



Managing Data

All the value of this company is in its people. If you burned down all our plants, and we just kept our people and our information files, we should soon be as strong as ever.

Thomas Watson, Jr. Former chairman of IBM

Individual data management

- ✦ Individual internal memory is limited
- ✦ External memory extends internal memory

Calendar

☀ Organizing principles

- ◆ Set amount of space
- ◆ Ordering
- ◆ Rapid access



Address book

✦ Organizing principles

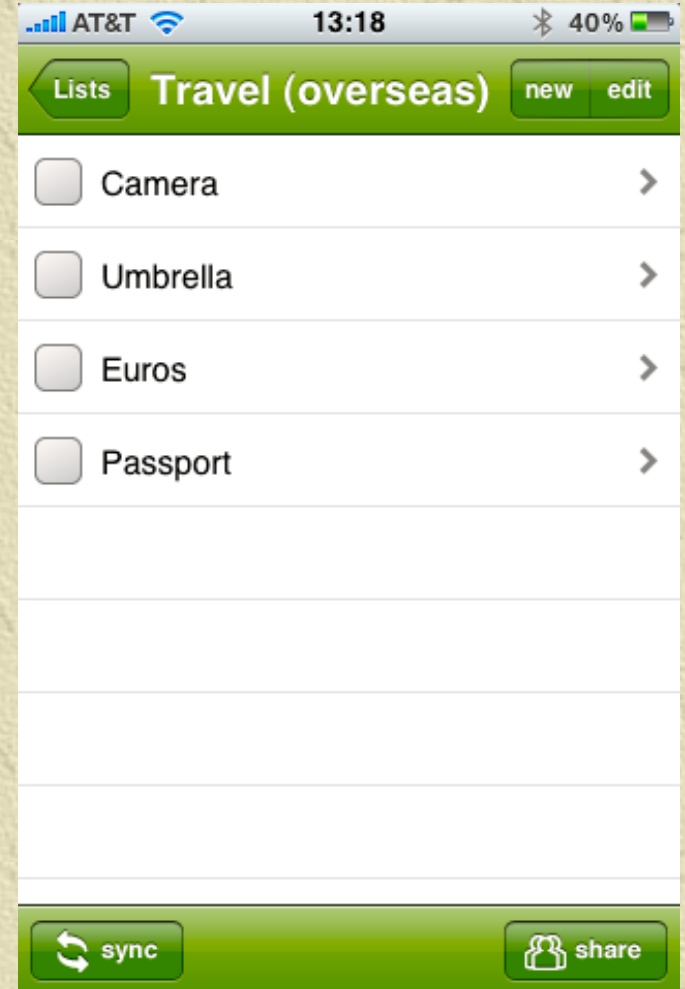
- ◆ Pre-formatted storage space
- ◆ Ordering
- ◆ Rapid access

A screenshot of an iPhone's 'New Contact' form. The status bar at the top shows 'AT&T', signal strength, Wi-Fi, location services, the time '13:18', and a 39% battery level. The form has a blue header with 'Cancel', 'New Contact', and 'Done' buttons. The main form area is light blue and contains several input fields: 'add photo' (with a camera icon), 'First', 'Last', and 'Company' (all in white boxes); 'mobile Phone', 'ringtone Default' (with a plus icon), 'home Email', and 'home page URL' (all in white boxes); and 'add new address' (with a plus icon) at the bottom.

