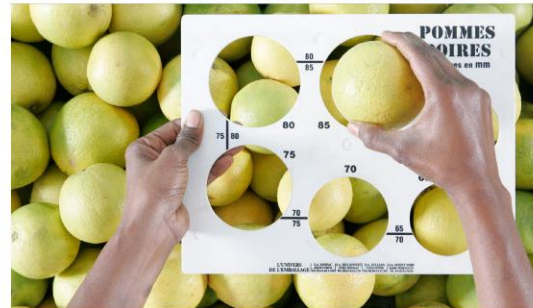


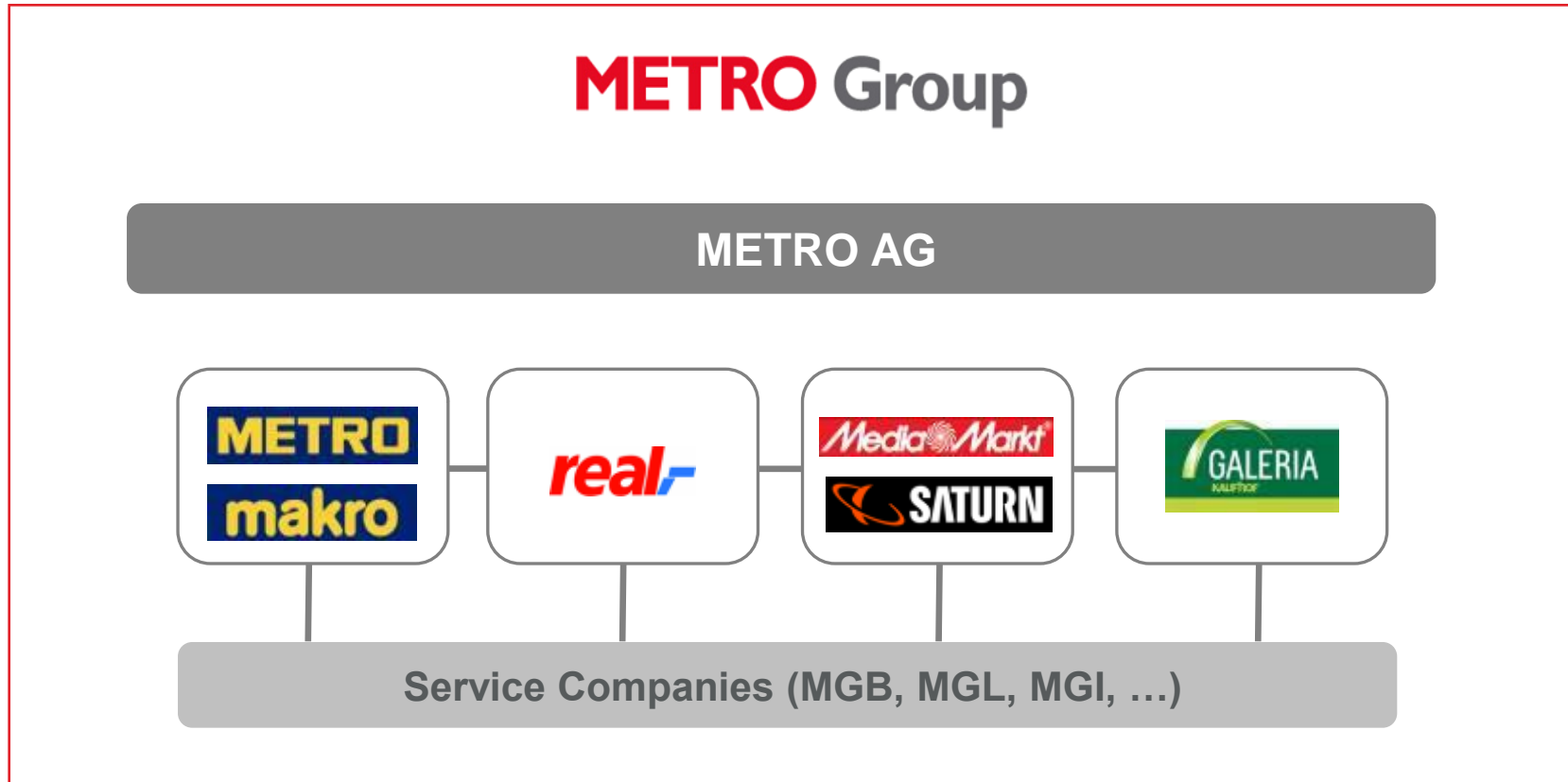
MADE TO TRADE.

End-to-End Visibility: Import Supply Chain

Alexandra Hilger / Jens Kungl (MGI) | March 2010 | © METRO AG 2010



METRO Group- Sales Brands and Service Companies



1. Corporate overview

Asia is Metro's most important import region

- METRO Group Buying HK (MGB HK) handles sourcing and buying activities in the Far East region for Metro's Sales Brands
 - More than 1300 suppliers worldwide
 - Delivering to 94 Metro warehouses
 - Shipping from 80 ports of loading to 31 ports of discharge
 - 73.000 orders (in 2009)
 - Shipping more than 54.000 twenty-foot-equivalent units (20-foot containers) (in 2009)
 - Volume of goods in 2009 amounted to ~ 1 Billion Euro



Asia is the most important import region for METRO Group's Sales Brands

2. Problem statement & project goal

Problem statement: Complexity and diversity in the international supply chain cause inefficiencies



- Metro's international supply chain encompasses
 - Many stakeholders
 - Different countries
 - Diverse processes
 - Separated IT systems and IT infrastructure

- Diversity and complexity often lead to supply chain deficiencies:
 - Incomplete order quantity caused by missing stock information
 - Small number of season changes in non-food as a result of long lead-times
 - Huge safety stocks because of high fluctuation of delivery and replenishment times
 - Out of stock situations for promotion goods due to missing delivery status information

