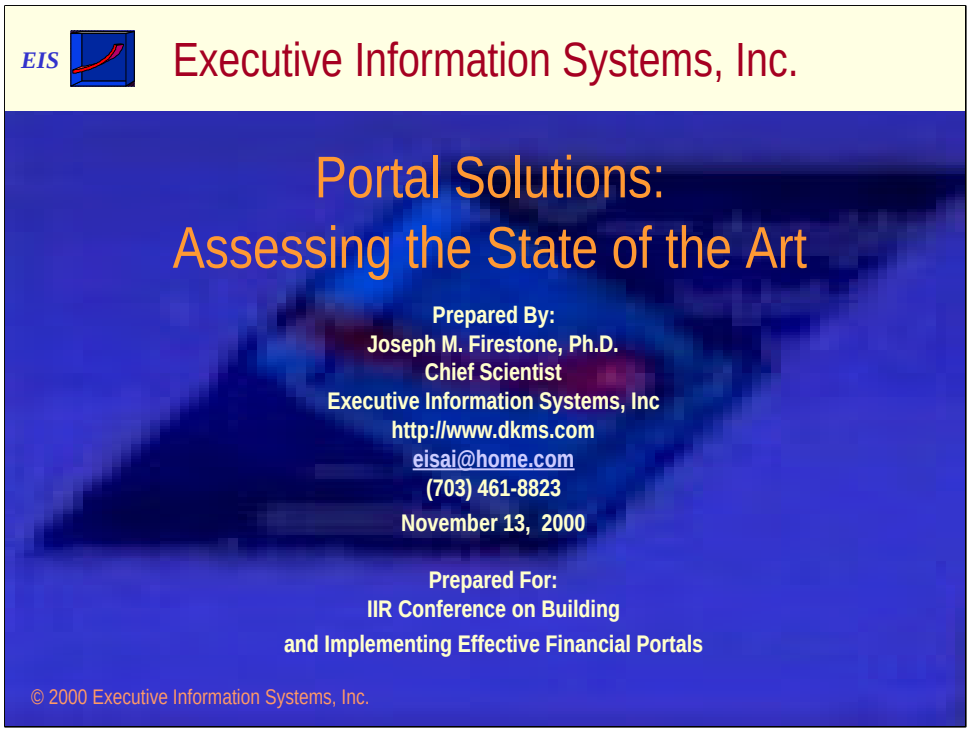
EIS
Executive Information Systems, Inc.
Portal Solutions:
Assessing the State of the Art
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What We'll Cover

- The Major Enterprise Information Portal Segments
- Trends in Segment Development
- The Most Advanced Tools in Each Segment

Eight Portal Segments

- Decision Processing (Viador, Computer Associates, Brio One)
- Content Management (Plumtree, Autonomy, Verity, Oracle, IBM, KnowledgeTrack, SageMaker, DataChannel, Sequoia Software)
- Collaborative Processing (Practicity, Engenia, Intraspect, OpenText)
- Decision Processing/Content Management (Hummingbird, Sybase, Iona)

Eight Portal Segments

- Advanced Collaborative Processing (DP/CM + Collaborative + some Knowledge Production + additional features)
- Structured Information Management (ACP minus Most CM features of ACP)
- Structured Knowledge Processing (ACP minus- Most CM features of ACP + Knowledge Processing and KM)
- Comprehensive Knowledge Processing (ACP + Knowledge Processing and KM)

Decision Processing Portals Support:

- structured data management
- querying and reporting against structured data
- query and or agent-based searching on unstructured content
- posting and broadcasting content
- Integrating information useful for information management
- portal interface integration - incremental
- Business process types or combinations
- Content and data sources include relational, OODBMS, flat file, multidimensional, BI Reports, text, and word processing

Content Management Portals Support:

- Query and or agent-based searching on unstructured content
- Agent-based scanning on unstructured content
- Query-based and continuous retrieval on unstructured content
- Filtering and manual and automated classification on unstructured content

Content Management Portals Support: (Two)

- posting and broadcasting content
- Integrating information useful for information management
- portal interface integration - incremental
- Business process types or combinations
- Content and data sources include relational, OODBMS, flat file, multidimensional, BI Reports, text, and word processing

Collaborative Portals Support:

- Query-based searching and retrieving
- Planning
- Project Management
- Distributed Expertise
- Problem-solving
- Work Flow

Collaborative Portals Support: (Two)

