

## DIDYMOS-XR Newsletter: 6th Edition

Welcome to the DIDYMOS-XR newsletter, a guide to our latest work and news!

DIDYMOS- XR (DIgital, DYnaMic and respOnsible twinS for XR) is a three-year EU funded project that focuses on advancing the state of the art of enabling technologies that will allow the creation of large-scale digital twins, synchronised in real time with the real world.

DIDYMOS-XR has researched and developed robust and scalable methods for 3D scene reconstruction from heterogeneous cameras and sensor data (e.g. lidar), integrating data captured at different times and under different environmental conditions to create accurate maps of varied industrial, urban and cultural scenes.

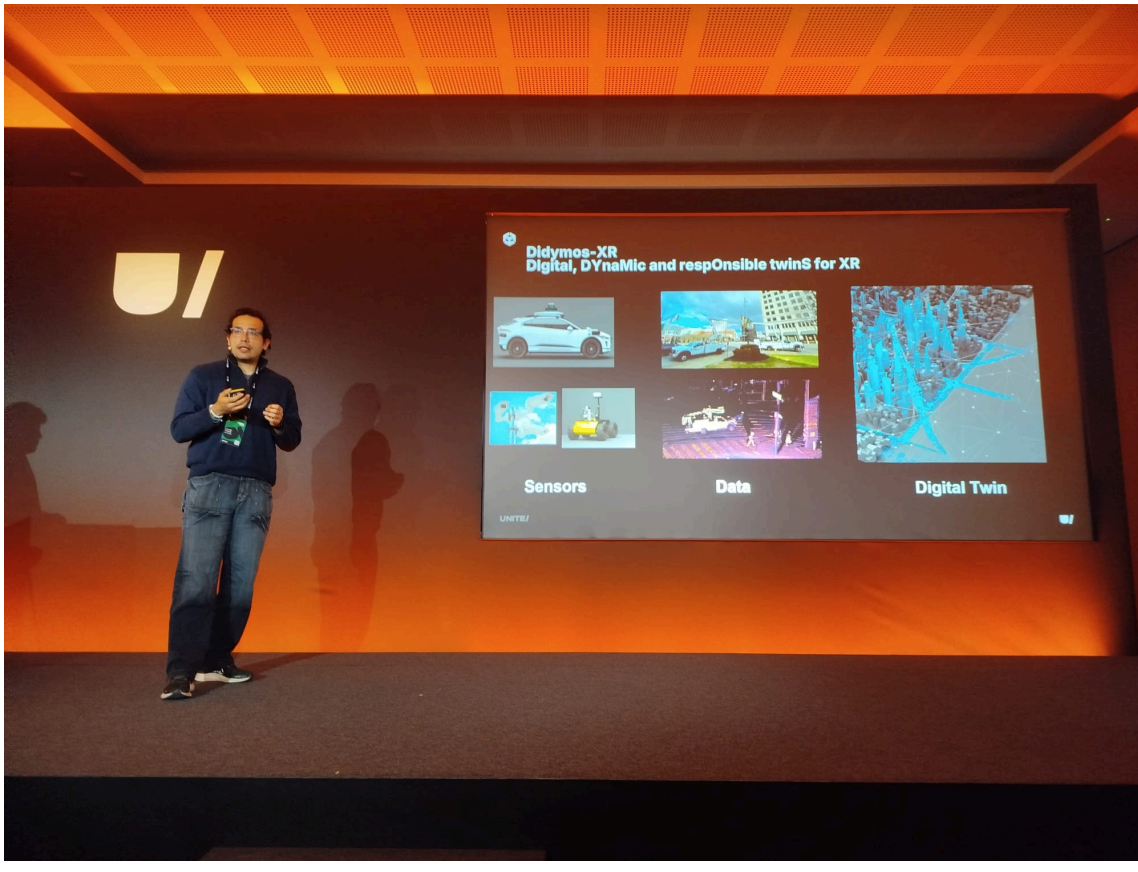
Read more about the project [here](#), and read on for updates from the DIDYMOS-XR consortium.