To do list

✦ Organizing principles

- ◆ Structure
- ◆ Rapid scan support



Comparison of data management systems

Internal

- ◆ Small
- ◆ Fast for limited retrieval
- ◆ Convenient

External

- ◆ Large
- ◆ Slow for limited retrieval
 - Overhead of using a device
- ◆ Need to have handy

Much smaller creatures than humans could not develop the complexity necessary for intelligence; much larger ones would be limited by the time it takes information to travel across their brains

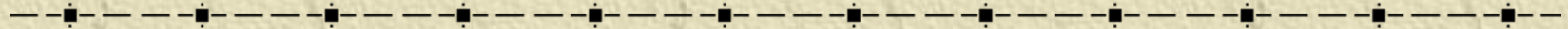
Organizational data management

- ✦ Organizations, like people, need to remember many things
- ✦ Deciding where and how to store data frequently involves a trade-off
- ✦ Organizational data are used by a variety of information systems

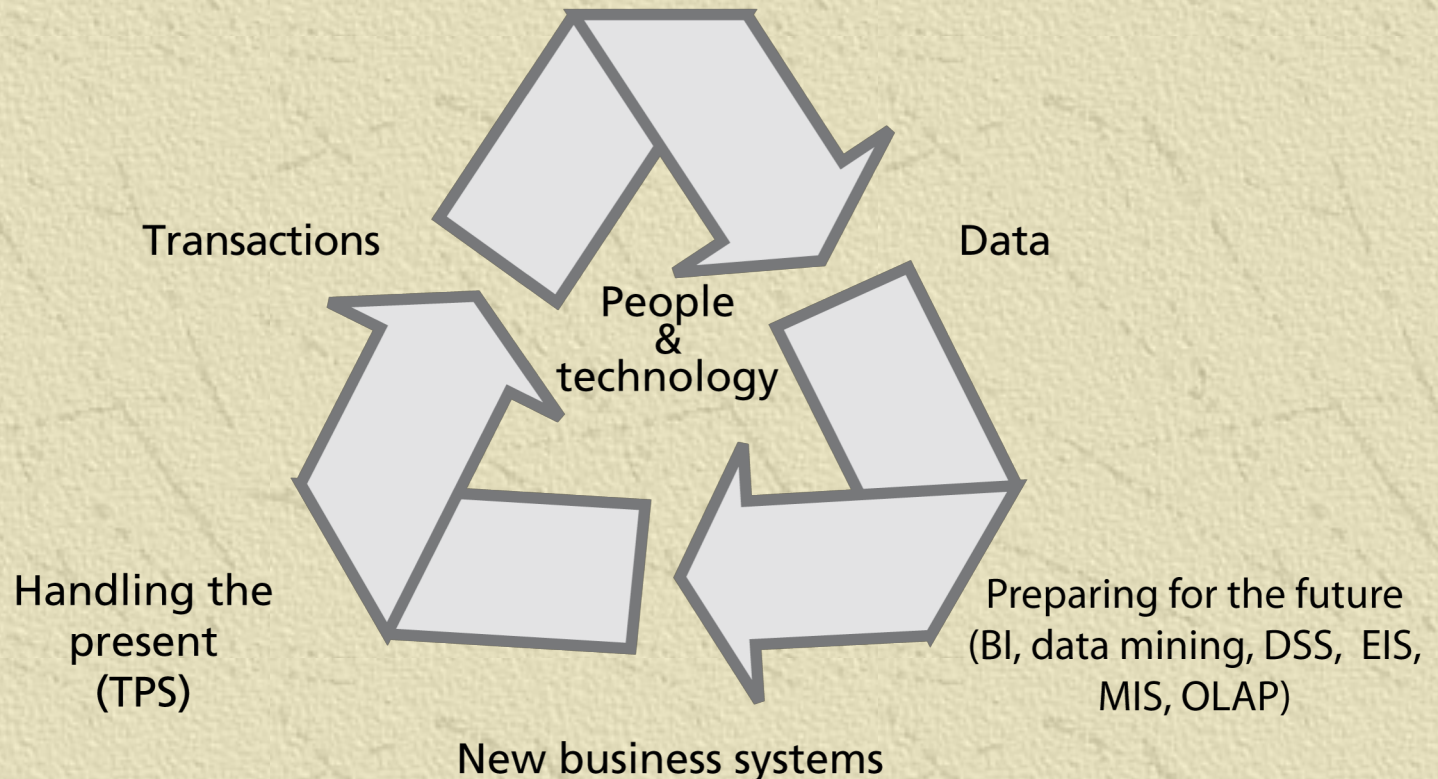
Types of information systems

Type of IS	System's purpose
TPS	Transaction processing system: Collects and stores data from routine transactions
