



A National Science Foundation
Industry/University Cooperative
Research Center 

Vision, Capabilities and Value Proposition of the Center for Visual and Decision Informatics (CVDI)

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IAB Benefits

- **The ultimate benefit is an additional source of Technology Innovation for IAB members that leads to commercial value for the business**
- **Additional benefits, some less tangible**
 - Ability to find and recruit high quality graduating students already immersed in IAB subject matter areas of interest – including internship opportunities
 - Fantastic networking opportunities among like minded industry members
 - Connections with academic institutions strong in research areas of interest for the IAB that can lead to collaboration outside of CVDI
 - Simply being exposed to CVDI research activities “can change the way an IAB member thinks” about their own internal research
 - Leveraging the nexus of academic research and commercial technology strategy
 - Opportunities for joint collaboration on white papers and peer-reviewed publications
- **Members of the IAB must invest in CVDI to maximize CVDI ROI**

Vision & Mission

CVDI drives continuous *innovation* through knowledge sharing among partners leading to *invention* and *commercialization* of *decision-support technologies*

- Research and develop next generation visual and decision support tools and techniques to improve the way their organization's information is interpreted and analyzed, all within the "Big Data" space
- Brings together, analytic, visual and perceptual techniques

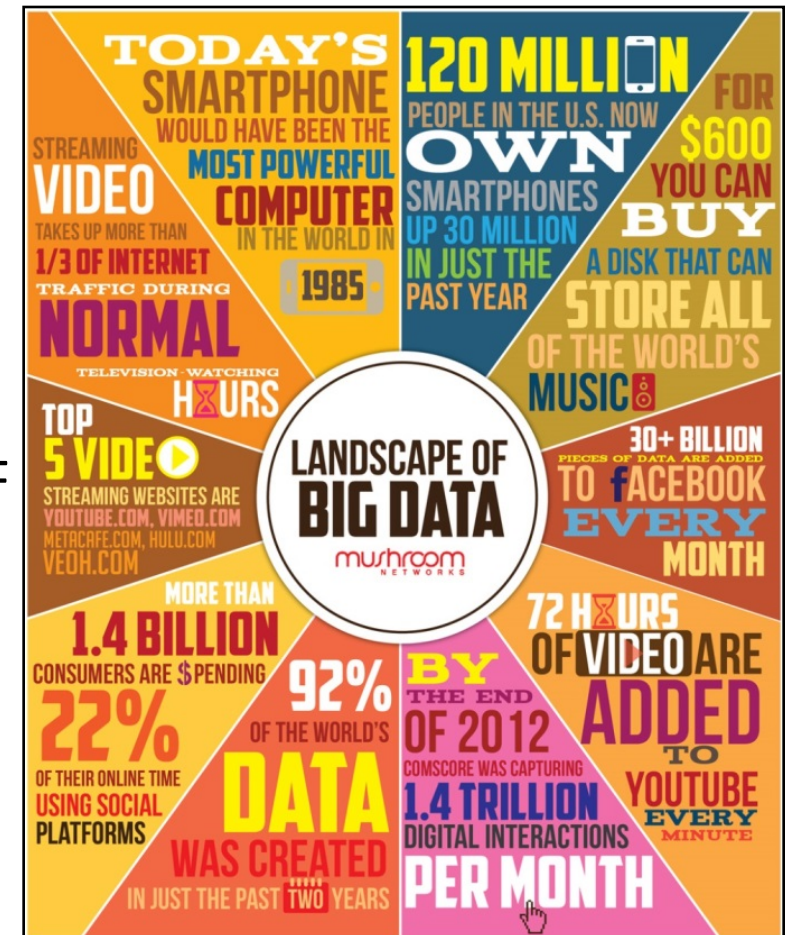
Recognition

- Jointly created by UL Lafayette & Drexel Univ.
- One of only 25 NSF CISE Centers in the US
- Only I/UCRC with "*Visualization & Big Data Analytics*" focus
- One of six I/UCRCs in the country with an International Research Site

