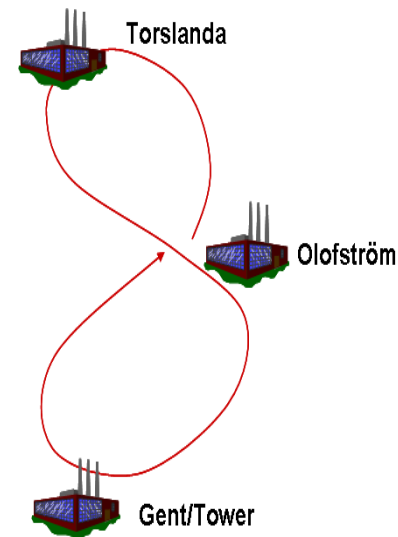


# RFid in Reality

An example how to use RFid technology to keep track of logistic movements and get measurements.

**To measure is to know**



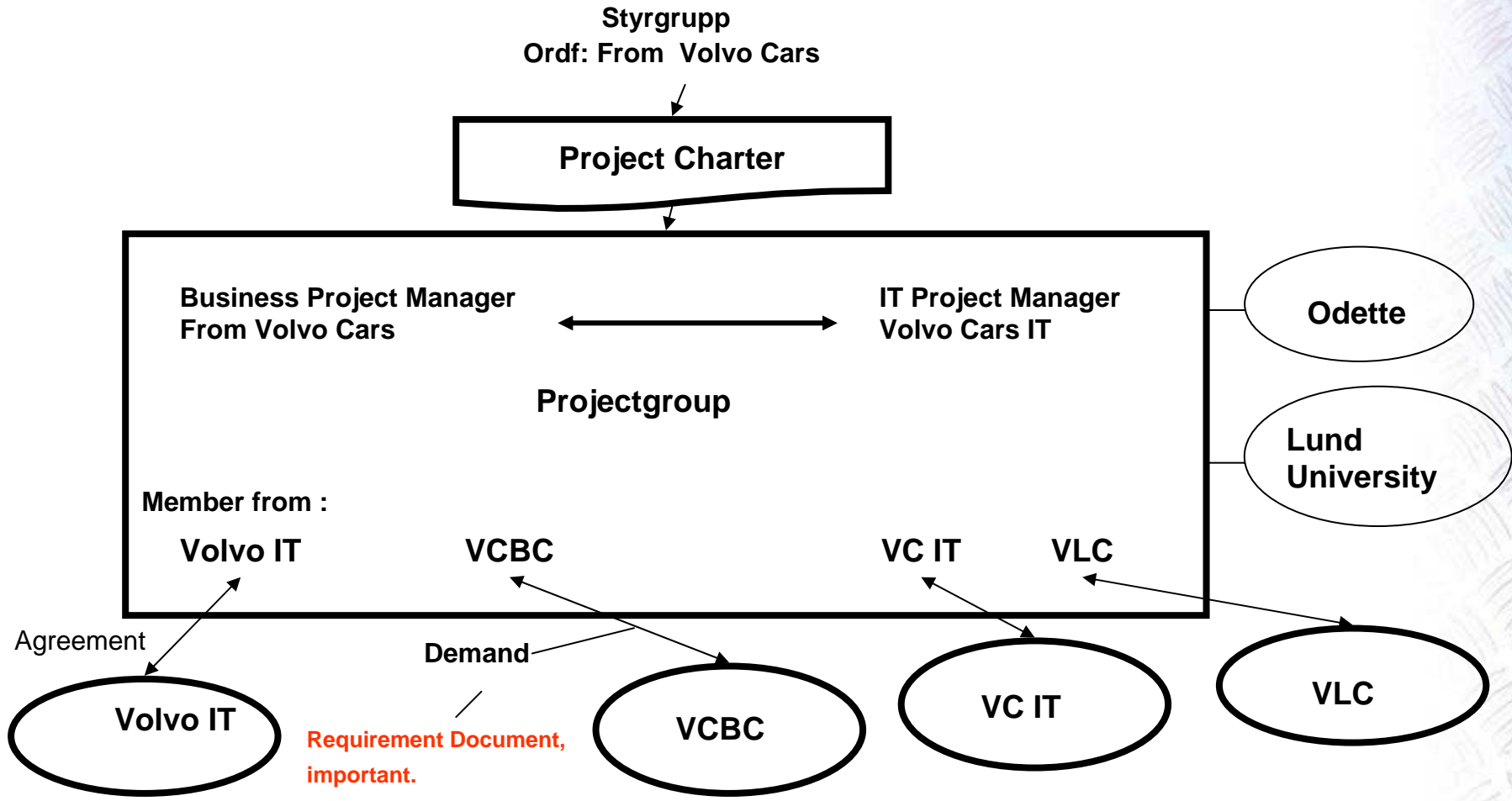
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# RFID Seminarie 6 Maj 2008

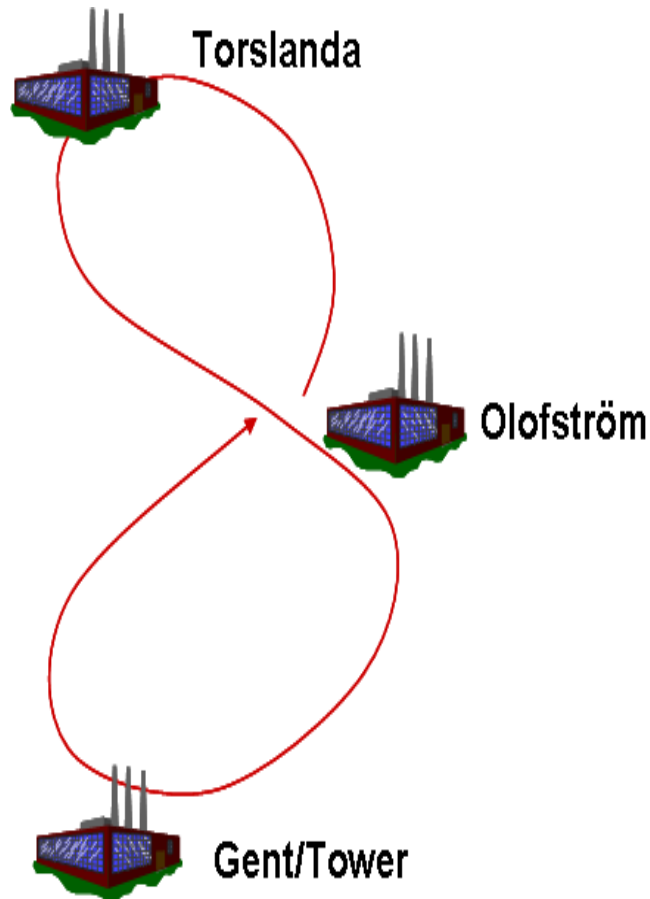
- Volvo Cars IT - Lars Åkesson
- Volvo IT - Björn Nohlin
- Volvo IT - Fredrik Holmström

