

A photograph of a railway yard at sunset. The sky is filled with large, dramatic clouds in shades of orange, pink, and blue. In the foreground, several freight trains are visible on parallel tracks. One train in the immediate foreground is composed of blue and white intermodal containers. Other trains further back consist of various types of freight cars, including cylindrical tankers. The scene is illuminated by the warm, low light of the setting sun, creating long shadows and a golden glow on the tracks and containers.

The next 'Big Thing' for your supply chain

The New Silk Road:

***A modern rail transportation
option for cargo transport
between China and Europe***

Content

- 1 The history of the Silk Road
 - 2 The New Silk Road
 - 3 Shipping goods from China to Europe
 - 4 Freight railway network across Europe and Asia
 - 5 Shippers benefitting from the rail freight services of the Silk Road
 - 6 Benefits of Rail Freight Transport via the Silk Road
 - 7 Comparison of different transport modes for shipping goods from the East to the West
 - 8 Risks imposed by transporting goods via the Silk Road railway:
Geographical and political Challenges
 - 9 Supply chain visibility solution by Arviem for tracking and monitoring containers in-transit on the Silk Road
-

Interesting facts to know:

The History of the Silk Road

During the existence of the Roman Empire, silk was the most valuable item of trade between Rome and the east. As a result, the island of Cos became luxurious from the manufacture of clothes. After the fall of the Roman Empire, the Byzantine Empire took over and interestingly did not give up the Roman love for silk. However, the Byzantine emperor named Justinian managed to steal some silkworms from China and brought to the Byzantine silk industry, despite China's effort to keep their silk harvesting process under the radar. When the Ottoman Empire outwitted the Byzantine Empire, they shut down the Silk Road entirely.

The Silk Road refers to a transcontinental network of ancient routes both terrestrial and maritime that linked the ancient world (in this case Asia and Europe) through trade. The name Silk Road was coined from the booming trade in silk across the routes dating as far back as during the Han Dynasty. While many goods traversed the vast expanse of these routes, Chinese silk was popularly traded with Rome. It was considered to be the most influential item on the culture along these trade routes. However, historians of contrary opinion claim that paper invented in the reign of the Han Dynasty and gun powder - both Chinese inventions - wielded a much greater impact on the culture than did silk. However, the legacy of these terrestrial and maritime routes cannot be disputed. The Silk Road facilitated a magnanimous level of cultural exchange considering that the routes transversed the region from China, in and through the Indian region, going up by Mesopotamia, all the way to Africa through Egypt, into Greece, Rome, and Britain. This is the legacy attributed to the Silk Road.