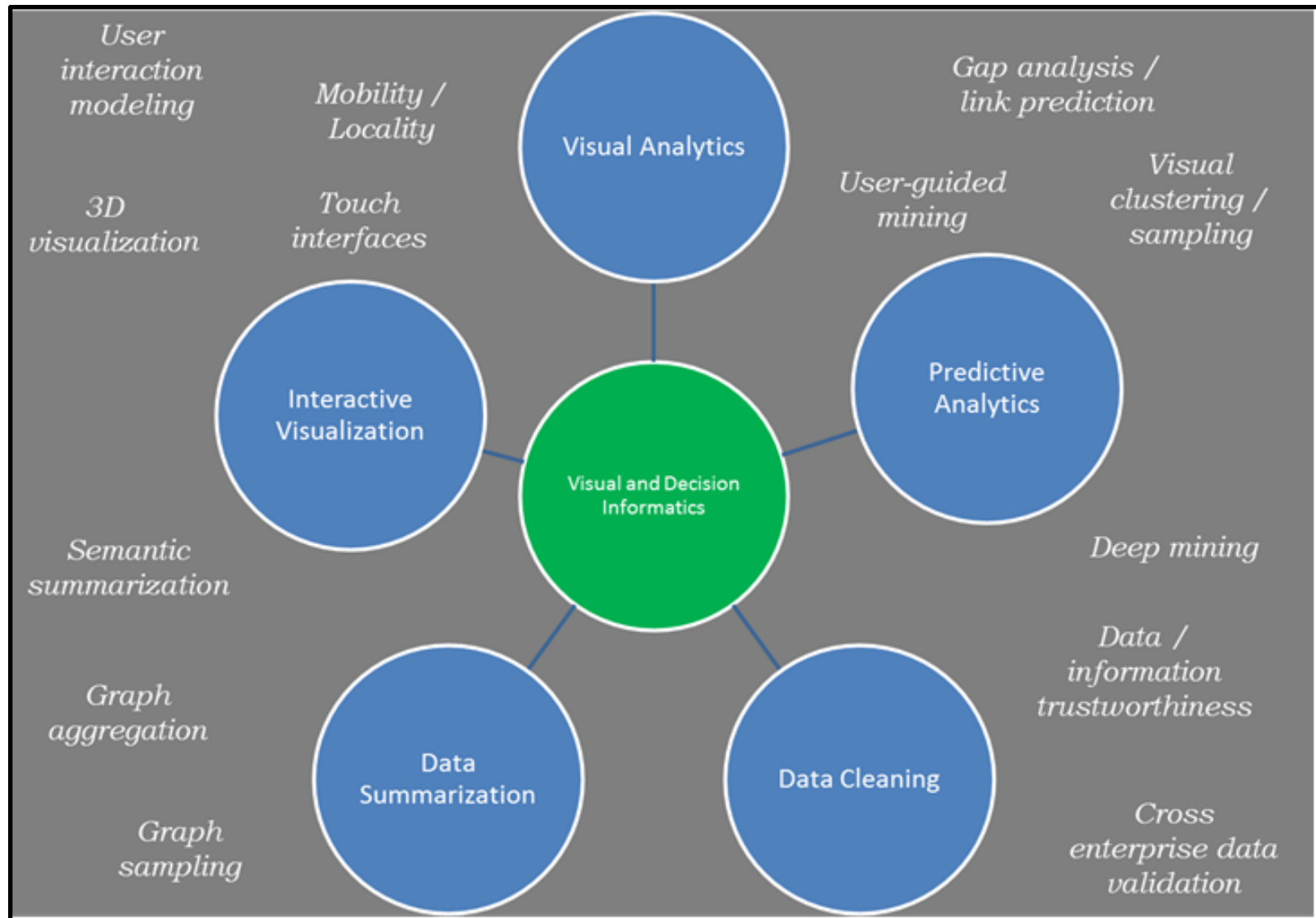


Funding

- Currently have 11 Members, 13 seats
 - \$300K to \$450K annual research expenditures
- NSF Center Funding: \$135,000 per year
- 12: 1 leverage based on IAB funding received
- Several other competitive awards from NSF
- 42: 1 leverage to Industry members, with additional NSF support



Research Topics



Members

Industry

- CGI
- IMS Health Incorporated
- Intel
- Schumacher Group
- Johnson and Johnson
- Louisiana Health Care Quality Forum
- Louisiana Immersive Technologies Enterprise
- Mbrain
- Microsoft Corporation
- Thomson Reuter
- Tieto

Government

- Louisiana Department of Health & Hospitals

Academic Sites

- Univ. of Louisiana, Lafayette
- Drexel University
- Tampere University of Technology
- Univ. of North Carolina, Chapel Hill

