Sources causing potential disruption of Logistics Service Providers Business Models

Presentation to the ETH Zurich

Roland Berger
Strategy Consultants

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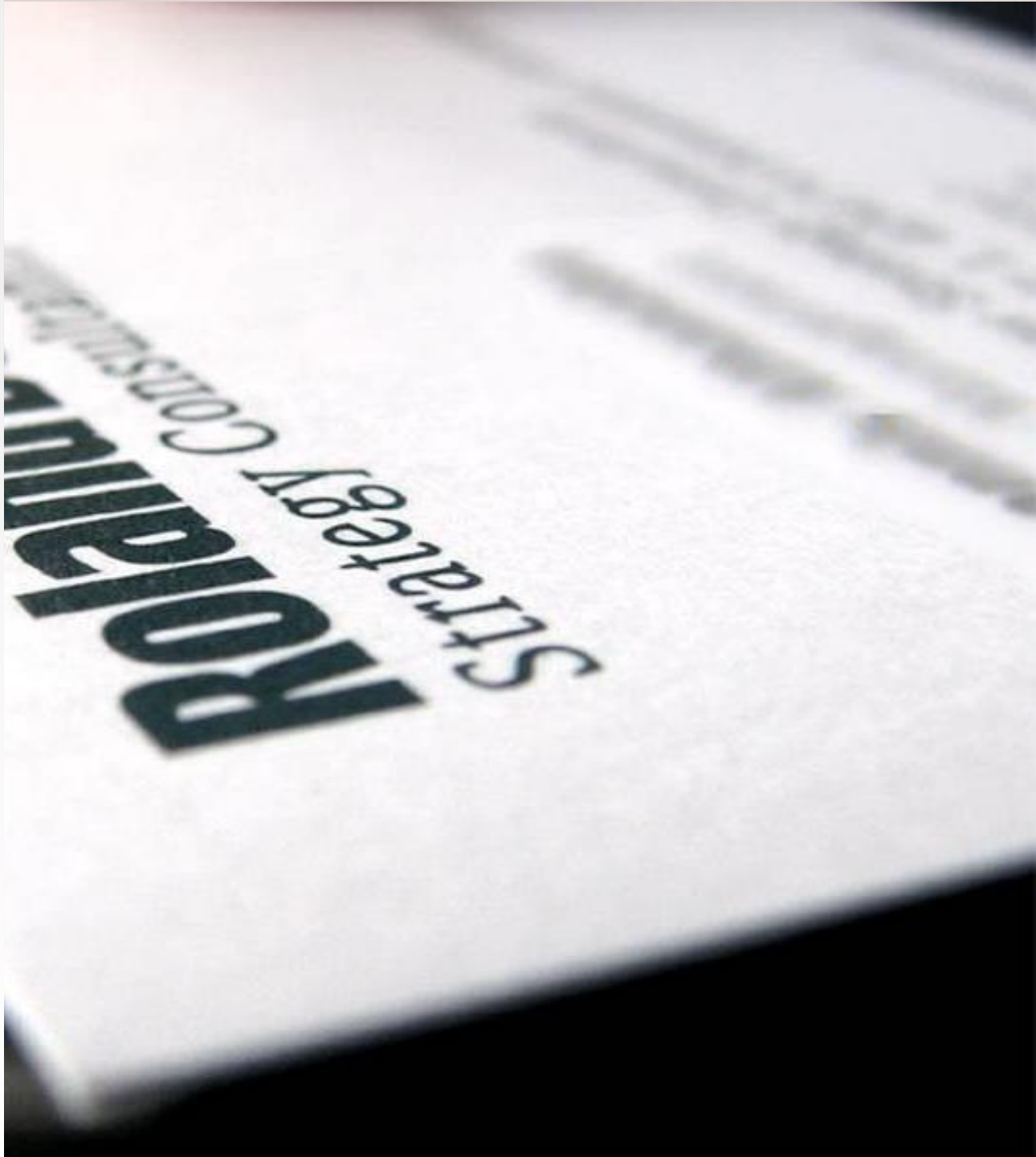
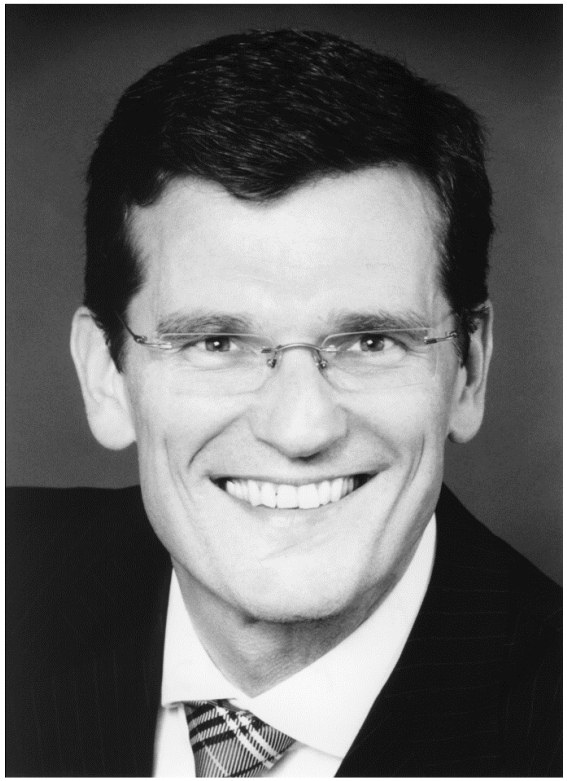
A. Introduction of Roland Berger Strategy Consultants

Roland Berger
Strategy Consultants



Let me introduce myself

Matthias Hanke, Managing Partner, Zurich



- Born 1965 in Hamburg, living in Basel
- Married, two kids (18/20)

- Apprenticeship in steel trading (2 years)
- German Navy (2 years)
- Combined Master studies of Mechanical Engineering and Business Administration at Technical University Darmstadt (6 years)

- Junior Consultant to Senior Project Manager at RBSC (5 years)
- Executive Vice President "Network & Strategy" at Swissair, Crossair, Swiss (4 years)
- DHL Express (3 years)
- Partner with RBSC in Zurich (9 years)
- Key areas: Logistics, Aviation, Tour Operating

- *Mobile: +41 79 372 3945, e-mail: matthias.hanke@rolandberger.com*

Source: Roland Berger

Let me introduce our company (I/II)

Logistics experts involved

Peter Wiese
Project Manager ZRH

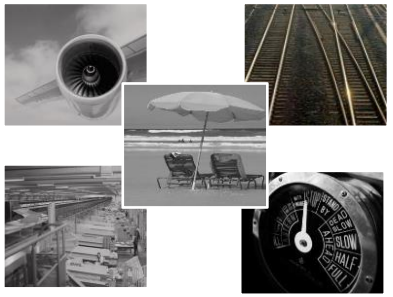
> 3 years of experience in DHL Global Forwarding
> 4 years of consulting experience
  – Logistics
  – Freight forwarding/shipping
  – Distribution and supply chain optimization
  – Reorganization and offshoring

Vlad Ciocan
Project Manager ZRH

> 3 years experience with ExxonMobil Aviation and Retail
> 5 years of consulting experience
  – SCM/Logistics
  – Retail and Consumer Goods
  – Tourism/Travel and Aviation
  – Digitalization

Christian Schmid
Consultant ZRH

> 2 years of consulting experience
  – Logistics
  – Cargo airlines and hubs
  – Digitization of value chains
  – Foundation of Joint Ventures in Asia



> **Worldwide some 40 partners** with their teams in CC Transportation
> Active in **23 countries**
> Serving global clients in **all fields connected to transportation**:
  – Aviation and Tourism
  – Rail
  – Postal and logistics
  – Shipping and ports

Source: Roland Berger

Let me introduce our company (II/II)

