



BUSINESS WHITE PAPER

The Logistics Technology Platform

The Logistics Technology Platform

Executive Summary

Logistics is different. If logistics is your business or a critical element to its success, you know this. You have to manage inventory, resources and documents that are all concurrently in motion with business processes that extend to the edge of your enterprise and well into your trading partners' operations. Working with trading partners can be a challenge because they are numerous and your relationships with them are constantly changing. Traditional enterprise and niche applications have not adequately enabled your logistics business.

However, Descartes' Logistics Technology Platform was designed for your logistics operations. Delivered through the fusion of the Global Logistics Network – the world's most extensive global multi-modal network and the industry's broadest array of modular interoperable web and wireless logistics management solutions - it is the technology platform that Descartes' customers and their trading partners use to extend command of their logistics operations. Combined with the world's largest community of carriers in multiple modes, logistics intermediaries, government regulatory agencies, manufacturers, retailers and distributors, the Logistics Technology Platform enables customers to quickly and cost effectively connect and conduct logistics business.

What Makes Logistics Operations So Unique

Logistics Has Always Been About Collaboration. Unlike other organizations that have recently learned that collaboration and coordination of multiple parties are critical to success, logistics has always been about working together with customers and partners. With few exceptions today, most logistics operations rely to some degree or another on others to help them deliver their goods or serve their customers. As a result, most logistics business processes are extended or multi-enterprise processes, as opposed to intra-enterprise.

Dynamic By Nature. Customers and partners are constantly changing, as are their roles in the logistics network. The notion of static, long-term relationships is not the norm - today's competitor could be tomorrow's partner. Transient or casual relationships are more prevalent than ever as logistics organizations move from one relationship to another to reduce costs. Logistics is also a service business with a relatively low barrier to entry. What was considered value-added yesterday is industry standard today. In the war to differentiate, logistics organizations are constantly assembling and reassembling their process and partners, because the logistics process is the business product. Therefore, competitive advantage is all about time-to-market with new services. Rapidly connecting to partners is paramount in this strategy.

Logistics Workers Are In Motion. The majority of logistics workers are not in a factory, warehouse or store; they are in the field and in motion. Logistics customer service is ultimately measured against the people that an organization has the least visibility to their actual performance. Traditional "eyes on" management and data capture

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are not effective in logistics. Compounding this command of operation problem is the need for smart data collection due to driver safety concerns and route efficiency.

Data Is Multi-Party By Nature. Much of the critical data required to run a first class logistics operation comes from outside the logistics organization – everything from orders to tenders to customs clearance to proof of delivery. This data cannot be stored in one “master data base in the sky” because pieces are in various internal and external organizations and other parties such as regulatory agencies. Data timeliness, accuracy and the ability to quickly assemble or disperse it from or to multiple parties is essential to be able to deliver reliably, to cross borders quickly and to get paid in a timely fashion.

Partner And Technological Diversity. Diversity in many forms is prominent in the logistic world and the ability to exploit it is an important key to success. Even the largest logistics organizations work with very small local carriers to help conduct their business. Technical ability also varies greatly and is not necessarily based upon company size – each mode of transportation and customer has communication “standards”. The challenge for logistics organizations is to be able to cost effectively connect and collaborate with their customers and partners to maximize operational effectiveness.

The Limitations Of Existing Logistics Technology

Most of the unique characteristics of logistics organizations have been around since the beginning of modern logistics. Even though logistics now represents over \$2 trillion in global spend annually, the information technology market has not historically served logistics organizations well. Here are some of the main reasons why:

Enterprise Applications For An Inter-Enterprise World. The enterprise application phenomena goes back to the early 1990's when it became apparent to leading manufacturers and distributors that they needed integrated manufacturing, financial and distribution systems. Cost and complexity haven't been the real barriers, as both big and small enterprise application vendors have struggled to make a difference in logistics. Twenty plus years later, the new generation of underlying technology, business models and support architectures still follow that same intra-enterprise paradigm. It is the reason that enterprise applications have had so little penetration in the logistics industry beyond “back office” functions such as financials.

