

Visual Analytics for Data-Intensive Computing

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Interactive visual analysis
can help humans make
sense of vast amounts of
heterogeneous information.



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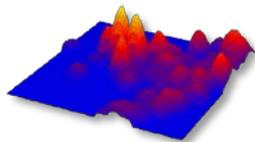
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What Distinguishes Visual Analytics?

- ▶ Visual analytics focuses on supporting **analytical reasoning** through interactive interfaces.
- ▶ Visual analytics techniques help
 - Synthesize information and derive insight from massive, dynamic, ambiguous, and often conflicting data
 - Detect the expected and discover the unexpected
 - Provide timely, defensible, and understandable assessments
 - Communicate assessment effectively for action.



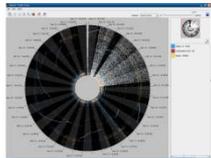
Representative Visual Analytics Capabilities



High-performance text analysis



Massive semantic graphs



Event detection in streaming cyber data



Large-scale interactive workspaces

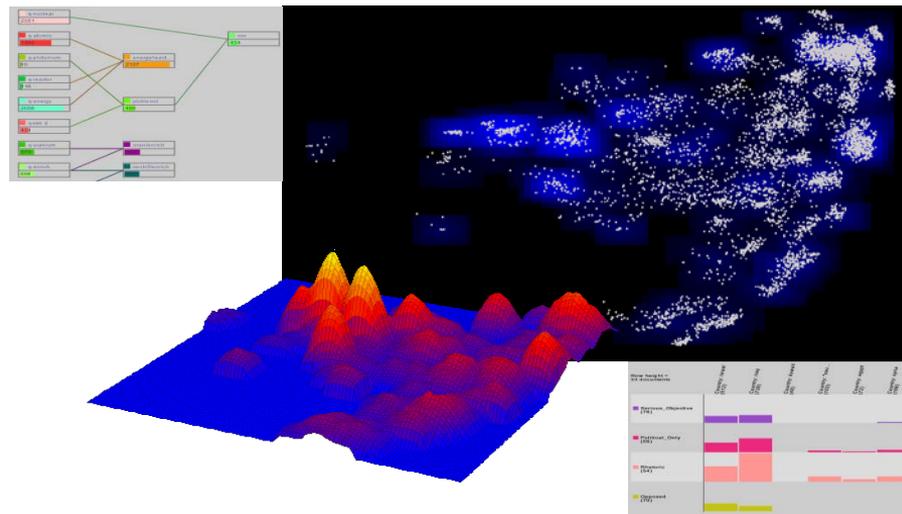


Hybrid computing for video analytics

Representative Visual Analytics Capability

High-Performance Text Analysis

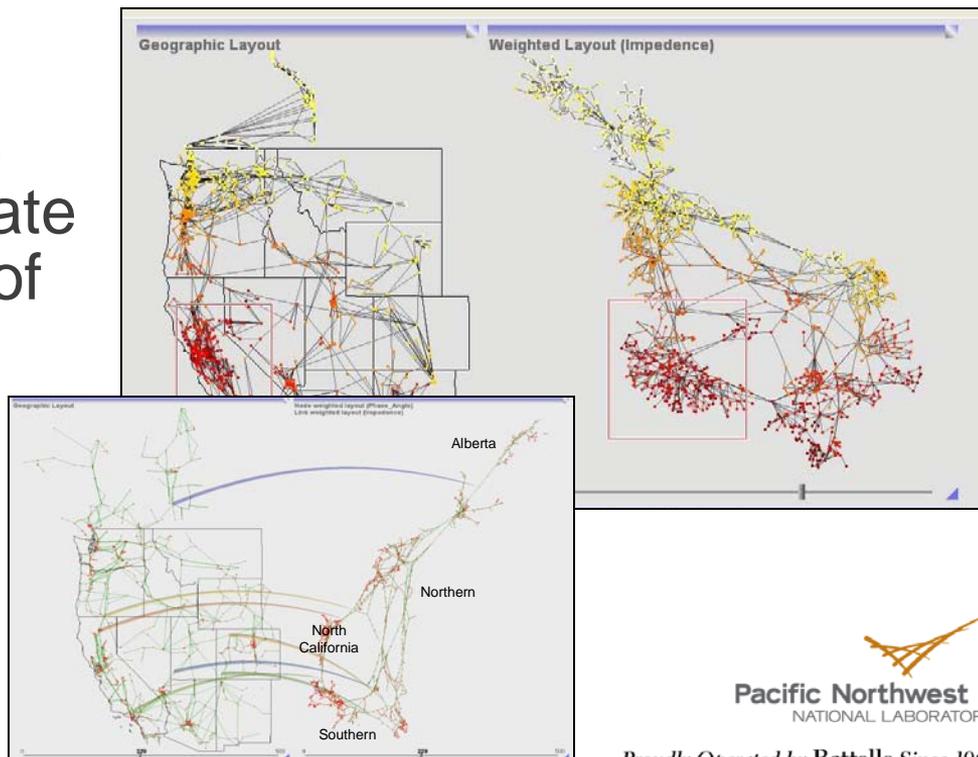
A parallel text processing architecture resulted in a ten-fold improvement in document ingest speed and ability to visualize up to 6 million document records.