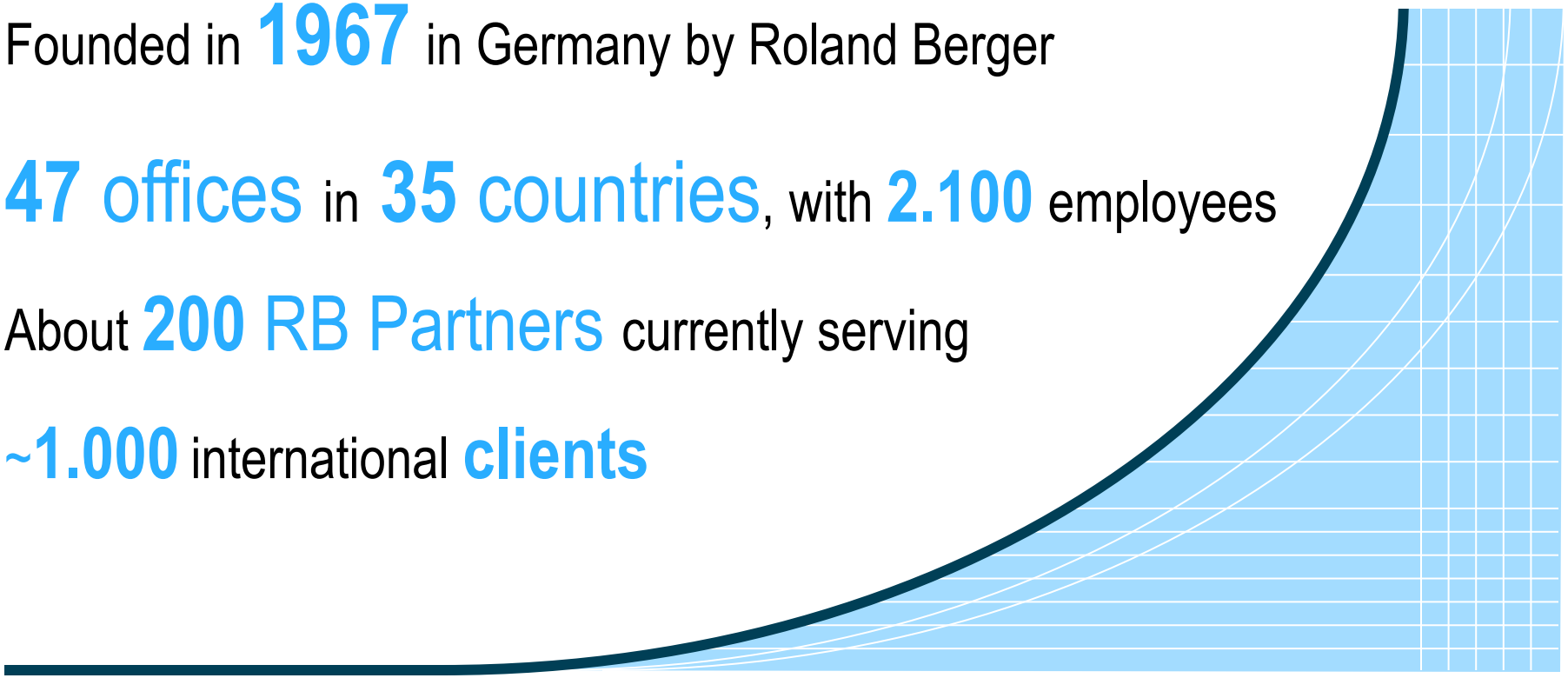
Our scope and global reach

Founded in **1967** in Germany by Roland Berger

47 offices in **35** countries, with **2.100** employees

About **200** RB Partners currently serving

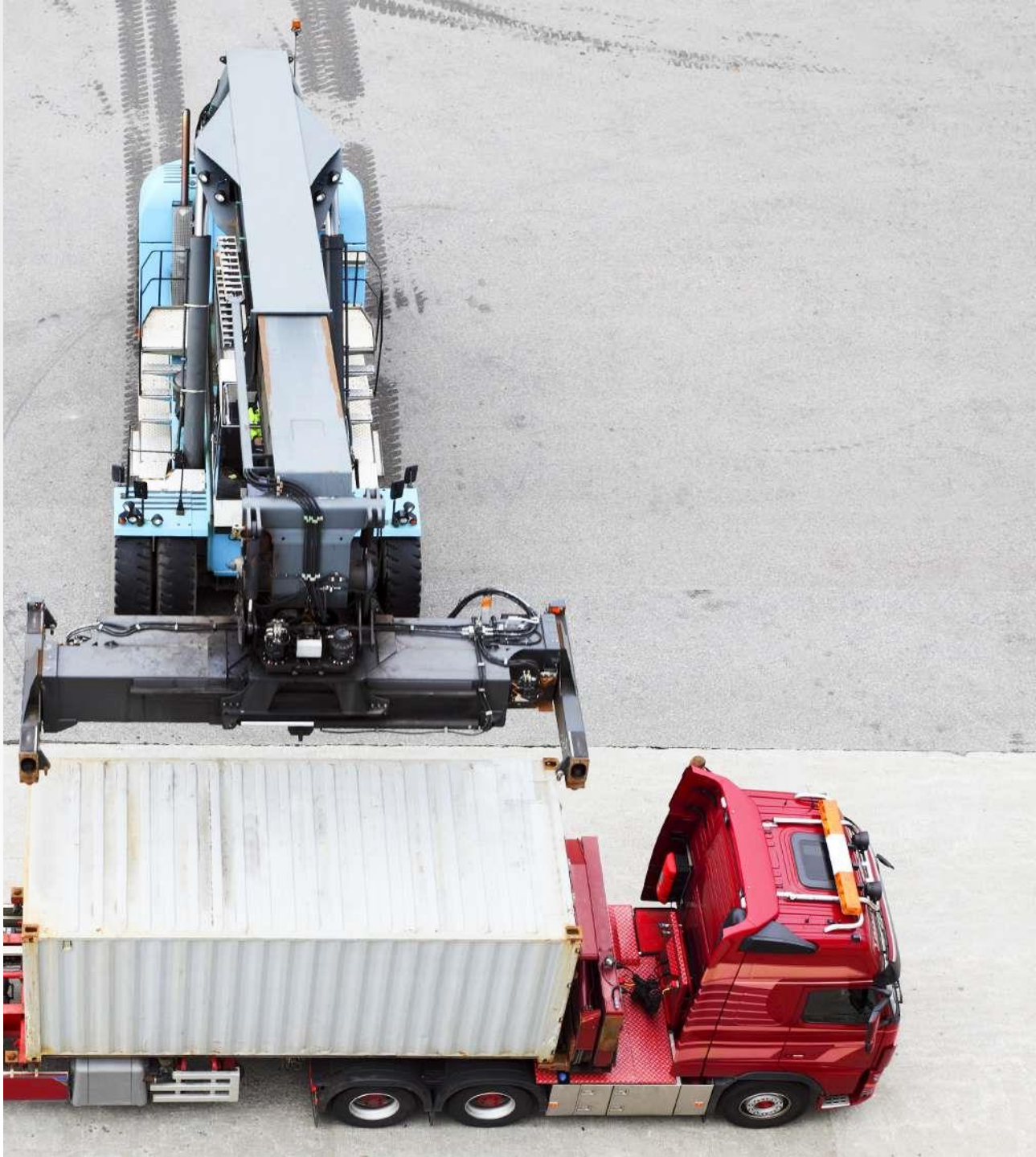
~1.000 international **clients**



Source: Roland Berger

B. Logistic service providers (LSPs) – A brief delineation of the industry

Roland Berger
Strategy Consultants



Logistics Service Providers can be clustered into 4 largely different groups

Summary: Logistics Service Providers

1. Logistic Service Providers (LSPs) are **vendors within the supply chain management process** of large operating/producing companies

2. LSPs activities as a result of a continuous outsourcing process are being differentiated between **2/ 3/ 4 party logistics** (PL)

3. 3/4-PL Logistic providers can be clustered into 4 largely different groups: **overland transportation, global forwarding, contract logistics, express logistics**

Source: Roland Berger

Logistic service providers are vendors within the supply chain management process of large operating companies

Perspectives on logistics

The "shipper/ consignee" perspective

> Supply Chain Management
  - **Purchasing** of production material and logistics components
  - **Inbound** logistics
  - **Site/production** logistics
  - **Distribution** logistics
  - …

> Overall **supply chain ownership** and accountability for all actions conducted
> Actively managing **cost & quality** control
> **Make or buy** decisions
> Increasing **demands for sophistication** of logistics services

Focus

The "logistics provider" perspective

> **Forwarding** Services
> **Warehousing** Services
> Logistic **Solutions**
> **Transportation/hauler** Services
> …

> **Network** capabilities, **knowhow** & **value added services** form strong USPs
> Sophisticated **asset management** and/ or **capacity purchasing**
> **Price-competitive** offering

Source: Roland Berger

LSPs activities as a result of a continuous outsourcing process are being differentiated between 1/2/3/4 party logistics (PL)

Key differentiators

SHIPPER

1PL

> **Shipper or consignee** for a given manufacturing/ transportation flow (owner of the cargo)
> **Overall responsible** for execution of logistics activities

LOGISTICS PROVIDER

2PL

> Companies **operating assets** to execute **the physical transportation** of goods
> Typical 2 PL players include airlines, shipping lines, trucking companies, and warehousing companies – **asset heavy business models**

3PL

> Service providers that rely on consolidating and integrating multiple logistics services into a **holistic door-to-door solution** for customers
> Maintains very **limited physical assets** and relies on purchasing- or leasing capacity from 2PL's (⇨ Forwarders)

4PL

> **Independent actors/ consultants** that are organizing and managing complete supply chains strategies for their customers
> Drive **outsourcing decisions, supplier selection , cargo routing** …to support SCM; this way also **manage subcontracting** with 3PLs and 2PLs

Source: Roland Berger

Logistics service providers can be clustered into 4 largely different groups

Logistics Service Providers

	Key characteristics
Overland Transportation	> Mainly **trucking**; growing share of rail > Forwarders often exercise "**Selbsteintrittsrecht**" and "operate" > Operation consists of **carriage** plus **terminal operation** for LTL business (groupage) > "Mama and Papa business" – low USPs ... **low entry hurdles**
Global Forwarding	> Core business is **sea and air** intercontinental transportation > **Asset-light/ trading business** (capacity brokerage) plus **value added services** > **Low margins** (RoS; don't mix up with RoC) > **Interfaces** with Overland Transportation and Contract Logistics
Contract Logistics	> **Coordination of parts of the supply chain** on behalf of the customer > **Warehousing and Distribution** are elements of core business > Contract duration over a **longer period** (~5 years) with dedicated **investments** > **IT integration/interfacing** with customer is key
Integrators; Express Logistics	> **Door-to-door** service, self operated (P&D, domestic linehaul, intl. linehaul, terminals) > Standing **network** – given fix-cost (flight gets operated ... full or empty) > **Day-definite** and **Time-definite** delivery plus even **courier-services** > **High-cost** proposition

FOCUS TODAY

Source: Roland Berger

C. Sources of disruption of logistics service providers business models

Roland Berger
Strategy Consultants

These days LSPs find themselves increasingly challenged between a changing trade landscape and revolutionary digital techniques

Overview: Potential sources for disruption of LSPs legacy business models

1.

CHANGING TRADE LANDSCAPE

> Change of **geography** of trade lanes (and thus the shippers places for contracting)
> Change of traded **categories**
> Change of **modal split**
> **External events** overlaying the dynamics in the trade landscape

2.

LOGISTICS 4.0

> **New technologies** driven by digitization
> **New players** driven by new technologies
> Potentially **shortened value chains**
> **Legacy business models** become partially obsolet

Source: Roland Berger

C.1 Trade lane management reloaded: Shift of global trade lanes and its modal split

Roland Berger
Strategy Consultants

Without an enforced trade lane management, logistics service providers might not be able to respond to a shifting trade landscape

