



Ajuntament
de Barcelona

International Forum On Urban Digital Twins

12th September 2023 | @ Munich Urban Colab

Digital Twin: the future of urban planning

Barcelona contribution

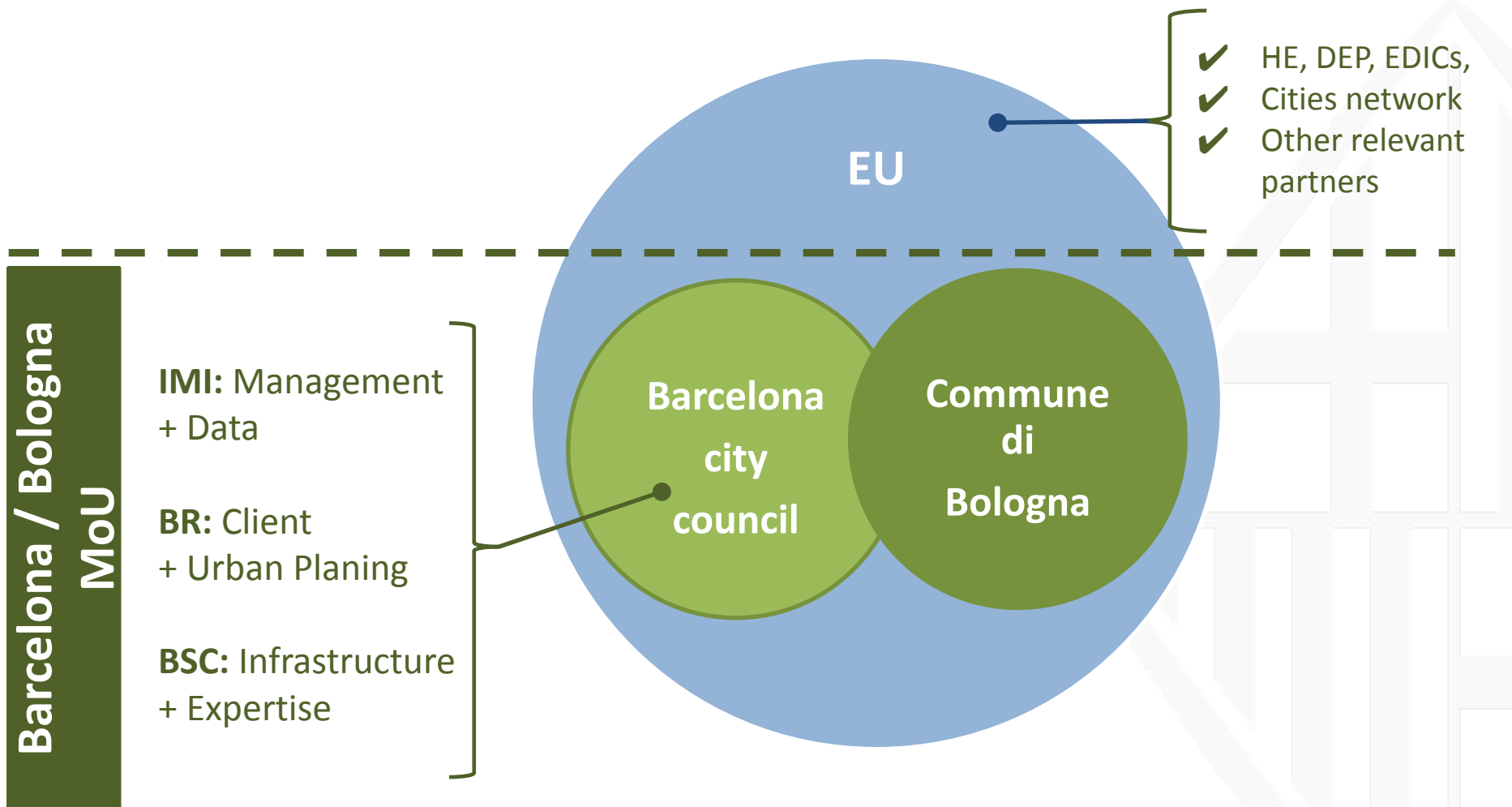
*Barcelona Digital Twins team
12th September 2023*



