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# PLENARY PANEL

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# Triple Helix Innovation Summit

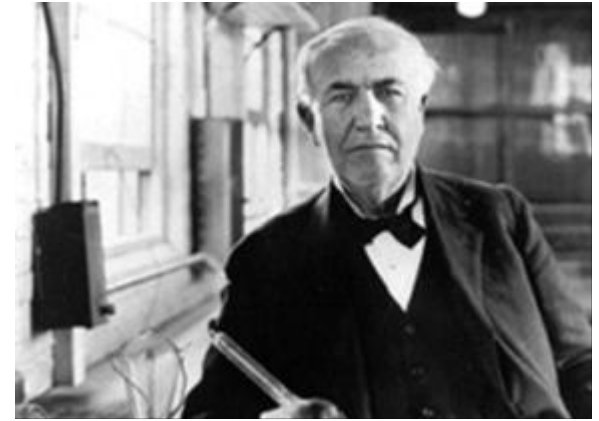
**“Things to think about”**

Michael Brown

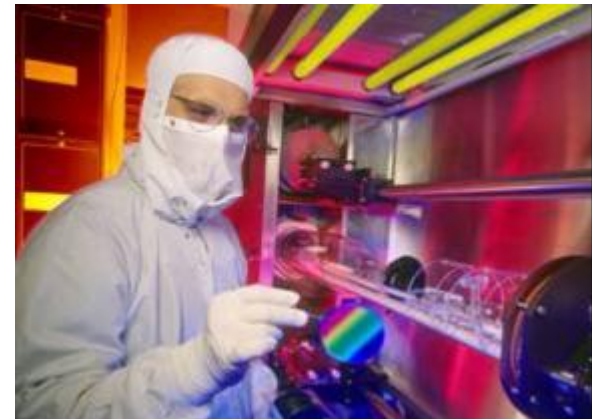
February 12, 2007

# GE – Over a Century of Innovative Heritage

- 115-Year-Old, High-Tech, Growth Company
- \$163 Billion in Annual Revenues
- Only Company Listed in Dow Jones Index Today That Was in Original List in 1896
- 315,000+ Employees Worldwide



1892



2007

# **Global Research**

# Global research: market-focused R&D

- First US industrial lab
- Began 1900 in Schenectady, NY
- Founding principle ... improve businesses through technology
- One of the world's most diverse industrial labs