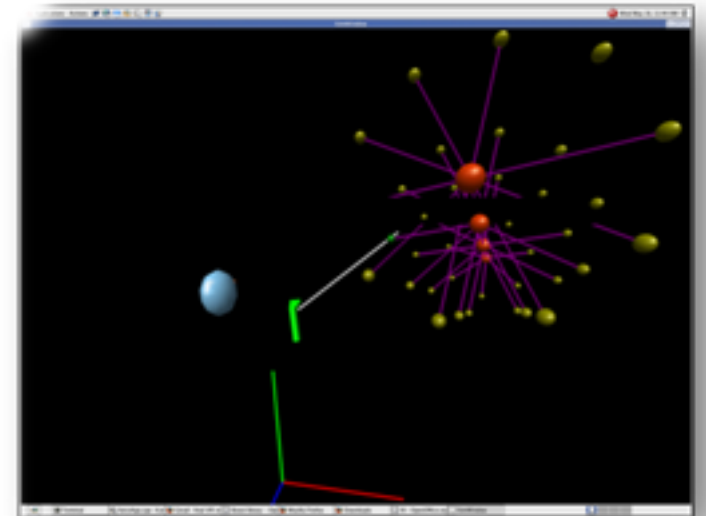


CVDI University Sites and Skill Sets

UL Lafayette	Drexel University	Tampere U. of Technology (Finland)
Data/text/web mining	Machine learning and data mining	Machine learning
Social network analysis		Deep learning
Information visualization	Real-time data analysis	Artificial neural networks
Visual analytics	Interaction techniques	Bio-signal processing
Data extraction and analysis	Visual analytics	Pattern recognition
Knowledge organization	Big Data platforms	Evolutionary optimization methods
Cybersecurity	Spatio-temporal data mining	Image analysis
	Information retrieval & extraction	Image retrieval
	Data integration	Green computing