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# Projektorganisation



# Supply chain



- The Tracking 20 feet container project is supporting the process that provides VCT and VCG with parts. The called “tåg åttan” (Train eight). The project is focusing on Olofström, but the opportunities at the customer points are similar to this. Processes involved is
  - Reporting the arriving train
  - Storing rack in yard
  - Ordering of rack to production
  - Emptying/filling containers
  - Loading container on train reporting
  - Creating transport document

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# Statistics

- # of 20 feet containers = 1 500
- # of special packaging (racks) = 45 000
- Figures valid for VCC Olofström
  - # of managed 20 feet containers = 130 000 / year
  - # of managed racks = 1 000 000 / year
  - # of manually typed container id = 250 000 / year
- The customers processes are similar so the figures are to be multiplied by 2 for the total VCC-process.

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# pcs.Koala

pcs.Koala analyses the business processes and value streams.

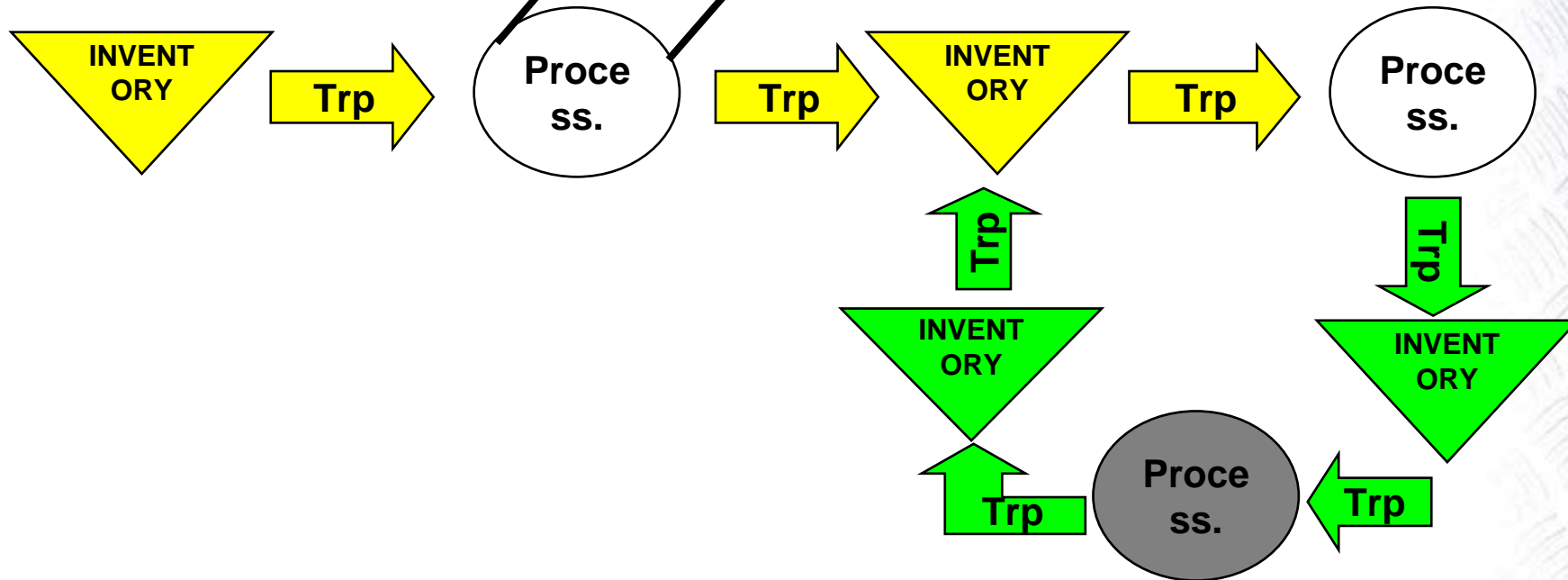
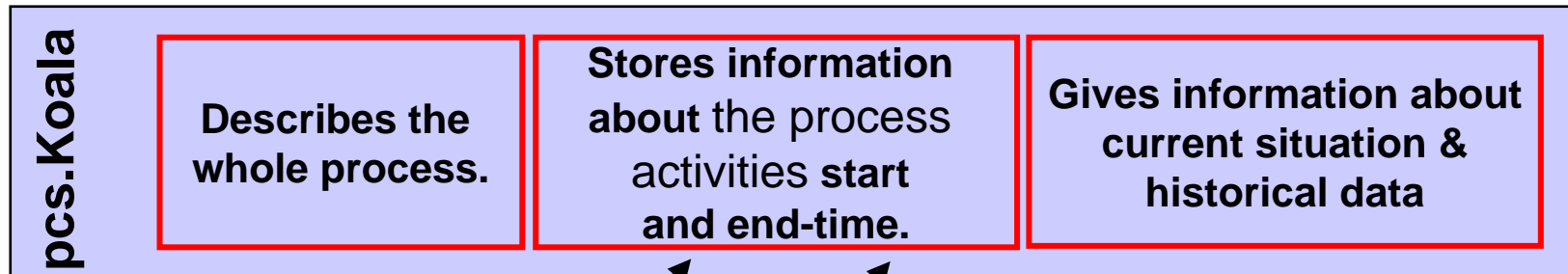
pcs.Koala documents material (physical)- and information flow. It also measures key performance indicators e.g leadtime OEE (Overall Equipment Effectiveness) and transport time.

pcs.Koala analyses the present state of the process focused on a Lean mindset.

