Electronic Business Systems

School of Engineering & Design

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Topics Today
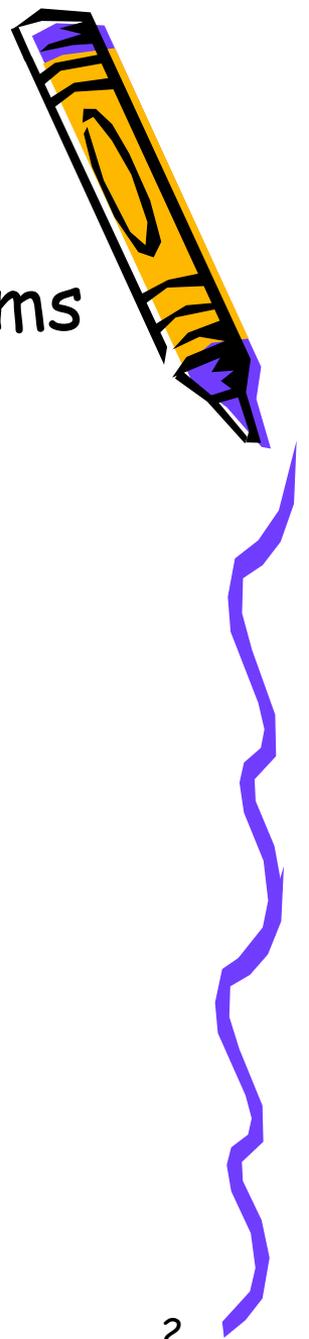
- Electronic Business Models from Systems Perspective

- Systems Theory

- Electronic Business Systems and Their Life-Cycle
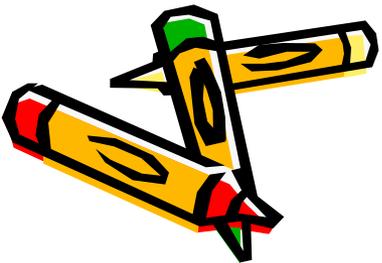
Systems Thinking
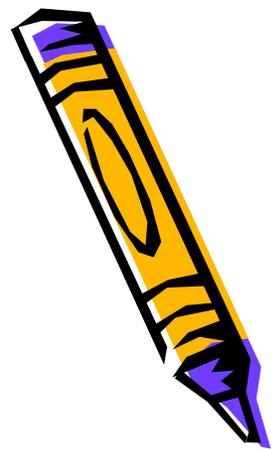
We will use Systemic metaphors to establish a platform for *creative* and *organised* thinking
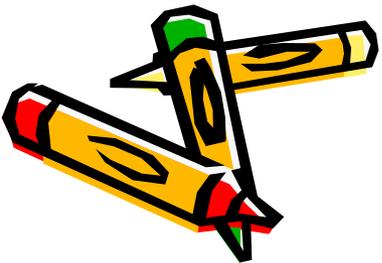
Systems Definition
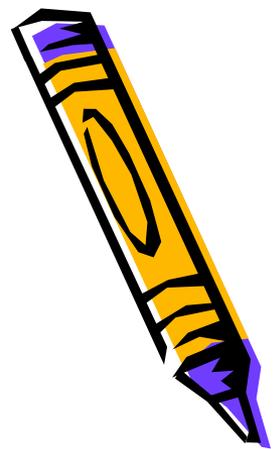
A set of interacting elements that seek a common goal