**c. 1900**



**2007**

**Cornerstone of GE's commitment to technology**



# Global brains



**Global Research Center  
Niskayuna, NY**



**John F. Welch Technology Center  
Bangalore, India**



**China Technology Center  
Shanghai, China**



**Global Research – Europe  
Munich, Germany**

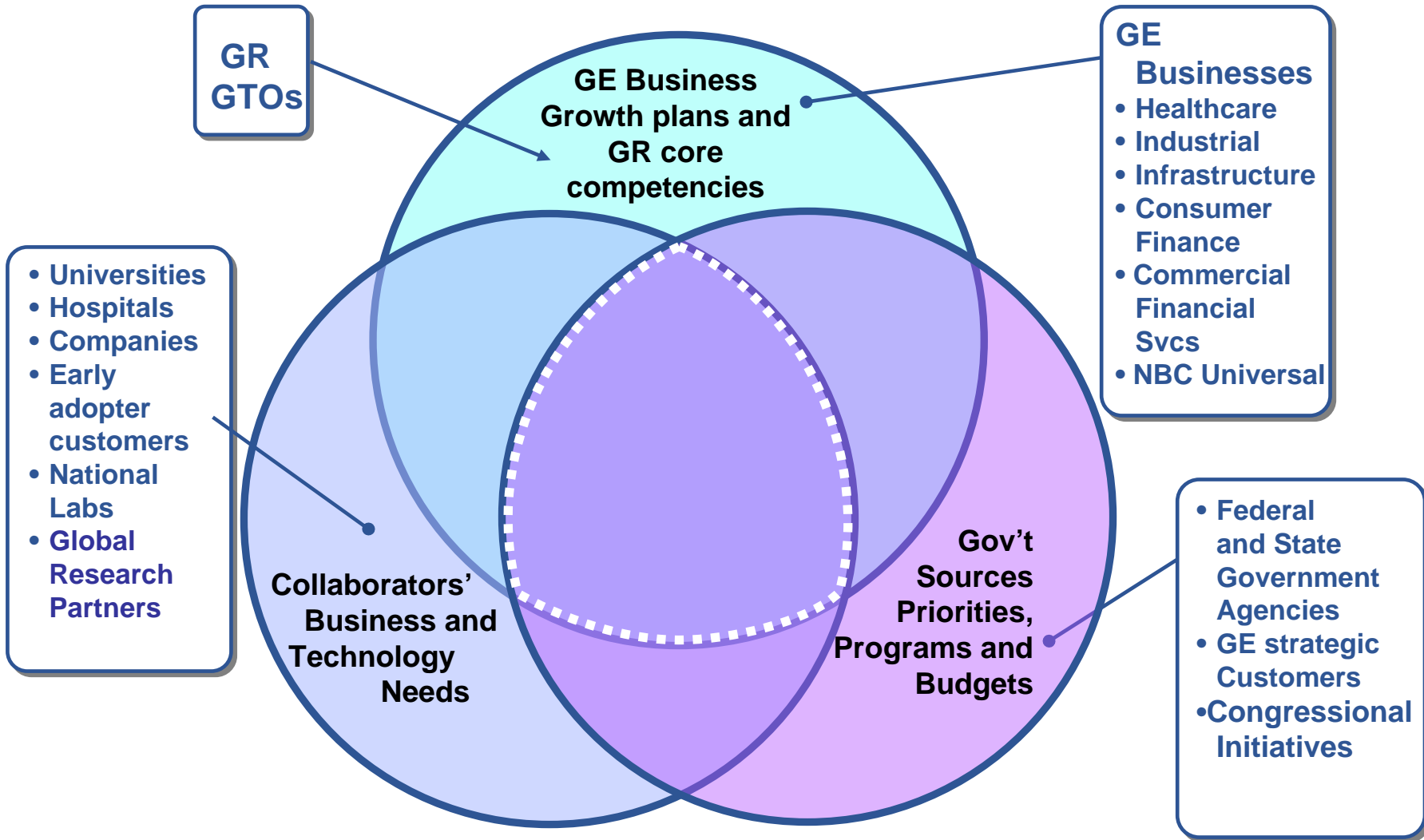
- 2,600 research employees (nearly 1,000 PhDs)
- Diverse group from 55 nations
- 26,000 GE technologists worldwide

# A History of Innovation

- 1909 Ductile Tungsten
- 1913 Medical X-Ray
- 1932 Langmuir Nobel Prize in Chemistry
- 1942 First US Jet Engine
- 1953 LEXAN™ Polycarbonate
- 1955 Man-Made Diamonds
- 1973 Giaever Nobel Prize in Physics
- 1983 Magnetic Resonance Imaging
- 1995 GE90® Composite Fan Blade
- 1999 Digital X-Ray
- 2003 H Turbine
- 2004 Lightspeed VCT

