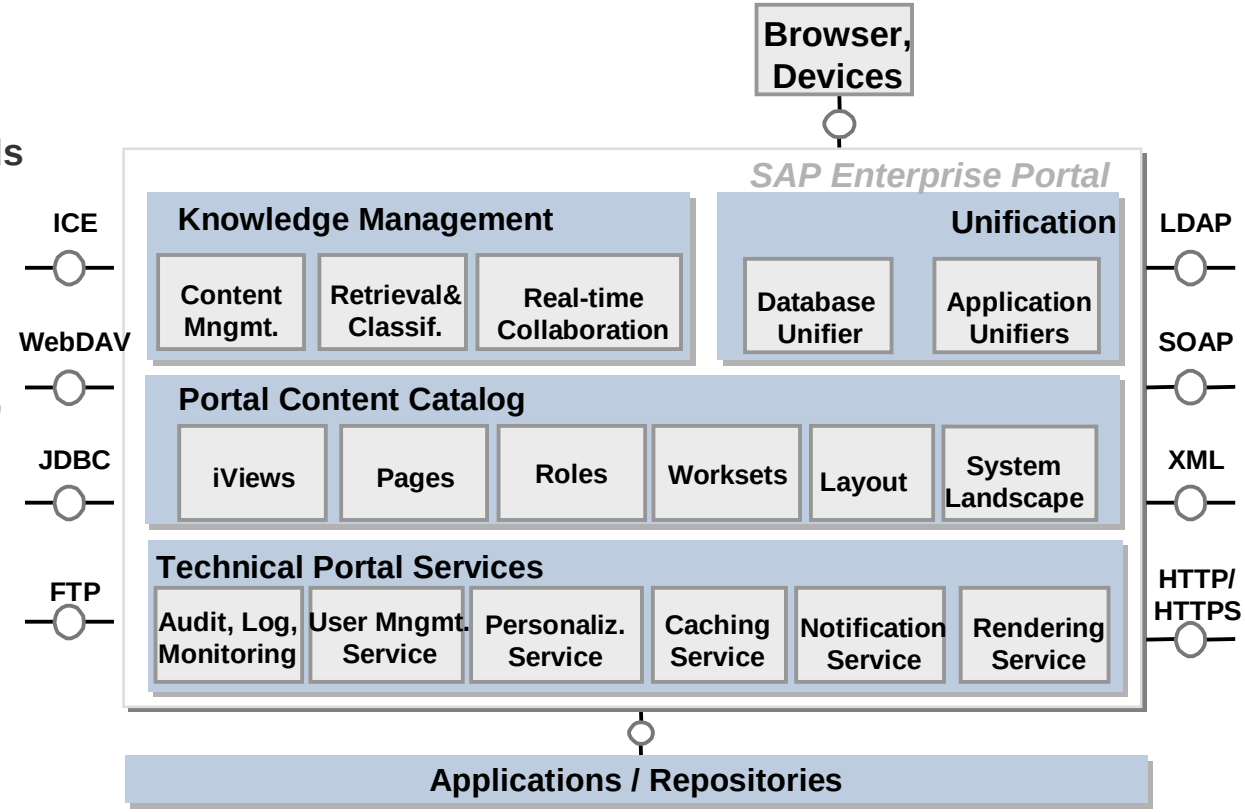
- Support of Internet standards like LDAP, Java, X.509,.Net, XML, JCA, JAAS.
- Web service support (SOAP, UDDI)
- Portal services like auditing, logging, caching, rendering, personalization service.
- Open APIs
- Secure environment

Open KM Platform

- Applications around unstructured information
- People-centric collaboration
- Enterprise content management

Patented Unification Technology

- Drag&Relate operations between heterogeneous apps



Open Development Platform

- Web-based definition of worksets, roles, layout, etc.
- Portal Content Studio for code-free development of portal content
- Portal Development Kit for developing portal content

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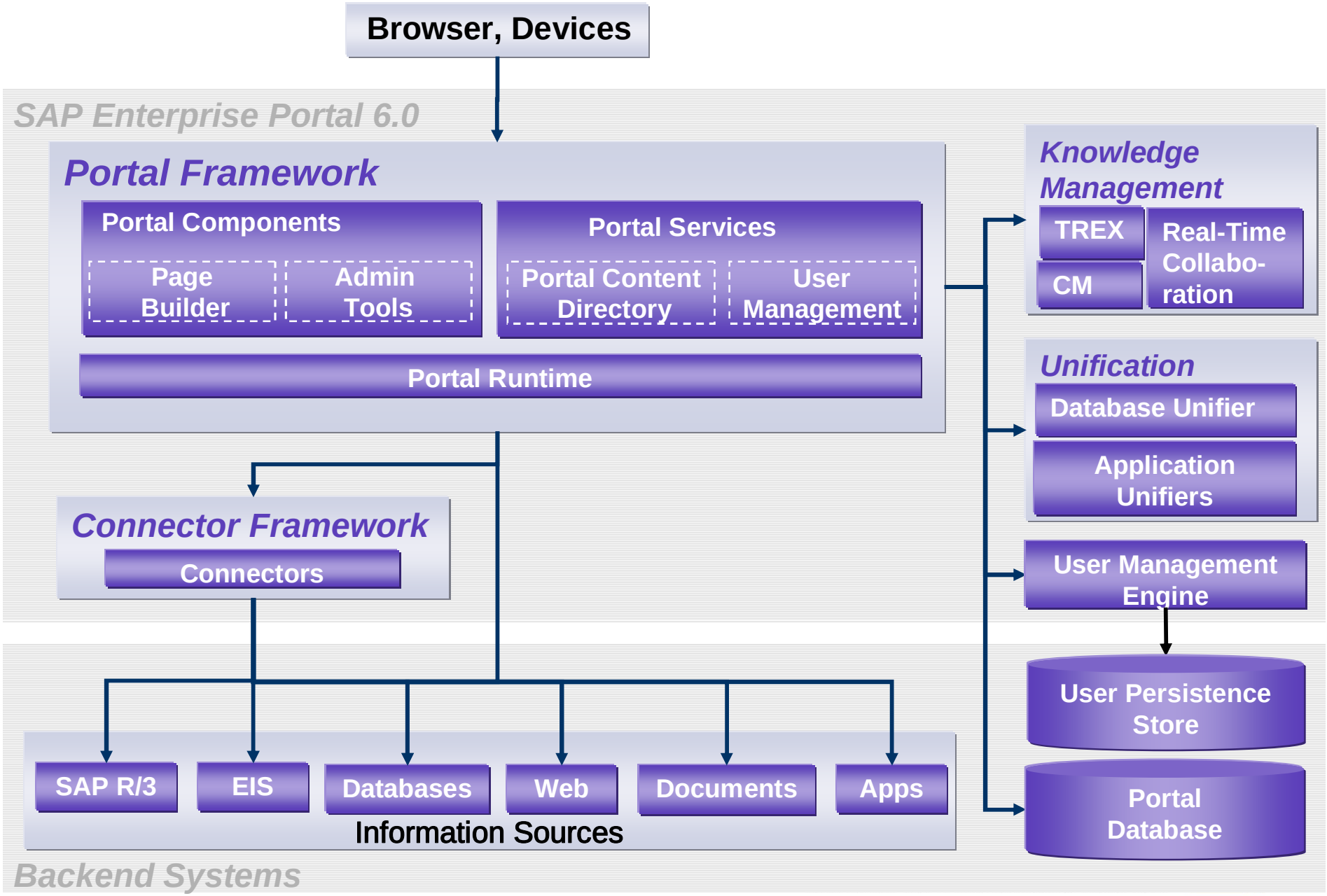
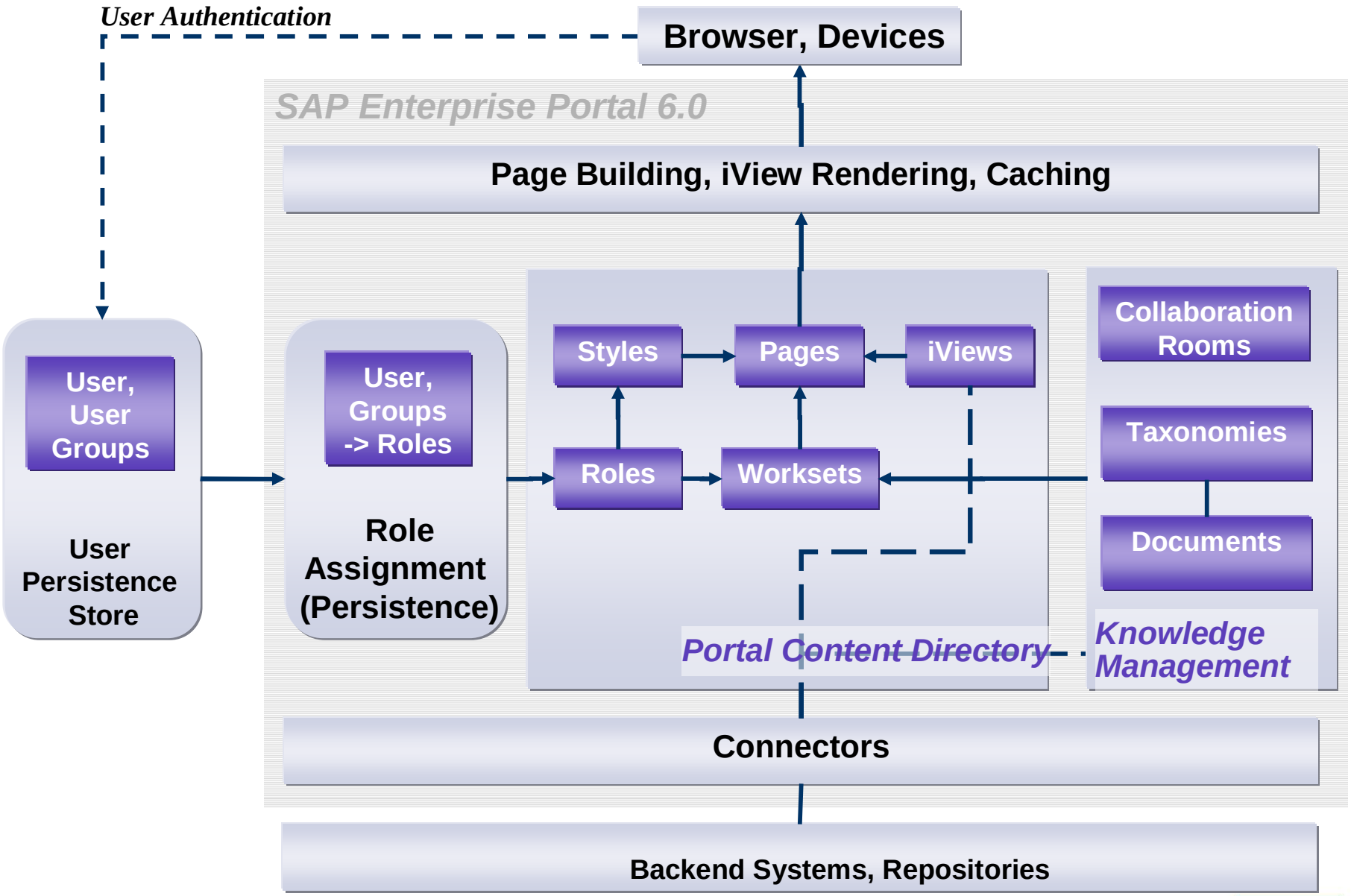
Logical Components



