Need Identification: Quick Change Electrical Connection

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Intro

- Client: Raytheon Missile Systems
  - Started 90 years ago
  - Defense, aerospace, and government applications
  - Limited amount of information given
- Quick Change Electrical Connection

Need Statement

- The current nose assembly is unable to provide the ability to quickly install the nose without compromising the electrical connection.

Problem Statement

- Goal
  - Design an improved electrical connection alignment.
- Objectives:

Objective	Basis of Measurement	Units
Inexpensive	Cost of producing 200 units per year	$
Long life	Time before failure	years
Field Replaceable	Time taken to replace	minutes
Easily Repaired	Distance part is deformed	inches

Constraints

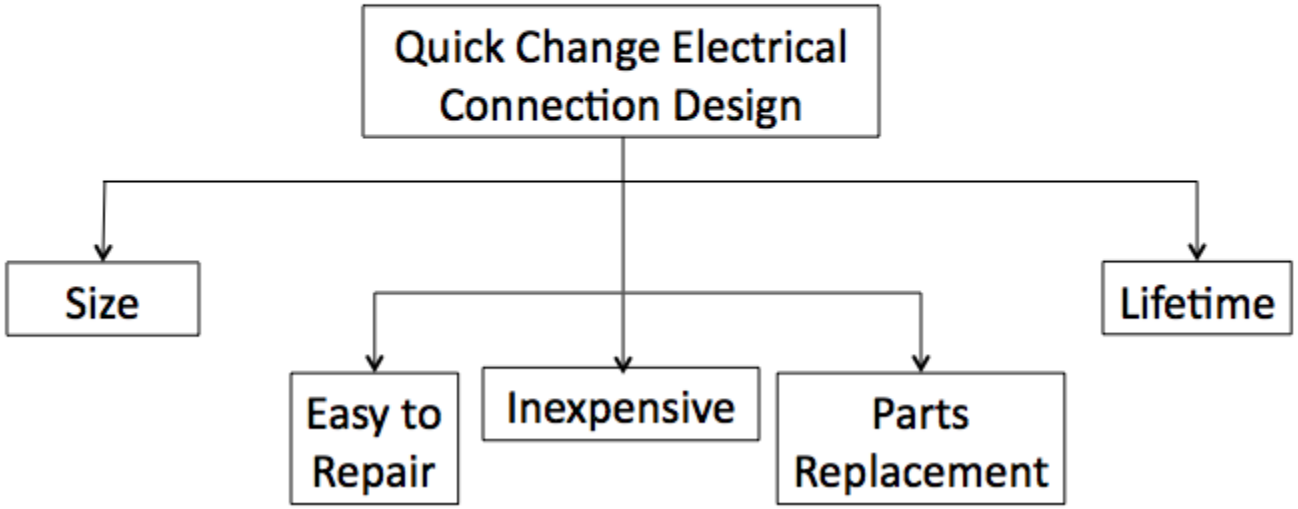
- Transportation Loads
  - Gs
- Temperature Range
  - Large range of temperatures˚C
- Sand and Dust
  - Varying particle size at a predetermined velocity
- Water and Ice
  - Droplets per minute at a predetermined velocity
- Bomb Rack Ejection Shock
  - Gs
- Corrosion Resistance
  - Salt solution
- JP10 Fuel
- Size of zone
- Must make mating tolerance

