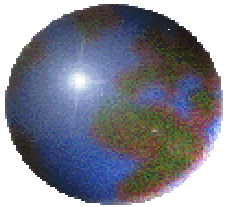




UNIVERSITI TEKNOLOGI MALAYSIA
The Discovery University



“Enabling Technology for the Creation and Sharing of Knowledge”

Prof. Dr. Ahmad Zaki Bin Abu Bakar
Faculty of Computer Science & Information Systems
Universiti Teknologi Malaysia

**PPM/PSZ Conference on Knowledge Management in the Digital
World**

Puteri Pan Pacific Hotel, Johor Bahru
22-24 October 2001



What are the enabling technologies for the creation and sharing of knowledge?





Why do organizations need to create and share knowledge ?

Is Information Communication Technology (ICT) a critical component in this endeavour?



"The computer is merely a tool in the process. To put it in editorial terms, knowing how a typewriter works does not make you a writer. Now that knowledge is taking the place of capital as the driving force in organizations worldwide, it is all too easy to confuse data with knowledge and information technology with information."

- Peter Drucker (1995)



Rationale for Knowledge Sharing & Creation

- Competitive pressures reduce size of work force that holds valuable business knowledge.
- Reductions in staffing create need to replace informal knowledge with formal methods.
- Amount of time available to experience and acquire knowledge has diminished.
- Market places are increasingly competitive & rate of innovation is rising.
- Early retirements & increasing mobility of work force lead to loss of knowledge → must manage expertise turnover effectively.
- There's a need to manage increasing complexity as small operating companies are trans-national sourcing operations.
- Changes in strategic direction may result in the loss of knowledge in a specific area.



Key Components of Your Virtual Workplace





Forces Shaping Business Today

● They include:

- Globalization
- Competition
- Information as a key resource
- The virtual workplace and telecommuting
- Electronic commerce
- Knowledge worker computing.



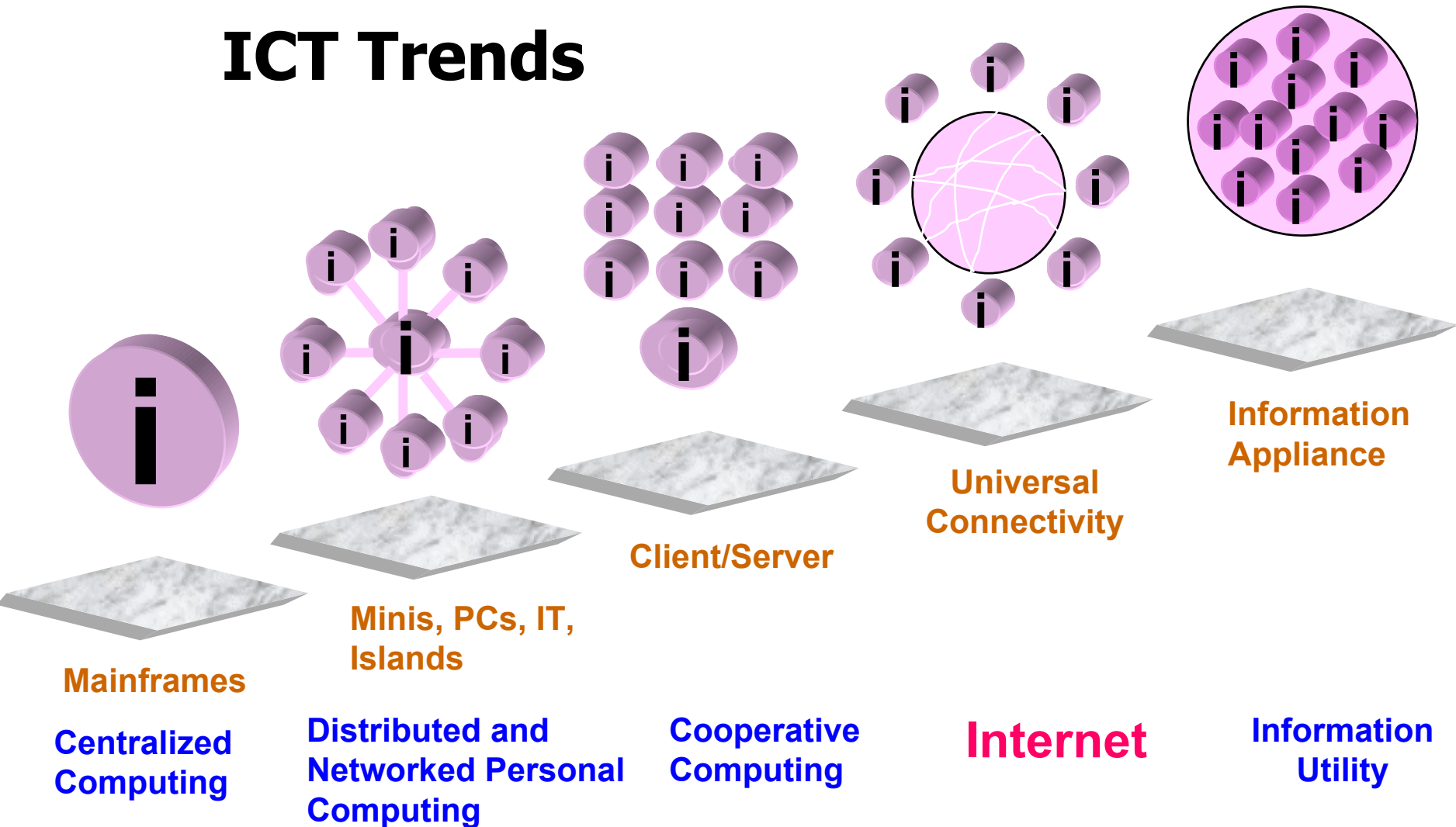
Generally, aim of Knowledge Management strategy is to use ICT to capture what people in the organization know, to share it within the organization and to create new knowledge.



