Understanding the Value of Real-Time Monitoring in Supply Chains

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Overview

- Background and Motivation
- Research Method
- Customer Interviews
- Creating Value
- Understanding Customer Adoption
- Closing Thoughts

1.

Background & Motivation

About the Project

Sponsor Company

- Large logistics provider with a global presence
- Recently developped a real-time tracking device, paired with a web-based application
- Relatively small, but growing customer base
- Adds value to customer's operations by managing exceptions

The Technology

- Easily drop the device into shipments

What Can it Measure?
Location
Temperature
Light Exposure
Relative Humidity
Barometric Pressure
Shock

How can real-time monitoring devices be used to create value in today's supply chains?

2. Research Method

Our Approach

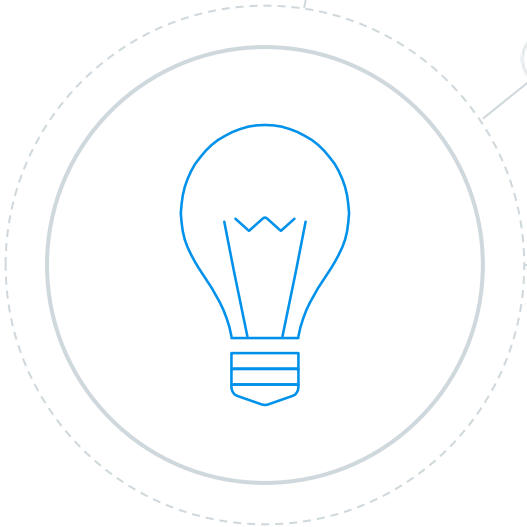
- Extensive literature review of sensor technology, IoT and smart connected devices
- Focused on interviews with current and prospective customers + subject matter experts

Project Scope

- Limited our research to advanced, nonintegrated sensors that measure multiple parameters
- Low-cost, disposable or one-way-use, as well as single parameter sensors are all outside of our scope

3.

Customer Interviews & Results



What Did we Hear? Pharma

- Increasingly complex business environment - More specialty products and regulatory pressure
  - Greater need for more sophisticated temperature control solutions
- Overall cold chain market is growing at double the rate of conventional pharma products
  - Will reach $288 billion (out of a $1.3-trillion) global biopharma market in 2017
- Many interviewees use passive temperature loggers as a more cost-effective solution
  - Margins are already thin. Extra operating costs would be passed on to patients

General Concerns

Managing Devices

- Who will interpret the data and generate analytical insights?
- Who will manage the reverse logistics?
- Who will ensure that device inventory is balanced?

