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Enterprise Information Portals: The Next ERP?

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Overview

- Introduction to Enterprise Information Portals (EIPs)
- Benefits
- Architectural Approaches
- EIP and Enterprise Application Integration
- EIP and ERP

Introduction

Two Problems of Information Management

- ***”Islands of information"***
- ***”Islands of automation"***

Enterprise Portals

- The Enterprise Information Portal/Enterprise Knowledge Portal trend is aimed at
  - Solving both of the IM problems.
  - Creating automated IM support for a unified and integrated work environment personalized to the knowledge worker's occupational role and personal preferences.

EIP is “hot”

- Merrill Lynch Report
- More than a dozen companies have entered the EIP space
- Verticalization should kick that to more than one hundred

What is an Enterprise Information Portal?

- According to Merrill Lynch's Shilakes and Tylman:
- "Enterprise Information Portals are applications that enable companies to unlock internally and externally stored information, and **provide users a single gateway to personalized information** needed to make informed business decisions. "

What is an Enterprise Information Portal? (TWO)

- ". . . an amalgamation of software applications that consolidate, manage, analyze and distribute information across and outside of an enterprise (including Business Intelligence, Content Management, Data Warehouse & Mart and Data Management applications.)"

Essential Characteristics of EIPs

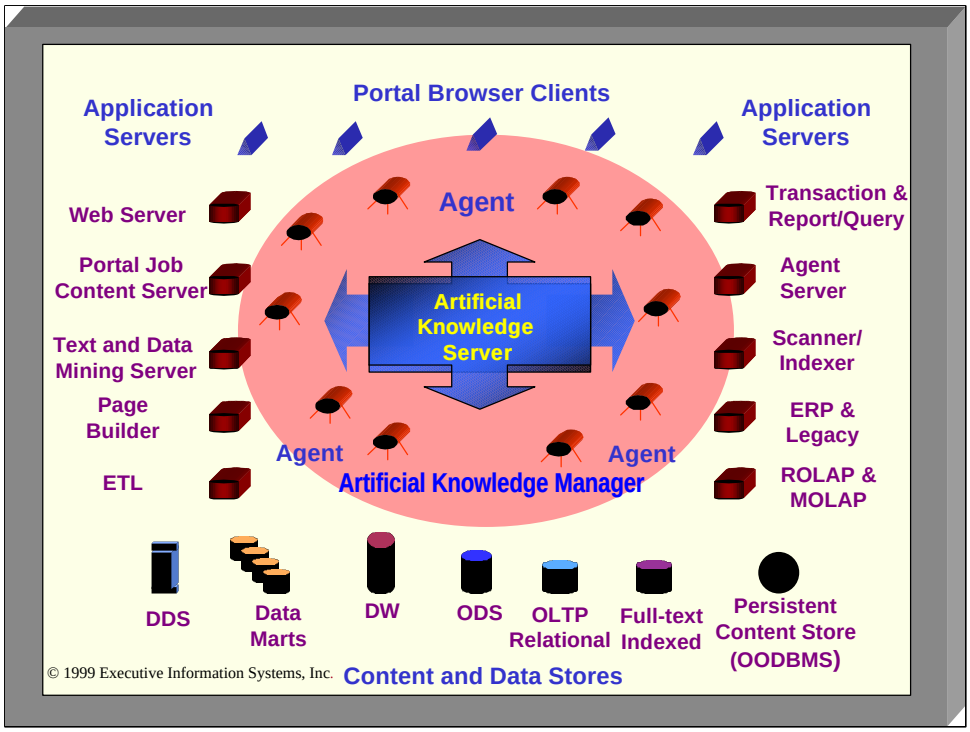
- Use “push” and “pull” technologies to transmit information through a standardized web interface
- Provide “interactivity” -- the ability to “ ‘question’ and share information on” user desktops.
- Exhibit trend toward verticalization in apps
  - Packaged apps with targeted content toward industries or corporate functions

Essential Characteristics of EIPs (TWO)

- Integrates disparate applications and data/content stores into a single system
- Accesses both external and internal sources
- Supports bi-directional info exchange from sources
- Uses data and info acquired for further processing

EIPs and Internet Portals

- Portals originated with the consumer web portals
- An EIP/EKP is very different because of its capacity for dynamic integration.