Runtime – Generating the Portal Desktop



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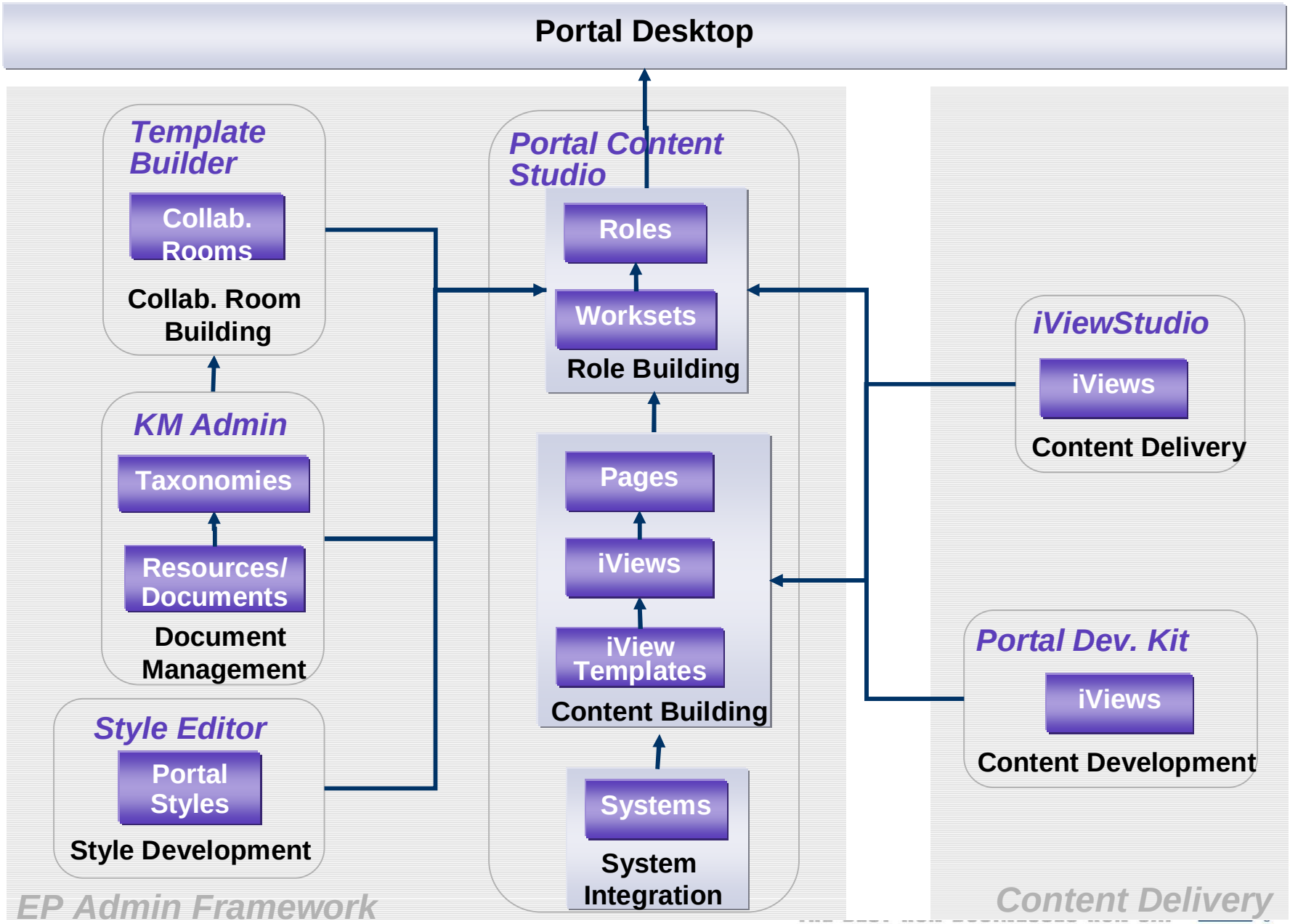
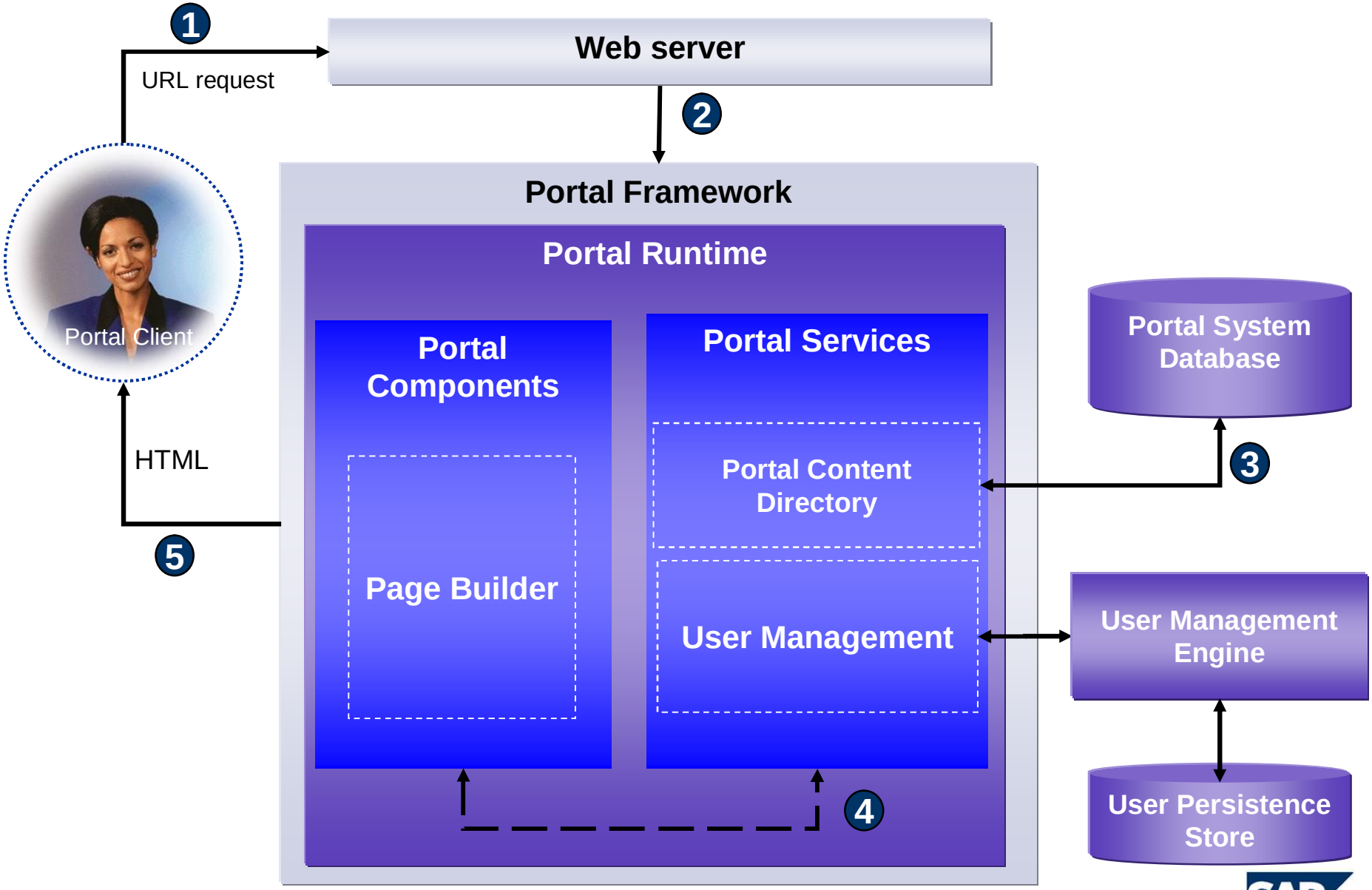
Design Time - Setting Up Portal Content



Flow of a Request In the Portal



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Supported Standards (1)

SAP Enterprise Portal 6.0 supports a wide range of standards:

- **iView development: Java, .Net**
- **User management & security: LDAP, X.509, JAAS**
- **Connector: JCA**
- **Information / content exchange: ICE, XML, WebDAV**
- **APIs: Java, JNDI (PCD API)**

SAP Enterprise Portal 6.0 supports Web services (UDDI, SOAP)

- **iViews can use Web services**
- **Portal services (like user management) can be called as Web service**
- **Connectors can be called as Web services**

SAP Enterprise Portal 6.0 is unicode-compliant

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Supported Standards (2)

SAP participates in standardization groups such as the Java Specification Request 168 Portlet Specification (JSR 168) and the Web Services for Remote Portals (WSRP)