- posting and broadcasting content
- Integrating information useful for information management
- portal interface integration - incremental
- Work Flow-based Integration
- Business process types or combinations

DP/CM Portals Support:

- Structured Data Management (OLTP Packaged, ERP, ODS, legacy and Data Management Apps; DSS Data Mining, Packaged Analytical, Modeling and Simulation Apps; Batch Data Management and Processing, Computer Simulation, and Statistical Estimation Apps)
- Unstructured Content Management (Query and agent-based searching, agent-based scanning, Query-based and continuous retrieving, filtering and manual, automated, Bayesian, and fuzzy classification)

DP/CM Portals Support: (Two)

- Unstructured Content Management (text mining including semantic network development, text abstracting, full-text indexing, concept network creation in response to querying, concept tagging and metadata w/XML, and non-XML concept tagging)
- posting and broadcasting content
- Integrating information useful for information management
- portal interface integration - incremental

DP/CM Portals Support: (Three)

- Data federation-based Integration
- Distributed Content Management-based integration
- Business process types or combinations
- Content and data sources include relational, OODBMS, flat file, multidimensional, XML, BI Reports, text, e-mail, HTML, and word processing

Advanced Collaborative Portals Support

- All Structured Data Management and Unstructured Content Management Features of DP/CM portals
- Collaborative Prioritization, Planning, Project Management, Expertise, Work Flow
- Knowledge Production (Individual and Group Learning, Information Acquisition, and Knowledge Claim Formulation)
- posting and broadcasting content

Advanced Collaborative Portals Support: (Two)

- Information Management (Leadership, Building External Relations, Information Production, Information Integration, Changing Info Processing Rules, Crisis Handing, Allocating Resources, Negotiating Agreements)
- Work flow-based and portal application integration -- incremental

Advanced Collaborative Portals Support: (Three)

- Business process types or combinations
- Content and data sources include relational, OODBMS, flat file, multidimensional, XML, BI Reports, text, e-mail, HTML, and word processing

Structured Information Management Portals

- All Structured Data Management Features of DP/CM portals
- Query and Agent-based searching
- Collaborative Work Flow
- posting and broadcasting content
- All Information Management Features of Advanced Collaborative Portals

Structured Information Management Portals

- Structured Application Integration -- incremental
- Business process types or combinations
- Content and data sources include relational, OODBMS, flat file, multidimensional, XML, BI Reports, text, , HTML, and word processing

Structured Knowledge Processing Portals Support

- All Structured Data and unstructured Content Management features of Structured Information Management Portals
- Collaborative Prioritization, Planning, Project Management, Problem-solving, Knowledge Production and Work Flow
- All Information Management Features of Structured Information Management Portals

Structured Knowledge Processing Portals Support (Two)

- Knowledge Processing (Info Acquisition, I & G Learning, Knowledge Claim Formulation, Knowledge Claim Validation, Broadcasting, Searching/Retrieving, Teaching, and Sharing)
- Knowledge Management (Leadership, Building External Relationships, Knowledge Production, Knowledge Integration, Changing Knowledge Process Rules, Crisis Handling, Allocating Resources, Negotiating Agreements)

Structured Knowledge Processing Portals Support (Three)

- Structured Application Integration -- incremental
- Business process types or combinations
- Content and data sources include relational, OODBMS, flat file, multidimensional, XML, BI Reports, text, , HTML, e-mail, SGML, and word processing

Comprehensive Knowledge Processing Portals Support:

- All Structured Data and Unstructured Content Management Features of Advanced Collaborative Portals
- Collaborative Prioritization, Planning, Project Management, Expertise, Training, Problem-solving, Knowledge Production and Work Flow
- All Knowledge Production, posting and broadcasting, Information and Knowledge Management Features of Structured Knowledge Processing Portals

Comprehensive Knowledge Processing Portals Support: (Two)

- Portal Application Integration -- incremental
- Business process types or combinations
- Content and data sources include relational, OODBMS, flat file, multidimensional, XML, BI Reports, text, , HTML, e-mail, SGML, and word processing

Decision Processing Portals will evolve into Structured Information Management or into combined Decision Processing/Content Management Portals

- This is the most likely immediate development path. DP portal vendors began by incorporating BI and DW capabilities into their products. Now they are incorporating access to SAP, PeopleSoft, Baan, and other OLTP sources. Also, DP vendors such as Viador, and Computer Associates are rapidly moving to incorporate CM capabilities into their products

Content Management Portals will evolve into combined Decision Processing/Content Management Portals or into Advanced Collaboration Portals

- The leaders in CM portals, such as Plumtree, are rushing to integrate DP capabilities into their offerings or at least to provide the means of integrating third party DP capabilities into their frameworks.
- On the other hand, IntegrationWare, now Practicity, while claiming the first knowledge portal, is actually using a strong integrative architecture to unite CM and collaborative capabilities while also integrating some DSS capabilities.

