



CiViTAS
Cleaner and better transport in cities

CATALIST

**CATALIST and POLIS workshop
on urban goods**

11 - 12 February 2010

Brussels

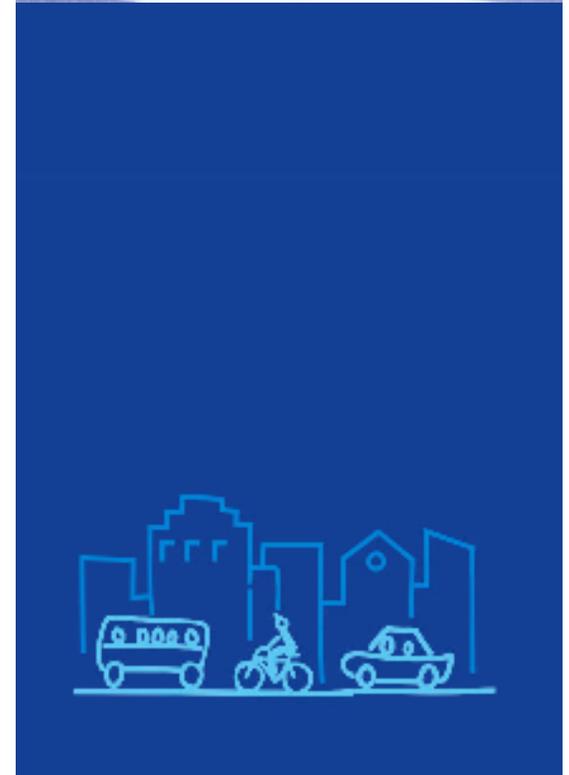
Federico Rossi; Perugia



THE CIVITAS INITIATIVE
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EUROPEAN UNION

About this presentation

- **Introduction**
 - About my organization
- **RENAISSANCE Measure**
 - Short introduction of Project **RENAISSANCE**
 - Short introduction of Measure “**Pipe\$net**”
- **Description of system involved**
 - What is **Pipe\$net**?
 - Background
 - Applications
 - Some numbers
 - Status and prototyping as far



About CIRIAF – University of Perugia

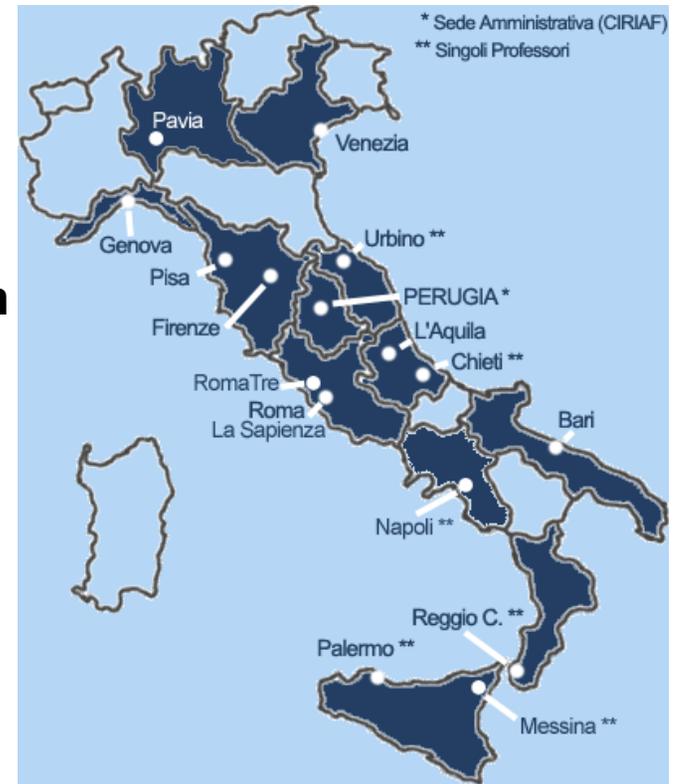
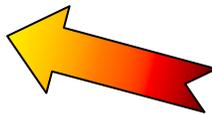
CIRIAF stands for the Italian acronym of **Interuniversity Research Center on Pollution from Physical Agents**). Members come from **14** different Italian **universities**.

