
Heejoon Park
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Agenda

• Digital Business and Fast Data
• Fast Data Architecture and Components
• Case Study: Integration Journey from TIBCO® BusinessWorks 5 to 6
• Case Study: Rethink Track & Trace Using Streaming Analytics
• Case Study: Operational Business Intelligence
Three Key Takeaways

1. Integration is more relevant than ever. Fast Data is all about getting the right data to right people at the right time. It all starts with integration!

2. If you are new to event processing, track and trace use case offers a great entry point and offers immediate value-add

3. Your digital business needs powerful analytics and visualization to make sense out of integrated data and systems and drive insights.
TIBCO Fast Data

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Integration

- Data Accessibility
  TIBCO® ActiveMatrix BW
- Data Management
  TIBCO® MDM
- Improved Business Outcomes
  TIBCO® ActiveMatrix BPM
- In-Memory Computing
  TIBCO® ActiveSpaces
- API Management
  TIBCO® API Exchange Gateway
  TIBCO® Mashery API Mgmt
- Monitoring & Management
  TIBCO® Hawk
Case Study: Integration Journey from TIBCO BusinessWorks 5 to 6
Customer Case Study: Integration

Customer Industry: Consumer Auto Financing

Challenge

- Long time TIBCO customer with ~200 interfaces using version of BW 5 and adapters that were getting outdated
- BW 6 adopted as development standard for all new integration as part of technology modernization
- What does this mean from operations perspective?
- How do you reconcile and support interfaces from these two platforms on an on-going basis?
Approach

- Identified ~10 projects as candidate for migration based on use of certain adapter/plugin, complexity.

- Hybrid approach taken where skeleton BW 5 projects were migrated using Migration tool but certain functionalities were redesigned leveraging BW 6 features:
  - exception management
  - support for legacy custom functions
  - in-process communication
  - support for policy management
Customer Case Study: Integration
Customer Industry: Consumer loan and lease servicing

Approach

- **Pre-migration tasks**
  - Add missing target namespace into XSDs
  - Reorganize project structure to resemble BW 6

- **Migration Error Analysis (project specific vs. common)**
  - activity input config/invalid data type conversion/unresolved reference in schema
  - use of actual vs. extrapolation to compare against new interface development

- **Post-migration tasks**
Customer Case Study: Integration

Outcome

- Obtained total migration effort hours estimated for candidate BW projects.
- Three potential options emerged as go-forward plan

<table>
<thead>
<tr>
<th>Migration Options</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid: Migration tool + reengineering</td>
<td>Balanced approach using reengineering opportunistically to exploit new features</td>
<td>Timeline mismatch between Engineering and project</td>
</tr>
<tr>
<td>Rewrite existing interface in BW 6</td>
<td>Leverage BW 6 architecture and feature to fullest extent</td>
<td>Opportunity cost</td>
</tr>
<tr>
<td>Run dual platforms</td>
<td>Developers can focus business logic while tool matures</td>
<td>Requires dual migration</td>
</tr>
<tr>
<td></td>
<td>No immediate outdated software</td>
<td>Cost and skill set consolidation delayed</td>
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Integration Takeaways

1. BW 5 to 6 migration is more than just running Migration tool. Proper planning and analysis is key for enterprise wide migration success.

2. The migration tool is maturing fast and collective field experience is increasing. Leverage TIBCO PSG for guidance.

3. Consider BW 6 for first class dev tooling, sophisticated modeling, open platform/ecosystem, and more web friendly env.
Case Study: Rethink Track & Trace Using Streaming Analytics
Customer Case Study: Event Processing

Customer Industry: Upscale Fashion Retail

Requirements

- Provide end-to-end (E2E) transaction traceability across components
- Aggregate/correlate logging and exception records for a given transaction
- Report response time for every transaction in real time
- Provide ability to drill down and view response times at a component level to isolate low performing component

Business & IT Value

- Brand loyalty reinforced through seamless high-touch customer service experience
- Minimized downtime of key service components
- DevOps alerted of low performing component, proactively addressing issue in real time
Customer Case Study: Event Processing

Architecture

- Transaction milestone log and exception records are published via JMS.

- One E2E transaction involves multiple components which need to be correlated.

- TIBCO StreamBase subscribes to event streams and perform:
  - Correlate
  - Update/organize transient hierarchical event model (in-memory data mart)
  - Aggregate
Customer Case Study: Event Processing

Architecture

- Event Server updates are pushed to real-time operational dashboard (TIBCO Live Datamart)

- For historical analysis, Spotfire can be used
Customer Case Study: Event Processing

Correlation Management

- CorrelationIds need to be used consistently across a given transaction E2E

- CorrelationIds are associated with business context such as:
  - OrgId
  - ApplicationId
  - BusinessTransactionId
  - BusinessAction and etc.