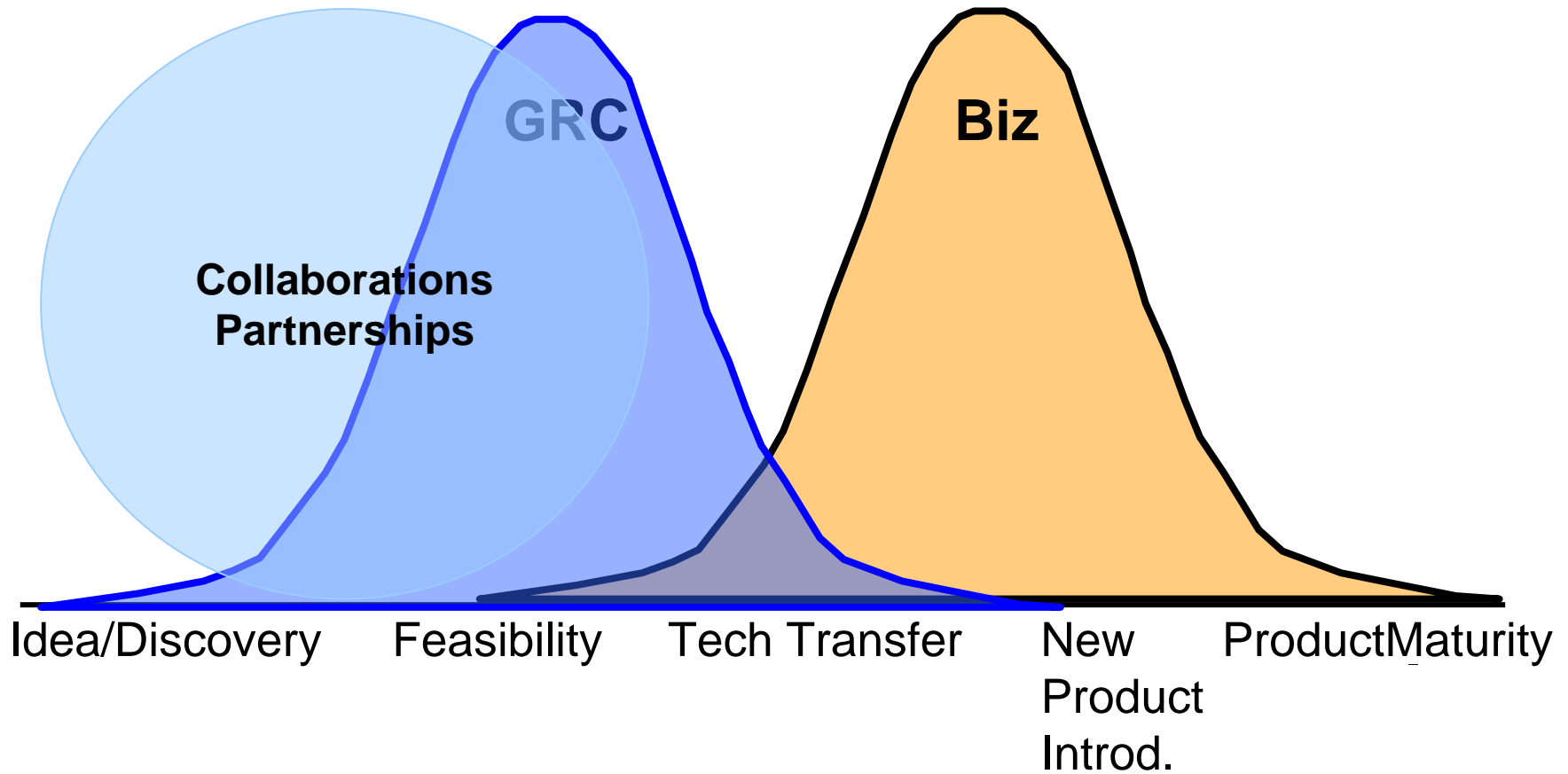


# GRC's External Collaboration Process



**Key...find, leverage or create win-win intersections to stimulate GE strategic technology development aimed at business growth**

# Biz & GRC team to develop innovative products



# GE's overall strategy for partnering:

- **When?**

- A technology gap exists at GE
- Makes sense for all partners(IP, Interest, Timing)

- **How?**

- Use six sigma for partner selection
- Method (JV, government funding, direct funding, etc.) Is on case-by-case basis

- **What works?**

- It's a win-win for everyone
- Roles and goals are well defined
- Monitor the program

- **What doesn't work?**

- Force fit
- Lack of synergy between partners

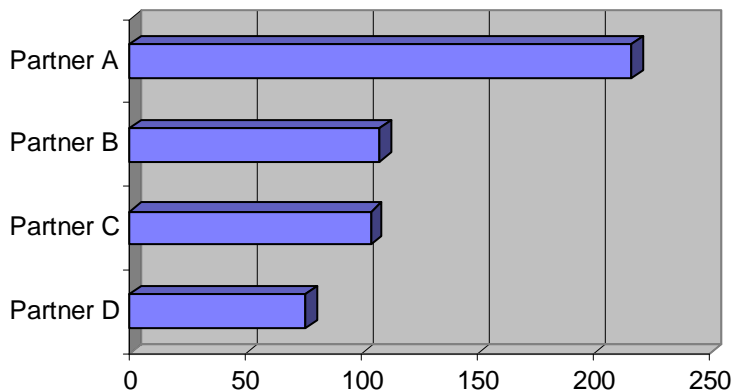


# Partner Selection Process

- Utilize 6 $\sigma$  Tools (QFD)

