EURIDICE Industrial results

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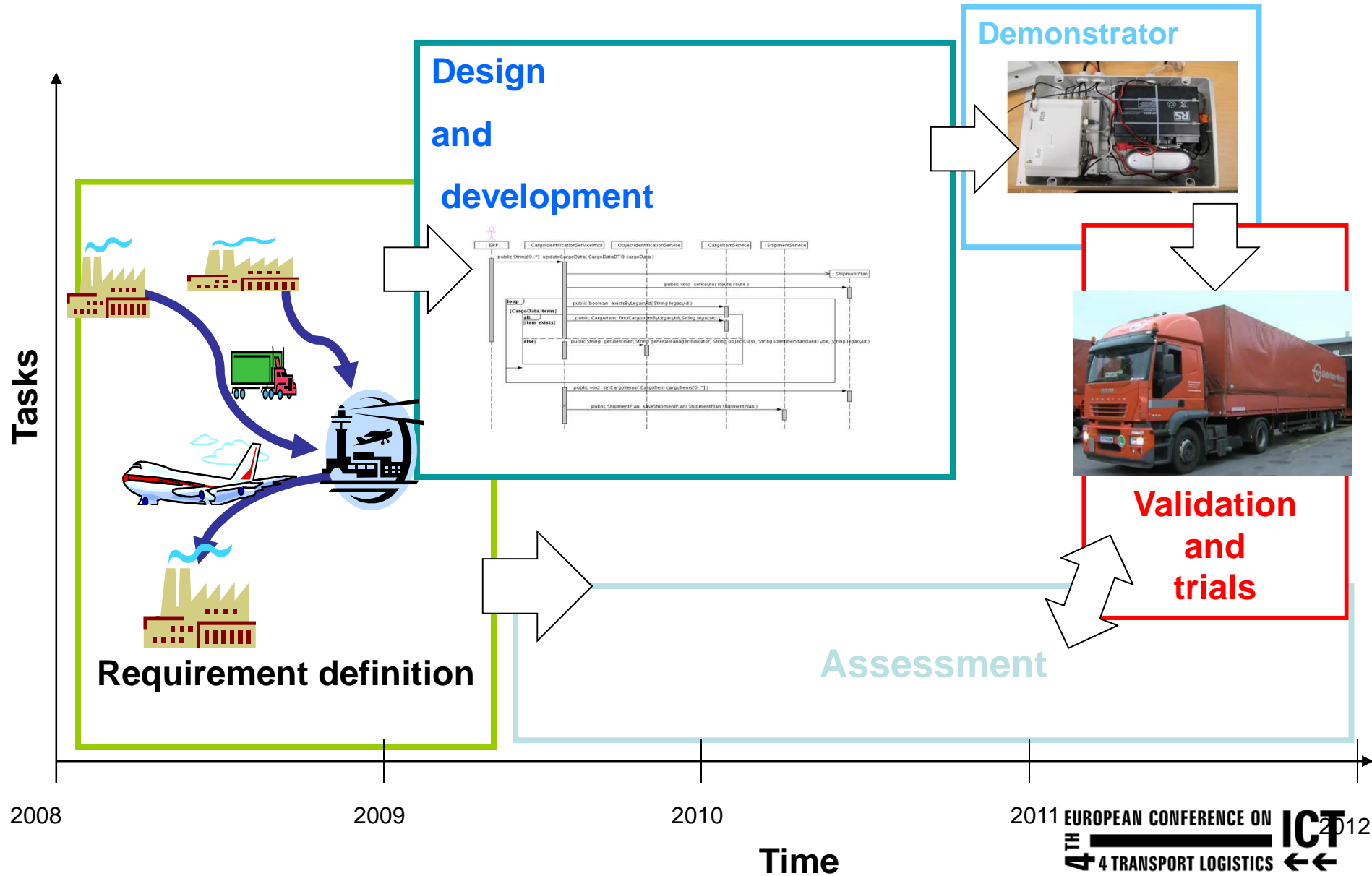
Outline

- ✓ Intelligent Cargo in the pilot cases;

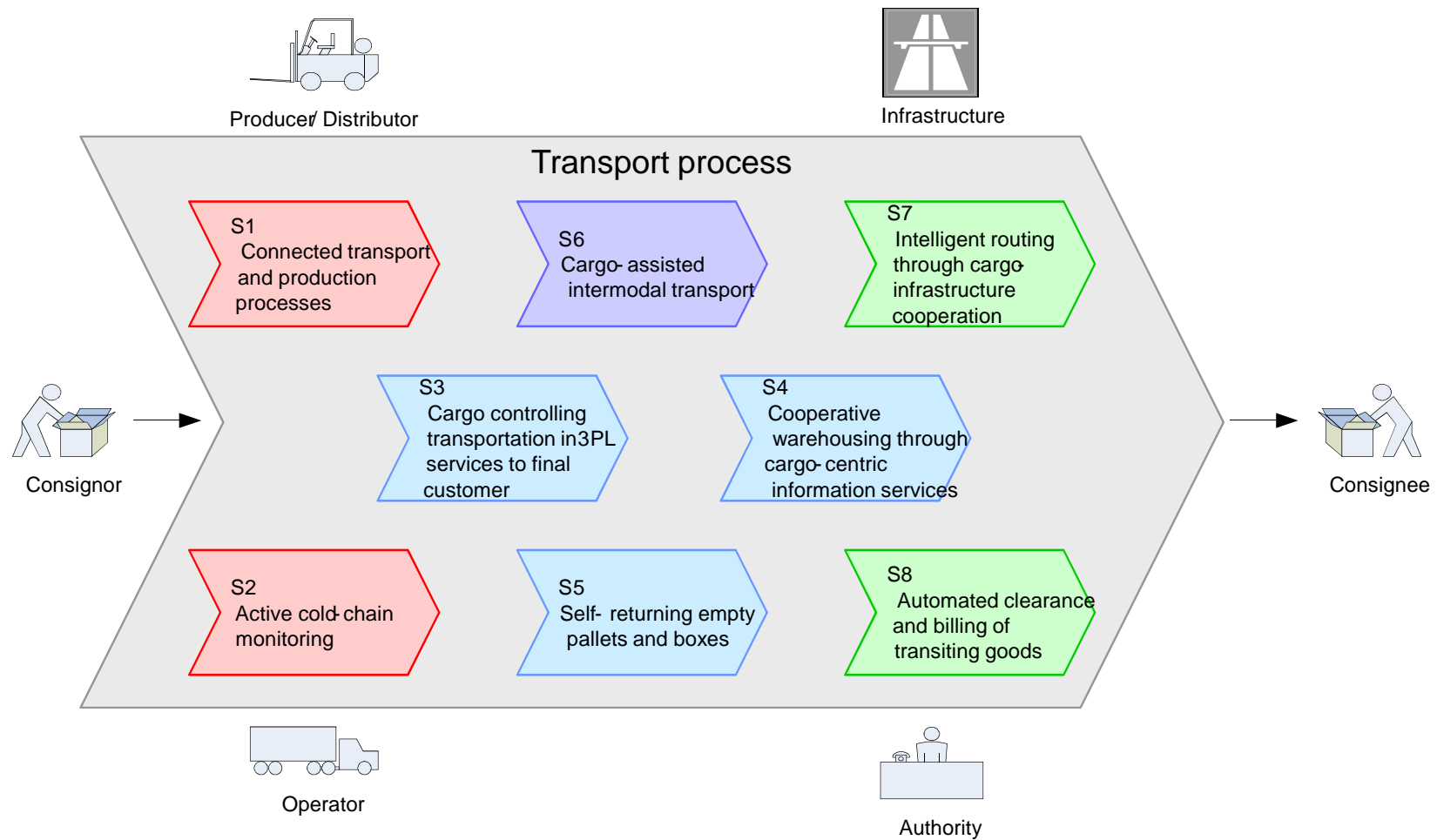- ✓ Trials feedback (PIs and usability);