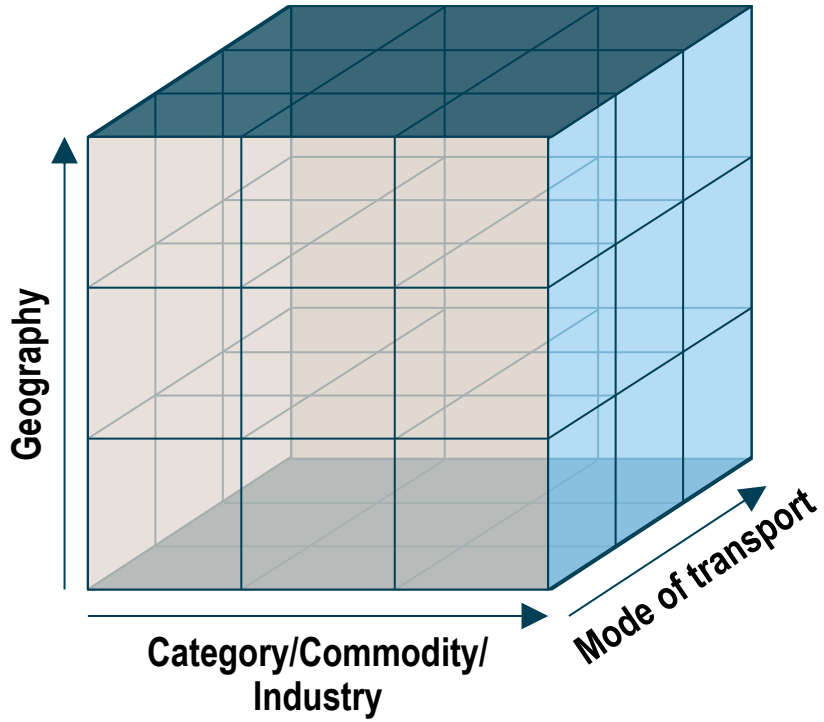
Summary: Trade lane management reloaded

1. New data **analysis tools and increasing global data transparency/availability** support structured trade lane management
2. Link between **GDP growth** and the **logistics industry** has been weakened since the financial crisis – Global trade forecasted to **grow with ~5% p.a**. however with **different focus concerning geography, categories and modal split**
3. 2009–2023: a view to the top 50 trade lanes show a **shift away from the traditional super trade lanes** between the US, Europe and China towards a China-centered trade pattern involving **intra-regional trade** and trade between emerging markets
4. Shippers **are further driving the shift** of trade lane landscape, forcing incumbent Logistics Service Providers to keep up by adjusting to extended and increasingly complex supply chains
5. Besides a shifting trade landscape there is a critical **modal shift from air to sea** respectively **growth of the seafreight sector** at the expense of general air cargo
6. A deeper view into 2013's Chinese key trade lanes show an **that raw material categories** are fueling the overall growth of China's trade – Additionally, **growing Chinese middle class** is fueling **demand for Western fresh, high-quality products** – Interesting niche market for LPSs
7. Green logistics, near shoring and potential political unrests are further **external factors which might cause disruption** with a view to an LSPs trade lane management
8. … **SO WHAT:** Global LSPs have to **enforce tradelane analyses** and to **adapt their local foot-print** in order to remain competitive in the future

Source: Roland Berger

New data analysis tools and increasing global data transparency/ availability enabling structured trade lane management

1. Trade lane management tools (here: IHS data cube)



- **Historical** data from **1997** and …
- …**forecasts** until **2030**
- Data available in **tons**, **value** and **TEUs** traded between **93 countries**
- Coverage of **air, land and sea transport**
- **127 unique commodities**[1)] which can be mapped **to fit LH Cargo product categories** or industries
- Based on IHS, one of **the most extensive bottom-up trade data sources** for the transportation industry – Forecasts calculated using a **macroeconomic and industry** development model

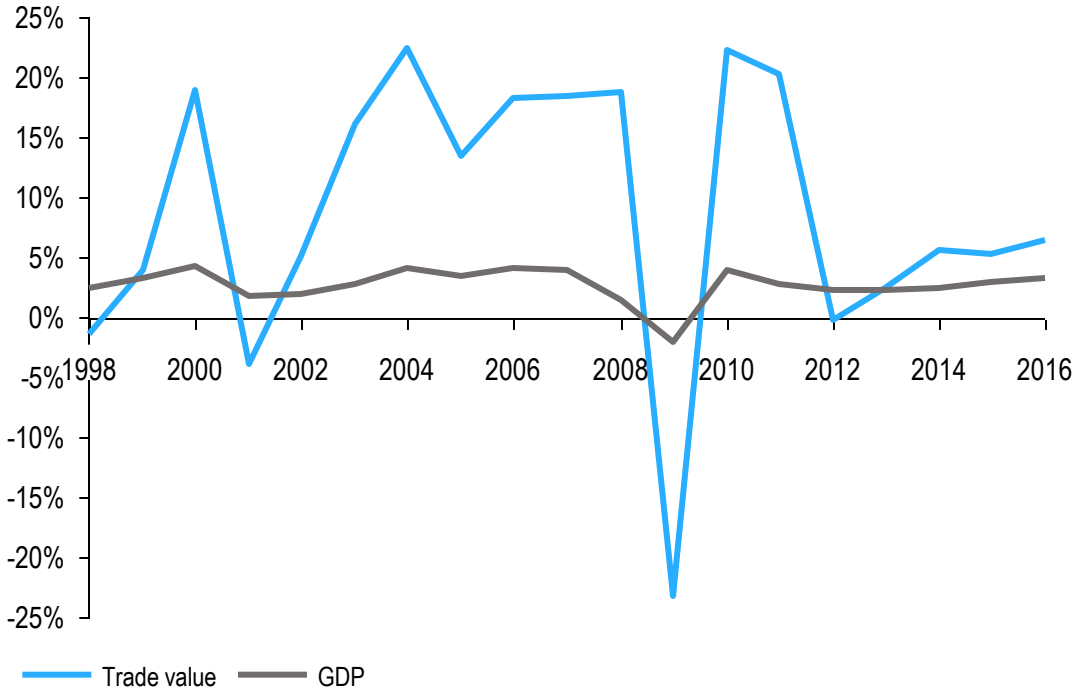
1) Categorized according to the WCO HS classification

Source: IHS, Roland Berger

Global trade forecasted to grow with ~5% p.a. however with different focus concerning geography, categories and modal split

YoY growth, world wide cross-border trade flows vs. GDP growth [%][1)]

MARKET DEVELOPMENT AND OUTLOOK



After the crisis of 2009 and recovery in 2010/11, traditional growth mechanisms for logistics are no longer reliable

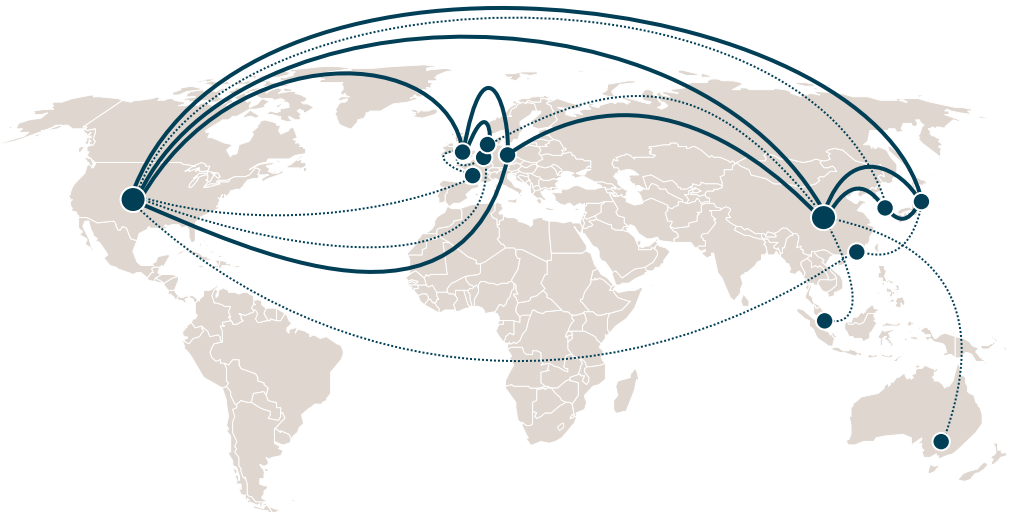
- **Logistics growth more volatile** than GDP – In times of peaks logistics would develop faster than GDP
- Logistics industry grew with a **multiplier of 4X GDP** over the last several decades – However, pattern expected to change moving closer to GDP growth in the order of **2X GDP**
- But, **high variation** for:
  - different **geographies**
  - different **categories**
  - different **modes of transport**

1) Nominal value

Source: IHS,World Bank, Roland Berger analysis

Trade lanes are shifting: from super-trade lanes between Europe, US, and China that handled the majority of volume in 2009…

Busiest trade lanes[1)] in 2009 [USD bn]



Top 10 Top 20

Rank	Bilateral trade pair	Volume
1	China - United States	290
2	China - Japan	210
3	Japan - United States	150
4	China - Korea	140
5	Germany - United States	120
6	Germany - United Kingdom	110
7	China - Germany	100
8	United Kingdom - United States	100
9	Japan - Korea	70
10	United Kingdom - Netherlands	70
11	Korea - United States	70
12	United Kingdom - France	60
13	Hong Kong - United States	60
14	China - Singapore	60
15	France - United States	50
16	China - Australia	50
17	Netherlands - United States	50
18	Japan - Hong Kong	50
19	China - Netherlands	40
20	United Kingdom - Belgium	40

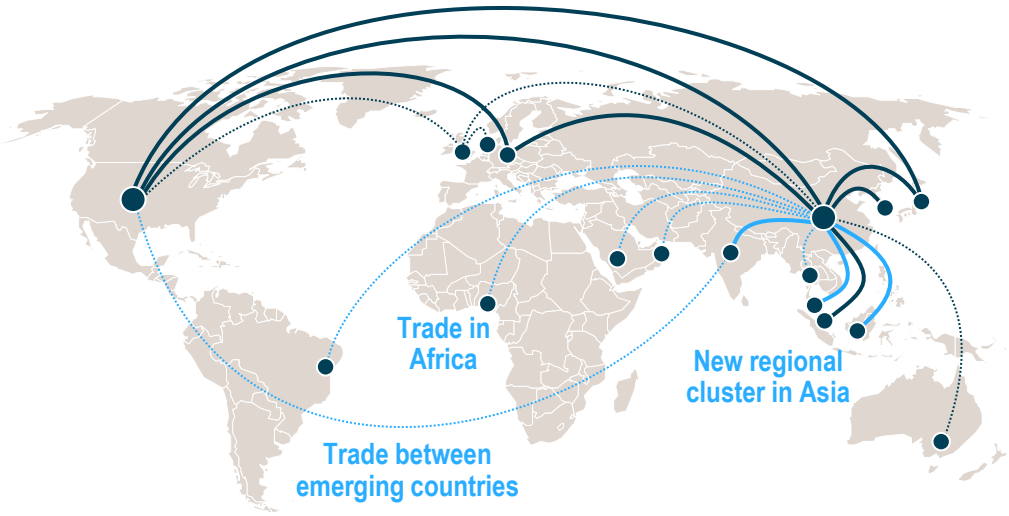
Trade within Europe Trade within Asia

1) Top air and sea freight bilateral trade pairs

Source: IMF, PWC, Roland Berger analysis

…to a China-centered trading pattern involving intra-regional trade and trade between emerging markets by 2030

Estimated busiest trade lanes[1)] in 2030 [USD bn]



