IT and Dangerous Goods

Challenges and Opportunities

Horst Pahl

TraDaV GmbH

DaGoB Seminar

13th August 2007, Helsinki

Agenda

- **Challenges**
- **Opportunities**
  - **IT-Solutions – Status and Strategies**
    - **The Transport Chain**
    - **The Official Handling**
- **Conclusions**

General Challenges

- **The Dangerous Good itself**
- **Security aspects**
- **The whole Transport Chain and its Monitoring**
- **Costs and Benefits**
- **Small and Medium Enterprises**
- **The basics of IT-Solutions (heaven and earth)**
- **New Technologies**

Laws and Regulations

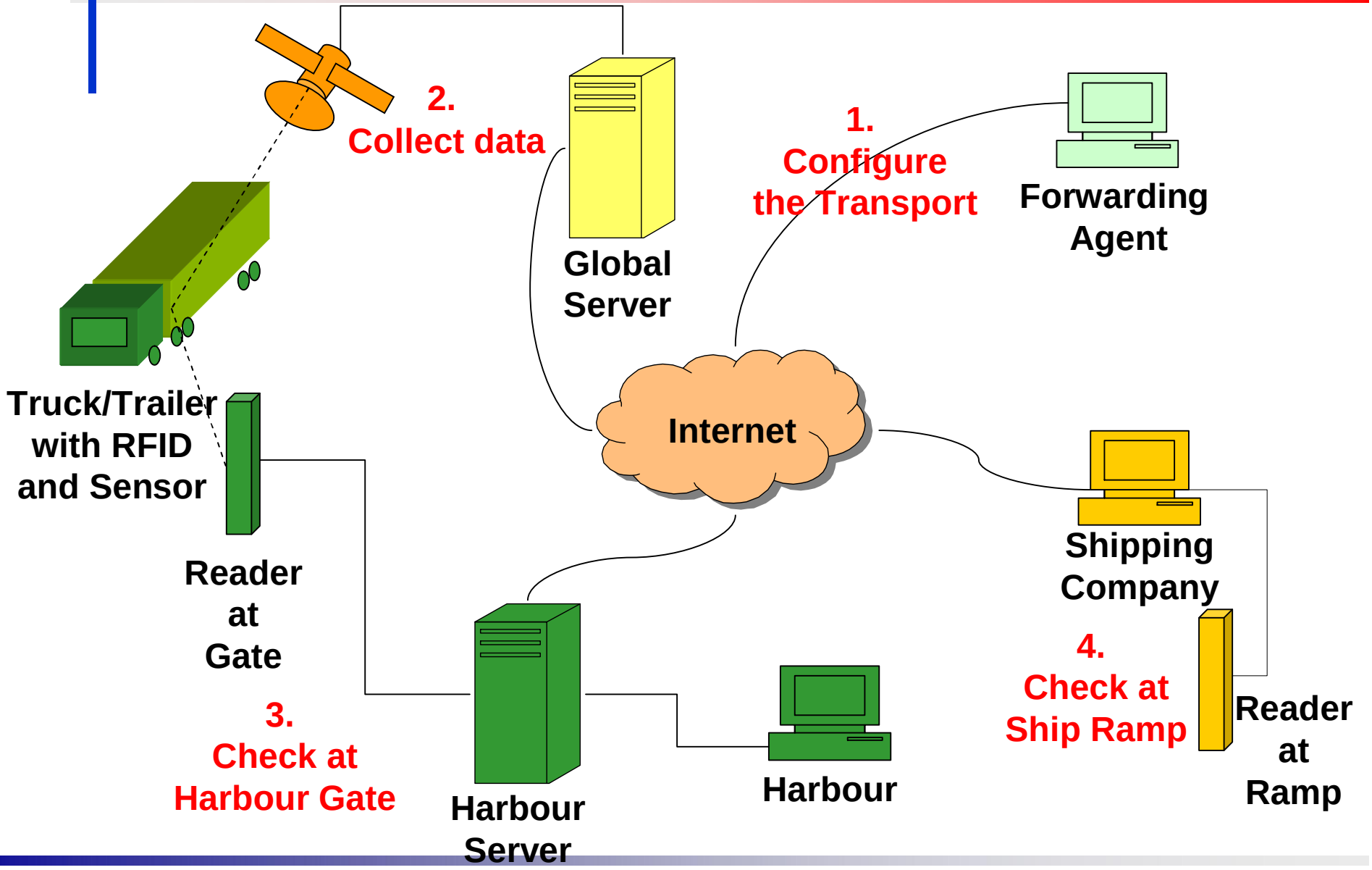
- **Stowage Regulations**
- **Pre-notification for forwarders and shipping-lines**
- **Regulations for the drivers**
- **Different regulations even on national level**
  - **Different harbours „speak different languages“**
- **Integration of authorities and institutes into electronic Information-Chain**