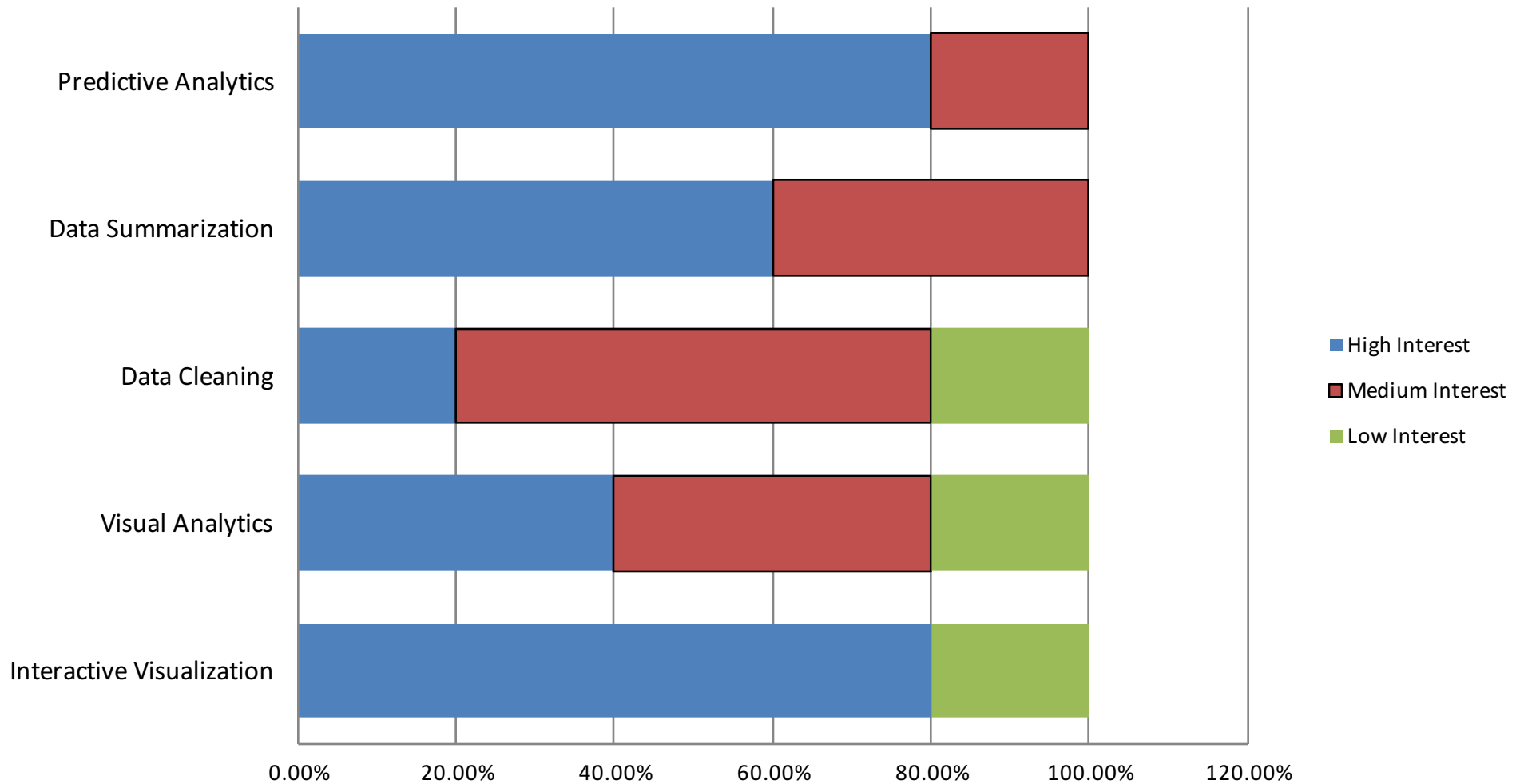
Outcomes

- Students:
 - 54 students supported by research activities
- Intellectual property generated:
 - Potentially patentable discoveries: 36
 - Potentially copyrightable discoveries: 29
- 3-Year Historical Outcomes of CVDI:
 - Completed 16 projects in 3 years
 - Published 62 research articles
 - International research site in Finland, April '15
 - Received over \$1.1 million in NSF additional funding,
including major research infrastructure, fundamental research, CORBI and
research support for undergraduates, teachers and veterans



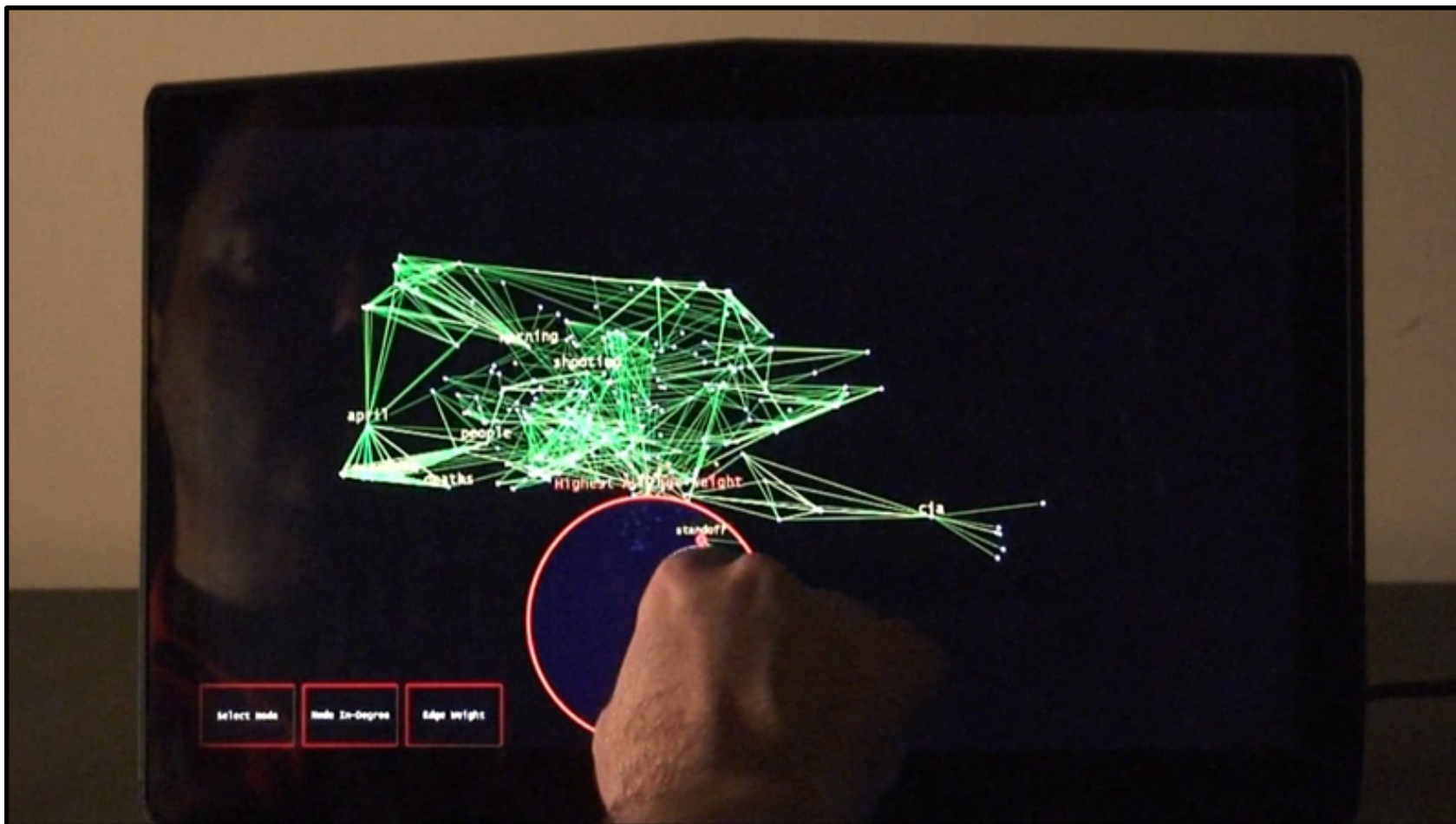
2015 IAB Research Topics Interests Survey

