



arviem

0.480 KG
7.200 LBS
1.990 KG
4.390 LBS
8.490 KG
2.810 LBS

261
MAX. GR. .480 KG
ARE .200 LBS
ET .170 KG
ET .780 LBS
310 KG
420 LBS

33.2 CU.M
1.172 CUFT

U. CAP. 33.2 CU.M
1.172 CUFT

A SMART CONTAINER OR SMART DEVICES FOR CONTAINERS?

QUICK GUIDE to help you decide best fit solution for real-time cargo monitoring

IoT based SUPPLY CHAIN VISIBILITY

At the onset of Industry 4.0, the drive towards supply chain digitization is fueling massive investments in Internet of Things (IoT), smart sensors and connected devices. The technology is often considered a game-changer for supply chain and logistics operations, having able to elevate the efficiency of operations. According to the [Forrester forecast](#), IoT investment is expected to reach \$58.14 trillion in the next 15 years. Among industries spending on Internet of Things (IoT) technology, the supply chain track-and-trace sector is expected to have the largest spending growth — a 24.2% increase between 2017 and 2023.



“IoT is on the rise towards restructuring the entire process by which supply chains operate.”

Need of SUPPLY CHAIN VISIBILITY

In times of the digital revolution and changing supply chain requirements, shippers are in need for more information than ever before. Supply chain stakeholders place more importance on the need for improved visibility to identify the inbound flow of goods to satisfy higher demands and react to the unexpected. They would like to know where their goods are while in transit and in what condition at any given time. The need to capture inefficiencies, understand delays and look at the big picture by aggregating real-time data is the force that will drive further advancements toward fully transparent supply chains. Without visibility, shippers cannot expect the fastest, safest and importantly, the most ecological routes for their shipments. Hence, most of the companies are looking for solutions that provide freight visibility that go beyond monitoring the milestones tracked by their logistics service providers.



“The combination of IoT together with analytics of the end-to-end data value streams is poised to improve and disrupt supply chain”.

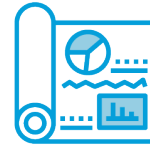
While searching for an IoT based real-time monitoring solution for their cargo, shippers will end up having to make the choice between using smart containers that are permanently equipped with a tracking device or implementing an intermodal cargo monitoring solution that provides intelligent, sensor equipped devices that can be added to any cargo. To make the choice easier, this guide gives a brief overview of smart containers and smart device enabled visibility solutions and how they differ from each other.

What are **SMART CONTAINERS**?



As defined by MSC, one of the major shipping lines offering smart containers, a smart container is a standard marine container permanently fitted with electronics.

Smart container electronics can be built in during manufacturing, retrofitted to all types of existing containers, or embedded within the contents of the container.



“Smart containers hold promise for revolutionizing supply chains. However, generating and collecting smart container data is not enough to make supply chains ‘smart’.”

What is **SMART DEVICE / SENSOR – ENABLED CARGO MONITORING**?

Cargo monitoring through smart devices and sensors is one of the most independent and reliable means to track and trace the movement of goods in transit. Smart devices, also called cargo trackers, container security devices, or container tracking devices are removable, IoT enabled devices with built-in sensors that can be attached to any container.



The devices can be used not only in marine containers but also for air cargo, pallets, or trucks. The independent devices can make any container smart; they can be fitted to any container prior to the container doors being closed.



“Thanks to the independent, reliable data provided by visibility solutions supply chains are achieving manifold benefits”.

REAL-TIME MONITORING OF CARGO with Smart Containers or Smart Devices is making supply chains more efficient by eliminating blind spots

Real-time monitoring of cargo with smart containers or smart devices is taking the digital age of shipping one step further, making supply chains more transparent, reliable, agile, secure, resilient, connected, and sustainable. They eliminate milestone-based visibility from the supply chain as they provide data on the location and condition of the goods in transit. The sensor devices travel along with the cargo and provide real-time information on the geographic position as well as the state of the cargo. Depending on the type of sensors used, different parameters can be monitored throughout the entire transport process from origin to destination, e.g. temperature, humidity, shock, light and door openings, predictive ETA etc. The generated data can be accessed via web portals or through API.