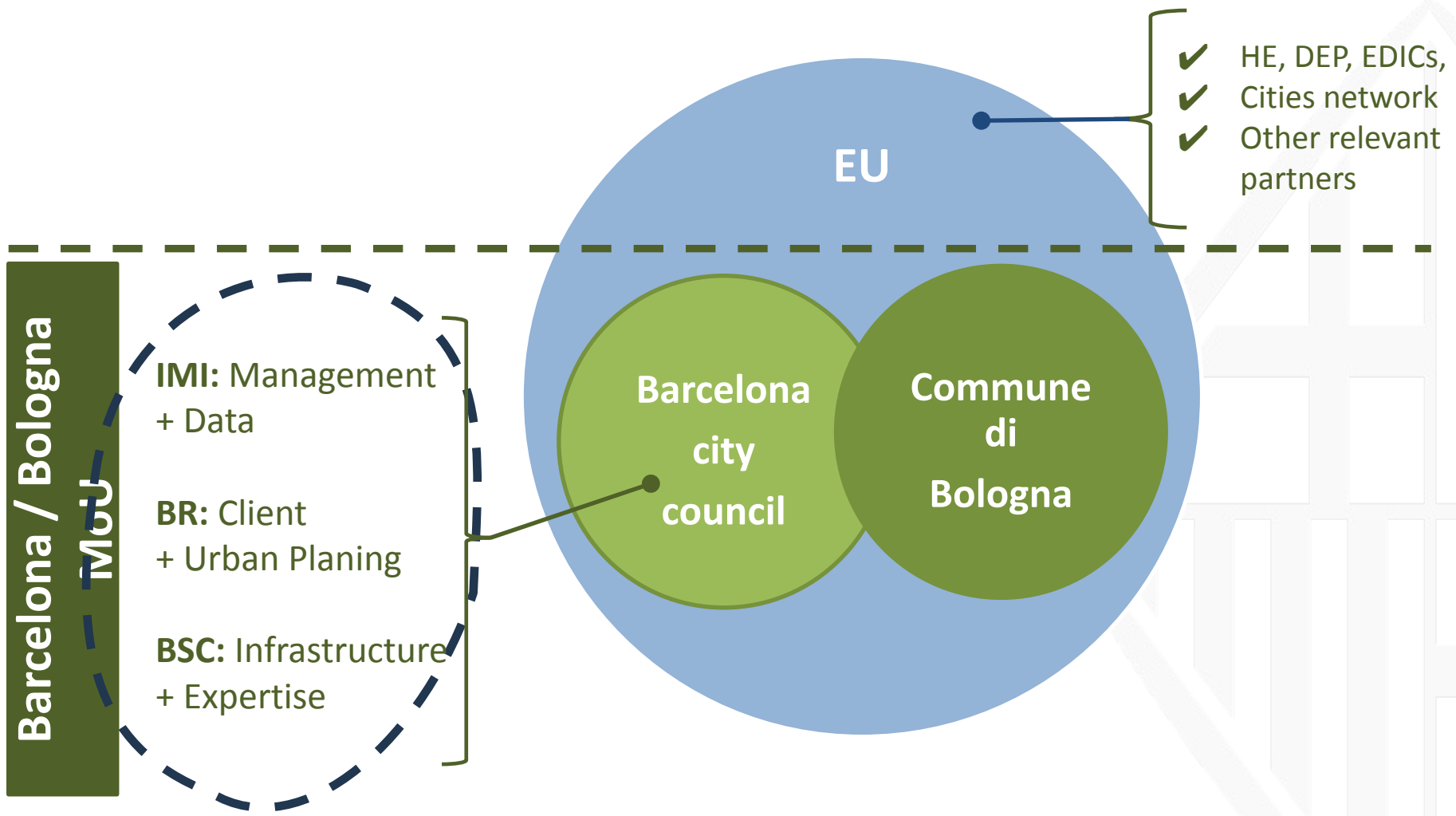
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4. First steps

