IPRO 333
Fab Lab

Creating Design-to-Prototype Learning Modules for the Fabrication Laboratory at the Museum of Science and Industry

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Presentation Outline

- Introduction
- Objectives
- Planning
- Research & preparations
- Design & development
- Challenges
- Conclusions

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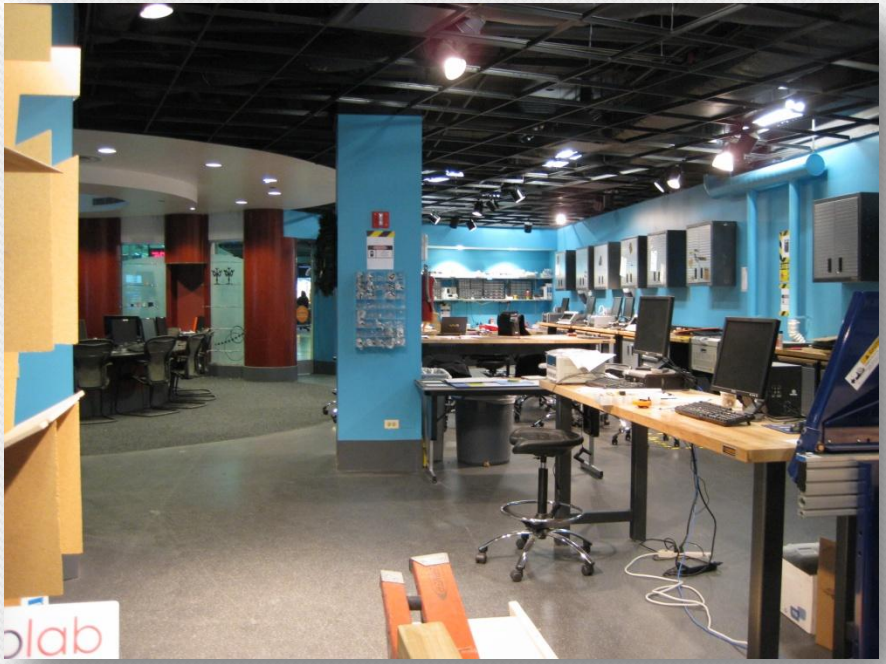
Introduction

What is a Fab Lab:

- A place to make almost anything enabling innovation and invention
- Shared workspace with other users
- Project based learning and documentation



MSI Fab Lab Goals:

- Increase MSI's knowledge base and the knowledge base of the greater Fab Lab community
- Expand the range and complexity of the Fab Lab projects
- Bring in more users

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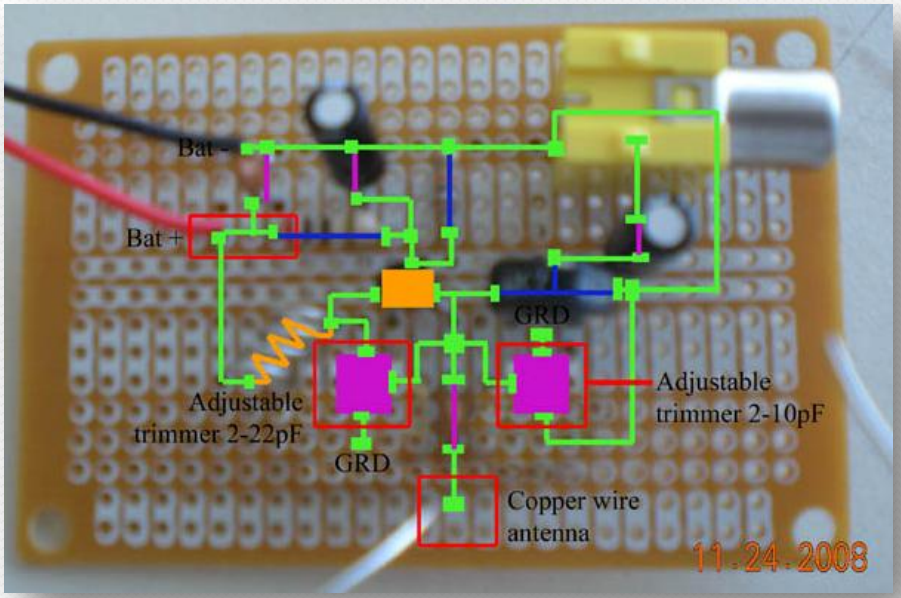
Introduction

Design-to-Prototype

Prototyping: What is it?

