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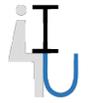
March 2022

4I4U PROJECT

CITIZEN, TEACHING, INDUSTRY · CITIES FOR FUTURE MOBILITY



**ABOUT
4I4U**



4I4U, Citizen, Teaching, Industry, Cities for Future Mobility

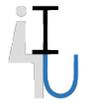
The **4I4U project** aims to engage the community of citizens made up of **15-23 aged students** on the topic of **mobility of the future** while empowering them to **become actors for change** who can participate on the development and the evolution of their city.

Being inspired by **12 hybrid seminars** held simultaneously in **Toulouse** and **Barcelona**, round-tables and brainstorming sessions will take place in order to understand different aspects of mobility and raise awareness on the subject.

Going **from ideation to action** by imagining and creating new use cases, objects and applications for future urban mobility will be created and mentored by city workers, industrialists and academics.



KEY OBJECTIVES



- 1** **Raise awareness of the context of urban mobility among teenagers and young adults** with the expertise of teachers and trainers, city workers and industrialists in the field of mobility.
- 2** Develop their capabilities to **become actors of the mobility of the future** with the creation of networks amongst students, cities and industry on this topic.
- 3** **Highlight the needs and desires** of this group of citizens.
- 4** **Create a replicable methodology** with specific and common activities proposed by Toulouse and Barcelona, and develop an environment to help students from ideation to action for future mobility.



Activity

Draw me the Automobile of the Future for Urban Mobility

A face-to-face and live streaming seminar with Jean-Luc Maté, automotive and new mobility services expert

Organizers

Campus des métiers de la Mobilité et du Transport Intelligent (MTI), Lycée Polyvalent Joseph Gallieni, Institut National des Sciences Appliquées de Toulouse and Institut Supérieur des Arts et du Design de Toulouse

Date and location

Institut Supérieur des Arts et du Design de Toulouse, media platform, 15th February 2022, 4 PM CET

1st
seminar

“ Petrol engine vehicles changed the modern world and accompanied the desires for freedom of nearly five generations on all continents. Today the global path-way to net-zero emissions by 2050 suddenly raises the question of its future as a means of individual transportation. We no longer speak of automobile but of mobility. From now on, it is information and communication technologies that are revolutionizing the way cars are used and shaping the contours of new urban vehicles. Connected, clean, highly automated, or even autonomous and shared are now the characteristics of all vehicles of the future. ”

Jean-Luc Maté. Senior Experienced Executive Vice President in Bendix Electronics, Siemens VDO and Continental Automotive. Co-founder of European Road Transport & Advisory Council ERTRAC in Eco driving. He currently manages a consulting agency providing support in the development of the electric, connected, and autonomous vehicles for the future of urban mobility. He is also board member of Automotive Engineering Society, an honorary chairman of Automotive Occitanie cluster.

Target audience

High school, design and engineering school students

Expected outcomes

To foresee gathering information regarding automobile trends, new mobility services, and urban expectations and constraints to make students thinking about what the future's cities could look like

Seminar registration: <https://bit.ly/3p6J8de>



Coordinator



Partners



Associated partners



Activity

Project Design from the perspective of city services for citizens

A face-to-face and live streaming seminar with Angel López, Director of Electric Mobility Strategies at Barcelona City Council

Organizers

Universitat Politècnica de Catalunya - Barcelona Tech (UPC) and Barcelona City Council

Date and location

Universitat Politècnica de Catalunya - Barcelona Tech, Campus Nord, Classroom A2-201, 3rd March 2022, 5 PM CET

Seminar registration: <https://bit.ly/3hBHaOg>

2nd
seminar

“ Using the “case study” methodology, different ways to approach the design of a product or a service from the perspective of City and Citizens will be presented to the students. Real cases of (un)successful projects, applauded or rejected by citizens, to be analysed and learn the creation and design processes that drove them. Some cases will be studied, according to the interests of the students, e.g., BCN Eixample Master Plan from Ildefons Cerdà; Superblocks Barcelona from Agencia Ecologia Urbana; Covid19 projects by Urban Department Barcelona; Barcelona Tramway. Infrastructures and Mobility Department Barcelona; Area Verda. Mobility Department Barcelona; Logistics, Last Mille MicroHubs. Mobility Department Barcelona; Pacte per la Mobilitat; T-Mobilitat. Autoritat del Transport Metropolità; Taxis, Uber, Cabify, Digitalization of traditional services. Institut Metropolità del Taxi. ”

