



Implementing an innovative Public Transport mobile ticketing service: legal and organizational aspects



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The customers' point of view

- Searching for kiosks, vending machines
- Coins missing
- Vending machines broken-down
- Confusion about tariffs, ticket types, etc.
- Difficulties with different languages





The public transport operators' point of view

However transport operators also know how difficult it is to ensure high-quality ticket and info distribution...

- ☹ **High number of Vending Machines required**
- ☹ **Maintenance Costs (Refilling Tickets, Cash handling...)**
- ☹ **Revenue Loss due to Thefts, Frauds, Vandalisms, Fare dodgers**



TELEPAY Vision

Mobile Phones – Mobility Device

- Most people (up to 90% in parts of Europe) already use mobile phones
- Worldwide interoperable services by means of roaming process

Needs for Transport Services

- Easy payment system for seamless intermodal public transport
- Complementary service to smart cards dedicated to occasional users
- European-wide harmonised payment and ticketing solutions for multimodal transport services



Use of mobile phones for transport services (ticketing, payment, travel information)



Telepay Goals

Develop and assess an innovative payment system for transport services (e.g. public transport ticketing, motorway tolls, etc...) using mobile phones.

Customer Convenience

- ☺ Simple, easy-to-use
- ☺ Multilingual
- ☺ Roaming-enabled
- ☺ Multi-mode
- ☺ Harmonized

Transport Operator

Cost Reduction

- ☺ Cost-efficient
- ☺ Highly automated
- ☺ Standardized
- ☺ Highly available, highly reliable
- ☺ Highly secure



Trials

Berlin, Germany

Public Transport: bus, tramway, metro

Ticket Type: single ticket and day ticket for immediate use (no validation)

Aims: reduce public transport costs; improve transport accessibility; improve ticket distribution; improve information

Paris IdF, France

Public Transport: bus

Ticket Type: day ticket, limited time ticket, monthly ticket, multi-ride ticket (mandatory validation)

Motorway: tolling and barrier opening, prepaid access to motorway and automatic toll collection

Aims: improve customer acceptance (saving time, avoiding queues); assess technology feasibility and reliability

Turku, Finland

Public Transport: bus

Ticket Type: day ticket for immediate use (no validation)

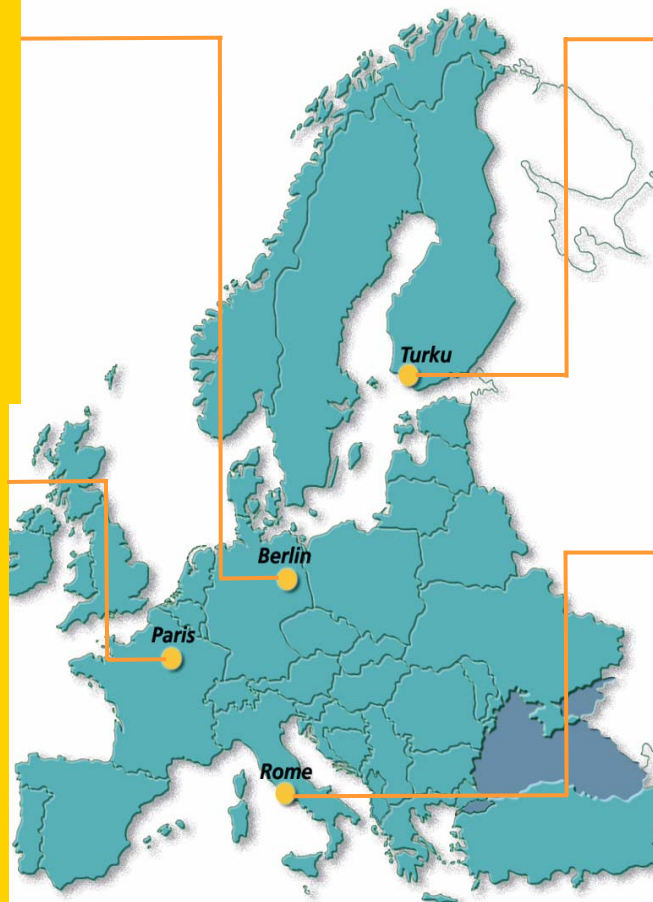
Aims: reduce to a minimum the sale of tickets by bus drivers; improve customer satisfaction

Rome, Italy

Public Transport: bus, tramway, metro

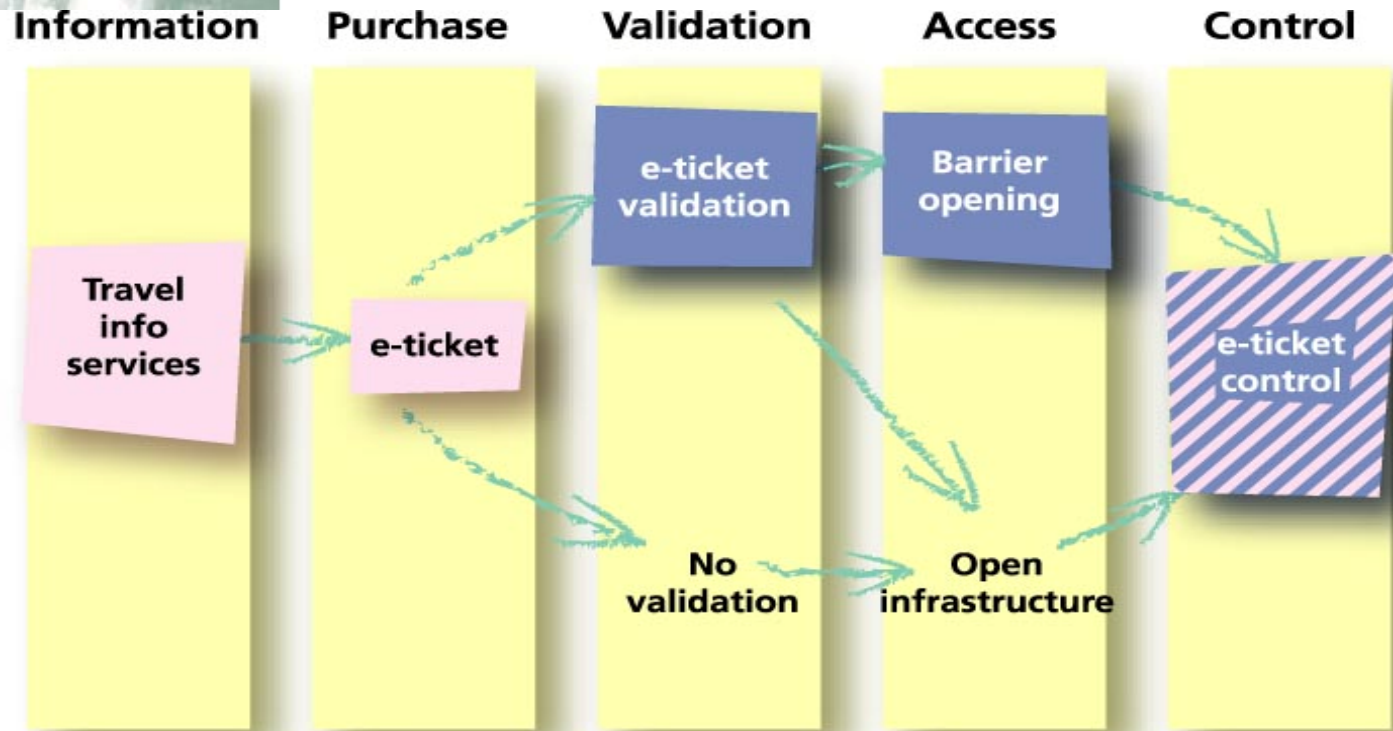
Ticket Type: single ticket for immediate use (no validation)