## Latest News

### DIDYMOS-XR at UNITE 2025

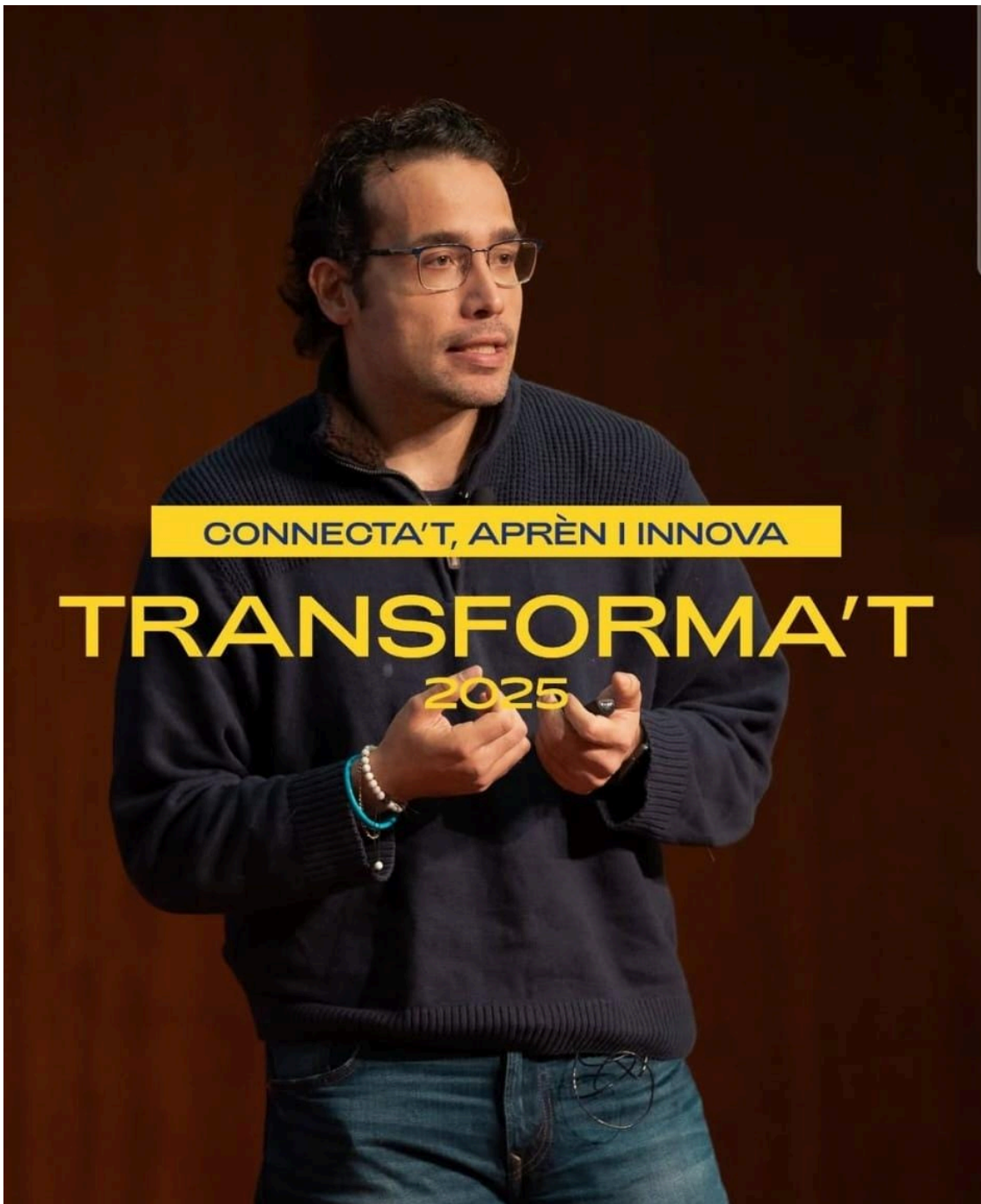
The annual conference organised by Unity was held in Barcelona in November and our project partners I2CAT and DTT were both in attendance, sharing our technical achievements towards bridging the gap between physical and digital worlds through continuously updated, sensor-driven digital twins. The key challenge here has been managing data from heterogenous sensors and keeping updates synchronised to real time. The DIDYMOS-XR applications run in Unity with WebGL deployment, so it was fantastic to share with participants our experience of managing real-time data streams in the discussions at the event. Read more about the technological advances for accurately recreating a scene digitally in our most recent blog post.



