

A vertical strip on the left side of the page features a 3D paper-cut effect. The top portion shows a red and white Union Jack, which is cracked and peeling away from a blue background. Below the crack, several yellow stars are visible, representing the European Union flag. The overall effect suggests a transition or a break in a traditional state.

IoT in the supply chain to help beat the Brexit Blues

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Background statistics of trade between EU and UK

Britain will leave the EU soon, in March 2019, but still uncertainty prevails on how would trade relationship look post Brexit. As UK and EU have strong trade relations, Brexit will have an impact on the global economy. To put it in figures, while the UK's biggest individual export trade partner is the US, the majority, over 62% of all UK exports went to the 27 EU Member States during Q1 2017, totaling £33.1 billion. During this time-period, the UK's top import partner was also an EU Member State, Germany, with £17.6 billion worth of goods. Within the EU, the UK exports most of its goods and services to Germany, France, Ireland and the Netherlands. Goods from all industrial sectors are shared between the EU and UK. The food and drink industry is the EU's biggest manufacturing sector and trade in agri-food products account for 11% of all trade flows between the UK and the EU. In 2016 alone, 3.6 million shipping containers from the EU passed through UK ports, carrying more than 50,000 tons of food per day. The food products in transition include meat, cheese, fruits and vegetables, cereals, milk along with large quantities of raw and processed ingredients, animal feed and beverages. A snapshot of UK's food and drink industry is as below:

Main industries affected

Food & Beverages



Automotive



Pharmaceuticals



Manufacturing



Chemical



Food and drink accounts for 16 % of total manufacturing turnover in the UK	UK farmers received almost €3.1bn in direct payments from the EU CAP scheme in 2015	72% food and non-alcoholic drinks exports are to the EU	£18bn The value of food and drink exports in 2015
£201bn Total consumer expenditure on food, drink and catering in 2015	52% of food consumed originated in the UK	10million tons of food and drink wasted in the food chain annually in the UK	98% of seasonal workers originate from the EU

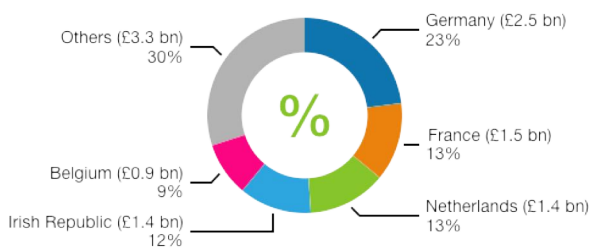
Background statistics on trade between EU and UK

The post-Brexit scenario is expected to affect not only the food industry but it appears to be also threatening for the automotive, manufacturing, pharmaceutical and chemical industries. The UK automotive industry alone generates around £80 billion in revenue each year. There are over 2500 automotive suppliers in the UK along-with manufacturers that are producing component parts as well as sports cars, buses, commercial vehicles, and mainstream models. Direct exports to the EU account for over half of all UK exports in the automotive industry. The number is equally significant when it comes to the import volumes to UK from EU. For e.g. the average UK-built car has about 6,000 parts and the majority of them comes from EU by passing across borders between Britain and other European countries several times during the assembly process. Airbus spends about £5bn each year on the UK supply chain by moving parts between UK and EU with wing making operations at Broughton in north Wales and Filton. Post Brexit scenarios seem to affect the vast supply chains of big players in automotive industry.

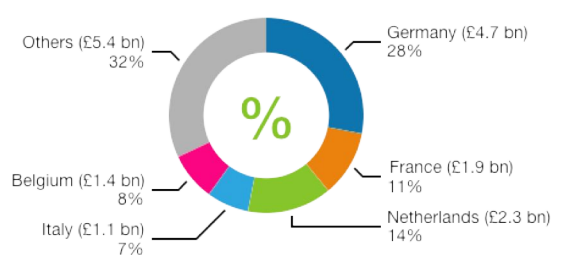
Within the pharmaceuticals industry, every month, 45 million packs of medicine move from the UK to the EU, with 37 million moving the other way around. UK pharma exports to the EU were valued at around \$15bn. Pharmaceutical products are among the top 5 products that are imported and exported from the UK to the EU and vice versa. These products represent 8.2 percent of goods exported from the UK and 5.3 percent of goods imported to the UK.

