

Mobile Computer Cart

Progress Report

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Overview

- Project Description
 - Needs, goals, objectives, constraints
- Testing Environment
- Parts Orders
- Concept Selection
- Dimensions / CAD
- Parts Ordered
- Frame
- Next Steps
- Progress Progression
- Summary
- References

Project Description

- Client : Dr. Srinivas Kosaraju
- Dr. Kosaraju is currently managing multiple student teams for capstone classes at Northern Arizona University. He is requesting for a mobile computer cart capable of traveling outside to perform experiments.
 - Must be adjustable
 - Weather proof
 - Cost under \$500

Needs Statement

“The current available mobile computer carts are too expensive and are not designed for outside use.”

Goal Statement

The project goal is to design a mobile computer station that is less expensive than available marketed products, which can be operated in outside conditions.

Objectives

Objectives	Measurement Basis	Criteria	Units
1. Inexpensive	Cost prototype production	Cost	Dollars
2. Be able to hold CPU, Monitors, and testing equipment	The amount of the storage area	Volume	ft ³
3. Should be adjustable for multiple users	Able to change the height of the station	Height	ft
4. Should be easily maneuverable	Time it takes to transport inside and outside easily	Time	Minutes
5. Weather Resistant	Ability to resist weather conditions	Water accumulation	in
6. Reasonable size	Fit through a door and is light	Volume and Weight	ft ³ and lbs
7. Remain functional after transported	Material not deformed after rolling outside	Material Strength	Psi

Table 1 : Objectives

Constraints

- Yes-No constraints
 - Support two screen monitors.
 - Hold a CPU, keyboard, and a mouse.
 - Move through rough terrain.
 - Easily transported with only one individual.
 - Weather resistant.
- One-sided inequality constraints
 - Must be less than \$500.00.
 - The storage space must accommodate 2 ft³.
 - The width of the cart must be less than 3 ft.
 - The height of the cart must be less than 7 ft.

Testing Environment

- Field Test
 - Terrain
 - Rocky, grass, dirt
 - Function properly
 - Undamaged during transportation
 - Simulate rain
 - Transport with no assistance
 - Fit through door, weight, maneuverability, time it takes to transport

