



Beyond Graphs!

Standard graphs such as pie charts, line graphs, bubble diagrams, 3D graphs are widely used to describe the relationship between different variables. However, they fail to capture the effect of one variable on the other. It is possible to argue that such effects do in fact exist - as mental pictures. In which case, to create an effective diagram, the skill is to put the mental picture onto paper so that the reader obtains exactly the same information.

Reference Diagrams come handy at such situations. Standard graphs often create assumptions and doesn't provide a clear picture of the situation. On the other hand reference diagrams are **simpler to understand**. They **present straightforward scenarios** even if there are changes in relationships or sequences.

These diagrams are used to **express complex relationships** in a graphical manner so that change in one variable in the whole diagram shows where all its going to impact and to what extent.

A typical Reference Diagram has following components -

- **Object:** The objects interacting with each other in the system.
- **Relation/Association:** A link connecting the associated objects. Qualifiers can be placed on either end of the association to depict cardinality.
- **Messages:** The interaction between different objects is represented as messages.

These diagrams are very useful tools to **understand the flow of the model**. For example, a model with an objective function of minimizing logistics and inventory carrying cost subject to various feasibility and service level constraints can be represented through a reference diagram.



Related Links

- [The Art of Modeling](#)
- [Modeling Style Guidelines](#)
- [The Business Process Model](#)

About DecisionCraft Analytics

DecisionCraft Analytics provides intelligent business solutions aimed at helping organizations create and sustain competitive advantage. Our competency lies in solving complex business problems with the help of state-of-the-art mathematical models.

Our focus areas include supply chain management, marketing and finance. We recognize that all organizations are unique entities at various levels of evolution and hence, our solutions are tailored to the specific needs of each organization and its business environment.

What Reference Diagrams contribute to build a model:

- **The context:** A model is typically a set of mathematical equations and these are difficult to understand by a normal user. Reference Diagram graphically clarifies the model context.
- **What something does:** Generally model reformats the data and finds some hidden patterns, which are easier to understand with the diagrams. A diagram can show the structure of the input data and the output data. A typical example for such a scenario would be a Customer Order (input data) received gets translated into a Sales Order (output data).
- **Detail overview:** Model consists of constraints, preferences, and sequences apart from input and output data. All these details are easier to understand and explain with the use of reference diagrams.
- **Components:** During a debug stage, models are hard to debug so reference models are useful tool to define components of the model and allow user to debug the model component wise.
- **Comparisons:** It is easier to compare different models with the use of reference diagrams.
- **Relationships:** A diagram that shows components is also likely to show the relationships between the components. All preprocessing or post-processing components of the model are easier to relate to inputs and output.
- **Sequences:** This is a common use of diagrams and it enables authors to show the correct order for a sequence of events or tasks.

It's worth mentioning that reference diagrams convey more than one type of information. **Reference diagrams convert complexity of model to simple and useful context.**

Next Issue: Pitfalls in Implementing Modeling Solutions

Previous Issue: [Can you prevent losing customers?](#)

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