

Master in City & Technology

Iaac

Institute for
advanced
architecture
of Catalonia

Barcelona

2019-2020

2019-2021

Iaac | Institute for
advanced
architecture
of Catalonia | BARCELONA

MASTER IN CITY & TECHNOLOGY

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WORLD OF CITIES

The next 40 years will see an unprecedented transformation in the global urban landscape. Between 2010 and 2050, the number of people living in cities will increase from 3.6 billion to 6.3 billion. Almost all of that growth will occur in developing countries. By 2025 there will be 37 megacities, each with a population greater than 10 million; 22 of those cities will be in Asia. The impacts of this new phase of urbanization on the global economy and on existing urban infrastructure and resources are already being felt. They are also spurring innovation in urban design, technologies, and services. Trillions of dollars will be spent on urban infrastructure in this period, presenting an immense opportunity for new transport management systems, smart grids, water monitoring systems, and energy efficient buildings. Information and communication technologies will

be deeply embedded in the fabric of both old and new cities and will change the way we think of city operations and how we live and work in these environments. Pike Research forecasts that the smart city technology market will grow from \$6.1 billion annually in 2012 to \$20.2 billion in 2020.^{1}

Metaphors based on futurism and utopianism have been used over the past two decades to describe the changing ICT-based city. The information era and the technological advances in communications allow specific planning and design ideas to get far away from futuristic approaches; concepts for the future agglomeration seek bottom-up processes where importance is not final aesthetics or final accountancies but rather than data and information that prepare the ground for the birth of an urban metabolism.

Urban environments have always stood in close relationship to the technologies of production, transport, and communications. By introducing ICT in spatial planning, it can be conceptualized as a new type of infrastructure providing for the transport of data or information. As technologies and their impacts on urban environment change, their relationship calls for new or adapted concepts, where the emerging pattern language of electronic connections tie in seamlessly with the language of physical connections.

The great challenge for a new urban metabolism lies in the capacity of the city to interact, to give and receive information among interconnected nodes of different scales and natures (infrastructure, buildings, public space elements, environmental conditions, flows). This anticipates fundamental concepts related to the importance of proposing

symbiotic systems of organization based on real time data that can be further articulated into responsive systems and metabolic organizations, where small decisions can have a large impact at an urban scale. Cities, then, perform as organisms and become behavioral.

The city is a connective network among human beings and their activities. This is what led to urbanization in the first place: individuals clustered so that communication distances would shrink to a minimum, while the number of connective nodes increased.

The future city model gives a leading role to information and communication technologies as well as to user empowerment in terms of interaction and innovation.

^{1} www.pikeresearch.com/research/smart-cities

MASTER IN CITY & TECHNOLOGY

The Master in City & Technology (MaCT) is a unique programme which is orientated towards training change makers that city administrations, governments, industries and communities need, in order to develop projects for the transformation of our cities in the era of big data.

Taking place in Barcelona, the capital of urbanism, this programme aims at redefining the practice of urban planning and management through big data analytics, computational design and citizen design science.

The MaCT prepares the new professionals and urban technologists for the creation of applied visions and solutions that have the power to fuel progress of urban environments for many generations. Using real case studies and in collaboration with the industry, city administrations and the European Agency, the programme works on cities through the creation of responsive, decentralized,

productive, digital and hyper-connected systems.

The MaCT has two different course lengths, 9 months (MaCT01) or 18 months (MaCT02). The Master in City and Technology is accredited by the Universidad Politècnica de Catalunya (UPC) with 75 ECTS and 120 ECTS respectively.

The MaCT is directed by Architect and Urban Technologist, Areti Markopoulou and the programme is led by internationally renowned academics, companies and industries. The programme aims to form industry, innovation and political leaders and thinkers which will guide our cities' welfare to a positive change. The rapid and exponential growth of technology and urbanisation has created a new problem for change-makers which is the uncertainty of technology applications.

The Master in City and Technology focuses this question by defining what will most affect the future needs of humanity, and by addressing the

question of the implementation of Information and Communication Technology (ICT) in different levels of the environment. This is developed thanks to a broad experience in urban research that has been carried out by IAAC over the last years in fields like the Internet of Things, Smart Buildings, Eco and Productive neighbourhoods, Internet of Energy, Digital Fabrication, Urban Gamification and Smart Cities. The programme aims to develop and exhibit new categories of projects, technologies and solutions that can be meaningfully extended systematically to the cities of the world, thus helping them to become more efficient and more consistent with today's exponential technological evolution. Every candidate will attend and develop technological seminars, city studies, cultural analysis, and pilot projects in order to have a global comprehension of the development of technologically-driven urban projects in real-life environments. The programme prepares candidates to be the key actors capable of

making connections between disciplines where none were possible or even considered before. Participants will be introduced to concepts such as the Internet of Cities, the Internet of Buildings and the Internet of People as well as learning all the new necessary processes and tools on how cities, surrounding regions and rural areas, can evolve towards sustainable, open and user-driven innovation eco-systems to boost future internet research and future internet-enabled services of public interest and citizen participation.

The candidates will be introduced to a large variety of technological tools and software that are imperative for the multi-scalar representation and understanding of the urban environment. From Big Data analytics, to coding, to 3D modelling, to data visualization, to simulations, to parametricism and Geographical Information Systems (GIS), students will be called to learn all of the necessary tools that will allow them to become effective and efficient project developers

MASTER IN CITY & TECHNOLOGY

as well as communicators.

Master candidates will be immersed in new ways of approaching Urban Design, Sustainability, Citizen-based services, Urban Infrastructures or Urban Mobility and Accessibility systems in order to learn how to develop and implement design and planning systems, based on real-time data and societal needs.

Projects will integrate the design of public space, buildings, service infrastructure, user interaction and technologies of information, developing technical, social and economic skills. This will allow MaCT students to develop the new urban planning processes, the new economy of city services and new models of city management that go beyond the potential of the Internet of Things.

The Master is oriented to engineers, architects,

designers, economists, sociologists, entrepreneurs, environmental scientists, urban planners and urban designers and graduates related with the transformation and management of cities and technologies of information. It aims to transform them into Social Innovators, Project Leaders and Chief Strategists who will foster the conversion of art, science, industry and politics towards the unfolding of new futures.

Once successfully finished the master, IAAC students will join the IAAC Alumni Community. This today is an active and dynamic network of visionary professionals distributed around the world, promoting principles and applications of Advanced Architecture, exploring new academic and research initiatives, leading award winning practices or working for internationally acclaimed firms and institutions.

There is a lack of professionals who are capable

of leading projects whose aim is to transform our cities from the 20th century production and distribution models, to the 21st century paradigms. The MaCT aims to create the future professionals who will be able to undertake such projects, like Urban Consultants and Managers, Managers of Real-Time and Open Data, Smart-City Planning Consultants, City Administration Digital Officers, Smart City Project Managers and Urban APP Developers.

Moreover, graduates of the MaCT will be equipped with the knowledge and tools to work in the Public Sector as Public Policy Administrators, Public Space Administrators, as well as Mobility Analysts and Urban Planners. In addition to the public sector, we aim to create strong professionals in the private sector such as Environmental Resources Managers, City Waste Managers, Clean Energy Optimization Managers, Urban Welfare Inspectors, Urban Studies Advisors and finally

Experts in Urban Data Visualization, Mobility Micro and Macro Simulations, GIS Software, Augmented and Virtual Reality.

In general, our goal is to create the future professionals who will be able to work in a series of departments, depending on their focus of expertise. Such sectors include Renewable Energy, Innovation, Infrastructure and Transportation, Smart-Technologies, Urban Consulting, Academics, City Management, Natural Resources, Public Spaces, Recycling and Public Waste, Data Visualization and of course Urban Planning.

One of the fundamental elements of the Master in City & Technology is the realisation of real case studies in real context. The MaCT collaborates every year with a different city bringing real solutions to situations that challenge the welfare of their inhabitants.

PROGRAM ORGANIZATION

The Master in City and Technology is an innovative educational format that offers interdisciplinary skills and understanding through the research on new categories of projects, technologies and solutions related with information and communication technologies in urban environments.

IAAC gives students the opportunity to create individual Studio agendas and develop Pilot Thesis Projects based on Citizen Innovation, New City Business Models, Urban Apps, Smart City Infrastructure, new Citizen-based Services, Open Data Development and more. In this way, IAAC puts together an experimental and learning environment for the training of professionals with both theoretical and practical responses to the increasing complexity of contemporary urban environments.

Students have the opportunity to be part of a highly international group, including faculty members, researchers and lecturers, in which they are encouraged to develop collective decision-making processes and materialize their project ideas.

The Master program represents an effort of facilitating the exchange of knowledge and the mutual learning of urban experiences among cities.

Barcelona is considered to be at the forefront for urban strategic planning, awarded the European Capital of Innovation ("iCapital" – 2014) prize "for introducing the use of new technologies to bring the city closer to citizens" by the European Commission.

MaCT foresees new city economy and new city management models for the creation of a decentralized, productive and social city of the future, forming graduates that will become the change makers in our future cities.

The Master develops seminars, studios and master classes along 5 main thematic: Theory, Strategic Planning, Technology, Urban Design, and Studios (Data, Strategy and Design).

The Master in City and Technology comprises the following elements:

- TC. THEORY
- SP. STRATEGIC PLANNING
- TE. TECHNOLOGY
- UD. URBAN DESIGN
- ST. DESIGN STUDIO
- LS. LECTURE SERIES



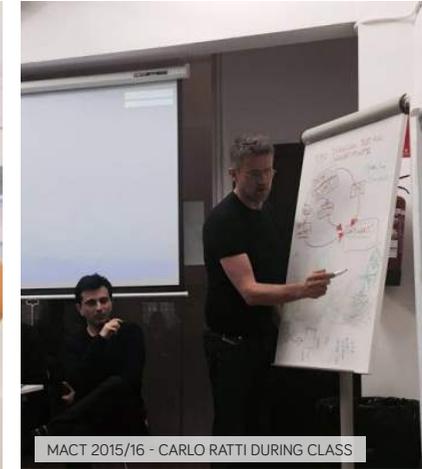
MACT 2017/18 - CARLES CASAMOR DURING A PRESENTATION



MACT 2016/17 - FAB CITY DESIGN STRATEGIES PRESENTATION



MACT TEAM 2017/18



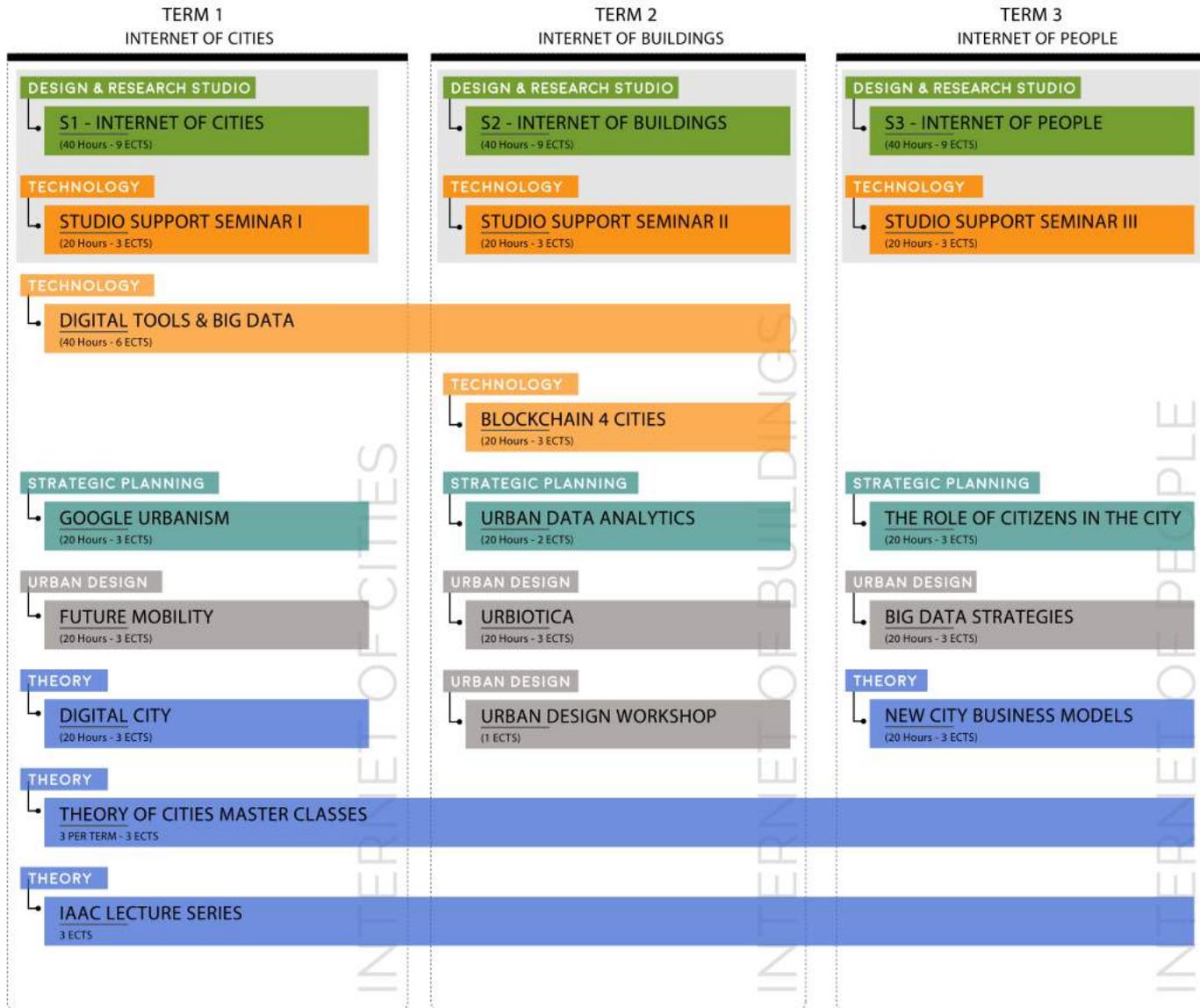
MACT 2015/16 - CARLO RATTI DURING CLASS



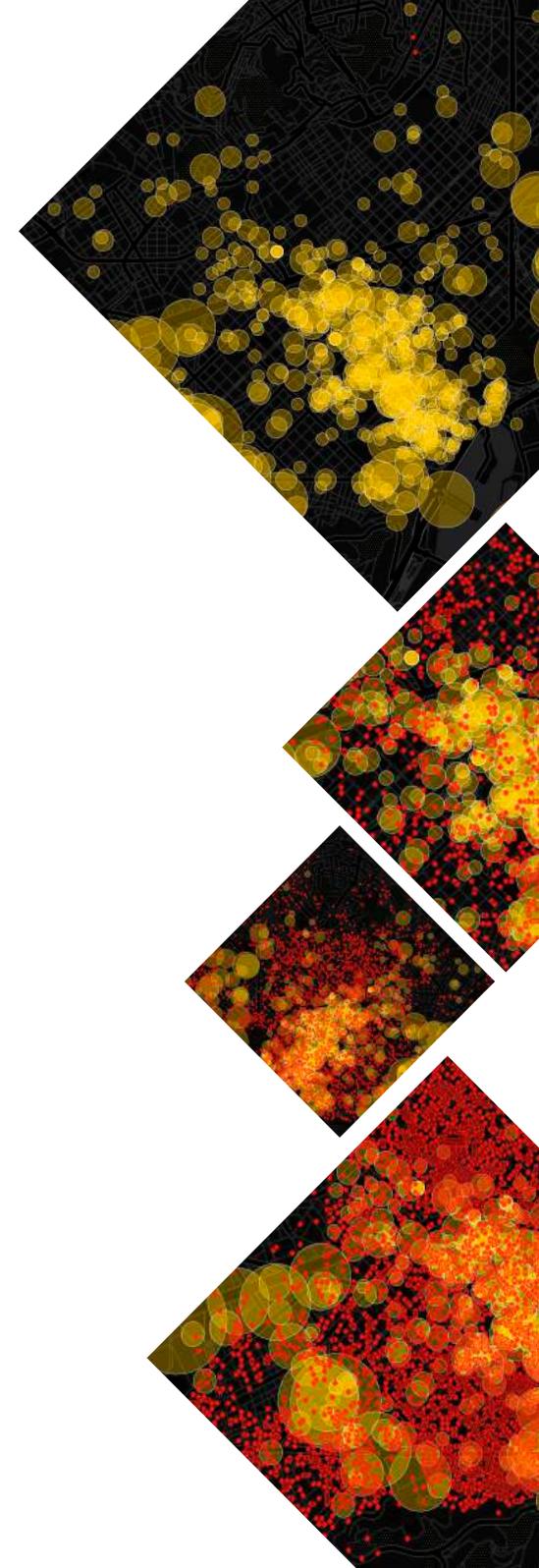
MACT 2016/17 - WINY MAAS GIVING A LECTURE

PROGRAM

OCTOBER-JUNE



The following program refers to the Academic Year 2018-2019.
The program for the Academic Year 2019-2020 may be subject to slight variations



