

ME Key

A device for transferring user preferences in shared-use mobility systems

The highly personalised nature of vehicles is a stumbling block in the large scale implementation of shared-use mobility systems

- Personal attachments to vehicles
- Ergonomic and other vehicle preferences rarely have to change
- Develop an anthropomorphic relationship with vehicles



Shared-use mobility refers to a new and growing sector of the transportation market whereby rentable, lightweight, personal mobility vehicles are distributed throughout a city to complement the existing public transport system and reduce the heavy reliance on private vehicle usage.





Airport to home



Home to train station

Going for lunch



Picking the kids up



Grocery shopping



Distant meeting

Renderings by Franco Vairani
Smart Cities MIT

For shared-use mobility models to be truly successful, the design of the vehicles needs to counter any potential social and physical resistance to vehicle sharing.

- the vehicle must adjust quickly to the ergonomics of different bodies
- personal user preferences must be transferrable between vehicles



Rather than display instruments being in a standardized location, new vehicle designs are customized to user needs and preferences.

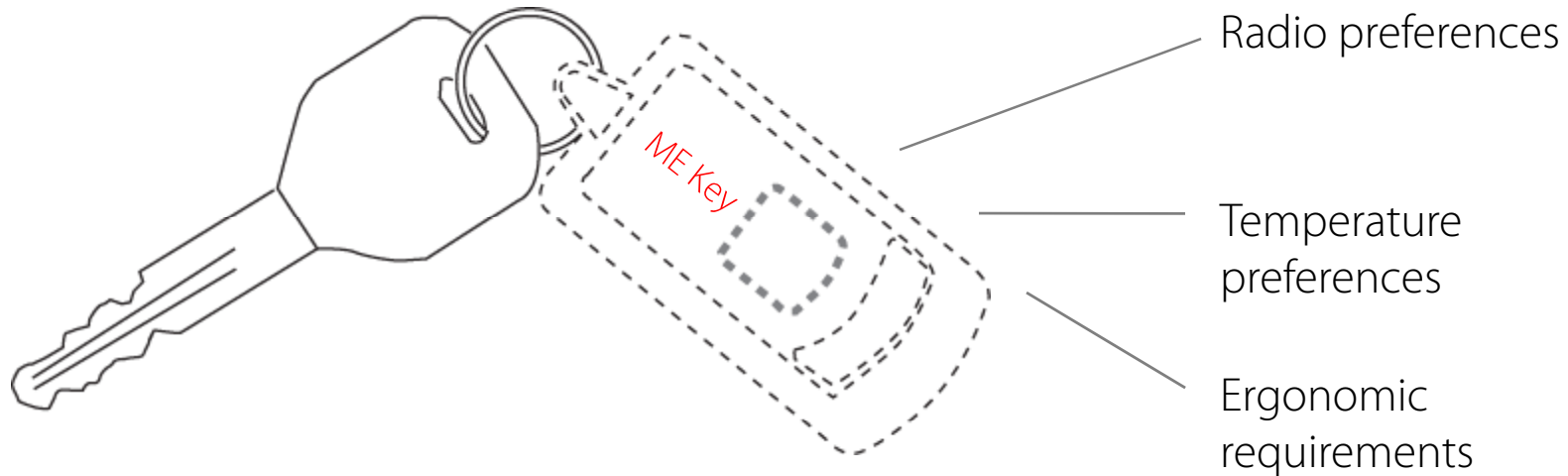
- GUI's allow users to select their own configuration of instruments and information
- We need a way that vehicle preferences can be transferred easily from car to car



