Essentials of
Knowledge Management

March 15, 2000
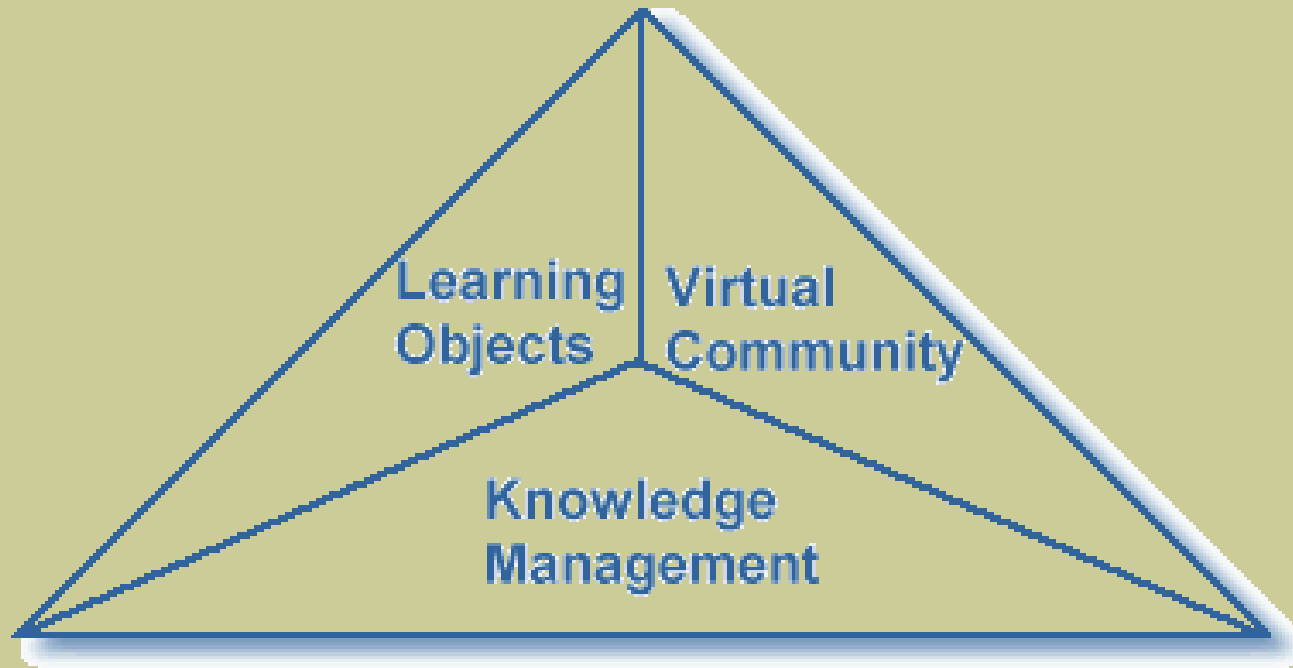
- Knowledge Management
  - "attending to processes for creating, sustaining, applying, sharing and renewing knowledge" – *Integral Performance Group*
  - "KM is formal in that knowledge is classified and categorized according to a prespecified – but evolving – into structured and semistructured data and knowledge bases." – *O'Leary, 1998*

• Knowledge… (12 Principles)

- Knowledge is messy
- Knowledge is self-organizing
- Knowledge seeks community
- Knowledge travels on language
- Knowledge is slippery
- Looser is probably better

- – Knowledge keeps changing
- – Knowledge does not grow forever
- – No one is really in charge
- – You cannot impose rules and systems
- – There is no silver bullet
- – How you define the problem defines how you manage it
- – *Excerpt from Verna Allee, The Knowledge Evolution, at Integral Performance Group*

- Two Aspects of Knowledge Management:
  - Culture – aka process view
    - "ways to facilitate collaborative processes, learning dynamics and problem solving."
  - Technology – aka object view
    - "focus on databases or other storage devices, mechanisms for sharing knowledge products such as documents, and terms such as knowledge transfer."