CIRIAF is a department of **University of Perugia** which is one of the most ancient universities in Europe, its foundation dating more than **700 years ago**.

We focus in the **energy**, **innovative mobility** and **environment control** research fields.

Currently we are involved in 2 big **EU project**:

- **RENAISSANCE (CIVITAS+)**
- **GREEN POST (IEE)**



Faculty of Engineering

About the project: RENAISSANCE

- it's a **CIVITAS+** project
- **5 cities** which have in common
 - strong **historical** and artistic heritage
 - reliance on **tourism**
 - **forefront** of sustainable development and mobility
- **Perugia (Italy)**
- **Szczecinek (Poland)**
- **Bath (United Kingdom)**
- **Skopje (Macedonia)**
- **Gorna Oriahovitsa (Bulgaria)**



Easy
Safe
Clean



Perugia

The Measure (7.1 PG) of RENAISSANCE Project

Description

- Study the application of **Pipe§net system** to the distribution of goods and logistics in an **historical city**: Perugia.

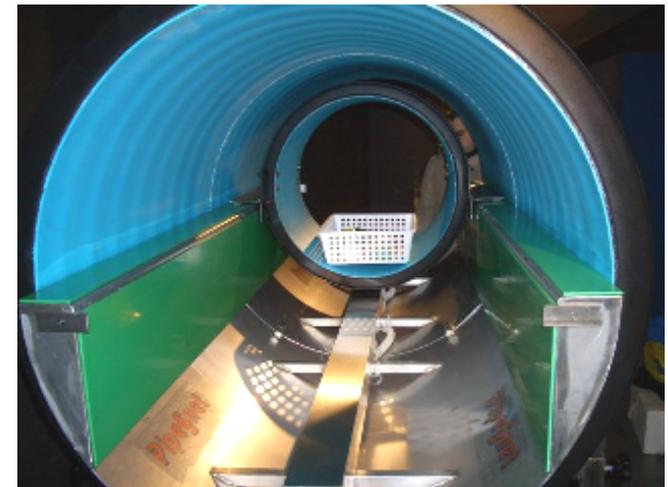
Main objectives

- Perform an application study within selected scenario (cost/benefit analysis, impact study)
- Promote Pipe§net system as an alternative and sustainable transport system
- Promote innovative approach to logistics solutions



connection between station's hub and city center

What is PIPE§NET ?



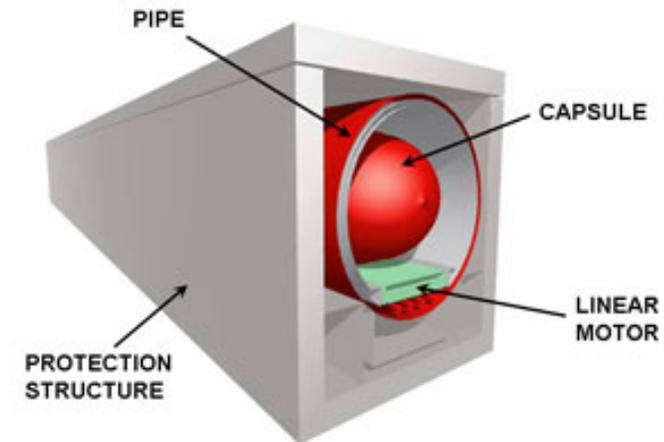
2 meters prototype

What is Pipe\$net

Description

- innovative and original
- it transports **light goods** (up to 50 Kg)
- network of **tubes**
- **vacuum-sealed**
- **capsules** carrying up to 1 europallet
- **electrical linear motor**
- low or very **low friction** suspension
- **high rate and velocity** (up to **1500 km/h**)

