



Meware

***ICT Platform for direct and reverse logistics
integration***

Abstract

- Meware Srl
- Rome Living Lab
- Possible evolution

Meware S.r.l.

- **Meware** is an SME specialized in the **design, implementation and maintenance of software solutions** in:
 - Service Oriented Architecture and Enterprise Applications Integration
 - Business Process Management and Monitoring
 - Business Intelligence and Analytics
- Meware offers a complete and integrated set of services **covering the overall lifecycle of applications** development and maintenance
- Meware has been involved in delivering projects related to **logistics services and products**, providing **predictive models** and **optimization tools**, building a solid knowledge of logistics processes and services
- Logistics expertise has been improved and strengthened through **participation in EU funded research projects** and with the active involvement in **Physical Internet initiative**, which is supported and disseminated

Living Lab main concepts

- Basic ideas:
 - **Integration** of last mile (delivery) and first mile (picking up) in order to increase vehicle's load factor
 - **Shared carrier approach**, instead of having logistics operators moving in the city at same time and at same place, have only one operator performing delivery and picking up activities, for all the collaborating partners
 - **Management** of the picking up **request** to be matched with the delivery activities
 - **Routing optimization**, in order to minimize vehicle travelling distance
 - Using a **closed loop** logistic process based on re-usable modular units

