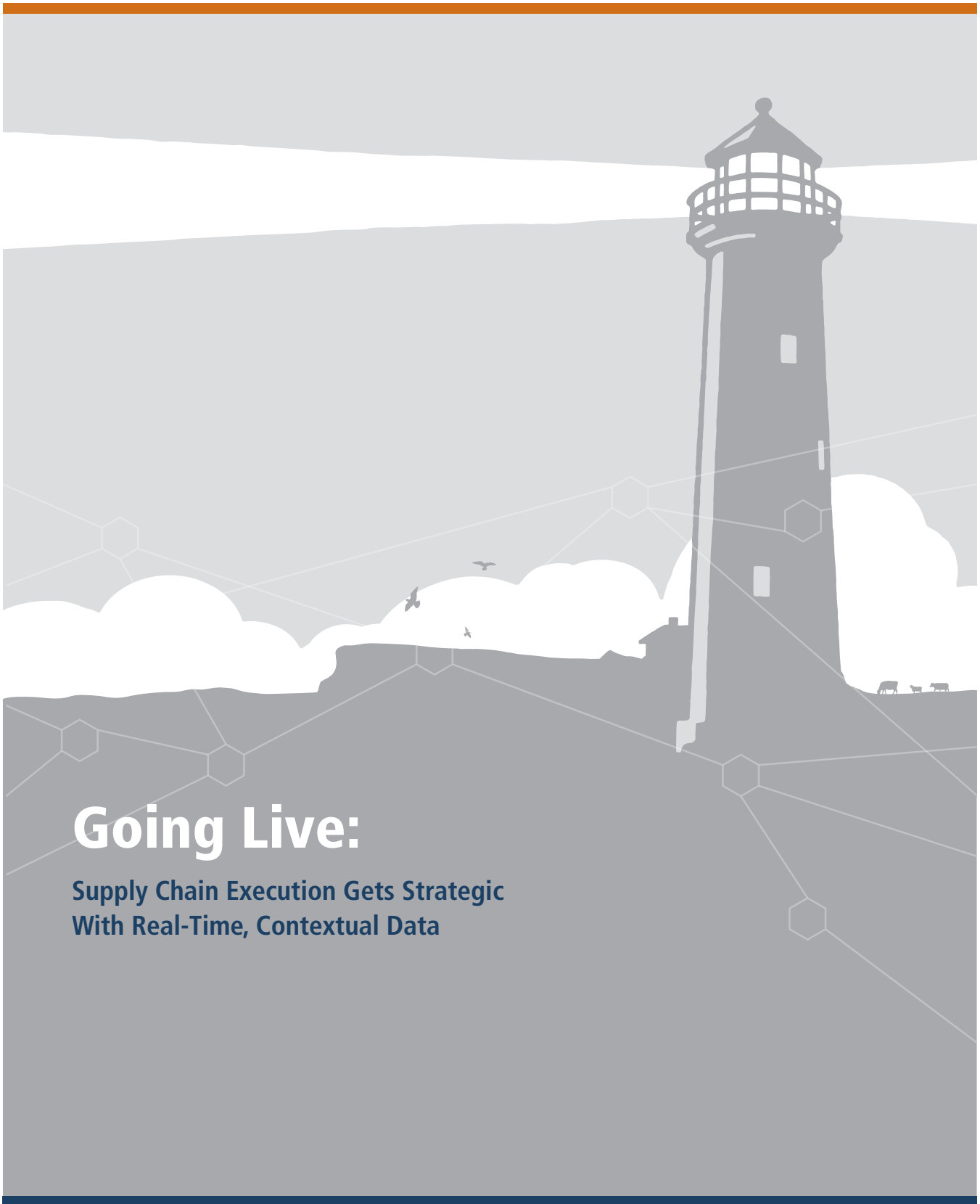


Going Live:

Supply Chain Execution Gets Strategic With Real-Time, Contextual Data

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Introduction: The Evolution of Supply Chain Information

Look across the industrial world and you'll see, for the first time in nearly a century, true optimism. The big data/fast data/smart data revolution is reshaping business. And supply chains are about to become radically better because of it.

Supply chains have been on a data path for several years now. From the days when EDI and ERP systems were new to modern cloud collaboration platforms, better data has made it easier to operate and be more customer-centric. And thanks to the Internet of Things, social media, and Geographic Information Systems (GIS), some of the most valuable information that exists is available in real-time.

The next step is to use real-time data to provide meaningful context to supply chain issues, from more precise ETAs to important prescriptive recommendations. Get ready, because we're about to enter the era of the "live" supply chain.