Organization's formal and informal activities have resulted in information explosion.



ICT Trends

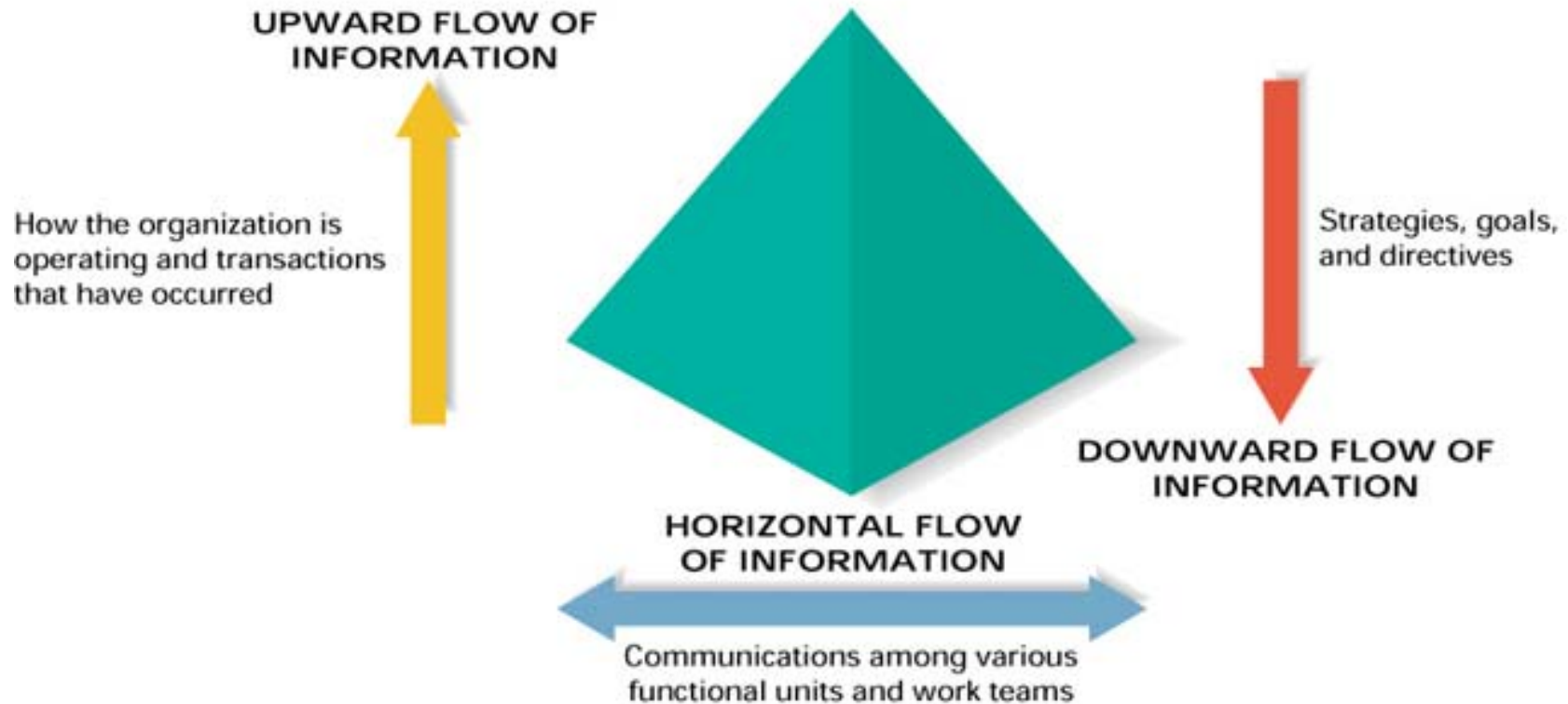


1960's and 1970's

2000 and Beyond

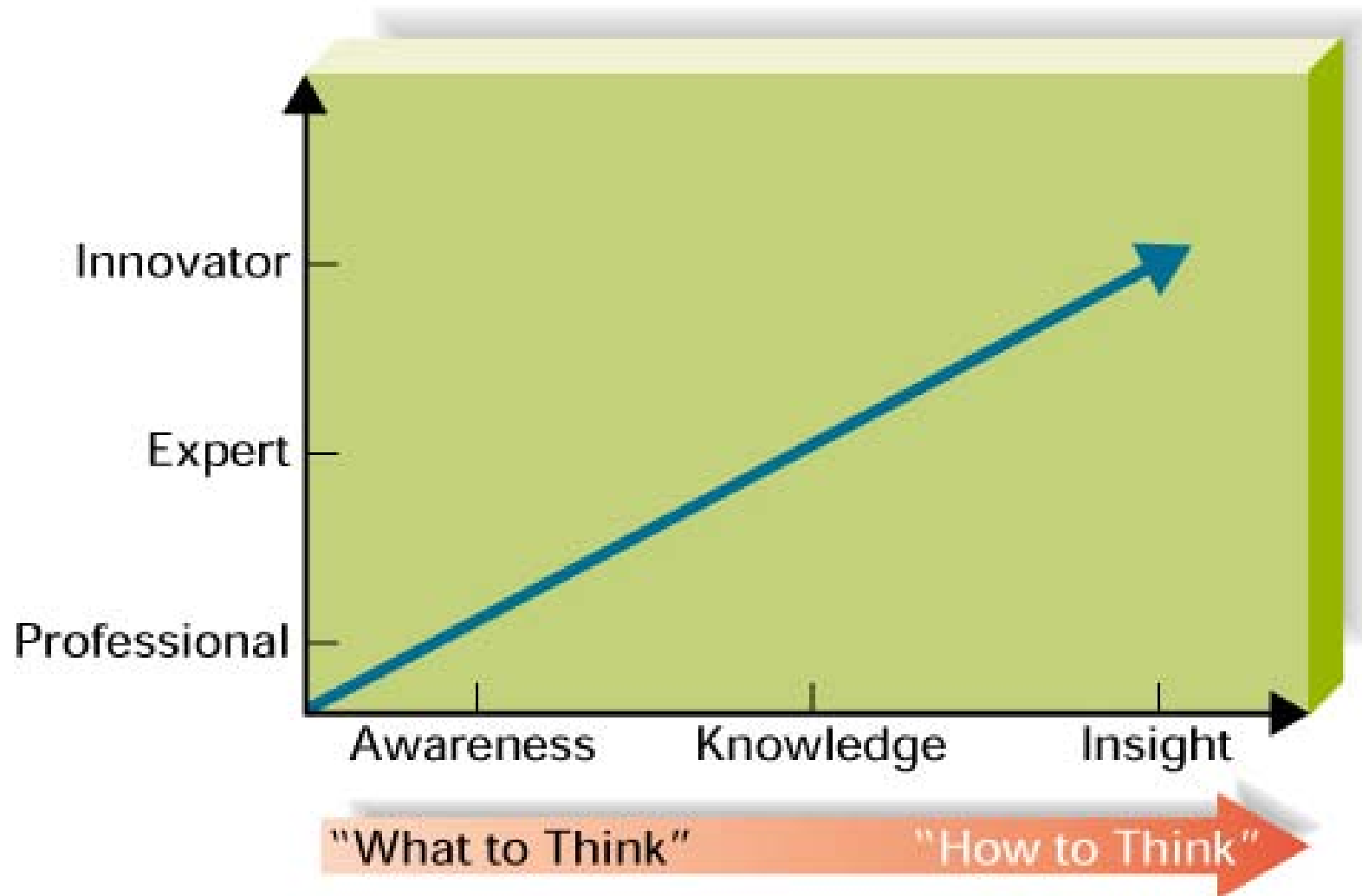


The Flow of Information in an Organization





Levels of Information Literacy





Knowledge Characteristics

- Knowledge is messy
- Knowledge is self-organizing
- Knowledge seeks community
- Knowledge travels via language
- The more you try to pin knowledge down, the more it slips away
- Looser is probably better
- There is no one solution
- Knowledge doesn't grow forever
- No one is in charge
- You can't impose rules and systems
- There is no silver bullet.
- How you define knowledge determines how you manage it

Verna Allee
(1997)



Technology components should be designed to do the following: ...1

- ❖ Assist people in creating and acquiring knowledge by interacting, recording failures and documenting successes.
- ❖ Support efforts to convey tacit knowledge into explicit knowledge.
- ❖ Identify and remove hurdles to best practice and skills transfer
- ❖ Support the rapid delivery of the right knowledge to the right person at the right time (If it is possible!)