MACT02

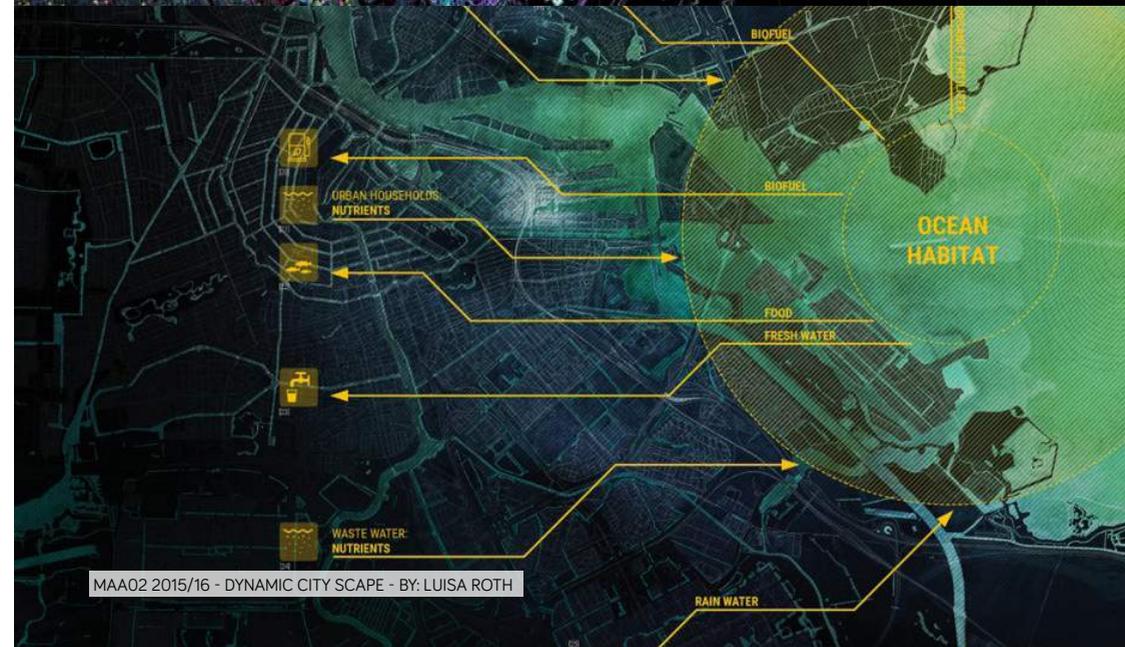
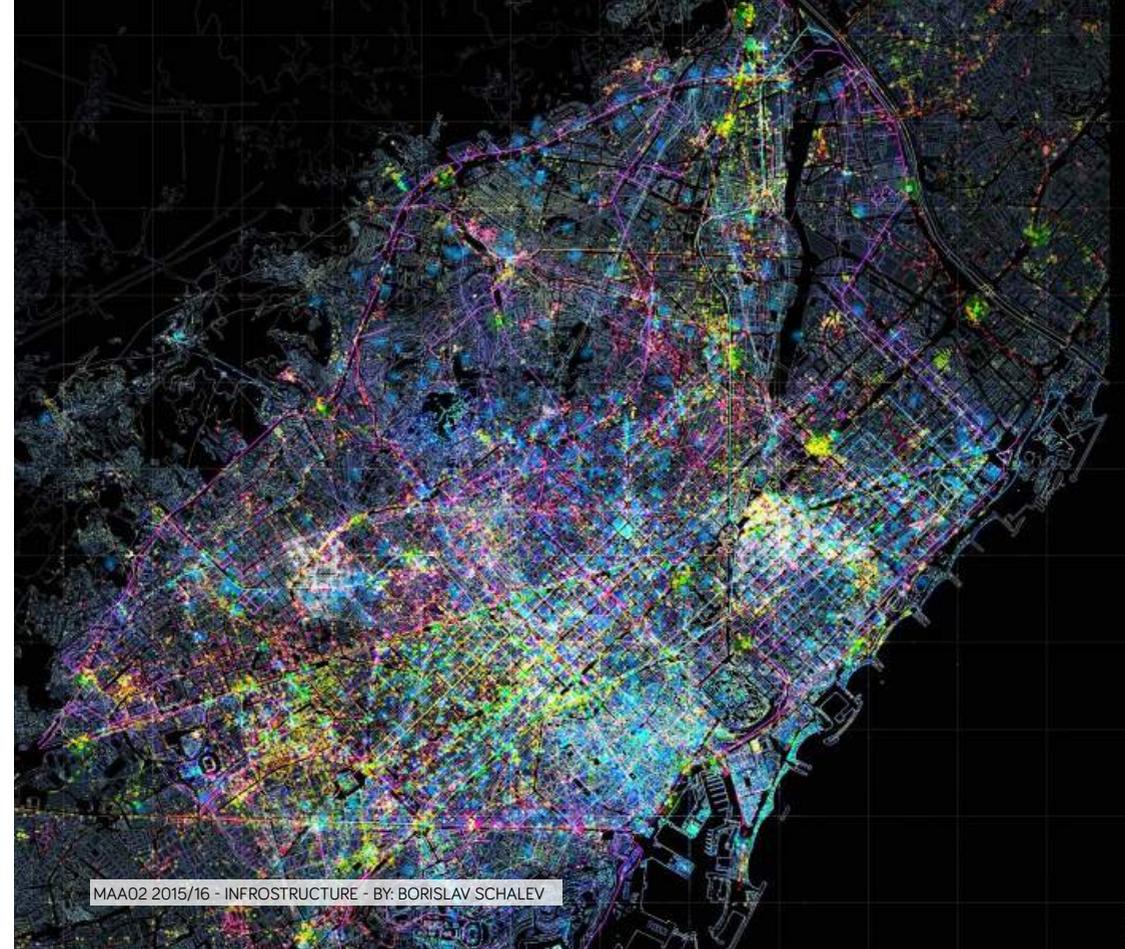
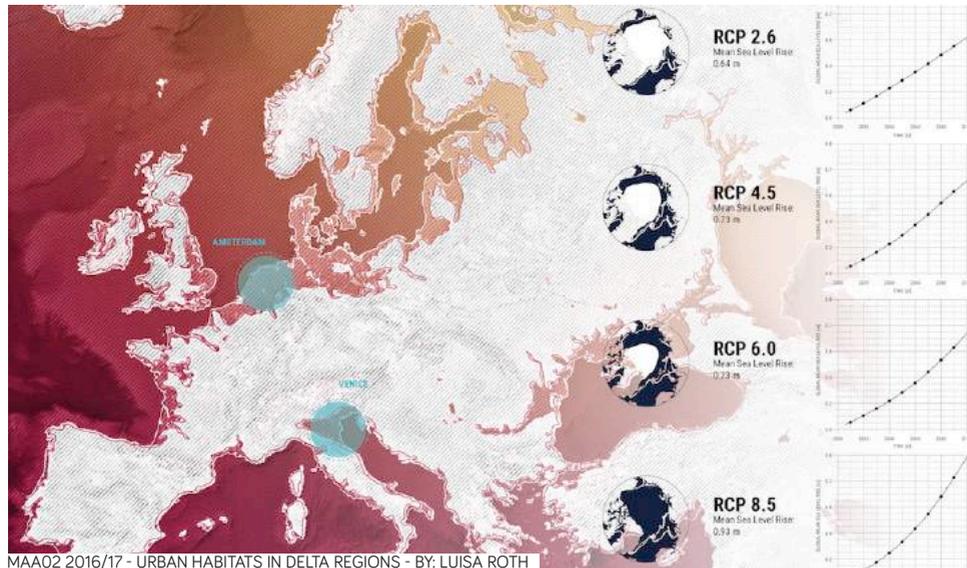
SECOND YEAR

INDIVIDUAL THESIS

MACT02: 120 ECTS, 2 YEARS

With the objective of furthering the research developed in the first year of the MaCT programme, IAAC launches its first edition of MaCT02. During the MaCT02 programme students will have the opportunity to work on an individual thesis focussed on the development of a pilot project, allowing them fully engage with both the theoretical and practical aspects of the project. The students will also follow associated seminars amplifying their knowledge of technologies associated to the urban context, allowing them to integrate these in the development of holistic projects, mixing technology with social, economic and environmental benefits.

The individual thesis, or pilot project, will allow the students to gain indepth knowledge on elaborating disruptive urban proposals that use technology to better citizens' quality of life. Additionally, through the development of the individual thesis based on a real case study, students will have the opportunity to collaborate with industrial and administrative representatives, among the collaborative entities of the MaCT programme, giving the students the necessary support and knowledge to develop solutions for the real world.



TUITION FEES

TUITION FOR STUDENTS ATTENDING MACT (75 ECTS: 1 YEAR)

Tuition for the year 2019/2020 is for Non-EU citizens 18,750€ and for EU citizens 15,000€. The selected candidates must send to the Institute a scanned proof of a down payment of 2,500€ to confirm participation, maximum 4 weeks after their acceptance. The remaining part of the tuition fee (Non-EU: 16,250€/ EU: 10,625€) may be paid either in one or two intallments, 60% (Non-EU: 9,750€/ EU: 6,375€), before September 1st, 2019 and 40% (Non-EU: 6,500€/EU: 4,274€) before December 1st, 2019.

TUITION FOR STUDENTS ATTENDING MACTO2 (120 ECTS: 2 YEARS)

MaCTO2 Tuition for the year 2019/2021 is 30.400€ for Non EU students and 24.350€ for EU students. The selected candidates must send a scanned proof of a down payment of 2,500€ to the Institute to confirm participation, maximum 4 weeks after their acceptance. The remaining part of the tuition fee may be paid either in one instalment; or divided it into 3 instalments: 35%, before September 1st, 2019; 30% before December 1st, 2019 and 35% before September 1st, 2020.

All payments of the selected program must be paid by bank transfer only to:

Bank: Santander
Agency: 6784
IBAN - ES55 0049 6784 3226 1615 5632
SWIFT - BSCHEMXX
Holder : Institut d'Arquitectura Avançada de Catalunya.
Address: Via Augusta, nº182 (Es 08021 Barcelona)

Note: Make sure that bank transferring SUBJECT is the applicant's name, and not the person who orders the transfer. Also make sure to select the SWITF instructions code "OUR" when ordering the bank transfer. This means that you have to pay the transfer charges.

MACT

STUDIOS AND SEMINARS

The following program refers to the Academic Year 2017-2018.
The program for the Academic Year 2018-2019 may suffer minor variations.

DESIGN RESEARCH STUDIO

TERM 1, 2 AND 3 - 3 DESIGN RESEARCH STUDIOS ARE DEVELOPED ALONG THE 3 TERMS.

FACULTY OF PAST AND CURRENT EDITIONS:

ARETI MARKOPOULOU (IAAC ACADEMIC DIRECTOR),
MATHILDE MARENGO (HEAD OF STUDIES),
VICENTE GUALLART (VALLDAURA PROJECT FOR SELF SUFFICIENCY),
MAR SANTAMARIA, PABLO MARTINEZ (300.000KM/S),
TOMAS DIEZ (FAB CITY RESEARCH LABORATORY DIRECTOR)

Human life is changing in a speed that never did before. New technologies are affecting the way we live, and how we interact with other humans and our physical space. How can we define the current city model? is the smart city enough? Do we really need a single model to define a city? How can our city adapt to the real-time needs and desires of its users?

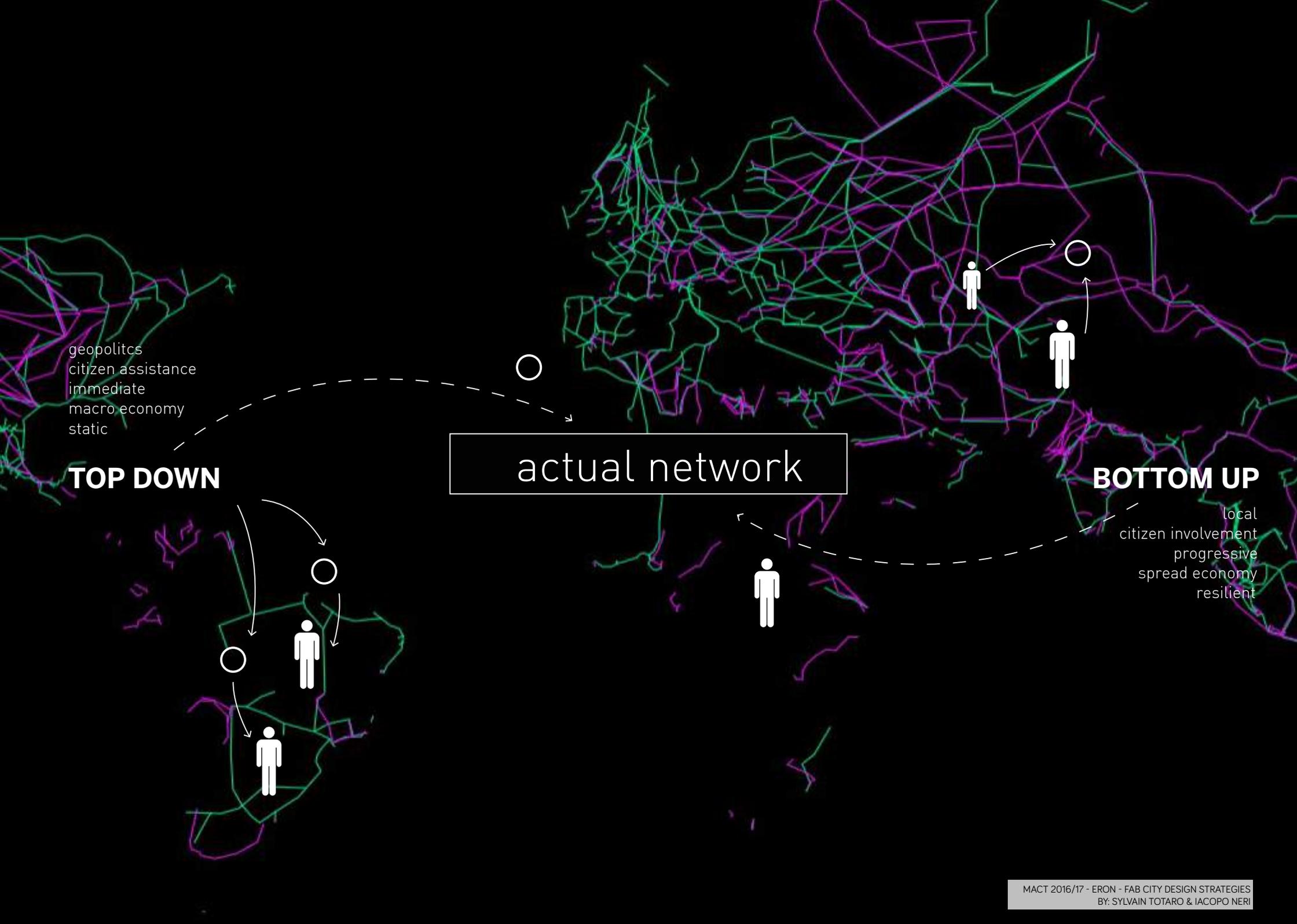
The design research studios of the Master in City & Technology are oriented to the development and applications of the general learnings of the Master towards real urban scale interventions and applications. Each year the Master works hand in hand with a city from around the world, along with its administration, proposing advanced proposals for areas in transformation. The Master projects therefore contribute to real-world solutions. The first edition of the MaCT worked in the BDD

Chawls area in the city of Mumbai, and the second edition of the Master is focussing on the city of Barcelona, now actuating the transformation of the SuperBlock Plan, initially proposed by Salvador Rueda and the Barcelona Ecology Agency, in the @22 Innovation District of the city. The third edition of the Master in City & Technology focused on China in an attempt to understand and plan for the continuous and fast paced urban growth of Shanghai.

ERON

POBLENOU





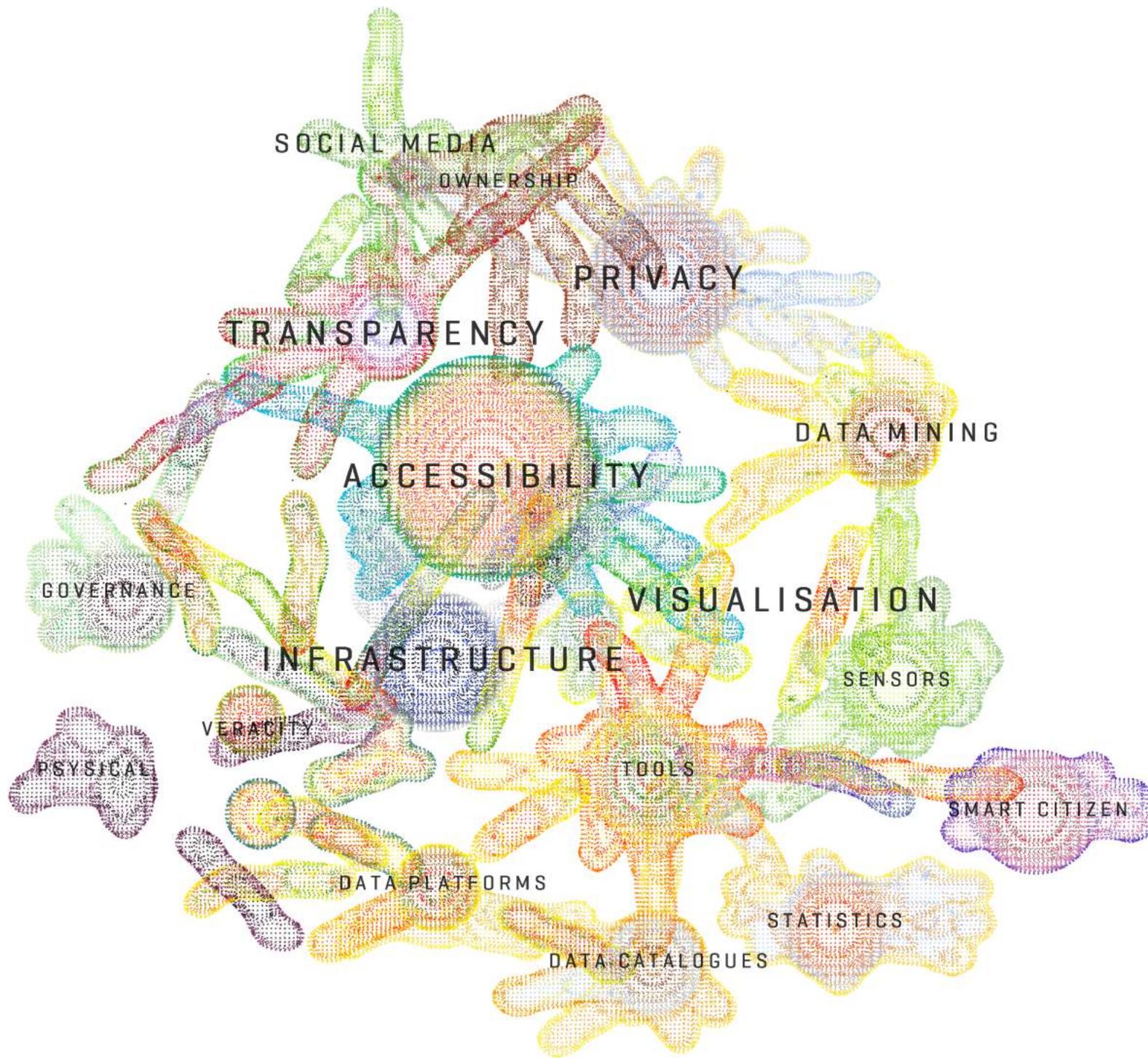
geopolitics
citizen assistance
immediate macro economy
static