- ✓ Limitations;

- ✓ Next steps

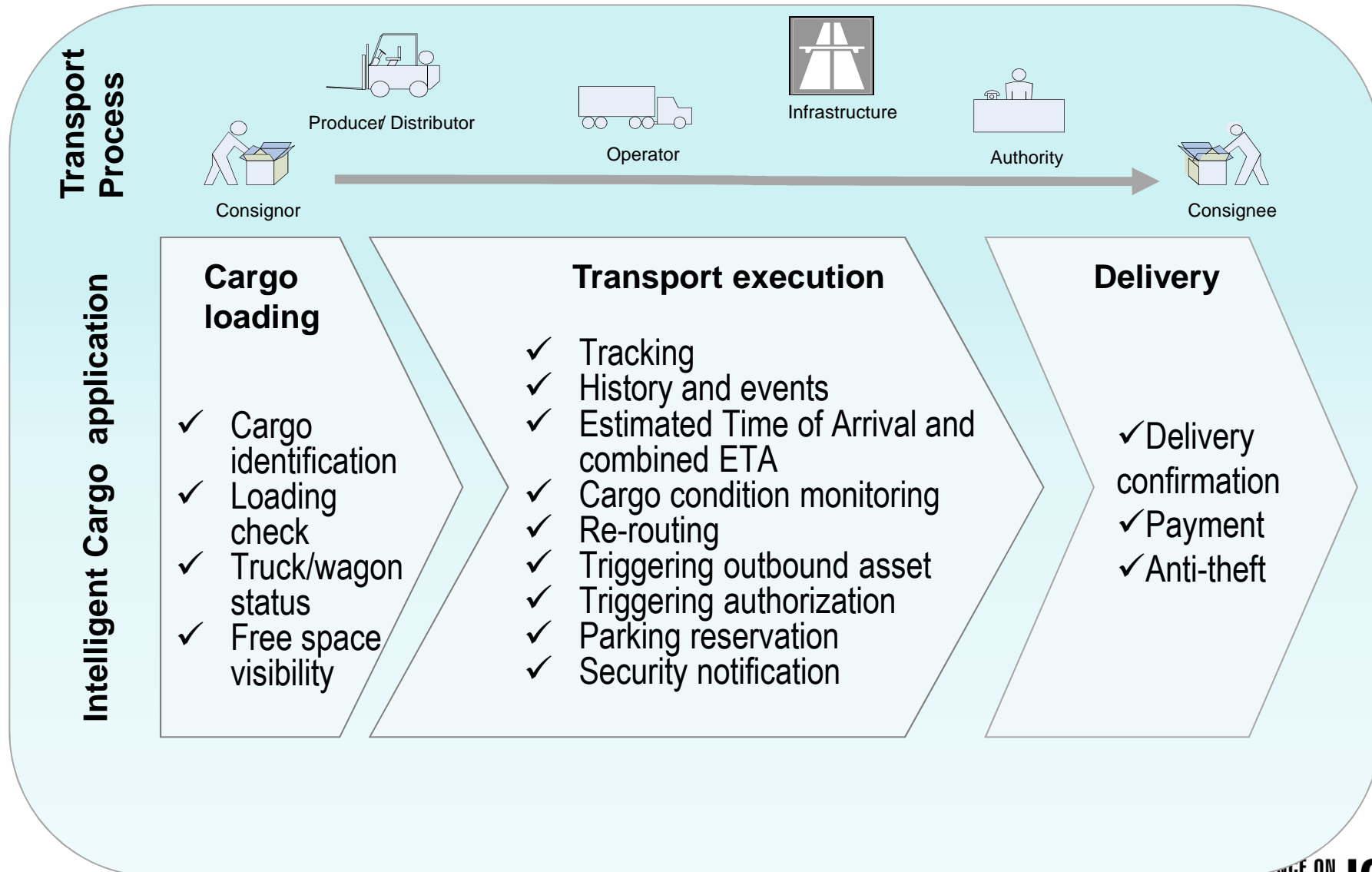# The Intelligent Cargo in the pilot cases
- project task plan -