The chemical industry is also an important part of the economic relationships between UK and EU. The products and technologies imported and exported across borders are used in a wide range of sectors such as aerospace, automotive, pharmaceuticals etc. 60% of chemical exports are destined for the European Union, whilst 75% of chemical UK imports, many of which are essential raw materials, arrive from the EU. The overall trade between EU and UK can be analyzed in figure below:

UK exports to the top 5 EU partner countries



UK imports from top 5 EU partner countries



Effect of Brexit on trade

Currently, the goods can enter or exit UK with minimal delay, allowing for frictionless trade between the two unions. For example, fresh fruits and vegetables can go onto trucks in Spain on Monday to UK stores by Thursday, without going through any border checks having still with five days long shelf life. Currently, there are no tariffs, quotas or taxes and companies enjoy free movement of goods, services, capital and people between UK and EU. With Brexit, there will be new trade deals and regulations among European trading partners and other countries. Without any explicit agreement, movements of agri-food and drink products and other exchanged goods in both directions would be subject to the usual formalities with third countries. This could affect the supply chain in many ways.

Brexit will affect the global supply chain in terms of performance, food waste, monetary loss, increased inventory cost, sustainability and reduced competitiveness!

Possible concerns arising post Brexit

Import/Export Shift



The shift of imports and exports could affect performance as companies lack sound strategy to find new routes.

Sustainability



With the stricter new environmental regulation, companies might also need to monitor the carbon footprint of their supply chains.

Food Waste



Enhanced border controls and regulatory checks could cause delays and food getting rotten at borders

Monetary Loss



Costs of delayed goods include warehousing costs, lost sales, reduced customer satisfaction, performance deliverables and inventory financing costs.

Inventory Cost



Fear of having products well on time could cause stockpiling which could lead to increased inventory cost in long run.

Competitiveness



Extra paperwork for import/export will increase the cost of the final product thus keeping many suppliers out of competition. Due to less admin efforts, EU businesses will prefer to do business with EU companies making UK less competitive marketplace.

What can be affected negatively by Brexit?

1 Shift of Import and exports



According to a [report](#) from financial times, as a result of Brexit, 63 % of EU27 supply chain managers who work with UK suppliers are expected to move some parts of their supply chains out of Britain and 40 % of UK companies said they are looking to replace their EU suppliers. Along with current suppliers, companies might look to establish more business with other global suppliers located in different parts of the world. With this shift of suppliers, there will be changes to the supply chains of companies by new factories, new supply routes and relying on new freight operators in different parts of the world. This would require companies to have a sound strategy to anticipate the best possible trade routes for imports and exports. They would need a solution that could help them assess performance and risks to take the right decision with the right insights to develop the adequate strategy. Predictive analytics would be considered as next big thing helping in supply chain optimization. The ability of being proactive and anticipating the future is what is making predictive analytics the next big thing in supply chain business intelligence. It can help by supporting the decision making process and the evaluation and optimization of the different travel paths available for imports and exports post Brexit.

2 Sustainability



As a result of border controls and enhanced regulations between EU and UK, there is potential for growing interests in non-EU imports and exports. One of the [reports](#) from Green Alliance and the food and the Nature task force believes that along-with increased non-EU imports, the quality of food and agriculture would deteriorate, increasing UK's food footprint. For e.g. although beef is more than twice as expensive to produce in the UK as in Brazil, the environmental impact of Brazilian beef is nearly 3 times higher mainly due to deforestation. Importing Brazilian beef would vastly increase the UK's food environmental footprint. New regulations post Brexit could introduce new environmental quality metrics. Some of these metrics might include high quality food standards to guarantee UK food and environmental standards not to be weakened by imported goods and that all imports meet the same environmental standards as UK produced goods. With the stricter environmental regulation predictions post Brexit, companies might also need to monitor the carbon footprint of their supply chains. The carbon footprint of a product's supply chain includes emissions from its raw materials, manufacturing, storage and transportation. Supply chains can be responsible for up to four times the greenhouse gas emissions of a company's direct operations. Thus, managing the footprint can have a significant effect on the company's overall environmental performance.

