

Digital supply chains

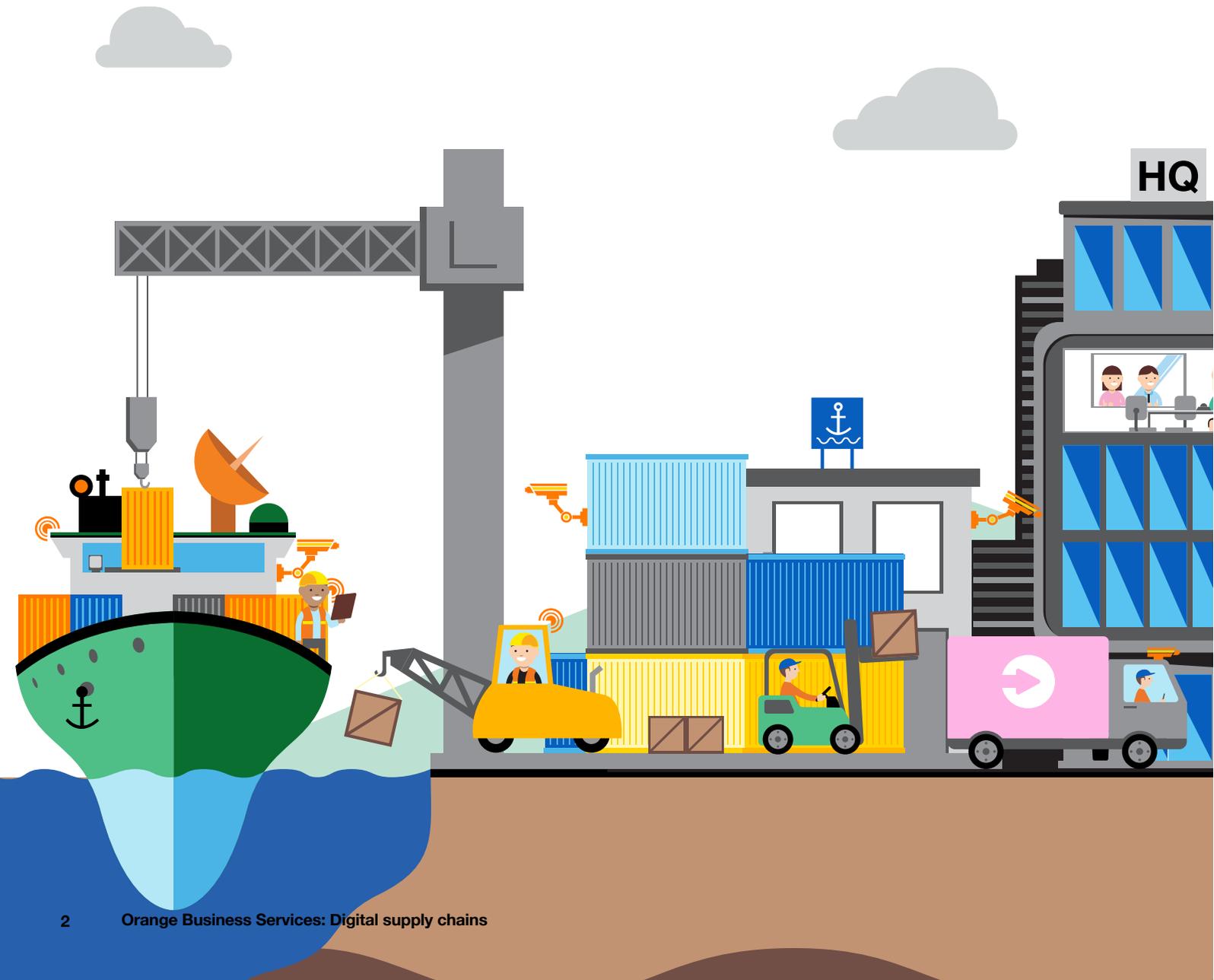
How IoT and big data are transforming asset and fleet management in logistics and transport



**Business
Services**

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The changing face of transport

In the digital economy time and speed are crucial, forcing the transport industry to transform to retain its competitive edge – or be pushed out by disruptors eager to take a share of this fast-growing sector. But there is still much confusion on where to start the digital journey and the logical steps required.

Globalization, population growth and a dramatic rise in e-commerce have all contributed to a transport and logistics boom that is set to continue, with the market forecast to be worth \$15.5 trillion by 2023¹.