Standards and Systems Integration

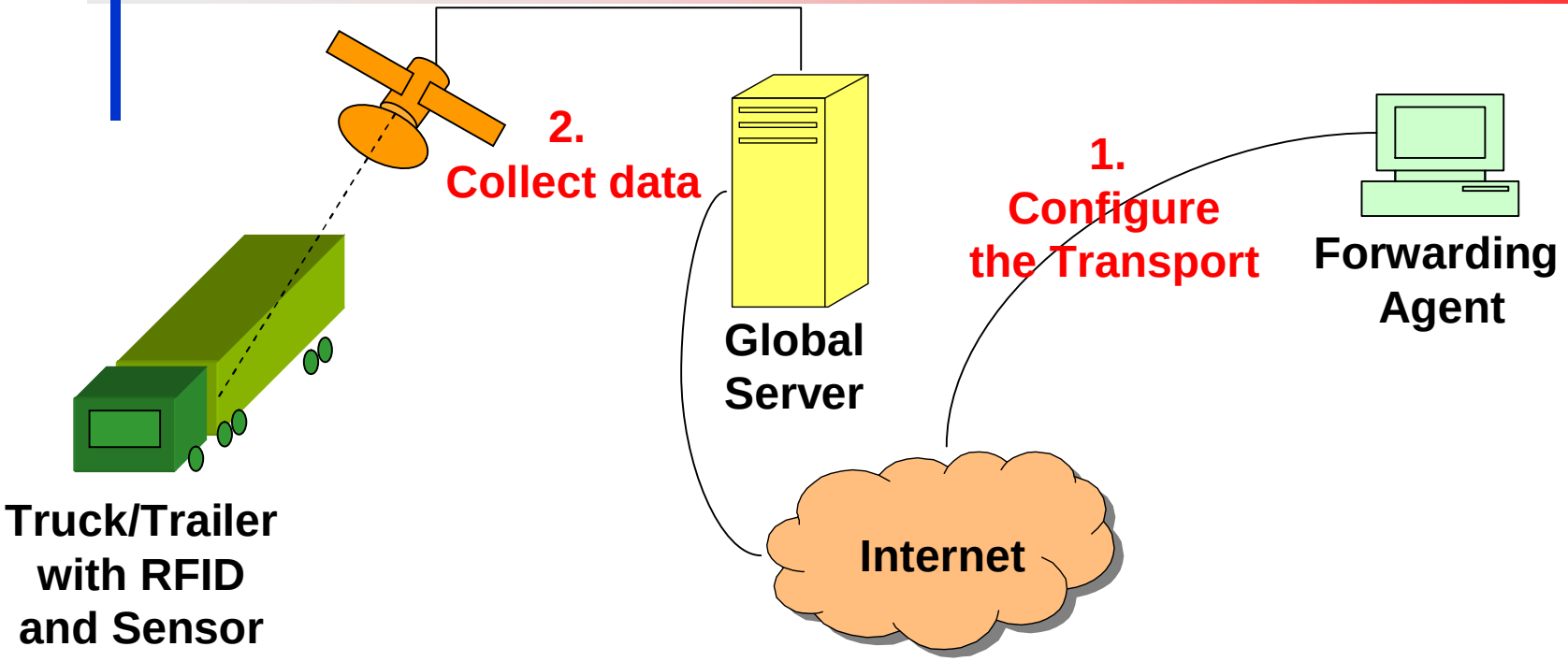
- **Almost no standards are defined**
- **Too much Paper is still in use**
- **Used data are not approved**
- **Cooperation in and between harbours is still missing**
  - **Data are available, but no interfaces**
- **Weak awareness of new technologies like Service Oriented Architecture, Web Services, RFID and sensors**

Opportunities

The Transport Chain



Transport Chain



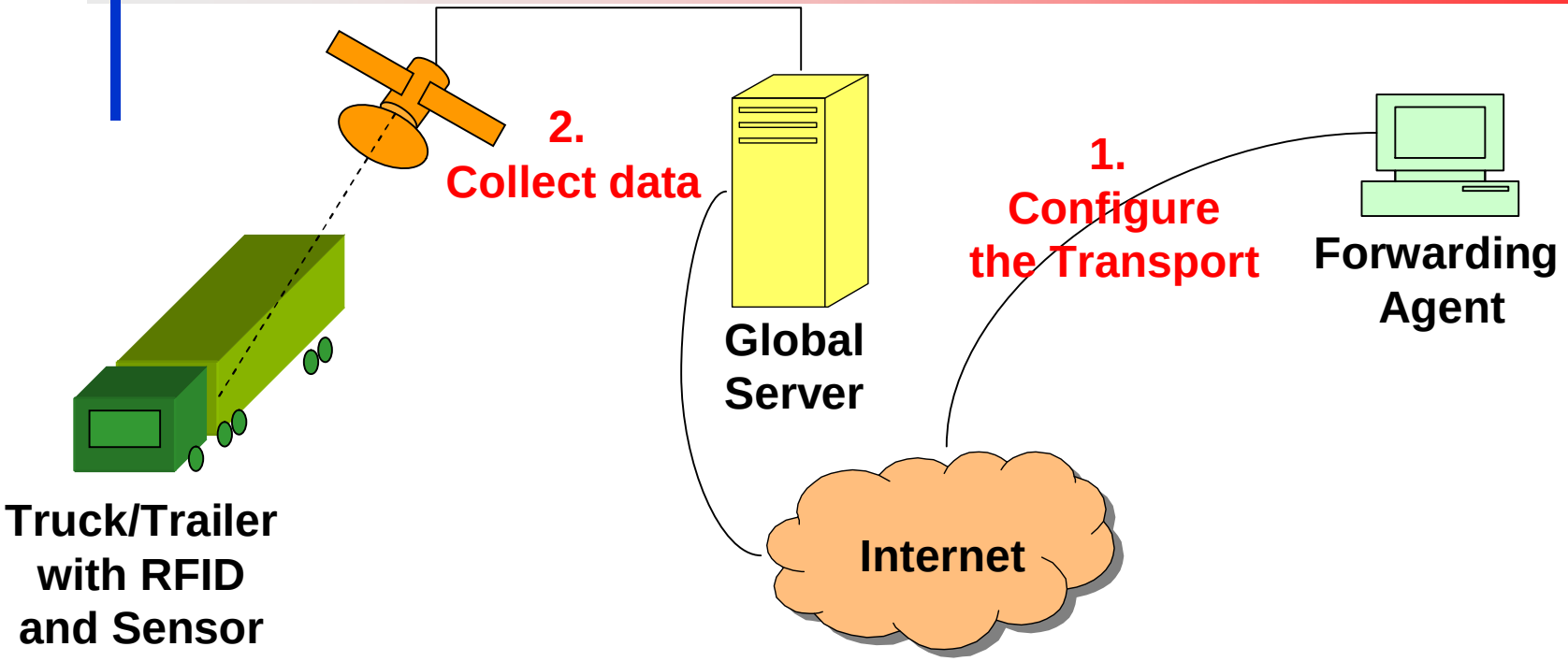
- **Safety and Security in goods transport**
  - **GSM/GPS in the truck**
  - **RFID Tags (active/passive)**