Tasks

Design and development

Demonstrator

Validation and trials

Requirement definition

Assessment

Time

The Intelligent Cargo in the pilot cases
- the pilots -

Producer/ Distributor

Infrastructure

Transport process

S1 Connected transport and production processes

S6 Cargo- assisted intermodal transport

S7 Intelligent routing through cargo infrastructure cooperation

S3 Cargo controlling transportation in3PL services to final customer

S4 Cooperative warehousing through cargo- centric information services

Consignor

Consignee

S2 Active cold- chain monitoring

S5 Self- returning empty pallets and boxes

S8 Automated clearance and billing of transiting goods

Operator

Authority

The Intelligent Cargo in the pilot cases

Transport Process

Producer/ Distributor

Operator

Infrastructure

Authority

Consignor

Consignee

Intelligent Cargo application

Cargo loading

- ✓ Cargo identification
- ✓ Loading check
- ✓ Truck/wagon status
- ✓ Free space visibility

Transport execution

- ✓ Tracking
- ✓ History and events
- ✓ Estimated Time of Arrival and combined ETA
- ✓ Cargo condition monitoring
- ✓ Re-routing
- ✓ Triggering outbound asset
- ✓ Triggering authorization
- ✓ Parking reservation
- ✓ Security notification

Delivery

- ✓ Delivery confirmation
- ✓ Payment
- ✓ Anti-theft

ICT

4TH

4 TRANSPORT LOGISTICS

Cargo loading

✔ **Cargo identification**

FioritalPoC [Dev] - Order [EDIT]

Status:	NEW
Order Date:	Fri May 06 00:00:00 CEST 2011
Distributor order:	Order # 1076 from Fri May 06 00:00:00 CEST 2011
Delivery Date:	2011-05-28 00:00
AQ:	
LOT:	

Products | Comments

Name	Box Weight	Unit	Quantity	Best before	EPC Code
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Salmon, RED	2.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...
Tuna, RED	5.0	KG	1.0	Fri May 13 11:...	urn:epc:id:sgti...

