Transportation executives are taking notice of how web service APIs are reshaping freight communication, and the tangible benefits just around the corner.
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I. THE STATUS OF TECH ADOPTION IN TRANSPORTATION MANAGEMENT

The slow progress of technology in our professional and private lives rarely falters. In many cases we are unaware of new technologies that happen in the background, enabling features or capabilities in our apps and programs. Just as there are early adopters, racing to the cutting edge of advancement, at the other end of the continuum there is also a surprisingly sizable group of laggards, struggling with the forward march. Some are unaware of the changes around them. Some resist change, hoping it will go away. They are analog survivors living in a digital world.

Welcome to the world of technology adoption in transportation management. Welcome to the world where moving freight and managing freight flows involve communicating with key partners that are at very different stages in the technology evolution.

Based on technology developed during the 1948 Berlin Airlift and refined by the railroads in the 1960’s, electronic data interchange (EDI) is still a primary technology that is used by supply chain members to manage freight flows.

In its day, EDI was a major advancement over postal mail and fax. Transitioning from a paper-based exchange of business documents to a computer-to-computer interchange reduced costs, increased processing speed for many activities in the supply chain, and reduced the likelihood of errors.

Many thought EDI was the ultimate technology solution for improving the efficiency and effectiveness of information flow. However, we know that advancement is perpetual. As Eckhart Tolle said, “Evolve or die... If the structures of the human mind remain unchanged, we will always end up re-creating the same world, the same evils, the same dysfunction.”

WHAT MAKES EDI ‘OLD SCHOOL’ TECHNOLOGY?

EDI exchanges require a standard format in order for Company A’s computers to be able to read and understand the data from Company B. Without a standard format specifying what the information is and in what format (e.g., integer, decimal, mm/dd/yyyy), it would be like an English-speaking only person trying to comprehend someone speaking in Mandarin Chinese.

Even though EDI adopted several standards that are in use today, each standard has many different versions. For any two supply chain partners to exchange data, documents or information via EDI, they must agree on the specific standard and version. The agreement is just the beginning.
An internal EDI system, at a minimum, involves EDI software, communications software, EDI transmission methods, mapping and translation software, EDI and mapping specialists, ongoing upgrades, support and maintenance.

Sadly, this investment is only a starting point. It is highly probable that a company with an internal system will also need to assist – or even build – the system for their supply chain partner. It will be an ongoing effort as each partner’s supply chain changes over time. It’s not surprising that many companies work with a third party provider for this capability. Using an external partner to supply the EDI infrastructure offers many of the same benefits that companies have experienced when using third party logistics and transportation providers.

And, if you think that a third party EDI provider resolves the previous issues, then cost must not be a consideration for you or your supply chain partner. While a number of pricing models are available, the cost for the most part depends on the volume of data that is transmitted over the EDI network. Cost also increases depending on the number of partners that are enabled on the third party providers’ networks already, the range of geographic coverage, and/or the level of support and training for the trading network.

All that effort and EDI still has significant gaps in shipment information availability and communications between shippers, 3PLs and carriers. It is difficult to implement, expensive to maintain, and too rigid to work in a dynamic marketplace.

Is it any wonder that as supply chains became globalized and technology continued to progress at a rapid pace, companies sought other ways to derive the same or better advantages that EDI created decades ago? The ancient Greek philosopher Plato is attributed with the saying – “necessity is the mother of invention.” This simply means that a need or problem encourages creative efforts to meet the need or solve the problem.

“It’s not just the cost of EDI but the added cost when EDI isn’t fast enough and reliable enough to meet today’s demands for supply chain partners that create competitive advantage through efficiency and effectiveness.

When still dependent on EDI, our firm sent thousands of EDIs per day and had to follow-up on a fair share of these transactions, consuming time and human capital resources. APIs completely eliminate the need for those manual back-and-forth communications, saving us time and money.”

JEFF LEPPERT, REDWOOD LOGISTICS

4 THE ROAD TO PROFITABILITY IS A WEB SERVICE CONNECTION
APPLICATION PROGRAMMING INTERFACES (APIs) ARE THE SOLUTION

APIs have changed the language of electronic data interchange, enabling companies to become multilingual in the process – without the huge investment required by EDI. APIs are a messaging format that allows data to be transmitted from one system to another in nanoseconds via web services, increasing productivity and revenue for businesses. In addition, the code is simplified and structured to clearly define how a program will interact with the rest of the software world, saving time, IT resources, and potentially nasty data entanglements along the way.

Consider what the rest of the world would look like if they had to use EDI transmissions and not APIs. Imagine having to set up EDI accounts for all the apps you currently use. Expedia, Kayak, or Travelocity would all need to setup specific links with each individual or company user in order to book travel. Social networks such as Facebook would have very few active users without the accessibility and wide-ranging functionality delivered by their API integrations with other platforms. Once you have the software and hardware in place, imagine having to update all of your accounts every time you update your phone.

