A Look Ahead: How IoT, AI, and Blockchain will Shape the Intelligent Business Network

April, 2018 | Mark Morley
Agenda

• Ecosystem evolution
• Progress of digital transformation
• The autonomous supply chain
• The intelligent business network
Digital Transformation and Ecosystem Evolution
Changing market conditions

Political change & trade restructuring

Accelerated market dematerialization

Increased regulatory compliance

Unprecedented digital transformation

Consumer-driven industry convergence

Increasing levels of M&A/JV activity

Market & channel expansion

Modernizing enterprise business systems
Embarking on a journey of digital transformation

New sources of information will need managing & analyzing across the enterprise
Transformation impacts your business ecosystems

40% of data comes from external data sources; projected to invert in 5 years
Supply chain ecosystem evolution

Then…
- Rigid, linear hand-offs—a chain
- Volume production, mass markets
- ‘Just in case’ inventory
- Capitalized on labor-arbitrage
- Single channel
- Own the entire manufacture chain
- KPI: minimal variation
- Manual, paper-intensive

Today…
- Business networks
- Markets of groups e.g. generation
- ‘Just in time’ assemble to order
- Political volatility, closing labor gap
- Multi-channel
- Strategic tier-1 suppliers
- KPI: perfect order
- EDI turns 50! standards proliferate

Future…
- Demand sensing, risk adjusting
- Markets of one; individual values
- 3D printing minimizes inventory
- Robotics remove labor dynamic
- Omni-channel
- Dynamic ecosystem of partners
- KPI: lifetime value/service (e.g., car)
- API explosion, any to any
Competitive organizations require...

- Agile business ecosystems that support expansion into new markets
- Improved productivity and tech future-proofing with seamless integration and always-current Cloud
- Digital information flows for timely informed decisions that minimize risk of supply chain disruption
- A ‘digital backbone’ to support new digital transformation initiatives
- Customer-centric processes that improve engagement, satisfaction and deliver new sources of value
- A trusted partner to manage integration complexities while you focus on innovation

Customer-centric processes that improve engagement, satisfaction and deliver new sources of value
Progress of Digital Transformation in the Supply Chain
Is digital transformation driving supply chain restructuring?

Respondents said they were using digital transformation to enable new capabilities across their supply chains: 57%

Respondents said they were using cloud B2B networks across their supply chains today: 70%

Respondents said a lack of bandwidth was preventing them exploring new digital transformation projects: 31%

Respondents said they were considering an outsourced approach to managing their B2B integration requirements: 66%

Industries Surveyed:
- Automotive
- High Tech
- Retail
- CPG

Countries Surveyed:
Digital transformation maturity in the supply chain

- **Digital Resister**: Business is a laggard, providing weak customer experiences, using digital technology only to counter threats
- **Digital Explorer**: Digitally enabled customer experience and products are inconsistent and poorly integrated
- **Digital Player**: Business provides consistent but not truly innovative products, services, and experiences
- **Digital Transformer**: Business is a leader in its markets, providing world-class digital products, services, and experiences
- **Digital Disruptor**: Business remakes existing markets and creates new ones to its own advantage

Managed: 34%
Optimized: 9%
Repeateable: 27%
Opportunistic: 24%
Ad Hoc: 7%
## Digital technologies used in the supply chain today

<table>
<thead>
<tr>
<th>Technology</th>
<th>No use</th>
<th>Pilot</th>
<th>One function</th>
<th>Multiple functions</th>
<th>Full use</th>
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<tr>
<td>Cloud applications</td>
<td>12%</td>
<td>10%</td>
<td>22%</td>
<td>31%</td>
<td>25%</td>
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<tr>
<td>Big Data Analytics</td>
<td>22%</td>
<td>11%</td>
<td>18%</td>
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<td>B2B cloud networks</td>
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<td>Robotics</td>
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<td>22%</td>
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<td>3D printing</td>
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<td>14%</td>
<td>17%</td>
<td>24%</td>
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<td>IoT (Use of sensors)</td>
<td>20%</td>
<td>17%</td>
<td>23%</td>
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<td>Machine Learning</td>
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<td>15%</td>
<td>26%</td>
<td>14%</td>
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<td>Wearables</td>
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<td>14%</td>
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<tr>
<td>Drones</td>
<td>47%</td>
<td>12%</td>
<td>13%</td>
<td>16%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Respondents said they were using cloud B2B networks today.
The Autonomous Supply Chain
We are at an inflection point of disruptive technologies and market demands that will transform supply chain operations...
The Autonomous Supply Chain