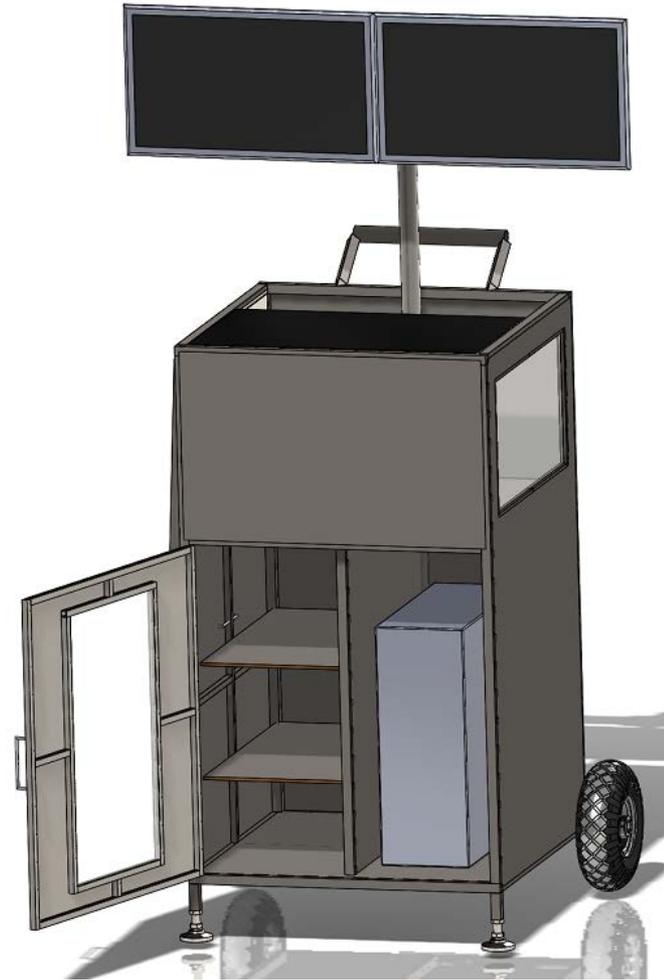
Parts Ordered

Parts Ordered				
No.	Parts	QTY.	Vendor	Description
1	8ft Frame Tubing 1	6	Online Metals	0.75" x 0.75" x 0.065" square tubing A513 HOT ROLLED MILD STEEL
2	8ft Frame Tubing 2	7	Online Metals	0.5" x 0.5" x 0.065" square tubing A513 HOT ROLLED MILD STEEL
3	Sheet Metal	6	Online Metals	24" x 48" x 0.03" steel
4	Plexiglass 1	1	Mc Master Carr	12" x 24" x 1/8" Polycarbonate
5	Plexiglass 2	1	Mc Master Carr	12" x 48" x 1/8" Polycarbonate
6	Telescope Tubing	1	Mc Master Carr	1.5" x 1.5" x 4ft Telescoping tubing
7	Hinge	1	Mc Master Carr	2 ft long piano hinge
8	Monitor Mount	1	Amazon	Tyke Supply Dual LCD Monitor Stand
9	Leveling Mounts	2	Machine Shop	Swivel Leveling Mounts
10	Latches	2	Mc Master Carr	Draw latches
11	Door latch	2	Mc Master Carr	Magnet latches
12	Door Handles	2	Machine Shop	Door Handles

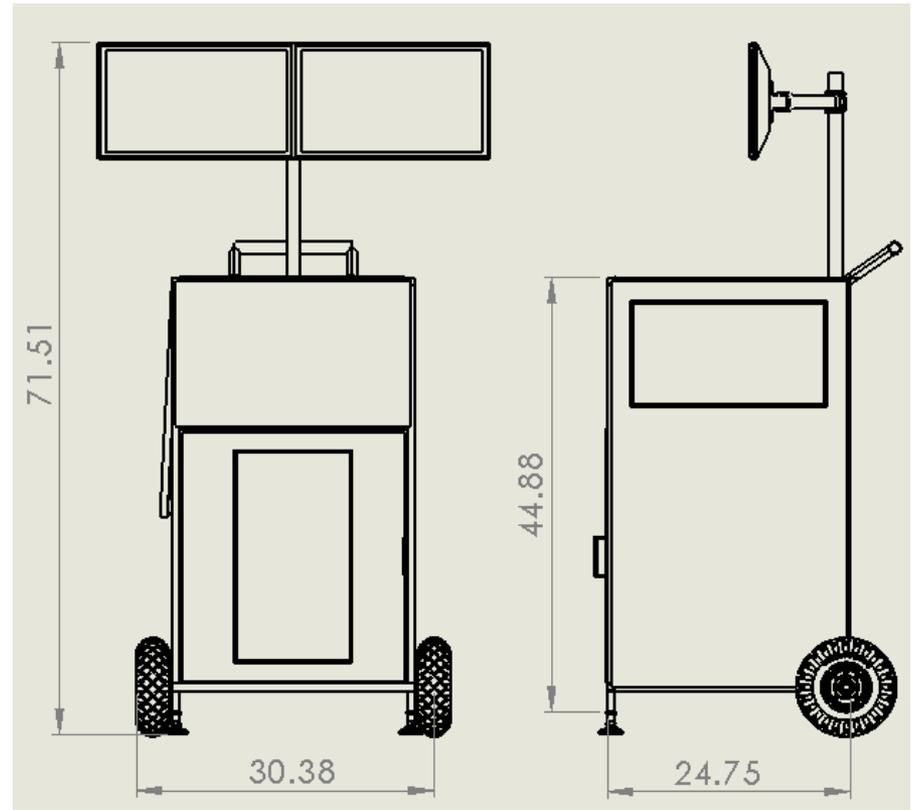
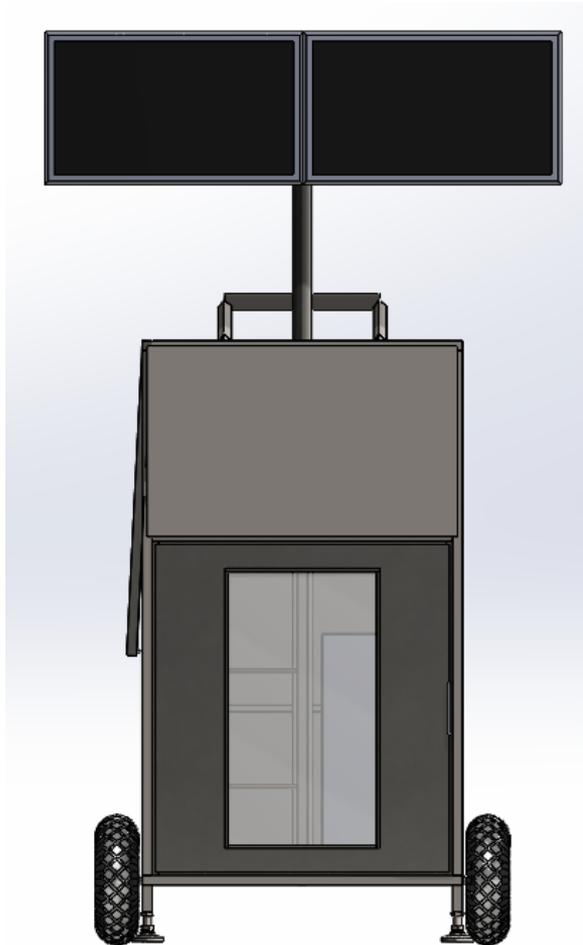
Table 2: Parts Ordered