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### Connecting Industry at Transforma't 2025

Our partners Neàpolis brought together entrepreneurs, startups, and SMEs on the 27th November at this years Transforma't event. Professionals from a variety of industries were brought together to connect and learn from one another about digital innovation and the ecosystem that exists in Catalonia to support their endeavours. Participants were introduced to the technologies in DIDYMOS-XR as examples of innovation taking place in Vilanova i la Geltrú and could test the applications in immersive devices. Neàpolis has also recently organised multiple Living Labs in the city where participants can get first hand experience of the DIDYMOS-XR applications and help improve them through their feedback. Read more about it in the recent blog post below.



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### Speed-networking at UNITED XR 2025

DIDYMOS-XR was invited to participate at the United XR event in Brussels at the start of December to connect with other projects and players in the European extended reality landscape. Participants had the opportunity to learn about one another's work, test various applications, and discuss future collaboration opportunities. We are grateful for the opportunity to share our work and make new connections.



## Publications

### DIDYMOS-XR Recommendations

As the project nears its end, we have been working on putting together recommendations for the development, use and maintenance of digital twins based on the findings and learnings from

DIDYMOS-XR. The recommendations have been collated in briefs directed at different audiences: smart city managers, manufacturing industry professionals, local governments, digital twin developers and owners, data protection managers, and other digital twin industry professionals. We make recommendations for how to assess the impact of adopting digital twins, how to manage the change within the organisation, what digital twins can be used for in urban environments, and how to ensure data quality and manage data protection risks.

# Recommendations

<p><b>Briefing paper</b></p> <p><b>Recommendations for impact assessments in XR deployments</b></p> <p>November 2023</p>	<p><b>Briefing paper</b></p> <p><b>Responsible data access: safeguarding privacy in image-based datasets</b></p> <p>November 2023</p>	<p><b>Briefing paper</b></p> <p><b>Recommendations for managing data quality throughout the creation of a digital twin</b></p> <p>November 2023</p>
<p><b>Who is this for?</b></p> <p>This brief is intended to inform local governments and smart city managers interested in adopting XR technology. This brief will provide an introductory insight into the impact that XR can have on urban environments, which will support the planning process for responsible deployment of XR.</p>	<p><b>Who is this for?</b></p> <p>These recommendations are for effectively implementing a dynamic management of data protection and privacy requirements, particularly in multi-party systems, such as for the creation of digital twins. The brief outlines the challenges for specific data processing, the data protection and privacy requirements, and the measures that can be taken to ensure that the data management stage of the lifecycle is robust throughout the development process.</p>	<p><b>Who is this for?</b></p> <p>This brief is intended to inform digital twin creators and owners on the importance of good practices for data quality for creating and maintaining a robust and reliable digital twin. The brief provides recommendations for managing data quality at different stages of digital twin development and deployment. Recommendations are provided according to stages of digital twin creation and can be tailored to according to the needs of the user.</p>
<p><b>Introduction</b></p> <p>Extended Reality (XR) is emerging as a tool for public sector transformation. From innovative citizen engagement and training, to critical incident and remote asset inspection and city planning in smart cities, XR can increase safety, improve customer and reduce costs, but it also introduces new data privacy, accessibility, safety and security risks. Local governments need a</p>	<p><b>Introduction</b></p> <p>As digital applications, particularly those relying on image-based datasets such as digital twins, become increasingly central to operations, organisations face a challenge: managing data generated with high volume and high frequency. Organisations need to ensure digital twins of large scale and life cycles heavily depend on large amounts of high quality data</p>	<p><b>Introduction</b></p> <p>As industries become increasingly digitised, technologies such as digital twins and extended reality (XR) are transforming how we design, construct, and interact with physical systems. Digital twins and XR, which encompass augmented reality (AR), virtual reality (VR), and mixed reality (MR), are enabling industries to engage from manufacturing and healthcare to urban planning and aerospace.</p>

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## The method: how do we make the digital twin?