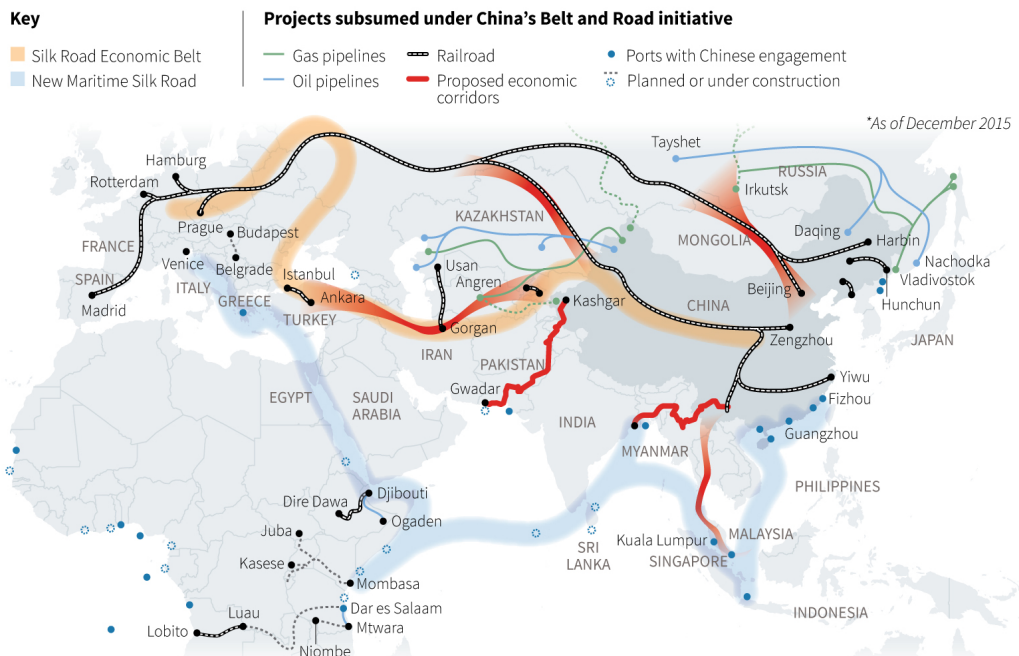
The New Silk Road

The New Silk Road is the resurrection of the ancient one called to action by President Xi Jinping. Its purpose is to reinvigorate the once ancient commerce relationship between the 'East' and the 'West'. The initiation of this double trade corridor covering both land and sea routes is intended to open up and facilitate trade between the two regions through investment in infrastructural development. The multi-billion-dollar project is projected to encompass over 60 countries benefitting a large chunk of the population and affecting the global GDP.

The belt and road initiative, as it is otherwise termed, covers both the land going Silk Road and the Maritime Silk Road. Part of the vision for the new Silk Road is a long-distance rail connection across the east and west trade fronts. Already, the demand for rail have been increasing, especially for use by the automotive industry to move vehicles and parts is astonishing. The market dynamics are slowly bowing to the promising prospects of the new direct China to Europe trains as seen in the steady growth in the number of the China-Europe express trains.

Reviving the Silk Road

Announced by Chinese President Xi Jinping in 2013, the Silk Road initiative, also known as China's Belt and Road initiative, aims to invest in infrastructure projects including railways and power grids in central, west and southern Asia, as well as Africa and Europe.



Source: Mercator Institute for China Studies.

C. Inton, 24/03/2017

REUTERS

Shipping goods from China to Europe

Currently shippers of goods from Asia to Europe have two options to deliver their goods to the West. They either opt for the cheap but slow ocean-bound route or decide to ship their goods via air which is a way faster but a considerably more expensive solution.

The New Silk Road train that is faster than marine transport and cheaper than air transport appeals especially to customers who have time-sensitive goods, such as merchandise to be sold as part of special promotions in the apparel industry or capital-intensive goods such as automotive parts or electronics. The surplus costs of rail transportation compared to the marine routes can be offset by the reduction in inventory costs and timely delivery. On average, the transit from China to Europe on the New Silk Road is about 14 to 18 days for block-trains and 18 to 21 days for single container shipments.

“Compared to ocean freight, the shipment process of the computers [via the Silk Road] is significantly reduced, which increases the throughput rate, reduces the financing of stock and hence frees up cash for HP. As a result, the total cost of operations is impacted positively, which is why companies like HP have shifted to the rail.”

(Karl Gheysen; CEO of Khorgos Gateway)



Freight railway network across Europe and Asia

There are [two major routes to the new Silk Road](#); the first is called [the Northern Route](#). This route connects to the Trans-Siberian railways in Russia. The second is the [Southern Route](#) that passes through Kazakhstan into Russia before ending in Europe. Several European terminals are connected to the Silk Road rail system. A few of them are:

- Moscow
- Brest
- Warsaw
- Hamburg
- Milan
- Madrid
- London



Shippers benefiting from the rail freight services offered via the Silk Road

As the pioneer 34 FEU freight train set foot in Germany after an 18-day sojourn, it was loaded with a variety of consumer goods from wholesale suppliers in China. Hewlett Packard’s products like laptops and mobile phones were part of the arriving cargo from China. 33% of cargo on the China-Europe rail constitutes raw materials heading to manufacturing plants for production. Out of the remaining 67%, automotive and automotive spare parts made up 15% just one percent less than the portion taken by machinery. The rest is consumer goods, fashion and technology products. A variety of goods are plying the rail system in both directions, eastbound and westbound. The table below summarizes the types of goods involved in the transportation system.

