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

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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.


• 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