



**UNICA**  
UNIVERSITÀ  
DEGLI STUDI  
DI CAGLIARI  
DICAAR



European  
Digital  
UniverCity

Co-funded by the  
Erasmus+ Programme  
of the European Union



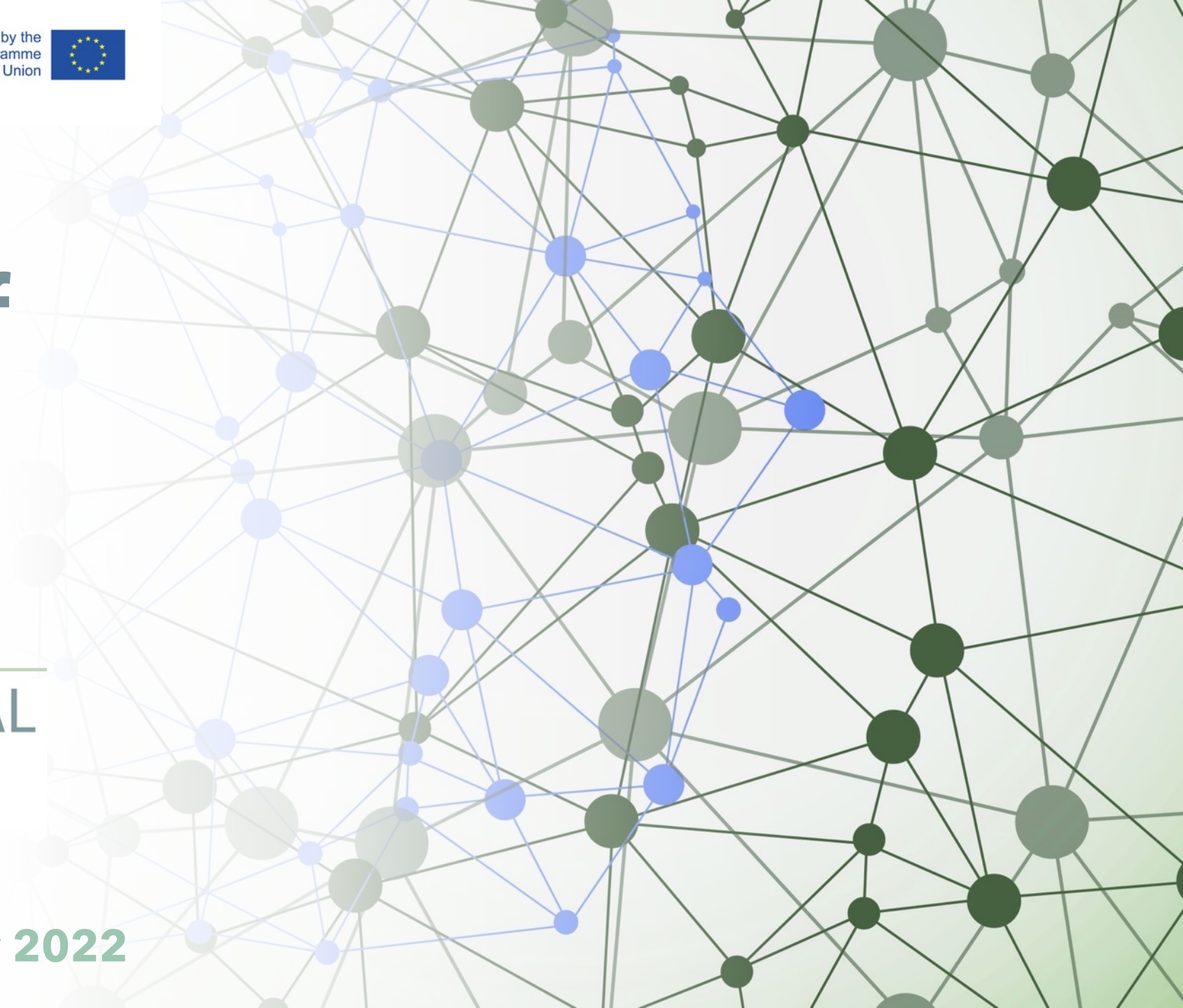
# The challenge of climate change

Participants' guide

imagination  
planning  
governance  
tools

**INTERNATIONAL  
SMART CITIES  
SCHOOL**

Cagliari 19 june - 01 july 2022





# SECOND week

	26/06/22 Sunday	27/06/22 Monday	28/06/22 Tuesday	29/06/22 Wednesday	30/06/22 Thursday	01/07/22 Friday	02/07/22 Saturday		
09:00 - 09:30	FREE	Giuseppe Desogus - <i>The segmentation and characterization of urban buildings and optimization of energy retrofit scenarios.</i>	Jurgen Kropp - <i>Solving the Climate Dilemma: the role of urban agglomerations</i>	Leonard Wallezky - <i>Service complexity</i>	Cultural visit (Porto Flavia)	CoWorking-Lab	FlyBack		
09:30 - 10:00									
10:00 - 10:50									
10:50 - 11:10		coffee break	coffee break	coffee break	coffee break				
11:10 - 12:00		Fabrizio Monfardini - <i>Sustainability, innovation and democracy</i>	Leonard Wallezky - <i>Service complexity</i>	Ferdinando Fornara - <i>The contribution of Environmental Psychology for promoting sustainable behaviours at the urban level</i>		CoWorking-Lab			
12:00 - 13:00		Jurgen Kropp - <i>Carbon Capturing for Free: How cities can become real carbon sinks</i>							
13:00 - 14:30		Lunch time	Lunch time	Lunch time	Lunch time	Lunch time			
14:30 - 15:00		IE - International Exchange	IE - International Exchange	IE - International Exchange	Stefano Pili (Sotacarbo) CoWorking Lab: <i>From the building energy efficiency to the energy communities</i>	Final Test			
15:00 -16:00		CoWorking-Lab	CoWorking-Lab	CoWorking-Lab					
16:00 -17:50				Team works presentation					
17:50 - 18:10									
18:10 - 19:00		AperiNET							
19:00 - 19:30									
19:30 - 20:00									
20:00 - 21:00	Farewell Party								

# **Information about your staying**





# Essentials

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- Laptop
- Smartphone + earphones
- Swimwear
- Beach towel
- Sun cream

**DON'T  
FORGET!**





Cagliari-Elmas Airport is located very close to the city and is very well connected to the city centre by a regular train service. Trip from/to the airport takes less than 10 minutes. Timetables are available online on [Trenitalia website](#) and on the Trenitalia app.

Tickets cost 1,30 each and can be purchased at one of the ticket machines inside the airport or right at the **station**, on the app (Trenitalia), online via the Omio app and in some authorised tobacco shops.



