



[ericsson.com/
industrylab](https://ericsson.com/industrylab)

Pre-emptive logistics — the road ahead

Contents



- 03 What's driving change in the logistics industry?
- 04 Logistics today
- 07 Logistics tomorrow
- 14 The role of mobile network operators
- 15 A glimpse into the future

Methodology

Quantitative data was collected from China, Germany, Sweden and the US through online interviews with 1,923 respondents aged 18 and older. Of these, 667 were decision makers with responsibility over logistics solutions and services. The other 1,256 were business users within the logistics field, but without any decision-making authority. Users were typically employees in the same type of companies as the decision makers. The majority of surveyed decision makers can be categorized as early adopters of new technology, as could the companies they represent. The same is also true for the business users. The survey was conducted during January and February 2020. In addition, quantitative consumer survey data from the Ericsson Consumer & IndustryLab Analytical Platform gathered in April 2020 was used.

Qualitative insights were gathered through 21 interviews with industry experts, academic researchers and decision makers within the logistics industry and 4 with transportation workers. These were conducted in Europe and the US from August 2019 until April 2020.

The following logistics experts and decision makers have been interviewed:

- Per-Olof Arnäs, Ph.D. in Logistics, Chalmers, Sweden
- Aljosja Beije, Logistics & Technology Lead, Blocklab/Port of Rotterdam, Netherlands
- Sean Bellucci, General Manager, ShipBob, US
- Todd Bills, SVP Supply Chain, ShipBob, US
- Michael Browne, Professor, Logistics, University of Gothenburg, Sweden
- Divey Gulati, Co-Founder, ShipBob, US
- Clayton Harris III, Director, Illinois Intl Port District, US
- Zach Janson, Business Development, QSL/Nasco, US
- Andreas Lischke, Team Leader, Institute of Transport Research, Germany
- Jett McCandless, Co-Founder & CEO, Project 44, US
- Chuck Monini, Director of Information Services, CargoSprint, US
- Stephen Mosher, Vice President, QSL/Nasco, US
- Adam Rod, Asst. Commissioner Planning, Chicago Dept of Aviation, US
- Nicholas Rundbom, Communications Director, Einride, Sweden
- Michelle Rupke, Logistics Manager, M. Holland Company, US
- Matt Silver, CEO & Co-Founder, Forager Logistics, US
- Fredrik Sjöholm, Professor, Department of Economics, University of Lund, Sweden
- Marcy Capron Vermillion, Co-Founder, Equilibria, US
- Frank Vetter, Director Global Sourcing, Essity Operations, Mannheim, Germany
- Henrik Zsigo, Project Forwarder, Valmet, Sweden
- Fredrik Svedberg, CEO, LogTrade Technology AB, Sweden

About Consumer & IndustryLab

Ericsson Consumer & IndustryLab delivers world-class research and insights for innovation and sustainable business development. We explore the future of connectivity for consumers, industries and sustainable society by using scientific methods to provide unique insights on markets and consumer trends.

Our knowledge is gained from global consumer and industry research programs, including collaborations with renowned industry organizations and world-leading universities. Our research programs cover interviews with over 100,000 individuals each year, in more than 40 countries – statistically representing the views of 1.1 billion people.

All IndustryLab reports can be found at: www.ericsson.com/industrylab

What's driving change in the logistics industry?

Digitalization activities are transforming enterprises and industries around the globe. The logistics industry is no exception.

This report takes a closer look at the future of logistics and explores the viability of pre-emptive logistics. To what extent can a more efficient and sustainable system be achieved by use of digitalization technologies such as IoT and 5G? Will this industry sector be ready to take the necessary steps, such as connecting all the parts and sharing information between all parties, in order to allow for pre-emptive logistics? To what extent will efficiency gains drive transparency in a sector that, today, is characterized by silo-oriented operations? This report will attempt to answer these questions.

Additionally, as this report was written in the middle of the coronavirus disease 2019 (COVID-19) pandemic, the global economy – including the logistics industry – is facing an entirely new set of challenges. This report will, therefore, also reflect on how global disasters could lead to adjustments regarding the future of logistics.

Key findings

1. One-third of decision makers say that being unable to easily exchange information with customers and suppliers is an obstacle for improving their companies' logistics operations.
2. The lack of good digital track and trace tools, tools for visualization etc. and reliable mobile connectivity are key barriers for two out of five logistics companies today.
 - Additionally, three in five strongly agree that better logistics tools would improve their companies' capability to deliver on time.
3. Almost 7 in 10 of the surveyed decision makers say it will be very important for their companies to be part of logistics information sharing systems in the next 3–5 years.
4. Two-thirds of the studied companies will use AI and data analysis to match logistics needs with capacity within the next five years, and one in five are already doing it.
 - More than 6 in 10 companies will ship pre-emptively in the next 3–5 years.
5. Globally, more than one in three consumers either began or increased online grocery shopping compared to before the COVID-19 outbreak, causing significant challenges to existing logistics flows.
6. Pre-emptive logistics does not mean the death of warehouses and fulfillment centers. Cross-competitor information sharing and collaboration, including shared warehousing between many actors, could lead to more resilient future logistics solutions.
7. Sustainability is quickly becoming an additional driver for logistics enhancements.
 - Sixty-seven percent of decision makers agree that customer sustainability requirements will change the way their companies handle logistics in the next three to five years.

Logistics today

Consumers and business customers alike increasingly request, and expect, quick deliveries. This raises a number of technological and logistical challenges at different stages of the supply chain.

Shifting expectations

Consumers are accustomed to having instant access to goods within the digital world, for example music, movies and games. These expectations are now rapidly being seen in the physical world as well. This is most clear when it comes to online shopping, which grew from USD 1,336 billion to 3,530 billion, or more than 150 percent from 2014 to 2019.¹

The success of Amazon in the US and Europe and Alibaba in China has redefined consumer expectations. Until recently, consumers waited patiently for shipping and transport. But with the emergence of services like Amazon Prime, consumers now expect same-day delivery. These expectations are also evident in the B2B sector; of the companies surveyed, 88 percent say that their customers currently request same-day delivery.

The global effort to battle COVID-19 through lockdowns and social distancing has increased the need for fast home deliveries. For example, Swedish grocery home delivery app MatHem needed to hire 10–15 new employees every day to meet customer demand,

increasing their capacity by 30 percent in a single month. More than one in three consumers globally agreed that they had either begun or increased online grocery shopping compared to before the COVID-19 outbreak (see Figure 1).

A fragmented market

As e-commerce giants like Amazon and Alibaba continue with vertical integration of logistics functions through acquisitions of, for instance, planes (Amazon now has a fleet of 50²), the rest of the market is left to deal with rising expectations for rapid deliveries and better customer experiences. These expectations may be hard to fulfill considering that the logistics arena consists of a plethora of actors (see Figure 2).

