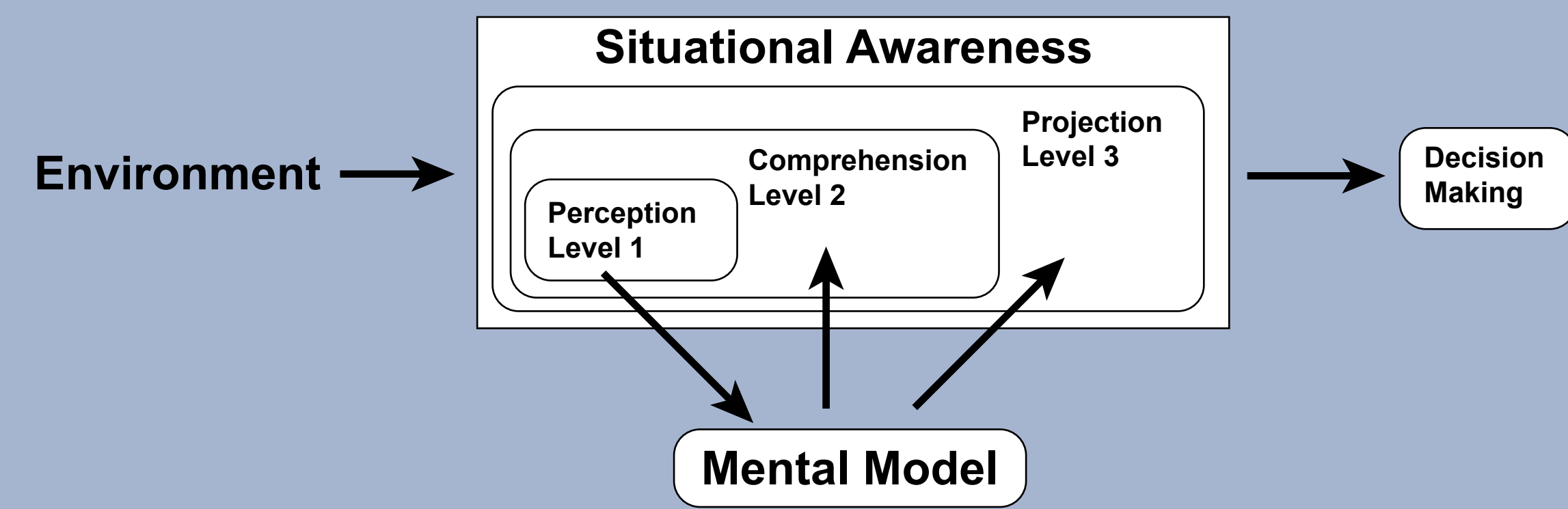


# Visual Analytics for Situational Awareness

(and how to get the software out of your way...)

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## Aims:

- Empower users to explore their data
- Simple, direct and intuitive interactions
- Support the non-linear and unstructured exploration process
- Facilitate multiple lines of thought

## Domains:

- Infectious Disease Outbreaks
- Public Health Weather Map
- Network Intrusion Detection
- Nuclear Energy
- Genes and Proteins Correlations

## Funding:

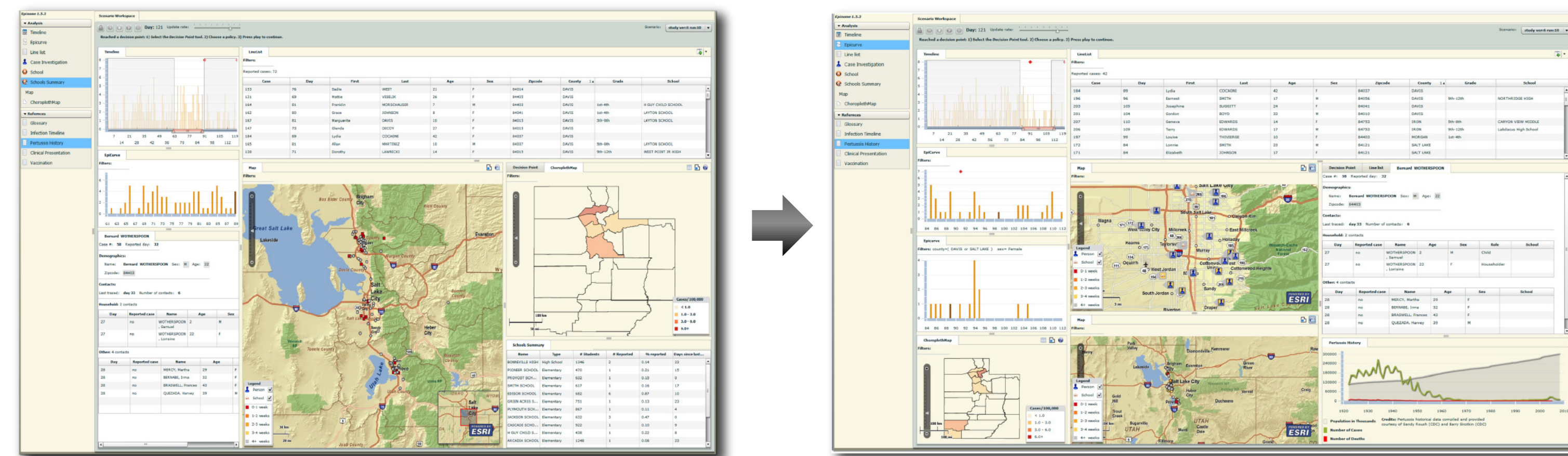
- ARDA & Air Force Research Lab
- US Army Telemedicine & Advance Research Center
- CDC Center of Excellence
- DOE, Nuclear Energy University Program
- TCO, University of Utah
- NIH