TOP DOWN

actual network

BOTTOM UP

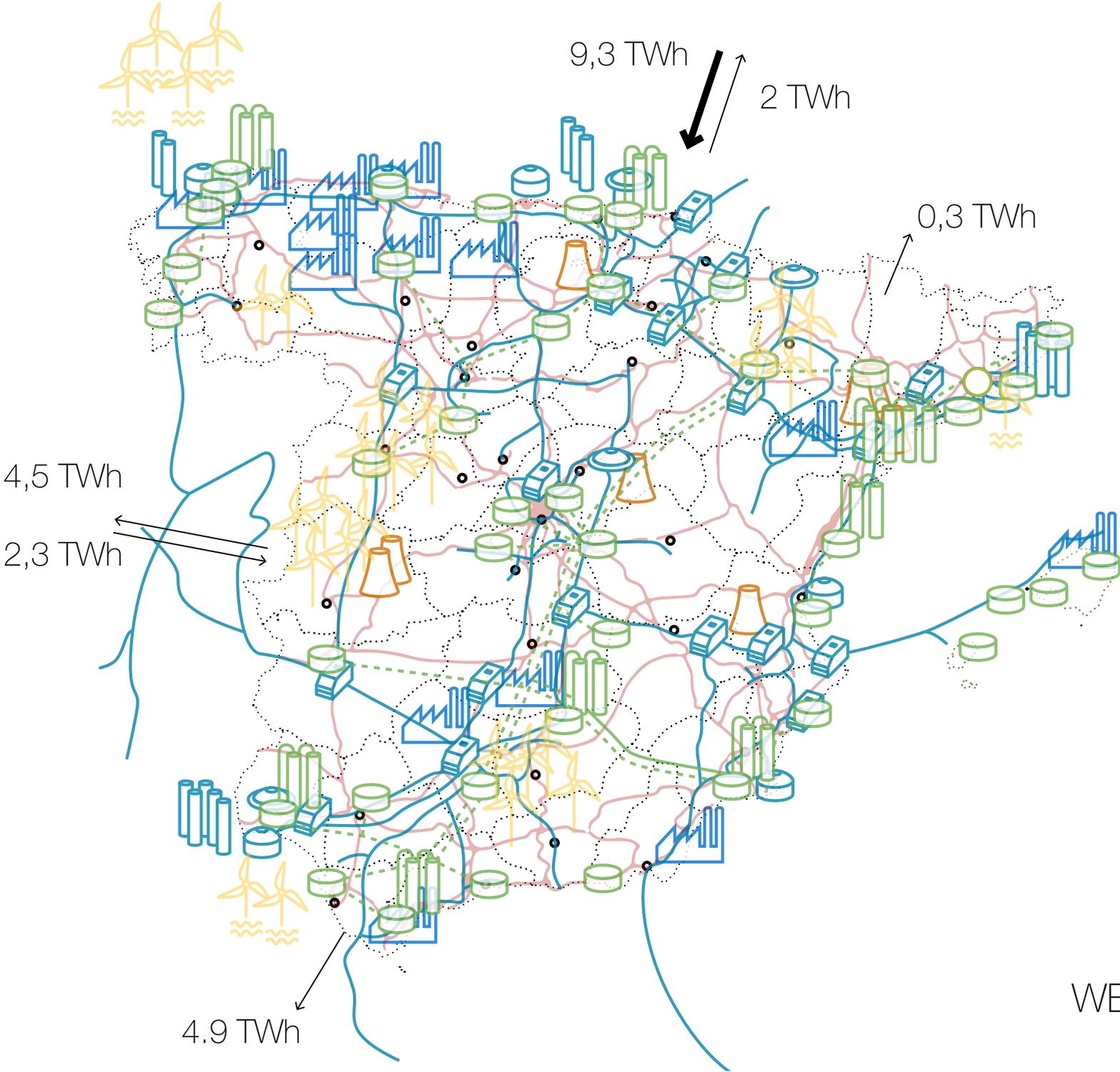
local citizen involvement
progressive spread economy
resilient



REPLICABILITY



**ENDESA
RED ELECTRICITAT
ENDESA
IBERDROLA
PETROS
CHL
GAS NATURAL**



**IMPORT
≈
EXPORT**
WE IMPORT AS MUCH AS
WE EXPORT

THEORY OF CITIES / MASTER CLASSES

TERM 1, 2 AND 3 - 2 TO 5 MASTER CLASSES EACH TERM.

MULTIDISCIPLINARY FACULTY.

FACULTY OF PAST AND CURRENT EDITIONS:

JOSE LUIS DE VICENTE (SÓNAR+D),
GONZALO DELACAMARA (IMDEA),
ALBERT CANIGUERAL (OUISHARE),
ENRIC SANABRE (GOTEO),
RICARD ESPELT + ISMAEL PENALÓPEZ (APPS4CITIZENS),
MIGUEL FERRER,
ANDREA RUANI (EATWITH),
MARA BALLESTRINI (IDEAS FOR CHANGE)

The Master in City & Technology foresees new city economies and new city management models for the creation of a decentralized, productive and social city of the future. This program is oriented towards training new change makers that the Administrations, Industries and Communities need.

The Theory of Cities course aims to create a platform where the students can have direct contact with people from diverse areas of expertise, furthering their formation and knowledge towards their development as multidisciplinary change makers.

The Course is developed in a transversal manner, throughout the entire Master program, in the form of Master Classes. Each Master Class counts on the intervention of a select expert from around the world, renowned in a particular field influential to the future of our cities, including economists,

sociologists, politicians, architects, urbanists, engineers, philosophers, ICT experts, HCI experts and more.

The past and current editions' interventions include:

Maita Fernandez - UN Habitat; Júlia López - C40 Regional Director, Europe; Salvador Rueda - Ecology Agency Barcelona; Manuel Gausa - Actar Arquitectura; Ignasi Fontanals - CEO Opticis; Antoni Vives - Late Vice Mayor of Barcelona; Ethel Baraona - dpr; Javier Nieto - Santa&Cole; Daniel Ibañez - GSD Harvard; and many more.

Students will be given a bibliography prepared by the Guest faculty prior to the ToC Master Class, used as the basis for the discussion on the Master class with the Guest faculty.

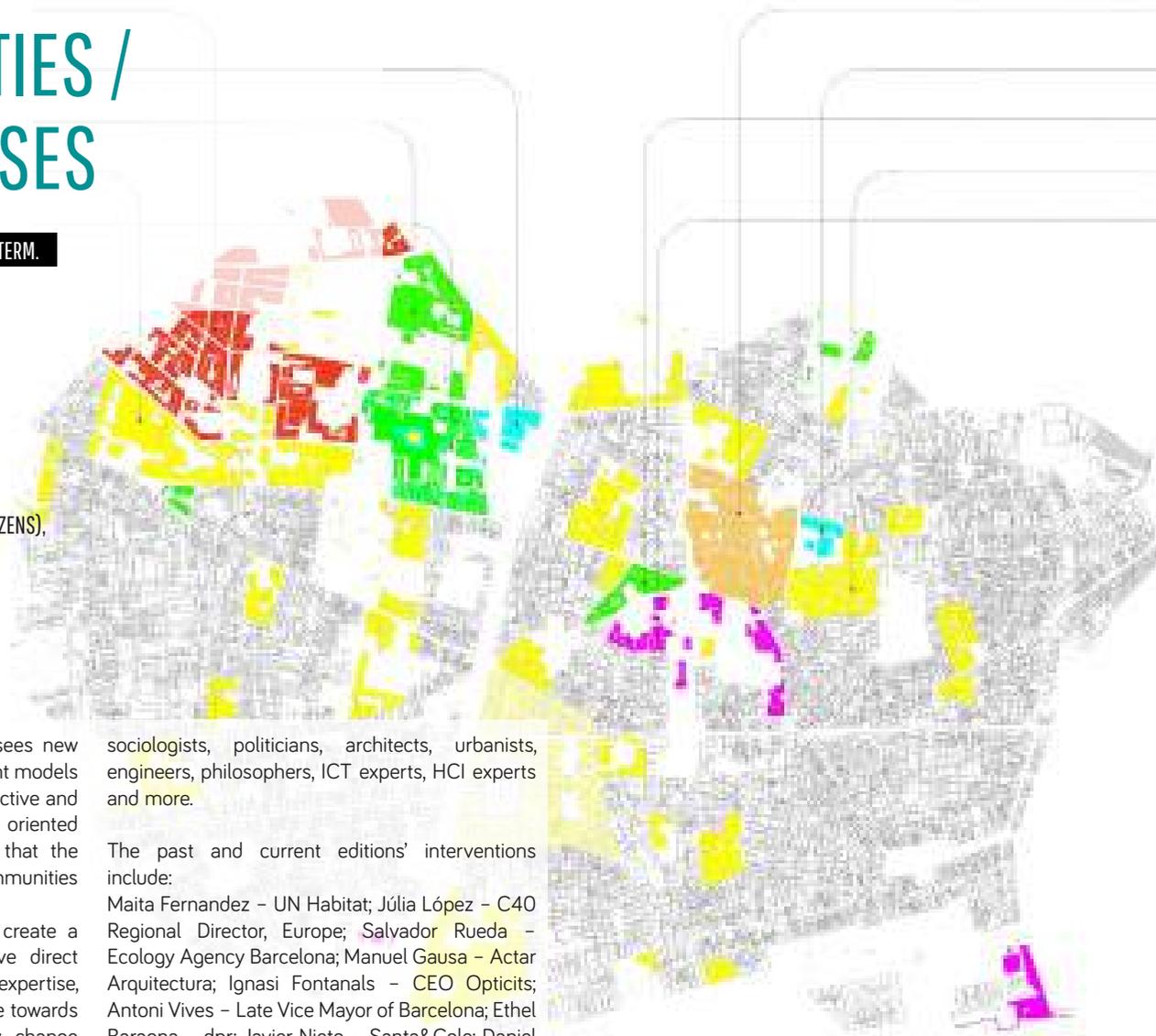
Medium Mortality Rate

Public Education Establishments

Welfare Establishments

Cathedrals/ Churches/ Churches

Habitats / Special Buildings



STRATEGIC PLANNING SEMINARS

TERM 1, 2 AND 3 /SEMINARS, DEVELOPED IN 1 TERM (20 CLASS HOURS) AND 2 TERM (40 CLASS HOURS) FORMAT, ARE DEVELOPED ALONG THE 3 TERMS.

FACULTY OF PAST AND CURRENT EDITIONS:

LUIS FALCON (INATLAS),
NICOLAY BOADJIEV (STRELKA UNIVERSITY),
ALEXANDER ERATH (FUTURE CITIES LABORATORY),
KATHRIN DI PAOLA & JULIUS STREIFENEDER (URBAN STANDARDS)

Through the study of the relationships between information technologies, citizens, economics, urbanism and the city, as well as the potentials that can arise from these relationships, the MaCT shapes the strategic planners and change makers of our urban futures.

With the rise of mobile communications, sensors and automation, and data modeling, Digital Technologies have an increasing role today in shaping the dynamics of the contemporary city. The importance of the relationship between information technologies and urbanism throughout the last 60 years, and the different visions and historical traditions that have produced the contemporary discourses of the Digital City, the Smart City or the Internet of Things, among other concepts, are undeniably important when developing strategic visions for the future of our cities. However, this role is not driven exclusively by technological factors.

How can technologically advanced and responsive cities create a fertile space for new business models and innovation, mostly around the so-called 'sharing

economy?

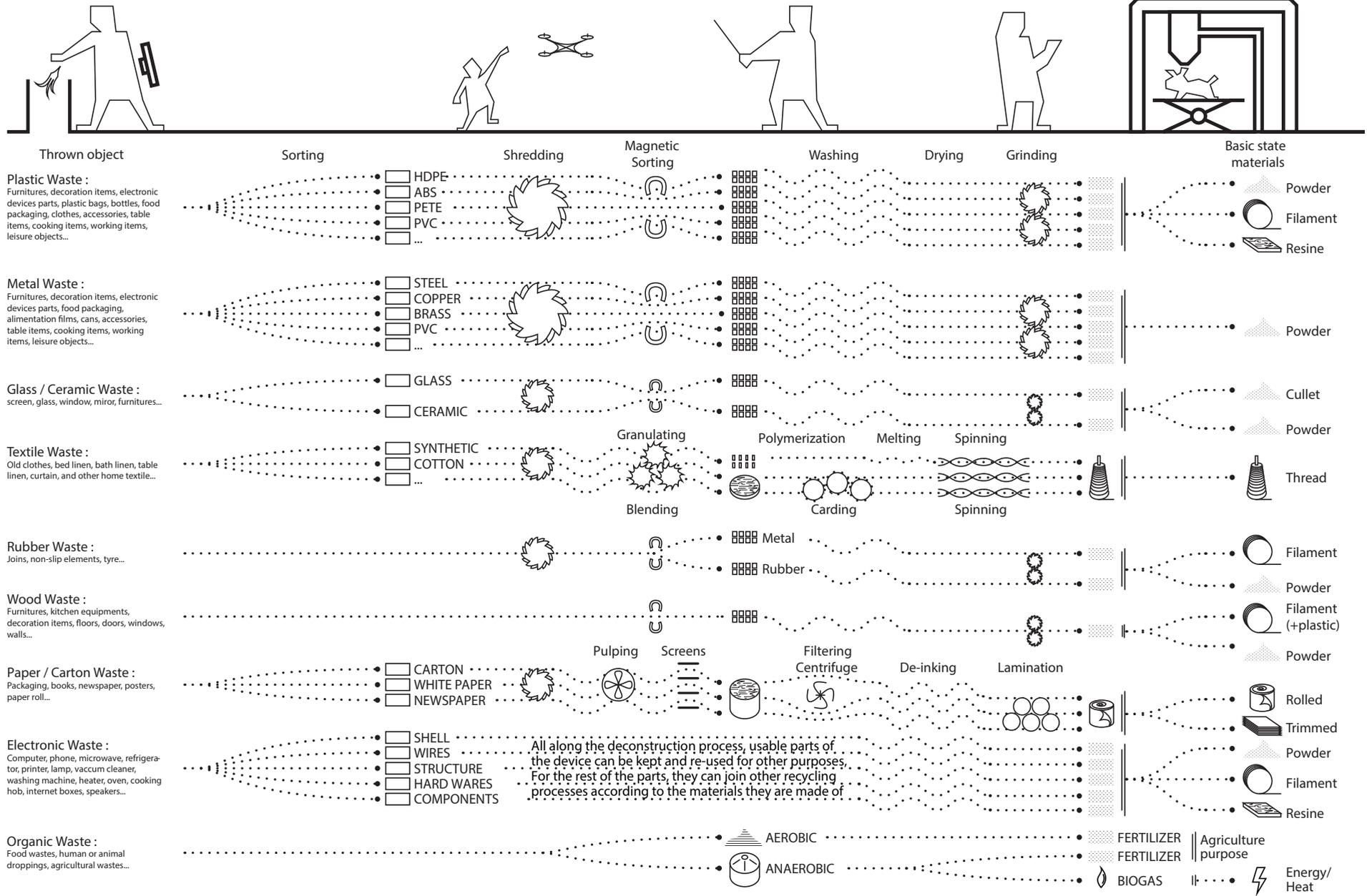
Robust decision-making and long-term planning require factoring in multiple scales (spatial and temporal). Moreover, increasing challenges in spatial development and urban design demand new approaches that can deal with complex trade-offs and synergies throughout those multiple scales.

Beyond this, citizens are increasingly harnessing the potential of digital technologies to actively participate in urban matters, share efforts, resources and skills, and taking ownership of their contexts possibly effecting social, economic and/or political change. In some cases, citizen engagement strategies have been instigated by city councils with the aim to involve people in decision-making regarding civic and urban planning issues, or as part of a "technology push" aimed to support companies that create and sell urban ICTs. An approach to "Cities for citizens" entails putting citizens at the heart of the design process, with the understanding that diversity and power struggles are key to any city's identity.

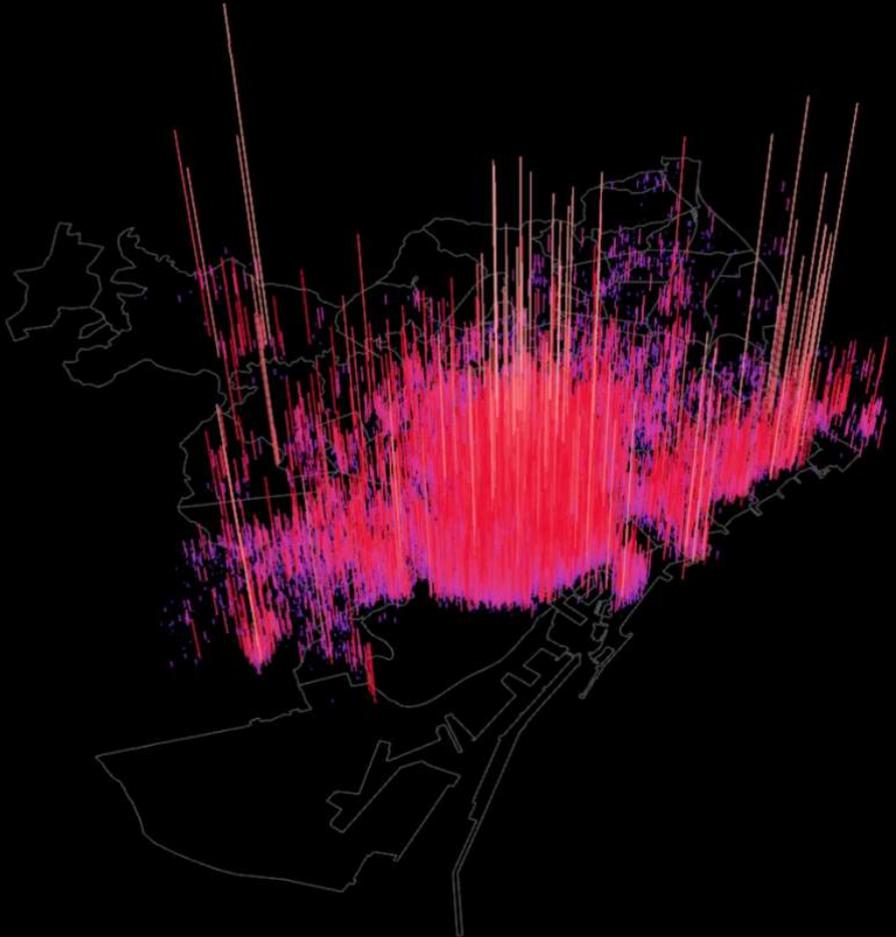
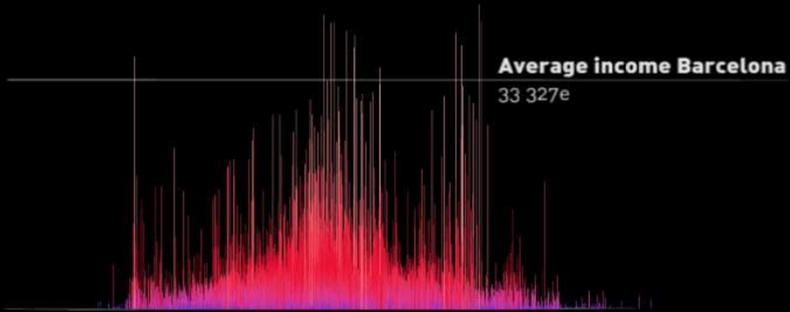
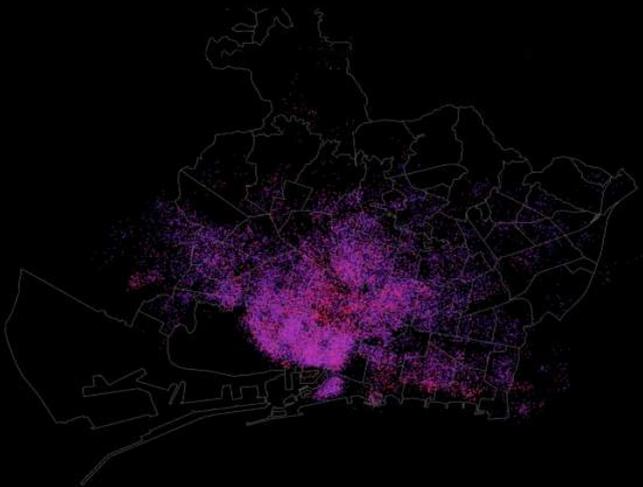
Urban Analytics: A Guide to the City of the Future

