Digital Reinvention and Building Digital Competence

Sue Terpilowski FCILT OBE PMW Chair
MD - Image Line Communications

Cargo owners taking control

Getting a container from point A to point B frequently involves more than 30 different parties, with an average of 200 interactions between them.

With the majority still happening on traditional channels and using lots of traditional carriers, **paperwork accounts for up to half of the cost of container transport.**

Cargo owners taking control

TODAY is often referred to by cargo owners as they feel "dumb, dark and disconnected" from the process

- ***Supply Chains compete not businesses today but***
- Cargo owners have little visibility and control over their cargoes and assets wherever they are on land and sea
- Cargo owners have limited chances to manage and mitigate cargo damage, asset and cargo theft and other service threats in-transit **including late availability**
- Transportation modes and flows operated generally as siloes within the end-to-end supply chains

What do cargo owners want?
To maximise the efficiency of cargo flow – control

What Cargo owners are doing

Optimised transport for own processes

Digitally integrated

Reflect company values and standards

Risk management

Technical development

Logistic development

Cost

Environmental regulations

Changing shipping scene

Maritime 4.0 - a smart shipping ‘toolbox’

- Shipping revolutions take decades or even centuries.
- The first lesson is that because shipping revolutions have a global span, they take a long time.
- The global navigation revolution **lasted 300 years**; the steam ship revolution **150 years**; the bulk shipping revolution has **lasted 65 years so far**. They may be getting shorter, but the timescale is still more than a working lifetime.
- The move really is from the ship as the business unit to a **transport factory**, with links to customers and suppliers. The key word is "evolution", preferably within a **"protocol" framework**.

Martin Stopford - Clarksons Shipping ‘Toolbox’

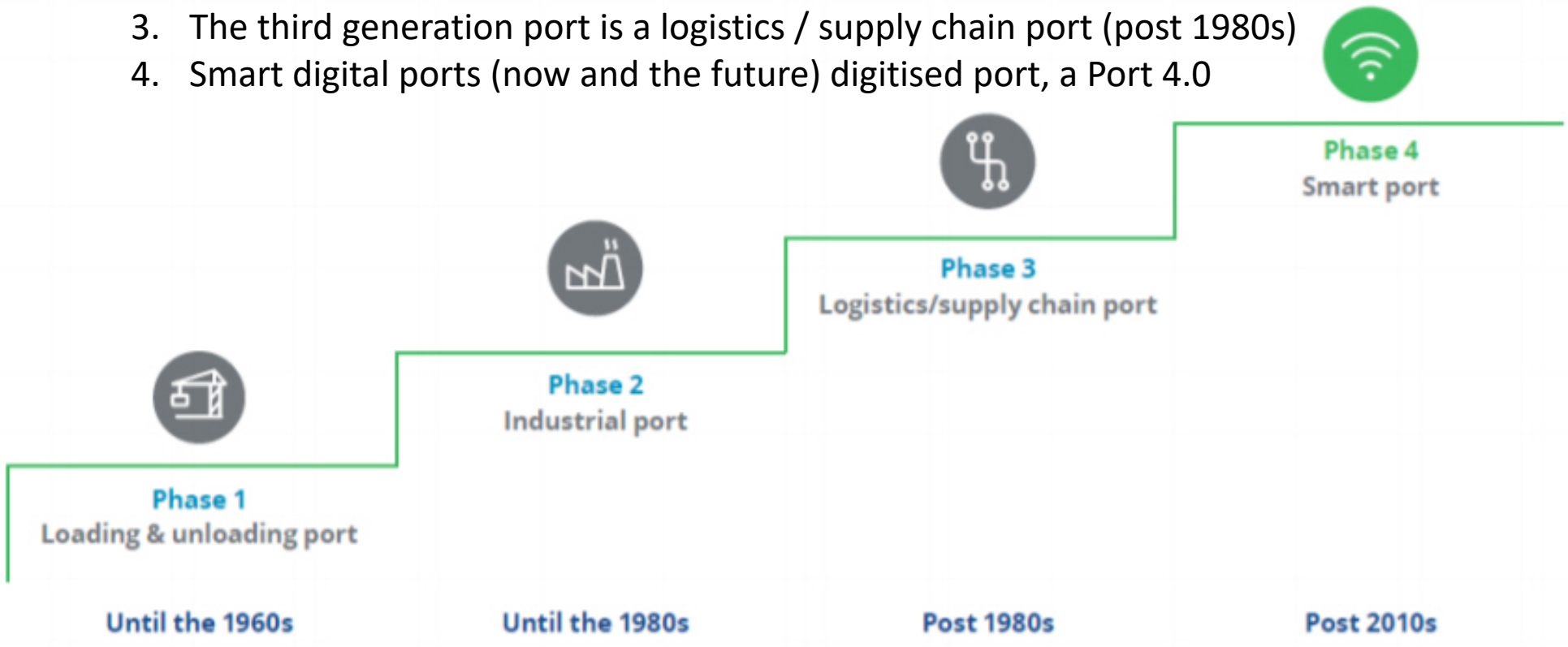
Maritime 4.0 - a smart shipping 'toolbox'