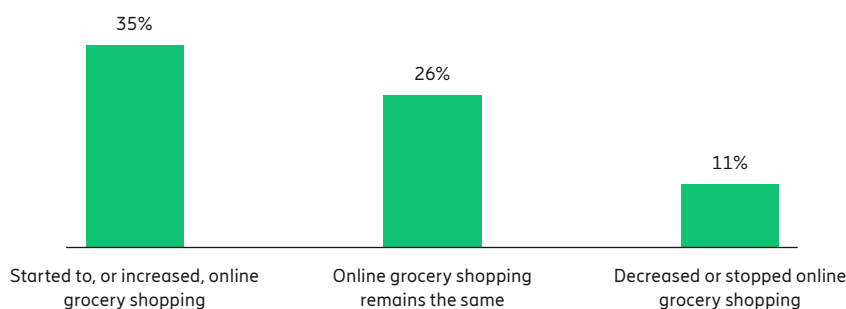
Each role in the logistics chain is being carried out by hundreds or even thousands of different players. The International Federation of Freight Forwarders Associations (FIATA) has 40,000 members, and the International Road Transport Union (IRU) has a staggering 1 million members.

The opportunity for any single actor to steer the market with proprietary solutions for logistics planning, control and information sharing is therefore small. Looking at the top freight forwarders, for instance, none have more than a 13 percent global market share (DHL had 13 percent, Kuehne + Nagel 10 percent and DB Schenker 8 percent in 2018).³

“Amazon changed consumer expectations: now everyone wants everything within two days, or the next day if they’re in the US. Amazon came in and changed the game for everyone.”

**Divey Gulati, COO,
ShipBob, Chicago**

Figure 1: Global changes in consumers’ online shopping habits for groceries after the COVID-19 outbreak



Source: Ericsson Consumer & IndustryLab Analytical Platform (May 2020)

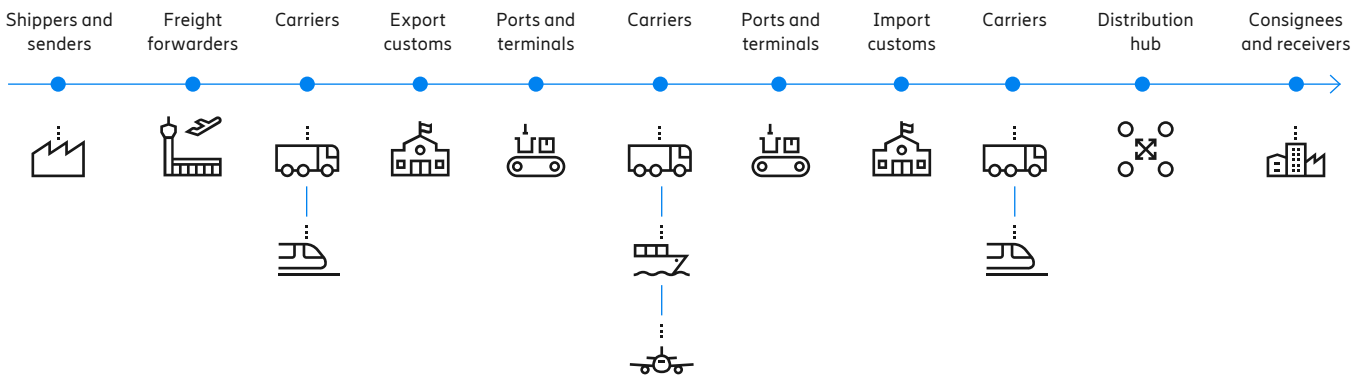
Base: Smartphone users aged 16–69 in Brazil, China, France, Germany, India, Italy, Spain, South Korea, Sweden, the UK and the US

¹ eMarketer (March 2019)

² www.businesswire.com/news/home/20181220006014/en/Amazon's-Air-Network-Expands-Support-Growth-Prime

³ www.aircargonews.net/business/statistics/top-25-airfreight-forwarders-rival-kn-continues-to-close-in-on-dhl

Figure 2: A multitude of different roles and actors are involved in the logistics chain



Lack of transparency

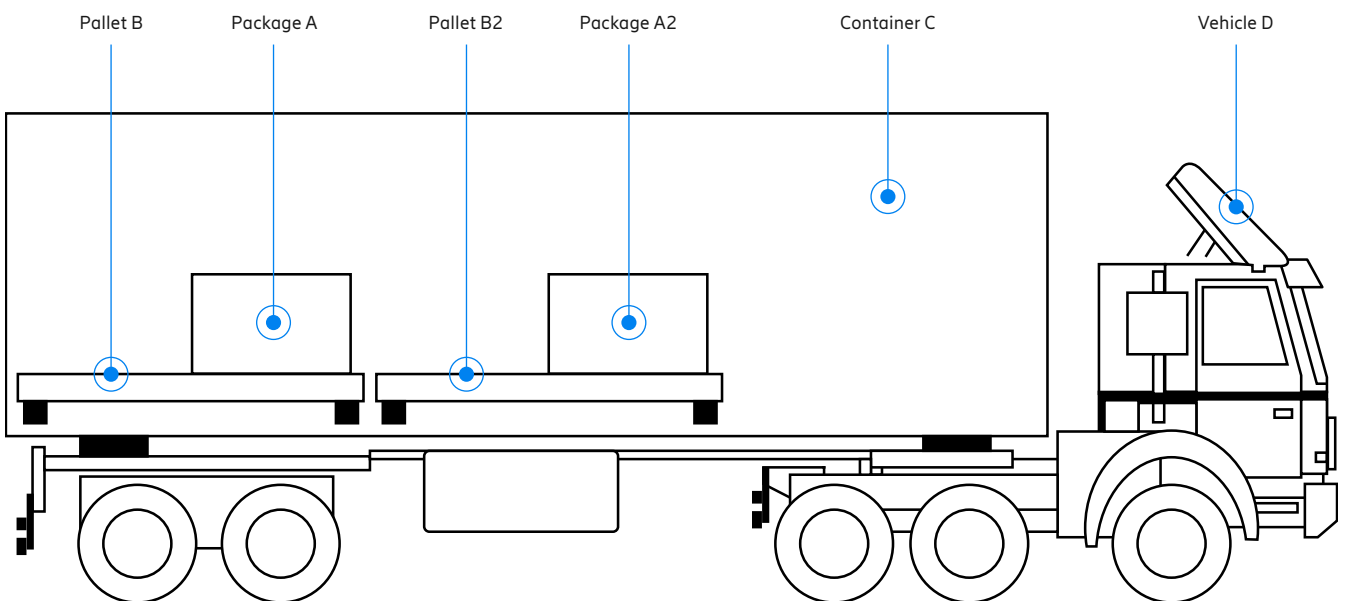
Today, there is a substantial lack of transparency across the entire logistics chain. Logistics data is typically shared within a company, or between a limited set of actors within a predefined logistics chain, using proprietary solutions. It is often handled in siloed structures, which means that information exchange between systems, or even between silos within the same system, often needs manual intervention. Integration of these systems would be a very cumbersome data mapping activity. The result of this is that logistics managers face the question, “where’s my truck?” on a daily basis.

