

USC Viterbi
School of Engineering

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Academic Career Mentoring Panel:
Is Industry or Academia
Right for You?

November 4, 2011

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Professor Azad M. Madni



- **Entrepreneur** ▪ **Corporate Executive** ▪ **Researcher** ▪ **Educator**
- Professor, Epstein Department of ISE, Viterbi School of Engineering
Director, Systems Architecting & Engineering Program, Viterbi School of Engineering
Professor, Pediatrics, Keck School of Medicine
- Founder and CEO (1994-2009), Intelligent Systems Technology, Inc.
- 2011 Pioneer Award Winner from International Council of Systems Engineering
- Numerous awards from DOD, SBA, Professional Societies, Commercial Organizations
- Fellow of IEEE, INCOSE, SDPS, IETE; Associate Fellow of AIAA
- B.S., M.S., and Ph.D. from UCLA; Graduate of Stanford Executive Institute
- **Technical Interests:** Systems Architecting, Socio-Technical Systems Engineering, Adaptable and Resilient Systems, Model Based & Platform Based Engineering
- **Business Expertise:** Strategic Planning, Business Plan Development, Market/Trend Analysis, Market Segmentation and Product Positioning, Strategic Partnering



Post Ph.D. Choices and Influences



- While working on Ph.D.
 - employed by Rockwell International on Space Shuttle Program
 - given opportunity to excel in M&S
 - contemplated post-Ph.D. career choices (startup, academia, continue at Rockwell)
 - influenced by UCLA mentor to join startup ... I did
- Post-Ph.D. Influences
 - established my R&D credentials (DARPA, ONR, AFOSR, ARI, NASA, ...) over 16 years
 - part of core team that took company public; Executive V.P. for R&D and CTO
 - founded ISTI, an R&D company, in 1994 and grew it 1588% in first 5 years; served as CEO for 17 yrs
 - focused on: technology-enabled process transformation; game-based education and training
 - recruited by USC to potentially head up SAE Program; selected from a pool of candidates
 - Professor of ISE and Director of SAE Program, VSOE; joint appointment from Keck School of Medicine

Key Influences: opportunity at Rockwell; mentor's suggestion; crystallization of interests; starting a company; academic collaborations; USC opportunity



Succeeding in Academia vs. Industry



■ Academic Success

- research grants, journal publications, presentations at key conferences
- focused research area with results orientation (national/global interest)
- written communication skills
- relationship with research sponsors and members of research community
- **impact opportunities:** transform education by building a two-way bridge to research; exploit how students use technology in their daily lives

■ Industry Success

- results orientation; planning/organization skills; interpersonal/communication skills
- **impact opportunities:** transforming vision into effective policy and executable plans; technology/product strategist; solution consultant; program management; technical problem-solving

Pursuit of Academic Career



- Instill interest in science-technology-engineering-math (STEM)
- Transform teaching from instructor push to shared learning experiences
- Exploit key insights acquired in industry to enhance teaching, research, and industry-university collaboration/partnerships
- Collaborate with colleagues on multidisciplinary teams to research problems of national /global significance
- A way of giving back to community and country



Lessons Learned

- When learning becomes a by-product of gameplay, student motivation and recall are greatly enhanced
- Maintaining a problem focus ensures that research will be relevant
- Weave in storytelling during lectures to communicate key concepts; storytelling provides a “contextual anchor,” and enhances students’ motivation and ability to apply the concepts learned
- Results orientation serves to remind students what they will get out of a lecture/course/experiment/research
- Do not confuse activity with purposeful action
- In industry, collaboration is necessary for survival; in academe, collaboration is desirable but not deemed essential by many

Career Choice Preparation and Planning



- Start identifying what is **important** to you
 - flexibility, quality of life, stability, creative pursuits, ...
- **Prioritize** these factors in terms of their importance
- Start identifying what you are **great** and **good** at
 - leadership, coping with ambiguity/uncertainty, ability to stay the course, conducting research, networking, persuasion, communicating
- Pursue what you are **great** at

The answers to these questions will most of the time make the choice of industry or academia self-evident to you; if not, need to do some soul searching and revisit your priorities.



In theory, there is no difference between theory and practice. But, in practice, there is.

- Jan L. A. van de Snepscheut