Data analytics supported by AI & MACHINE LEARNING offers manifold benefits

Real-time cargo monitoring, whether with smart containers or with smart devices enabled containers holds promise for revolutionizing supply chains. Real-time monitoring data can be fed into analytics programs powered by AI and machine learning technology. Data analytics helps to analyze supply chain and logistics performance and to streamline supply chain operations. Supply chain managers can anticipate supply chain disruptions with reliable real-time data. The data can even be shared easily between manufacturers and retailers to coordinate in advance of predicted delays. Thanks to improved data accuracy and accessibility, supply chain professionals are empowered to make educated, well-informed operational decisions while staying in control of their cargo from its origin to its destination. Moreover, with reliable cargo shipment data, inventory safety stocks can be reduced, dock scheduling can be improved, warehouse resources can be used more efficiently, and planning becomes more accurate thanks to predictive ETAs. This empowers decision-makers to make well-funded tactical and strategic management decisions.





However, generating and collecting smart container data is not enough to make supply chains fully "smart". It is essential that the collected data can be easily analyzed. Additionally, it is one of the needs of shippers today to deliver independent data in a standard format for easy integration into different systems. Most shippers, BCO's, importers and exporters favor a solution that is readily available, reliable, and deployable with on-demand requirements.



Are you confused about what makes smart containers different from smart devices enabled monitoring? A quick overview follows to help you choose the best fit solution.

Smart CONTAINERS

Smart DEVICES

Legal procedures	 Custom clearance and authorization is automated beforehand and hence provides easy movement of cargo across borders	 Requires clear customs declaration and experience in global customs processes, hence should be managed by experienced service providers
Viability	 Commercial viability of this concept is questionable due to high costs for infrastructure and logistics	 Solution already in use by multiple providers, makes it fully viable empowering additional services
On-demand availability	 No on-demand/ad-hoc monitoring possible due to lack of short term availability of smart containers.	 Ad-hoc monitoring possible due to easily available device trackers in short span of time
Use cases	 Technology use cases are limited. For e.g. devices used cannot reliably detect door opening as they rely on the light sensor instead of dedicated door opening sensor to detect door status. This makes it unreliable for security monitoring	 Support many use cases e.g. advanced devices have a dedicated door status sensor in addition to a light sensor and can reliably detect the opening or closing of a door or any unexpected or unauthorized access to the container.
Roll-out timeline	 Roll-out with 100% coverage is practically not achievable and depends on carrier portfolio of customer. Any roll-out to cover at least the trade lanes with available smart containers will take at least 6 months, or 12+ month	 Roll-out with 100% coverage of all containers of a large corporation can be achieved in 30 days.
Usage	 Market penetration is very limited – higher for refrigerated containers, lower for dry containers.	 Fits to any ISO Standard dry or reefer container, making any container a “smart container” on demand, and back to an ordinary container on device removal
Data Ownership	 Data is owned by shipping line or carrier which is not always easily and reliably available	 Data can be independently owned by cargo interests or shipper making it easy to report in case of claims handling and decision making

