

System Modeling

System Modeling is the process of developing abstract models of a system, with each model presenting a different view or perspective of that system.

OR



A System Model represent aspects of a system and its environment

OR

System Modelling is a mean of representing a world view or detailed view of the system using some kind of **Graphical Notation**.

Features of Model :

- Define the processes that serve the needs of the view under consideration.
- Represent the behaviour of the processes and the assumptions on which the behaviour is based.
- Explicitly define both exogenous and endogenous input to the model.
- Represent all linkages (input/output) that will enable the engineers to better understand the view.

To Construct a model, the Engineers should Consider a number of **Restraining Factors**

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Assumptions

Simplification

Limitations

Constraints

Preferences



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• Assumptions

It enables a model to reflect the problem in a reasonable manner by reducing the number of possible **permutations** and **variations**.

Eg:- **Representation of 3d human forms**

In this input domain may be that the System engineer makes certain assumptions about the range of allowable human movement (legs can-not be wrapped around the torso) so that range of inputs and processing can be limited.

• Simplifications:-

that enables the model to be created in a timely manner.

Eg:-

A System Engineer is modelling the needs of the service organization and is working to understand the flow of information that spawns a service order.

Although a service order can be derived from many origins, the engineer categorizes only two sources:

Internal Demand and External Request

This enables a simplified partitioning of input that is required to generate the service order.

• Limitations:-

That help to bound the system.

Eg

An aircraft avionics system is being modeled for future aircraft. Since the aircraft will be a two-engine design, the monitoring domain for propulsion will be modeled to accommodate a maximum of two engines and associated redundant systems.

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• Constraints

That will guide the manner in which the model is created
And the approach taken when the model is implemented.

Eg: Suppose a System for the 3-d rendering describes previously is a single 64-bit processor. So Computational complexity of problems must be constrained to fit within processing bounds imposed by the processor.

• Preferences :-

That indicates the preferred architecture for all data, functions and technology.

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