Improving Efficiency & Quality of Data Acquisition in the Environmental Test Lab

Final Exit Presentation

Jet Propulsion Laboratory, California Institute of Technology

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Outline

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California Institute of Technology

- NASA MUST Project
- Capabilities of the Environmental Test Lab – 3 Tasks
- Basics of Data Acquisition
- Portable Instrumentation Rack
- Future Work & Contributions
- Acknowledgements
- Questions

NASA MUST Project

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Mario Rubio Exit Presentation Summer 2011

NASA Motivating Undergraduates in Science in Technology

- Scholarship covers ½ of tuition costs up to $10,00/Year
- 10-Week summer internship at one of ten NASA Centers
- Mentoring, Leadership Symposium and Tutoring

Environmental Test Laboratory

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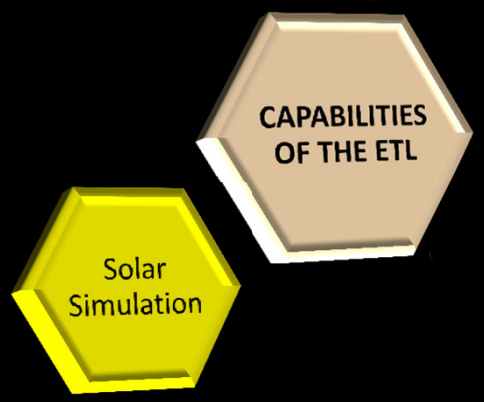


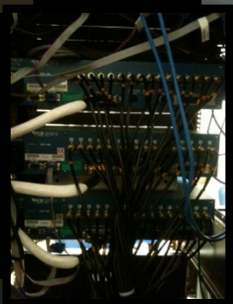
1. Build and Implement a Portable Instrumentation Rack
2. Create Manual for the fabrication of Thermocouples
3. Replace Motor and Automate solar radiometer

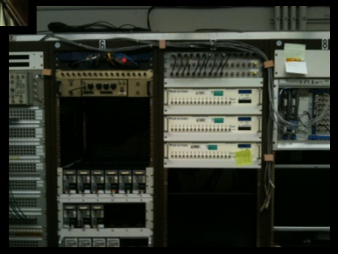
Data Acquisition

Data Acquisition System - samples signals from sensors measuring some physical phenomena and converts them into digital information that can be manipulated on a computer.

COMPONENTS OF DAQ

- Transducers – Signal Source
- Lines/Cables
- Signal Conditioners
- Analyzers/Recorders





ETL Layout

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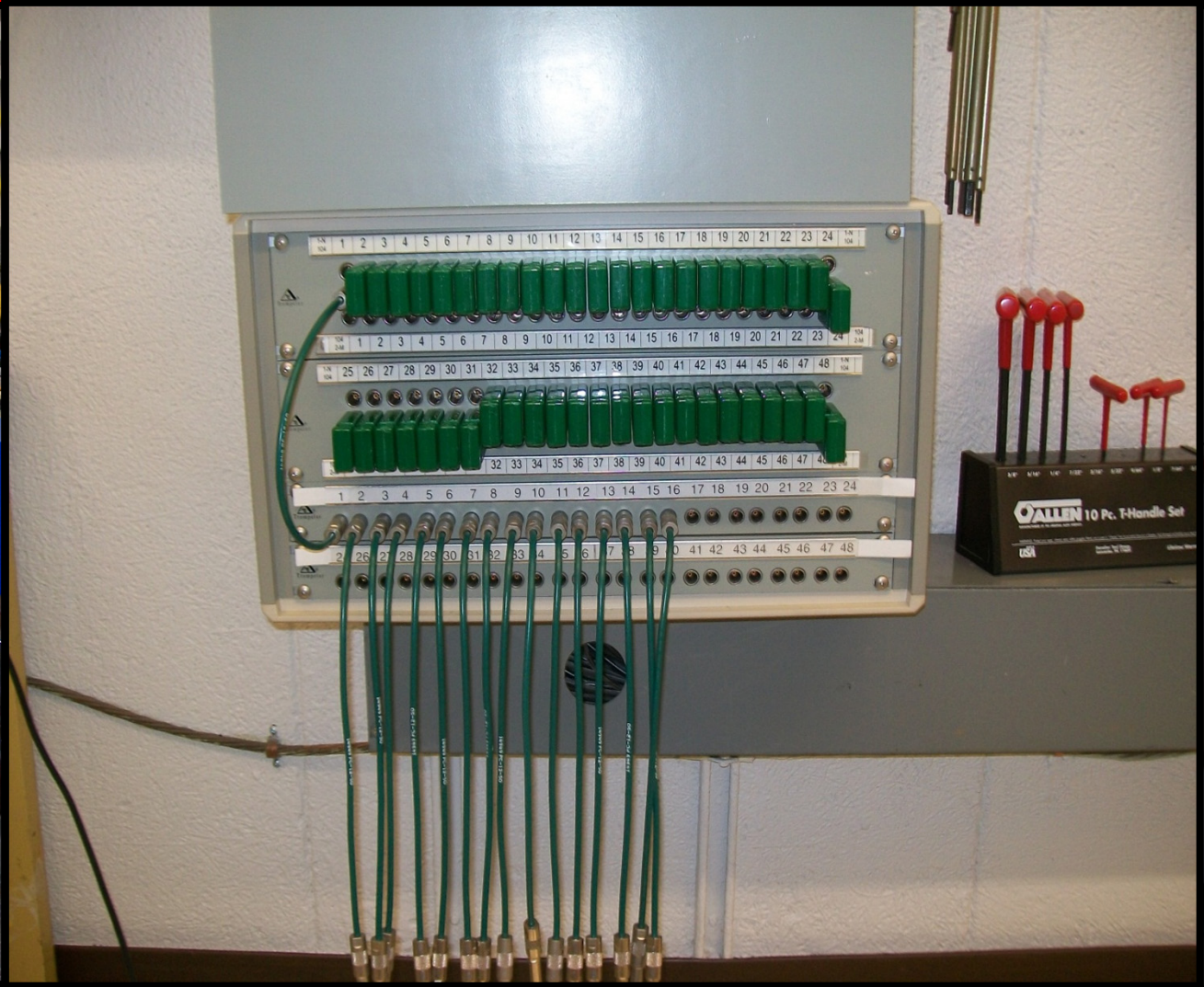
COMPONENTS OF DA