- **Safety and Security in goods transport**
  - **Sensors on truck and trailer**
    - **Monitoring the cargo (temperature, etc.)**
    - **Monitor the coupling**
    - **Monitor the trailer inside (motion detection, CO2, …)**
    - **Monitor the trailers´s integrity**
    - **Monitor the route**

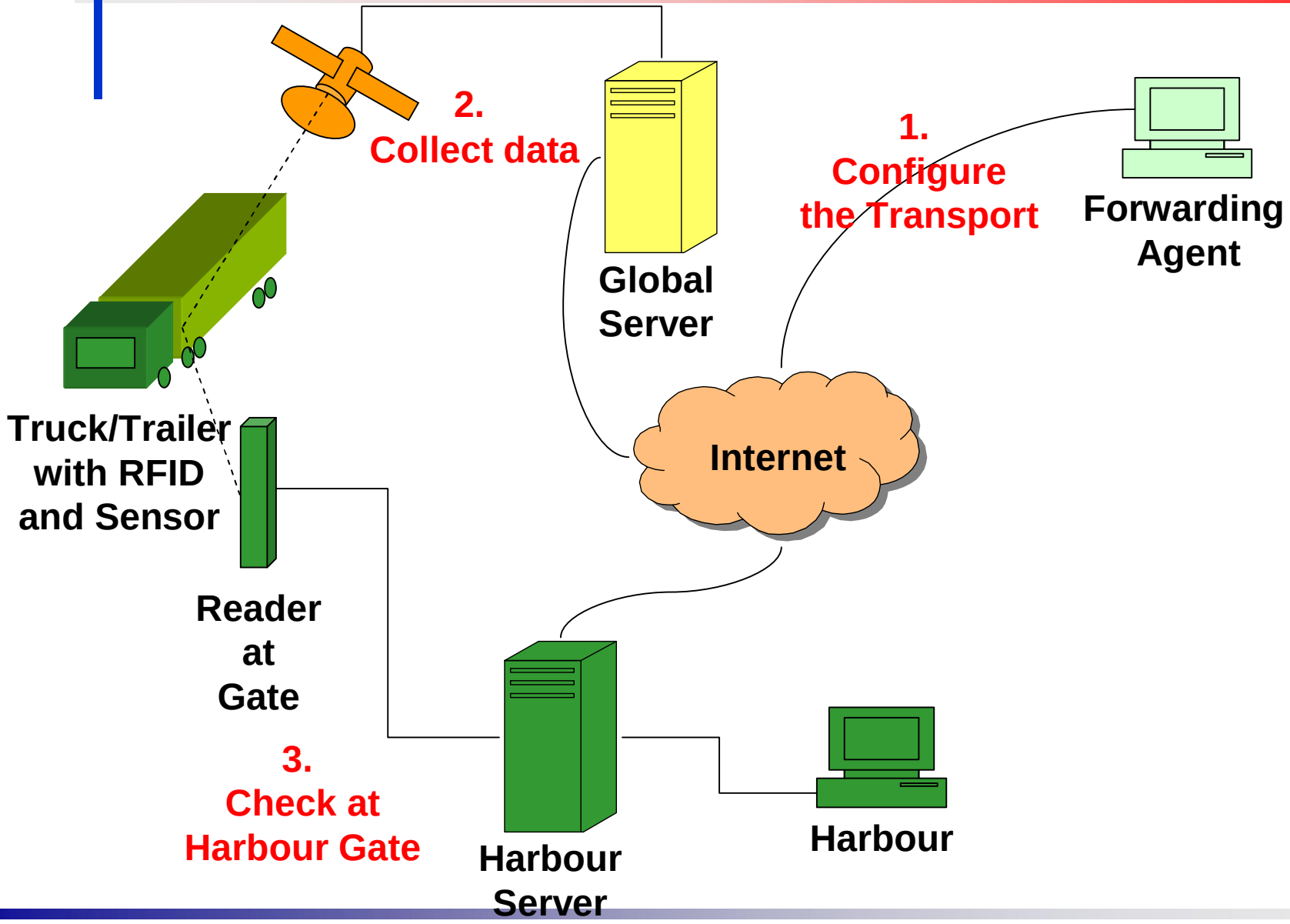
- **Safety and Security in goods transport**
  - **Head-Sensor on truck and trailer**
    - **Sends messages via GSM**
    - **Is accessible by reading and writing**
    - **Is accessible by static or mobile readers**