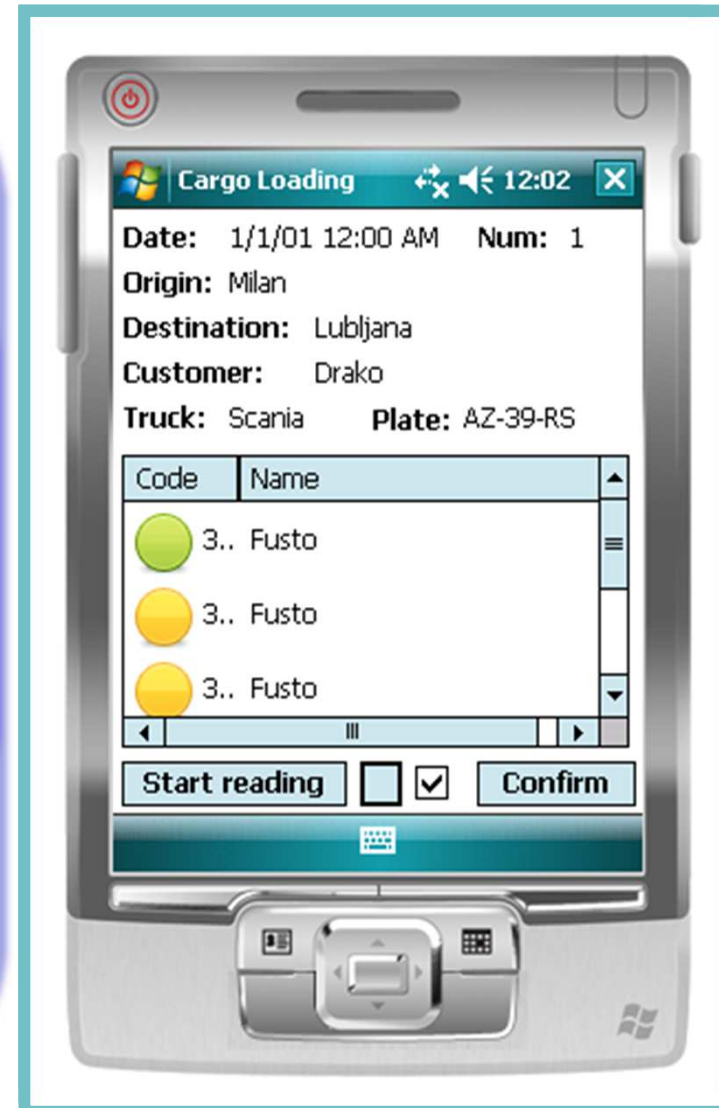Buttons: Add, Edit, Remove, Up, Down

Import excel | Request EPC codes | Print RFID tags | Ready to sent

Ok | Cancel

Cargo loading
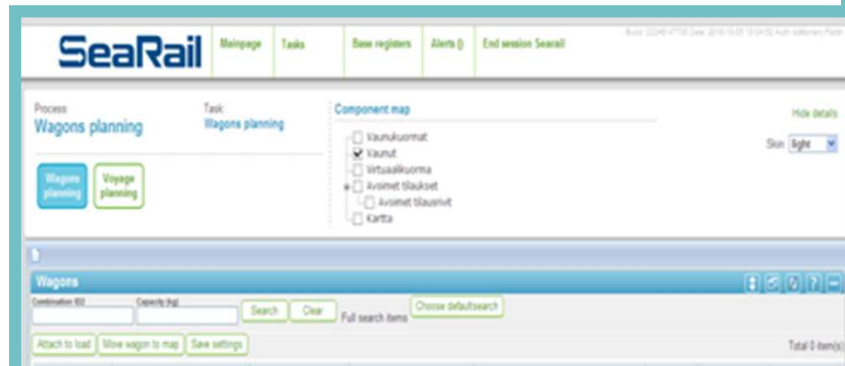
✔ **Loading check**

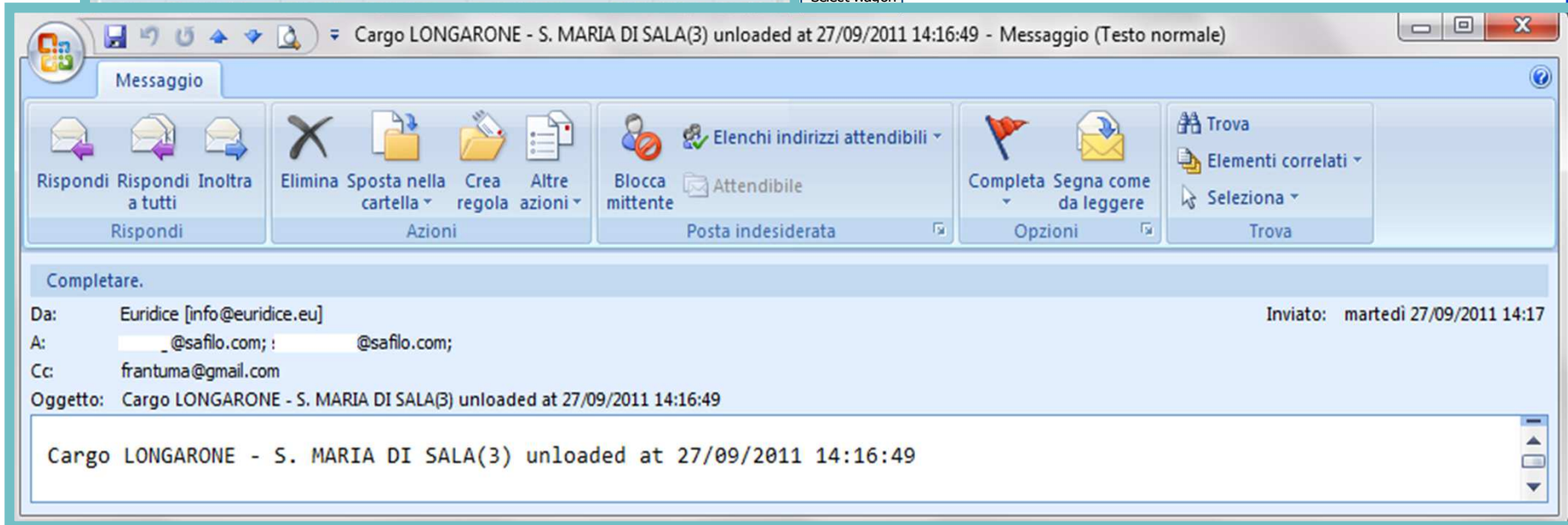# Cargo loading

✔ **Truck/wagon status**

UC.02.03 Wagon proposal

Below is list for all available wagons for order <transportOrderNumber>

Wagon ID	Wagon status
Wagon 1	Unloaded
Wagon 2	Unloaded
Wagon 45	Unloaded

Select wagon

Cargo LONGARONE - S. MARIA DI SALA(3) unloaded at 27/09/2011 14:16:49 - Messaggio (Testo normale)

Messaggio

Rispondi Rispondi a tutti Inoltra | Elimina Sposta nella cartella Crea regola Altre azioni | Blocca mittente Elenchi indirizzi attendibili Attendibile | Completa Segna come da leggere | Trova Elementi correlati Seleziona

Rispondi | Azioni | Posta indesiderata | Opzioni | Trova

Completare.

Da: Euridice [info@euridice.eu]
A: _ @safilo.com; :   @safilo.com;
Cc: frantuma@gmail.com
Oggetto: Cargo LONGARONE - S. MARIA DI SALA(3) unloaded at 27/09/2011 14:16:49

Inviato: martedì 27/09/2011 14:17

Cargo LONGARONE - S. MARIA DI SALA(3) unloaded at 27/09/2011 14:16:49

Cargo loading

✔ **Free space visibility**

Vehicle State

Vehicle-ID:	V#12345
Location:	In Vehicle#12345
State:	In transit
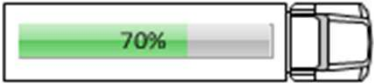
Filled: 7 Pallets
Available Space: 3 Pallets