Technological innovation is one of the major drivers for success, but there are many difficulties transport and logistics companies face even getting started. A lack of urgency, insufficient budget and limitations within systems are the biggest pitfalls for logistics companies looking towards digitally transforming their business.

Digital is new, so there is often no natural project owner to propel digital transformation forward. This is the first step on the road to change. Leadership is paramount alongside a “top down and bottom up” approach to fully engage employees and customers on the journey. Digital will inevitably disrupt processes, so accounting for the human aspect is vital. Change agents need to explain and lead change going forward alongside sound leadership to achieve sustainable transformation.

Wasted journeys

On average 85 million items are delivered around the world every day, yet 50% of trucks are empty on their return journey². In addition, the logistics industry suffers from significant inefficiencies, which impacts upon its already low margins. Key concerns include high insurance premiums, unregulated driving behavior and volatile fuel prices. The Internet of Things (IoT) and digital transformation can do much to iron out these inefficiencies, increase trade growth through cross-border initiatives and improve the sustainability of transport, whilst reducing the impact it has on our planet.

This paper focuses on fleet management and asset management applications, often referred to in the same sentence, yet they are separate entities delivering their own specific benefits. Together they can enable transport and logistics companies to digitize and streamline their operations in an increasingly complex business environment, where profits are still partly controlled by oil and labor costs.



Definitions

Fleet management: enables fleet managers to centrally organize, coordinate and manage a fleet of vehicles to ensure that operations run efficiently. Functionality includes fleet maintenance, cargo optimization, route planning and delivery/price management. It allows real-time data to be recorded on vehicle operations to ensure maximum productivity whilst ensuring safety of employees.

Asset management: captures and maintains an accurate picture of assets in transit and at rest. The application records and tracks assets so that manufacturers and transport managers know exactly where an asset is at any given time in its journey to the customer and can better allocate resources. It can manage planning and forecasting, assets in transit, mapping and reporting in real time.

1. Transparency Market Research (<https://www.transparencymarketresearch.com/logistics-market.html>)

2. World Economic Forum – Delivering Change: Transformation in Logistics (<http://reports.weforum.org/digital-transformation/delivering-change-digital-transformation-in-logistics/>)

Fleet management: big data driving intelligence and new services

Fleet managers have increasingly powerful real-time analytics and reporting tools to analyze all the data they collect from across their business. Going forward this information will provide a 360-degree view of day-to-day fleet operations in real time, allowing companies to better allocate resources and identify opportunities of growth such as new routes that can be easily optimized.

Efficiency use cases provided by fleet management applications:

- Real-time route planning/optimization provide information on routes, weather and even loading and unloading schedules at ports and warehouses. This enables vehicles to be diverted and allocated slots as appropriate to reduce time wastage and guarantee delivery times.
- Reducing risks by identifying irregular activity. Alerts can highlight any unusual or unexpected driver behavior, changes in fuel levels, rapid fuel loss or theft, for example.
- Accurate positioning reports of each vehicle in the fleet can be generated through cellular communication, backed up via satellite. Vehicles can be programmed to update data more regularly when in cellular range to keep costs down. This can be used to ensure driver hours used efficiently, for example.
- New connected vehicle data sources can generate reports on predictive maintenance, for example, reducing service and repair costs as well as downtime. Engine hours can be tracked, for example, to see if a truck is being under or over utilized.

Challenges around data privacy

Digital transformation in fleet management does not come without its challenges as vehicle manufacturers, logistics companies, leasing companies and representative organizations discuss issues surrounding data ownership, data privacy and data accessibility.

Businesses will need to be transparent about what data is being collected, why, where it is going and how it is being used. For instance, the General Data Protection Regulation (GDPR) makes it very clear that information is treated as personal data whenever individuals can be identified by online identifiers – this includes GPS data. The new regulation will strengthen and unify data protection for all individuals within the EU.



