Meeting Goals and Agenda

Goals

• Review the SAE deliverables: what are they, when are they due
• Describe the use of GOTChA charts as a project planning tools
• Describe the engineering team GOTChA chart for fall
• Kick off the division activities for the term (via breakouts)

Agenda

8:00  Goals, Agenda, Notetaker
8:05  Review of engineering team organizational structure & roles
8:10  2015 Formula SAE Electric schedule (Rob and Jake)
8:20  Engineering team goals, objectives, technical challenges & approach/milestones
8:40  Plan for the week
8:45  Division breakouts
9:00  Adjourn

Notetaker: ______________________

• Record notes and action items from meeting; post on wiki
### CS/EE/ME 75 Organization

#### Integrated Product Team (IPT)

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<tr>
<th>Team</th>
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<th>TA</th>
<th>UG lead</th>
<th>Members</th>
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<tr>
<td>Mechanical</td>
<td>G. Blanquart</td>
<td>Joseph Bowkett</td>
<td>Evan Sloan</td>
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<td>Chassis</td>
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<td>Drivetrain</td>
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<td>Energetics</td>
<td>A. Emami</td>
<td>Cibele Halasz</td>
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<td>Software</td>
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<td>Operations</td>
<td>R. Murray</td>
<td>Noah Olsman</td>
<td>Anup Kishore</td>
<td>10-15</td>
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<td>Systems modeling</td>
<td>Safety procedures</td>
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<td>Computing systems/data analytics</td>
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<td>Shenghan Yao</td>
<td>Mark Lorden</td>
<td>25-35</td>
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<td>Fund raising</td>
<td>Communications</td>
<td>Facilities/equipment</td>
<td>Outreach/events</td>
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- **Team meetings (45-60 min/week):** Mondays, 8 pm, 135 Gates-Thomas
- **Division meetings:**
  - Mechanical: Mon, 9-9:30 pm, 135 Gates-Thomas
  - Energetics: Mon, 9-9:30 pm, 115 Gates-Thomas
  - Operations: Fri, 12-12:30 pm, location TBD
  - Support: Mon, 9:30-10 pm, 135 Gates-Thomas
Project/Course Timeline [Rob/Jake]

SAE team registration
• What is this and who is responsible

SAE notice of intent
• What is this and who is responsible

Business plan
• Include enough detail for groups to understand first term deliverables

FMEA
• Include enough detail for groups to understand first term deliverables

System requirements review
8 Oct
SAE team registration

~2 Nov
Notice of intent due

~4 Jan
Business Plan
FMEA

~1 Mar
Structural equivalency form

~31 Mar
Impact attenuator +
cost reports

15-18 Jun
SAE RACE WEEK

8 Oct

S

ystem
requirements
review

S

ystem
design
review

Preliminary design review

Critical design review

Mock competition

8:10-8:20

Structural equivalency form
• What is this and who is responsible
• OK to leave out details for now

Impact attenuator report
• What is this and who is responsible
• OK to leave out details for now

Cost report
• What is this and who is responsible
• OK to leave out details for now
**GOTChA Charts**

**Goals (1-3)**
- Describe the goals of your project, in plain English
- Description should be understandable to your engineering friends (avoid jargon)
- Tie to the overall project goal

**Objectives (3-6)**
- Specific tasks that you need to complete in order to accomplish your goals
- Objectives should be “SMART”
  - Specific - concrete descriptions
  - Measurable - can tell whether you accomplished them or not
  - Attainable - possible to complete in time available
  - Relevant - lined up w/ system spec
  - Trackable - possible to monitor progress as you go
- Guide: try to include numbers and dates, when possible

**Technical Challenges (4-8)**
- List of problems that you expect to face in accomplishing your objectives
- Try to list anything that you are not sure about
- OK to include things that you don’t yet know (eg, programming in C/C++, implementing a vision algorithm, etc)

**Approach (4-8)**
- Describe how you are going to tackle the technical challenges that will let you accomplish your objectives to satisfy your goals
- Make sure all of the technical challenges are addressed (otherwise how will you overcome them?)
- Can serve as a work plan for the term - what do you want to do first, next, etc
Engineering Principles and Fall 2015 Goals

Project mission

• Gain hands-on engineering experience by designing and building energy efficient race vehicles
• Apply engineering concepts & better understand the mechanical, electrical and controls aspects of EV technology
• Develop innovative engineering solutions
• Assess costs and benefits to different power systems for vehicles
• Compete in and win SAE Formula Electric competition
• Engage the community

Engineering Team Principles

• Safety is our main priority. If you don't know how to do something, find someone who does to help/teach you.
• Communication is key to our success.
• Nothing is impossible.
2015 Project GOTChA (1 of 2)

Fall 2015 Goals

- Build a highly effective team with the skills and insights required to build an electric vehicle from scratch
- Complete a design that is compliant with the rules and will win the Formula SAE Electric competition

Objectives

- Monitor system-level requirements and budget allocations for weight and cost of components as design is evolving
- Create compliant designs for all components and review design choices by the end of the term
  - Midterms: clearly defined requirements for each component (performance, cost, weight)
- Train all CS/EE/ME 75 students in safety procedures and create protocols required for safe testing, operations
- Make enough progress in first term to build complete vehicle by end of second term
  - Finalize and build plan for the vehicle frame and begin construction (mechanical)
  - Complete a validated energetics design that will pass technical inspection (energetics)
- Create infrastructure required for divisions to optimize their designs with testing and simulation (operations)
- Finals: compliant design, with evidence of viability (prototype, vendor quote, etc)
2015 Project GOTChA (2 of 2)

Technical Challenges

- Very short timeline to produce working design, with minimal FSAE experience
- Lack of expertise in assembling and welding frame (design bottleneck)
- Meeting technical inspection requirements (competition bottleneck)
- Lack of expertise in high voltage electronics (design bottleneck, safety issue)

Approach

- Have working core equipment (e.g., motors, battery pack) working to allow testing as soon as the students are ready
- Create simulation and testing environments that will allow design space exploration of mechanical and energetic systems
- Know the Formula SAE Electric rules by heart
Plan for the Week: 5-11 Oct 2015

CS/EE/ME 75

• Complete HW #1 if you haven’t already (eg, late adds)
• Division breakouts (introductions, plans for the week)
  - Mechanics: 135 Gates-Thomas (weekly division meeting @ 9)
  - Energetics: 115 Gates-Thomas (weekly division meeting @ 9)
  - Operations: 235 Gates-Thomas (quick meeting, then go to appropriate division)
  - Support - no breakout session
• HW #2 out tonight, due 11 Oct (Sun), 8 pm: GOTChA charts +

Project activities (Rob)