- Projects outlined for various users of the laboratory
  - Step-by-step instructions from computer aided design to machine fabrication



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Introduction

Users of the Fab Lab

- Museum Members
  - Members with an interest in prototyping either pre-made projects, or own inventions
- Open Access
  - Visitors to the museum
- Student Groups
  - Class groups working on projects related to curriculum
- Science Achievers
  - High school students with personal interest in 10 week program

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Objectives

- Assess the needs of laboratory users
- Create projects for all user groups following specific guidelines (if applicable)
- Education of staff
  - Research machine capabilities and proper function
  - Introduce local expertise from IIT

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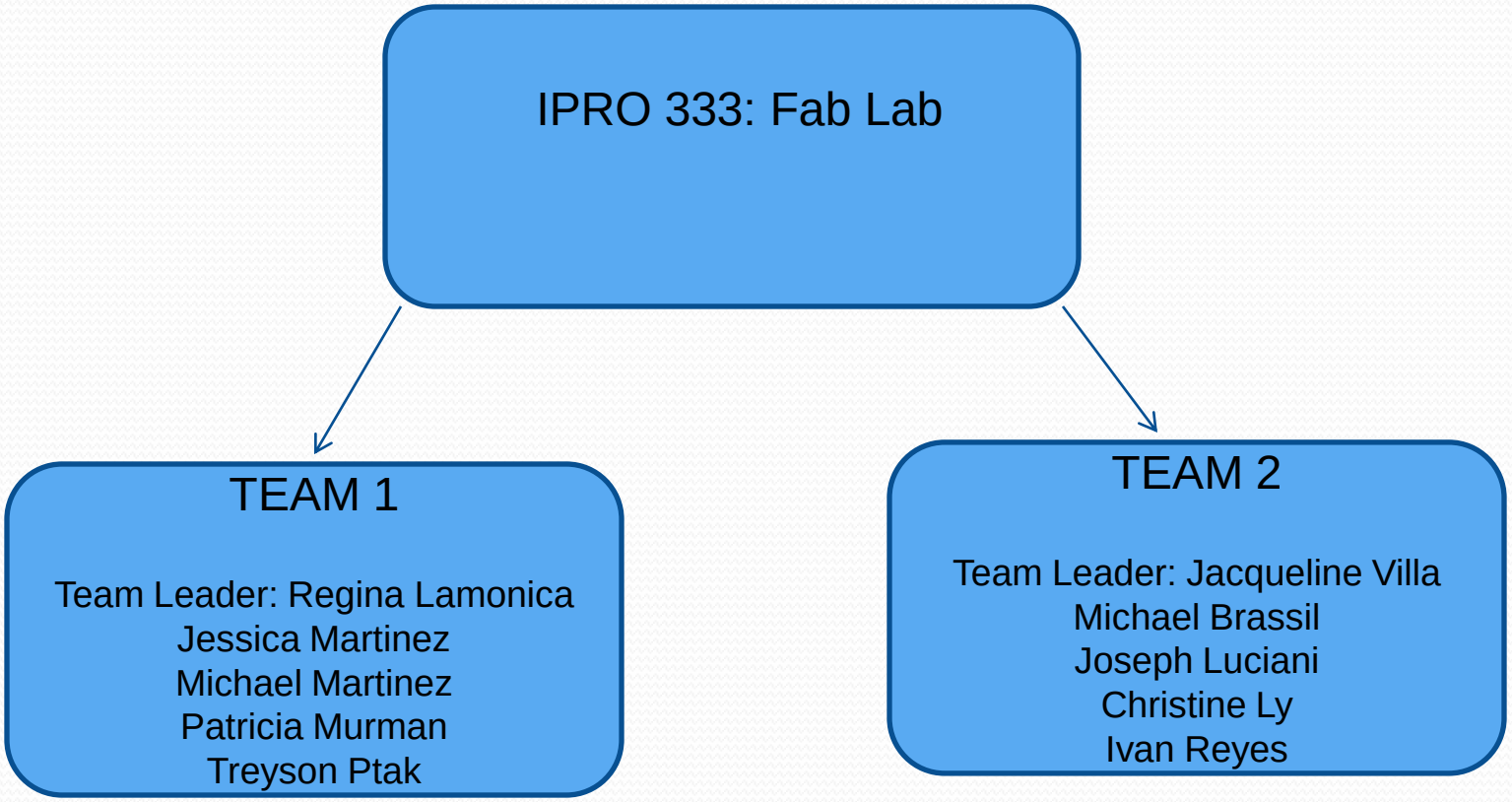
Planning