- **Upcoming standards for portal and portlet interoperability**

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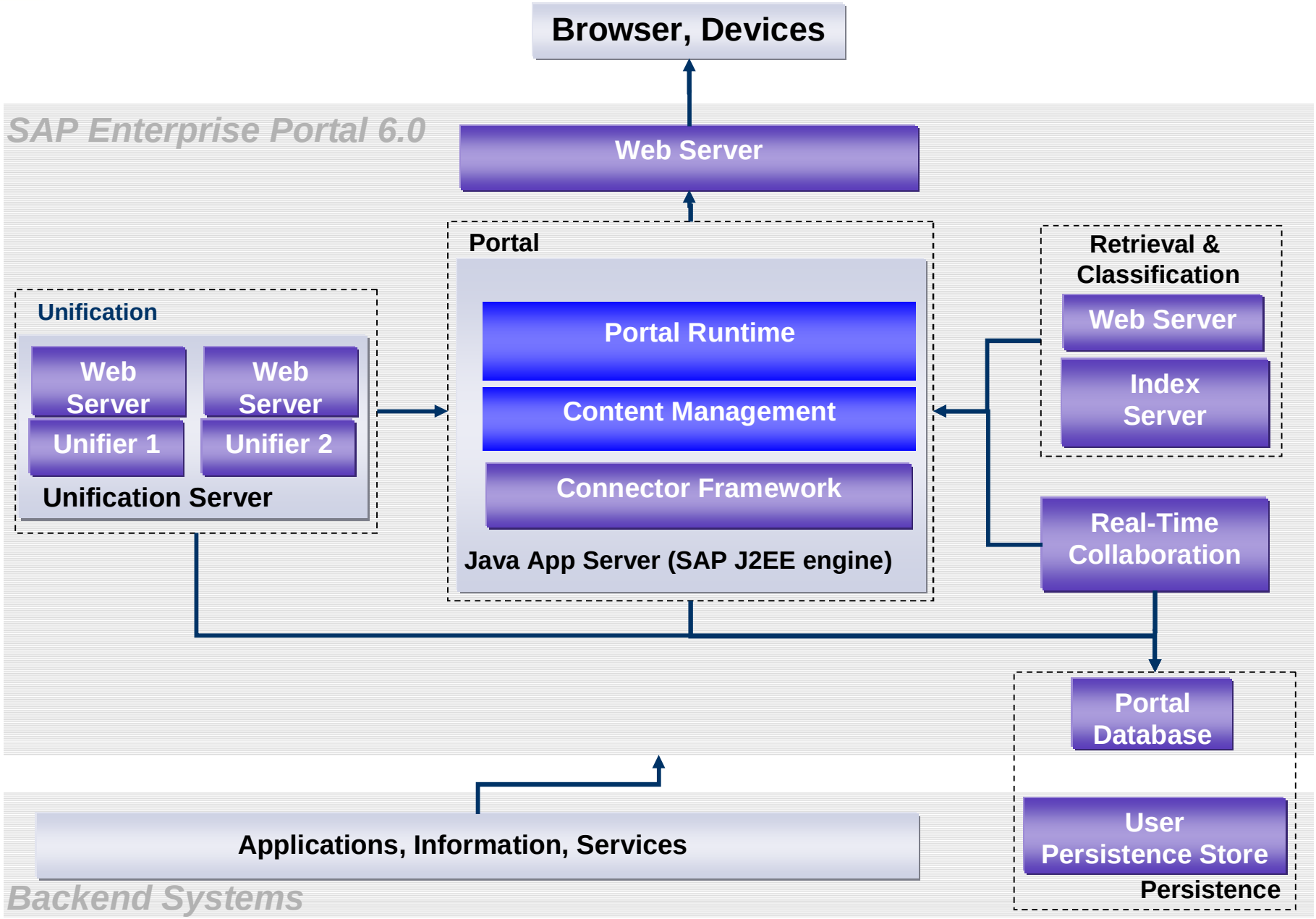
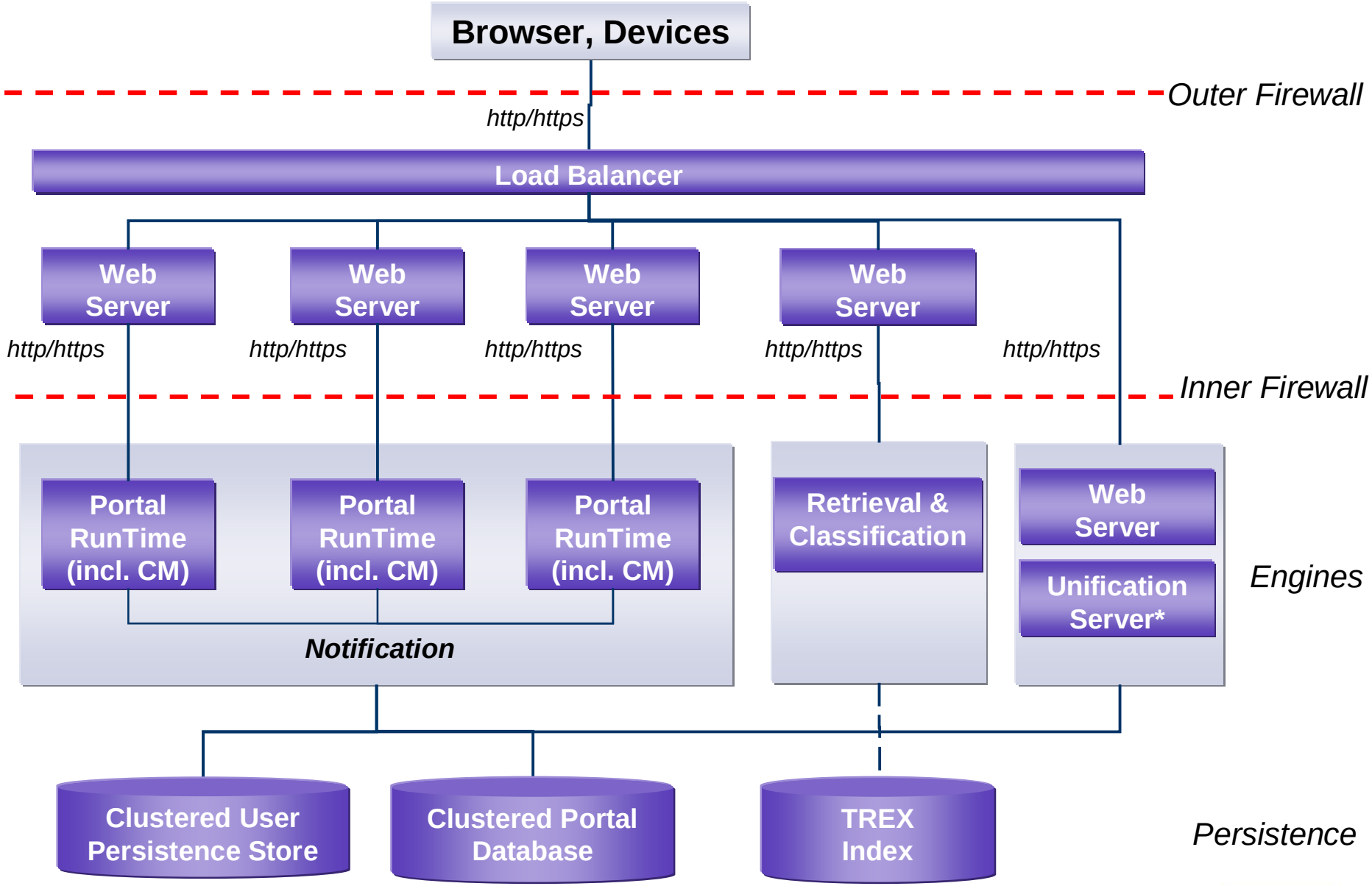
Technical Components



Setting up a Portal Cluster



*Unification will be ported to Java in 2003 and will be available as a Portal Service on the PRT.

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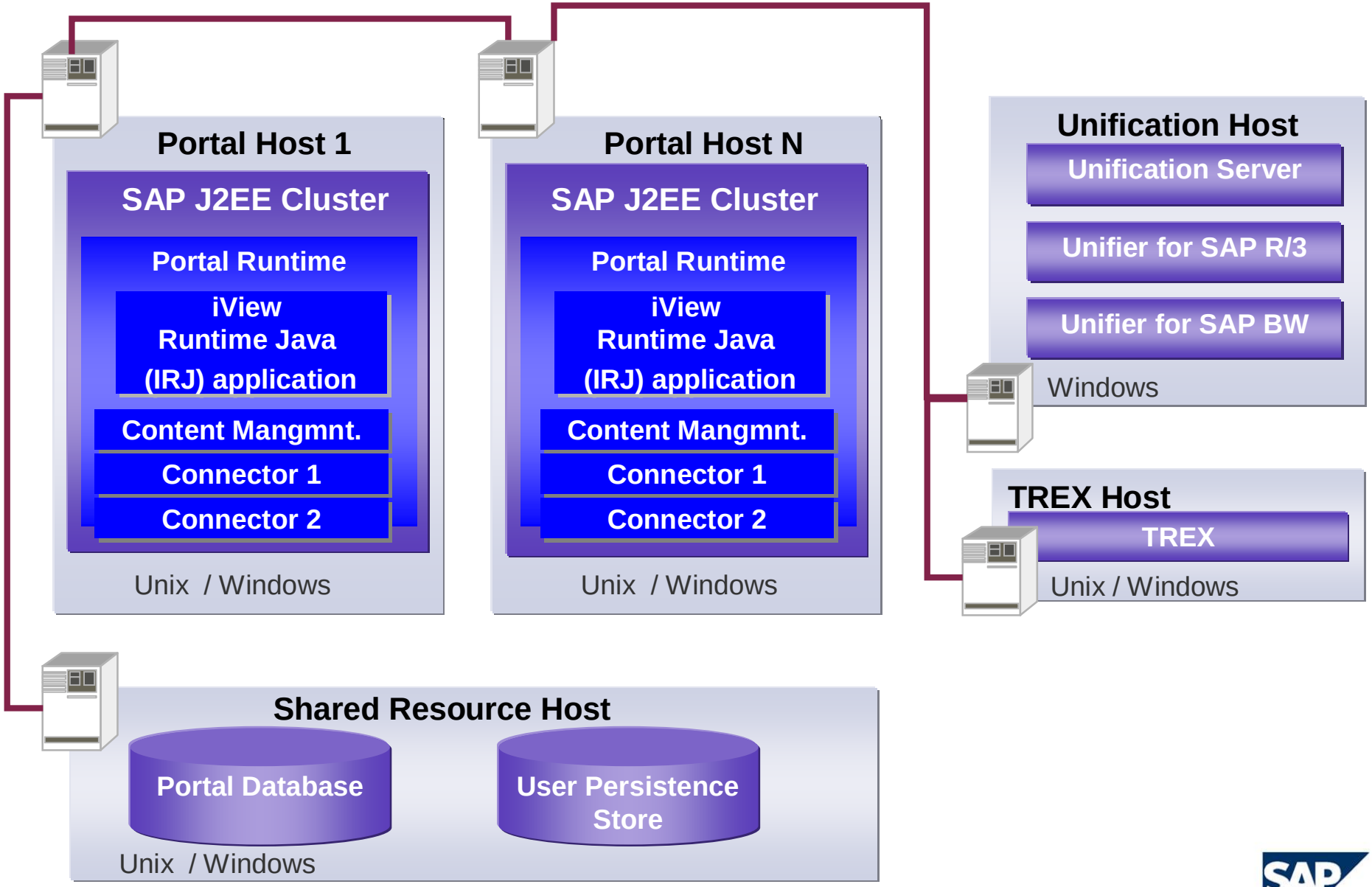
Portal Landscape: Example



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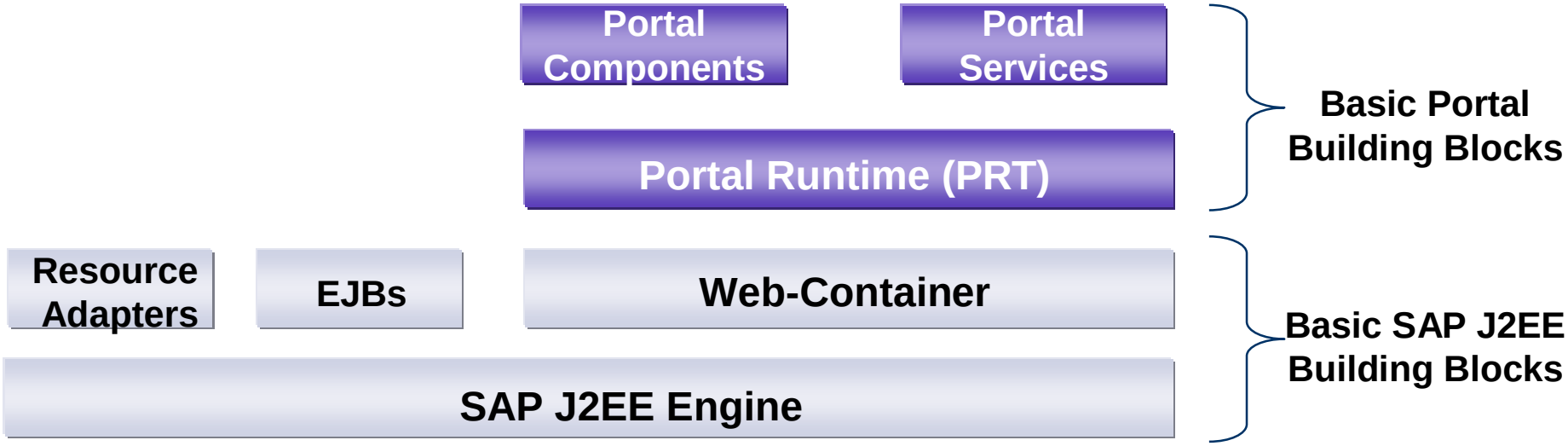
Portal Runtime Building Blocks

The Portal Runtime (PRT) resides on the SAP J2EE Engine.