To make it even more complex, logistics has the characteristics of nested objects. As illustrated in Figure 3, in order to know the condition and whereabouts of Package A, you need to know that it is on Pallet B, which is located inside Container C, being transported by Vehicle D. This nesting can of course change during the logistics flow, both due to physical shipping requirements and because of shifting business relationships between the partners in the supply chain.

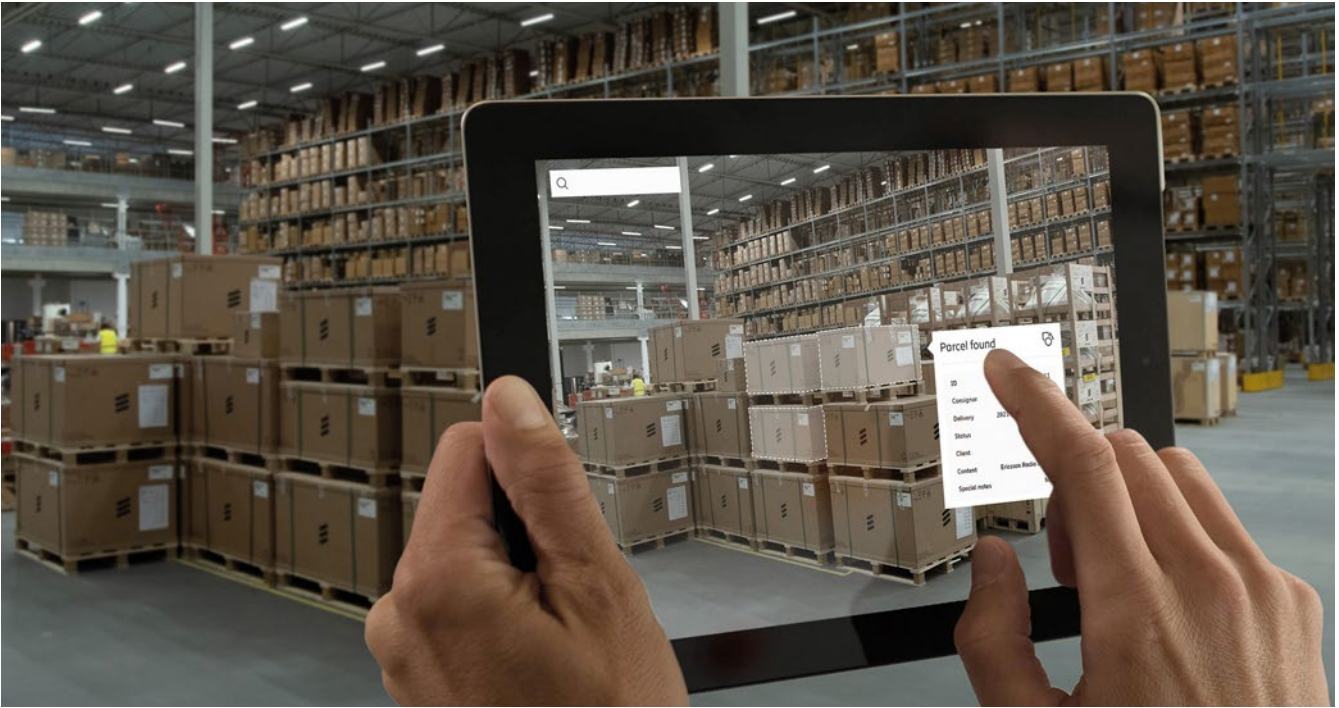
The lack of collaboration between logistics companies has several reasons. Firstly, there are difficulties in getting agreements between the many players involved.

There is also a lack of interoperability between many standards⁴ (such as UN/EDIFACT, ANSI X12 and the mode-specific ones like IATA’s CargoXML, IRU’s eCMR, or EUAR’s TAF TSI) as well as interworking between all the systems (for example process, site, system, asset and traffic management). Last but not least, there is an unwillingness to cooperate with competitors that have similar capabilities. The result is that the logistics ecosystem suffers from a lack of information exchange. In fact, 34 percent of the surveyed decision makers say that a lack of easy exchange of information with customers and suppliers is a major obstacle for improving their companies’ logistics operations today.

Figure 3: An example of nested objects in a truck



⁴ Internet of Logistics, Industrial Internet Consortium (IIC), “Journal of Innovation” (March 2020)



It's a given that connectivity is essential for advanced logistics tools, such as track and trace – how companies will connect is another question entirely

Last-mile delivery challenges

Dense urban areas have their own set of additional shipping challenges. Heavily populated areas have restrictions for traffic (for example, limits on truck size, parking and exhaust and particulate emissions). Additionally, delivery staff may require specific information about the delivery conditions, such as whether a high-rise building has an elevator large enough for the cargo. Suburban areas have their own challenges, such as the fear of “porch pirates” – thieves stealing parcels left by the door when no one is home to accept them.

Low tech and lack of connectivity

Industry experts and decision makers agreed that in many parts of the logistics chain, the technology used is far from advanced. According to the Eurostat Digital Intensity Index, transport and storage is 5th from the bottom in a list consisting of 24 different economic sectors. In fact, much of the required information flow between parties in the supply chain is managed by handling documents that, to a surprising extent, are still printed on paper.

The most commonly used technologies for communication are computers and mobile phones, with 75 and 63 percent of logistics workers respectively using these daily.

Technologies that may be seen as almost arcane are also used; in Germany, 20 percent of the workers use VHF radio daily. In interviews, transportation workers pointed out that cell coverage can be unreliable in certain rural and suburban areas, especially in the US. This poses problems when contact with the dispatcher or customer is crucial to delivery completion.

It is also notable that, from a warehouse and fulfillment center point of view, US real estate companies usually leave it to the tenants to procure, install and manage connectivity solutions, such as indoor cellular or Wi-Fi connectivity. Since this type of connectivity is more or less mandatory when enabling advanced digital logistics tools, having to also build, own and operate a wireless solution is one more headache for warehouses and fulfillment centers. Almost 40 percent of decision makers say that a lack of good digital tools and reliable mobile connectivity keep them from improving their companies' logistics operations. Additionally, three in five decision makers strongly agree that better logistics tools (such as for track and trace or visualization) would improve their companies' capability to deliver on time. Better logistics tools could also have a positive impact on the fill rate of freight transports, such as road freight, as well as help reduce the amount of empty runs, which make up 15–30 percent of journeys in the EU.⁵

Examples of documents required and used throughout the logistics process include:

- quotations
- pro-forma invoices
- purchase orders
- commercial invoices
- packing lists
- packing declarations
- letters of instruction
- insurance certificates
- certificates of origin
- CITES certificates
- phytosanitary certificates
- shipper's declaration for dangerous goods
- inspection/quality certificates
- letters of/documentary credits
- house waybills
- air waybills
- house manifests
- export/import goods/cargo declarations
- customs release documents
- flight manifests
- transfer manifests
- transit declarations
- security declarations
- freight book lists
- delivery notes
- approvals/exemptions (government)
- bill of lading
- FIATA multi-modal bill of lading
- CMR

⁵ Eurostat, Road freight transport by journeys characteristics:

www.ec.europa.eu/eurostat/statistics-explained/index.php/Road_freight_transport_by_journey_characteristics#Average_vehicle_loads

Logistics tomorrow

In an increasingly connected world, an interest in greater transparency and efficiency within the industry could lead to pre-emptive logistics sooner rather than later.