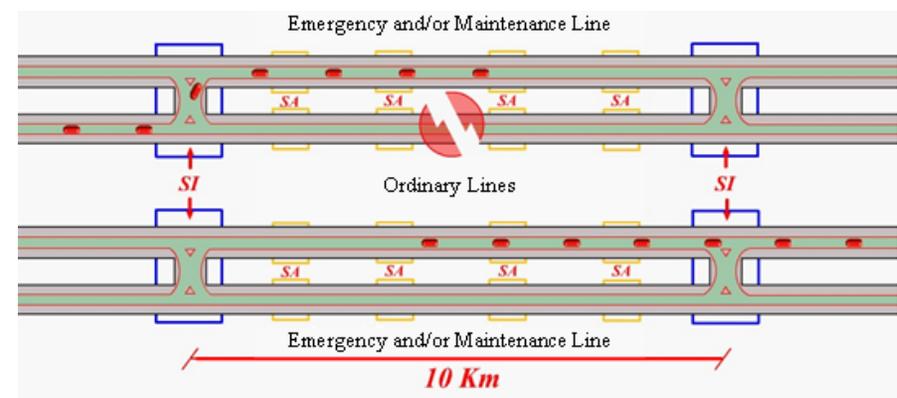
5th Mode of Transport
after Road, Train, Ship, Air



Length 120 – 150 cm
∅ 90 – 100 cm

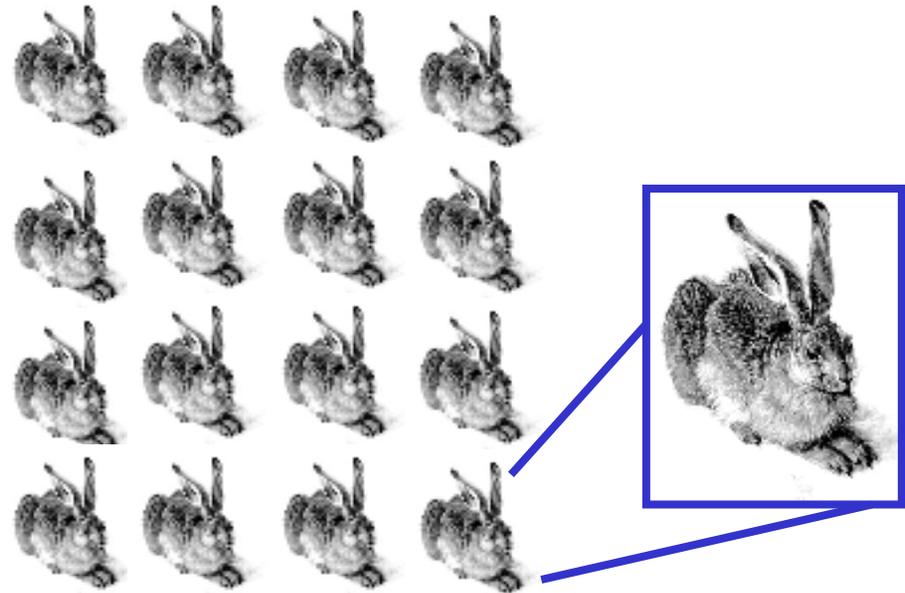


Europallet: 80x120



Pipe\$net's innovative approach

- Assumption: the **same transport capability** can be achieved both by
 - slowly moving huge masses (trucks, trains)
 - transferring small payloads at high rate (**Pipe\$net**)