Aims: reduce the difficulty in finding tickets; improve ticket distribution; improve information



SYSTEM REQUIREMENTS

Ticketing Steps



Function based on SMS, WAP technologies



Function based on short-range communication technologies



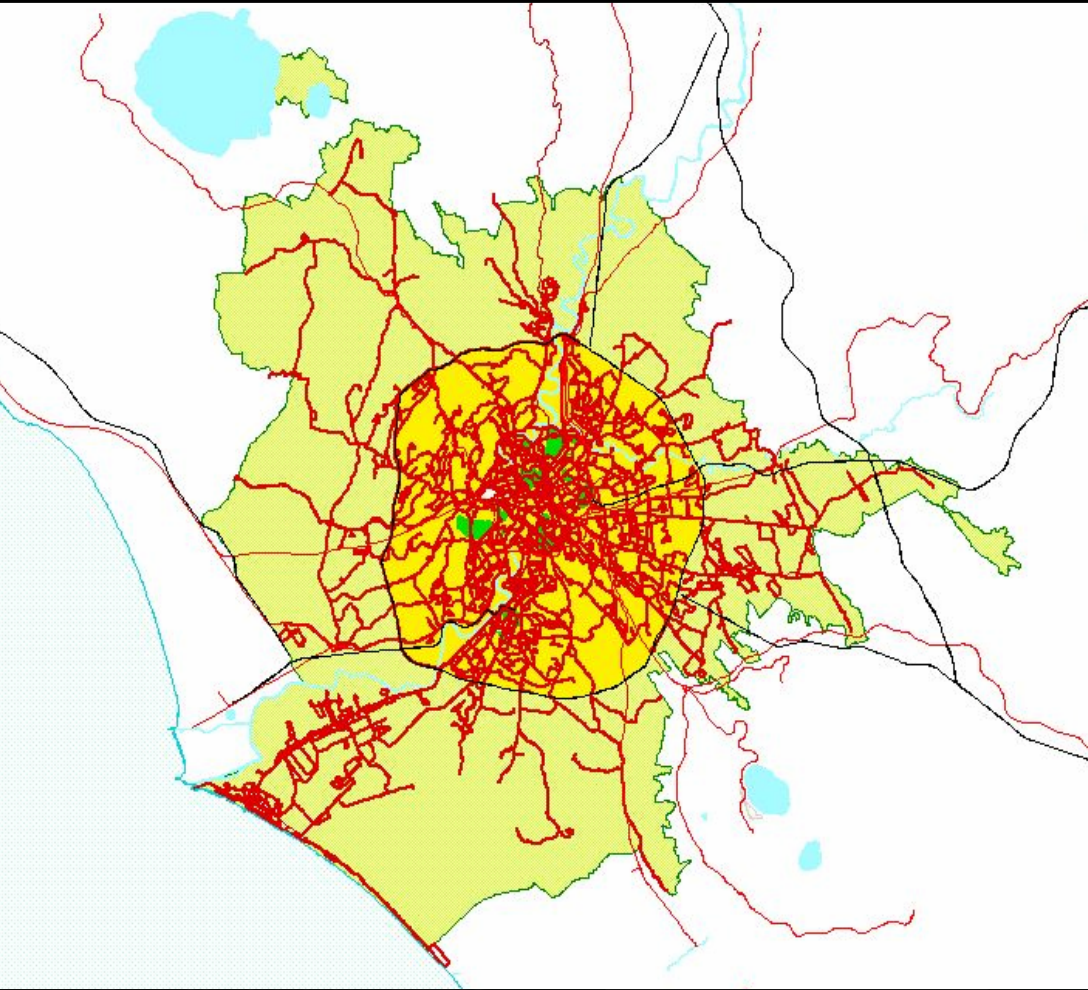


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Rome Test Site

Public Transport Network



- Rome Municipality:
 - urban area: **1300 sq km**
- Public Transport Network:
 - Urban bus: 2457 km
 - Tramway: 48 km
 - Metro (2 lines): 37 km
 - Light railway: 148 km
- 2.500 buses and 140 tram
- **7850 bus stop in the urban area**
- 930 million passengers/year by surface transport
- 220 million passengers/year by two underground lines
- Building of the new third underground line

Rome Test Site

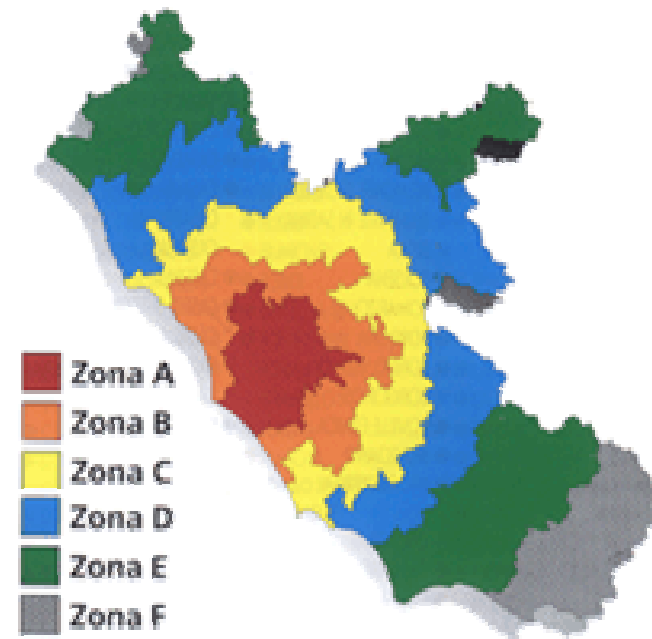
Ticketing System

"Metrebus" Fare & Ticketing System in the Lazio region

- *ATAC (Rome mobility Agency)*
- *Tramibus (surface urban public transport)*
- *Met.Ro (underground and light railways)*
- *Cotral (regional buses)*
- *F.S. (national railways)*
- *Other Operators (specific services & routes)*

