Third technology presentation

COMBINED APPLICATIONS

Agenda

- **Maps**
- Points of interest (POI)
- Multi-service Tracking Platform
- Geo-fencing
- Dangerous goods tracking
- Livestock management
- Medication

Two families of maps

Bitmap

- Like a photograph (pixels)
- Can come from a scanned map
- Can contain additional information, such as aerial pictures

Inconvenient

- Very heavy in terms of size (but can be compressed)
- Zooming problem

Vector

- Contains only information of point, line and arc positions (including colours, size, …)
- Very low size
- Zoom-in and out to infinity

- **Various standards exist**
- **Maps data integrity is a real issue (correctness, update)**
- **Map accuracy level is of essence (when applications are using map-matching techniques or for maritime)**
- **Map based applications have been democratised by services such as Google earth / Virtual earth**

Digital maps availability remains the issue

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Points of interests (POIs) are special locations pinpointed on the map.

Examples are:

- Petrol station
- Parking
- Automatic Teller Machine
- Garage
- Speed cameras
- Restaurants
- …

POIs are recorded using latitude and longitude coordinates.

Use:

- Getting to the nearest POI
- Warning when approaching a POI
- Static or Dynamic

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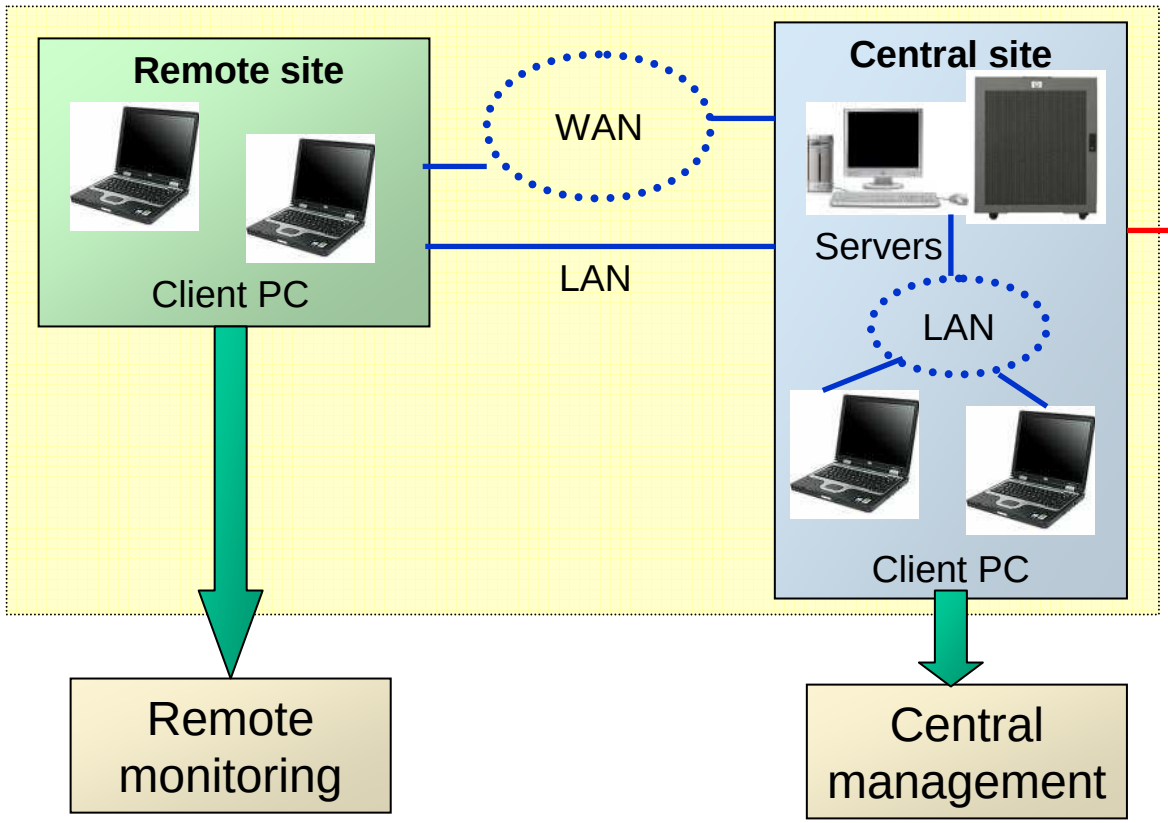
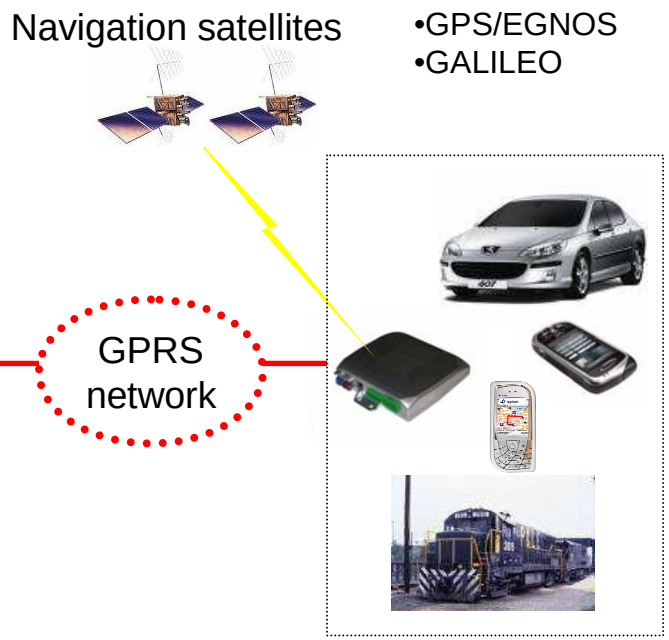
Multi-service Tracking Platform 1/3

