



Competition or Recompetition: Opportunities case studies

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OUTLINE

- **Competition / Re-competition?**
- **Identify Opportunities?**
- **Two case studies**
 - The US High Magnetic Field Portfolio
 - The Nanofabrication Infrastructure Network



Competitive Merit Review a core principle of NSF

“To promote the progress of science—to advance research and education in S&E across all fields and disciplines and at all educational levels is a core mission of the National Science Foundation (NSF). NSF accomplishes this by shaping and managing portfolios of the highest quality research and education projects, as determined by competitive merit review and national priorities.”



NSB Policy

- NSB-08-12: All expiring awards are to be recompeted because it is “...**in the best interest of U.S. science and engineering research and education.**”
- The Board also endorsed a policy for full and open competition of the operations award of major facilities.

Creates opportunities but presents challenges too.



Identify Opportunities

- What are the science opportunities ?
- What are the enabling technologies ?
- What new opportunities for education, training and broadening participation?
- What organizational model: (central, distributed network other....)?
- What are the resources required?
 - Strategic planning, engaging community

Case Studies



The US High Magnetic Field Portfolio

- 1960: Founding of The Francis Bitter National Magnet Laboratory (FBNML) with grant from the Air Force.
- 1971 Transfer to NSF
- 1979-1984 NSF sought Community Input: new science opportunities, new applications, and magnet attributes required.



The Seitz-Richardson Panel (1988)

- Defined the roadmap of NSF's role in high magnetic fields since 1988.
- “The agencymust have a long term commitment to the program in order that it continues to be effective”
- Support through combination of funding required...for at least 10 years.”
- Partnership: “..Some of the building and staff support might be borne by the institution seeking to house the new laboratory”



The Seitz-Richardson Report cont

- The Seitz-Richardson Report stated that there are compelling scientific & technological reasons for establishing a Central National Magnet Facility with
 - A hybrid 45tesla DC magnet
 - SC and NMR magnets > 25 tesla
 - Pulsed-field magnets > 75 tesla (msec), >200 tesla (μ sec)
 - Water-cooled facility magnets up to 25 tesla
 - Pulsed-field magnet up to 65 tesla (500 msec)
 - Facility instrumentation
 - Advanced multidisciplinary in-house research and magnet development



NSF Response

- 1989: Proposal Solicitation (NSF89-115)
- 1990: 3 Proposals received and reviewed
- 1991: NSB approved award to FSU to create NHMFL
- 1991-95: NSF
 - continued support for FBNML during NHMFL construction
 - NHMFL & FBNML collaborated on 45T hybrid
 - \$124M of new money in the field

National High Magnetic Field Laboratory

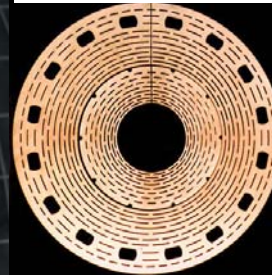


Florida State University

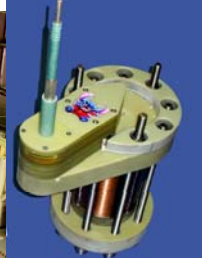


45T Hybrid DC Magnet

Los Alamos National Laboratory



89T Pulse Magnet
15mm bore

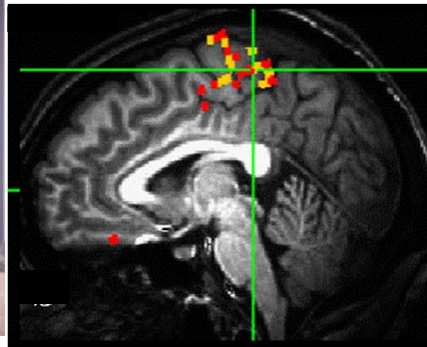


University of Florida

Advanced Magnetic Resonance Imaging and Spectroscopy Facility



11.4T MRI Magnet
400mm warm bore



High B/T Facility
17T, 6weeks at 1mK

900MHz, 105mm bore
NMR/MRI Magnet



NSF Support

- Renewed in 1996 and 2001 (10 years)
- In 2003-2005, NSF sought community input to address NSB Policy on recompetition
 - NRC Report on Opportunities in High Magnetic Field Science (COHMAG)
 - NSF Blue Ribbon (Richardson) Panel on recompetition:
- 2008: 5-year renewal
- 2013-Renewed with plan for recompetition¹²



The Plan for Next Decade

NSB approved

- Planning for Recompetition
 - What Science Opportunities for next decade?
 - What are the new enabling technologies?
 - What new organizational model?
- Progress: NRC study to be completed on May 7, 2013.
- Briefing: May 8, 2013 at NSF.