- **94.7 million single integrated tickets (BIT)**
- **6.6 million day tickets**
- 5.1 million monthly passes
- 340.000 weekly passes
- 100.000 yearly passes
- 1864 sales outlets

(Figures: Year 2001)





Rome Test Site

Objectives and Main Features

Objectives

- **Improve Information Availability (through SMS and WAP)**
- Improve Distribution of **Tickets**
- Reduce Difficulties in Finding **Tickets**
- Reduce Difficulties in Paying for **Tickets**
- Reduce **Ticketing** System Maintenance Costs

Main Features

- Site Area: whole urban public transport network
- Ticket available with Telepay: Single Integrated Ticket (B.I.T.)
- Duration: 3 months (21st of May – 21st of August)
- Sample/1: 200 users selected by ATAC (core sample)
- Sample/2: night service users ("open sample")
- Technological solution/1: Text Messaging (SMS) dialogue
- Technological solution/2: Omnipay card as *e-purse* to buy Telepay tickets





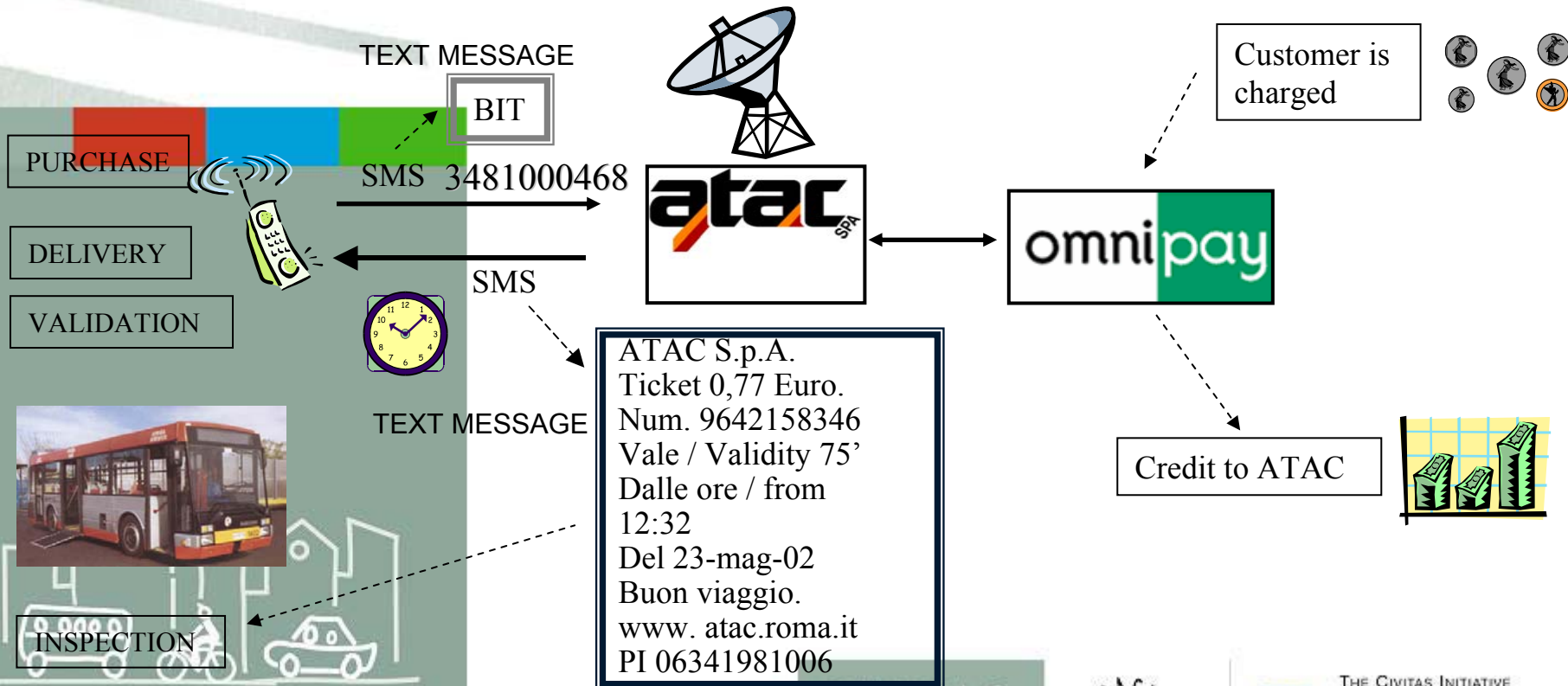
Rome Test Site

Transaction Framework

REGISTRATION

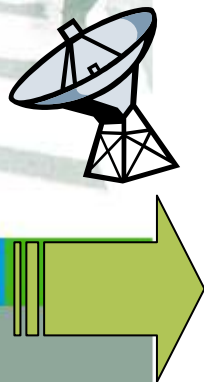
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Electronic Purse
OMNIPAY Pre-paid Card