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# pcs.Koala

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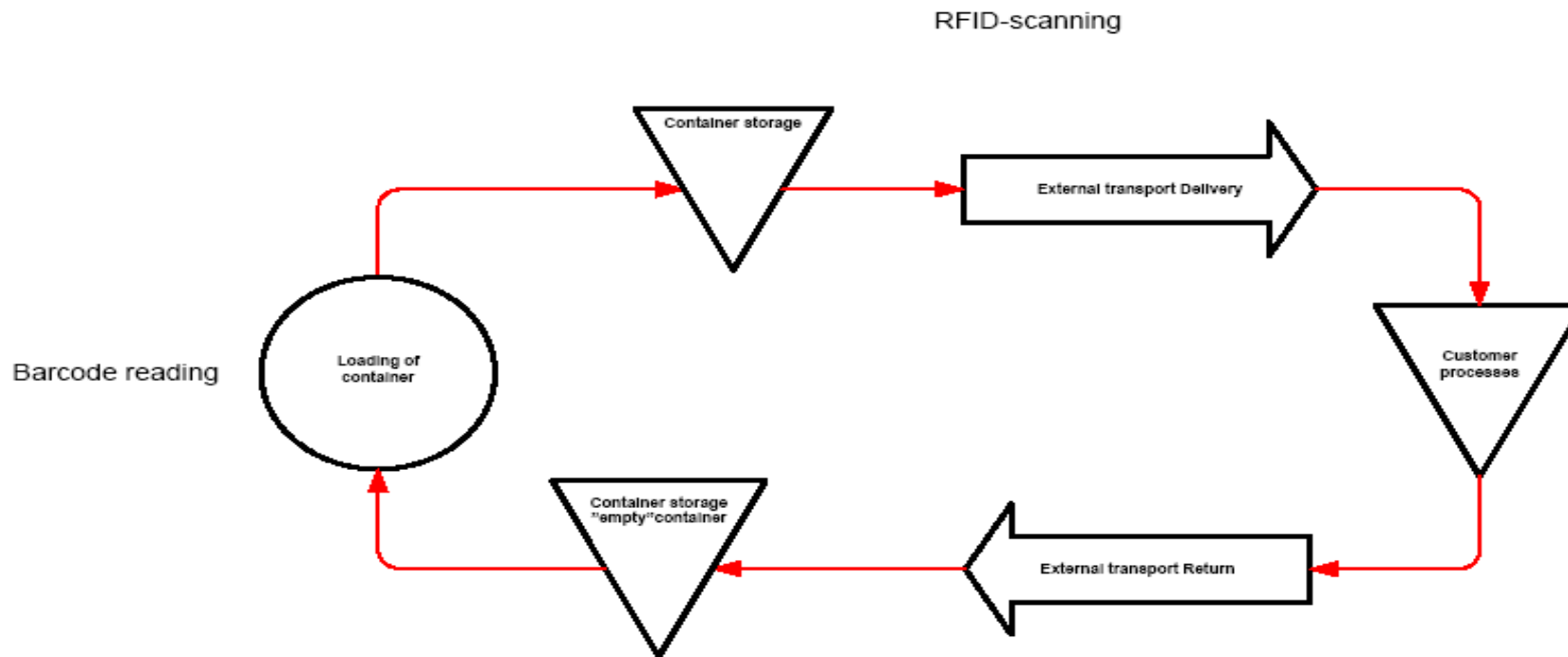
# Business value

- Quality assurance of supply chain information
- Objective measurement of supply chain
- Supply chain monitoring
  - Input to 6-Sigma projects
  - Reduction of tied up capital
  - Reduction of throughput time
  - Reduction of process lead time

To measure is to know!



# Scenario drawing



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# Scenario

- External transports where containers are equipped with RFid tags
- RFid tags are using Marker technology
- The containers are loaded with packages marked with bar coded labels.
- Labels are read by a handheld scanner.
- Containers are sent from a supplier to a customer and back again in a "closed loop"



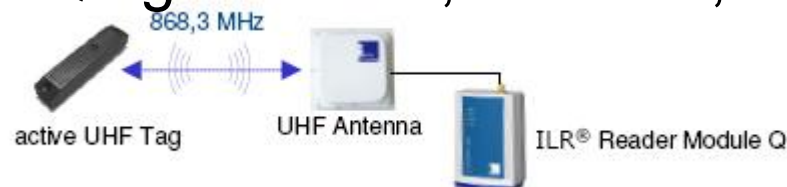
Odette



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# Equipment

- Rfid from Identec Solutions
- Active system 868 Mhz with marker technology 127kHz reading distance < 100m, Marker distance < 6m
- i-Qtag 868 Mhz, i-Marker, i-Card3, i-Port3



- Symbol handheld computer with barcode scanner
- Software pcs.Koala from Volvo IT

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IDEN TEC SOLUTIONS AG  
Millennium Park 2  
A-6890 Lustenau

[www.identecsolutions.com](http://www.identecsolutions.com)

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## RFID – General Comments

- RFID is widely applicable and has been in use for many years
- Market evolving, high growth potential
- RFID compliments Barcode but EPC becoming more prevalent
- RFID automates data collection process
- Tag Cost is only one part of overall system (it's not about the tag!)
- There is no "one size fits all" solution
- RFID is very scalable, scale up & out
- RFID data retrieval can approach 100%
- RFID tag ID is an arbitrary number, inherently secure

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## Container Management Automobile Industry

VOLKSWAGEN AG



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### Customer BENEFITS through the use of ILR®

- Increased usage rate of containers
- Reduction of losses due to procurement costs
- Fewer "lost" containers
- Decrease in search times
- Reduction of alternative packaging
- Reduction of delivery errors
- Decrease in production down times



 **ROI < 8 months (tags AND infrastructure)**

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## ILR Frequency

### UHF (868 MHz)

- Technical analysis indicates this is the "right" frequency band
- No interference from consumer electronics, pagers, keyless entry, Bluetooth, wireless LAN, 2.4 cordless phones, etc.
- High data rates (115 Kb/s)
- Good propagation characteristics
  - Higher frequency severely impacted by rain, high humidity and snow cover
  - Lower frequency impacted by electrical interference (e.g. electric welders, motors, transformers, etc.)