1. Barcelona Digital Twins ecosystem



1. Barcelona Digital Twins ecosystem





Barcelona Digital Twins Ecosystem

IMI / Municipal Institute of Information Technology

Management. Ecosystem. Data provisioning



BR / Barcelona Regional

Prescription view + Urban Planning

BSC / Barcelona Supercomputing Centre

Infrastructure + Expertise



1. Barcelona Digital Twins ecosystem

Barcelona Digital Twins Ecosystem



IMI / Municipal Institute of Information Technology

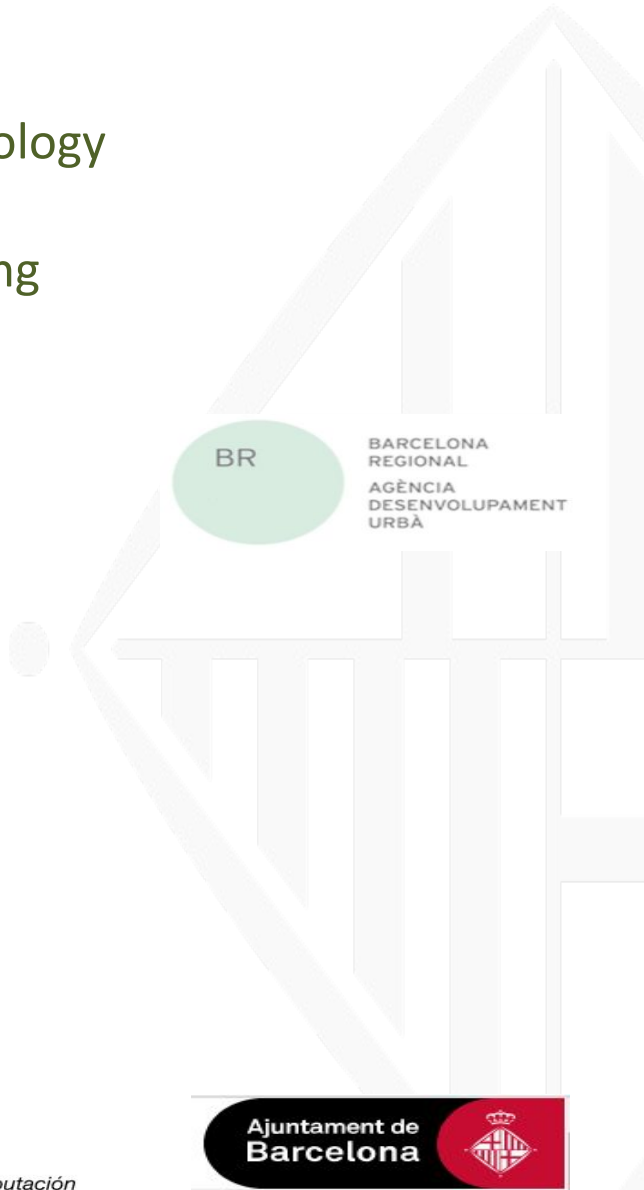
Management. Ecosystem. Data provisioning

BR / Barcelona Regional

Prescription view + Urban Planning

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1. Barcelona Digital Twins ecosystem

