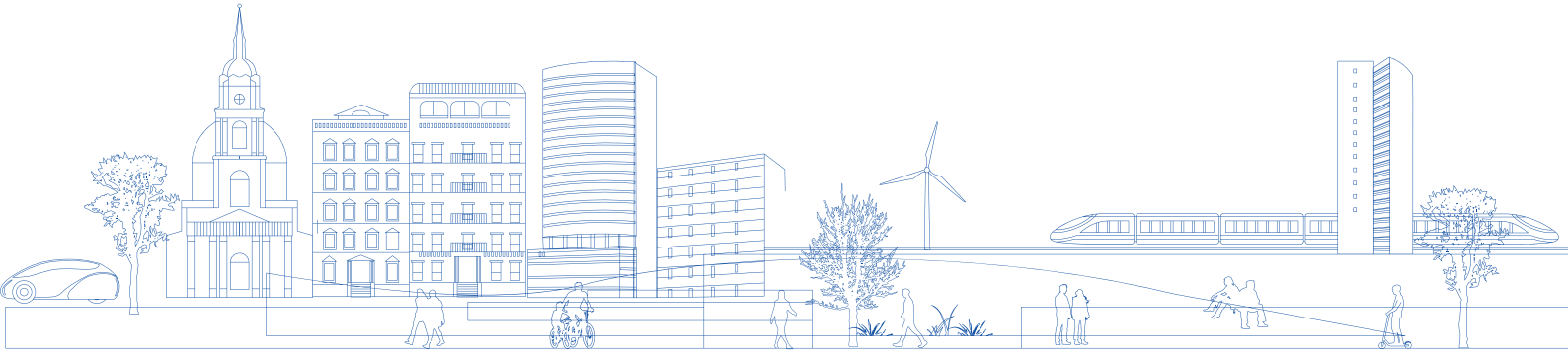
CES4KIDS

From 13 to 17 years old



This project is funded by EIT Urban Mobility, an initiative of the European Institute of Innovation and Technology (EIT), a body of the European Union.

eit Urban Mobility

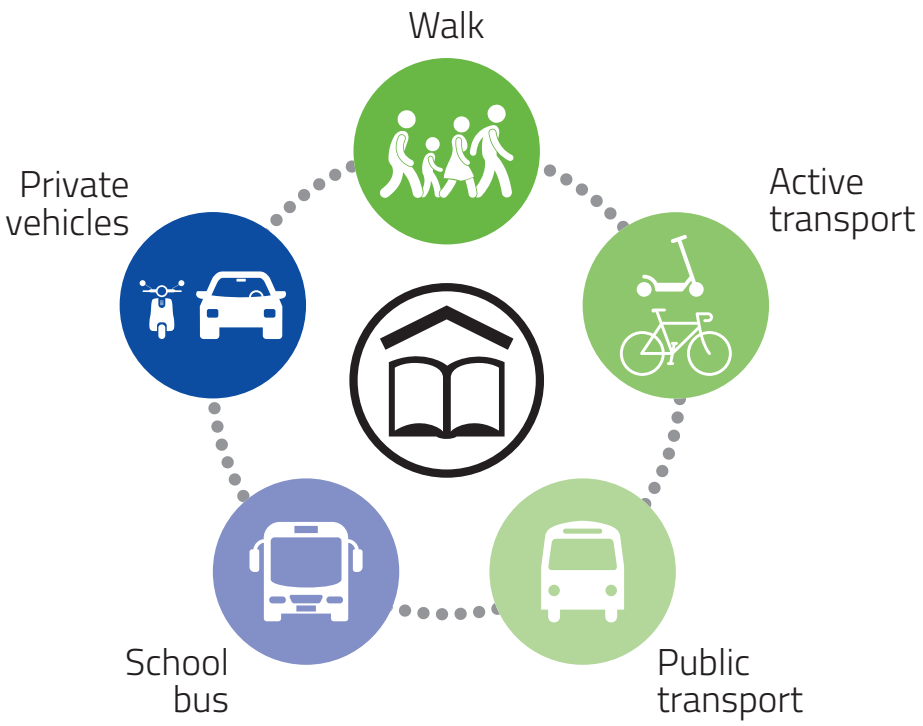
Co-funded by the European Union

Sustainable mobility

For us citizens, it is essential to move within the city not only to access the different available services and facilities but also to carry out our daily activities. That is why urban mobility is a basic need for the population.