Rome Test Site

TELEPAY Simulator

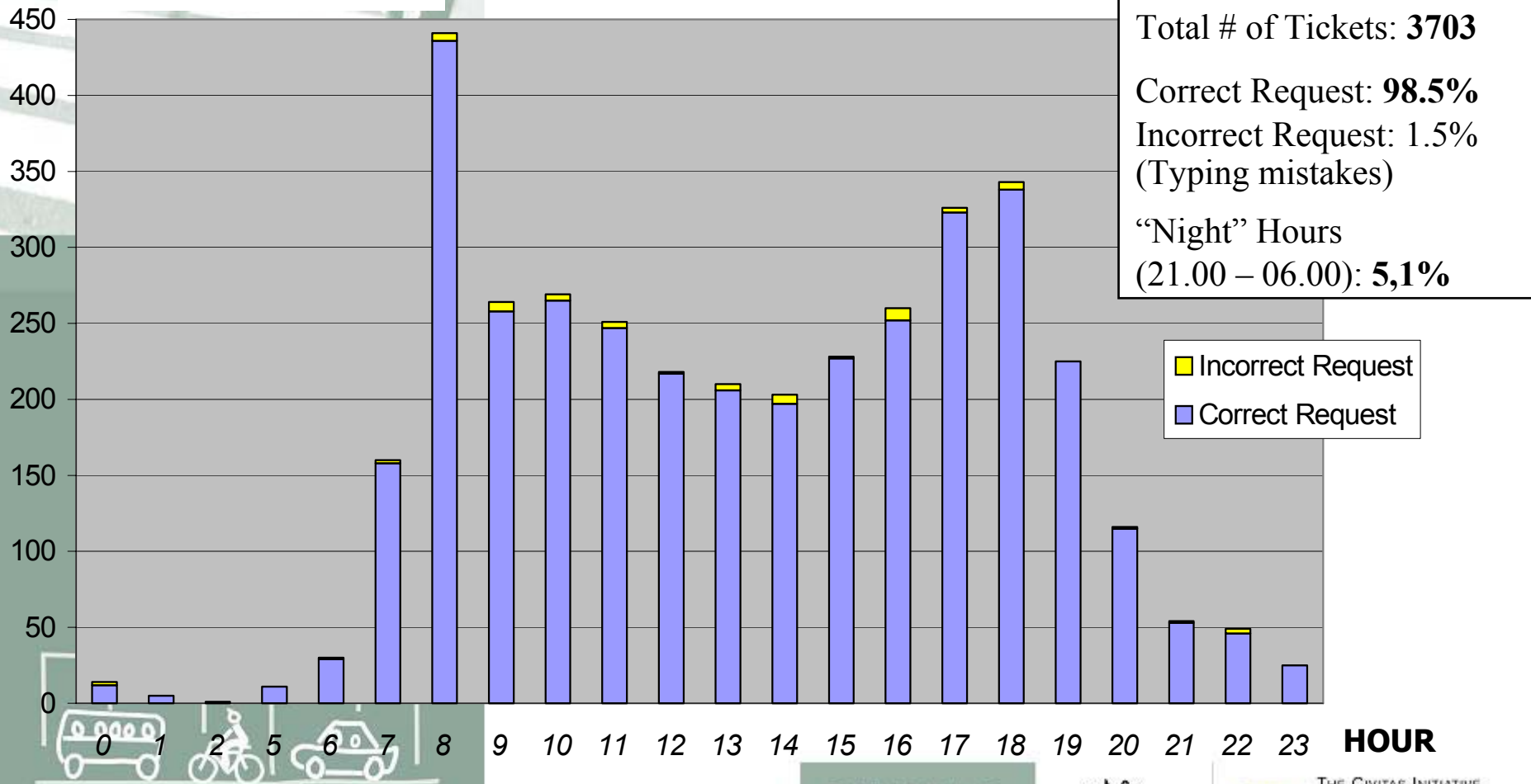




Rome Test Site

Aggregate Demand of Tickets per Hour

NUMBER OF TICKETS



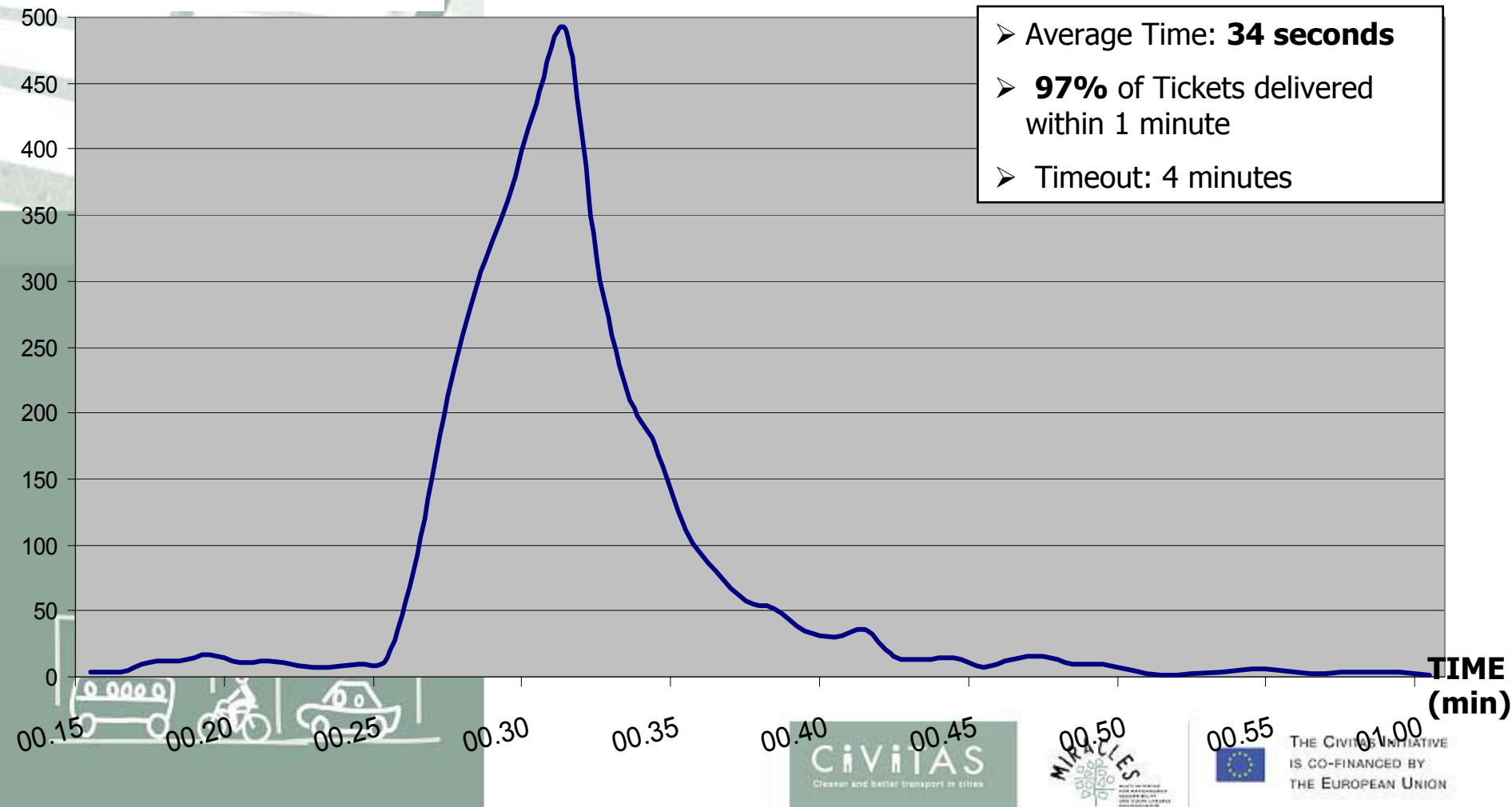
Rome Test Site

*Aggregate Delivered Tickets: Transactions
Time*

NUMBER OF TICKETS

- Average Time: **34 seconds**
- **97%** of Tickets delivered within 1 minute
- Timeout: 4 minutes

**TIME
(min)**



Results

- ✓ Few technical problems
- ✓ Easy to implement
- ✓ Technological constraints (SMS and barriers...)
- ✓ Legal Constraints (need for payment means)
- ✓ High potential (high user acceptance)



The role of Miracles project

From research...