2. Problem statement & project goal

Project goal: End-to-end visibility throughout the supply chain

- ❑ Establish end-to-end visibility and thinking on all stages of the supply chain
- ❑ Today: High-level view on financial supply chain figures across stages and optimization at each stage mainly
 - ❑ Each stage measures its performance by individual Key Performance Indicators (KPIs)
 - ❑ High level of responsibility is taken over at each stage but consideration of whole chain is often missing
- ❑ Future: End-to-end supply chain consideration on operational level and measuring of overall supply chain performance
 - ❑ Measurement of performance for the whole supply chain
 - ❑ Established end-to-end thinking among employees and managers
 - ❑ Enable end-to-end visibility and thinking

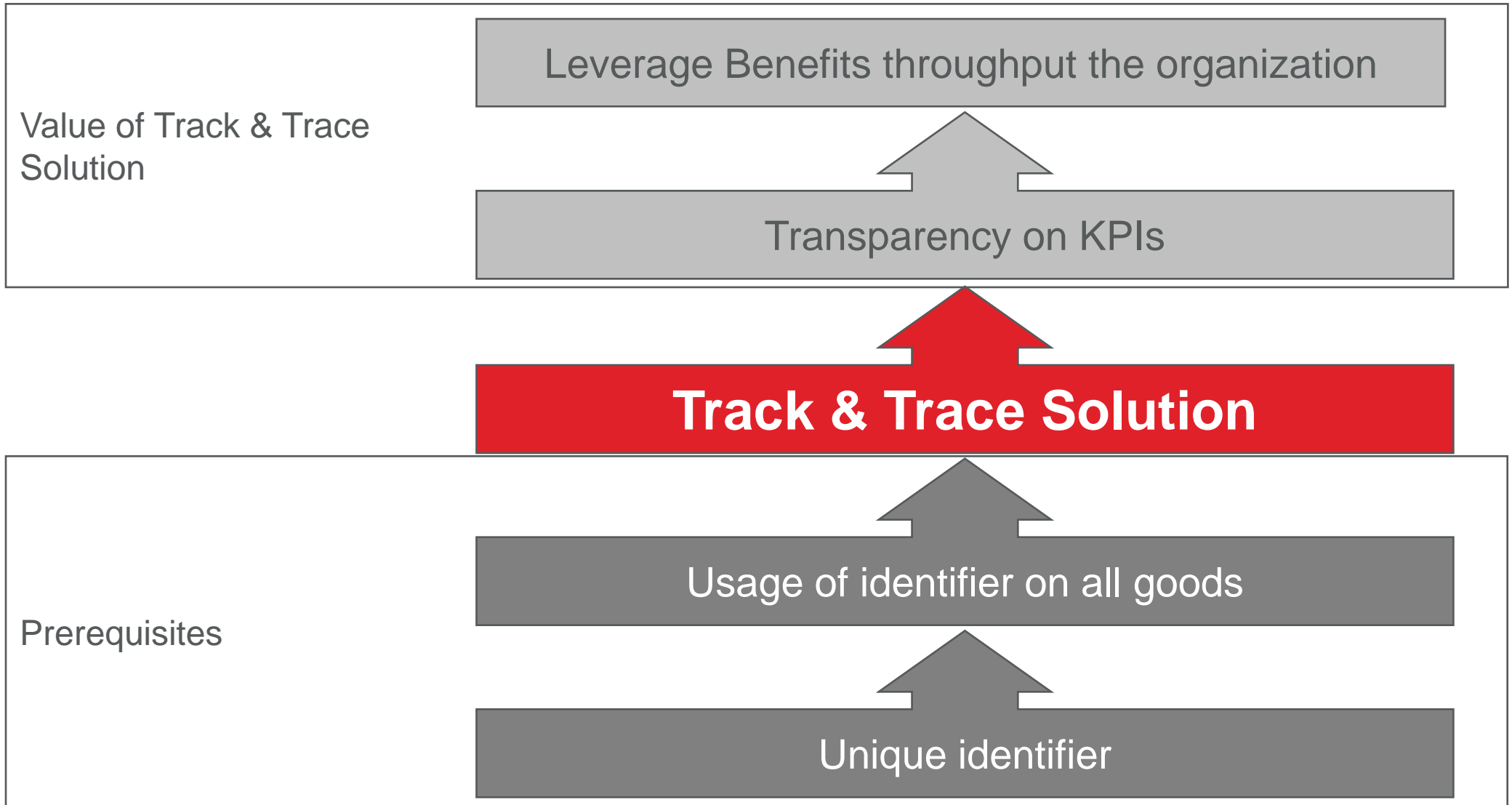
...How to get there?...

Establishing visibility with a track & trace system

- Implementation of an end-to-end track & trace system based on supply chain events
 - EDI
 - Barcode
 - RFID technology
- Establishment of end-to-end transparency on supply chain Key Performance Indicators
- Transparency enables
 - Optimization of order processing
 - Minimization of cycle times
 - Reduction of stock and associated stock costs
 - Improvement of on-shelf-availability

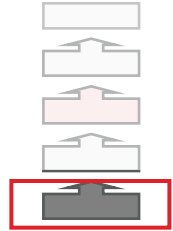
3. Prerequisites & value of a track & trace solution

Unique identifier is the prerequisite, transparency the value of a track & trace solution



3. Prerequisites & value of a track & trace solution

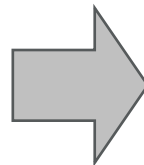
Prerequisites for track & trace: Unique identifier



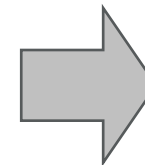
- Import goods are packed in export packages
 - Cartons of different sizes
 - No pallets