SMART CITIZEN behavior is to sort thrown objects as soon as they become wastes, in order to increase the efficiency of the recycling process

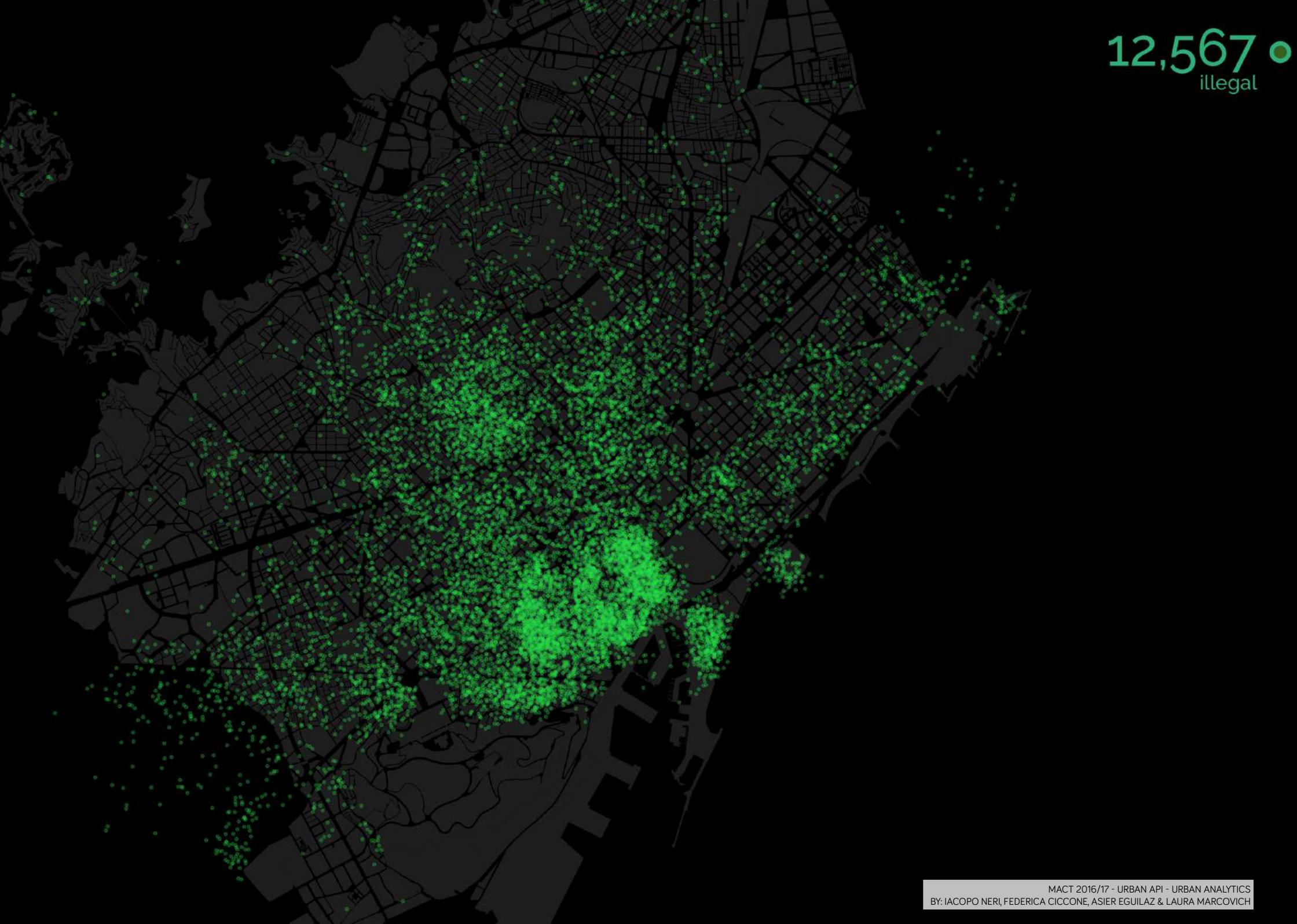
ADVANCED DEVICES (3d printers) can provide efficient ways to use locally the recovered materials



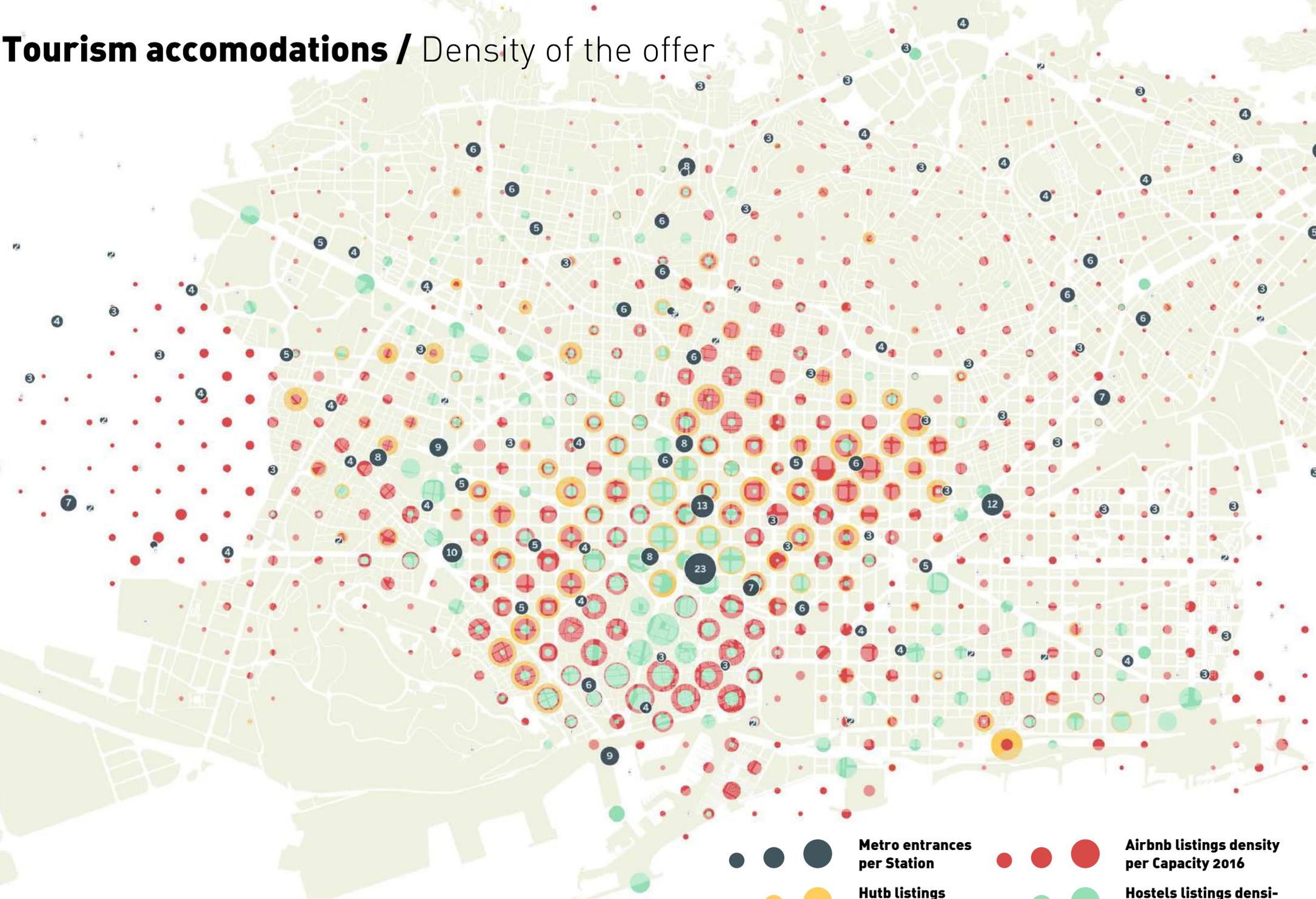
INCOME GENERATED BY AIRBNB DURING THE WEEKEND IN 2016



12,567 
illegal



Tourism accomodations / Density of the offer



TECHNOLOGY SEMINARS

TERM 1, 2 AND 3 / SEMINARS, DEVELOPED IN 1 TERM (20 CLASS HOURS) AND 2 TERM (40 CLASS HOURS) FORMAT, ARE DEVELOPED ALONG THE 3 TERMS.

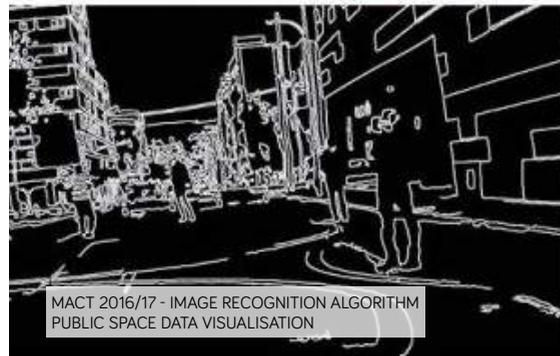
FACULTY OF PAST AND CURRENT EDITIONS:

ANDRE RESENDE (300.000KM/S),
LLUISA MARSAL (UN HABITAT),
FRAN CASTILLO (SYNERGIC PARTNERS),
CARLES FERREIRO + STEFFEN BECKER (DOTOPEN),
CRISTIAN RIZZUTI (ADVANCED ARCHITECTURE GROUP)
RODRIGO AGUIRRE (ADVANCED ARCHITECTURE GROUP)

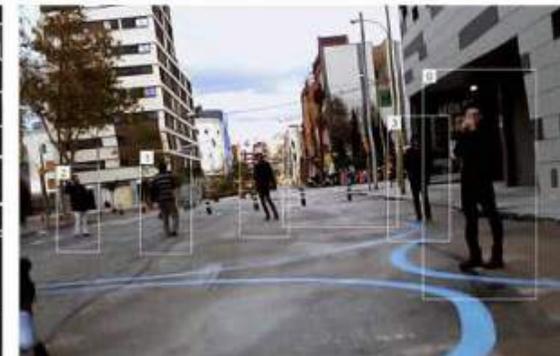
Technical advancements over the past decade have completely changed the way we sense, seize, use, plan and build present and future cities. Traditionally, urban planning has been based on a morphological description of the environment. This classic birds eye view approach has become obsolete both as a descriptive tool used to represent the consolidated city - slowly growing or declining-, as well as as a planning tool used to deal with the development of emerging cities where the urban sprawl is faster than planning methods available.

The explosion of Urban Big Data and ICTs can address a description of the city also responding to different scales and velocities, providing responsive real-time solutions. This datification of the world enables the integration of multiple information in a unique representation to propose novel design strategies. Besides architecture of 'stone and space', we should recognise an expanding landscape of invisible networks.

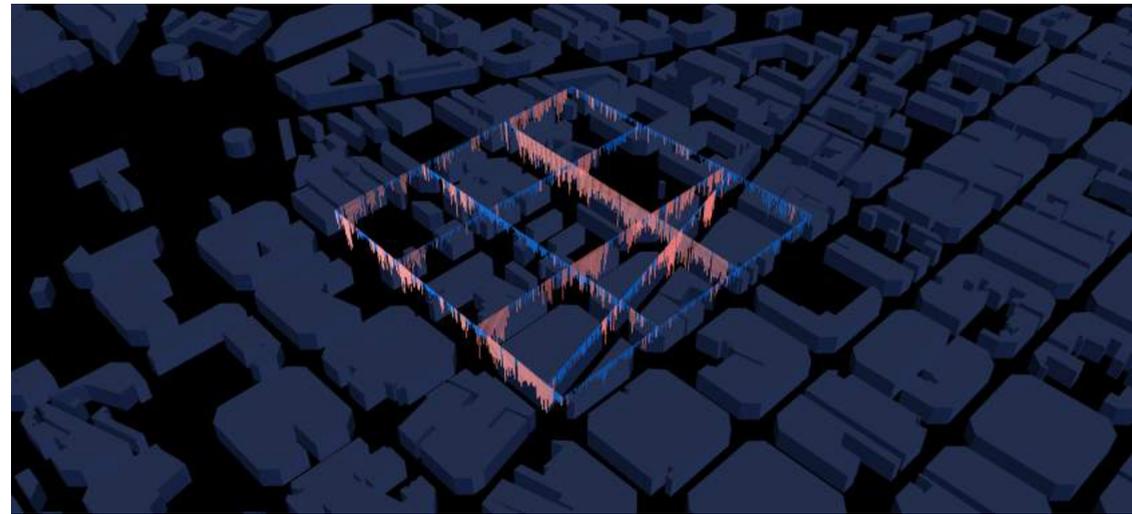
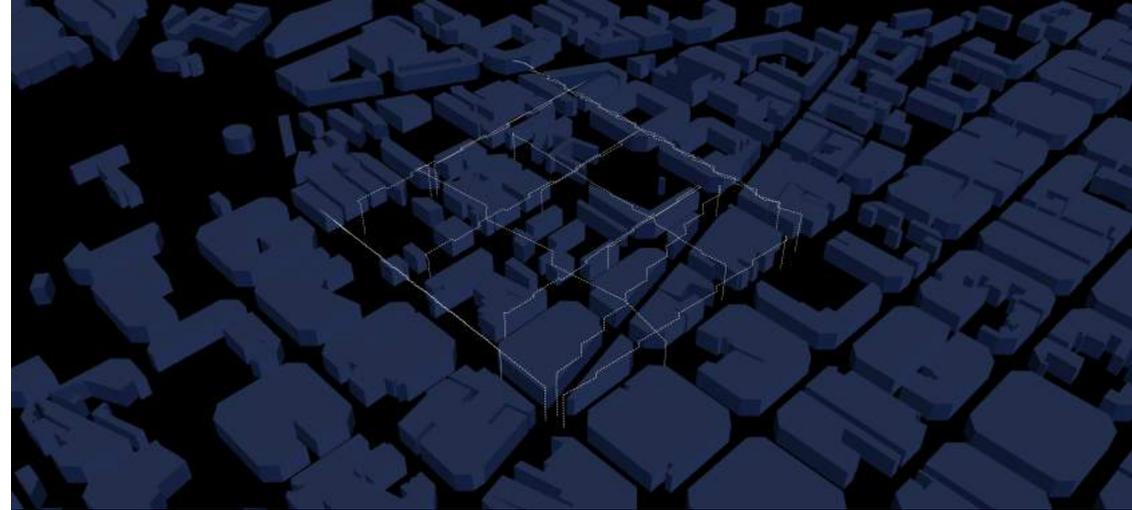
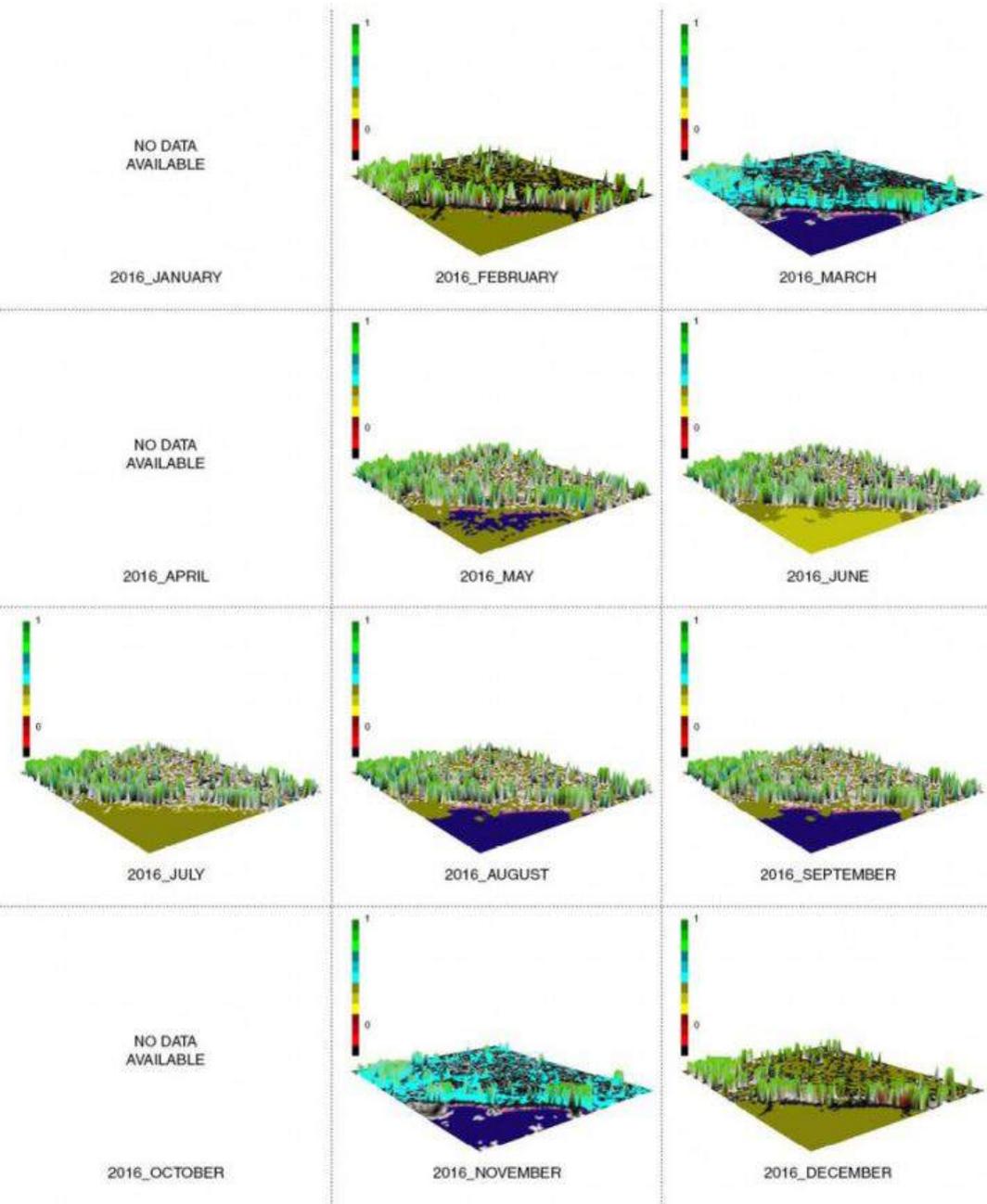
The MaCT Technology seminars are oriented towards both the training in the latest digital and computational tools for urban design and city data visualization, as well as the potentials of these visualizations and their interpretation in real projects. Moreover, the master works towards the development of new digital tools, enhancing the performance of the design projects developed throughout the year.