# Accommodation

5 minute walking from the railway station

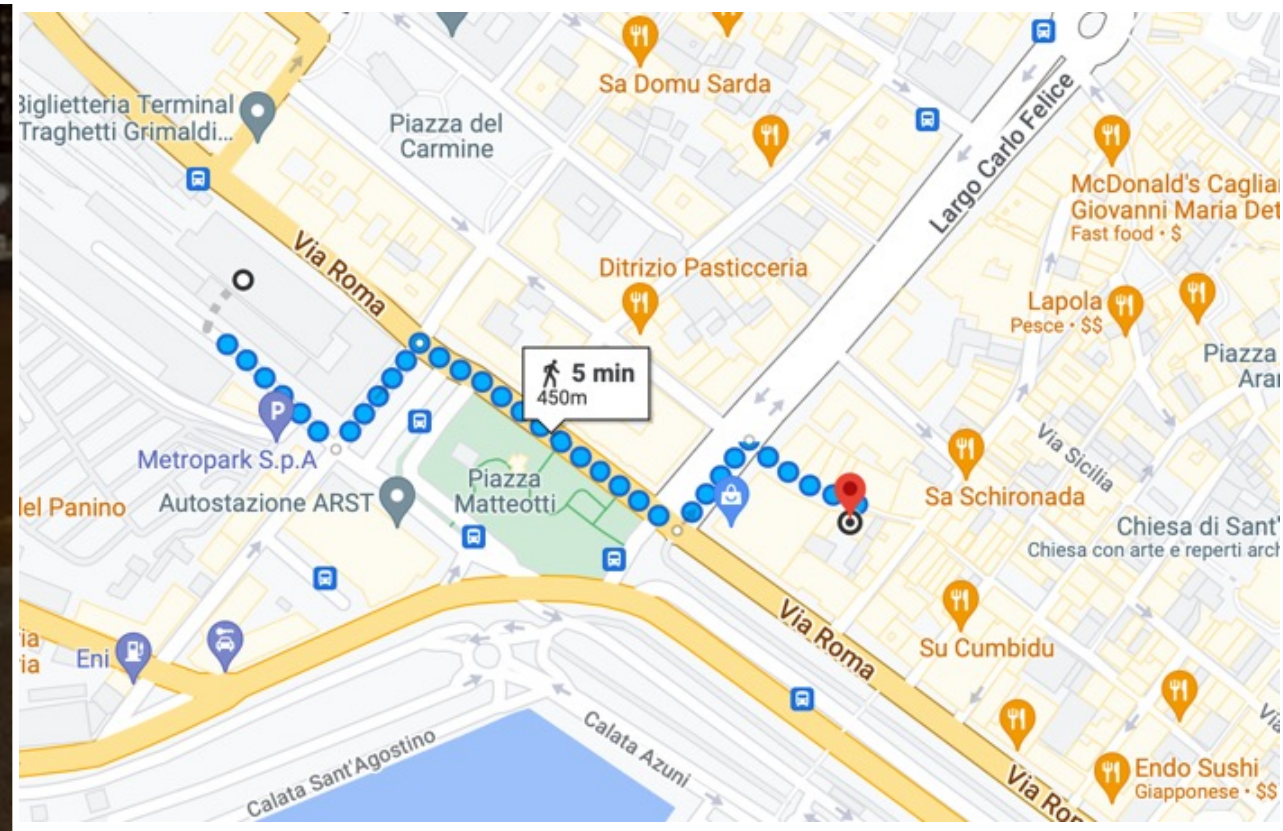
## Hotel Italia

Via Sardegna, 31 - 09124 Cagliari

T +39 070 660410 / +39 070 660510

F +39 070 650240

[info@hotelitaliacagliari.com](mailto:info@hotelitaliacagliari.com)





# Venue

From the Hotel Italia  
take the bus n. 8

7 stops – 12 min.

From Carlo Felice to Merello  
Or by walking (22 minutes)

