Streaming Integration and Intelligence
For Automating
“Time Sensitive” Events

Ted Fish
Director Sales, Midwest
ted@striim.com
312-330-4929
## Striim Executive Summary

### Delivering Data for “Time Sensitive” Processes & Decisions

<table>
<thead>
<tr>
<th>Founded</th>
<th>Founded in 2012 by leaders of GoldenGate Software and BEA/WebLogic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead investors</td>
<td>Backed by leading investors: Summit Partners, Intel Capital, Atlantic Bridge, &amp; Dell</td>
</tr>
<tr>
<td>Customers</td>
<td>Deployments in financial services, telco, healthcare, retail, IoT</td>
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</tbody>
</table>
Sample Customers

Transportation & Logistics

Financial Services

Telco, Manufacturing

Retail, High Tech/IoT
Striim Awards @ 2017 Strata Data Conference

“Best Big Data Technology for Real-Time Analytics” / “Top 5 Vendors to Watch” / “Best IoT Platform”

<table>
<thead>
<tr>
<th><strong>Financial Services</strong></th>
<th><strong>Healthcare</strong></th>
<th><strong>Manufacturing</strong></th>
<th><strong>Retail</strong></th>
<th><strong>Communications</strong></th>
<th><strong>Transportation/Logistics</strong></th>
<th><strong>Insurance</strong></th>
<th><strong>Public Sector</strong></th>
<th><strong>IT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Fraud prevention</td>
<td>- Staff allocation optimization</td>
<td>- Predictive maintenance</td>
<td>- Real-time offers</td>
<td>- Predict network failures</td>
<td>- Predictive maintenance</td>
<td>- Agent fraud detection</td>
<td>- prevention</td>
<td>- Replication validation</td>
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<tr>
<td>- Risk management</td>
<td>- Point of care compliance</td>
<td>- Equipment monitoring</td>
<td>- VIP customer service</td>
<td>- Proactive network failures</td>
<td>- Asset tracking</td>
<td>- Risk-based policy pricing</td>
<td>- Cyber security</td>
<td>- API usage monitoring</td>
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<tr>
<td>- VIP customer service</td>
<td>- Eligibility verification</td>
<td>- Capacity optimization</td>
<td></td>
<td>- Location-based advertising</td>
<td>- Route optimization</td>
<td></td>
<td>- Traffic management</td>
<td>- SLA monitoring</td>
</tr>
</tbody>
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Challenge: Supporting Time-Sensitive Decisions, Processes, Insights

Data is New
- Websites
- Applications & Databases
- Network
- Devices, Mobile, IoT

Integration Options
- Messaging
- Extract, Transform, Load (ETL & Batch)
- Legacy Replication & CDC

Data is Old
- Cloud
- Files
- Messaging
- Orders / Sales
- Inventory
- Data Warehouse
- Security
- Big Data
- Process Automation

Lack of Data for Real-Time Events:
- Customers
- Orders / Sales
- Inventory
- Security
- Process Automation

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How Striim Transforms Your Organization

Data is New

- Websites
- Applications & Databases
- Network
- Devices, Mobile, IoT

In-Memory Streaming Integration & Intelligence

Time Sensitive Events

- Customers
- Orders
- Inventory
- Security
- Safety

“Before the Data Lands”
Automate Processes, Deliver Insight, Make Timely Decisions

Data is Old

- Cloud
- Files
- Messaging
- Data Warehouse
- Big Data

End-To-End Solution
7/24 Enterprise Grade Platform

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Striim: Fast Data, In-Flight Intelligence, Fast Decisions

Real-Time Insights & Action
- Alerts
- Triggers
- Machine Learning/AI Models

Real-Time Visualization

Data is New
- Streaming Integration
  - Transformation
  - Filtering
  - Enrichment
  - Aggregation
- External Context
- Complex Event Rules
- Multi-Stream Correlation
- Anomaly Detection
- Pattern Matching

Streaming Data Delivery
- Time Sensitive Decisions & Processes
  - Customers
  - Orders/Sales
  - Inventory
  - Security
  - Process Automation
- Fast Deliver to Anywhere
- Big Data & NoSQL
- Cloud Files
- Messaging
- Data Warehouse
- Edge
- Any Messaging, Built-In Kafka
- Sensors IoT
- Databases
- Log files

Streaming Events
- CDC

Striim: Fast Data, In-Flight Intelligence, Fast Decisions

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Visualization & Drilldowns Through Streaming Dashboards
Real-Time Treat/Fraud Security Monitoring – Largest Credit Card Company