Apart from business franchises; manufacturers, shippers and traders benefiting from the use of the new Silk Road, countries involved in this megaproject will stand to benefit. Over 65 countries along the new Silk Road will see infrastructural improvements in the interest of enhancing the efficiency of the route. There will be economic advancements derived from the rapid and smooth flow of goods from one region to another and thus increased business opportunities.

Goods ferried on the China-Europe rail system

Eastbound Goods	Westbound Goods
Pharmaceuticals, soft drinks and scotch whiskey from the UK	Shoes and socks
Beer from Germany	Mechanical, electrical and chemical products
Ford spare parts	HP, Asus, Acer and Toshiba Laptops, iPads from Foxconn to Germany
Mechanical equipment	Automobile parts from Minsheng Logistics
Food and agricultural produce	Plants to Holland
Belarusian milk	Chongqing laptops destined for Germany
Fashion items	Mechanical and electric equipment, robots
Aircraft	Household products
Powder milk from Poland	Wallets, purses, and suitcases
Volvo cars	
Chemicals from Poland	
BMW, Mercedes and Land Rover cars	

Source: online research of publicly available information

Benefits of Rail Freight Transport via the Silk Road



Reduction of transport time

Sea transport has been conveniently labeled for transportation of bulk cargo from China to Europe and back. However, that notion is about to change. While the maritime Silk Road takes about 35 days for cargo to arrive, it takes the rail freight just about 18 days to hit the UK from China. Offering a slash of almost half the time that was before needed, rail freight is thus gaining popularity. Thus, rail freight has taken a medial position between sea and air letting air handle the very perishable products like agricultural produce while the rest are moving away from shipping to rail transport.



Reduction of transport costs compared to air freight

Forwarders are registering an increasing number of inquiries from shippers into the China-Europe rail route as an alternative to the costly air freight services. The onset of the financial crisis put air freight at an unaffordable level, and so shippers opted for ocean transportation which was extremely cheaper but slow. To make matters worse, slow streaming made the journey even slower. This fragmented a luxurious market niche for rail transportation; not as expensive as the air freight option and not as slow as the shipping route.

Customers are thus passionately pushing shippers to include the China-Europe rail in their catalogue. A comparison done by a forwarder stationed in Hong Kong and Shanghai considered a 40-foot container. The chargeable weight for such a container is approximately 9600 kilograms. On the rail transit, it would cost \$8000 per FEU while the charges for the same FEU would be \$5000 less on ocean freight. On air freight, charges would soar to over ten times that charged on ocean transit. It is thus conclusive to say that rail transit averages the two: offering a cut down on air freight service prices while also cutting down on transportation time from the maritime route.



Benefits of Rail Freight Transport via the Silk Road



Reduction of CO2 emissions

Greencarrier Freight services, a Scandinavian Freight Forwarder operates container services out of China via the north corridor destined for Warsaw in Poland. It has adopted the China-Europe rail route as part of their green transport solutions towards their goal of reducing CO2 emissions by 15% by the end of 2017. The reduction of the mileage the cargo covers being transported on the roads has helped cut down on carbon emissions.

Though not the most environmentally-friendly mode of freight transportation, rail freight transport beats air transport. If a 12-meter container with cargo weighing 20 tons was to be ferried via rail freight, it would account for about 4% of CO2 that would result from the use of air transport. In the case of ocean transport, the level of emissions would be cut in half again. Additionally, according to Far East Land Bridge Ltd., the New Silk Road train journey also saves 75% of the carbon footprint of the ocean route while running only 11,000 km instead 22,000 km on the sea route. It reduces the severe congestion which exists in and around the seaports involved in the east-west container trade, by moving containers from truck to rail.