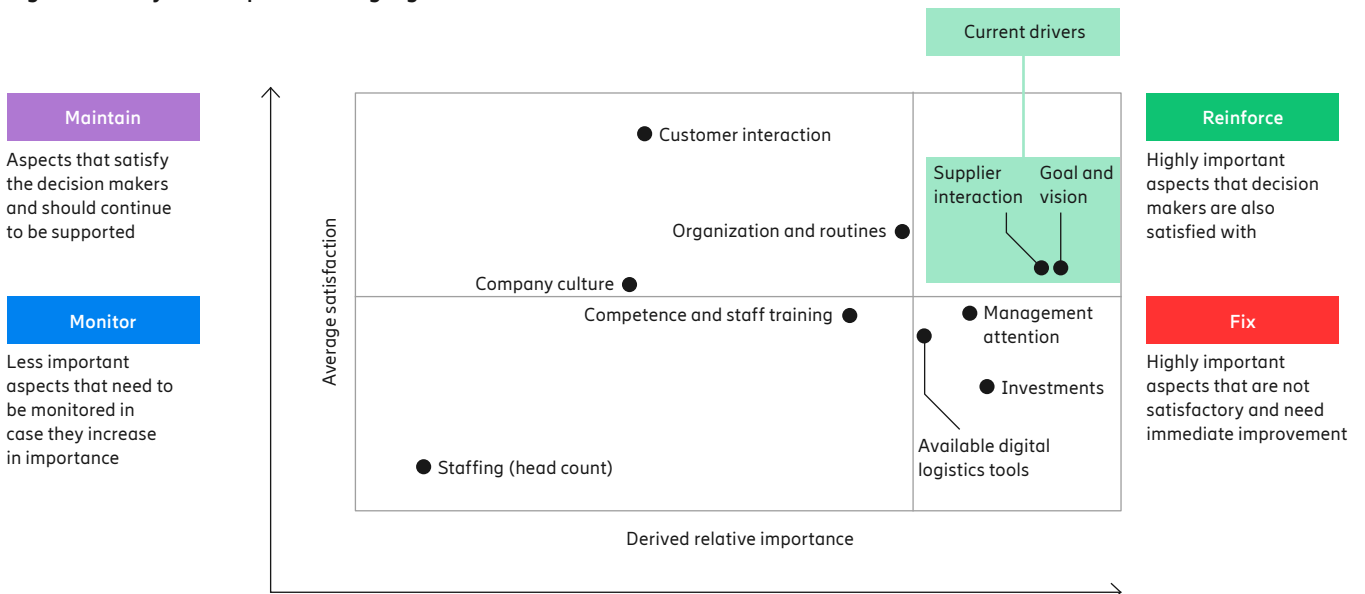
While the majority of decision makers in the surveyed companies are satisfied with their overall logistics operations, they still identified several areas for improvement. One explanation for this could be that many of the studied companies have taken several necessary steps towards evolving their logistics operations, such as setting a relevant vision and associated goals, and ensuring that the interaction with suppliers is set up in an adequate way. As can be seen in Figure 4, these aspects can be thought of as reinforcement activities. Digital tools, adequate investments and overall management attention have also high derived relative importance; however, these are not yet at the desired level of satisfaction in the logistics industry.

Among the decision makers, staffing – with regards to both head count and competence – has a lower relative importance and satisfaction, meaning it is less urgent to fix. The customer interaction, company culture and organization aspects in the “Maintain” quadrant (Figure 4) already satisfy the decision makers and should continue to be supported, even though they have a lower derived relative importance.

With the world becoming increasingly connected, there are many opportunities to improve logistics by using the available data gathered and shared throughout the logistics chain.

The first step on this path is connecting tools and shipments to be able to understand, visualize and analyze operations within the company (Figure 5). The next steps involve achieving the transparency required for all relevant parties to understand the location and status of shipments at all times. This implies sharing data. In such a scenario, all parties will be able to see where and in what condition the shipments are (age, temperature, vibration, etc.), which would allow them to plan more efficiently and deliver far better customer experiences throughout the value chain. Sixty-eight percent of the decision makers in the study say it will be very important for their companies to be part of such information sharing systems in the next three to five years.

Figure 4: Analysis of aspects driving logistics evolution

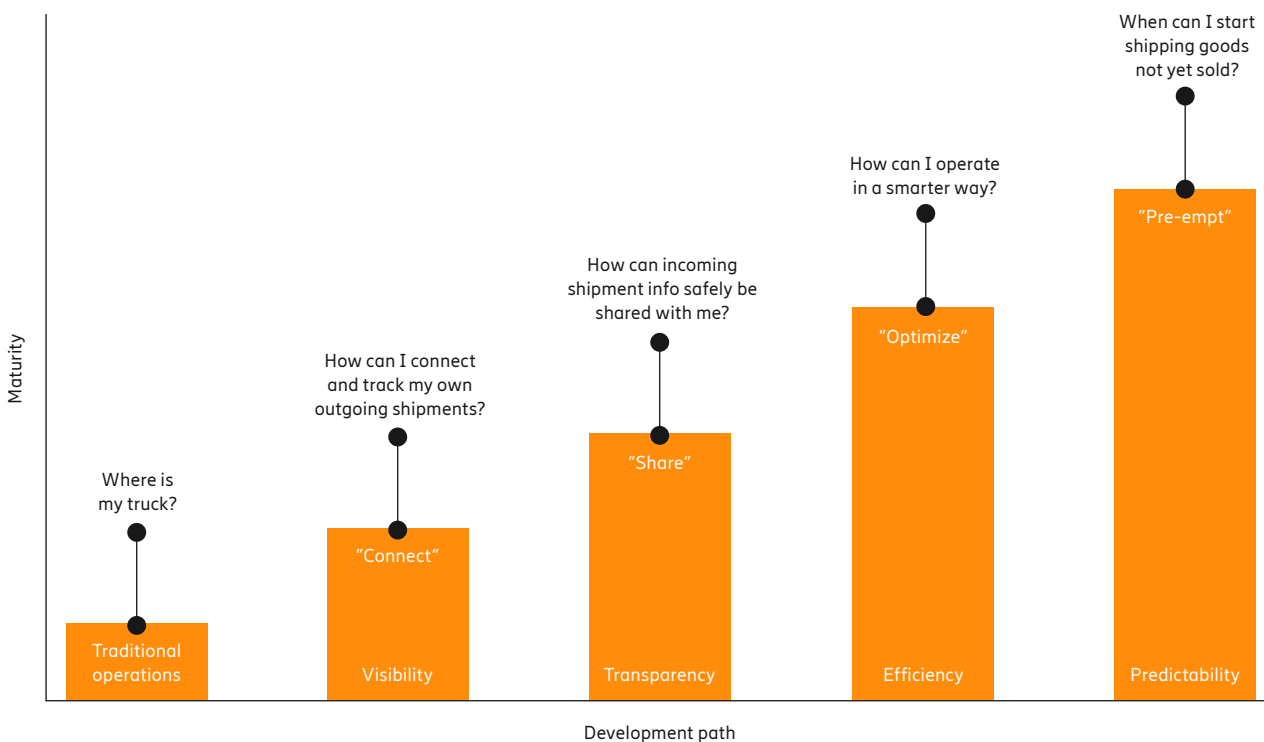


Source: Pre-emptive Logistics report (July 2020)
Base: 667 logistics decision makers in China, Germany, Sweden and the US