Barcelona Digital Twins Ecosystem



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2. Ambition & challenges

City complex ecosystem

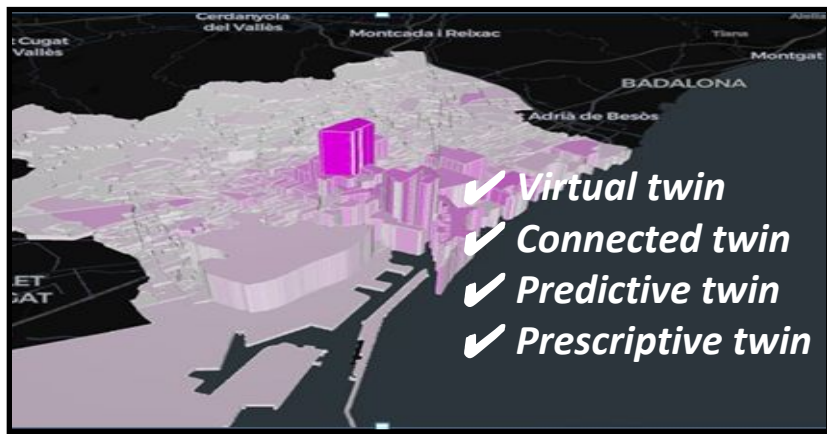


2. Ambition & challenges

City complex ecosystem



Digital Twin maturity level

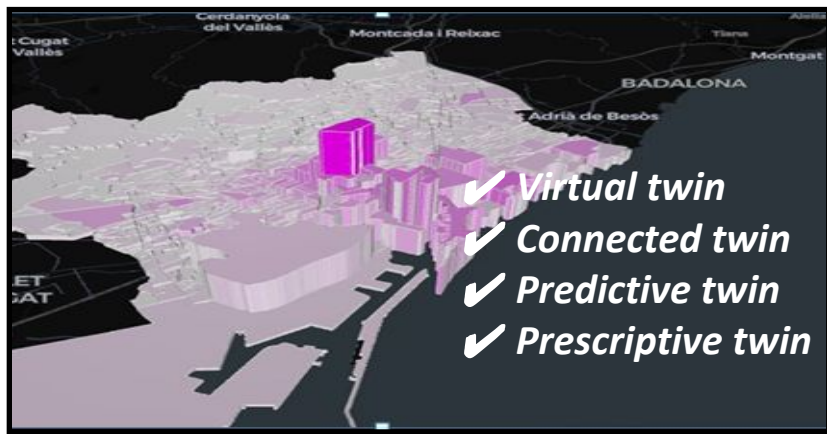


2. Ambition & challenges

City complex ecosystem



Digital Twin maturity level



ICT infrastructure

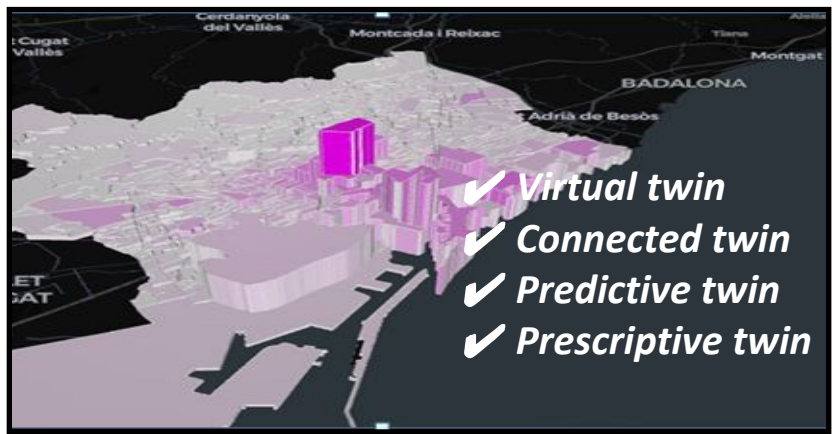


2. Ambition & challenges

City complex ecosystem



Digital Twin maturity level



ICT infrastructure



Stakeholders ecosystem

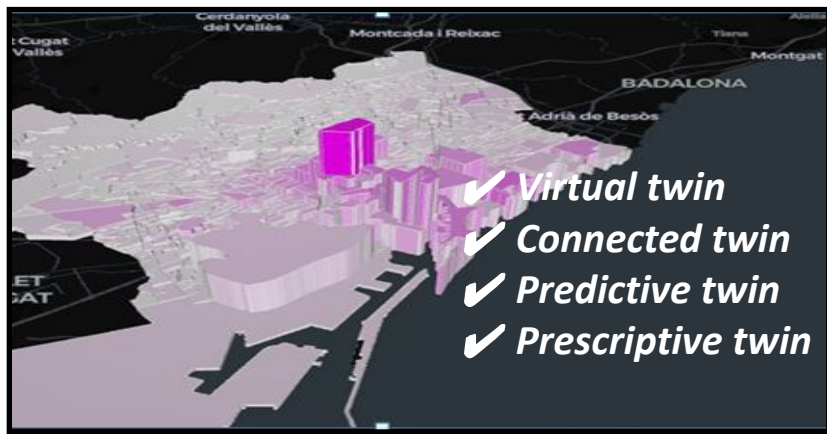


2. Ambition & challenges

City complex ecosystem



Digital Twin maturity level



Interoperability: Technical, Semantic, Organizational & Legal

ICT infrastructure



Stakeholders ecosystem

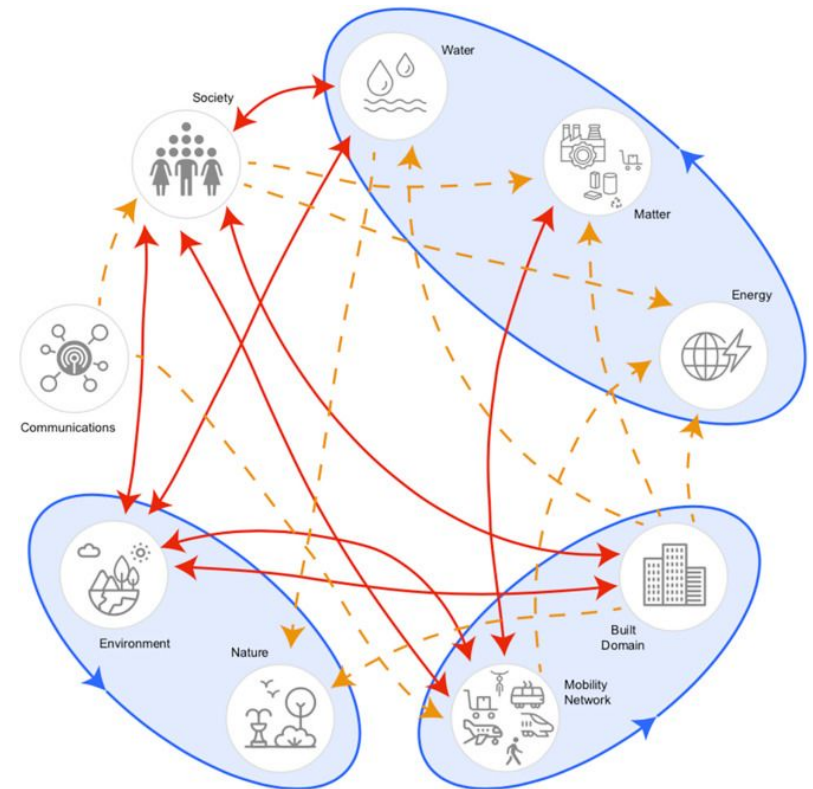




- National Supercomputing Centre in Spain
- member of the European network of supercomputers

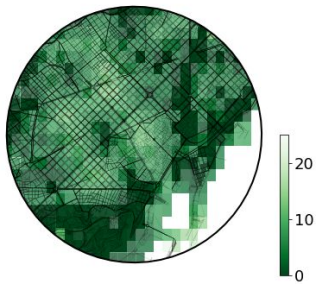
A screenshot of a web browser displaying a news article from POLITICO. The browser's address bar shows the URL 'politico.eu/article/barcelona-digital-twin-future-city-planning/'. The article's title is 'Barcelona bets on 'digital twin' as future of city planning', and the sub-headline reads 'New scheme aims to ensure planning is based on solid data, rather than political whim.' The article is categorized under 'LIVING CITIES'. The background image of the article shows a modern server room with rows of server racks, set within a grand, historic building with high ceilings and arched windows.

- Underlying **theoretical framework** on how to build an urban digital twin
- Describes how the different parts of the city –its anatomy– work and **interact together**
- **Modularity** makes it easy to upgrade and **transfer to other cities**