Fleet management: big data driving intelligence and new services

The future of fleet management

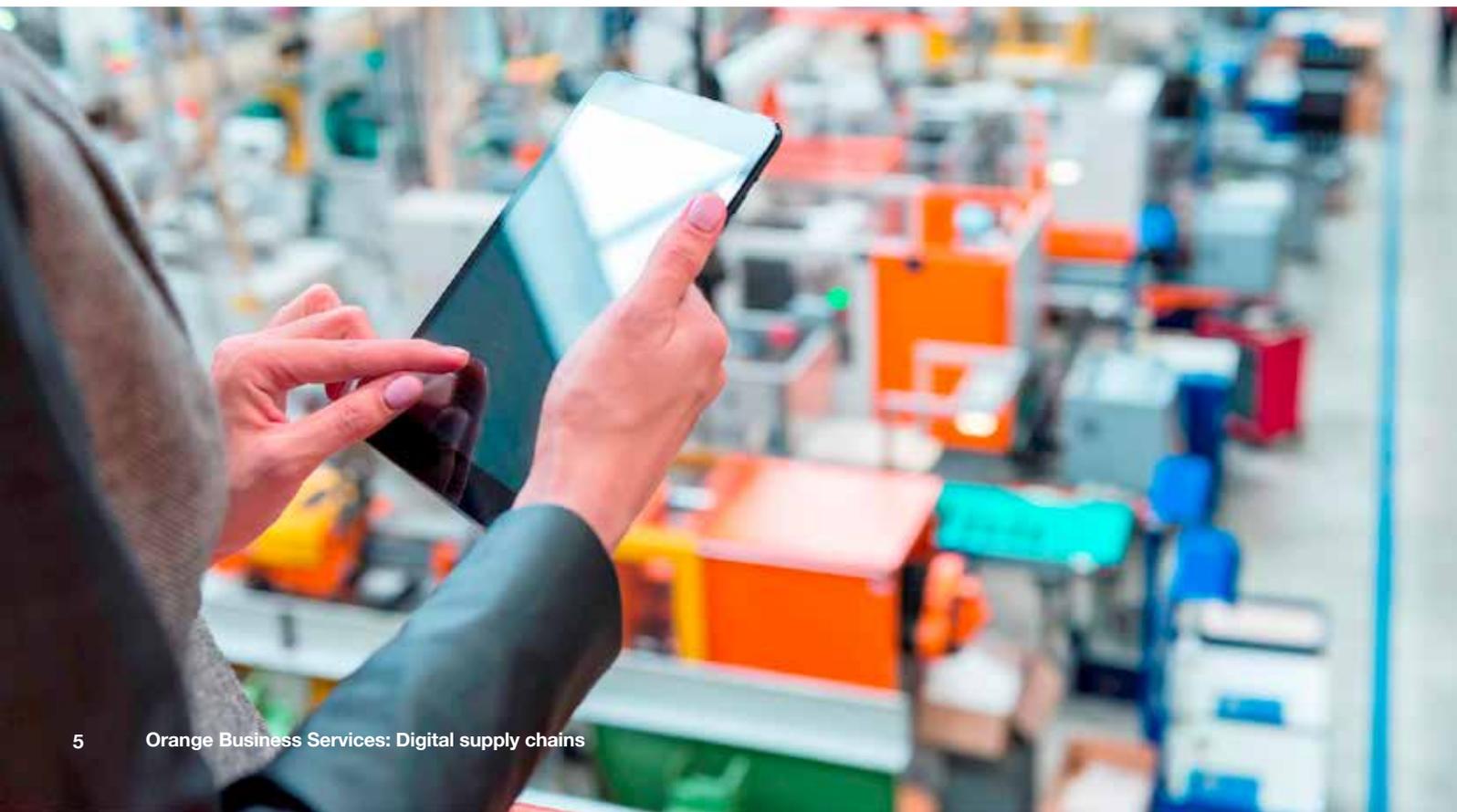
Connected vehicle technology will be used to reduce fuel use and emissions by ensuring traffic is on routes that are moving. Fleet management applications will ensure that fleet managers are able to react and re-route drivers in real time as appropriate to avoid congested areas.

In parallel, more automotive manufacturers are fitting their entire vehicle range with first fit telematics boxes from top tier vendors to provide telematics services to their customers. This will be a major disruptor in the marketplace as automotive manufacturers, who are being squeezed on vehicle margins, look to other business models to provide a recurrent revenue stream from the end user (including logistics companies), through services such as predictive maintenance, fuel consumption monitoring etc.

The arrival of autonomous vehicles will create enormous opportunities for vehicle telematics in areas such as fault identification as we all increasingly put our trust in a driverless age. This includes platooning, where a convoy of trucks drives close together at a constant speed to boost traffic flows thanks to connectivity technology and automated driving support systems.