MIS	Management information system: Converts data from a TPS into information for planning, controlling, and managing an organization
DSS	Decision support system: Supports managerial decision making by providing models for processing and analysing data
EIS	Executive information system: Provides senior management with information necessary to monitor organizational performance, and develop and implement strategies
OLAP	Online analytical processing: Presents a multidimensional, logical view of data
Data mining	Uses statistical analysis and artificial intelligence techniques to identify hidden relationships in data
BI	Business intelligence: Systems for gathering, storing, analyzing, and accessing data to improve decision-making

The information systems cycle



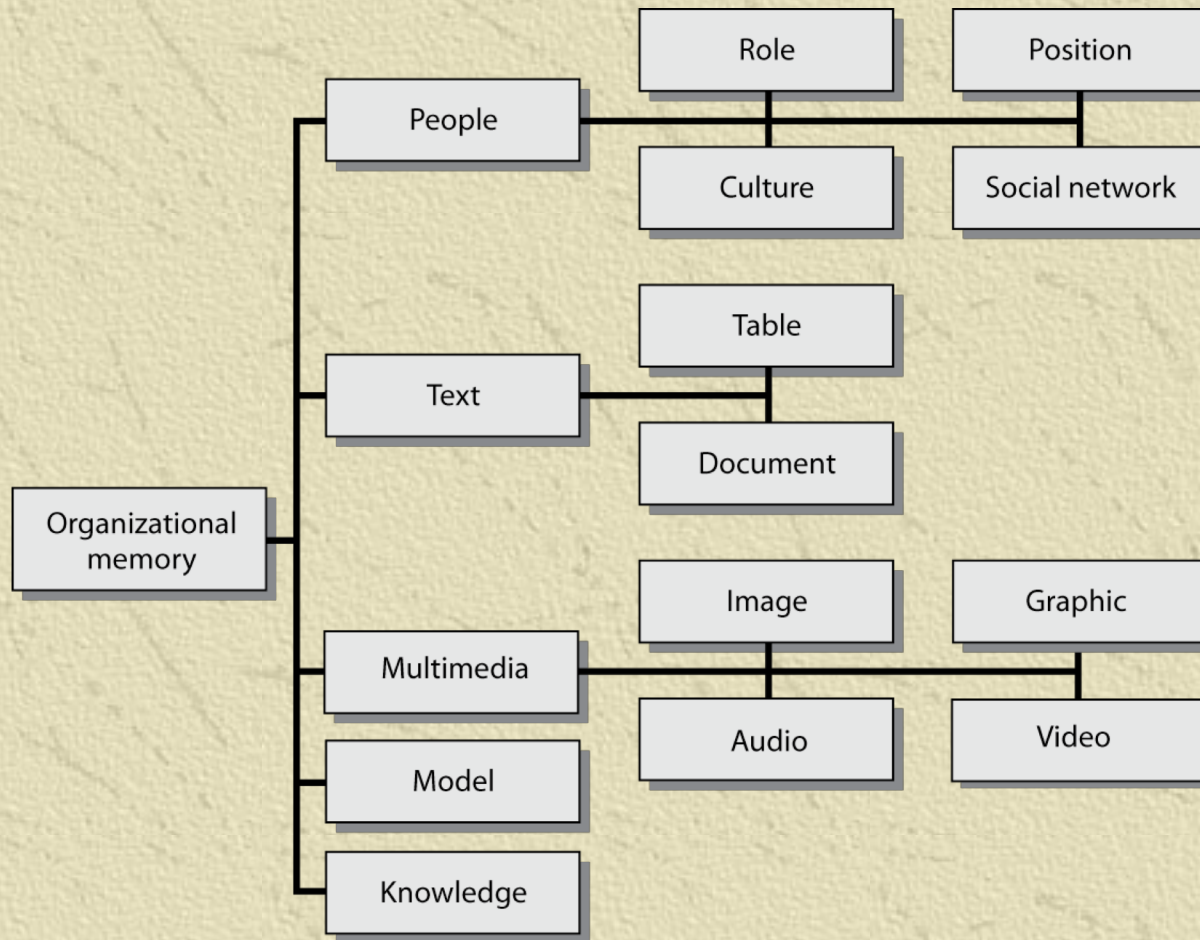
Remembering the past
(databases and data warehouse)