Application Servers
Portal Browser Clients
Application Servers
Agent
Web Server
Portal Job Content Server
Text and Data Mining Server
Page Builder
ETL
Transaction & Report/Query
Agent Server
Scanner/ Indexer
ERP & Legacy
ROLAP & MOLAP
Artificial Knowledge Server
Agent
Agent
Artificial Knowledge Manager
DDS
Data Marts
DW
ODS
OLTP Relational
Full-text Indexed
Persistent Content Store (OODBMS)
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Content and Data Stores

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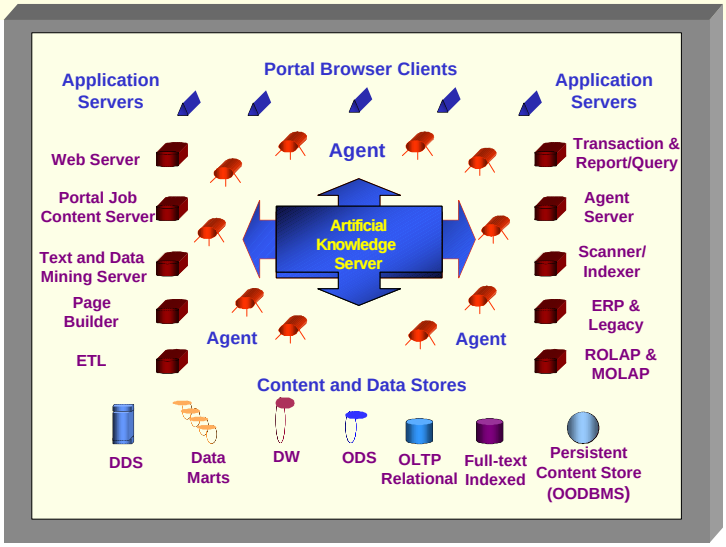

EIP/EKP Abstract Architectural Overview

EIP Benefits

EIP Benefits

- Competitive Advantage
- Increased ROI
- Increased Employee Productivity
- Increased Effectiveness
- Decreased Cost of Information
- Increased Collaboration
- Universal Access to Enterprise Resources
- A Unified, Dynamically Integrated and Maintained View of Enterprise Data and Information

Competitive Advantage

- Valuable information is currently still locked away in disparate, mal-integrated corporate data stores.
- EIPs provide access to timely and accurate information
- Info leads to better forecasts, to faster response to changes (more agility), and to better support for decisions.

Competitive Advantage (TWO)

- EIP software combines and integrates internal and external information, and standardizes, indexes, analyzes, publishes, and distributes all the information needed in a user's job role.
- The user's job performance is upgraded.
- Cooperative performance is also upgraded.

Increased ROI

- Packaged EIP applications produce higher ROI
- Are less expensive.
- Contain functionality specific to particular industry vertical markets.
- Are easier to maintain.
- Are faster to deploy.

Increased Employee Productivity

- Improved cycle time in information gathering.
- If, for example, users now spend 180 minutes per day surfing the web, perhaps they can be expected to spend 150 minutes per day getting the same amount of information when they use a portal.
- If we multiply 30 minutes times the number of company employees, we have the gross amount of time saved by the portal per day, which, of course, can easily be converted to a benefit in dollars if we know the average hourly compensation.

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Increased Effectiveness

- Portals provide new information in an integrated and personalized way.
- Integration and personalization ***focus*** information on the job role of the user, and therefore
  - lead to improved job performance, and
  - to a more knowledgeable and effective organization.

Decreased Cost of Information

- A consequence of both web-based publishing and the automated character of portals
- Savings for companies that still distribute information on paper
- Savings on web administration personnel costs for companies already involved in web publishing

Increased Collaboration

- Brings more sustained common effort to accomplish corporate goals, and
- Greater social integration of corporate environments, especially across departmental and geographic barriers.
- Collaboration through portal structures provides a powerful antidote to fragmentation and isolation in modern decentralized enterprises

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Universal Access to Enterprise Resources

- Cost-effectiveness of the Internet as the foundation for such access
- Portals use both “push” and “pull” technologies to ensure that users have the right information available to them at the right time and at the right price (for the enterprise).

A Unified View of Enterprise Information

- Positive impact on education, socialization, and integration of new employees
- Helps widely distributed employees identify with the company
- Helps employees share information, and cuts down dependency on a few key employees for information.
- Common view also empowers new employees to deal with the increasing complexity of products produced by the most sophisticated companies.
- Since common view is dynamically maintained and integrated, and also comprehensive, it is an aid to competitive intelligence in the business

EIP Architectural Approaches

Approaches to EIP Architectural Integration

- **Here are the main approaches to portal architecture:**
- The Passive Access to Content (PAC) approach
- The Structured Application Integration (SAI) Approach
- The Distributed Content Management (DCM) Approach
- The Portal Application Integration (PAI) Approach

The PAC Approach

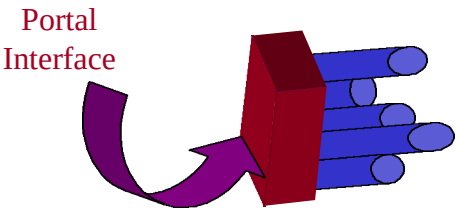
- Currently the most common approach.
- Web browser is customized to provide the portal interface.
- Web server and application server(s) provide a directory of content and applications accessible through the portal publishing, subscription, and delivery services, import/ export interfaces, metadata crawlers/filters, search engines, security, and administration facilities.
- Application servers connect to various application sources and data and content stores to provide content

PAC Integration

- No internal or external applications accessed by the portal need be integrated with any others.
- Integration at the user interface level only.
- Ability to access attributes of objects or tables from different portal applications is not available through the portal interface.
- Most EIPs in the first wave of portal growth are PAC portals.