- Transducers – Signal S
- Lines/Cables
- Signal Conditioners
- Analyzers/Recorders

Control Room

DAQ System

Controls



ETL Layout

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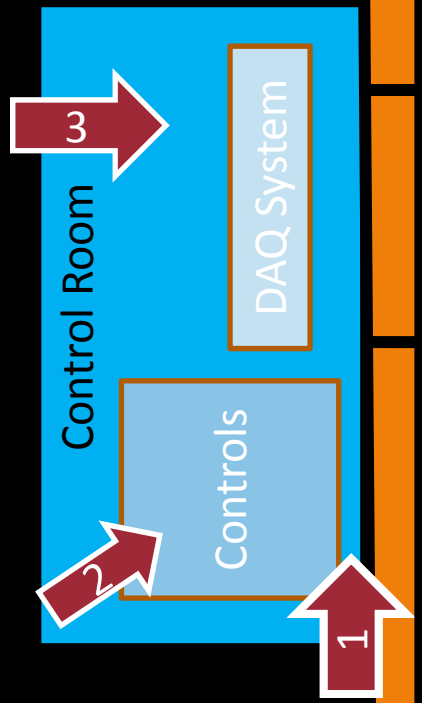

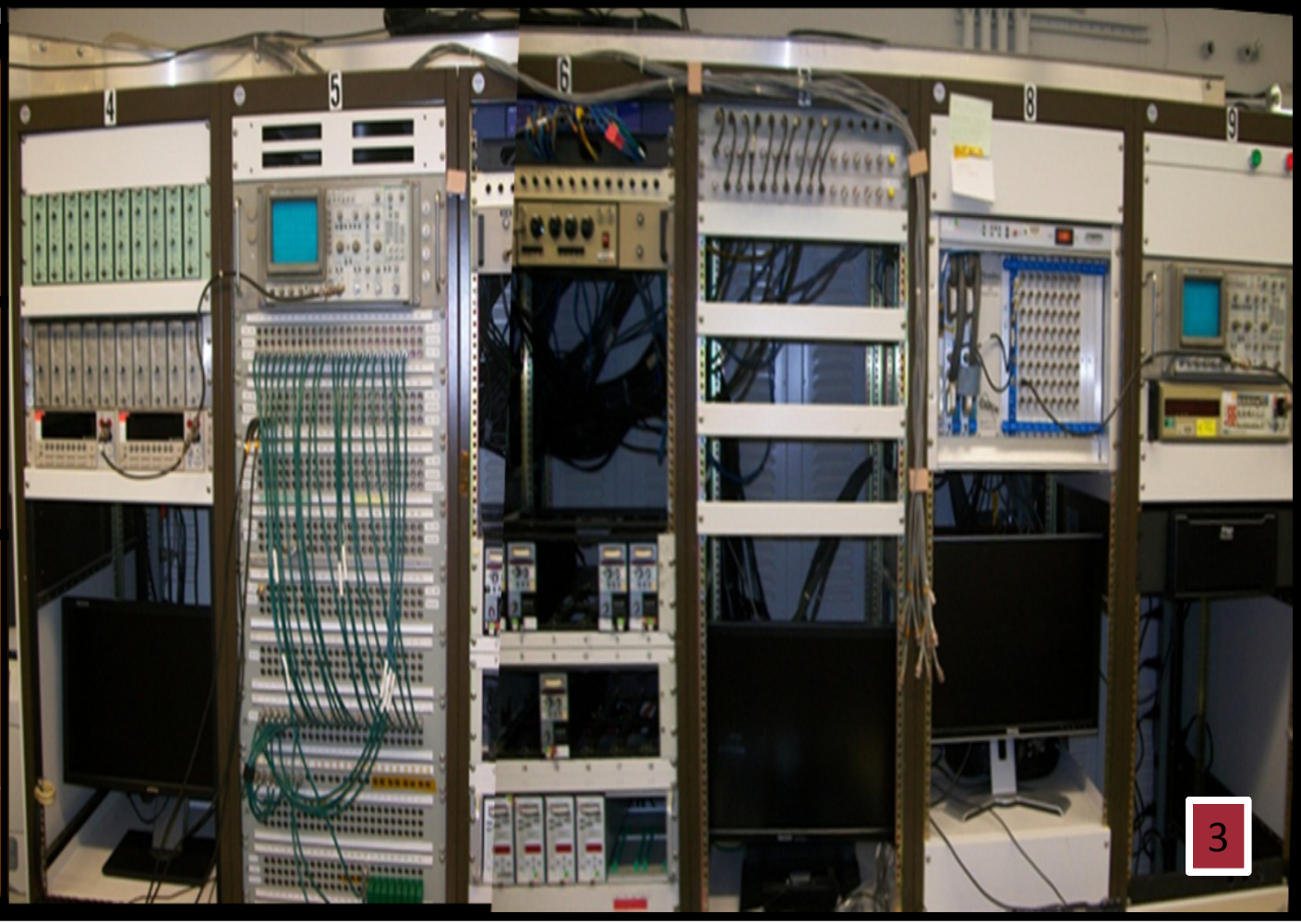

Instrumentation Rack

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Empty Instrumentation Rack Cabinet

1. **Locate a usable rack**
   - Pricing and getting quotes using FHLP-Flight Hardware Logistics Program
   - Using Transportation and Delivery Services
2. **Create drawing to represent rack and hardware**
   - Measuring each component in Units (1.75 inches)
   - Create drawing using Microsoft VISIO
3. **Remove components from current location**
4. **Install Components in rack**
5. **Wire all hardware-Power and Data Lines**
6. **Power up instruments and run test**