The road to pre-emptive logistics is shorter than it may seem, as many companies expect to be shipping pre-emptively within three to five years

Figure 5: The necessary steps to achieve pre-emptive logistics





Distribution of goods will become pre-emptive through the marriage of massive IoT and AI to optimize logistics resources.

Creating a logistics information sharing system for greater transparency

One way to create a data sharing system that many can easily connect to is to base it on web technology. The internet has evolved over time to produce dynamic content, security has improved, and efforts have been made to ensure that the data is suitable for machine learning. An example of this is the International Air Transport Association's (IATA's) ONE Record. This uses a URL for each shipment, which is populated by each party along the logistics chain. Although it is still not widely accepted or implemented, it is encouraging to see that large international organizations like IATA are driving innovative, powerful, paperless initiatives to achieve transparent logistics data sharing.

Pre-emptive logistics

The evolution of logistics does not end with increased transparency and efficiency. As shown in Figure 5, these improvements rather lay the foundation for the final step – pre-emptive logistics. In such a system, it is possible to predict the demand for products, services and solutions before customers even make purchase decisions. This means that shipments of goods can be started proactively. The improved planning time enables a more efficient and sustainable choice of transportation methods, such as using low-peak traffic periods and optimally filling transports.

This will have ripple effects throughout the supply chain. Even this early stage of the logistics evolution is not far away; 67 percent of the studied companies say they will use AI and data analysis to match

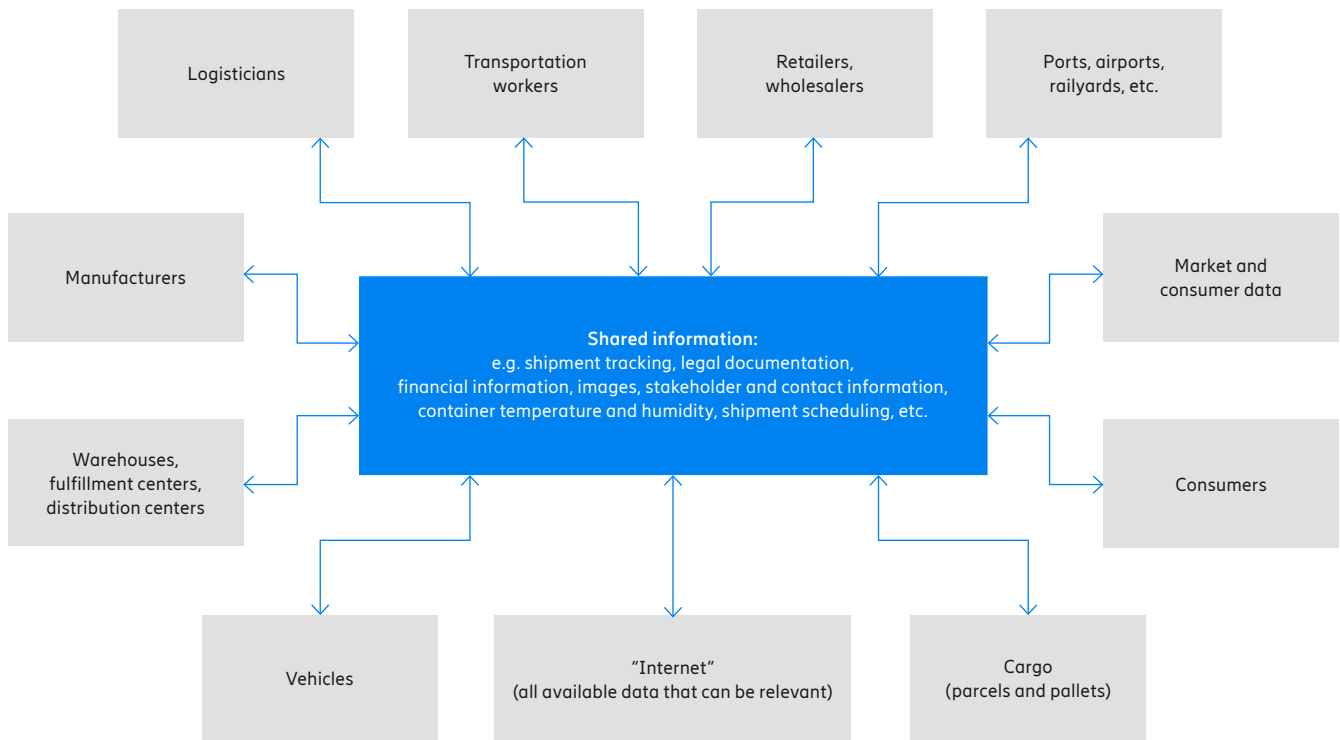
logistics needs with capabilities within the next 5 years, and 19 percent are already doing it to some extent. Furthermore, 64 percent of the studied companies say they will ship pre-emptively in the next 3–5 years.

Although pre-emptive logistics cannot yet be considered to be widely implemented, there are some early attempts at enabling developments in that direction.

64%

Of the companies studied, 64 percent say they will ship pre-emptively in the next 3–5 years.

Figure 6: Shared information is a key requirement for pre-emptive logistics



In a pre-emptive logistics system, the role of fulfillment centers and warehouses is likely to change. While some storage is absorbed by other parts of the supply chain, one of the lessons learnt from the ongoing COVID-19 pandemic is likely to be that critical goods and materials, be it ventilators, alcohol sanitizer or face masks, will also need local storage in the future.

Pre-emptive logistics should therefore be seen as more than simply a slimmed down, cost-minimized, "just-in-time" delivery of goods. A truly pre-emptive logistics flow should be capable of handling huge global shifts both in consumption habits and delivery capabilities. Such a system could even enable cross-competitor information-sharing and collaboration, where the burden of extra warehousing can be shared, rather than duplicated, between many actors in order to achieve "virtual" extra storage. Perhaps this could even become a key driver for creating the transparent ecosystem that enables information sharing as outlined earlier.