Multiservice Tracking Platform
Distributed architecture
Clients - servers





Multi-service Tracking Platform 2/3

Building blocks architecture

Diagnostics

D. G.

S.C.

W.F.

Supply chain

Dangerous goods

Diagnostics

Workforce

A9910 MTP

Common app features

Multi-service management

Vehicle Mobile Unit

Diag

D. G.

PDA/Smartphone

S.C.

Cell phone

W.F.

S.C

Multi-service Tracking Platform 3/3

Based on industry standards

- 3GPP : Mobile phone (positioning)
- OMA : Open Mobile Alliance
- GST : Global system for Telematics
- OSGI : Open Service Gateway Interface
- JAVA : J2EE & Application server based

Designed for easy interfacing with legacy systems

- E.g. LDAP directories
- Other existing application

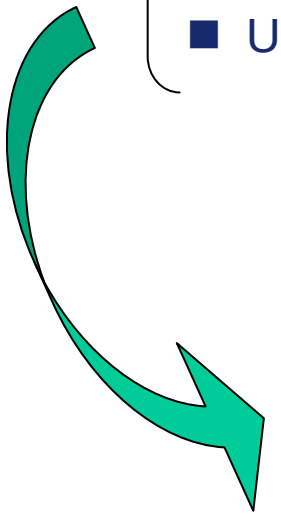
Geographic Information System

- Integration of custom maps
- Powerful vector map display on client (possibility to select layers)

MTP demo

The challenge

- Most satellite and terrestrial communication technologies already exist
- Most applicative technologies already exist…..
- Users have needs…..



The challenge is to combine and adapt those to meet the user needs

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Geo-fencing 1/4

An Invisible boundary is set around some location; as soon as that boundary is breached, an alarm is raised (visual message, email, SMS, etc).