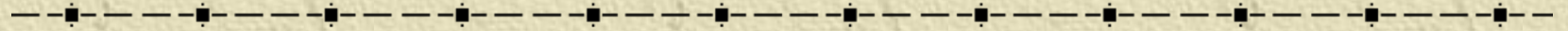
Desirable attributes of a data management system

- ✦ Shareable
- ✦ Transportable
- ✦ Secure
- ✦ Accurate
- ✦ Timely
- ✦ Relevant

Components of organizational memory



People



✦ The linchpin

- ◆ Create, maintain, evolve, and use organizational memory

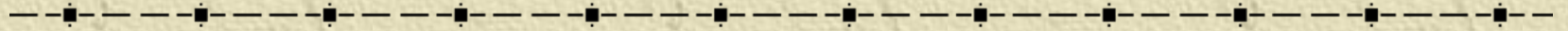
✦ Role and position

✦ Organizational culture

✦ Social networks

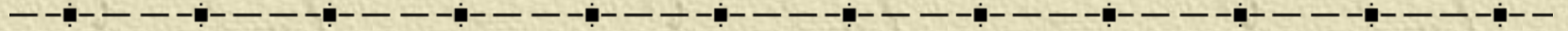
✦ Standard operating procedures

Table



Product	Price
Pocket knife - Nile	4.50
Compass	10.00
Geo positioning system	500.00
Map measure	4.90

Content Management



- ✦ Reports
- ✦ Manuals
- ✦ Brochures
- ✦ Memos
- ✦ Letters
- ✦ Email

Multimedia Management

✦ Images

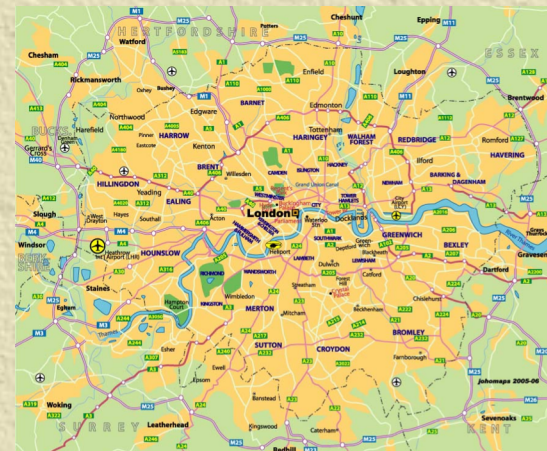
✦ Graphics

✦ Audio

✦ Video

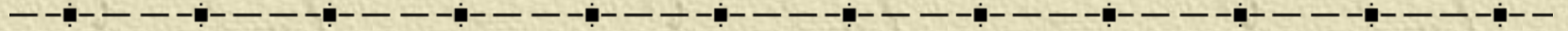


Image



Graphic

Models



Decision support systems

- ◆ Mathematical models
- ◆ Spreadsheets

Decisions

- ✦ Decision making is the central activity of modern organizations
- ✦ Minutes of a meeting
 - ◆ Usually not an audit trail of decisions
- ✦ Reusable decisions
 - ◆ Take advantage of past deliberations