- **Maritime 4.0 can only really be effective as part of a smart supply chain** 'toolbox'* (or interconnected maritime players, systems and vehicles) is directed towards shipping and ship building
- **Smart shipping and Big Data** are the most important elements of the future of shipping – **but only as good as the data is and how you read it**
- **Modern vessel operation** needs to make **use of the massive data available** to become more efficient. This may result in a paradigm shift, e.g. intelligent voyage planning instead of high-speed journeys and a reduction of operational costs and vessel turnaround times in seaports
- Benefits like improved fuel efficiency, reduced port-stays or a better network design can be achieved by collecting and analysing vessel data using flow meters, control and alarm systems, sensors or time stamps
- Autonomous and automated ships the future or just part of it?

* Martin Stopford Clarksons Shipping 'Toolbox'

Evolution of Ports

1. The first generation port is a loading and unloading port (until the 1960s)
2. The second generation port is an industrial port (until 1980s)
3. The third generation port is a logistics / supply chain port (post 1980s)
4. Smart digital ports (now and the future) digitised port, a Port 4.0



Smart port is the fourth generation in port development.

Ports 4.0 or Smart Ports

- Ports 4.0 (Digitisation of the processes of Planning management, Port management and Cargo management) directed towards shipping lines and some cargo owners – mainly hauliers
- Smart ports will make use of the massive data available and unique to them, to become more efficient. This may result in a paradigm shift, e.g. faster and better vessel turnaround times in ports, efficiency improvements through traffic management systems, improving flow throughout the port area, automation, reducing costs and digital invoicing (customs) - improving lead time
- More importantly digitisation will become a new **REVENUE SOURCE and finally allow ports to have a commercial relationship with cargo owners**

Ports 4.0 or Smart Ports

Logistics and Supply Chain 4.0

- **The key to smart supply chain management and logistics in Industry 4.0 - is data, turned into actionable intelligence and ultimately *(autonomous, semi-autonomous and human)* interaction.**

Cargo Owner → Hinterland transportation → Loading → Ocean transportation → Unloading → Hinterland transportation → Delivery

Connected ports
Digitally-enabled port synchronisation, import planning, resource and work flow optimisation

Connected container trucks
Real-time monitoring, operations and availability optimisation integrated with key stakeholders

Connected container trucks
Monitor in real-time & analyse to support better vehicle, driver, operations & regulations management