## Loosely Coordinated Multiple Views

**Epinome:** Infectious Disease Outbreak Investigation (CDC Center of Excellence, Dept. of Epidemiology U. of Utah, VBI Virginia Tech)

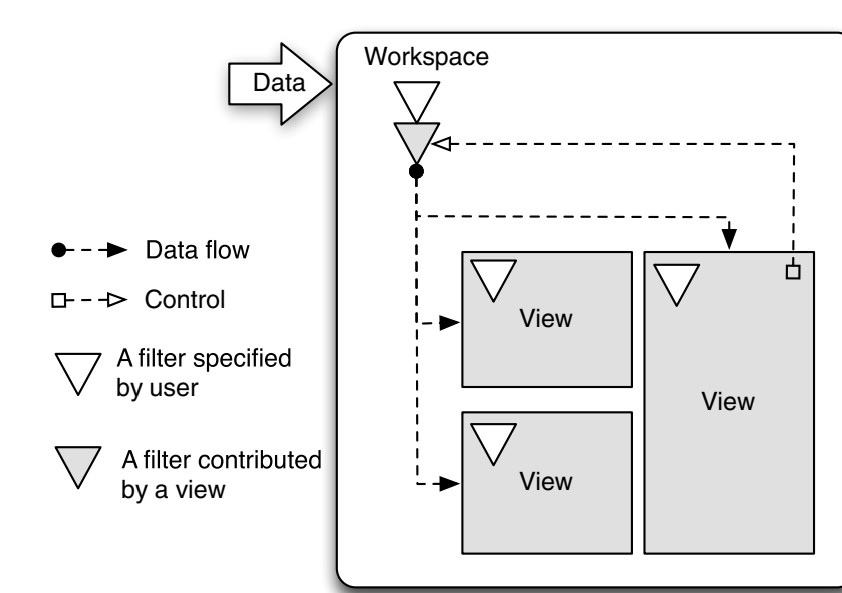
- Seamlessly Evolving Investigation Environment
- Multiple views of shared data
- Data changes over time

### • Direct Interactive Layout

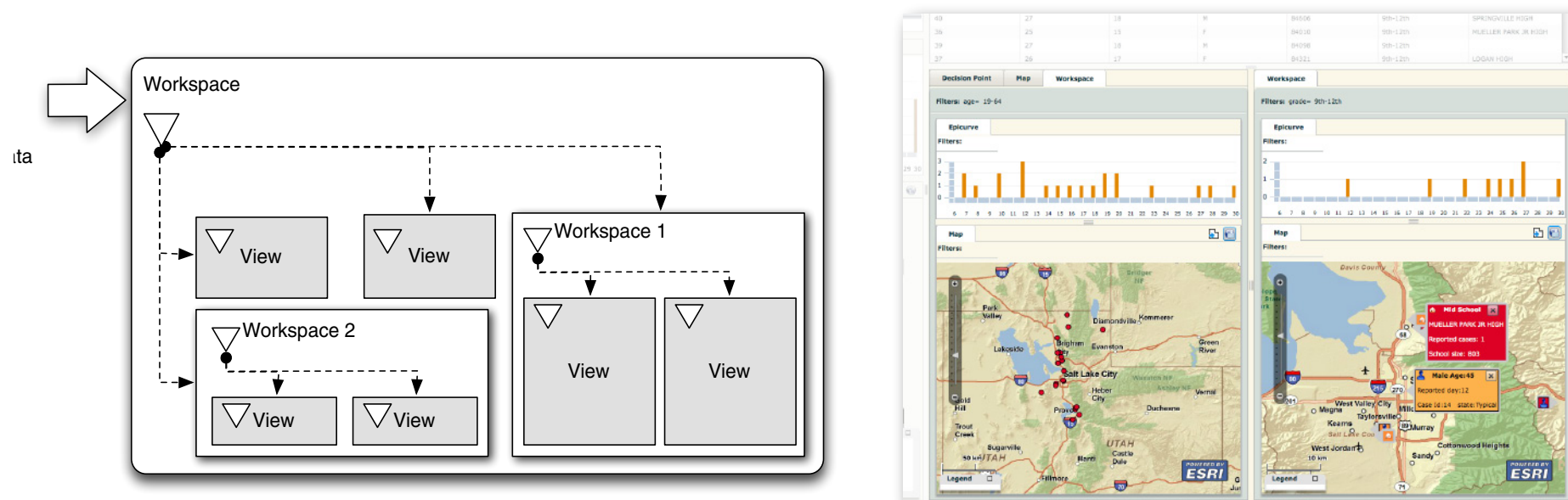


### • Loosely Coupled Views

- Shared dynamic data
- Global filtering over all views
- Independent local filtering