2015 IAB Interests



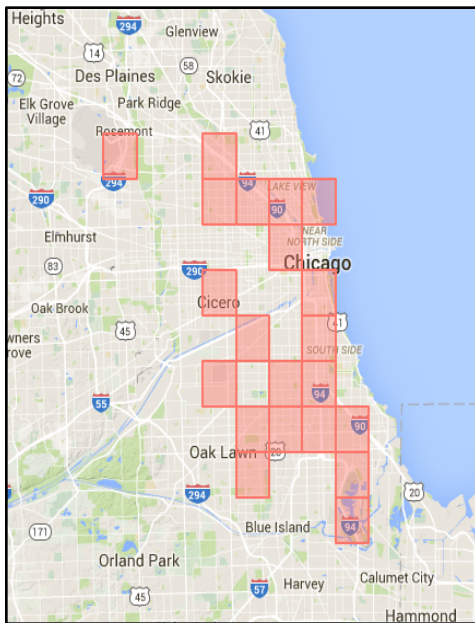
CVDI Current Project: **Visual Analytics: Time Evolving graphs**

Interactive analysis of massive time-evolving
graphs using multi-touch displays

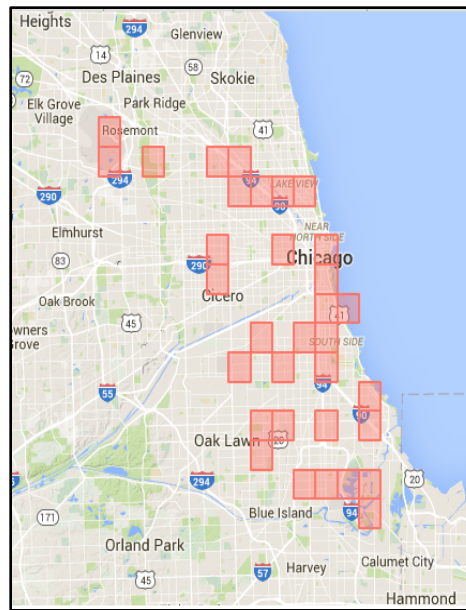


CVDI Current Project: **Predictive Analytics: Spatio-temporal hotspots**

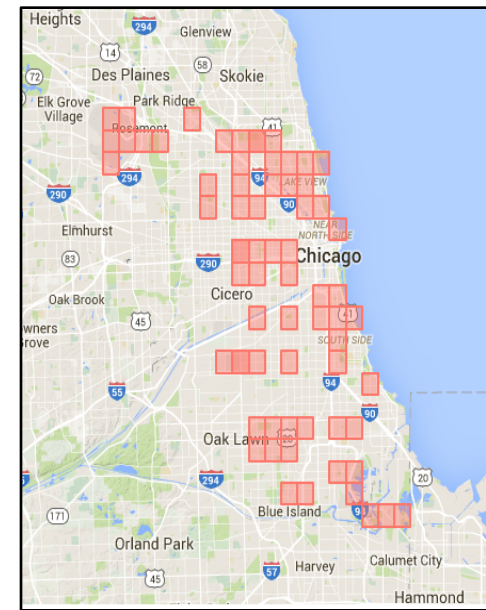
Predicting the spatio-temporal evolution of hotspots (hotspots: Chicago crime hotspots)