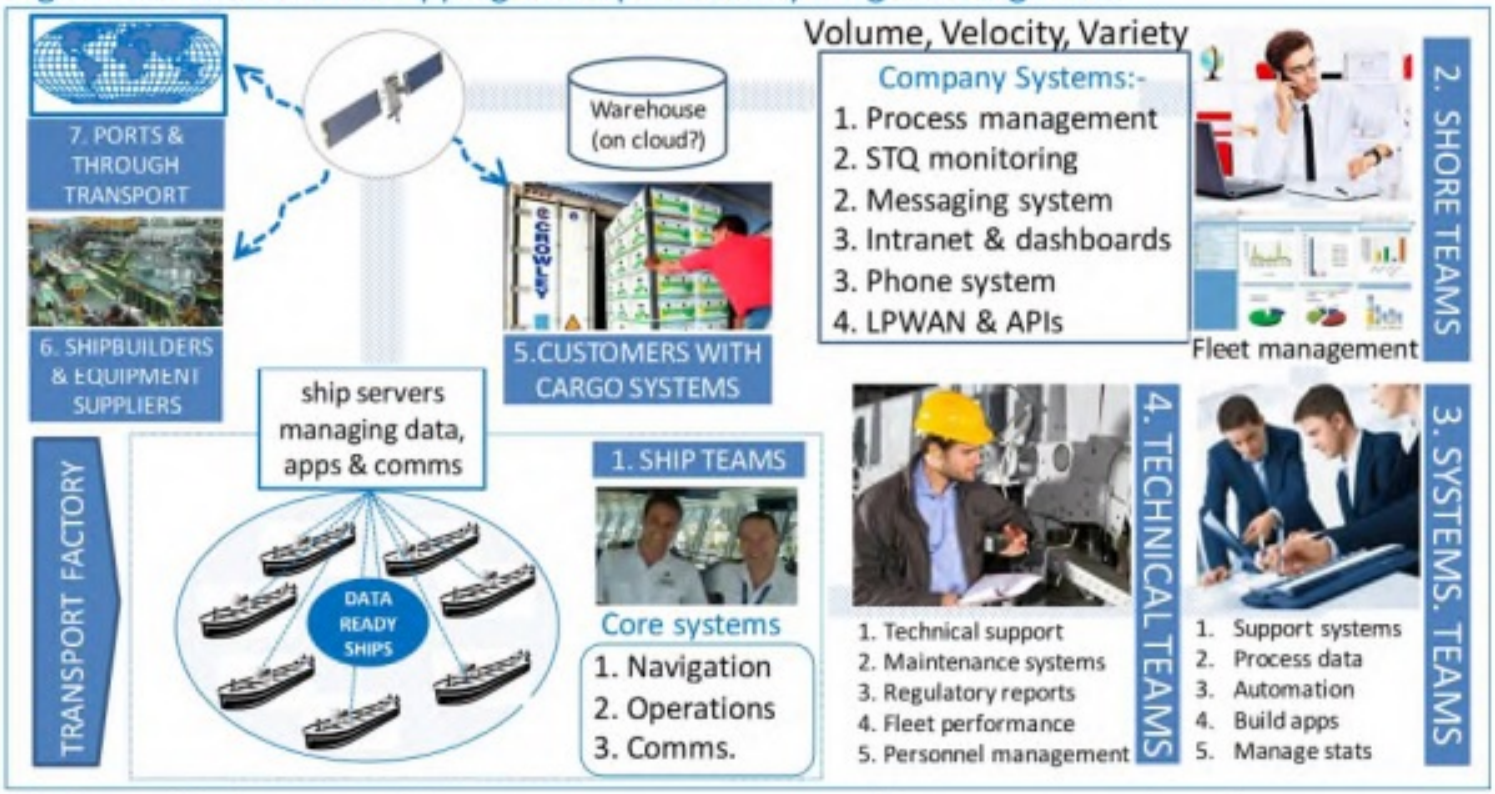
Connected workers
Mobile, safety, tracking analytics and technology to increase worker efficiency

E-Commerce platforms
Real-time bookings, visibility, price transparency, customs and supplier integration with predictive analytics

Digital supply chains
End-to-end monitoring, analytics, automation and integration across channels and supply chain stakeholders

Digitalisation of the maritime transport chain

Figure 4: How a Smart-Shipping "Transport Factory" might be organized



At the heart of the business model are seven management groups, all using ICT to coordinate their activities – 1) ship teams, 2) shore teams; 3) systems teams 4) technical teams 5) customer teams 6) Shipbuilder & equipment suppliers and 7) Port & Transport systems - Martin Stopford

The challenges

According to 2016 transportation and logistics research by PwC

“only 10 percent of transportation and logistics companies rate the maturity of their data analytics capabilities as advanced”.

This is less than in other sectors, PwC states (source: “Industry 4.0: Building the Digital Enterprise – Transportation and logistics key findings”).

The challenges

- Shipping and transportation processes have not been updated for over 20 years
- Lack of common processes
- Diverse data requirements
- Many documents not digital – still talking about digital BoL, since 1980s
- And those that are digital but not digitised
- **No common platform or open source API**
- Cloud not yet synonymous with shipping and ports but is in logistics (3/4pls and suppliers)
- Anti competition rules in the sectors

What is stopping it really happen?