Telepay



- FP5 DG INFSO IS1 Programme
- Key Action 1 Systems and Services for the Citizen
- Duration: 1 July 2001 – 31 December 2002



...to implementation

M-ticketing

- Miracles Project
- Duration: 01 March 2003 – September 2005
- Departments involved: Marketing, IT, Legal, Financial, R&D



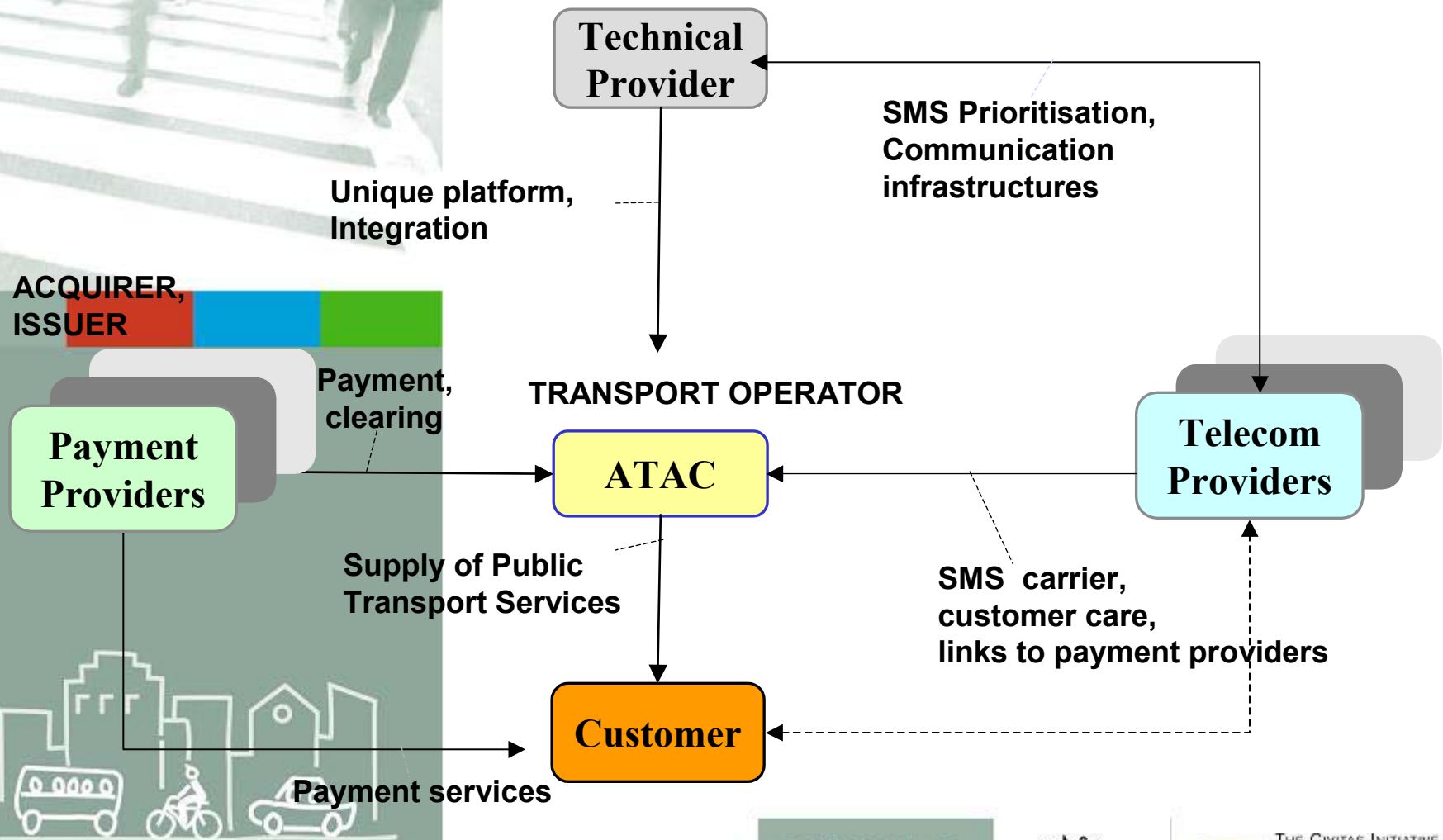
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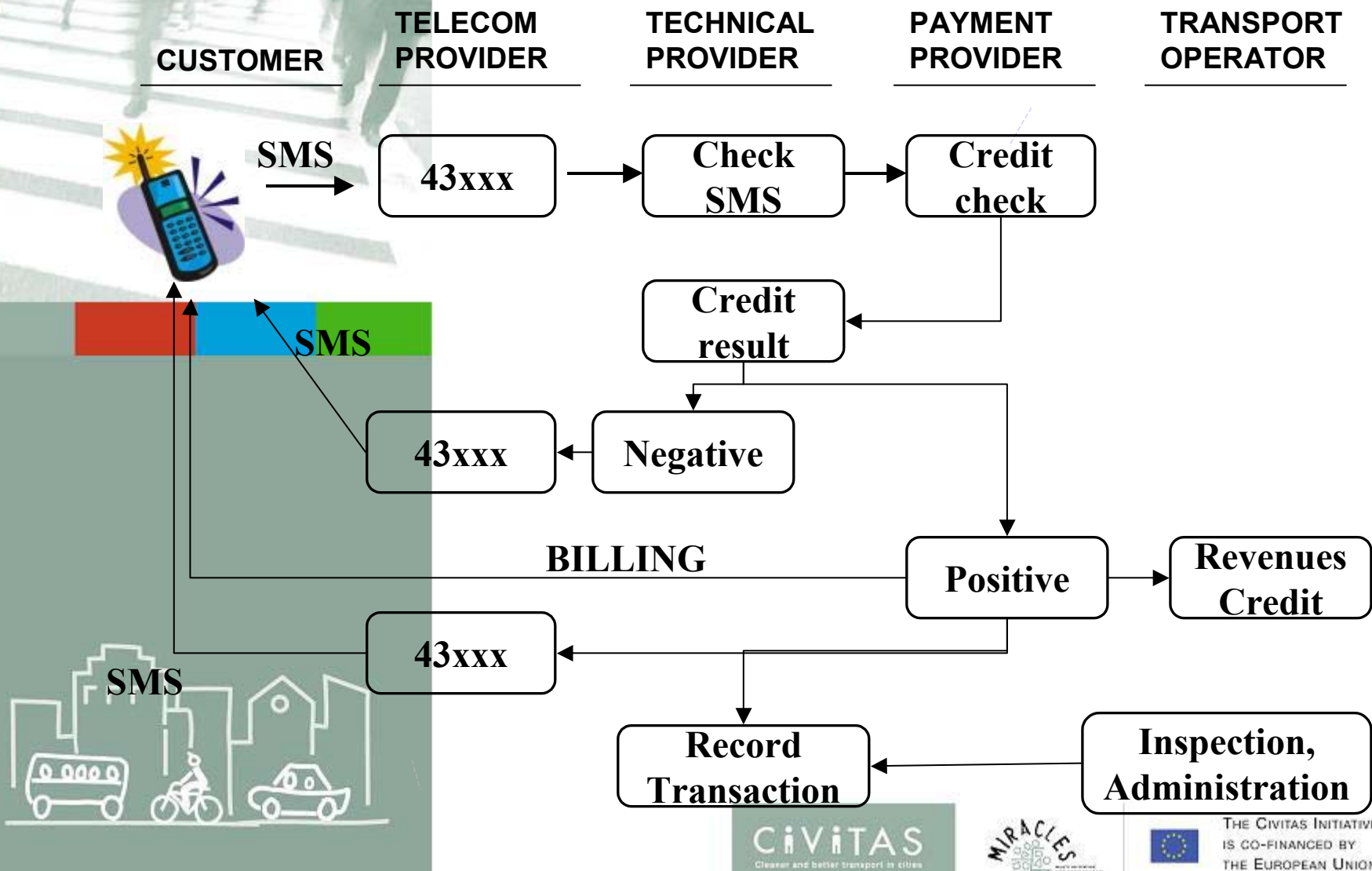
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Mobile ticketing: Relationships