There are many means of transport to get around the city, and some are better than others depending on our necessities. We can walk, bike or skate, use public transport, such as bus, metro or train, or we can use private vehicles. Our city governments must guarantee that everyone has access to quality services and the infrastructure to do so.

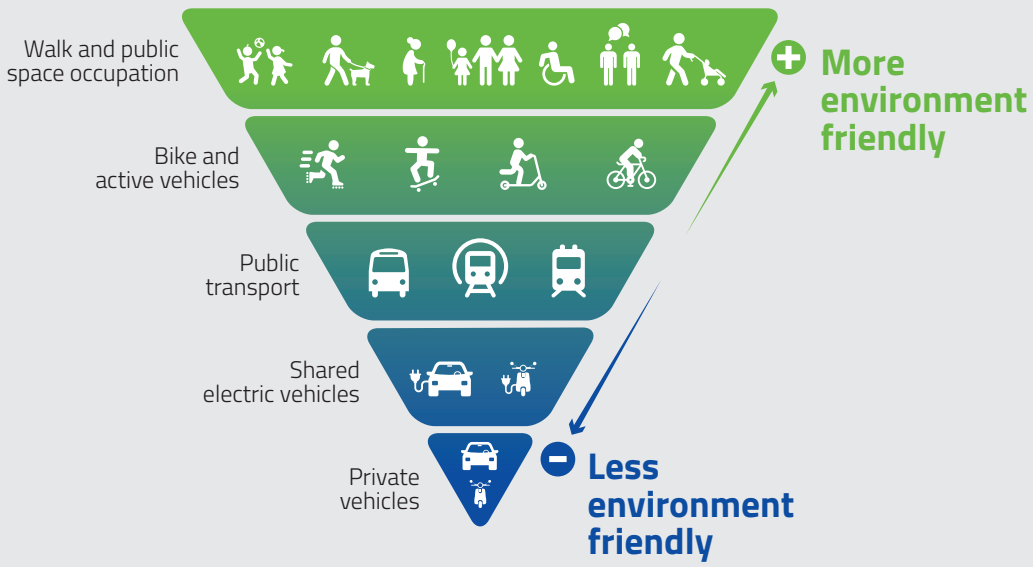
How do you get to your school every day?



What is sustainable mobility?

Sustainable Mobility rationalizes the means of transport in a city, by giving preference to the healthier and less polluting modes, in order to cause a lower impact on the environment.

The **Pyramid of Sustainable Mobility** teaches us that the preference in public space and roads will be higher for the more environmentally friendly ways of moving, while the most polluting forms will be of lower priority.



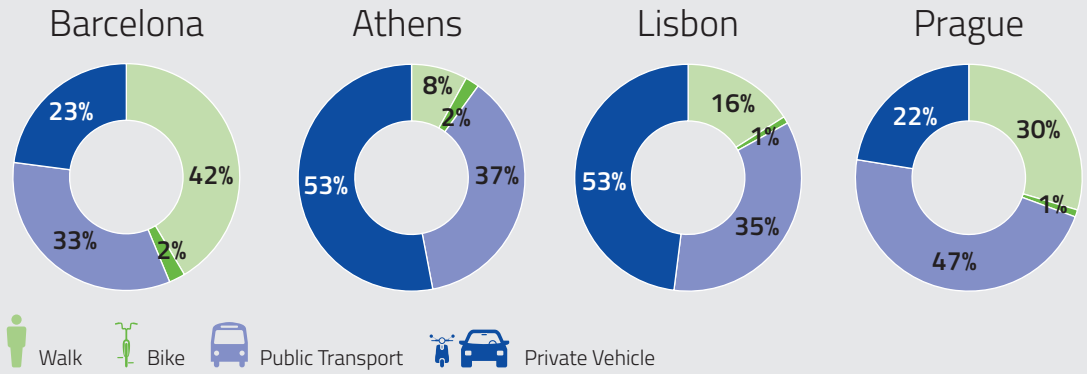
Therefore, we need to organize the mobility of our cities and towns to considere all the different ways we move, while prioritizing the ones that are environmentally–friendly. To achieve this, the most important tools we have at our disposal are the Sustainable Urban Mobility Plans.

Sustainable mobility Watch

This is how cities move

The modal split is a graph that you find in Urban Mobility Plans that represents the percentage of people moving with a specific mode of transport through the city.