Minimal information printed on the carton, automated information gathering impossible



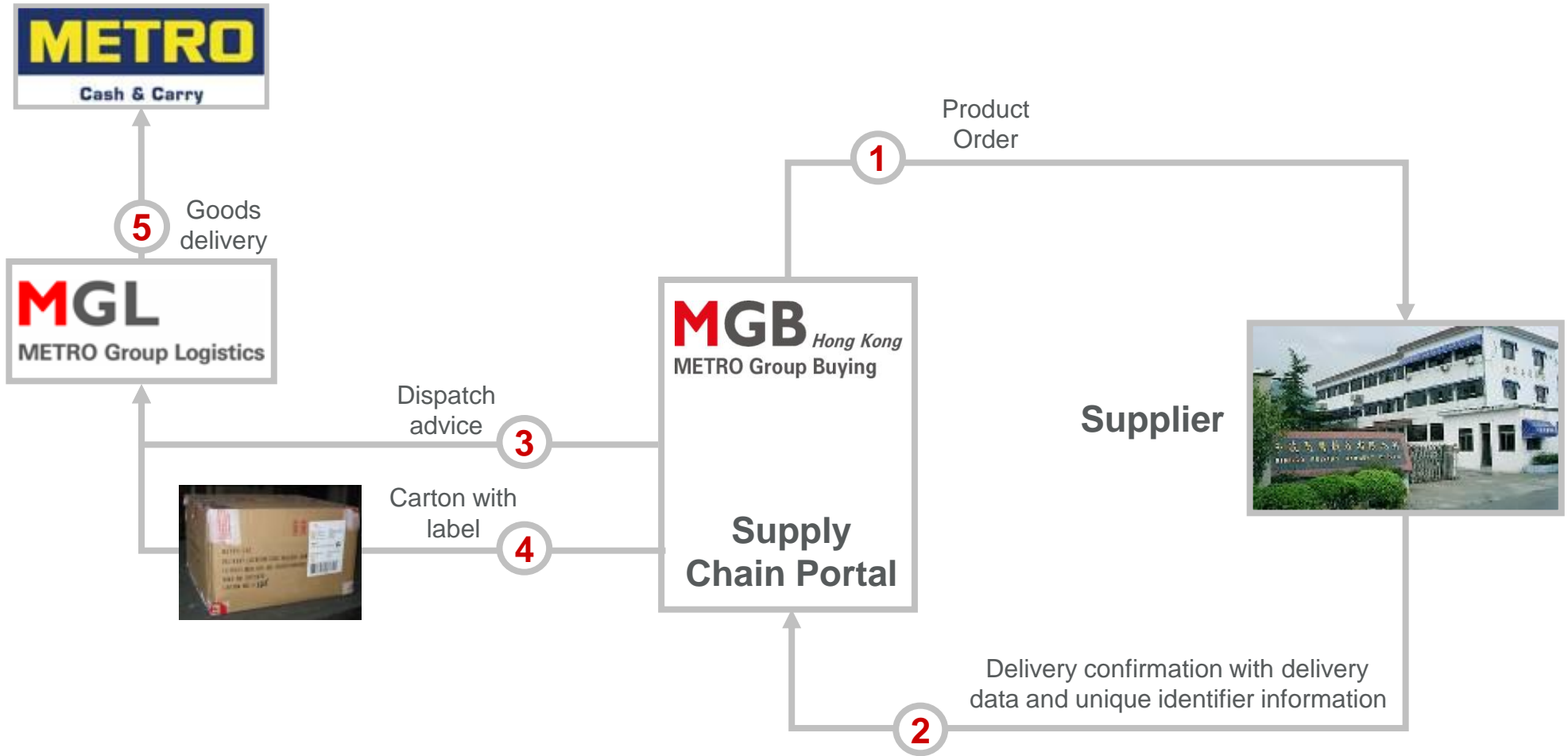
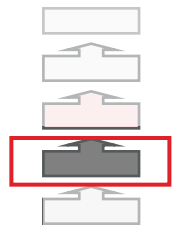
Standardized barcode and RFID information on one label