Smart CONTAINERS

Smart DEVICES

Ownership	 Belongs to container leasing company or shipping line	 Belongs third party solution provider, to the freight forwarder or shipper
Availability	 Availability for major routes and significant volumes only. Only selected shipping lines own it and hence does not satisfy cross carrier needs	 Quickly and globally available with any carrier or cross carrier
Installation	 Device needs to be installed by a specialized team	 Tracker installation is easy with no specialization or training required.
Reverse Logistics	 No reverse logistics involved. Once installed, containers are easy to use with no mounting/unmounting. They are repositioned by shipping line	 Devices needs to be sent back and forth for reuse. Logistics of the devices can be managed by a quality visibility provider.
Price	 Normally paid as pay per trip	 Can be pay per use or any subscription based price modeling
Cost	 Comparatively low when used but costs of installation, maintenance and immobilisation (when not used) are expensive for owners which also impacts the service price.	 Due to their simple installation, the cost is often affordable for most companies. Embedded with more use cases and value potential, initial cost is higher but the solution is cost neutral at the end.
Maintenance and Reusage	 It is a whole new class of containers and it is difficult to turn a smart container to normal usage container for additional value added services. Repositioning of smart containers is more difficult wheather done by shipping line itself or outsourced.	 Smaller shipping lines or container leasing companies which lack the financial power of the big carriers can easily turn their complete fleet into a "smart container on demand fleet" and generate additional revenue from value added services.

SUPPLY CHAIN VISIBILITY SOLUTION by ARVIEM

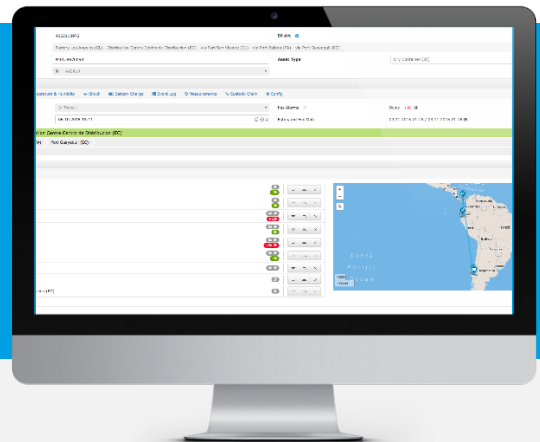
Arviem specializes in IoT enabled smart device based real-time cargo tracking and monitoring. Arviem offers freight visibility globally on all modes of transport as a pay per use service, requiring no investment from shippers in hardware, software or additional staff. Arviem's real-time supply chain visibility solution makes global trade visible by monitoring the location and condition of goods in transit. The solution connects intermodal shipping containers, cargo, vessels, and trailers with enterprise IT systems via sensors, GPS, mobile networks, and a cloud-based platform. Using cloud-based infrastructure, software and analytics, Arviem turns this collected data into actionable information. Arviem leverages the collected data to offer add on services that include carbon footprint monitoring, working capital financing, supply chain analytics, supply chain risk management.

"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



GEO LOCATION



INTRUSION DETECTION



SHOCK DETECTION



TEMPERATURE FLUCTUATIONS



POSITION BASED E.T.A.



HUMIDITY FLUCTUATIONS



PERFORMANCE REPORTS

EMPOWER

Let's optimize and act on identified improvement potential

Educated Decisions

Continuous improvement

Exception handling

Process optimization

CONTROL

Why is this happening?
How to improve?

