Transitioning from a Product Company to a Platform Company

John Vrankovich and Bob Simonoff
JDA Software Group

API World 2019
API Lifecycle Conference
API Strategy Track
Workshop Stage C
Statements in this presentation concerning future prospects, business outlook, and product availability and plans are forward looking statements that involve a number of uncertainties and risks. Factors that could cause actual events or results to differ materially include: sales productivity; possible disruptive effects of organizational changes; shifts in customer demand; perceptions of the Company and its prospects; technological changes; competitive factors; unanticipated delays in scheduled product availability dates; general business conditions; and other factors. The information on the roadmap is intended to outline our general product direction and it should not be relied on in making purchasing decisions. The information on any roadmap shown is not a commitment, promise or legal obligation to deliver any material, code or functionality. The development, release and timing of any Objectives or functionality described for our products remains at our sole discretion. Future product will be priced separately. This roadmap does not constitute an offer to sell any product or technology or include any future functionality in products.
Introduction to JDA Software – What do we do?

Market Leading Retail and Supply Chain Solutions

- Demand Planning
- Merchandise Financial Planning
- Assortment Optimization
- Pricing & Promotions

- Workforce Management
  - Task Management
  - Enterprise Store Operations
  - In-Store Picking

- Retail Planning
- Manufacturing Planning

- Collaboration
- Visibility

- Store Operations
- Performance
- Mobility

- Intelligent Fulfillment

- Category Management

- Channel Clustering
- Assortment Optimization
- Space & Floor Planning
- Planogram Generator
- Category Advisor
- Category Knowledge Base

- Digital Control Tower
  - Demand Planning

- Demand & Fulfillment
  - Distributed Order Management
  - Transportation Management
  - Warehouse Management
  - Labor Management

- Sales & Operations Planning
  - Order Promising
  - Factory Planning & Sequencing
JDA Quick Facts

4,000+ Global Customers

$1B+ Annual Revenues

75 Of the top 100 Retailers use JDA

77 Of the top 100 CPG companies use JDA

4,500+ Associates Worldwide

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Our Customers Rank Among the
Who’s Who in Their Industries

Manufacturing
- Mercedes-Benz
- Coca-Cola
- Dell
- Kellogg’s
- PVH
- Michelin
- P&G
- LG
- PEPSICO
- Bristol-Myers Squibb
- Kimberly-Clark
- Stanley Black & Decker

Retail
- THE HOME DEPOT
- PetSmart
- Target
- Lowe’s
- M&S
- Metro
- systm
- J Sainsbury plc
- Walgreens
- Loblaws
- Aldi
- Best Buy
- Staples
- Safeway

Wholesale Distribution
- Gordon Food Service
- C&S Wholesale Grocers
- Sysco
- Glazier’s
- Universal
- Henry Schein
- Owens & Minor
- KeHE
- Chalifour Canada

Services
- A+E Networks
- Best Western
- Carlson Rezidor Hotel Group
- The Met
- British Airways
- United Cargo
- Air France
- Virgin Trains East Coast
- Eurostar
- Marriott Hotels & Resorts
- Royal Mail
- MD Logistics

Logistics Providers
- DHL
- Imperial Logistics
- Penske
- Benko
- Cathay Pacific
- Caterpillar
- UTI
- Ryder
- East West
- CEVA
JDA Major Acquisitions

1985: (retail planning)  
1990: (space and floor planning)  
2000: (manufacturing planning and transportation management)  
2010: (artificial intelligence and machine learning)  
2012: (warehouse and labor management)  
2018: (demand management)
About us...

JOHN VRANKOVICH, Principal Architect | JDA Software
Responsible for JDA’s platform and technology strategy supporting our product portfolio. Specializing in SaaS architecture, Enterprise Software Platforms, Identity Management, APIs and Application Security.
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BOB SIMONOFF, Sr. Enterprise Architect, Fellow | JDA Software
Bob has been with JDA for 22 years, focusing on applications and platforms. He currently leads the architecture efforts for JDA’s integration strategy and Data Platform and is heavily involved in JDA’s API strategy and API management activities..
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<table>
<thead>
<tr>
<th><strong>Server</strong></th>
<th><strong>Client</strong></th>
<th><strong>APIs</strong></th>
</tr>
</thead>
</table>
| • Java / Java EE (80%)  
• C/C++, C# | • HTML, JavaScript, Angular, React, Mobile  
• Minimal Desktop remaining | • Many *Native* Public APIs  
• Limited Web APIs |
Native SaaS Technology Stack – Luminate Products

Noteworthy Technologies and Partners

- HTML
- CSS
- JS
- React
- Microservices
- Java
- Python
- Node
- Apache Ignite
- Akka
- Kafka
- MuleSoft
- Elastic
- Power BI
- Azure
- Azure DevOps
- Container
- Kubernetes
- Azure AD
- AppDynamics
- Splunk
JDA’s Platform Strategy and Journey
... will uniquely enable customers and partners to create cutting-edge applications on top of JDA’s solutions for the first time.