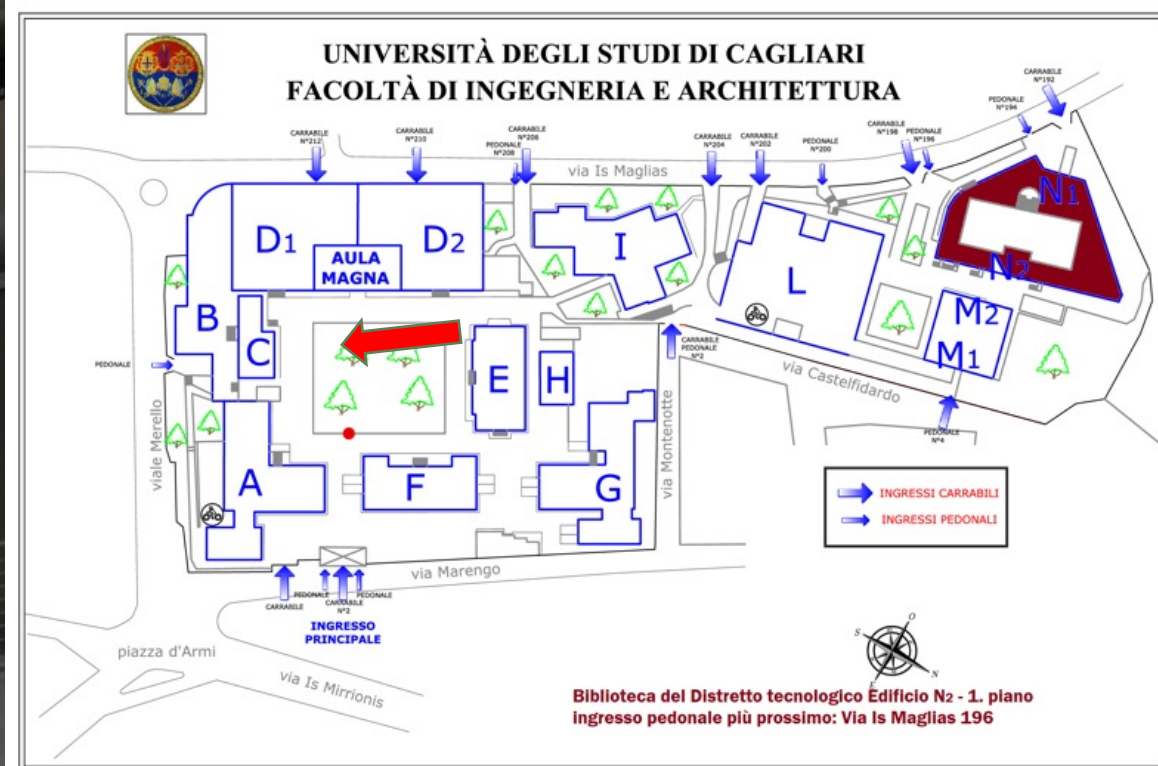


## Aula Alfa

Facoltà di Ingegneria e Architettura

Via Marengo, 2

Cagliari





# Eating

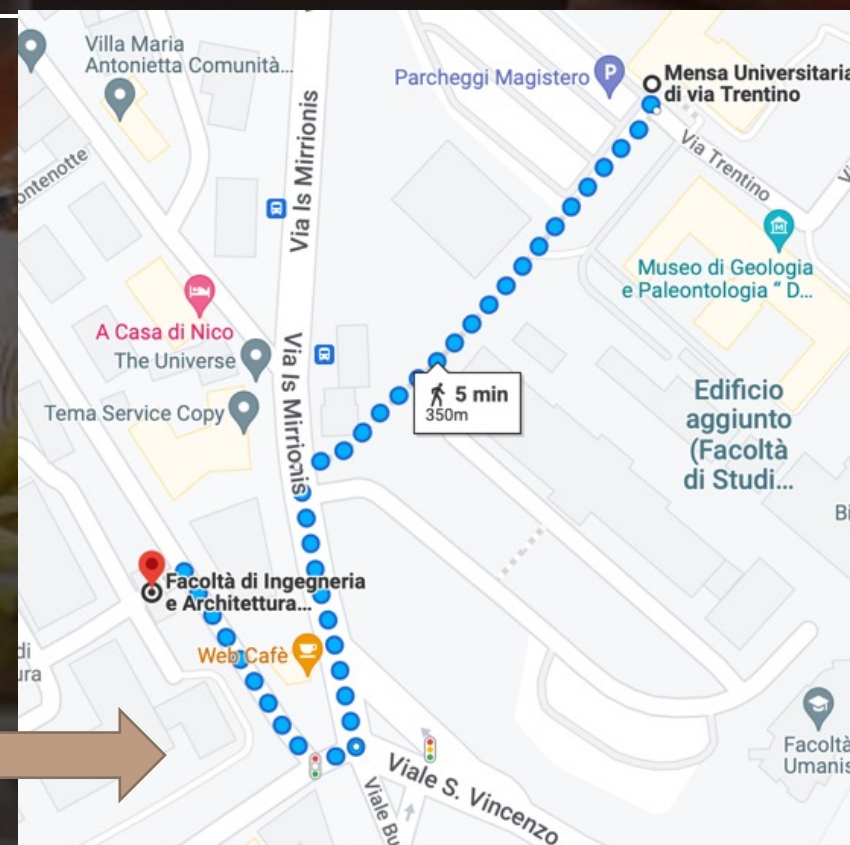
Follow the instruction to access UNICA catering service received by mail

## UNICA canteens location

- Via Trentino, Cagliari, "Sa Duchessa" campus

From Aula Alfa to Via Trentino

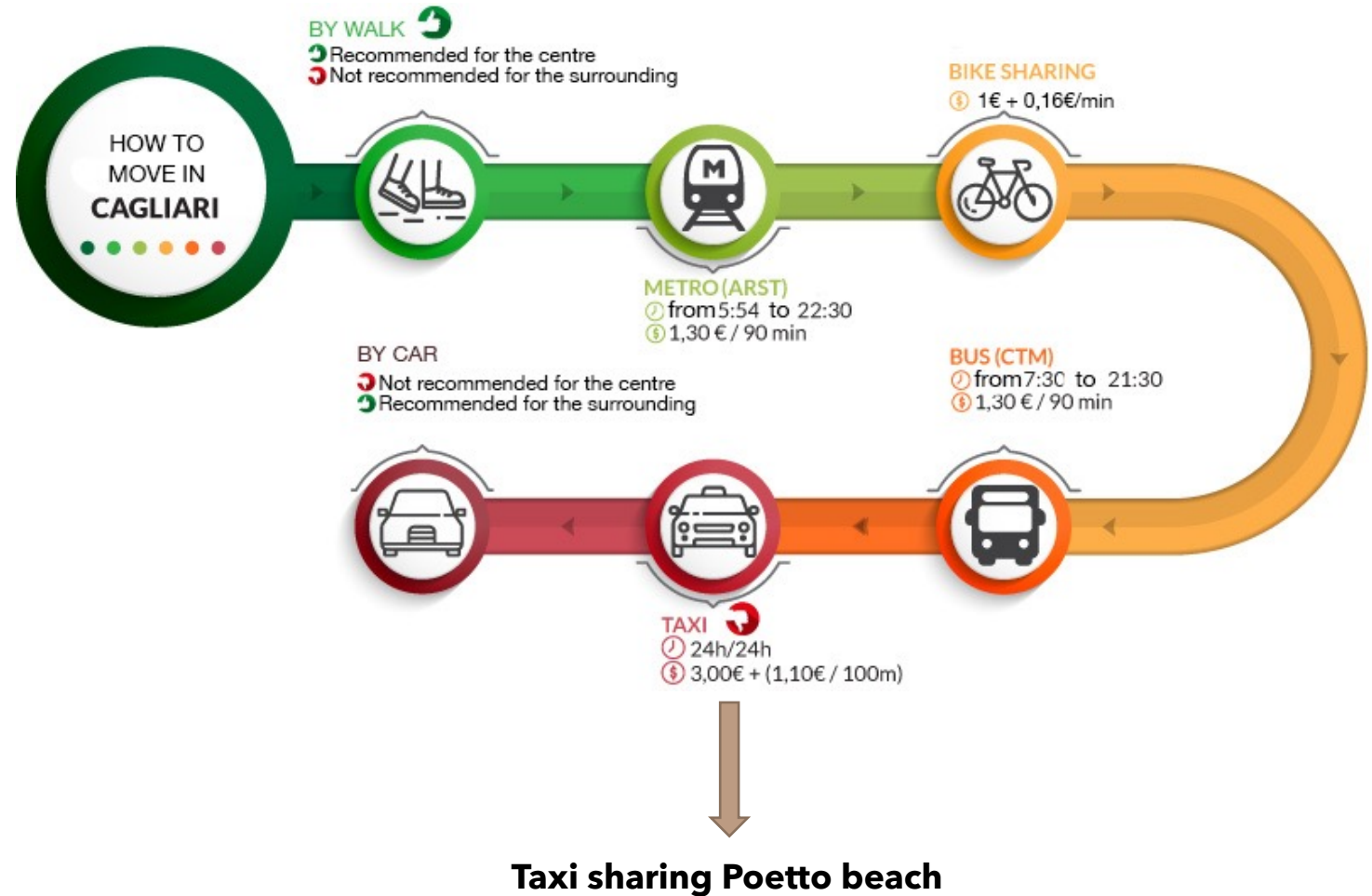
5 minutes walking





# Moving in Cagliari

- By bus/metro
  - <https://www.ctmcagliari.it/wp-content/uploads/2019/12/mappa.pdf>
- By sharing (e-bike and electric kick scooter)
  - Play car
    - <https://www.playcar.net>



Service valid from any point in the city to the Poetto beach Ottagono limit, operating 24h for 4 persons. Up to 3 passengers the taximeter amount will be valid.

# Local Public Transport

As you will stay in Cagliari for about 2 weeks, we recommend to buy **2 weekly tickets** at the cost of **€ 12,00 per ticket**.

The weekly ticket offers unlimited travel throughout the Metropolitan area network, including Metrocagliari service, for 7 days from the ticket validation time. Remember to validate the ticket on board the first time you take the bus.

You can **buy your tickets** at the nearest CTM ticket shop.

The **nearest CTM shop** to your hotel is in Piazza Matteotti, 3 minutes walking distance from Hotel Italia.