- **PRT hosts portal applications which consists of portal components (UI-relevant, e.g. iViews) and portal services (general functionality providers) – most parts of the portal environment are packaged as portal services.**



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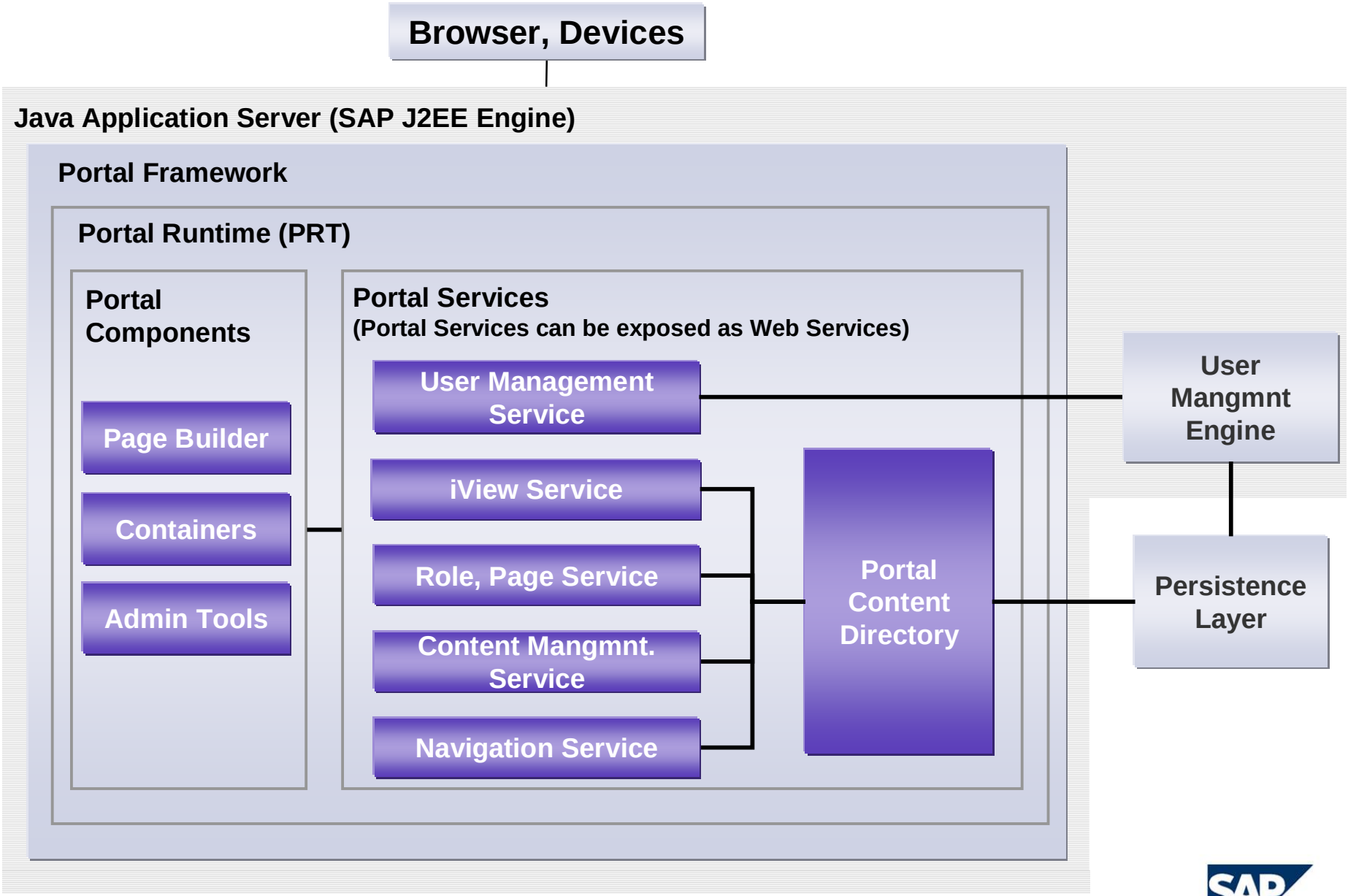
Portal Runtime Architecture



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Portal Services: Examples (1)

Connectivity Service

- **Portal service to use a connector**

User Management Service

- **Portal service to access User Management Engine (UME)**

Navigation Service

- **Portal service to generate the content of top-level-navigation and detailed navigation**

Notification Service

- **Portal service to exchange messages between portal servers in a portal cluster**

Caching Service

- **Portal service to cache iViews, pages, etc.**

System Monitoring Service

- **Portal service to generate monitoring messages (e.g. to connect to CCMS)**

Portal Content Handling Service (Content Catalog and UIs)

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Portal Services: Examples (2)

URL Generation Service

- Portal service to generate URLs to external systems (e.g. SAP ITS)

System Landscape Management Service

- Portal service to manage the system landscape

Look & Feel Management Service

- Portal service to manage theme and style handling according to the style definition, personalization (user -> style assignment), etc.

Web Service Provision and Consumption

Licensing Service

- Portal service to check the validity of the portal license

HTMLB Service

- Basic library to implement HTML-based UIs with full support for accessibility and look and feel.

.....and many more!

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Portal Services: Transport Mechanism

The Transport Mechansim is a Portal Service for getting content into and out of SAP Enterprise Portal 6.0.

- **All portal content is managed by the PCD.**

Uses

- **Transfers PCD content from a development system to a test or productive environment**
- **Exchanges PCD content during the content development phase**

EP6.0 transports - benefits

- **Allows manual triggering of exports and imports**
- **Allows automatic handling of dependencies**
- **Introduces the package as a PCD object**
- **Log files as PCD objects**

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Single Portal Components (iViews): Overview

SAP Enterprise Portal 6.0 offers *one* type of iView: the Java iView

- **All EP 5.0 iViews are migrated to EP 6.0 Java iViews**
- **.Net iViews running on a separate Web Server can be integrated**
  - **Portal Services can be used (e.g. User Management, System Landscape service)**

In SAP Enterprise Portal 6.0 the complete portal desktop consists of iViews

- **Header iView**
- **Navigation iView**
- **“See also” iView**
- **Page Editor iView**
- **Etc.**

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Page Builder: Introduction

The Page Builder is a portal component running on the PRT

- **Assembles the content of an iView according to the defined layout**

A portal page comprises

- **List of possible layouts, and a default active layout.**
- **iViews located in the page.**

SAP Enterprise Portal contains a set of pre-defined page layouts based on layout templates. In addition, new layouts can be developed.

- **Definition of a layout is implemented by proprietary tags used in Java Server Pages (JSP) to define HTML elements for pages.**

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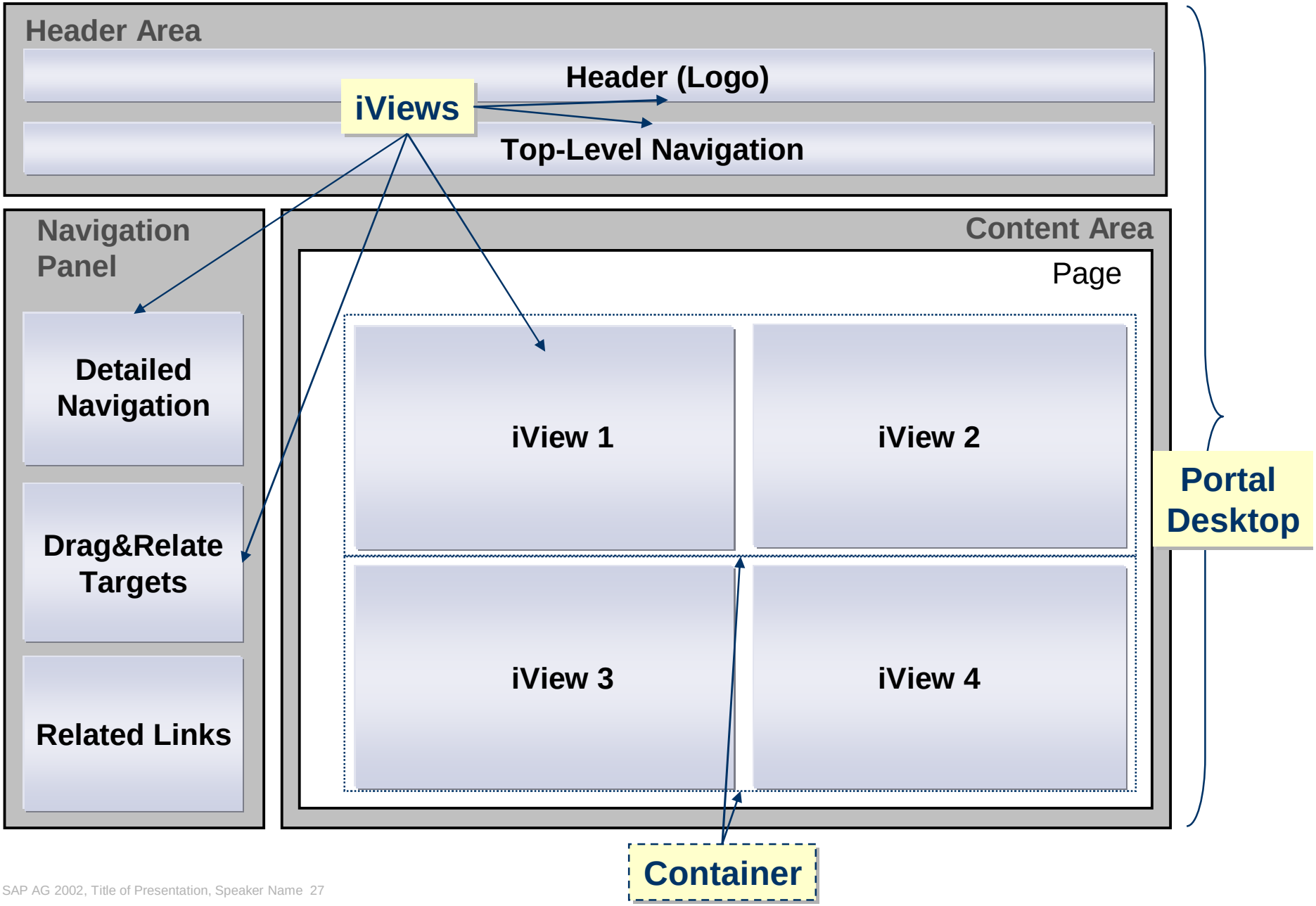
Components of the Portal Desktop



iView Types

íViews

- Isolated iViews (iFrame Rendering)
  - iViews are fetched by an IFRAME in a single request or all isolated iViews in the page are fetched in a single request by the Page Builder (recommended)
  - The Page Builder creates an <IFRAME SRC= “iView URL”> statement for each iView
- Embedded iViews (Table Rendering)
  - The Page Builder fetches the content of the iView and place it on the page in a <TABLE> structure.
  - All of the iViews in the page are fetched in a single request by the Page Builder
  - iViews are fetched asynchronously in multiple threads

In EP5.0, iFrame rendering was used for IE support and table rendering for Netscape 4.7 support

- In EP6.0, each content administrator can define the rendering mode!