Option for Full and Less than Container Services

Another advantage offered by the China-Europe rail system is the availability of options to utilize full container load or less than container load shipping solutions. Less than container load refers to small shipments that do not have to meet the full capacity required for a container sailing through the ocean. The less than container load service is intended to be a cheaper alternative to air freight for lower capacity shipments. The option saves time as shippers do not have to wait for a container to be filled before they can send it through the rail system.

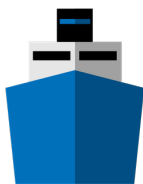


Good to know:

Comparison of different transport modes for shipping goods from the East to the West



Air



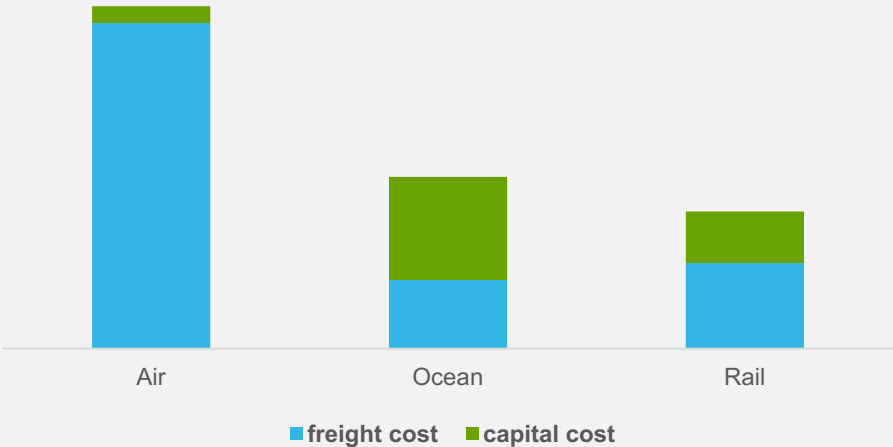
Ocean



Intermodal Rail

Volume / Capacity		
Limited	Outstanding	Increasing
Max payload: 100 t.	Capacity: 18.000 20'containers Max payload: >195.000 t.	Capacity: 40-50 40' containers Max payload: 2000 t.
Lead Times		
1 day Shanghai – European air terminals	35 - 40 days between Shanghai and Rotterdam	14 – 18 days rail terminal 'East' to rail terminal 'West'
Loading Units		
ULD (Unit load device)	40' sea container	40' high cube container
Price		

Considering capital and freight costs, rail can be the most economic option for capitalized goods



Risks imposed by transporting goods via the Silk Road railway: *Geographical and political challenges*

As the New Silk Road railway transverses several countries, [political atmospheres vary from one to the other](#). Some countries are burdened with sanctions from European countries thus movement of goods across the borders can at times be slowed down because of prohibitions set by various governments. International cooperation on the matter has also proved hard to come by. Some governments have continuously been against the project; for example, India's hostility is quite evident so much that its top officials boycotted the Belt and Road summit held in May.

[The level of investment in the project also varies from one country to another](#). While China has greatly invested in the infrastructure, the Russian infrastructure, on the other hand, is very old. This is disadvantageous because it slows down movement of goods along the rail system.

There are quite [severe temperature variations along the route](#) as the train passes through the warm climate of China to the super freezing environment of Russia. Bearing in mind that cargo ferried along the railway is often temperature sensitive, manufacturers are putting in place mechanisms to monitor their goods ensuring the correct temperature is being maintained and mitigating the risks of disruptions.

Additionally, there is a variation in the shipment requirements for containers used across the various countries along the China-Europe rail route. It may necessitate cargo offloading and loading along the route to meet the required specifications. This could further increase the transportation time and thus further affect the costs upward. Geopolitical challenges further inhibit tracking of movement of goods along the rail.