Please see shop's opening times below:

from Monday to Saturday	7.30-13.30
Sunday and national holidays	closed

The ticket machine outside the shop is open 24/7 so you can buy the ticket on Sunday upon your arrival.



Alternatively, tickets are also available in **selected shops** that show this image at the door.

The best and quickest way to purchase the weekly tickets is by downloading the **App Busfinder**, available for Android, iOS and Huawei.

The app CTM busfinder can be downloaded in English and it is very easy to use. Once you have entered personal data for the subscription, select Tickets>Buy, then choose the **Weekly ticket** option and proceed to the payment.

# Sharing Mobility - free of charge.

Use the **link** received by mail and follow the procedure to register.  
**Don't enter your driving license** because you have the possibility to  
use only bikes and kick scooters, **not cars**



# Visiting Cagliari



Ask for your **free card!**  
Discounts and benefits for you.



# **Information about didactic activities**





# CoWorking Lab

Co-working laboratories are conceived as moments of interdisciplinary design and planning between participants and experts and will be organized dividing participants in 5 teams each as diversified as possible in terms of competence and nationality. The aim of each team will be to define a «smart» proposal (technical, social, governance, etc. solutions) to tackle climate change issues in the case of Sant'Alenixedda neighborhood.



Sant'Alenixedda Neighborhood

0 100 200 300 400 500 m





# International Exchange

**Before the starting of the school** each participant has to choose a city (of its nation) in order to present it to the other participants (possibly with a power point) in relation to the policies and technical solutions it's implementing to tackle the climate change.

It's requested a critical vision.



*The complex of buildings erroneously known as the 'Jewish Ghetto' stands on the bastion of Santa Croce, overlooking the castle walls. The building originated in 1738 as military barracks. The improper name 'Jewish Ghetto' derives from the fact that a little further on there was the quarter where they lived...*

**21 June : Smart mobility solutions to mitigate climate change**

**28 June: Rethinking urban places and services to tackle climate change**

Interpretation services will be available through the Rafiky app. To use the service follow the instructions below

1. Download the latest version of the Rafiky Connect app from the Apple Store or Play Store.
2. Once the app is installed, enter the Username, e-mail and Token provided by our team.
3. We have to use a headset with your Smartphone while listening to the interpreter via our App.
4. To change channels, click "Disconnect" and select the new channel you wish to connect to.



Play store



Apple store

[Video Promo App](#)

[Tutorial](#)

The aim of the **AperiNET** is to foster networking between institutions, enterprises, research centres and promote virtuous exchanges and knowledge transfer enjoying good wine and good food.

# Detailed Calendar





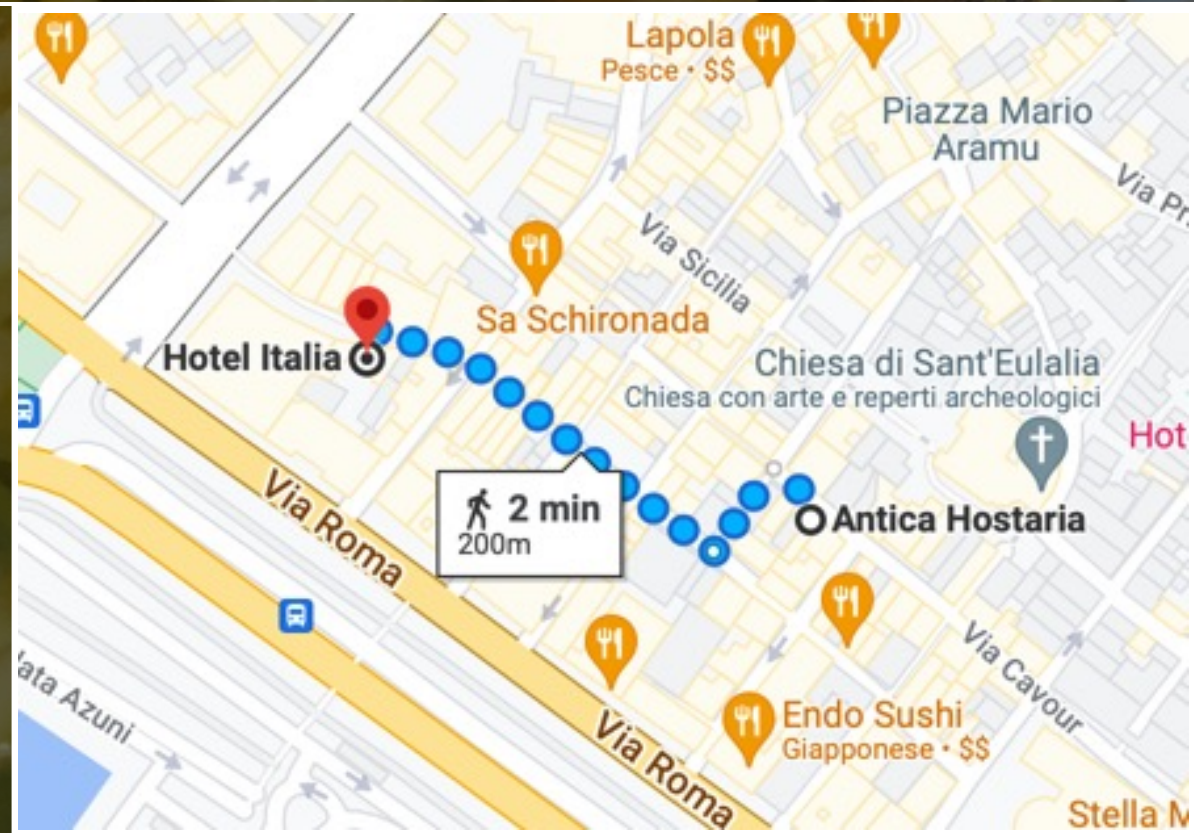
19 june

# Welcome Dinner

21:00

«Antica Hostaria» Restaurant

Via Cavour, 60





20 June 9:00 – 09:30

# Institutional welcome



**Alessandra Carucci**

University of Cagliari  
Vice-Rector for international affairs and EDUC Scientific  
Coordinator for UNICA



**Giorgio Massacci**

University of Cagliari  
Director of the Department of Civil and Environmental  
Engineering and Architecture (DICAAR)



**Luigi Mundula**

University of Cagliari  
ISCiS Summer School Director



**20 June 9:30 - 11:00**

# **Donatella Vignani**

## **ISTAT**



The key note will be divided into a first part of about 1 hour in which the empirical evidence related to the main statistical indicators on meteoclimate in cities will be illustrated, with a zoom on the city of Cagliari, and a second part (about 30 min) with questions and in-depth analysis.

20 June 11:00 - 12:00

**Alessio Satta**

**Med Sea Foundation and Med Wet**



The key note will be focus on the adaptation to climate change and coastal risk through Nature-based solutions. In particular, coastal communities resilience and the case of the Meditteranean baasin will be described.