Label on carton makes automated data capture possible

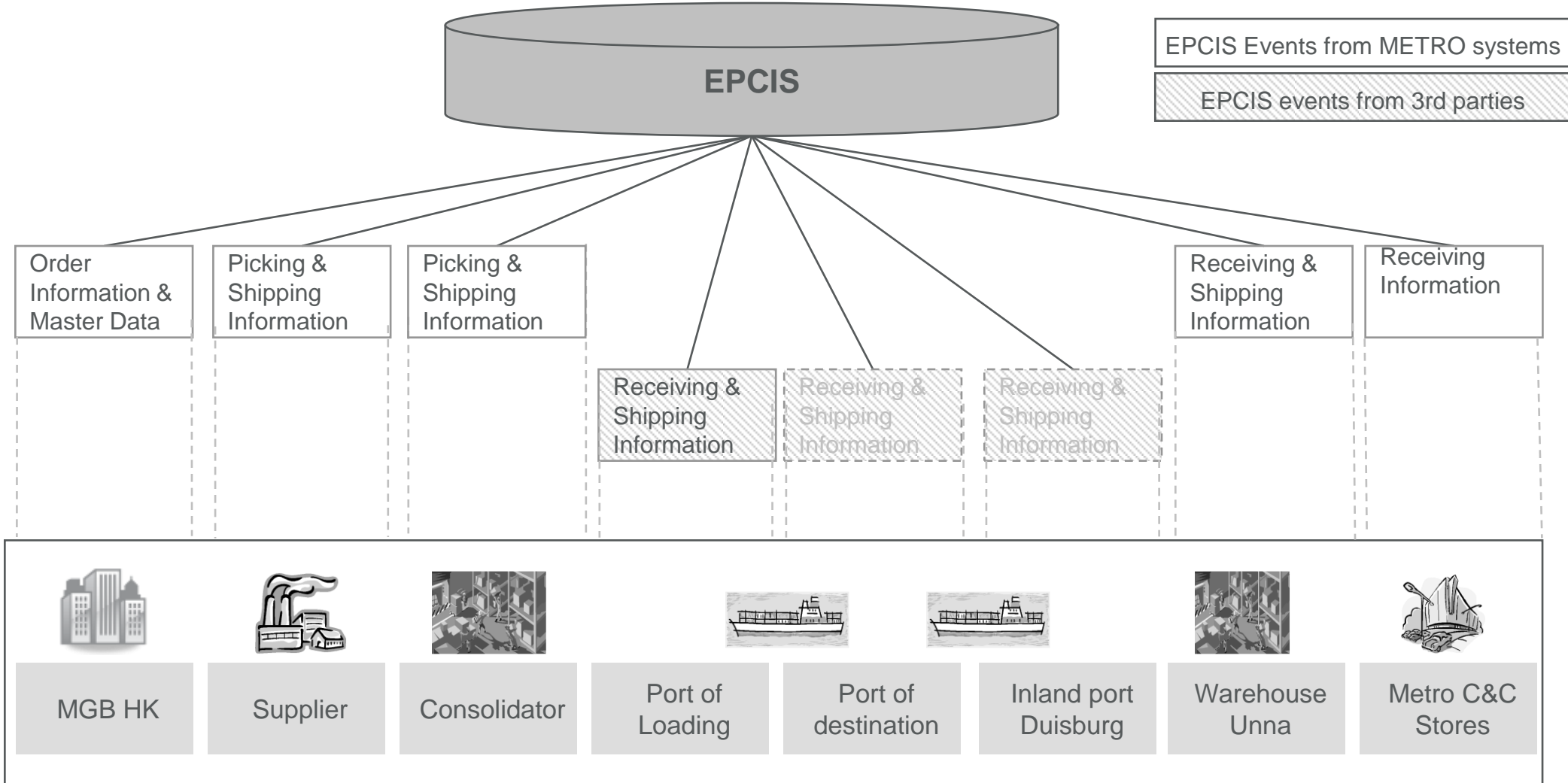
3. Prerequisites & value of a track & trace solution

Prerequisites for track & trace: Usage of identifier on goods



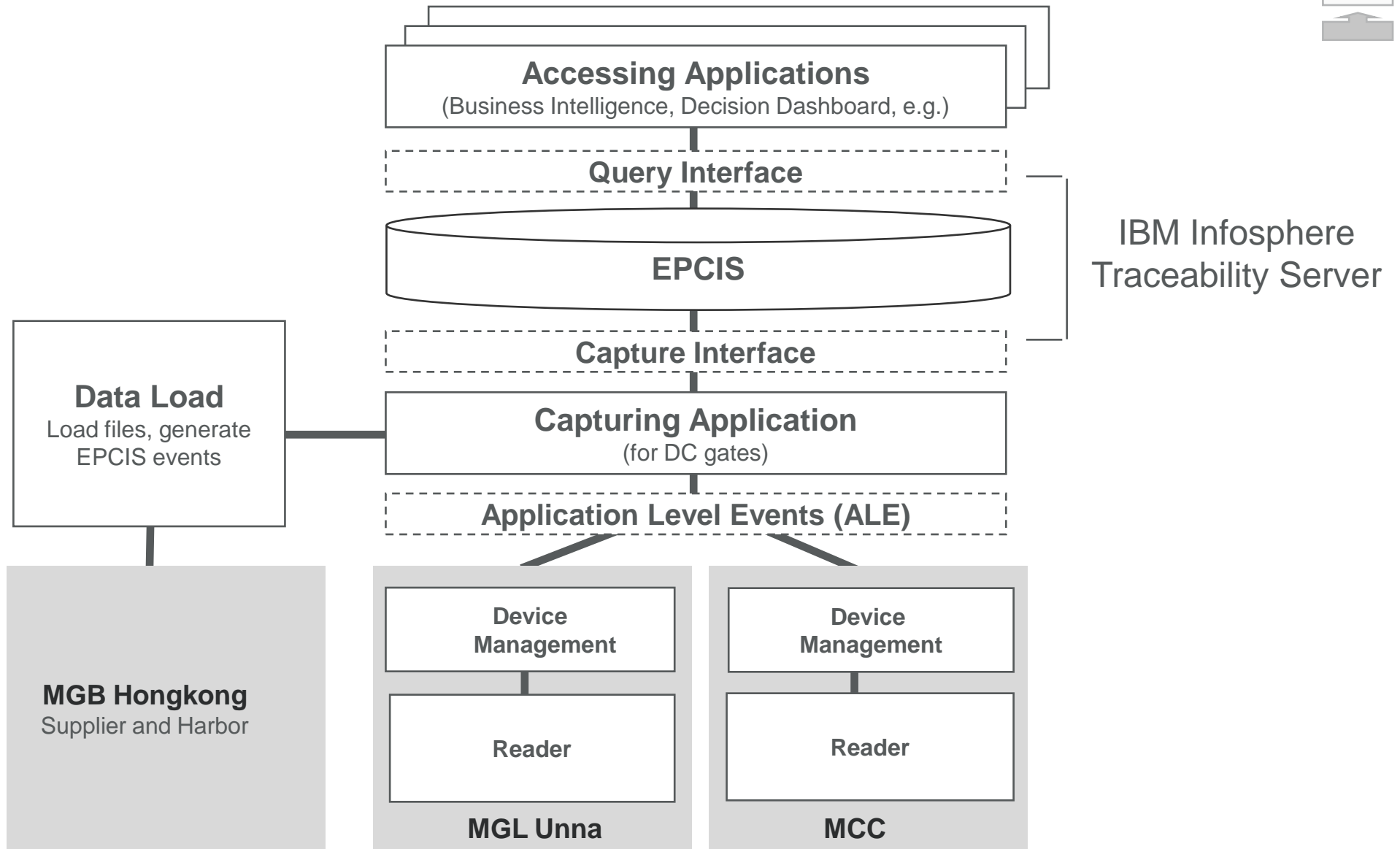


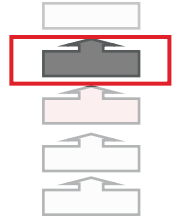
Read events from all supply chain stages captured by EPCIS





