

# **A Comparison of Three Top Research Intensive Universities (Purdue, Gatech and UCSD) with UTD:**

## **My latest visit to Purdue University**

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### **Preamble**

On July 16<sup>th</sup>, I had a one day action-pack and info-rich visit to Purdue University in West Lafayette, Indiana. I was invited by the Dean of Engineering Dr. Linda Katehi and the Interim Vice President for Research Charles Rutledge.

Research, as I have underscored on numerous occasions, is the soul of universities. For any university which is research centric, constant enhancing its research breadth and depth must be top priority. Therefore, as Vice President for Research and Graduate Education of UTD, a university in Texas which has the aspiration to become one of the best in the nation, my gut feeling is that we need to appreciate the “lessons learned” from and “growth paths” of some of the top research universities, with similarities boundary conditions as UTD.

In the past several months, making contacts with my counterparts of three research-rich universities which fit the above criterions, I made visits to them. The three are University of California at San Diego (UCSD) in La Jolla, California, Georgia Institute of Technology (Gatech) in Atlanta and Purdue University.

The latest visit was to Purdue University.

### **My Attempt to Compare These Three Universities with UTD**

Obviously, these three universities have interesting similarities as well as differences with UTD. In the following table, I have listed some of the interesting comparisons of these three universities with UTD.

	Purdue	Gatech	UCSD	UTD
<b>US News and World Report Doctoral Universities Ranking</b>	57	40	26	>125
State affiliated?	Yes	Yes	Yes	Yes
Part of a System	Sort-of	No	Yes	Yes
Urban or Rural	Rural	Urban	Urban	Urban
Founded when?	1869	1885	1960	1961
Number of students	38,000	15,000	23,000	14,000
Number of Faculty	~1,700	~700	~1000*	~350
Freshmen SAT Average	~1300	~1400	~1400	~1250
Number of NAS Members	3	3	64	2
Number of NAE Members	10	26	13	2
Number of Nobel laureates	None	None	8	2
AAU Membership	Yes	No	Yes	No
2003 Research Expenditure	~300M	~400M	~600M	~33M
<b>US News and World Report Engineering Ranking</b>	8	5	13	>50
<b># of Public U with Eng in State</b>	1	1	many	many
<b>US News and World Report Management Ranking</b>	27	42	>50	62
<b>Medical School</b>	No	No	Yes	No
<b>Law School</b>	No	No	No	No

\*my guess

The key features from the above table are as follows:

1. All three are science and technology intensive, if not centric. In UCSD case, it has a powerful medical school.
2. No two universities are isomorphic.
3. No two universities have identical growth paths.
4. All three are in the top 50 or so (in whatever ranking). However, I would assume moving to the top 10 for these three universities will require even more Herculean efforts than thus far?
5. All three with high engineering ranking have TEN or more NAE members. It would be interesting to ask the following question:

Would one need to have more NAE members before becoming top ranked or vice versa!

6. UCSD has an overwhelming NAS members and Nobel laureates. This could reflect that fact that it is such a powerhouse in life-sciences! Still, I suspect that this is an area where all three are working hard to improve. It MUST be an area where UTD pay attention to.
7. To reach top 50 in ranking, several hundred million dollars of annual research expenditure appears to be a threshold. It is also interesting to underscore that even though the faculty number of Gatech is only twice that of UTD (750 vs. 350), a factor of 10 larger in Gatech's research expenditure (~400M vs ~33M) implies that the growth of research expenditure is probably nonlinear with the growth of faculty number. Factors contributing to the nonlinearity are probably research areas, regional, national and international relevance, and last but not least, quality.
8. All three universities have one common building block: they all have very high SAT average scores for their entering freshmen class. It is interesting that while UTD's entering freshmen class, even it is the smallest (~1300) compare to these three, and is one of the highest, if not the highest in Texas (for 2004, the SAT average is ~1250), it is still at the low end,
9. I was quite startled by the fact that Gatech is not a member of AAU (American Association of Universities). AAU is of course a elite university-club of North America, which has 62 members only. It would be interesting to learn what are the reasons for Gatech not be in the club.

### **Whom I met and What I Learned at Purdue**

I met with the following individuals. All are most helpful and friendly in our discussions.

**Dr. Jay Gore**, Associate Dean for Research and Entrepreneurship

**Dr. Edgar Martinez**, Assistant Dean for Research

**Dr. Simran Trana**, Director, Office of Technology and Commercialization

**Dr. James Cooper**, C. W. Harrison Professor of Electrical and Computer Engineering, Co director, Birck Nanotechnology Center

**Dr. Richard Schwartz**, Professor of Electrical and Computer Engineering, Co-director, Birck Nanotechnology Center

**Dr. Charles Rutledge**, Interim Vice Provost for Research and  
Executive Director of Discovery Park

**Dr. Linda P. B. Katehi**, John A. Edwardson Dean of Engineering

**Dr. Vincent Jo Davisson**, Professor of Medicinal Chemistry and  
Co- director Bioscience Engineering Center

**Dr. Alok Chatuvedi**, Associate Professor of MIS and  
Director of Center for Homeland Security

Here are some of my impressions of Purdue.

First: I learned that Purdue is extremely proud of its alumni. For example, it is palpable that Tom Engibus, former Texas Instruments CEO is a Purdue grad. It is a big deal in Purdue. The “big dealness” of course was enhanced recently by the fact that there is now a “Tom Engibus Endowed Chair in Electrical Engineering”. According to Linda, Purdue is now on a global search to find the best person to fill this position. One of the individuals I met whimsically (and I honestly cannot recall who it was) said that TI could stand for “Texas in Indiana”!

Second: Since coming to Purdue at 2000, President Martin C. Jischke launched a very ambitious funding campaign and the university now has a war-chest of about \$1.2 billion dollars. According to Jo Davisson, “Martin always seems to put money where his mouth is!”

Third: Every Dean of at Purdue is less then 3 years in tenure age. This probably has something to do with the fact that the President is is also relatively new. There is a clear sense of optimism in Purdue!

Fourth: Purdue is on a high quality recruiting binge. According to Linda Katehi, the university launched an effort two years ago to hire 300 new faculty members, and 75 will be in engineering. In fact, I noticed that Linda could not hide her excitement that in the fall of 2004, FOUR new engineering faculty members are NAE members!

Fifth: Purdue is launching a very aggressive technology transfer program.

**Epilogue**

After three visits, I have developed a very optimistic view about the future of UTD, although I am equally sure that the challenges confronting UTD are arduous.

Several of the people I met in these three universities told me that no single president could “bring us from here to there”, whatever the “there” is. Just like these three universities, reaching their current academic stature require the colossal efforts of a number of Presidents in several decades of continuous effort.

I was startled, but not surprised, that universities such as Purdue are in a quality hiring-binge. Hence by extrapolation, I can easily envision outstanding universities all across the land are all trying to hire the best minds. Therefore, hiring new people for any aspiring universities will be arduous (but not impossible). It means that think-out-of-the-box manner of hiring will be the norm and not the exception.

In the end, I walked away with information from Purdue which I think made me wiser!