20 June 12:00 - 13:00

# Marcello Schirru

## University of Cagliari



*The lecture illustrates the historical-architectural and urbanistic events of the city of Cagliari, from the late Middle Ages to the twentieth century the evolution of its ancient districts and expansion plans drawn up since the second half of the nineteenth century. Through the projection of images, it will be shown how much remains in today's buildings of the various historical eras. A particular study will be dedicated to the area between the San Benedetto, CEP, Fonsarda, Giudici districts, specific object of the coworking-Lab.*





**20 june**

# Cagliari City Discovering

**3 hour Walking Tour of Cagliari's two most picturesque historic quarters: Castello and Marina**

The tour will take you first of all to the 'old' Cagliari: the picturesque CASTELLO quarter, founded by the Pisans in the Middle Ages, which stands in a dominating position from where you can enjoy an amazing panorama of the entire city. Fortifications such as the towers, city walls, bastions, as well as churches and old noble residences will let you experience the immense historical, artistic and architectural heritage of ancient Casteddu.

We will continue our guided tour of LA MARINA, Cagliari's liveliest, most sparkling and dynamic district. La Marina is cosmopolitan and multicultural, and the shopping area is full of shops, art galleries, jewellers, small craft workshops, restaurants and typical trattorias. Here we will visit the Sant'Eulalia museum centre, an artistic and cultural treasure, where we will take a journey through more than 2000 years of Cagliari's history.

**15:00 Guided Tour of Castello (departure from piazza dell'indipendenza)**

**16:00 Sant'Eulalia Museum and archeological area**

**17:00 Guided Tour of Marina**

**18:00 Aperitif (offered by Consorzio Cagliari Centro Storico)**





# Luigi Mundula

## University of Cagliari



*Smart cities and climate change : from definitions to policies*

The lecture will be focused on the Smart city concept. Firstly, it will be discussed whether it should be understood as a new paradigm or a new label. Secondly, it will be showed indexes actually used to measure the “smartness” of a city and how these are used as policy tools. Thirdly,

- From a smart to a bright city (i.e. joining smartness, sustainability, cohesion, and resilience concepts) moving from linear to circular economy
- The dark sides of smart cities.

# Gianfranco Fancello

## University of Cagliari



The ongoing climate change imposes a strong turnaround on the issues of energy systems, with particular reference to those related to mobility.

The lecture will focus on the state of the art of the various transport systems and the prospects for energy transition in the near future, with reference both to technological and infrastructural aspects and to new mobility behaviour on the part of users.



The complex of buildings erroneously known as the 'Jewish Ghetto' stands on the bastion of Santa Croce, overlooking the castle walls. The building originated in 1738 as military barracks. The improper name 'Jewish Ghetto' derives from the fact that a little further on there was the quarter where they lived...

## Smart mobility solutions to mitigate climate change

18:00

**Stefano Epifani** - President of Digital Transformation Institute Foundation

18:15

**Lorenzo Giustozzi and Mirko De Maldè** - Moveax - *From Smart to Cognitive City: a focus on smart and sustainable mobility and relevant technological enablers*

18:30

**Giuseppe Colistra and Marco Uras** - Greenshare - *Smart Mobility: Mobile Ticketing, Fleet management and People Mobility Monitoring*

18:45

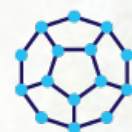
**Fabio Mereu** - Playcar - *The design of the sharing mobility in the city of Cagliari*

19:00

**Stefano Mameli** - DG Metropolitan City of Cagliari

19:15

**AperiNET**



FONDAZIONE  
PER LA SOSTENIBILITÀ  
DIGITALE

Digital  
Transformation  
Institute

**moveax**  
Building the future, together.



**GreenShare**



**playcar**



CITTÀ  
METROPOLITANA  
DI CAGLIARI

The aim of the **AperiNET** is to foster networking between institutions, enterprises, research centres and promote virtuous exchanges and knowledge transfer enjoying good wine and good food.

# Meryam Benabdeljelil

## University of Paris Nanterre



*Smart Cities* between the promises of utopia and the dystopian disillusion in the scopes of climate change.

Displaying the importance of technology influence on building ideological *Smart City* concepts in its relation to climate change and to its driving utopian and/or dystopian ambivalence is one goal of this lecture. Advertising smart solutions to answer today's climate challenges leads to expectations often swinging between a utopian and a dystopian future. The approach aiming to highlight the importance of technological imagination in the conception of Smart cities discusses its intrinsic relationship with utopia/dystopia, especially in the scopes of climate change.

The impacts of *Smart Mobility* and the paradigm shift on urban dynamics

Hybridization between technology and urbanity is manifested in public spaces in terms of practices as well as infrastructure (urban and digital). This section will consider thoughts around the mobility paradigm shift, Mobility As A Service (MAAS), ambitions of shared mobility and issues of collected data, with their influences on climate change regarding air pollution, congestion etc ...

Relations between smart cities, mobility and climate change will be covered through some examples of smart mobility solutions.



# Diego Reforgiato

## University of Cagliari



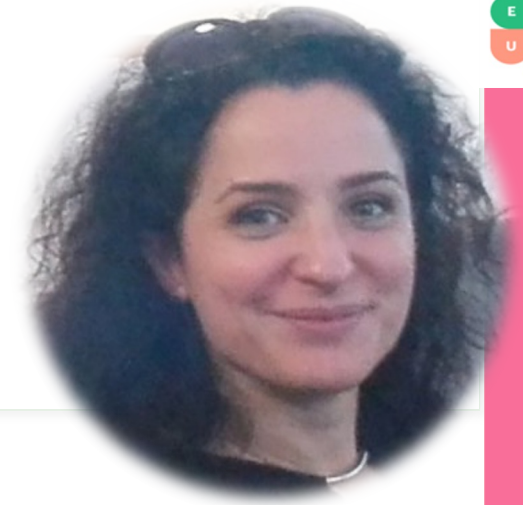
In 2017, thanks to word embeddings, an innovative technology was developed in the Deep Learning domain known as Transformer, where, unlike recursive networks where neurons' activations depend on the current word, the current word produces a vector activation that also considers all other words in the sentence, each weighted according to their relevance. This relevance (Attention mechanism) is learned by the different linguistic contexts to which the model is exposed. Thanks to Transformers and the architectures that have evolved in the following years (e.g., Generative Pre-Trained Transformer - GPT, Bidirectional Encoder Representations from Transformers - BERT), it is possible to efficiently solve problems such as machine translation, book summaries, prose generation in a certain style, software writing, music, poetry, conversation, and automatic answer to questions on a given input text. Examples of the application of transformers and Deep Learning in the context of smart cities such as smart urban modelling, smart infrastructure, smart transport, smart governance, sustainability, smart education, smart solutions for health, security, privacy will be shown.



**22 June 15:00 - 16:00**

# **Chiara Garau**

## **University of Cagliari**



The negative effects of global trends such as pandemics, climate change, social inequality, and natural disasters are amplified in urbanised areas. The seminar investigates the concepts and strategies developed within the smart and sustainable city paradigm and aims to promote from a practical standpoint, life satisfaction, health, social inclusion, economic prosperity and environmental sustainability. Specifically, the seminar will concentrate on the concept of a smart city and smart urbanism as the basis for a policy focused on climate change, and a set of indicators will be presented to structure the cognitive framework required for the development of planning strategies, within a smart perspective. The aim is to illustrate the development of smart cities that could face climate change and could improve people's quality of life.