MACT 2016/17 - IMAGE RECOGNITION ALGORITHM
PUBLIC SPACE DATA VISUALISATION



MACT 2016/17 - TIMBER CURFING - INTRO TO DIGITAL FABRICATION
BY: FEDERICA CICCONE





Definition	ID	Area	Percentage
warehouse / parking	a	786.439 M2	9.61%
commercial	c	639.130 M2	7.81%
cultural	e	404.649 M2	4.94%
industrial	i	127.353 M2	1.56%
sport	k	37.463 M2	0.46%
leisure	g	544.090 M2	6.65%
offices	o	676.497 M2	8.26%
public	p	278.416 M2	3.40%
religious	r	80.772 M2	0.99%
performances	t	75.949 M2	0.93%
housing	v	4.429.795 M2	54.12%
health	y	10.5111 M2	1.28%

8.185.664 M2

“Hey Sants...”

...where to organise a street football?”

“You definitely should consider...”



- Definitely, Nah!
- +/- Could be...
- + Be the first!

- x0 ...Isovisibility
- x2 People flow
- m . l . a . n Short Range
- m . l . a . n Inter. Range
- m . l . a . n Long Range
- m . l . a . n Commuters
- x0 ...Empty shops
- x0 ...Google/Yelp rating
- x2 Emotion of users
- x2 Trees
- x2 NDVI
- x3 Width of streets
- x4 Pedestrian areas
- x0 ...Ligthing
- x0 Public wifi

CAPACITY pedestrian

passeig de San Antoni

carrer de Joan Guell

plaça d'Osca



MORPHOLOGY visibility

plaça de los
Països Catalans

plaça Espanya

plaça de la Farga



CAPACITY street width

rambla de Badal

Carrer de Taragona

gran via de les corts Catalanes



COMFORT public lighting

Jardins de Can Mantega

rambla de Badal

Carrer de Taragona



COMFORT

public wifi

passeig de San Antoni

plaça de los Països Catalans

Spain industrial parc

carrer de Sants



ENVIRONMENT

NDVI

Carrer del Vallespir

Avenüe de Josep Tarradellas

Spain industrial parc

plaça de la Farga



ENVIRONMENT

trees on street

Avenüe de Josep Tarradellas

gran via de les corts Catalanes

Carrer de Parcerisa



SENTIMENT

twitter polarity

Jardins de Can Mantega

Barcelona-Sants

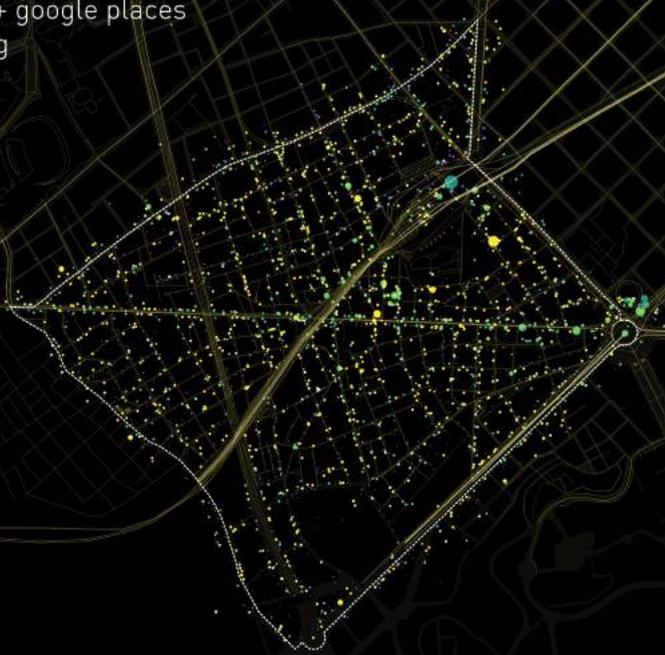
Carrer de Vilardell

plaça Espanya



SENTIMENT

yelp + google places rating



POTENTIAL

quantity of retail



SERVICE QUALITY

yelp + google places rating



POTENTIAL

empty / retail



Carrer de Galileu

plaça d'Ozca

carrer de Sants

Carrer de Santa Caterina

Plaça d'Herenni

Carrer de Leiva

Jardins de Can Mantega

gran via de les corts Catalanes

Carrer d'Olzinelles

FLAWS

mobility attractors

short range
+
medium range
+
long range



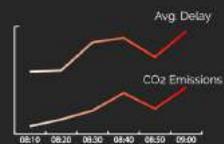
SANTS,

Barcelona 2017

Time period: 8am - 9am

Avg. No of Cars: 6,985

Avg. Speed: 21.52 km/h



FLAWS

commuters



SANTS,

Barcelona 2025

Time period: 8am - 9am

Avg. No of Cars: 488

Avg. Speed: 18.92 km/h



URBAN DESIGN SEMINARS

TERM 1, 2 AND 3 / SEMINARS, DEVELOPED IN 1 TERM (20 CLASS HOURS) AND 2 TERM (40 CLASS HOURS) FORMAT, ARE DEVELOPED ALONG THE 3 TERMS.

FACULTY OF PAST AND CURRENT EDITIONS:

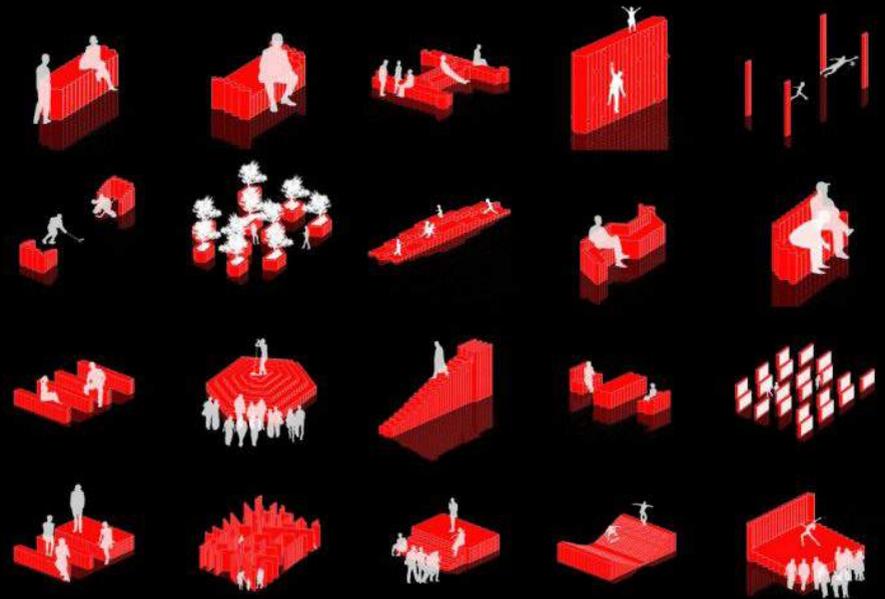
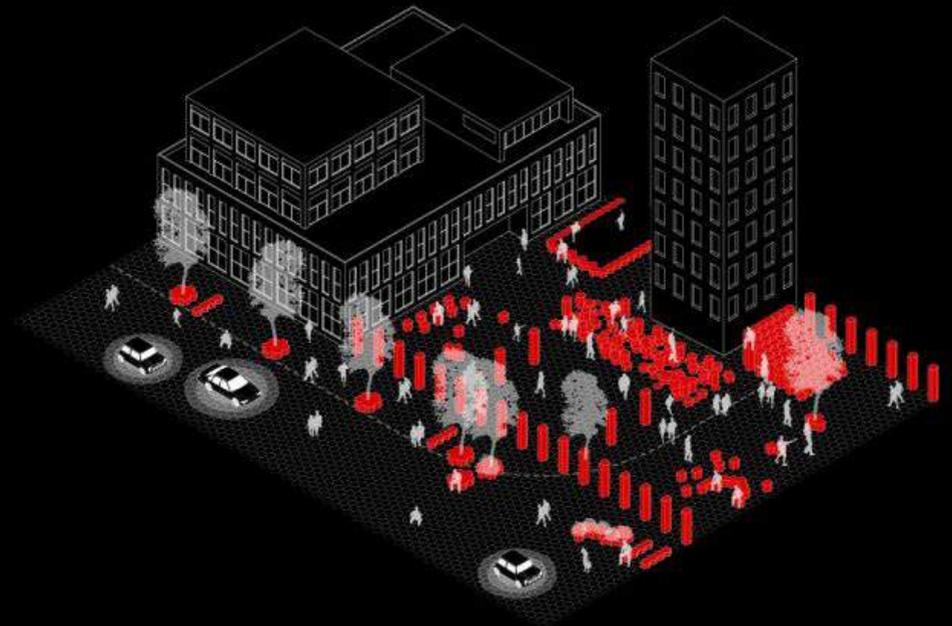
WINY MAAS + ADRIEN RAVON (THE WHY FACTORY),
CARLO RATTI + ANTONIO ATRIPALDI + MATTEO SILVERIO (CARLO RATTI ASSOCIATI),
FEDERICO PAROLOTTI + FRANCESCA ARCURI + SEBASTIANO SCACCHETTI (MOBILITY IN CHAIN),
WILLY MULLER + JORDI VIVALDI (BARCELONA URBAN SCIENCES LAB),
LISA FUTING (AUDI URBAN FUTURE INITIATIVE),
JOSEPH A. CURTATONE (MAYOR OF SOMERVILLE)

The way we interact with our city, and the interface of our city, along with the continuous innovation in tools and technology, are drastically changing. Through the development of a series of Urban Design oriented experiences, both theoretical and real world design, the Master in City & Technology works towards a new city economy and new city management models for the design and creation of a decentralized, productive and social city of the future.

This is a city where the development of the urban forms connects with accessible information to directly inform and shape our urban environment, taking advantage of the possibilities offered by emerging technologies, and imagining the future technologies and how these could change the

planet and the way we inhabit our cities. A city responding to the shift from the industrial society to that of information. Or a city that proposes new forms of large scale infrastructural solutions, in the face of imminently obsolete industrial and post-industrial infrastructure, taking advantage of large scale, privileged and emblematic values to propose urban solutions of re-information and re-cycling. Finally, also speculating and developing future scenarios - from utopian to dystopian, developed leading to visionary, city-related designs.

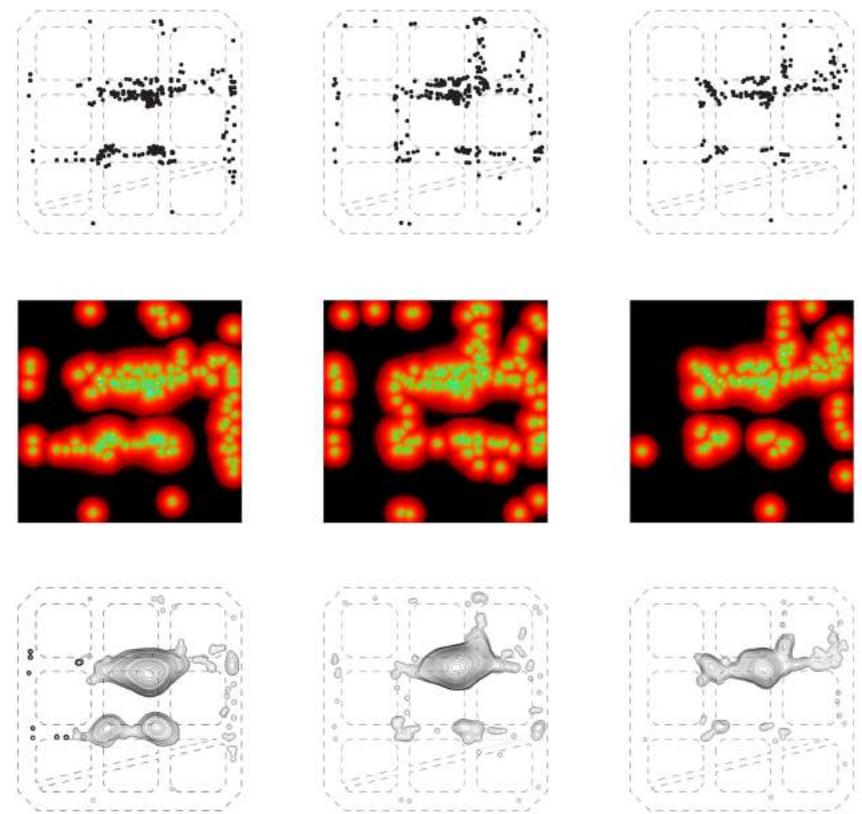
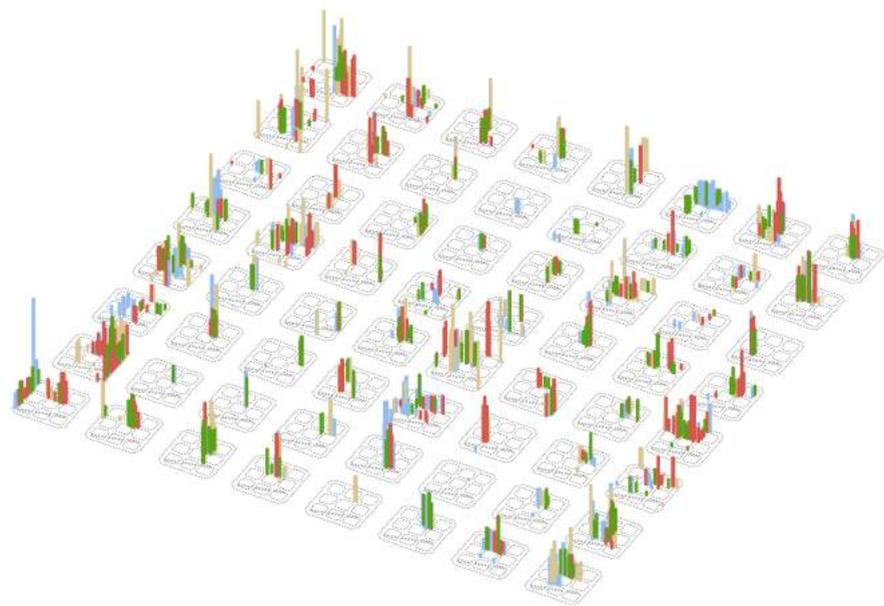
Urban Design Seminars include collaborations with Industrial Partners as well as City Administrations that bring real case studies to be analyzed, quantified, designed and evaluated.





75 players

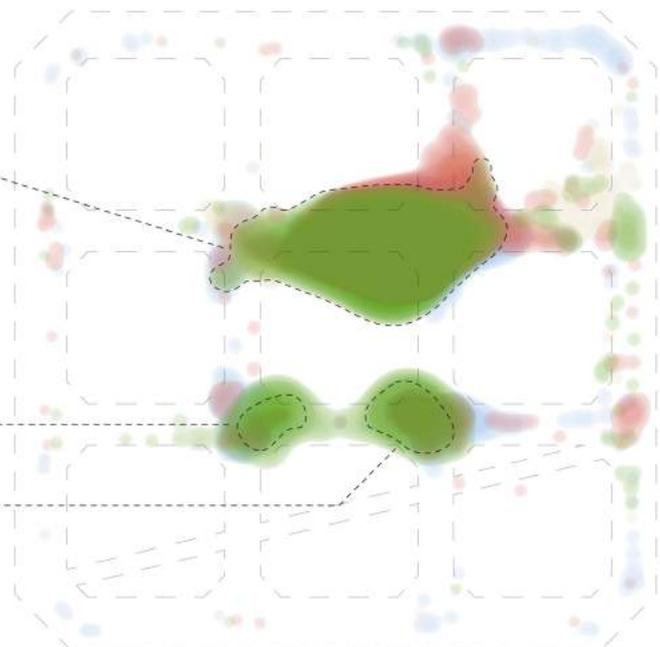
1345 modules



map of emerging patterns

- 50 % eco
- 20 % energy
- 18 % mobility
- 12 % leisure

- 42 % eco
- 23 % energy
- 22 % mobility
- 13 % leisure



SuperBARRIO





MACT - MASTER IN CITY & TECHNOLOGY

MACT PREVIOUS EDITIONS SHANGHAI - 2017/18

EXPONENTIAL GROWTH
ENSURING SUSTAINABLE GROWTH

MACT PREVIOUS EDITIONS SHANGHAI - 2017/18

After the founding of the People's Republic of China, Shanghai underwent rapid and far-reaching transformation of its social structure and urban and architectural conformation. Set against its historic backdrop, Shanghai's modernity is the result of this cultural contamination between Western and Chinese cultures. Shanghai, is a city of paradoxes, an amalgam of Western practices and Chinese mindsets, testifying to an extraordinary story of rapid and unprecedented growth and development over more than a century of constant change.

Thanks to the expert knowledge and leadership of the MaCT collaborative entities Mobility in Chain, the Italian transport planning consultancy, Urban Standards, the German interdisciplinary team of analysts, architects, mobility experts and urban planners, and 300.000km/s, a Barcelona based Data Analysis, Visualisation and Design studio, the MaCT is ready for the great Eastern adventure.

From the crucial role of the river as a primary resource and means of transport and communication, to the longest metro system in the world, the Maglev and a highly connected digital society, the focus will be to investigate the extremely rapid growth of the city's mobility infrastructure, and to examine their practical implications in the urban and social context. By investigating the introduction of 21st century mobility paradigms the students will create a new vision for the future of this grand metropolis.

Tackling these impending topics related to extreme densification, overpopulation and infrastructural obsolescence, makes for a challenging and creatively engaging context.



