DECISION SUPPORT SYSTEM

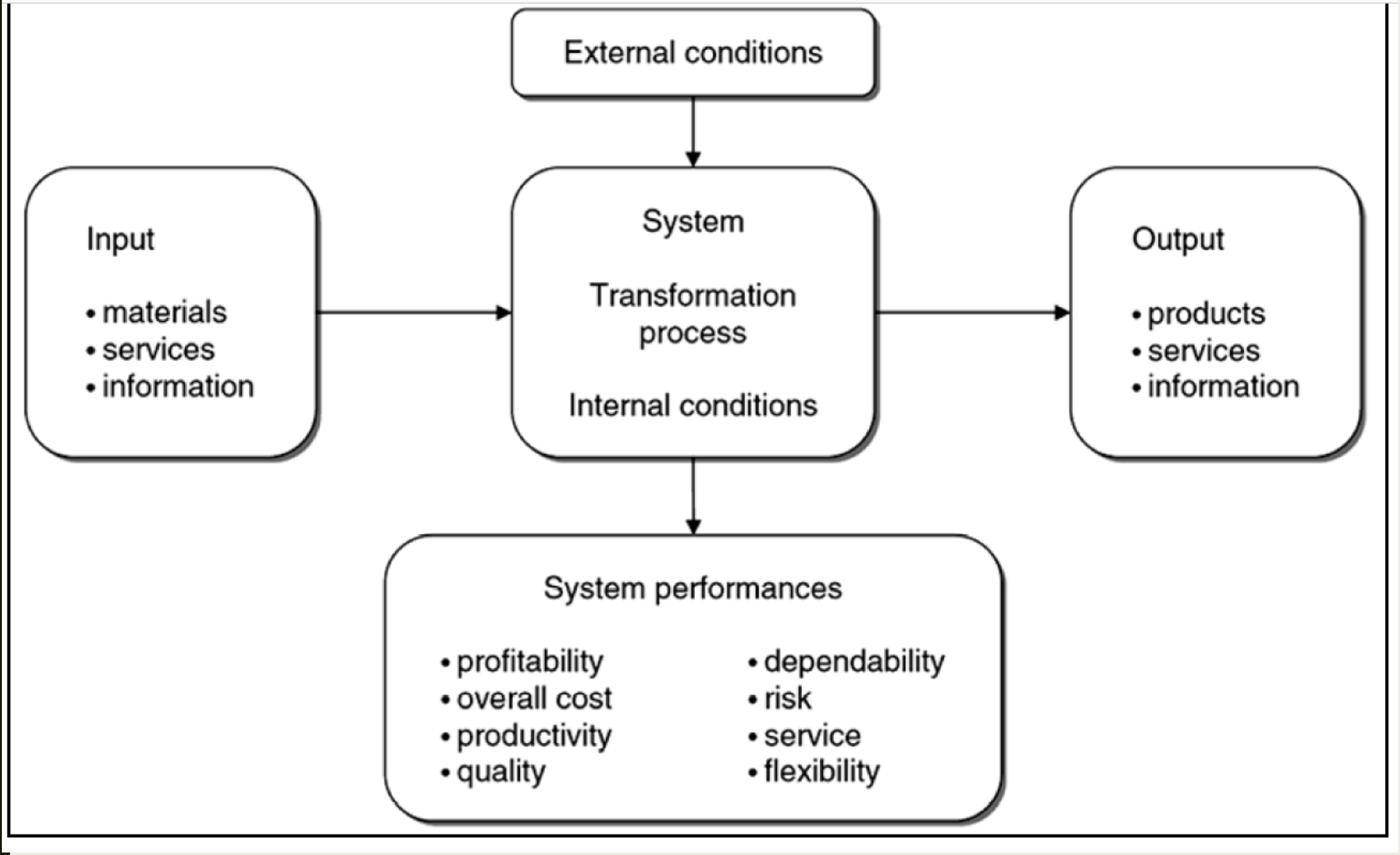
-Sohrab Ardeshar Vakharia

What is the importance of a Decision ?