Basic Collaboration Portals will evolve into Advanced Collaboration Portals

- This trend is already observable in Intraspect's attempt to integrate its collaborative capabilities with SAS's structured IM capabilities and in Practicity's content management and structured data management capabilities

Structured Information Management Portals will evolve into Structured Knowledge Processing Portals

- This will occur naturally as the distinction between information and knowledge portals enters industry consciousness, and software companies figure out what needs to be done to incorporate formal knowledge production and validation, KM processes, and validity information into their portals.

Combined DP/CM Portals will evolve into Comprehensive Knowledge Processing Portals

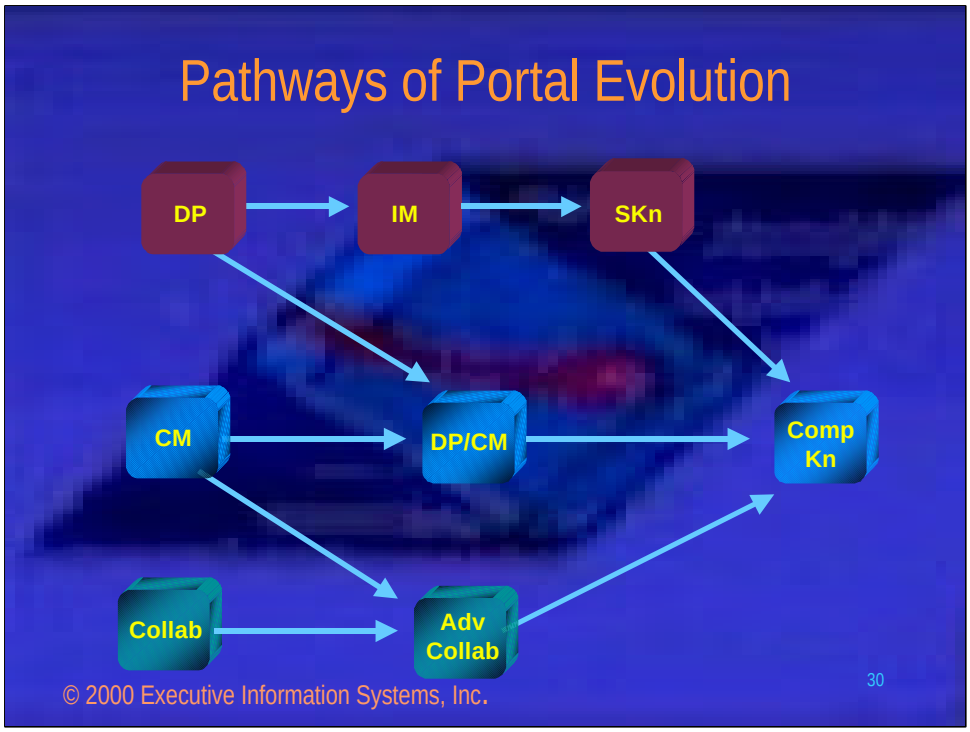
- To do this they need to add Advanced Collaborative Capabilities and incorporate formal knowledge processing and KM capabilities. It will be a half year to a year before any software company approaches this synthesis, and that assumes they're thinking about it right now.

Advanced Collaboration Portals will evolve into Comprehensive Knowledge Processing Portals With KM capabilities

- ACPs need to add knowledge processing and KM capabilities to evolve into Comprehensive Knowledge Processing Portals. Again it will be at least six months to a year before we see the first of these products.

Structured Knowledge Processing Portals will evolve into Comprehensive Knowledge Processing Portals

- This requires incorporating collaborative and content management capabilities. Provided a company is at this stage to begin with, and has previously made the more difficult transition from information processing and management to knowledge processing and management, this change should not be difficult. Particularly since by this time content management and collaborative processing capabilities should be widespread in the portal space.


