



BD Hubs: Midwest: “SEEDCorn: Sustainable Enabling Environment for Data Collaboration”

## Midwest Big Data Hub

Accelerating the Big Data Innovation Ecosystem

One of four Big Data Regional Innovation Hubs (BD Hubs) funded by the National Science Foundation through award #1550320

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## Healthcare and Biomedical Research (HBR) Spoke Overview

Kevin Smith (for Brian Athey)  
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# HBR Spoke – Big Data Challenges

- Data and information standardization, integration and aggregation of biological and clinical research measurements, patient reported information, and sensor-generated data
- Incorporating Genomics into Patient Care
- Data and information privacy and health IT (HIT) security, including policies and regulations
- Best practices regarding data sharing and use of open-source Big Data analytic applications

# HBR Spoke – Proposed Activities

**Convene** ... a set of

- Hybrid workshops (on-site and virtual),
- Integrated biomedical workforce training programs powered by online learning and on-site opportunities, and
- Community building activities

... to **establish** a defined set of **sustainable public-private partnerships** focused on addressing opportunities and challenges related to Big Data in HBR

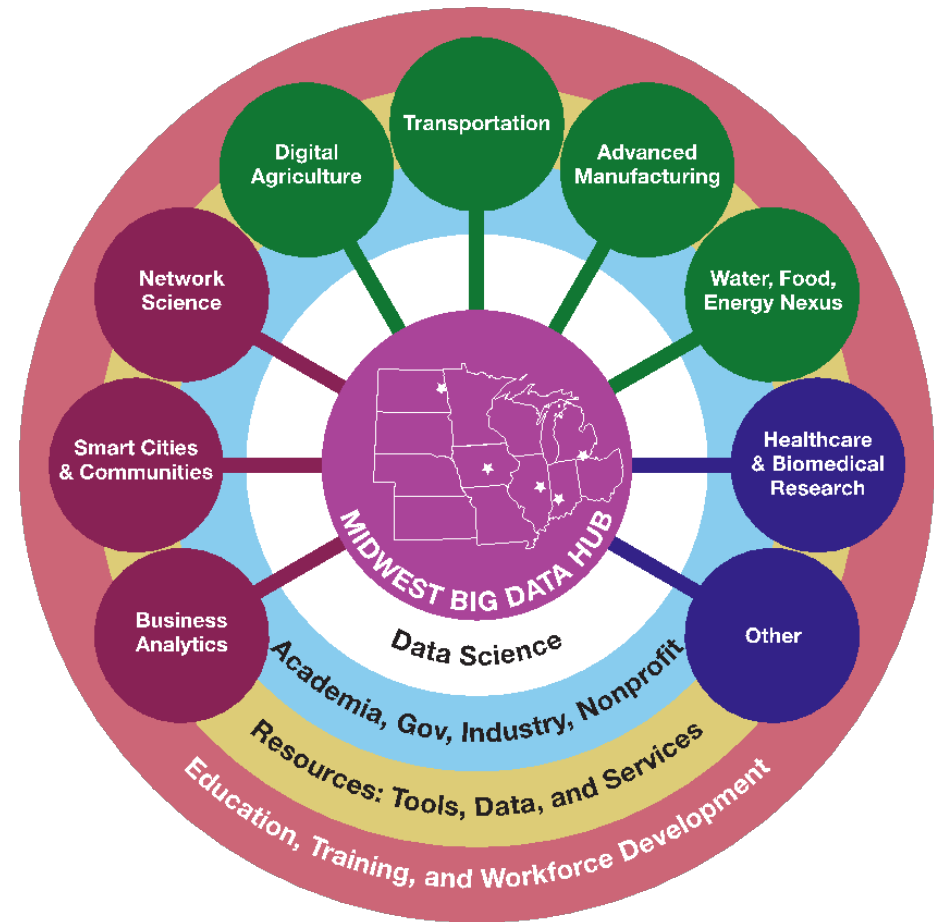
# HBR Spoke – Leveraging MBDH

## Leveraging Rings

- Data Sciences
- Education, Training and Workforce Development
- Tools, Data and Services

## Spoke Collaboration

- Network Science
- Business Analytics
- Transportation (e.g. Ambulance Resourcing)



# HBR Spoke – Partner Organizations

## Academics

- Universities of Michigan, Cincinnati, Chicago, Iowa, Illinois, Indiana, Ohio State and Northwestern, including Mayo Clinic, and North Shore University Health System

## Industry

- Abbvie, Assurex Health, Eli Lilly, Henry Ford, Transgenomics, Trinity Health

## Non-Profits

- Michael J. Fox Foundation, Open Cloud Consortium, Regenstrief Institute, tranSMART Foundation

# HBR Spoke – Annual Workshops Topics

- **Data wrangling, scrubbing, and machine-learning methods** to mine, analyze, visualize, and understand biomedical data (from -omics, health records, and mobile platforms) in a temporal fashion, capturing longitudinal trends to alert researchers of discovery opportunities, alert providers of intervention or adverse events, and to alert patients to provide positive feedback;
- **Building new communities and partnerships to leverage global open biomedical science data sharing and analytics platforms** such tranSMART, i2b2, and i2b2 SMART;
- **Geospatial health informatics data analytics / visualization** capabilities for HBR communities;
- Understanding how to work with **patients in the home** using biometric sensors cell phone applications and communications capabilities;
- **Workforce development:** a cohort of data science-enabled students and trainees at all levels (undergraduate through post-doctoral) to build and use emerging and future data platforms.

# HBR Spoke – Proposals Submitted

## NSF Solicitation 16-510

### ... Establishing Spokes to Advance Big Data ...

#### Planning Grants

- “*Laboratories of Democracy: Characterizing State Health Care Systems Using Natural Language Processing and Crowd Source Technologies*”; Jeremy Bellay, Battelle Memorial Institute
- “*ALPHA (Archiving Lifestyle Data for Personal Health Analytics)*”; Sanjukta Bhowmick, University of Nebraska at Omaha

#### Full Grants

- “*Advanced Computational Neuroscience Network (ACNN)*”; Rich Gonzalez, University of Michigan
- “*Sharing Computational Models of Contagion for Health Applications*”; Caterina Scoglio, Kansas State University

# HBR Spoke – Get Involved

- Participate in Monthly HBR Community Calls
- Help identify additional HBR Partners
- Help refine HBR “Big Data” Challenges
- Help identify additional HBR Resources
- Help organize HBR Workshops





# HBR Spoke – Key Contacts

- **Brian Athey and Kevin Smith**, University of Michigan  
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- Others please step forward!