Partner Selection		How to address			
Partner Selection Criteria	Importance	Partner A	Partner B	Partner C	Partner D
Luminary	3	M	L	M	M
Synergy with planned technology roadmap	5	H	H	L	L
R&D Capabilities	5	H	M	M	L
Financial Stability	3	M	M	H	L
Eagerness to work with GE	3	M	M	L	H
Relationship with the customer	3	H	M	H	L
Potential IP Clash	5	H	M	M	M
Responsiveness	3	H	L	L	M
<b>Total</b>		<b>216</b>	<b>108</b>	<b>104</b>	<b>76</b>

Partner Selection Pareto

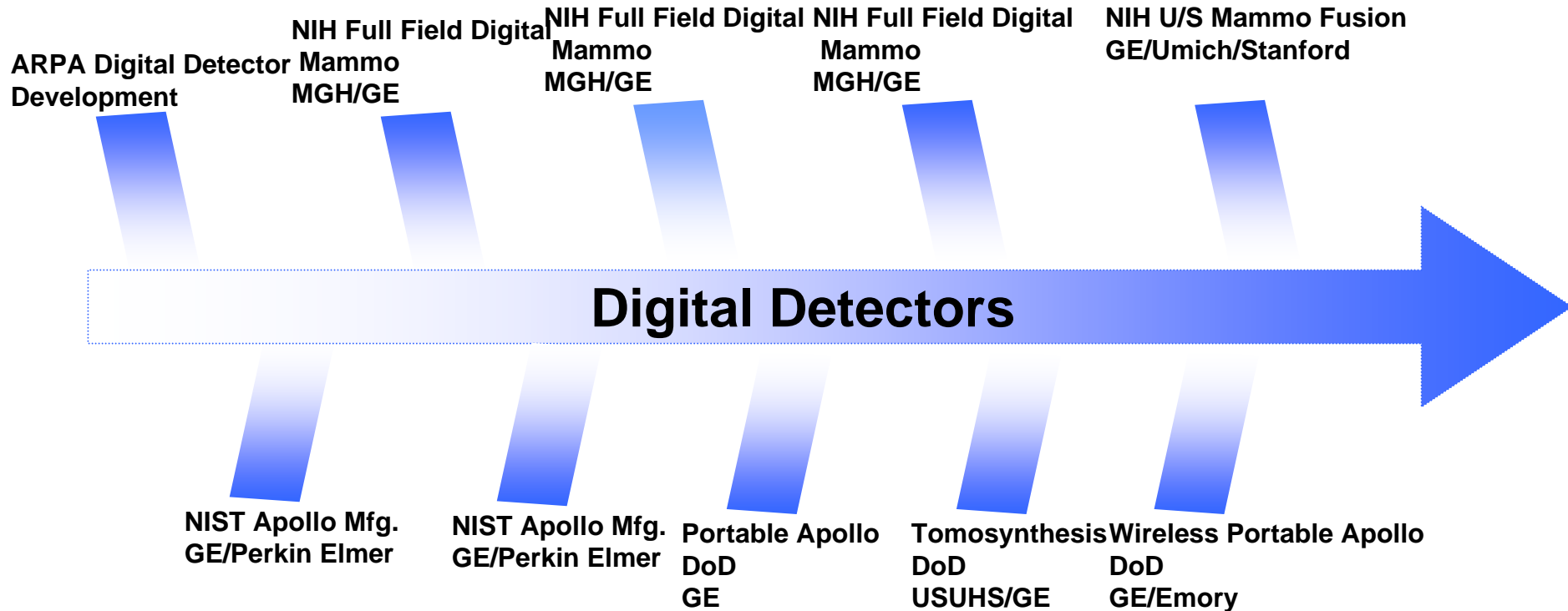


- Existing Collaborations
- Recommendations from:
  - Customers
  - Existing Collaborators
  - GE Businesses
- Internal Research Team
- Consultants
- Conferences/Brokerage Events

# Benefits and Challenges

- Accelerated development of technology
- Sharing of risk
- Faster path to market
- New business opportunities
- Spin-off technologies/products
- Exchange of scientific ideas and resources
- Exposure to other corporate or academic cultures
  - Introduction of new processes
  - Entrepreneurial spirits
- With a large company—
  - focus/priorities can change quickly
  - sometimes difficult to get complete picture across company
  - bureaucracy can slow progress/prevent quick changes
- With a small business—
  - long-term vitality can be a risk
  - lack of resources (personnel and funds)
- With a University—
  - timeline and goals often different from corporations
  - intellectual property issues

# GE Digital Detectors





**imagination at work**