“We are officially making this a reality three-fold:
- unveiling of this new platform;
- launching our first developers conference,
- deepening our roots with key ecosystem partners…” – Girish Rishi, CEO

“…we will empower our customer and partner community to create cutting-edge applications ... SCM Platform and API architecture will accelerate our rate of innovation and give our customers a way to build their own robust applications and extensions ...” - Desikan Madhavanur, CDO
Why APIs Matter at JDA

- We are Becoming Platform Company – Foundation is API exposure
- Fostering a Developer and Partner Ecosystem
- Facade for Modernization
- Providing Ease of Upgrades and Continuous Delivery

As our Customers expand their digital transformation

JDA Partners continuously look for ways to drive revenue; building new value-add solutions

JDA Agility, internal development and services team
APIs Accelerating Innovation

Customer / Partners

- Adopt Faster
- Extend
- Innovate

Mobile  IoT  Automation  Analytics
Data Services  AI / ML  Applications  Robotics
Autonomous Supply Chain starts with visibility and predictions

Autonomous Supply Chain is powered by Enterprise Data

Autonomous Supply Chain is more precise with NextGen Data

Autonomous Supply Chain is more reactive with Real-Time IoT Data

Incomplete, unclean, or incorrect data reduces the accuracy of Machine Learning

Machine Learning at Cloud Scale uses this Data to drive the Autonomous Supply Chain

A Data Platform curating data represented in a consistent logical model is the heart of the Autonomous Supply Chain

Inconsistent or hard to understand curated data makes machine learning more difficult

Powered By

AUTOMATION

APIs

AI / ML

DATA

SERVICES

Manual

Powered By

AUTOMATION

APIs

AI / ML

DATA

SERVICES

Manual
Migration to Integrated SaaS Delivery

Luminate Applications - Native SaaS Applications

Already...
- Azure
- Microservices
- Containerized
- Observable
- Elastic
- Limited APIs

Standardization
- Identity Management
- API Exposure
- Onboarding
- Data Management

Convergence to SCM Platform

JDA Core Applications (WMS, TMS, SCP, etc.)

Deployment
- Azure
- Automation
- Security

Standardization
- Identity Management
- API Exposure
- Onboarding
- Data Management

Modernization
- Reasonable Sized Services
- Containerization
- Orchestration
- Modularization
- Elastic

Convergence to SCM Platform

Platform Services
- Identity Management
- API Exposure
- Data Management

Infrastructure Services
- Containerized
- Common Orchestration, CI/CD
- Secure Service Mesh
- Observability
- Azure PaaS
API Strategy
Core Components of Our API Strategy

- Consistent API Standards
- Common Identity Management
- Data Management Platform
- API First Mindset
- Common Catalog
- Governance
- Common Semantic Model
- API Gateway Common
- Developer and Partner Outreach
Attributes of Publicly Exposed APIs

• Base on Open, **Web** Standards
  - RESTful, RESTlike
• Sustainable, **Designed to last**!
  - Versioned, Deprecation Timeline
• Designed with the User Experience of the developer in mind - API UX (AUX)
  - Easily consumable
    - by mere mortal programmers!
• Well documented
  - The APIs, Getting started guides
  - Examples, Interactive Trial Interface

• **Modern** Authentication and Authorization
  - ![OpenID](image)
• Performance, Scalability and Reliability (PSR) Standards
• Common
  - Monitoring, Metrics
  - Diagnostics, Tracing
  - Invocation Limits
  - Metering and Billing
API Security Reminder

Don’t rely on the UI or another layers to provide security protections!