Rank	Bilateral trade pair	Volume
1	China - United States	590
2	China - Japan	340
3	China - Korea	280
4	China - India	260
5	China - Germany	200
6	Japan - United States	190
7	China - Singapore	180
8	China - Indonesia	170
9	Germany - United States	170
10	China - Malaysia	160
11	China - Nigeria	150
12	Germany - United Kingdom	140
13	United Kingdom - United States	140
14	China - Thailand	140
15	China - Saudi Arabia	140
16	China - Brazil	140
17	United States - India	130
18	China - United Kingdom	120
19	China - United Arab Em.	120
20	China - Australia	120

Trade within Europe Trade within Asia

Key challenges for global LSPs: Build up new business relationships with Chinese shippers

Top 10 (2030) already in top 20 in 2009
Top 10 (2030) but not in top 20 in 2009
Top 20 (2030) already in top 20 in 2009
Top 20 (2030) but not in top 20 in 2009

1) Top air and sea freight bilateral trade pairs

Source: IMF, PWC, Roland Berger analysis

Shippers are further driving the shift of trade lane landscape, forcing LSPs to adjust and extend increasingly complex supply chains

Example: Development of VW's global trade network

VW EUROPE CENTRIC NETWORK IN 1990

> **Flows of materials and finished vehicles** originated (for the majority) in Europe
> Relatively **simple supply chain and transportation** operating model – Point to point from Europe

VW GLOBAL NETWORK TODAY

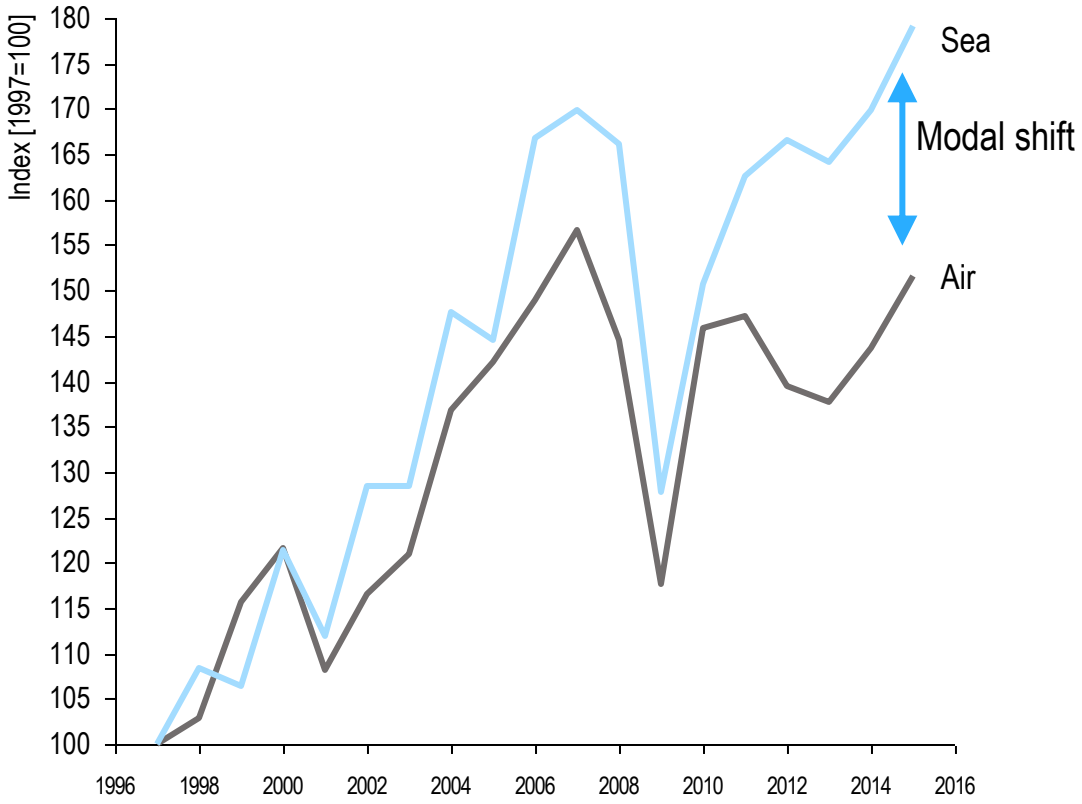
> **Integrated global transportation network** supporting operation across the globe – 25% increase in volume[1)]
> Complex network supported by **several global LSPs and numerous local logistics players** for inbound logistics

1) Adjusted for growth in production volume

Source: Transport Intelligence, Roland Berger analysis

Critical modal shift from air to sea respectively growth of the seafreight sector at the expense of general air cargo visible

Growth air, sea [legacy lanes, typical air categories, 1997=100][1)2)]



> Before 2010, **similar growth patterns** of sea and air volumes visible – However, since 2010 widening gap indicating **modal shift from air to sea**

> **Drivers of modal shift** are:

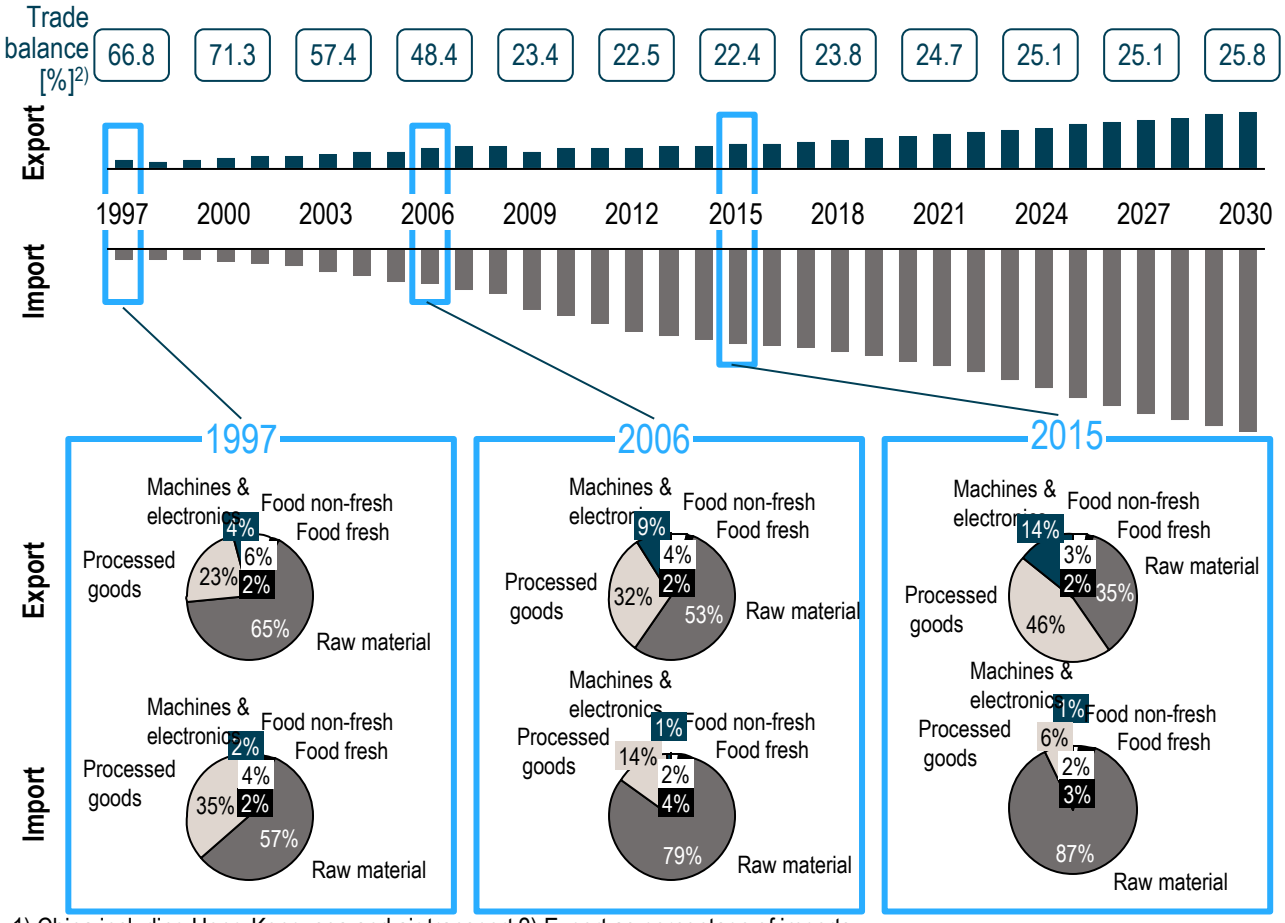
- **Low interest rates**; less impact of expensive goods being shipped iso. flown
- Dropping **sea shipping rates** due to **overcapacity**
- More **advanced supply chains** (e.g. shippers shifting to floating inventory)
- **New technologies** (e.g. more reliable and seamless cold chain capabilities)
- **Geographical shift** (main markets accessible by ship)

1) EU-AP vice versa, NA-EU vice versa, AP-NA vice versa trade lanes 2) Based on top 20 air cargo IHS categories 1997 in terms of volume

Source: IHS, Roland Berger

Raw material categories are fueling the overall growth of the global trade – Fastest growing commodities from a variety of sectors

Chinese import and export volumes [tons m, 1997-2030][1)]