- How do we define right and a wrong decision?
- Do we take help while making a decision?
- How much do we rely on the decision making help?
- Why do we take help for making decisions?
- Whom do we consider as a “right” decision making help/support?

Understanding “System”

- System is group of **interrelated components working together** towards common goal by accepting **input and producing output** in an organization transformation processes.
- System is often used in everyday language for example **solar system, the nervous system or the justice system.**


External conditions
Input
• materials
• services
• information
System
Transformation process
Internal conditions
Output
• products
• services
• information
System performances
• profitability
• overall cost
• productivity
• quality
• dependability
• risk
• service
• flexibility

What is DSS?

A decision support system (DSS) is a computer program application that analyzes **business data and presents it so that users can make a decision**.

Decision support system (DSS) is a **computer-based application that collects, organizes and analyzes business data to facilitate quality business decision-making for management, operations and planning.** A well-designed DSS aids decision makers in compiling a variety of data from many sources.

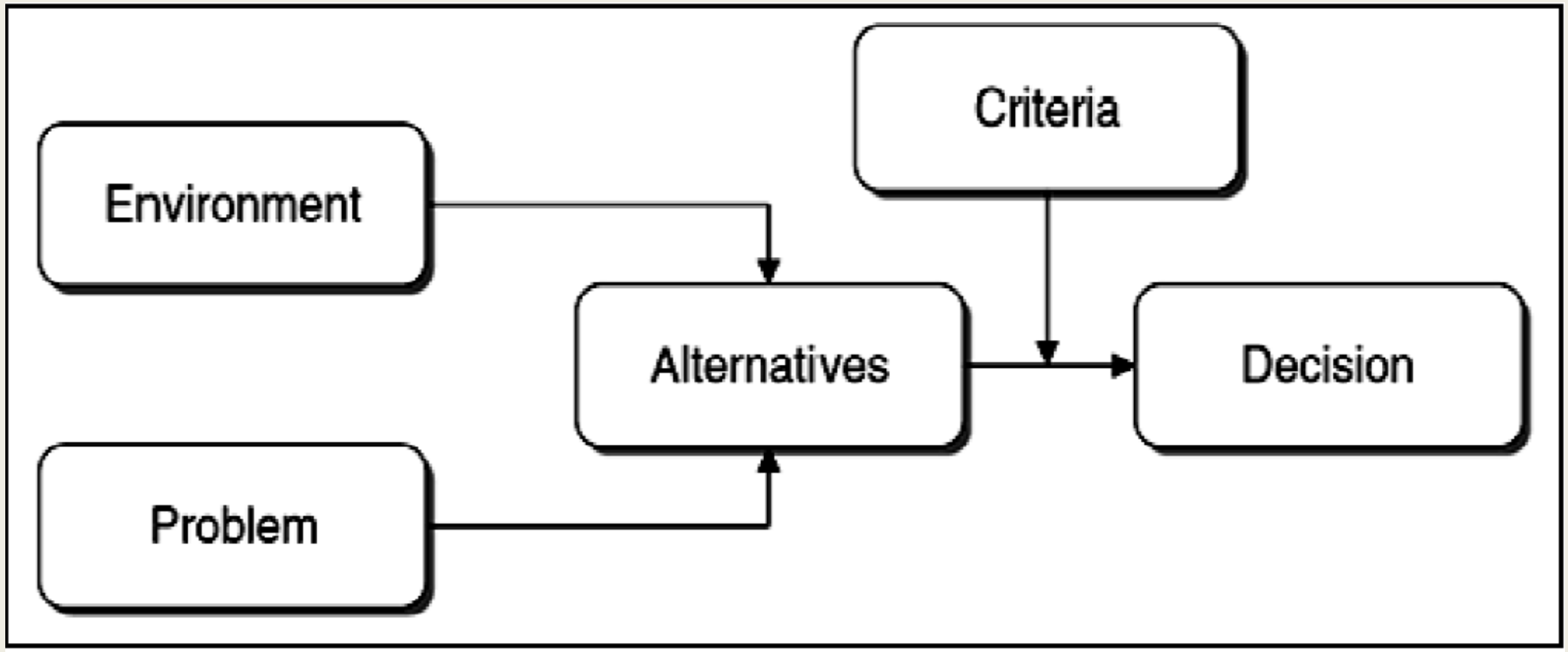
Important considerations for DSS

- A decision support system helps in decision-making but does not necessarily give a decision itself.
- *Decision making* is a process of choosing among two or more alternative courses of action for the purpose of attaining one or more goals.