Team Organization



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Planning

Team One

Team One Focus:

- Student Groups
- Open Access Users

Team One Goals:

- Bring in IIT Professors to the Fab Lab
- Utilize Federal and State Education guidelines in the formation of projects
- Develop projects for Student Groups and Open Access

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Planning

Team Two

Team Two Focus:

- Science Achievers
- Museum Members

Team Two Goals:

- Designing tutorials for intermediate to advanced projects
- Define software capabilities of equipment
- Explore different material usage

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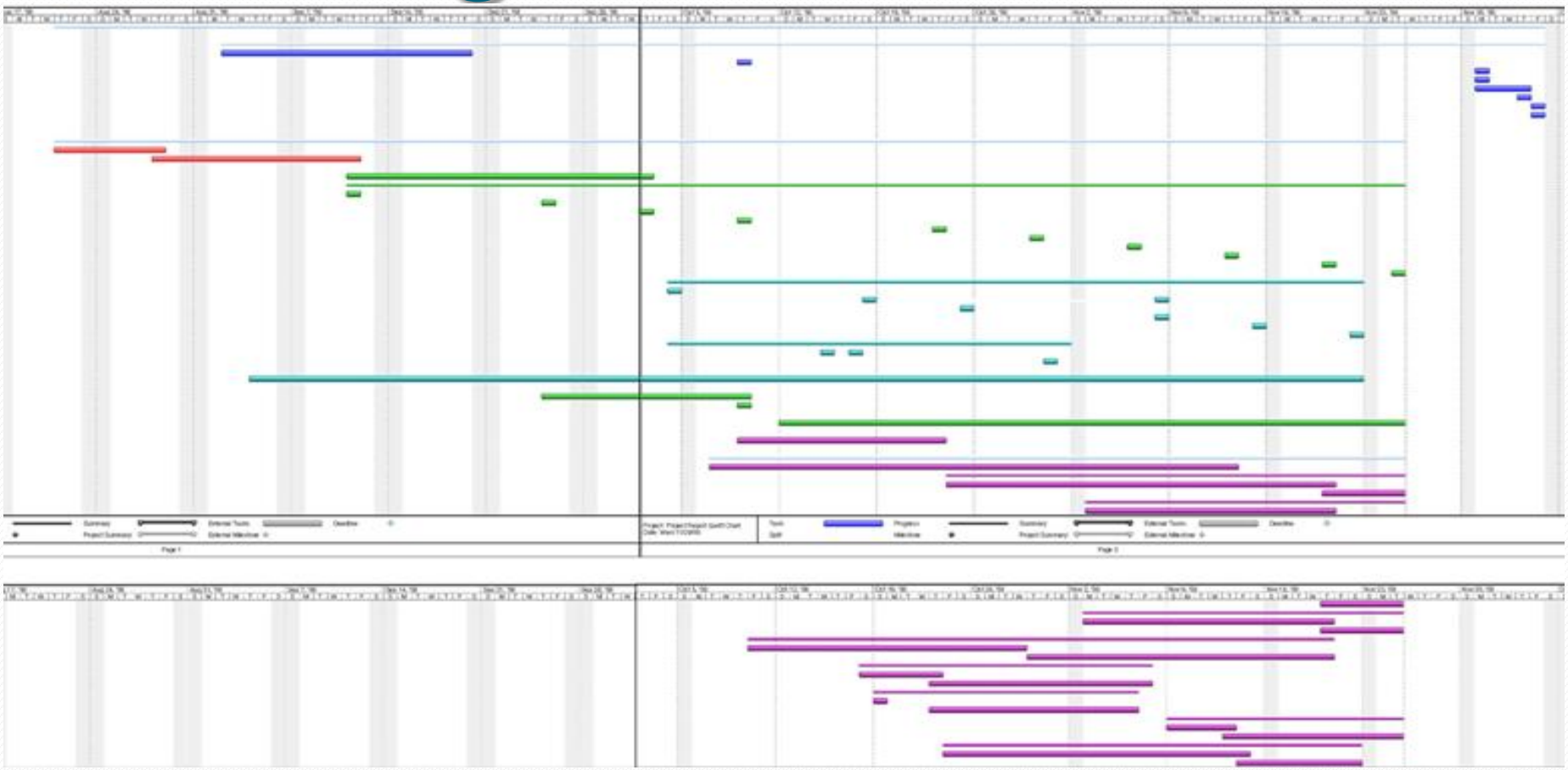
Planning