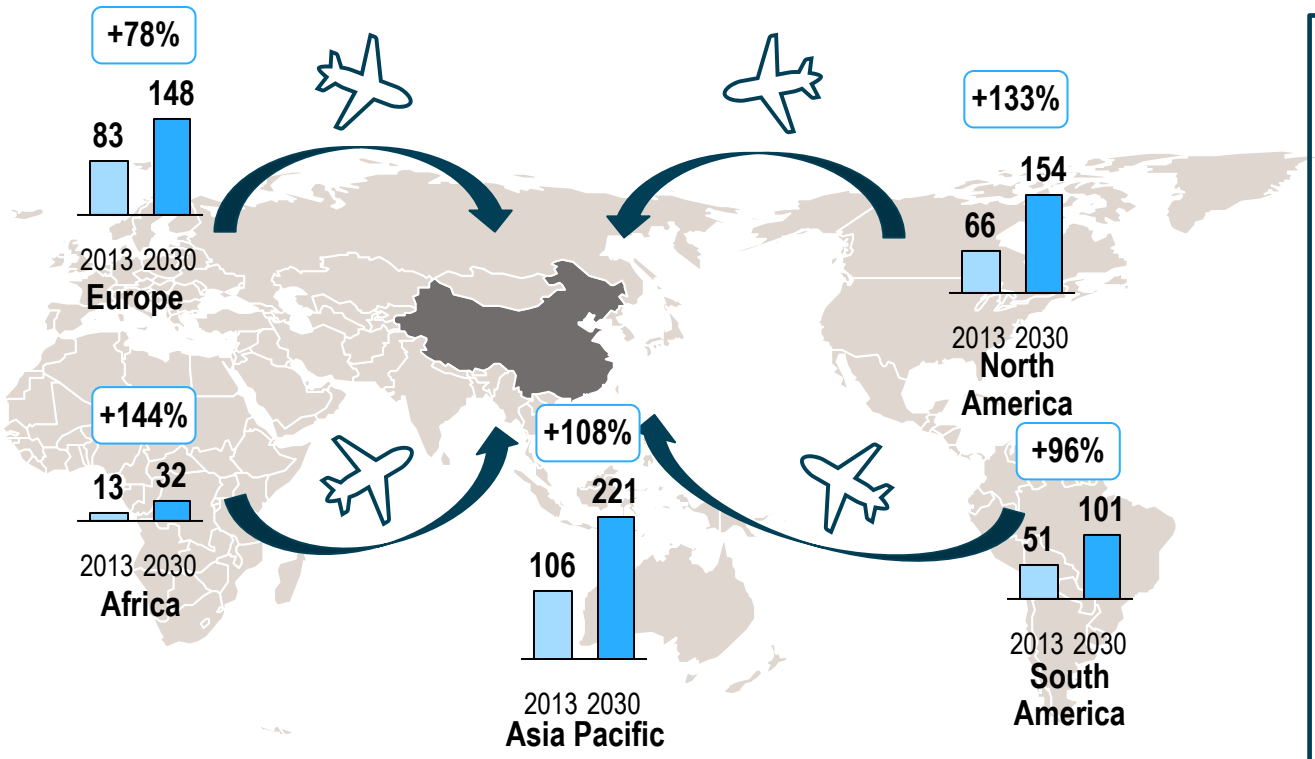
- China is a strong **growing logistics market** with steady growth of **import**, as well as **export** volumes
- Over time, Chinese **export patterns shifted** away from simple to more sophisticated/ processed products
- **Raw materials** becoming most important Chinese import **fueling global growth** of trade
- Due to growing wealth and thus growing consumption of population, China is expected to remain a **net importer** in terms of logistics volumes

1) China including Hong-Kong, sea and air transport 2) Export as percentage of imports

Source: IHS, Roland Berger

Growing Chinese middle class is fueling demand for Western fresh, high-quality products – Interesting niche market for LPSs

Chinese demand for fresh and luxury products ['000 t, 2013-2030][1)2)3)]



- Fast growth of the **Chinese middle class** in the last years created **high demand for high-quality European goods** such as wine, dairy products or luxury products
- **Typical products** include **dairy**, **meat**, **wine** and **watches** from Europe, **beauty products** from the US and **fish** from South America and Africa
- LSPs could start filling up **their excess capacity** to China with these goods to benefit from growing demand

1) China including Hong-Kong, Middle East excluded due to very small volumes 2) Air transport volumes 3) Defined as fresh vegetables, meat, dairy products, food ingredients and luxury products

Source: IHS, Roland Berger

Other non-mainstream tradelanes also offer interesting opportunities – Africa and South America expected to grow significantly

Area-to-area trade lane growth [tons m, vice versa directions, sea and air transport][1)]

Tradelane	2013	2030	Growth [#]	Growth [%]
Africa-Africa	46.9	114.4	67.5	144.0%
Africa-Asia Pacific	563.5	1'181.4	617.8	109.6%
Africa-Europe	434.9	747.6	312.7	71.9%
Africa-North America	112.9	169.8	56.9	50.4%
Africa-Middle East	72.6	140.0	67.4	92.9%
Africa-South America	83.3	133.3	50.0	60.1%
Asia Pacific-Asia Pacific	2'879.5	5'008.5	2'129.0	73.9%
Asia Pacific-Europe	615.1	974.3	359.1	58.4%
Asia Pacific-North America	492.0	1'047.8	555.8	113.0%
Asia Pacific-Middle East	869.3	1'281.6	412.2	47.4%
Asia Pacific-South America	641.4	1'235.0	593.5	92.5%
Europe-Europe	44.2	54.9	10.8	24.4%
Europe-North America	303.0	383.9	80.9	26.7%
Europe-Middle East	211.5	304.7	93.2	44.0%
Europe-South America	324.0	465.2	141.2	43.6%
North America-North America	75.7	110.6	34.9	46.1%
North America-Middle East	106.9	151.7	44.8	41.9%
North America-South America	424.6	552.4	127.8	30.1%
Middle East-Middle East	1.7	3.5	1.8	107.8%
Middle East-South America	44.6	79.8	35.3	79.0%
South America-South America	180.8	351.4	170.6	94.3%

1) Excluding undefined trade flows

> **Intra-Asian** trade is expected to become **worlds largest 'tradelane'** by 2030

> However, apart from Asia, **other emerging markets tradelanes** are also expected grow significantly in the future

> Especially **Africa** and **South America** are foreseen to **experience significant growth** rates, despite current lack of coverage

> **LSP's** have to make thorough analyses in order to be prepared in due to capture opportunities

Source: IHS, Roland Berger

Green logistics, near shoring and potential political unrests are further external factors which might cause disruption

Further external factors

Nearshoring

- Companies seeking to **shift work to lower cost countries** within own regions to maintain **flexibility and response times** of their supply chain
- **Less attractive** to offshore production e.g. to Far East
- As a result trade lanes **are becoming shorter and more regional**

Green logistics

- Over the last decade **environmental** issues have become a **mainstream** topic
- Political and **social demand** for sustainable development forces organizations to **reduce the environmental impact** on their **supply chains**
- **New** and more **eco-friendly logistics** concepts and trade lanes need to be developed

Political unrest

- **Rising political tensions**, especially in **Eastern Europe** as well as the **Middle East** having negative effects on shipping times as well as safety
- Shippers as well as LSPs have to **adapt trade lanes to changing political** environment and **find solutions** to safeguard products

CHANGED TRADE STRUCTURE INCREASES IMPORTANCE OF INTRA-REGIONAL TRANSPORT

Source: Deutsche Bank, Transport Intelligence, Roland Berger

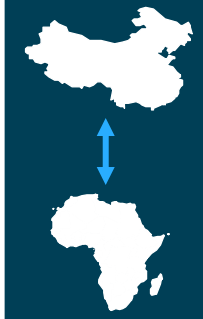
Global LSPs have to enforce tradelane analyses and to adapt their local foot-print in order to remain competitive in the future

Refocused trade lanes to match new market realities

INTRA - ASIA

> Ensure that company has **proximity to/and knowledge of APAC** markets and shippers

> Focus on **building relationships with local shippers**



CHINA - AFRICA

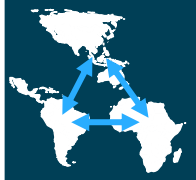
> Develop companies foot-print with competences in verticals covering **resources to China** and **manufactured goods to Africa**

> Local **presence in Africa** is critical

EUROPE – ASIA

> Changed focus from relying on Western shippers to mature **APAC shippers with global** networks

> Grow advanced logistics competence and **capabilities in APAC**



EUROPE – EMERGING MARKETS

> Expand **scope/footprint of company** to capture upcoming volume between emerging markets

> Build "local overseas knowledge" to **offer shippers valuable export services**

Source: Roland Berger

C.2 Logistics 4.0: how new technologies and new players will change the logistics industry

Roland Berger
Strategy Consultants

Logistics will strongly be influenced by digitalization, especially on the last mile, through platforms and automated intermediation

Summary: Logistics 4.0 (1/2)

1. **'Logistics 4.0'** has to be understood in the overall context of digitization and **'Industry 4.0';** digitization takes effect on industry via four levers (digital data, automation, connectivity and digital customer access)
2. Hypothesis #1: **Logistics industry will be exposed more and faster to digitization** than other industries
3. Hypothesis #2: **Innovation will come rather from outside** based on new techniques – A monitoring of recent start-ups in the logistics area suggests, that legacy LSPs will be only capable in a limited form to transform themselves
4. Hypothesis #3: **Value chains will be characterized by less players and** higher automation; new **consignee or even consumer access** will be based on new distribution concepts
5. Hypothesis #4: **The biggest impact will happen on the last mile resp. in distribution**
6. Hypothesis #5: Classical logistics activities will experience huge efficiency increases through **highly automated and highly connected operations with real-time control**
   - Digitally supported **disposition of goods** leading to smaller warehouses resp. reduced stock-keeping
   - **Warehousing** however shows ambivalent trends: either a tendency towards super-large infrastructure with **highest warehousing automation standards** or towards **largely decentralized warehouses** and shared by digital technique
   - Digitally supported **disposition of drivers and vehicles** enables reduction of operating assets
   - App-based disposition of drivers/ vehicles/ goods will even **reduce disposition workforce** in the road forwarders ops control center
   - **Autonomous/driverless trucks** could boost efficiency – legal/ infrastructure topics to be solved before

Source: Roland Berger

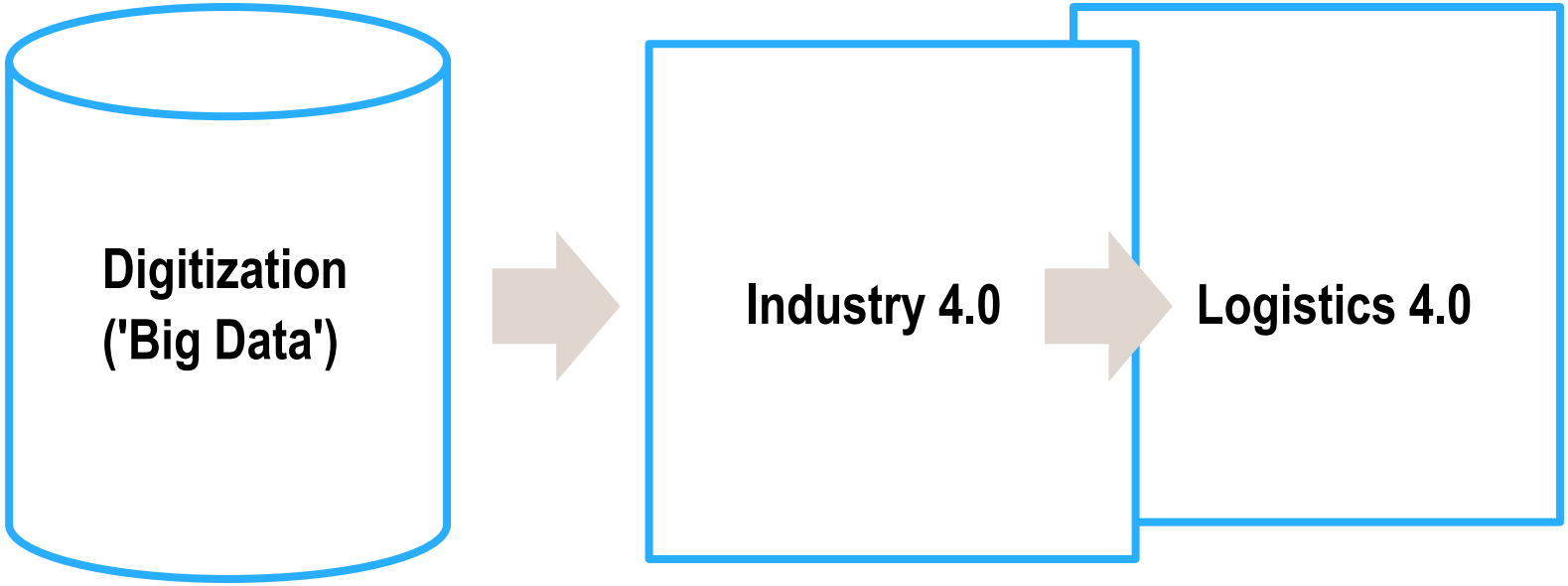
Logistics will strongly be influenced by digitalization, especially on the last mile, through platforms and automated intermediation