- This is all very good, but … syndrome
- Is there really a will to deliver to shipper demands for fully integrated supply chains or are we paying lip service to it?
- Will the industry be able to provide end to end visibility and common data sharing in transport chains identified by shippers as necessary to optimise logistic supply chains?
- Which technology to choose? Fear of getting it wrong
- Unlikely, unless we can integrate the highly fragmented maritime & ports sectors into seamless supply & financial chains.
- Some are doing it and up for the challenge …..

No more humans?

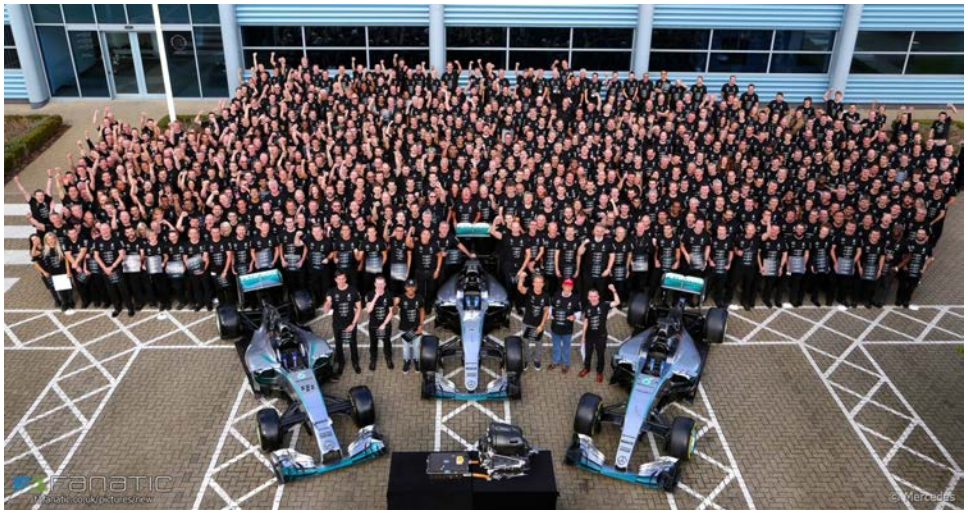
- **Regardless of how autonomous we want systems to be, there remains an important human element whereby management is changing in the decentralising context of Industry 4.0 but nevertheless it will still need people to plan and take actions as not all actions can be or should be automated.**
- **Exception management**

No more humans?

4.0 - Requires different skillsets to manage it all and take the right decision in a changing environment of decentralisation, **fast decision making,** the development of real-time capabilities and **agility** with a shift from centralised organisational and planning approaches to on-demand planning **and managing uncertainty in far less pre-determined scenarios.**