2. Create Drawing

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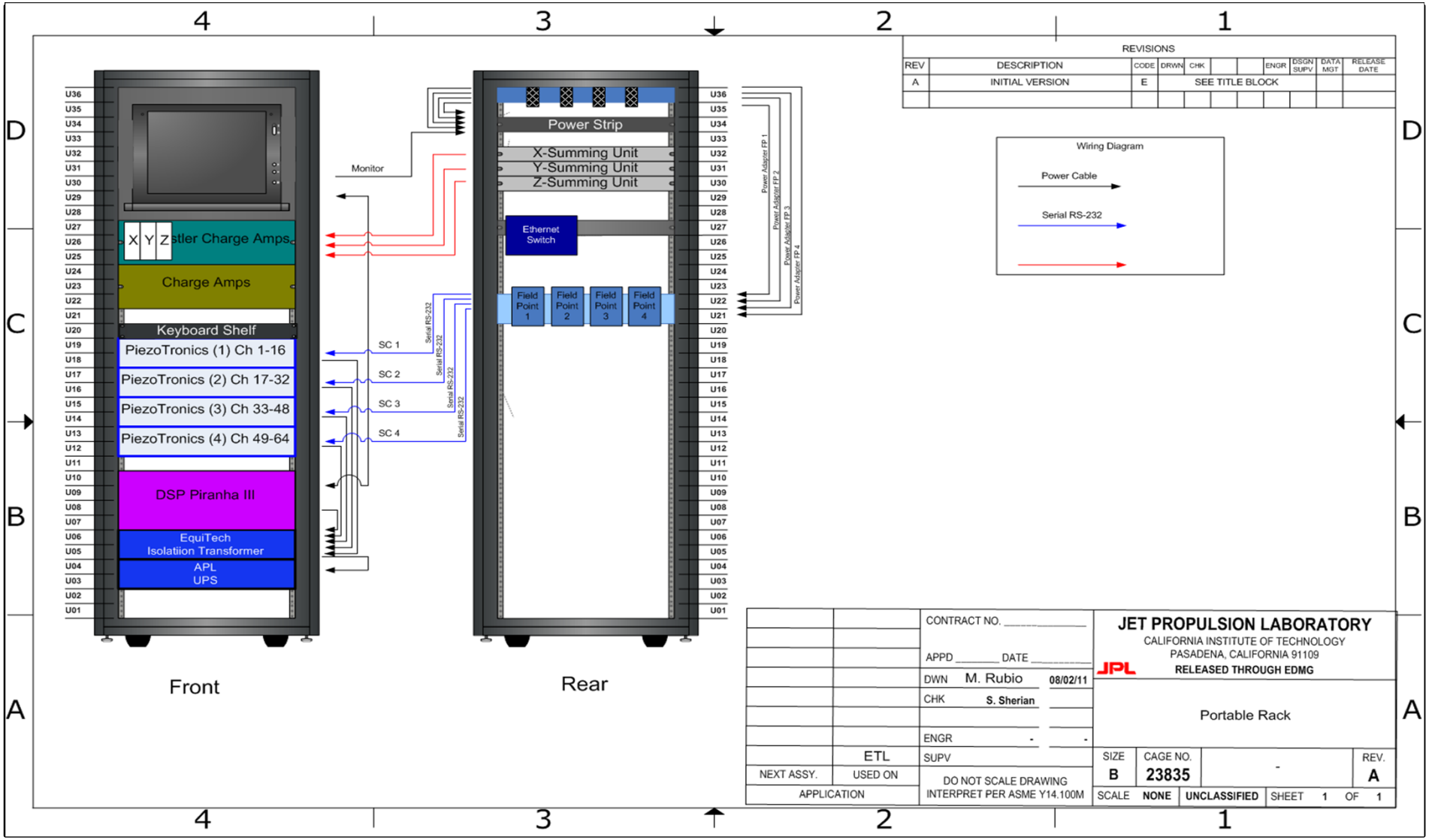

3. Remove Components