Stovepipes in the PAC Portal System

- Many writers on portals are taken with the web interface
- They think creating an EIP is a matter of writing Active Server Pages to "plug" applications into the portal.
- Unfortunately, that portal development strategy creates this:



A portal of stovepipe applications and content stores

The SAI Approach

- Includes portal interface integration
- Integrates existing DSS, ERP and other structured data applications
- Provides integrative layer composed of object model.
- No integrative layer for content management applications except that related to the basic portal function of accessing individual content sources and applications.

The Metadata "Hub"

- SAI differs from metadata "hub and spokes" used in DW
- In h & s, object model is implemented for "metadata hub" application server.
- The hub, which can be distributed across multiple servers, maintains common view of data and metadata, drives DW process, and integrates metadata across component applications and data marts
- Hub facilitates technical staff management of flow of metadata along supply chain, so metadata can be manually synchronized.
- Does not provide automated synchronization and adaptation to change.

The SAI Object Model

- Object model has methods for performing above functions
- Also programmed with methods for automatically adjusting and synchronizing the various metadata stores in the system.
- Within certain limits this “active metadata hub” in the SAI architecture manages integration of the structured data applications without administrative intervention.

The DCM Approach

- Architecture that integrates the portal interface and the components of the content management life cycle by using a Distributed Content Manager (DCM).
- The DCM provides Process Control Services, an Object Model of the Distributed Content Management System, and connectivity to all file formats used to store content, and to all applications for manipulating content.
- In addition, the DCM provides connectivity to ORBs.

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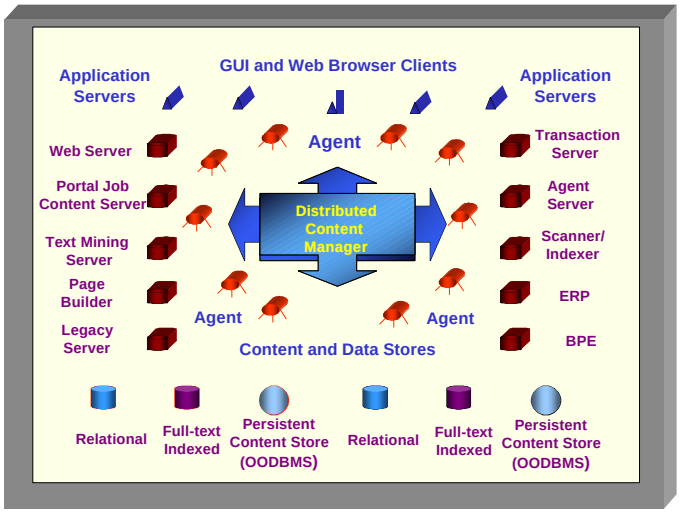

DCM Architecture

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Process Control Services in the DCM

- In-memory proactive object state management and synchronization across distributed objects using application servers and intelligent agents
- Component management and Workflow Management using application servers and intelligent agents
- Transactional multi-threading
- Business rule management and processing and
- Metadata management

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The DCM's In-Memory Active Object Model

- Event-driven behavior
- DCMS-wide model with shared representation across distributed DCM application servers
- Declarative and procedural business rules
- Caching of the object model along with partial instantiation of objects
- A Persistent Object Store
- Reflexive Objects.

The DCM's Connectivity Services

- Language APIs: C, C++, Java, CORBA, COM
- Content and Databases
- "Wrapper" connectivity for application software
- Unstructured Content Applications connectivity

Other DCM Features

- Object model provides a unified view of enterprise content objects
- Scalable to the enterprise
- Documentum's EDMS/RightSite Product is closest COTS to DCM.
- But Documentum objects don't provide the inference engine and communication capabilities required.

The PAI Approach

- Comprehensive architecture that integrates both structured information management and content management aspects of EIPs within and across application and data types.
- PAI architecture is very similar to DCM architecture, but there are differences.
- PAI incorporates an integrative layer called an Artificial Information Manager (AIM) modeling both content and structured aspects of an EIP.