Summary: Logistics 4.0 (2/2)

6. Hypothesis #4: Classical logistics activities will evolve towards highly automated and highly connected operations with real-time control (continued)
   - **Tasks of classical network management** might become replaced by an 'Uber-like' organization of networks based on shared capacities – networks will be regulating themselves
   - Biggest impact on **forwarding logistics** will have upcoming **freight platforms** – a key precondition here will be the standardization of data formats similar to the PAX business
7. …**SO WHAT**: LSPs will have to **review own business models with a view to digitization opportunities** and challenges and **selectively invest to acquire new models from start-ups**

Source: Roland Berger

'Logistics 4.0' has to be understood in the overall context of digitization and 'Industry 4.0'



> Industry 4.0 is being **enabled by advanced availability and use of data**
> **Autonomous processing entities** coordinate themselves in a very flexible set-up
> Overall, many **processes have to be reviewed** and can be redesigned more efficient
> Innovation will come – **companies can be part of if or the will become marginalized**

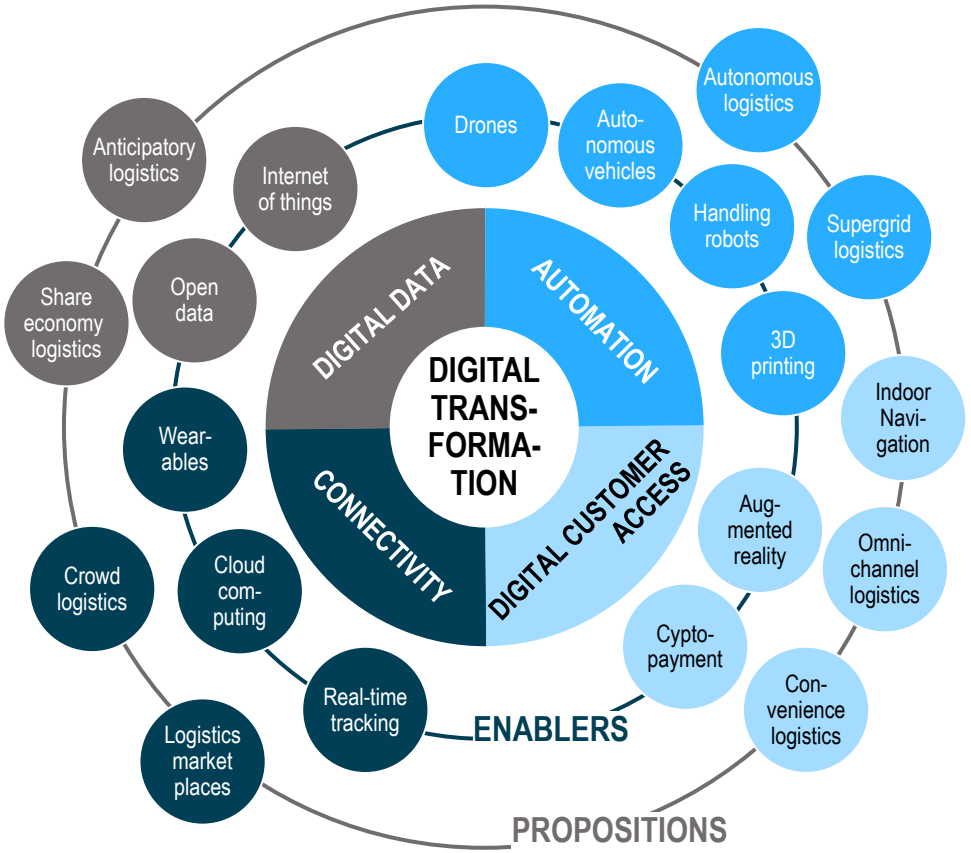
Source: Roland Berger

Digitization takes effect on industry via four levers – the general framework can be applied also on 'Logistics 4.0'

'Industry 4.0'

- **Digital data**. Capturing, processing and analyzing digital mass data allows better predictions and decisions to be made
- **Automation**. Combining traditional technologies with artificial intelligence is increasingly giving rise to systems that work autonomously and organize themselves. This reduces error rates, adds speed and cuts operating costs
- **Connectedness**. Interconnecting the entire value chain via mobile or fixed-line high-bandwidth telecom networks synchronizes supply chains and shortens both production lead times and innovation cycles
- **Digital customer access**. The (mobile) internet gives new intermediaries direct access to customers to whom they can offer full transparency and completely new kinds of services

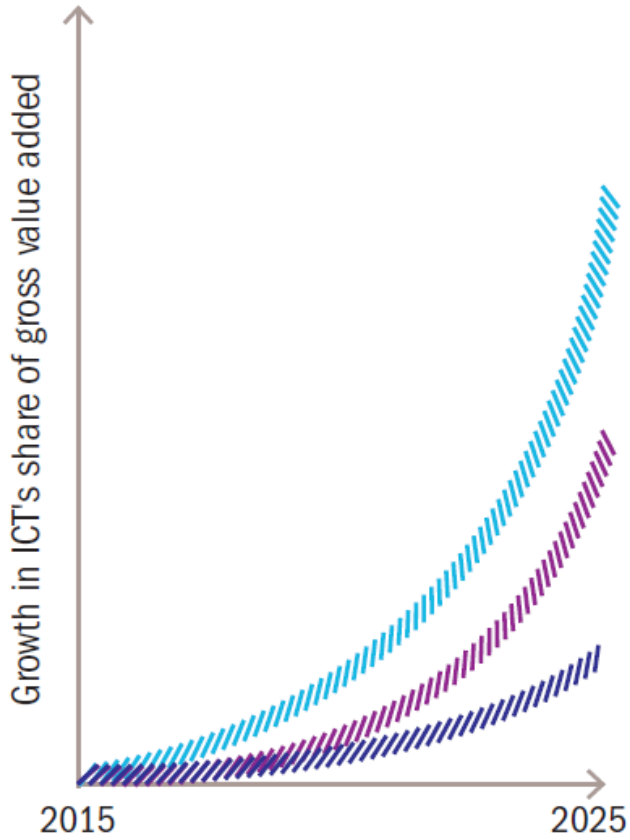
'Logistics 4.0'



Source: Roland Berger, joint study with BDI on effects of Digitization

Hypothesis #1: Logistics industry will be exposed more and faster to digitization than other industries (1/2)

Non-reaction might lead to overall market losses in the order of ~EUR 605bn



	Change in ICT's share of GVA in 2025, relative to 2015	Potential losses through 2025 (cumulative)
Wave 1	+ 17% points Disruptive to serious impact on entire industry	Automotive, logistics EUR 350 bn in GVA[1)]
Wave 2	+ 10% points Serious to moderate impact on individual segments	Medical technology, electrical engineering, mechanical/plant engineering, energy systems EUR 215 bn in GVA[1)]
Wave 3	+ 5% points Evolutionary to minor impact	Chemicals, aerospace EUR 40 bn in GVA[1)]

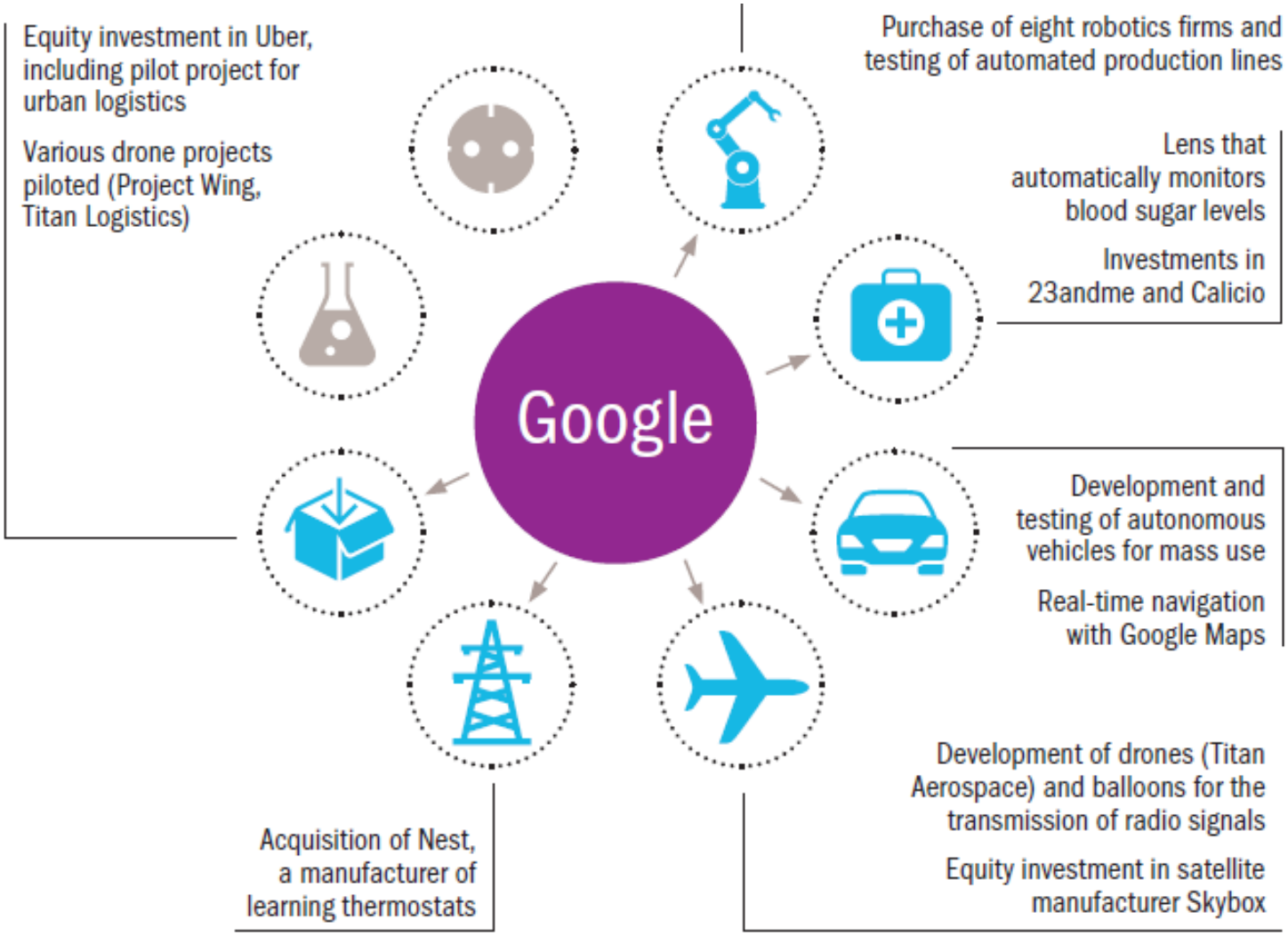
1) Information and communication technology; 2) Gross value-add of the industry in EU-15 countries plus Norway and Turkey