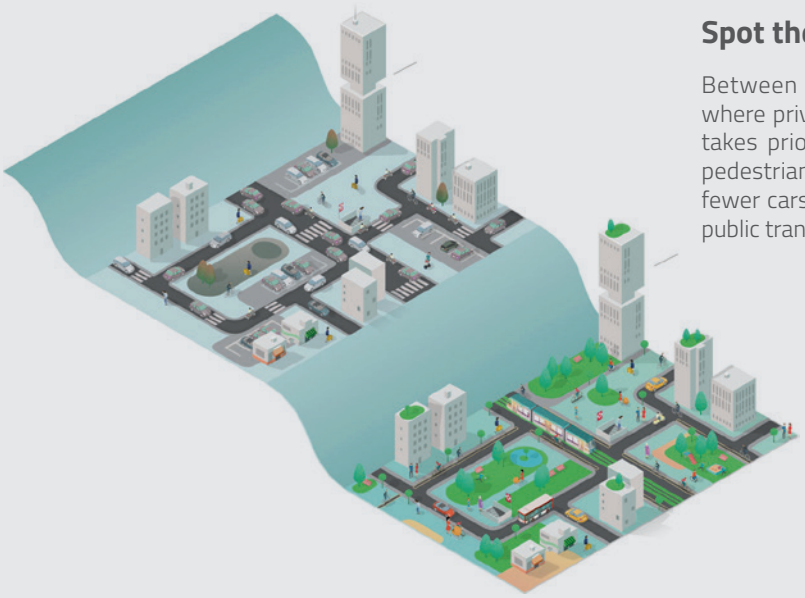
In a sustainable environment, we want more people using soft modes (walking and biking), and using public transport, instead of private vehicles.



Do you know what a sustainable urban mobility plan does?

The Sustainable Urban Mobility Plans play a very important role in organizing mobility in cities. A Sustainable Urban Mobility Plan brings together all the initiatives and actions we plan today that aim at achieving a more sustainable mobility in the future.

For this, we must analyze carefully the way we currently move and from there design an integrated vision of the desired future for the city and its mobility system, considering the needs of everyone involved: citizens and businesses, cities and environment.



Spot the differences

Between the city we have now, where private and motorised mobility takes priority, and a city focused on pedestrians with more green spaces, fewer cars and motorcycles and more public transport. Which do you prefer?

Play

Planning together

An appropriate way to gather and understand our community's needs for mobility is through democratic participation. This type of involvement is important because it allows for citizen engagement and empowerment in the decision making of the cities, mobility planning.

Community involvement in the city planning has also a positive impact because citizens will feel responsible and will develop a higher civic consciousness through the development and maintenance of the infrastructure.

Urban Mobility Plans feed on citizen participation processes to satisfy the mobility needs of citizens. The same can be achieved at your school!

Do you think your school could have a mobility plan?

Travel green to school

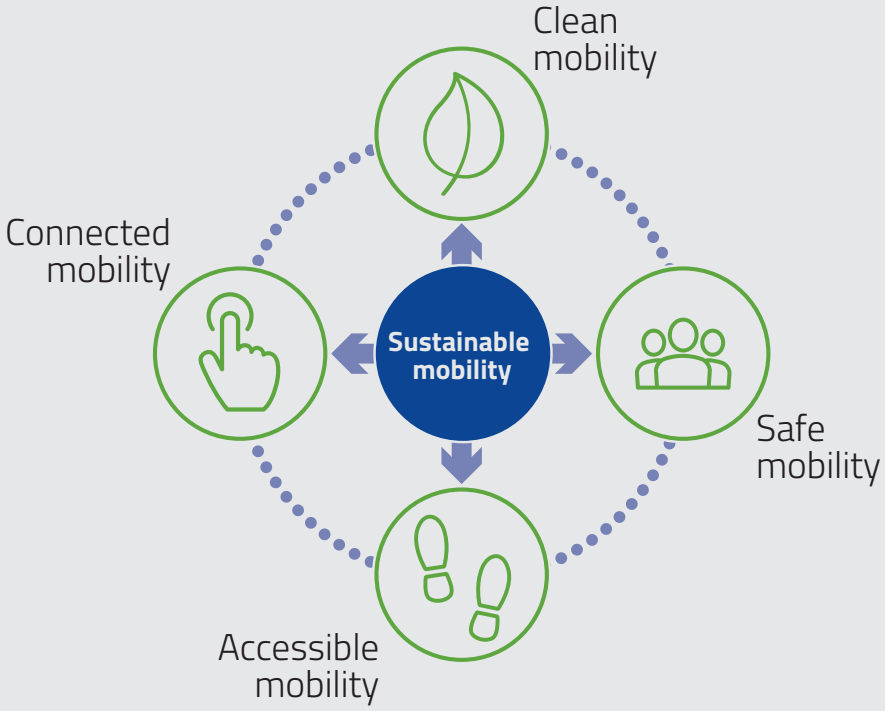
Think of two ways to make your trip to school more sustainable.