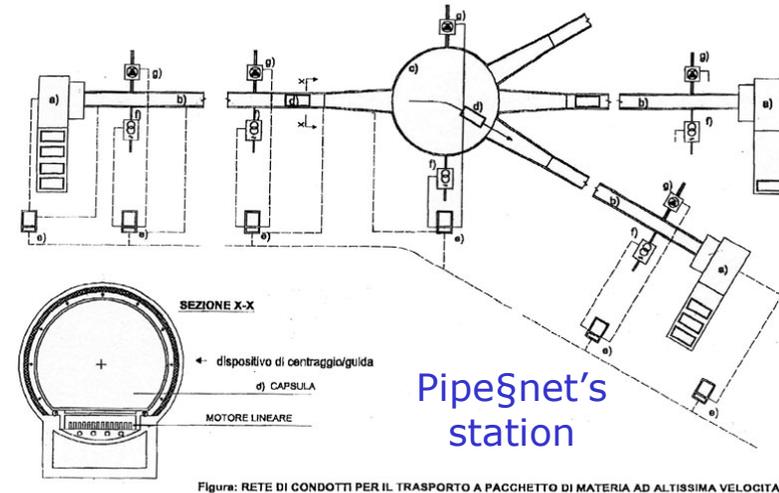
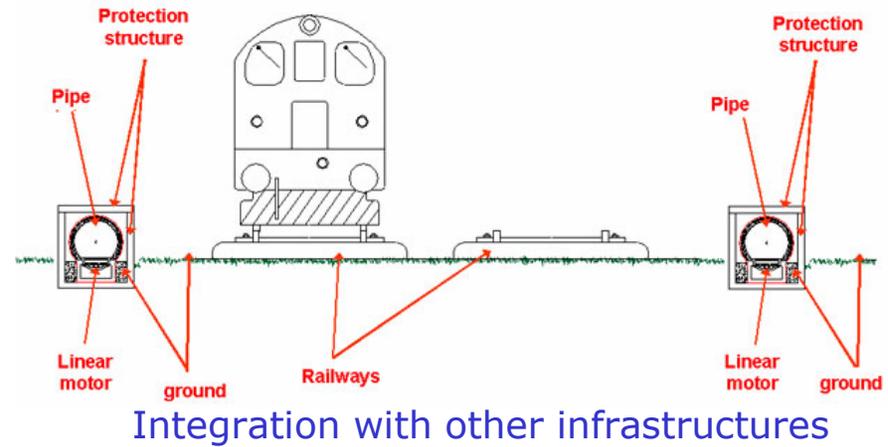


- Focus on **small and light volume freight**
 - construction complexity and costs lower
 - small size
 - impact and interference of infrastructures with the territory lower
 - safety requirements more manageable

Pipeξnet's innovative approach

Pipeξnet **avoids** all the issues which usually affect the progress of untraditional systems due to:

- **cost**
- **environmental impact**
- **timing**



Background

Pipe\$net can address the following **mobility needs**:

- **green, affordable, available, efficient, scalable** transport
- **“light”** infrastructures
 - costs, times, impact on territory and people
- **separation** between passenger and freight transport infrastructures
 - exploit differences, avoid interference
- request for **light goods rising**
 - expansion of e-commerce
- **just-in-time** replenishment
- **comodality**
 - each mean of transport is best performing for different needs
 - integrated (can fit **EUROPALLET**)
- transport **door-to-door** potential
- focus on **users’ needs** not on logistic service suppliers’ ones



Application

Optimization of supply chains would benefit by the introduction of a “**fifth**” freight transport system with features very different from the others and intrinsic characteristic of sustainability.

Unique Pipe\$net’s potential is disclosed in **scenarios** which are “**difficult**” for traditional systems like:

- environmentally **fragile** areas
- highly **dense** urban zones
- territory with a complex **orography**
- valuable **historical** city centers (**RENAISSANCE**’s focus)
- areas with **growing** mobility needs yet with **saturated** capacity

