

Mission 2019: Viewpoint from 2000 miles away

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

My background

- Mentor for about 10 Mission Classes
- MIT SB/SM Course 2
- Engineering Consultant (Primarily in energy/power production)
- 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.

Mission Team



Care for yourself and team

- Recognize your own constraints
(Commitments, schedule, state of mind)
- Acknowledge the constraints of others
- Be sensitive to the condition (physical, mental, emotional) of yourself and others
- Let people know early if something is going on that affects you or the team
- RECREATE!

Stress

- MIT can occasionally be stressful
- People respond to stresses differently
 - Behavior changes
- Be aware of others AND of yourself
 - Are you/they changing?

Sources of Stress

- Workload
- Dorm life
- Sleep deprivation
- Away from home
- Diet
- SAD (Seasonal Affective Disorder)
- External/family factors

Care for yourself and your team

- Call for help when you need it: Team, Class, UTFs, Mentors
- Communicate in person often
- Don't take it personally.
 - If someone seems harsh to you, maybe something else is going on
- Occasionally, do something nice for someone.
(Sounds silly, right?)

Care for yourself and your team

- Watch for:
 - Changes in communication (hostile, very passive...)
 - Brooding, negative
 - Depression
 - Inability to plan or act
 - Behavior different from what has been normal for that person

Care for yourself and your team

- Be open to listening
- Avoid being a hermit
- Affirm people
- Talk to others (I'm always willing to talk, for example.)
- Call for help when you need it: Team, Class, UTFs, Mentors
- Other ideas?

Mission “Life Cycle” (my perception)

- September 1-15: 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 task assignments.)
 - Remote view: Some teams post and talk a lot.

Life Cycle (cont.)

- October 1-31: Complete mini-project, web design
 - (I need to do more stuff for Mission. 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.

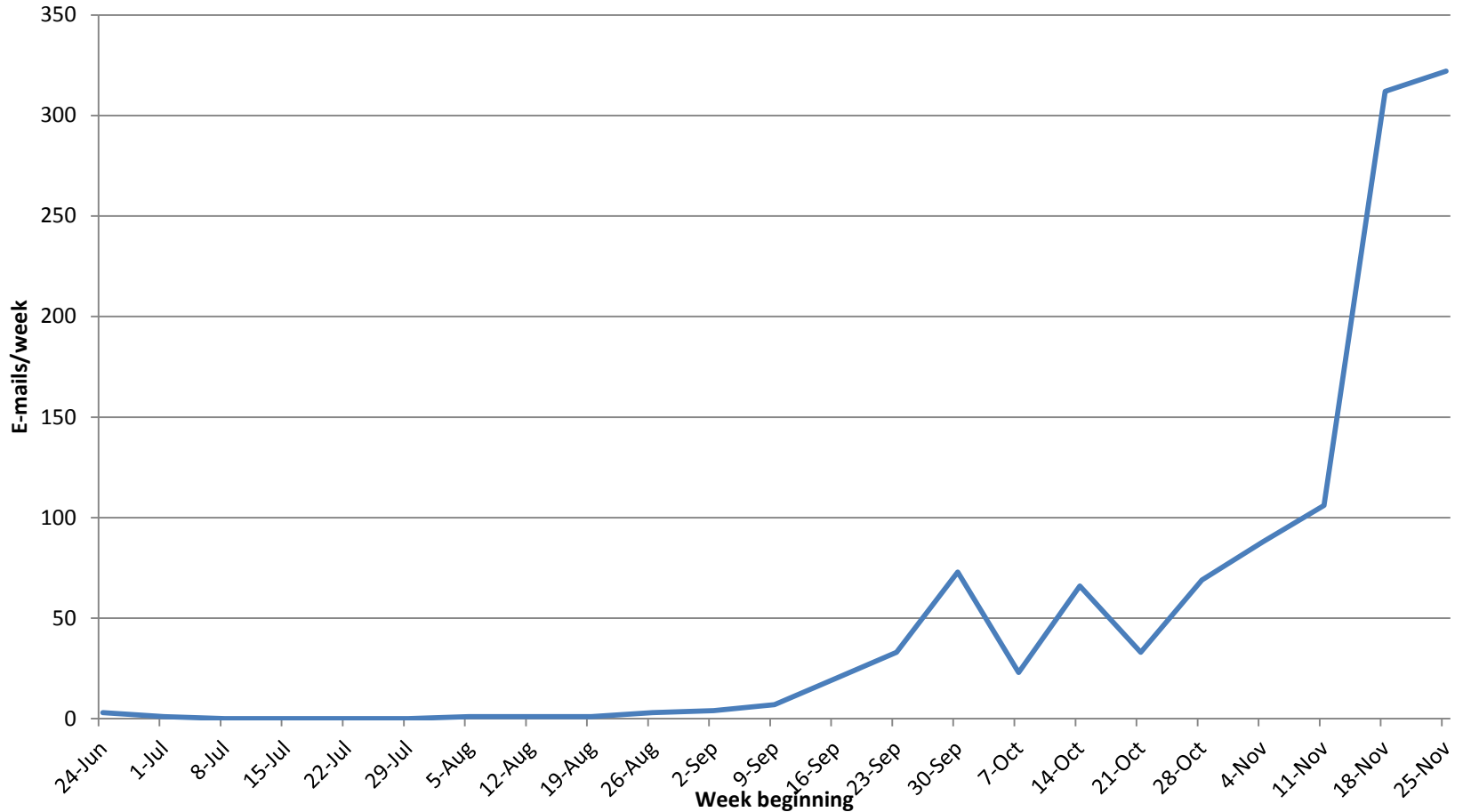
Life Cycle

- November 1-8: Your final presentation is less than 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.
 - Class starts becoming “TerrorScope”

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

Mission 2016 Activity (e-mails per week)



Side note:

Communication

- Is e-mail “the best way” to communicate?
- Advantages/disadvantages
- Other Options?

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?

Life Cycle

- The presentation was brilliant. Thunderous applause. (That never happens with an 8.01 P-set)
- Faculty and UTFs are actually smiling.
- Remote view: Like watching the Super Bowl, for mentors and other Mission groupies. Pass the wine.
- **What? Finals are in 10 days?**

Oh, Dam!



Suggestions

- Start defining your problem early. Build a time line by working backwards. Stick to it.
(EXAMPLE: Mini-project)
- 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.

Build on individual work



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
- Consider opposing viewpoints.
- Recognize Biases

There's more than one viewpoint



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: The final project is not 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

- Mission can be very time consuming
- During the typical Mission Fall Term, over **300 student –years** are spent on the project
(Wait---What?)

Caution 3: True Believers

- Falling in love with a technology or solution
 - No other is as good
 - This is THE solution!

Caution 5: Understand Biases

- ALL sources are biased.
- A biased source doesn't make it an unusable source
- Know your own biases
- Look for hidden agendas
- Try for objectivity: Compare sources with different viewpoints

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.

This can be fun!