Standardized software architecture





Value of track & trace: KPIs analyzed in reports

Time related KPIs

- ❑ Replenishment time
- ❑ Delivery time between supply chain parts
- ❑ Dwell time
- ❑ Delivery reliability

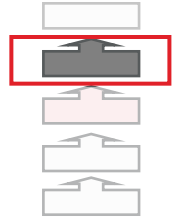
Quantity related KPIs

- ❑ Inventory analysis warehouse
- ❑ ORDER – DESADV Matching
- ❑ DESADV – Goods receiving matching

Financial KPIs

- ❑ Capital tied-up in container
- ❑ Capital tied-up at different supply chain stages

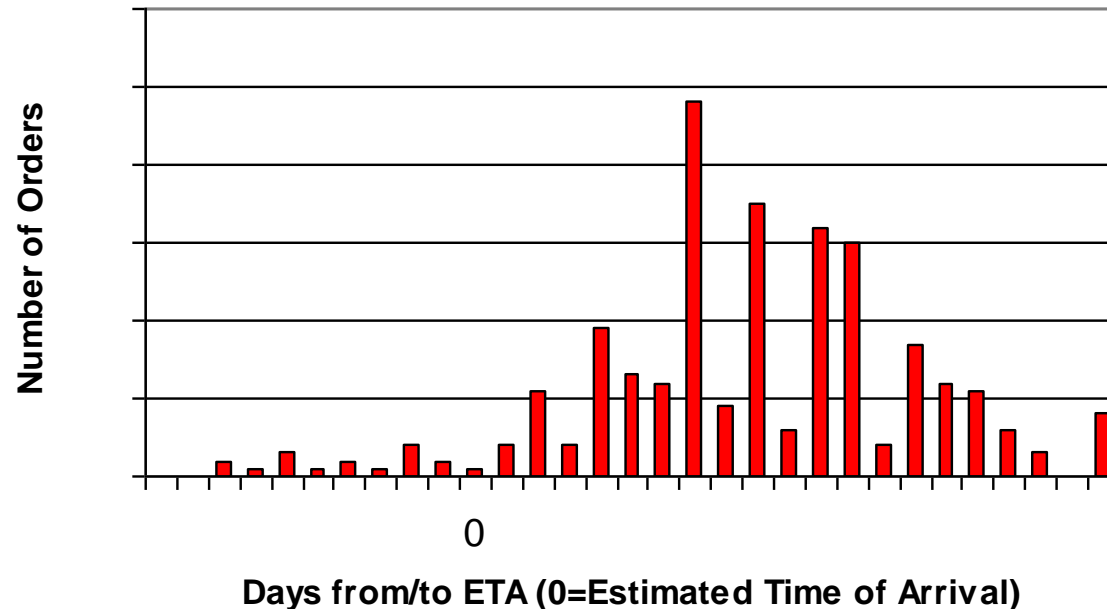
5. KPI reporting examples

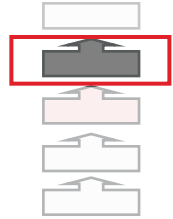


Report example: Matching desired and actual delivery date

- When ordering, buyer enters a desired delivery date (=estimated time of arrival= '0' in the graph below)
- Graph shows the distribution of arrived orders around the ETA