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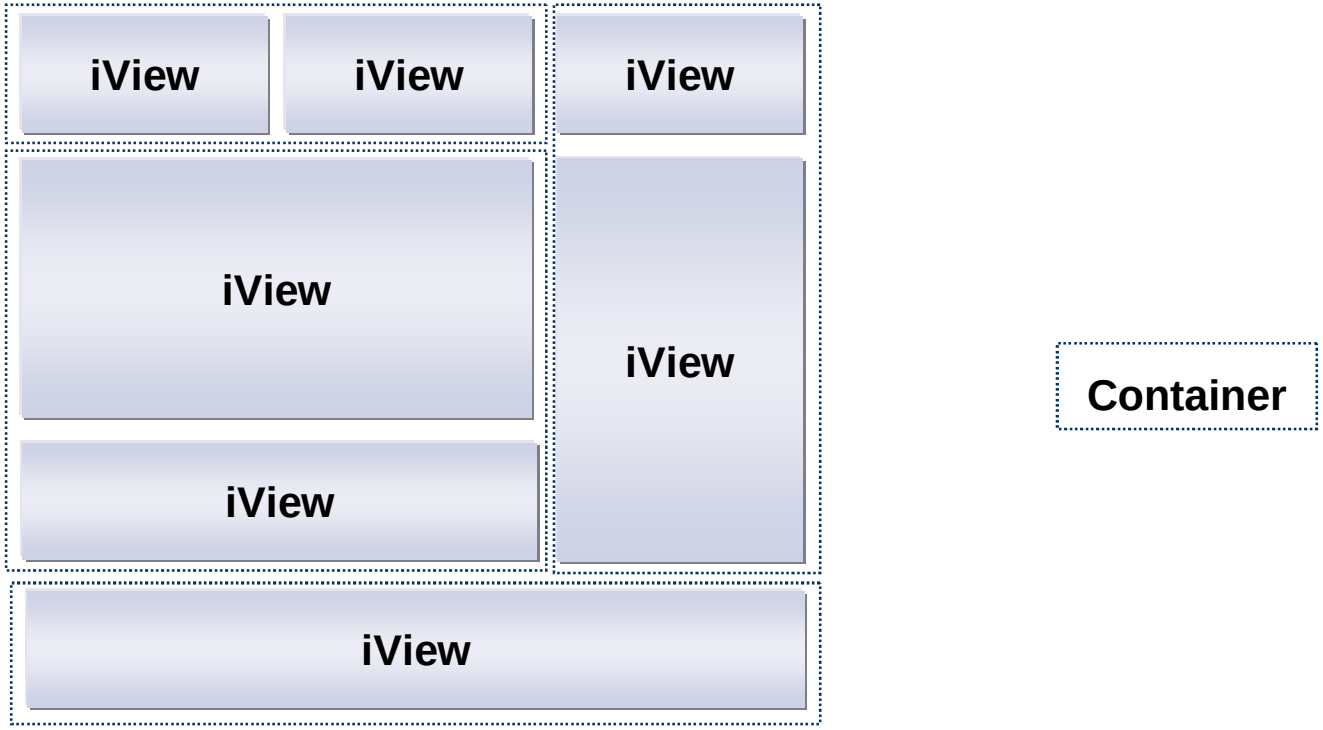
Container Concept

Containers are part of the EP6.0 layout concept

- Include 1...n iViews
- Make the page layout much more flexible
  - In EP5.0 the page layout was partly fixed
  - Customers can create their own layout (JSP)



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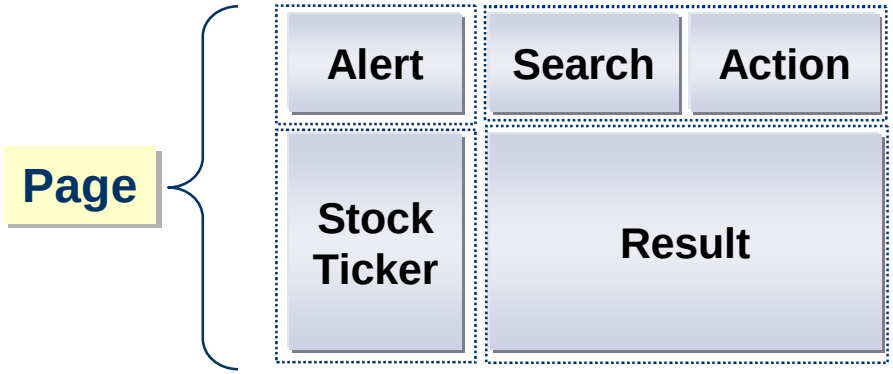
Page Concept

Page Concept in SAP Enterprise Portal 6.0

- Whereas a container is used for defining the layout, pages the rendering technology (iFrame or table rendering)
  - Pages may only contain one type of iView – isolated or embedded.
- A page includes 1...n containers
- Technically, the page is also an iView. Thus a portal page can include other portal pages



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Portal Content Directory: Overview

The PCD is a virtual layer holding portal services that interact with the portal database

- **The PCD acts as a central persistence for portal objects such as roles, pages, system landscape, and many more. The details of such data are deployed on the portal in portal archive (PAR) files.**

All portal services storing persistent data on the portal database (can) use the PCD as storage mechanism

- **Enables separation of data that describes content, such as, names, fields, values, etc., from the technical implementation of the content.**

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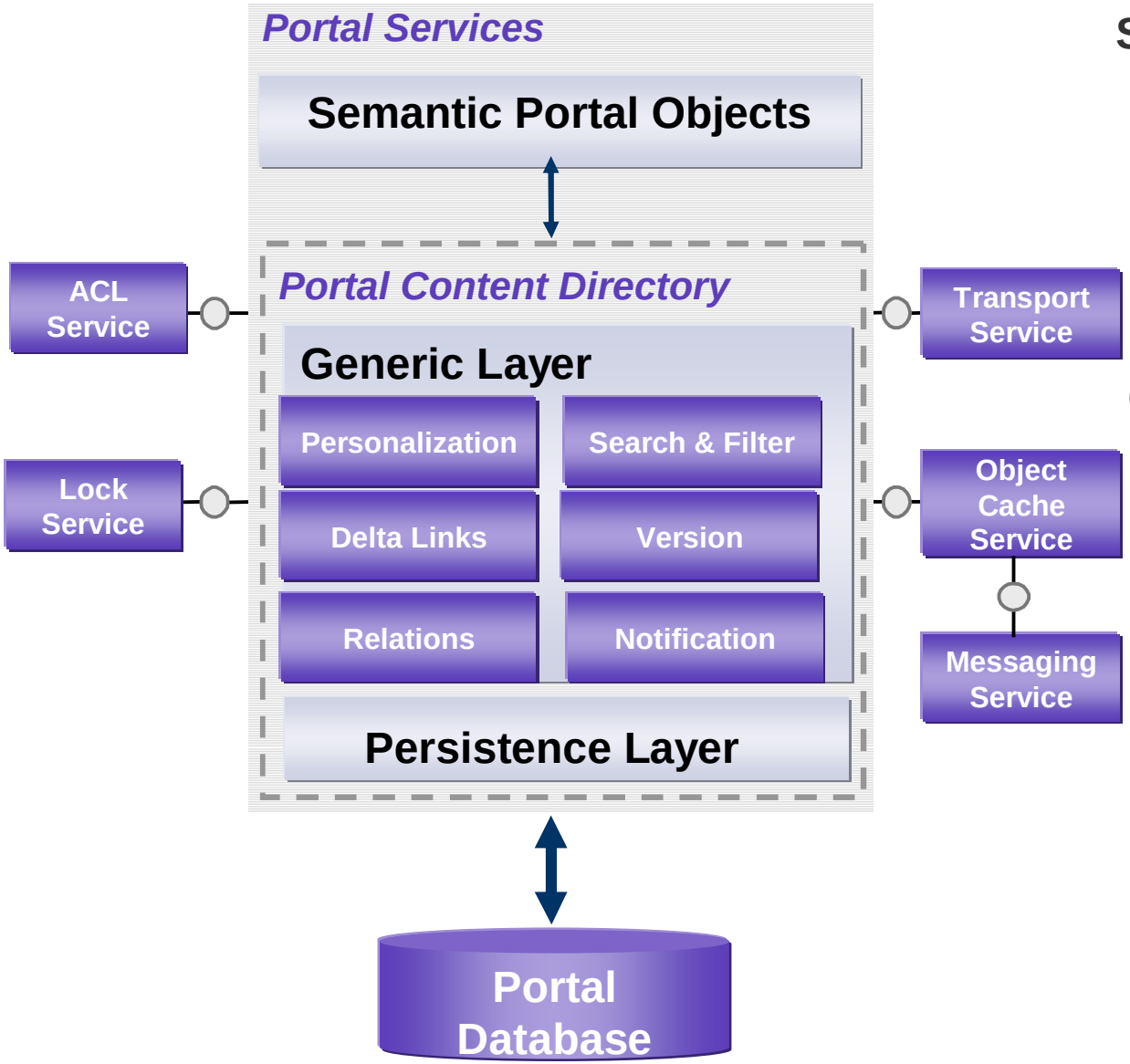
Logical Layers of the PCD



Semantic Portal Objects

- Portal Services using the PCD as storage mechansims
- Describe information of portal content in form of metadata

Generic Layer

- Generic Object model abstracts from business/portal semantics
- Provides persistence API for semantic portal objects
- Hierarchy of “folders” with attributes

Persistence layer

- Hides the physical persistence
- Supports several variants for the persistence (different DB vendors, etc.)

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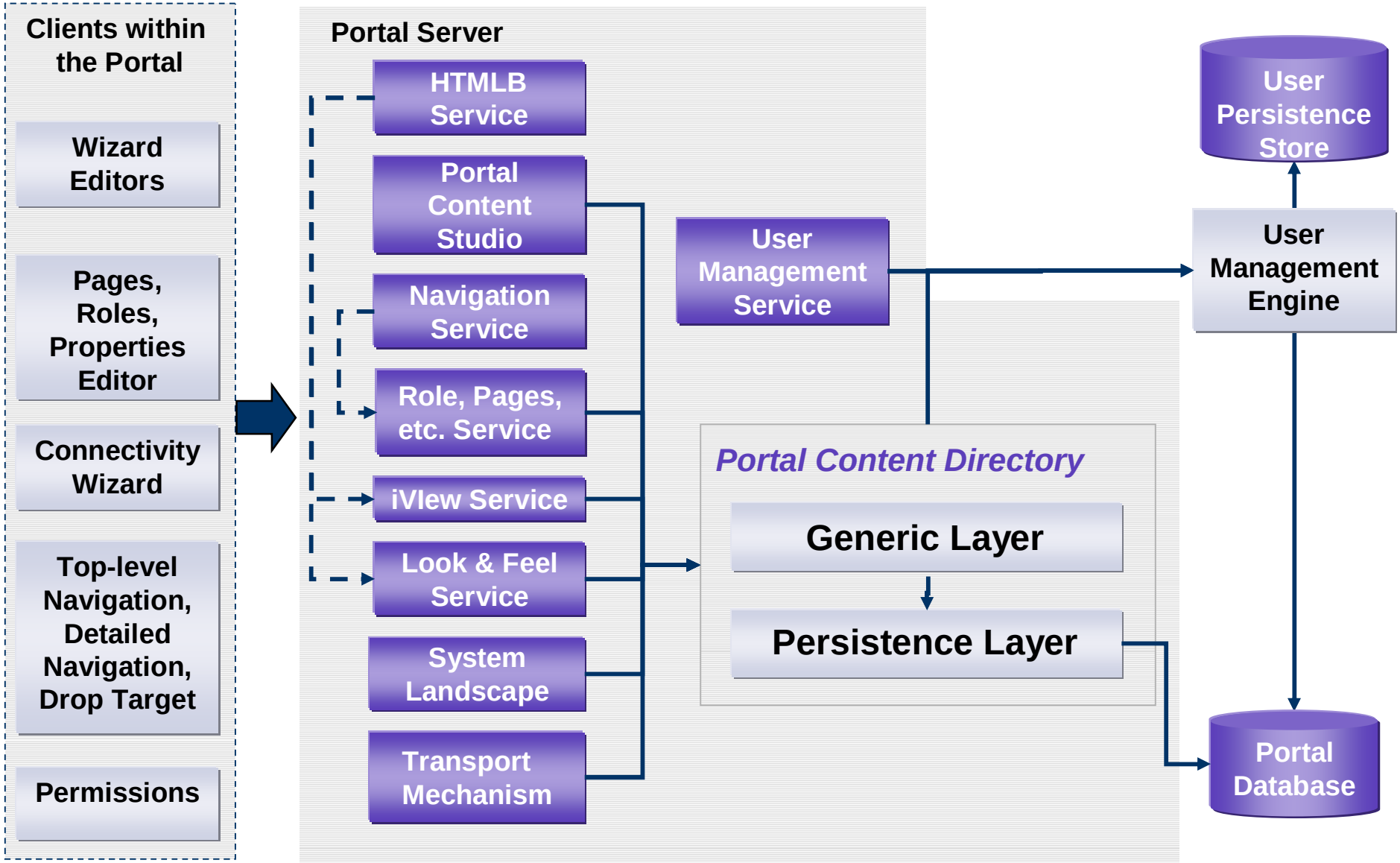
Important Portal Services Interfacing with the PCD