Angel López. Director of Electric Mobility Strategies at Barcelona City Council. In the past, he worked in major projects for the city councils of Madrid and Barcelona, the Catalanian regional government, the Spanish Directorate of Traffic (DGT) and the Spanish Ministry of Public Works, and had management responsibilities in private high-tech companies. His areas of expertise includes traffic management, road safety and public transport systems. He holds a MSc and a PhD in Civil Engineering from Polytechnic University of Catalonia.

Target audience

Information and Telecommunication Technologies, Automotive Engineering and High School students

Methodology and participatory process

Interactive seminar to show and immerse students in the real situation of engineers in the Design, Resolution and Management of Services for Citizens, using examples and demonstrative cases

Expected outcomes

To understand the specific characteristics of the services design projects for Citizens and have an orientation to detect the challenges, learn how to pose the problems and be able to apply the specific knowledge in engineering to services with a transcendent and social impact



Coordinator



Partners



Associated partners



Activity

Non-Financial Report of ICT projects

A face-to-face and live streaming seminar with Eva Vidal, Associate professor in the Electronic Engineering Department at UPC

Organizers

Universitat Politècnica de Catalunya - Barcelona Tech (UPC)

Date and location

Universitat Politècnica de Catalunya - Barcelona Tech, Campus Nord, Classroom A4-103, 8th March 2022, 2 PM CET

Seminar registration: <https://bit.ly/3M148XG>

“ Information and communications technology (ICT) is a key component of many technical urban mobility projects. During the 2 hour event the sustainability assessment of ICT technologies will be discussed. Starting with the legal framework referring to the non-financial report of big companies and with the review of Sustainable Development Goals and specially Target 12.6, the principal environmental and social impacts of projects related with ICT will be unravelled. Problems related with raw materials, the huge energy needed to fabricate electronics circuits, the materiality of the “cloud”, the energy needed to send information from server to user, between others, will be presented and confronted with the current knowledge of the attendees. Ethics considerations will also be discussed. And a simple guideline to make the non-financial report of any ICT project will be presented. ”

Eva Vidal. Delegate of the Rector attached to the vice-rector for Social Responsibility and Equality. Dr. Eva Vidal is an associate professor in the Electronic Engineering Department at the UPC. She is a member of the research group in education in engineering and science, BCN-SEER, working on concepts of technoethics and environmental and social impacts. She is the author of numerous publications related to sustainable human development in the field of ICT and in analogue and radiofrequency electronics.

Target audience

University and High School students

Methodology and participatory process

Presentation and attendees active participation through the audience engagement platform Mentimeter

Expected outcomes

To know the principal laws, norms and examples related to the Non-financial report of ICT companies, learn to recognize the principal environmental and social impacts of any ICT project, and learn how to make a simple non-financial report of any ICT project.



Coordinator



Partners



Associated partners



3rd
seminar



Activity

AUTOFICTION, a biography of the automobile object

A face-to-face and live streaming seminar with the designer Olivier Peyricot

Organizers

Campus des métiers de la Mobilité et du Transport Intelligent (MTI), Lycée Polyvalent Joseph Gallieni, Institut National des Sciences Appliquées de Toulouse and Institut Supérieur des Arts et du Design de Toulouse

Date and location

Institut Supérieur des Arts et du Design de Toulouse, media platform, 9th March 2022, 6 PM CET

“ The automobile is an extraordinary object that imposes its delirious infrastructure on the world, shaping the landscape and the atmosphere as well as our imagination. It can be found in the blind spot of our daily lives. Omnipotent, it is the central component of a globally and politically ramified mobility system: more than 1.2 billion cars are on the road today. A private object for individual use that colonizes public space, the automobile is not only an assembly of thousands of parts, it also carries with it its legends, its own world. Autofiction proposes a subjective, embarrassing and often taboo biography of this object which participates more than ever in the fabrication of systemic, massive, encompassing artificial environments. How to branch out under these conditions? This biography of the automobile object illustrates the multiple ties that must sometimes be broken in order to be able to completely rethink mobility tomorrow. ”

Olivier Peyricot. Designer, Director of Research, Experiments and editions at Cité du design of Saint-Etienne since 2014, and Scientific Director of the 2017 and 2021 Saint-Etienne International Design Biennial. Co-founder of IDSlane design agency (1996-2010), design and urban planning consultant (2008-2014), professor at ENSAD (2008-2014). Represented by Galerie Mercier & Associés (Paris) for his most experimental work, and present in the collections of MoMA, FNAC, VIA and Centre Pompidou.