70%

OK   Cancel
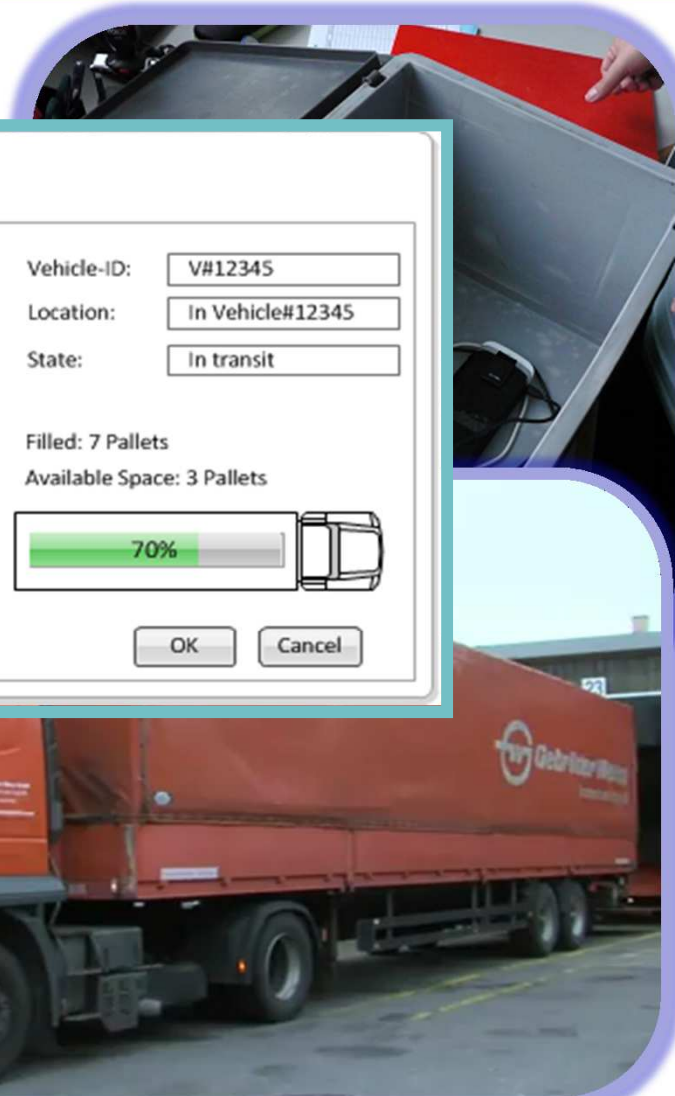
Transport execution
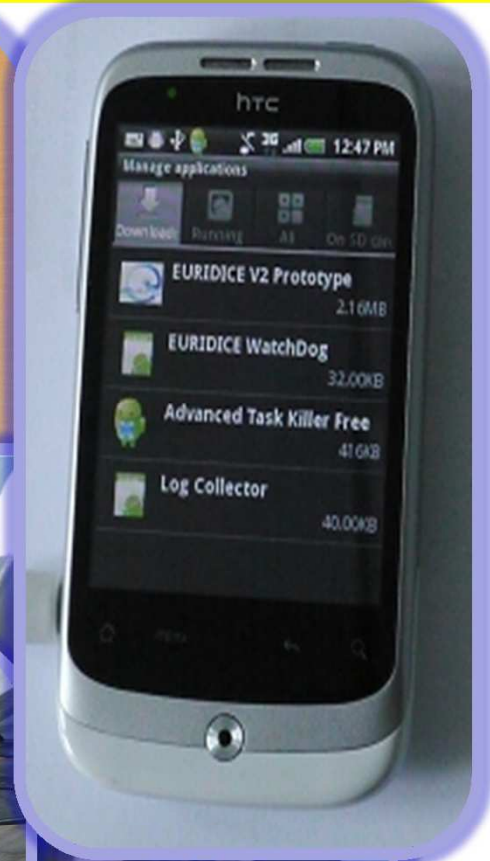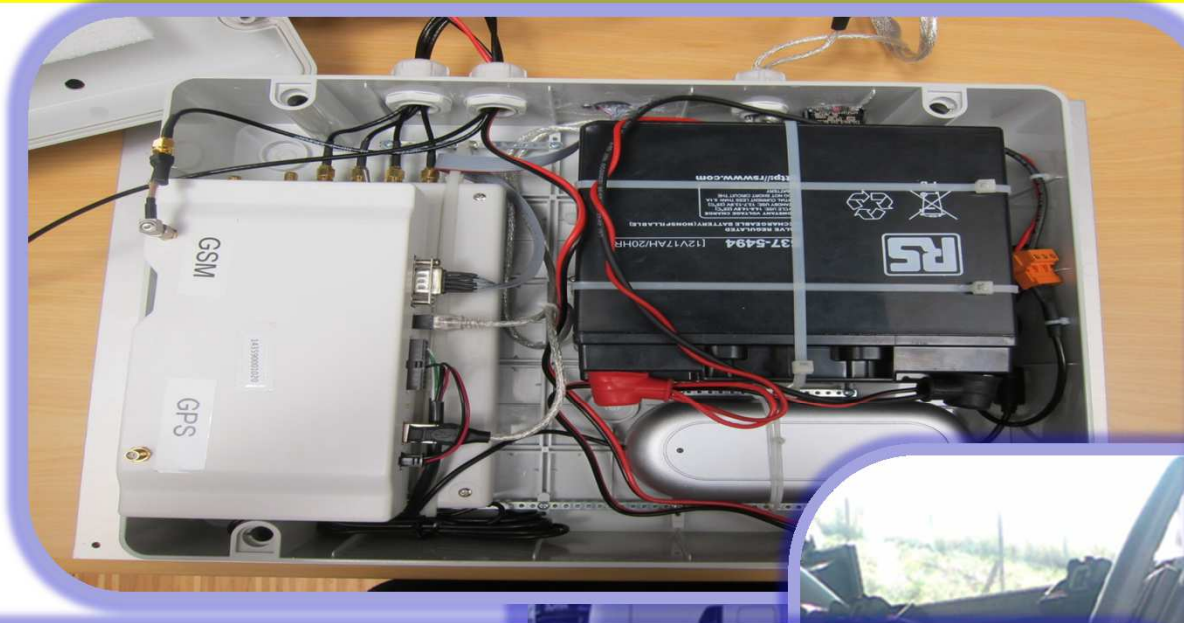
Transport execution

✔ History of events and alerts

Transport execution

✔ **ETA - Estimated Time of Arrival**

Transport execution

✔ **Cargo condition monitoring**
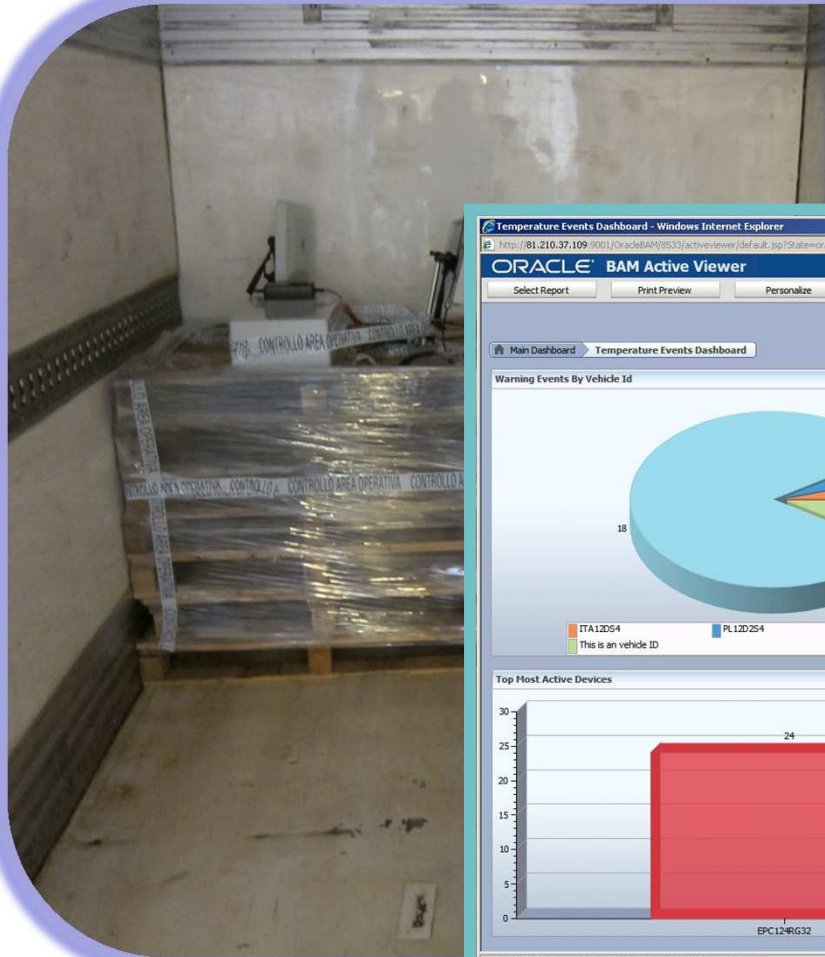
Transport execution