What would you change in the way you currently get to school?

Share

The four pillars of sustainable mobility

Sustainable mobility is based on four pillars that cover the main features of modern urban mobility. The four pillars consider the whole mobility ecosystem, having an impact on the people, the environment, the infrastructure and the technology.



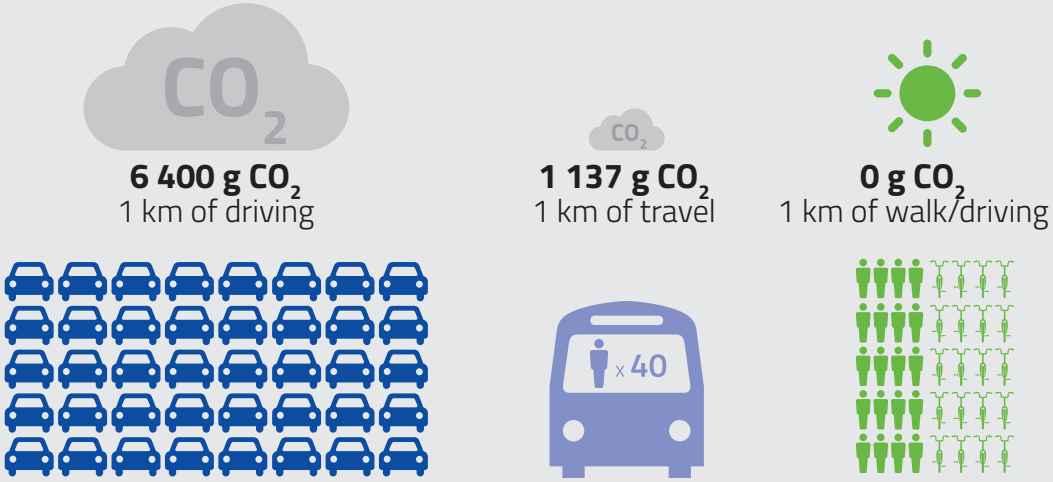
Clean Mobility

Clean mobility

With clean and sustainable mobility, we want to reduce dependence on energy-intensive means of transport while making it easier for people to move around in soft ways. Also to reduce the negative environmental impacts of mobility.

- Transport is responsible for more than 1/4 of Europe's total greenhouse gas (GHG) emissions and is a major contributor to climate change.
- Road transport (cars, vans, trucks and buses) is responsible for over 70% of all transport emissions.

Comparison of the emissions burden



Mobility using conventional means of transport also has other negative effects:

- Higher noise levels in cities
- Intrusion on public spaces
- High energy requirements for operation
- Increased time spent in cars with traffic congestions
- Health impacts: exposure to air pollution can lead to a wide range of disease

Causes and consequences of climate change

Watch

Calculate your carbon footprint and compare with classmates

Go to

Towards clean mobility

We need to reduce emissions and improve air quality. The European Union has committed to reducing GHG emissions in transport by 90% by 2050.

We need to reduce pollution and its effects on the environment while optimising mobility management, resource use (environmental sustainability) and the performance of the mobility space.

How best to achieve this? Use some form of clean mobility

1. Active mobility: Zero emissions!

Active mobility is the simplest form of human transport and, given the right conditions in cities, it is also safe and low maintenance.

Walking, the simplest form of transport, which is not demanding on space. Only accessibility (barrier-free streets) and safety (crossings, underpasses) must be ensured.

Cycling (whether using your own bikes, e-bikes or shared bikes/electric bikes), cycling is flexible. Within cities, cycling is comparable in time to driving a car.

2. Using electricity or alternative energy sources

Various alternative drives are being promoted as clean mobility. Electricity or other alternative energy sources are allowing more and more forms of transport. Electric vans are already common, and recently alternative battery propulsion is being developed for large trucks.