Background: Volatility on the Rise

Global trade has grown into an immense institution in the 21st century. Operating modern supply chains is a complex feat[1], and the sheer number of ways things can go wrong is far greater than ever before.

Major Problems, Modern Impacts	
Natural Disasters Storms, volcanoes, earthquakes, and droughts can cause greater trade disruptions worldwide, because modern supply chains are so global and interconnected.	**Port and Labor Disruptions** The growing complexity of ports around the world can inadvertently create accidents and labor disputes that are even more crippling to supply chains.
Economic Instability Multinational companies are sourcing from more regions and selling into more markets than ever before. Macro and microeconomic fluctuations cause immediate ripples across the globe.	**Political Unrest** Geopolitical strife—be it warfare, terrorism, sea pirates, or sanctions—is no longer just a local concern; they imperil global supply chains every day.

1 http://www.bbc.com/future/story/20150209-the-network-that-runs-the-world

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To combat this volatility, business leaders are focusing on supply chain visibility and supply chain risk[2].

Achieving visibility and mitigating risk requires good information throughout the entire supply network. IT for supply chain has consequently evolved, from a combination of enterprise resource planning (ERP) and electronic data interchange (EDI) to modern, cloud-based information networks that bring a great deal of adaptability and security to supply chains.

Cloud Supply Chains: Data that's Perceptive + Collaborative

The rise of cloud technology has given structure to the increased complexity of global trade. Because cloud platforms unify what were once disparate systems (ERP, transportation management, credit approval), one-off communications (emails, faxes, phone calls), and forms (spreadsheets, invoices) into a single information architecture, the odds of communication error drop dramatically.

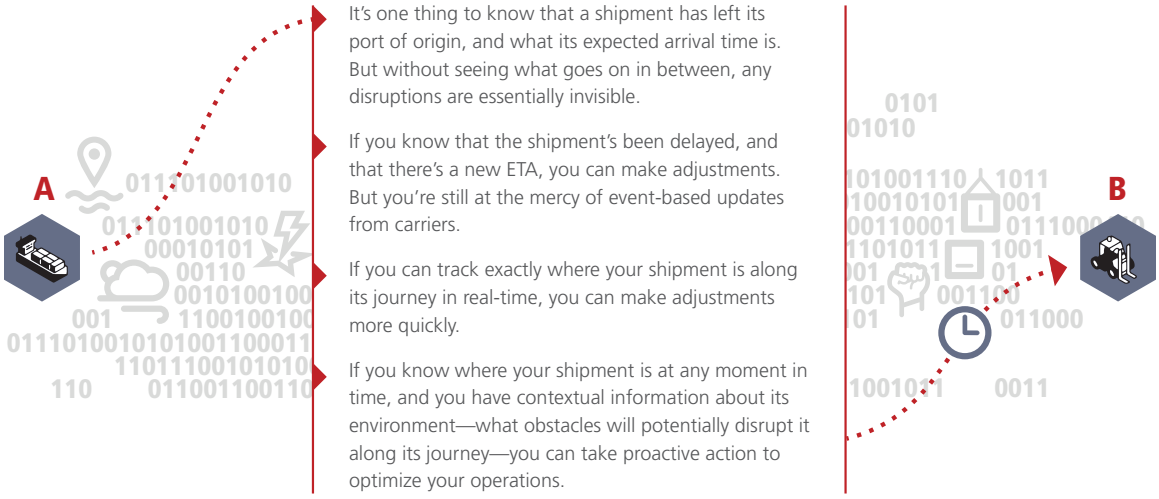
But cloud platforms also create some dramatic positive effects:

1. They offer a comprehensive mechanism for end-to-end visibility across both physical + financial supply chains
2. They enable tighter collaboration between supply chain partners, which allows businesses to respond quickly to disruptions

Cloud infrastructure is an important starting point for combating 21st century economic volatility, but it's not the end, just the means. The quality of information piped into cloud systems determines the level of supply chain visibility and risk maneuverability a business has. The better the information, the better an organization can respond to unpredictable shocks to the supply chain.

Better Information = Better Visibility

More detailed information gives you a greater ability to make proactive decisions.



Just by having transactions take place in one centralized hub, cloud platforms give stakeholders better estimates about arrival times and delays than traditional on-premise, enterprise systems.

But for even greater visibility—with the kind of predictive power to take action in advance of potential disruptions—platforms need additional sources of input.