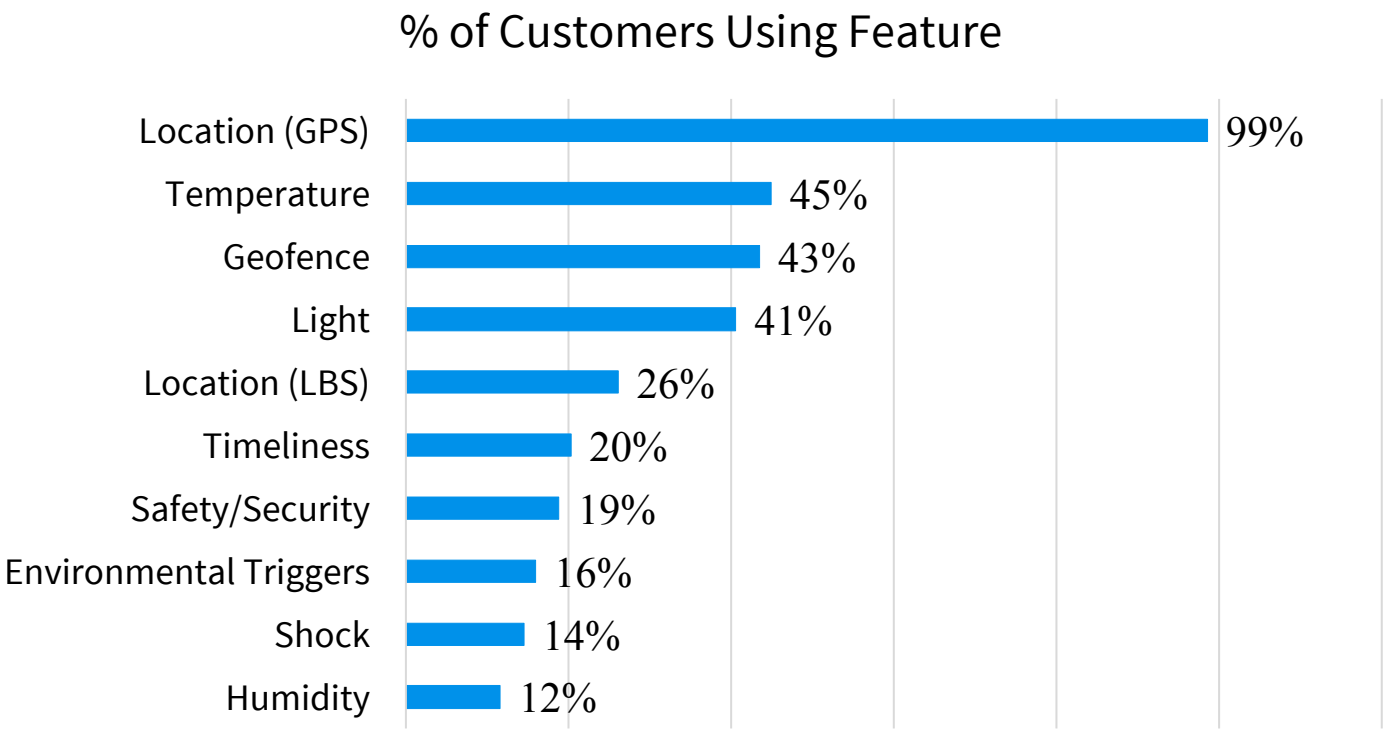
Security and Trust

- What data is collected about their shipment?
- Who is this data shared with?
- How secure and reliable is this data?
- Should they be afraid of hacking?

Interoperability

- Can this device connect to their existing enterprise systems?
- Can these trackers connect to other IoT devices?

Which Features Really Matter?



4.

Creating Value

4 Ways to Add Value

Insurance Cost Reduction

Perform risk assessments based on actual characteristics of the shipment rather than proxy data.

Proactive, not Reactive

Knowing about a shipment delay ahead of time allows companies to act sooner, rather than later.

Analytics and Optimization

Optimize shipments and operations, both internally and externally.

Reducing Business Frictions

Real-time tracking opens up opportunities to automate operations and to reduce business frictions.

Removing These Frictions

- Recent technological advances have enabled the creation of intelligent program code, letting participants build terms and conditions (rules) into contracts
- Real-time monitoring devices now provide the data for logistics providers to offer customers the ability to tap this rules-based intelligence to perform business functions
- This reduces transaction costs, maximizes efficiency and opens the door for machine-to-machine transactions across the IoT
- The core technology behind these advances is called blockchain
  - An open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way

5.

Exploring Blockchain

INTERNATIONAL BUSINESS

Global Supply Chains Are About to Get Better, Thanks to Blockchain

APR 21, 2017 @ 01:07 PM 6,932

Why Blockchain May Be Your Next Supply Chain

TC SESSIONS: ROBOTICS

CRUNCH NETWORK

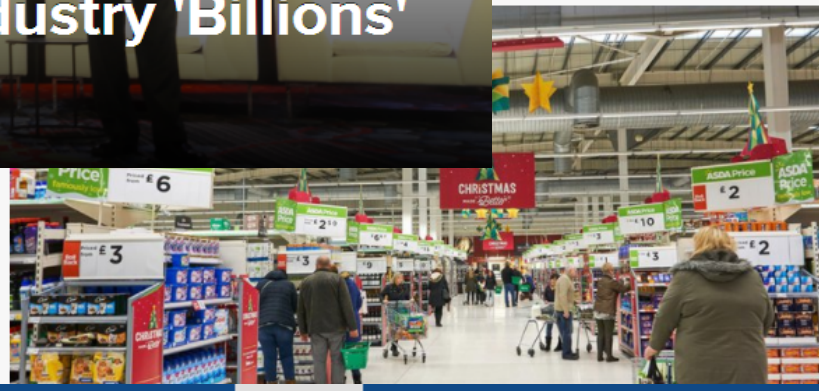
Blockchai
chain

Posted Nov 24, 2016 by

Consensus 2017: IBM Thinks Blockchain Could Save Shipping Industry 'Billions'

May 22, 2017 by Morgen Peck

Blockchain
upply Chain



FORTUNE | Tech

BLOCKCHAIN

Maersk Tests Blockchain-Based F Tracking

David Z. Morris
Mar 05, 2017

PORT TECHNOLOGY | News | Technical Papers | Journal Archive

IBM: Blockchain to Save Shipping 'Billions' of Dollars

"Blockchain will do for transactions what the Internet did for communications"

-Bridget McDermott, VP of Blockchain Business Development at IBM

So What Exactly Is It?