Hinterland Transport

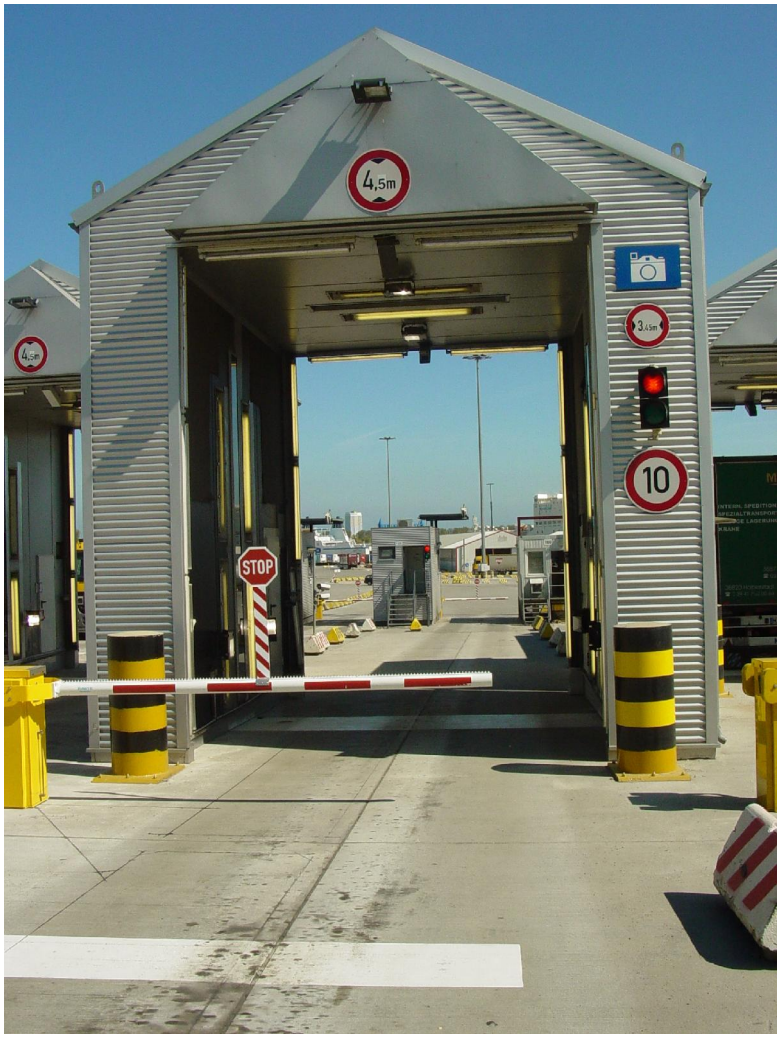
- New regulations for the drivers
- Safe rest- and service areas along the motorways
  - Electronic bookings (slot management)
  - Electronic entrance control
- Cost / Benefit problem
  - Equipment is only used if there are advantages
  - SMEs need cheap and simple solutions
- RFID and sensor standards have to be defined



Transport Chain



Digital camera and control system for units with velocity, length, height measurement and RFID / sensor equipment



1. IHS identifies unit (loop)
2. IHS opens barrier
3. IHS takes pictures, length and height
4. IHS sends status to shipping line
5. IHS reads RFID tag
6. IHS reads and writes the sensor

Send high resolution pictures as email | Printer-friendly version | Return to result list

Attention! The truck was too fast! This listed data is supplied without liability.

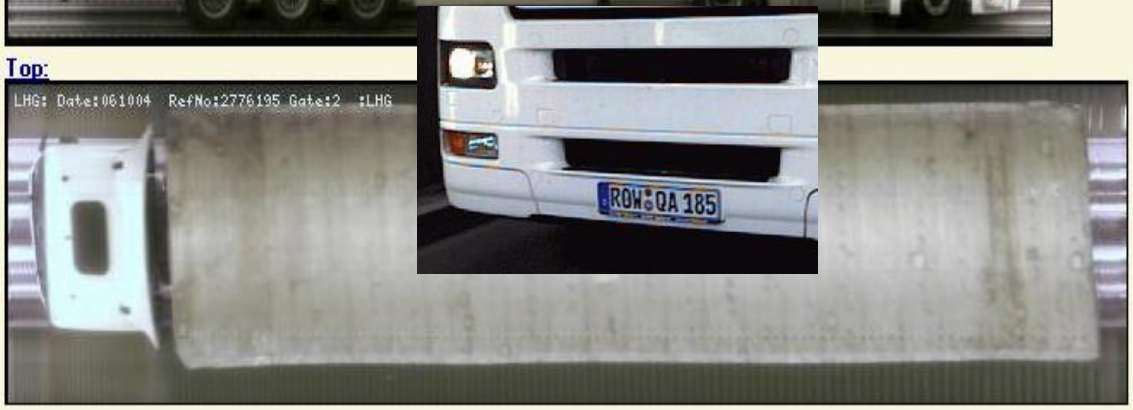
IHS Ref. No:	2793278	Shipping Company:	FF
GC Ref. No:	2776195	Forwarding Agency:	SCANLINK OY LTD
Unit No:	WBN118	Booking No:	585406011
Unit Type:	T	Gate:	SK 2
Creation Date:	04/10/06 10:05	ETA:	04/10/06 00:00
Vehicle Length:	16592 mm	TIN:	-
Vehicle Height:	3608 mm	Vehicle No:	ROWQA185
Trailer Length:	14123 mm	Damage Code:	-
Trailer Height:	3973 mm	Speed:	35 km/h
First Location:	I2 [search current location]	Arrival Time:	-
Ship Code:	FH	Comment:	-