Gantt Chart



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Research & Preparations

- Surveys conducted
  - Science achievers
  - Student groups
  - Teachers
- Educational standards researched
  - Benchmarks for Science Literacy
  - National Science Standards
- Software & machine tutorials explored
  - Eagle
  - Corel Draw

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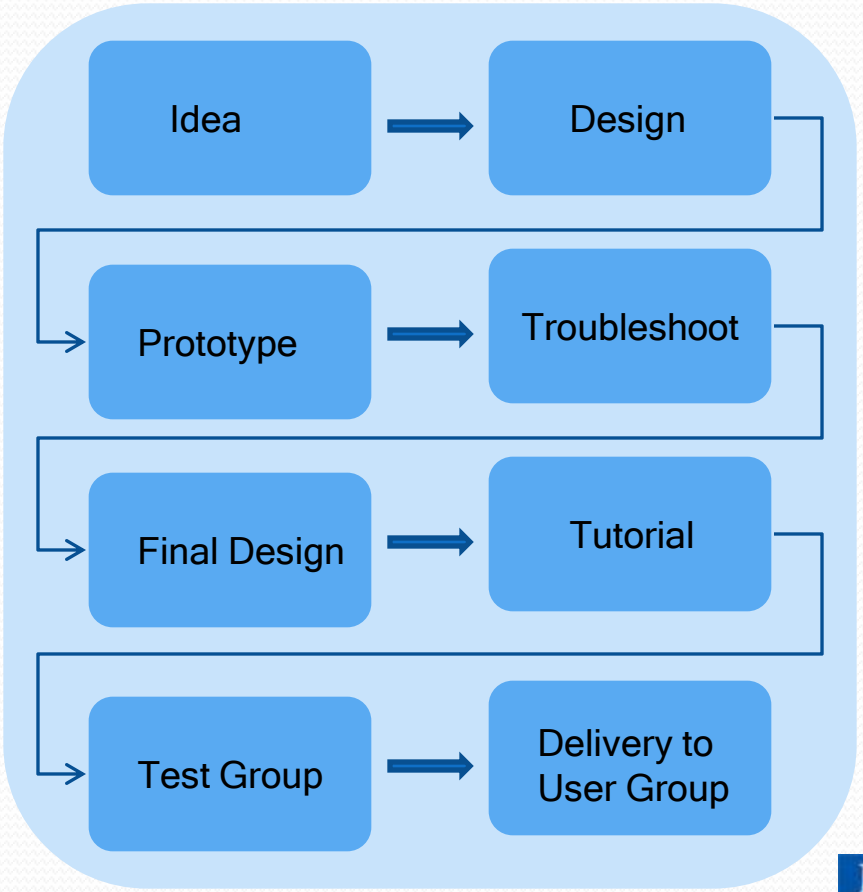
Project Design & Development

