


BD Hubs: Midwest: "SEEDCorn: Sustainable Enabling Environment for Data Collaboration"

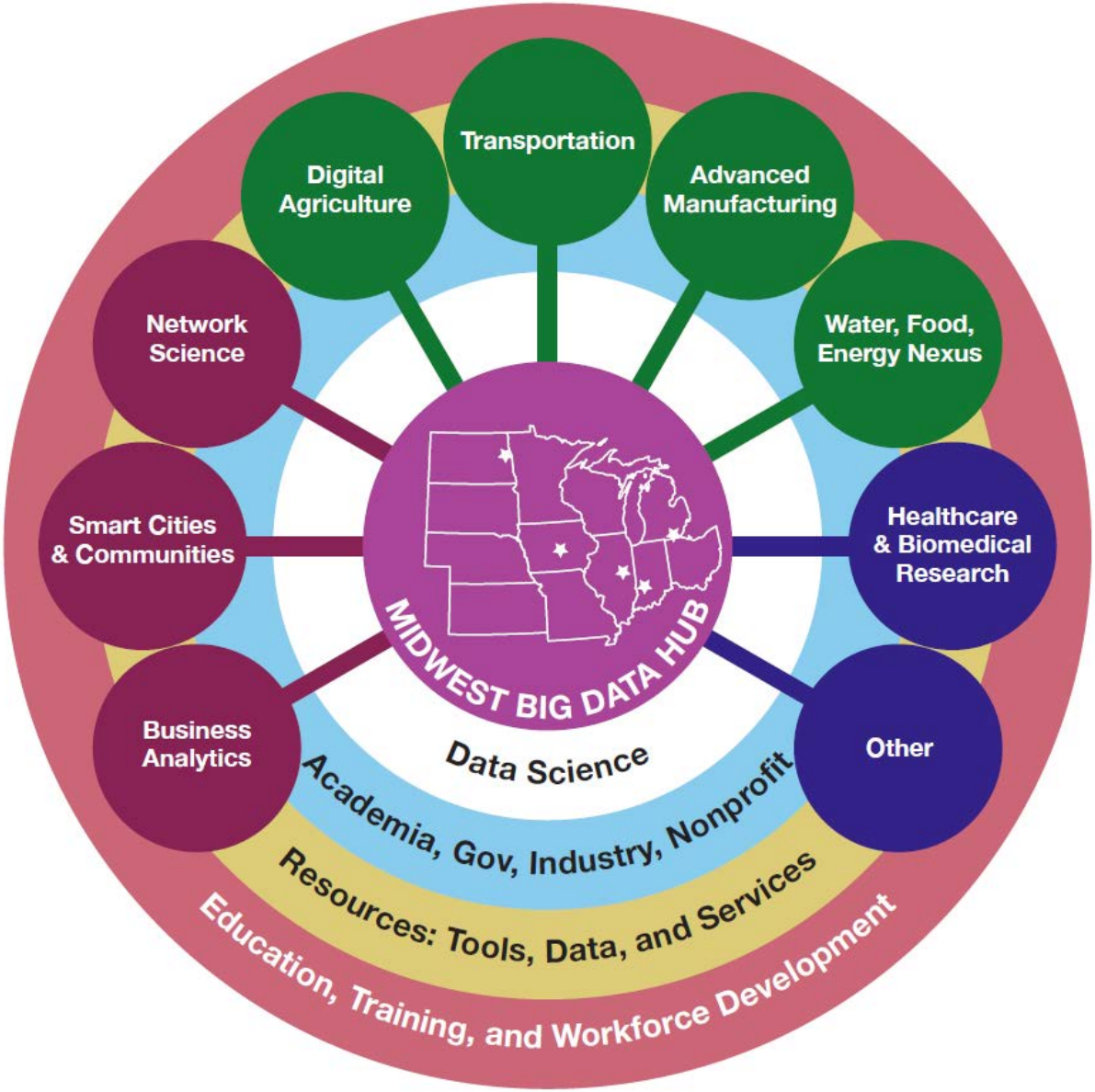
Midwest Big Data Hub

Accelerating the Big Data Innovation Ecosystem