Target audience

High school, design and engineering school students

Expected outcomes

To provide the necessary information on the interaction between user, design and city, as well as on the symbolic representation of the car over time

Seminar registration: <https://bit.ly/358rU8x>

4th
seminar



Coordinator



Partners



Associated partners



Activity

The role of Technology Innovation in Urban Mobility

A face-to-face and live streaming seminar with Jordi Ortuño, Innovation Projects Coordinator at IMI. Barcelona City Council

Organizers

Universitat Politècnica de Catalunya - Barcelona Tech (UPC) and Municipal Institute of Information Technology, Barcelona City Council

Date and location

Universitat Politècnica de Catalunya - Barcelona Tech, Campus Nord, Classroom A2-201, 17th March 2022, 5 PM CET

“ A seminar to encourage students of Information and Telecommunication Technologies to understand how to face advanced challenges in engineering projects applied to Innovation Technologies in Cities. An approach to urban mobility challenges from a technological perspective considering the following three aspects: Introducing Technology Innovation in cities; Data, the tip of the iceberg, and Interoperability, a key component for seamless digital services from an experience perspective. ”

Jordi Ortuño. Senior bachelor's in Economics at the University of Barcelona (UB). His professional career began in the private sector where he held several functions in IT sector and consultancy. Since January 2009 holds different positions in Barcelona City Council, where he has been ICT Mobility Responsible and currently serves as an Innovation Projects Coordinator at the Innovation Directorate of Municipal Institute of Information Technology (IMI) of Barcelona City Council. Among other positions, he is Commissioner for the development of smart technologies of the Official College of Computer Engineering of Catalonia (COEINF).

Seminar registration: <https://bit.ly/3KAy6We>

Target audience

Information and Telecommunication Technologies, Automotive Engineering and High School students

Methodology and participatory process

Interactive seminar to show and immerse students in the real situation of engineers through the Conceptualization, Development and Implementation of Innovative Technological solutions for Urban Mobility having in mind its benefit but also its impact in cities using examples and demonstrative cases

Expected outcomes

To have a better understanding of the role that Technology Innovation plays in Urban Mobility challenges understanding it as a driver/tool but also as a key component in the process as whole

5th
seminar



Coordinator



Partners



Associated partners



Activity

Challenges for sustainable urban logistics

A face-to-face and live streaming seminar with François de Bertier, transport and logistics expert, Cluster Trans TEN

Organizers

Campus des métiers de la Mobilité et du Transport Intelligent (MTI), Lycée Polyvalent Joseph Gallieni, Institut National des Sciences Appliquées de Toulouse and Institut Supérieur des Arts et du Design de Toulouse

Date and location

Lycée Polyvalent Joseph Gallieni, multimedia space, 24th March 2022, 4.30 PM CET

“ The energy mutation is the main challenge of our today world. Our full reliance on fossil energy is threatening our future and health because of the climate change and pollution. As logistics experts, we are facing the situation and rethinking our paradigm to properly respond to urban mobility for both goods and passengers while taking into account the above threats. To achieve this, we must overcome our fear of change and take the lead for the implementation of sustainable solutions. The seminar aims to explain how urban logistics can be involved into this process of mutation and what support we can expect from cities. ”

François de Bertier. Former student of the Ecole Supérieure de Commerce de Toulouse (now Toulouse Business School and where he became a teacher). He has a dual experience as Small and Medium Sized Enterprises manager in the services and transport sector: 18 years in the photographic industry until a Kodak takeover bid, and 26 years in transport and logistics in short circuit in Occitania. Founder of the Cluster Trans TEN in 2018, he is very involved in regional energy change.

