Real-Time Data Analytics

S&T Campaign: Computational Sciences
Data Intensive Sciences

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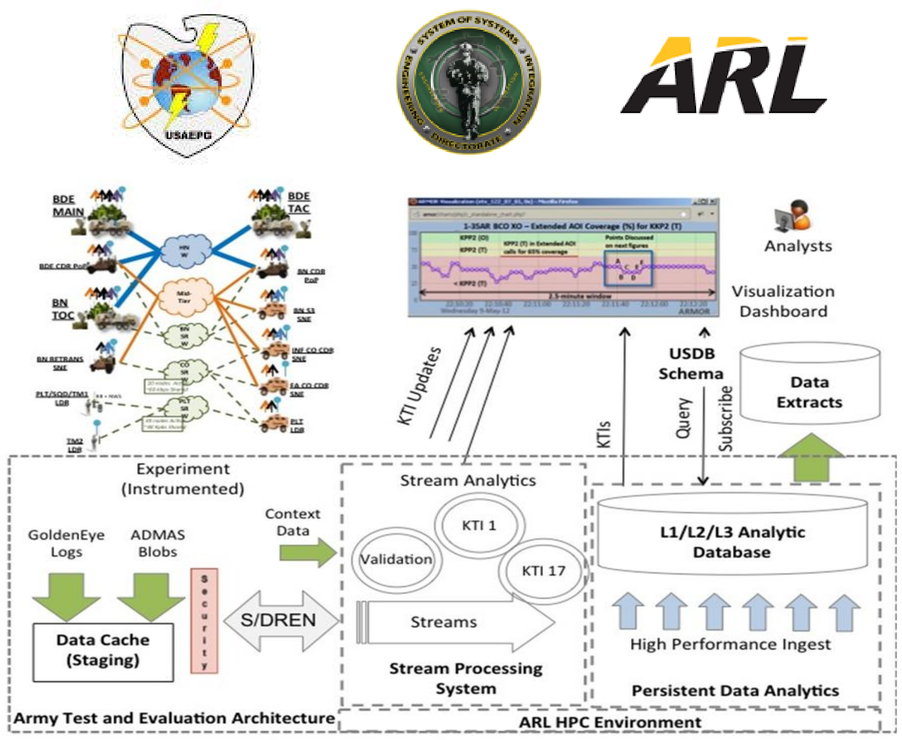
Research Objective

- Investigate application of real-time data analytics to Network Integration Evaluation (NIE) communication traffic and generation of Key Technical Indicators (KTIs).
- Apply stream processing to extend the analysis and evaluation capabilities of the Army.
- Discover new computational methods to process data and extract insights from that data



High-Level Architecture View

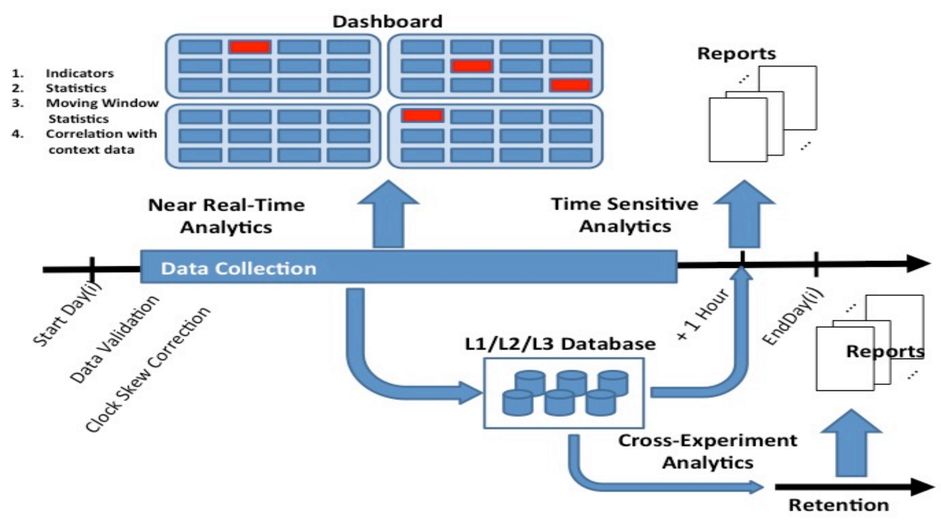
ARL Facilities and Capabilities Available to Support Collaborative Research

- HPCMP/ARL-DSRC supercomputer facility DSP (Dedicated Service Partition) provides computation and storage
- Streams software including IBM InfoSphere Streams developers licenses
- Available Unclassified and Classified computing environments depending on sensitivity of data being analyzed.

ARL's newest HPC system, Excalibur, has over 101,000 processors
And a theoretical peak speed of 3.7 PetaFLOPS

Challenges

- Measurement capabilities on expanding network footprint (sensors, personal networks, micro UAVs)
- Measurement capabilities to increase real-time fidelity
- Mapping of real-time analysis to existing HPC environment



Data Flow Timeline

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Dedicated computation hardware tailored to the I/O and data requirements of streaming data
- Innovative methods for robust streams analysis and evaluation in presence of network disruptions
- Investigate effect of mobile/field-deployed HPC to improve real-time processing
- Expertise in measurement of macro and micro-level networks using in-device and external measurement mechanisms to develop future requirements
- Applicability of test network lessons learned infuse future reporting capabilities and potential self healing of deployable devices in test and operational networks