Decision making process

- A decision is a choice from multiple alternatives, usually made with a fair degree of rationality.
- Decisions made by knowledge workers in public and private.
- The decision-making process is part of a broader subject usually referred to as **problem solving.**
- Which refers to the process through which individuals try to bridge the gap between the current operating conditions of a system and supposedly better conditions to be achieved in the future.

Logical flow of problem solving



Rational approach in decision making

A rational approach to decision making implies that the **option fulfilling the best performance criteria is selected out of all possible alternatives.**

Factors influencing rational choice:

1. Economic
2. Technical
3. Legal
4. Ethical
5. Procedural

Evolution of DSS

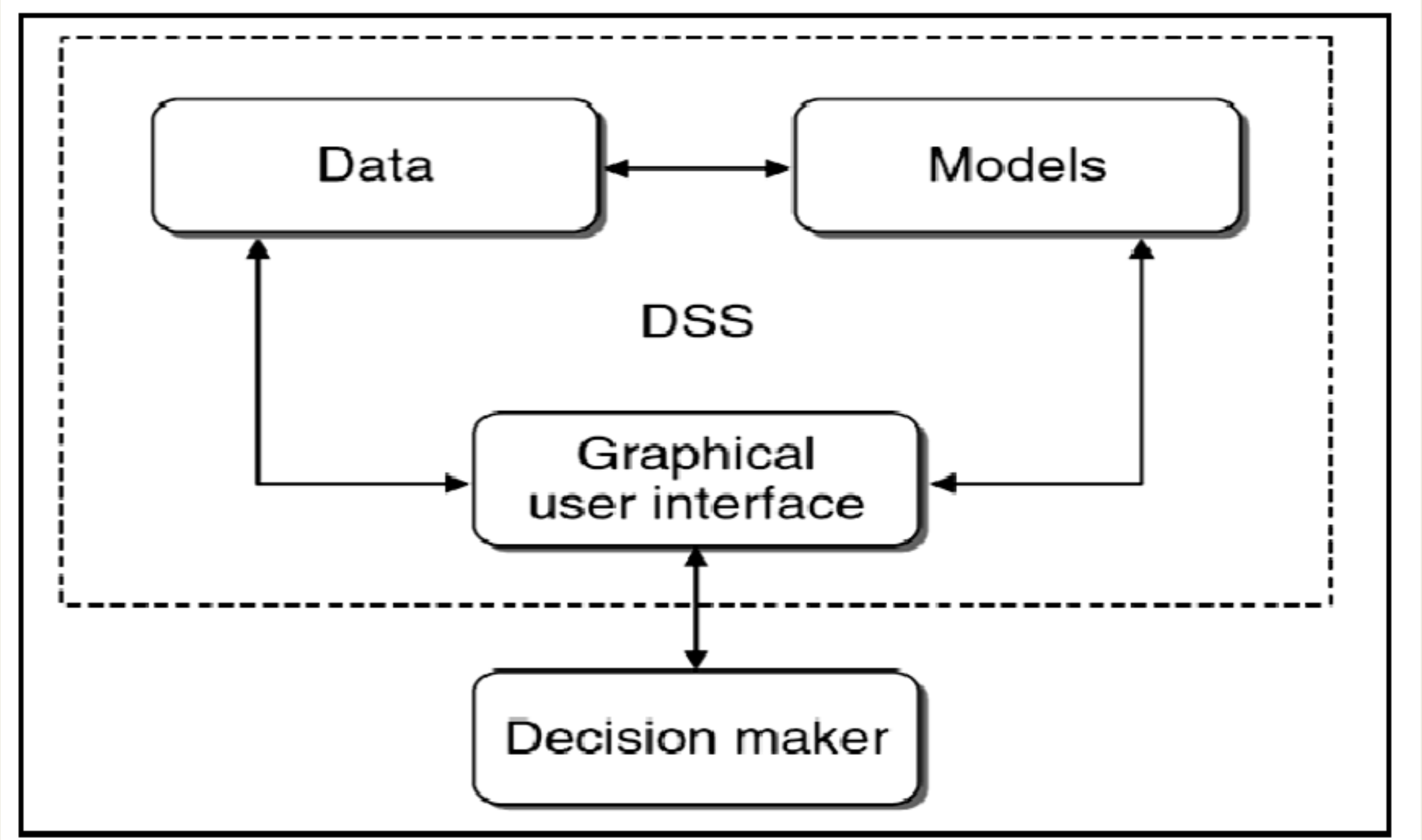
- In the 1970s there began to arise within enterprise increasingly complex needs to devise software application devise software application. Called management information system (MIS), in order to ease access useful and timely information systems.
- The mainframe computers of those days lacked graphic visualization capabilities, and communicated with users through character-based computer terminal and dot printers.
- Further difficulty lay organization structure companies based on highly centralized information system department usually resulting in very long and frustration time delays in implementing changes or extension to the available application.

