



# GWFF

GEOSPATIAL WORLD FORUM

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# INFRASTRUCTURE SUMMIT

## Advancing Infrastructure Resiliency through Digital Transformation



16<sup>th</sup> May 2024 | Rotterdam

# Local Digital Twins for Public Sector Decision-making and Engagement

## *A Smart City Approach*

*Presented by*

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**Social Sciences Institute**





**Engaging Content**  
Engaging People



Comhairle Cathrach  
Bhaile Átha Cliath  
**Dublin City Council**

## Vision

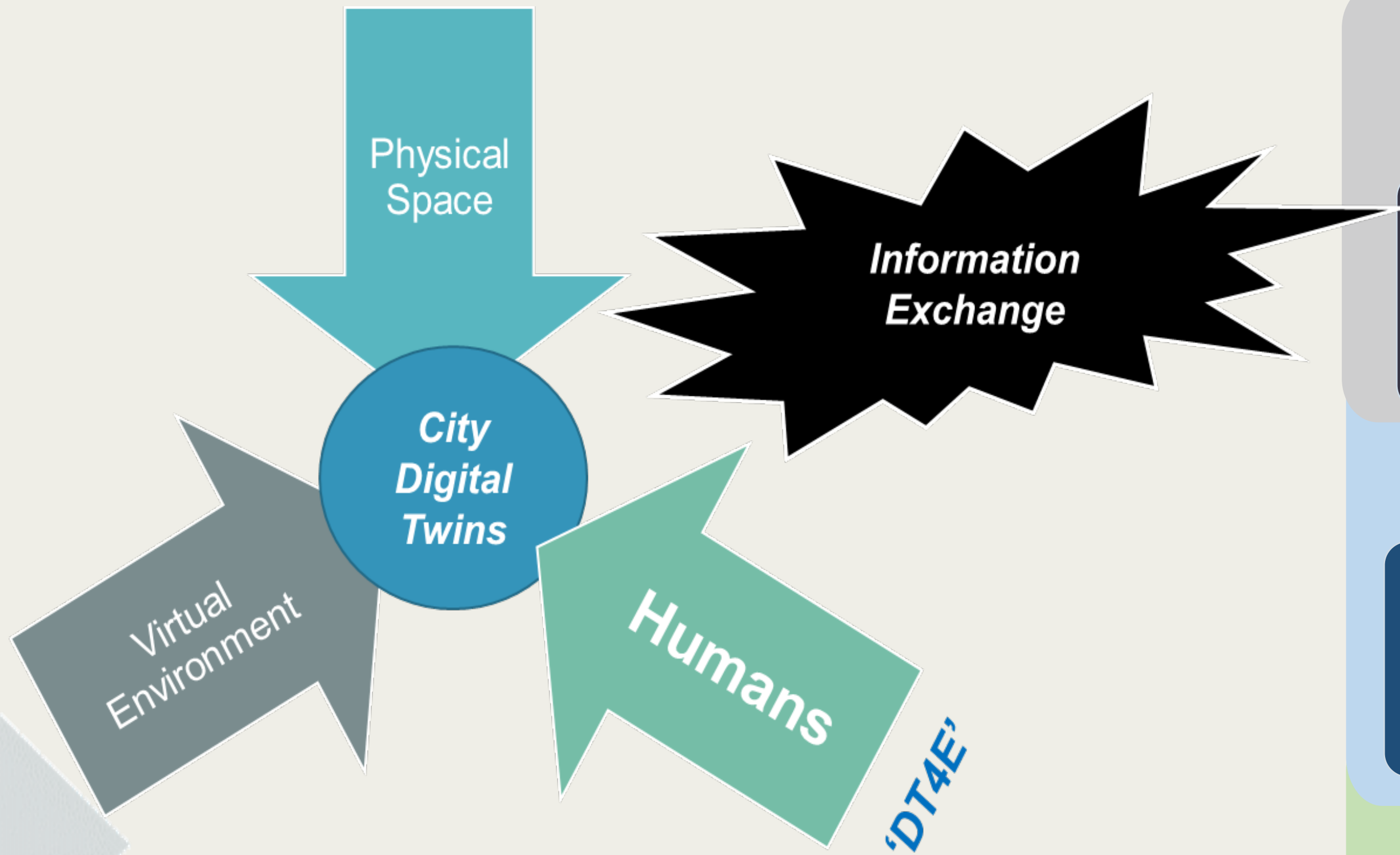
### *A balanced digital society by 2030*