A Sea Of Small Vendors. Due to the enterprise application vendors' lack of success in logistics, a sea of small, undercapitalized specialist vendors have emerged to serve the highly diverse requirements of the logistic market. Many of these vendors are limited to offering one or two robust and unique capabilities, but are leaving the logistics IT organization to have to stitch too many vendors together to make a total logistics solution. The result is an

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inflexible array of integrated solutions. The software-as-a-service (SaaS) revolution has not changed that situation as integration needs to occur whether the applications are locally hosted or in the cloud. Because all of these applications were built as if nothing else existed, there is little opportunity for the “1+1=3” effect as their functionality wasn’t designed to optimize overall logistics processes. Logistics organizations are also in an investment quandary with the undercapitalized specialists - should they “bet the farm” on a vendor who may not be around in five years?

Technology/Logistics Operational Model Mismatch. Logistics operations involve a network of organizations; they need networked IT solutions - just like their business. Unfortunately, this hasn’t been the evolution of the logistics technology market. The vast majority of logistics technology vendors either fall into the “applications” or “network” vendor bucket. Logistics applications, even those purporting to be multi-party, have limited capability because, by themselves, they don’t have access to the data they need to operate efficiently and lack a way to leverage the use of that data uniquely across multiple parties.

The answer lies in accessing a large scale community of active logistics members. Think back to the Supply Chain Event Management Market and “Market Place” days of the late 90s - many of these companies had great applications, but failed to deliver value because they had no community. Communities take years to build and are the real driver in time-to-value. Without a network with pre-existing connections, logistics application implementations can drag on and return on investment is illusive.

There have been a number of specialist networks that have been created over the last two decades. Unfortunately, they have been single mode (e.g. ocean), regional in nature and “applicationless”. A number of these networks have seen significant declines in their member base or have been consolidated because their capabilities are now considered a commodity. Customers want to do more with their data than just move it around and don’t want a separate provider per each transportation mode. In addition, many of these networks are built on old messaging transfer paradigms that do not support the high velocity of today’s logistics business. Interestingly, the same conclusion can be drawn for the larger general networks trying to operate in the logistics industry - the term “VAN” has become an anathema.

The Internet – Yes, Even The Internet. Even the internet has drawbacks for logistics organizations – the “wired” internet that is. Since a large percentage of logistics workforces are in the field, tethered solutions, web-enabled or not, fail to enable the increasing majority of logistics workers. Waiting to get to a truck stop, depot or home to get to the web browser does nothing to more dynamically and better manage the mobile workforce.

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How Advances in Technology and Markets Are Redefining Logistics Processes And Capabilities

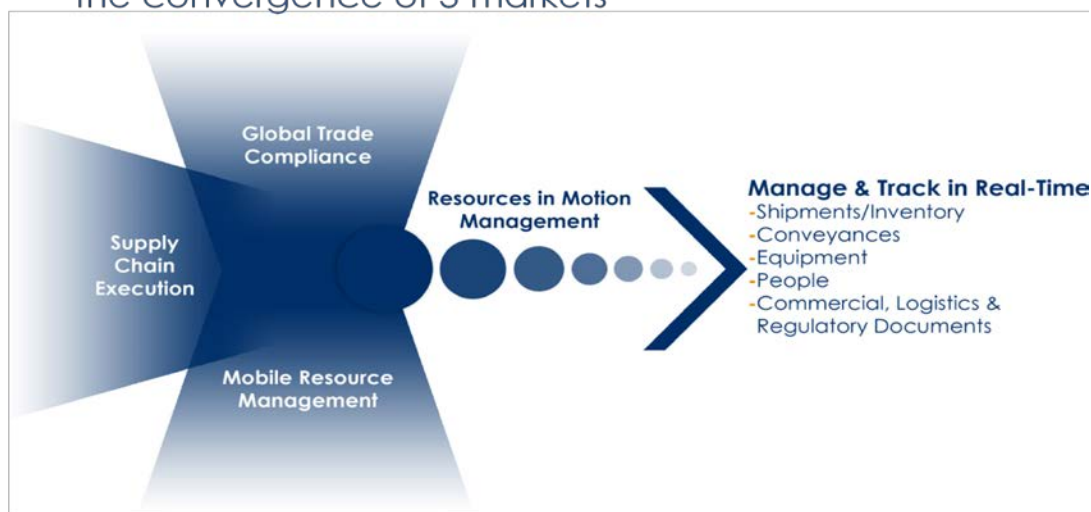
A number of significant trends have emerged that are redefining logistics processes and technologies. Many of these come from outside the logistics industry and others are based upon structural changes such as increasing governmental regulation. Below are some of the most important trends shaping logistics technology and, indeed, the industry.

