

# **Information and Communication Technology Management**

**Topic: Artificial Intelligence**

# Artificial Intelligence

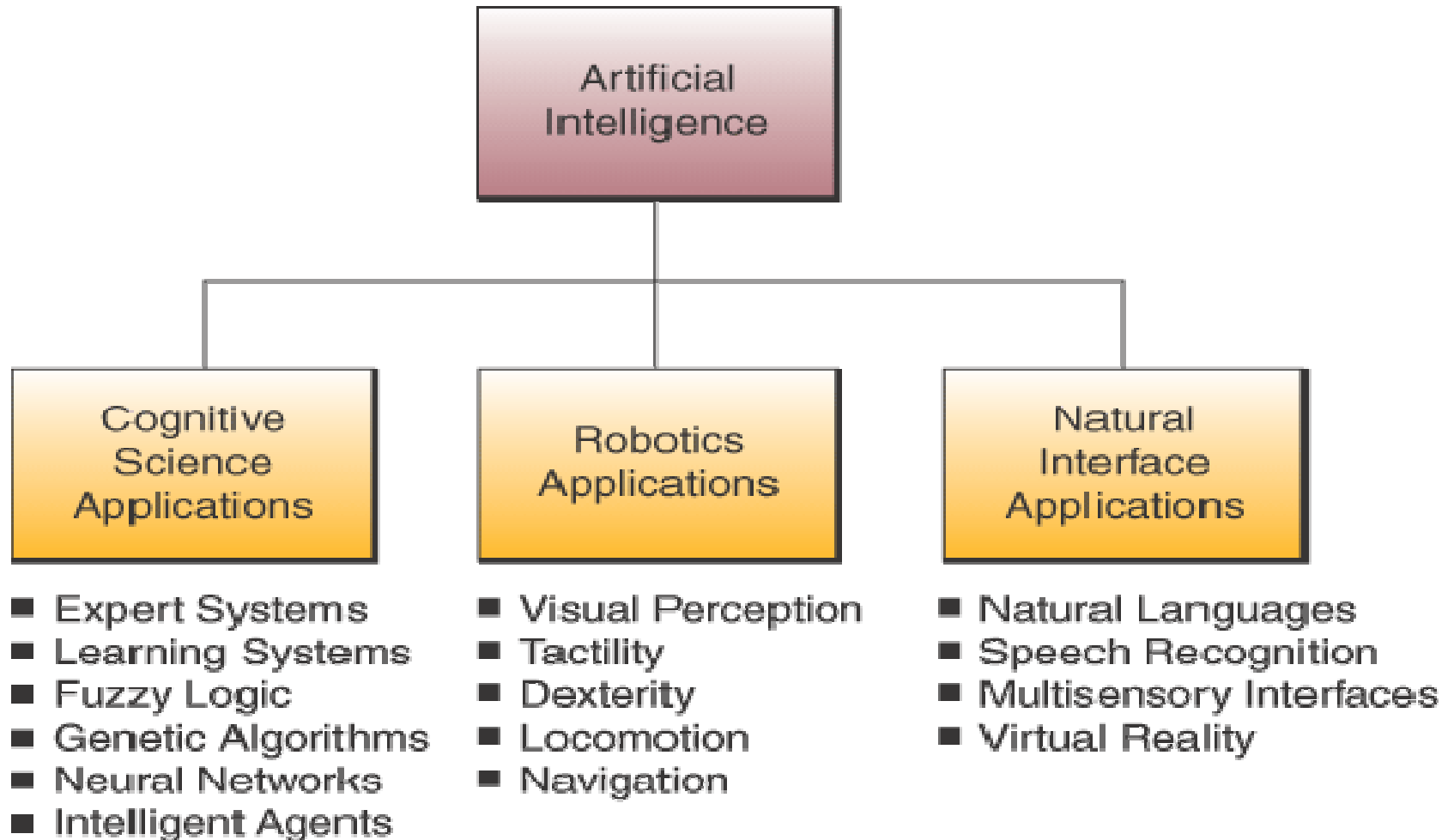
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- ▶ AI is a field of science and technology based on computer science, biology, psychology, linguistics, mathematics and engineering.
- ▶ The goal is to develop computers than can simulate the ability to think and see, hear, walk, talk, and feel as well.



# Artificial Intelligence

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# Artificial Intelligence

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- ▶ **Cognitive Science:** Focuses on how the human brain works and how humans think and learn.
- ▶ **Robotics:** Produces robot machines with computer intelligence and human like physical capabilities.
- ▶ **Natural Interfaces:** Involves research and development in linguistics, psychology, computer science and other disciplines.



# Commercial Applications of AI

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- ▶ Decision Support
- ▶ Information Retrieval
- ▶ Virtual Reality
- ▶ Robotics



# Expert System

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It is a knowledge-based information system.

