Engineering Design Graphics: Sketching, Modeling, and Visualization

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Chapter 1 – Engineering Design
**PRODUCT REALIZATION PROCESS**

*Engineering Design* is a part of Product Development which is the first stages of the entire product realization process.
ENGINEERING DESIGN PROCESS is the sequential process or design spiral. It is actually the problem solving process in searching for a list of feasible solutions and ultimately to get an optimal solution based upon the existing constraints such as customer need (form and functions), availability of man, machine, money, technology, facilities...etc
**Formulation:** Information gathering, functional requirement, constraints, evaluation criteria...etc

**Concept design:** Look into each component, function and sub-function. Aim to get the best concept alternatives.

**Configuration design:** Finalize the type, components and dimensions of the product.

**Details design:** Completed drawings and specifications, sufficient for manufacturing process.
Engineering Design is characterized by strong graphical elements as shown below:
Concurrent Engineering is a team approach to product design. Typically, the cross-functional team members are from the key areas as presented in the above B-figure.

The major accomplishment of Concurrent Engineering approach is to:
1) shorten product development time
2) improve product quality and performance
3) reduce product cost.
**CAD database** may be used as a single most important source of product information or representation in the Concurrent Engineering process and/or activities. **The central motivation for concurrent engineering** is to ensure that manufacturing considerations are taken into account early and throughout the entire course of the design process.