Visual Analytics for Situational Awareness
(and how to get the software out of your way...)

Yarden Livnat (SCI Institute) in collaboration with: Matt Semore (Epidemiology University of Utah, Department of VA), Per Gesteland (Pediatrics, University of Utah), Adi Gundlapalli (Epidemiology University of Utah, Department of VA), Geoff Draper (SCI Institute), Orly Alter (SCI Institute), Chris Barrett (Virginia Bioinformatic Institute), Paul Wilson (University of Wisconsin-Madison)

Loosely Coordinated Multiple Views

Epiname: 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

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

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

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
Respiratory Viral Outbreak
Cryptosporidium Outbreak

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

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

Visual Correlation

WIN (Western Innovation Network)
(University of Wisconsin-Madison)
Exploration of Intellectual Properties, Expertise and Resources

Interactive Visual Data Mining

Wrangler
by Ryan Vance
Gene to Protein Correlations (NIH)

Dartboard
by Geoff Draper
Relations exploration

SQiRL
by Geoff Draper
Analysis of Election results