MACT - MASTER IN CITY & TECHNOLOGY

MACT PREVIOUS EDITIONS BARCELONA - 2016/17

SUPERBLOCK PROJECT
ACTIVATING PUBLIC SPACES

MACT PREVIOUS EDITIONS BARCELONA - 2016/17

In September 2016, Barcelona created a new SuperBlock, a car-free area designed to maximise public space. The implementation of the SuperBlock has been the core of many debates about the qualities of massive pedestrianisation, dynamic urban spaces and citizen engagement.

In order to go beyond the limits of already existing techniques regarding citizen participation, laaC's Design for the Responsive Cities seminar aimed to develop and understand how gaming technologies can become a tool for the designer to share and evaluate the design process through the user's feedback and vice-versa.

At the same time the students looked into how the collection of data can be used as a tool to inform the redistribution of the activities in the Old City of Barcelona. With the main focus to reduce the amount of cars and to increase the productive activities inside the district, they measured the amount of square meters that are currently being occupied for transportation and vehicle parking and searched for ways to redistribute them for productive and leisure activities.

By focusing on the district of Sants they explored the implications of futuristic automated mobility systems, of pedestrianisation and of tools that make complex, urban, live information massively accessible.

Finally, they explored the concept of urban acupuncture for the district of Poble Nou by making proposals for the decentralised production and distribution of energy, information, materials, waste, water and food.



MACT PREVIOUS EDITIONS

MUMBAI - 2015/16

ADAPTIVE SOCIAL HOUSING
RESPONDING DYNAMICALLY TO
CITIZENS' NEEDS



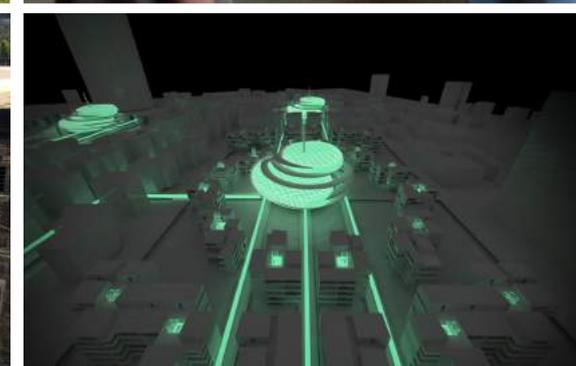
MACT PREVIOUS EDITIONS MUMBAI - 2015/16

The site of the design studio was BDD Chawls, located in Worli, Mumbai, India. This part of the city is pre-dominantly occupied by textile mills in the beginning of 20th century and correspondingly crawls were built to house the mill workers and migrant workers. The Worli BDD chawls cover an area of 24 hectares, 121 buildings and have a population of 38,400 residents.

The aim of the MaCT design studio was to define visions and design proposals for area. The BDD Chawls had already been the object of a design competition finalized to the demolition of the existing buildings and the construction of a high-density multifunctional district.

The design studio was supported by a seminar on Augmented Reality, which focused on the integration of augmented and virtual reality interfaces in the analysis, design and management of the urban environment.

There were two proposals from the students: Adaptive Neighborhood - which envisioned a responsive system in the neighborhood that would make the space adapt to activities and Collective Microgrid - which aimed to involve citizen participation in an energy productive ecosystem, creating a model for new energy self-sufficient and productive neighborhoods.



MACT COLLABORATIVE ENTITIES

Partnership/ Collaborations/

European Research Projects:

The Master in City & Technology works on close collaboration with Industry and City Administrations in an effort of developing pilot projects and solutions that can be applied to real case scenarios.

Previous and current collaborations include Foster+Partners, Audi Future Urban Initiative, UrbanStandard (ex Stylepark), Carlo Ratti Associati, The Why Factory, Mobility in Chain, Ideas for Change, OuiShare, dotopen and InAtlas among others.

On top of this, the Master in City & Technology agenda integrates research and development advancing the essential elements of European research projects that count with numerous expert partners and collaborators. Some of these projects include the Knowledge Alliance for Advanced Urbanism, , Active Public Space, as well as the newly established International Symposium on Responsive Cities and Urbanism in the Experience Age, held annually in Barcelona.

Foster + Partners

Foster + Partners understands that the best design comes from a completely integrated approach from conception to completion. We have a strong creative team, in which structural and environmental engineers work alongside the architects from the beginning of the design process. By doing so, we believe that they can learn from one another and combine their knowledge to devise wholly integrated design solutions. The design teams are supported by numerous in-house disciplines, ensuring that we have the knowledge base to create buildings that are environmentally sustainable and uplifting to use.

The Urban Design team applies a holistic approach to the study of the city, exploring patterns of behaviour, demographics and the hidden systems that influence the built environment, from the property market to underground infrastructure. The team draws on an extensive body of data to inform the design process.

Many of their tools are custom-made, including a touch-screen system that allows users to collaborate in a virtual environment, testing the impact of different configurations on pedestrian activity. By analysing trends influencing cities today, they help us to create communities for the future.



MIC is an international transport planning firm founded in 2009 by Davide Boazzi, Federico Cassani and Federico Parolotto who decided to open a new firm after 10 years of experience in the field.

MIC is founded on the belief that mobility influences the way we live and the quality of our lives. and was created with the ambition of improving the quality of our lives through a profound understanding of how we move. In line with previous professional experience, the MIC team is strongly focused on international work, providing transport consultancy to developers, masterplanners and public bodies all around the world. MIC introduces a new innovative and sustainable vision for mobility, a vision that is based upon understanding the need of the client and focused on both functional matters and urban quality.



Agència
d'Ecologia Urbana
de Barcelona

Implementing projects aimed at domestic and international public institutions, foundations, organisations and companies by applying a systemic approach for reorienting the management of cities towards a more sustainable model, contributing solutions for mobility, energy, waste, urban planning, water, biodiversity and social cohesion.

Working in conjunction with its target bodies, it diagnoses problems and their causes, makes proposals, analyses technical feasibility, quantifies results and offers support for the project's administrative management and implementation.



inAtlas is a Big Data and Location Analytics company that offers strategic business solutions. It has created a proprietary technology that increases the speed of geospatial data processing. Since 2010, it has designed and developed customized tools for private companies like Heineken, Northgate, Prisa Radio, Informa D&B, among others; and public governments like those of the Barcelona City or Santa Cruz de Tenerife City. In 2014 it launched inAtlasPlaces, the first Geospatial SelfService Web App that helps entrepreneurs and small businesses to choose the right location for their new businesses. inAtlas offers a set of APIs with rigorous location data about businesses, consumers, real-estate and online reputation. inAtlas works on the field of urban competitiveness by its own 6T approach: Territory, Tourism, Time, Technology, Talent and Tolerance. In 2013, inAtlas was recognized as an Innovative New Tech Company by the Government of Spain, Minister of Economy and Competitiveness.

URBAN STANDARDS

Rapid urbanization across the globe has a direct impact on our future mobility needs. 75% of the infrastructure needed for urban environments by 2050 is not built yet, which offers a substantial potential for new business models and ideas.

Urban Standards is a specialist in finding new ways of value creation through the systemic integration of technologies, services and partners in urban real estate. We develop and assess solutions for mobility/transport service providers, real estate developers, and cities that match future needs and create new user experiences.

CARLO RATTI ASSOCIATI

Carlo Ratti Associati is a rapidly growing architectural practice based in Turin, Italy, with branches in Boston and London. Drawing on Carlo Ratti's research at the Massachusetts Institute of Technology, the office is currently involved in many projects across the globe. Embracing every scale of intervention, ranging from city masterplans to furniture design, the work of the practice focuses on revolutionizing the use of digital technologies in our built environment and daily lives.

Among the most recent projects is the Future Food District for Expo Milano 2015. Other projects included the design of the headquarters of the leading Trussardi fashion house in the center of Milan, Italy, 1000 Tsunami-safer houses in Sri Lanka, The Cloud for the London 2012 Olympics, the Makr Shkr robotic bar for Google I/O 2013 and the Digital Water Pavilion at the 2008 World Expo in Zaragoza, Spain.

The practice has received many awards including TIME Magazine's 'Best Inventions of the Year' for the Digital Water Pavilion and the Copenhagen Wheel. In 2011, the practice was selected as one of the 'New Talents in Architecture' by the Renzo Piano Foundation. The work of the office has been featured in leading publications worldwide, including the New York Times, the Boston Globe, Der Spiegel, Discovery Channel, BBC, Domus and Abitare.



The Why Factory (T?F) is a global think-tank and research institute, run by MVRDV and Delft University of Technology and led by professor Winy Maas. It explores possibilities for the development of our cities by focusing on the production of models and visualisations for cities of the future. Education and research of The Why Factory are combined in a research lab and platform that aims to analyse, theorise and construct future cities. The Why Factory investigates within the given world and produces future scenarios beyond it; from universal to specific and global to local. It proposes, constructs and envisions hypothetical societies and cities; from science to fiction and vice versa. The Why Factory thus acts as a future world scenario making machinery.

Mcrit

"MCRIT" stands for "Multicriteria", the evaluation method that integrates multiple quantitative and qualitative criteria. MCRIT counts on a multidisciplinary staff of consultants specialised on strategic, urban and regional development, with a particular focus on infrastructure and transportation planning. To support these work activities, MCRIT develops advanced information, forecast, evaluation and communication systems.

Since early nineties, MCRIT is deeply involved in the design and implementation of plans and projects in Barcelona, Catalonia and Spain for public institutions at all scales as well as for private companies mostly large infrastructure developers or managers, transport and other public service operators, such as Abertis, Saba or ENDESA. In the rest of Europe, MCRIT works with the European Commission, the European Investment Bank and the European Parliament; in the Mediterranean, MCRIT works for institutions such as the Union of the Mediterranean or the European Centre for Transport Studies; at world level, MCRIT collaborates with institutions such as the Inter-American Development Bank (IDB), the World Bank and United Nations/Habitat, in cooperation with governments in different Latin-American countries.



The Audi Urban Future Initiative aims to establish a dialogue about urban mobility and sustainable and enjoyable ways to move from one place to another. It is a multifaceted effort rooted in the belief that mobility challenges are best addressed in a collective and interdisciplinary context. Established in 2010, the initiative comprises several components: the Audi Urban Future Award, an invited ideas competition that aims to stimulate new visions for cities and urban mobility; research collaborations with academic and cultural institutions worldwide; interactive events and workshops that bring together experts from many fields; and an internal, interdepartmental think tank dedicated to issues of urban mobility.



Synergic Partners is a specialized Big Data, Data Science and Data Engineering consultancy firm committed to delivering solutions and services that enable companies to leverage the business value of their enterprise data. We help our clients to gain competitive advantages in areas such as Customer Insight, Fraud prevention, Risk and Compliance, Financial governance or Mergers and Acquisitions, among other business challenges.



OuiShare is a global community and think and do-tank. Our mission is to build and nurture a collaborative society by connecting people, organizations and ideas around fairness, openness and trust.

We believe that economic, political and social systems based on these values can solve many of the complex challenges the world faces, and enable everyone to access to the resources and opportunities they need to thrive.

OuiShare activities consist of building community, producing knowledge and incubating projects around the topics of communities and the collaborative economy, as well as offering support to individuals and organizations through professional services and education.

Started in January 2012 in Paris, OUIShare is now an international leader in the collaborative economy field. A non-profit organization which has rapidly evolved from a handful of enthusiasts to a global movement in dozens of countries in Europe, Latin America and the Middle East, our network of expert Connectors engage hundreds of members and contributors worldwide.



The new open innovation paradigm, with innumerable participants and partners trying to collaborate in spite of their diverse interests and goals, creates an environment of unprecedented complexity. What is the order within this chaos?

At dotopen we have dedicated the better part of the last decade building the expertise, tools and processes that we customize to the needs of the project. Our expert team, our partnerships and communications reach and our technology platforms enable us to bring about projects and programs with effective and measurable ecosystem productivity.

Are you interested in collaborating with the MaCT program?

Contact us at:
mathilde.marengo@iaac.net

MACT
INTERNSHIPS

MaCT - MASTER IN CITY & TECHNOLOGY

After the end of the Master in City and Technology (MaCT), our students have the exclusive opportunity to be placed as interns in one of the many collaborative companies of the programme. The following companies are specifically interested in IAAC students with the MaCT profile:



Agència
d'Ecologia Urbana
de Barcelona



At the completion of the programme the coordinator will inform the students regarding the application process.

MACT
FACULTY

FACULTY 2019/2020



**ARETI
MARKOPOULOU**

IAAC ACADEMIC DIRECTOR
MaCT PROGRAMME DIRECTOR
& STUDIO FACULTY



**MATHILDE
MARENGO**

IAAC HEAD OF STUDIES
MaCT_STUDIO & THEORY
FACULTY



**VICENTE
GUALLART**

IAAC FOUNDER
MaCT_STUDIO FACULTY



**WINY
MAAS**

THE WHY FACTORY
MaCT_STUDIO FACULTY



**WILLY
MÜLLER**

URBAN SCIENCES LAB
MaCT_SEMINAR FACULTY



**CARLO
RATTI**

CARLO RATTI ASSOCIATI
MaCT_SEMINAR FACULTY



FEDERICO PAROLOTTO

MOBILITY IN CHAINS
MaCT_STRATEGIC PLANNING



FRANCESCA ARCURI

MOBILITY IN CHAINS
MaCT_SEMINAR FACULTY



**KATHRIN
DIPAOLA**

URBAN STANDARDS
MaCT_SEMINAR FACULTY



**JULIUS
STREIFENEDER**

URBAN STANDARDS
MaCT_SEMINAR FACULTY



**JOSÉ LUIS
DE VICENTE**

SÓNAR+D
MaCT_SEMINAR FACULTY



**LUIS
FALCÓN**

inATLAS
MaCT_SEMINAR FACULTY



**GONZALO
DELACÁMARA**

IMDEA WATER FOUNDATION
MaCT_SEMINAR FACULTY



**LLUÏSA
MARSAL**

MaCT_SEMINAR FACULTY



**ALEXANDER
ERATH**

MaCT_SEMINAR FACULTY



**NICOLAY
BOYADJIEV**

MaCT_SEMINAR FACULTY



**ADRIEN
RAVON**

THE WHY FACTORY
MaCT_SEMINAR FACULTY



**SEBASTIANO
SCACCHETTI**

MOBILITY IN CHAINS
MaCT_SEMINAR FACULTY



**JORDI
VIVALDI**

URBAN SCIENCES LAB
MaCT_SEMINAR FACULTY



**CRISTIAN
RIZZUTI**

MaCT_SEMINAR FACULTY



**ALEX
MADEMOCHORITIS**

MaCT_COORDINATOR &
SEMINAR FACULTY



**ALBERT
CAÑIGÜERAL**

CONSUMO COLABORATIVO
OUISHARE
THEORY GUEST FACULTY



**MARCELLA
DEL SIGNORE**
THEORY GUEST FACULTY



**ALBERT
CAÑIGÜERAL**
*CONSUMO COLABORATIVO
OUISHARE*
THEORY GUEST FACULTY



**MARCELLA
DEL SIGNORE**
THEORY GUEST FACULTY

GENERAL INFORMATION

APPLICATIONS, GRADING SYSTEM AND MORE

APPLICATIONS

Online applications form (www.iaac.net/iaac/ apply) for the programmes: MAA01, MAA02, MaCT01, MaCT02, MAI, MAA01 + OTF, OTF, MAEB, MRAC, MDEF.

For the online application, the following required documents should all be submitted in English, with the exception of the undergraduate diploma (All documents must be uploaded onto the designated space on the online application form in PDF format).

A letter of intent expressing the reasons for which you wish to attend the chosen master – Written in English, PDF and with a maximum of two A4 pages.

Curriculum vitae

Portfolio, showing samples of your work – maximum of 10MB.

Two letters of recommendation (from professional or academic referees) – In English, PDF and with the corresponding referee contact information.

A copy of your highest academic degree.*If you haven't graduated and therefore your diploma is not available at the moment of your application, you will need to send a letter in English or Spanish emitted by your University acknowledging that you are currently studying (name of the programme) and will graduate in (specific date).

A copy of a valid passport (copy of valid I.D. is accepted for citizen of member states of the EU)

*If you hold more than one passport bear in mind that the one you provide in the application form is the one IAAC will use for your acceptance let-

ter and therefore the one you will use to apply for your Spanish visa (non EU students) and NIE (all students).

*Bear in mind that you can apply with a copy of your title but If you are accepted you will be required to send a legalised copy of your degree and an official SWORN translation of it in Spanish. More info about SWORN translation and legalisation in the "FAQ" section in IAAC's website.

* If you have not yet graduated, but will be graduating before the commencement of the academic year to which you are applying at IAAC, you are still eligible to apply. However, to complete the application process, you will need to provide the document explained in the section 5 above.

If you have any questions or doubts with regards to the application process, please feel free to contact us at applications@iaac.net

GRADING SYSTEM

Class attendance is obligatory for studios and seminars. In both cases, courses are graded as follows:

0–4.9 Fail (this means that the student is not going to get his/her Master's Degree, this grade will be justified and well explained)

5.0–6.9 Passed

7.0–8.9 Good

9.0–10 Excellent/Distinction

- Under no circumstances will students be excused from presenting their design work at the final review of a project.

- Diplomas will not be delivered to students with any incomplete in their final grades.

In addition to the above, Midterm Reviews will be held with the members of the faculty in order to inform each student briefly of the general feelings of the faculty about his or her work. Suggestions may be given on how to prepare for the Final Review

STUDENT FEEDBACK AND EVALUATION

The usual procedure IAAC uses for the collection and analysis of information to ensure the quality of the programme is the student surveys and evaluation reports. IAAC performs two different types of surveys: one survey is specific for each course, and is being made immediately after a course finishes, and the second survey is a general survey, which is conducted at the end of the academic year. Course Survey: The surveys contain questions related to course content and structure of the class, the methodology used and the level of facilities where the course has been conducted. There are also questions about the faculty, allowing the student to evaluate the faculty's communication capabilities, the capacity of synthesis and organise the content structure as well as the faculty's competence in assessing and explaining the results obtained. The survey also include questions about the relevance of the class with respect to the students own interests and the relevance with the general research agenda of the Master programme. Students are also asked within this survey to suggest improvements in the courses that IAAC takes into consideration for the future editions. General Survey: The general annual survey refers to the overall management of the programme and the efficiency of the entire organisation. It includes questions of whether students had difficulties in the application and admission process, whether they had problems in acquiring all necessary certificates and/or other documents and more. It also includes question of satisfaction in relation with the efficiency level of IAAC staff, whether faculty

and content have met their expectations, and whether they were satisfied with the level of access to facilities and material resources at the Institute . Also, students are asked what course or activities considered more interesting and relevant to the programme and they are also asked to express ideas mefor overall improvement.