10x10 grid



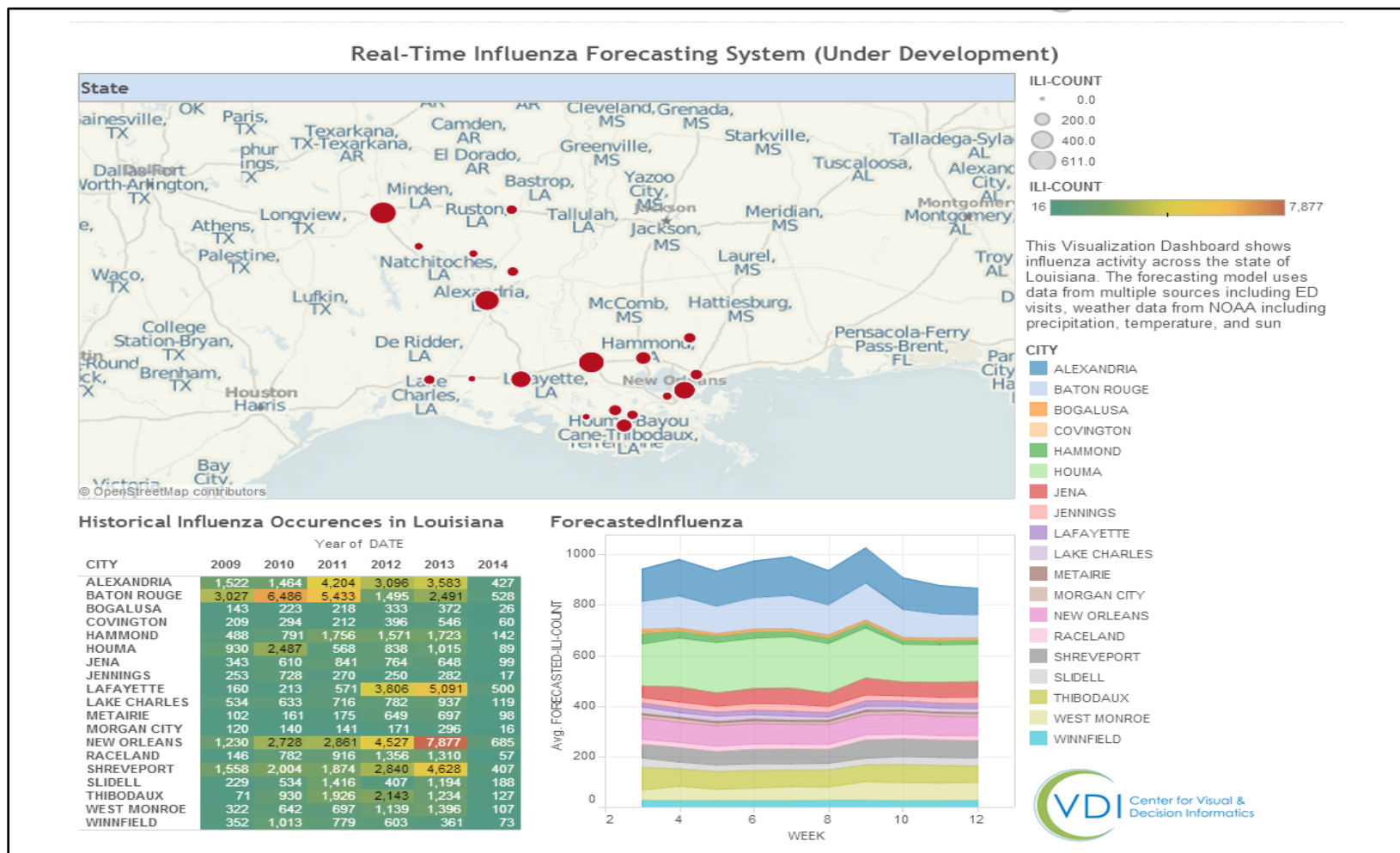
15x15 grid

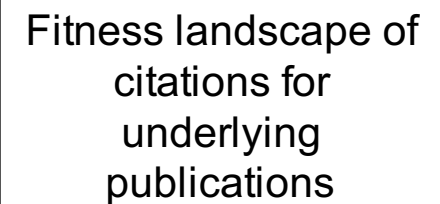


20x20 grid

CVDI Current Project: Predictive Analytics: Influenza forecasting

Influenza forecasting model that uses environmental conditions (temperature, sun exposure) and influenza history



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Scientometric analysis of terrorism research in CiteSpace



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