Logistics Technology Market Convergence.

To meet customers' demands for increased capabilities and broader reach, logistics organizations have been expanding through convergence. Look at the number of logistics company consolidations over the last ten years – many of them large. The logistics technology business is also undergoing a similar convergence. Traditionally, the logistics technology market has been highly fragmented. However, logistics organizations have been driving IT convergence by demanding functionality that can be more process based and comprehensive in scope, and offer greater leverage from common data, reach into their community and economies of scale. Simply put, logistics organizations want great command of operations, with the ability to manage, in real-time, their shipments/inventory, conveyances, equipment, people, and commercial, logistics and regulatory documents. As a result, three logistic technology markets are converging, Supply Chain Execution, Global Trade Compliance and Mobile Resource Management. Hardware, software and networks are coming together. Descartes predicted this trend with its Resource in Motion Management Systems model over six years ago (See Figure 1).

FIGURE 1.

Resources in Motion Management Systems (RiMMS), the convergence of 3 markets



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The Mobile Revolution.

The mobile revolution is reshaping, and will continue to reshape, logistics technology. Many in the logistics community are familiar with mobile devices for pickup and delivery operations and on-board computer systems and black box telematics devices. However, what was offered as new as little as three years ago, is rapidly becoming legacy because many of those ruggedized devices are bulky, offer limited functionality and are expensive. The same goes for the dated notion of mobile applications as extended source data collection tools that are tied to static databases and batch applications. The mobile revolution will enable not only the entire internal logistics organization, but also provide real-time command and control of all mobile resources in the field. Critical capabilities include enabling workers to make more intelligent decisions promising pickups and deliveries, to quoting transportation prices right in front of the customer.

A specific example of the mobile revolution is the intuitive ongoing integration of routing, mobile and telematics. Descartes announced this technology evolution as part of its Mobile Resource Management (MRM) 2.0 strategy over 15 months ago. Unlike disparate route planning, mobile and telematics solutions, MRM 2.0 leverages the power of real-time planning and wireless mobile and telematics technology as if they were designed to work as one from the beginning. Optimized planning and wireless mobile technology within MRM 2.0 solutions are built on event-based architectures that allow for the bi-directional propagation of messages as they occur, from planning through the mobile applications. This architecture provides new, real-time capabilities that allow for more dynamic and effective command and control of resources in motion. (See Figure 2).

FIGURE 2.



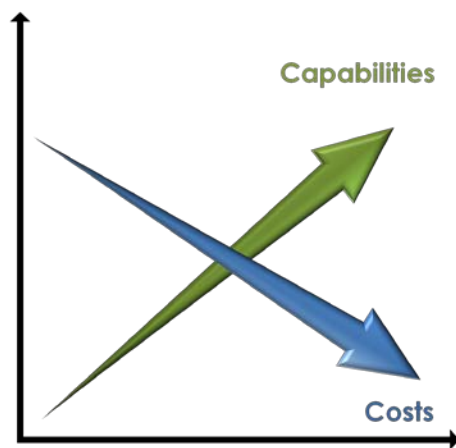
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Consumer/Commercial Technology Convergence.

Technology itself is converging, thanks to the power of the consumer markets. Commercial and consumer IT used to be separate and different. Now this difference is blurring as consumer-based technology is penetrating the commercial technology market. For example, mobile devices have come down dramatically in price and, equally, gone up in capability thanks to the widespread adoption of smart phones (See Figure 3). Consumer technology market volumes are measured in the 10s and 100s of millions of units, which is well beyond the traditional scale of logistics systems. It's not just phones and telematics units, but digital map data and other base logistics technologies. This phenomenal economy of scale is greatly influencing a number of the solutions that are now, and will in the near future, be available.