Representative Visual Analytics Capability

Massive Semantic Graphs

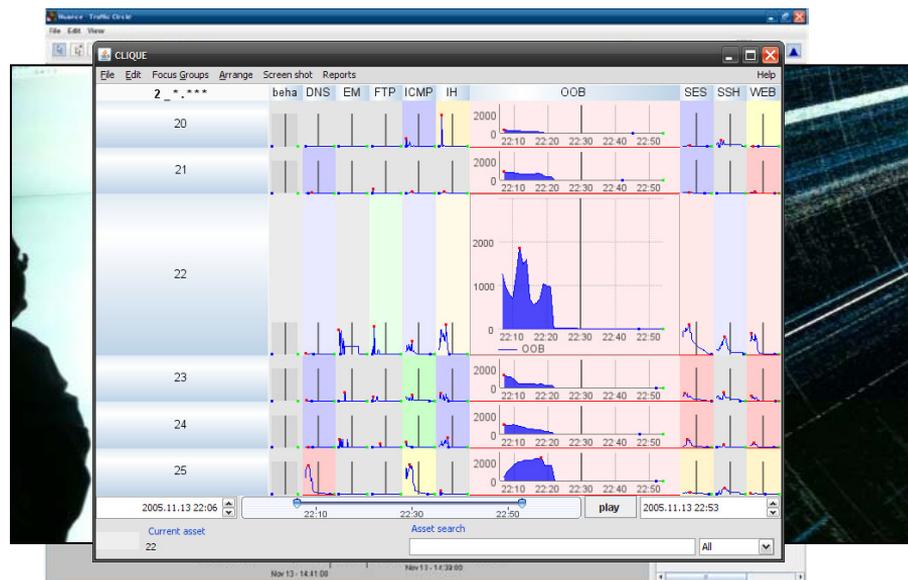
New feature extraction and graph clustering algorithms result in the ability to navigate graphs containing millions of nodes interactively.



Representative Visual Analytics Capability

Event Detection in Streaming Cyber Data

Using PNNL's MeDICi pipeline, new scalable visualization techniques give analysts real-time situational awareness in data sets containing hundreds of millions of transactions.

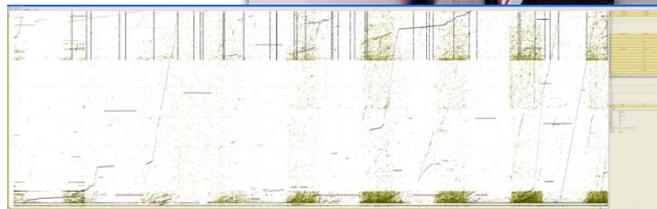


Representative Visual Analytics Capability

Large Scale Interactive Workspaces

Large, high-resolution displays give users “space to think” about complex problems.

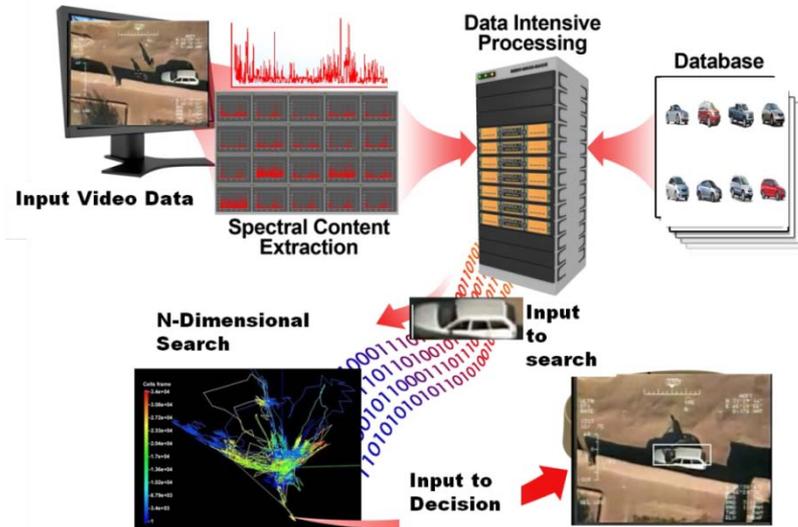
New visualization and interaction paradigms that make use of multiple coordinated displays become possible.



Representative Visual Analytics Capability

Hybrid Computing for Video Analytics

PNNL's work in signature development for video and image data uses GPUs, cloud computing, and the Cray XMT in high-throughput analysis workflow for summarizing, indexing, and searching video.



Harold.1

**Human-in-the-loop visual analysis
supports knowledge discovery across
domains.**

**The visual analytics community is
focused on developing transformative
new technology through partnerships
between industry, academia, and
government.**

For more information:

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