Programme and content guide

This training programme is a collaborative effort between Eurocities and the Barcelona Supercomputing Centre (BSC) designed to enhance the capabilities of city officials in the field of Urban Digital Twins (UDTs). The in-person training will take place in Barcelona on 7-8 November 2024, with participants from 15 cities, each with two representatives: one technical specialist, and one policymaker-like profile.

The programme is aimed at four main learning objectives:

a) Gaining a solid foundation in the concepts, potential, and applications of digital twins for urban decision-making.
b) Understand the technical aspects of UDTs, including data infrastructure, integration, and legal considerations such as GDPR compliance and procurement.
c) Enhance the ability to use UDT insights for evidence-based urban planning and decision-making.
d) Applying the above knowledge into each city's local context, challenges and needs.

The programme aims to provide a hands-on, practical approach to understanding and implementing UDTs through the development of a city-specific Action Plan, and the production of a final Implementation Guide that will be publicly available.

- Each city will develop an Action Plan that addresses their specific needs and challenges related to digital twins. The Action Plan will be a dynamic document, evolving through the programme to include learnings and inputs from trainers and peers. It will be adaptable to each city's level of UDT development, and will encompass all elements of the UDT cycle – from problem identification to data strategy, and integration into the decision-making process. A template for the Action Plan will be provided at the outset and refined throughout the programme.
- An Implementation Guide will be developed by co-organisers as a key output of the programme. It will compile collective learnings and experiences from participants. This guide will serve as a resource for any city looking to start or improve their digital twin initiatives, contributing to extending the programme's impact beyond the immediate cohort of participants.

Training programme structure

Introductory online session	In-person training (Barcelona) - tentative			Follow-up online session
	Thursday, 7 November 2024		**Friday, 8 November 2024**	
Introductory meeting Action Plans: challenges and use cases Preparatory meeting	**Welcome and opening**		**Setting the scene for the day**	Presentation of Action Plans Consultation on the Implementation Guide
	Introduction: UDTs, what are we talking about?		**Working with data: legal considerations for UDTs**	
	Policy track (UDT-users) **Defining the need: why using an UDT?**	Technical track (UDT-developers) **Working with data: data infrastructure for UDTs**	**Building UDT Action Plans: city work time and peer-learning**	
	Lunch		*Lunch*	
	Policy track (UDT-users) **Evidence-informed decision-making: putting UDT insights at work**	Technical track (UDT-developers) **Working with UDT providers: city procurement and digital twins**		
	City work time and plenary		**Wrap-up, next steps, and closing**	
	Daily wrap-up			
	Dinner			

Section A. Before the training (online)

1. Introductory session – 18 July, 11h CEST

Relevance. An initial online session will be organised for the selected participants. This will allow BSC and Eurocities to get to know participants, and for them to meet each other. This first meeting will facilitate a clearer understanding of participants' training needs and expectations, which will then allow for adjusting the training's programme to their needs. The session will be recorded and shared with all participants.

Goals. The introductory only session will aim at:

- Introducing all participants and the organisers.
- Understanding the challenges that each participating city has, their level of UDT development, and what they expectations are regarding the training programme.
- Presenting the preliminary training programme and getting feedback on it, so that organisers can adjust it based on participants' needs.
- Presenting the structure and scope of cities Action Plans, which will be the main deliverable of the programme.
- Presenting the event(s) prior to the training, as part of the Smart City Expo World Congress.

Outputs. After this session, the following elements will be produced:

- A note summarising participants' training needs and expectations.
- The final version of the programme, integrating feedback and inputs by participants.

2. Action Plans: challenges and use-case session – late September

Relevance. Part of the training programme will focus on supporting participants in the development of their use cases and strategies to address specific urban challenges, including through peer-to-peer reviews and feedback sessions. It will thus be important to make sure that both BSC and Eurocities, and their fellow participants, are familiar with each participant city's specific challenge it would like to address through digital twins, or the use case they would like to enhance.

Goals. This session will be aimed at:

- Presenting each city's challenge, use case, or UDT strategy they would like to work on as part of the training programme.
- Providing initial feedback to these challenges, by both organisers and fellow participants.
- Understanding which methodologies and support can work best during the training for each city to successfully create its Action Plan.

Outputs. After this session:

- Each city will need to provide a written version of the challenge they would like to focus their Action Plan on, by mid-October.
- BSC and Eurocities will finalise the design of the peer-to-peer review session of the programme based on the thematic scope and level of advancement of each city's challenge and Action Plan.