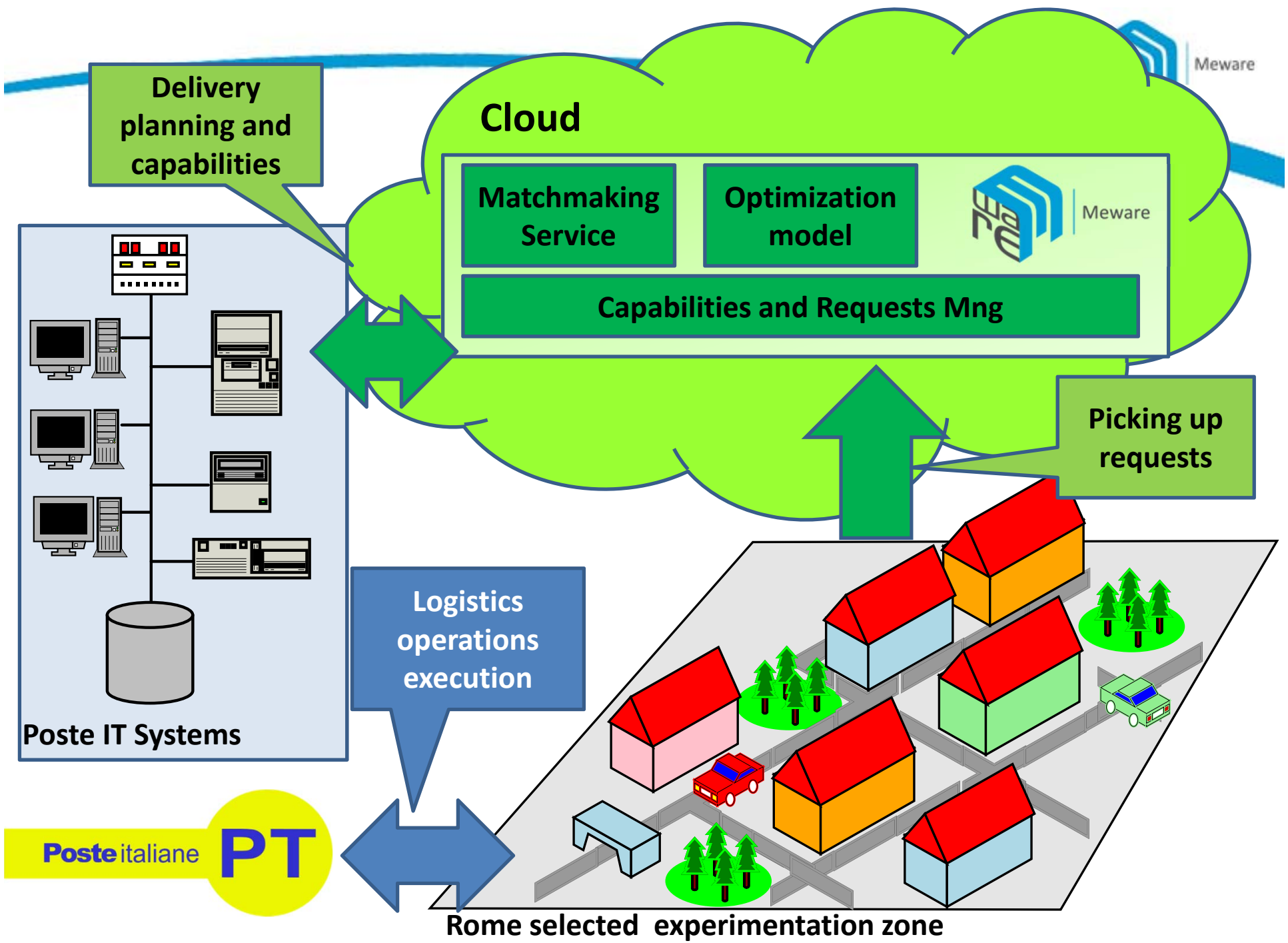
Living Lab objectives

- The objective of the living lab, from a logistic point of view, is the optimization of the postal services in the urban area, **integrating delivery of mail and parcels with retrieve of "clean waste"** (i.e. plastic caps) that can be picked up by the postman and delivered in collection point, where they can be used for achieve the recycling objective.
- This implementation has the objective of demonstrating the improvement in logistic processes that can be achieved integrating direct and reverse logistics, using **standardized units**, used for containing recyclable waste.
- The results that the Living Lab wants to achieve are the reduction of traffic congestion and pollution, in the urban area, through the **reduction of the number of carriers involved** in delivery and picking up, **using a shared carrier approach**, as proposed by the **Physical Internet**.

ICT solution architecture

High Level architecture designed is based on the following components:

- **Meware solution based on public cloud:**
 - Matchmaker: receives the picking up requests, matching them with the delivery processes
 - Optimizer: analyse the planned routing in order to optimize the vehicles route (minimized) and loading factor (maximized)
- Customer devices: browser or app for accessing the web application for signalling picking up request
- Integration with Logistic Services Provider (P.T. in this case) for receiving capability info and providing planning suggestions
- Integration with Roma Servizi Mobilità System for receiving traffic and regulatory information, influencing the optimization



Trial of solution

For trial phase of the living lab, **Meware implemented a set of cloud services**, using a web application, in order to support the testing scenario finalized to collect the plastic caps by mailmen:

- **Receiving picking up requests** from the sites involved in the trial;
- **Providing info to Poste Italiane** to adapt postman routing and integrating pickup and delivery activities
- **Enabling monitoring of collection activities** by the mobility manager
- **Tracking & tracing of the modular units** used in the experimentation activities

Evolution

- E-commerce explosion
 - Global B2C online sales are expected to grow from \$1 trillion in 2012 to around \$2.4 trillion by 2017
 - In China alone the number of packages transported by express delivery surged by 820% in the six years ending 2014
- Delivery cost
- Last-mile delivery system is the problem (28% of shipment cost)
- The social networks are enabling the sharing economy
- The financial crisis in many countries has forced a lot of people to search for new ways of generating extra income or subsidising their travel costs



Crowd-shipping

Crowd-shipping

- Crowd-shipping works like this: when an individual or business wants an item delivered, the platforms crowdsource the job to a network of approved drivers who are not employed by the company but have capacity to courier goods.
- Each driver, then, works like a micro LSP, moving in the city for its own interest (going to work, or to the supermarket) while “also delivering parcels”.
- The power of the crowdshipping model is that it does not require the asset-heavy infrastructure of warehouses, vehicle fleets, fuel costs and employed drivers that traditional logistics companies

Crowd-shipping

- Crowd-shipping uses technology to create access to an abundant source of under-utilised assets to create a powerful new cost-effective logistics system. It's an asset-light model, likes Uber and Airbnb.
- The sharing economy enables new ways of transportation by connecting those who need parcel deliveries with those who are on the road

Automated Parcel lockers

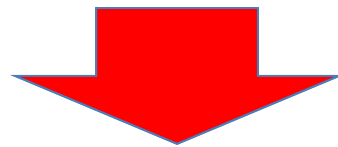


Automated parcel lockers

- Automated parcel lockers provide an easy, three-step process to package retrieval:
 - 1. Package is delivered and placed into the parcel locker. Recipient receives a notification of delivery by email or SMS.
 - 2. Recipient enters a one-time PIN code at the locker station.
 - 3. Door opens for package retrieval.
- Returning a package is just as easy:
 - 1. Recipient places the return label on the package.
 - 2. The label is scanned at the locker station.
 - 3. Locker door opens and customer places the package inside.
- Parcel lockers can be integrated in the Rome Living lab solution, using closed loop modular units and integrating direct and reverse logistics

ICT support: technologies

- A viable evolution of the living lab concept is the introduction of parcel lockers in the closed loop logistics and citizens involvement may be increased using a crowd-shipping approach.
- Meware is able to support such scenario evolving the LL platform, with the following technologies:
 - Cloud based services for managing the parcel lockers based logistics, integrating the direct and reverse logistics;
 - Mobile app for enabling easy access to the crowd-shipping aspect of the system;
 - Web 2.0, HTML 5 and CSS, can be used for realizing responsive users interfaces
 - Big data analytics may be used to handle the data managed by the system in order to extract valuable knowledge (for logistic providers, city government, etc.)



New engagement and loyalty model



Gamification

- [Piano stairs - TheFunTheory.com - Rolighetsteorin.se.mp4](#)
- Meware has developed a Gamification platform (iEGP) that can be used for engaging the citizen in the overall system, trying to promote positive behaviour
- iEGP is a structural gamification platform; it may be deployed as a cloud service for introducing “gaming mechanics” in the scenario, further increasing citizen participation
- Meware has the ICT technological competencies for operating the platform and also the capabilities to design and manage the social aspects of the gaming approach

Innovative Enterprise Gamification Platform