Mobile Cart Design

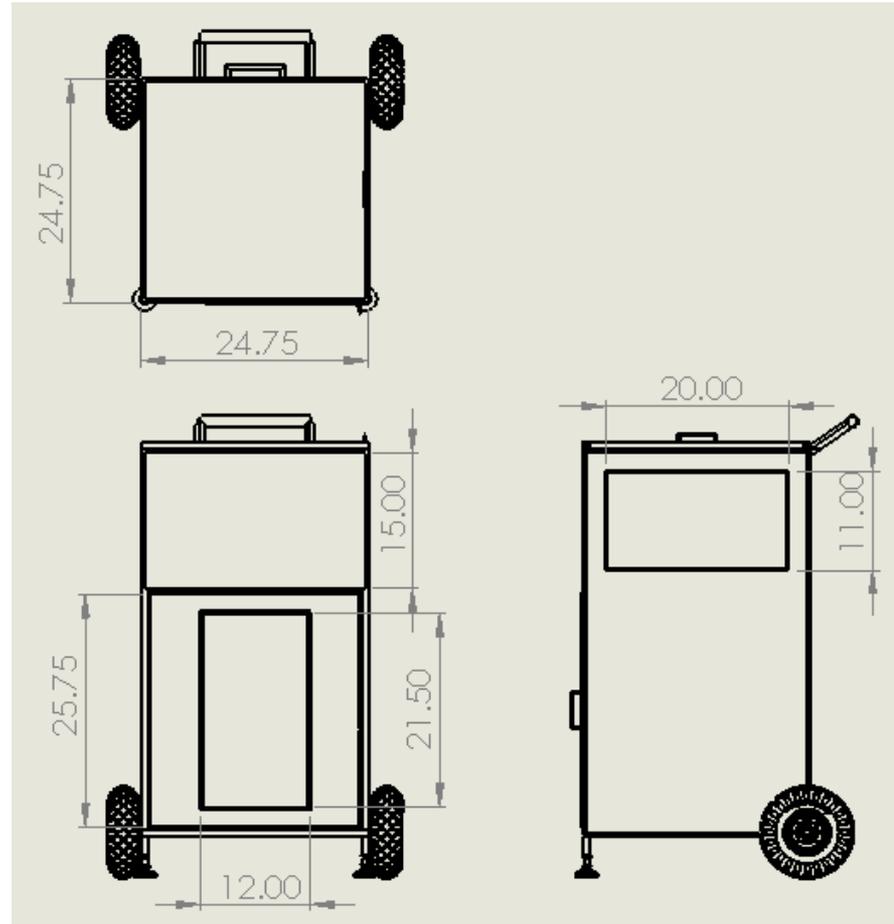
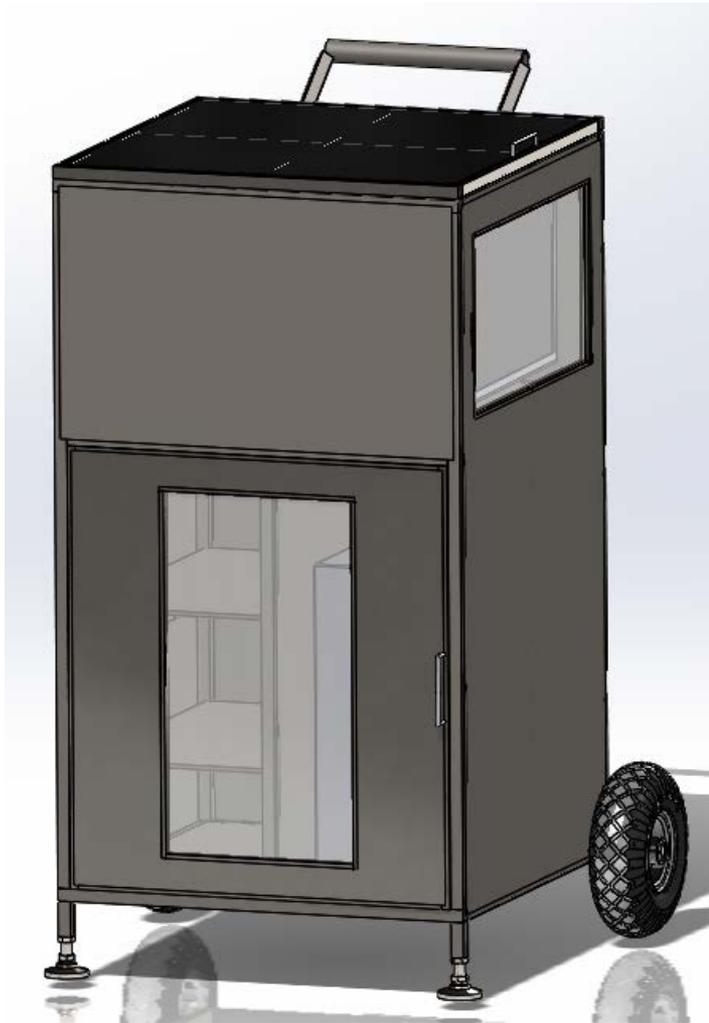
- **Two wheeled dolly Design**
 - Adjustable monitors
 - Large wheel for rough terrain
 - Interior storage space
 - Retractable lid
 - Collapse everything inside
 - Windows
 - Fits through doors
 - Handle for easy maneuverability



