ARTS’ potentials

Automated Road Transport Systems are promising solutions:

- High flexibility and high frequency
- Less expensive services
- Extended working hours
- Ecofriendly transportation
- Various vehicle capacities
History

« Moving from technology to demonstration »

✓ ARTS are robots destined to all kinds of users

✓ Roads are mostly designed for cars, trucks and public transport

✓ Two gaps have to be overaken:
  ✓ Technological (full autonomous in any conditions of use)
  ✓ Operational (public transport ergonomy, robustness)
History

« Moving from technology to demonstration »

✅ CyberMove (FP6): 1st ARTS small scale demonstration (Frog Parkshuttle in Antibes) in a fully segregated environment

✅ CityMobil (FP7) and CATS (FP7): large and small scale demonstrations with high technological and integration constraints

✅ Promising results and strong will to go forward
CityMobil2

CityMobil2 main goal is to address the barriers to the deployment of automated road transportation systems:

- Implementation framework
- Legal framework
- Unknown wider economic effect
Implementation framework

Different implementation frameworks have been tested:

- City centers: La Rochelle, Trikala
- Campuses: EPFL, Sophia Antipolis, San Sebastian
- Leisure site: Oristano
- Exhibition site: Vantaa
Implementation framework

All these frameworks have different constraints:

✔ Different types of users, roads, environments ...

But also shared objectives:

✔ Attractive transport systems for the first and last miles
✔ Flexible solutions depending on transport demand
✔ Connections to the rest of the public transport network
Today’s ARTS limitations

Automated vehicles:

☑ still need some improvements as regards reliability of the embedded systems
☑ must stick to the standards of public transportation

In addition, automated vehicles should be able to:

☑ Operate in varied weather conditions
☑ Plug themselves automatically to recharge
☑ Ensure constant travel times (schedule adherence)
What can we imagine as a next step?
EPFL deployment study
A transport system inside the campus is not absolutely necessary – as the distance can be covered by foot – but intuitively useful for all kinds of application.

Interest is especially linked to the wide range of public present on site daily. Target users: mobility impaired persons, people with luggage and one-time visitors.
To provide effective services, the connections made with automated vehicles must be:

- Direct
- Convenient
- Visible

The stations must be spaced enough to ensure time efficient routes and avoid competing walking.
EPFL deployment study
La Rochelle deployment study
La Rochelle deployment study

✓ Automated vehicles are relevant in the short term for touristic purpose where there is no bus.

✓ The vehicles are well suited to La Rochelle city center as regards size and capacity and can become an important walking alternative.
La Rochelle deployment study

✅ Envisaged operation mode: fixed lines, on-demand vehicles and extended operating hours.

✅ La Rochelle has mentioned the interest of using the same automated vehicles for urban logistics.
La Rochelle deployment study

**Short term proposal**

1 large tour:
- Gare SNCF
- Avenue Général de Gaulle
- Quai Georges SIMMON
- Quai du Gabut
- Quai Vallin
- Quai Duperré
- Grosse Horloge
- Rue du Palais
- Rue Chaudrier
- Rue Gargoulleau
- Rue Thiers
- Rue des Dames
- Rue Amielot
- Rue des Merciers
- Rue de la Ferté
- Quai Maujubec
- Quai Vallin
- Quai du Gabut
- Quai Georges SIMMON
- Avenue Général de Gaulle
- Gare SNCF

**Long term proposal**

5 short tours:
1. Gare SNCF
   - Avenue Général de Gaulle
   - Quai Vallin
2. Quai Duperré
   - Grosse Horloge
   - Rue du Palais
   - Rue Dupaty
   - Rue de la Ferté
   - Quai Maujubec
3. Rue Thiers
   - Rue des Coubiers
   - Rue de l'Evécos
   - Rue du Brave Rondelle
   - Rue Saint-Louis
   - Rue Gambetta
Trikala deployment study
Trikala deployment study

✔ Greek legal framework in favour of ARTS integration

✔ Convenient to connect touristic sites and public buildings

✔ Relevant as promotion tool

✔ Strong accompanying measures: in favour of the suppression of longitudinal parking lots
Trikala deployment study

ARTS deployment local ambitions:

✔ Maintain the loop line tested during CityMobil2

✔ Last mile exploration in some residential areas

✔ Create city shuttles from the main city entrances to city center
Trikala deployment study

**Existing**
- Public parking
- Main entrance
- Railway station
- Bus terminal

**Scaling up**
- Center loop
- Feeder path
- Park and move
- Peripheral parking
- ARTS
Challenge

« Moving from demonstration to deployment »

✔ How to propose a genuine public transport service with automated vehicles?

✔ What conditions must be met to deploy successfully automated vehicles?
Recommendations - Vehicles

✔ Provide technologically robust and comfortable vehicles, adapted to public transportation and that can reach a cruising speed of about 20 km/h to reduce travel times.

✔ Provide sufficiently dimensioned fleets to offer real public transport services that take into account maintenance and charging needs.
Recommendations – System operation

✓ Integrate local public transport operators very upstream of the process and give them the responsibility of the whole service.

✓ Integrate automated vehicles in the operator supervision system or use a dedicated fleet management software to connect with existing bus lines.
Recommendations - Communication

- Communicate with and involve all stakeholders

- Use city studies as promotional tools for communication of city ambitions and long term perspectives

- Provide extensive information to passengers: inside the vehicles, at stations but also on smartphones (dedicated applications).
It is time to think about...

THANKS FOR LISTENING
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