Target audience

High school and engineering school students

Expected outcomes

To provide the necessary information on transport and logistics sector, its trends and challenges to address sustainable urban mobility. What are the answers in terms of urban services and infrastructures, energy transition, and constraints? Make students aware that the sector is a major stakeholder in urban infrastructure design for mobility.

Seminar registration: <https://bit.ly/3KVTCVn>



Coordinator



Partners



Associated partners



6th
seminar



Activity

Smart mobility. Urban Mobility challenges

A face-to-face and live streaming seminar with Angel López, Director of Electric Mobility Strategies at Barcelona City Council

Organizers

Universitat Politècnica de Catalunya - Barcelona Tech (UPC) and Barcelona City Council

Date and location

Universitat Politècnica de Catalunya - Barcelona Tech, Campus Nord, Classroom A2-201, 31th March 2022, 5 PM CET

“ Six cases of current and new challenging projects in urban mobility services will be presented and analysed, addressed from the perspective of Smart Mobility technologies and solutions. All of them, real cases that have been implemented around the world with different degree of success: Electrification; Sharing Vehicles; Mobility as a Service; Micro Mobility: scooters; Connected and Autonomous driving vehicles, and Digitalization of Mobility Information. ”

Angel López. Director of Electric Mobility Strategies at Barcelona City Council. In the past, he worked in major projects for the city councils of Madrid and Barcelona, the Catalanian regional government, the Spanish Directorate of Traffic (DGT) and the Spanish Ministry of Public Works, and had management responsibilities in private high-tech companies. His areas of expertise includes traffic management, road safety and public transport systems. He holds a MSc and a PhD in Civil Engineering from Polytechnic University of Catalonia.

Target audience

Information and Telecommunication Technologies, Automotive Engineering and High School students

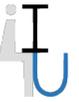
Methodology and participatory process

Interactive seminar to show and immerse students in the real situation of engineers in the Design, Resolution and Management of Services for Citizens, using examples and demonstrative cases

Expected outcomes

To have a clear understanding of processes to create valuable and successful mobility projects

Seminar registration: <https://bit.ly/3ulkQxZ>



Coordinator



Partners



Associated partners



7th
seminar



Activity

When smart mobility means smart infrastructures

A face-to-face and live streaming seminar with Pierre-Emmanuel Maire, Director New Business Models at Continental Automotive

Organizers

Campus des métiers de la Mobilité et du Transport Intelligent (MTI), Lycée Polyvalent Joseph Gallieni

Date and location

Lycée Polyvalent Joseph Gallieni, multimedia space, 14th April 2022, 5 PM CET

“ During a 1-hour conference two technologies which transform city infrastructures into smart infrastructure will be presented. It will also explained how cities are implementing them. The first technology is the Vantage Fusion detection system. The solution is continuously monitoring, visualizing and optimizing mobility to ensure that roads are safe, travel is efficient, and communities thrive. It applies cloud computing, artificial intelligence, advanced sensors, advisory services, and services to achieve safe, efficient and sustainable mobility. The second technology is making car moving autonomously within parking. The prerequisite for using the solution is an additional vehicle function (Central Motion Control), which converts the trajectory specified by the intelligent infrastructure into the control of the corresponding actuators. To be implemented these technologies need smart city infrastructures demanding updates in sensing, connectivity, and communication capabilities. Then how Continental and cities are working together to make these happening? ”

Pierre-Emmanuel Maire. Director New Business Models at Continental Automotive in Toulouse. Graduated in computer engineering from Ostfalia University of Applied Sciences in Northern Germany. He has spent 27 year career in the automotive industry. Since 1998 he has been working for Continental Automotive. Currently he is focussing on developing new business models for Smart Infrastructure Systems.

Target audience

High school, design and engineering school students

Expected outcomes

To provide concrete examples of new technologies for smart mobility and better understanding in urban mobility solutions process from a technology perspective to their implementation within a city.