FIGURE 3.

- 100s of millions of mobile phone users are driving change into the logistics market
- Smart phone consumer applications are driving mobile phone capabilities
- Advances in network performance continue 3G...4G...WiMax...?



The Agile Network.

Information networks have been around for 30 years in many forms, from cargo community systems to mode-specific and value-added networks (VAN). In the beginning, these networks were built on highly proprietary technology that required complex integration. Their use was limited to the largest and most technologically sophisticated companies. The internet weaned companies away from the use of proprietary networking technology, and portals made the networks more accessible to the “low tech” organizations, albeit in a limited way. Yet, logistics-focused networks have still not reached much of their potential community. Limitations such as being a registered party, only providing simple portal functionality and “wired” only networks have kept much of the logistics community from fully leveraging the network effect.

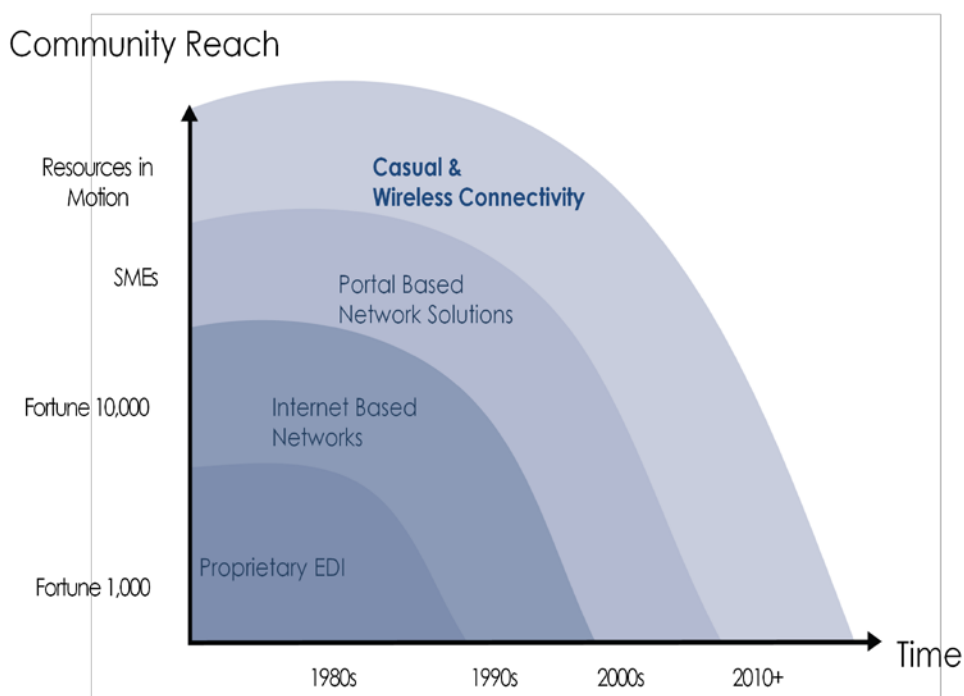
New smart and secure messaging technologies are being developed to allow transient logistics partners to connect and collaborate through the logistics network. For many logistics organizations, this technology will remove the

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“flying blind” problem they face when they use carriers or other logistics services providers with whom they have only a casual business relationship or no technological capability.

Traditional logistics networks have also been limited to “wired” connectivity. But, what if the network could converse with mobile devices of all kinds, from handheld applications to machine-to-machine? The network could then truly be the conduit for real-time information that could be used by multiple parties to more effectively manage the flow of goods and reduce cash-to-cash cycles. New carrier- and device-agnostic gateway technology is being developed to connect the wireless and wired worlds. With these networking advances, a broader range of logistics organizations can now participate, resulting in a larger connected and collaborating logistics community. (See Figure 4).

FIGURE 4.



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Multi-Party Process Solutions.

Logistics processes, especially multi-party ones, have been constrained by traditional logistics application functionalism. For example, in a multi-party process where retailers work with suppliers and carriers to move goods into their operations, coordination across the parties is critical. Yet, the individual applications used by these originations weren't designed to work together and, in many cases, produce conflicting results. New, multi-party SaaS applications are emerging that are designed to coordinate these competing applications, give all of the participants visibility to the total process and help ensure that the flow of goods gets executed in the most efficient and effective way possible.

