

### **Task 1.3.**

## **Assessment of the research state at the local level related to the European trends and demand analysis**

### **PURPOSE**

*According to the DoW in order to fully understand the potential of the RCs it's important to evaluate on one side their position related to the research and innovation trends recorded in Europe and to the general state of R&TI, and on the other side the distance from the innovation demand perceived on the local market.*

*To achieve these results, it is necessary to define and to analyze the existent knowledge about the state of the European research on the specific topic of urban logistics.*

*This is the first part of the activity to be developed within tasks 1.3.*

*A specific integration will be made analyzing the trends in two main fields which represent important support technology for the urban logistics, that is the ICT and the vehicle technologies (with particular respect to electric vehicles).*

*Moreover the planning documents of the main Bodies in charge of technological development, namely:*

- *Europe 2020 Strategy with his Flagship Initiative "Innovation Union";*
- *The existing regional R&TI policies, plans and activities, their evolution and their impact;*
- *The existing national R&TI policies and support initiatives*

*will be deeply analyzed by UCVin order to prepare a reference for the evaluation of the position of each RC compared to the EU Position.*

*The second phase of the activities will be to prepare a document describing the position of the RCs activities with respect to this reference framework; this will be done according to the methodology developed under task 1.1 and the information collected in task 1.2 about the local situation in the Regions..*

*This analysis will give the possibility to characterize the specific context of the RCs with respect to the external reality in a transnational context, as the one targeted by the RCs actions should be.*

*The outcome of the work will be a report containing the above mentioned analysis and the results of the comparative positioning analysis.*

## 1. ORGANIZATION OF THE ACTIVITIES RELATED TO THE ASSESSMENT OF THE STATE OF THE ART (FIRST PHASE)

According to the methodology document assessed in task 1.1 and the subsequent segmentation of the research area the following matrix describes all the technology and products to be analysed; in the same way each Technology field has been assigned to Partners in order to perform the data collection and the preparation of synthetic status of the art of each Technological field.

	General Tech field	Specific Technology	Partner in charge
1	Freight distribution management systems	Simple software systems	FRI/LIB
		Fleet management systems	
		Integrated distribution management systems	
2	Special hardware for distribution management	Palm top for delivery management	LIB
		On-board devices for freight vehicles	
3	Special software for freight distribution systems	Software tools for freight distribution optimization	MOV
4	Support systems for regulation schemes	Access control management / charging systems	IPN
		Parking management / charging systems	
		Permissions release and management systems	
5	Automatic warehousing systems and handling systems	Warehousing systems	FRI/University
		Handling and picking systems and equipment	
		Loading / unloading systems and equipment	
		Automatic weight / dimension measurement equipment	
		Automatic labeling machines	

	General Tech field	Specific Technology	Partner in charge
6	Storage systems for transport	Storage systems for transport	UPV
7	Non-conventional vehicles	Application of electric vehicles to freight distribution	UPV/PE
		Application of other non-conventional vehicles	
8	Engineering and management	New regulation schemes	MET
		New distribution process schemes	
9	E-commerce platforms	Platforms addressed by specific operators to the end users for on-line buying	IPA/DMG
		Platforms b2b addressed by specific companies to other companies, shopkeepers, and other business subjects used for purchasing and managing orders and shipment	
10	Electronic devices for goods and vehicles tracking	Barcode systems	IPN
		RFID systems	
		GPS systems	
		Wi-Fi systems	

Moreover UCV is going to prepare a document related to the general European situation taking into the account: the planning documents of the main Bodies in charge of technological development, namely:

- Europe 2020 Strategy with his Flagship Initiative “Innovation Union”;
- The existing regional R&TI policies, plans and activities, their evolution and their impact;
- The existing national R&TI policies and support initiatives.

#### DESCRIPTION OF THE ACTIVITIES

Each partner has to develop the activities assigned by the task leader according to the following scheme:

1. Data collection of the documents produced within within several European Programs, Civitas, CiTylog, SmartsetBestfact etcetera. Moreover the availability of advanced products and solutions on the market should be generally taken into account. This activity should lead to identify the most important and advanced technologies / solutions and the general situation of the sector in Europe
2. Preparation of the documentation which will be constituted of two parts:
  - 2.1. A short synthesis of the general situation related to the specific technological field (descriptive)
    - General Concept / Content
    - Possible integration with other technologies ( within the same tech field)
    - Main applications in EU,
    - Research and technology development.
  - 2.2. For the most important technologies / application a specific record containing:
    - Description of the technology / solution (working principle, technical characteristics, etc.)
    - Main application in Europe experiences
    - Results of the applications done
    - Perceived potential
    - RTD activities in progress, if any

The annex template shows which are the main information to be collected.

