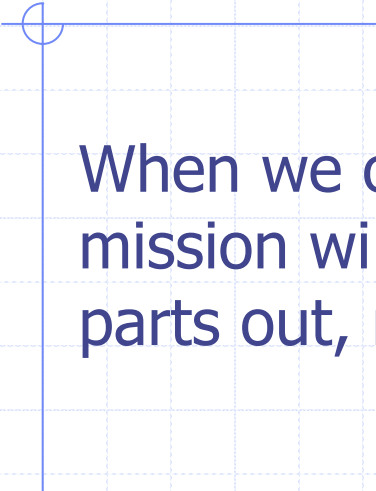


Project Planning for Design and Build



When we open the package for the robot to see what our mission will be, what would happen if we just take the parts out, read the rules and start building?

Project Planning for Design and Build



CHAOS!

Project Planning for Design and Build

How effective would we be?



Project Planning for Design and Build

Why plan?

- To understand the problem
- To understand the alternatives... what if?
- Define objectives and expected outcomes
- Consider various solutions
- Grade solutions and choose the best one possible
- Organize - Create a strategy on how to work together
- Develop a team approach
 - What needs to be done first and who's doing it?
 - Avoid chaos by working together
 - Resolve conflicts by building a consensus
- Measure results to insure the objects are met

Project Planning for Design and Build

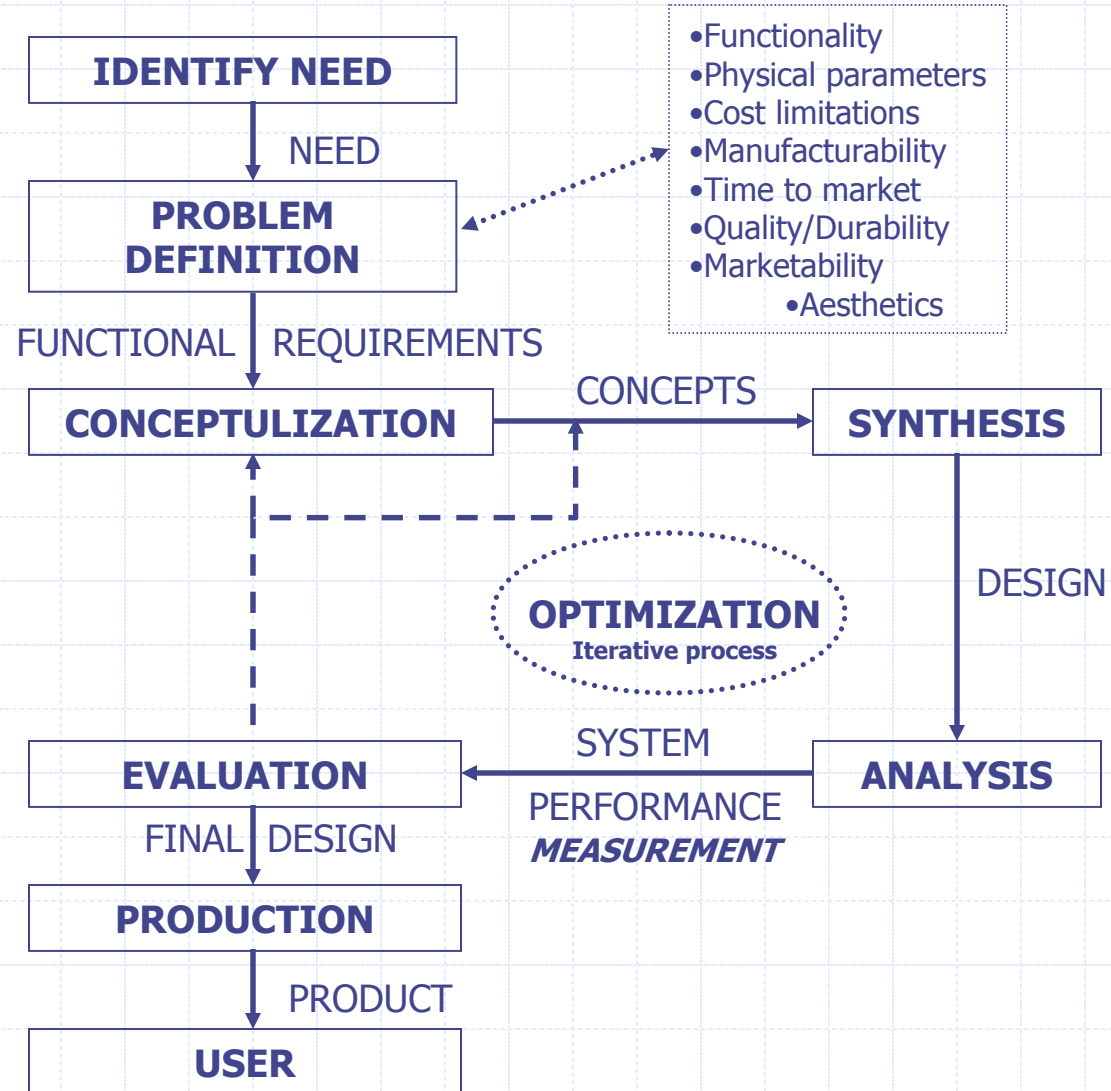
What is Design?

- The PROCESS by which PLANS are prepared for products to satisfy the needs of society.