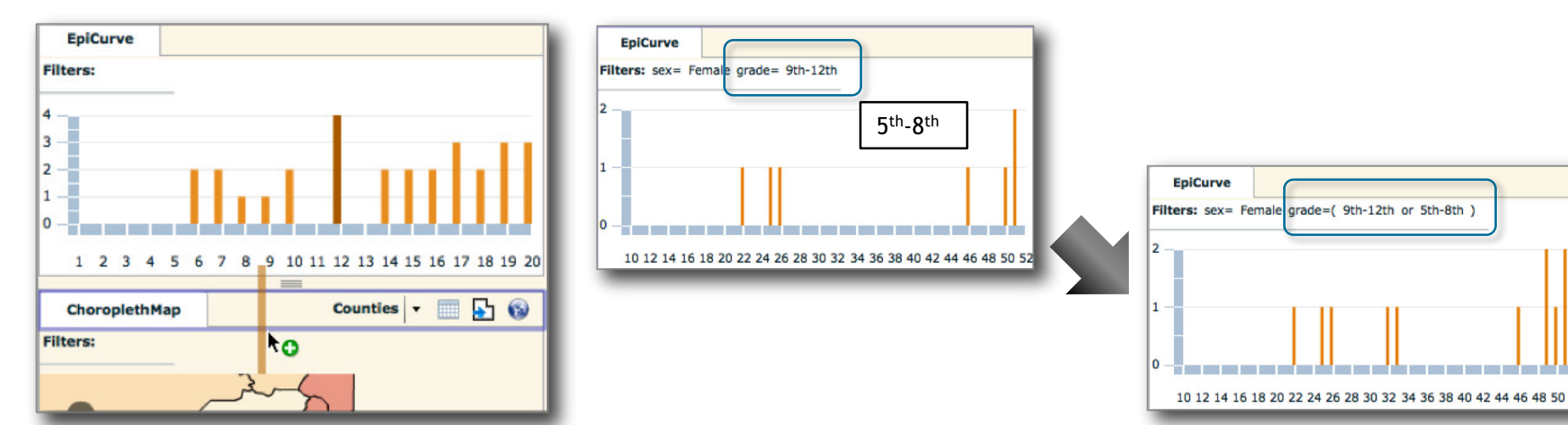
### • Nested workspaces



- Convergence Thinking (Drill down)
- Divergence Thinking (Hypothesis forming)

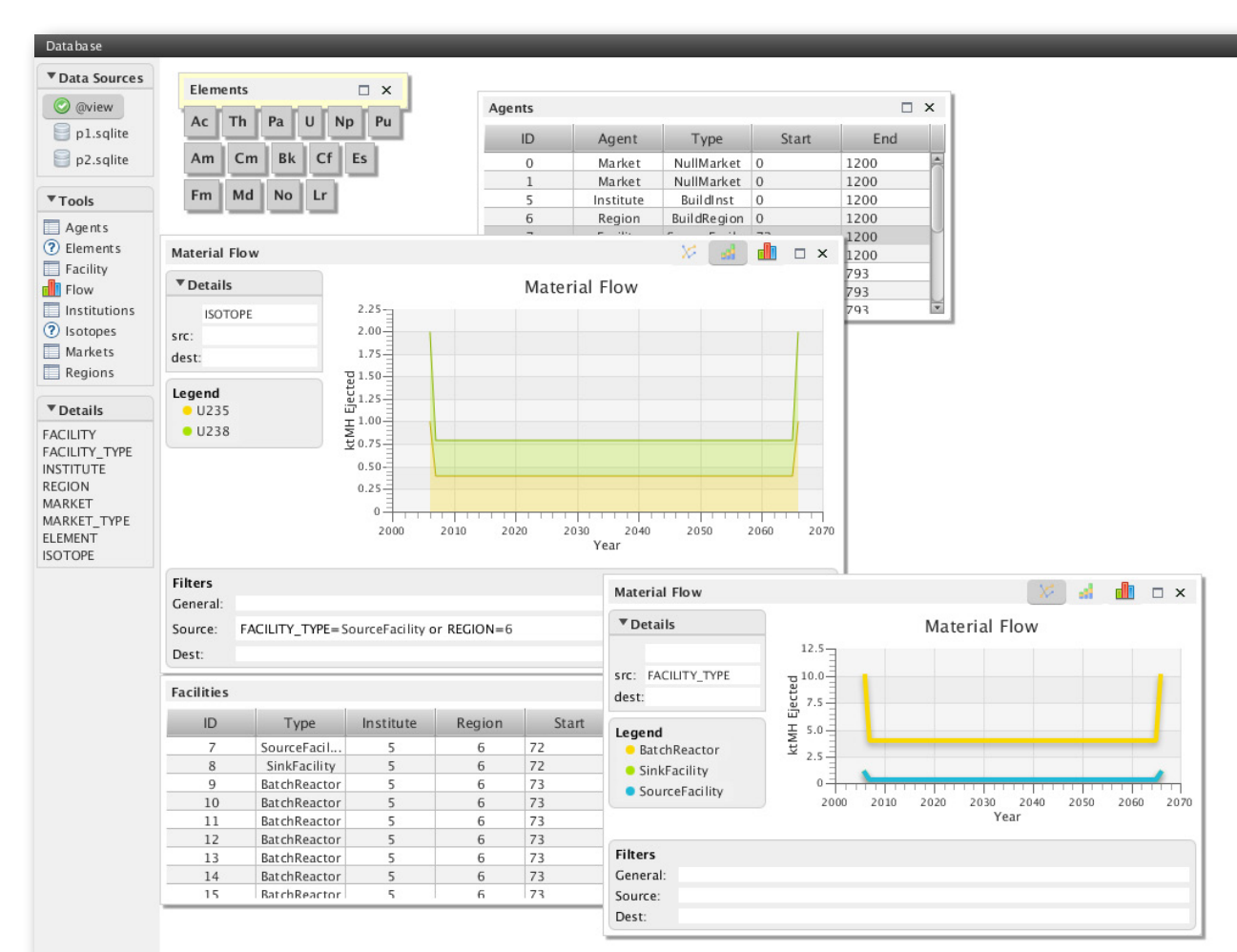
### • Query by Example & Automatic Filter Composition