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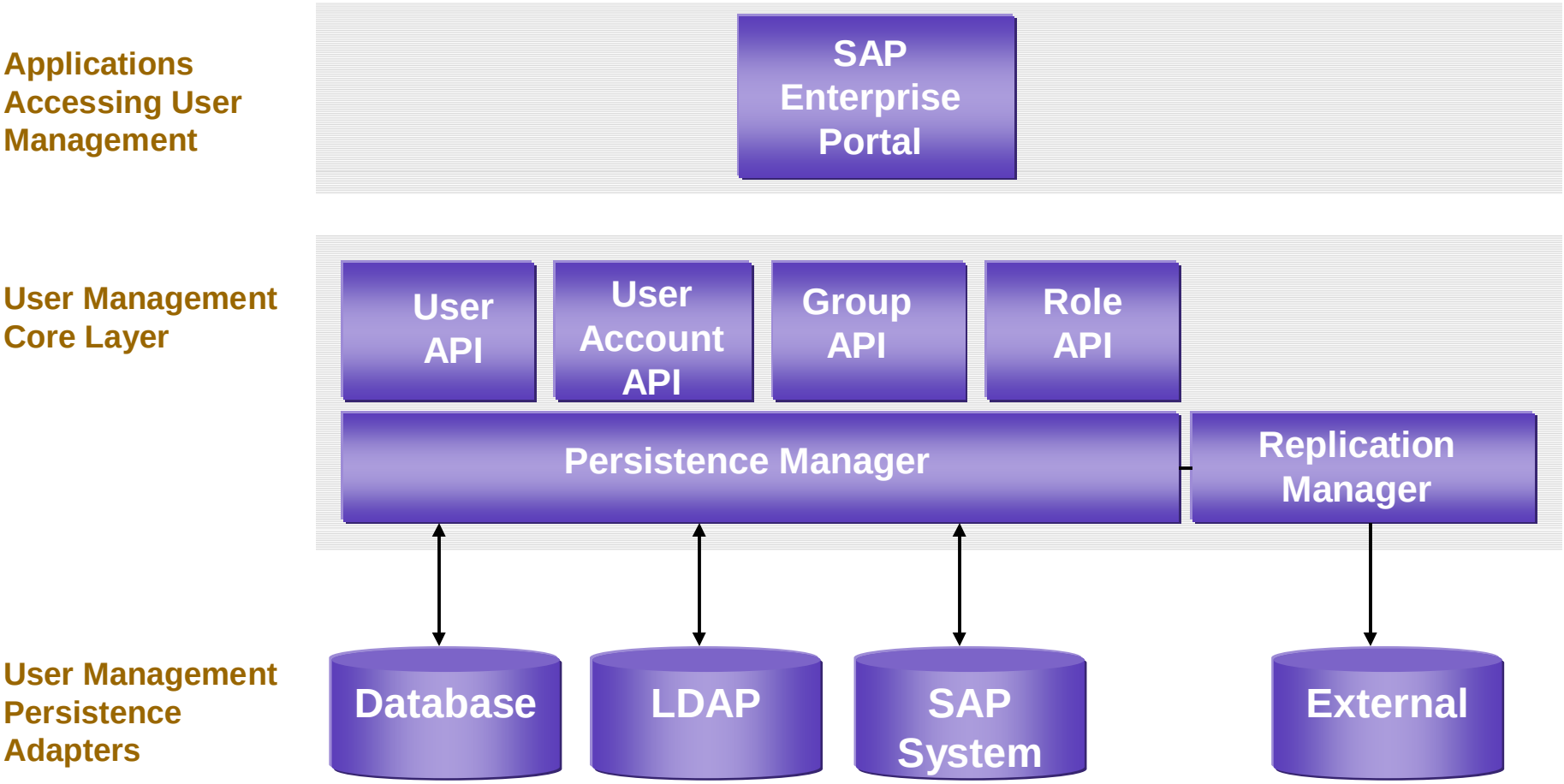
Architecture Overview – User Management Engine



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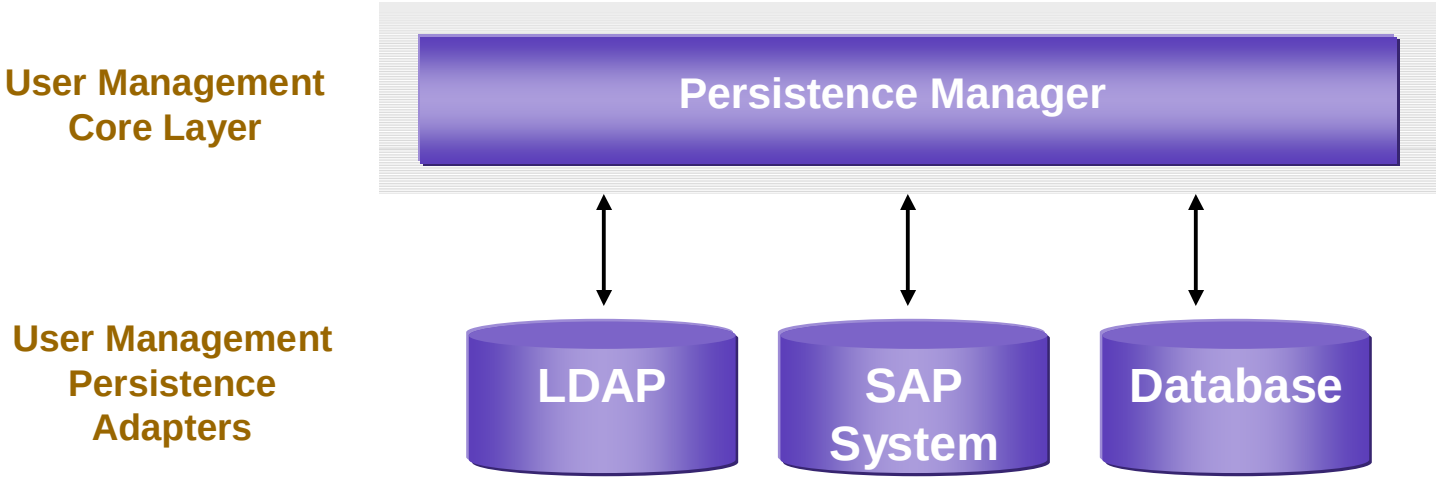
Persistence Manager

Central place for reading and writing user-specific data

- **Users**
- **Groups**
- **Role assignments**

Uses Persistence Adapters to read/write data

Supports database, LDAP directory and SAP system as repository



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Replication Manager

Replication of user data to external systems

Provisioning for external systems that cannot use supported user repositories

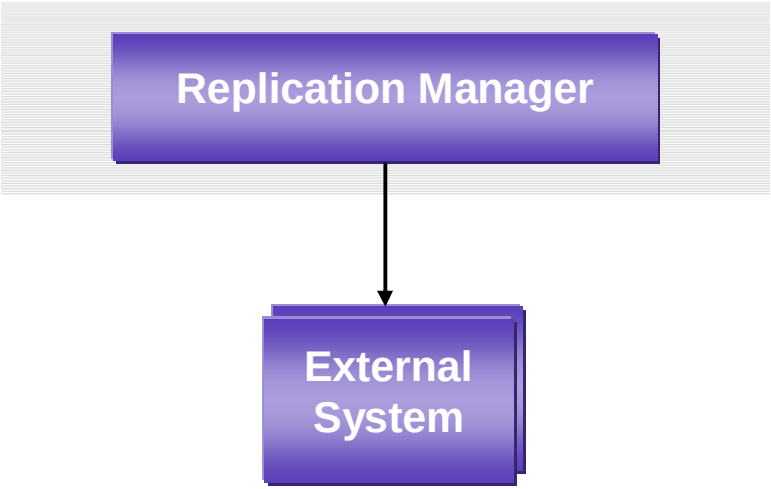
Notification when users are created or modified

Data exchange via XML documents

One-way replication of user data (Portal → External System)

User Management Core Layer

User Management Persistence Adapters



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User Management Architecture: Data Store

Portal

User Persistence Store

- LDAP Directory
- Database
- SAP System

Basic user data

Basic group data

User → group assignment

Portal Database

Store portal-specific data

UM Instance

User/group → role assignment

User mapping (for SSO purposes)

PCD Instance

User roles (metadata)