What can be affected negatively by Brexit?

3 Increased food waste



Trade is vital to the agri-food industry in the EU and UK, EU being the UK's largest trading partner in agri-food products accounting for around 60 percent of exports and around 70 percent of imports. Currently due to frictionless borders, even the most perishable products such as fruits and vegetables can be transported from Spain but still have 5 days shelf life in store or fresh beef can be transported from Ireland, minced and still have up to 10 days shelf life. The predictions on trade post Brexit have caused concerns about the time that additional checks on food imports would take. Any additional checks at customs could choke the UK's ports and threaten the availability of some food products for UK consumers. With enhanced border controls and regulatory checks implemented, there would be more delays, increased transit times and it could even result in failed deliveries. Delays due to border controls will reduce the shelf life of products, driving up food waste or, in the worst cases, meaning it is not good enough to put it into store. It could lead to food getting rotten at the borders.

4 Monetary loss



Monetary effects post Brexit are as significant as other major impacts. To understand the monetary loss in the supply chain, consider the example: companies incur significant losses due to the food getting damaged or rotten while in transit. An estimated \$750 billion is lost each year from poor cold-chain management (where items are spoiled between production and distribution because they have been stored at an incorrect temperature without being noticed). This amount can be predicted to increase further due to the fact that food might get rotten at the border control checks, delays in transport or due to longer new routes.

Additional border controls will result in increased journey times and higher operating costs, both in terms of the costs of running the fleet along with potentially other tariffs and administration work within the back-office. The increased lead time can also affect the production causing delayed time-to-market of products leading to further monetary losses. To demonstrate, Jaguar Land Rover in one of its plants in UK builds 1,500 cars per day using 15m components and any delay to parts delivery would suspend production, at a cost of £1.25m per hour. Furthermore, associated costs of delayed goods or components can be massive, including warehousing costs, lost sales, a reduction in customer satisfaction, performance deliverables and, significantly, inventory financing costs.

What can be affected negatively by Brexit?

5 Inventory stock increase



The possibility of new trade barriers or tariffs post Brexit will have a significant impact on inventory management. Increased regulations might lead to products in export and import ending up stuck in customs warehouses thus increasing the overall lead time. In general, extended lead times could result in companies' carrying more inventory and taking on additional warehousing capacity. With the fear of having products well on time particularly medicine shortages, companies are already stockpiling various products which could lead to increased inventory cost in long run.