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4. Install Components

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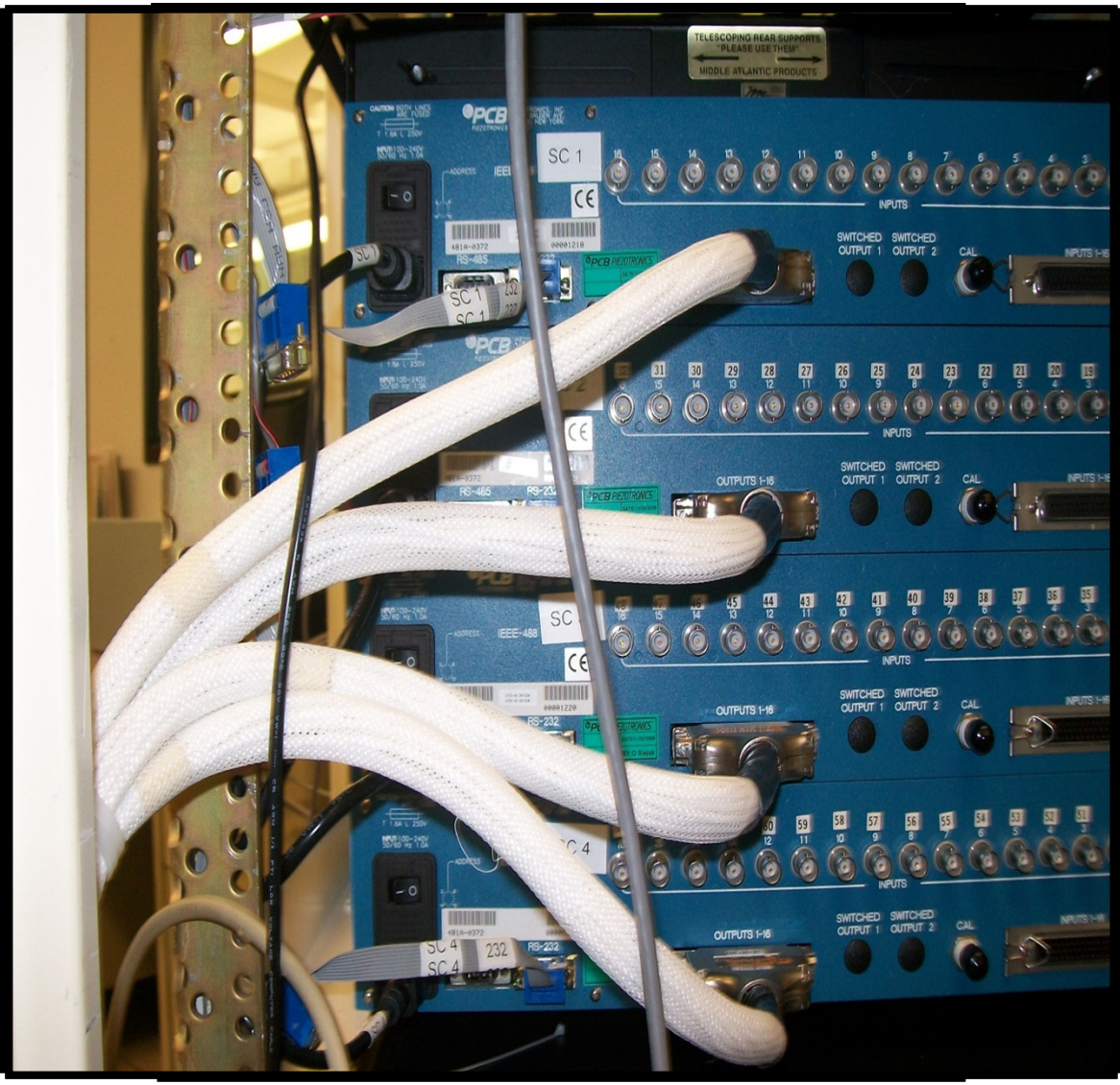