Eighty-six percent of the companies in the study plan to use on-demand warehousing in the next three to five years, which shows that the need for warehousing will continue – but they do not necessarily need to have it in-house. This indicates that fulfillment centers and warehouses will continue to be a significant component in the future logistics system. In some fulfillment centers, such as those belonging to Amazon and Chicago-based solution provider ShipBob, a certain level of pre-emptive action is already being applied. ShipBob has embedded digital tools in their fulfillment solution, tracking key performance indicators (KPIs) for all their clients (who, typically, are online retailers). This enables ShipBob to predict, for example, spikes in sales, and then advise clients on the best course of action. It may be best to increase manufacturing accordingly, or alternatively they could reallocate inventory between fulfillment centers across the US if sales are predicted to go up in a certain part of the country and down elsewhere.

"If we're tracking a truck and see that it is 47km out, the driver has plenty of hours of service, the speed is 52mph, there's no real traffic ahead ... and we're able to see real-time events, like he's running out of gas or he has a hard break because an animal runs out and he hits it, which we would get from the sensors on the bumper. Then we can send a notification that this shipment is in jeopardy, and the facility can start to adjust the appointment so that the dock at the distribution center is optimized."

Jett McCandless, CEO, Project44, Chicago

"[In the wake of the COVID-19 pandemic] we might see an increase in the use of intermediary warehousing. This crisis is showing the vulnerability with globalization and the whole concept of lean production. There are naturally limits to how much you could increase warehousing, so we might be talking about expanding it enough to last a couple of extra weeks."

Fredrik Sjöholm, Professor, Department of Economics, Lund University

Sustainability is increasingly important

Although the main focus is on ensuring reliable, cost- and time-efficient operations, sustainability is becoming an increasingly important driver for logistics enhancements. Of the decision makers surveyed, 54 percent strongly agree that customer interest in decreasing their carbon footprint will be high in the next 3–5 years, and 67 percent strongly agree that sustainability requirements will impact their own logistics operations in the next 3–5 years.

Sixty-nine percent of decision makers agree that the electrification of vehicles and tools such as labeling machines will be very important going forward. The increased use of electric vehicles can sometimes be driven purely by economics, but will also most certainly contribute to achieving sustainability targets and improving brand value.

Another facet of sustainability is the geographical origin of goods. Sixty-three percent of decision makers strongly agree that their customers will be interested in the origin of products and offerings in the next three to five years. If this materializes, it could have a limiting effect on the growth of long-haul logistics.

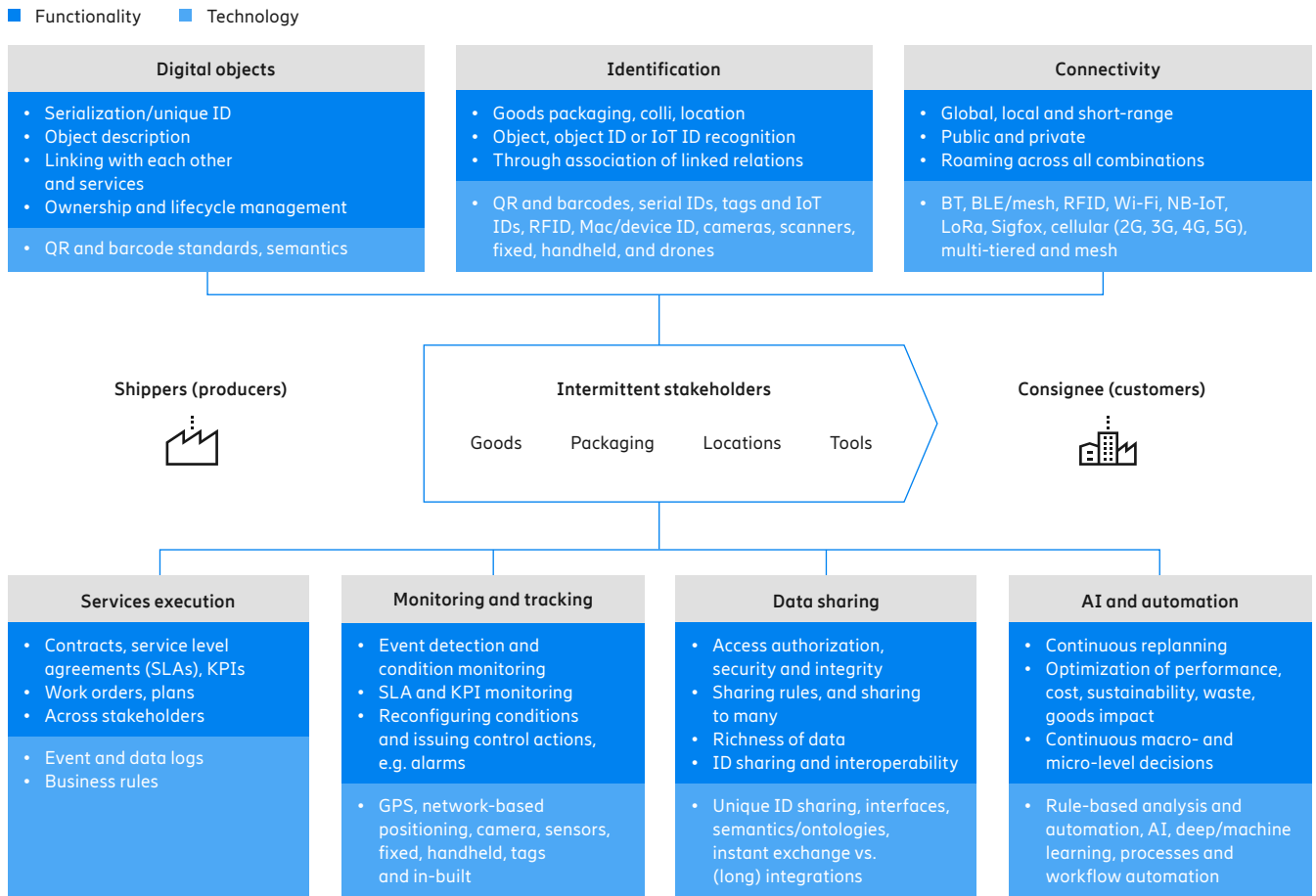
With the arrival of transparent logistics, customers will get information about how their goods are transported. Those who care about the environment will likely react if the container or vehicle is not full to capacity. This is something to be considered for express or same-day deliveries.

Changes in attitudes and expectations are already driving innovation, enabling customers to choose more eco-friendly deliveries. For example, MatHem informs their customers which intervals would be the most environmentally friendly choice, as they would coordinate with several other deliveries in the same geographical area. In this way, MatHem enables the customer to reduce the carbon footprint associated with the delivery of their grocery purchase.

“If a shipping option was ground-shipping entirely by electric vehicles, I absolutely guarantee there will be people picking that. Customers would pay more to have it shipped in a certain way.”