Content → role assignment

User's personalization data

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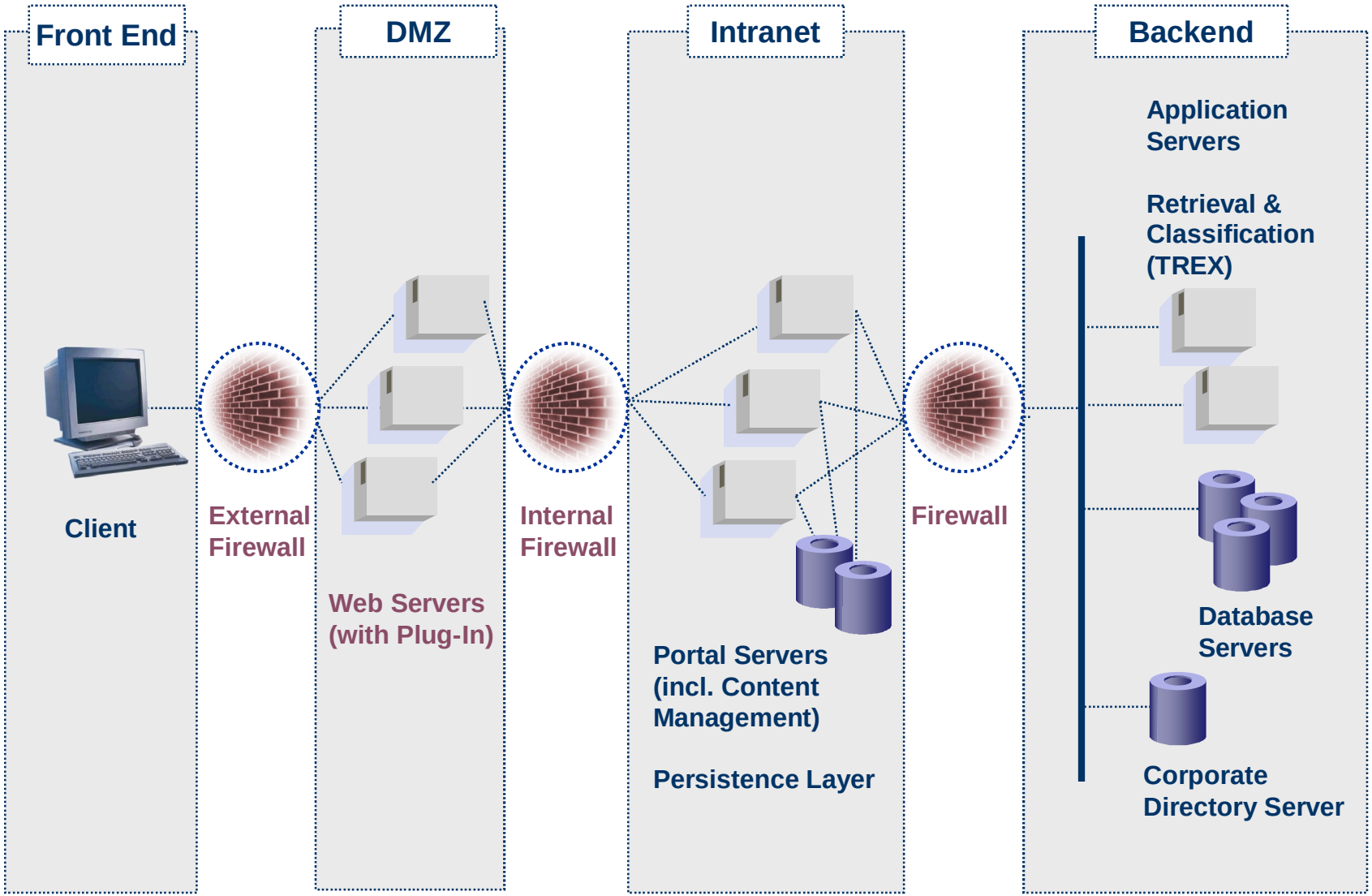
Secure Network Architecture – Enterprise Portal 6.0



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Connector Framework

JCA (J2EE Connector Architecture) is a standard **for connecting enterprise applications running on a J2EE Application Server to heterogeneous Enterprise Information Systems**

SAP offers JCA as the Connector Framework **… and provides out-of-the box connectors for SAP R/3, JDBC databases, …**

- **Connectors only require an SAP J2EE Engine, not the Portal Platform**
- **Connectors are developed in Java and support multi-platform**
- **iViews can connect to EIS applications using connectors**
- **Connectors can also be called as a Web Service**
- **Connectors can also be invoked from non-J2EE applications via XML/SOAP**

The Connector Framework offers an EIS independent interface

- **Content (iViews) become EIS independent**
- **Customers and partners can develop Connectors within the PDK**
- **Identical interfaces for runtime and development**

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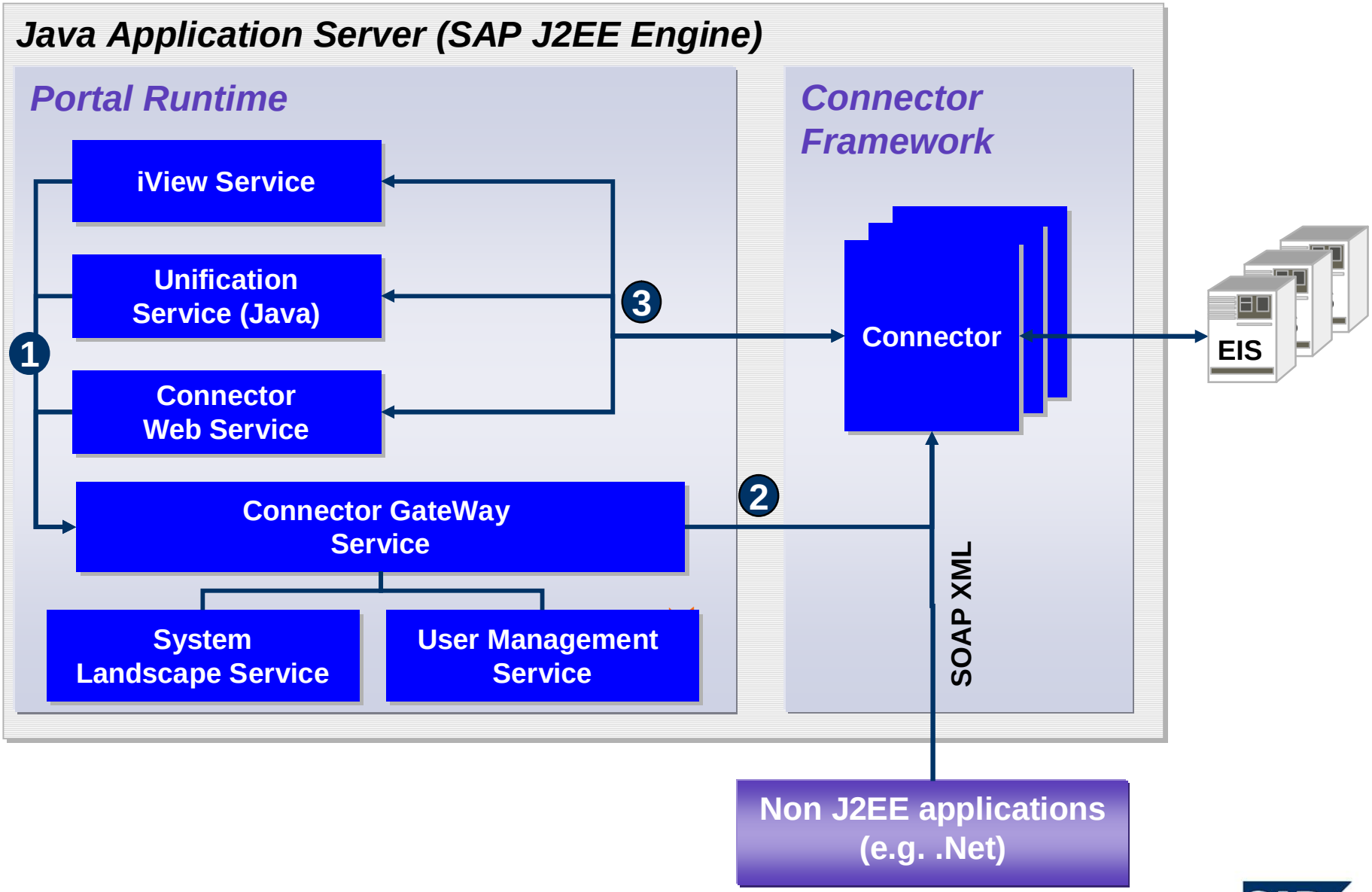
Connector Architecture - Runtime



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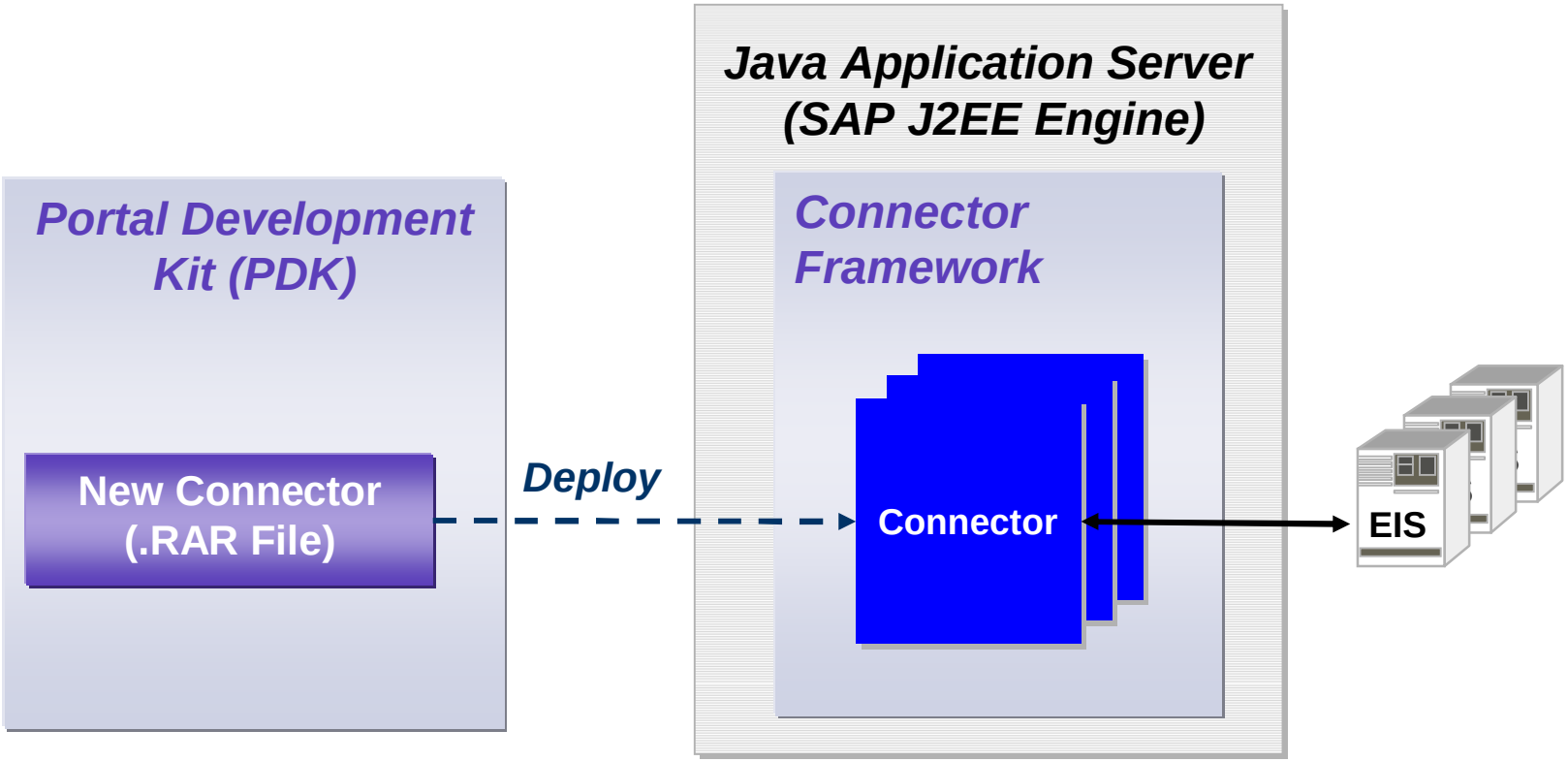
Connector Architecture - Design Time
Developing New Connectors