However, the following forms of pure propulsion are most popular in everyday urban traffic:

Public transport has the effect of reducing cars in city centres and transporting more people at once, combined with an emphasis on the inclusion of alternative fuel vehicles (electric/CNG buses) the effect of emission-free transport is enhanced.

Electric motorcycles and e-scooters, scooters (including shared scooters), similar requirements to cycling, but with higher demands on urban space.

Electric cars and alternative fuels, the use of alternatively powered vehicles brings emission reductions, but there are still necessary infrastructure requirements (parking)

Local investigation of class

Keep track of who used what type of transport during the week and how many of the vehicles used that were zero emissions. Record them on a table and compare it between classmates.

Clean transport cities

Transport emissions are the main cause of air pollution in cities. Clean mobility is not just about end devices, but also about the whole approach to the use of urban space.

Indeed, cities can contribute with actions such as:

- Promote walking and cycling by creating and improving infrastructure (increased pedestrian space, bike lanes, charging stations, parking racks) or services for cyclists (e.g. secure bicycle storage).
- Address traffic flow, to actively direct traffic away from centres (by creating emission-free zones for transit traffic), to look for methods of traffic calming, and to address the possibility of fully emission-free zones in historic centres.
- Promote public transport and effectively link transport modes, as the headless closure of cities will not bring sufficient comfort to users and vice versa.

Clean mobility can be an effective tool for creating synergies between fast, safe transport and increasing space for civic use.

Towards clean and sustainable mobility **Watch**

Safe Mobility

Safe mobility

Everyone has the right to move around the city, and to do so as safely as possible. Mobility must ensure safety and comfort in public spaces, so that no one stops using a certain mode of transport because they feel unsafe.

For example, safe mobility means being able to travel to school without risk of accidents.

Objectives:

- Improve road safety and reduce accidents.
- Improve the coexistence and respect between users of the different modes of transport.
- Promote autonomous, safe and sustainable mobility for all citizens, and especially for children in their schools environment.

Safe streets to move around

Public space belongs to everyone who uses it. A safer mobility must guarantee that everyone feels safe and comfortable when moving around, especially those most vulnerable. Vulnerability in mobility means that there are means of transport that have greater risk of causing injuries in case of traffic accidents.

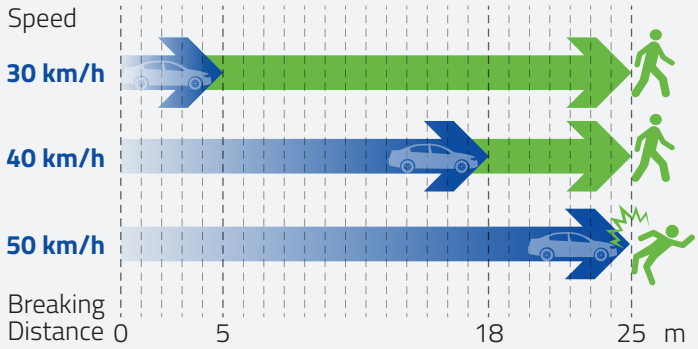
Most accidents occur on our urban roads and streets. We can make our streets safer through more sustainable mobility. For that, we need more people using active and healthy modes, such as walking, bicycling and skating, and using public transport, such as buses, instead of using private cars. Other sustainable means of transport include micromobility devices, such as e-scooters and shared electric motorcycles.

Micromobility is very popular among young people, however, its users require protection equipment and must follow specific rules on safety and coexistence with other modes, so it is important that we learn and respect the fundamental laws of traffic and circulation.

Friendlier and safer cities to move around

Cities must also guarantee the quality and comfort of urban public spaces by creating more and better areas for walking, bicycling and skating, while reducing the maximum speed for cars.

Speed is the single most important factor in the safety of a street, and it is directly proportional to the risk of pedestrian fatality in cases of accidents. The risk of loss of life as a result of a collision is reduced by at least five times if the speed of the vehicle that hits is 30 km/h, compared to another that travels at 50 km/h.



It´s a drag: vehicle stopping distances

Go to

But remember that you can also contribute to safer mobility by being attentive to your surroundings and by taking into account the other people who use the public space.

You can also help achieve a safer mobility by becoming involved in citizen participation processes and effectively create changes in your neighbourhood.

Road safety

Road safety refers to the set of actions that guarantee the adequate circulation of traffic and people within our cities' roads and streets, through the knowledge of the rules and regulations and the way we behave while moving through the city, in order to prevent traffic accidents. It is not justifiable for a person to lose their life in order to get around.