Business Intelligence

Risk analysis & mitigation

Performance reports

Carbon footprint analysis

REVEAL

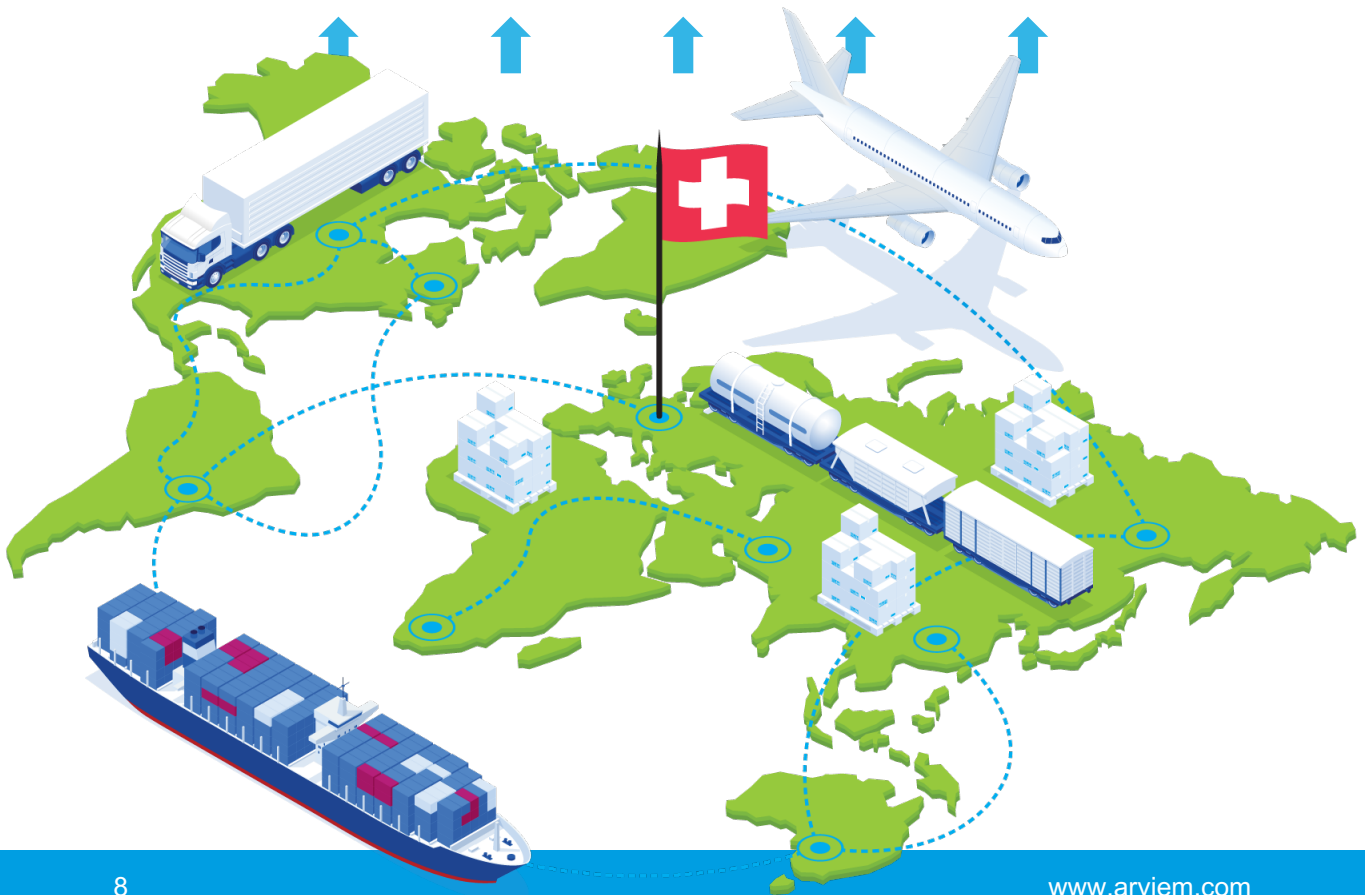
What is happening now?

Real-time Insights

Dashboards

Notifications & Alarms

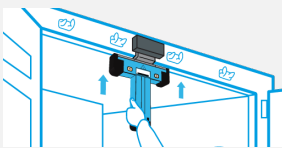
Data aggregation via sensors and Big Data



Why **ARVIEM AG SOLUTIONS?**

- ✓ 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**

A COMPLETE SMART DEVICE ENABLED CARGO MONITORING SERVICE



Data through monitoring devices

Monitoring devices are attached to the cargo at the point of loading and collect information while the cargo is in transit. They transmit data in real-time to the analytics platform.



Notifications and Analytics platform

In case of disruptions, notifications with actionable information are provided to clients. To support the decision making process, Arviem's data analytics platform provides both a quick picture of the cargo in transit and in-depth analysis uncovering inefficiencies and logistics blind spots.



Device operations

To ensure a carefree service to the client, device logistics, maintenance, repair and reverse logistics are handled by our operations team as well as client support and the initial project set-up.



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SMART INSIGHTS FOR SUPPLY CHAINS



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

Nestlé on Arviem's Services