Dimensions / CAD



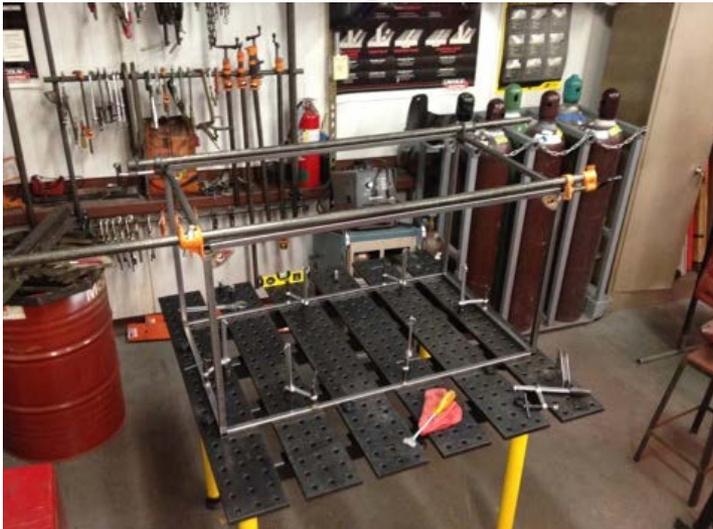
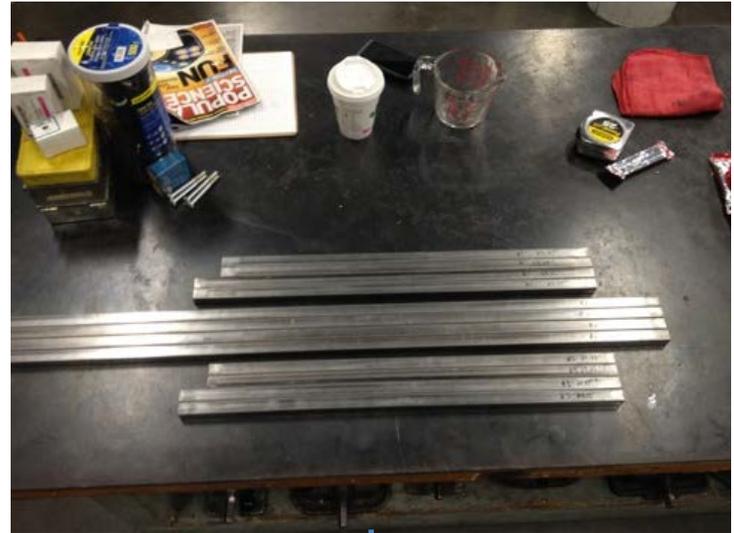
Dimensions / CAD



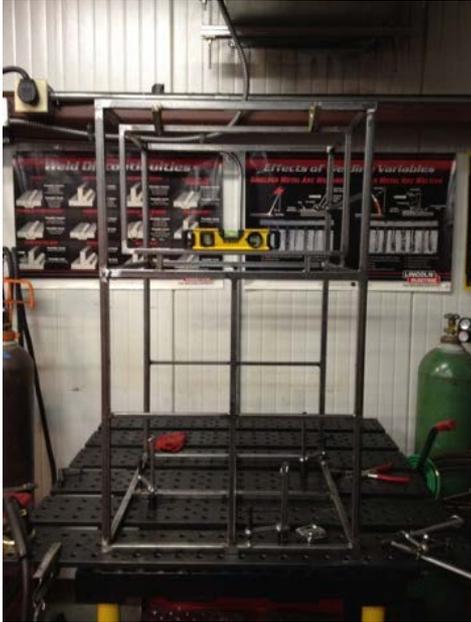
Frame

- Modifications
 - Top door removed
- Progress
 - All framing material arrived
 - Square tubing measured and cut
 - 90 % welded together
 - Beginning to attach sheet metal
 - Grinding and sanding weld beads smooth