Design Factors

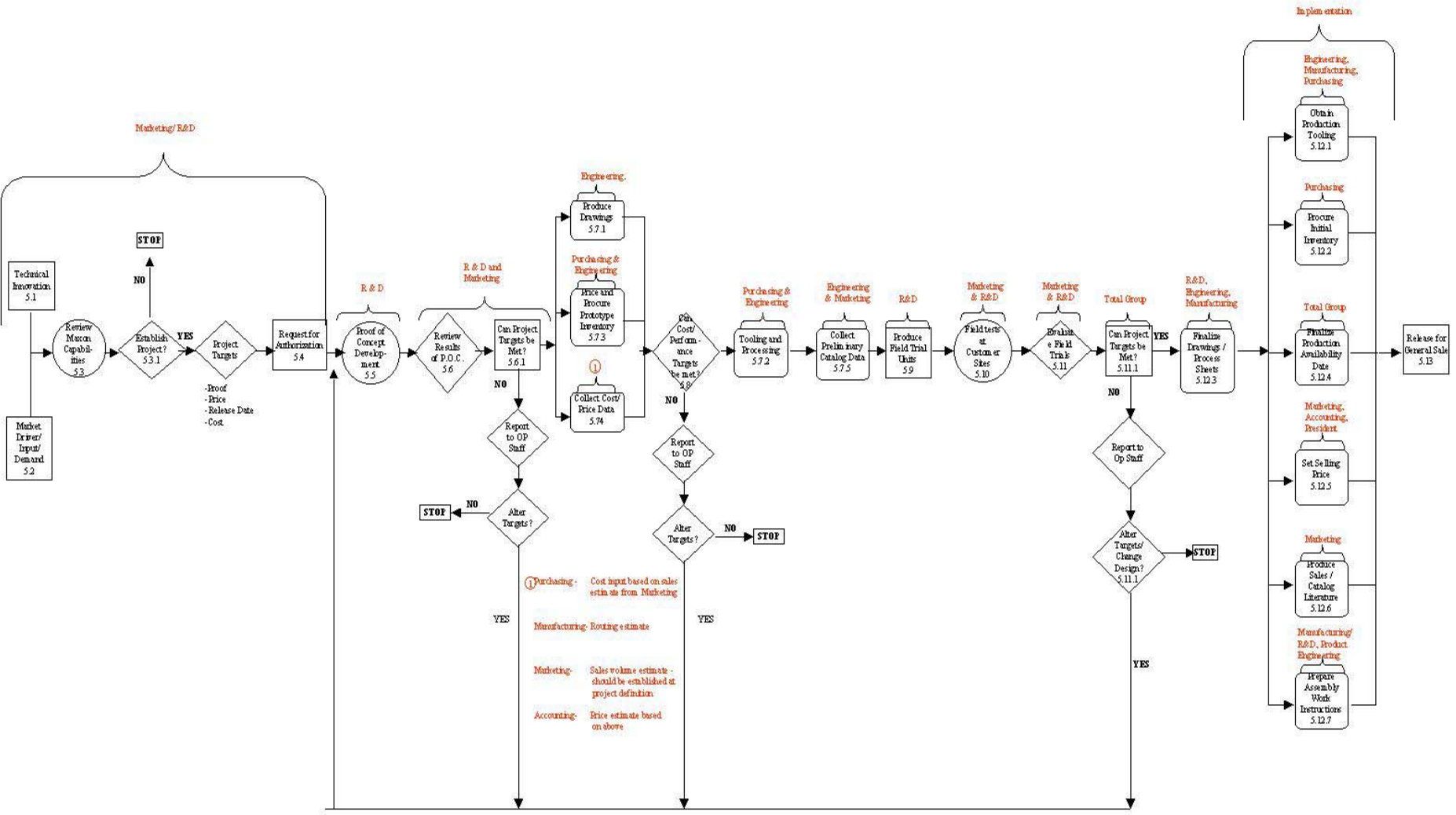
- Performance
- Value or cost
- Life cycle – How long does it need to last?
- Producibility – Can we build it? How?
- Functional parameters
 - What does this thing do?
 - Weight

The Design Process



Design and Development Flow Chart

(See Operating Procedures "Development Plan" and "Design and Development Process")



3.6.02
 Concept/Brainstorming
 Development

Design

Design and Test

Build Product

Cart Project Assignment

Objective: PLAN, DESIGN and BUILD the best possible cart for the team's robot using the design process to work together.

A three phase approach will be used.

1. Plan the Project – Conceptualize – Develop timeline
2. Choose baseline - Design the Cart – Plan the build
3. Build and Test – Verify the concept- Enhance

Cart Project Assignment

Design Criteria:

1. Must be constructed on materials commonly found in a home supply store such as Menard's or Lowe's
2. Material costs cannot exceed \$497.97
3. Must be capable of carrying the robot in and out of buildings while manually powered and controlled. Max collapsed dimensions of the robot are 28" x 38" x 60" high.
4. Combined weight of the cart and the robot cannot exceed 200lbs. Robot Max weight = 120 lbs (does not include 4 lb battery).
5. Cart should have on board storage for spare battery 3" x 8" x 7" high and tools 20" x 20" x 6" high. Can also have a place for spare parts.
6. Should have dock for joystick console 36" x 10" x 10" high, which will always be moved with the robot at competitions. The cart will be used to move all kinds of gear from a vehicle to the pit area and back.
7. There should be a place for the team number, if not the team name/logo
8. Should be easily configurable to lift the drive wheels of the robot off the cart when it is being worked on or permanently carried that way.
9. The cart must be designed to double as a work stand in the pits at competitions.
10. It should be highly maneuverable as space can be tight in the pits with many obstacles to negotiate around.