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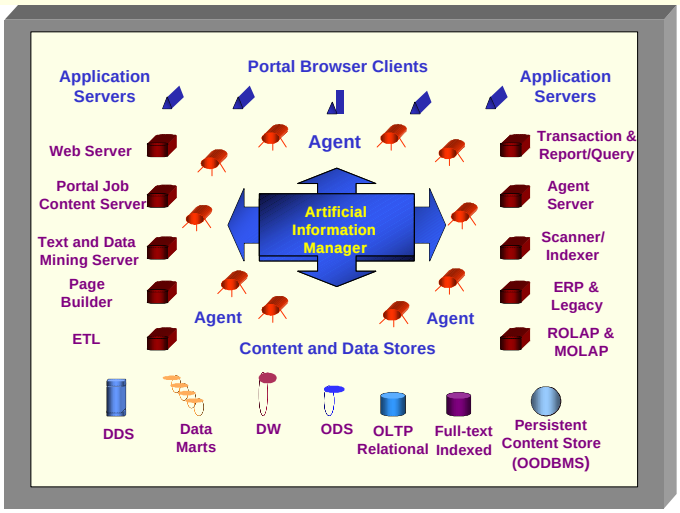

PAI Architecture

The AIM

- AIM integrates both structure and content.
- Combines features of PAC, SAI, and DCM architectures.
- AIM's in-memory Active Object Model/Persistent Object Store is characterized by objects having:
  - structured data attributes as well as content attributes
  - methods for manipulating structured data including complex analytical models
- Connectivity Services include all connectivity available to the DCM and:
  - Structured data applications connectivity whether applications are mainframe, server, or desktop - based.

Other AIM Features

- Object model provides unified view of all objects in the enterprise
- Scalable to the enterprise
- PAI not implemented in COTS information management products.
- Only architectural approach that will fulfill promise of Enterprise Information Portals

The PAI Problem

- Among the four, ideal is PAI.
- Most demanding technically and the most expensive to implement.
- Problem is loosely analogous to developing an enterprise data warehouse from a set of data marts.
- To implement a “galactic” data warehouse all at once is not wise if you want to maximize the probability of success.
- But you also should not construct unrelated individual data marts without constructing an architecture that will relate these

Incremental PAI

- Similar policy can apply to EIP construction.
- Each application added to an EIP should be provided access to the portal interface
- Should also be modeled using object modeling techniques in the PAI integrative layer.
- If AIM is pre-planned and gradually constructed with each incremental addition to an EIP, the basis for a fully integrated portal will develop over time.

The EIP Future

- Most current portals implement PAC architecture.
- A few vendors are exploring the SAI approach
- DCM, PAI, and incremental PAI approaches are largely untouched.
- Of these, the incremental PAI approach is the future of EIP development because the DCM approach is too limited and will be defeated by competition, and the “galactic” PAI approach is impractical.

EIPs and Enterprise Application Integration (EAI)

PAI, EAI, and EIP

- PAI architecture requires a **comprehensive enterprise application integration infrastructure**.
- Must be capable of managing both structured information and unstructured content stores and applications within the EIP
- Must handle relationship between structured information and unstructured content
- In the PAI architectural diagram, EAI infrastructure is represented by the Artificial Information Manager (AIM)

The AIM and EAI

- AIM component of PAI requires a particularly comprehensive form of EAI.
- The EAI “tribes”have been recently classified as “point-to-point,” “database-to-database,” “federated database,” “message broker,” “composite application,” and “process automation.”
- A mixed approach provides access to all types of EAI.
- The components, services, and connectivity provided by the AIM in PAI architecture allows one to implement this mixed approach to EAI

A Tool for Implementing AIM

- How do you implement the AIM component?
- The hard way is to write from scratch
- The easier way is to find a tool that embodies most or all of AIM requirements.
- A survey of tools reveals that no single tool provides all of the characteristics needed for PAI
- There is only one tool or set of tools that fulfills all of the AIM/AKM requirements with the exception of the intelligent agent component.

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The AIM and Template's EIT

- Template Software's Enterprise Integration Template (EIT) is a software template for quickly developing and deploying AIMs and AKMs (personal view)
- The only COTS template that provides all but intelligent agent functionality of the AIM
- It is therefore an essential tool for quickly implementing and deploying Enterprise Information or Enterprise Knowledge Portals using Portal Application Integration Architecture

EIP: The Next ERP?

- If we mean the next irresistible trend in IT, then EIP is the next ERP because:
- Desirability of solving the “two islands” problem is clear and compelling
- Offers a comprehensive integrative solution
- Can be approached incrementally
- Doesn’t threaten existing systems or previous investments
- Supports three powerful trends: the web, enterprise application integration, and knowledge management

The End