- Determine appropriate project for user group
- Design using proper software
  - Corel Draw
  - CAD/CAM
  - Eagle
- Prototype project



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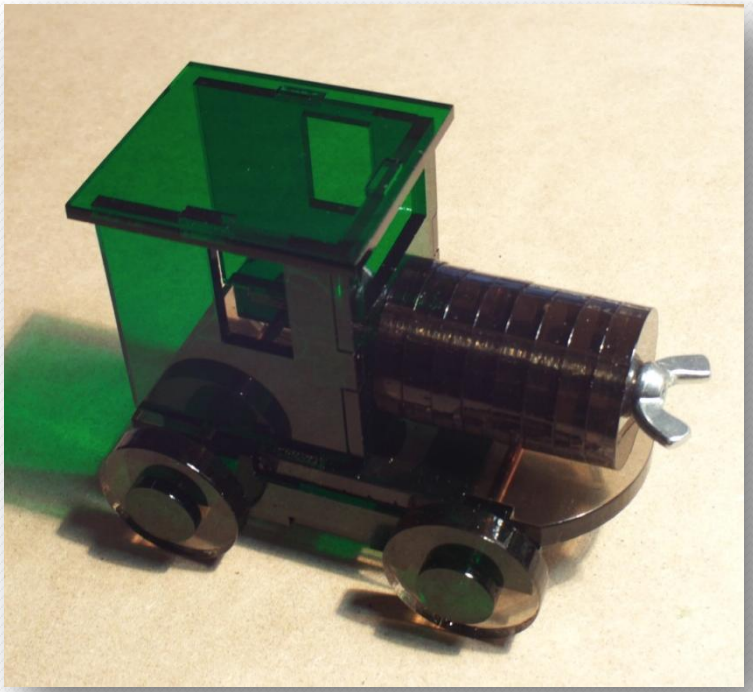
Design & Development

Student Groups

Rubber Band Train
(4th grade age group)



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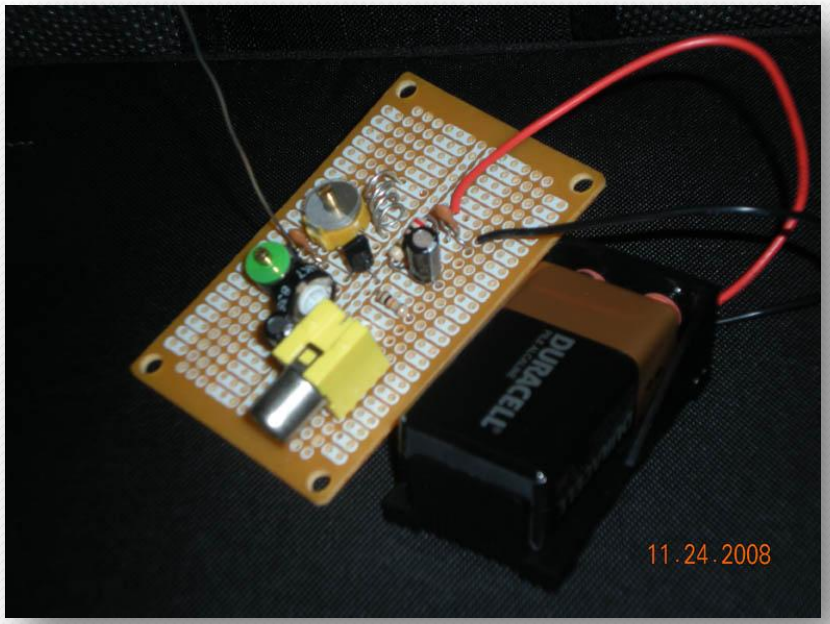
Design & Development

