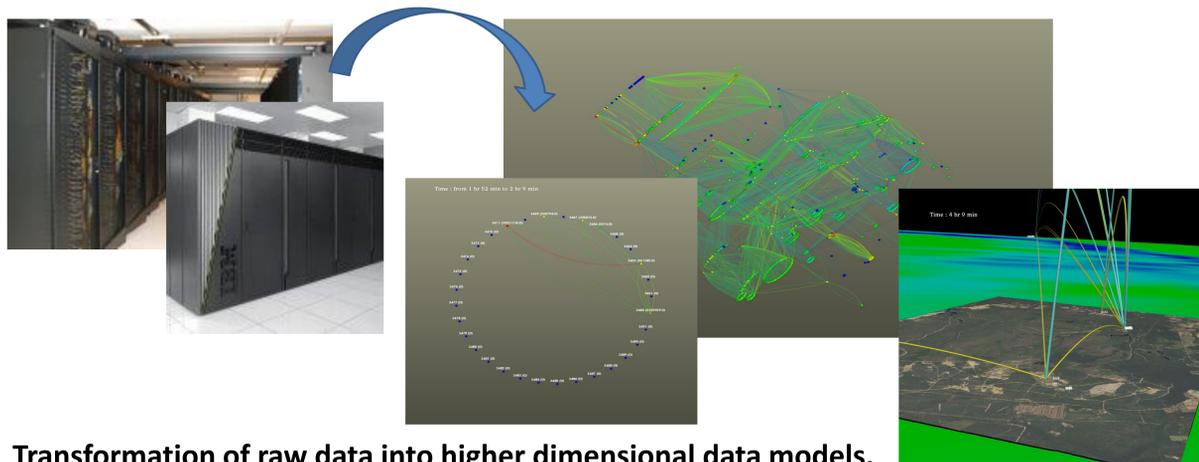


S&T Campaign: Computational Sciences Data Intensive Sciences

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Research Objective

- Investigate non-real time and real-time data analytics for C4 and automotive data
- Generate performance metrics from the data
- Apply stream processing to extend analysis and evaluation capabilities of the Army
- Enable additional analysis of data through advanced algorithms and data visualization



Transformation of raw data into higher dimensional data models.

Challenges

- Decomposition of data for parallel execution
- Formatting requirements for dynamic analysis
- Mapping of real-time analysis to existing HPC platforms

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- High-speed distributed data storage to support visualization and analysis
- Scalable visualization tools for network test data
- Innovative methods for robust streams analysis and evaluation in presence of network disruptions
- Dedicated HPC hardware for static and real-time network data capture, reduction, visualization and analysis

ARL Facilities and Capabilities Available to Support Collaborative Research

- HPCMP/ARL-DSRC supercomputer facility DSP (Dedicated Service Partition) provides computation and storage
- Streams software including IBM InfoSphere Streams developers licenses
- Unclassified and Classified computing environments depending on sensitivity of data being analyzed
- Internally developed HPC data reduction framework and modules for C4 data



- DREN**
- Data collected via NetADMAS on various platforms
 - Network packet data
 - GPS location
 - GPS Time – clock correction
 - Harvested every 12 – 48 hours
 - Transferred to ATC

- DREN**
- Pre-processing of data
 - Generation of context
 - Indexing and “view” selection
 - Transfer data to ARL HPC
 - Data Reduction
 - Populate data model

- DREN**
- Delivery of data model to evaluators
 - Service requests for additional information
 - Reach back to raw or intermediate data for clarification
 - Conduct analysis and take action

Data Flow for C4 and Automotive Analytics