# Hardware

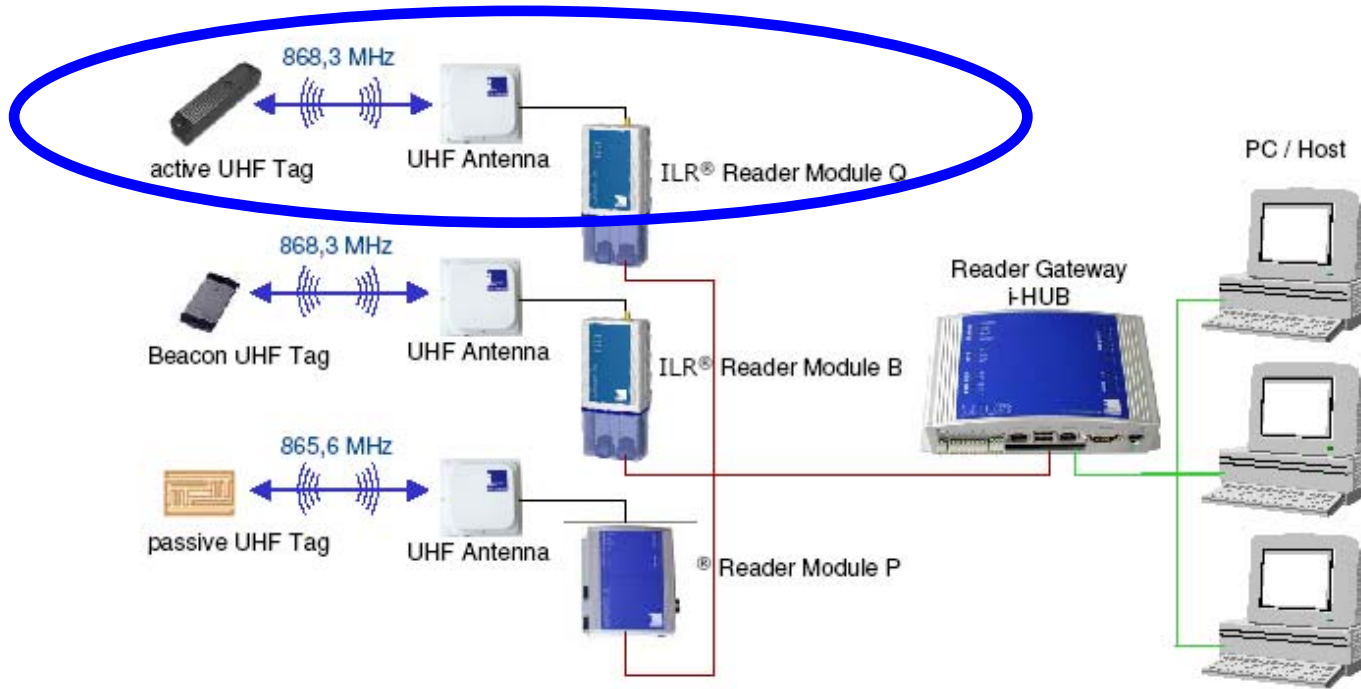
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## Active RFID Technology Products

### ILR® Read/Write Devices

- **Fixed** reader with up to 4 antennas
- Inputs/outputs for process synchronization
- Ethernet / serial interface
- Remote access and configuration
  
- **Mobile** reader with full ILR® functionality in PC-Card and CF format
- Easy integration in devices with free PCMCIA slot, (Notebook, Handhelds)



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## Active RFID Technology READER-talks-FIRST (RTF) Products

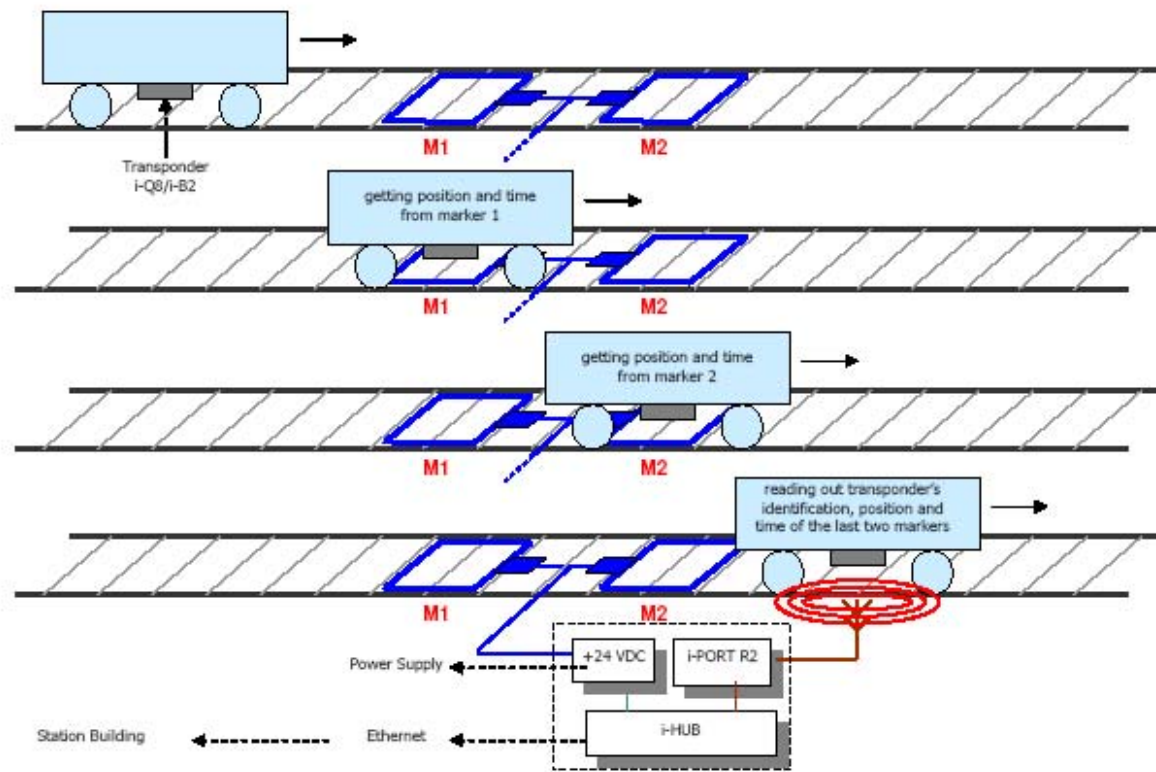
- **ILR® Read/Write Tags (i-Q/i-D series)**