Monitor your cargo

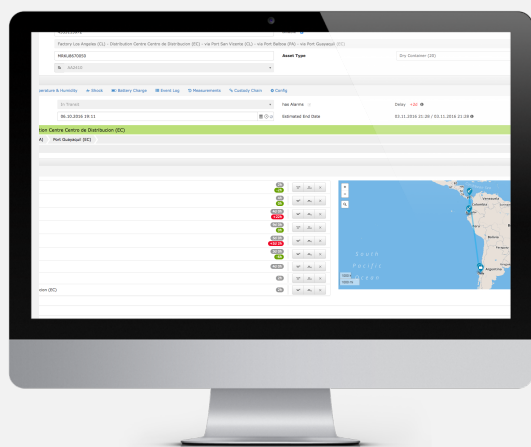
To ensure the security of their cargo shipments as well as the resilience of their supply chain, shippers who are utilizing the Silk Road railway can rely on Arviem's real-time cargo tracking and monitoring service. Arviem eliminates milestone based visibility solutions that only record data about the status & condition of assets when goods reach or leave certain checkpoints. Arviem provides real-time, trustworthy, carrier independent data about the whole journey of the goods from the point of manufacture to the point of delivery uncovering supply chain blind spots. Arviem's cloud-based, easy to use cargo monitoring and analytics platform provides business intelligence for decision makers.

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 ensures the continuity of its monitoring service even on remote locations, such as the steppes of Central Asia, by equipping containers with tracking devices that can transmit data both via satellite and GSM. Thanks to this offering, tracking devices are able to automatically switch to satellite communication whenever the GSM network is not accessible ensuring the elimination of logistics blind spots. 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 its 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