Big Data - The Education and Engagement Challenge

Midwest Big Data Hub, Summer School 2016, Iowa State University

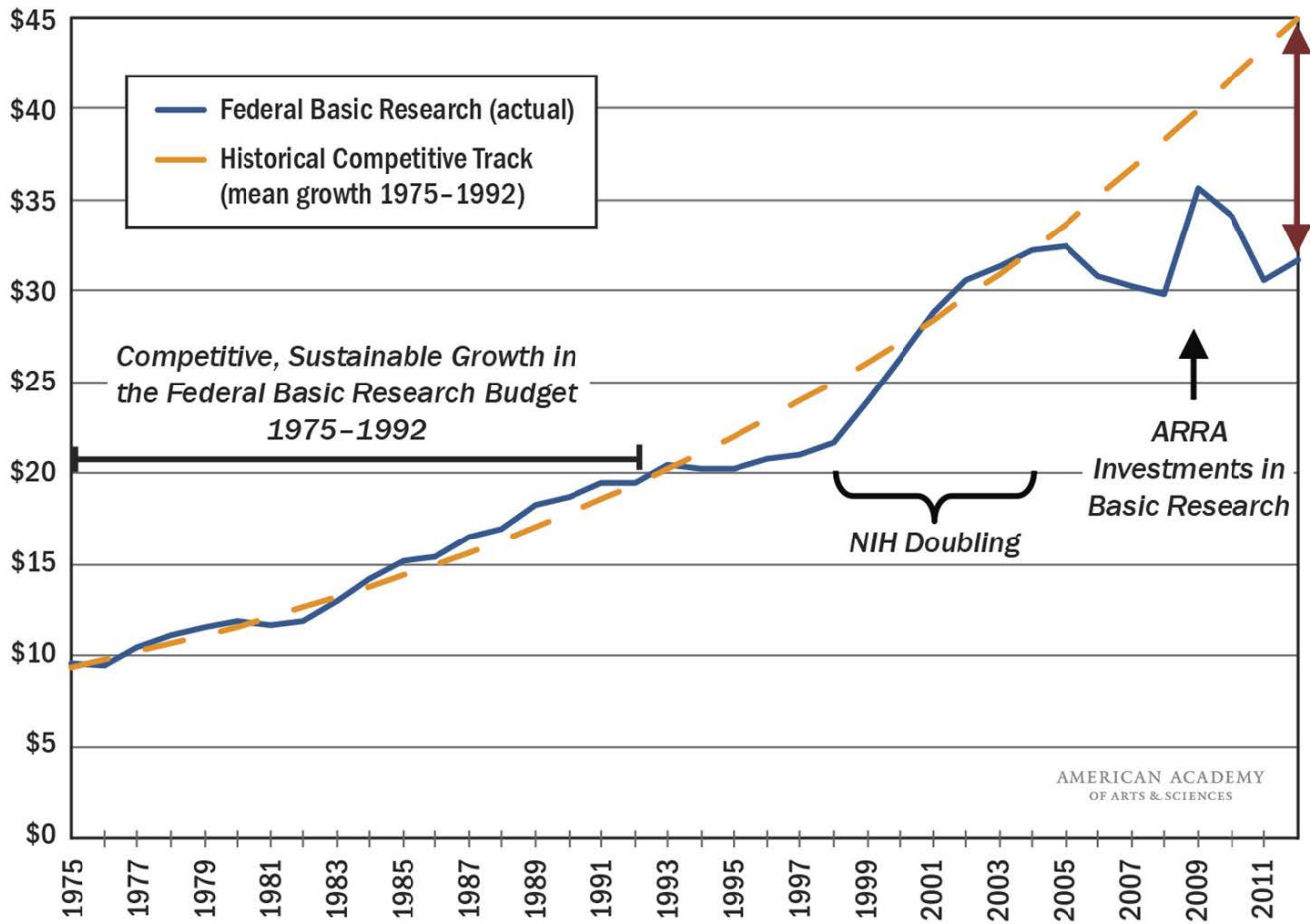
Presented by Wolfgang Kliemann, Iowa State University