6 Effect on Competitiveness



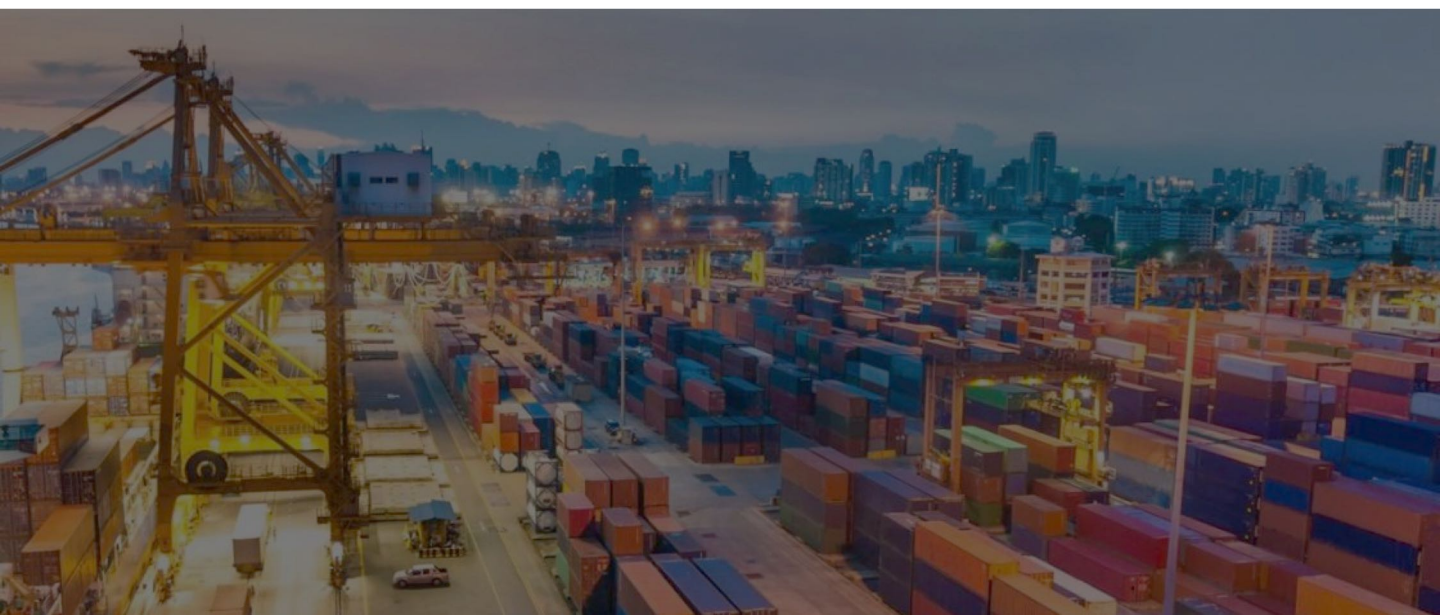
The imposition of strict border administration and customs tariffs are set to threaten the supply chains of all the industries, by driving up costs and inefficiency of the logistical operations. For e.g. the restriction of free movement is estimated to cause an ~ 8% hike in the prices of cars post-Brexit. Most automotive manufacturers follow the 'Just-In-Time' philosophy that dictates the direct incorporation of parts and accessories in a car. Since most components arrive at the production facility just hours before assembly, regulations and customs barriers are sure to cause a disruption in the supply chain in terms of lead time as well as cost. As a result, even short hold-ups at custom border would cause big problems for the complex supply chains involved, making Britain a less competitive marketplace. Furthermore, enhanced border control is likely to lead to extra paperwork for import and export declarations and charges for goods passing both into and out of the UK, as well as taxes, duties, tariffs and import VAT. This will increase the cost of the final product thus keeping many suppliers out of competition.

To help mitigate the issues posed by Brexit on trade, importers and exporters in Britain need to invest in creating new, agile supply chains through the innovative technologies. Planning in the context of the potential impact for the business will be crucial to understand the extent to which companies will be able to adapt to the new world post-Brexit.

How can IoT technology help to beat the Brexit blues?