Arviem's 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

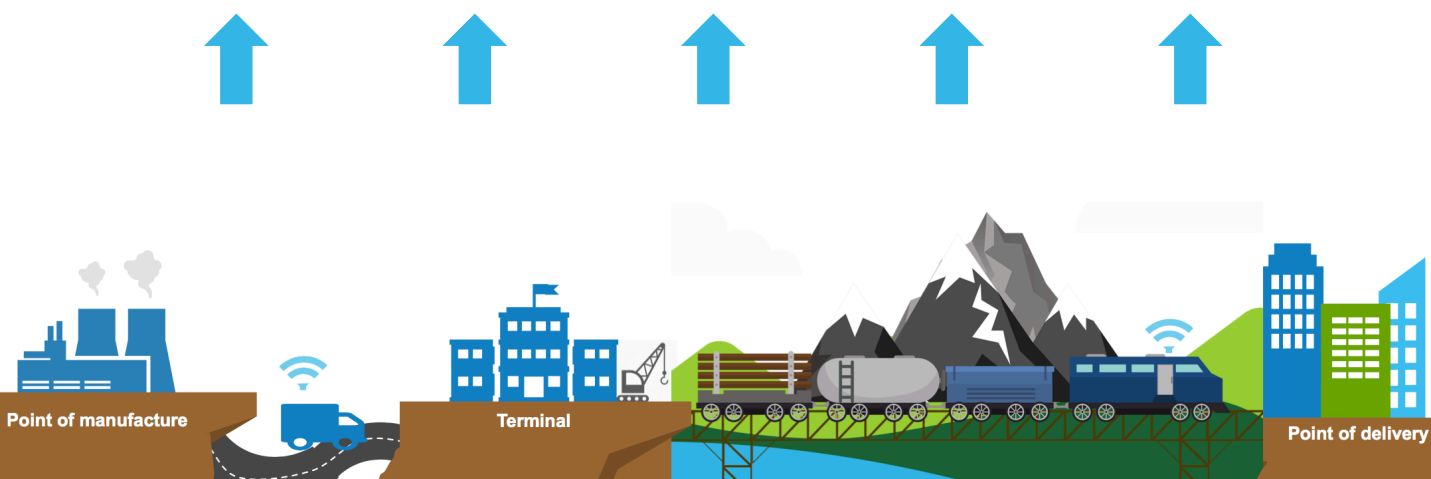
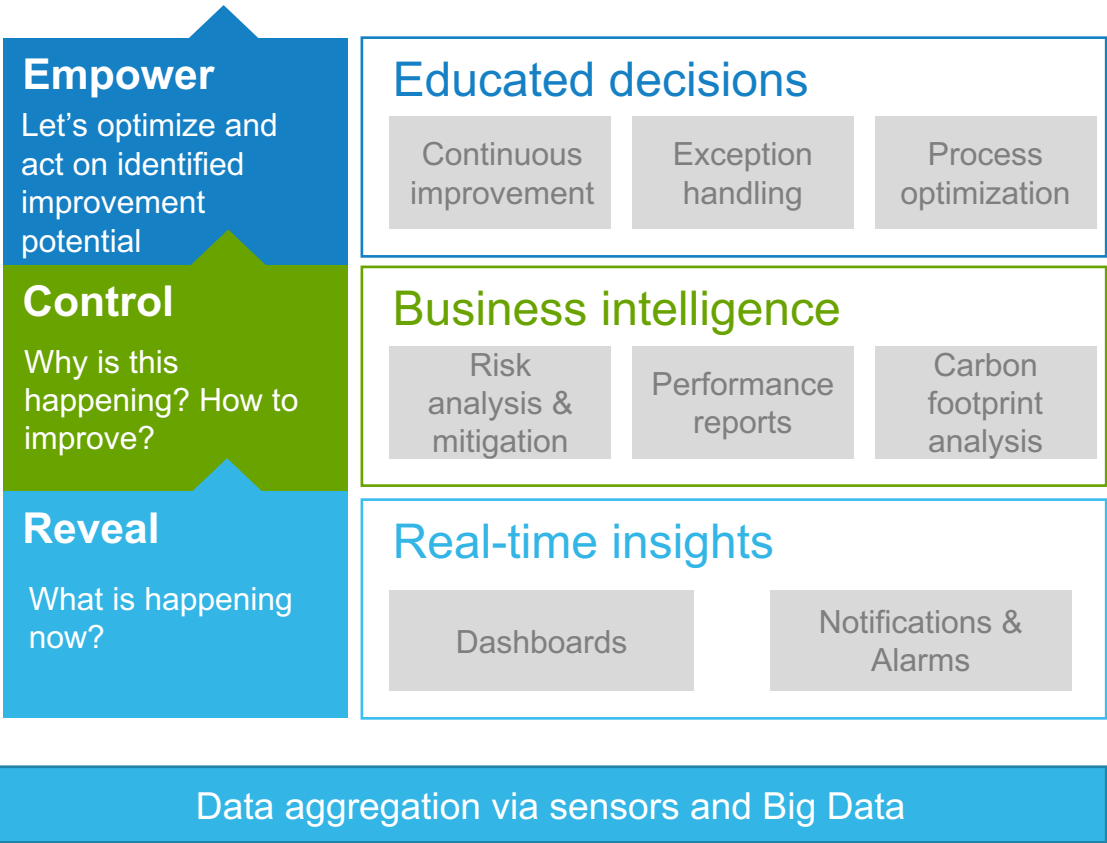


Shock detection



Performance reports

The Arviem supply chain visibility operating model



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: Kuester F. (2017) The New Silk Road – The Vision of an interconnected Eurasia.

<https://commons.wikimedia.org/wiki/File:Trans-Eurasia-Express.png#filelinks>

<http://en.unesco.org/silkroad/about-silk-road>

<https://www.weforum.org/agenda/2017/06/china-new-silk-road-explainer/>

<http://www.smh.com.au/world/chinas-new-silk-road-the-one-belt-one-road-explained-20170512-gw3ntx.html>

<http://www.nbcnews.com/news/china/belt-road-initiative-china-plans-1-trillion-new-silk-road-n757756>

<http://americanmonetaryassociation.org/chinas-new-silk-road-challenges-the-west/>

<https://worldview.stratfor.com/article/china-paves-way-new-silk-road>

<https://www.forbes.com/sites/wadeshepard/2016/10/19/the-booming-china-europe-rail-network-is-taking-the-next-step/>

<https://seekingalpha.com/article/4041596-china-europe-railway-trouble-container-shipping>



Arviem AG
info@arviem.com
www.arviem.com