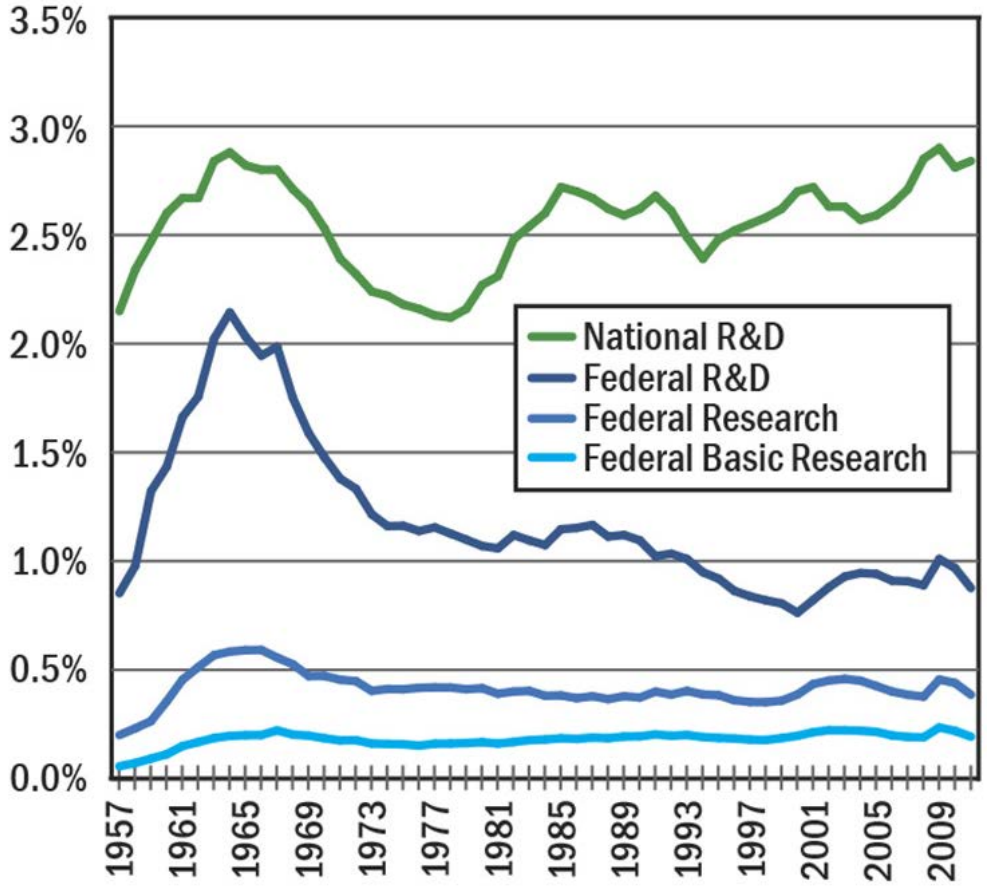
Midwest Big Data Hub

Accelerating the Big Data Innovation Ecosystem

Research Funding US 1975 – 2012



National R&D Investment (%GDP)



Challenges to Research Funding

- Challenges to federal funding
  - Senator Jeff Flake (AZ) – annual list of 20 NSF studies
  - Zika funding
  - Bird flu funding, …
- Accepting scientific method and results
  - Evolution, creationism
  - Climate change, …
- Long term perspective of research
  - The research chain
  - The payoff
- Research as investment
  - Research success
  - ‘Better use of budget $$’

Reactions of the Scientific Community I

- Grand Challenges
  - OSTP
  - PCAST
  - Some states

- Increased lobbying demonstrating usefulness
  - Societies in areas of basic research demonstrate applications
  - AAU, APLU, Midwest research administrators look for transformational results and company testimony

- Openness in research
  - Communicating results
  - Communicating data
  - Verification, reproducibility
  - Compliance

Reactions of the Scientific Community II

- Public – private partnerships
  - The innovation cycle
  - Federal programs such as I/UCRC, NNMI

- Research as investment
  - Research success
  - ‘Better use of budget $$’

- Communicating research and the research enterprise
  - Science ‘popular’ publications
  - Science blogs
  - Social media presence

- Engagement with science
  - Designing 2-way communication
  - Community research and citizen science

The Data Challenge I

- Data are ‘invisible’
- Data are not obvious
- Data do not force decisions

- Data literacy – K12
  - Core curricula – increased emphasis on data
  - Teachers with little or no data experience

- Data literacy - college
  - Few adequate data courses
  - Instructors with little or no data experience

- Data literacy – decision makers

Education Programs at MBDH Institutions

Levels of competencies

- Literacy in data science (e.g., a single course)
- Competency in the context of the work place - knowledge applied to a discipline/application (e.g., certificate, plus programs)
- Specialist – professional degrees (BS, Masters in analytics, Masters in data science, certificate in data science)
- Research – advanced capabilities

Several institutions have developed courses and programs and are interested in sharing experiences and resources.

The Data Challenge II

- Communicating data research and the data research enterprise
  - Science ‘popular’ publications
  - Science blogs
  - Social media presence

- Engagement with data science
  - Designing 2-way communication
  - Community research and citizen science
  - ELSE²I components

Challenge

- Design a data science communication and engagement approach
- K12, college, general public, communities, decision makers
- MBDH and cross-hub approach
- Broader impacts!!!