**Autonomous**

/əˈtɒnəməs/ adjective

(of a country or region) having self-government, at least to a significant degree.

"the federation included sixteen autonomous republics"

• acting independently or having the freedom to do so.

"an autonomous committee of the school board" "an autonomous republic"

synonyms: self-governing, self-ruling, self-determining, independent, sovereign, free

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Autonomous Supply Chain =

- Digital Business Ecosystems + Internet of Things + Artificial Intelligence + Blockchain

Pervasive  Connected  Intelligent  Trusted
Pervasive: Digital Business Ecosystems
Business networks evolution

- From static, hard-coded connections to real-time dynamic connections (auto-discovery, auto-provisioning, self-service, API-integration, etc.)
- Pervasive integration—any format, protocol, standard, structured and unstructured
- Federated to n-tier for shared visibility and collaboration
- Fused with analytics for single 360° view, real-time control tower to sense/respond
Managed services and software to facilitate efficient, secure and compliant collaboration between people, systems, and things.

Provides the necessary digital foundation for automating and insight for optimizing business processes across your extended ecosystem.

- Reduce cost
- Accelerate time to revenue
- Improve services
- Focus on core business
Digital backbone for extended ecosystems

Your ecosystem

- Vendors
- Corporate customers
- 3PL’s and carriers
- Financial Institutions
- Insurers

Opentext Trading Grid

Enterprise application

B2B operators: Automation, validation, visibility, control

LINE OF BUSINESS: demand, sales, shipments, payments

Customer

Enterprise application

Enterprise application

Financial Institutions

Invoices and factoring

Payments and bank reporting

Warranty claims

Service parts

3PL’s and carriers

Purchase order

Ship notice and status

Inventories

Order Management
Procure to pay, Order to cash, Logistics visibility

Community Management
Onboarding, governance, compliance & collaboration

Treasury Management
Single connection to all banks, SWIFT

e-Invoice Compliance
Invoice automation & regulatory compliance

Performance
Operational and business metrics, supplier KPIs
Existing community, infrastructure, flexibility

- $8 Trillion+ transaction value
- 22/25 world-class supply chains
- 600,000+ businesses connected
- 65,000+ customers
- 20+ countries with direct operations
- 24 Billion+ B2B transactions
- 2 Billion+ faxes
Enabling tomorrow’s supply chain

Insight

Process

Agility

Experience

Reach

Security

Self-Service Portal

- Set up alerts
- Manage certificates
- Edit TP profiles

Customer Applications
- Sales and Pricing
- Acquired Apps
- Critical Issues

Custom APIs
- Wildfire
- USS

Covisint IAM
- Your ecosystem
- Your organization

Trading Grid
- Programmable Grid
- Role Based Access Control
- Incomparable

Trading Grid Adapters
- eBPP
- Salesforce
- SAP

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Vision: The intelligent Business Network

- **Intelligence**
  - Auto-discover, auto-provision
  - IoT use cases connected car, automated replenishment, etc.