Monitoring can be on:

- Entrance
- Exit
- Number of occurrences
- Time/day of crossing
- Type of vehicle crossing
- Duration of stay within the zone
- …

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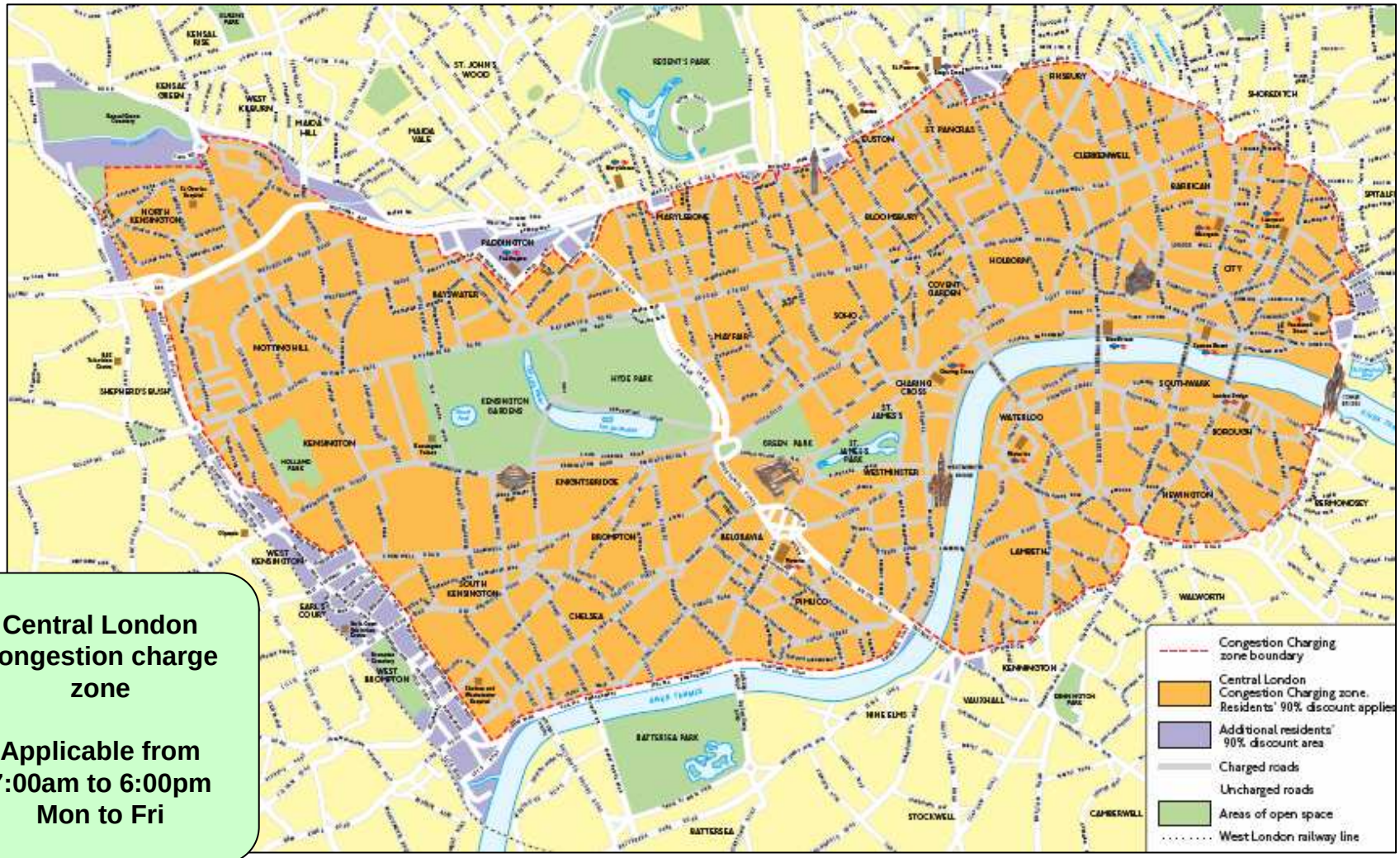
Typical example of geo-fencing: Congestion Charge in London

- Since Feb 2002
- Way of ensuring that those using valuable and congested road space make a financial contribution
- Encourages the use of other modes of transport
- Reduces traffic congestion

Geo-fencing 3/4



Central London congestion charge zone

Applicable from 7:00am to 6:00pm Mon to Fri

CSIR THALES

Another example: GPS tracking collars for pet!