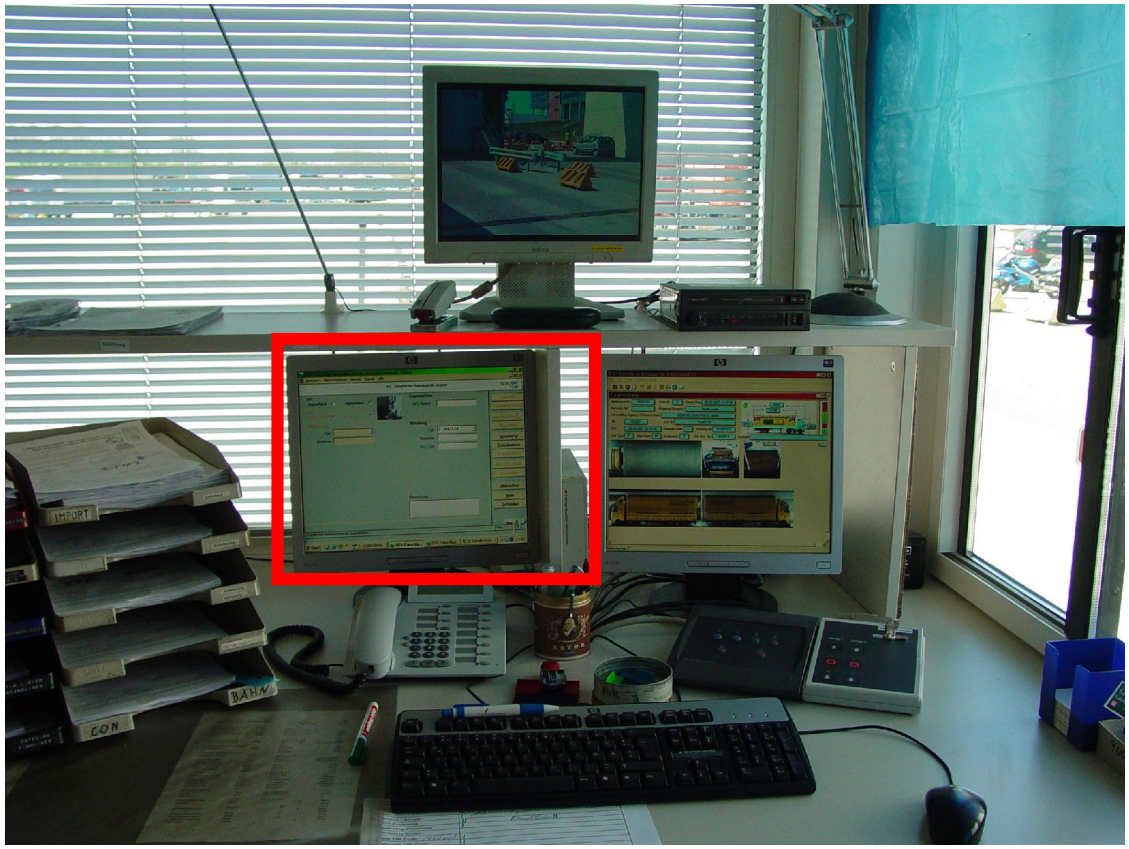
Front: Front Licence Plate Back: Back Licence Plate

Left:

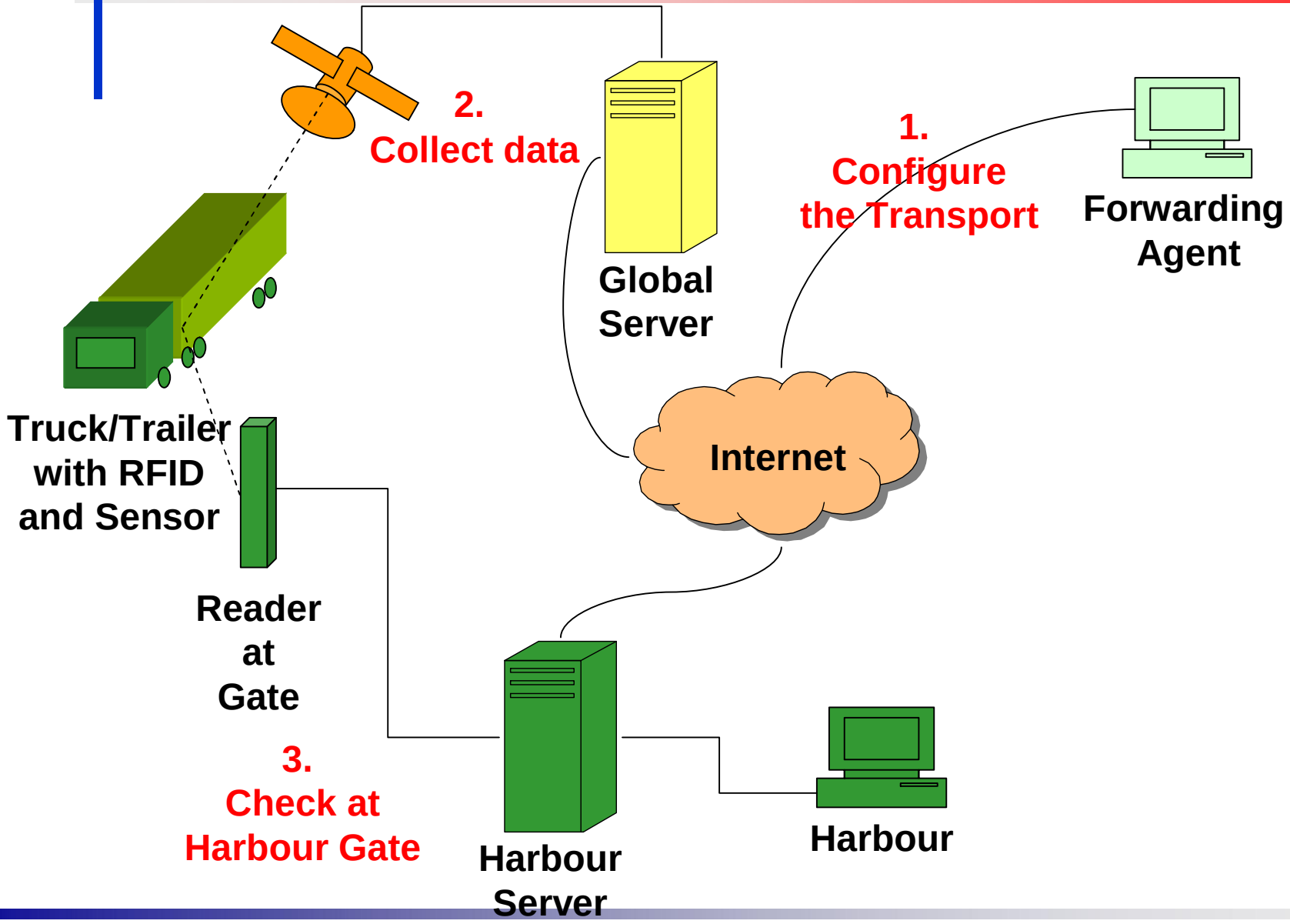
Right:

Top:

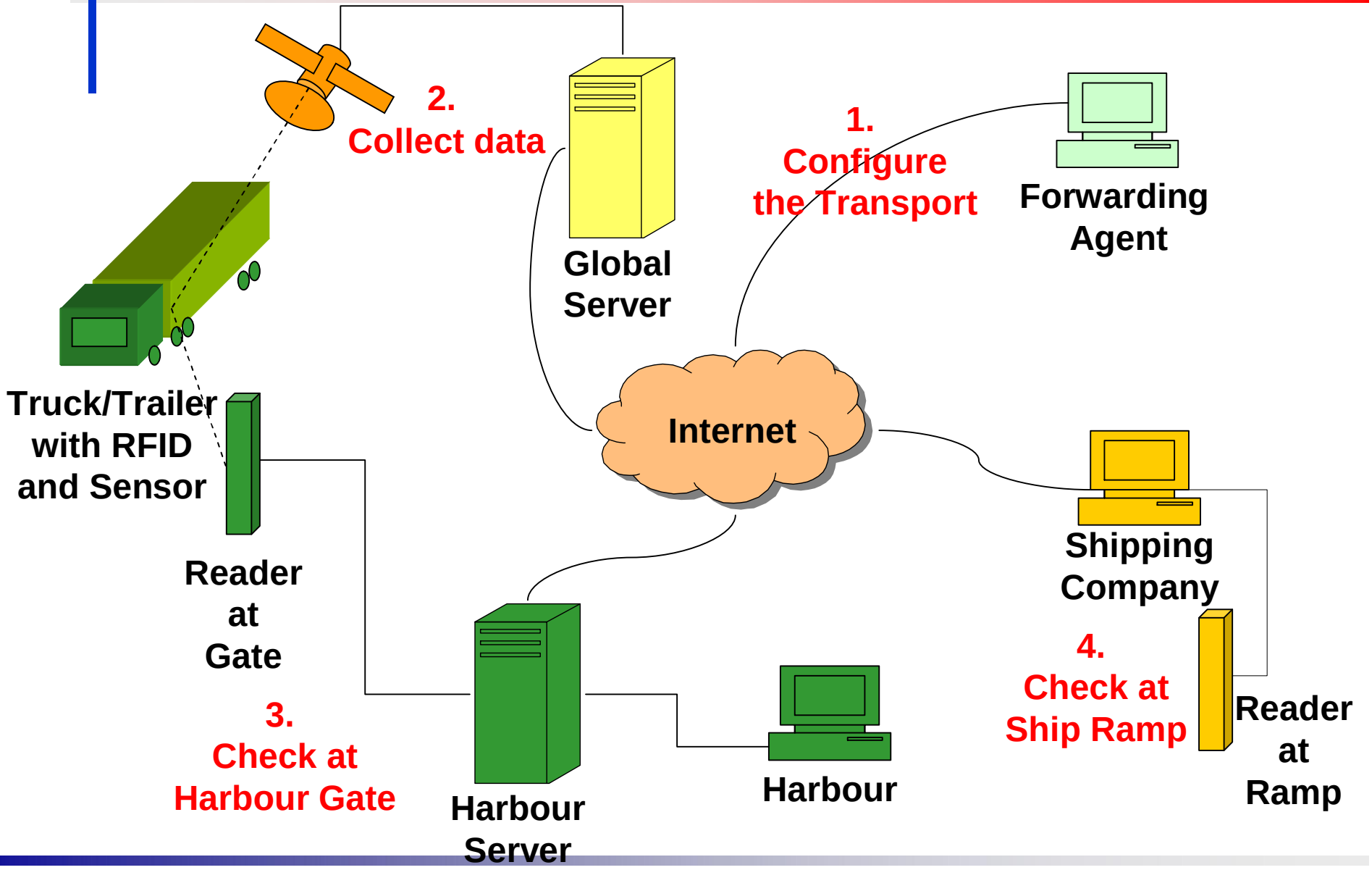




1. IHS checks bookinglist
2. IHS shows booking information
3. IHS optimizes yard place
4. IHS checks DG
5. IHS sends booking entry to shipping line
6. Unit drives into port area and to DG area