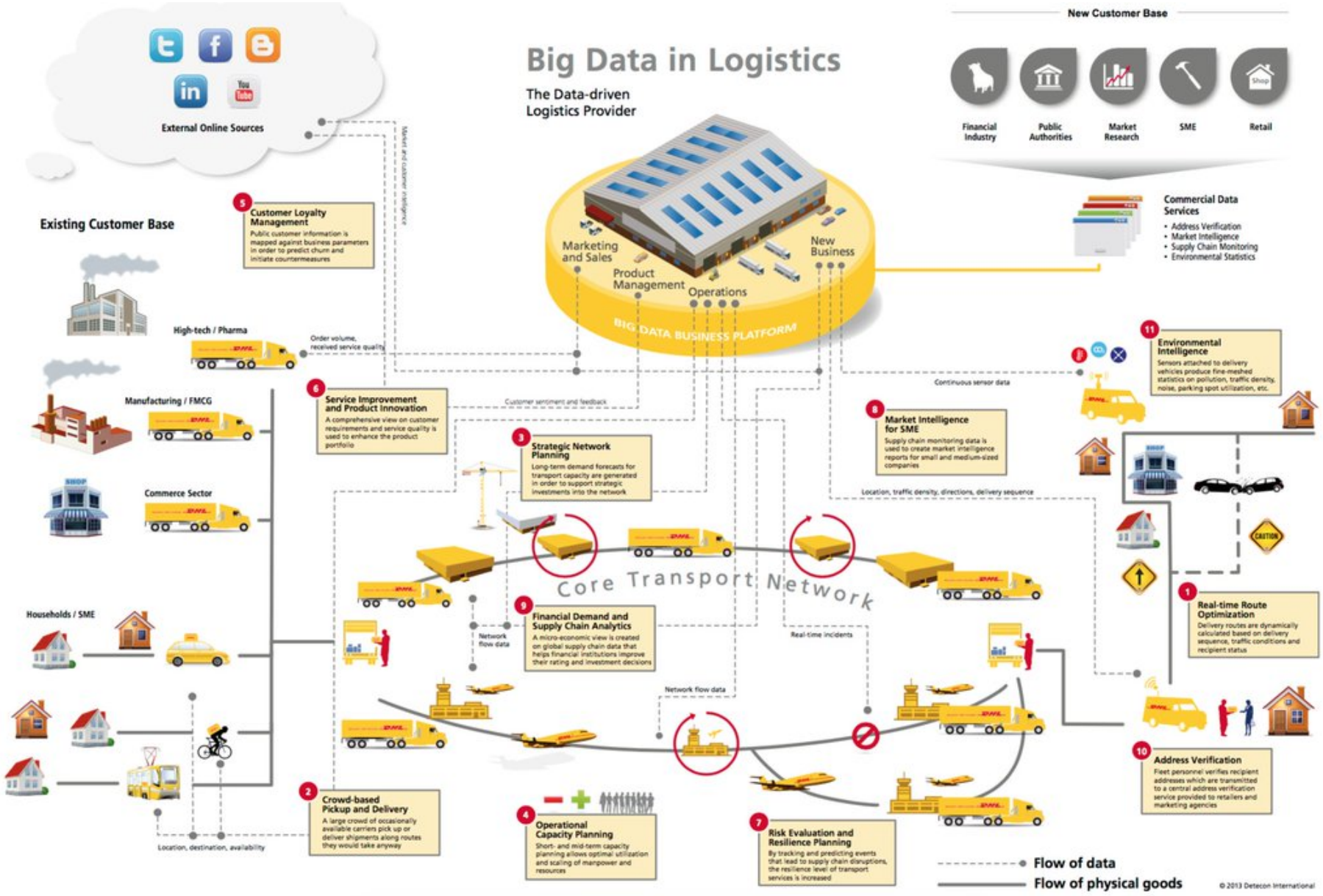
No more humans?

Learning from others



One Formula 1 team

One Formula 1 car team


Big Data in Logistics
The Data-driven Logistics Provider
External Online Sources
Existing Customer Base
New Customer Base
Financial Industry
Public Authorities
Market Research
SME
Retail
Commercial Data Services
• Address Verification
• Market Intelligence
• Supply Chain Monitoring
• Environmental Statistics
Marketing and Sales
Product Management
Operations
New Business
BIG DATA BUSINESS PLATFORM
5 Customer Loyalty Management
Public customer information is mapped against business parameters in order to predict churn and initiate countermeasures
High-tech / Pharma
Manufacturing / FMCG
Commerce Sector
Households / SME
Order volume, received service quality
6 Service Improvement and Product Innovation
A comprehensive view on customer requirements and service quality is used to enhance the product portfolio
Customer sentiment and feedback
3 Strategic Network Planning
Long-term demand forecasts for transport capacity are generated in order to support strategic investments into the network
8 Market Intelligence for SME
Supply chain monitoring data is used to create market intelligence reports for small and medium-sized companies
Continuous sensor data
11 Environmental Intelligence
Sensors attached to delivery vehicles produce fine-meshed statistics on pollution, traffic density, noise, parking spot utilization, etc.
Location, traffic density, directions, delivery sequence
Core Transport Network
9 Financial Demand and Supply Chain Analytics
A micro-economic view is created on global supply chain data that helps financial institutions improve their rating and investment decisions
Network flow data
Real-time incidents
1 Real-time Route Optimization
Delivery routes are dynamically calculated based on delivery sequence, traffic conditions and recipient status
10 Address Verification
Fleet personnel verifies recipient addresses which are transmitted to a central address verification service provided to retailers and marketing agencies
2 Crowd-based Pickup and Delivery
A large crowd of occasionally available carriers pick up or deliver shipments along routes they would take anyway
Location, destination, availability
4 Operational Capacity Planning
Short- and mid-term capacity planning allows optimal utilization and scaling of manpower and resources
7 Risk Evaluation and Resilience Planning
By tracking and predicting events that lead to supply chain disruptions, the resilience level of transport services is increased
Flow of data
Flow of physical goods
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Thank you
Questions?