Science Achievers



Micro TV
Transmitter

Personal
Power Plant

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Design & Development

Museum Members

Hexagon Puzzle

3D Box Puzzle

Sliding Puzzles

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Design & Development

Open Access Users

Yo-Yo

Wine Rack

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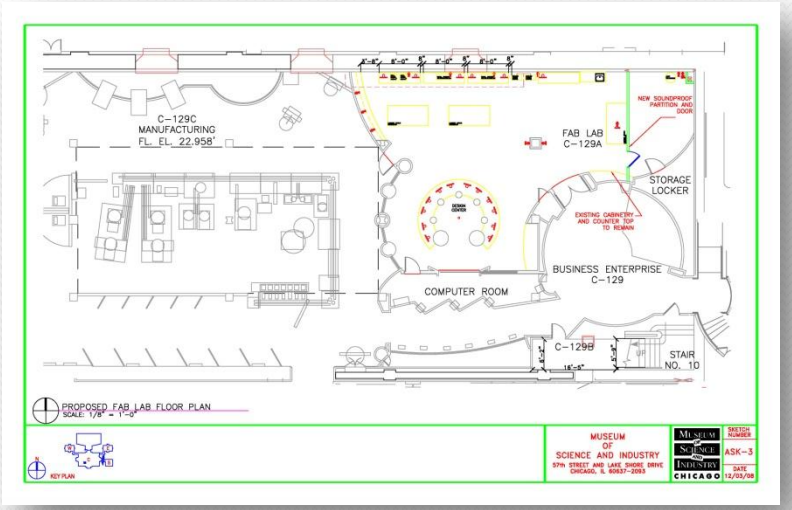
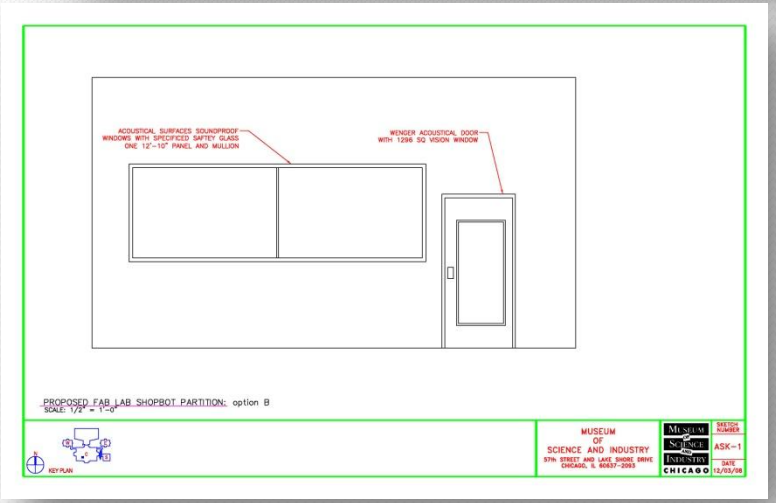
Design & Development

- CNC Enclosure

Lab Development





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Challenges

- Ethics
  - Teamwork
  - Adhering to standards while prototyping
- Time constraints
  - Coordination between MSI staff and IIT students
- Lab constraints
  - Limited knowledge of equipment

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Conclusions

- Accomplishments
  - Where we are at now

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Future Semesters

- Organization of Lab
- Furnishing of Lab
- Improvements on current projects
- Developing new projects
- Continuation of surveys
- Marketing

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Questions

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