Input → Process → Output

Process
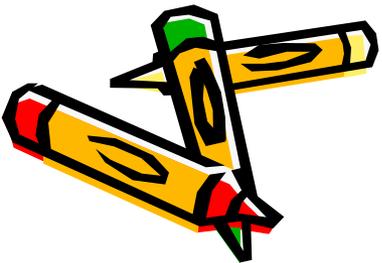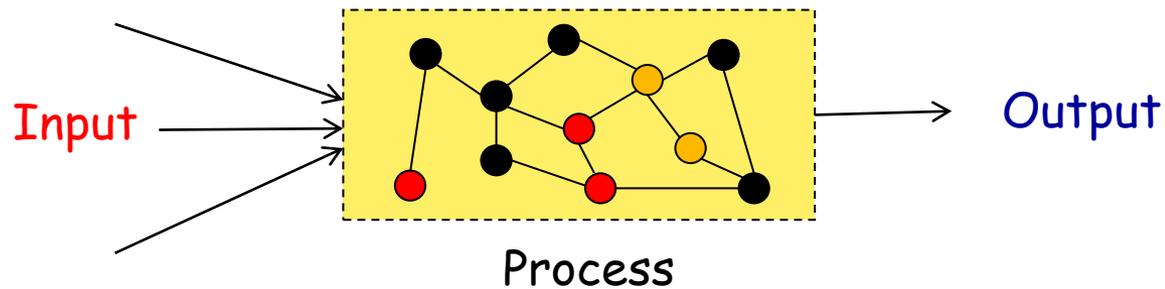
Schools of Thought

1. Mechanists (Closed System)

2. Organists (Open System)

3. Holists (Viable/Sustainable System)
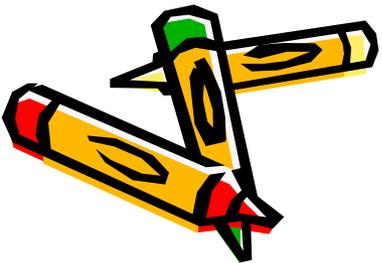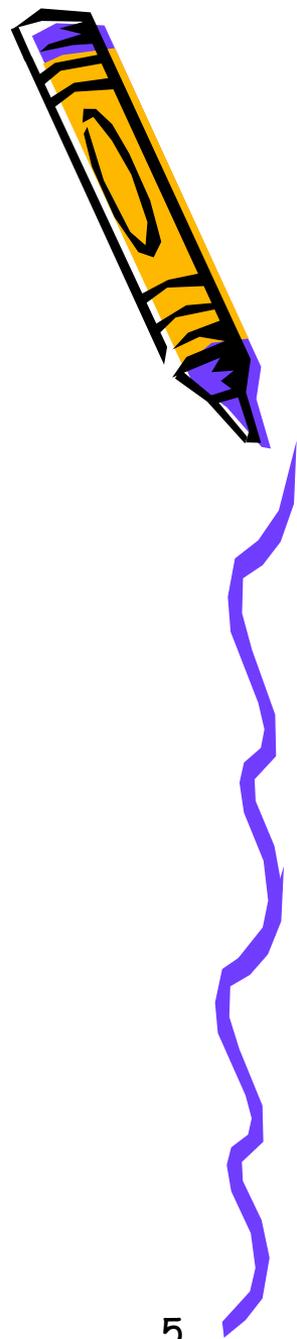
Mechanists

- System is an **Aggregation of Parts**
- **Whole** equals to **sum of parts**
- Standard parts with **well defined interrelationships**
- Emphasis on **Performance**
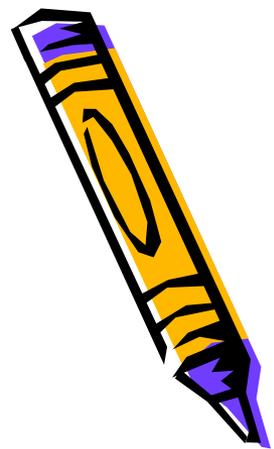
Closed System (Mechanistic)

Mechanical System
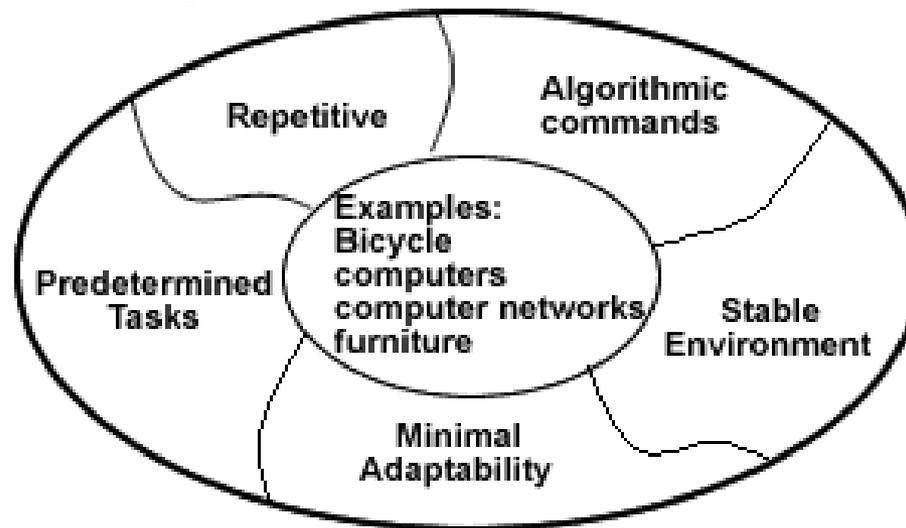
Figure 3.1: Main characteristics of "closed systems"