    Integral Performance Group, also Sveiby, 1996

- Culture: Knowledge Based Organizations
  - nature of knowledge
  - types of knowledge
  - Implementation

- Nature of knowledge
  - "Knowledge, in this continuum, is information with patterns patterns that are meaningful and can be the basis for actions, forecasts and predictive decisions."- *Ved Bhusan Sen, 2000*

- Types of knowledge
  - taxonomies
  - tacit knowledge

- Tacit knowledge
  - Michael Polanyi, Personal Knowledge (1958)
    - "Tacit knowing and tradition function as a taken-for-granted knowledge, which in its turn delimits the process-of-knowing and sets boundaries for learning." – *Sveiby, 1997*

• Taxonomies

– Eg. Bloom's Taxonomy

– Usually a distinction between 'knowing that' and 'knowing how'

- Implementation *(eg. four steps from Dialogue Corporation, also Stebbins and Shani 1998)*
  - list or identify knowledge assets
  - identify points where knowledge is used
  - identify tools for that use
  - maintenance and evaulation

- Technology: Three Major Components:
  - Database
  - Input
  - Output

• Overall Architecture

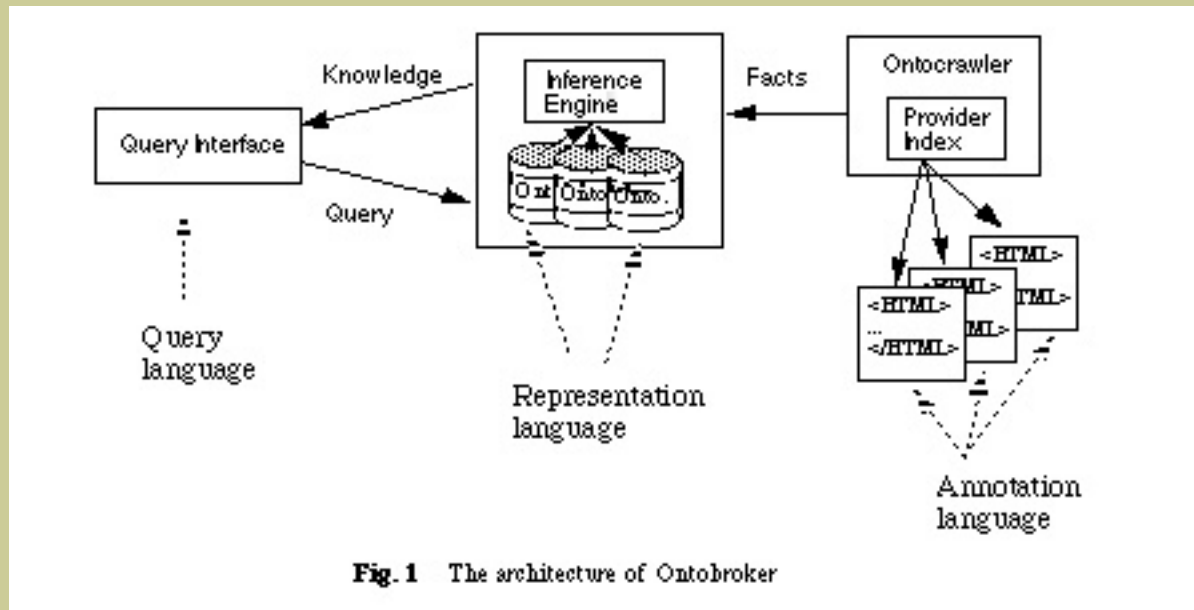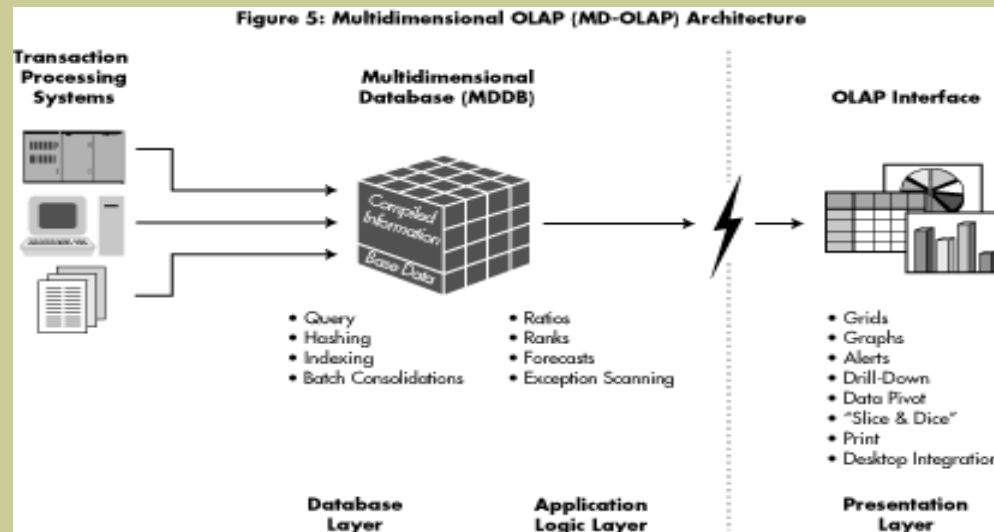## – Example. The Ontobroker