*Components of an Expert System:*

- Knowledge Base
- Software Resources



# Expert System

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## *Methods of Knowledge Representation:*

- Case-Based
- Frame-Based
- Object-Based
- Rule-Based

## *Expert System Application:*

- Decision Management
  - Diagnostic/Troubleshooting
  - Design/ Configuration
  - Selection/ Classification
  - Process Monitoring/ Control
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# Neural Networks

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- ✓ Computing systems modeled after the brain's mesh-like network of interconnected processing elements (neurons).
- ✓ Interconnected processors operate in parallel and interact with each other
- ✓ Allows the network to learn from the data it processes





# Fuzzy logic

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- ▶ Resembles human reasoning
- ▶ Allows for approximate values and inferences and incomplete or ambiguous data.
- ▶ Used in fuzzy process controllers used in subway trains, elevators, and cars



# Genetic Algorithms

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- ✓ Uses Darwinian, randomizing, and other mathematical functions
- ✓ Simulates an evolutionary process, yielding increasingly better solutions to a problem
- ✓ Used to model a variety of scientific, technical, and business processes
- ✓ Especially useful for situations in which thousands of solutions are possible





# **Business Data Analytics**



# Business Data Analytics

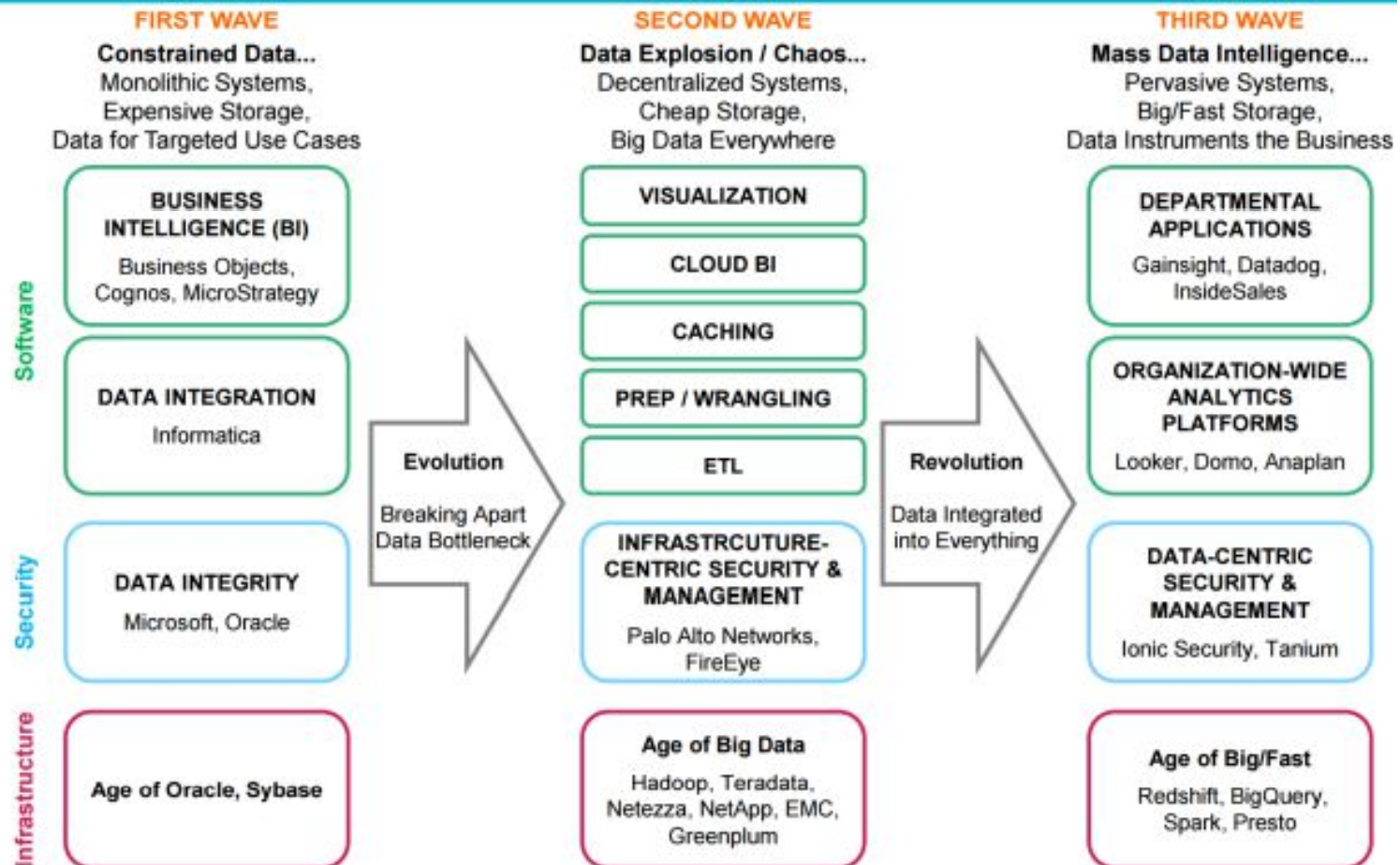
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- ▶ **Descriptive Analytics:** What happened?
- ▶ **Diagnostic Analytics:** Why did it happen?
- ▶ **Predictive Analytics:** What could happen in the future?
- ▶ **Prescriptive Analytics:** How should we respond to those potential future events?



# Business Data Analytics

## Evolution of the Data Platform, 1990 – 2016



# Business Data Analytics

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