Organisation from Mechanists Perspective

- Theories of **Bureaucracy** by Webber and **Scientific Management** by Taylor

Mechanistic Interpretation of Organisations

Challenges by Human Science and relations theorists
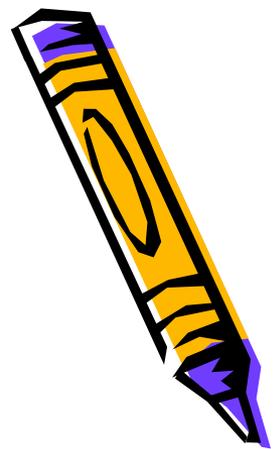
- Respect for **social** and **psychological** needs improves *efficiency* **and** *effectiveness* of operations and processes

The Organists described a systems as a set of interlinked elements with

Synergetic Properties

Darwinian adaptability and survival of the fittest

Open Systems (Organic)
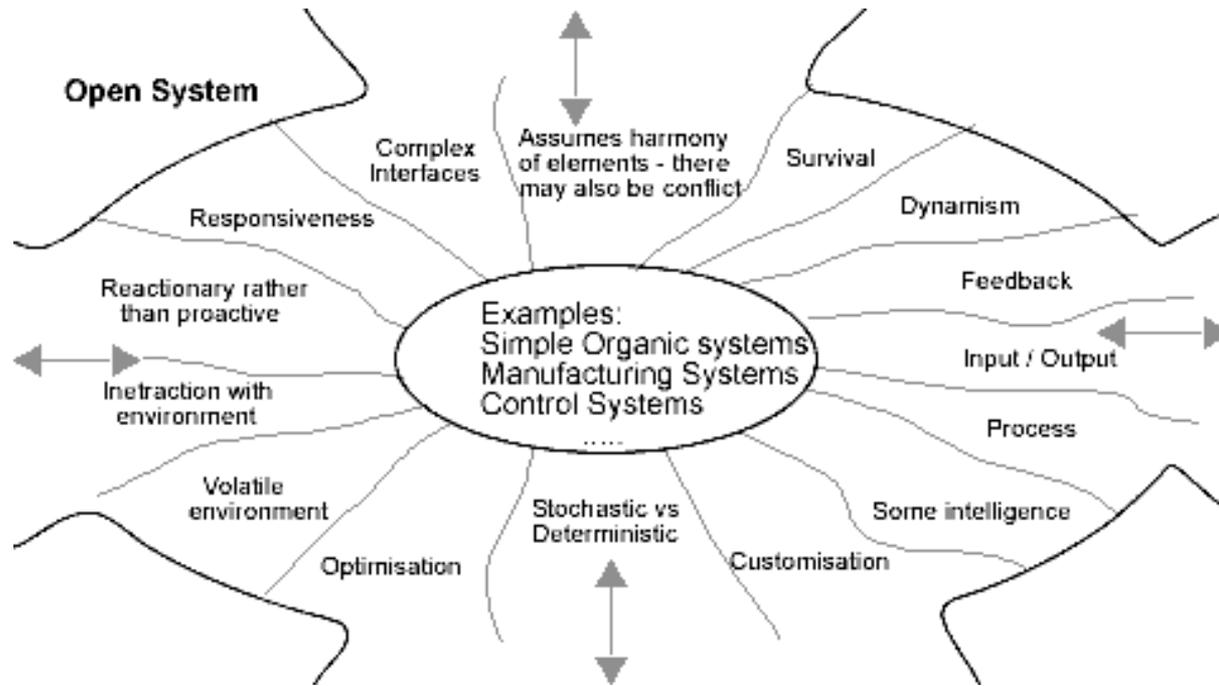
Figure 3.2: Characteristics of "open systems