- Specific transaction can be located either through CorrelationId or business context fields
Client Invocation

```java
then {
    System.debugOut("**RECEIVED A LOOKUP ORDER REQUEST**");
    String correlationID = CreateLogEntryDEHelper.getCorrelationId();

    //log input event
    CreateLogEntryDEHelper.log("INFO", null, "RECEIVED A LOOKUP ORDER REQUEST", lookuorder@payload, null, false);

    //log bw soap/http request
    LookUpOrderHTTP.Events.Input request = Event.createEvent("<xsl:template xmlns:xsl:template xmlns:ms2="ms2"
        xmlns:xsl:stylesheet xmlns:ms2="ms2">
        "http://localhost:16200/Services/LookUpOrderHTTP", request, ".Events/output", -1);  
    CreateLogEntryDEHelper.log("INFO", null, "INVOKING LookUpOrderHTTP", request@payload, null, false);

    System.debugOut("**RECEIVED HTTP RESPONSE***");
    System.debugOut(" RESPONSE IS : "+ response@payload);

    //log bw soap/http response
    CreateLogEntryDEHelper.log("SUCCESS", null, "RECEIVED A LOOKUP ORDER RESPONSE", response@payload, null, true);
    Event.consumeEvent(response);
```
Customer Case Study: Event Processing
Event Processing Takeaways

1. Enabling transaction visibility integrated with logging and exception is a fundamental aspect of your application architecture in your digital business.

2. Logging event traffic fits into the “big data” category. For a given transaction, you’ll need to collect 4 to 8X of event data across your distributed service. Your tool selection must incorporate this. i.e. If application support complains query takes 5 min, it’s too late!

3. Event/stream processing tools are powerful. This doesn’t obviate good architecture and intuitive user interface.
   A. correlationId management across your distributed service
   B. search capability with business context attributes

4. Know your audience and their requirements. (One size doesn’t fit all!) Do you need event processing in real-time or near real-time (i.e. 5, 30, 60 min delay ok?) This will dictate not only your tool selection but your solution architecture!
Case Study: Operational Business Intelligence
Customer Case Study: Operational Business Intelligence

Customer Industry: Industrial Alloy Manufacturing

Requirements

- Compare KPIs across plants based on chosen Alloy
- Ability to identify and analyze standard variances across production operations
- Visualize plant production performance on different dates

Business Value

- Continuous production operations improvement
- Standardization of production operations across the globe
Customer Case Study: Operational Business Intelligence

Alloy Manufacturing Primer

- Melting – process to convert from solid to liquid state
- Casting – process to convert molten metal directly into semi-finished product
- Hot Mill – process of converting casting material into sheet
- Cold Mill – Casting and hot mill both require cold rolling of the metal
- Finishing – Annealing, coating or slitting the metal to desired material characteristics
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Solution Architecture – Operational Business Intelligence

Capture Plant Machines and Operations Data in GDS

Visualize Production Operations within and across plants

Machine Data
Operational Data

Plant A

Machine Data
Operational Data

Plant B

Global Data Store
Value Add – Engineering

- Analyze Alloy production for a specific plant on date range
- Analyze Alloy production across plants on date range
Value Add – Engineering

- Identify outliers and complete detailed analysis on different data points
- Adjust machine parameters to optimize production operations

Comparing Mill Processing Time and Entry Temperature across different date ranges
Value Add – Plant Managers

Compare plant performance on different dates

Adjust machine setup based on analysis
Analytics Takeaways

1. Batch-oriented data collection and analysis provides only reactive insights, best used for future production efficiency improvement

2. Real-time analysis should be leveraged for predictive analytics where machine downtime can be predicted/corrected before it happens based on what you learned from Takeway 1

   i.e. Analytics and event processing together creates virtuous cycle

3. Fast Data technologies need to be included in data ingestion eco-system to support real-time predictive analytics
Three Key Takeaways

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TIBCO Software empowers executives, developers, and business users with Fast Data solutions that make the right data available in real time for faster answers, better decisions, and smarter action. Over the past 15 years, thousands of businesses across the globe have relied on TIBCO technology to integrate their applications and ecosystems, analyze their data, and create real-time solutions. Learn how TIBCO turns data—big or small—into differentiation at www.tibco.com.