Technology Roadmapping

Day One

Lecture #1
This seminar will explore the purposes and development of Technology Roadmaps for systematically mapping out possible development paths for various technological domains and the industries that build on them. Data of importance for such roadmaps include rates of innovation, key bottlenecks, physical limitations, improvement trendlines, corporate intent, and value chain and industry evolutionary paths. The course will build on ongoing work on the MIT Communications Technology Roadmap project, but will explore other domains selected from Nanotechnology, Bio-informatics, Geno/Proteino/Celleomics, Neurotechnology, Imaging & Diagnostics, etc. Thesis and Special Project opportunities will be offered.
TRM Class Goals

• Collaborative efforts among 1-3 students, MIT researchers, & Industry Sponsors
• Across MIT research areas
• Cross Industry Benchmarking
• Partnered with Industrial Sponsors
• Covering Technology AND Business Dynamics
• Attract students passionate about technology sector, however broadly or narrowly defined
• Committed to producing coherent & complete Tech Roadmap (Draft 1.0) during Fall Semester
High TRM Student Expectations

- Serious commitment of time & interest
- Literature review & substantial interviews
- Attend talks & seminar series in that tech sector, that’s part of the course
- Data gathering & presentation smithing
- Crafting a draft PPT & DOC by semesters end
Engaging Masters Students in MIT Sloan Research Agendae

- Business school disconnect
- Unfortunate and sub-optimal
- We’re prototyping a new path
- Help show that it works!
Stone Soup analogy

no free riders

*Clockspeed* as touchstone

value chain dynamics

Roadmap as a verb:

to do collaborative planning
Seriously

• If you’re not really serious, free up a slot
• We want this to be a top priority
• The seminar ought to BOTH advance your professional interests AND appeal to our shared roadmapping vision
Seminars & Conferences

• Part of your 9 units is required attendance of relevant technology seminars throughout MIT.
• Ask us for suggestions, etc.
Grading

• 20% based on class participation & attendance,
• 15% on progress report presentations & documentation,
• 45% on the quality & content of the final TRM presentation & documentation,
• 5% for adding novel reference material to our library of links and TRM documentation, and
• 15% discretionary for demonstrably helping classmates improve their roadmapping abilities, sharing lessons-learned, and generally going “above & beyond.”
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<th>Topic</th>
<th>Speaker</th>
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<td>Student email top 3-5 tech sectors of interest &amp; mini-bio</td>
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TRM Syllabus
TRM Team Formation Process

- Active promotion & recruitment by us
- Ask all students to specify top 3-5 technology sectors of great(est) interest in rank order plus a relevant mini-bio in Week 1
- Some kind of informal luncheon in Week 2
- MiniMap proto-project in the Week 3 to help ID student collaborators; also gives us fast feedback
Teams

- You choose to team up
- We will do our best to introduce, prompt, connect, and so forth
- This is management school; solve your own team problems
MiniMap Project

• Pick an emerging technology theme
• Do a quick’n’dirty search for key historical data and research viz that topic
• 5-10 PPT slide presentation Due in Week 3
Semester Finale

- One to Two full-days foci, at end of semester?
- All teams present
- Draft compendium assembling the most compelling Tech Roadmaps
Potential TRM Academia Speakers
(and Labs to Engage)

• Bob Brown & Alice Gast, MIT’s Research Directors
  • Ned Thomas, Soldier Nanotech
  • Marty Schmidt, MTL / MEMS
    - http://www-mlt.mit.edu/mlthome/
  • Bruce Rosen, Martinos / NeuroMRI
    - http://hst.mit.edu/martinos/
  • Eric Lander, Whitehead / Genomics
  • Bob Langer, Biomaterials, Drug Delivery
  • Victor Zue & Rod Brooks, LCS/AI Labs, Project Oxygen
  • Doug Lauffenberger, Biological Engineering
    - http://web.mit.edu/be/
  • E. Sachs, 3D Printing
    - http://web.mit.edu/tdp/www/
  • Neil Gershenfeld, Media Lab / Ctr Bits & Atoms
    - http://cba.mit.edu/
  • Tom Knight, AI Lab / Computation & Biology
    - http://www.ai.mit.edu/people/tk/tk.html

Other Labs? http://web.mit.edu/research.html &
Sample Reading: Semiconductor Roadmap

Adding Links

• Send us ANYTHING that might be of common interest and mutual benefit
• Helping educate one another is basic responsibility