Seminar registration: <https://bit.ly/387Mwz3>



Coordinator



Partners



Associated partners



Activity

Female Mobility Patterns

A face-to-face and live streaming seminar with Imma Ribas, tenured professor at the Department of Management of the UPC

Organizers

Universitat Politècnica de Catalunya - Barcelona Tech (UPC)

Date and location

Universitat Politècnica de Catalunya - Barcelona Tech, Campus Nord, Classroom A4-103, 28th April 2022, 5 PM CET

“ By the 1970s, some transportation planners were beginning to recognize the mobility needs of population subgroups. From then on, several researchers from a variety of fields have shown the differences in mobility patterns between women and men. Men primarily commute to and from work. Women’s mobility is mostly related to the “mobility of care”. We will see that in Africa walking is the dominant mode of transportation in cities. In Asia female mobility is influenced by patriarchal social practices. In Latin America men have a dominant role and actions are taken to avoid violence and sexual harassment. In Europe gender differences exist, as for example, women use more public transportation and walking than men. These facts will be supported by figures and some conclusions that show the reality of these differences. ”

Imma Ribas. Tenured professor at the Department of Management of the Universitat Politècnica de Catalunya - Barcelona Tech (UPC). She is an Industrial Engineer from the UPC and a PhD from the Polytechnic University of Valencia (UPV). She teaches at the Barcelona School of Industrial Engineering (ETSEIB). Her research activity focuses on the development and application of quantitative techniques for the resolution of problems of design, planning and programming of production and logistics systems, and in the study of new business models for mobility and logistics last mile.

Target audience

University and High School students

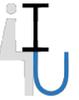
Methodology and participatory process

Presentation and attendees interactive participation

Expected outcomes

To know the principal characteristics of female mobility patterns and learn to recognize the main differences of mobility between men and women

Seminar registration: <https://bit.ly/3wus70J>



Coordinator



Partners



Associated partners



9th
seminar



Activity

5G technology and smart mobility

A face-to-face and live streaming seminar with experts of Orange in 5G technology

Organizers

Institut National des Sciences Appliquées de Toulouse

Date and location

Institut Supérieur des Arts et du Design de Toulouse, media platform, 12th May 2022, 4 PM CET

“ 5G technology is the fifth generation of mobile networks, which addresses the digital service growth. Technology inner qualities will generalize numerous services in various domains: smart city, Industry 4.0, connected cars, and multimedia services. 5G network deployment will improve outdoor data exchange (speed, latency, availability) while avoiding 4G network congestion in crowded areas (ski and seaside resorts, downtowns). The seminar first describes the inner 5G features, today and in the future, and their combination: speed, latency, connection density, edge computing, slicing, vicinity data storage or the increasing association with artificial intelligence and the Internet of things. The seminar also details the application of 5G to the automotive domain. The latter has a fast evolution: connected vehicles appears on the market and progressively aggregates autonomous features. Orange participated to cooperative research projects named 5GCar and 5GCroCO (Fifth Generation Cross-Border Control), which aimed to define a 5G V2X (Vehicle-to-everything) communication infrastructure and to experiment it on various road types, i.e. a highway corridor between France, Germany and Luxembourg.

Several cases were evaluated: lane merge coordination, data exchange between vehicles, vulnerable road users' protection, teleoperated driving, and high definition map generation. ”

Bruno Pouget. Toulouse 5GLab and innovative partnerships manager at Orange.

Frederic Gardes. Research and Software Engineer at Orange.

Stéphane Vialle. Head of Orange Innovation Factory.

André Bottaro. Innovation Unit manager at Orange.

Target audience

High school and engineering school students

Seminar registration: <https://bit.ly/3u72X5W>



Coordinator



Partners



Associated partners



10th
seminar



Activity

Mobility 4.0 and cognitive ergonomics: thinking about the human in an autonomous and connected environment

A face-to-face and live streaming seminar with **Céline Lemerrier, Professor, CLLE laboratory, University Toulouse Jean-Jaurès**

Organizers

Institut National des Sciences Appliquées de Toulouse

Date and location

Institut Supérieur des Arts et du Design de Toulouse, media platform, 16th May 2022, 4 PM CET

“ The 21st century opens the 4th industrial revolution, the digital one. Artificial intelligence (AI) is being introduced into all human activities. Today under the unique and exclusive supervision of humans, tomorrow the driving activity will be shared with, and then under the unique supervision of an AI. This automation of vehicles will also be accompanied by profound changes in road space, which will itself become autonomous and connected. Here, two views of technological development confront each other. The first one, centered on technology, considers that humans must adapt to the changes in their daily mobility caused by new and innovative technological solutions. In this perspective, intelligence is shared between interconnected AI agents. A not equipped human being (telephone, connected watch), is out of the decision loop. AI “does without” human intelligence, implying at least a lack of understanding of the usefulness and usability of the technologies developed, and at worst their rejection. The second, human-centered approach, considers that intelligent agents must adapt to the needs and constraints of end users. This time, intelligence is shared between humans and digital agents, with humans taking part in the decision. AI “works with” human intelligence, involving technological solutions developed to meet human needs and constraints.