- **Workflow**
  - Service orchestration
  - Programmable, extensible
  - Business event notification

- **Analytics**
  - Operational analytics
  - Business analytics
  - Blended analytics

- **Access & control**
  - Mobile
  - Portal, self-service
  - Identity/access management

- **Applications**
  - P2P/O2C, invoice compliance
  - Track and trace, blockchain
  - Industry solutions: Auto, Health

- **Managed services**
  - B2B MS & fax outsourcing
  - Canonical architecture
  - API library, ERP adapters

- **Secure exchange**
  - VAN, fax, notifications, MFT
  - Web services
  - IoT platform (coms, gateway)

- **Agile**
- **Intelligent**
- **Innovative**
Connected: IoT in the Supply Chain
Digital ecosystems: people, systems, things

- Real-time feedback
- Operational level (efficiency, performance)
- Granular insights
- New digital value
IoT platform enabled by ecosystem management

- **Relationship & lifecycle management**
  Lifecycle management of people, systems & things

- **Ecosystem management**
  Secure, enable, & manage trusted interactions across ecosystems

- **IoT messaging**
  Integration of messaging technologies for rapid go-to-market

- **Unified data model**
  Normalize data across ecosystems
Identity and access management for cybersecurity

- **Digital identity manager**
  Are you who you say you are

- **Authorization manager**
  What are you authorized to access

- **Identity sync, analysis & intelligence**
  Analyze and audit information access

- **Identity event streaming engine**
  Integrate all user and ID directories

Centrally manage the entire identity lifecycle of internal and external users, as well as their access to resources across the extended enterprise.
Supply chain use cases for IoT

**Pervasive Visibility**
IoT will provide improved end-to-end visibility of shipments through highly connected supply chain ‘assets’ across multi-modal 3PL providers

**Proactive Replenishment**
IoT will provide real-time monitoring of inventory levels and consumption patterns which will automate replenishment processes with suppliers

**Predictive Maintenance**
IoT will maximize asset availability by monitoring for potential part failures and automatically initiate a replacement part procurement process
1. Material Consumption Trends

- Proximity Based Sensors
- Connected Devices
- Enterprise IOT Platform
- GPS / RFID Network

2. Distributor Replenishment Process

- From Vendor Managed Inventory to ‘Device Managed Inventory’

Integration

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Material Storage Racks

OpenText Analytics

Mobile

B2B Web Portal

Distributor/3PL

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Customer Location

Distributor Location
Intelligent: AI in the Supply Chain
OpenText Magellan is a **flexible AI and Analytics platform** that combines open source machine learning with advanced analytics, enterprise-grade BI, and capabilities to acquire, merge, manage and analyze **Big Data** and **Big Content** – structured and unstructured. Magellan enables **machine-assisted** decision making, automation, and business optimization.

**Designed** to drive autonomy

**Infused** with AI powered analytics

**Built** on an open foundation

**Ready** to solve your business problems
The analytics spectrum

**Analysis**
- **Descriptive**
  - What Happened?
  - OpenText Analytics Information Hub (iHub)
- **Diagnostic**
  - Why did it happen?
  - OpenText Analytics Big Data Analytics (BDA)
- **Predictive**
  - What will happen?
  - jupyter, Spark, MLlib
- **Prescriptive**
  - What should I do?
  - OpenText Magellan

**Human Input**

**Decision Support**
- Social Feeds
- News Feeds
- Other Information sources

**Decision Automation**

**Decision**

**Action**

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Should we repair or replace the hydraulic brake pump system on rolling stock OT-3456?

Fluid flow sensors detect a loss of pressure in hydraulic brake systems.
Disruption Management Dashboard

Plant Disruption Location
Bangkok, Thailand

Disruption Type
6.9 level Earthquake 200 miles NE of Bangkok

Disrupted Suppliers

Distance From Disruption Epi-Centre

0 Miles 25 Miles 50 Miles 75 Miles 100 Miles

7 Tier 1 Suppliers Impacted Within 25 Mile Radius

Impacted Suppliers
- Bangkok Precision Castings
- Thailand Metals
- GG Sunroofs
- Valeo (Bangkok)
- Johnson Controls (Bangkok)
- Bosch Automotive (Bangkok)
- Continental (Bangkok)