The Cloud Platform Emerges.

On-premise applications have been at odds with the way most logistics organizations work financially and operationally. Logistics organizations operate with thin margins where capital is scarce. Traditional license models require capital up-front that may not be readily available. IT support is also "thin". Bringing systems in house requires more staff and sunk costs. Because of the rapid change of pace in logistics organizations, they need agile IT solutions and to be able to pay for them as they are used.

Emerging cloud-based solutions offer logistics organizations the operational flexibility and financial arrangements that are consistent with their own business models. For true multi-party or networked solutions to work effectively, they must be in the cloud. Cloud based solutions now offer broad and deep logistics solutions. Rather than simple, point-based SaaS solutions, large-scale cloud-based "platforms" are emerging that offer logistics organizations the ability to conduct much of their logistics operations through a single solution provider.

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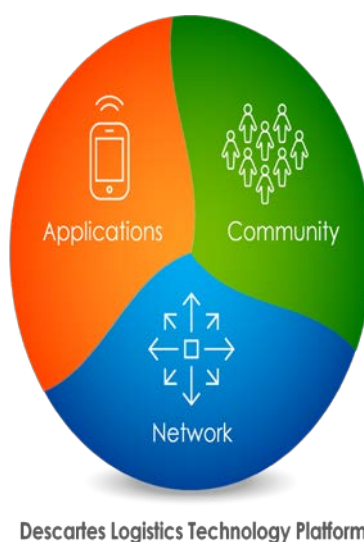
Working closely with leading customers, Descartes recognized that these companies wanted to work with a technology provider that understood the unique requirements of logistics organizations and could provide a comprehensive set of solutions that worked the same way they did. The heart of their issue was that they needed a simple and elegant way to extend their command of operations to the edge of their enterprise and across the multiple trading partners, logistics services providers and carriers that work with them. The Logistics Technology Platform was created to address those needs and provide a base for continuous innovation.

The Logistics Technology Platform is a simple and elegant combination of network, applications and community. It is the comprehensive technology infrastructure that Descartes customers and their trading partners use to extend the command of their logistics operations.

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The Logistics Technology Platform is the fusion of the Global Logistics Network – the world's most extensive global multi-modal network with the industry's broadest array of modular interoperable web and wireless logistics management solutions. The Logistics Technology Platform leverages an extensive logistics community that enables our customers to quickly and cost effectively connect and collaborate. (See Figure 5).

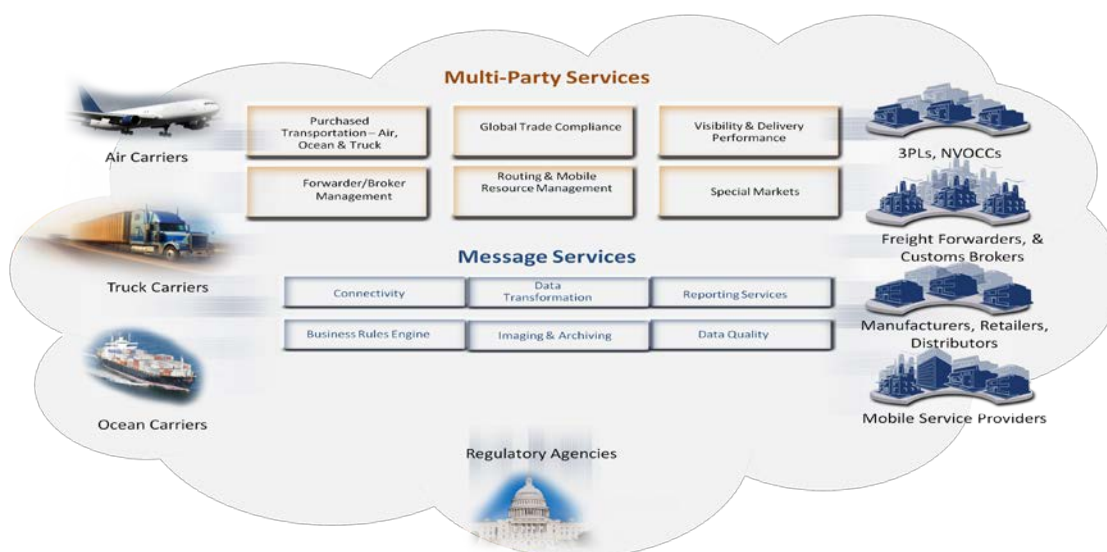
FIGURE 5.