- From the late 1980s the introduction of personal computers with operating systems featuring graphic interfaces and pointing devices such as mouse, optical devices sophisticated interactions and graphics.
- This led the most proactive knowledge workers to Create local databases and develop simulation models.
- *For example:* by means of spreadsheets, which can be regarded as true ancestors of today's business Intelligence architectures
- *Information systems* and *planned information systems* were first introduced toward the late 1980s to support executives in the decision-making process.
- Finally, toward the end of the 1990's the term Business Intelligence began to be used to generally address the architecture containing DSSs, analytical methodologies, and models used to transform data into useful information and knowledge for decision makers.

Elements of a DSS

- a database,
- a repository
- mathematical models

Structure of a DSS



Objectives :

1. To save time and effort in decision making process.
2. To help in processing the collected data and in producing a suggested solution to a problem
3. To provide sophisticated and fast analysis of vast amount of data and information.
4. To provide support for decision maker at all management levels mainly in semi-structured or unstructured situation by bringing together human judgement and computerized information.
5. To promote learning, which leads to new demands and refinement of application
6. To provide efficient and effective solution of every complex problem
7. To check the impact of changes on the proposed solution with help of “what-if” analysis

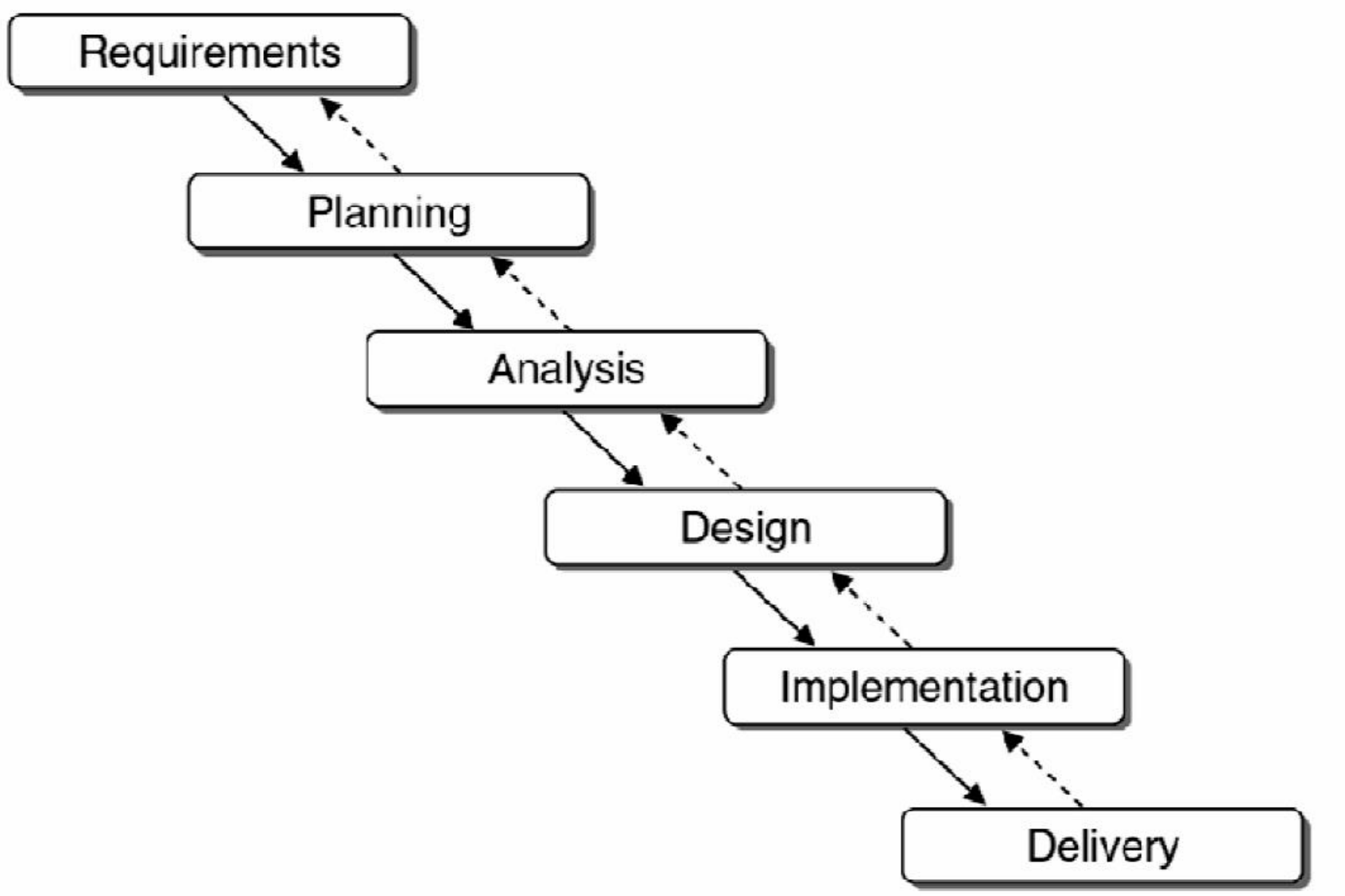
Limitations of a DSS

1. DSS CANT replaces human decision making talents such as creativity, imagination or intuition.
2. DSSs are generally designed to be narrow in scope of application. This prevents their generalized use to multiple decision making contexts
3. Languages and command interfaces are not sophisticated.

Types of DSS

- **Status Inquiry System** – It helps in taking operational, management level, or middle level management decisions, for example daily schedules of jobs to machines or machines to operators.
- **Data Analysis System** – It needs comparative analysis and makes use of formula or an algorithm, for example cash flow analysis, inventory analysis etc.
- **Information Analysis System** – In this system data is analyzed and the information report is generated. For example, sales analysis, accounts receivable systems, market analysis etc.
- **Accounting System** – It keeps track of accounting and finance related information, for example, final account, accounts receivables, accounts payables, etc. that keep track of the major aspects of the business.
- **Model Based System** – Simulation models or optimization models used for decision-making are used infrequently and creates general guidelines for operation or management.

Developing your own DSS



Mathematical Models

THANK YOU

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