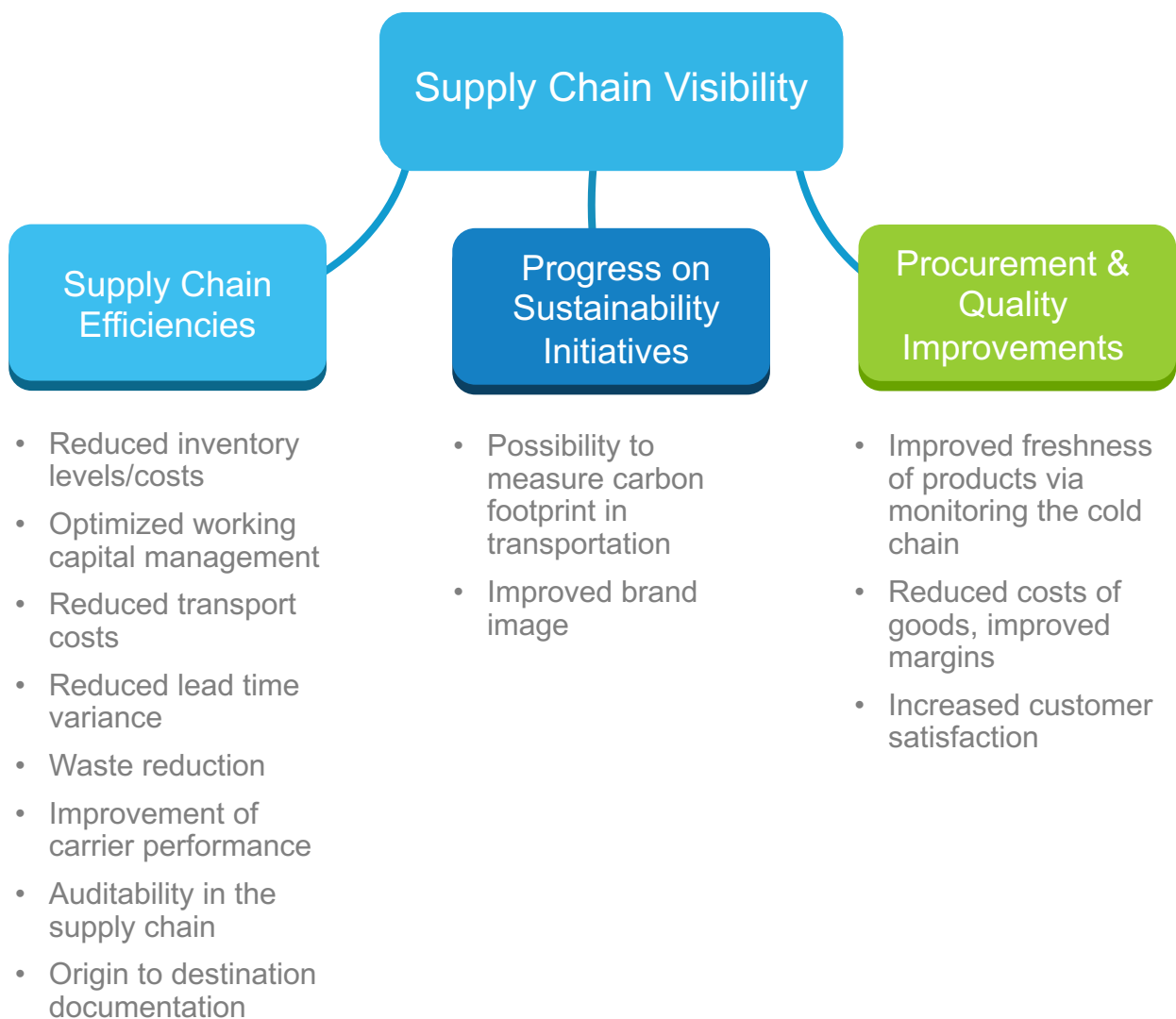
One of the essential requirements for transportation is to keep “the wheel moving”. More regulations cause more halts, leading to less efficient supply chain processes. In order to keep up with the uncertainties and changing regulations, companies will need to invest in technology solutions that allows end to end visibility in the supply chain processes - an important aspect to be considered for any post-Brexit strategy. IoT in collaboration with big data analytics help businesses to go from being reactive to being proactive. Thanks to the immense capabilities of IoT, supply chains can benefit from live data as it provides unprecedented visibility into every process and transaction within the supply chain. The live data gives the supply chain leaders and decision makers some security in form of insights during the unpredictable changes brought about by Brexit. Also, the prescriptive insights obtained from the big data lead to a decrease in risk of damage and waste, thereby generating more effective operational results and revenue potential.

IoT offers significant opportunities for reducing food waste in the supply chain. Along-with tracking the location of the shipments, tracing internal conditions for e.g. temperature, humidity, shock of cargo moving goods is of utmost importance to ensure food safety and quality. The adoption of IoT can provide a way to limit negative disruptions that could happen post Brexit. The ability of IoT to collect data from telematics and sensors, combined with analytics tools such as AI, means a richer understanding of where the goods are in transition and what is happening across the supply chain which in turn helps in better decision-making. IoT enabled supply chain visibility helps companies to know where their inventory is located, whether carriers are providing the right service levels, and where are the bottlenecks and inefficiencies are in the supply chain. Manufacturers and other suppliers within EU and UK must begin their plans for Brexit now and use those plans as a means to create a ‘business as usual’ scenario where they can confidently continue their much-needed investment and improvements.