3. Preparatory session – mid-October

Relevance. Ensuring a clear understanding of the training programme and materials by participants is essential to enhancing their learning experience. This online session will take place two weeks in advance of the training, to provide participants with an overview of the training programme; each session's content and trainers; relevant training materials, and logistical arrangements needed. It will also provide an overview of the event(s) prior to the training, as part of the SCEWC agenda.

Goals. This session will aim at:

- Presenting the final programme of the training, including each session's content and trainers.
- Explaining preparations needed for participants, including reviewing training materials and identifying what elements each city would need feedback on from its peers.
- Resolving doubts and questions participants may have regarding the training and logistical arrangements.

Outputs. No output is foreseen for this session.

Section B. Training sessions

1. Welcome and opening

Relevance

- Presenting each institution's work on digital twins, the partnership on this training, and welcoming participants.

Goals

This session will aim at:

- Institutional welcome from BSC and Eurocities.
- Reminding participants of the programme and explaining arrangements.

Introduction: UDTs, what are we talking about?

Relevance

- Alignment on common understanding of digital twins, including through concrete use cases.
- Understanding that UDTs should not be part of 'techno-solutionism' (they will not solve urban challenges on their own), but part of a wider change in city administration and democratic processes (towards evidence-informed policy- and decision-making).

Learning goals

- Understanding where digital twins come from (from an industry-born technological solution, to their application to urban policy-making), and the potential and limits for their application in cities.
- Understanding what forms of digital twins there can be (3D visualisation, 'layer-based' approach, modelling approach), their strengths and weaknesses for different use cases, and which one will be used in the training.
- Identifying UDTs as evidence-production tools in a wider decision-making process.

Main contents covered

- Overview of urban use cases developed and/or applied by European cities.
- Main characteristics of the digital twin approach used in the training.

Strategic track (UDT-users). Defining the need: why using an urban digital twin? (UDT-users)

Relevance

Digital twins have emerged in the last years as a technological, one-fit-all solution to solve urban challenges. However, city officials must take into account that: a) not all city problems can or need to be tackled through digital twins; b) digital twins on their own cannot solve an urban problem (rather,

they need to be embedded into a larger strategy), and c) digital twin development and application vary depending on the purpose of its use.

This session will contribute to answer the following three questions:

- What information can be extracted from digital twins?
- What type of urban challenges can digital twins contribute to solve?
- How can different digital twins uses (3D, layered approach…) match different urban challenges?

The session will promote self-reflection and exchange by participants on their specific challenges: is the digital twin the right tool to address the challenge they want to address? If so, in what policy and decision-making process would the digital twin use case take place? How will the use of digital twin contribute to make a decision or design a policy to address the challenge?

Strategic track (UDT-users). Evidence-informed decision-making: putting UDT insights at work

Relevance

Once the need for the use of digital twin has been established and its place in the policy-making process has been identified, the use case will be developed and applied. The digital twin will provide information and knowledge that can help design better public policies. However, decision- and policy-makers are not always open to data-informed insights, as there might be competing agendas (e.g. ideology, community demands). For city officials willing to make the case for a particular policy based on evidence and information produced by the digital twin, it seems important to understand what are the elements that can compete with evidence for policy- and decision-makers' attention, and what strategies can be put in place for them to favour and make the case for evidence-based policy alternatives.

Learning goals

- Identifying the different dimensions that intervene in decision-making – i.e. research/political timings, political orientation and ideology, community demands, multiple stakeholders' agendas.
- Learning strategies to advocate for evidence-based decisions and policies, presenting compelling cases for evidence-based policy alternatives, and building alliances with stakeholders with shared policy objectives.
- Applying these learnings to each participant's city context, by promoting self-reflection and exchange among participants.

Technical track (UDT-developers). Working with data: data infrastructure for Urban Digital Twins

Relevance

This session will equip participants with the knowledge to develop and manage the data infrastructure necessary for developing and using digital twins. Understanding the technical requirements ensures that cities can effectively collect, access, store, and process the vast amounts of data digital twins need. A focus will be set on the challenges of integrating real-time sensor data with static GIS data, as well as on key issues of data quality, control and management.

Learning goals

- Learning about the key components of data infrastructure necessary for developing and maintaining digital twins, including data collection, access, storage, and processing systems.
- Understanding how to effectively integrate data from various sources (e.g., sensors, IoT devices, administrative records) to create a UDT, including by combining real-time sensor data with static GIS data.
- Gain insights into best practices for managing large-scale urban data, ensuring data quality, interoperability, scalability, and security.