NNIN
slides provided by L. Goldberg
(ENG)



National Nanotechnology Infrastructure Network (NNIN)

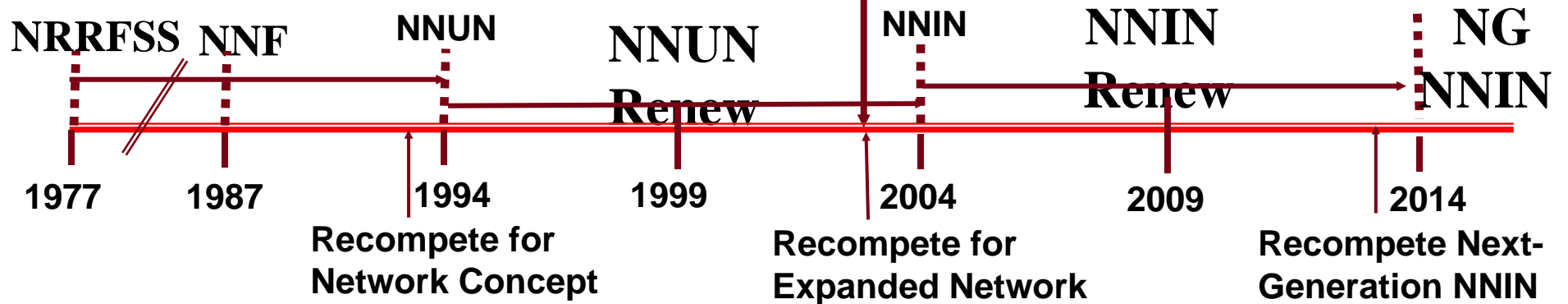


*An integrated national network of 14 university user facilities
providing researchers open access to resources, instrumentation and
expertise in all domains of nanoscale science, engineering and technology*

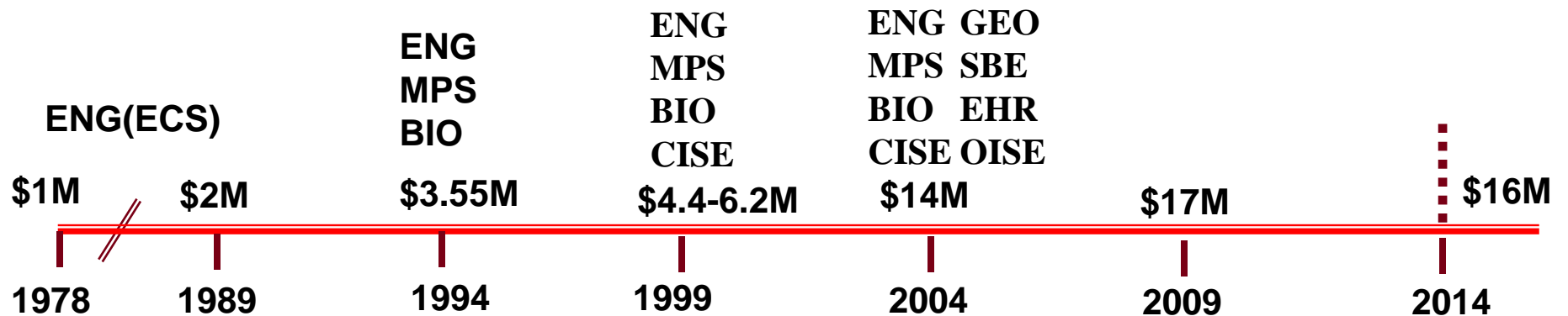
<http://www.NNIN.org>

~40 Years History

National Nanotechnology Initiative (NNI) established



- 2000 National Nanotechnology Initiative proposed by Pres. Clinton; Established in 2003
- Dec 2002 New competition begun for expanded network: National Nanotechnology Infrastructure Network (NNIN): All NSF directorates, ENG/ECS lead, \$14M funds
- Jan 2003 Information Meeting held with over 70 universities attending, also webcast
- 2004 Initial 5 year award for NNIN network, Cornell lead, 13 sites, \$14M funding
- 2009 NNIN Renewed for final 5 years, 14 sites: 3 added, 2 dropped, \$17M funding





Conclusion

- Excellence and competitive review are core values and core principles of NSF.
- Examples showing that competition created new opportunities when it is based on:
 - Bottom up: broad community input
 - Well formulated vision for science (solicitation)
 - Strategic budget planning (rebudgeting or new resources)



Thank You