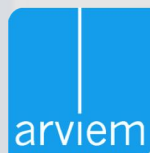


The business case for supply chain visibility solutions towards Brexit risks

Beyond reducing risks in the supply chain, supply chain visibility solutions offer quantifiable business results. This value created by visibility solutions could pay for supply chain visibility and cargo monitoring systems and justifies their implementation.²



Is your organization uncertain about the risks Brexit could bring to the supply chain? Are you looking for innovative solutions to help mitigate the arising risks? Arviem's service can help you provide end to end supply chain visibility and help you achieve needed agility in your supply chain.



Monitor your logistics chain with Arviem's IoT enabled real-time monitoring solution

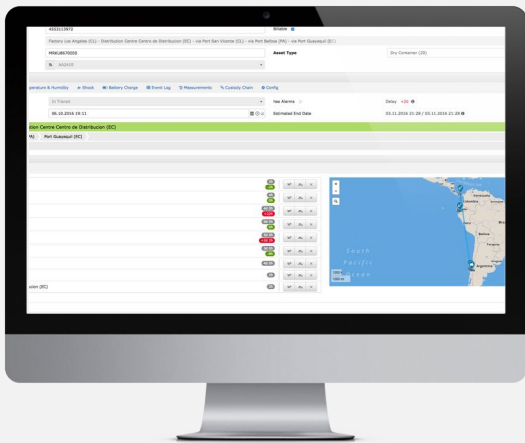
Arviem AG addresses the needs of the shippers of perishable products and solves the challenges of obtaining visible and intelligent trade by offering real-time, end-to-end cargo tracking and monitoring services. As the only full-service provider for real-time cargo tracking and monitoring on the market, Arviem provides exceptionally accurate location and quality condition monitoring of cargo throughout the global supply chain. Monitoring the condition and the environment of shipments in real time allows clients to verify the whole journey of a product; predict, correct, and even prevent problems thanks to faster response time. Clients know whether their cargo has been tampered with, whether it has experienced any significant shocks or temperature, humidity fluctuations that might have negatively affected the quality of the product.

Supply chain visibility solution by Arviem

Arviem's supply chain visibility solutions support their users in the efficient management of strategic, operative and financial supply chains via supporting real-time data-driven decision making. Arviem offers a wide array of services that are transforming supply chains by combining the latest sensor technology, big data, and clever data analytics methodology. Arviem's pay-as-you-use cargo tracking and monitoring services are enabling our customers to efficiently manage and optimize their operative and financial supply chains without the need for investing in assets or technology.

"Monitoring the location and environmental conditions of our shipments is a very important component of our stewardship efforts. Arviem provides us this capability."

Dow Chemicals on Arviem's Services



Parameters Monitored by Arviem

Our cloud-based, easy to use cargo monitoring and analytics platform provides business intelligence for decision makers.