We are all pedestrians at some point or another. Therefore, it is very important to know what our rights and obligations are when walking through the city, in order to guarantee our physical safety.

Road safety lessons

Crossing the road

Watch

Road safety also has at its core the principle of active and passive safety, which are essentially the actions you can take before and after an accident has occurred in order to minimize its impact.

- Active safety (Defensive or reactive)
  Is the set of measures and elements that tend to avoid a road accident.

Use the rules we learned on how to cross safely.

Know the different traffic and road signs.

- Passive safety (Proactive)
  Passive safety tries to minimize damage once the accident has occurred.

Wear protection when we bike, skate (helmet, gloves, etc.).

Wear seatbelts while in cars.

Road safety lessons

Bike safety

Watch

Accessible Mobility

Accessible mobility

Accessible mobility is a core issue for the sustainability of the future urban mobility. Facilitating the access of citizens - in particular for mobility impaired people- to public transport modes is imperative since it includes aspects of equity and universal accessibility.

Accessible Mobility means equal opportunities to move and travel for all people (democratic mobility). It promotes the right for mobility and individual freedom of movement (autonomy) fostering in parallel coexistence and social integration.

Objectives:

- Guarantee universal accessibility to the mobility system; this means to taking into account all the diverse needs of the different groups of mobility users and all the aspects of the mobility chain (all transport modes you use to go from A to B)
- Ensure equitable mobility by age, physical condition, gender, income and neighborhood.
- Improve the conditions of labor mobility and daily life.
- Encourage alternative uses of public space.

The inclusion project

How to make mobility more inclusive and accessible for all

Watch

Design for all (universal accessibility)

"Design for all" or "Universal Design" is based on the principle that the mobility services should be designed to be easily used by all people without the need for adaptation or specialized features for specific users' groups.

This doesn't mean the exclusion of assistive devices for particular groups of persons such as persons with disabilities (e.g. wheelchair users) where and if this is needed.

Universal Design means that city infrastructure (streets, roads, lights, etc.) and transport systems (bus stops, buses, trains, trains stations, etc.), including technology (websites of public transport services, booking apps, etc.), are usable for all. For example, the online content that informs people for the mobility services (e.g. websites of public transport services) as well as the applications (e.g. booking apps) must be accessible, including people with disabilities, hearing impairments, visual impairments, physical impairments or other disabilities.

Universal Design is one design that fits all, based on the assumption that:

- 10% of the worldwide population urgently needs accessible infrastructure (people with disabilities).
- 40% of the worldwide population needs accessible infrastructure as additional assistance (elderly people, kids).
- 100% of the worldwide population perceive accessibility as a required improvement of the mobility system.

The blindfold game

Rearrange the furniture in the classroom and put a blindfold on the students. Make them go from point A to point B and describe the challenges they find along the way.

The role of public space in an accessible city

Public space is a powerful instrument of social inclusion promoting democratic values. It operates as a room for social interaction, creativity and both economic and leisure activities.

Aspects of safety and accessibility for all user groups should be included in the sustainability strategy of the city.

Community involvement in the planning and maintaining of public spaces is a vital element towards sustainability. It will also help develop civic consciousness and ensures that issues of inclusion and accessibility are incorporated in the design of public space through the participation of different social groups.

In the case of **children** and youth, it is important that you can move around safely. Therefore, the city needs environmentally–friendly and safer streets that will enable you to travel around on your own and offer more possibilities to interact and benefit from your environment.

To understand the **diverse needs of transportation users** including kids and young people as well as all social groups, urban transportation planners should engage you throughout all phases of the process, from planning to post-implementation. Your participation is important!!

City streets and mobility through the eyes of children **Watch**

Connected Mobility

Connected mobility

Connected mobility means that the different urban mobility services such as public transport (bus, metro, train, etc.), individual mobility (bike, walk, motorcycle, scooter), and others, are accessible to all citizens, according to the needs of each trip.

To meet this main objective, several tools such as information, new technologies and innovation, support connected mobility.

Objectives:

- Improve mobility systems' efficiency, by providing trip services options that are attractive to users by improving their journey experience, thus contributing to reducing private car dependency.
- Allow seamless integration of transport networks and mobility services.
- Contribute to reducing private car-centred urban planning adverse effects, such as traffic congestion, air pollution, noise, and the decay in quality of life and quality of public spaces.