- Transparent Digital Governance Strand
- Engaged Research Framework
- Education and Public Engagement
- Citizens' Think-in / Discuss AI formats
- Strong focus on Ethical use of AI and technology

## Vision

### *Make Dublin a dynamic and sustainable city*

- Largest public local authority in Ireland with over 6000+ staff
- 6 Principles – Commitment to excellent public service, sustainability, leadership, ambition, fairness and accountability



## Proof of Concept

Trial, test and evaluate LDT solutions for ethical, inclusive and democratic decision making

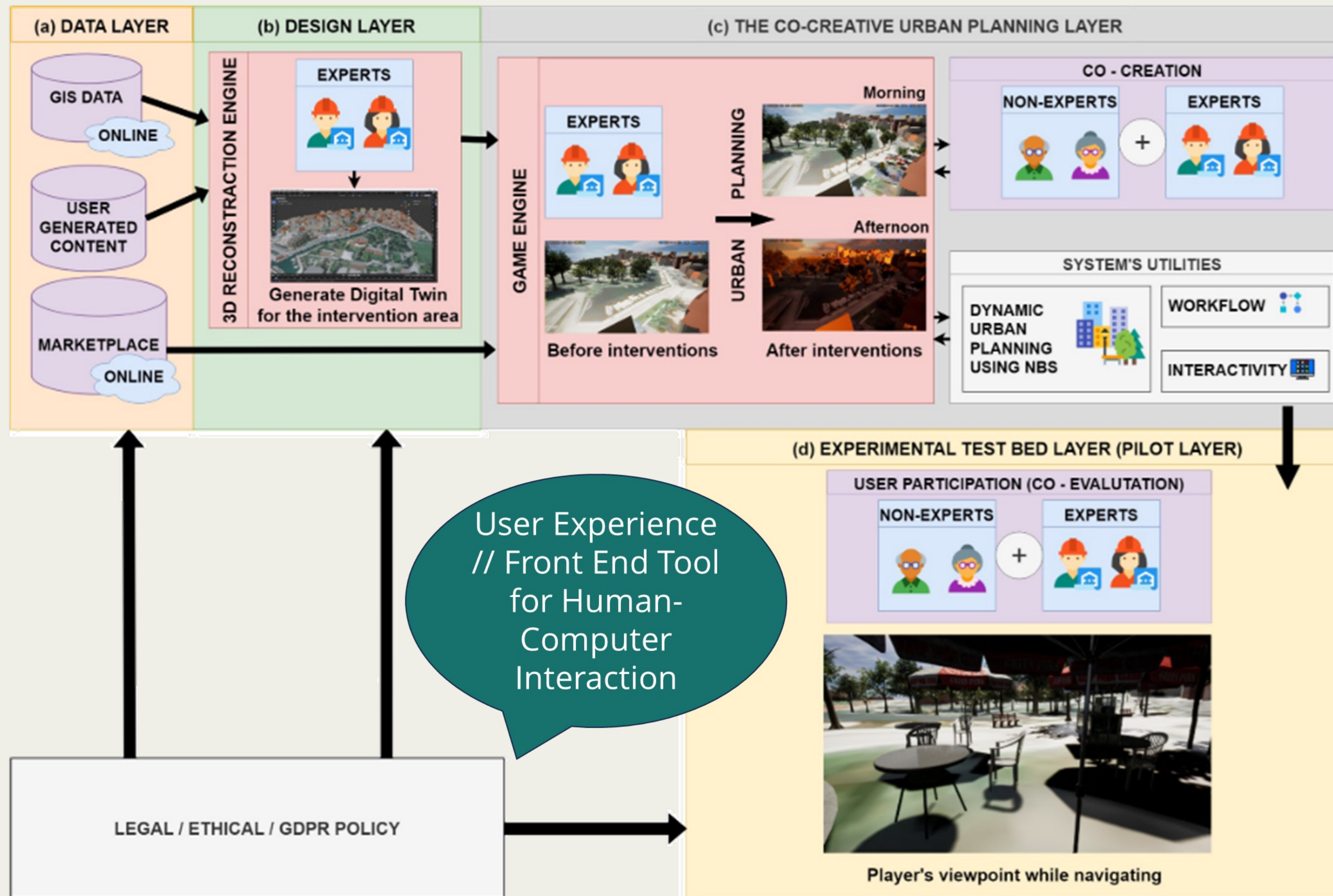
## Capacity Building

Build a Collaborative Ecosystem  
*-DT Interest Group @ DCC*  
*-Local Stakeholder Groups*