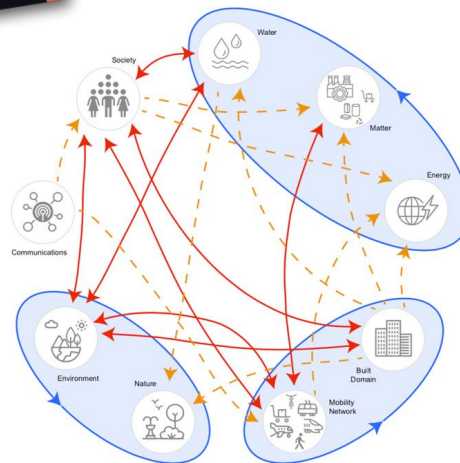




bike-lane network



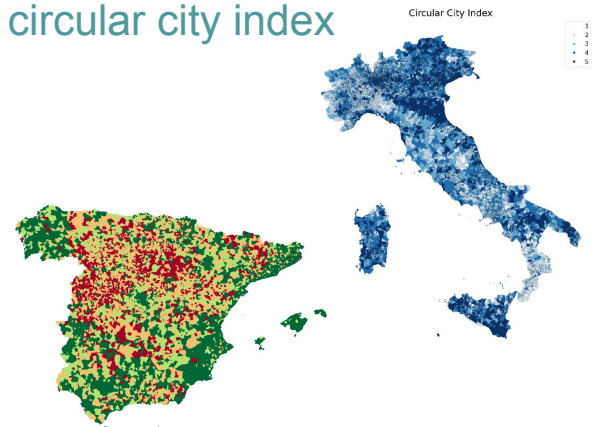
public green index



circular city index



AI-driven air quality estimation



mobility & accessibility

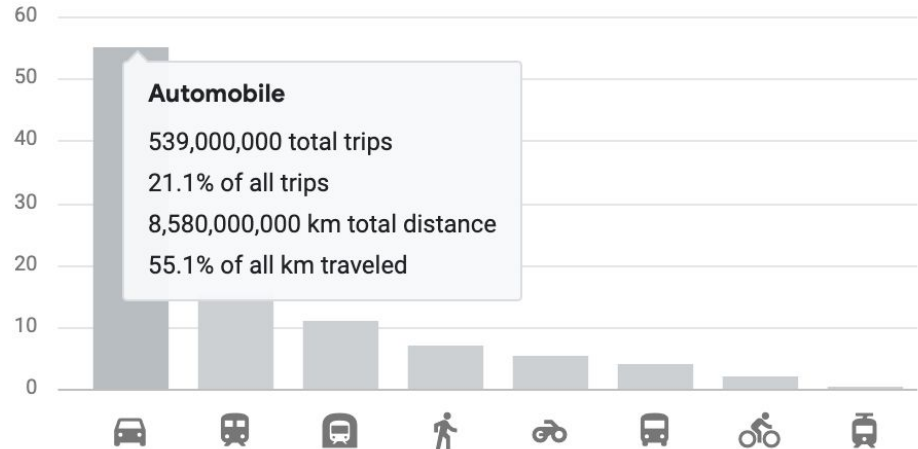
Mission Cities:

100 Climate-Neutral and Smart Cities by 2030

– European Commission, 2021

Challenge: cities require drastic changes in transportation


% of total combined kilometers by mode



Kilometers by mode in Barcelona
Source: Google EIE



mobility & accessibility



Ajuntament de Barcelona

Català Castellano English

Facilities

City CSV

Type the City and select the Facility type you want to visualise.

City

Facility type

List of facilities

	name
1	National Hospital for Neurology and Ne
2	Priory Hospital
3	Bridge Lane Health Centre
4	Royal Home and Hospital for Incurable
5	Chelsfield Park Hospital
6	Sloane Hospital
7	Queen Mary's Children's Hospital

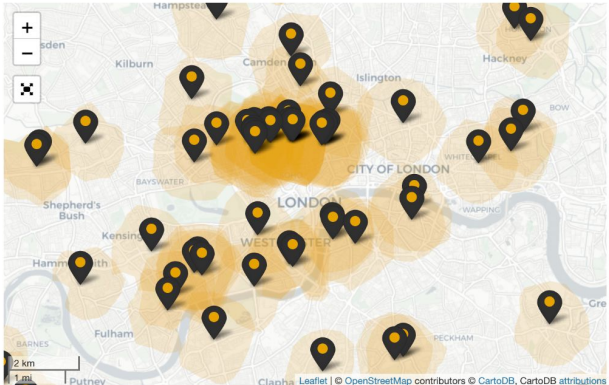
The 15-minute city

Is London a 15-minute city?