The Network.

The Global Logistics Network is the foundation on which the applications and community are built. It was designed with logistics operations in mind. It is differentiated by its management of data semantics, message delivery, transformation of data pertaining to regional or global operations and its ability to work across wired and wireless technologies. The Global Logistics Network gives you the flexibility to connect and collaborate your way. It was designed to be a network, and is not an application attempting to act as a network. You can seamlessly move or transform data through the network to your various trading partners, leverage Descartes solutions on the network or connect to your existing solutions. This inherent flexibility gives you the ability to create logistics business processes to operate or differentiate yourself from the competition. (See Figure 6).

FIGURE 6.



Unlike traditional electronic data interchange (EDI) oriented networks that use “store and forward” technology, the Global Logistics Network is a current-generation, high-speed messaging network that provides integration to not only carriers and trading partners, but also to “back-end ERP” systems such as order management and finance. The Global Logistics Network’s wireless gateway technology is carrier, device and application agnostic. This gives users the flexibility to leverage not only Descartes’ mobile and telematics solutions across a number of networks, but also integrate third party and internally developed solutions into the network. The Global Logistics Network’s messaging management services give customers full access to their data moving through the network, helping to ensure the timeliest and highest data quality.

The Global Logistics Network supports logistics industry standard messaging formats across all modes of transportation, many of the common commercial transaction sets and emerging regulatory compliance filing formats, and has the flexibility to address customer-specific needs. Having full standing within the EDI industry, the Global Logistics Network maintains interconnects to 26 general and logistics specific messaging networks to help customers gain access to the widest array of carriers and trading partners.

For those carriers and trading partners that do not have sophisticated connectivity capabilities, the Global Logistics Network’s Collaboration Gateway technology allows “low tech” carriers and trading partners to act and respond as if

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they have “high tech” capabilities. Through the Gateway Permit smart token technology, the Global Logistics Network allows its members to widen online collaboration with their casual trading partners in a controlled and secure way.

The Applications.

With the Global Logistics Network as the connectivity orchestration foundation, Descartes has been aggressively expanding its logistics application functional foot print to now offer the industry's widest array of modular interoperable web and wireless logistics management solutions. Whether you purchase transportation, run your own fleet, operate globally or locally, work across air, ocean and surface transportation, or are a logistics operator or organization within a manufacturer, retailer or distributor, we have the most comprehensive suite of solutions, including:

- Routing, Mobile and Telematics
- Transportation Management
- Customs & Regulatory Compliance
- Network Services
- Broker & Forwarder Enterprise Systems

Our solutions embody the deep domain expertise that resides with Descartes' people. We don't take the “check box” approach to delivering logistics and regulatory compliance functionality. In many cases, we are considered “the industry experts” and have worked with numerous customers to deliver new capabilities that have allowed them to differentiate their performance in the market, growing revenue and increasing profitability.

Our logistics solutions were designed to be modular and interoperable because your organization needs the flexibility to deploy them quickly within your existing portfolio of solutions. As history has shown within the enterprise application market place, a monolithic application approach is too inflexible and takes too many years to roll out. With our approach, you don't need to throw everything out and start over. We know that logistics businesses need agile solutions that can address their challenges and opportunities now and logically expand to meet future needs. Since our solutions were designed to be interoperable and multi-party, we can deliver functionality that is more the sum of the parts. The “1+1=3” effect that you are looking for to change your logistics operation performance is achievable when you roll out our solutions across your logistics processes - whether in-house or across a complex network of partners.

