

Clean Dream Team

Project Manager/Document Manager: Katie Hoffman

Budget Manager/Web Designer: Hannah Reed

Client Contact/Document Manager: Daniel Marquez

Project Description

- The objective is to design and build a clean hood and a portable clean room.
- The clean hood is to be around 2' x 4' x 4' or 2' x 3' x 4' it will be designed to fit over small equipment and induce a positive pressure flow of clean air within the hood.
- The portable clean room is to be around 4' x 6' x 7' it will be able to be disassembled and reassembled, carried by 3 - 4 people, and output positive pressure creating a clean environment within.

Project Description Cont.

- Our client is Aneuvast Technologies Inc., overseen by Dr. Becker. His company researches and manufactures microcatheters used in the brain.
- The project is important because it benefits the client's research and products manufactured.

Black Box Model

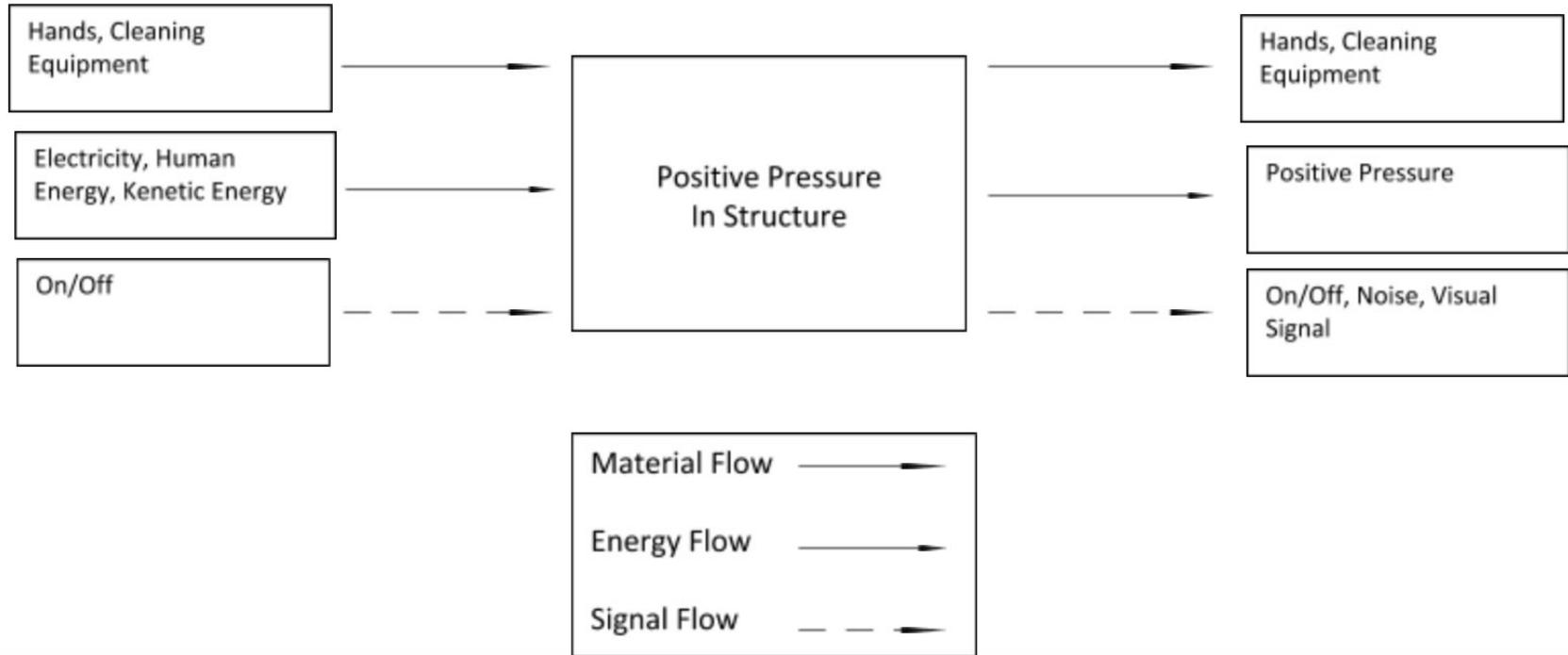


Figure 1: Black Box Model

Clean Room Breakdown Model

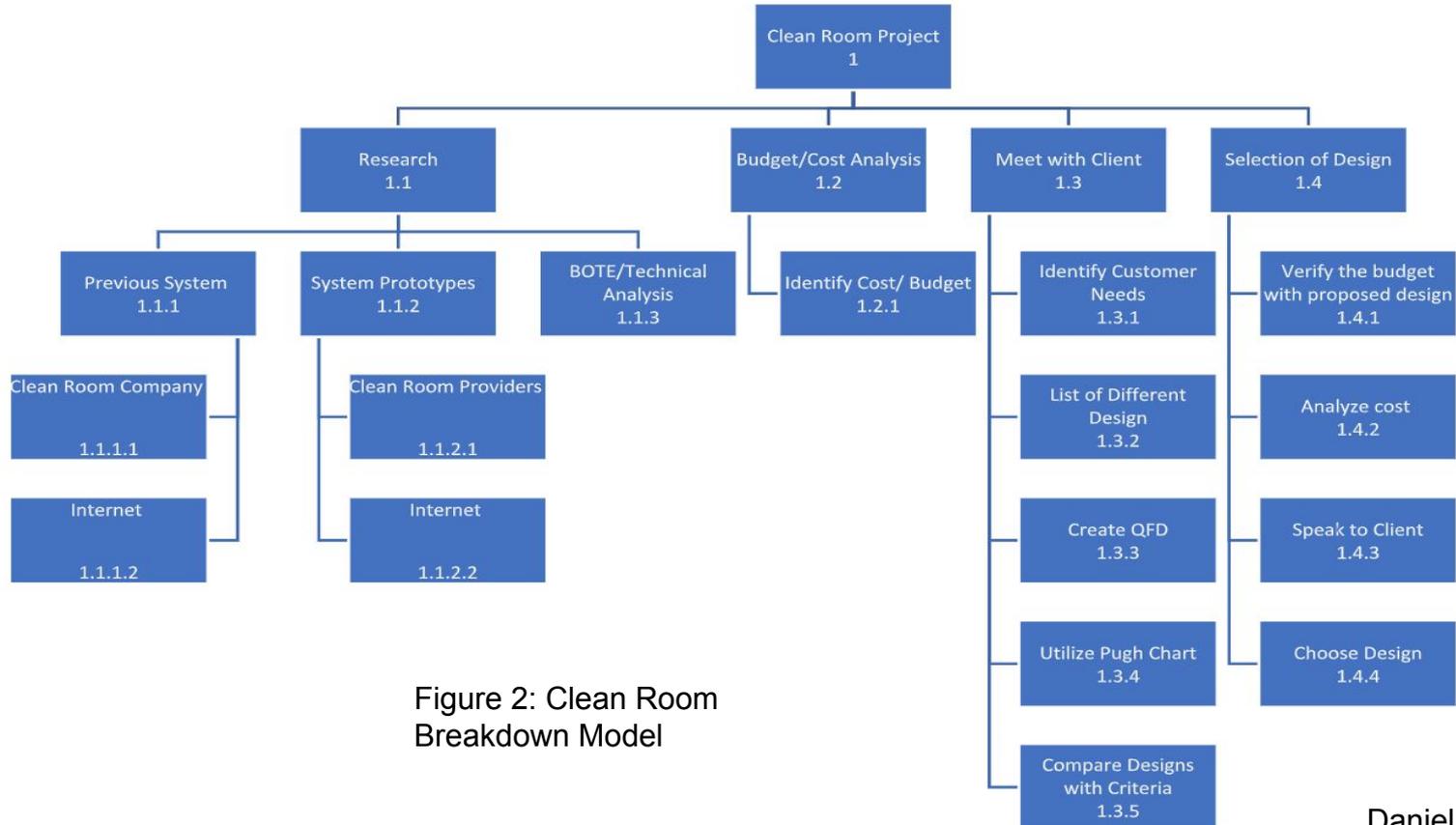


Figure 2: Clean Room Breakdown Model

Design Concepts

- Top design concepts for hood and room

1. Design #1 - Hood

- a. Aluminum Framing for the hood to support the weight of the fan
- b. Polycarbonate inner shell with a front hinged door
- c. Rubber lining the top to seal the three components from air escaping

2. Design #2 - Room

- a. Aluminum framing
- b. 0.25" plastic wrap for the walls and doors
- c. Duralock to mount the plastic to the frame and rubber for lining around bottom of fans
- d. Pins to connect the all components

Design Concepts Cont.