Marcy Capron Vermillion,
Co-founder, Equilibria,
Chicago

Figure 7: A nested approach to technology is needed where a range of technologies can contribute (non-exhaustive)



Technology evolution and adoption is required

Interconnectivity and communication throughout the entire logistics chain are key requirements when enabling a pre-emptive logistics solution. A nested approach to technology is needed in order to connect the logistics process and its nested objects, and a range of technologies can contribute. Cellular wireless connectivity can deliver the wide-area coverage needed to provide an end-to-end solution. Indoor facilities can be enhanced with local connectivity solutions, such as reliable private cellular networks or best-effort Wi-Fi networks, depending on needs. IoT technologies like NB-IoT or Cat-M, or short-range technologies such as Bluetooth (BT), BT mesh or Bluetooth low energy (BLE) can provide cost- and energy-efficient communication between the many sensors and devices employed both at sites and inside vehicles.

QR, barcode and RFID scanners will rely on these technologies when registering the movements of, and events related to, packets, pallets and containers between logistics assets such as warehouses, trucks and ships. Video recognition and surveillance equipment can also be highly effective at tracking movements,

automating work that is typically manual. A full range of technologies and how they fit within logistics are detailed in Figure 7.

Decision makers in the study agree that digitalization, connectivity and improved logistics tools are important enablers in order to achieve the described progress for the logistics sector, as illustrated in Figure 8. This can also be seen in their logistics investment prioritization. Their number one priority is to get improved digital logistics tools, followed by implementing wireless connectivity as a base to be able to use other tools. No less than 61 percent of decision makers ranked improved logistics tools as being in their top 3 priorities for investment, and 54 percent said the same for wireless connectivity.

Seventy-three percent of decision makers agree that both wireless connectivity and asset tracking will be very important in the next 3–5 years. These two technologies will be key when eliminating today’s problems with visibility and will also strengthen wider capabilities, such as advanced operational analytics, route optimization and risk management.

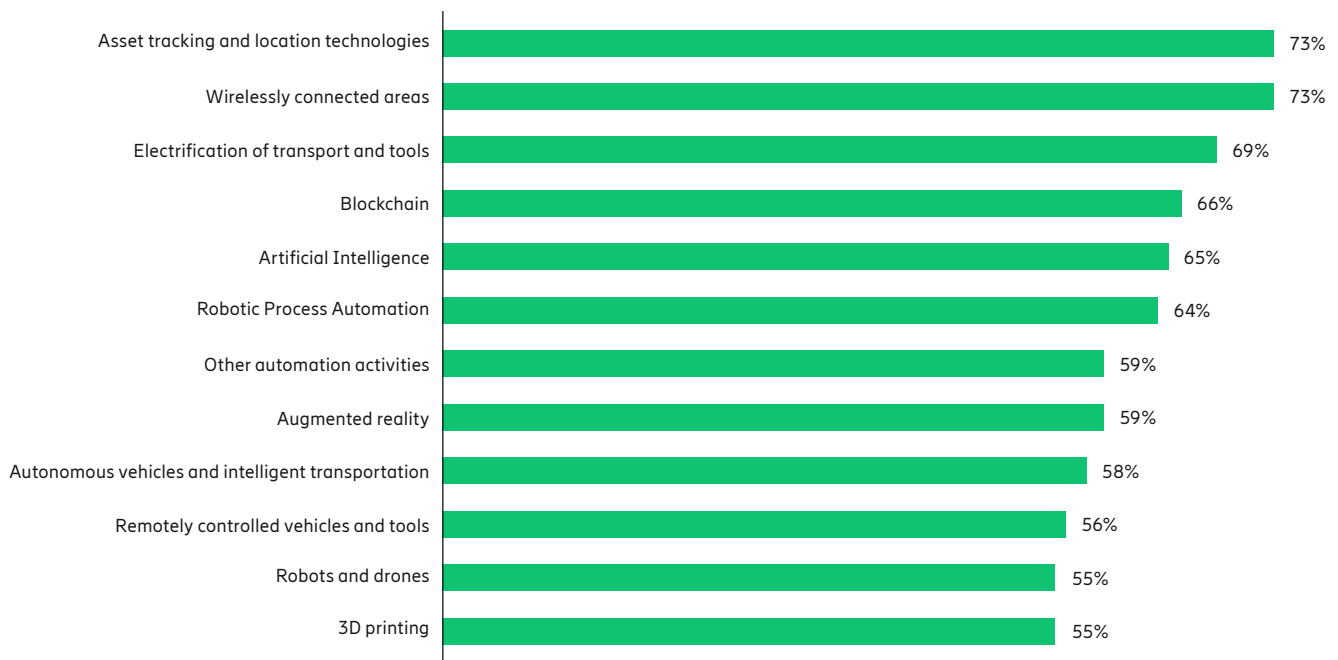
According to Berg Insight, more than 25 million intermodal containers and over 14 million trailers are currently in use worldwide. By 2023, it is estimated that one-third of trailers and 15 percent of containers will be connected. Based on the insights from the interviewed decision makers in this study, these estimates seem to be on the low end of the scale.⁶

Two-thirds of the surveyed decision makers also see great potential in Blockchain technology, which could potentially improve logistics processes if they are used in an efficient way when it comes to their electricity usage.⁷

⁶ Trailer and Cargo Container Tracking – 7th Edition, Berg Insight, M2M Research Series (2019)

⁷ Ericsson IndustryLab, “A quick guide to your digital carbon footprint” (February 2020)

Figure 8: Percentage of decision makers that agree each technology will be very important to their company in the next three to five years



Source: Pre-emptive Logistics report (July 2020)
Base: 667 logistics decision makers in China, Germany, Sweden and the US

Many agreed that process automation using software bots for a high number of repetitive and basic back-office tasks will be very important in the next three to five years. They see this as a very effective way to save costs, raise efficiency and reallocate logistics workers from low-skilled tasks such as form filling or data cleansing to more advanced tasks. Furthermore, no less than 64 percent of decision makers agreed that AI will be very important for their companies as it can address challenges such as merchandise planning, change planning, risk management, freight optimization, workflow management and smart manufacturing.⁸ For instance, AI will be able to analyze and suggest actions by matching transport requirements with the current condition of goods.

Barriers to achieving pre-emptive logistics

The first step to achieving pre-emptive logistics is to establish data sharing throughout the logistics process. The resulting benefits of improved efficiency and customer experience for everyone in this system need to outweigh the risks of potentially exposing crucial data to competitors. The reasons for safeguarding data from the competition are obvious: the information exchanged could be highly confidential.

There is pricing, volume, customer and supplier information within these datasets, so even peer-to-peer data sharing agreements could be challenging to achieve. So far, logistics companies have not betted on achieving a better overall system by availing data to any non-proprietary sharing system, despite their stated interests in such sharing, as discussed at the beginning of the “Logistics tomorrow” chapter.

The varying rules regarding how to use and handle consumer data could become a barrier, as an information sharing system would likely have to be global to be effective. A system that encompasses different regions and countries will have to contend with their varying consumer data protection regulations, as well as different cultural views on privacy altogether. The fragmentation and large number of players in the logistics industry, in conjunction with the lack of cooperation, poses the risk that different technology solutions will be chosen throughout the logistics chain. The cost of achieving interworking, and thereby transparency, could therefore become too high.