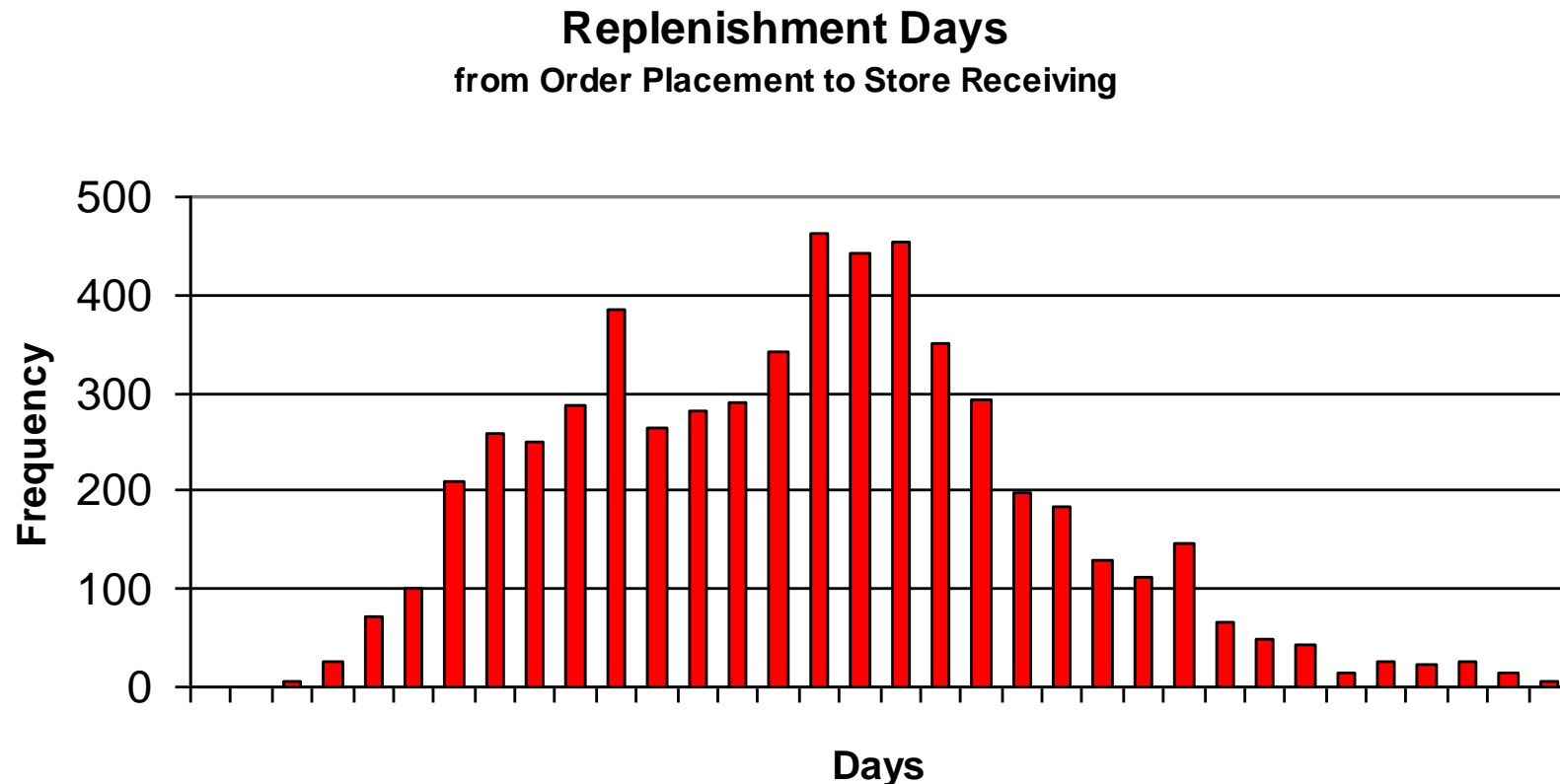
Desired ETA Buyer vs. DC Goods Receiving



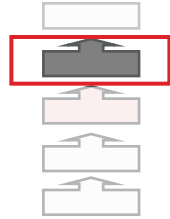


Report example: Replenishment time from order to store receiving

- Graph reveals the distribution of replenishment time on article basis from time of order until goods arrive at the store