The role of information

Information and Communications Technology (ICT) has drastically changed how people move, communicate, learn, and, most important, how do they live.

ICT refers to all devices, networking components, applications, and systems that in combination allow the interaction in the digital world of people and organizations such as public administrations, business, non-profit agencies, etc. ICT has revolutionized the human experience, by often replacing many of the tasks once handled by humans. For example, automated vehicles and electric vehicles, along with other innovative vehicle technologies.

Digital gap

It refers to a new form of social inequality derived from dissimilar access to new information and communications technologies.

This separation can be due to gender, territory, social class, ethnicity, and other aspects, however, in any situation the result is the same: the digital illiteracy of people.

Design for all is needed. Some examples of the strategies:

- For the elderly, mobility services should still have the option of being requested by conventional phone, since in most cases, they do not have smartphones.
- For diverse origin users, mobility services must be offered in different languages and not be limited to the local ones.
- For people with disabilities, hearing impairments, visual impairments, physical impairments, or other disabilities, the information and communication should be clear so that mobility services are universally accessible no matter the different physical conditions.

Using public transport

Imagine you want to take a bus or train from your school's closest station to the centre of another city nearby.
Take a look at the following bus or train timetables and try to answer:

- which is the first bus or train on Mondays?
- and the last?
- during the weekends, is the same schedule?
- if not, do you know why?
- do you think these timetables are user friendly and easy to understand?

Technological tools

The advances in technological development in mobility contribute to improving the user experience since they can help mobility service operators and providers accurately pinpoint routes with problems, recommend network adjustments, and suggest the best options to make a journey, among others.

Technological tools examples:

- Apps–Parking spots, valet parking, shared vehicles, route planners, payment methods
- Virtual assistants, route planners
- Autonomous vehicles

AVs are self-driving vehicles. They also can be used as shared vehicles for transporting people. They operate on the basis of electric cars and currently still have a driver (which is a safeguard for some potential collision situation), but in the near future will be fully automated.

Multimodal mobility

Multimodal mobility or 'multimodality' refers to the journeys made by combining two or more means of transport, and is an efficient and sustainable way of moving within the city since it helps avoid using private cars.

This way of mobility commonly involves public transport users, since bus, metro, or tram services do not always cover their routes completely. Public transport users can find efficient and environmentally-friendly ways to cover a part of their trip (first, last or both) with personal mobility vehicles (PMV) both active (bike or walking) or assisted (e–scooters or e–bikes).

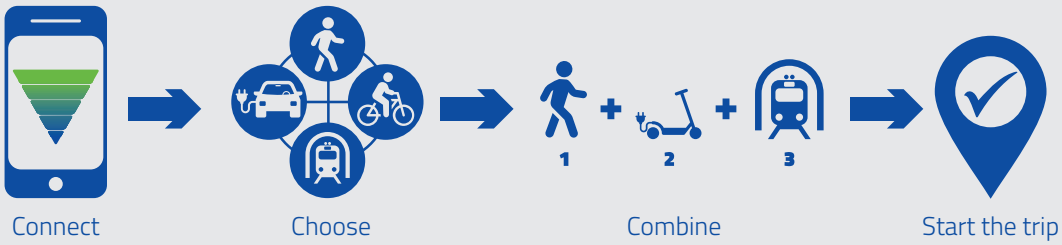
Shared mobility

Thanks to the growing awareness around the importance of less polluting and more environmentally–friendly forms of urban mobility, private car ownership is becoming less attractive for city inhabitants. The need for multimodal transport options has promoted the rise of shared transport services, such as bicycles, electric motorbikes or cars.

Mobility-as-a-Service (MaaS)

Nowadays these services are promoted by Mobility-as-a-Service (MaaS). Mobility-as-a-Service (MaaS) is a type of service that allows users to plan, book, and pay for diverse types of mobility services according to their preferences through a unified digital channel (app, website, etc.).

An example of the MaaS travel experience can be as follows:



What is mobility as a service? **Watch**

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CES4Kids

- Centre for Research & Technology Hellas (CERTH)
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- Institute for Advanced Studies and Awareness (IASA)
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- Municipality of Cascais
- Municipality of Fundão
- PowerHUB
- Instituto Superior Técnico (IST)
- UPC Technology Center (CARNET)
- Mobility, Logistics and Automotive Technology Research Centre (MOBI, VUB)
- Edenway
- Barcelona City Council
- Barcelona Regional