## Annex 1

### Task 1.3: Assessment of the research state at the local level related to the European trends and demand analysis

**Technology field:** Automatic warehousing systems and handling systems

*(please refer to the general tech matrix developed under 1.1 task)*

**Specific technology / solution:** Automatic labeling machines

*(please refer to the general tech matrix developed under 1.1 task each partner for the allocated technologies)*

#### Description of the technology / solution:

The labelling machines in general are integrated in a more complex structure, implemented in the warehouse system, that manages in an automatic way all the operation that concern the label.

This machine includes in general the two main functions that concern the print and the application of the label; the machines are particularly useful for the shipping and the manifesting process but find application even for other warehouse processes.

Nevertheless in big warehouses the system about the label is composed by many function, reported below by time consecutive steps:

- conveyor for the automatic transport of packages
- parcel identification by the use of a barcode scanner
- print/apply machine
- scanner verification of the printed label
- shipping software

In general with this machine it possible to manage and utilize in automatic way all the information that concern the package; the machine allows a high reduction of time respect to the manual execution of these operations.

From: Vendor Name Shipping Address City, State, Zip	To: Customer Name 123 Main Street New York, NY 10001
SHP TO POSTAL CODE <b>10001</b> 	CARRIER: <b>Logistics, INC</b>
<b>PO: 985290</b>	Qty: <b>15</b>
Store number: <b>298</b> 	For: Location: 298 123 Main Street New York, NY 10001
SERIAL SHIPPING CONTAINER <b>8347882 4890 438979 167 2</b> 	

Example of label printed with a labelling machine  
(source:<http://www.qmiservices.net/solutions/print-and-apply/>)



Example of labelling machine  
(source: <http://www.qmiservices.net/solutions/print-and-apply/>)

Another important aspect that it's possible to achieve with the use of the labelling machine is the high reducing of the shipping error with the consequent reducing of the costumers complaints and the post-shipment management cost.

Moreover in the label the barcode are the very useful information that make allows the tracking of the package even when it is out of the warehouse, with a real time following of the order.

Concerning the labelling it's possible to individuate, other to the printing for the shipment, the process that concern the product decoration and so the finite package of the product.

But this labelling sector is out of the target of the labelling process oriented to the transport and distribution of the freights.

**Main applications:**

*(referring to urban logistics field)*

The label in the urban logistic system it utilized like a business card, related to a specific vehicle for the freight transport, that orients the logistics services offered by the city toward customized solutions on the base of the characteristics of the goods.

A similar organization of the city logistics allow a more optimal use of the available resources with a consequent reducing of the consequence due to the bad management of the services, like the traffic congestion and the increase of the time necessary for the loading and unloading operations.

A good application concern the installation of technological systems like scanners, at the entering of port area or train terminal, with the aim of recognize the product-group of the freight: on the base of the kind of good are applied custom procedures for the management and the handling of the goods.

Between the applications there is solution that aims to provide a standard system for the labelling of the parking area inside the European Union; this is a particularly useful solution to inform the driver and to face the criminality inside the parking areas.

Moreover other solutions concern the development of custom systems for the transport freight with the aim to provide the best service on the base of the vehicle characteristics: for example use of the communication technologies in the port area for the fulfilment of the legislative aspects and for the preparation of the land service on the base of the ship cargo; whereas for the road vehicle is provided support service to the driver with respect to the optimal roads and the traffic conditions.

**Use and results of applicationsdone:**

*(analyse the experimentations done by cities with special regards to European programs ( i.e. FP7 funded projects, Civitas and other)*

One interesting project is the Visy Access and Area Control project (BESTFACT) that concerns a technological system installed at the entering of the port area, train terminal that operate a scanning of all the ship load. The system allows:

- the high resolution damage inspection imaging
- the dangerous goods IMO, ISO, ADR code recognition
- RFID recognition
- Fully automated and self-sustaining traffic guidance system
- Automated data archiving

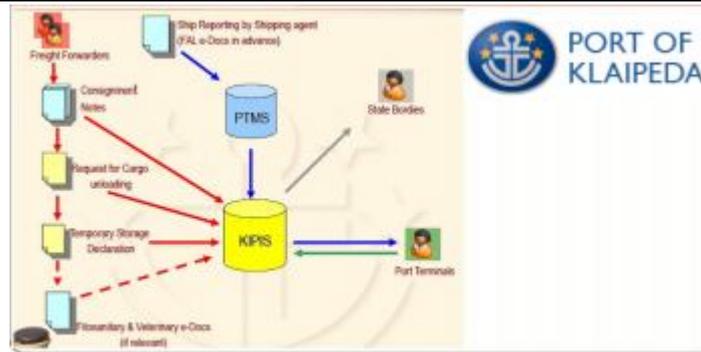


Visy Access and Area Control (source: [http://www.bestfact.net/wp-content/uploads/2013/08/Bestfact\\_Quick\\_info\\_efreight\\_3-089\\_Visy.pdf](http://www.bestfact.net/wp-content/uploads/2013/08/Bestfact_Quick_info_efreight_3-089_Visy.pdf))

A very interesting solution concerning the scalability of the service in the base of the characteristics of the freight transport is represented by the Freight and Goods Information System – KIPIS (BESTFACTS).