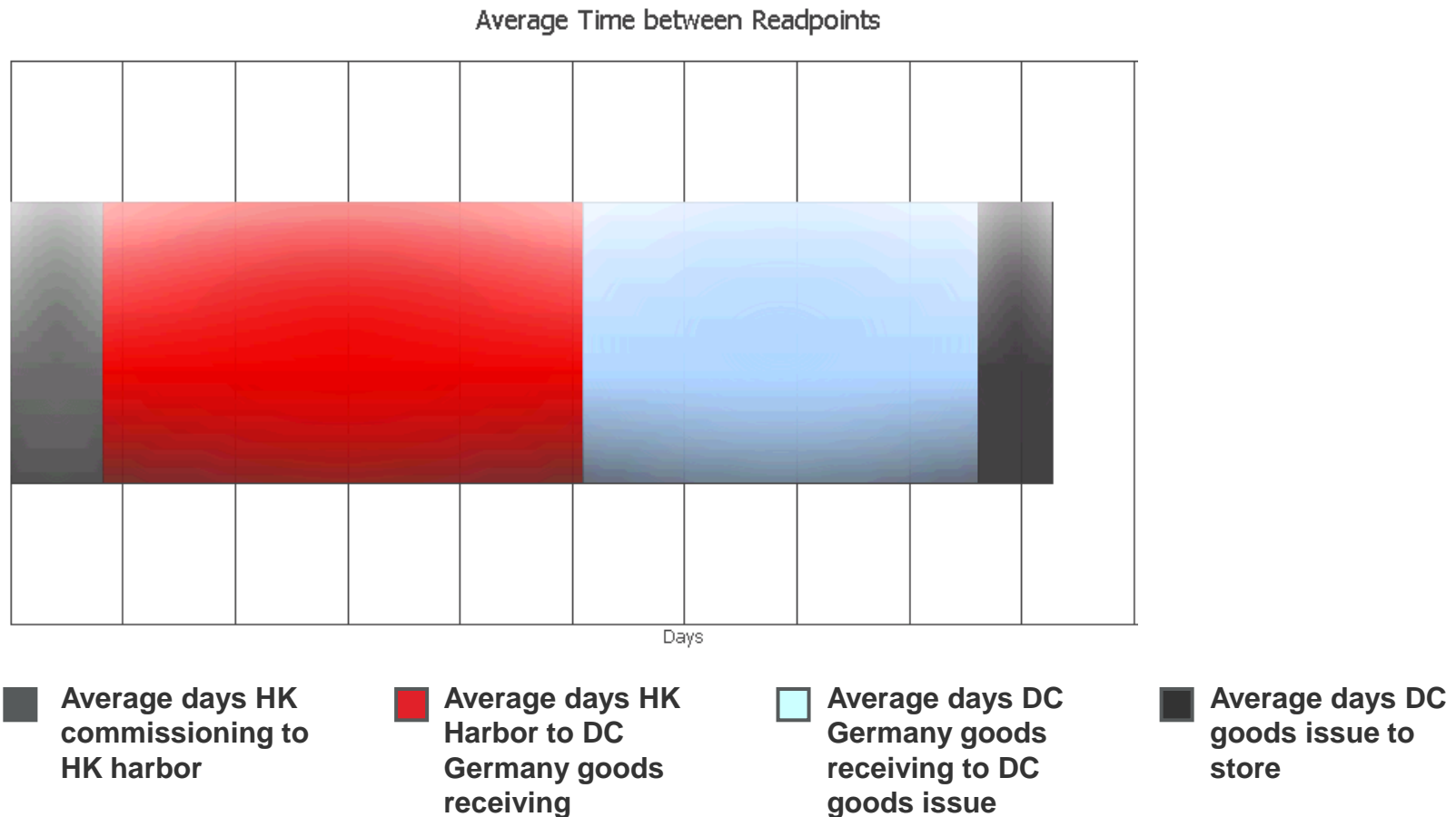


5. KPI reporting examples



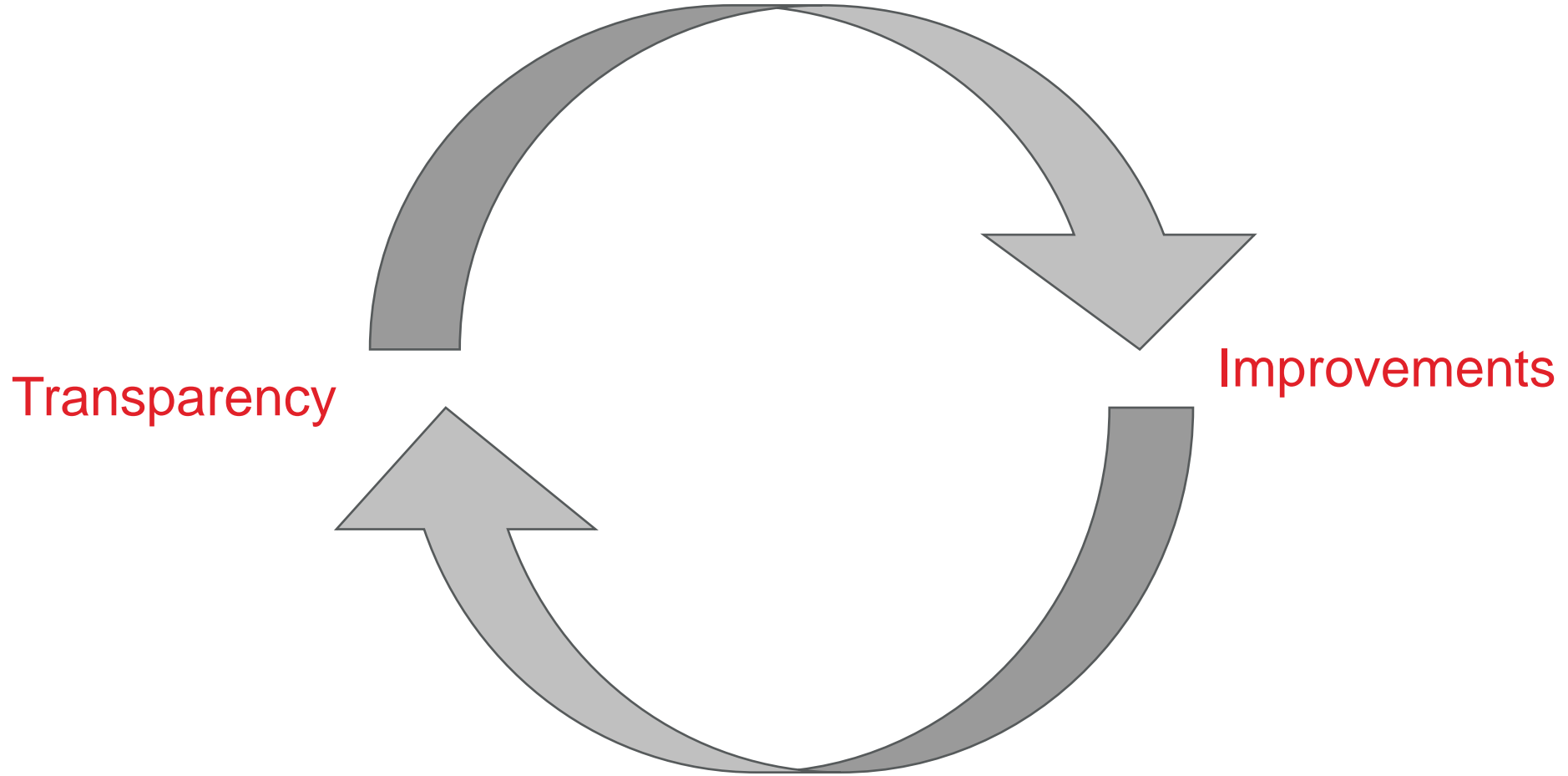
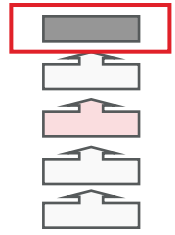
Report example: Average time required at supply chain stages

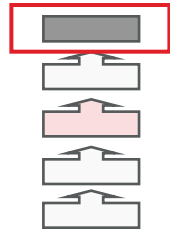
- The bar diagram shows the average time required to transport goods along the supply chain



