University-Industry Collaborations: Agilent’s Perspective
2012 Engineering Deans Institute/Kauai

Roger Stancliff
CTO, Component Test Division
Agilent Technologies, Inc.
A Brief History of Agilent

- 1939: Hewlett-Packard Company formed with the encouragement of Dr. Terman
- 1999: Agilent split from HP
- 2005: Strategic alignment: Phase I: *focused measurement company*
- 2006: Launched “Phase II”: *profitable, sustainable growth* - *initiated a global program for university research*
- 2011: Net revenue = $6.6 billion; employees = 19,000
## Agilent Technologies

**Addressing critical measurement challenges**

<table>
<thead>
<tr>
<th>Electronic Measurement Group</th>
<th>Chemical Analysis Group</th>
<th>Life Sciences Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY11 Revenue: $3.3B</td>
<td>FY11 Revenue: $1.5B</td>
<td>FY11 Revenue: $1.8B</td>
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<tr>
<td>Wireless technologies</td>
<td>Food safety, quality</td>
<td>Pharmaceutical research and manufacturing</td>
</tr>
<tr>
<td>Mobile phone R&amp;D and</td>
<td>Energy research, production</td>
<td>Genomics, proteomics, metabolomics tools for disease research</td>
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<tr>
<td>manufacturing</td>
<td></td>
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<tr>
<td>Aerospace/defense</td>
<td>Quality of air, water, soil</td>
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<tr>
<td>Low-cost instrumentation</td>
<td>Forensics, drugs of abuse</td>
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### Agilent Research Laboratories

Enabling technology breakthroughs across Agilent
Advances in Fundamental Knowledge

Measurement Advances

Technology Improvements
## University-Industry Collaboration Framework

<table>
<thead>
<tr>
<th>Activity in U</th>
<th>Short Term Development</th>
<th>Advanced Development</th>
<th>Applied Research</th>
<th>Basic Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-PI</td>
<td></td>
<td>DARPA, NSF, NIH</td>
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<tr>
<td>Mentor</td>
<td></td>
<td></td>
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<tr>
<td>Funding</td>
<td>R&amp;D contract</td>
<td></td>
<td>ACT-UR program</td>
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<tr>
<td>Tools</td>
<td>Thought Leaders</td>
<td></td>
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<tr>
<td>Business impact-Biz</td>
<td>Short term Results Months – 1-3 years</td>
<td>Medium Term Results 2-5 years</td>
<td>Long Term Results 5-10 years</td>
<td>Very Long Term Results 7-20 years</td>
</tr>
<tr>
<td>Strategic Impact-Biz</td>
<td>Extends R&amp;D capacity</td>
<td>Gives more technology options</td>
<td>May not affect products, could start new fields</td>
<td>Corporate Image</td>
</tr>
<tr>
<td>Strategic Impact-Univ’s</td>
<td>Money for students or educational</td>
<td>A bit too applied but can work for MS</td>
<td>Core of PhD programs</td>
<td>Nobel Prize and prestige</td>
</tr>
</tbody>
</table>
Role of an Industrial Mentor

*The key to adding value through university relationships*

- Cooperatively define programs of mutual interest
- **Actively contribute** expertise, judgment, knowledge of commercial technical trends, technology, and experience to the research program
- **Participate.** Spend time on campus. Attend related seminars and research group meetings. Invite faculty to Agilent sites
- Build a circle of **acquaintances** with faculty and students
- Help talented students find employment (internships and long term)
- **Assess** and access research
- Report findings, motivate use, be a technology transfer conduit
- Share best practices with other mentors
Examples of Collaboration:  
**Roger Pollard**

- Joined HP for a sabbatical in 1980
- Returned every summer through 2011; made significant contributions to our instruments
- Progressed to Dean of Engineering at U of Leeds
- Held many leadership roles in the IEEE
- Advisor/mentor to many PhD students from HP/Agilent
- Many hires from Leeds into HP/Agilent
- Retired from his Deanship in September 2010; joined Agilent as a half time employee
- In Memoriam, Roger Pollard (1946-2011); He left a powerful legacy!
Examples of Collaboration:

UC Berkeley Synthetic Biology Institute

• 10 year, multi-million dollar partnership
  -40% for SBI Infrastructure
  -60% for 4 sponsored research programs
  -advisory board spot for Agilent

• One topic: “faster and cheaper DNA synthesis”

• Goal: Create a standardized platform to quickly assemble and engineer new synthetic pathways

• Agilent can leverage this into new products and applications with strong commercial impact
Learnings

Build structures to foster collaboration

Build collaborative ties among students, faculty, and an industrial partner’s technical staff

Focus on excellent academic work in areas of industrial relevance and help our academic partners get funding for their research

Avoid short-term deliverables and IP

Engage frequently 1:1 with partners

Expect *more* than money from industrial partners

Share results broadly within both the academic and industrial organizations
Agilent Technologies Education Grant Support

• Agilent Technologies has been providing University research laboratories with state-of-the-art test and measurement equipment for many years

• Agilent already offers education promotions and discount programs for Universities, but is now providing assistance in the area of grant applications
  – Provide recommendations in defining equipment specifications to ensure you have the electronic test and measurement systems that best meet your program requirements
  – Provide access to key equipment to collect critical supporting data for technical proposals
  – Prepare grant support letters to demonstrate industry/academia collaboration
  – Promote programs of interest to Government agencies
  – Or any other collaborative effort to strengthen your grant proposals

For additional information please contact:
Steve Mango
Grant Program Development Manager
Agilent Technologies, Inc.
443.285.7728
steve_mango@agilent.com

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Summary: University-Industry Collaborations

• These are very important to Industry because they provide technology for the future, students for employment, and researchers as customers.
• These are very important to Universities because they can provide focus and funding for research, employment for students, and meaningful research relationships.
• There are many possible levels of engagement but 1:1 involvement (i.e. mentorship) is a powerful way to amplify the positive impacts of collaboration.
• Agilent, as a measurement company, needs to be at the frontiers of technology and Universities need the best possible measurements to advance their research: Our mutual collaboration is a major way to accomplish this.
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  – Internships (78)

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  – Asia Pacific (299)
  – Europe (92)

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