- Advantages

- Reliable
- Durable
- Lighter weight
- Moveable

- Disadvantages

- Expensive
- Frame can obscure views

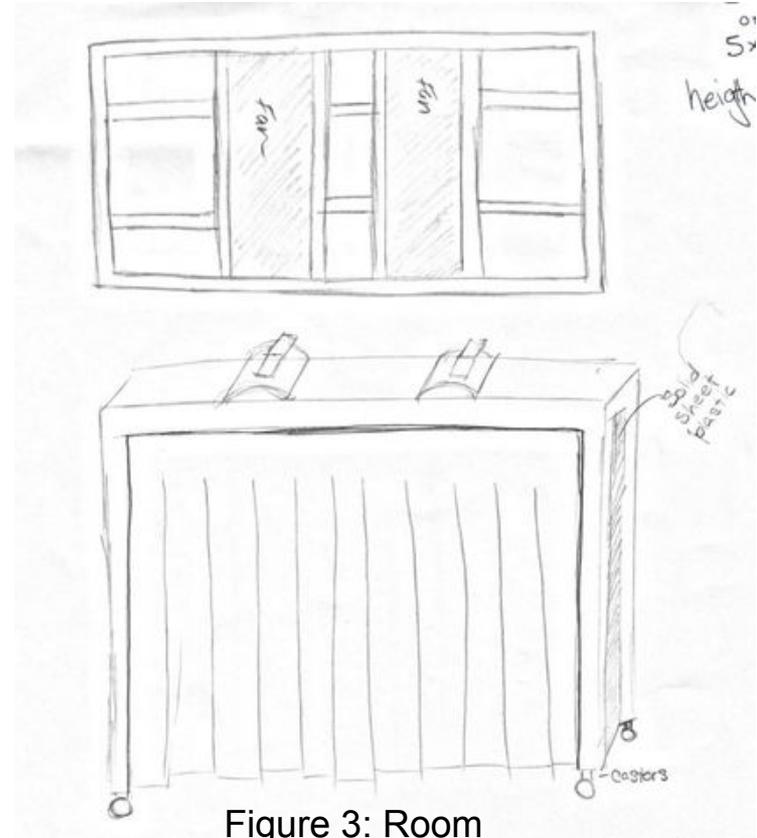


Figure 3: Room
Concept 1

Design Concepts Cont.

- Advantages

- Reliable
- Durable
- Lighter weight
- Portable

- Disadvantages

- Expensive
- Frame can obscure views

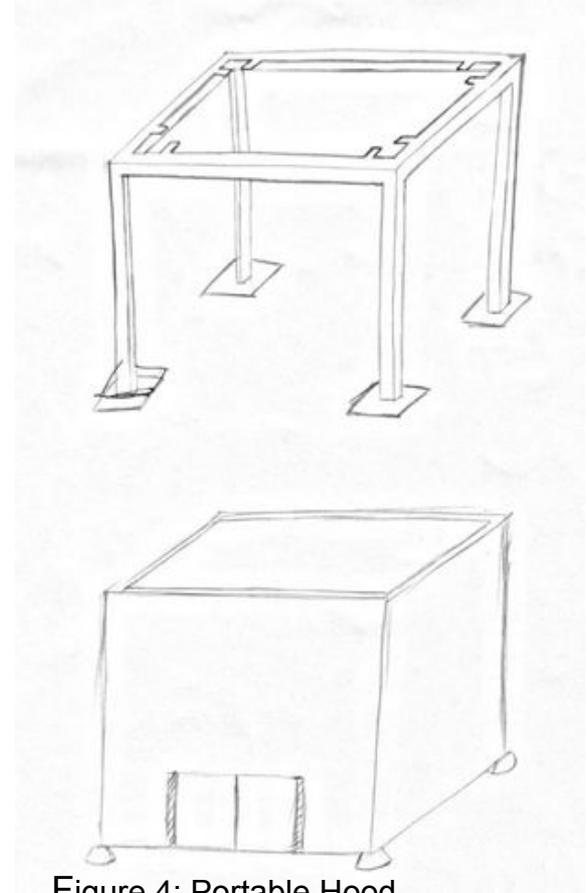


Figure 4: Portable Hood
Concept 1

Hannah Reed

Design Concepts Cont.