Test Environment

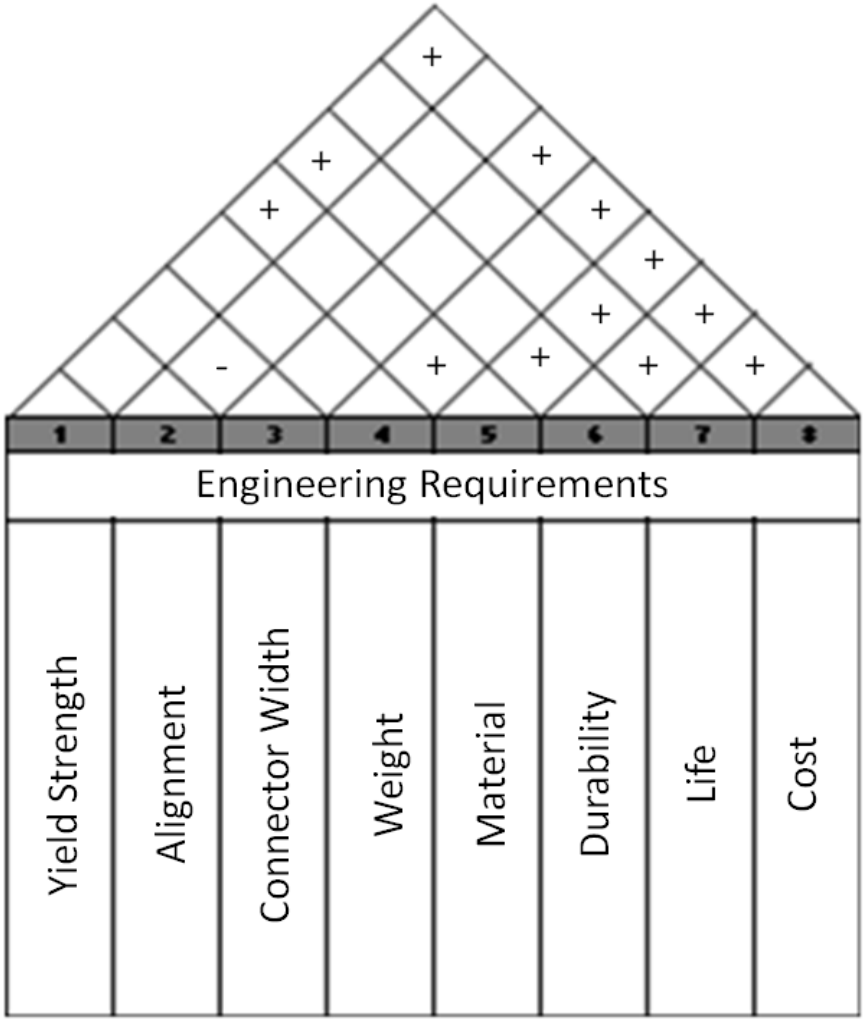
- Room 117 (Mechanics of Materials Lab)
  - Fatigue and Endurance Strength
  - Temperature