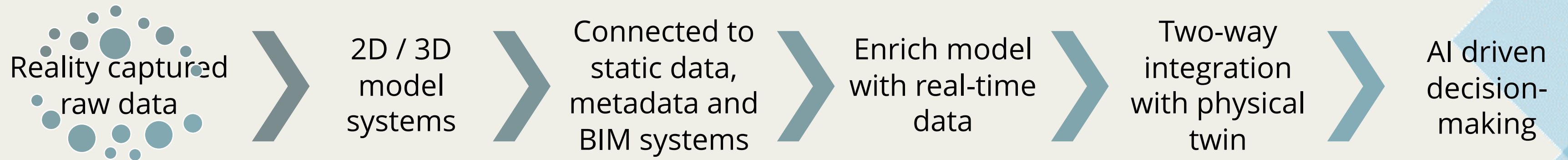
## New Opportunities

Collaborations with SMEs, Private Partners, European Projects

- LDTs as participatory tools
- Stakeholder collaboration
- Socio-technical solution
- Sustainable digital transformation
- Data Insights and not just 'datasets'



Source: Kavouras, I., Sardis, E., Protopapadakis, E., Rallis, I., Doulamis, A., & Doulamis, N. (2023). A Low-Cost Gamified Urban Planning Methodology Enhanced with Co-Creation and Participatory Approaches. *Sustainability (Switzerland)*, 15(3).



## Mapping Target Users and Levels of Engagement



# ▶ DUBLIN AS A TESTBED

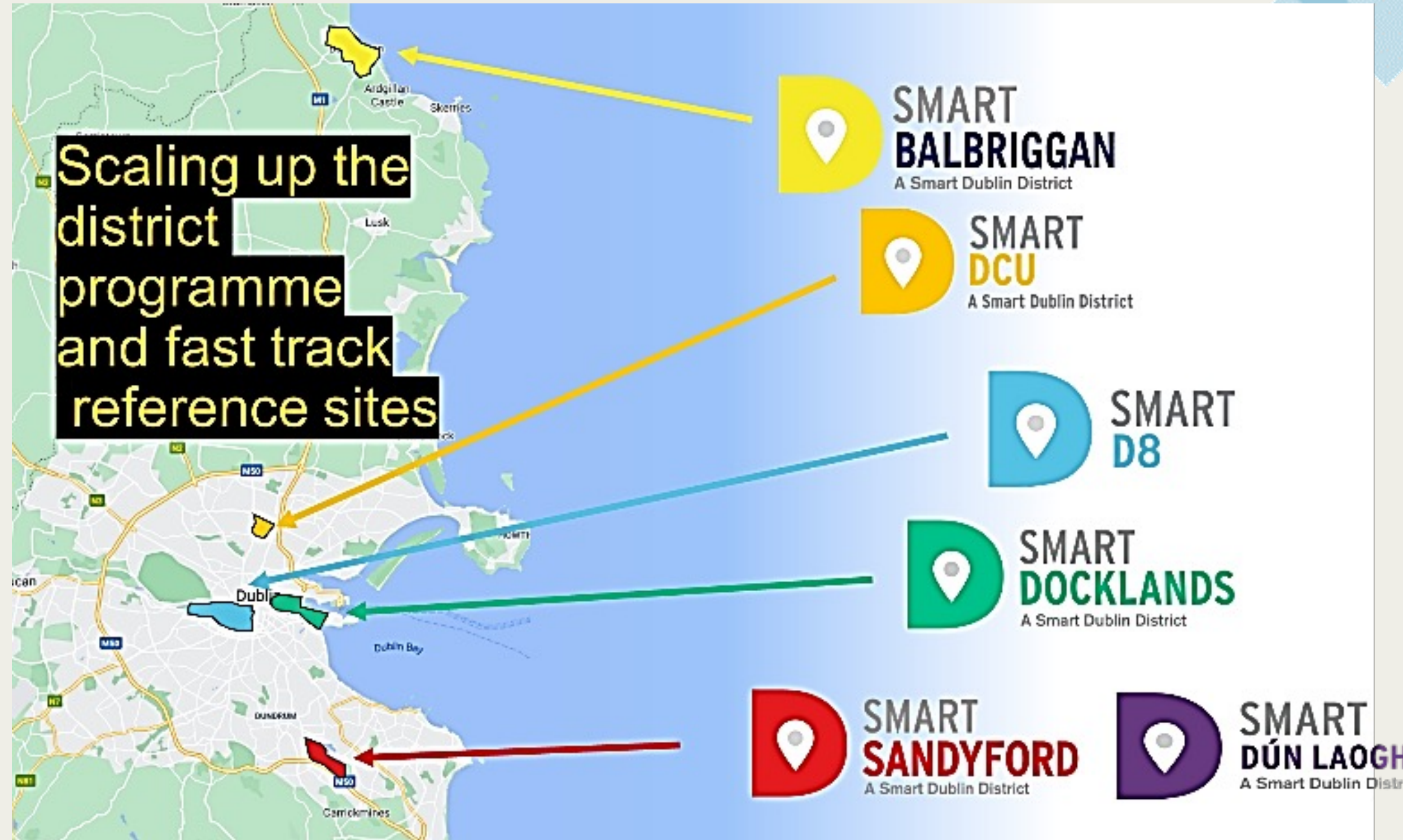
“ WE ARE BIG ENOUGH YET SMALL ENOUGH TO BE THE IDEAL LOCATION TO PILOT NEW CITY SERVICES & SOLUTIONS