M-ticketing: Communication Flows



Barriers to implementation

✓ **Legal issues**

- Payment of tickets through the phone bill
- International Roaming agreement for VAS
- Identification of liabilities in contracts

✓ **Organisational issues**

- Implementation within an “Integrated Fare System”
- New procedures for ticket inspection
- Business concept vs. public service (long business negotiations with telecom operators)

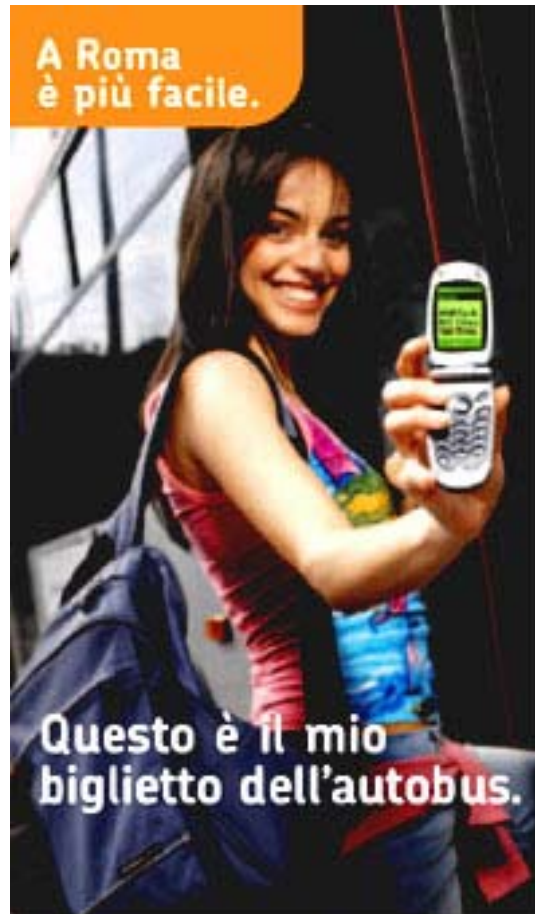
✓ **Technological issues**

- Constraints of GSM - SMS technology
- Need for new technology for closed transport systems



In Rome it's easier!

From 16th SEPTEMBER 2005...



CIVITAS
Cleaner and better transport in cities



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Available payment systems



- Payment through credit card: on-line registration to link the telephone number to the credit card (1+3) – (Visa and Mastercard)



- Payment through a standard phone credit "refilling" card converted as an "electronic wallet";
- Payment through debit card ("cash card")



- Payment through a standard phone credit "refilling" card converted as an "electronic wallet";
- Payment through debit card ("pagowind")
- Purchase of carnet of tickets through credit card (Visa and Mastercard)