2 https://www.ibm.com/smarterplanet/global/files/se__sv_se__none__smarter-sc_v2.pdf

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"Live" Feeds

As more physical devices connect to the Internet, the Internet of Things (IoT) becomes a promising way to capture real-time information and send it to decision-makers anywhere in the world. For supply chains, the IoT offers an exciting opportunity to provide meaningful context to supply chain events, which can empower better decision-making.

There are lots of potential sources for "live" data:

- Automatic Identification System (AIS) data – a maritime standard used for tracking a vessel's latitude/longitude, heading, speed, etc.
- Flight data – aircraft latitude/longitude, status, "cockpit ETA", altitude, speed
- GPS – precise geolocation across the globe
- News feeds – local, regional, and international breaking news from official sources
- Social feeds – "breaking", trending, insights about hyperlocal phenomena as they happen
- Weather feeds – precise, local weather data gathered from sensors and satellites in real-time
- Traffic information – road, rail, flight, port congestion reports directly from official sources

Each domain of "live" data can provide supply chain specific context:



Weather Weather data can weigh in on in-transit shipments and changes to ETA



Disasters Natural disaster information can warn of trade shutdowns in entire regions



Political Unrest News about terrorism, riots, sea pirates, warfare, strikes can reveal the need alternative routes



Vessel Locations/Status Real-time location status can enable up-to-the-minute decision-making



Port Conditions Information about congestion, accidents, and labor shortages can determine whether businesses can actually receive goods properly or not, regardless of whether they arrive to a port on-time

Incorporating these kinds of sources into existing cloud platform data about transactions, orders, and shipments can be incredibly beneficial for supply chain visibility. But "live" data also has a huge impact on supply chain risk.

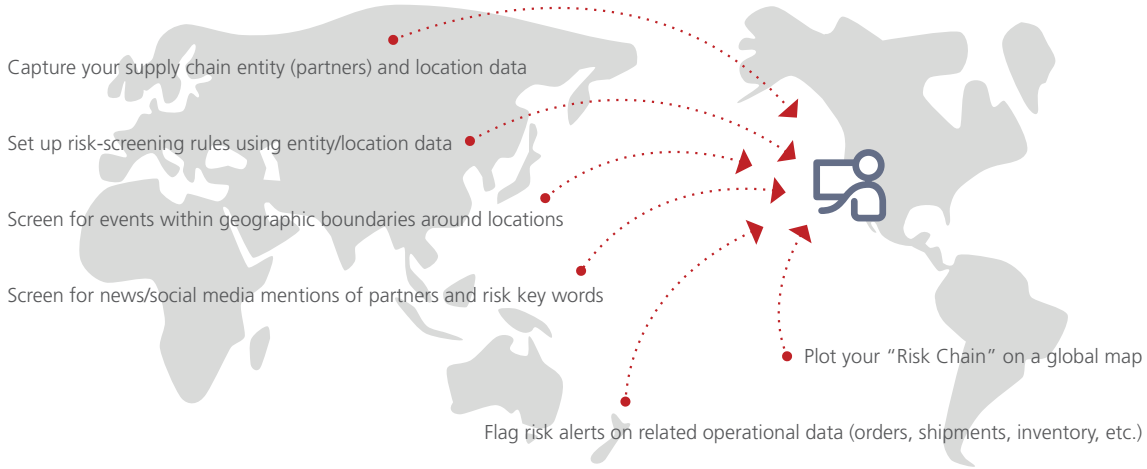
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Understanding Risk in New Ways

Assessing risk is a common part of supply chain management today. But current risk analysis usually does not take advantage of the rich contextual information that's available. At the outset, a company might consult with a risk management firm to determine what places to avoid sourcing from. But once those plans are set, there isn't much maneuverability regarding execution if new risk factors pop up. Information about supply chain risk might come in daily, but that information is often abstract, without any clear, actionable value.

"Live" contextual data can change that. Supply chain platforms make use of real-time news feeds, weather feeds, and other IoT data to find out if a disruption's happening. But more than that, they can provide personalized context for individual supply chains. So instead of a company finding out that there's a typhoon in the Pacific and ships might be affected, it can know that its orders will be affected. And the sooner a company knows this, the faster it can mitigate its issues.

This is why the integration of "live" data into a supply chain transaction platform is so important. It's not enough to know that something is happening - it's important to know if you are affected by it. It's one thing for an alert system to tell you that there's a strike in a country where you have suppliers, but it's an entirely more useful thing for it to tell you which specific orders you have that could be affected. By combining contextual data with transaction data, businesses can know exactly what events are relevant to them, without either being caught unaware, or overcommitting resources to a non-existent threat.