- Raytheon Labs
  - Electric Shock
  - Sand and Dust
  - Water Droplet

Criteria Tree



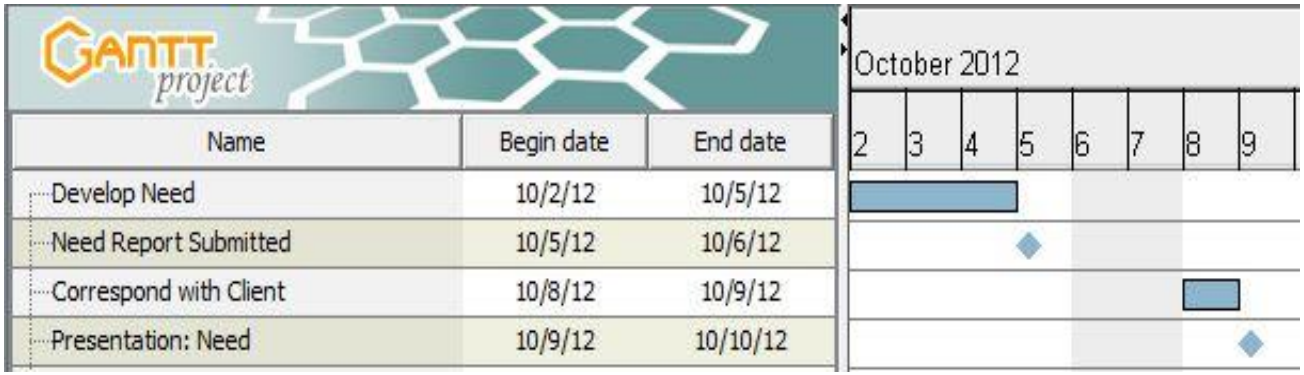
House of Quality



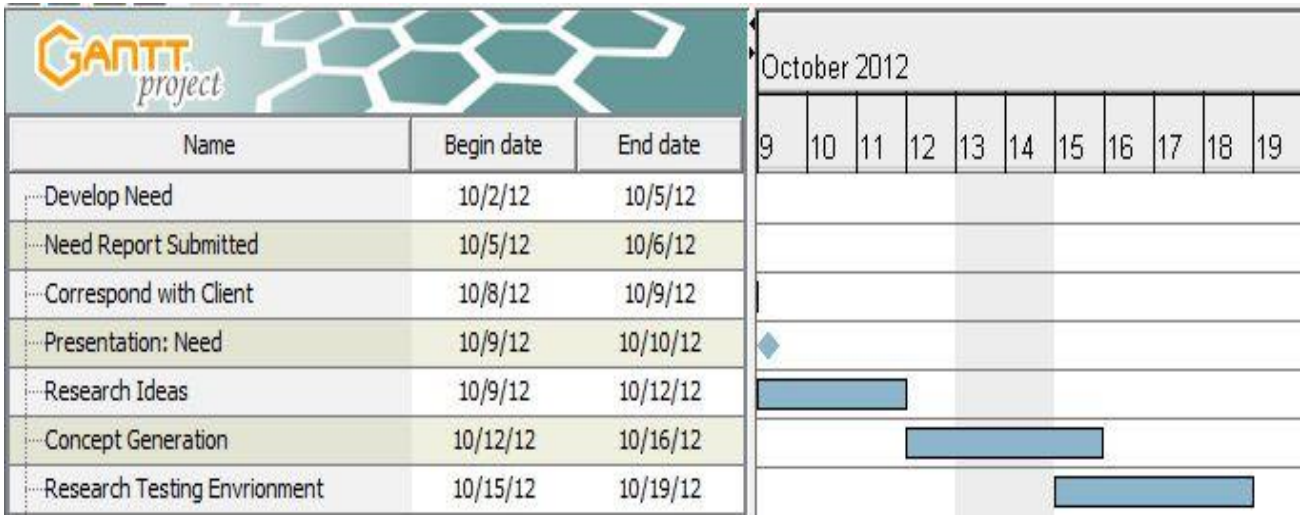
Quality Function Deployment

	Yield Strength	Alignment	Connector Width	Weight	Material	Durability	Life	Cost
Withstands Corrosion					X	X		
Operates under Various Conditions					X	X		
Resistant to damage	X							
Fits Properly		X	X					
Lasts a long time							X	
Withstands Forces	X					X		
Inexpensive				X				X
Units	Pa	cm	cm	N	C	cm	Years	$

Gantt Chart



Name	Begin date	End date
Develop Need	10/2/12	10/5/12
Need Report Submitted	10/5/12	10/6/12
Correspond with Client	10/8/12	10/9/12
Presentation: Need	10/9/12	10/10/12