Specialized memories

✦ Smells

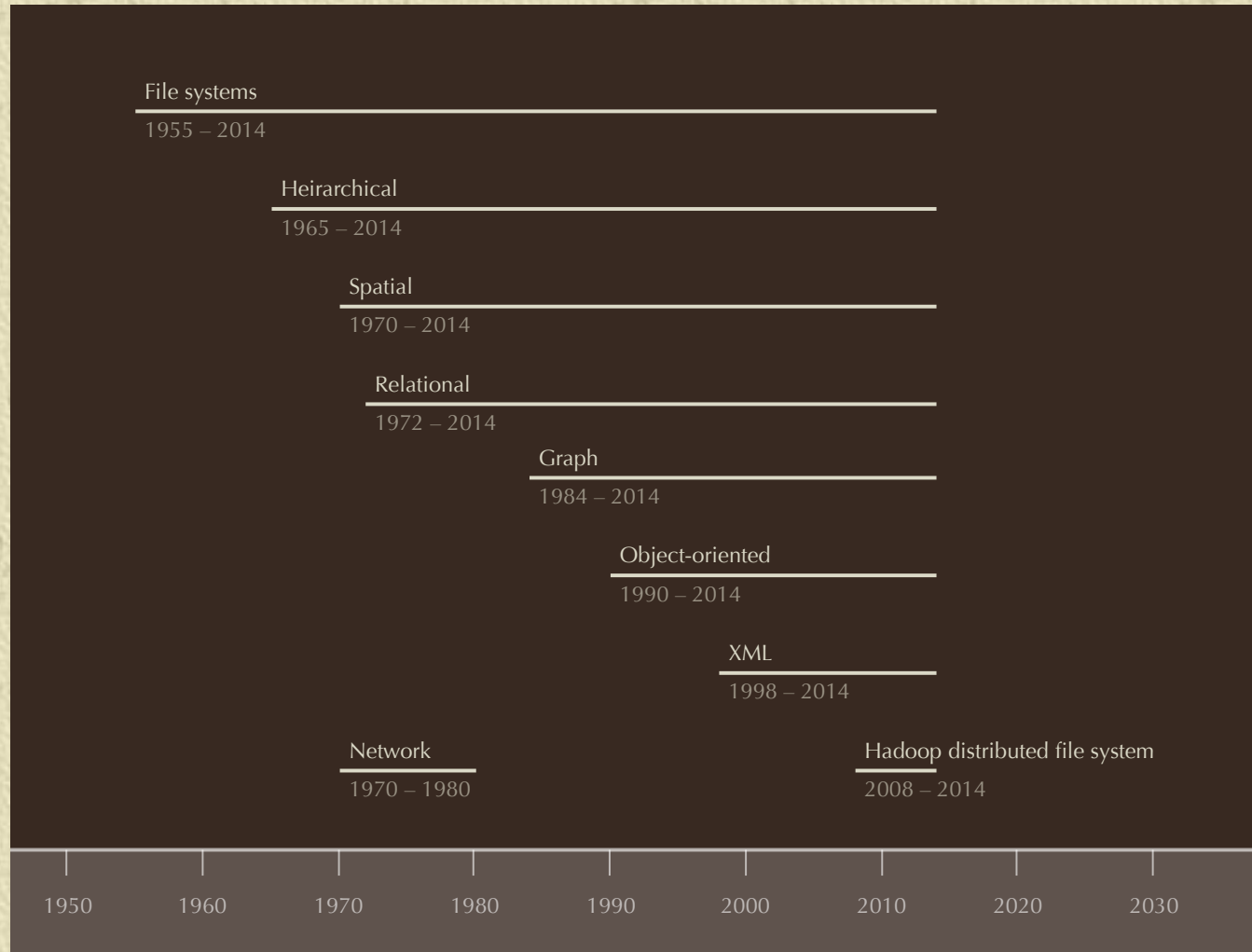
✦ Colors



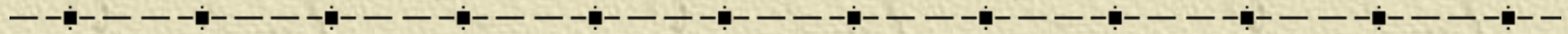
Problems with data management systems

- ✦ Redundancy
- ✦ Lack of data control
- ✦ Poor interface
- ✦ Delays
- ✦ Lack of reality
- ✦ Lack of data integration