Rendering by Franco Vairani,
Smart Cities MIT

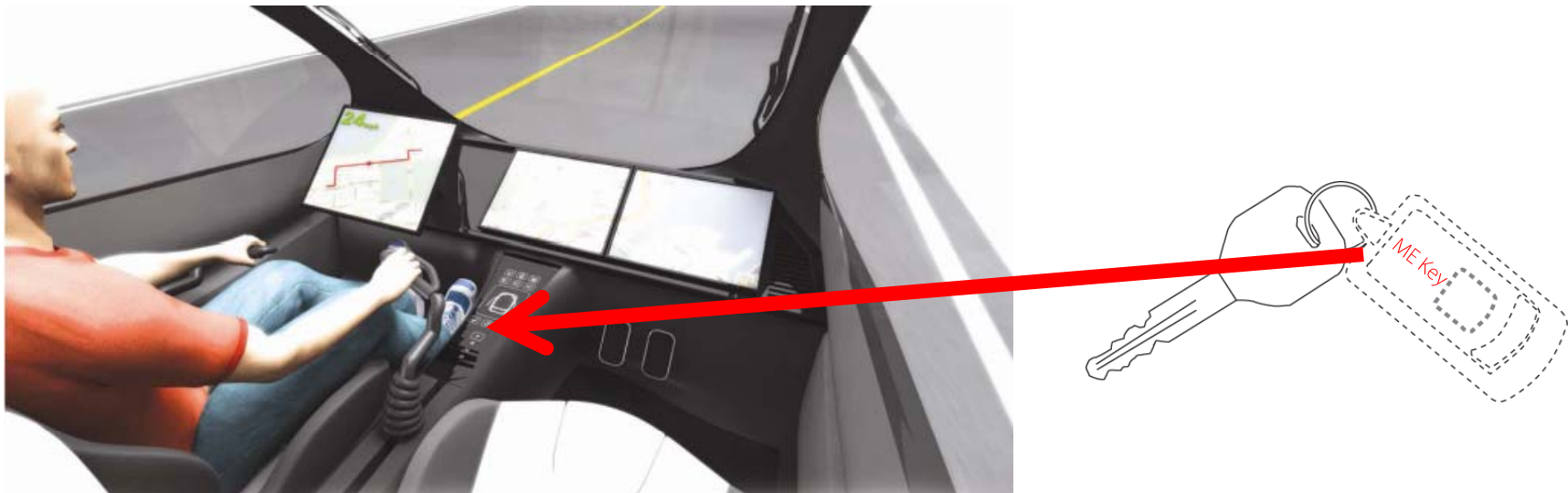
The **M**aster **E**nvironment or **ME Key** is a keychain device that will:

- issued to members of the shared-use mobility network,
- allow secure access to vehicles
- Record rental periods
- Set users master vehicle environment
- Remember and adapt vehicle preferences over time as drivers continue to use the system



Initial Implementation

- Use ME Key to unlock the vehicle
- Place in holder
- Prompts appear on GUI guiding first time users through the set-up process – both ergonomics (seats, mirrors etc) driving display and radio control
- This information is then stored in the ME Key
- When drivers change vehicles, the ME Key can instruct physical actuators to adjust ergonomic requirements as well as controlling the GUI's



Getting to know you

- ME Key monitors changes in user preferences over the first month of driving
- Once baselevels are established the system can begin to predict and activate user preferences
- The ME Key includes a simple mechanism for overriding preferences activated by the system

Example scenarios

Scenario 1

- Claire regularly listens to a news station during her morning commute, but a music station during her afternoon commute
- Change in radio stations are monitored by the ME Key. After one month, Claire no longer has to physically change radio stations. When she rents a car in the morning the news station is on and in the afternoon, her favorite music station plays

Scenario 2

- Nima likes to drive with the windows down, however about 2 kilometres from his house, there are some noisy and dusty roadworks.
- During the first month of renting in the shared-use mobility system he rolls up the windows and turns up the radio. After one month the ME Key can sense this 'environmental state' in the system and can do this for him

Scenario 3

- Pernel uses the navigation system in the CityCar on her first day of renting. Over the next month or so, she continues to adjust the system to show what is most relevant to her
- After the first month, the ME Key learns some of Pernel's preferences and can start to suggest places or information to her.

Technical Requirements ??

- 3-axis accelerometer: activity recognition.
- Microphone: for collecting voice features to tell if you are speaking to other people and gauging their/your interest
- Micro SD card for storing and retrieving information
- Processor
- Radio: to detect the location of others and to transmit and receive information
- Direct environmental sensors or way of connecting to environmental sensors on the exterior of the vehicle
- Smart Chip: payment of the vehicles, recognition and unlocking

Conclusions

- ME Key improves the perceived usability and acceptance of shared-use vehicle systems
- User maintains personal information in their possession - positive
- Having a system learn your preferences and act on your behalf (beyond simple ergonomic adjustments) could be a little scary – negative?