- If the dog goes 500 meters away from the house, and alarm is sent by cellular phone (SMS)
- At any time, the dog can be located
- Exists for cats and dogs
- Already a commercial success

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Dangerous goods tracking 1/5

Galileo applications in the road sector

	Safety-critical	Liability-critical	Non-liability critical
End users	- Advanced driver assistance	- Pay per use insurance pricing - Taxi service pricing - Car rental pricing - Recovery after theft	- Navigation services - Information for vulnerable road users - Fleet management - Passenger transport management
Road operators	- Emergency services management	- Speed limit enforcement - On street parking pricing - Accident reconstruction	- Traffic management - Road lighting management - Infrastructure management - Road research
End users & road operators		- Road user charging - Livestock tracking - Tracking of special vehicles	- Traffic information - Transport on demand

Dangerous goods tracking 2/5

Real-life situations

Dangerous goods tracking 3/5

A truck transporting gas has broken down (burning tyre). Emergency rescuers are sent to the position reported by GPS/GSM (GPS only).

When the rescuers arrive on the site, there is no truck!

Why?

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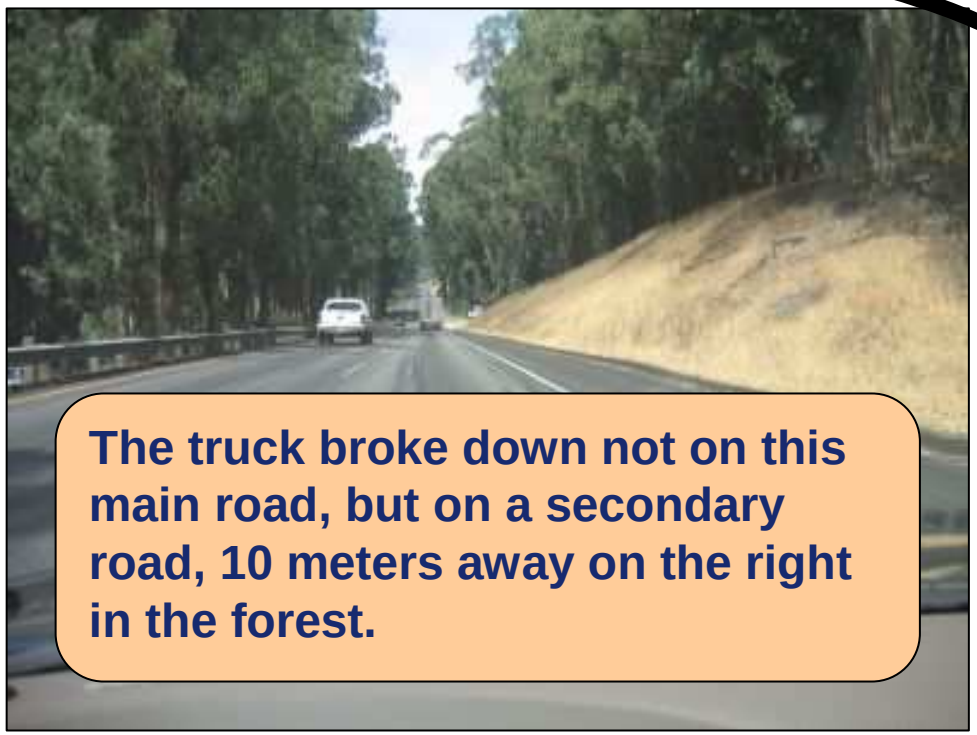
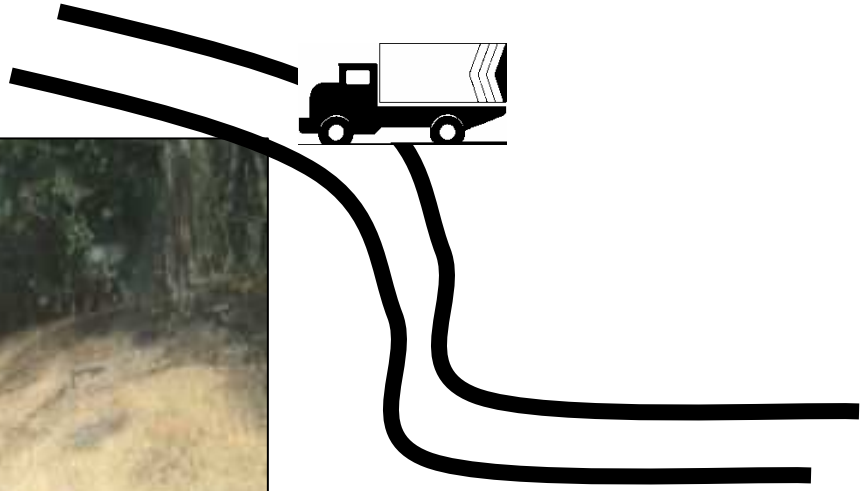
Dangerous goods tracking 3/5