What Does It Really Mean?

Let's say a strong storm suddenly develops in the Pacific. You might wonder: are trade routes affected? But the real question is: does it matter?

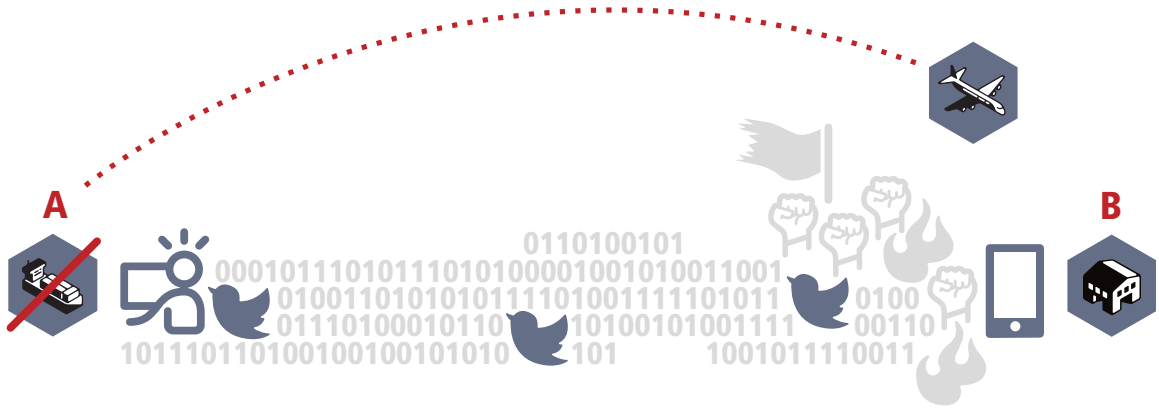
If you don't have an order on any of the ships nearby, then you might not care. Or, if the orders that you have on those ships are low-priority, then you also might not worry much. This is why context matters. Having the visibility to know that a storm exists and might delay ships is good, but knowing how that delay will actually affect you is the next level of supply chain visibility.

And that's the evolution in supply chain information flow that's happening today. Contextual information of all sorts – from weather data to social posts to a business' inventory levels - is working to answer the question - what does a supply chain event actually mean for me?

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This is huge, because decision-making in today's age of complexity is anything but straightforward. The sheer number of variables makes it difficult to assess reality without lots of distilled context.

Imagine a future scenario where a few social media posts on the ground signal an oncoming riot, which will disrupt trade in and out of an important port city. The contextual data feeds into a supply chain platform, which analyzes the posts and determines that there is a real threat to important orders. The system then recommends to the supply chain manager that she expedites orders via air in order to avoid the impending disruption. Once the supply chain manager does so, all parties involved can proceed in lock-step.



If the idea of a few social media posts informing important supply chain decisions seems far-fetched, it's not. Already, in areas like finance, businesses are running complex analyses on social media data

to predict market trends. The concept is known as "sentiment analysis"[3] and the idea is to use analytics to determine whether someone's social media post about a product has a positive or negative connotation. By evaluating sentiment data over a period of time, analysts have come up with models that predict, for instance, whether a stock will go up or down. This kind of advanced data science is only going to grow more sophisticated as time goes on. And the potential impact on supply chains will be huge. But companies shouldn't need to wait for this eventual future to act. The first stages of an advanced, real-time supply chain are happening right now, and they're providing tangible benefits.

Real-Time Insight, Precise ETAs, and the Future of Global Trade

Real-time supply chain execution weighs heavily on a very important metric: ETA. The more precise ETA you can get for an order, the more quickly you can take action. "Live" contextual data can calculate a more precise ETA based on real-time occurrences. This is vastly more accurate than what used to be done – extrapolating past historical data to predict the present. Real-time analytics are up-to-date as events unfold. Supply chain professionals can make their lives easier by incorporating real-time contextual data into their supply chain platforms to help with decision-making.

Global trade is an ancient human endeavor that continues to grow more complex with time. As the size, scale, and scope expand, the number of variables and volatile risk factors multiply nonlinearly. To get a handle on this, businesses can seek out new opportunities coming from the world of the Internet of Things and real-time data. "Live" data can provide powerful, actionable context for supply chain transactions.

For the first time in history, technology exists that can take the pulse of your specific supply chain, and give you a competitive advantage in making smarter business decisions. The worlds of big/fast/smart data and supply chain transactions are converging, and the automated, analytic-driven future of tomorrow is beginning today.

3 http://www.cs.columbia.edu/~julia/papers/Agarwaletal11.pdf

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