Source: 'The digital transformation of industry' – E European study commissioned by the federation of German industries (BDI) and conducted by Roland Berger Strategy consultants

Roland Berger
Strategy Consultants

Hypothesis #1: Logistics industry will be exposed more and faster to digitization than other industries (2/2)

Google: selected industrial projects and investments



Source: Roland Berger

Hypothesis #2: Innovation will come rather from outside – legacy LSPs will be less capable/ less flexible to transform themselves

Monitoring of recent start-ups and innovative companies in the logistics area

1 Business intelligence and data

2 Freight marketplaces

3 Niche logistics operations

4 Automation

5 Green Technology

Selective reasons, why legacy players show limited capability to transform themselves

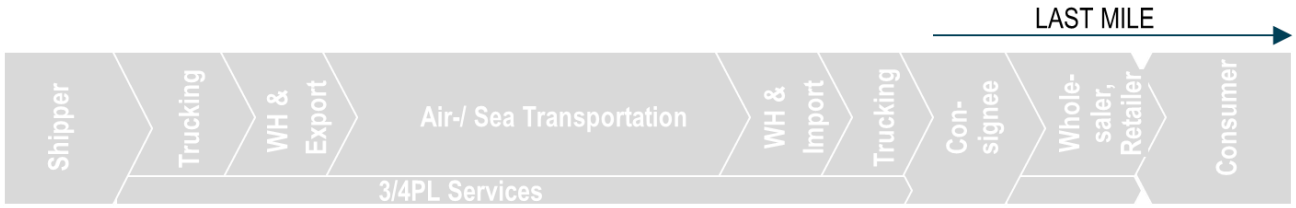
- **Accidential process** – 99% might fail – we only focus on the successful cases
- Technical innovation is often **cannibalizing** the legacy business models
- New business models often not to be combine with the old **value proposition/ brand of legacy player**
- Legacy players try to combine new technology with their own, **outdated system/process framework**

Source: Roland Berger

Hypothesis #3: Value chains will be characterized by less players and higher automation; new consignee or even consumer access will be based on new distribution concepts

Example: fresh-food cooperation Cargolux-HNCA

Traditional value chain

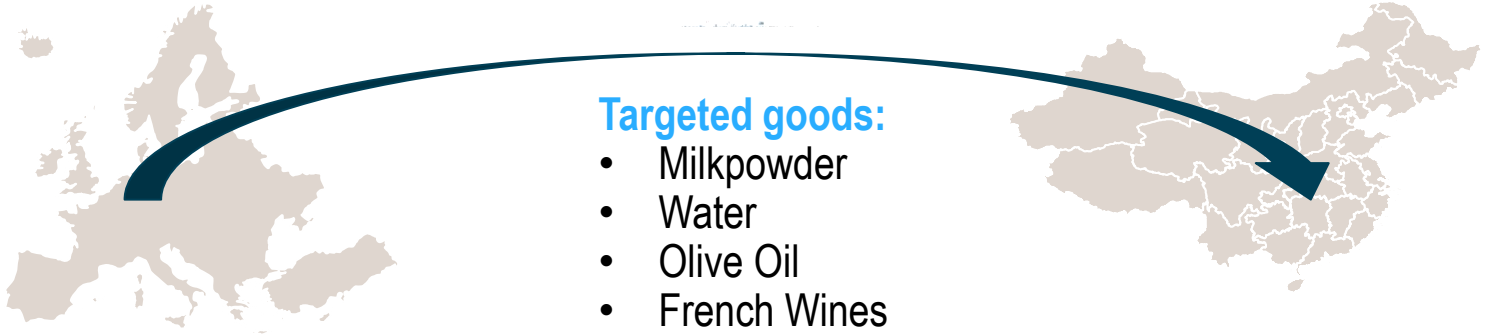


Fresh-Lux Sourcing Company

Carrier

HNCA Distribution Company (Flagship Stores, O2O, ...)

Shortened value chain



Europe

Targeted goods:

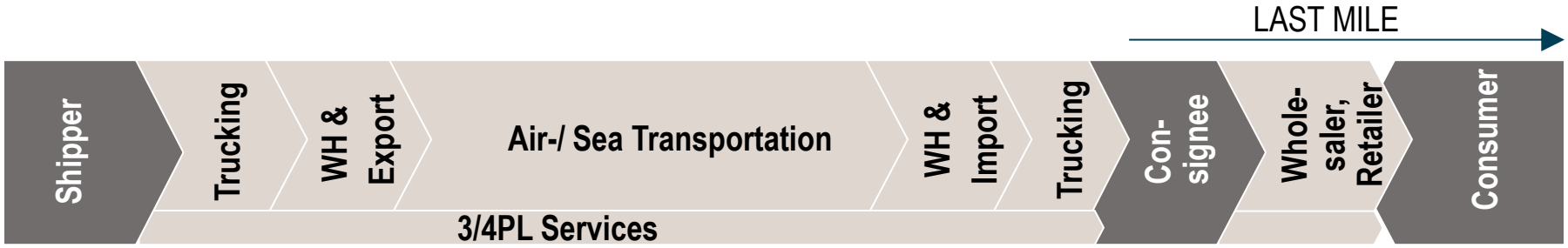
- Milkpowder
- Water
- Olive Oil
- French Wines
- Luxary Goods
- ...

China

Source: Roland Berger

Hypothesis #4: The biggest impact will happen on the last mile resp. in distribution … the value chain might shorten

Potential 'Logistics 4.0' impact along the classical value chain (1/2)

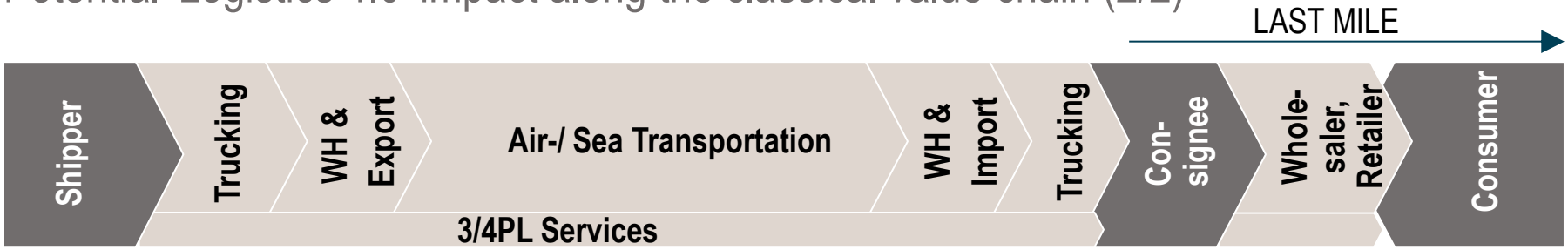


- > **O2O concepts/ Online shops/ B2C fulfilment/ Omni-channel** logistics
- > Fresh food delivery by **new players** (a.o. amazon, integrators, …)
- > Consolidated **urban logistics**; large players will set up local monopolies
- > Shared networks; **crowd logistics**
- > Autonomous **drone deliveries**
- > **3-D Printing**
- > Increased **outsourcing**/ value chain adjustments
- > Telematics, RFID and interconnectivity enable **cloud-based scheduling** as part of **collaborative business models**
- > Crypto **payment**
- > …

Source: Roland Berger

Hypothesis #5: Classical logistics activities will experience huge efficiency increases through highly automated and highly connected operations with real-time control

Potential 'Logistics 4.0' impact along the classical value chain (2/2)



- > **Process** integration and optimization
- > **Predictive** capacity planning
- > Data-based **routing**
- > **Tracking** by part/ article number
- > Manageable **stock** in transit
- > …

- > Digitally supported **disposition of goods**
- > Digitally supported **disposition of drivers and vehicles**
- > Reduced **disposition workforce**
- > Autonomous/ **driverless trucking**
- > Highly automated **mega ware-houses**; robotics handling; indoor Navigation

  versus
- > **Reduced stock-keeping** through improved disposition of goods and decentralized warehousing
- > **Self optimizing** networks
- > **Collaborative** transport; **shared networks**
- > **Freight platforms** combining different logistics players
- > …

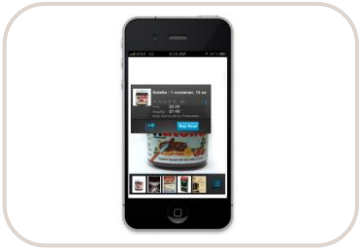
Source: Roland Berger

Roland Berger Strategy Consultants

Google and Amazon heavily invest into logistics with the intention to become a new player based on new/ digitized business models

amazon

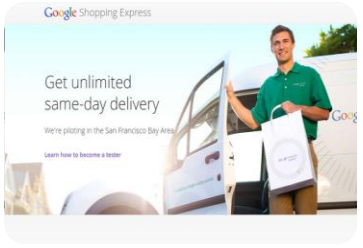
"From a book dealer towards trading and logistics"