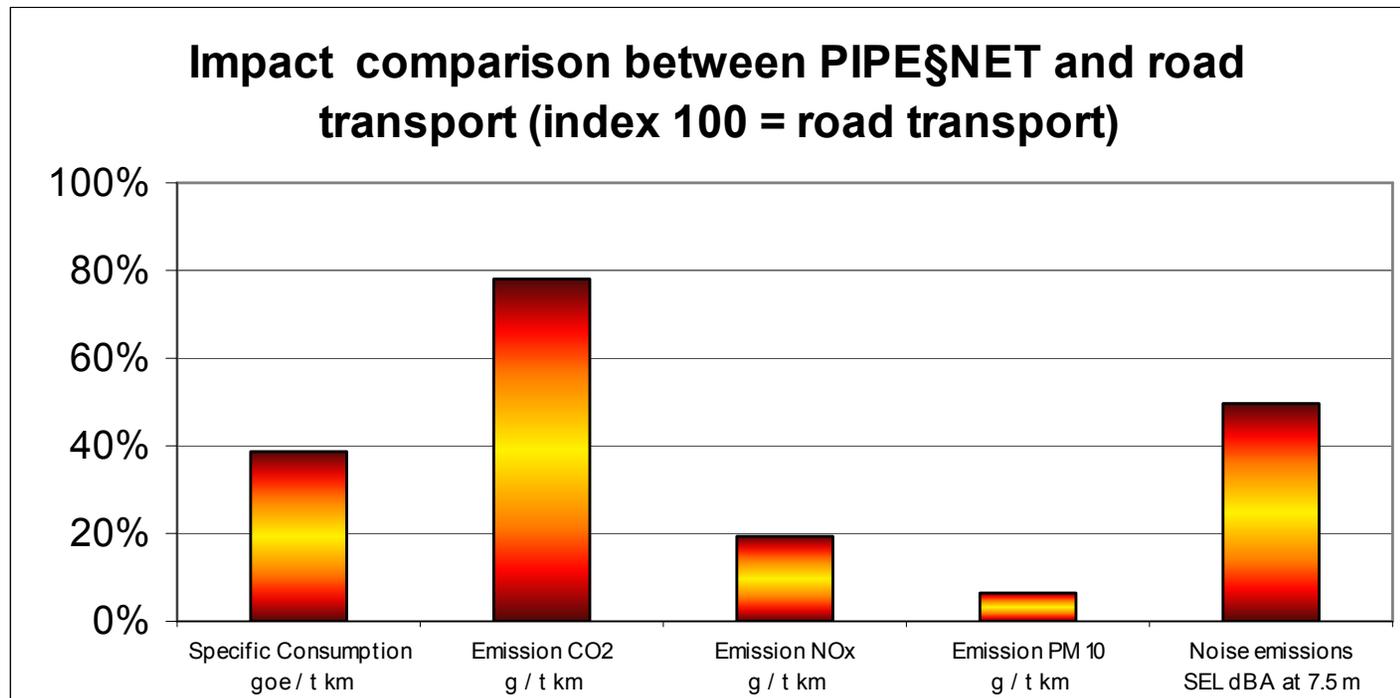


Kuwait City – Silk City



PIPEŞNET: some numbers

From a preliminary feasibility study:



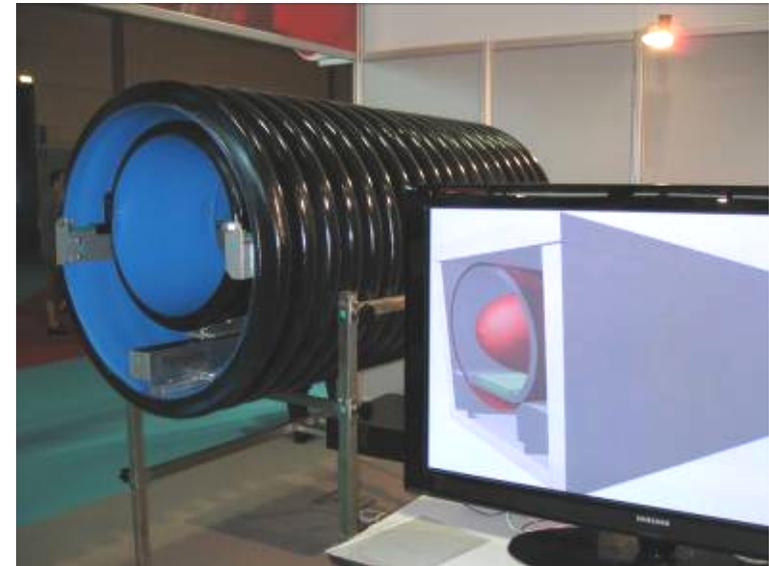
Up to **70% of goods** transported **by trucks** in Italy could fit in Pipeşnet

Estimate of infrastructure cost \approx **1÷2 Million € / km**

PIPEŞNET: status and prototypes

Status: advanced concept stage with many lab experiments, preliminary feasibility study done, prototypes built.

Recently exhibited at Bruxelles on invitation of EU Commissary Tajani during the *Stakeholders' Conference on the Future of Transport* (March 2009)



2 meters



Terni's facility



4 meters with custom ELM

Thank you

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