Fig. 1 The architecture of Ontobroker

– Example: Microstrategy's Relational OLAP

- *(*OLAP (online analytical processing) enables a user to easily and selectively extract and view data from different points-of-view. – *GuruNet)*

Figure 5: Multidimensional OLAP (MD-OLAP) Architecture

- Database
  - Data management
  - Metadata

- Data Management
  - Data warehouses – transaction data
  - Knowledge warehouses – qualitative data
  - Data and knowledge bases. eg:
    - Lessons Learned (National Security Agency)
    - Things Gone Right/Wrong (TGRW) (Ford)
    - Best Practices

- Ontologies
  - "An ontology is an explicit specification of a conceptualization" – *O'Leary, 1998*
  - Examples:
    - Taxonomy
    - Shared vocabularies
  - Centralized vs. distributed ontologies

- Metadata - is data about data
  - eg. Dublin Core - *Weibel, et.al., 1998*
  - in HTML as meta tags. *Kunze, 1999*
 - as referring to independent objects. *Denenberg et.al. 1996*

- Input
  - Content
  - Locating Knowledge
  - Automatic input vs manual
  - Categorization of input
  - Review or refereeing

- Content
  - Product information and attributes
  - Domain knowledge - conditions of satisfaction
  - Customer knowledge
  - Content tagging and template creation aka an information architecture
  - Business rules
  - Intellectual property and asset management
  - Quality control – *Seybold, 1999*

- Locating Knowledge
  - Search Engines and Portals
  - Intelligent Agents (eg. SuperSpider's 'Fetch')
  - Push services (eg. PointCast)

- Automatic - *eg. Dialogue's 'Linguistic Inference'*
  - review underlying information set (spidering)
  - identify and extract concepts fromcollected set
  - identify and recognize user's information need
  - correlate need with recognized concepts
  - interact with the user to refine their interest

Automatic (continued)

