



**FIRST Robotic Competition  
Zero Gravity - Team 2180  
2009 Season**

**November 24, 2008**



# Meeting Agenda



## November 24<sup>th</sup> Topics:

- q Determine PC and SW Tool Status
- q Inventory Spare Parts
- q Begin Prototype Robot Design

## Looking Ahead

- q Setup Lab / Tools for Development
- q Design, Build ,Test Prototype



# PC and SW Tool Planning



- **Lab PC Status**
  - Working Order
  - Current Software Installed
  - Additional PC's needed?
- **Design / Production Tools Needed?**
  - System
  - Mechanical
  - Electrical
  - Software



# Parts Inventory



- q **Inventory Spare Parts**
  - q **Hardware (metal, nuts, bolts, metric / SAE, etc)**
  - q **Pneumatics (fittings, pistons, etc)**
  - q **Electrical (Spikes, Victors, connectors, etc)**
- q **Create Wish List for missing items**



# Prototype Robot Design Requirements



- **Autonomous Mode**
  - 1 - Drive Straight to obstacle
  - 2 - Backup, Turn Left
  - 3 – Repeat 1 and 2
- **Tele-operated Mode**
  - Joystick Operated
- **Drive Train**
  - 4 Wheel Omni Directional



# Prototype Robot Design Constraints



- **Use 2006 Robot Chassis Parts**
- **Use Mecanum Wheels**
- **Weight Budget = 60 lb. Maximum**
- **Max Speed 9 ft / sec.**



# Design Approach



- System Design
  - Robot Development Phases
    - Design, Build, Test, Integrate, Practice
  - Create overall design to meet requirements
  - Flow requirements down to Mechanical, Electrical and Software designs



# Design Approach



- System Design
  - Establish Weight, Power, Size, Cost budgets
  - Use existing resources to aid in the design (Online Forum tools, books, lessons learned)
  - Break work down into increments
  - Build a little, test a little for each increment



# Design Approach



- Mechanical Design
  - Increment 1 - Drive Train
  - Increment 2 - Chassis
  - Increment 3 - Sensors



# Design Approach



- Electrical Design
  - Increment 1 – Power System
  - Increment 2 – Robot Controller
  - Increment 3 - Sensors



# Design Approach



- Software Design
  - Increment 1 – Tele-operated Control
  - Increment 2 – Sensors
  - Increment 3 – Autonomous



# Meeting Minutes



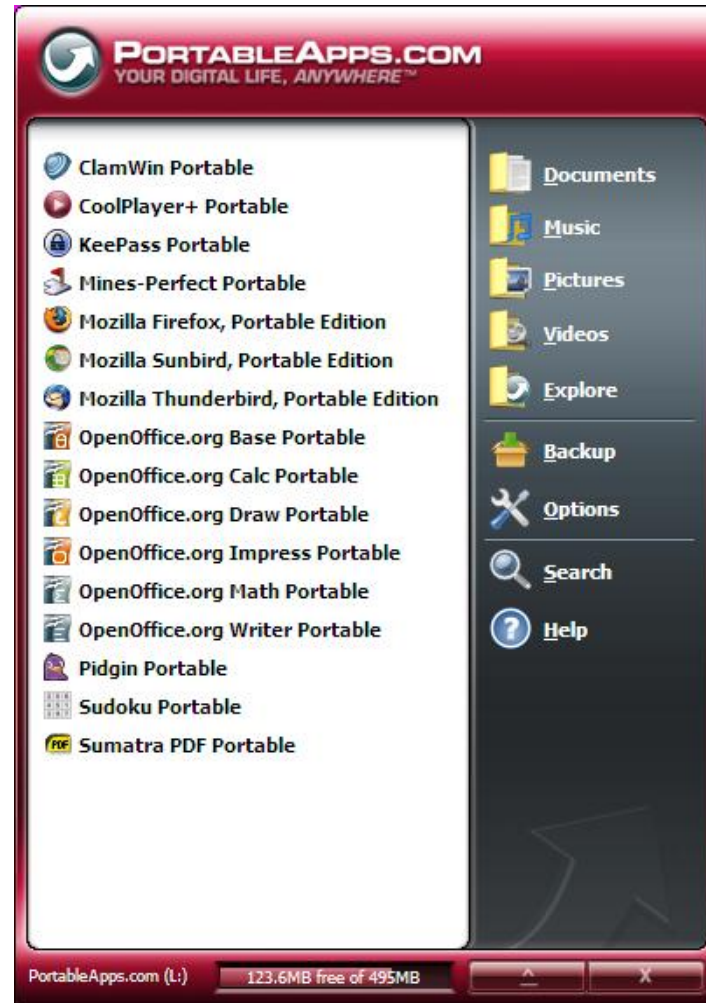
- **Lab PC Status**
  - Some missing keyboards
  - 3 to 4 PC's working
- **Current Software Installed**
  - None to speak of
- **Additional PC's needed?**
  - Four PC's from the Photo Tech class maybe available
    - **Need external hard drives for backup and storage**



# Meeting Minutes



- **Lab PC Status**
  - **Portable Thumb Drive Test Worked**
  - **Able to run free programs off Thumb drive**
  - **Need more Thumb drives**
  - **PC's have one USB port open, buy USB Hubs**





# Meeting Minutes



- **Design / Production Tools Needed?**
  - **Software**
    - Some of last years tools need to be reinstalled
    - Need to configure LabVIEW
    - Need to continue identify tools
  - **Electrical**
    - Missing schematic entry tool
    - Need to continue identify tools
  - **Mechanical**
    - Need to continue identify tools



# Meeting Minutes



q **Inventory Spare Parts**

q ???

q **Create Wish List for missing items**

q ???



# Action Items



- q **Baker – send Mike drivers for USB-6008 DAQ**
- q **Kohler – Have students disassemble 2006 robot platform for start of Prototype Robot**
- q **Kohler / Breingan – Locate Brian Peters Thumb drives**
- q **SHRPA – Approve purchase of USB Hubs**
- q **SHRPA – Approve purchase of external Hard drives**
- q **All – Complete Design Tool Recommendations**
- q **All – Complete Parts Inventory**
- q **All – Complete Wish List**