✔ **Re-routing**

Transport execution

✔ **Triggering outbound asset**

Search Criteria

From Date: 11/10/2011 12:50   To Date: 12/10/2011 23:59   ☐ Recieved from PDA   Warehouse: Σινδος

Load List: Truck: ☑ Trucks with PDA   Invoice:

Search

4 Records Found.

		Load List	Truck	Planned to load	Loaded to Truck	Received from PDA	Delivered	Comments	DateTimeStamp	LastNotification	Documents	Completed (%)
Select		H00000139925	NXY1607	14	14	0	0		12/10/2011 11:18:01	12/10/2011 11:18:01	0	0
Select		H00000139919	NXY1956	9	9	0	0		12/10/2011 10:30:00	12/10/2011 10:30:00	0	0
Select		H00000139914	NXY1607	17	17	0	0		12/10/2011 10:06:02	12/10/2011 10:06:02	0	0
Select		H00000139830	NXY1292	3	0	0	0		11/10/2011 12:57:59	12/10/2011 16:29:43	0	0
Totals:				**43**	**40**	**0**	**0**	**0**			**0**	

Search Criteria

From Date: 11/10/2011 12:50   To Date: 12/10/2011 23:59   ☐ Recieved from PDA   Warehouse: Σινδος

Load List: Truck: ☑ Trucks with PDA   Invoice:
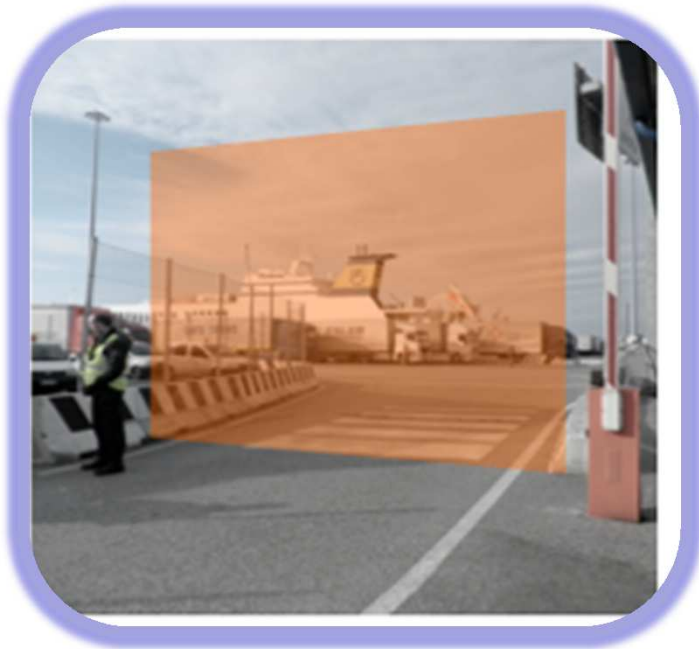
Search

4 Records Found.

		Load List	Truck	Planned to load	Loaded to Truck	Received from PDA	Delivered	Comments	DateTimeStamp	LastNotification	Documents	Completed (%)
Select		H00000139925	NXY1607	14	14	0	0		12/10/2011 11:18:01	12/10/2011 11:18:01	0	0
Select		H00000139919	NXY1956	9	9	0	0		12/10/2011 10:30:00	12/10/2011 10:30:00	0	0
Select		H00000139914	NXY1607	17	17	0	0		12/10/2011 10:06:02	12/10/2011 10:06:02	0	0
Select		H00000139830	NXY1292	3	3	3	0		11/10/2011 12:57:59	12/10/2011 16:30:00	0	0
Totals:				**43**	**43**	**3**	**0**	**0**			**0**	

Transport execution

✔ **Triggering authorization** **Automated security notification**

Transport execution

✔ **Automated parking reservation**

Delivery

✔ **Delivery confirmation**

Delivery

✔ **Automated payment**

Delivery

✔ **Anti-theft**

Trials feedback- metrics*

Nice but…does my company have real benefits using the IC?

✔ Do I receive the information needed in a faster way with respect to the current situation?

✔ Is the information sent by the IC correct?

✔ Is there a positive impact on the customer service?

✔ Is there a positive impact on my costs?

* Results based on the first on going trials performed by some pilots

Time reduction: status change (e.g. cargo loaded, unloaded etc)

✔ Metric: **Average notification time in case of status change**

✔ Meaning: How long does it take to receive the information about the status change with respect to the moment when it's verified?