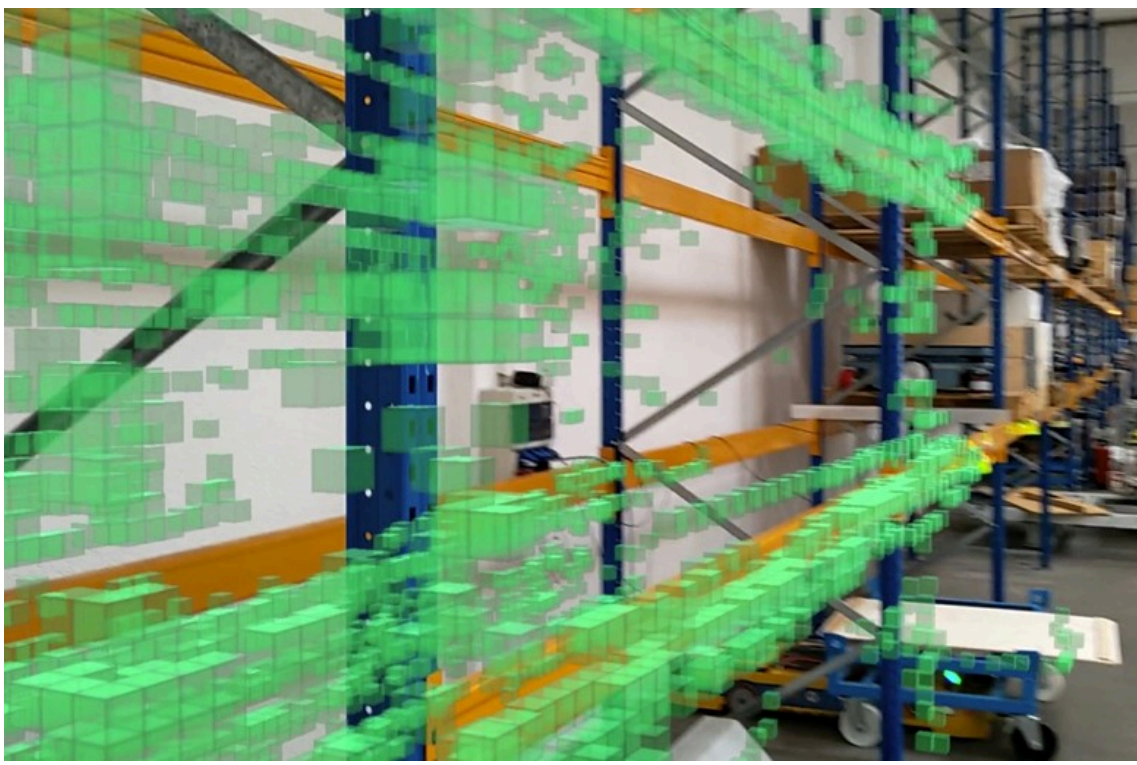
For our more technical audience who is interested in learning about the models and methods we've developed to recreate real life scenes digitally as well as the localisation and rendering required to create accurate XR applications: we have recently published two deliverables on exactly that! Take a deep dive into the technical side using the link below, where you will find D3.2 Capture, Reconstruction, Synchronisation and Scene Understanding Methods v2 and D4.2 Localisation, Mapping and Rendering Methods v2.



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## Interactive digital twins enabling responsible extended reality applications

The DIDYMOS-XR consortium recently published a paper detailing the process of how to responsibly develop and deploy XR applications that are based in digital twins. The paper introduces cutting-edge solutions in the creation, simulation, and manipulation of DTs, including advancements in 3D scene reconstruction, data enhancement, data compression, sensor fusion, localisation, rendering, and scene understanding. Additionally, we address the ethical and privacy challenges of digital twin systems and propose strategies for mitigating these issues. This work offers a comprehensive framework for creating semantically rich, scalable, and interactive digital twins, providing valuable insights for diverse applications in urban planning, maintenance, tourism, and industrial optimisation.



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For more information on the DIDYMOS-XR project please visit our website: <https://didymos-xr.eu>

**Our mailing address is:**

Email: [didymos-xr-office@joanneum.at](mailto:didymos-xr-office@joanneum.at)



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