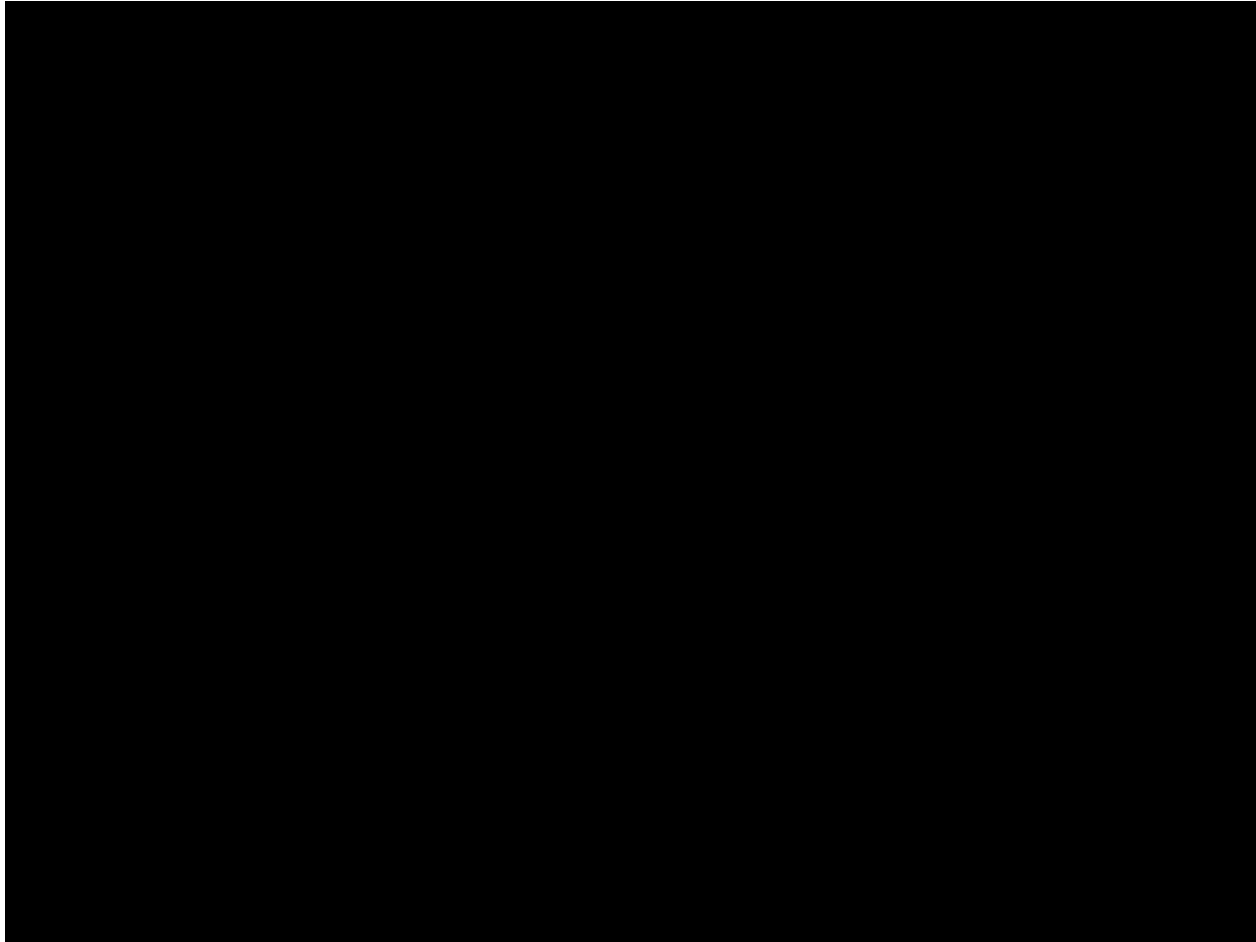
The map shows the areas in London where a facility of type **hospital** can be reached within 15 minutes of walking.