✔ Formula: ATSC = Σ(TSU - TSC) / N

where

AT: Average Time [min]
TSU: Time when status is updated [min]
TSC: Time when the status changed [min]
N: Number of measurements [#]

Status change (e.g. cargo arrived, loaded etc)	Pilot number	Time needed without IC	Time needed with IC	Time reduction with respect to the actual situation
	Pilot 7	8 hours	8 seconds	99,97%
	Pilot 3	5 hours	1 minute	99,67%
	Pilot 1	More than 1 hour	5 minutes	92,75%

Time reduction: deviation from established physical conditions

✔ Metric: **Average notification time in case of deviation from established conditions**

✔ Meaning: How long does it take to receive the information about the deviation from established condition with respect to the moment when it's verified?

✔ Formula: ATDC= Σ(TDU - TDH) / N

> where
>
> TDU is the Time when Deviation is Updated [min]
>
> TDH is Time when Deviation Happened [min]
>
> N is Number of measurements [#]

	Pilot number	Time needed without IC	Time needed with IC	Time reduction with respect to the actual situation
Average notification time in case of deviation from established conditions	Pilot 3	About 6 hours	1 minute	99,72%
	Pilot 2	45 minutes	5 minutes	88,89%
	Pilot 5	1 hour and half	12 minutes	86,89%

Reliability of the information: cargo identification

✔ **Metric: Percentage of error-free identifications**
✔ Meaning: What is the percentage of cargo correctly identified with respect to the shipment list?
✔ Formula: PEFI= 1-(Σ NCEI/ Σ NC ATSC)
        where
        NCEI is Number of Cargo with Error regarding identification
        NC is total number of cargo

✔ As-Is results: 97-98% of error free identifications

✔ To Be results: close to 100% (technical/human aspects)

Reliability of the information: ETA (Estimated Time of Arrival)

✔ Metric: **Percentage of correct last ETA (Estimated Time of Arrival)**
✔ Meaning: How many cargo arrived respect the last ETA defined?
✔ Formula: PCETA= Σ NCCETA/Σ NC

        where
        NCCETA is Number of Cargo with Correct ETA [#]
        NC is Total Number of Cargo [#]

✔ As-Is results: about 90%

✔ To Be results: close to 100%

Customer service

✔ Metric: **Percentage of on time deliveries**
✔ Meaning: How many deliveries are shipped with respect of the delivery time?
✔ Formula: POTD = Σ NOPOT/ Σ NOF
           where
           NOPOT: Number of Orders performed on-time [#]
           NOF: Number of Orders Fulfilled [#]

✔ To Be results: close to 100%

✔ Metric: **Percentage of correct order fulfillment**
✔ Meaning: How many orders are correctly fulfilled (in terms of time, type and quantity of goods)?
✔ Formula: PPOF= Σ NOPF/ Σ NOF
           where
           NOPF is Number of Orders Correctly Fulfilled [#],
           NOF is total number of orders
✔ To Be results: close to 100%

EUROPEAN CONFERENCE ON **ICT** 4 TRANSPORT LOGISTICS

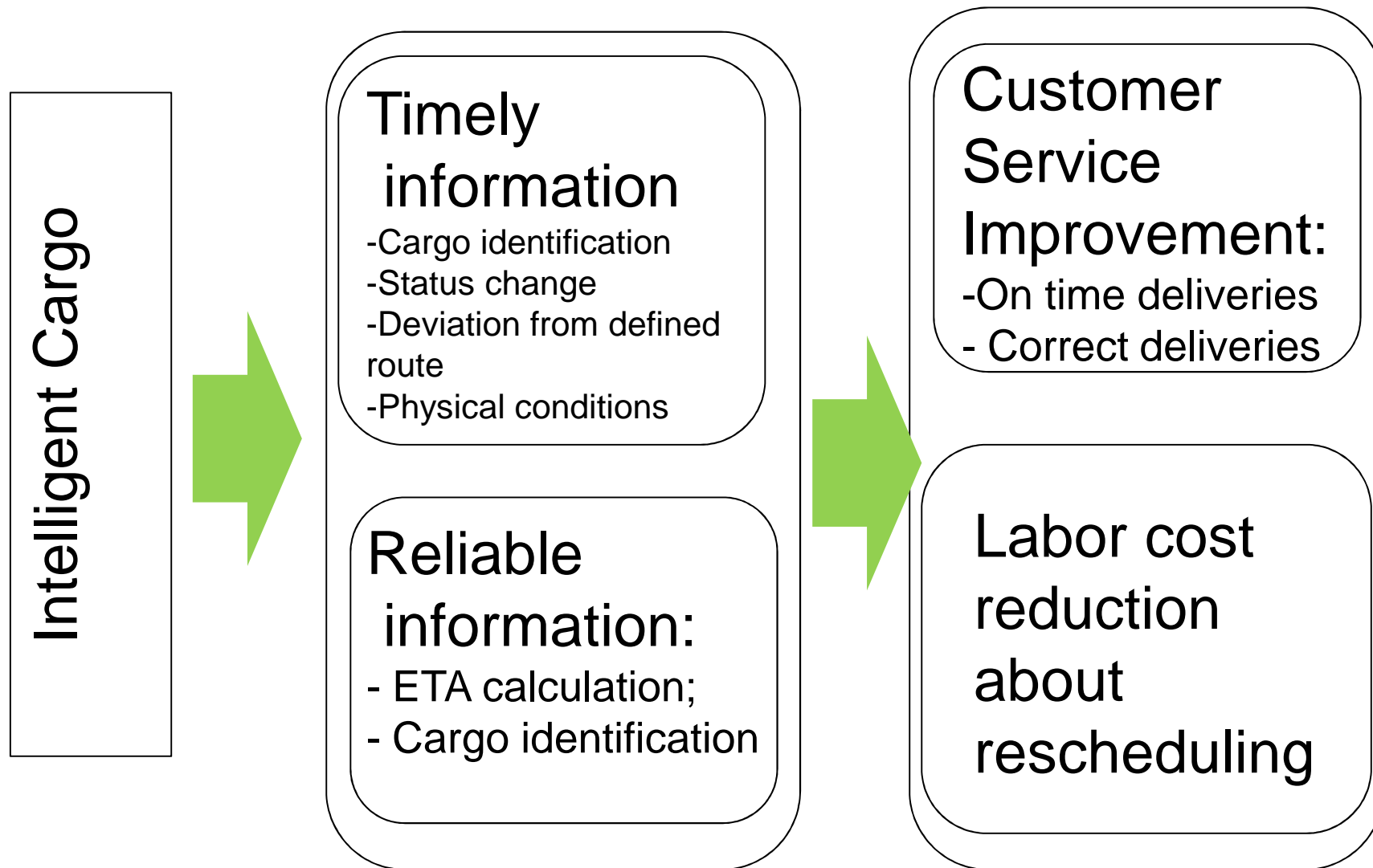# Labor cost reduction - rescheduling

✔ Metric: **Labor cost**

✔ Meaning: How much can the company reduce the labor costs to collect the necessary information to reschedule the plan due to transport problems (information flow)?