Pathways of Portal Evolution
DP
IM
SKn
CM
DP/CM
Comp Kn
Collab
Adv Collab
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Five Other Trends

- Increasing EIP functionality;
- Structuring unstructured content through XML
- Verticalization of EIPs and EKPs;
- More comprehensive EIP systems integration; and
- An increasingly common focus on knowledge processing and knowledge management

Verticalization

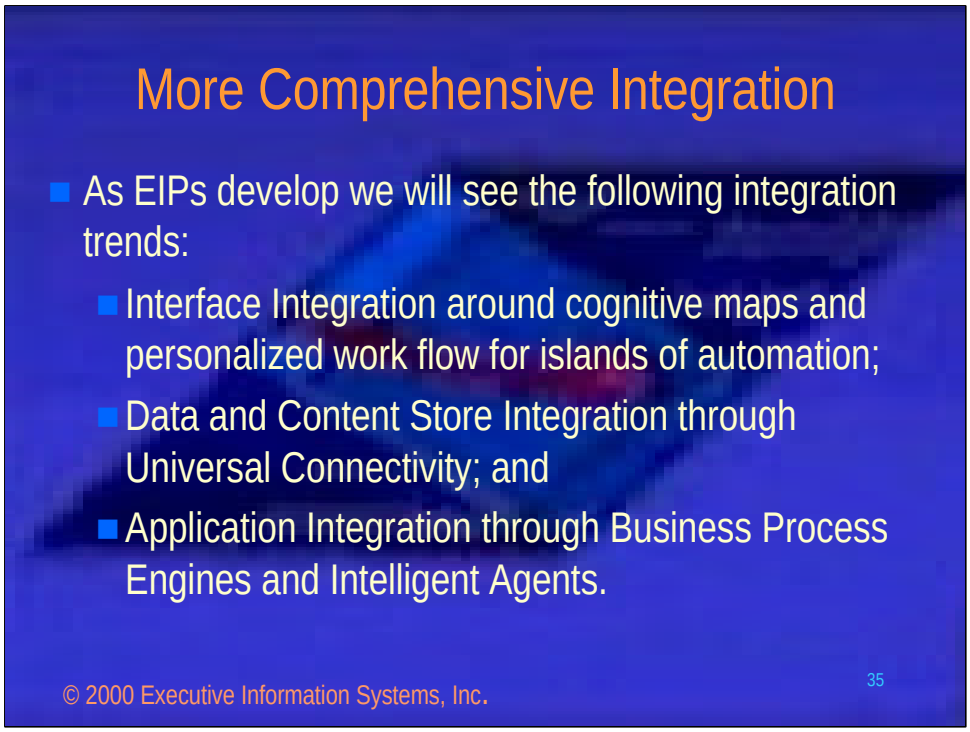
- In their initial report on EIPs, Shilakes and Tylman pointed to the trend of a likely increasing focus of portals on integrating applications packaging vertical market content such as: accounting applications, specialized analytical applications, and applications involving an industry content focus. This has also been a trend in DSS and BI, and in ERP applications. Packaged applications offer compelling economies as long as they can be integrated in portals. With portal companies now offering "widgets" and "gadgets" to allow more rapid integration of all types of applications, this trend can only accelerate.

Structuring Unstructured Content Through XML

- A basic distinction among EIPs at present is whether they support structured data management or unstructured content management. Some portal vendors currently emphasize their ability to handle XML and to use it to structure content
- In the future, EIPs will increasingly support text mining and conversion of documents to XML for the purpose of transforming unstructured to structured content. Once everything is structured all content will be open to analytical applications.

Increasing Multi-functionality

- From EIP applications focusing on either structured data management or unstructured content management and adding publication and distribution, there will eventually develop applications combining these and adding collaborative, knowledge processing, information management, and knowledge management.
- This trend highlights the nature and promise of EIPs as the integrator of all enterprise processing. EIPs are the leading edge of a developing Distributed Knowledge Management System (DKMS) for the enterprise. Their culmination in comprehensive EKPs will mark the realization of the DKMS at the enterprise level.