Viable System (Sustainability)

A Viable System is a set of interacting networks that in addition to their constituent elements govern:

1. **Complex interactions** between functional, socio-economical, cultural and political elements;

2. Emphasise on **active learning and control**; and

3. **Aggressive prediction**
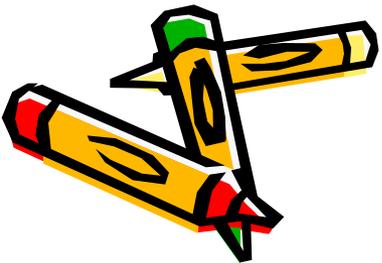
Viable Systems Continued
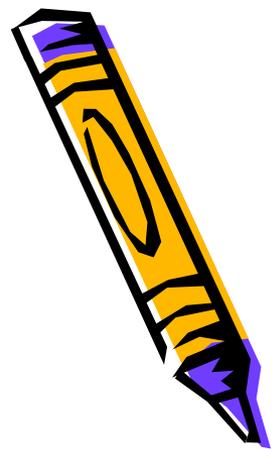
Viable Systems surpass the open systems (organic) adaptability and survival philosophy

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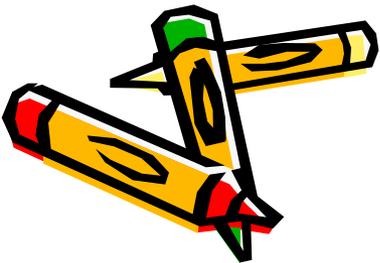
Viable Systems Continued

Viable Systems Focus on:

1. Advanced Data Acquisition

2. Information Processing

3. Sustainability

They not only adapt but change their Environment to their advantage
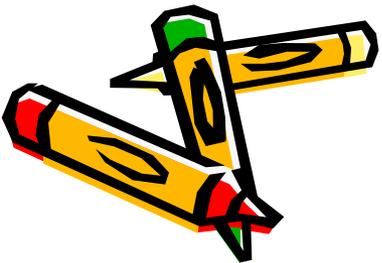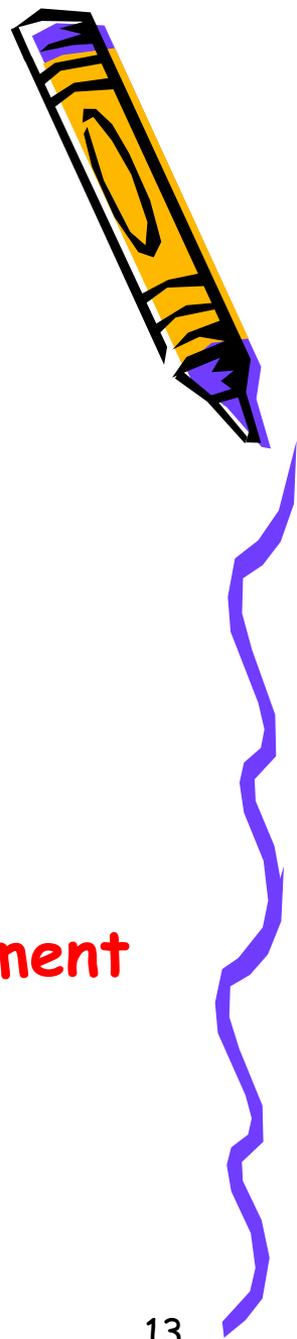
Example of a Viable System

Data Processing Centre
Real-Time & Historical

Decision

Communication Construct
(nervous system)

5 Senses

decision

data process

comm. cons.