- Advantages

- Reliable
- Durable
- Lighter weight
- Portability

- Disadvantages

- Expensive
- Visibility when flap is open
- Frame can obscure views

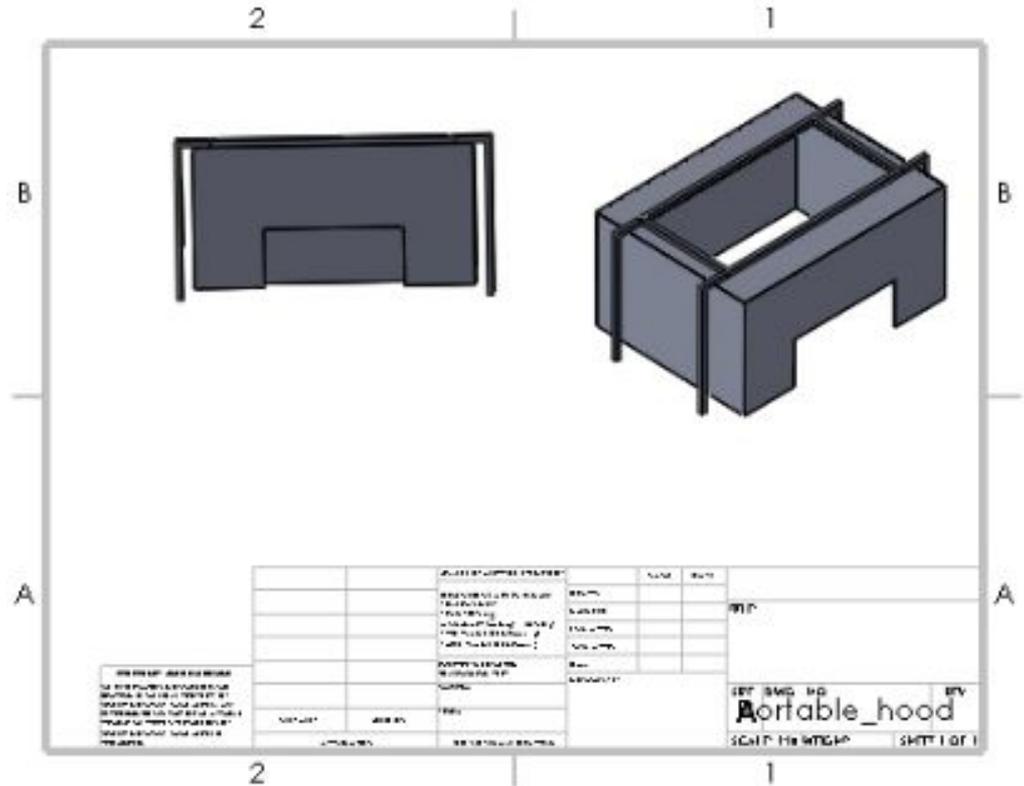


Figure 5: 2'x4' Portable Hood Concept 2

Concept Selection - Pugh Chart

Customer Requirements	1	2	3	4	5	6	7	8	9
Inexpensive	(-)	(+)	(-)	(+)	(-)	(-)	(+)	(-)	(+)
Portable	(+)	(+)(-)	(+)	(+)(-)	(+)	(+)	(+)(-)	(+)	(+)(-)
Positive Pressure	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)
Visibility	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(-)
Clean	(+)	(+)	(+)	(+)	(+)	(+)	(-)	(+)	(+)
Reliability	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)
Durability	(+)	(+)	(+)	(+)	(+)(-)	(+)	(+)(-)	(+)(-)	(+)
Classification	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Noise	(0)	(0)	(0)	(0)	(0)	(0)	(-)	(-)	(-)
Safety	(+)	(+)	(-)	(+)	(+)	(+)	(+)	(+)	(+)
Total (+)	7	8	6	8	7	7	7	6	7
Total (0)	2	2	2	2	2	2	1	1	1
Total (-)	1	1	2	1	2	1	4	3	3