- Read/Write range of up to  
100 m with i-Q series  
6 m with i-D series
- Non-line-of-sight communication
- User-definable memory of up to  
32 kBytes in i-Q series  
56 Bytes with i-D series
- Identification of 2.000 tags in the field
- OPTIONAL
  - integrated temperature logger
  - integrated LED ("Pick by Light")
- Battery lifetime of up to 10 years



# Tracking with Marker Technology

## Tracking and Tracing of Railway Wagons



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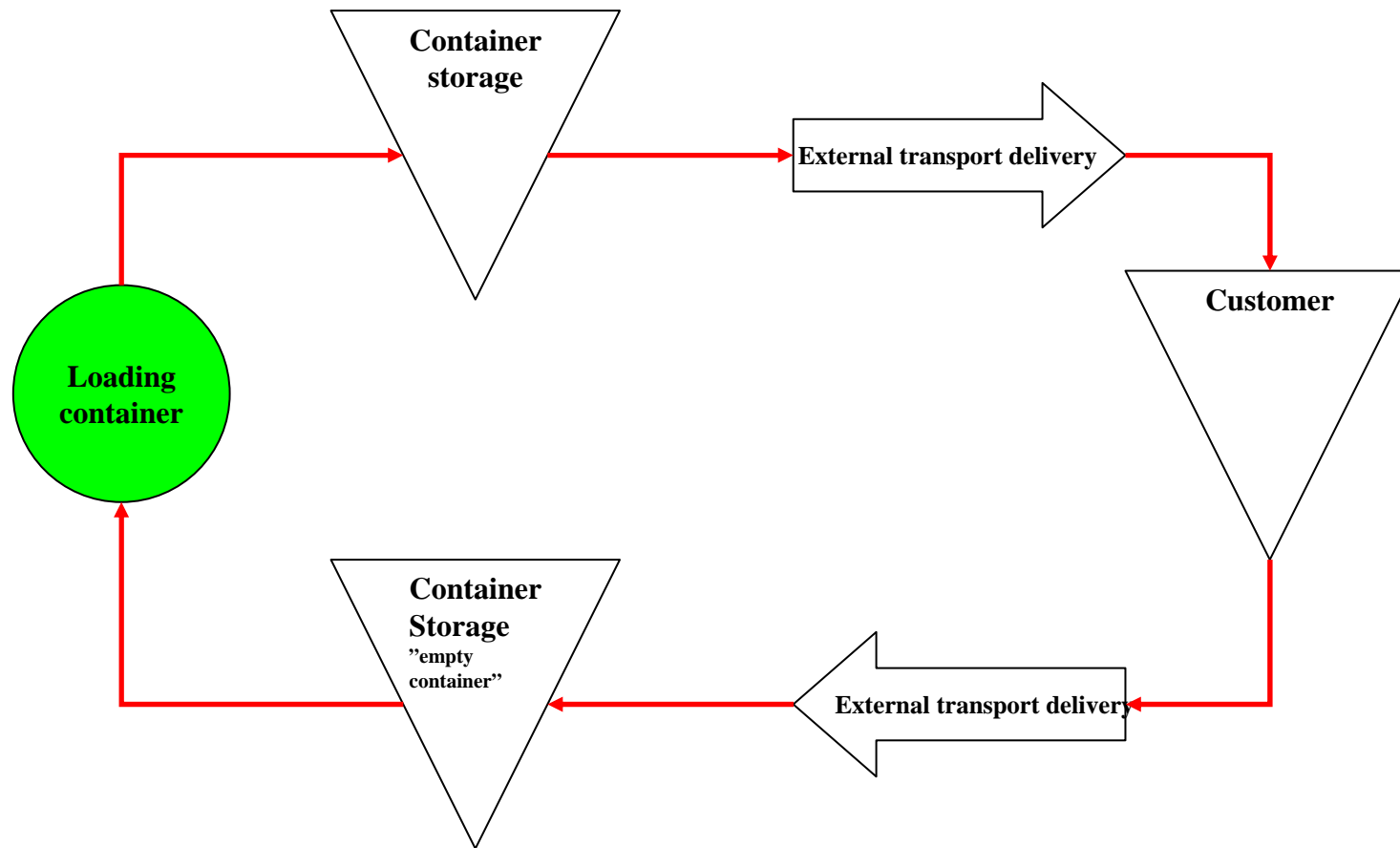
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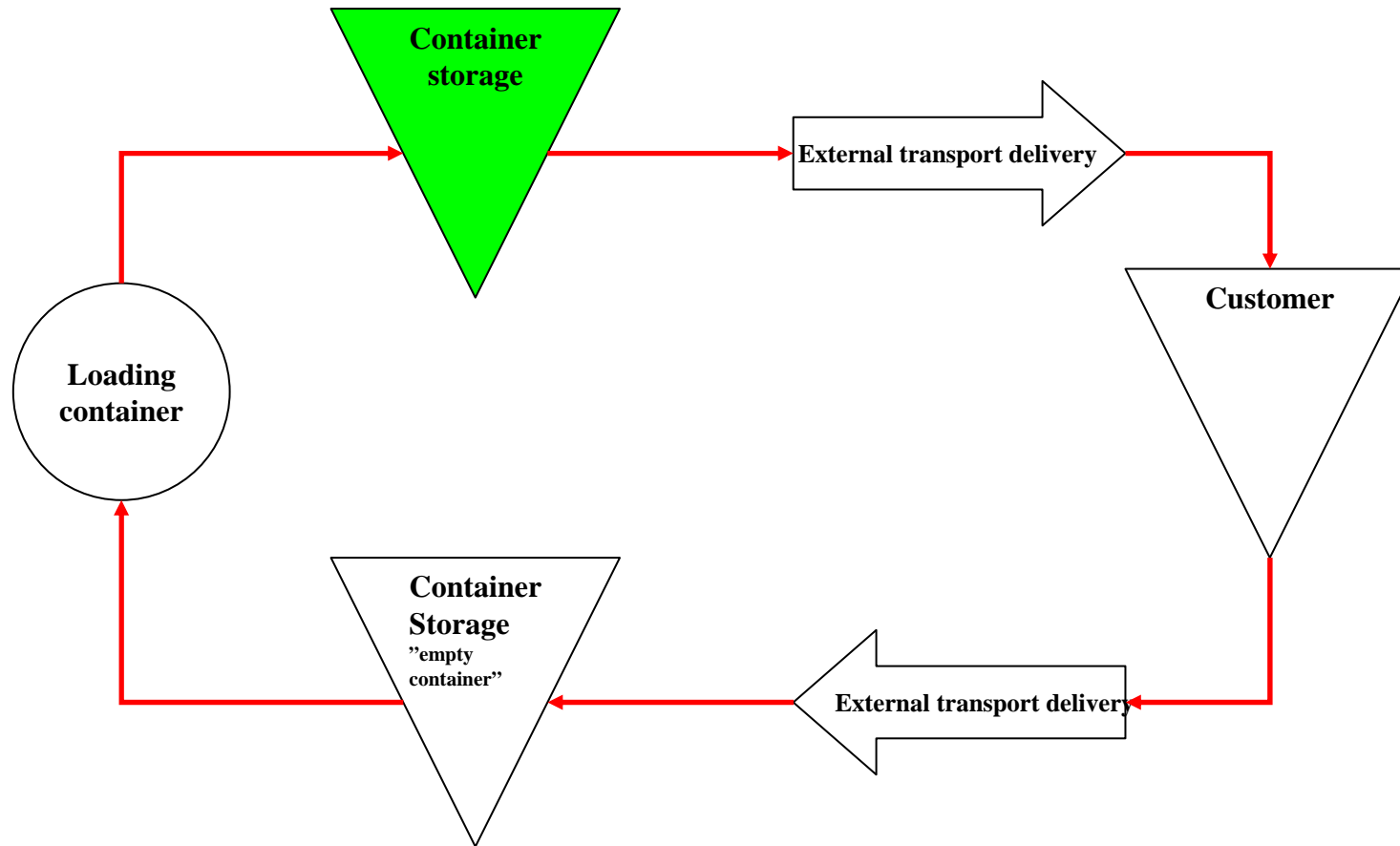
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# Unload a container