STUDY EXPENSES

Study-related expenses such as the purchase of books, graphic reproduction, printing and model moking are not included in the tuition fee. For field trips and excursions an individual financial contribution may be required.

MATERIALS

Students are expected to bring their ownly a lap-top computer no more than two years old, with the following specifications:

Processor: Computer with Intel i5 or i7 processor or AMD Equivalent

Ram: 8GB

Hard Disk: 200GB + HDD

Operating System: Windows 10, 8.1 or 7 SP2 - 64 BIT

Note: If you have an Apple computer, it is required that you install Windows on Boot Camp which will perform better than Parallels or VMWare. Please do this prior to your arrival in Spain).

Software

NON EUROPEAN STUDENTS

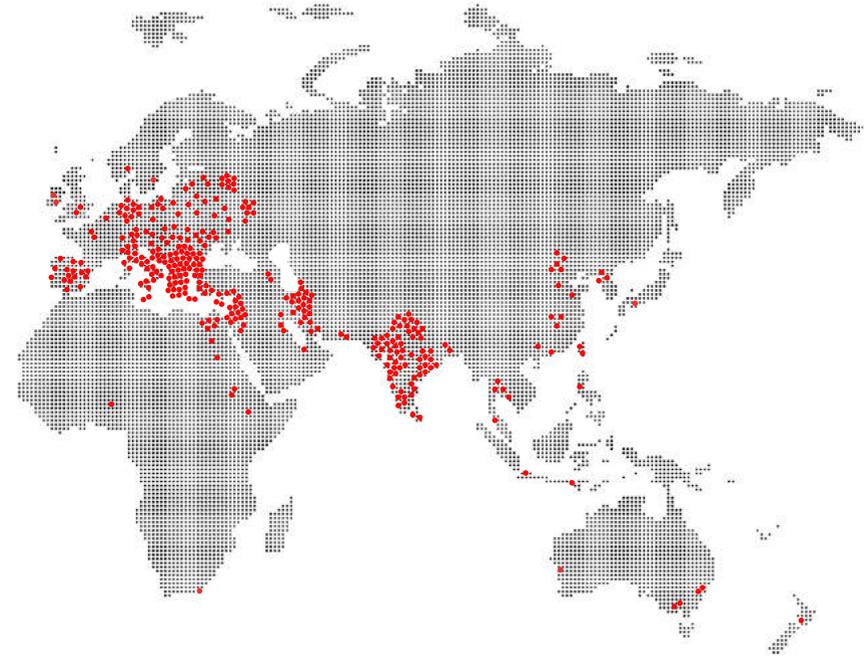
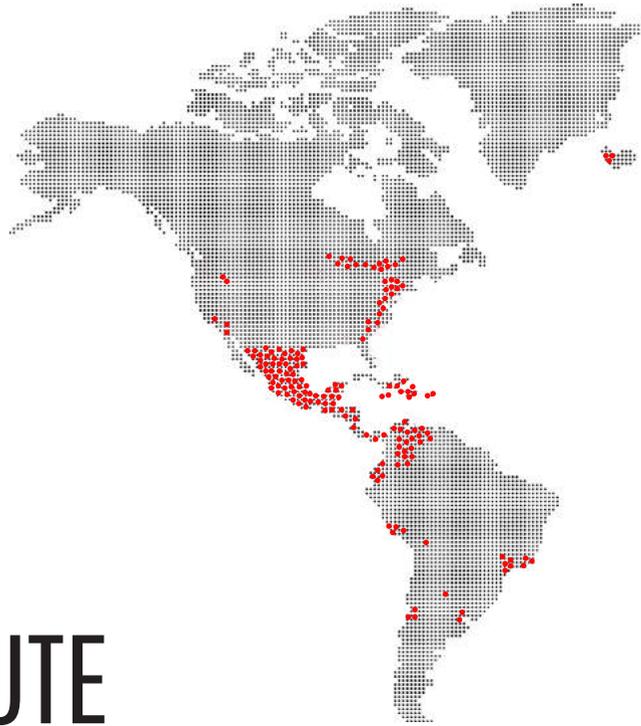
Non European students accepted to the programme are advised to contact the nearest Spanish Embassy to start the Visa procedure. Be aware that the application procedure for a Student Visa can take up to 3 months.

MEDICAL INSURANCE

Participants are responsible for their own health insurance and other personal insurance. It is mandatory to acquire a Medical Insurance to cover your stay here in Barcelona. The Catalan Public Health System does not cover students, and will charge you for any visit or consultation. Please note that the IAAC is not liable for loss or damage to personal belongings.

ACCOMMODATION

IAAC does not provide accomodation for students, although can provide information and assistance related to rental procedures.



THE INSTITUTE

The Institute for Advanced Architecture of Catalonia – IAAC is an international centre for Education, Fabrication and Research dedicated to the development of architecture capable of meeting the worldwide challenges in constructing 21st century habitability. Based in the 22@ district of Barcelona, one of the world's capitals of architecture and urbanism, as well as the European Capital for Innovation (2014), IAAC is a platform for the exchange of knowledge with researchers, faculty and students from over 60 countries around the world.

IAAC is Education, with the Master in Advanced Architecture, Advanced Interaction and the Master in City & Technology giving the next generation of architects and professionals the space to imagine, test and shape the future of cities, architecture and technology. This is possible through Open Thesis Fabrication, the implementation of Applied Research and allowing learning by doing, as well as through short programmes, implementing global agendas developed through local solutions, such as the Global Summer School.

IAAC is Fabrication, with the Fab Lab Barcelona, the most advanced digital production laboratory in Southern Europe, a laboratory where you can build almost everything, that recently hosted Fab10, the 10th annual worldwide Fab Lab conference.

IAAC is Research, with Valldaura Labs, a self-sufficient research centre located in the Collserola Metropolitan park, 20 minutes from the centre of Barcelona, where a series of laboratories are implemented for the production and testing of Energy, Food and Things.

And IAAC is also Barcelona, the European Capital for Innovation (2014)¹, the city that aims to be a self-sufficient city, a Fab Lab city, a smarter city. Thanks to its innovative visions, IAAC is strategically aligned to the new urban policies of the city, developed in close collaboration and mutual inspiration between the two entities.

The Institute develops multidisciplinary programmes that explore international urban and territorial phenomena, with a special emphasis on the opportunities that arise from the emergent territories, and on the cultural, economic and social values that architecture can contribute to society today.

IAAC sets out to take R+D to architecture and urbanism and create multidisciplinary knowledge networks. To this end the institute works in collaboration with several cities and regions, industrial groups, research centres, including the City Council of Barcelona, the Collserola Natural Park, the Massachusetts Institute of Technology (MIT), the Centre for Information Technology and Architecture (CITA), the Southern California Institute of Architecture (Sci-Arc), as well as diverse companies among which CISCO, Endesa, Kuka Robotics and many others. Together with these the Institute develops various research programmes bringing together experts in different disciplines such as architecture, engineering, biology, sociology, anthropology and other fields of investigation.

IAAC has made its name as a centre of international reference, welcoming students and investigators from over 60 different countries among which Australia, the USA, India, Brazil, Russia, Ethiopia, all European countries and many others.

1. http://ec.europa.eu/research/innovation-union/index_en.cfm?section=icapital

MISSION, VISION & VALUES

MISSION

The Institute for Advanced Architecture of Catalonia (IAAC) is a vanguard academic and research centre whose mission is to promote scientific and technological innovation in the conception, design and construction of the human habitat, at all scales (from bits to geography), integrating technological, social and cultural innovations of our time and contributing to the consolidation of Barcelona as a global platform for the urban habitat.

To this extent IAAC works with a multidisciplinary approach, facing the challenges posed by our environment and shaping the future of cities, architecture and technology.

This is obtained through the focus on select criteria:

- Design for Self-sufficiency
- Application of ICT (Information and communication technologies) at all levels of daily life.
- Contribution to the distributed networks in the conception of the environment.
- Advanced digital and parametric design.
- Digital and Robotic Fabrication

VISION

IAAC encourages innovation and construction of the human habitat, offering a working environment in the following areas:

- Education through academic programmes for graduate students and international faculty and students, continuous education programmes in design, interaction, architecture, urbanism and landscape.

- Research by developing projects to expand the boundaries of architecture, in collaboration with experts from multiple disciplines.

- The development of innovation projects with companies and institutions that define role models, responding to global realities.

- The promotion of projects through publications, exhibitions and competitions developed physically and virtually.

For all this, IAAC works with local and global organisations participating in multidisciplinary knowledge networks. It promotes transformation from its humanistic ideology based on learning by doing.

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This is obtained through the focus on select criteria:

- Design for Self-sufficiency
- Application of ICT (Information and communication technologies) at all levels of daily life.
- Contribution

VALUES

COMPACT

An organisation that is flexible, agile, quick and able to anticipate new challenges of our time.

INDEPENDENT

Private foundation that collaborates with individuals, universities, companies and public organisations to innovate the human habitat and interaction.

GLOBAL

In thought and action, in the origin of human capital, learning from the diversity of the world, promoting the construction of local realities with very specific identity.

INFORMATIONAL

Recognition of digital systems as a technological base that transforms our world today, integration of technologies and processes associated in all areas of their action.

NATURAL

Promoting connected self-sufficiency, according to the rules of biological ecosystems, to help build a more ecological and social world.

HOLISTIC

Broad overview of the conception, design and construction of the human habitat, and this works at all scales, in interaction with multiple disciplines.

SOCIAL

Important social base, from interaction with individuals, companies and organisations that promote innovation in the construction of the human habitat, prioritising talent and avoiding social and economic stigmatism.



IAAC OBJECTIVES

- To underline and reinforce our position as a worldwide reference for education and research, as well as for self-sufficiency and digital fabrication, through the consolidation and expansion of research projects, as well as offering up to date and evolving academic programmes.
- To expand our collaborations with strategic public and private partnerships both nationally and internationally.
- To strengthen our consultancy role by creating specific alliances with industries that promote and support applied research.
- To actively pursue an agenda of activities related to green architecture, sustainability and renewable energies through the development of the Green Fab Lab, the Food Lab and the Energy Lab.
- To enhance our current work and profile as a specialised think tank for innovative strategies within the fields of urban planning and urban design with particular attention to the Smart Cities challenge.



BARCELONA IS...

MODERNISM: 7 works by Gaudi are UNESCO World Heritage sites.

IMAGE: Almost 2.500 film shoots took place in the city during 2015.

CULTURE: 50 museums and exhibition centers, Palau de la Musica, Sonar, Primavera Sound etc. Barcelona is part of the Network of UNESCO Creative Cities as City of Literature since 2015.

SPORT: In addition to the pulling force of FC Barcelona, the city also hosts several international sporting events each year; these include the X Games, the World Swimming Championship etc.

PROFITABLE: Since 2000, Barcelona has been the top European city in terms of the quality of life of employees (Report by Cushman & Wakefield and Cinco Dias).

TOURISM: More than 15,5 million foreign tourists visited Barcelona in 2015.

AFFORDABLE: Barcelona is not among the world's 50 most expensive cities (according to Mercer Human Resource Consulting).

MOBILE: The city will continue to host the Mobile World Congress (MWC) until 2018. Barcelona welcomes more than 70.000 visitors during this annual event.



22@ CAMPUS

The Institute for advanced architecture of Catalonia is located in the Poblenou neighbourhood of Barcelona, in the recently created district known as 22@, a focus for companies and institutions oriented toward the knowledge society. The neighbourhood is close to the historic centre, the seafront, the Plaça de les Glòries and the Sagrera APT station, making it the most dynamic enclave in the city.

IAAC is housed in an old factory building, with 2,000 m² of space for research, production and dissemination of architecture, so that the space itself is a declaration of principles, embodying an experimental and productive approach to architecture. The IAAC premises include the Fab Lab Barcelona, an architecture and design oriented fabrication laboratory which is part of the global network of Fab Labs set up by The Center for Bits and Atoms at MIT. The Green Fab Lab, hosted in IAAC's forest campus in the Valldaura Labs, is also part of the same global network, a fabrication laboratory this time oriented towards self sufficient and productive solutions.



VALLDAURA CAMPUS



Valldaura is IAAC's second campus located in the Collserola Park, the natural centre of the metropolitan area of Barcelona. Valldaura campus is a large park and testing ground for innovation that features the latest technologies in the fields of energy, information and fabrication. The core of this innovative project developed by IAAC is a laboratory to implement investigation and set a new bench mark for self-sufficiency. The Valldaura Self Sufficient Labs express a new concept for sustainability established by IAAC. Its aim is to create a sustainable, consciously designed ecology using both cutting edge technology and traditional craftsmanship.

Valldaura Self Sufficient Labs Centre is at the forefront of developing a new concept of habitability placing people as the centre of all actions.

Local self-sufficiency is promoted in the use of the environment, and the expansion of knowledge is promoted through the participation in global information networks to share and generate progress.

The Valldaura Self Sufficient labs and its three Laboratories, Food Lab, Energy Lab and Green Fab Lab; allow to research the specificities of the production of key elements involved in self-sufficiency: food, energy and things, combining ancestral knowledge that connects us to nature with the latest advanced technology.

EDUCATIONAL PROGRAMMES

LONG TERM

IAAC Educational Programmes give the next generation of architects the space to imagine, test and shape the future of cities, architecture and technology through applied research, learning by doing, and implementing global agendas developed through local solution.

IAAC is also part of the European consortium InnoChain, a consortium of six renowned research institutions and 14 leading industry partners: an interdisciplinary network developing PhD research in innovative building design practice under the Horizon 2020 programme.

MAA01 - 1 year, 75 ects MASTER IN ADVANCED ARCHITECTURE

The MAA01 - Master in Advanced Architecture Programme is oriented to graduates who wish to commit and develop their design research skills in the context of new forms of practice within architecture and urbanism, ranging from large scale environments to tectonic details and material properties. In order to allow the highest quality and applied research, the Masters in Advanced Architecture proposes a multidisciplinary approach, considering architecture as a transversal field, for which it is imperative to integrate all research and applications with the knowledge of specialists form a diversity of fields of expertise.

The MAA01 emerges as an Innovative Structure focusing on five select Research Lines all led by Internationally renowned experts, and bringing together students and faculty from different disciplines and origins, towards the creation of a Networked Hub dedicated to Research and Innovation for the habitability of the 21st Century. The programme is organised in four phases: three terms and the final project development phase.

MAA02 - 2 years, 130 ects MASTER IN ADVANCED ARCHITECTURE

The MAA02 programme combines the first year Master (MAA01) with a second year of investigation towards the development of a thesis project. This programme allows senior students, already having developed the appropriate sensibility and tools from MAA01, to get further a personal investigation, around the themes of the advanced technology, architecture and urbanism. During this second year students are required to deal with a project counting on the possibility of developing it with international faculty and enterprises, highly specialized in different fields.

During the second year each student will propose and develop his/her Individual Thesis Project through an academic programme structured in:

- Individual Tutoring with internationally renowned experts that will support the student in the development and in the theoretical definition of the thesis project
- Seminars focused on the topics of Advanced Digital Tools, Research Methodology and 1:1 Fabrication

The thesis, submitted in publication format, can be developed according to diverse research methodologies.

MaCT01 - 1 year, 75 ects MASTER IN CITY & TECHNOLOGY

The Institute for Advanced Architecture of Catalonia (IAAC) is launching an EU accredited Master programme in City & Technology (MaCT). In an effort of understanding the needs for the habitability of the 21st century cities and the significant role of technology for the formation of the new urban environments IAAC proposes a new Master programme oriented in training Change Makers that City Government Administrations, the Industry and Communities need in order to develop projects for the transformation of the cities.

The Master programme represents an effort of facilitating the exchange of knowledge and the mutual learning of urban experiences among cities.

MaCT foresees new city economy and new city management models for the creation of a decentralized, productive and social city of the future.

MaCT02 - 2 YEAR, 120 ECTS MASTER IN CITY & TECHNOLOGY

With the objective of furthering the research developed in the first year of the MaCT01 programme, IAAC launches the MaCT02. Throughout the MaCT02 programme students will have the opportunity to work on an individual thesis focused on the development of a pilot project, allowing them to fully engage with both the theoretical and practical aspects of the project. The students will also follow associated seminars amplifying their knowledge of technologies associated to the urban context, allowing them to integrate these in the development of holistic projects, mixing technology with social, economic and environmental benefits.

The individual thesis, or pilot project, will allow the students to gain in depth knowledge on elaborating disruptive urban proposals that use technology to better citizens' quality of life. Additionally, through the development of the individual thesis based on a real case study, students will have the opportunity to collaborate with industrial and governmental representatives, among the collaborative entities of the MaCT programme, giving students the necessary support and knowledge to develop solutions for the real world.

EDUCATIONAL PROGRAMMES

LONG TERM

MAEB - 1 YEAR, 90 ECTS / 140 ECTS MASTER IN ADVANCED ECOLOGICAL BUILDINGS IMMERSIVE PROGRAMME

Current discourses on sustainability and design do not yet adequately frame questions of energy and ecology. Whether you consider how building design overlooks landscape and urbanisation interdependencies; or incomplete interpretations of the ecological processes that could otherwise better support building, urbanisation, and life today; or how the material choices in buildings are governed by stylistic abstract notions instead of something ecologically more powerful, the Master in Advanced Ecological Buildings aims for a more ambitious and comprehensive approach of energy and ecology for the built environment.

Following up the urban research carried out by IAAC in the last years in fields like Solar Housings, Eco neighbourhoods, Internet of Energy, Hydrogrid, Digital Fabrication, the immersive Master in Advanced Ecological Buildings (MAEB) aims at training professionals in the design, prototyping, and fabrication of buildings as ecological and thermodynamic systems. The immersive programme takes place in Valldaura Labs, IAAC's campus located inside Collserola Natural Park in Barcelona.

MRAC - 1 YEAR, 75 ECTS MASTER IN ROBOTICS AND ADVANCED CONSTRUCTION

With the Master in Robotics and Advanced Constructions (MRAC), IAAC seeks to train a new generation of interdisciplinary actors capable of facing our growing need for a more sustainable and optimised construction ecosystem. The Master is focused on the emerging design and market opportunities arising from novel robotic and advanced manufacturing systems.

Through seminars, workshops and studio projects, the master programme challenges the traditional processes in the Construction Sector; it investigates how robotics and new digital fabrication tools change the way we build, and develops the design tools and processes for such new productions methods.