To be fast, agile and extend to the edge of your enterprise and across your trading partner network, our solutions use web-native or wireless user interfaces. Our goal is to make deploying our solutions simple and to keep the

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complexity buried behind our firewall – they are designed to work with a browser, smart device and connection to the Global Logistics Network. Because the solutions are “network aware”, we can quickly connect them to the trading partners and logistics companies that are already part of the network, accelerating your time-to-value. Leveraging a network that operates in real-time has allowed us to think differently about how logistics solutions could operate. Our event-based application architecture uses the wired and wireless data flowing through the network to make smart decisions and take action immediately. Our strategy is not only to extend your command of operations, but give you the tools to keep it operating on track every moment of the day.

The Community.

The third component of the Logistics Technology Platform is our logistics community. It is the largest multi-modal network of logistics intensive companies in the world, with over 147,000 organizations collaborating in over 160 countries. Many companies are becoming members or extending their participation in Descartes' logistics community because we offer them one place where they can work across many modes of transportation and with regulatory agencies. The breadth and density of our logistics community allows you to rapidly extend your command of logistics operations and accelerate your time-to-value because of the many carriers and trading partners that are pre-connected to the network. We are constantly working to extend this network through our own efforts and partnerships to create even greater value for our customers. Our work with each customer is helping to benefit other customers as we bring more members to the community.

Why Descartes? Why Now?

The capabilities of the Logistics Technology Platform make simple sense. The need for it has existed for years. What took so long for it to evolve? Behind the scenes, Descartes has been working towards this vision. There were three components that needed to come together to make the Logistics Technology Platform a reality: technology breadth, network density and financial strength. Through organic development and acquisitions, we expanded our technological capabilities, domain expertise and function footprint, more rapidly than our competition. We worked hard to expand our logistics community in membership and the level of participation of the members. Finally, to do all of this, through sound business practices, we built a company that had the financial resources to support this extensive effort without mortgaging our or our customer's future.

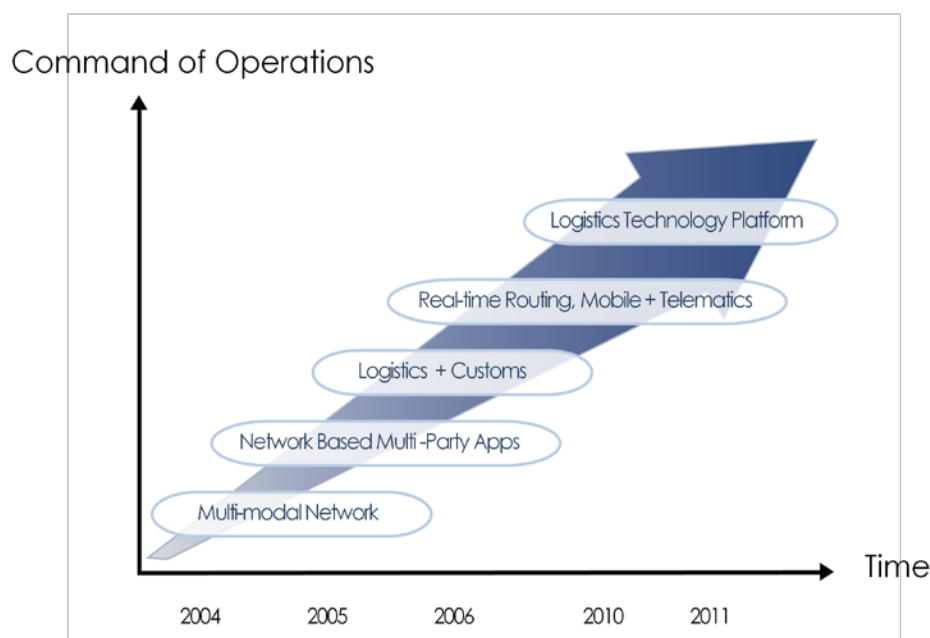
Natural Evolution of Descartes' Technology Leadership.

We could see, through our work as a logistics technology innovator over a number of years, that the Logistics Technology Platform was the natural evolution. We have been a leader in the creation of multi-modal networks. Our collaborative efforts with leading logistics companies and retailers helped to pioneer multi-party applications. With our RIMMS strategy, we saw and exploited the technology and market convergence in customs and global logistics

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solutions, brought hardware, software and networks together to advance fleet management and have been paving the way with multi-party logistics process solutions. All of these innovations and others have paved the way for the Logistics Technology Platform. (See Figure 7).