Data management systems timeline

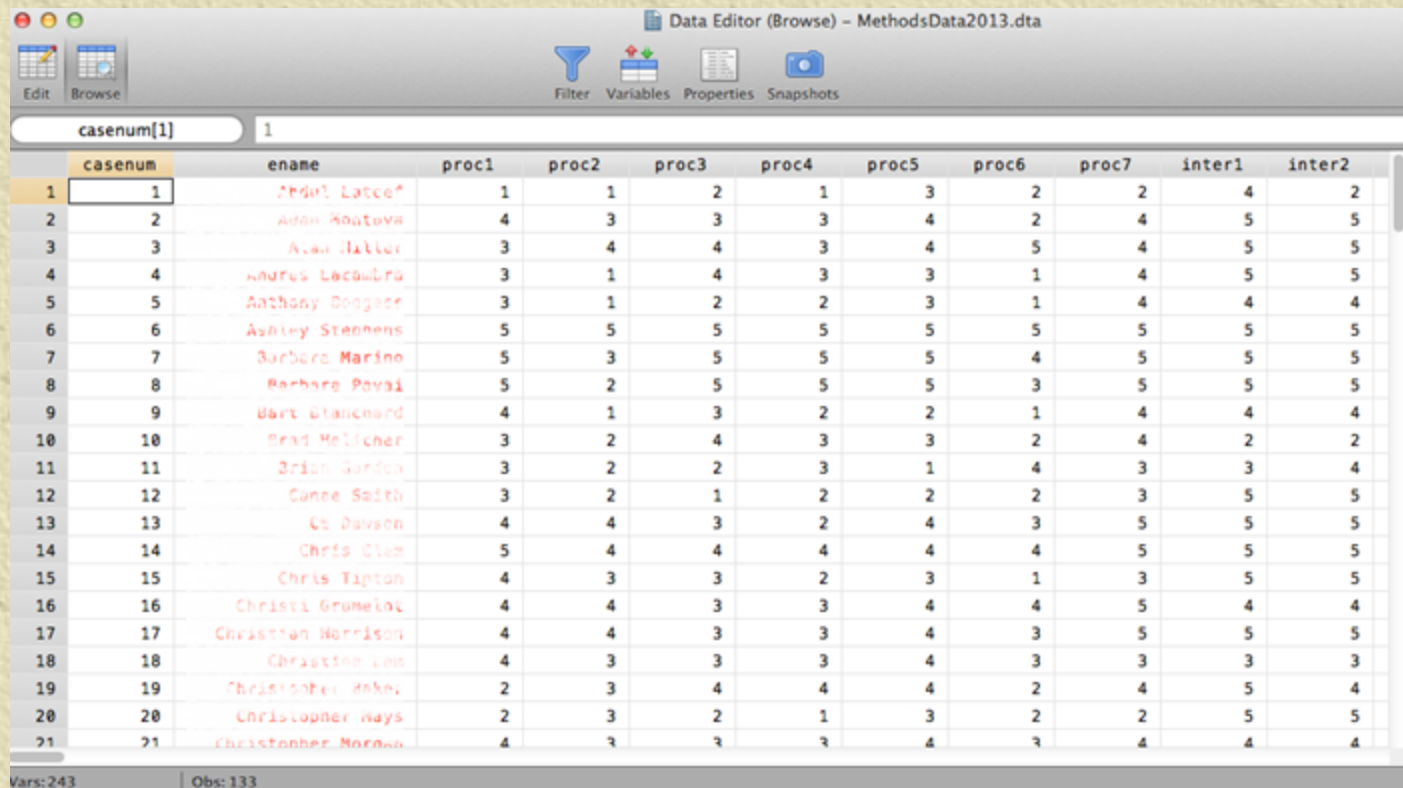


Data, information & knowledge



Data

- ◆ Raw, unsummarized, and unanalyzed facts

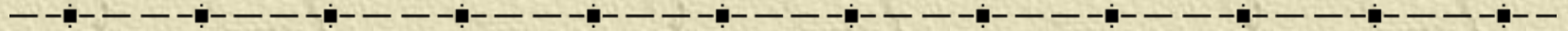


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3	3	Alan Miller	3	4	4	3	4	5	4	5	5
4	4	Andres Lecoubro	3	1	4	3	3	1	4	5	5
5	5	Anthony Doggier	3	1	2	2	3	1	4	4	4
6	6	Ashley Stephens	5	5	5	5	5	5	5	5	5
7	7	Barbara Marino	5	3	5	5	5	4	5	5	5
8	8	Barbara Poval	5	2	5	5	5	3	5	5	5
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18	18	Christine Lam	4	3	3	3	4	3	3	3	3
19	19	Christopher Baker	2	3	4	4	4	2	4	5	4
20	20	Christopher Wags	2	3	2	1	3	2	2	5	5
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Data, information & knowledge



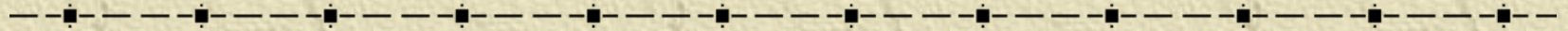
Information