Manufacturing Process



Manufacturing Process



Next Steps

- Order remaining material
- Grind and sand outside for paint
 - Electric grinding wheel
 - 600 grit sand paper
- Continue Assembly
 - Wheels
 - Plexiglas windows
 - Storage
 - Computer stand
 - Wiring

Project Progression

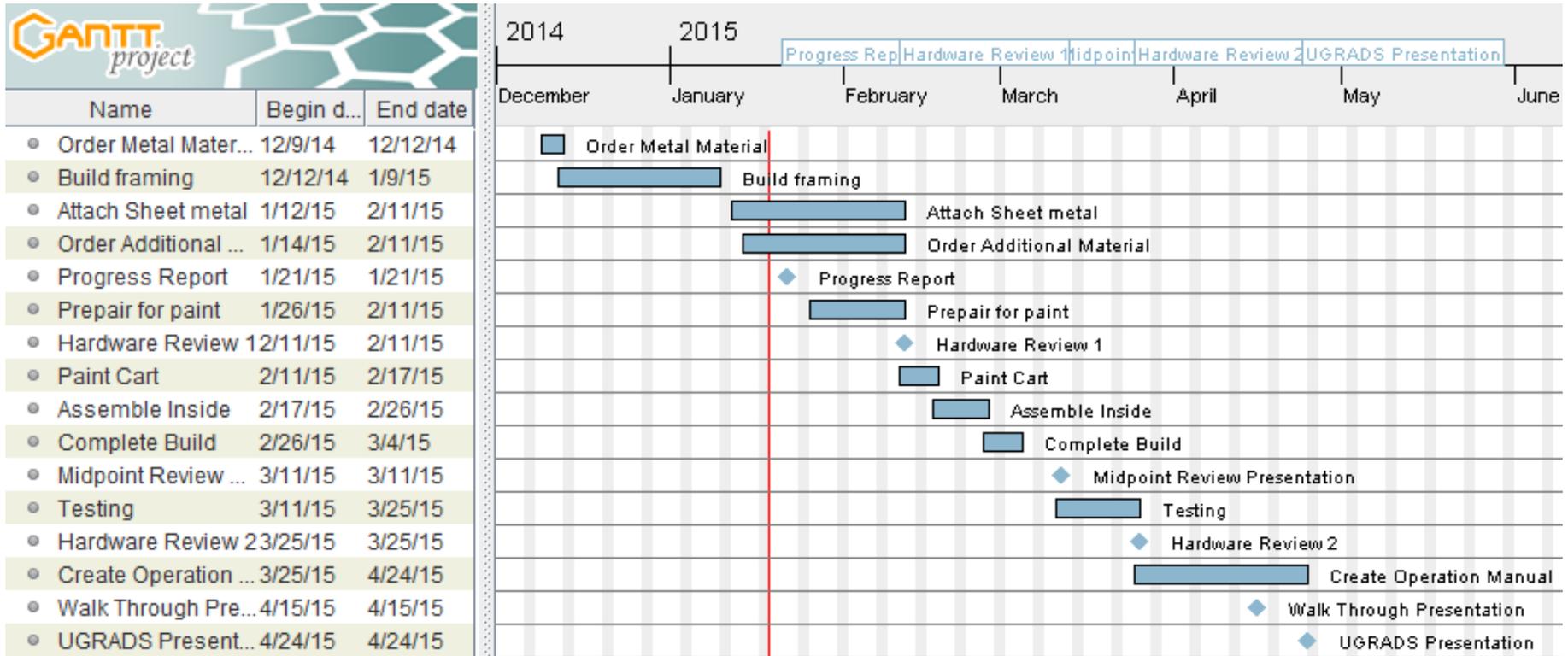


Table 3 : Gantt Chart

Summary

- Project Background: Mobile computer cart for Dr. Srinivas Kosaraju
- Going to perform a field test once complete
- Purchased equipment: 80% of the material has been ordered from Online metals or McMaster Carr
- Currently only 1 design modification to the upper door, which was removed
- Frame is 90% complete
- Sheet metal is currently being welded on
- Continue working in the machine shop to meet March completed date
- UGRADS on April 24th

References

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