The bandwidth of 5G together with IoT will create opportunities for dedicated vehicle-to-vehicle communications using the mobile network, while minimizing the risks of latency and unpredictability. The new technology can be used by vehicles to transmit navigation information to each other to cut fuel consumption or to provide more intelligent routing. This includes detour, safety warning and traffic information to avoid accidents and traffic congestion.

“CRCS DKI, a restoration services and disaster clean up company in Canada, used telematics for three years to monitor idling and address driving behaviors, thereby increasing its fleet’s average miles per gallon from 11.2 to 13.4.”



Asset management: ubiquitous connectivity, low-cost sensors propelling new generation of services

With so many deliveries and pick-ups happening globally 24/7, coupled with increased customer expectation, businesses can't afford to risk their reputations by losing touch with their assets. Internet of Things (IoT) devices, sensors and airtime can deliver comprehensive end-to-end solutions to track the entire journey of a product, from manufacturer to customer.

Smart asset management, supported by low-cost sensors and mobile networks, have made it possible to improve operational efficiencies, while increasing capacity and visibility. The arrival of low power wide area networks (LPWAN) such as LoRa and Sigfox, in conjunction with a cellular gateway to monitor assets out of cellular/satellite range, are further revolutionizing asset management.

New opportunities to track assets

The integration of LPWAN technology provides extended communication that reach beyond cellular networks. LoRa-equipped sensors, for example, use very low power which means the batteries can last several years, providing ongoing tracking of important cargo location data. LoRa-based gateways also have the capacity to handle a huge number of messages, providing transport and logistics companies with real scalability.

IoT sensors are streamlining the asset management process. But IoT is also allowing traditional asset management tracking to become more sophisticated. For example, radio frequency identification tagging (RFID) coupled with cloud-based GPS solutions can track an item and predict an accurate delivery time.

“An Orange gas distribution customer is tracking its gas bottles using an IoT platform on a LoRa network. This has enabled the company to optimize its distribution channels, adapt deliveries to sales points and track gas bottles and gas quality via sensors located on the connected valve.”



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Asset tracking use cases

- **Asset tracking applications and geofences can be used to track the location of trailers and find out if truck doors have been opened outside authorized zones.** Geo-fencing uses the global positioning system (GPS) or RFID to map out geographical boundaries.
- **Door and cargo sensors can be used in association with asset tracking software to monitor cargo and protect it from origin to destination.** This could be used to keep goods at optimum temperatures, for example, or to stop counterfeiting and theft. Transport of dangerous goods, such as chemicals, can be tracked via sensors warning potentially hazardous situations.
- **Asset tracking reports can be used for compliance** such as adhering to pharmaceutical transport requirements for example.
- **Asset management applications can provide a solution to keep drivers safe in high risk areas** in combination with communications, sensors and geofencing.
- **Asset management can help operators make best use of their truck capacity** and protect fragile goods in transit.
- **Telematics systems that can talk to the back office, can provide real-time proof of collection information.** This can potentially shorten billing times for transport companies, for example.

Collaboration: key to the future of asset tracking

Business has fast realized that tracking the movement of assets in real-time can result in huge cost savings, not only by maximizing on asset delivery and pick-up scheduling, but also against theft, loss and counterfeiting. Governments are also increasingly working with businesses, using asset tracking applications to simplify border crossings and open trade routes.

Today's transport and logistics companies look after enormous flows of goods, creating huge amounts of data. Collaboration and data stream sharing between these companies will increase in the future, enabling powerful new services where a parcel could be tracked from A to B across its entire lifecycle, thus cutting out current market fragmentation in the industry. Local information picked up by fleets across different countries and regions could also provide valuable traffic and environmental statistics which could be shared. On the back of this businesses will look to streamline their operations even further by sharing warehouse resources.

In addition, new disruptors are tapping into data sources backed up by asset management, such as crowd-sourced delivery for the last mile, which due to routing is the most expensive. Crowd-sourced delivery start-ups have seen a gap in the market for same day delivery of items purchased online. Others are looking to create platforms to manage retailers' delivery operations more efficiently for any courier by using advanced analytics alongside asset management.



Taking a unified approach to fleet and asset management

Rising pressure on transport and logistics companies, manufacturers and distributors to run a smooth economic service requires a holistic approach to fleet and asset management. By having access to a 360-degree view of their fleet and assets, they can put the technology and skills in place to innovate and survive in an increasingly complex environment.