Blockchain

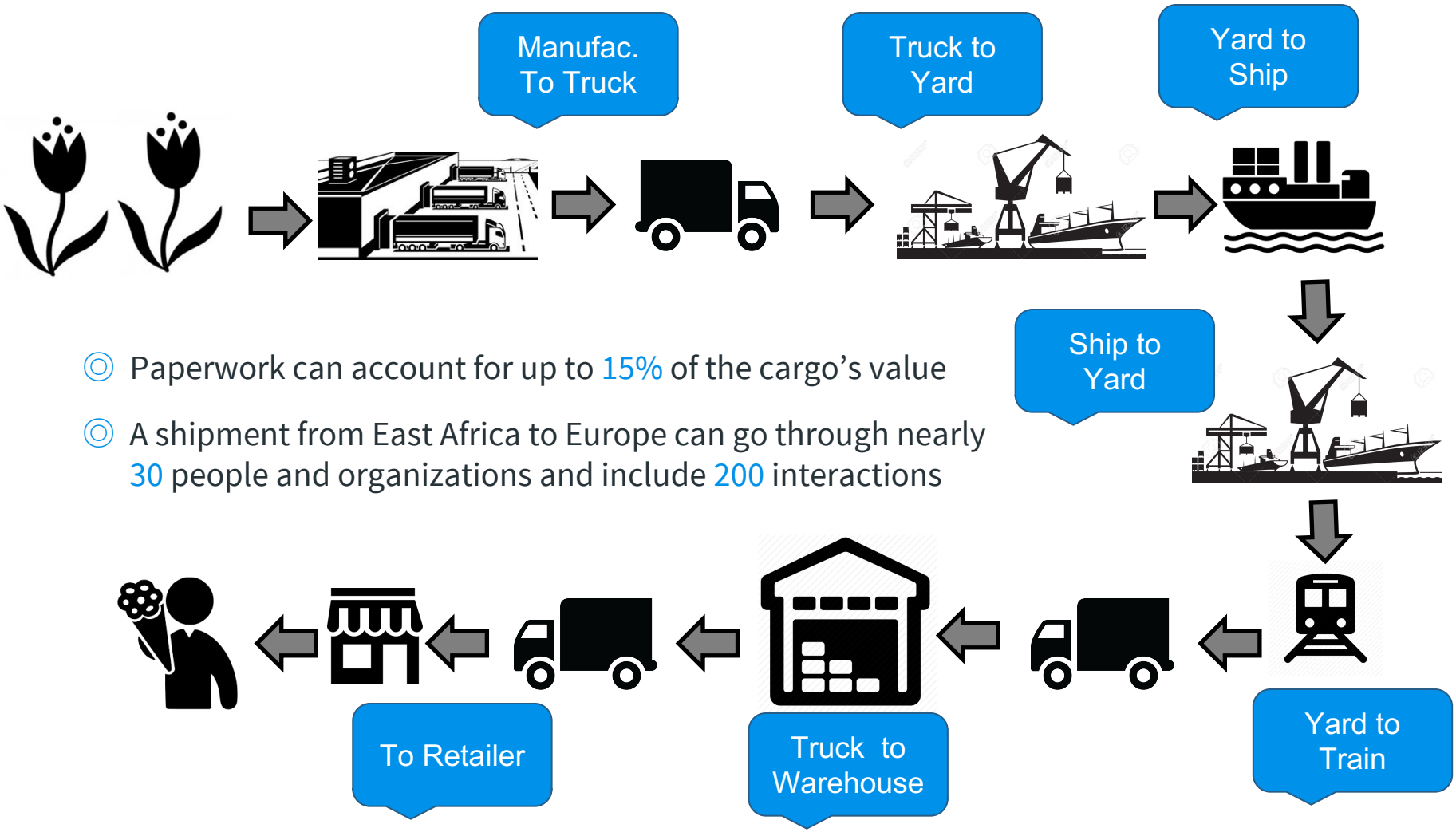
- Computers of separately owned entities follow a cryptographic protocol to validate updates to a commonly shared ledger
- No single company has control, therefore it resolves problems of accountability between individuals whose interests are not necessarily aligned
- Mutually important data can be updated in real time, removing the need for laborious reconciliation with each other's internal records
- It gives each member of the network far greater and timelier visibility of the total activity

Smart Contracts

- Intelligent, embedded and trusted program code, letting participants build terms and conditions into contracts

1. A contract between parties is written as code into the blockchain
2. A triggering event, like a shipment entering a geo-fenced area, is hit and the contract executes
3. Regulators and auditors can easily trace the activities, while maintaining the privacy of individual actors

A Use Case: Importing Flowers from Kenya



- Paperwork can account for up to 15% of the cargo's value
- A shipment from East Africa to Europe can go through nearly 30 people and organizations and include 200 interactions

But How Will We Get There?

Which factors affect customer adoption of these devices?

How can we understand the effect these factors have?

How do we get more real-time monitoring devices to reach critical mass?

What tool can we use to understand the dynamics of this system?

6.

Understanding Customer Adoption

“System Dynamics models the relationships between all the parts of a system and how those relationships influence the behavior of the system over time. ”

-MIT Sloan School of Management

Adoption Model of a Real-Time Monitoring Device

Main Adoption Drivers

Infrastructure

- How easily can you intervene?
- Services to automate business processes

Product appeal

- Cost
- Disposability
- Features

Awareness

- Word-of-Mouth
- Marketing

7.
Closing Thoughts

Conclusions

- Our sponsor company can accelerate the adoption of real time tracking in supply chains by focusing on 3 aspects :
  - Product appeal
  - Support infrastructure
  - Customer awareness
- Logistics providers should differentiate themselves with the services they offer, not only with these physical sensor devices
- Smart connected products reflect a whole new set of technological possibilities, but global logistics providers' ability to leverage their core strengths will be the key to success

Thanks!

Any questions?