Transport Network Availability
0% 25% 50% 75% 100%

3PL Service Availability

Concept only
Disruption Management Dashboard

Plant Disruption Location
Bangkok, Thailand

Disruption Type
6.9 level Earthquake 200 miles NE of Bangkok

Impacted Orders
- PO234679 – 3000 x 10mm Spade Connectors
- PO234679 – 6000 x 5mm Spade Connectors
- PO234680 – 7500 x 2mm Connection Pins
- PO256800 – 9000 x 25mm Optical Switches
- PO257777 – 2000 x 30mm Two Way Switches
- PO267990 – 1500 x Electric Motors
- PO278677 – 1500 x Electric Motor Brackets

Alternate Suppliers
- Valeo (Cambodia)
- Bosch (Thailand)
- Rexel
- Delphi
- Thai Switch Company

Transport Network Availability
- 0%
- 25%
- 50%
- 75%
- 100%

Alternate Suppliers

Disruption Management
http://disruptiontracker.com

Concept only
Trusted: Blockchain in the Supply Chain
What is Blockchain?

• Blockchain is a distributed ledger technology that maintains a continuously growing list of records/blocks

• Each block, in each node, references the previous block by a hash value—forming a chain

• Data in the block cannot be retrospectively altered

• Everyone can have a copy of the ledger, having no central control authority, forcing trust in system

• OpenText and BlockEx evaluating supply chain use cases:

  - Tracking High Value Goods
  - Food & Beverage Traceability
  - Pharma & Life Sciences Traceability
  - Raw Materials Traceability
  - Supply Chain Finance
  - End to End Product Recall Management
Potential supply chain use cases for Blockchain

**Supply chain finance**
Banks want transparency across the physical and financial supply chains. Blockchain retains all information relating to the financing of shipments as they move across the end-to-end supply chain.

**Raw materials traceability**
Manufacturers seek ability to track raw materials across supply chain, from mine to finished product. Blockchain retains this information and leverages IoT sensors to track shipments.

**Perishable goods transportation**
Retailers must ensure perishable products are delivered in safe condition. Blockchain retains all 3PL shipping information (temperature, shock, etc.) at each stage of the journey.

**Vehicle rental & fleet management**
Vehicle rental companies seek to improve customer service and fleet optimization capabilities. Blockchain retains rental agreement, assigned vehicle details and ongoing maintenance history.
Perishable goods monitoring using Blockchain

Conceptual example

- B2B Transaction
- Sensor Information

OpenText IoT Platform

Blockchain Platform

- Supplier ID Number
- Shipment ID Number
- Carrier ID Number
- Temperature Reading

Retail Store

2°C

5°C

9°C

5°C

2°C

2°C

- International 3PL
- In Country 3PL
- Brazil Customs Depot
- Last Mile 3PL

NA Supplier

Blockchain Platform

Update Block 0123

OpenText IoT Platform

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Bringing It Together: The Intelligent Business Network
The Intelligent Business Network

• **Pervasive**: Creates a digital backbone that allows the digital exchange of information and offers seamless integration to enterprise business systems

• **Connected**: Enables a highly connected ecosystem of people, systems, and things with digital identities and cybersecurity

• **Intelligent**: Provides a self-aware environment where deep insights into supply chain performance can optimize business processes and learn to respond to different and unexpected situations in a more efficient way

• **Trusted**: Offers a single source of truth relating to the traceability of goods as they move across the physical supply chain and an archive of all digital interactions between a company and its trading partner community
OpenText - Enabling the digital business

Information from IoT Connected Devices

Big Data

Design

Procurement

ERP

Production

Support

Sales

EIM

Internal Enterprise

Marketing

Process

Content

Experience

Business Network

Identity and access management

External Business Ecosystem

Suppliers

Distributors

Customers

3PLs

Banks

Insurers

FAX

FTP

MFT

NOTIFICATIONS

SWIFT

IDOC

HULFT

XML

NOTIFICATIONS

ANSI

EDIFACT

HULFT

Office

Utilities

Production

Warehouse

Thank You