The master offers an international and multidisciplinary environment in which Engineers, Designers, Architects, Craftsmen, Academics and Industry partners must rethink the construction industry. The master will take place in IAAC, a creative space fully equipped with the latest manufacturing technologies, based in Barcelona, an International hub for innovation in a traditionally rich industrial region.

MDEF - 1 YEAR, 75 ECTS MASTER IN DESIGN AND EMERGENT FUTURES

The aim of the Master in Design for Emergent Futures (MDEF) is to provide the strategic vision and tools for designers, sociologists, economists and computer scientists, to become agents of change in multiple professional environments. This programme focuses in the design of interventions in the form of products, platforms and deployments in the context of emerging future scenarios in society and industry.

Students will be encouraged to work at multiple scales (product, platforms, strategic planning and distribution strategy) in order to create prototypes to be tested in the real world. The theoretical and practical contents in this programme propose an exploratory journey aimed to comprehend and critique the role of disruptive technologies -including digital fabrication, blockchain, synthetic biology, Artificial Intelligence, among others, in the transformation of the established order.

The programme is recommended for designers, sociologists, computer scientists, economists, anthropologists, technology entrepreneurs and changemakers who are looking to develop an interdisciplinary career path to conceive and produce impactful ideas to transform the world. This Master has a high component of hands-on learning and project-based learning where students will be requested to turn big ideas into design strategies, prototypes and interventions to be tested in the real world, focused in Barcelona but connected globally with other cities.

EDUCATIONAL PROGRAMMES

SHORT TERM

OTF - 6 MONTHS, 25 ECTS OPEN THESIS FABRICATION

The aim of the programme, in line with the opportunity of making a difference, is to develop research to be applied through patents or products for marketing. This will be obtained through the common goal of researching of different fabrication techniques, materials and form, towards the implementation of a large scale prototype, understanding the potentials of digital fabrication together with new needs of current society and the market. All the IAAC BUILDs researchers will be working together in 1 group towards a collective goal and project, in turn subdivided into different specialized research teams each focusing on a specific aspect of the project's development. Hence the implementation of a 1:1 scale prototype allowing to test techniques and materials on real scale. IAAC BUILDs follows in the footsteps of OTF developing the applied research in partnership companies, whose involvement will vary according to project focus. The program mealso counts on the collaboration of experts in various fields such as engineering and structures, materials, technical components, and much more, allowing the development of a full scale and fully functioning prototype.

GSS GLOBAL SUMMER SCHOOL

The Global Summer School (GSS) is a platform defined by ambitious, multiscalar investigation into the implications of emergent techniques on our planned environments. The programme develops a global agenda in various institutions around the world, each focussing on developing localised solutions. International teams located in key cities around the globe explore a common agenda with projects that are deeply embedded in diverse local conditions. This intensive two week course connects each participant to ongoing research agendas in robotics, simulation, physical computing, parametric design, digital fabrication, and other relevant emerging design methodologies. The programme focuses on a global agenda developing local solutions.

VISITING PROGRAMS

Every year, IAAC organises and takes part in a number of international educational programmes and projects. IAAC annually participates in Global Architecture & Design exchange programme organised by CIEE, international education and exchange centre. Global Architecture&Design Programme simultaneously runs in three locations: Barcelona, Berlin and Prague. Students are working with leading architecture and design experts and innovators to complete a real world design project within an emerging global context. This programme aims to pursue hands on design work in a state of the art studio using the latest technology to address an aspect of the current global environmental crisis.



FAB LAB BARCELONA

FabLab Barcelona is one of the leading laboratories of the worldwide network of Fab Labs, a small scale production and innovation centre equipped with digital fabrication tools and technologies for the production of objects, prototypes and electronics.

Fab Lab Barcelona is part of the Institute for Advanced Architecture of Catalonia, where it supports different educational and research programmes related with the multiple scales of the human habitat. It is also the headquarters of the global coordination of the Fab Academy programme in collaboration with the Fab Foundation and the MIT's Center for Bits and Atoms; the Fab Academy is a distributed platform of education and research in which each Fab Lab operates as a classroom and the planet as the campus of the largest University in construction in the world, where students learn about the principles, applications and implications of digital manufacturing technology.

The Fab Lab Barcelona has produced projects such as Hyperhabitat IAAC (official selection for the Venice Biennale XXI) or the Fab Lab House (Audience Award in the first Solar Decathlon Europe in Madrid). It is currently developing projects of different scales, from smart devices for data collection by individuals (Smart Citizen innovative project award in the Smart City Expo and World Congress in Barcelona), the development of the new generation of Fab Labs in the Green Fab Lab project, to the new production models for cities with the Fab City project being implemented in Barcelona in collaboration with the city council.

Fab Lab's mission is to provide access to the tools, the knowledge and the financial means to educate, innovate and invent using technology and digital fabrication to allow anyone to make (almost) anything, and thereby creating opportunities to improve lives and livelihoods around the world. Community organisations, educational institutions and non-profit concerns are our primary beneficiaries.



VALLDAURA GREEN FAB LAB

"LEARNING FROM NATURE TO CHANGE THE WORLD"

As a part of the Fab City network, the Green Fab Lab works towards the creation of a self-sufficient habitat and research centre at Valldaura Self Sufficient Labs, one of IAAC's campus locations.

Located in the Collserola Natural Park, in the heart of the metropolitan area of Barcelona, it has laboratories for the production of energy, food and things, and develops projects and academic programmes in association with leading research centres around the world.

As part of IAAC's commitment to promoting and advancing habitability in the world based on ecological principles and making the fullest use of all available technologies and resources, we have created a research centre focused on the idea of self-sufficiency, with a view to provide a worldwide point of reference. The Green Fab Lab offers an opportunity to learn directly from nature to bring that understanding to the regeneration of 21st century cities.



FAB LAB PROGRAMMES

FAB ACADEMY

The Fab Academy Diploma consists of a 5 month part time student commitment, from January to June 2017.

Each Fab Lab that participates in the Fab Academy programme is part of a global Fab Lab / Fab Academy network. These Fab Labs are Nodes that offer the Fab Academy programme.

Fab Academy faculty, who are leaders in their respective fields, provide global video lectures, supervise academic content and guide research. Hands-on instruction in the labs is provided by instructors who supervise and evaluate Certificates, develop and disseminate instructional material, and assist with projects

The Fab Academy is directed by Neil Gershenfeld, produced by Sherry Lassiter and coordinated by Tomas Diez.

Students at the Fab Academy learn:

- How to use a Fab Lab's digital fabrication tools for rapid prototyping: Epilog Mini Laser Cutter, Roland MDX-20 Milling Machine, 3D printers, Roland CAMM-1 Servo GX-24 Desktop Vinyl Cutter, ShopBot CNC Milling Machine

- Electronics design and production by producing circuit boards using a variety of sensors and output devices.

- How to programme AVR microcontrollers on the boards they have produced

- Moulding and casting

- 3D scanning and printing

The programme requires a minimum of 30 hours per week.

FAB KIDS

The Fab Kids, is a creative laboratory that favours the development of intelligence, creativity and imagination of children and youth. It is a place where thinking is encouraged and innovation occurs, a space where educational and recreational activities take place, focused on design and digital fabrication.

WORKSHOPS

Fab Lab Barcelona offers a programme of workshops focused both on specific aspects of Advanced Digital and Robotic Fabrication, as well as spreading knowledge and empowering citizens and creative people. Some of the latest workshops include: Computational couture, 3d printing, building with robots, cutting and blending, extreme manufacturing, making things talk, mould's fabrication and object production, networking environmental robotics (NERO), and much more.

SPECIAL PROJECTS

As part of IAAC's commitment towards the investigation of new and emerging areas of the Architectural discipline, pilot projects are launched on a yearly basis. These projects, such as the Fab Lab House (1), the Endesa Pavillion (2), Hyperhabitat (3) and Smart Citizen Kit (4), operate in the field between academia, architectural practice and information technologies, and are designed and fabricated by IAAC faculty, students and collaborative companies.

These projects operate on several scales, from 1:1 architectural interventions to pocket sized micro-processors, all sharing a common vision of investigation towards a more sustainable and socially empowering design approach. All projects have been welcomed with considerable success, with various distinctions in events such as the Solar Decathlon and the Venice Biennale, as well as being published in several reviews and publications. In the development process of these pilot projects, IAAC collaborates with a network of partners from various disciplines, including leading universities and innovative companies.



SPECIAL PROJECTS

2014/2017

2017 - CONSTRUMAT

The twentieth edition of Barcelona Building Construmat, put a particular emphasis on innovation and new technologies. IAAC played a central role in the Future Arena of the fair, where the Institute could showcase its most recent research projects about additive and robotic manufacturing applied to the construction sector: **On Site Robotics**, the project born from the collaboration between IAAC and Tecnalia with the participation of Noumena, on-site construction of a 3D printed pavilion made with 100% natural materials, which has been completed in only four days.

2016 - IN3DUSTRY

This is an international event, focusing on the current state and future of Additive and Advanced Manufacturing.

The event, co-organised by IAAC Fab City Research Laboratory and Fira Barcelona, is a global hub bringing together all components of the Additive Manufacturing ecosystem to showcase the latest technologies and innovations.

2015 - BEYOND // INNOVATION PAVILION

The Pavilion of Innovation 2015 in Beyond Building Barcelona, curated by IAAC | Fab Lab Barcelona, presented new ideas and construction paradigms emerging from international excellence in research and pilot projects, forming the basis of future buildings and cities. Novel and reactive materials, advanced digital/robotic manufacturing techniques and responsive environments were the key topics presented, towards shaping the future of the building industry.



SPECIAL PROJECTS

2014/2018

2018 -PLAYBALL! // LLUM BCN

Playball! is an interactive art light installation that engages a big number of users that play together to create a visual and aural experience. Playball uses light to create interactions between the viewer and installation, and between the viewers themselves.

2017 -BRILLEN EN LA FOSCOR // LLUM BCN

Located in an enclosed patio in the Gothic quarter of Barcelona, the installation, an interactive audiovisual instrument, transforms the space through a musical performance based on citizen participation. The visitor enters the patio space and is invited to play with the strings of light, composing musical melodies based on the citizens' real time interaction.

2016 - LLUM TAFANERA // LLUM BCN

La Llum Tafanera, The Curious Light, was an interactive kinetic light installation that wanted to make technology more friendly and closer to the public through the simulation of the personality of a star. IAAC once again had the honour of being invited to participate in the Llum BCN Urban Light Festival in Barcelona.

2015 - PLUJA DE LLUM // LLUM BCN

The Llum Bcn festival of lights takes place each year in February. For the 2015 edition, IAAC created an illuminated installation that combines art, tradition and technology. The concept of the installation follows a mixture of the elements of the tale of Santa Eulalia, in particular her tears, transforming these into conceptual rain. A rain of light, emanating from translucent vertical elements interacting with sounds and music.

2014 - DATANET // LLUM BCN

For the Llum Bcn 2014, in the courtyard of the Museu Frederic Marés in Barcelona, IAAC 'plants' DATA NET, a new artificial tree, forming an interactive mesh. The intensity of light of the installation changes, reacting to the location and the density of the visitors through a series of sensors that track peoples' movement.



LLUM BCN
INSTALATIONS

SPECIAL PROJECTS

2014/2018

2016 - PLOBEJOC // SUPERILLA

Poblejoc, an interactive installation conceived during the Active Public Space workshop, was designed as an Urban Game with the aim of activating public space. Poblejoc was created in the framework of the #Superilla (Super-block) workshop, a pilot test of the Superilla plan for Barcelona, that was developed in the Sant Martí district. The plan aims to close a part of the cities roads to traffic, allowing to use these new pedestrianised areas as public space.

2014 - LIBERTY

Designed and fabricated for the Re.Set festival, a circuit of ephemeral architecture in the streets of Barcelona, Liberty follows the concept of FREEDOM. Knowledge provides freedom and progress; and the power of freedom is expressed through reading. This installation consists of three different trees whose trunks and branches are made of steel, while the leaves are made of books, and the earth made of concrete. Liberty activates a new public space; a shady bench and a new interactive area in the city centre.



ACTIVE
PUBLIC SPACES

SPECIAL PROJECTS

2017 - 3D PRINTED BRIDGE

The first pedestrian, 3D printed bridge in the world was inaugurated on December 14th in the urban park of Castilla-La Mancha in Alcobendas, Madrid.

The Institute for Advanced Architecture of Catalonia (IAAC) was in charge of the architectural design of the bridge, which has a total length of 12 meters and a width of 1.75 meters and is printed in micro-reinforced concrete. The 3D printed bridge, which reflects the complexities of nature's forms, was developed through parametric design, which allows optimising the distribution of materials to minimise the amount of waste by recycling the raw material during manufacture.



2017 - NOMAD FOLDING FLAX PAVILION

Castejón de Monegros has once again hosted the Nowhere Festival, the one-week festival promotes cultural and educational activities focused on the self-expression. The Nomad Folding Flax Pavilion, result of the lightweight Bio Composite seminar, was among the installations presented at the event, developed around the structural value of origami shapes.

2014 - ENDESA WORLD FAB CONDENSER

Pavilion for the FAB10 Symposium (July 2nd to 8th, 2014). Initial design by Margen-Lab, produced by IAAC and collaboratively designed, built, and customized by the Fab Lab Network.

2014 - CATALAN VAULT

IAAC MAA01, in collaboration with Map13 Architects built a Parametrized Catalan Vault, fruit of a 2 week long workshop in Valldaura Labs. Using digital tools along with traditional century old Catalan masonry techniques, with students seeking to re-engineer, compute, and construct a Vault in the forest.

IAAC is also furthered this research investigating in the field of advanced robotic fabrication techniques towards the implementation and automation of these complex Catalan vault forms.



SPECIAL PROJECTS

EXPERIENCE FUTURE CITIES EXHIBITION

IAAC End of Year Exhibition Experience Future Cities, the public event which showcased the best projects of IAAC international researchers. The work displayed had been developed in Institute's Master programmes.

Given the multidisciplinary and multiscale nature of the Master's methodology, the exhibition content ranged from experimentations on new materials to scale-up proposals for new cities, using a variety of materials and supports.

AUTO-MÀTIC EXHIBITION

An exhibition that addresses the limits and potentials of generative drawing, emerging from data through mathematical and mechanical operations; raising questions on automation, reproducibility, and the role of the arbitrary or accidents as sources of creative experimentation.

The research was developed in the framework of Machinic Protocols, a research line directed by Edouard Cabay, in IAAC's Master in Advanced Architecture.

LIVING IN FUTURE CITIES

The exhibition Living in Future Cities is a product of work developed by the international architectural researchers of IAAC. The work examines issues of the near future and proposes a series of solutions in the era of experience, where technology can aid us to positively define the spaces and cities we live, grow and thrive in.

VENICE BIENNALE

The Institute for Advanced Architecture of Catalonia took part in the 15th Venice Biennale, titled "Reporting From the Front" and curated by Alejandro Aravena, with an interactive installation made in collaboration with the Indian architect Anupama Kundoo. Information Technology has opened up new ways of sharing knowledge, moving towards faster and more inexpensive ways, making knowledge more accessible, and making it easier to gather people around common topics of interest.



RESPONSIVE CITIES

URBANISM IN THE EXPERIENCE AGE

Some of the brightest minds in the fields of Sociology, Urban Sciences, Technology and Architecture gathered in Barcelona to discuss the Future of our Cities.

The first edition of the Responsive Cities Symposium, chaired by Areti Markopoulou, with programme chairs Chiara Farinea and Mathilde Marengo, established itself as a major event in the architectural debate.

Fifteen outstanding keynote speakers, fifty-four international panellists and more than 400 visitors animated the two-day gathering, held in Barcelona Caixa-Forum on the 16th and 17th of September 2016 and followed online by more than 700 spectators.

What is the most important challenge for the future Urbanity? What should the role of technology be in the Future City?

Saskia Sassen, Carlo Ratti, Philippe Rahm, Janet Sanz Cid, Areti Markopoulou, Tomás Díez, Albert Cañigüeral, Mariina Hallikainen, Lydia Kallipoliti, Maïta Fernández-Armesto, Mar Santamaria, Manuel Gausa, Ethel Barona Pohl and Daniele Quercia were among the international speakers and panellists who met in Barcelona to join the debate about the Urbanism in the Experience Age.

The Symposium was organised by the Institute for Advanced Architecture of Catalonia as one of the main activities carried out under the Knowledge Alliance for Advanced Urbanism – KAAU, the EU co-funded project seeking to promote the innovative education and training that emerging technologies require.



RESPONSIVE CITIES 2017

ACTIVE PUBLIC SPACE

The second edition of the Responsive Cities Symposium, chaired by Areti Markopoulou, with programme responsables Chiara Farinea and Mathilde Marengo. More than a dozen outstanding keynote speakers, 30 international panelists and more than 400 visitors animated the two-day gathering, held in Barcelona CaixaForum and Smart City Expo on the 13th and 14th of November 2017.

On the first day of the symposium the opening of the APS exhibition “Implementing Technology Towards Active Public Space” aimed to promote the knowledge generated in the framework of the Active Public Space Project. At the show, visitors were able to explore best examples of implementation of innovative technologies for public space activation.

How do we design and inhabit our Public Space? How does it perform? What does it produce? These were some of the questions and discussion topics raised during the roundtables and debates taking place at CaixaFòrum and Smart City Expo. Through transversal viewpoints, the 2nd edition of the Responsive Cities Symposium combined disciplines such as urban planning, biology, advanced architecture, interaction, participatory technology and even performing arts to respond to the challenge of how cities can shape their public spaces towards more dynamic, productive and active citizen meeting places. The Symposium was organised by the Institute for Advanced Architecture of Catalonia as one of the main activities carried out under the Knowledge Alliance for Advanced Urbanism – KAAU, the EU co-funded project seeking to promote the innovative education and training that emerging technologies require.



Areti Markopoulou



Crimson Rose



LECTURE SERIES

Since the year 2000, the Master's in Advanced Architecture runs an international lecture programme in which architects and experts from a variety of different disciplines present their work at IAAC. The lectures are open to the public, making it a high quality cultural activity open to the city of Barcelona.

2014/2016 LECTURERS

Elizabeth Diller
Bob Sheil
Laura Andreini
Li Xiangning
Izaskun Chinchilla
Oscar Tomico
Mitchell Joachim
Farshid Moussavi
Giovanna Carnevali
Rodolphe el-Khoury
Alberto Diaspro
Alfredo Brillembourg
Hubert Klumpner
Andrew Watts
Jose Luis de Vicente
Dave Pigram
Jelle Feringa
Aaron Betsky
Ali Basbous + Luis Fraguada
Kengo Kuma
Jan Knippers
Yael Reisner
Manuel Jimenez Garcia
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