- DnD visual data items (text & graphics)
- Associated semantics with the DnD item



**Cyclist:** Nuclear Fuel Recycle Simulation

(DOE Nuclear Energy University Program, U. of Wisconsin-Madison)



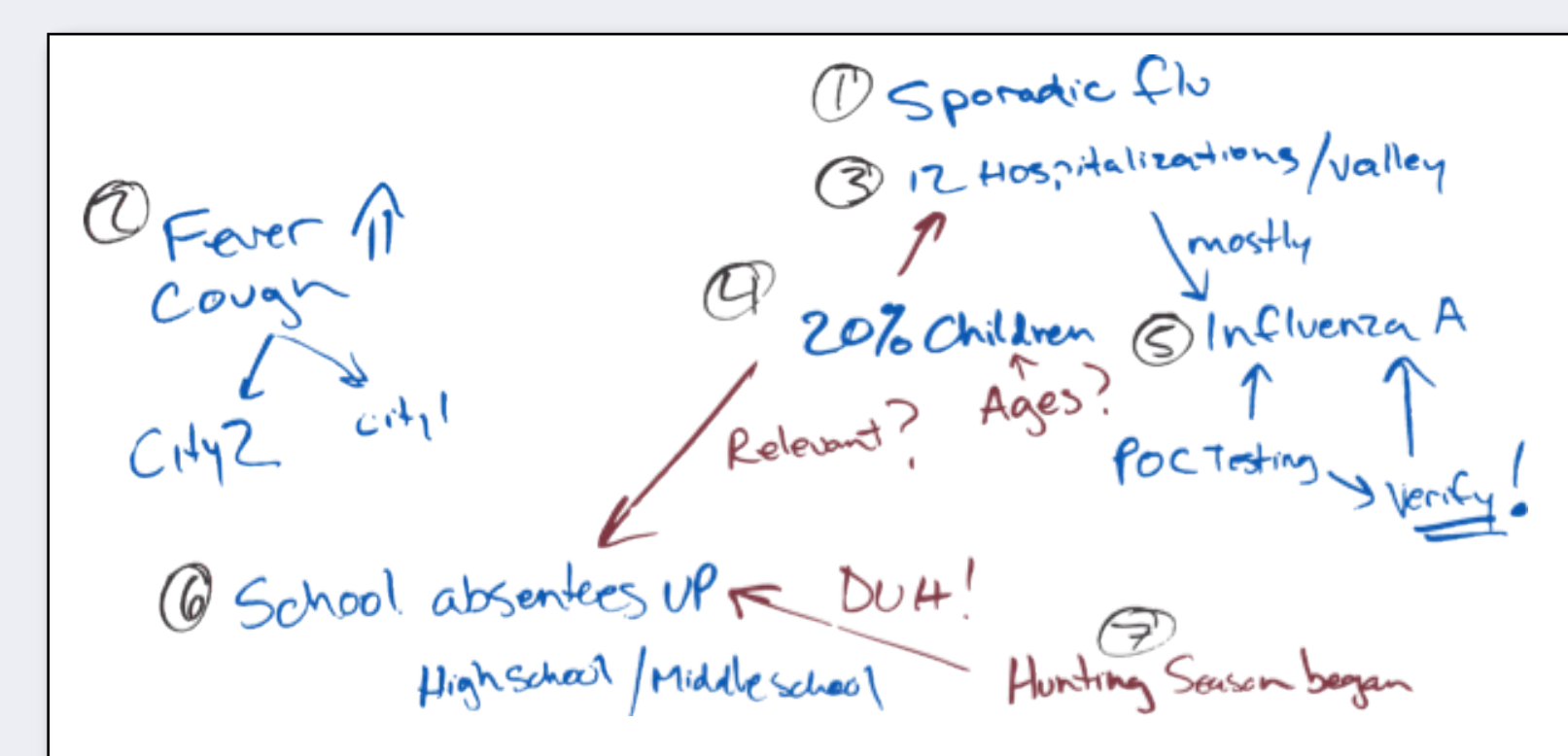
- Visual investigation of material flow in nuclear fuel recycle simulation using various nuclear processing models

