

Gustin, Hal

From: Gustin, Hal [HLGustin@structint.com]
Sent: Saturday, September 29, 2012 8:37 AM
To: terrafrosh2016@mit.edu
Subject: One more important suggestion

Everyone:

I really enjoyed speaking with you all yesterday. Thanks for your hospitality.

One recommendation I forgot to mention, and it's maybe the most important.

Sometimes people at MIT get really stressed out. Be very aware of that, both for yourselves and for others. Know the signs in yourself, and watch for signs in others. If you feel it building up in you, take a break. Do something silly, or go run, or whatever works for you. If you see someone else stressing out, do something nice for them. I've found that bringing someone a drink or a cookie when they didn't ask for it, or even writing a quick note can help a lot (Hey, I know you're worried about this. Can I help?) . Watch out for each other.

And if someone is being really harsh or bitchy, it's not because they're an evil person. It's more likely because they haven't slept in recent memory. Don't take it personally.

Hal

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Mission 2016: A View of its Life Cycle from 1800 Miles Away

Hal Gustin
(Alumni Mentor)
720-320-6722
HGUSTIN@ALUM.MIT.EDU

My background

- Mentor for several Mission Classes (Floods, Fish, Water, Air, Food, Biodiversity)
- MIT SB/SM Course 2
- Consultant
- Mission Cheerleader
- Why do I do this?

Mission Problem vs. Classical Problems

- Classical: Often well defined, deterministic or close. Needed input is clear. Final solution is quantifiable and usually verifiable.
- Mission: Often open ended, underdefined, nondeterministic, not quantifiably verifiable. Often long time scale.

Mentors

- The alumni mentor group is like a consulting company for Mission teams
- A lot of experience, not necessarily in topic
- Eager to help, but don't know "the answer"

How mentors can help

- Critique logic of teams
 - Suggestions in the context of experience
 - Listen to ideas
 - Sanity checks
-
- But: we are not usually subject matter experts
 - We shouldn't be proof readers
 - We can't do the project. You will know a lot more than we do.

Mission “Life Cycle”

(my perception)

- September 4-15: Class and topic introduction, team formation
 - (They haven’t told me how to do this, but I’m sure they will soon.)
 - Remote view: Lectures, resources posted. Not much communication with class.
- September 16-30: Team meetings, Mini-project assignment, Library and other resources
 - (So, team, what are we supposed to do? Let’s make some assignments.)
 - Remote view: Some teams post and talk a lot.

Life Cycle

- October 1-31: Complete mini-project, web design
 - (Post more stuff on wiki. 8.01 problem sets are killing me. Better focus on that. I don't actually have to do the Mission stuff today.)
 - Remote view: Things get really quiet on e-mail.

Life Cycle

- November 1-8: Your final presentation is in a month. Your website is due before Thanksgiving.
 - (Class and team leaders: Please get your input in, we're trying to pull things together.)
 - Remote view : Some drafts are sent for review. Increasing e-mail traffic, sense of looming panic.

Life Cycle

- November 9-18: “It’s 2 am, we’re working in the Terrascope room, and we have FOOD. Please join us!”
- “We need your input NOW”
 - (What? In TWO WEEKS? AAARGH)
 - Remote View: Increasing panic. Team leaders and UTFs try to encourage and gently motivate (or butt kick). Intense e-mail traffic