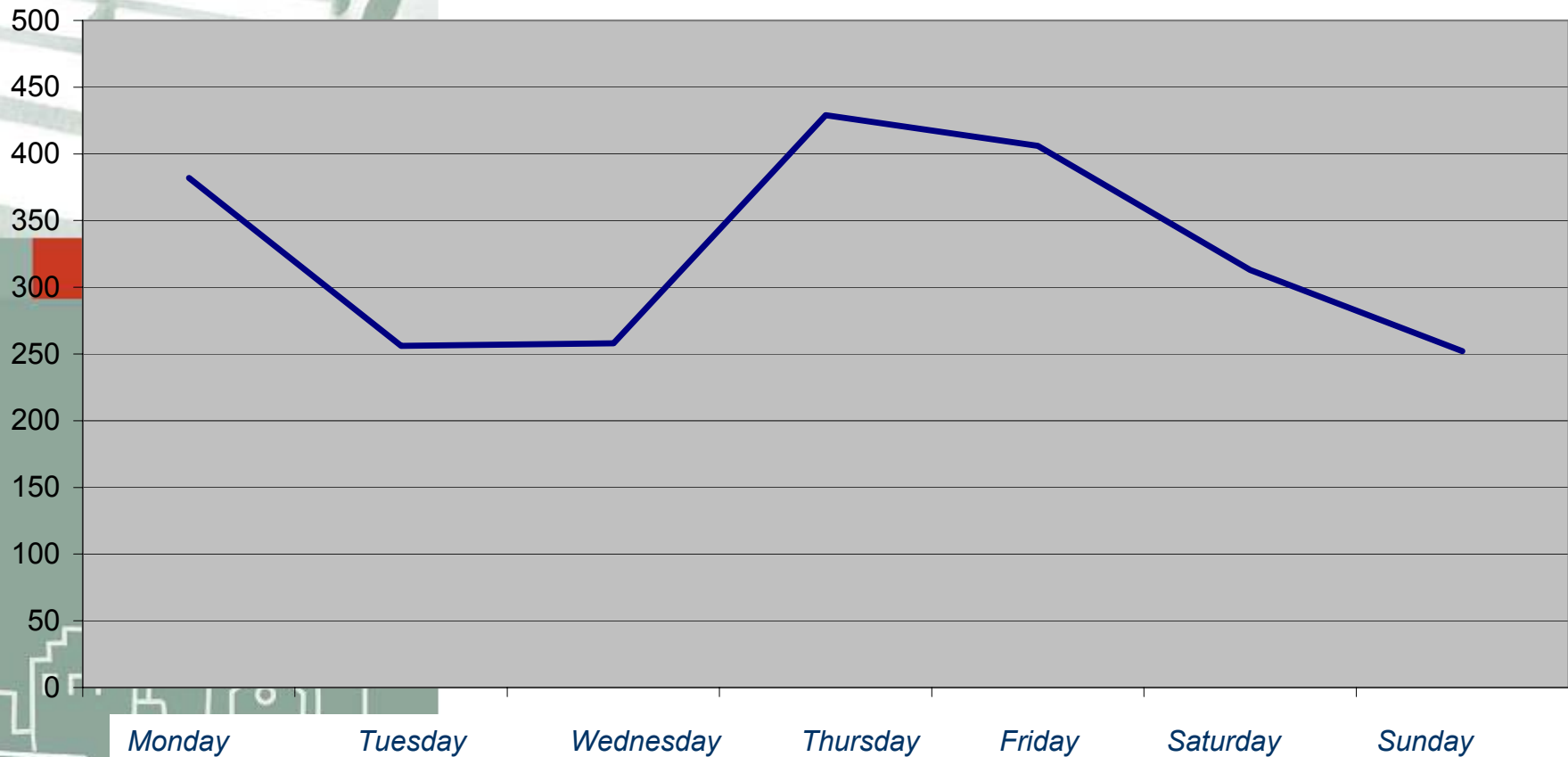


- Ongoing negotiation



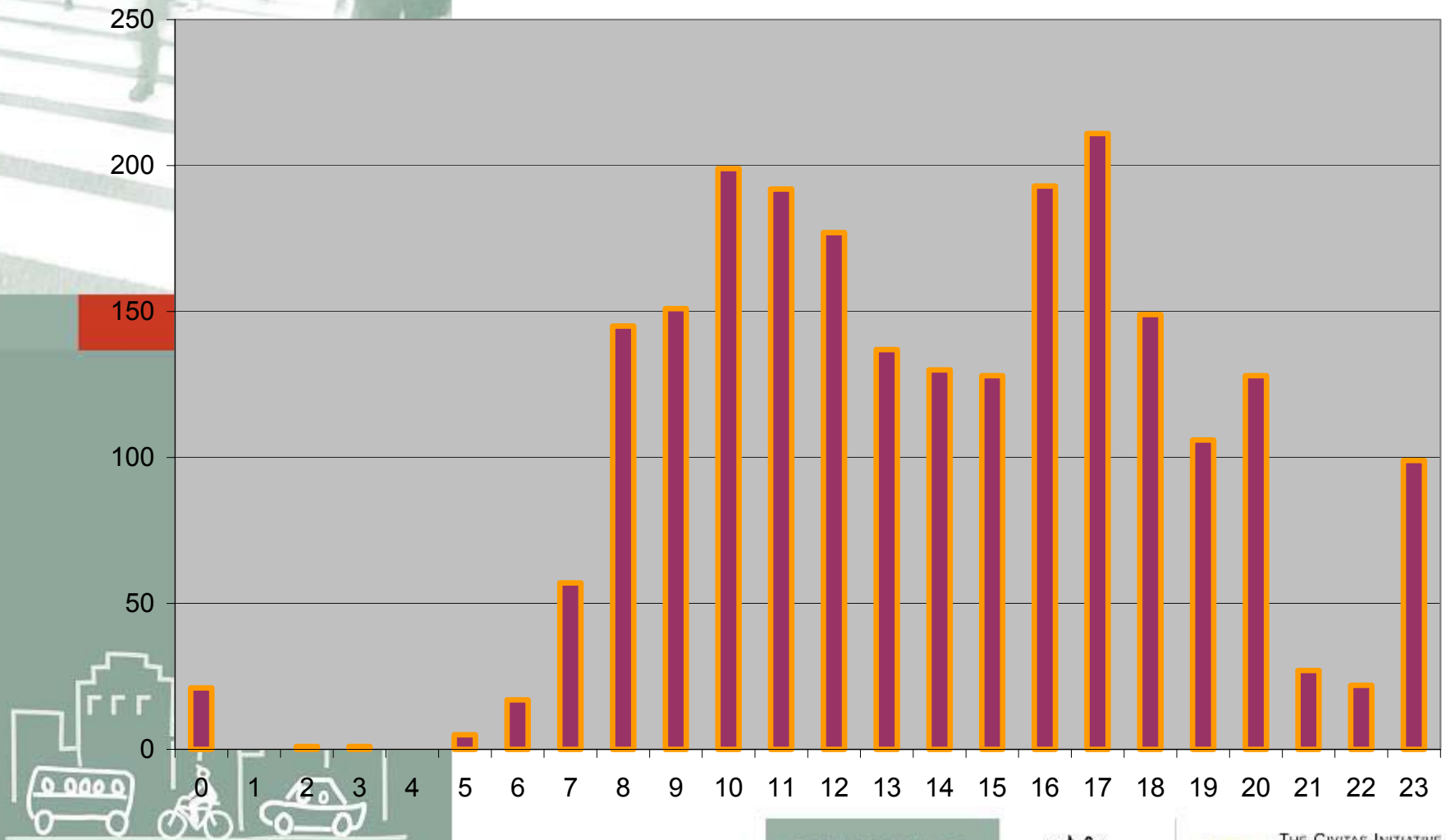
Early results

BIT sold per day of the week



Early results

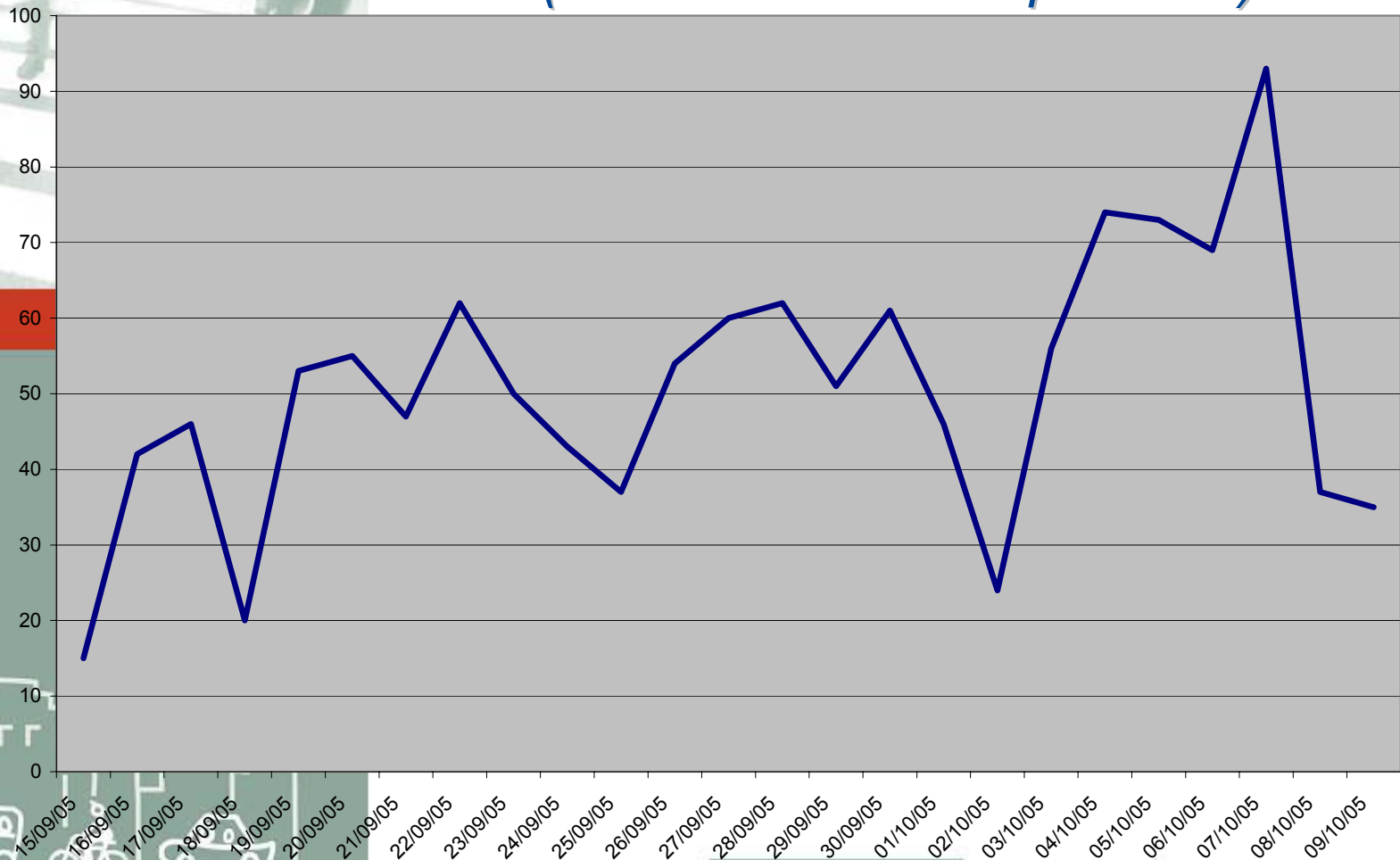
BIT sold per hour



Early results

BIT sold 16/9 - 9/10

Partial data (2 out of 3 mobile operators)



Tomorrow's Promises

**To improve access to closed systems
and ticket inspection procedures:**

- ☺ **Short range communication**
- ☺ **Combination with RFID Tag**
- ☺ **Optical Barcode Scan**
- ☺ **Java Security Features**



Recommendations to EC