1. Design 1 hood - Aluminum frame, polycarbonate hood, foam top lining
2. Design 2 hood - Steel frame, polycarbonate hood, rubber top lining
3. Design 3 hood - Aluminum frame, polycarbonate hood, rubber top lining
4. Design 4 hood - Steel frame, polycarbonate hood, foam top lining
5. Design 5 hood - Aluminum frame, acrylic hood, foam top lining
6. Design 1 room - Aluminum frame, 0.25" plastic wrap, duralock, lock pins
7. Design 2 room - Steel frame, 0.25" plastic wrap, velcro, latch locks
8. Design 3 room - Aluminum frame, 0.25" plastic wrap, velcro, latch locks
9. Design 4 room - Steel frame, 0.25" plastic wrap, duralock, lock pins

(+) - Positive Correlation
(0) - Neutral Correlation
(-) - Negative Correlation

Gantt Chart

Table 2: Gantt Chart

TASK NAME	ASSIGNED TO	START DATE	DUE DATE	DURATION	% DONE	DESCRIPTION	PROJECT PHASE
1. Team Charter	Team	9/5/2018	9/14/2018	9	100	Document contains team guidelines	Phase 1
2. Presentation 1	Team	9/21/2018	9/26/2018	5	100	Presentation of Current Research	Phase 2
2.1. Benchmarking	Daniel	9/19/2018	9/26/2018	7	100	Compare concept ideas to actual products	Phase 2
2.1.1. Material Background	Team	9/12/2018	9/26/2018	14	100	Research materials for construction	Phase 2
2.2. QFD	Katie	9/20/2018	9/26/2018	6	100	Compares CR's and ER's	Phase 2
2.3. Gantt Chart	Hannah	9/24/2018	9/26/2018	2	100	Organizes task to be completed	Phase 2
2.4. Budget	Hannah	9/9/2018	9/26/2018	17	100	Proposes how to spend allotted money	Phase 2
3. Website Check 1	Hannah	9/24/2018	10/5/2018	11	100	Check for web creation	Phase 2
4. Peer Evaluation	Team	10/1/2018	10/5/2018	4	100	Evaluate peer performance	Phase 2
5. Analysis Team Memo	Team	10/8/2018	10/12/2018	4	100	Analysis Memo	Phase 3
6. Website Check 2	Hannah	10/5/2018	10/17/2018	12	100	Check for web creation	Phase 3
7. Presentation 2	Team	10/17/2018	10/24/2018	7	100	Presentation of Current Research	Phase 3
7.1. Design Concepts	Team	10/5/2018	10/19/2018	14	100	Conceptual designs generated	Phase 3
7.2. Concept Selection	Team	10/17/2018	10/23/2018	6	100	Selection process of design	Phase 3
7.3. Budget update	Hannah	10/22/2018	10/23/2018	1	100	Update of the Budget	Phase 3
8. Preliminary Report	Team	10/17/2018	10/26/2018	9		Report containing current accomplished	Phase 3
9. Analytical Report	Individual	10/10/2018	11/9/2018	30		Analytical Research for Project Parts	Phase 3
10. Peer Evaluation 2	Team	11/9/2018	11/16/2018	7		Evaluate peer performance	Phase 3
11. Final Report	Team	TBD	TBD	#VALUE!			Phase 4
12. Prototype	Team	TBD	TBD	#VALUE!		Working Prototype of design	Phase 4
13. Bill of Materials	Team	TBD	TBD	#VALUE!			Phase 4
14. CAD Package	Team	TBD	TBD	#VALUE!		CAD drawing and 3D design	Phase 4
15. Website Check 3	Hannah	TBD	12/13/2018	#VALUE!		Check for web creation	Phase 4
16. Peer Evaluation 3	Team	TBD	12/13/2018	#VALUE!		Evaluate peer performance	Phase 4