# Smart Dublin



An initiative of the **FOUR DUBLIN LOCAL AUTHORITIES** to engage with smart technology providers, researchers and citizens to solve challenges and improve city life.





*The future is happening now!!*



Smart Office Optimisation



5G Mobile Indoor



Smart Bike Stands



Smart Bench



3D AR VR Model



Cyclist Prioritisation at Junctions



5G Mobile Outdoor



Smart Bins



Smart Bike Light



Smart Gully Monitoring



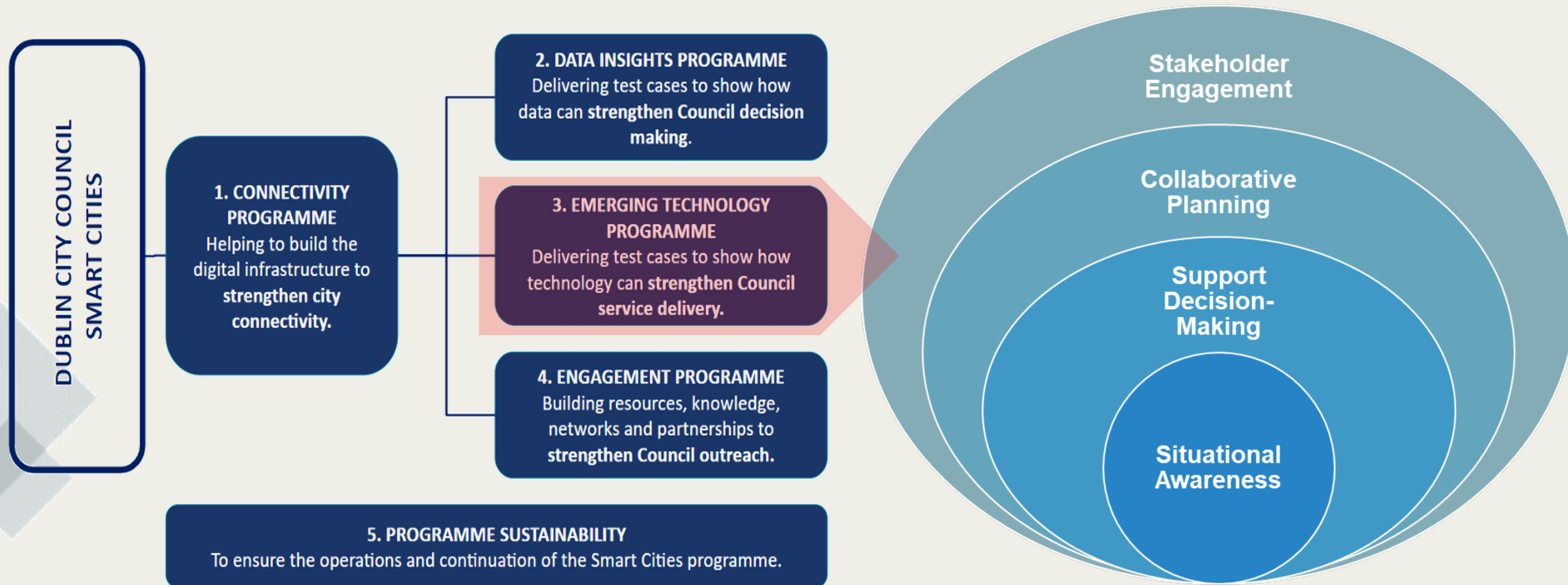
Flood Prediction



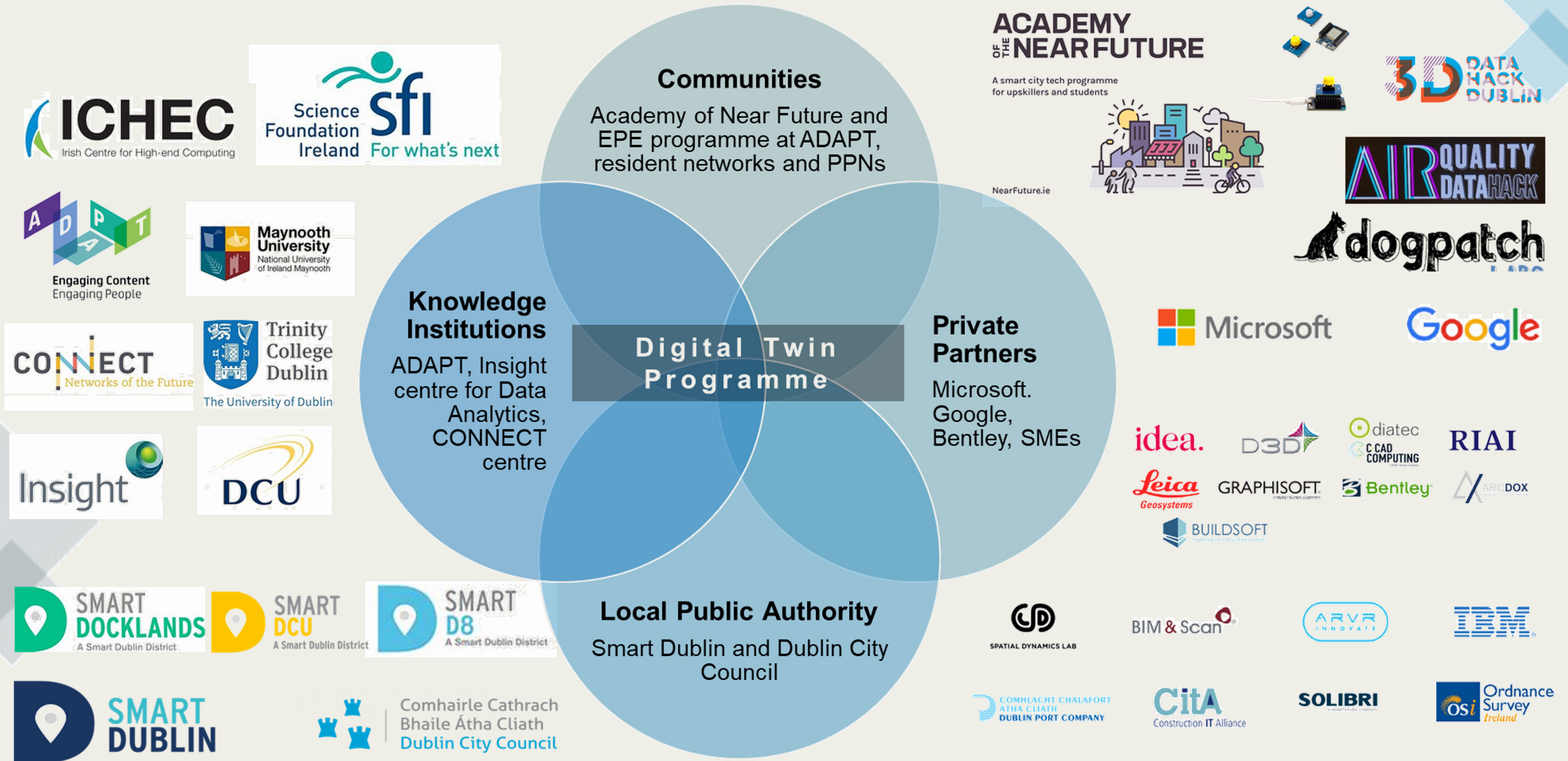
Air Quality Sensing

# Smart Cities Digital Twin Programme

“Unlocking Tomorrow's Possibilities with Digital Twins”