22 June 16:00 - 17:50

COWORKING LAB

# Chiara Garau

## University of Cagliari



The co-working lab will focus on the practical application in which the students will work in the classroom by considering one of the sets of the indicators described in the first module.





# CRS4 & Nora Tour

**8:30**

Departure from Hotel Italia by bus

**09:00**Guided Tour **CRS4 (Pirri)****10:30**

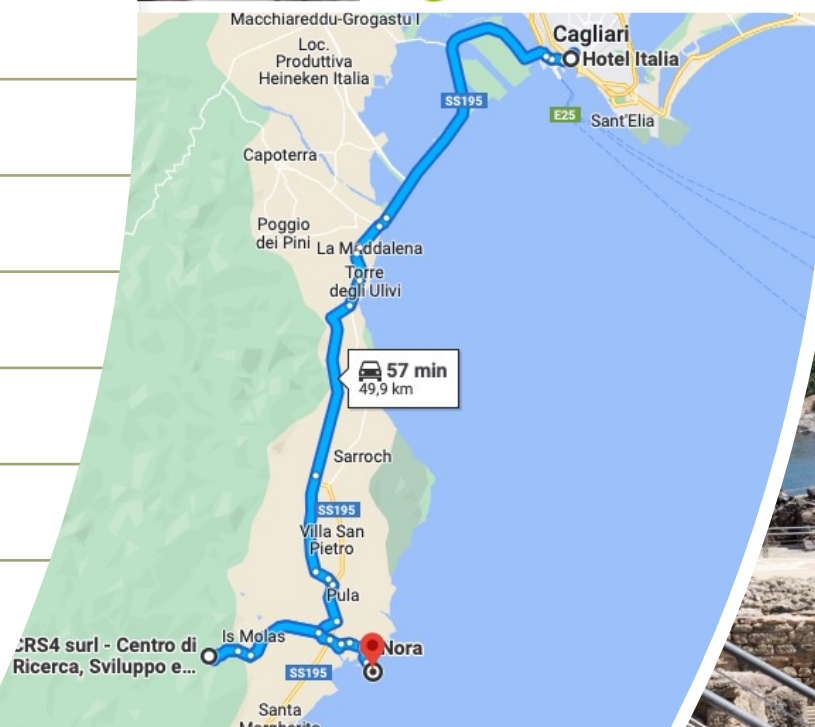
Departure to CRS4 (Piscina Manna)

**11:30**Guided Tour **CRS4 (Piscina Manna)****13:00**Picnic on the **Nora beach****16:30**Guided tour of the **Nora archeological area****17:30**

Beach

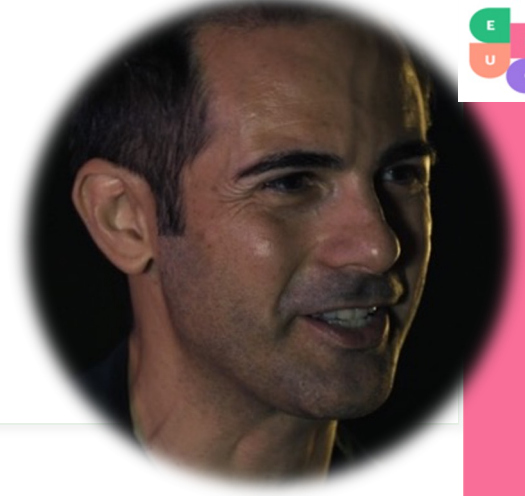
**18:30**

Back trip to Cagliari

**20:45****Typical Dinner** - «Sardegna 85» Restaurant - Via Sardegna, 85

# Simone Ferrari

## University of Cagliari



*Microclimate Urban Design as a strategy for the mitigation of climate change in smart cities*

The Urban Heat Island (UHI) phenomenon is the local expression of climate change: in the urban built environment the temperature can be from 1 to 10 °C higher than in the surroundings. Considering that 55% of the world population lives in cities and this percentage is going to increase till 67% in 2050, most of the world population is and will undergo to the health and discomfort issues related to UHI.

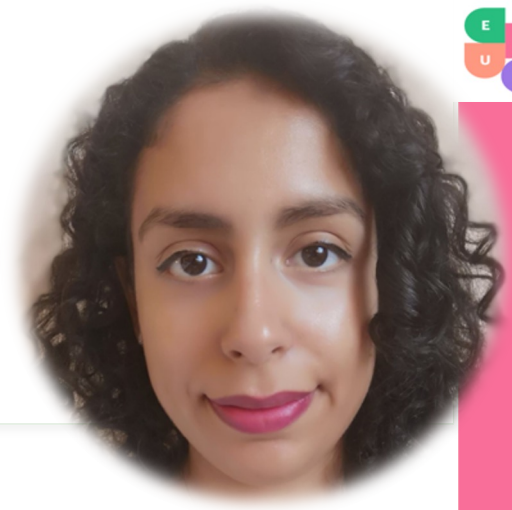
The UHI is generated by the air and energy trapping caused by interaction of buildings among each other and with air flows, with a consequent trend to accumulate, among the others, heat, humidity and pollutant released in the cities. The Microclimate Urban Design is a recursive and multidisciplinary design process employing the size, shape and relative position of buildings in order to promote the UHI phenomenon reduction, as well as the dispersion of pollutants, the improvement of air quality and human outdoor comfort and the optimization of smart cities' energy performances.

In this lecture, an introduction on the Urban Microclimate fundamentals will be given, to then focus on an overview of the main Microclimate Urban Design strategies for the planning of the next generation smart cities.

24 June 11:00 - 12:00

# Meryam Benabdeljelil

## University of Paris Nanterre



Approaching *Smart Cities* urban planning

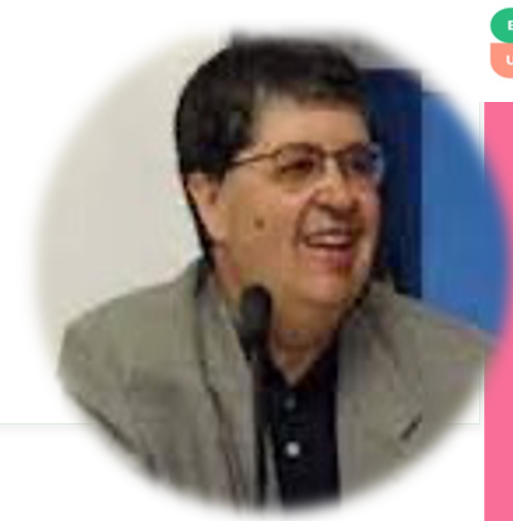
The lecture will focus on solutions suggested by "quarter-hour" city and "half-hour" territory, on their goal to reduce resource consumption, explore some examples of the latest Smart Cities, and on how these concepts propose new designs for cities.