- Injection Attacks
  - Query Injection Attacks
    - *Not Just SQL Injection!*
    - SQL, No-SQL, Proprietary Datastore Query Languages, etc.
    - XML and JSON Injection

- Sanitizing Data
  - Incoming and Outgoing Data

- Data Security Errors
  - Tenant hopping, Incorrect authorization

- Data Masking
  - PPI information, attributes client/user should not have access to

- Exposure of underlying technical error details
  - Database Connection Information, type of OS, etc.

- DOS Attacks

- Use OAuth tokens so credentials aren’t propagated

- GDPR - filtering

Don’t rely on the UI or another layers to provide security protections!
Areas of API Standards

- Web / HTTP
- Event Processing over HTTP
- File / Batch Processing
- Canonical Model
- Naming Conventions
- Error Handling
- Payload
- Media Types
- Gateway Publishing
Luckily We’re Transitioning to a SaaS Company

**SaaS Delivered Solution Benefits and APIs**

- **Hide Complexity**
  - Implementation, Delivery and Operations of Products / Services
- **APIs Provide ONLY interface to Solutions**
- **APIs Enable Continuous Delivery / Seamless Upgrades**
- **Enables a more Autonomous DevOps Ownership Model**
  - More Flexible Technology Selection ‘behind the SaaS firewall’
  - More Agile Innovation by Each Service team
  - Rapid Continuous Delivery at the Service level, not the entire Monolith
- **Enables Evolutionary Modernization**
Modernization

Using Public API Exposure to Transition Products to a Microservices Architecture

Monolithic Architecture Example

Clients
- Web-based
- Mobile
- Voice
- Integrations
- Workflows

REST/SOAP
http/s
Integration
Other

Application Context

Service Execution
- Context Management
- Session Management
- Transaction Management

Framework Services and Modules

Private APIs
- Public APIs (http, native)

In VMs

Relational Database
Modernization

Hybrid – Starting Wrap and Break it Down

Clients
- Web-based
- Mobile
- Voice
- Integrations
- Workflows

API Gateway
- REST/SOAP
- http/s
- Integration
- Other

Single Tenant Scalable Instances

Application Context

Relational Database

Container

On-demand Instances – Multi-tenant (optional)

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Modernization
Towards a SaaS Native Architecture

Clients
- Web-based
- Mobile
- Voice
- Integrations
- Workflows

API Gateway
- REST/SOAP
- http/s

Integration
- Container
- Data Store

Message Bus
- Scalable Instances – Multi-tenant (optional)

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Data Needs to be...

- **Validated**: Ensure the Data meets JDA’s requirements
- **Cleansed**: Identify and removing problems in the data: duplicates, missing dependencies, etc. Compute and track Data Quality
- **Enriched**: Incoming Data is Enriched to complete gaps or fill in missing values
- **Authored**: Manually Create or Edit/Fix Data with Reply capability
- **Post Processed**: Perform Computations like Aggregation, Calendar Slotting, etc.
- **Staged**: Holding data for any period of time to satisfy downstream App needs
- **Distributed**: Delivering the data to interested services
JDA Data Platform
Data Ingestion and APIs

SCM Platform (on Azure)

JDA Data Platform
Data Management
- Ingestion
- Staging
- Validation
- Enrich
- Cleansing
- Auditing
- Post-Processing
- Serving

JDA Data Platform
Mastered Data
- Products, Orders, Forecasts, Weather, Traffic, POS

Operational Data
- Uptime
- Performance

Supply Chain Core Services

SaaS Native

SaaS Native

Kafka

Supply Chain Applications

Customer Data Center

Your Apps
- JDA Connect
- JDA Connect Bridge

JDA App

ERP

Social (Traffic, Events, Weather, News,...)

CRM

Partners

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### Summary

**JDA Platform Journey**

<table>
<thead>
<tr>
<th>Building Upon</th>
<th>Current</th>
<th>Next</th>
<th>Future</th>
</tr>
</thead>
</table>
| - JDA Luminate applications | - SaaS delivery  
  - JDA Luminate  
  - SaaS modernization  
  - Security hardening  
  - Modern authentication  
  - API exposure  
  - Common API standards  
  - API exposure by applications  
  - Developer Program | - API exposure  
  - API gateway  
  - API catalog  
  - Data Management  
  - JDA Data Platform  
  - Holistic SCM Platform  
  - Bring JDA assets together  
  - Infrastructure Services  
  - Platform Services  
  - Core App Services | - Externalize Platform Capabilities  
  - Extensibility  
  - AI/ML data science  
  - Algorithm deployment  
  - Development and deployment |
Thanks for attending

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