Gantt Chart

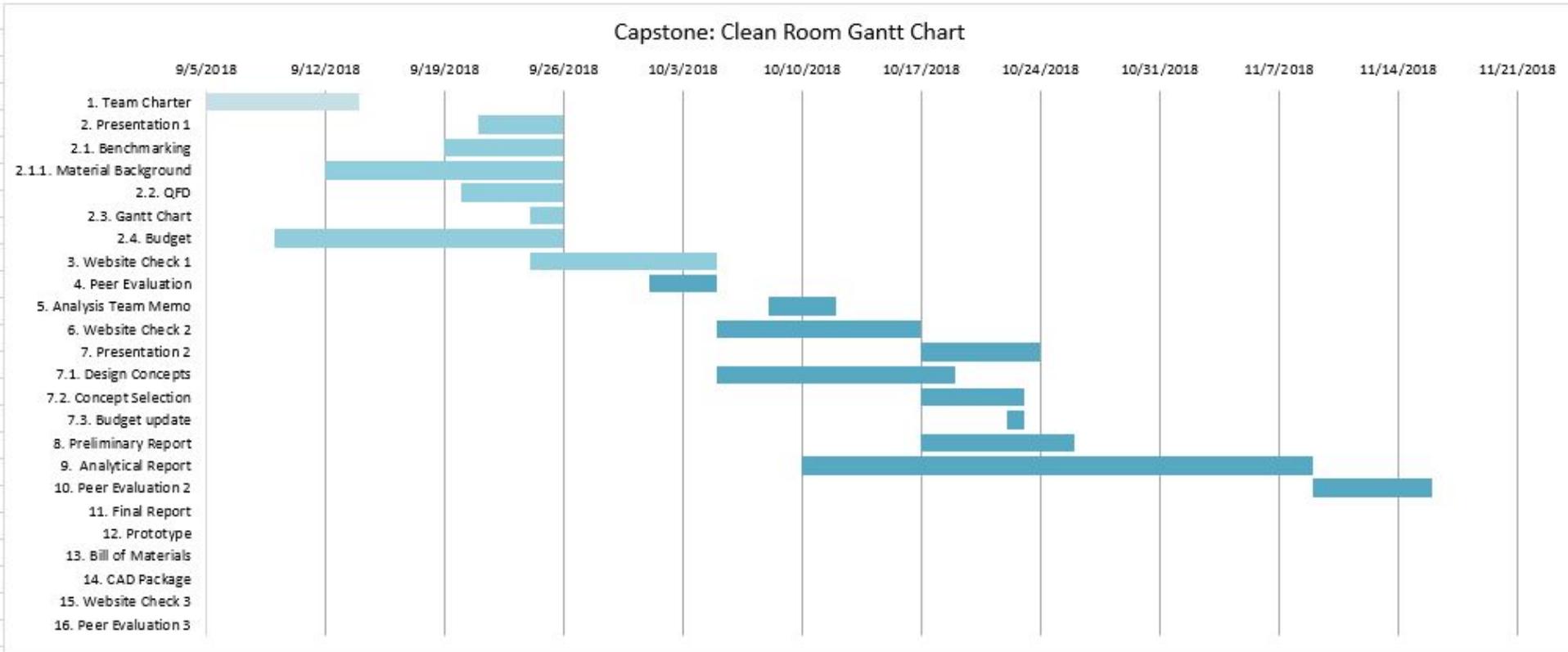


Figure 6: Gantt Chart

Updated Budget

Table 3: Updated Budget

Clean Room Team Portable Room & Hood Expense Budget				Allotted Money	\$ 1,000.00
Brief Description	Quantity	Price Per	Total Price	Total Expenses	\$ 900.49
Room Frame, Aluminum 6105-T5 97"L x 1"H	12	\$ 27.50	\$ 330.00	Remaining Funds	\$ 99.51
Plastic sheeting roll 8' x 100'	1	\$ 78.00	\$ 78.00		
Polycarbonate 48inx96inx0.125in	1	\$ 140.25	\$ 140.25		
Hood Structure Aluminum Struts 36"x1/2"x1/16"	8	\$ 11.53	\$ 92.24		
Polycarbonate Cutting	1	\$ 20.00	\$ 20.00		
Velcro Tape 1"x75'	2	\$ 52.00	\$ 104.00		
Aluminum Joints	16	\$ 8.50	\$ 136.00		
** Discounted alternative available					

Continued Work

- Technical analysis
- Finalize final design
- Meet with Dr. Becker again

References

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