The MaxStream Federated Stream Processing System

Functionality: Business Monitoring Application
Sales Map & Spikes
- Large international company with locations in Switzerland, France, and USA
- At each location, multiple sources of raw operational data: new orders, invoices, scheduling deliveries, etc.
- A different SPE installed at each site, keeping track of local aggregate sales volumes and unusual spikes on a minute-by-minute basis
- Company headquarters located in USA, monitoring the overall business

Performance: Linear Road Benchmark
- LRB simulates traffic on a set of highways determining variable tolling based on segment statistics and accident occurrences.
- Measure of the benchmark: L = the number of highways-worth of data that a given engine can handle while meeting the maximum response time constraint of 5 seconds for all queries.

Handling the Heterogeneity of SPEs
- Capability Differences: handling the differences in the type of queries that different SPEs can support
- Execution Model Differences: handling the differences in the internal query execution models of different SPEs
  - SECRETS Model – A model that explains the windowing behavior of SPEs along five dimensions: Scope, Evaluation, Content, REport and Tick

Management of both Streaming and Stored Data
- ISTREAM: streaming input events through MaxStream in persistent or transient modes
- Monitoring Select: streaming output events through MaxStream in persistent or transient modes
- Native support for hybrid (stream-table) joins within MaxStream

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Automatic Query Translation to Different SQL Dialects
Uniform Interface for Data and Queries
Client Application
Federation Layer
Management of both Streaming and Stored Data
Handling the Heterogeneity of Stream Processing Engines

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http://www.systems.ethz.ch/research/projects/maxstream/