✔ Formula: LCR= HLCR*NHR

          where
          LCR is Labor Cost for Rescheduling [€];
          NHR Number of Hours for Rescheduling [#]

✔ To Be results: close to 100%

Trials feedback- summary

Intelligent Cargo

Timely information

-Cargo identification
-Status change
-Deviation from defined route
-Physical conditions

Reliable information:

- ETA calculation;
- Cargo identification

Customer Service Improvement:

-On time deliveries
- Correct deliveries

Labor cost reduction about rescheduling

Trials feedback - Usability of EURIDICE system

✔ On line questionnaire about: usability, flexibility, performance, integration/scalability and fit for purpose of EURIDICE;

✔ 24 questions: Likert scale with Weight (1-5) and Level of Satisfaction (1-5)

* Results about 4 pilots

Trials feedback - Usability of EURIDICE system - the top five
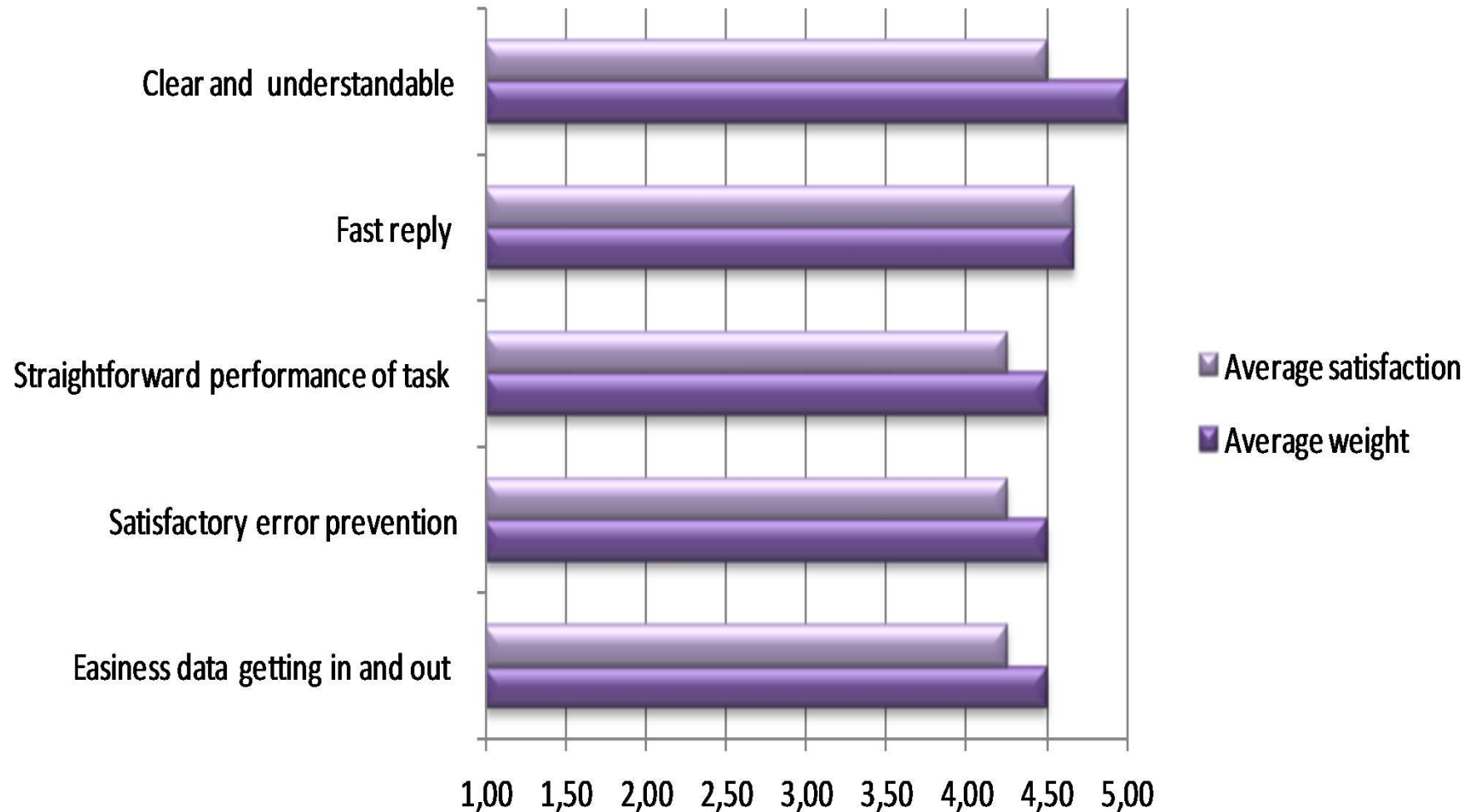
Possible limitations in EURIDICE use

✔Technical:
   ✔ GPS connection;
   ✔ RFID reading (physical constraints);
   ✔ Network connectivity;

✔ Organizational
        ✔ Involvement of different players along the supply chain;
        ✔ Authorization to install the hardware at certain locations (e.g. public authorities);

Next steps

✓ Trials on going;

✓ PIs collection;

✓ Feedback collection from the trials (impact on user activity, improvements etc)

Thank you for your attention!

For further information:
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