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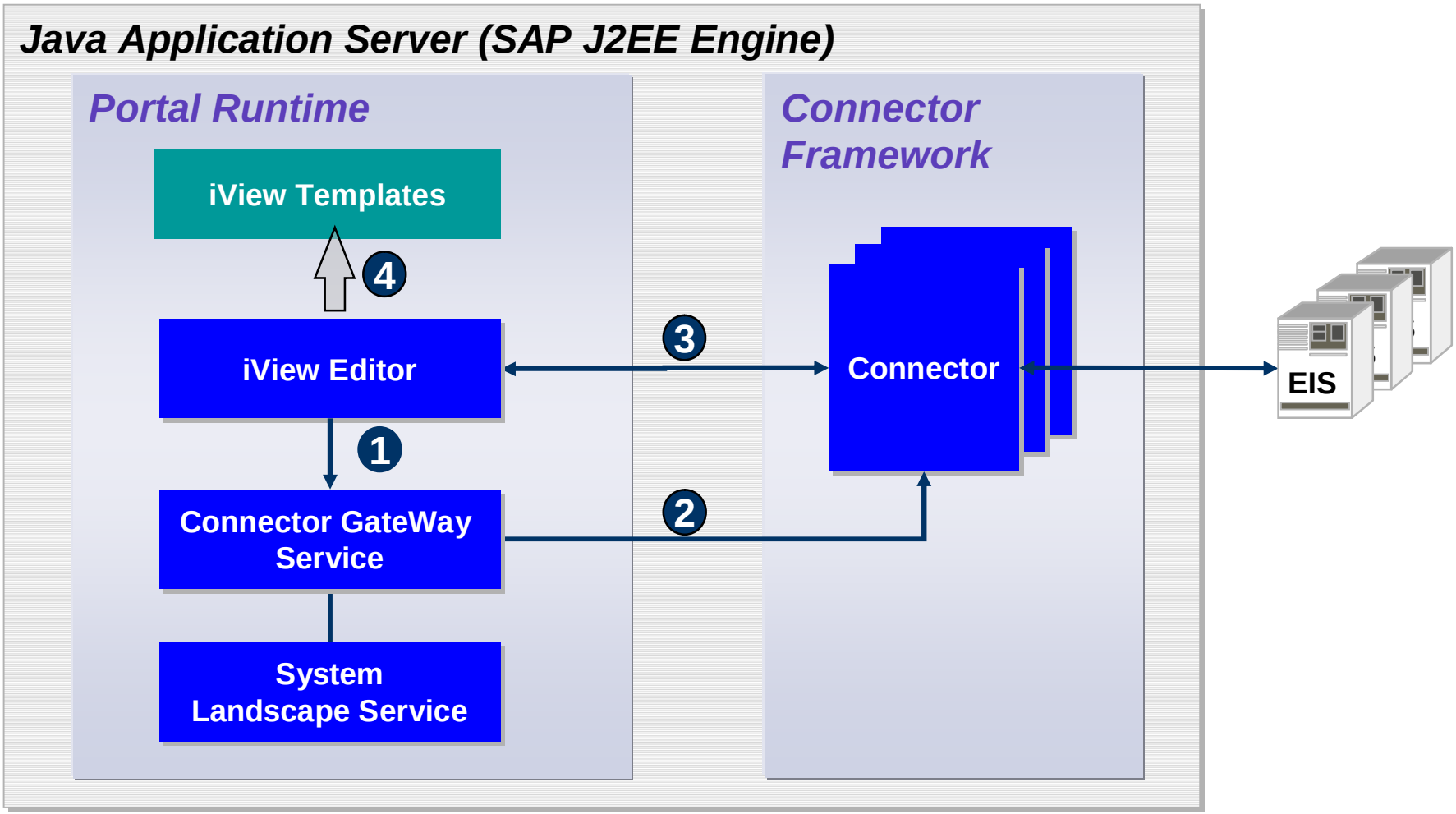
Connector Architecture - Design Time
Developing New iViews Based on Connectors



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Unification Technology

EP 5.0 unifiers (C++) are connected directly to EP 6.0

- **Unifiers are enhanced to support new 6.0 processes (UM, PCD)**
  - **Integration of iPanel within detailed navigation**
  - **Assignment of Drag&Relate targets to a page, role**
  - **D&R result is displayed in a separate window**
- **Unification still requires an SQL database and a Windows2000 server**

Planned

SAP plans to port the Unifiers to Java in 2003 → EP 6.0 Unifiers

- **Will base on the Connector Framework**
- **Will run on all EP 6.0 platforms**
- **Unification will become a Portal Service integrated within the Portal Runtime (PRT)**

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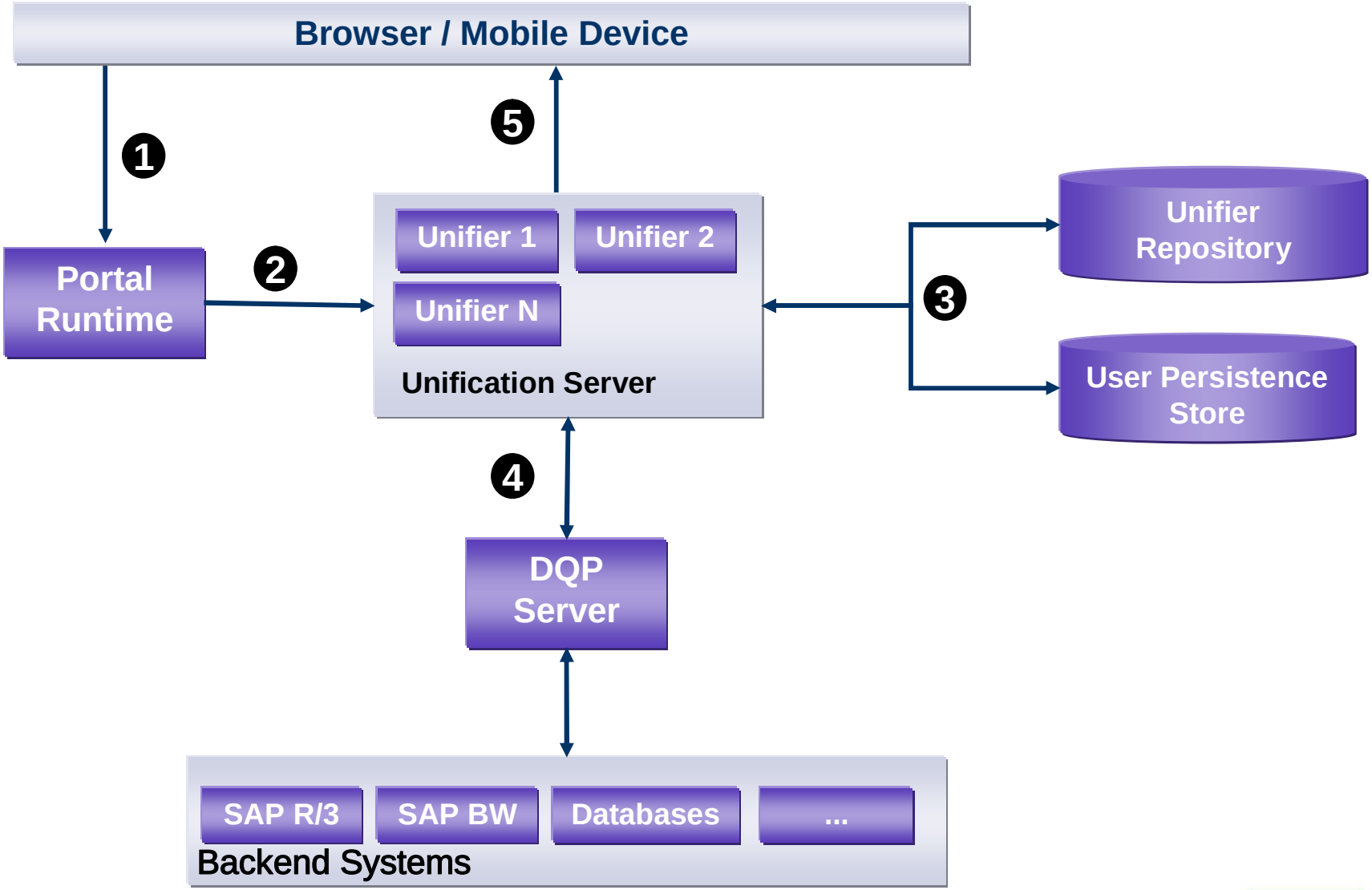
Unification Architecture - Runtime



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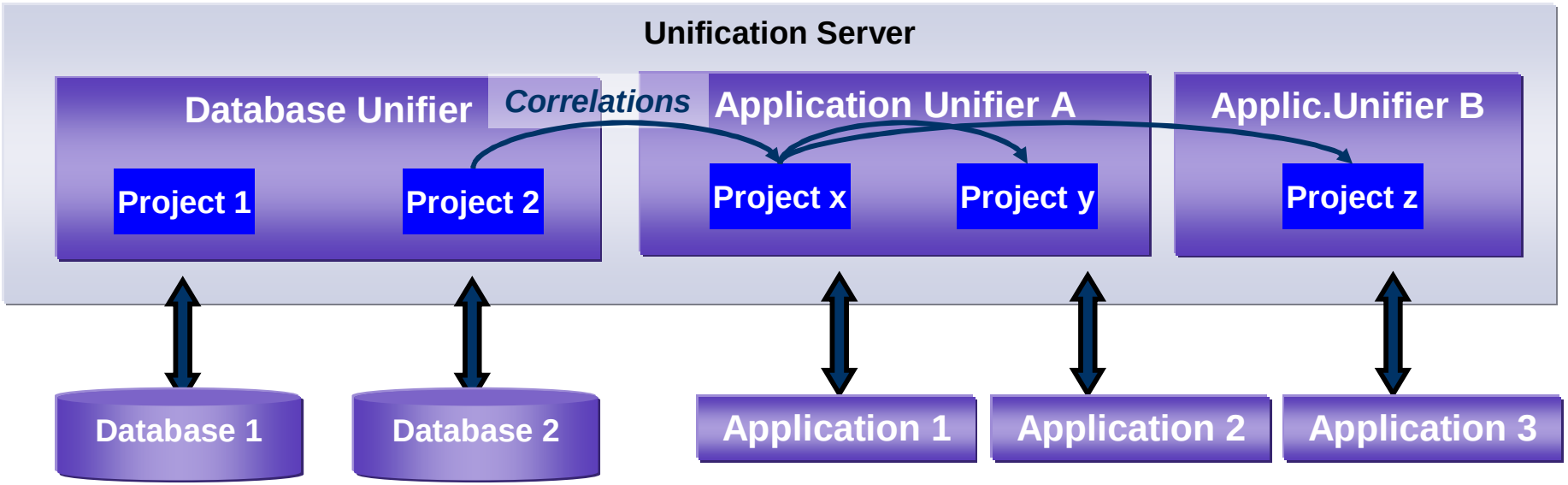
Database and Application Unifiers



Databases can be:

- Oracle 7.3.2.3.1 and later
- DB2 R4V4 and later
- SQL 7, SQL 2000
- Sybase 11.9.2 and later
- Informix 7.3 and later
- Access 2000

Application Unifiers exist for :

- R/3
- BW (with EP 5.0 SP5)
- ORACLE

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