The project find application in the port of Klaipeda; the service aim is to manage the exchange of the information between the port and the ship by the use of the internet connection: the information exchange concerns the handling activities and all the bureaucratic aspects necessary to the mooring of the ship.

So from the communication it is possible to organize the warehouse for the temporary storage of goods and when the ship arrive to the dock all the documentation necessary for the operation it is already filled. All the system comports an extraordinary reduction of the time necessary for the freight movements through the port.



Freight and Goods Information System-KIPIS (BESTFACT)

The labelling process applied the road freight transport finds solutions even for the security of the truck; the security about the parking area where happening a lot of crimes concerning the steal of the goods from the trailers. Concerning this theme there is the LABEL project “Truck Parking Label” promoted by European Union. Inside the pilot project is implemented a labelling scheme described the security and the comfort level that it possible to find in the specific facility (parkin area). Moreover the scheme represented a standard scheme, a best practise that marks the UE parking’s. The security rank scale is composed by 5 levels from the basic service to very high level of security that are make possible with the implement of the technological communication solutions.



LABEL project (source: handbook for labelling -

<http://truckparkinglabel.eu/assets/docs/Handbook%20for%20Labelling.pdf>)

Another application of dedicated service on the base of the type of vehicle is inside the HeavyRoute project co-founded by the 6<sup>th</sup> RTD Framework of the European Commission. The project cover the period between 2006 and 2009 and between the aim of the project there is the necessity to develop an heavy vehicleadvance route guidance system for

deriving the safest and most cost-effective routes for road freight transport throughout Europe.

The system will particularly take into account the road user needs and so it will provide different road solutions: the system will take in account the heavy vehicle constraints of the road infrastructures (like tunnels, bridges, environmental zones); the system will provide deriving allowable and deriving recommended.

Moreover on the truck will installed a on board systems that gives information on the relevant local information like overtaking restrictions, speed limit changes, road condition. In addition on the base of real time information on the vehicle and the infrastructure condition the vehicle driver will be informed on warning and recommendations to preserve the safety of the vehicle.

**Perceived potential:**

*(describe the potentialities of the analysed topic in terms of future applications, impact on the process, innovation, etc.)*

The transport of freight assumes more and more important in a global market.

For the sustainability of the system it essential that the freight flow working well because the falling of the system causes huge problems for the general traffic systems and for the quality of the life.

So custom services on the base of the goods "label" are essential to support the vehicle operators that work in the field of freight transportation.

These service are particularly developed in the port area where there are a lot of bureaucratic compliance and a very big quantity of goods.

In the inner city and small urban centres where there are problem of space for the load and unload of the freight the introduction of a monitoring systems that have the function to guide the truck (that have a sort of identification label on the base of the kind of the goods)through the best roadways (in secure and safety locations like the labelling parking) in respect of its need, could be a very useful support for the truck drivers and for the general traffic conditions.

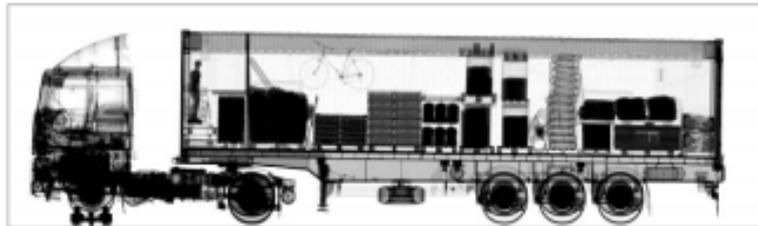
Moreover a similar solution can be very useful for the correct treatment of the different product-group that need different procedures for the safe conservation and managements.

### **RTD activities in progress**

*( describe the RTD activities in course, or the possible envisaged RTD needs)*

At the moment there are many research activities, inside the UE customs 2013 programme, devoted of implementation of custom detection technologies for check the safety of the goods prior to import or export from European union for the anti-terrorism rules.

The x-ray container inspection technology is a very useful solution because it allow to see in a very rapid way the kind of freight.



X-Ray scanning of a truck-trailer

(source:[http://ec.europa.eu/taxation\\_customs/resources/documents/common/publications/info\\_docs/customs/customs\\_security\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/common/publications/info_docs/customs/customs_security_en.pdf))

A possible new way could be the implementation of these technologies in the check of the load transport by the truck when they arrive to the freight hub: on the base of the product-group can be adopted different methodologies of freight managements and custom channels of distributions.