- ◆ Data processed into a meaningful form
- ◆ One person's information can be another's data

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(obs=126)
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Data, information & knowledge



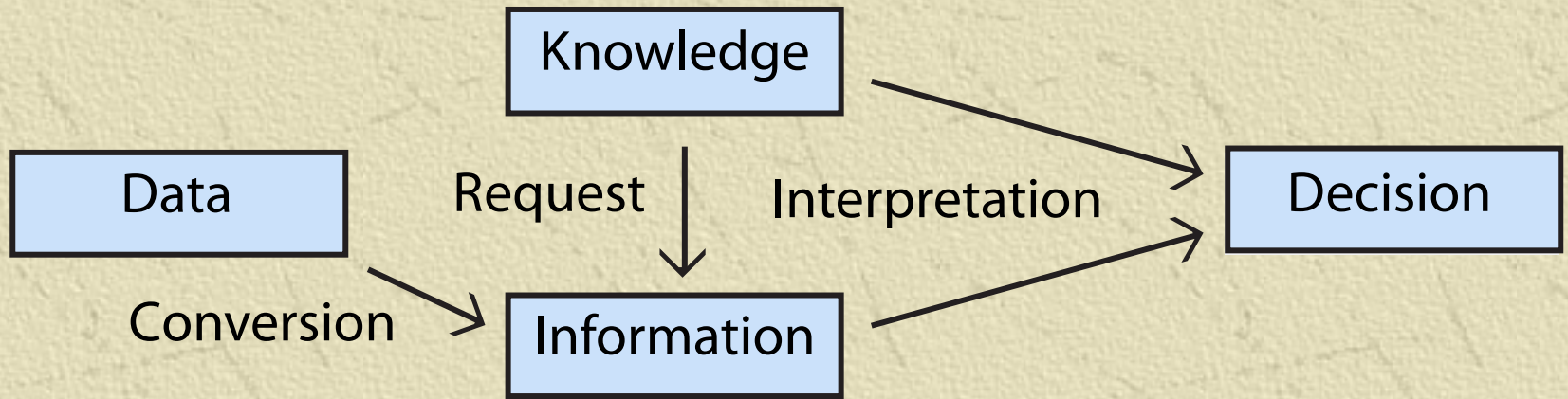
Knowledge

- ◆ Knowing what information is required
- ◆ Knowing what the information means

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Data, information & knowledge



The challenge

- ✦ Organizations that effectively use data, information, and knowledge are more successful
- ✦ The challenge is to develop data management and exploitation skills across an organization
- ✦ Many organizations do not make effective use of the data they already have
- ✦ Data management is an enduring problem for nearly all organizations and societies