EXPERIENTIAL PROJECT MANAGEMENT FOR STUDENT RESEARCH TEAMS

PRESENTED TO THE NATIONAL COUNCIL OF SPACE GRANT DIRECTORS
AT THE 2015 SPRING MEETING, CRYSTAL CITY, ARLINGTON, VA
FRIDAY, FEBRUARY 27, 2015

PRESENTED BY:
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ON BEHALF OF THE LOUISIANA SPACE GRANT CONSORTIUM (LaSPACE)
ABOUT THE PROJECT

Ionization Nexus for Discharge Research in the Atmosphere (INDRA)

- Measured the breakdown voltage of the atmosphere as a function of altitude
- Team of seven students:
  - Young Group: six sophomores, one senior
  - Diverse Backgrounds: three EEs, two MEs, one CE, and one PetE
- Successfully launched from NASA’s Columbia Scientific Balloon Facility in May 2014
TEAM STRUCTURE

LaSPACE Staff

Project Manager

Electrical Lead

Software Lead

Mechanical Lead

Electrical Assistant

Software Assistant

Mechanical Assistant

Experienced

Inexperienced
Project Management

- Project Manager is a full time position
- Project Planning consumes most of a Project Manager’s time
  - Must oversee the development of the entire project, consider long lead time need, and critical path items
  - Need to know the system inside and out, and what systems need to built and tested
  - Must be able to see how the project breaks down into tasks
  - Should know the strengths and weaknesses of each team member for task assignments
CREATING WORK BREAKDOWN STRUCTURES

How do you create a long-term project development plan?

1. Identify the critical path – i.e. the set of components that take the longest time to research and develop, then plan critical path development early

2. Identify dependencies between tasks, and make sure that pre-requisite activities are completed before attempting post-requisite tasks

3. Budget significant extra time to complete tasks

4. Budget extra time to complete documents

5. Consider school schedule: don’t count on midterm week, finals week, or holidays
DEFINING TASKS

- A task is anything required to develop or support development of a project subsystem that can be assigned directly to a team member.
- Most tasks can be derived from a high level system design.
Expand diagram blocks until physical hardware implementations have been defined.
ASSIGNING TASKS

- Task assignment should be based on a few different things:
  - Skills and expertise
  - Upcoming personal schedules
  - Previous task-completion track record

- Always know what the team is working on, and which tasks are coming up for each team member.
While good organization and task definitions are important, building a cohesive team was key to the success of our project.

Project managers should build a strong team by actively:
- Ensuring team communication
- Promoting team building
TEAM COMMUNICATION

- Project Managers should keep in contact with their team
  - Email is useful for long messages and task assignment lists
  - IM clients (Facebook/GroupMe/Texts/etc) great for short reminders and real-time discussions
  - Group Calls should facilitate long-distance meetings (i.e. over school holidays)

- Friendly reminders about upcoming meetings and deadlines are incredibly useful
TEAM BUILDING

- Team building makes people excited to work on the project instead of just earning money

- Do non-work things outside of the lab
  - We ate dinner at local restaurants to celebrate project milestones
  - We helped each other with classes
  - We played co-op video games

- Should be optional
LEAD BY EXAMPLE

- Be a good team member
- Keep private conversations private
- Avoid gossip about other team members
- Compliment and support your team (positive feedback)
We began a new project for the High Altitude Student Platform.

In addition to the work on this payload, we mentor two student groups:
- LSU: Six new ballooning program students
- Baton Rouge Community College: Working to start a new balloon program
Questions?