Future Work & Contributions

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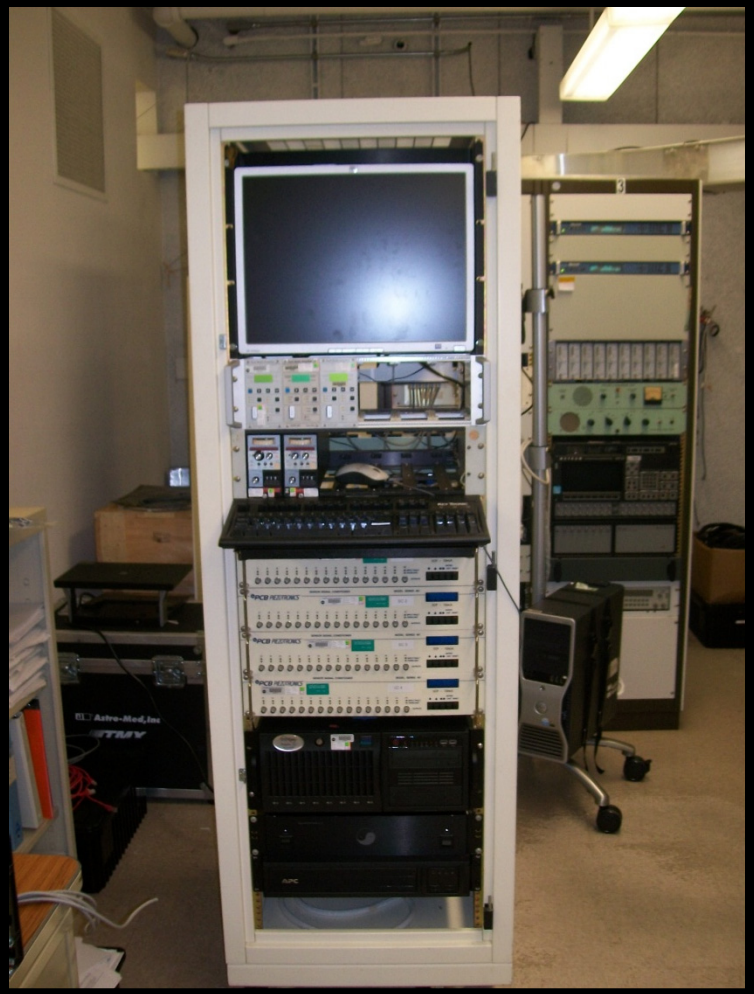

Future Work

Test the Data Acquisition
Portable Rack

Contributions

- Improve Efficiency
- Improve Data Quality
- Save time
- Save Money

Acknowledgements

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Programs

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