24 June 12:00 - 13:00

# Paolo Contu

## University of Cagliari



*To co-design a vision of health promoting mobility for a smart city.*

Dream for health promoting mobility for a smart city in 2030

Input from international documents

Worldcafé (exchange in small groups): to co-design a vision on physical activity, mobility, leisure for a smart city

24 June 15:00 - 17:50

# Stefano Pili

## Sotacarbo

COWORKING LAB

*Introduction to using QGis*

In this coworking-lab, the basics of working with the open access software Qgis will be presented. Participants will try, operationally, to use the software





25 june (option 1)

# FREE DAY or Gonnesa Tour - 30€ (not mandatory tour)

9:30

Departure from Hotel Italia by bus

10:30

Tour **Tuna factory of Portopaglia** and **Fishermen's Village**

11:30

Guided Tour **Nuraghe Seruci**

13:30

Typical Lunch in Agritourism

15:30

Tour **Gonnesa**: Historical houses and Monument Piazza del Minatore

16:30

Tour **Mining Village «Normann»**

18:30

Guided tour **«Pozzo Baccarini»**

19:30

Back trip to Cagliari

The tour will be done with a  
minimum of 20 participants

To book write an e-mail to  
[info@gogonnesa.it](mailto:info@gogonnesa.it)

# GONNES

## centro commerciale natur





## FREE DAY or Bike Tour of Molentargius Park (not mandatory tour)

**10:00**

## Bike Tour of **Molentargius**

**12:00**

Free Time / beach

09:16  **Hotel Italia**  
Via Sardegna, 31, 09124 Cagliari CA



A piedi

▼ Circa 2 min, 210 m

09:18 ○ Roma (Molo Sanità)



**PF** Flumini

✓ 10 min (10 fermate) · ID fermata: 0024

09:28 ○ Poetto (fron­te G.Rossi)



A piedi

▼ Circa 11 min, 850 m

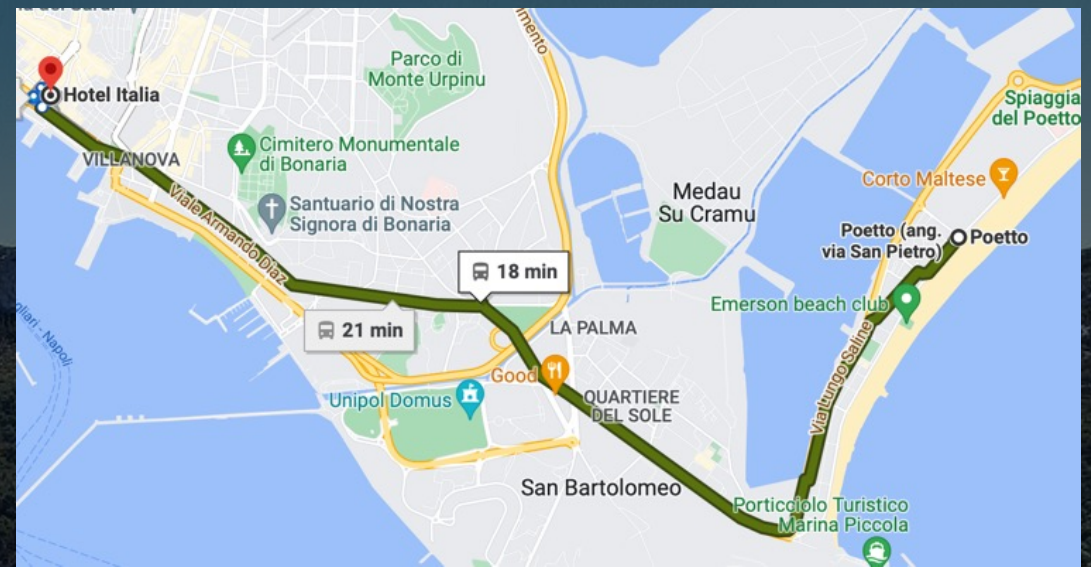
09:39  **Parco Naturale Molentargius Saline**  
Via la Palma, 9, 09126 Cagliari CA





26 june

# FREE DAY



We suggest you to go around Cagliari or enjoy a day at the Poetto beach.

You can reach it by bus (line PF or PQ) in 20 minutes (more or less)



# Giuseppe Desogus

## University of Cagliari



*The segmentation and characterization of urban buildings and optimization of energy retrofit scenarios.*

*Firstly, a brief overview of the segmentation techniques finalized to urban building energy modelling will be illustrated. Top down and bottom-up approaches will be described and commented, with a specific focus on the use of archetypes. A possible classification of the main parameters to be adopted for buildings clustering will be proposed with reference to the practical study case that will be the object of the workshop. Then, the possible retrofit scenarios, including the integration renewable energies, will be analysed for different archetypes and the energy saving potential of each of them will be evaluated.*





# Fabrizio Monfardini

## University of Cagliari



*Sustainability, innovation and democracy*

The lecture will focus on the question if an environmental innovation in public sector can be effective and also respectful of the will of the citizens.

In particular will be showed the case of Area C in the city of Milan, an innovation in transport policy, aimed at reducing traffic pollution.

Results show that the innovation is achieving relevant results in reducing both pollution and traffic congestion, while increasing the average speed of public transport. Such achievements have been reached through a long process of consensus building, started including such policies in the electoral program, and persuading citizens about the necessity and usefulness of the initiative.

27 June 12:00 - 13:00

# Juergen Kropp

## Potsdam Institute for Climate Impact Research (PIK)



*Carbon Capturing for Free: How cities can become real carbon sinks*

Deals with new materials and highlights challenges and opportunities of new construction materials from a climate change perspective



# Juergen Kropp

## Potsdam Institute for Climate Impact Research (PIK)



*Solving the Climate Dilemma: the role of urban agglomerations*

Discusses how urban systems are interfering with the climate, i.e. in both directions. Thus, as a victim and an origin of climate change. It is shown that planning and climate friendly development needs a careful evaluation of global dimensions as well as local target conflicts (e.g. heat burden, low carbon development, etc. pp.)

*Carbon Capturing for Free: How cities can become real carbon sinks*

Deals with new materials and highlights challenges and opportunities of new construction materials from a climate change perspective





28 June 11:00 - 13:00

# Leonard Walletzky

## University of Masaryk



Service complexity.

The role of the context in service design and understanding each service's overlaps and influences.

How does service (solution) interact with others? The service can influence others in many ways, and what seems to be a good solution, at first sight, can bring negative value. How to prevent such situations, and how to develop really valuable solutions?

The complex of buildings erroneously known as the 'Jewish Ghetto' stands on the bastion of Santa Croce, overlooking the castle walls. The building originated in 1738 as military barracks. The improper name 'Jewish Ghetto' derives from the fact that a little further on there was the quarter where they lived...

## Rethinking urban places and services to tackle climate change

18:00

**Daniela Ducato** - President WWF Italy and President Territorio Italia Foundation



18:15

**Luca Provenzani** - Al maviva - *Enabling IoT infrastructures for the city*



18:30

**Graziella Roccella** - Planet Smart City - *Experiences of smart districts in Italy*



18:45

**Gianluca Cighetti** - SSG - *Management of logistics sustainability policies and city liveability through robotics services*



19:00

**Riccardo Porcu** - General Director IT Innovation and Security of Sardinia Region



19:15

**AperiNET**

The aim of the **AperiNET** is to foster networking between institutions, enterprises, research centres and promote virtuous exchanges and knowledge transfer enjoying good wine and good food.