sensors
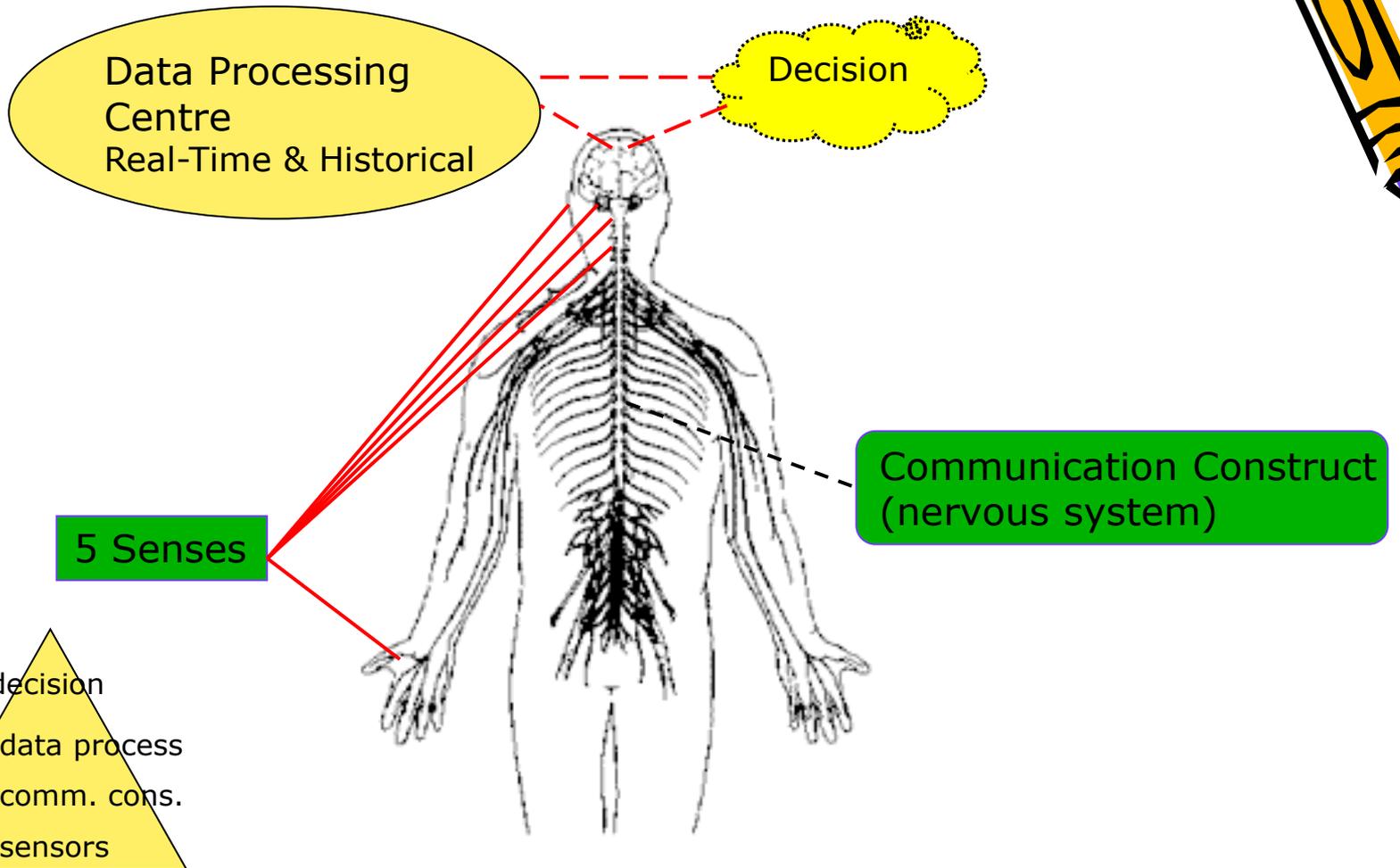
Figure A: A viable system

A Viable Organisation
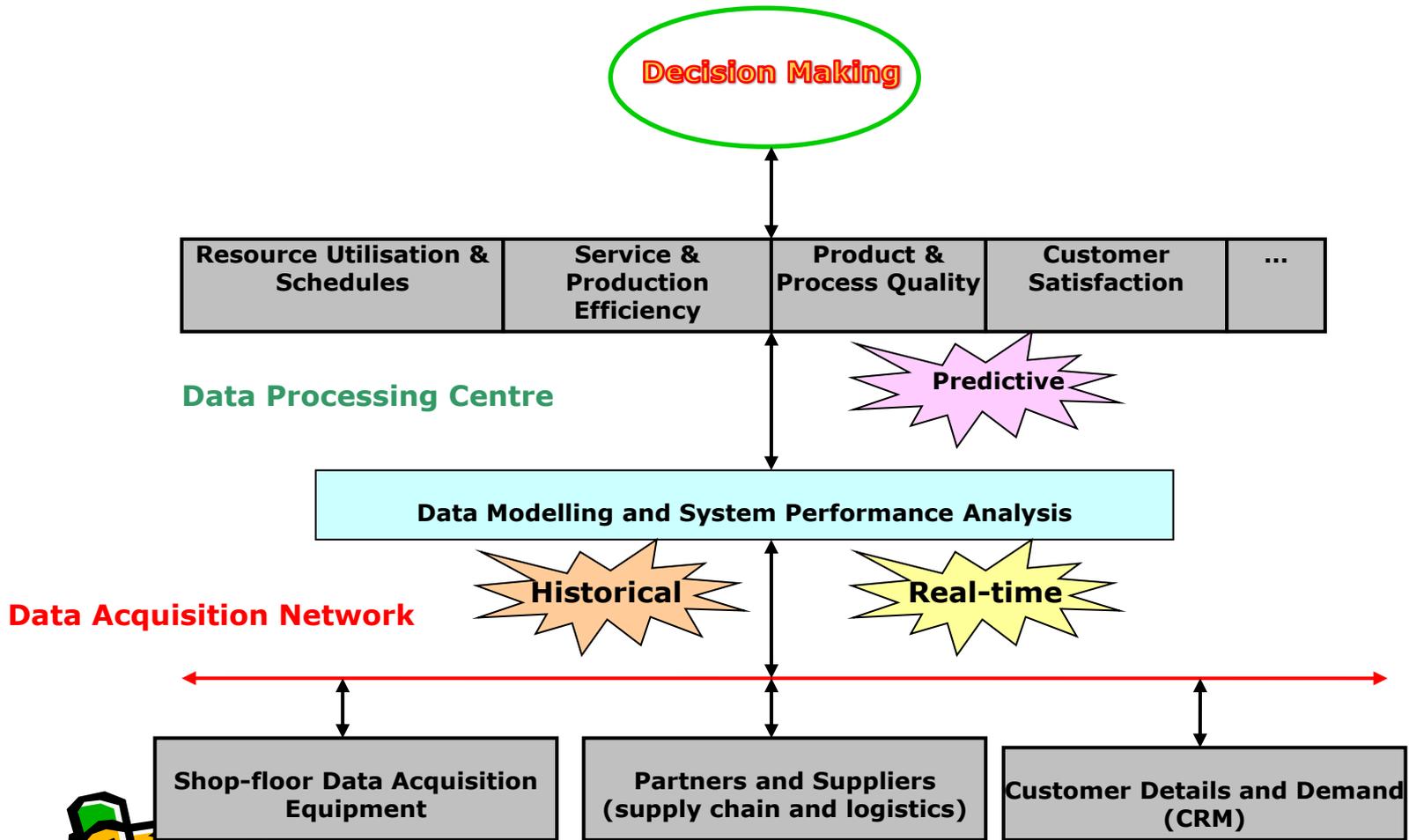
Figure B: The Information Architecture of a Viable Industrial System – SinglX by A. Mousavi et al.

A viable System Expandability and Contractibility

Viable System

Examples:
Enterprise Systems
Research and Development
Electronic Business
Modern Manufacturing Systems
...

Arrows: Learn & adjust (Dynamisim) · Socio-economic Dynamics · Highly Interactive · Uncertainty · Collaboration · Creativity · Highly Customised · Continuous Change · Influences Surrounding · Neurocybernetic Systems · Highly Complex · Value Chains · Highly Intelligent · Agile & Responsive · Viablity

Expandable & Contractable

Figure 3.3: Characteristics of "viable systems"