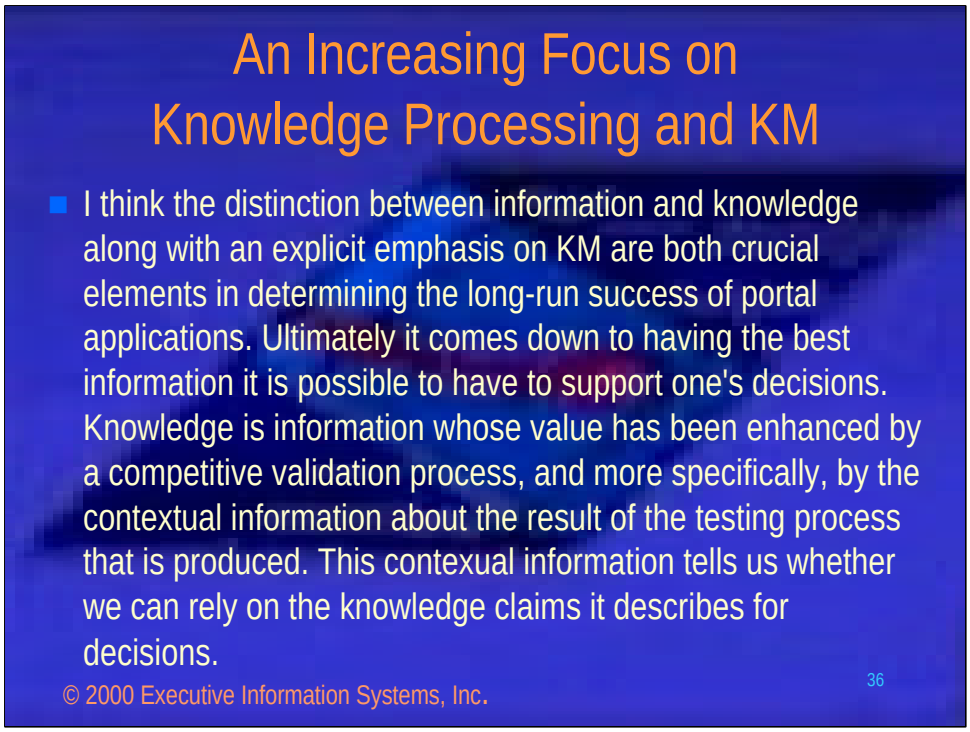
As EIPs develop we will see the following integration trends:

Interface Integration around cognitive maps and personalized work flow for islands of automation;

Data and Content Store Integration through Universal Connectivity; and

Application Integration through Business Process Engines and Intelligent Agents.

When these trends have run their course, EIP applications will have evolved into virtual enterprise applications solving both of the "islands problems," and integrating both the user's window on the virtual enterprise, every data, content, information, and knowledge store, and every application in the modern enterprise..



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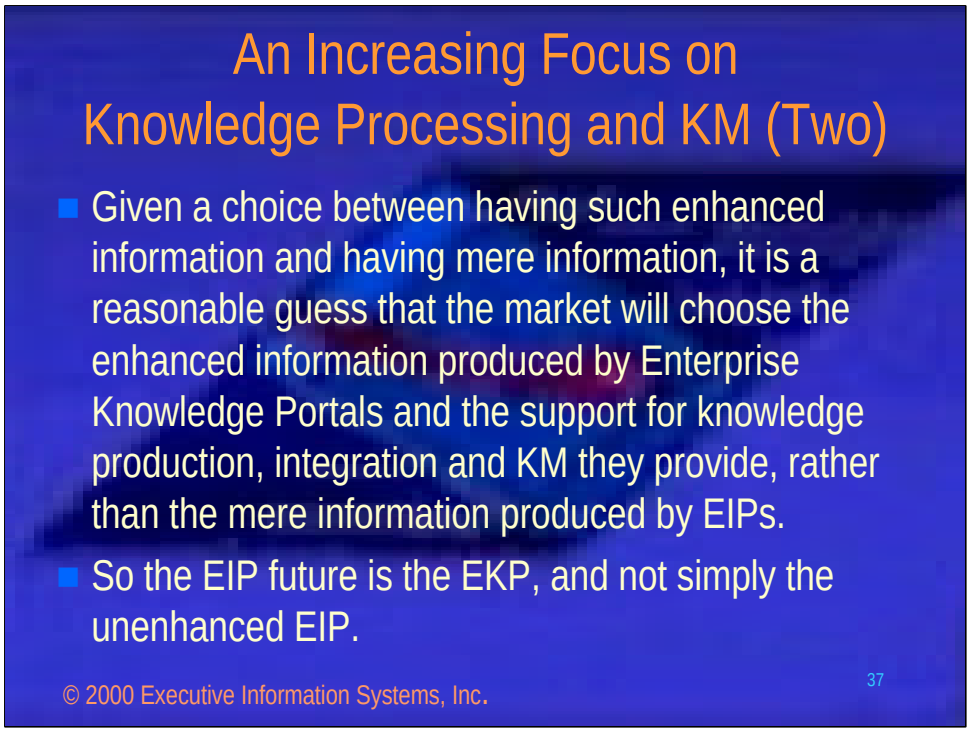