With APIs, trucking transactions such as requesting rates, dispatching a shipment, or tracking a shipment are automatically triggered and answered through the systems.

This allows shippers and 3PLs to spend more time on activities that can greatly improve their business. Connectivity gaps inherent in EDI transmissions cause shippers and 3PLs to act on stale or inaccurate information.

With cloud-based APIs, the data and information surrounding a shipment is reliable, up-to-date, and dynamic, providing supply chains the opportunity to maximize performance and implement proactive strategies.

Necessity did indeed create a better solution. Why then is transportation management still resisting this progression in technology when the fundamental means of communicating in transportation is broken? It no longer provides shippers, carriers, and 3PLs with the visibility, flexibility and responsiveness expected in an API-world.
II. GO WITH THE FLOW: THE WORLD IS RIGHT AROUND THE CORNER

There is no better way to think about the impact of APIs on transportation than to use a method used for decades: describe the current process and look at the future state.

Suppose a shipper has a shipment originating in Chicago and headed to Mobile. The shipper tenders the shipment to its strategic (or core) LTL carriers – using outdated rates established 7 months earlier at the start of the year. Now the waiting begins because the EDI is batched with several others, and then sent to the first carrier specified. Once received by the carrier, it is again put on hold until the carrier downloads their batch of EDI transmissions, ranging anywhere from every 15 minutes to 2 hours. A pick up is scheduled and confirmed using EDI, but these notifications are also batched with others, adding more time to the overall process. Would any of us wait this long or tolerate this process if you were making a hotel reservation or purchasing an airline ticket?

As you might expect, in-route visibility is limited and batched with other EDI messages. For just-in-time (JIT) shipments, you may be notified by your customer that the shipment didn’t arrive, and then receive an EDI an hour later confirming the phone call.

WHAT’S A MORE DIRECT ROUTE, BUS OR UBER?

A good analogy for EDI is a bus. Information boards the bus, and it takes off on its route. It makes a stop, and some passengers get off while others may board. In the same manner information in an EDI message is routed through many stops, as information is pulled out. Additionally, the data from an EDI has to be transformed into the right format and sent to fit into the right or appropriate program such as a transportation management system (TMS).

In contrast, APIs are like Uber. One origin, one destination. Direct. No stops. The information from the API goes straight to where it needs to go, without transformation and with little need of processing. And with that speed comes greater flexibility and, most importantly, visibility. While sharing is possible, the network ensures that users specifically select this option with both cost and time dimensions immediately available as part of the decision-making process.
In today’s world rating, dispatch, tracking and imaging are processes that can be slow and expensive, as well as lacking visibility. The power of APIs is beginning to be unleashed, and focused on reducing cost and improving the customer experience. It’s not a matter of being an early adopter; even now we can peak around the corner and see the world that awaits us.

**PART 1: DYNAMIC PRICING**

For carriers, a new world is right around the corner. It’s not just about the advantage that APIs currently offer in terms of instant communication with customers and real-time data transfer. The world around the corner is one where carriers can leverage that real-time data to predict and forecast. In this business environment companies that win will be those that use data to make both live business decisions and forecast future outcomes.

Compounding uncertainties in transportation is the number of variables that impact costs. Adding a customer, losing a customer. Demand on lanes is not static. Having a single rating table that changes on a yearly basis isn’t responsive enough to the needs of the market.

The infrastructure is totally different for the exchange of data and documents. Flexible connections that accommodate any form of data and enable users to extract that information with ease in the form of their choice is the future. Think about it: how often do rates change on a flight from Chicago to Atlanta or vice versa? Or the cost of a hotel room in Seattle or San Francisco? Why should transportation carriers be different?

Diagram 1.0: Chicago-based technology solution, project44, is leveraging APIs to provide analytic capabilities, paving the way for advanced, proactive transportation management. With their APIs, carriers are able to manage their capacity and respond to market conditions by dynamically modifying their pricing, ensuring competitive rates.
Dynamic pricing is a strategy where companies set flexible prices based on current demand in the market. In trucking, dynamic pricing factors could include current demand, predicted demand, as well as the current and anticipated future capacity available to serve.

APIs will actually make dynamic pricing...dynamic and real. Dynamic Pricing relies on the real-time data exchange enabled by API integrations. Armed with real-time capacity metrics, historical network data and live market conditions, carriers can flexibly adjust their pricing to optimize capacity, efficiently manage their network and maximize their profits.

For instance, what if the shipment left on Monday, and not Tuesday? What if transit time were three days, and not four? What if the pick up and delivery times were flexible within a 36 hour time window? Plug in your parameters, select, calculate, and peruse your options.