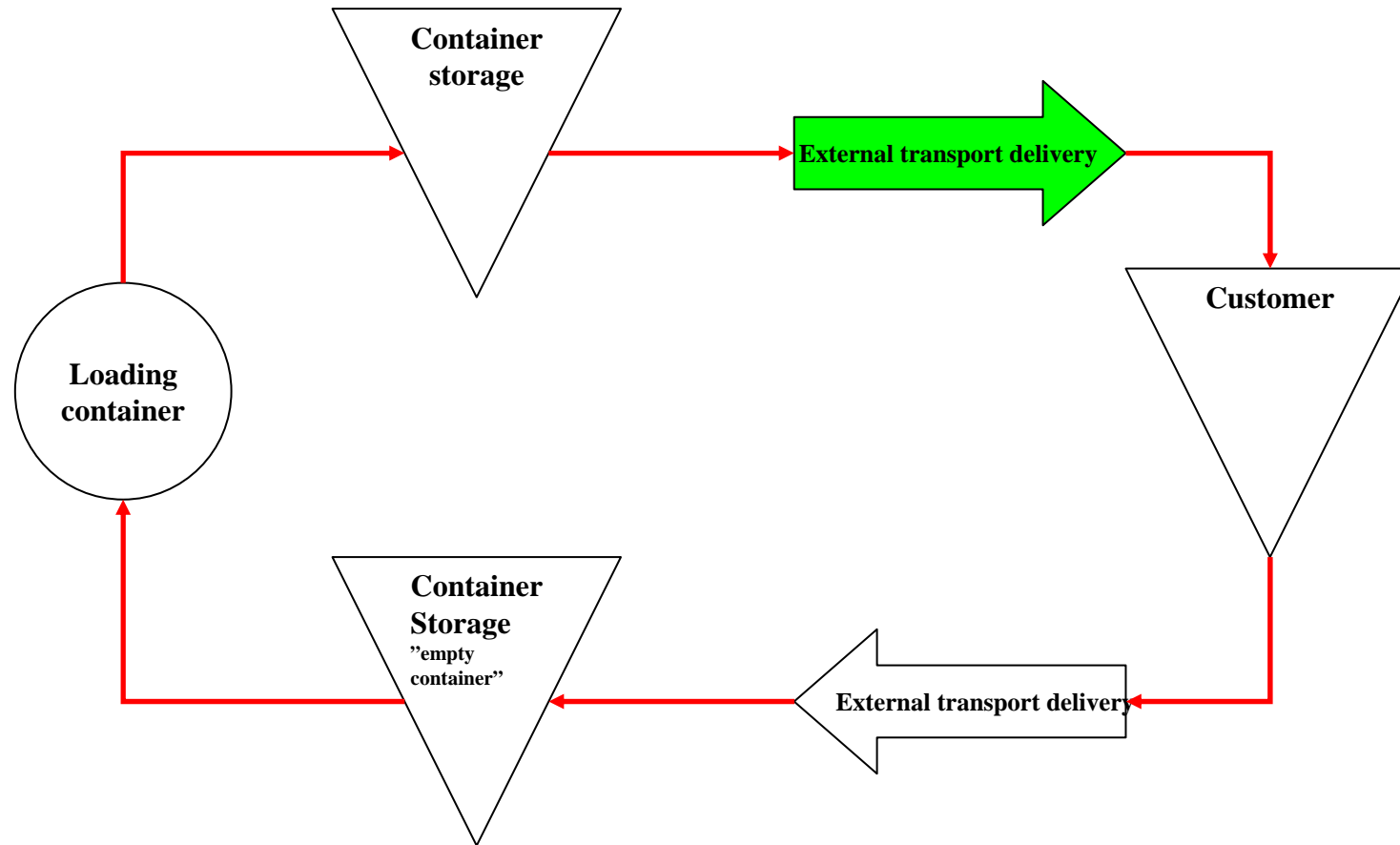
LET'S MAKE SURE

# Load with new packages



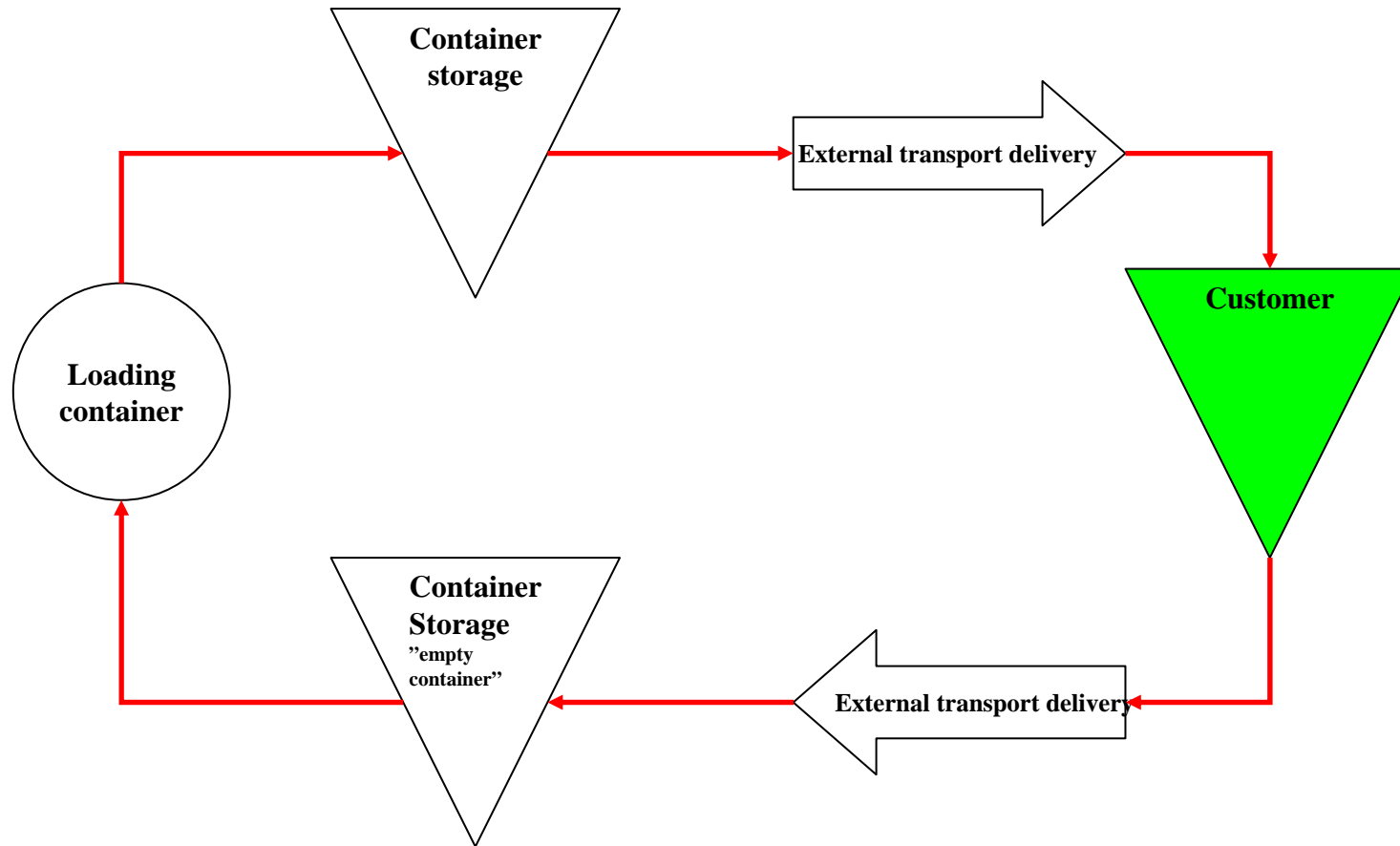
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# Start the transport to Customer