Transport Chain

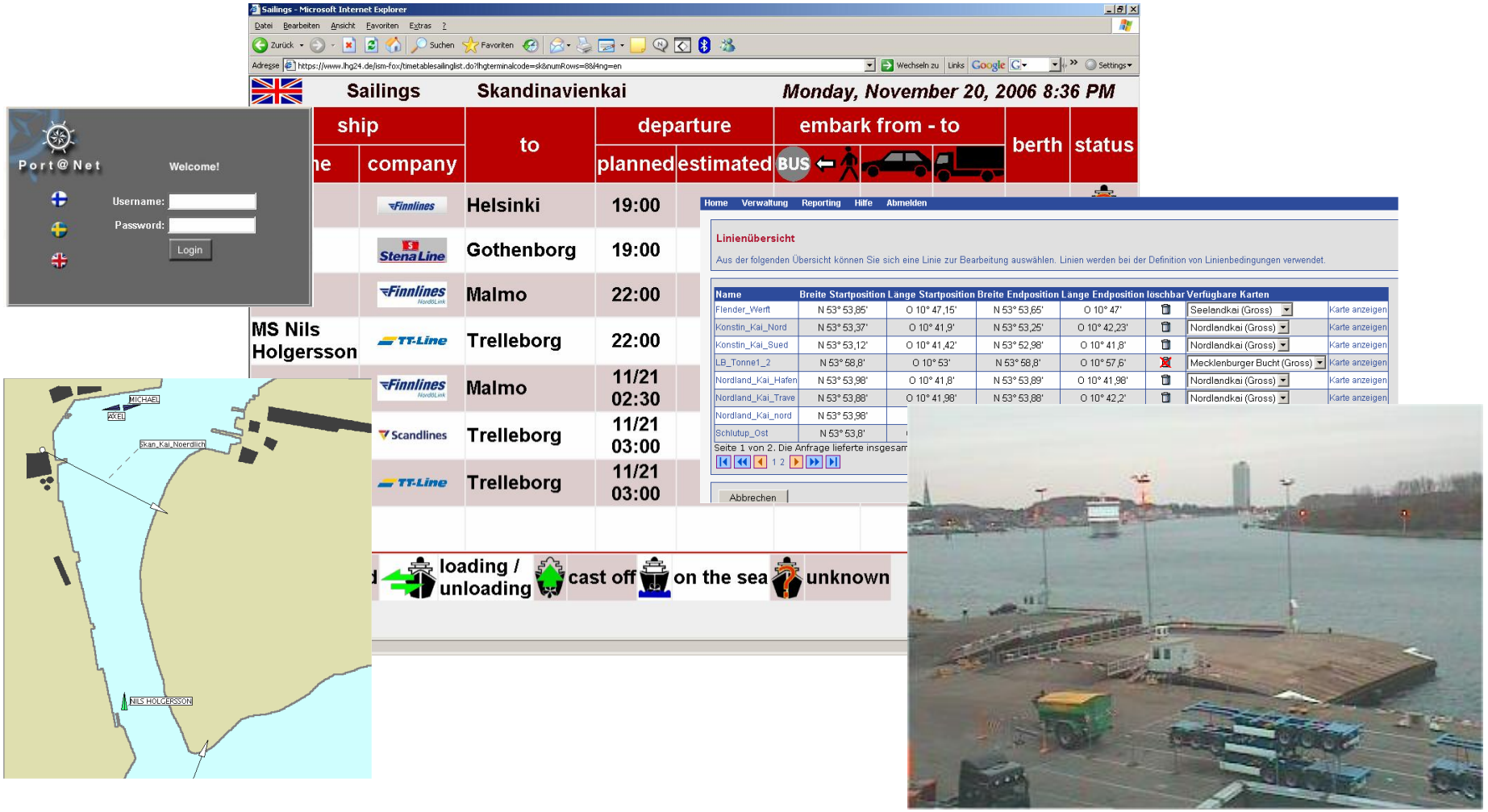


Transport Chain

Ship

- **Ramp Officer identifies trailer via RFID handheld**
- **Ramp Officer approves Stowage Regulations**
- **Sensors are connected to ship alarm management**
- **DG manifests are sent to national authority**
- **National authorities give information in case of calamity**
- **AIS sends DG data**