Technical track (UDT-developers). Working with UDT providers: city procurement and digital twins

Relevance

In many cases, city administrations do not have the capacity (knowledge, skilled staff) to develop a digital twin by themselves. This means that they will need to work with external providers on the development and application of use cases. There are different types of providers available for digital twin projects, such as research centres, multinational companies, and local organisations, each with their own strengths and disadvantages. This session will equip participants with the knowledge to make informed decisions when selecting partners, focusing on procurement aspects like data ownership, technology ownership, control over the information produced, and operational responsibilities.

Learning goals

- Identify the different types of providers (research centres, multinational companies, local organisations) and evaluate their respective advantages and disadvantages.
- Assess the relevance of the different elements to take into account when contracting digital twins with external providers, including data ownership, technology ownership, control over information produced, and operational responsibilities.
- Learn from peers on how procurement has worked out in their cities, and reflect on the potential implications of these learnings in each participant's city.

Working with data: legal considerations for Urban Digital Twins

Relevance

Addressing the legal considerations of working with Urban Digital Twins (UDTs) is essential for ensuring compliance with data protection regulations and maintaining public trust. This session will focus on the legal aspects, primarily GDPR compliance and privacy issues, which are critical for the ethical and lawful handling of data within UDTs. By understanding these legal frameworks, city officials can ensure that their digital twin projects adhere to legal standards, protect citizens' privacy, and foster a trustworthy digital environment.

Learning goals

- Understanding GDPR and its implications for data handling with digital twins.
- Learning how to implement data governance practices that ensure compliance.
- Explore strategies to protect citizens' privacy, including data anonymisation techniques and secure data access protocols.

City work time and plenary

This session is designed to provide both focused and collaborative time for participants. It is divided into two parts: city work time and a plenary session. During the city work time, each city pair will work together to discuss the day's learnings, applying insights to their Action Plans and broader work contexts. This focused interaction allows participants to identify key takeaways, integrate new knowledge into their ongoing projects, and outline any questions or challenges that arose during the day. Following this, the plenary session will bring all participants together for an open and unstructured discussion. This collaborative dialogue provides a platform to address unresolved issues, share insights, and explore topics not fully covered during the structured sessions. The aim is to foster peer learning, collaborative problem-solving, and strengthen connections among participants, ensuring that they leave with enhanced Action Plans and a deeper understanding of common challenges and solutions.

Building urban digital twin Action Plans: co-design and peer-learning

Relevance

This session will facilitate a collaborative environment where participant cities can present the current status and challenges of their Action Plans, and receive valuable feedback from their peers. This collective exchange ensures that participants benefit not only from the expertise of trainers, but also from the real-world experiences of their fellow city officials. By sharing experiences, obstacles, and lessons learned, participants gain diverse perspectives and practical insights that can enhance their own Action Plans. This peer-learning approach not only enriches the training experience, but also builds a supportive network of city officials who can continue to share knowledge and best practices beyond the training programme.

Learning goals

- Enable participants to present the current status and challenges of their Action Plans, promoting a common understanding of diverse approaches and common obstacles.
- Encourage the sharing of experiences, successes and lessons learned, helping participants to learn from each other's practical implementations and to avoid common pitfalls.
- Promote collaborative problem-solving and co-design.

Section C. After the training (online)

1. Presentation of Action Plans

Relevance. After the completion of the in-person training, an online session will be organised for cities to present their Action Plans, gather final feedback from fellow city participants, and engage in a discussion with them.

Goals. This session will be aimed at presenting the work done by participants and facilitate an exchange with other cities.

Outputs. Prior or after the session, participating cities will submit their Action Plans to Eurocities. The final versions of the documents could be posted on Eurocities' website.

2. Consultation on the Implementation Guide and next steps

Relevance. This session ensures that the Implementation Guide captures participants' experiences and insights, making it a practical resource for cities starting their digital twin journey. Gathering feedback

on the draft guide and discussing future steps promotes ongoing collaboration, learning, and joint advocacy among participants.

Goals. The session aims to collect feedback on the draft Implementation Guide to ensure it is practical and reflective of real-world experiences. It seeks to identify improvements and additional content joint advocacy, and networking possibilities to maintain momentum among cities.

Outputs. The session will result in a refined Implementation Guide incorporating participants' feedback, making it a valuable resource for cities developing Urban Digital Twins. It will also strengthen connections among city officials and provide a clearer vision for ongoing collaboration and support within the network.