Starting A Center:
New England Center for Analog and Mixed Signal IC Design (NECAMSID)

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`http://ece.wpi.edu/analog`

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Presentation Overview

- **Background**

- **Design Center Overview**
  - **Organization**
  - **Benefits to Sponsors, Students**
  - **Intellectual Property Policy**

- **Advice on Starting Your Center**
  - **Organization**
  - **Industry Contacts**
  - **Selling to Potential Sponsors**
  - **Recruiting Students**

- **Summary**

Personal Background

- 1979-1983   A.B. Engineering Sciences Dartmouth College

- 1983-1986   Design Engineer, Analogic Corp.

- 1986-1990   Design Engineer / Engineering Manager,
        Adaptive Optics Associates (AOA)

- 1990-1994   Graduate School (Univ. Rochester, Boston U.)

- 1994-1999   Asst. Professor, WPI

Design Center Overview: Organization

- **Membership**
  - 5 companies each pay $30,000 annual fee
  - No indirect costs charged
  - Collaborative : Total of 4 MQPs, 4 MS, 16 students in lab

- **Advisory Board**
  - Representatives from member companies
  - One-day meetings in fall, spring
  - Review progress, choose future projects
  - Direct interaction with students

- **Research Projects**
  - Proposed by companies, faculty
  - Selected by companies (Advisory board vote)

Selling Points: Benefits to Sponsors

- Access to graduating seniors, M.S. students
- Increase pool of students with mixed signal IC design experience
- More awareness of sponsor's company among all students in ECE
- Influence direction of research
- Awareness of and access to new technologies
- Influence curriculum development
- Networking

Sponsored Project Benefits to Students

Better Project Quality

- "Real World" project credibility

- Better project definition
  - Expect more from first term!

- "Customer" = easier to motivate students
  - Professor not the bad guy

- Compete with sponsor's competitors
  - Students live with real cost / budget constraint

Intellectual Property Policy

- **Research results equally available to all members**
  - –Consortium NOT for proprietary research!
  - –We've got expen$ive, overhead-laden accounts for that
- **Members may request delay in publication of results**
  - –Throw 'em a bone
  - –Journals so slow it doesn't matter anyway
- **Ownership of patentable discoveries, inventions, etc. goes to whoever pays for patent expenses**
  - –WPI and/or subset of interested sponsors
- **All members entitled to non-exclusive, royalty-free license**
- **Legal agreement on web at**

  `http://ece.wpi.edu/center/newagreement.html`

Talk early and often with Jeff DiTullio!

Show Me The Money

- **$5,000 is too cheap for MQP**
  - Hot job market = graduates in demand!
    - Major field dependent, of course
  - Don't be afraid to ask for a lot of money
    - OK if they say no
  - Sponsor's attitude:
    - Little money committed = low priority

- **Sponsors are really interested in students**
  - Access, experience, interest in company's field
  - Curriculum, research less important
  - Cheap compared to recruiting / headhunter cost
  - Give the people what they want

Starting Your Design Center Organization

Talk to / get ideas from as many people as you can:

- **People at WPI doing something similar**
- **People at other schools doing something similar**
  - –**Stole idea from Terri Fiez, CDADIC, WSU**
- **Contacts at potential sponsors / member companies**
  - –**Be aware of industry biases / constraints**
  - –**Want instant, cost-free product development**
  - –**18 months = eternity**

- **Consider teaming with other faculty**
  - –**Within department: cover several subdisciplines**
  - –**From other departments: interdisciplinary**

Starting a Center: Industry Contacts

Quantity Rules

- **To get 1 good idea, you need 10 bad ideas**

- **To make 1 sale, you need to live through 10 rejections**

- **To get 1 sponsor ...**

- **If a potential contact isn't producing, spend time elsewhere!**

Industry Contacts: Where to get them?

Anywhere and everywhere!

- **Former students! (tough for new faculty)**
- **Former employers/employees (tough for traditional PhD path)**
- **Your PhD advisor's contacts (tough for some advisors)**
- **Help from colleagues in your department (tough in small dept, hate-filled academia)**
- **People who see you at conferences (tough: 99% of academic conferences bogus for industry. Choose wisely)**
- **People who see your publications (tough for industry: ultra-narrow publish-or-perish niches)**
- **People who see you at local professional society talks**
- **Put your buzzword-laden CV on the web**

Mixed Signal Design Center Contacts

- **Analog Devices**
  - –**Julie Barbeau (Former WPI student)**

- **EG&G Reticon**
  - –**Chris Raanes (Former AOA underling, now Pres. & G.M.)**

- **Unitrode**
  - –**Rich Valley (Eng. Manager; through BU advisor)**

- **Teradyne**
  - –**Bill Bowhers (Former BU student)**

- **Allegro**
  - –**Pete Lanyon (Called me; worldwide fame and prestige)**

Selling Your Center To Sponsor

- Any contact to get you in the door
  - Engineering, Human Resources, anything
- Work your way up corporate food chain
  - "This will make you look good for your boss"
- Find the person in sponsoring organization who can say
       "This is a good idea - let's spend $30,000 on it!"
  - Title different depending on company size / organization

- Work your way back down corporate food chain to whoever's actually interested in technical work
  - Point of (frequent) contact once work is happening

- Two Words: "Quarterly Payments"
  "$30,000 is a lot of money"
                              "You can pay in quarterly installments"
  "Where do we sign?"

Selling Your Center to Students: Recruiting

- Two words: FREE FOOD
  - MQP / Grad student recruiting event early C term
- Two more words: FREE CLOTHING
  - Analog Lab T-shirts
- Another two words: OPEN HOUSE
  - October, April
  - Invite all undergrads in dept (especially juniors!) to lab
  - See ongoing projects; cool place to work
- Teach undergraduate courses in your area with enthusiasm
  - Frequently mention related, high quality, sponsored projects
  - Lecture examples from industry / project work
- Most important: Student word-of-mouth, positive peer "buzz"

Summary

- **Organizing Center**
  - Tailor to needs of customers
    - Students
    - Sponsors
  - Talk to lots of people

- **Selling Center**
  - Benefits Not Features!
  - Identify contacts at correct level for each stage of process
    1. "Foot in the door"
    2. "CEO Says Go"
    3. Day-to-Day Technical Contact
  - Talk to lots of people