Door opening



Temperature fluctuations



Geo location



Position based ETA



Intrusion detection



Humidity fluctuations

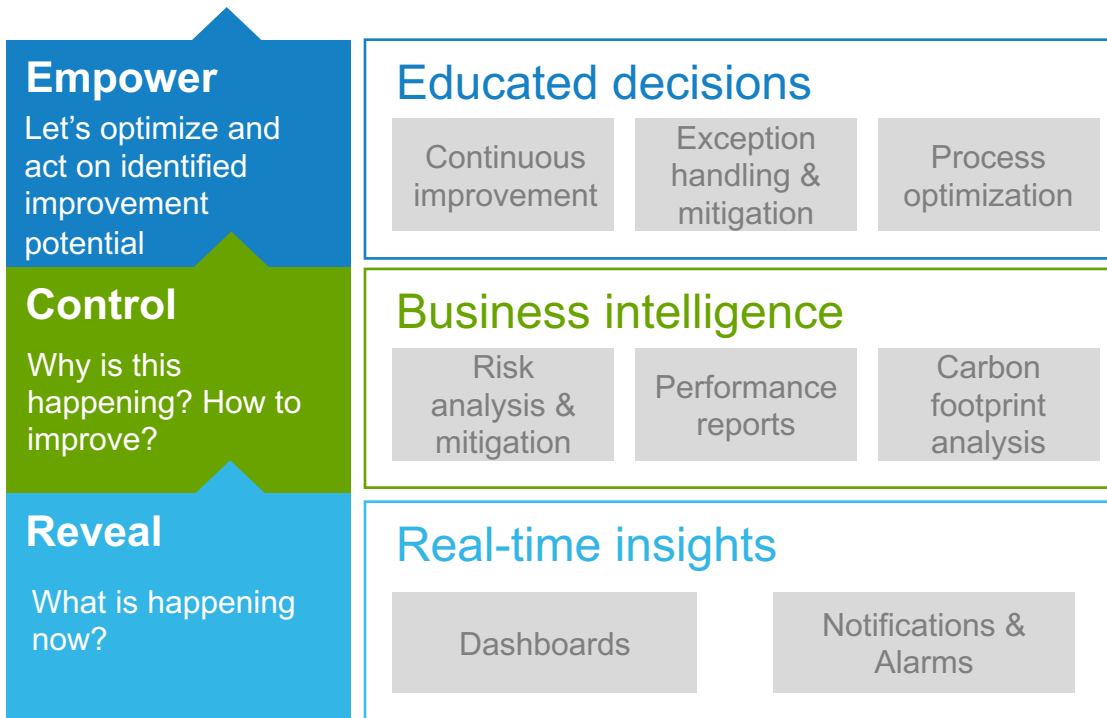


Shock detection

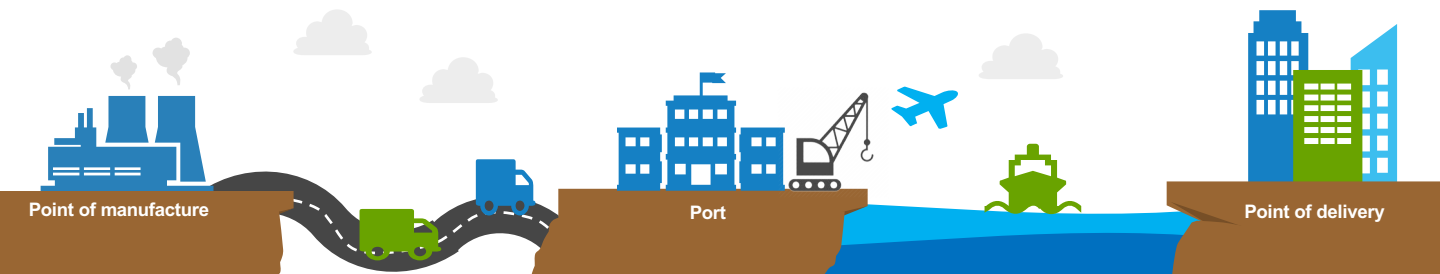


Performance reports

The Arviem supply chain visibility operating model



Data aggregation via sensors and Big Data



Why Arviem?

We operate **worldwide** and offer a **full service**

We provide **multimodal** cargo monitoring solutions

We offer '**pay-as-you-use**' service, no investment needed

We guarantee **24/7** customer service

Our solution is up and **running in a day**

We have **long established expertise** in the industry

We operate from and develop our software in **Switzerland**

*"We have eliminated waste,
reduced demurrage costs
substantially and achieved timely
product availability and product
freshness."*

Nestlé on Arviem's Services





Resources:

- 1: Wilkinson, S. (2012) The Value of Supply Chain Visibility: Traceability is just the start
- 2: <https://www.enterpriseirregulars.com/101753/10-ways-big-data-revolutionizing-supply-chain-management/>
<https://www.qmul.ac.uk/media/news/2018/hss/post-brexit-trade-deals-should-go-further-to-improve-labour-conditions.html>
- 3: <https://automotivelogistics.media/news/jlr-threatens-pull-investment-bad-brexit>