The truck broke down not on this main road, but on a secondary road, 10 meters away on the right in the forest.

Rescuers have to go back 2 km to the branch section to get on the secondary road. Crucial minutes are lost!

Dangerous goods tracking 3/5

GPS+EGNOS would have reported a more accurate position of the truck, allowing for better response time.

Another example…

Dangerous goods tracking 5/5

Added value of combined applications

Emergency service

- Precise localisation
- Type of transported goods

Fleet management

- Restricted zone (alarm)
- New service of "transport certification", which could be related to quality assurance procedures

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Livestock management 1/2

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A new regulatory context

- Growing concern on the **welfare** of animals undergoing transport
- Will to reduce the chance of **disease spread** through transport in general (foot-and-mouth disease, H5N1,…)

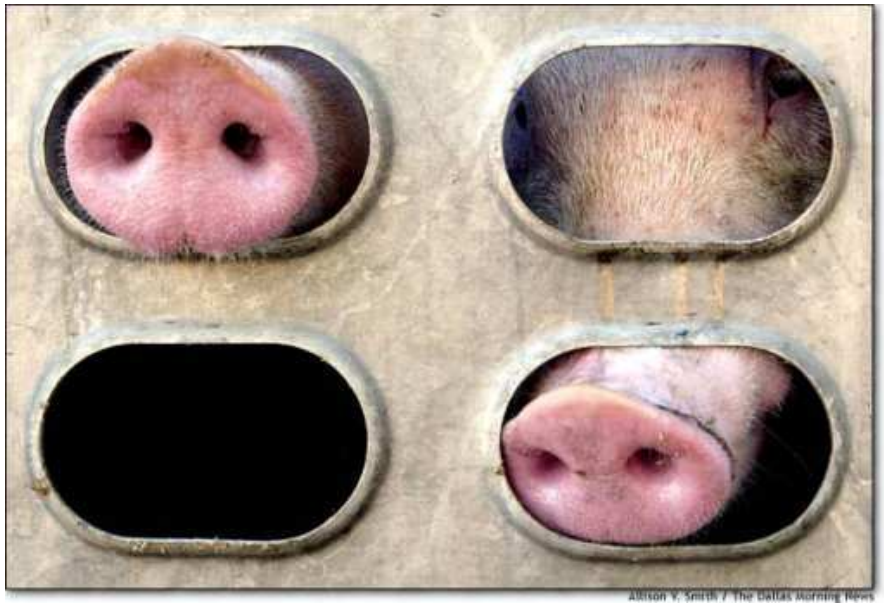
Key dates in the EU*

1/01/2007

Satellite navigation system to be installed in all means of transport by road for long journeys that are in service for the first time

1/01/2009

Satellite navigation system to be installed in all means of transport for long journeys



Note: * from Council Regulation (EC) 1/2005, relative to the transport of live vertebrate animals including cattle, sheep, goats, pigs, poultry and horses.

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Business case: delivery certification

Cofimar: Italian leader in drugs distribution

- Distributes drugs to most of the city's pharmacies.
- Monitors vehicles with a GPS based fleet management system.
- Sometimes can't distinguish if the drugs are delivered to a specific customer, or to another one just 80m apart in the same narrow street.

A more accurate vehicle tracking system is needed. It will informs about the **position accuracy**, and help in **certifying the critical deliveries**.

Liability-critical application

Open discussion