## CommonGround | An interactive visual exploration of temporal and known correlations

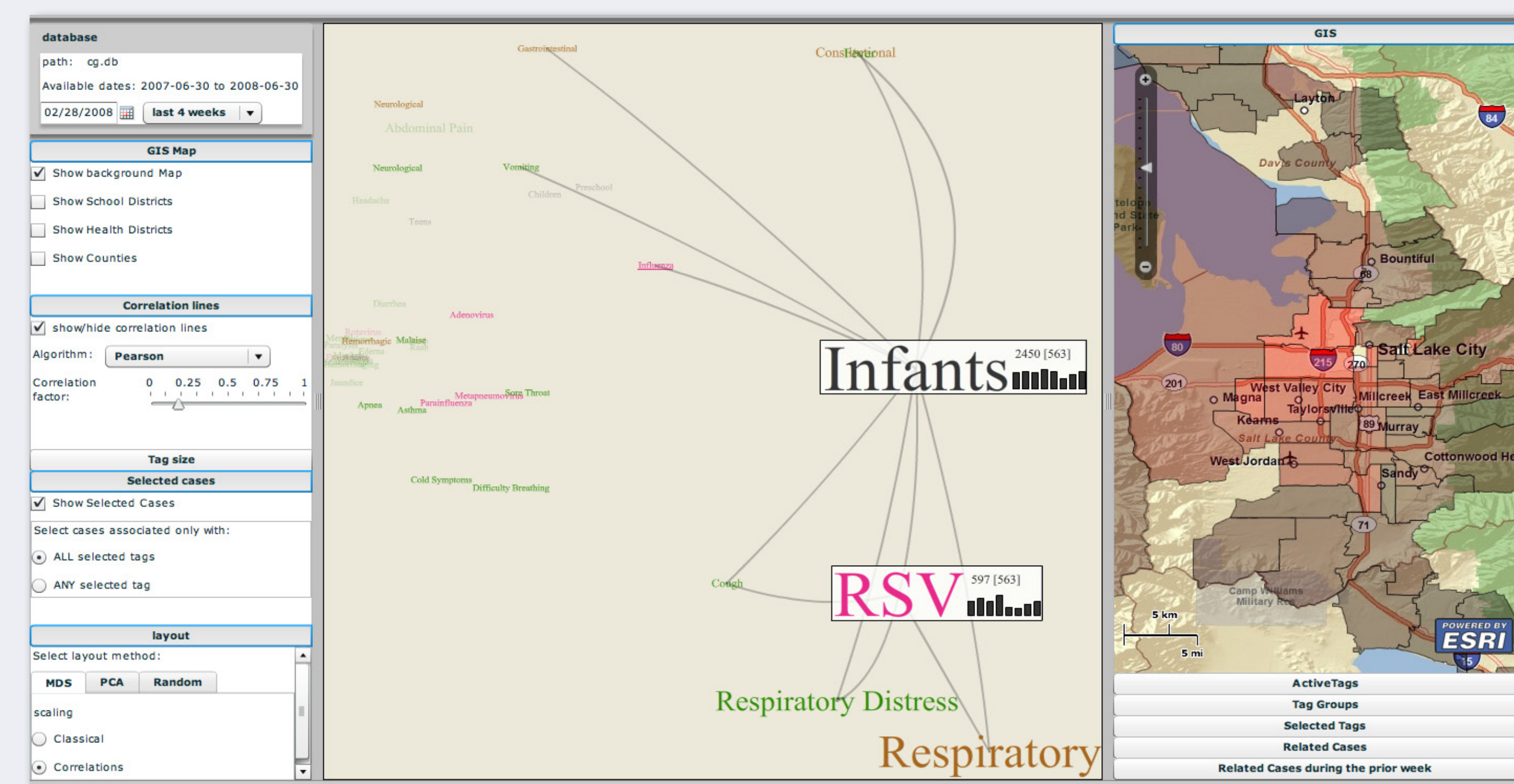
**EpiCanvas:** Infectious Disease Weather Map (US Army Telemedicine & Advance Research Center (TATRC), Dept. of Epidemiology U. of Utah)