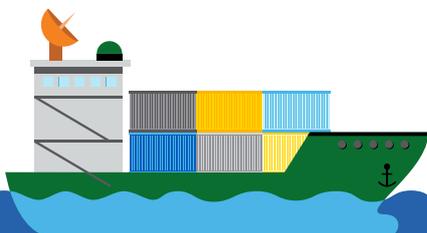
Data from fleet and asset management are of interest to three key groups: employees, business partners and consumers. Integration here is vital because companies can't afford to have siloed databases of information across organization as it dilutes the real-time objective. If, for example, an employee has one delivery time on a database and a consumer is sent another, it can fast destroy a company's credibility.

This integration of data sources across fleet and asset management plays a key role in ensuring that freight can be delivered quickly, safely and economically across continents. Analytics coupled with IoT and predictive maintenance, for example, could save the road freight industry \$520 billion in operating costs over the next decade. At the same time, improved route optimization could lead to a reduction in emissions of more than 4 billion metric tons³.

“After installing geo-fencing to monitor route adherence and sensors to monitor engine idling time, one of Carlsberg’s European fleets reported a fall in fuel consumption by 4.8%, saving 200,000 liters of fuel in a year.”

APIs makes working with third parties easier

In addition to direct channels, logistics companies also must deal with indirect distributors, which they do not control. This has placed an increasing emphasis on application programming interfaces (API) in the logistics sector.



APIs are a messaging format that enable data to be sent from one system to another in real-time, allowing for efficient application integration and faster decision making. With most APIs, a development team can develop new services quickly. APIs can link shippers, for example, allowing them quick and easy access to tracking and proof of delivery. They also provide rapid mobile integration, which means data can be easily ported to mobile devices. Logistics players need to reach a level of API standardization that ensure partners can share data. Currently, there is a certain standardization from vendors, but it is not foolproof.

Use cases for unified fleet and asset management

- **Improving driver safety:** Driver safety is paramount for transport companies. Telematics can improve safe driving in fleets, which lowers insurance premiums. Telematics can engage drivers and help them drive more safely. Dashboard displays in vehicles, for example, can provide drivers with instant feedback on driving around through traffic lights, for example. Drivers can monitor their scores via an online portal or a smart phone app. Good performance can be rewarded.
- **Implement a fine-tuned logistics strategy:** The supply chain is constantly changing and so are the assets. Developing and implementing a formal logistics strategy alongside asset management software can dramatically improve decision making and increase error-response times. This strategy needs to be continually evaluated. Transport companies, for example, can predict disruptions and know exactly how to respond to them. If it sees a small fluctuation in container temperatures picked up from sensors it can ensure perishable goods are quickly swapped across to another refrigerated truck. This allows transport companies to ensure service levels stay at their peak.



Checklist: get started with asset and fleet management

Every business has different logistics requirements. This is made more difficult in an industry where the environment is continually changing and is largely dependent on supply and demand.

Today fleet and asset management solutions can be utilized to measure almost anything from fuel consumption to if the cargo has been opened or tampered with. Choosing the right applications will determine your future success.

Here is our 10-step checklist for deploying fleet and asset management solutions.

- Carefully consider what your specific needs are.** Each company is different, so don't be talked into a 'one size fits all' approach.
- Ensure there is leadership to take the project forward** and change agents to make sure it is carried through at all levels.
- Don't be afraid to embrace a 'fail fast strategy'**, where you can work on smaller experiments and nurture the ones that work.
- Put an IoT sandbox in place** which allows for the testing and building of IoT applications in a controlled environment using cloud services and real-time workflows. It allows for multiple user cases to be tested against set parameters.
- Pilot** the solutions you choose. This enables you to recognize any challenges and onboarding issues and define best practices before the full deployment.
- When it comes to deployment start small and scale out.** Find a business unit that wants to push forward with digital transformation. Others will fast follow its success.
- Check the data protection legislation** in countries you operate in to ensure you can legally collect and use the data you wish to analyze.
- Ensure that systems have the appropriate levels of protection and monitoring in place to prevent unauthorized access.** Drivers, for example, will not normally need access to the same level of intelligence as fleet or asset managers. Authorization should be dependent on both data sensitivity and the role of the person in the logistics chain.
- Make sure you set key performance indicators (KPI)** to track the progress of your transformation.
- APIs are becoming the new data exchange for logistics and supply chain management.** Factor them into your digital transformation strategy.

Contact your account manager to find out more about transport and logistics solutions from Orange Business Services or visit <https://www.orange-business.com/en/industries/transport> for more information.



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