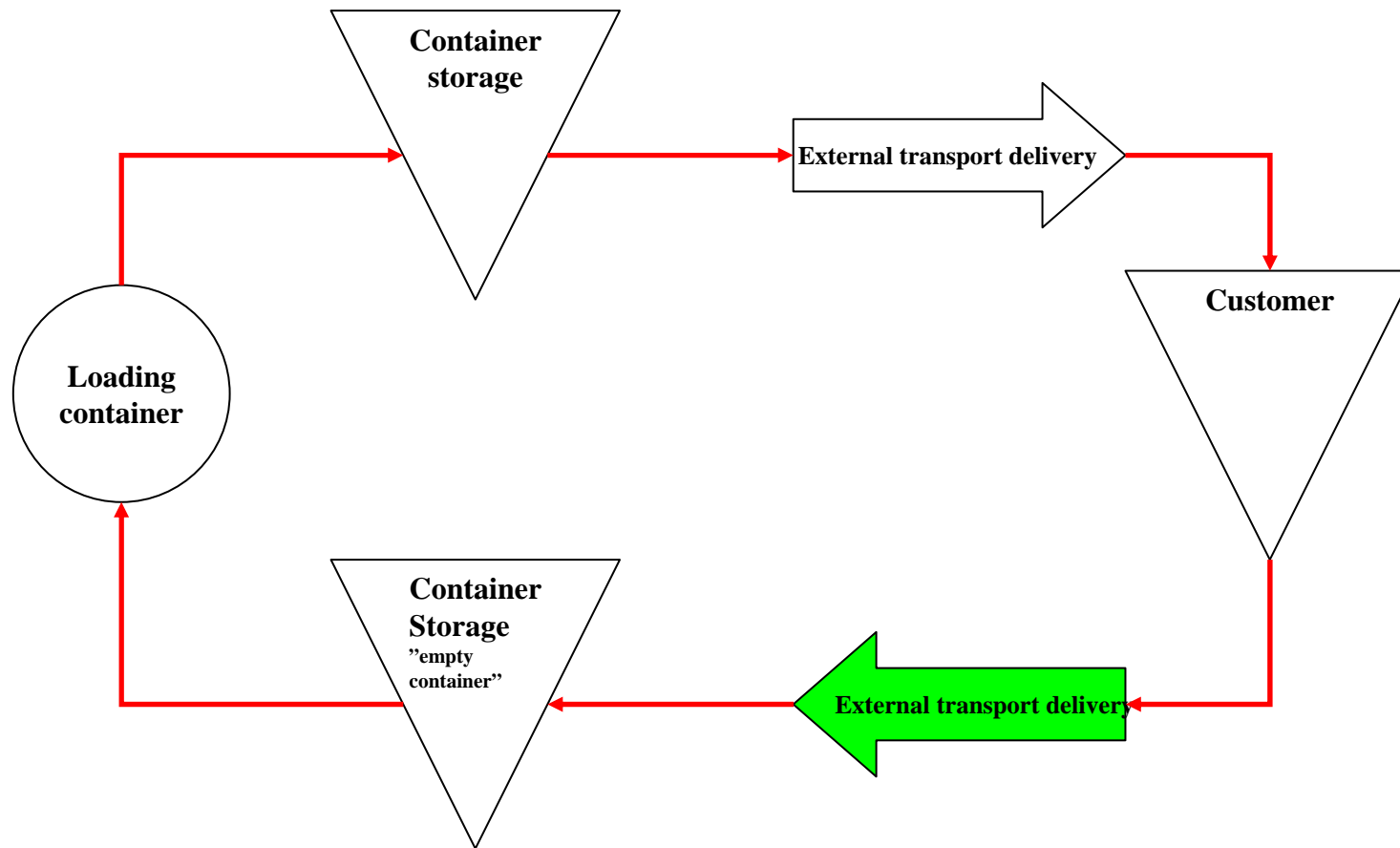
LET'S MAKE SURE

# Transport arrives at Customer



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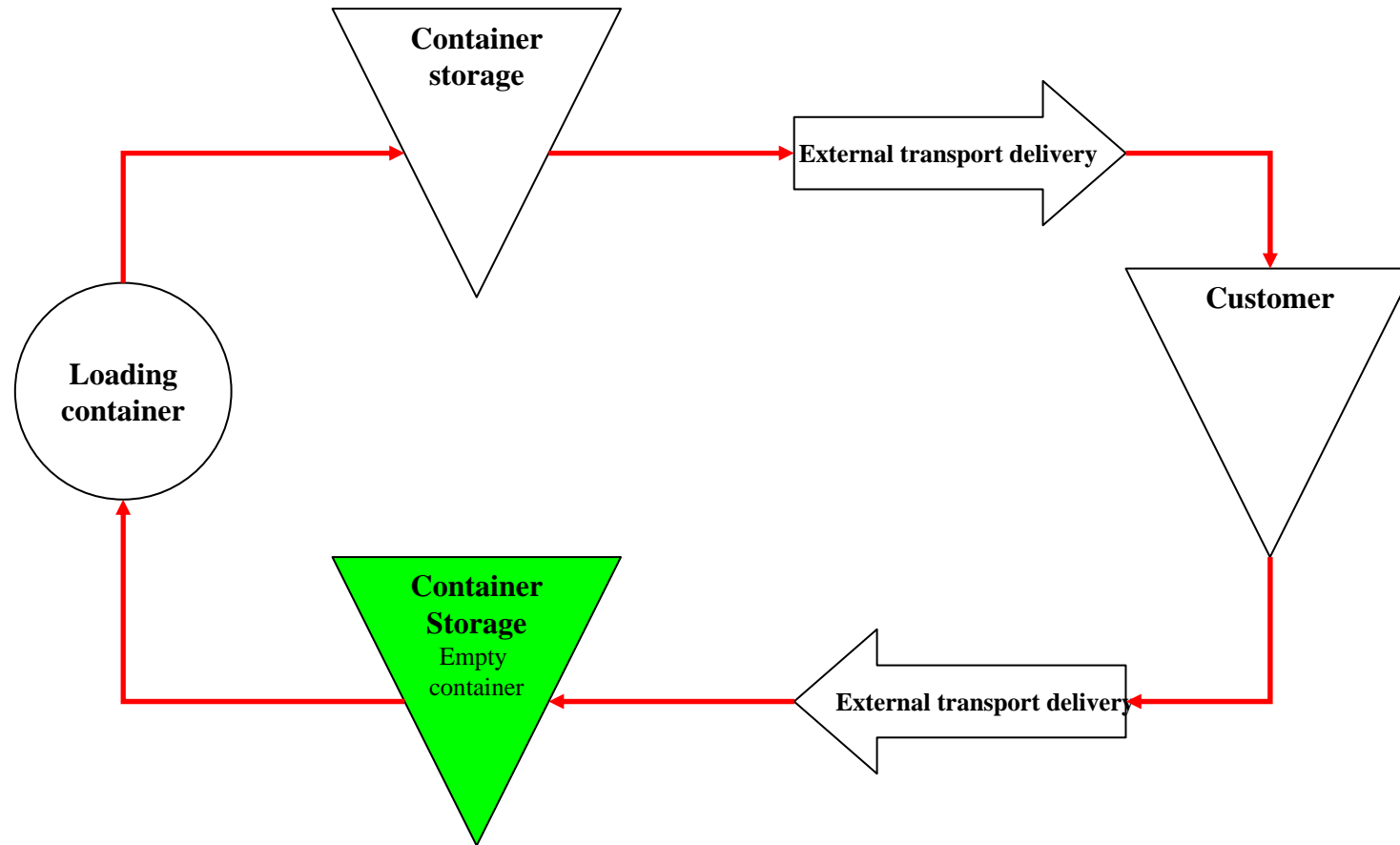
# Transport leaves Customer



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# Transport arrives at home and the loop is complete



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