- Eg. Tacit's KnowledgeMail
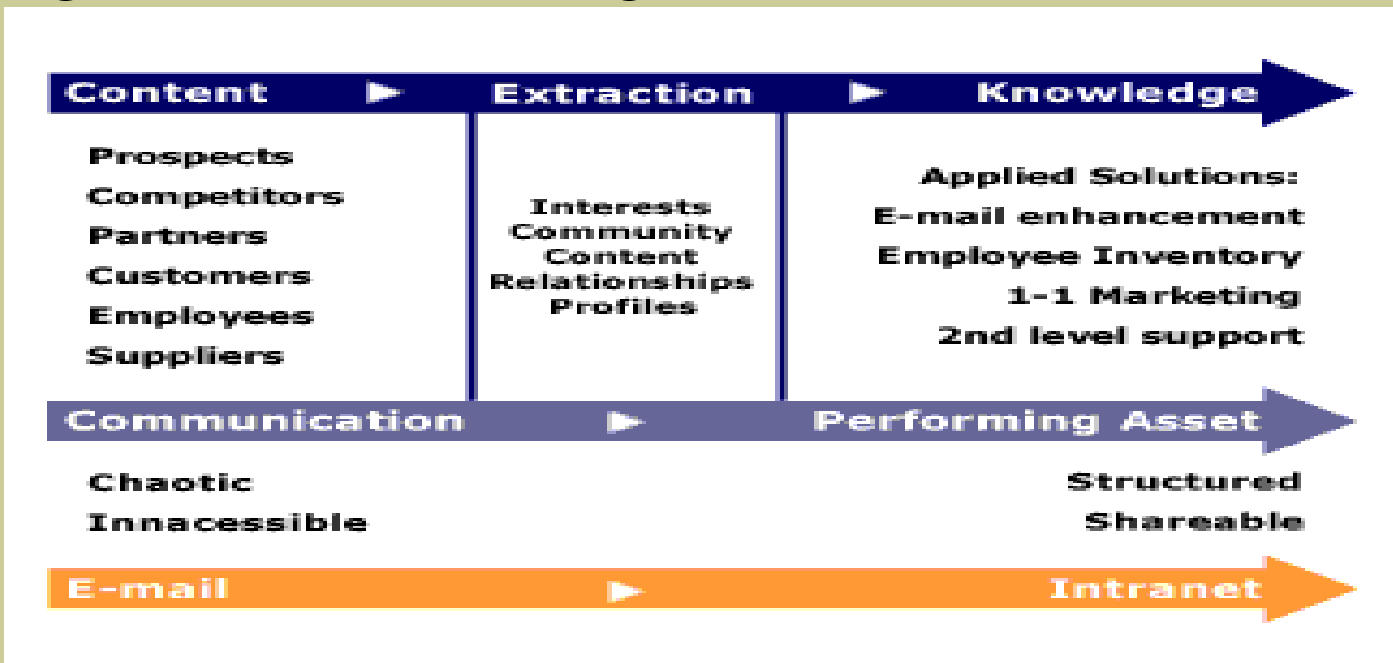
- Review or Refereeing (aka filtering)
  - Non-filtered (eg. discussion lists)
  - Manually Filtered (eg. referees)
  - Mechanically Filtered (eg. grapeVine)
    - Problem of defining importance
    - Shows need for individually customized filtering

- Categorize - methodologies *(Murray, 2000)*
  - Manual tagging
  - Keyword
  - Linguistics (field values extracted by text)
  - Concept-based (statistical techniques to distil content)
   - *Quoted from Goldstein, 1999*

- Output
  - Portals
  - Visual or Graphical
  - Visualization Models
  - Human Readable vs Machine Readable
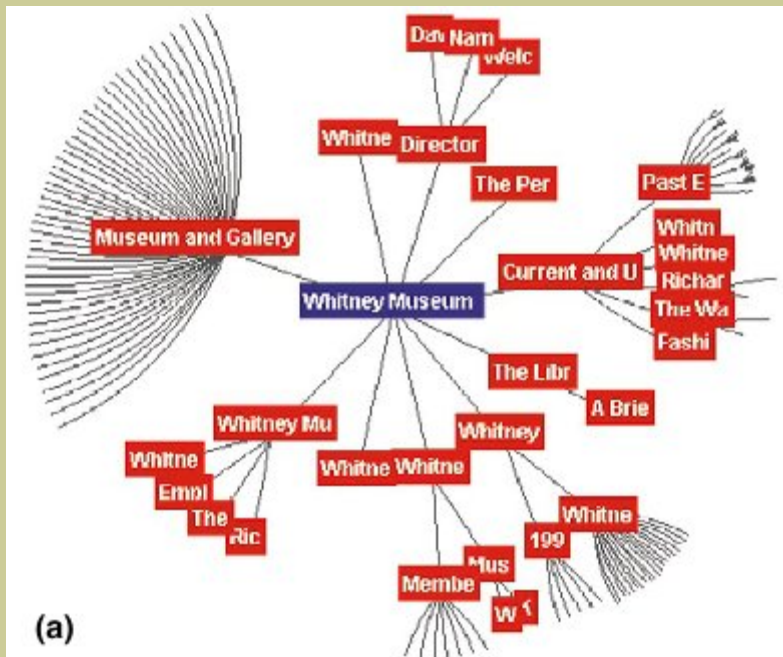 - Multiple Output formats