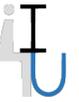
Cognitive and ergonomic psychology, adopting an experimental approach to human-intelligent system interaction, questions the usefulness, usability and acceptability of intelligent mobility systems on the one hand, and advocates the development of interfaces adapted to humans on the other. Using examples from the work of the CLLE laboratory, we will interrogate the challenges that need to be addressed to allow humans to find their place in mobility 4.0. ”

Céline Lemerrier. University Professor in cognitive and ergonomic psychology at the University Toulouse Jean-Jaurès. Since 2000, she has been conducting research at the Cognition Languages Language Ergonomie laboratory on the theme of attention and its defects. Since 2002, she has led and participated as a partner in public and private research programs. Since 2019, she is responsible for the HMI Acceptability action of the PIA3 Vilagil research program (2020-2030) focused on the place of the human in the urban/road space of tomorrow. She is a member of the “Aeronautics, space and new mobilities” scientific animation pole of the Toulouse Federal University.

Target audience

High school, design and engineering school students

Seminar registration: <https://bit.ly/3N29yal>



Coordinator



Partners



Associated partners



11th
seminar



Activity

Urban Mobility and Pollution Citizen Maps. Young Population study in Barcelona

A face-to-face and live streaming introductory seminar on young mobility patterns in Barcelona, air quality exposure and carbon footprint

Organizers

Universitat Politècnica de Catalunya - Barcelona Tech (UPC) and CARNET

Date and location

Universitat Politècnica de Catalunya - Barcelona Tech, Campus Nord, Classroom A2-201, 19th May 2022, 5 PM CET

“ This final activity shows the 4I4U workshops and seminars outcomes achieved by Telecommunication Grade students and the results of the workshops carried out by secondary school students according to the project purpose. Thus, a preliminary solution implemented by UPC students from one side to measure pollution using Cloud-based Internet of Things (IoT)-enabled Air Quality Index (AQI) sensors embarked in e-micromobility vehicles and from the other side to visualize young population mobility patterns in Barcelona will be presented. A dashboard will show very granular pollution maps and carbon footprint estimates depending on the localisation and transportation mode. Incentives for the participation of 15-23 aged students to design and use the final solution, following citizen science principles, will also be part of this project. The final solution will be an app which will complement routing alternatives considering navigators such as Google maps or Waze that give information of minimum times given different transportation modes, or Lobelia that gives information of estimated levels of NO₂ and PM₁₀. ”

UPC. A public university that carries out research and provides higher education in the fields of engineering, architecture, sciences and technology.

CARNET. A knowledge hub for automotive science and technology focused on urban mobility.

Target audience

University and High School students

Methodology and participatory process

Presentation and attendees interactive participation

Expected outcomes

To be able to understand a preliminary solution provided by Telecom School UPC students, to know the participation of High School and UPC students, and might be able to test the first prototype and suggest possible improvements

Seminar registration: <https://bit.ly/3DccwEP>



Coordinator



Partners



Associated partners



12th
seminar





PARTNERS

4I4U is a project led by an European Consortium comprised of cities, teaching entities from high school to universities and clusters of companies in the field of mobility.

Partnership

Toulouse Métropole
 Barcelona City Council
 Municipal Institute of Information Technology (IMI) of Barcelona
 Universitat Politècnica de Catalunya - Barcelona Tech (UPC)
 CARNET. Future Mobility Research Hub - UPC Technology Center
 Lycée Polyvalent Joseph Gallieni (Campus des métiers de la Mobilité et du Transport Intelligent)

Associated partners

Institut National des Sciences Appliquées de Toulouse (INSA)
 Institut Supérieur des Arts et du Design de Toulouse (isdaT)
 Cluster TOTEM



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For more information about 4I4U project:
<https://engage.eiturbanmobility.eu/processes/Project4I4U?locale=en>