Finally, the fear of breaching the integrity of end customers (if the system is not secure and handled in a way that safeguards privacy) could prevent data sharing from happening.

The long-lasting effects of COVID-19 are at present hard to predict, but financial turmoil and economic downturn is likely to lead to shifting volumes and revenues throughout the logistics sector. For many, these changes will mean significant loss of revenue, while other parts of the ecosystem might even increase their turnover due to shifting consumer behavior. For example, restaurant revenues have slumped while grocery store revenues boom due to increased home cooking.

The current global trend towards protectionism could mean that an increased number of sectors or parts of the business are closed for free trade, and that markets will be restricted to regional, trade alliance or even national marketplaces. This would fragment the logistics industry further, making it difficult to uphold data sharing across borders.

⁸ AI is a wide term and can refer to machine learning, predictive analytics, cognitive computing and more

The role of mobile network operators

Connectivity and communications will be an important part of tomorrow’s logistics systems. Decision makers in logistics are waiting for mobile network operators to take the lead.

Importance of gaining more trust

Decision makers, as concluded earlier in this report, agree that mobile connectivity is one of the cornerstones of the continued evolution of logistics. However, in interviews, decision makers also claim that mobile network operators have so far not invested in the necessary competence and bespoke offerings (even with partners) to seriously engage with logistics. Nor have they taken steps to capitalize and expand on offerings beyond the basic connectivity provided, they claim. The absence of engagement with this sector is probably one of the reasons for the lower levels of trust awarded by decision makers (Figure 9).

It is perhaps natural that IT solution providers who are active in the logistics space today are the most trusted,

along with forwarders and major carriers, as shown in Figure 9. Well over half of all decision makers say they place high trust in these bodies.

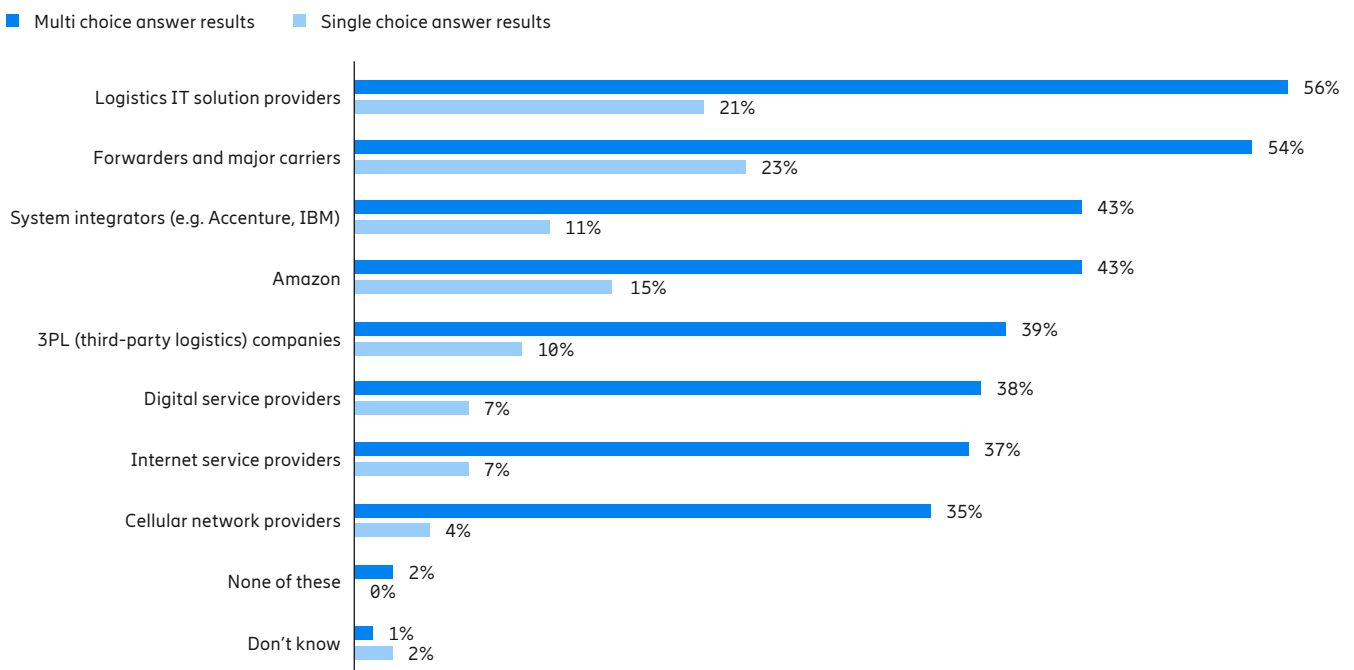
Mobile network operators could play a substantial role in logistics digitalization based on their network assets and competence. Both public and private networks, and combinations of these, could be of major interest to companies looking to connect shipments and assets for logistic chain transparency, as well as for improved tools. Cellular solutions are key to enabling warehouse automation and flexibility including automatic guided vehicles, real-time track and trace solutions (including vibration and temperature sensors), workforce communication

and management, health and safety (using AR/VR), predictive maintenance and remote asset control. The interviewed decision makers agree that, given the position of network providers, it should be a natural step for them to take on the role of connectivity and communication orchestrators in the logistics arena.

“5G will definitely help – it will be a big leap forward compared to what we can do today with 4G. It will enable us to integrate and coordinate devices so that data can flow throughout the supply chain.”

Aljosja Beije, Logistics and Technology Lead, BlockLab, Chicago

Figure 9: Decision makers’ level of trust for various potential business partners



Source: Pre-emptive Logistics report (July 2020)
Base: 667 logistics decision makers in China, Germany, Sweden and the US

A glimpse into the future

Developing technology in terms of connectivity, data sharing and even the vehicles themselves is enabling the logistics industry to evolve towards a truly pre-emptive future.

The decision makers and business users interviewed in this study agree that the trends of sustainability, self-driving vehicles, electrification and sharing are important to reach a truly pre-emptive state.

Without drivers or other staff, transport vehicles including planes and ships could be constructed very differently and be operated in new ways. Transport design will be continuously optimized for the new conditions and goals that sustainable, driverless transports, with fewer time constraints to reach their destination, will mean. As an example, consider the trucks that the Swedish logistics company Einride manufactures.

The dimension of this truck and the speed with which it drives itself are both very different from a normal truck. It does not need to transport a person safely, nor optimize the cargo vs. driver cost parameters. With pre-emptive logistics, where transportation could take place ahead of time and perhaps at even lower speeds, new dimensions for optimization will be added into the design specifications. New driverless electric vehicles have already altered design criteria; now pre-emptive logistics is adding yet another dimension.



Pods like this could be a common sight in the future, as new technologies inspire and shape vehicle design

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

www.ericsson.com