...2

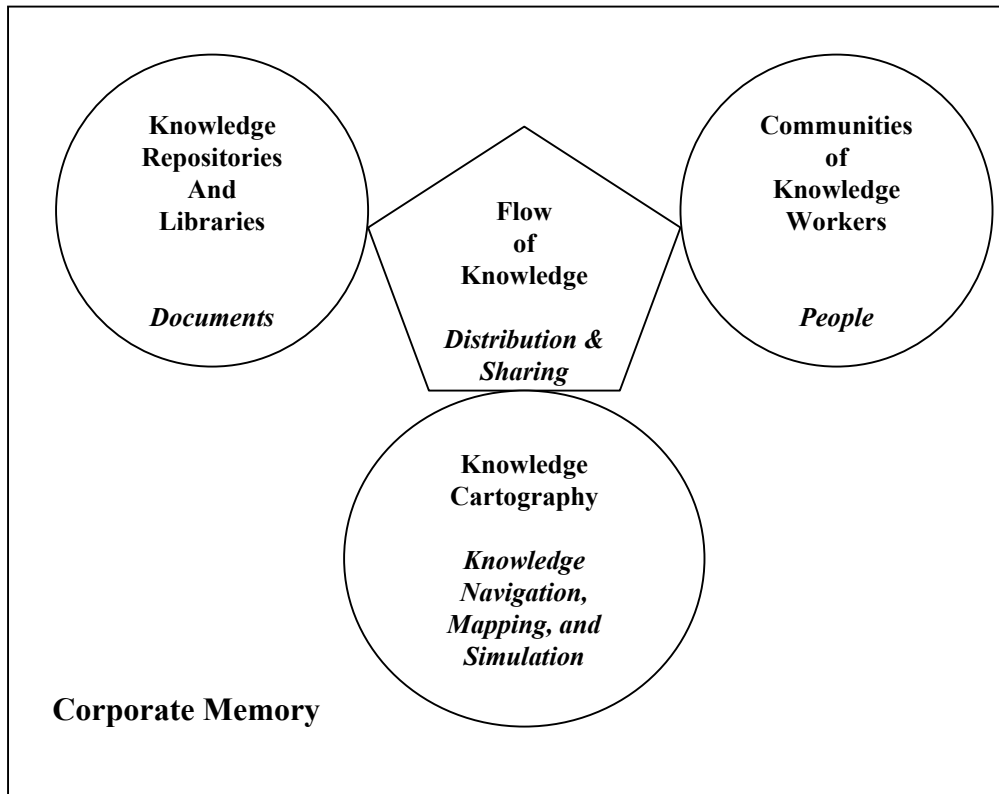
- ❖ Assist with the indexing, screening, classifying, aggregating, synthesizing, cataloging, and otherwise organizing of knowledge.
- ❖ Enable the package, delivery, and storage of knowledge.
- ❖ Support the importation of knowledge from outside the firm.
- ❖ Support communication and networking among employees.
- ❖ Assist with what-if analysis



Knowledge Management System Architecture

● Applehans et al (2001)

- **People:** Those who produce and those who use knowledge that will be the basis for action.
- **Content:** The flow of data, information, and knowledge important to the success of the business.
- **Technology:** The technical infrastructure that enables the capture, storage, and delivery of content to those who need it when they need it.



Borghoff and Pareschi (1998) of Xerox



Tiwana's KMS 7 layers

- ❖ Interface layer
- ❖ Access and Authentication layer
- ❖ Collaborative Filtering and Intelligence layer
- ❖ Application layer
- ❖ Transport layer
- ❖ Middleware layer and Legacy Integration layer
- ❖ Repositories



Tiwana's (2000) 10-step road map

- Analyze the existing infrastructure
- Align knowledge
- Design the knowledge management infrastructure
- Audit existing knowledge assets and systems
- Design the knowledge management team
- Create the knowledge management blueprint
- Develop the knowledge management system
- Prototype and deploy
- Manage the change, culture, and reward structures
- Evaluate performance, measures ROI (return on investment), and incrementally refine the knowledge management system



Western & Eastern KM Approach

- Hirotaka Takeuchi (1998) : "As we have seen, the focus in the West has been on (1) explicit knowledge, (2) measuring and managing existing knowledge, and (3) the selected few carrying out knowledge management initiatives. This bias reinforces the view of the imply as a machine for information processing. What at Western companies need to do is to "unlearn" their ng view of knowledge and pay more attention to (1) tacit knowledge, (2) creating new knowledge, and (3) one in the Organization be involved. Only then can the ization be viewed as a living organism capable of creating continuous innovation in a self-organizing manner."



Western knowledge management systems

- ✚ Normally insensitive to diversity of culture and languages of the world
- ✚ Most knowledge management systems are monolingual & is in English
- ✚ Biased towards the American culture.