### Understanding the User Mental Model

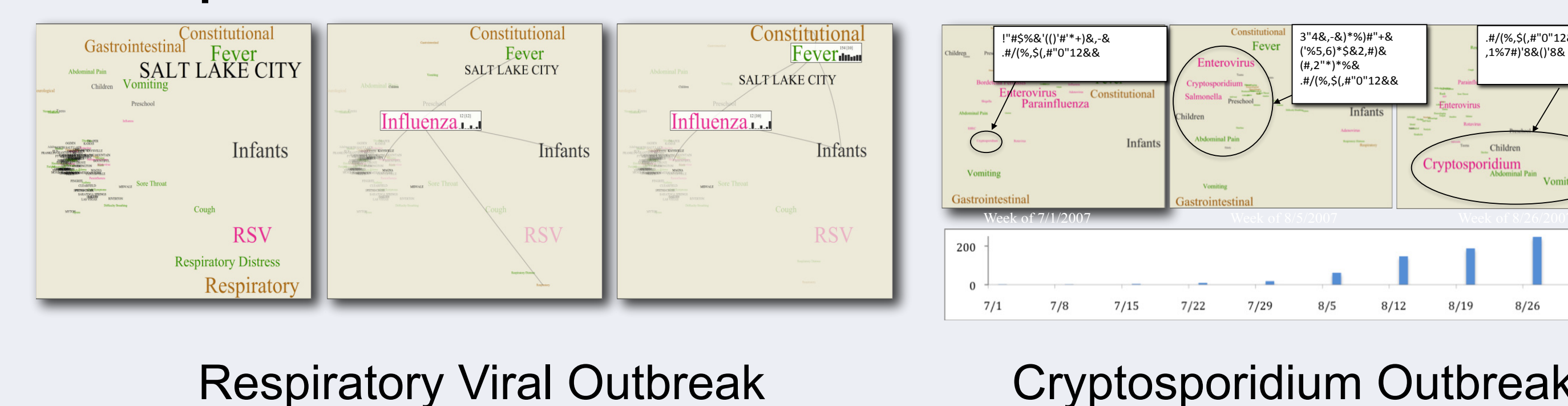
- Capture only key indicators
- Add annotations
- Apply mental tags