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The End
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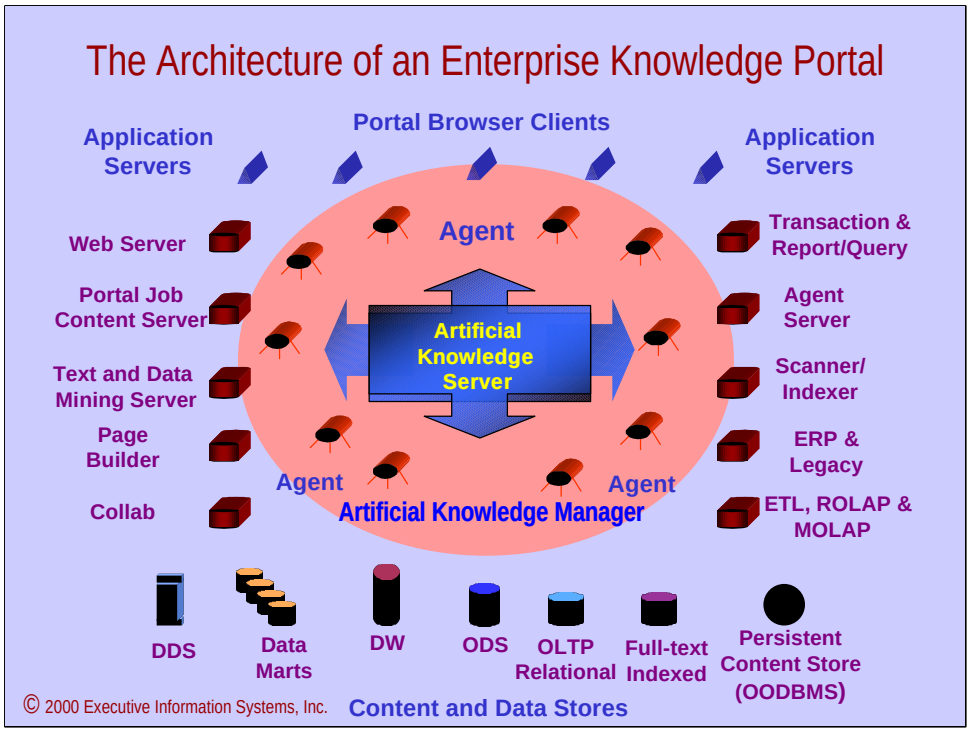
What is an Enterprise Knowledge Portal (EKP)?

- An EKP is an enhanced Enterprise Information Portal (EIP)
- It is an EIP that supports knowledge production, knowledge integration, and knowledge management
- It is an EIP that supports individuals, groups, and teams in the swirl of problem-solving activities permeating enterprise business processes

Enterprise Knowledge Portals

- focus upon, provide, produce and integrate information about the validity of the information they supply
- provide information about your business and meta-information about the degree to which you can rely on that information,
- distinguish knowledge from mere information,
- provide a facility for producing knowledge from information
- orient one toward producing and integrating knowledge rather than information


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

EKP Generic Application Components

- Browser and e-mail clients
- The Avatar -- a client-based intelligent agent
- The portal application server(s),
- The access management system
- Knowledge Claim Objects
- The enterprise Artificial Knowledge Server(s) (AKSs),
- Complex adaptive system (cas) mobile intelligent agents
- The formal knowledge production application server(s) and its associated clients supporting analytical and statistical modeling, KDD and Data Mining, Simulation, impact analysis and forecasting,
- The collaborative processing application server, and
- A persistent storage component.

Knowledge Claim Objects

- An important class of objects in the EKP system is the knowledge claim object (KCO)
- A KCO is distinguished from an ordinary business object by the presence of validity metadata encapsulated in the object
- Such metadata compares the KCO to alternative, competing KCO's, and may be expressed in many different forms. The "metadata" may be qualitative or quantitative or it may be in the form of textual content. In relatively infrequent but important special cases, the metadata may involve quantitative ratings of a knowledge claim compared to its competitors.
- When the KCO is accessed by a user, data, metadata, and methods are all available, so the user can evaluate the KCO as a basis for decision against competing KCOs. This capability is not available in EIPs, which express knowledge claims as data or business objects only.