



TDA Training Program on Transport Decarbonisation

Module 2

Urban Multimodal Mobility I (Overview)



Deployment: Online / blended

Workload: 3 hrs



Extra learning: 2 hrs



Module working group:

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Learning outcome

By the end of this chapter, students should understand the main concepts about urban multimodal mobility in cities and metropolitan areas. They should have a wide perspective about the most traditional modes of transport but also about new realities in multimodal mobility.

Students should have an overview about the impacts in urban development related with the relevant infrastructures and services required for transport multimodal operation. Additionally, they should also be able to understand the current and future governance and business models based on the study real life cases that took place in cities and large urban agglomerations.

Syllabus

1 Urban multimodal mobility: definitions and current/future perspectives

The use of different and optimally combined transport modes within the mobility chain in a seamless way is one of the most important approaches towards greater sustainability in urban transport. This is what is called multimodal mobility and its main objective is to discourage the use of the individual car by promoting a more accessible, shared and connected mobility.

On the other hand, students will be faced with a short perspective on how the urban planning affect mobility and transport flows. The students will learn that the combination of public transport with other motorised and non-motorised modes as well as with new concepts of vehicle ownership are the core of multimodal urban mobility concept.

This course module will explore examples of multimodal mobility at different geographical levels (places, cities, regions), considering specific challenges such as gender issues (e.g. the options that are safe and comfortable for a woman may not be the same as those convenient for a man) and will analyse the number of different current and future challenges for them, namely those related with disrupt solutions. As an example, the impacts of new technology like the always-on connection between vehicles will be discussed in this chapter as an evolution paradigm.

2 Urban mobility vehicles and systems

Urban mobility comprises a different set of vehicles: the bigger ones such as subway, tram or train that have special railways; bus, metrobus, car and taxis (or similar) on the road and also the two-wheelers such as motorbikes, bikes, e-scooters. Boats and ferryboats could also be in this group according to the urban landscape. Each mode has its own advantages and capacities but when combined, they are able to enlarge the potential users of the sustainable mobility market. Different transport modes have diverse carbon implications (walking, bicycling, passenger cars with multiple occupants, passenger cars with just one traveller, bus, train, boat, plane, etc.). The module will provide an overview on typical metrics for their carbon impact measuring and point out scenarios for further development of low-carbon mode incentive options.

In this chapter students will also explore current multimodal systems and relate them with new trendy sharing systems that involve car-sharing, bike-sharing and ride-sharing, etc. The concept of "first" and "last" mile and its importance to boost the public transport demand will also be enlightened.

3 Basic infrastructures compliant with multimodal mobility

To promote multimodal mobility, cities and metropolitan areas must be prepared with infrastructure that allows the shifting between different modes of transport.

This topic will have a strong emphasis on the physical infrastructures such as urban transport interchanges as well as park-and-ride facilities that allow commuters to reach the city centres without cars. Besides this, technological infrastructures such fiber networks, communication networks, electrical vehicle chargers, cameras or smart traffic lights are needed to provide new categories of services in multimodal mobility.

4 An overview about current governance and business models

Common ticketing, common communication with an integrated brand management are important ways to provide multimodal services in a seamless way. In this topic, students will understand the importance of governance models as ways of integration but also some other models that exist, because there are successful experiences with different levels of integration. Despite that, to provide a common ticket is possibly the most relevant measure to guarantee a strong transport service integration. Students will be shown different examples of good integration for multimodal mobility, namely those achieved by means of ownership models (different transport modes ran by the same company); association of companies (gathering public and private companies) and local/metropolitan authorities (that defines, contracts and controls the integration requirements).

5 Autonomous and connected: the future of urban mobility business

The arrival of driverless autonomous vehicles (AV) represents a unique opportunity for a disruptive change in urban mobility and therefore public transport authorities must take an active role to guarantee their smooth integration in the sustainable mobility ecosystem. Some of them are already being trialled in many cities and this is certainly creating exciting new business models.

It is important to start looking ahead by anticipating the arrival of this game changer in order to guarantee that this reality will benefit society as a whole and not just some specific sectors.

6 Mobility as a Service (MaaS)

Like in other sectors of society, mobility is evolving towards a service providing mode. More than having a car or equipment, the way forward is sharing it and using it as a service. In this chapter we will explore the possibilities of MaaS as the new paradigm of using sharing equipment that is crucial in the multimodality that we want to build in the near future. There are already several integrated service subscription models that will be explored and some of them involve the use of innovative technologies, such as small size electric vehicles with two, three or four wheels as well as smart-phones and mobile apps to provide information and access to all modes.

7 Parking Management

Virtually every car trip ends in a parking space. Accordingly, managing parking spaces means managing the demand for car use and congestion. Compared to other transport policies aimed at managing car use, parking presents two clear advantages:

- Parking management does not usually require large investments, such as new roads or the extra public transport supply, and it can thus be realized in a relatively short time;
- Some parking management can already be found in almost all larger towns and cities in Europe. This makes the public acceptance of parking management much greater than other ways to manage car use (e.g. congestion charging schemes).

You can find more information about parking management in the Push&Pull project (please check Major references chapter).

Case studies

Anda (TIP - Transportes Intermodais do Porto, Porto) - Portugal

Anda is a mobile app designed to enable travelling within Porto public transport network with Andante multimodal fares. It does so in a simple, fast and comfortable fashion. With Anda, travellers do not need to know fare rules and may travel with the certainty that they will only be charged with the minimum possible value for all journeys.

Andante (Porto Metropolitan Area) - Portugal

Porto Metropolitan Area network is based on an open and intermodal zonal system with a single ticket called Andante. With Andante it is possible to travel in STCP, Metro do Porto, CP-Urbanos do Porto and in some private road channels. The payment only depends on the route and not the mode of transport that is used.

Whim (Helsinki) – Finland

Whim is mobility service that is made available through a mobile app. Using it, a person can travel by public transport, taxi or even rent a brand-new car and some more options. The user can choose a plan to get the best value or buy each journey separately. Whim is based on the Mobility as a Service concept (MaaS), which combines a broad range of transport services to make traveling easier than ever. The core of the MaaS concept is that all your daily mobility needs are covered by a single service.

Connected Public Transportation (Porto) – Portugal

VENIAM partnered with STCP (Porto City public transports) and the municipality of Porto to create the largest mesh network of connected vehicles in the world. Since 2014, more than 600 buses, taxis and municipal service vehicles are connected to this innovative mesh network solution, providing high-quality mobile Wi-Fi to more than 200.000 people every day and gathering terabytes of actionable urban data for Porto's Smart City applications.

Major references

<https://eu-smartcities.eu/sites/default/files/2017-10/Multimodal%20personal%20mobility%20january.pdf>

<https://www.linhandante.com/>

https://veniam.com/wp-content/uploads/2017/05/PortoCaseStudy_Letter_2016-04-15.pdf

<https://whimapp.com/>

<https://maas-alliance.eu/>

Push&Pull (2017) "16 Good Reasons for Parking Management", Push & Pull Consortium, <http://push-pull-parking.eu/index.php?id=15>