

# Career Ideas for the Engineer

Ron Grassel, Area Sales Manager  
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# Agenda

- NI Profile
- Traditional Thinking in EE Jobs
- New Career Ideas
- Preparing for These Careers
- Conclusions
- Questions

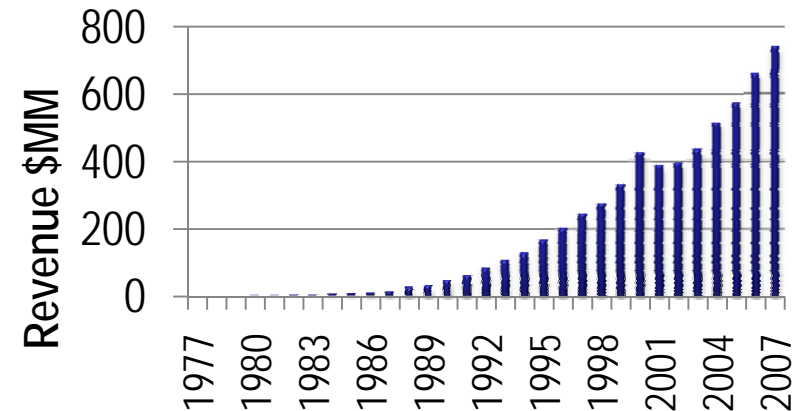


# National Instruments Profile

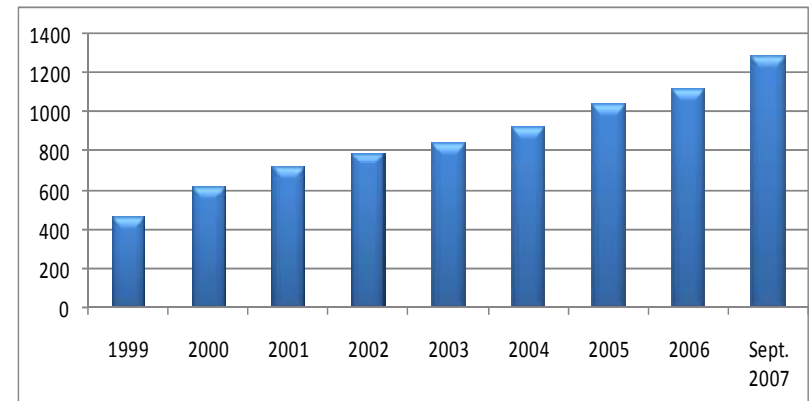
- Leaders for over 30 years in Computer-Based Measurement and Automation
- Strong track record and investment in R&D
- \$740M Revenue in 2007
- 4,400 employees (>1300 engineers);
- 16% of revenues invested in R&D (\$118M in 2007)

## Track Record of Growth

National Instruments Revenue \$MM,  
2007 = \$740MM



## Strong Investment in R&D



# National Instrument Customers

More than 25,000 companies

>90% of Fortune 500 manufacturing companies



# At the University Level...

- Electrical Engineering curriculum typically focuses on technical aspects of the engineering profession.
- Classroom lectures emphasize fundamental and theoretical aspects of engineering
- Lab work typically involves design of product (circuit design, analysis, etc.)
- The Result: The initial job search often focuses on specific design areas of electrical engineering.



# “Traditional” Entry Level Design Jobs

- Analog/Digital circuit design
- ASIC design or fabrication
- RF/Microwave design
- Control System implementation
- Power electronics design
- Power systems development/distribution
- Signal processing



# Resources for Traditional Job Info

- Companies use professional resources like the Radford Salary Survey

*DSP Engineer (Digital Signal Processing) (Levels 1 through 6):*

Designs, codes, develops and debugs DSP algorithms and circuitry on a variety of platforms, processors and assembly language programs. Develops and executes system software algorithm performance. Analyzes and determines system software test standards and procedures.

- User sources available on the web for job descriptions (ex: [salarysource.com](http://salarysource.com))



# Different Career Ideas

- There are many jobs and careers available that provide technical challenges with less emphasis on product design
- These jobs often combine technical skills with other areas, such as customer interaction, business development, or project/people management



# Some Career Options

- Applications Engineering
- Field Sales Engineering
- Technical Marketing
- “Higher Level” design and R&D
- Technical Training/Documentation
- Entrepreneurship
- International Opportunities



# Applications Engineering

- “Someone built the product, but who’s going to support it?”
- Typical responsibilities:
  - Customer support (general and app specific)
  - Product troubleshooting/testing
  - Customer education
  - Technical liaison between R&D and the customer
- Generally develops a broad technical background. Also tends to have good communication skills.



# Field Sales Engineering

- Primary company contact to the customer
- Responsibilities:
  - Understanding the customer's technical issues
  - Define system configurations to address their needs
  - Product demonstrations
  - Organize/chair events
  - Develop major accounts
- Combines technical background with strong business emphasis and customer interaction



# Technical Marketing

- Determining the fate of a company product line....
- Responsibilities:
  - Providing advance information about product developments
  - Attending high-level trade shows/corporate meetings
  - Providing input towards the evolution of a product line
  - Developing effective advertising
- Very strong business focus; influential in product decisions



# High-level Designer

- Building products based on your company's (or someone else's) products
- Technical Applications Engineers often roll into these positions
- Responsibilities similar to typical design engineers
- Examples: Toolkit development, test station development.



# Technical Training / Documentation

- Answering customer questions before they have to contact the company
- Responsibilities
  - Teach classes on products
  - Develop training courses
  - Write product documentation
  - Some follow-up customer support
- Broad technical backgrounds and very good written/oral communication skills



# Entrepreneurship

- Usually requires work experience to develop the technical and business skills to be successful
- Generally combines all of the preceding jobs, plus design skills, into one position
- Smaller companies provide more opportunities for entrepreneurship with less risk or background requirements
- Some companies (like National Instruments) are organized to promote entrepreneurship



# International Opportunities

- You don't necessarily need to know a foreign language to pursue jobs abroad
- Finding companies with overseas startup operations can provide you with entrepreneurship as well as the opportunity to travel or relocate abroad
- Larger companies may have established branches that can provide traditional design positions as well as jobs similar to those described earlier



# Other Jobs

- Test engineer
- Consultant
- Management Information Systems
- Human Resources



# Preparing for these Jobs

- Develop skills outside of engineering design
- Communications, leadership, business skills
- Extracurricular activities and groups
- Relevant internships
- Write a resume to target a particular position or a particular company
- Research a company and the positions it offers
- Talk to those who do the job



# Preparation at Maryland

- QUEST Program, joint program between ENG and Business: teaches practical aspects of product development & marketing, hones presentation skills, and stresses working in mixed teams of engineering and business students.

<http://www.smith.umd.edu/quest/whatisquest/>

- MTECH's programs for students & faculty -

[http://www.mtech.umd.edu/programs/#Campus\\_Entrepreneurs](http://www.mtech.umd.edu/programs/#Campus_Entrepreneurs)



# Conclusions

- Design jobs are only a portion of the available positions in industry
- Alternative jobs combine technical skills with other areas, such as business and communications
- Preparation and exposure to these positions can help you select a job better suited to your interests, while increasing your chances for obtaining such a job



Questions?



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