- Portals
  - Definition: a window, courtesy of the basic web browser, into all of an organization's information assets and applications. *source: Merrill Lynch Research Report*
  - A shopping mall for knowledge workers *source: Patricia Seybold Group White Paper*

- Corporate Portal Content Examples:
  - corporate face book
  - meeting room scheduling
  - skills data base
  - organization chart
  - lunch menu – *Goldstein, 1999*

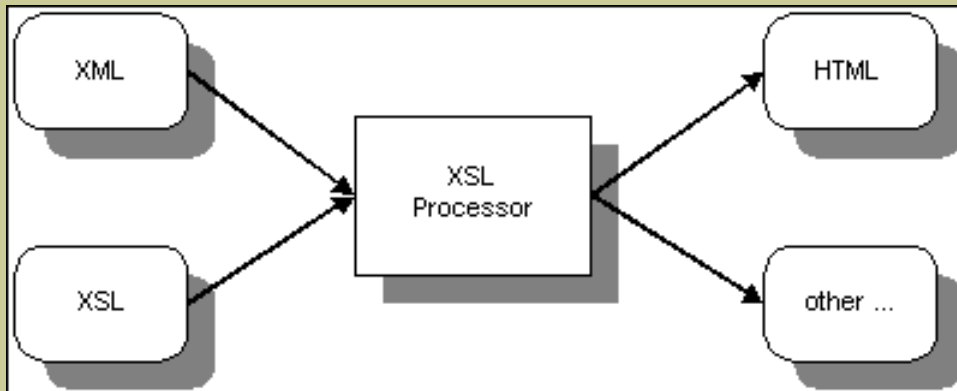# Visual or Graphical

- EDGAR (U.S. Securities and Exchange)
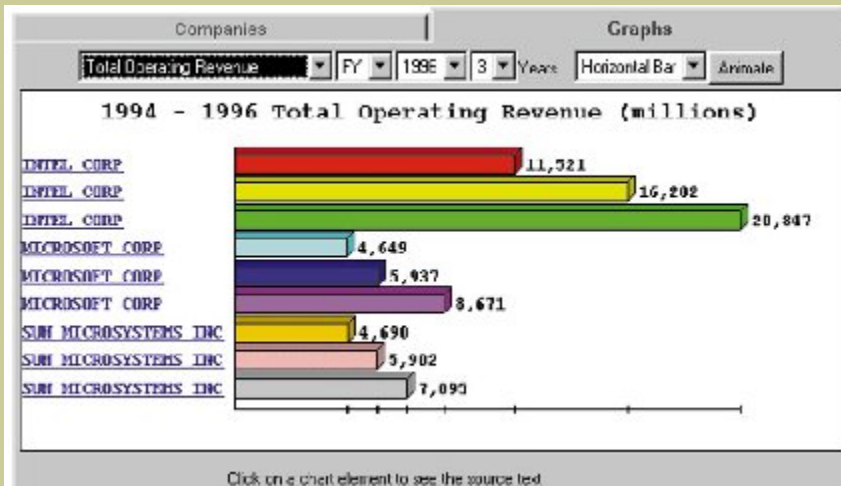
Visualization Models

– Eg. InXight's "Summary Server"

- Human Readable vs Machine Readable
  - Human Readable
    - Eg. Case Specific – help files
  - Machine Readable
    - Eg. Expert systems

Multiple Output Formats
  - Eg. XML+XSL

- Database Driven Multiple Outputs