6. Business benefit

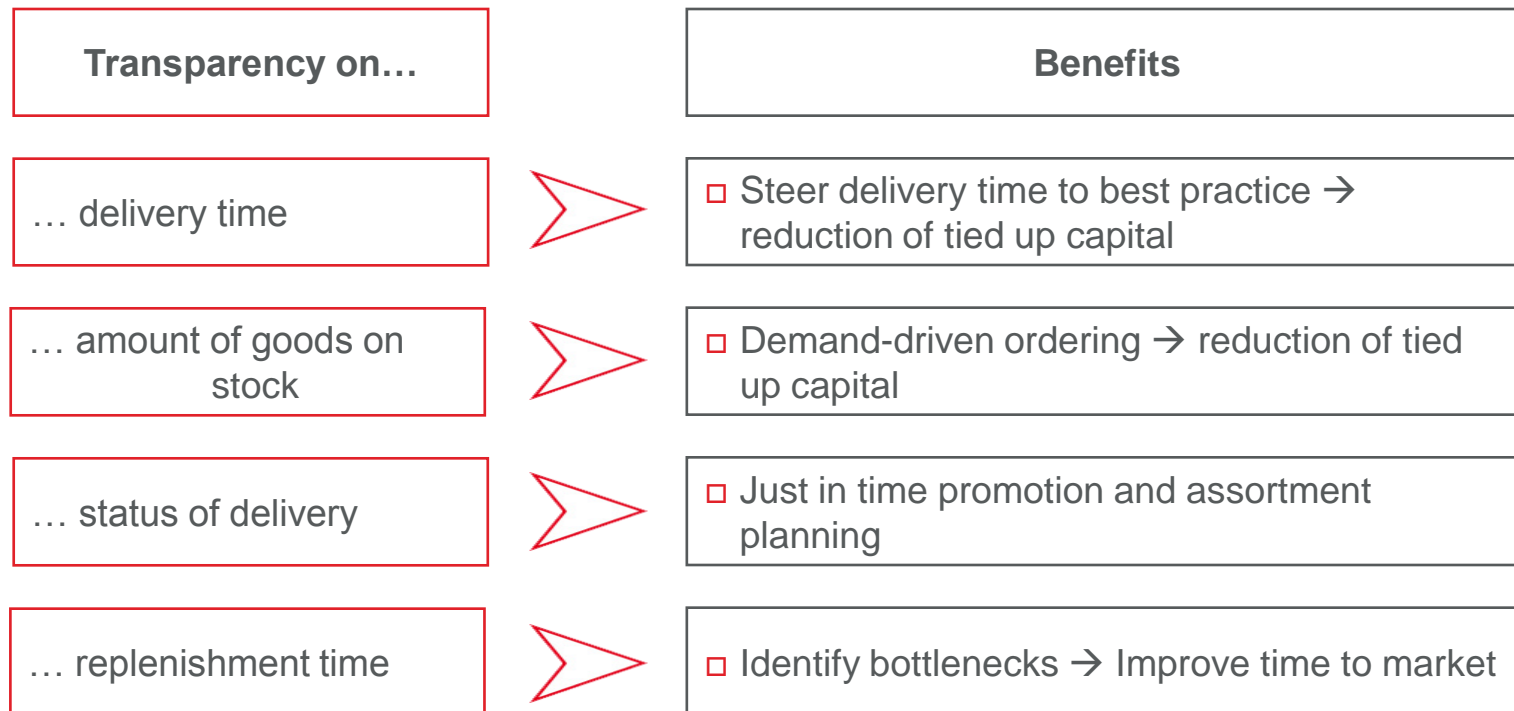
**Transparency accelerates improvement,
improvements increase transparency**



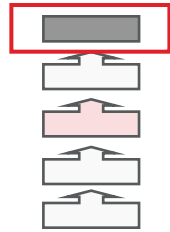


Transparency on supply chain KPIs brings about many benefits

- Transparency on KPIs is important for efficient supply chain management
- Track & trace system based on supply chain events enables transparency:



Warning and alerting system for most important KPIs




Reducing delivery time saves capital cost

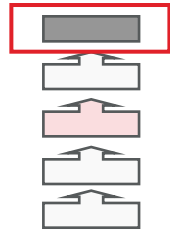


Example calculation: Capital cost of one container:

- ❑ Minimum delivery time Hong Kong supplier to DC Germany: 25 days
- ❑ Details of example container:
 - ❑ Delivery time HK supplier to DC Germany: 66 days
 - ❑ Value of container content: 99.000€
 - ❑ Content: Carrera Toys
- ❑ Difference actual delivery time to minimum time: 41 days
- ❑ Capital cost per day (only container content): 18,43€

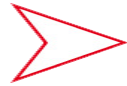


 Each day that the delivery is accelerated for **this one example** container saves 18,43 € of capital cost



Delivery status notifications enable just-in-time planning

... status of delivery



Just in time promotion and assortment planning

- ❑ Promotion execution takes 6 to 8 weeks
- ❑ Today, promotion planning starts only when goods have arrived at the DC
- ❑ With a track & trace system, promotion could already be executed while goods are underway
 - ❑ As soon as a certain EPCIS event occurs e.g. when goods are shipped from harbor HK

```

<ObjectEvent>
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  <bizStep>urn:epcglobal:epcis:bizstep:fmcg:shipping</bi
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  <disposition>urn:epcglobal:epcis:disp:fmcg:in_transit</dispos
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  <readPoint>

    <id>urn:epc:id:sgln:4894096.0000.3</id>
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  </highLocation>
  </ObjectEvent>
    
```

Container BICU 1234565
Date: 30.03.2009, 13:30 h
Readpoint: Harbor Hong Kong
Business Step: Shipping



Summary

- ❑ Complexity & diversity in the supply chain and IT systems cause deficiencies
- ❑ The goal is to achieve visibility and end-to-end supply chain thinking
- ❑ Goal can be achieved by using a track & trace and reporting system:
 - ❑ Unique identifier on all goods
 - ❑ Read events from important supply chain stages being captured in one database
 - ❑ Measuring and monitoring of supply chain KPIs by implementing reports and alerts
 - ❑ Using insights from KPI visibility to steer the supply chain to best practice
- ❑ Business benefit when best practice is implemented
 - ❑ Reduction of tied-up capital
 - ❑ Just in time planning and ordering
 - ❑ Time-to-market improvement
- ❑ Further tracking details can be gained by container tracking

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