And, one additional benefit of dynamic pricing: not having the hassle of static pricing and rate tables. Every time a carrier changes its rates, everything has to be updated and tested. New rate tables need to be sent from the provider. They need to be uploaded, verified, and tested. This could take weeks.

Later, every one of the shipment documents and invoices will have to be amended. During this period of waiting for the new rates to be implemented freight shipments continue to move. As a carrier, do you absorb the shipment increase, or try to get it back from the customer?
“By better knowing our demand, and the cost to meet that demand on a daily basis, we are better able to understand our costs. This enables us to charge a fair price across the board, without having some shipments subsidize other less profitable moves. Our customers benefit from this increased visibility and responsiveness by taking advantage of lower rates, when we have more capacity to serve their needs more effectively.”

PART 2: PREDICTIVE ANALYTICS

Shippers can benefit from this new world that is right around the corner. As predictive analytics become embedded in TMS solutions, so too will increased choice for many shippers and 3PLs. Shippers will be better able to match their needs with what the market basket of carriers is willing to provide. To paraphrase a former executive at CitiBank, “Information about trucking is more valuable than trucking itself.”

In other words, predictive analytics provides insight for both carriers and shippers to determine the impact of dynamic pricing on any lane at a given point in time. Dynamic pricing, without predictive analytics, would be clashing. Predictive analytics provides the foundation for effective dynamic pricing. Today, shippers select carriers based on past performance as well as their perception of past performance. This is built up over time, and is typically thought of as an attribute for a company. Carrier X is always on time; Carrier Y is not.

While overall that may be true, the facts can be more nuanced. How do you know – right now – how a carrier is performing on a single lane? What factors impact their performance? While long-term historic performance is important, it is even more critical to know how are they performing on this lane right now.

Why does this matter? Picking a carrier not hitting the deadline can significantly impact your business.

MARK DAVIS, AVERITT EXPRESS

PREDICTIVE ANALYTICS IS THE COUNTERWEIGHT TO DYNAMIC PRICING. THE YIN AND YANG. IT CREATES TANGIBLE DUALITY FOR THESE SEEMINGLY OPPOSITE CAPABILITIES.
The issue is not whether or not APIs will play a key role in transportation management, but rather, when you will make the decision to evolve. Will you see the signs and move to a flexible and responsible network that will challenge the status quo in transportation?

1. LEARN. If you aren’t familiar with APIs, take the time to learn more about them. Ask vendors, carriers and suppliers. Ask the experts – and ask people you trust. Start thinking about how your firm – be it shipper, carrier, 3PL, or other provider – will be helped by the use of APIs. Remember implementing technology solutions also requires process improvement. Educate yourself on both. Tommy Barnes, president of Chicago-based technology company, project44 reminds that, “In order to see the real value, you must pair API technology with sound operational procedures and communication processes.”

2. LIFT. Education covers a lot of ground, but it doesn’t till it. It will take time and resources to move from EDI to APIs, but it’s a necessary, worthwhile, and ROI positive investment. When do you start and how much do you lift? Some think that they need to develop, write and manage all of the APIs for their firm. Yet, as with any in-house solution, there are benefits and drawbacks. For in-house solutions, the maintenance costs are higher, and less responsive to a changing market. Outsourcing to experts seems to make more sense, and it takes a lot less internal time and IT investment to get started.

III. THE TIME IS NOW: 3 STEPS TO TURN THE CORNER

VIKRAM BALASUBRAMANIAN, MERCURYGATE

“Our ability to provide impactful predictive analytics requires us to understand what is happening right now. Traditional monthly or quarterly reporting on supply chain performance is like looking purely in the rearview mirror. In a dynamic world, the real time ability to sense disruptions and provide course corrections depends on our understanding of the present. If carrier performance is slipping, it may not be reported or noticed right away. It would be far better to know how everyone is performing right now, and finding the best carrier on that lane to handle a shipment.

True control tower capability is impossible with just batch information enabled by EDI. Web services based integration via APIs set the stage for providers to create the next generation of decision support tools. The scope is not just limited to supply chain visibility but can be leveraged in making dynamic pricing decisions based on availability or shortage of capacity as well.”
3. LEAD. Adopting new software is just the beginning. Lifting and putting the pieces in place is the start. Leading: that’s another story all together. “APIs are revolutionizing transportation management, providing firms with the actionable, critical and predictive insight required to make smarter business decisions,” said Tommy Barnes. “It’s exciting to see what industry players are willing to step up to lead the charge and trailblaze a path forward.”

As you learn and lift, think about how your firm can use APIs to lead. How do you use the technology and capability to be more effective in the marketplace? What added benefits can you provide that puts you ahead of others? How will increased visibility reduce your costs? Ultimately, how will this all improve how you service your customers?

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