Ship-born AIS transponders provide position and status



AIS Coast Control

Opportunities

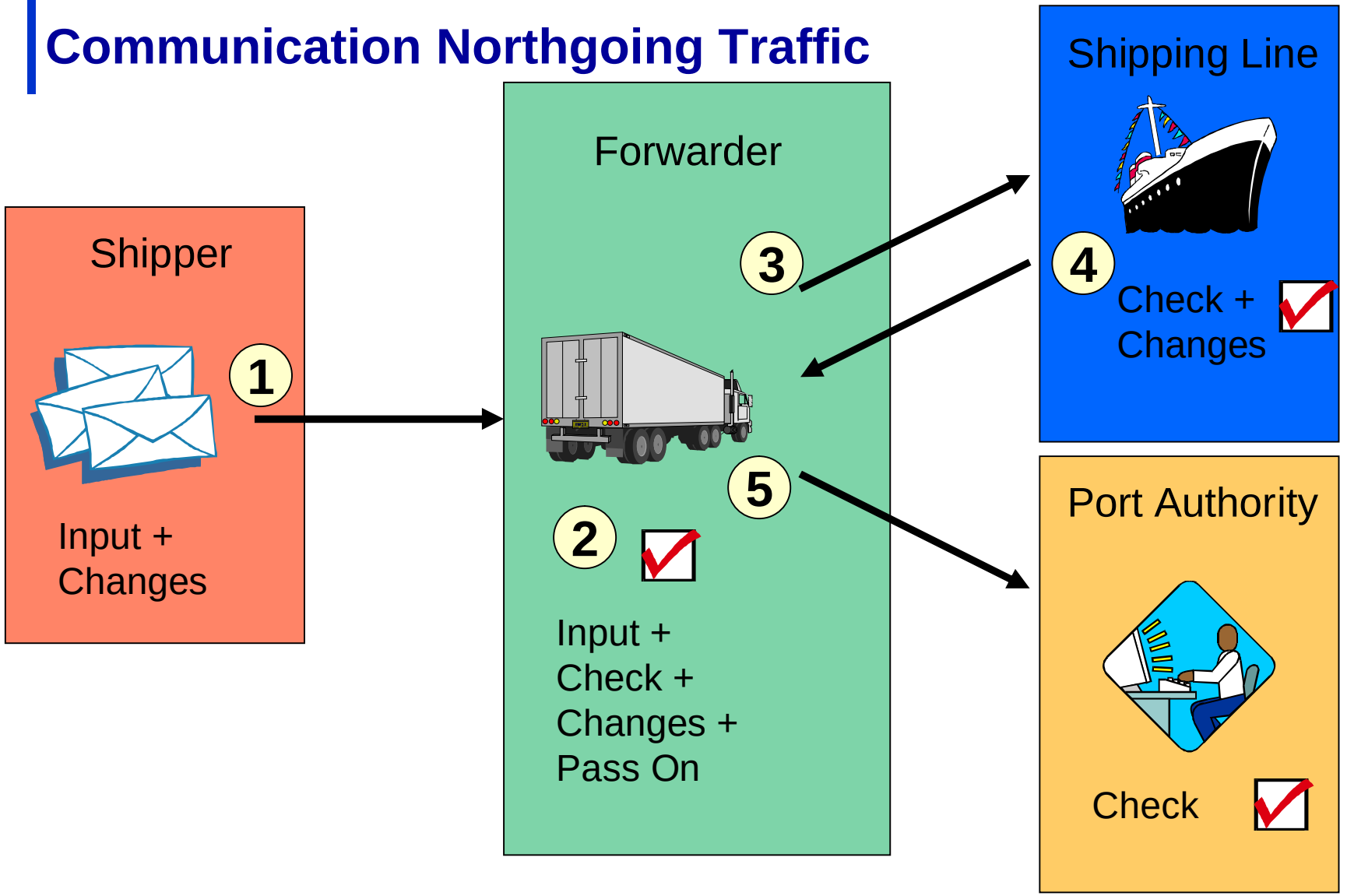
The Official Handling

Lübeck Case

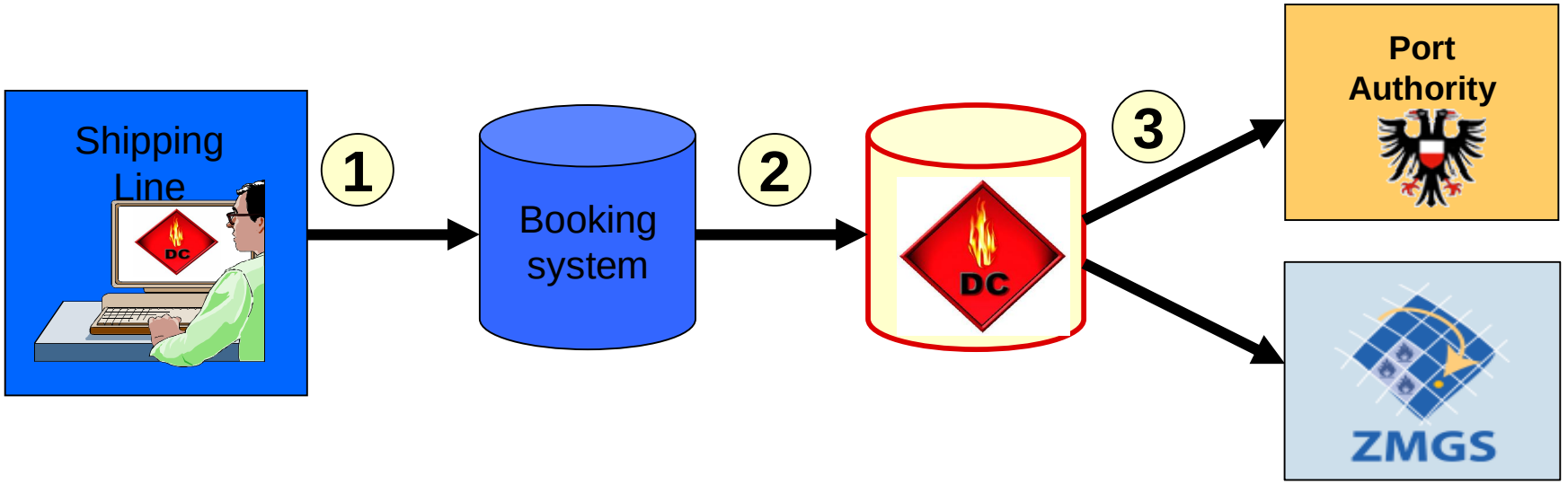
Dangerous Goods Management System Lübeck

- **Integrated system with standardised interfaces**
- **Control by Dangerous Goods Database**
- **IMO, ADR and MoU**
- **Pre-control by shipping-line**
- **Reduced notification period**
- **Access for police, stevedore, fire-brigade**
- **Interface to gate-control**

Communication Northgoing Traffic



Communication processes for incoming vessels



Data transfer via the Dangerous Goods System to Port Authority and ZMGS

Conclusions

New Solutions and Technologies must serve safety / security AND daily processes.

Standards have to be developed in the very near future (on national and international level).

National and international cooperation is necessary (as e.g. PortNet).

Laws and regulations must support IT-usage.

Monitoring could avoid environmental calamities and supports save and rescue units.

Conclusions

- **DaGoB supports communication and cooperation.**
- **Standards are defined by HAZMAT directives.**
- **The BaSIM Project gives first standards in data exchange (www.basim.org).**
- **The BaSIM Project prototypes cooperation of sensor, RFID and GPS technologies.**
- **EU and national projects should communicate.**

Thank you very much

for your

Interest and your Patience