✓ Consider mobile phone payment for transport related services in European regulations

- Mobile phone payment barriers: waiting for EU single markets
- To allow Telecom operators to charge non communication services

✓ Encourage Telecom Operators to

- Open international roaming for non telecommunication services
- Adapt mobile phone telecom fees

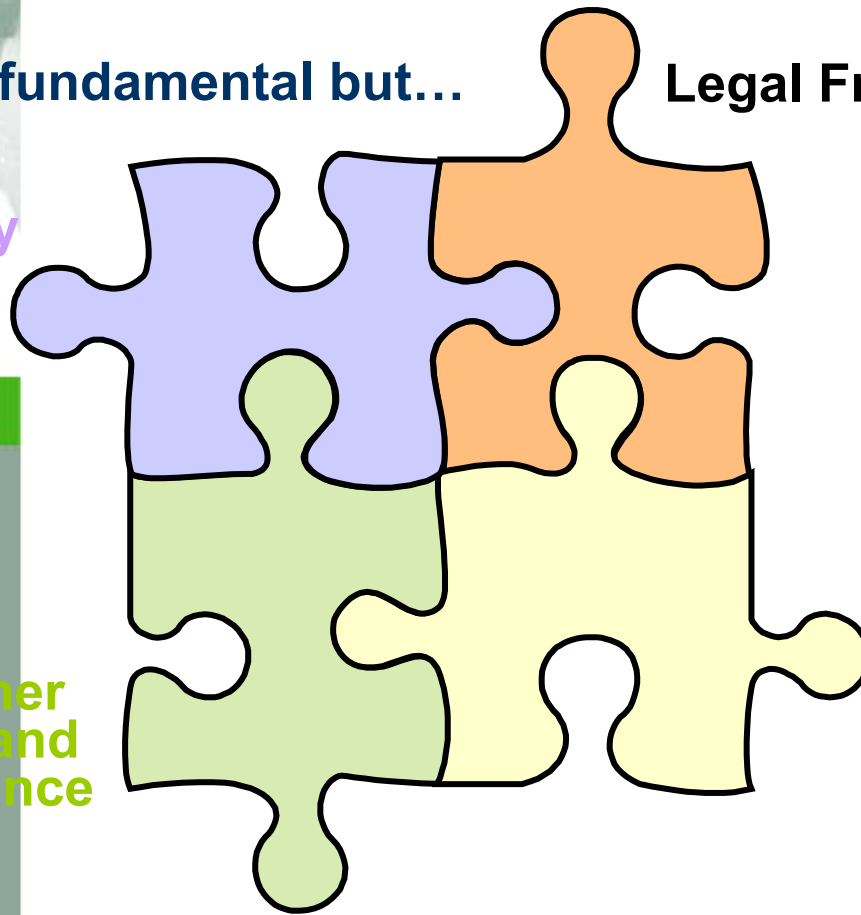


Conclusions

Technology is fundamental but...

Technology

Legal Framework



Organisations and Markets

Customer needs and experience

...You need Miracles for Implementation!