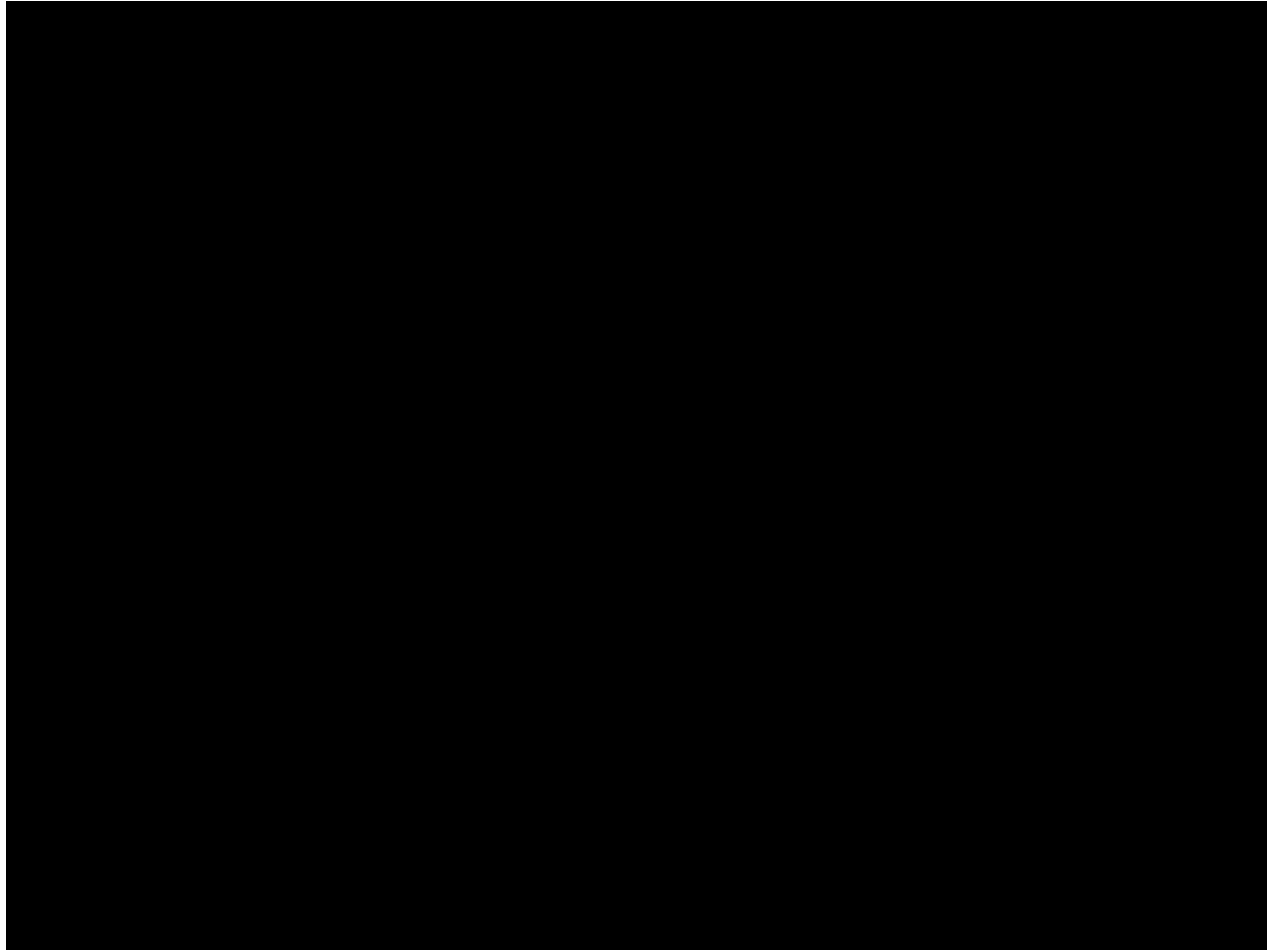
Transport mode: walking

Maximum time to reach a facility (in minutes): 10 — 15 — 20



Advanced tools







Comune di Bologna



UNIVERSITÀ
DI TORINO



AJUNTAMENT DE
VILADECANS



IMI
Institut Municipal d'Informàtica



Thanks !!

- **Jordi Ortuño**
 - Barcelona City council. IMI
 - jortunor@bcn.cat
- **Patricio Reyes**
 - Barcelona Supercomputing Center
 - patricio.reyes@bsc.es

BR

BARCELONA
REGIONAL
AGÈNCIA
DESENVOLUPAMENT
URBÀ



**Barcelona
Supercomputing
Center**
Centro Nacional de Supercomputación

Ajuntament de
Barcelona