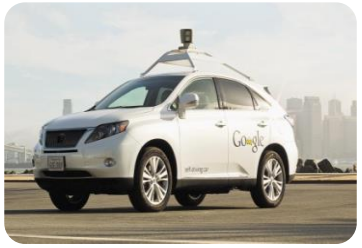


- Amazone App: buy what you see ...
- Automated picking
- Avoid last mile delivery or use drones
- Co-use same-day network

Google

"From a search engine towards trading and logistics"





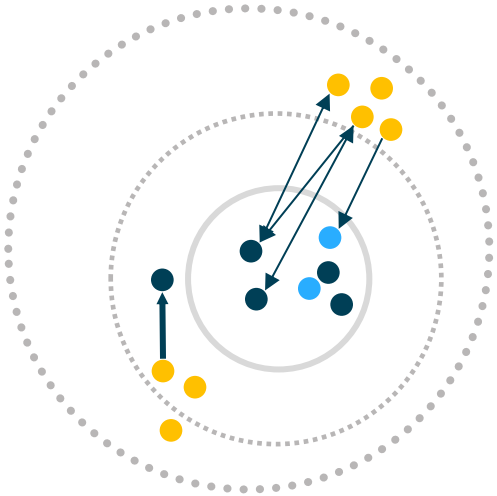
- Google App: buy what you see ...
- Automated picking
- Avoid last mile delivery
- ... or use automated cars (test taking place)

Source : presse, analyse Roland Berger

Roland Berger
Strategy Consultants

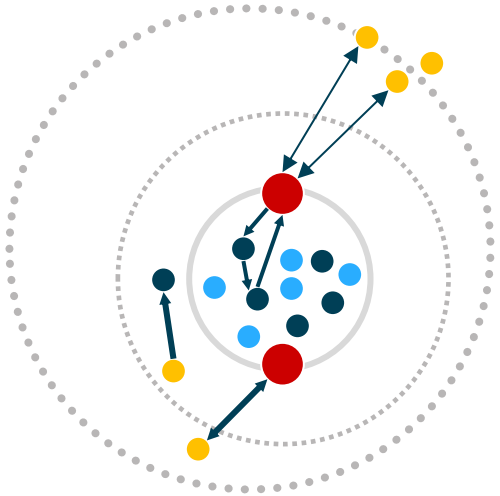
Urban logistics is becoming increasingly important as urban centers grow – benefits from delegating urban freight to a unique operator

Today



Delivery to private individuals **10-15%**

2025 +



20-30%

- > E-commerce increase
- > Fragmentation of deliveries
- > Better utilization of infrastructures and fleets
- > Congestion and pollution of urban centers
- > Multiplication of pilots: Guangzhou, Amsterdam, Kyoto, Monaco, Versailles and 7 other cities in France

- > Difficulties and additional organization costs
- > Risk of market loss for carriers
- > Unproven economic viability for operators

Warehouses (DC) | Stores | Home delivery | Consolidation centers | City center | 1st belt | 2nd belt

Source: Roland Berger Strategy Consultants

Roland Berger
Strategy Consultants

O2O concepts have gained huge importance in China and are foreseen to be combined with a potentially shortened overall value chain

O2O (online to offline) Shops

- O2O concepts combine **online stores** with **offline physical stores** and have gained a lot of importance lately especially in **China**
- Typically an O2O commerce model includes:
  - **Online Payment** (download) access to e-vouchers, e-coupons and e-tickets,
  - **Offline verification** or redemption
  - **Home-delivery** may be chosen as an additional option
  - The shops have the opportunity to pursue **additional advertising via the smartphone**
- The inclusion of **online payment** is what makes the scalability and revenue model really powerful
- Combines the main **advantages of online** (24h availability, large choice, etc.) with the **advantages of offline** (ability for "live" testing, immediate delivery, etc.)
- Shops can minimize stock-keeping by **just-in-time order/delivery** combined with **centralized warehousing and logistics**

Examples

Argos (via catalogue and website)

Digitec (via website)

Woolworths (via "order wall")

Source: Roland Berger

Roland Berger Strategy Consultants

Real-time disposition of truck, aircrafts, drivers and inventory already today forms a big source of efficiency

Digitally supported disposition

Real time fleet monitoring

46 000 vehicles equipped with real time captors measuring the localization, direction, speed, brake and chassis performance in order to re-configure vehicle trips on a real time basis

EUR 30 m savings per year

PASSUR AEROSPACE combines **historical and real time data** thanks to a network of over 60 radars in the US in order to provide ETA (estimated time of arrival) to airlines on their own airplanes

Inventory forecasts and optimization

Kimberly-Clark (Kleenex, Huggies)

EUR 20 bn $ revenues

has improved sales forecast accuracy by reducing error rate from **35% to 15%** on a weekly basis by using the **TERRA TECHNOLOGY** solution which integrates distributor data representing ~30% of its revenues at point-of-sales level in addition to its own order history

Impact:

-20% inventory in 18 months

Source: Roland Berger Strategy Consultants, UPS, Passur A., Terra Technology

Roland Berger
Strategy Consultants

Warehousing getting increasingly automated – machine replaces once more human workforce

Warehouse automation and size increases

E.LECLERC Leclerc investing EUR 1 bn into large automated logistics solutions over the next three years

> **100% mechanized solution** implemented by Witron:
  – Packages/pallets put directly onto a **conveyor** by the supplying truck driver
  – Goods are **automatically unpacked** (including from pallets) and stored according to the needs
  – **Automated sorting of orders per store** and packaging/paletting
  – Delivery into transport vehicle via **conveyor belt**

> 265 stores and ca. 800'000 packages daily being routed **through three warehouses across France**

> 5 more warehouses in construction or being planned

> Ca. **15% decrease of logistics costs** expected with a pay-back period of 6 years on the investment

Source: Roland Berger

Roland Berger
Strategy Consultants

Autonomous/driverless trucks could boost efficiency once more – infrastructure topics to be solved before

Autonomous/driverless trucks

Commentary

> **Autonomous driving is feasible** … prototype are being developed in many places
  - Self-driving **vehicles for passenger**s already being developed by Google
  - Mercedes is developing its **Future Truck 2025 autonomous truck** – first showcase of prototype in 2014

> Besides tech. development - main obstacle are **legal implications** of autonomous vehicles

> Will **separated infrastructure (separate lanes …)** be required

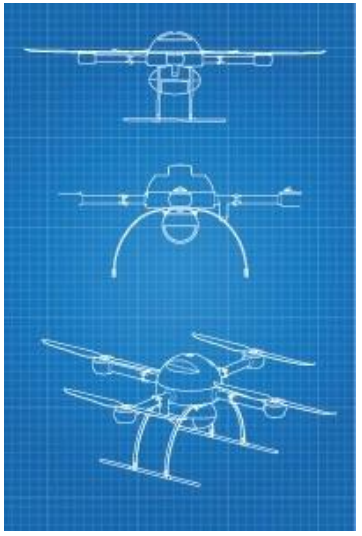
Source: Roland Berger

Roland Berger
Strategy Consultants

DHL is experimenting with logistic drones to deliver emergency drugs to otherwise hard to reach island of Juist in Germany

Logistics drones – Example of DHL Paketkopter

> Currently being used to transport **emergency drugs** to Juist Island off the North Sea coast of Germany
> **Cooperation with local pharmacy** that takes in the orders
> Deliveries are being done **ad-hoc 24/7** when weather patterns allow it
> Drone uses **electric power** and got a **flight time of 45 min** with a **range of at least 12 km; t**ransports **packages of up to 1.2 kg**



Commentary

> **Higher flexibility** in delivery times/ frequency due to **lower fixed costs** per delivery (no unused capacity)
> **Circumvents lack of other transport modes** (e.g. cars) on the island
> Ability to **operate in difficult terrain** where traditional delivery modes do not reach
> Especially relevant for **quick/ immediate delivery of low weight goods** within short ranges (e.g. urban areas)

Source: DHL, Roland Berger

Roland Berger
Strategy Consultants

Classical tasks of network management might become replaced by an 'Uber-like' organization based on shared capacities

Shared networks; crowd logistics

Stuff2Send - UK

> UK based **platform for shipments of any items** – access for all shippers/drivers

> Aims at **offering cheap delivery** and give motorists an easy source of extra income

UberCARGO - HKG

> Uber's pilot project to use its existing **platform for urban deliveries** – part of the Uber Everything concept

> Currently offered in Hong Kong but to be **expanded if successful**

> Shareconomy' describes the societal **shift from owning to sharing in the offline world**, enabled by online technology

> Enables new hybrid business models based on **flexible capacity and dynamic networks** through peer-to-peer sites (C2C or B2B) or courier platforms

> Brings new competitive dynamics to logistics where **incumbents have to deal with overhead cost structures** and regulations, while shareconomy players have less restrictions – similar to what Uber did to the taxi market

> First **players are already operational**, e.g. the industry mastodon Uber testing its concept

Source: Stuff2Send, Uber, Roland Berger

Roland Berger Strategy Consultants

Big impact on forwarding logistics will have upcoming freight platforms – a key precondition here will be the standardization of data formats

SHIPPING PLATFORMS

INTTRA

> Seafreight **shipping platform**
> **Facilitates e-commerce** in seafreight
> Connected to over **40 leading shipping lines**

GT NEXUS

> Cloud based **supply chain platform**
> Covers **door to door** flows of goods

CargoSmart

> Global **logistics platform**
> Has "**real time" sailing schedule** info
> Mainly **connected to Asian** shipping lines

KEY FUNCTIONALITIES

> See **schedule data** online
> Request "**online" quotes** (but not real-time, neither linked to the revenue management system of a carrier)
> Conduct "**online" booking** of **seafreight**, partly also corresponding **road feeder services** (but rather designed on a hybrid set-up)
> Set-up **online profile** including **master data** and **framework agreements** e.g. with road feeder service providers

KEY BENEFITS

> **Cost savings**, reduce processing costs and eliminate costs of connecting systems to multiple carriers/forwarders/shippers
> **Reduced complexity,** shipping platforms create one single connection for each carrier, forwarder and shipper
> **Faster processing times,** reduce paper, faxes, phone calls, etc.
> **Higher data quality**, by automated processes and reduced manual keying of data
> **Increased visibility** of the supply chain

COMMENT

> Big threat to the forwarder's USP
> However: No clear evidence/ proof of concept yet

Source: INTTRA, GT NEXUS, CargoSmart, Roland Berger analysis

LSPs will have to review own business models/ USPs with a view to digitization opportunities and challenges and selectively invest to acquire new models from start-ups

Source: Roland Berger

Let's think: act!

Roland Berger
Strategy Consultants