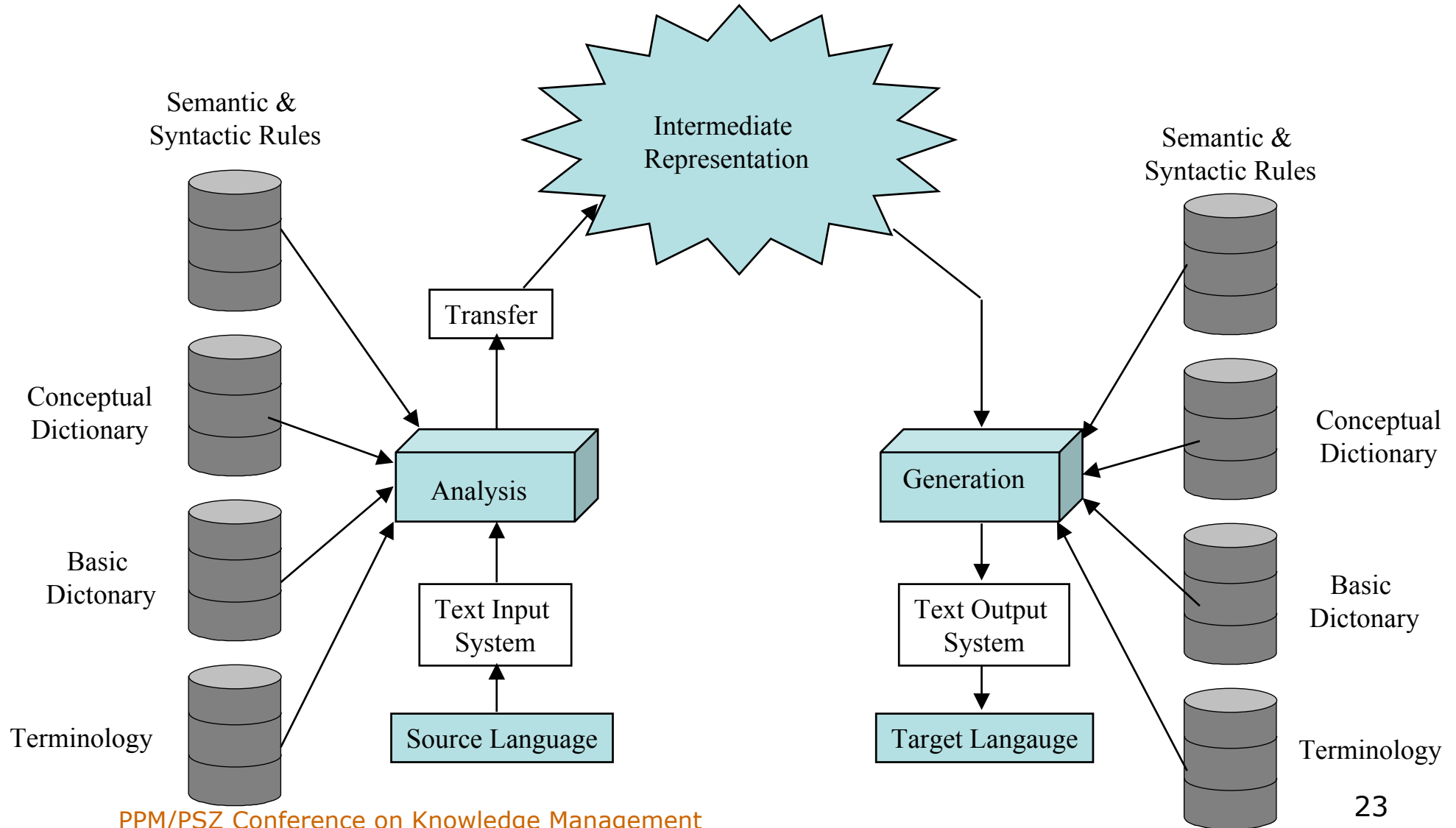


Eastern KM Features

- ❖ Inclusion of Computer Translation systems & other Natural Native Language-based Interfaces
- ❖ Search engines based on native languages are useful tool to find documents in a database or native language repository
- ❖ Any KMS architecture must include cultural and language components to be successful and effective in a truly global environment



Machine Translation





MALAY NLP