Life Cycle

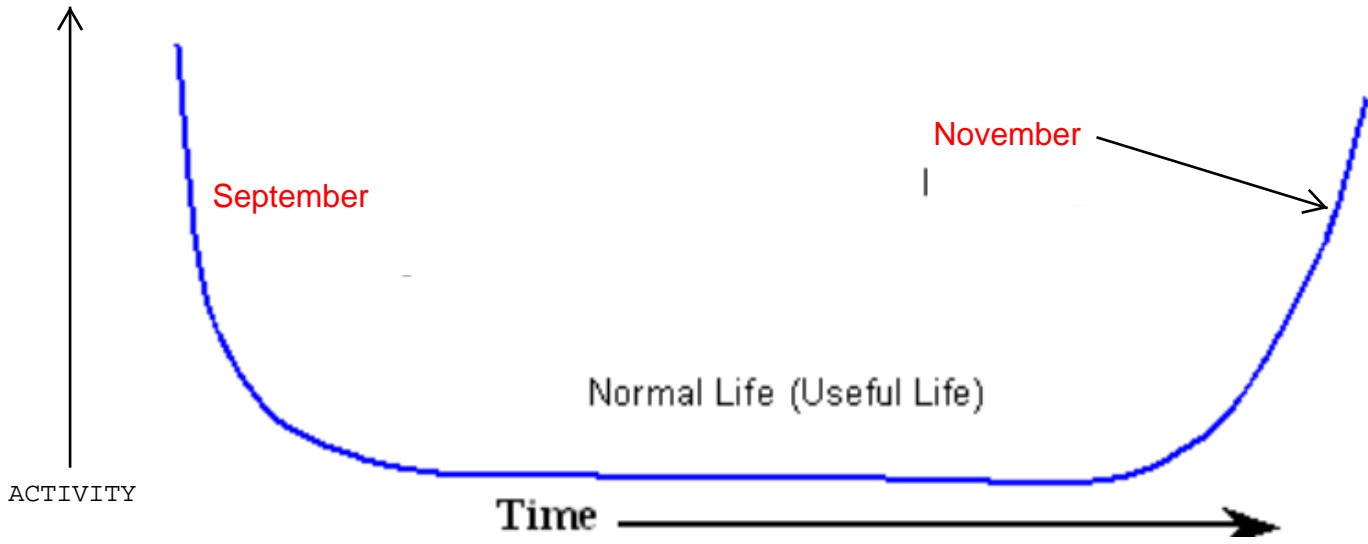
- November 19-30: Thanksgiving Break
 - “We are going to be working non-stop over this whole break to get website and PowerPoint drafted and revised, and we STILL don’t have input from these people. We have Food and BROWNIES in Terrascope. *PLEASE COME HELP!*”
 - Remote View : E-mail at 2 am: “I’m sorry to bother you, but would you please review this? We’re trying to get it done before morning”

Life Cycle

- Presentation week: “Rehearsals and Q&A sessions tonight and tomorrow, until we’re done.”
 - “Guys, wear shoes AND socks – not white. Girls, if you’re wearing heels, practice walking in them”
 - Remote view: What’s the webcast address?

The Bathtub Curve

Based on Observations of Previous Missions 2006-11



Life Cycle

- The presentation was brilliant. Thunderous applause. Faculty and UTFs are actually smiling.
 - What? Finals are in 10 days?
 - Remote view: Like watching the Super Bowl, for mentors and other Mission groupies. Pass the wine.

Suggestions

- Start defining your problem early. Build a time line by working backwards. Stick to it.
- What pieces are essential to a solution?
- How will you know when your solution is complete?
- Each person is part of a chain of activities. If you delay your part, you delay the people “downstream”. Everyone is on critical path.

Suggestions 2

- Use October well: That tends to be lower activity
- Call for help when you need it: Team, Class, UTFs, Mentors
- Help out with things other than your own assignments.

Suggestions 3

- Think about the life cycle of whatever you are studying
- Think about developing a systematic structure
- Validate your results as well as you can

Caution 1: Data

- You'll know a lot about the topic as a group.
- Each person and group will be an expert on some piece.
- INTEGRATE and SYSTEMATIZE: Don't make the final project a huge data dump from everyone.
- It's more about defining a process than about the immensity of unconnected data.

Caution 2: Numbers

- Understand and validate any numbers you use, where they come from, and what they mean
- Your audience are mostly technical types. They LIKE numbers. If you state a number that doesn't make sense, they will jump all over that.
- DO a critical sanity check.

Numbers - Example

- During the typical Mission Fall Term, over 3×10^{14} Brownies are consumed
(Ridiculous? Yes. Have we seen similar claims? Also yes.)

Caution 3: References

- Be very critical of what references you cite: we (your audience) will.
- Having a statement in print, or on the internet or even in Wikipedia doesn't make it true.
- A single source doesn't prove anything. Is your information broadly supported?

Finally

- Enjoy this process.
- This thought process, though frustrating, undefined, intense, will develop abilities that will be valuable through your academic and professional careers
- After you survive, put a bullet on your resume about the mission effort. I hire people. I look for the kinds of abilities you are developing. Others do too.