Correlate Logs From Multiple Security Products to Identify Cross-Domain Issues or Exploits that are not Obvious from a Single Security Product

- Source Logs In Real-Time from Multiple Security Products
- Ingests and Analyzes security log & session data, capturing all events from 50+ siloed security solutions
- Looks for Patterns of Activity Across Logs that Indicate Exploits or Anomalies
- Provide Real-Time Monitoring Dashboard and Immediate Alerts
Striim “Next Generation” Architecture

Sources & Parsers
- RDBMS
  - Generic JDBC/SQL
  - Oracle CDC
  - MS/SQL CDC
  - HPE NonStop CDC
- Files
  - CSV/TSV
  - JSON
  - XML
  - Apache Avro, Free-form
- Network
  - TCP
  - UDP
  - HTTP
- Message Queues
  - Kafka/Flume
  - JMS
- BigData
  - HDFS
  - Hive

Applications
- Continuous Query Processor
  - Distributed In-Memory Cache
  - Distributed In-Memory Store
  - Kafka Streams (optional)
  - Distributed Indexed Store (ES)

Real-time Dashboards
- Business-Level Logic
  - With (extended) SQL

Targets & Formatters
- Alerting
  - Email
  - SMS
- Message Queues
  - JMS
  - Kafka
- Cloud
  - Google BigQuery
  - MS Azure SQL, AWS Redshift
- DB Persistence
  - JDBC/SQL
  - Oracle
  - MS/SQL, Teradata
  - HPE NonStop
- File Persistence
  - CSV/TSV
  - JSON
  - XML
- BigData
  - HDFS
  - Hbase, Hive

Scalable IMC Cluster
- External Context

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Kafka Enhancements – Integration, Performance, Support

Performance, Scalability, Security, Easier Manageability

- Kafka built-in - for persisting data and performance
- Continuous collection - data and deliver to Kafka
- Intelligence - on streaming Kafka data
- Visualization and Drill Downs - on streaming data
- SQL Queries against Kafka, without coding
- Performance - each writer dynamically processes 24 parallel threads
- Enterprise Grade - Scalability, Reliability, Security
- Exactly-Once-Processing (E1P) from sources to targets
Built-In “CDC” Change Data Capture / Replication Database to Database

“Striim Leveraged their Golden Gate Development Expertise”

- On-Premise Database to On or Off Premise Databases
  - Read current Base Table to perform Initial Load to Target Data Tables
  - Start change data capture on Source database to read transaction logs
  - Striim Transforms Change Records to DML Operation and Applies changes to DBMS destinations
  - Add Kafka Persistent Streams to add Mission Critical E1P reliability for fault tolerant replication
IoT Projects – Exploits Striim’s Platform

- **Cloud**
  - HUB
  - Machine Learning

- **Gateway Hardware**
  - Protocol Translation

- **Exported ML Model**

- **Continuous Real-Time Processing**
- **Intelligence at the EDGE**
- **Visualization & Automation**

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Collect Data to Train Model and Use Model in Striim to Perform Real-Time Anomaly Detection or Predictions

- Source Data From Databases, Files, Kafka, etc.
- Process and Prepare the Data and Write to Disk to Train Machine Learning
- Export Trained Model and Use in Streaming Analytics Real-Time Scoring
- **Present Results on Dashboard and Alert on Anomalies**
Application Development Environment - Robust & Flexible

- End-to-end integrated application development
- Visual dashboard designer
- Visual application designer (Flow Designer)
- Application templates
- SQL-like programming interface
- Source data preview
- Live / ad-hoc query & parameterized query interfaces
- Predictive analytics

Business-Level Logic
With Tungsten QL (extended SQL)
Built-In Enterprise Operations / Clustering, HA, Fault Tolerant

- Clustering - Multiple node use cases
  - Architecture
    - Hybrid / Public / Private Cloud
    - Striim Agents
    - Mesh network
    - Democratic
  - Scale out
    - Memory on one node not enough for holding windows/caches
    - Processing power on one node not enough to process the number of incoming events
    - Consistent hashing and distribution of data stream, caches, results caches,
    - Co-location of data and processing
    - Dynamic resizing
  - Availability
    - Guarding against node outages
    - Guarding against errors on nodes
    - Dynamic resizing
Built-In Enterprise Operations / Scalability

- Cluster scales horizontally on commodity hardware
- Lightweight agents for edge collection of data
- Consistent data partitioning
- Scalable indexed results store

Event Rate Per Servers

Event Rate Per Servers

Events Partitioned Over Cluster

Collection Agents

Processing Cluster

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THANK YOU