# Leonard Walletzky

## University of Masaryk

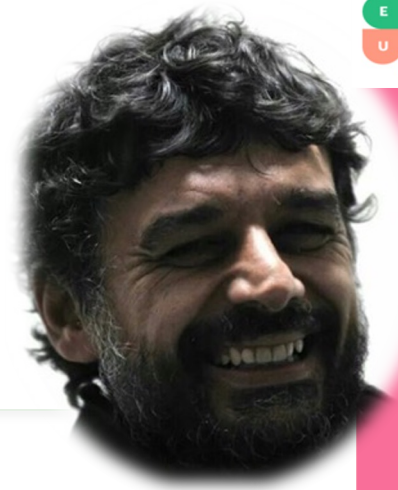


Climate change and resilience examples – from waste management to public transportation or energy grids (complex value of the services and analysis of the service environment)



# Ferdinando Fornara

## University of Cagliari



The contribution of Environmental Psychology for promoting sustainable behaviours at the urban level.

Nowadays a paradigm shift is needed in order to impact successfully on climate change and related phenomena. Research in environmental psychology has tried to detect under which socio-psychological conditions individuals, groups and communities are more likely to perform more sustainable practices and behaviours.

This seminar will focus on those factors, such as pro-environmental attitudes and beliefs, biospheric values, perceived behavioural control, normative pressure (i.e., social and moral norms), place identity and place attachment, that have proven their influence - as possible drivers or barriers - on an array of environment-related behaviours performed at the urban level, in the light of the promotion of the Smart City.

30 June

# Porto Flavia & Sotacarbo Tour

**8:30**

Departure from Hotel Italia by bus

**10:00**Guided Tour of **Porto Flavia****11:30**Departure to **Sotacarbo** (Carbonia)**12:30**

Guided tour of Sotacarbo laboratories

**13:15**

Lunch (offered by Sotacarbo)

**14:15**

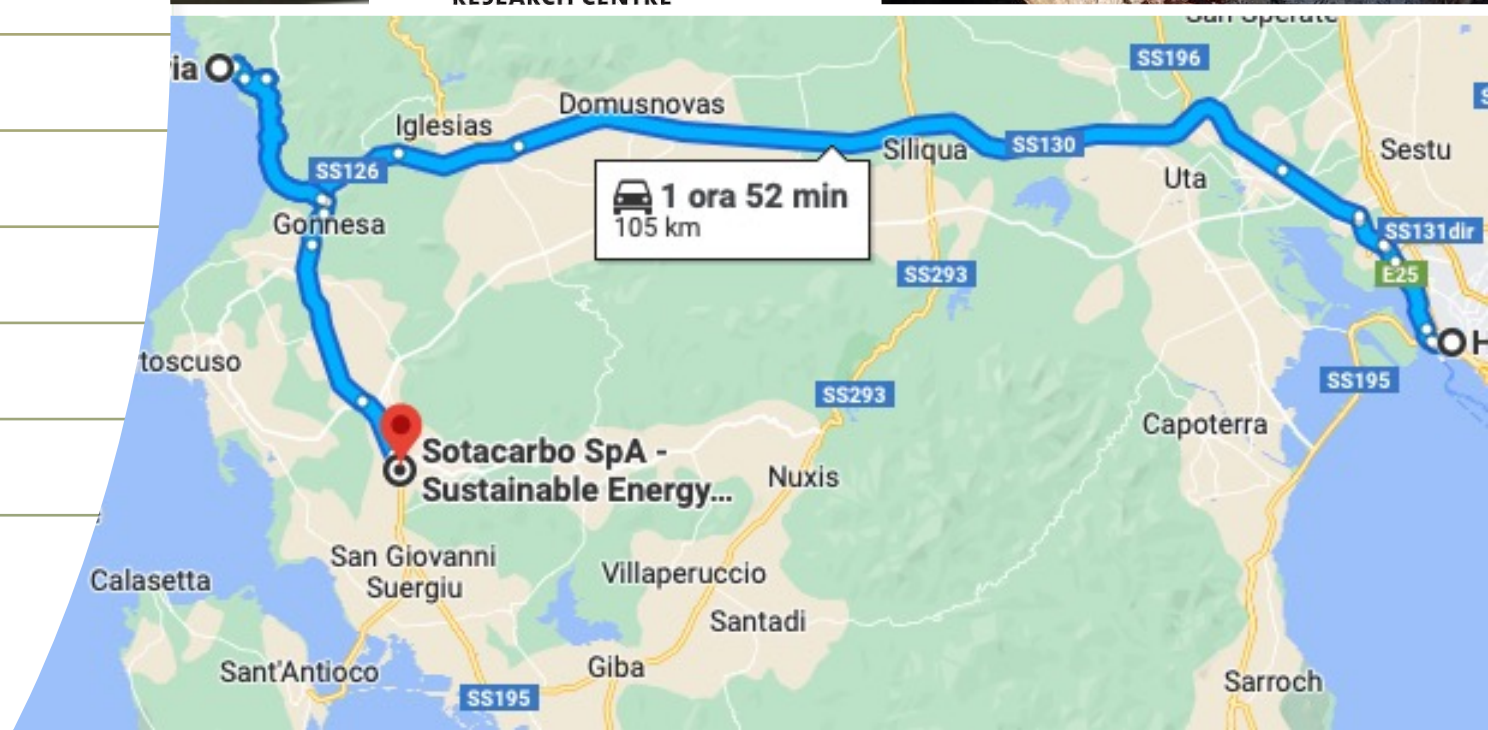
CoWorking Lab (Stefano Pili)

**16:30**

Results presentation by the teams

**18:00**

Back trip to Cagliari





30 June 14:15 - 16:30

COWORKING LAB

# Stefano Pili

## Sotacarbo

*The "Energy Community paradigm"*

After a touch on the theoretical background about studies on energy retrofitting potential in a complex system, like could be considered an urban area, a simple methodology will be implemented in the workshop. Students will use an easy GIS based energy modeling approach in order to describe some energy retrofitting scenarios for a group of buildings in the study area. The target is to represent the theoretical potential of the new "Energy Community" paradigm on some different parts of the study area characterized by specific building archetypes."





# **A SI BIRI CUN SALUDI!**

*See you again  
in good health!*

**16:00**

Team works presentations

**18:00**Comments on  
Team works**Giorgio Angius** - Deputy Major of Cagliari**Michele Casciu** - President of Architect Professional Order of Cagliari**Sandro Catta** - President of Engineer Professional Order of Cagliari**Teresa DeMontis** - President of Federation of Architect's Professional  
Orders of Sardinia**Mario Asquer** - President of Agronomists Professional Order of Cagliari**19:00**Closing  
ceremony**19:30**

Farewell Party