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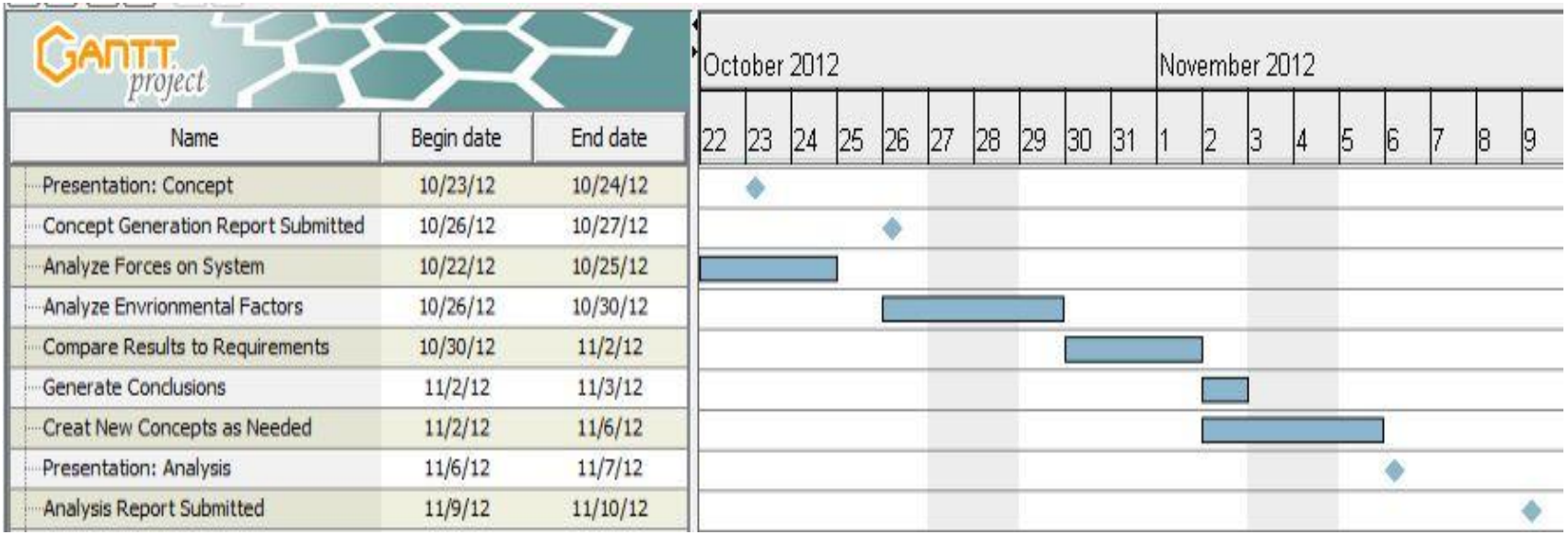
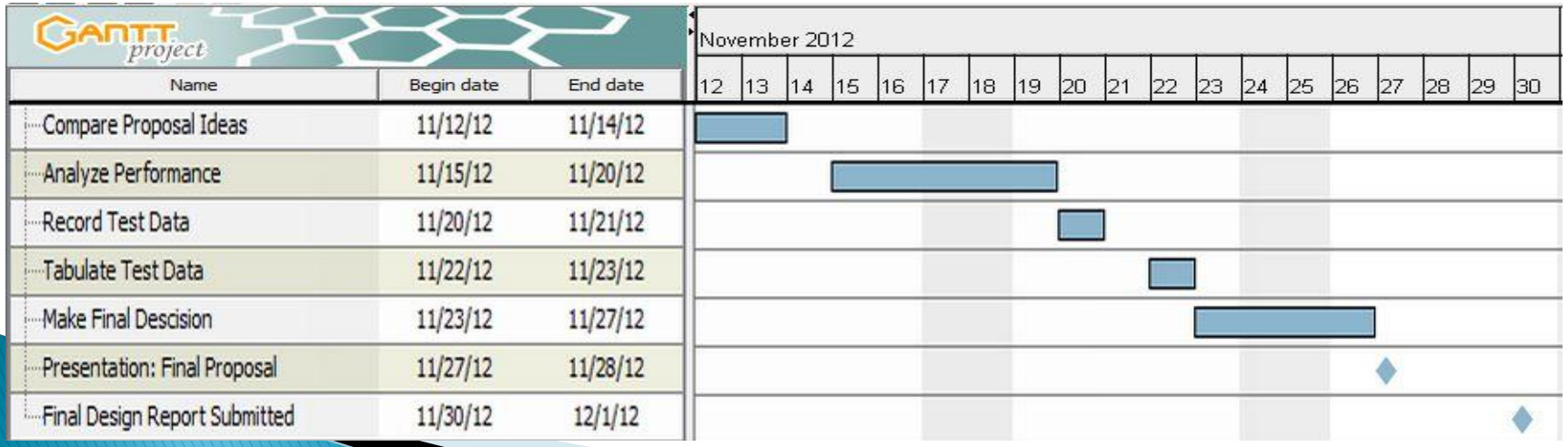
Need Report Submitted	10/5/12	10/6/12
Correspond with Client	10/8/12	10/9/12
Presentation: Need	10/9/12	10/10/12
Research Ideas	10/9/12	10/12/12
Concept Generation	10/12/12	10/16/12
Research Testing Envrionment	10/15/12	10/19/12

Gantt Chart



Name	Begin date	End date
Presentation: Concept	10/23/12	10/24/12
Concept Generation Report Submitted	10/26/12	10/27/12
Analyze Forces on System	10/22/12	10/25/12
Analyze Envrionmental Factors	10/26/12	10/30/12
Compare Results to Requirements	10/30/12	11/2/12
Generate Conclusions	11/2/12	11/3/12
Creat New Concepts as Needed	11/2/12	11/6/12
Presentation: Analysis	11/6/12	11/7/12
Analysis Report Submitted	11/9/12	11/10/12



Name	Begin date	End date
Compare Proposal Ideas	11/12/12	11/14/12
Analyze Performance	11/15/12	11/20/12
Record Test Data	11/20/12	11/21/12
Tabulate Test Data	11/22/12	11/23/12
Make Final Descision	11/23/12	11/27/12
Presentation: Final Proposal	11/27/12	11/28/12
Final Design Report Submitted	11/30/12	12/1/12

Conclusion

- Intro
- Need Statement
- Goals, Objectives and Constraints
- Quality Function Deployment, Criteria Tree, and House of Quality
- Gantt Chart

Questions?