### Prototype

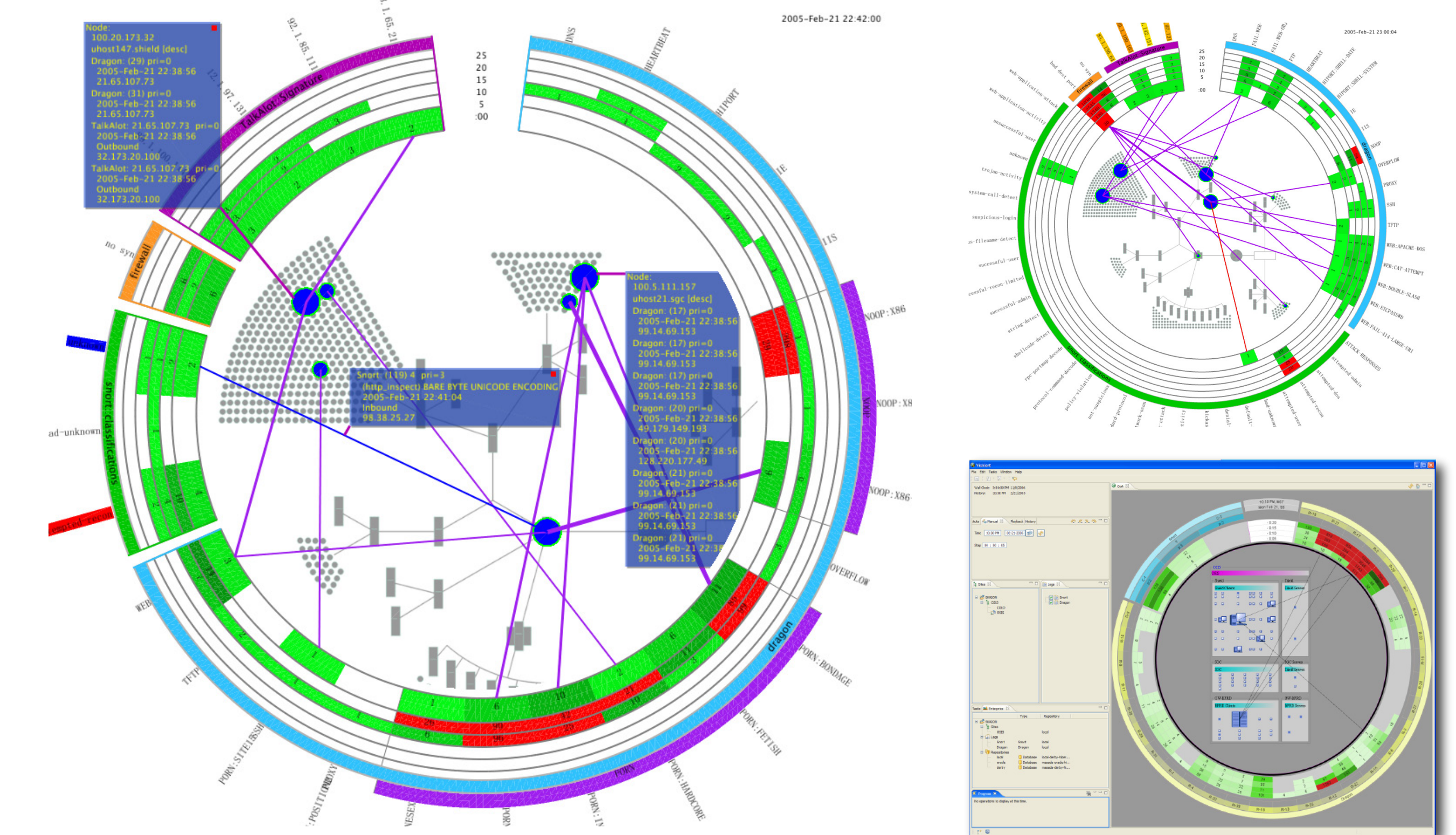


### Examples

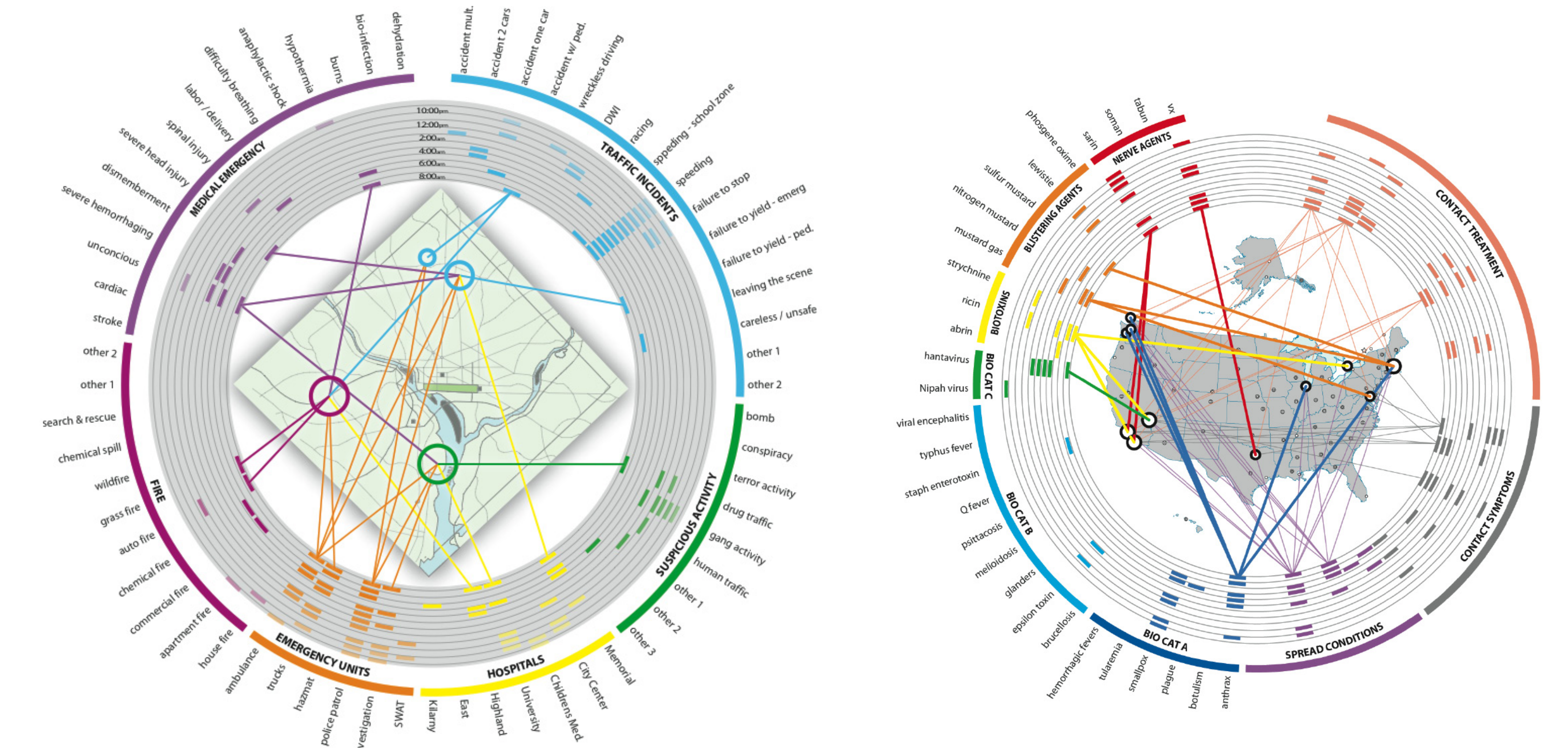


## Visual Correlation

**VisAlert:** Network Intrusion Detection (Intelligence Community: ARDA, Air Force Research Lab)

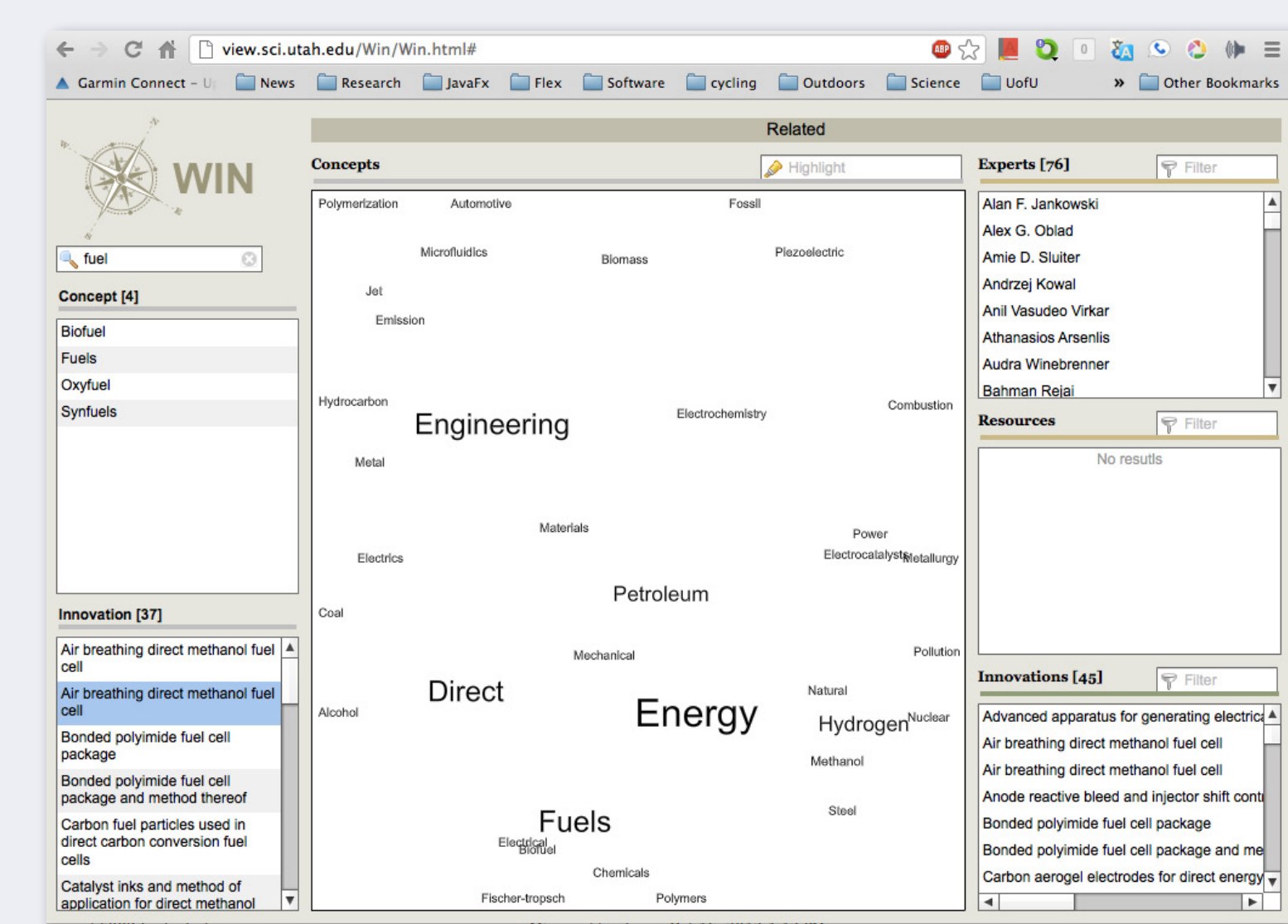


**VisAware:** Conceptual Generalization (Intelligence Community: ARDA, Air Force Research Lab)



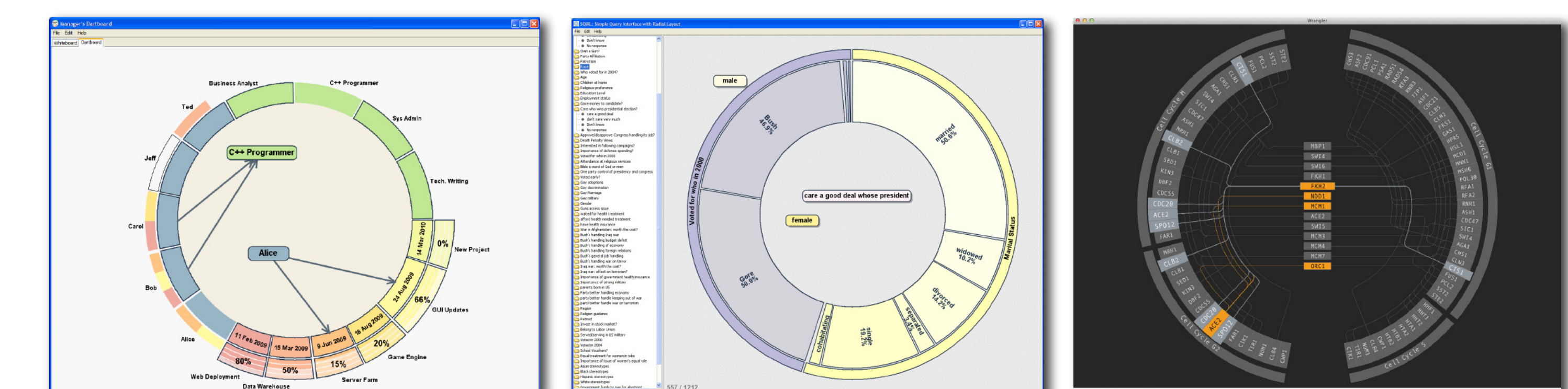
## WIN (Western Innovation Network)

(Technology Commercialization Office University of Utah)



Exploration of Intellectual Properties, Expertise and Resources

## Interactive Visual Data Mining



**Dartboard** by Geoff Draper  
Relations exploration

**SQIRL** by Geoff Draper  
Analysis of Election results

**Wrangler** by Ryan Vance  
Gene to Protein Correlations (NIH)