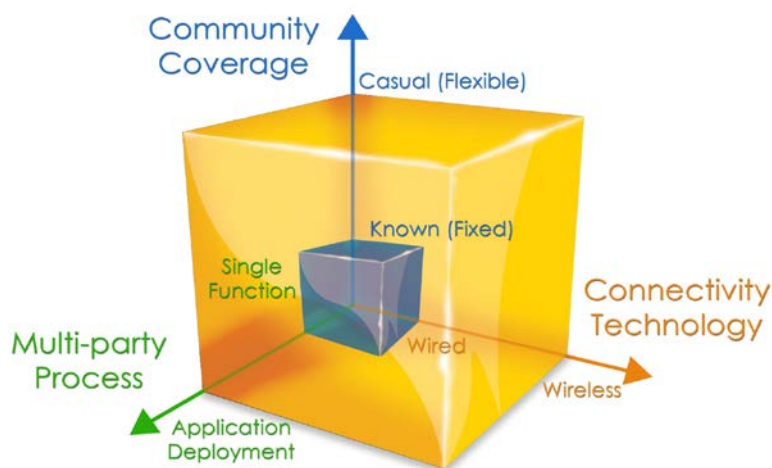
FIGURE 7.



The Innovation Needed to Extend the Command of Operations.

Descartes, as a technology leader and fast adopter, recognized that to create the Logistics Technology Platform we needed to extend the command of operations for our customers. To do that, we needed to advance our technology architecture on a number of fronts. First, the network needed to extend beyond wired communications to wireless mobile technology so that the mobile workforce could be included. Second, we had to break the “known” or registered party and simple portal paradigms to allow more parties to participate. Finally, we needed to build solutions that were about coordinating greater logistics business processes, not just some functional view. (See Figure 8).

FIGURE 8.



We Were “Cloud” Before Anyone Knew The Term.

Descartes was a pioneer in hosted logistics solutions because we have always believed that it was the best way to deliver logistics technology to logistics organizations. We are experts in SaaS and cloud solutions. We have the most extensive offering of cloud-based logistics solutions and have a track record that extends over 14 years. Our network runs billions of transactions annually and we have customers that range from one to almost 10,000 users. We have delivered simple and sophisticated solutions through our cloud. Customers use our cloud technology to ensure that their goods move safely and securely, and even to pay their workforce. Descartes has the track record that you want as a cloud solution provider.

Partner Friendly.

Just as logistics organizations need to collaborate, Descartes believes that logistics technology solutions need to do the same. While we have the broadest offering of logistics solutions in the industry, logistics is an extremely broad discipline and, to meet the needs of our customers, we need to partner. The Logistics Technology Platform was designed to support Descartes' United by Design partner program, which focuses on pre-integration with partners to deliver the overall solutions that our customers need.

Think Of Descartes First.

Many of you know us for the one or two things we do for you today. With advent of the Logistics Technology Platform, Descartes should be the first place you come to address your logistics technology needs. We combine the three elements you need to help improve the productivity and performance of your logistics operation. We provide

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you with the breadth of solutions and flexibility to help you create the ideal logistics operation. We are focused on customer success with a global team of passionate logistics experts. And, our customer success has allowed us to obtain the financial viability to be the long term logistics technology partner you need.

About Descartes

Descartes (TSX: DSG) (NASDAQ: DSGX) is the global leader in logistics technology. If logistics is critical to your business, Descartes connects the people and technology to put your organization in motion. We extend the command of logistics operations, helping the world's largest and most connected logistics community to quickly reduce costs, improve service and comply with customs and transportation regulations. Descartes' Logistics Technology Platform uniquely combines the power of the Global Logistics Network, the world's most extensive multi-modal network, with the industry's broadest array of modular and interoperable web and wireless logistics applications. At our core, Descartes' team of industry-leading logistics experts is dedicated to delivering innovative solutions while working closely with our customers to help ensure their success. Descartes is headquartered in Waterloo, Ontario, Canada and has offices and partners around the world. Learn more at www.descartes.com and blog.descartes.com.