# Quadruple Helix of Innovation





**D3D**  
(Data Hackathon – explore use cases -> Planning case and DFB)



*Docklands 3D Model procured, and 3D Hackathon organized in 2019*

*Climate Action Unit Dashboard, DCC*

*Proof of Concept of Digital Twins for Engagement on Open Cities Planner*

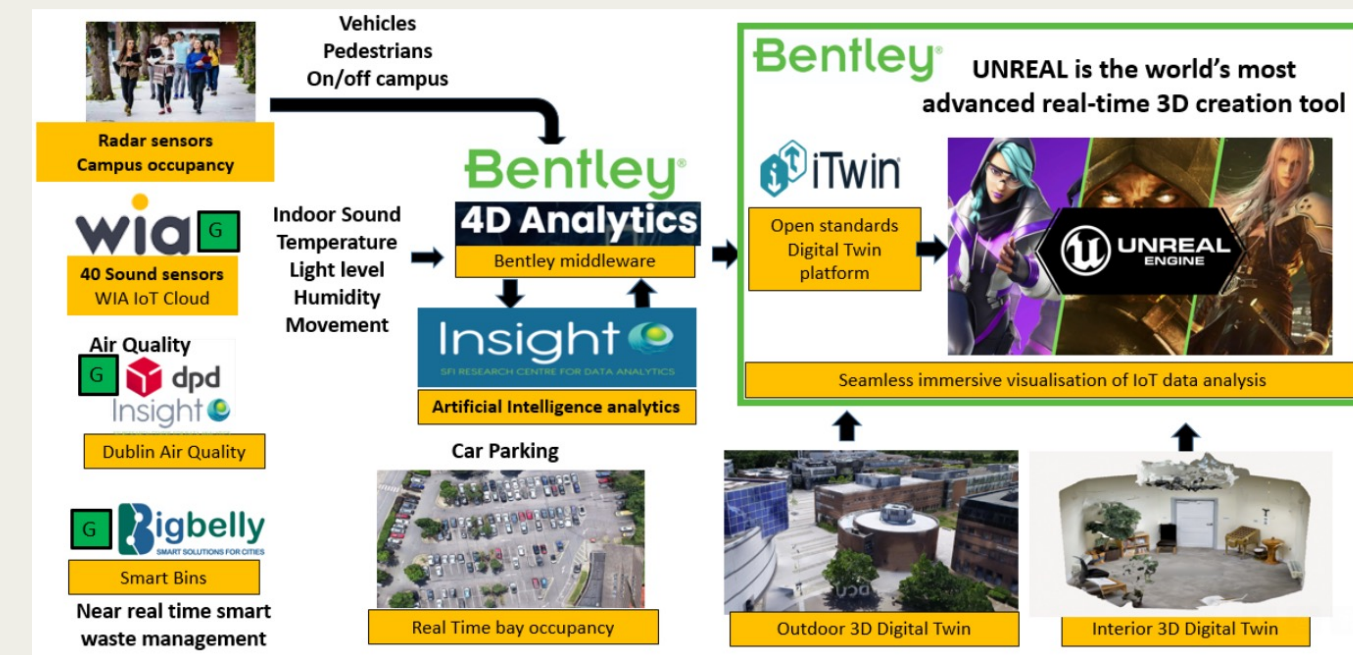
# Digital Twin Ecosystem at Dublin City Council



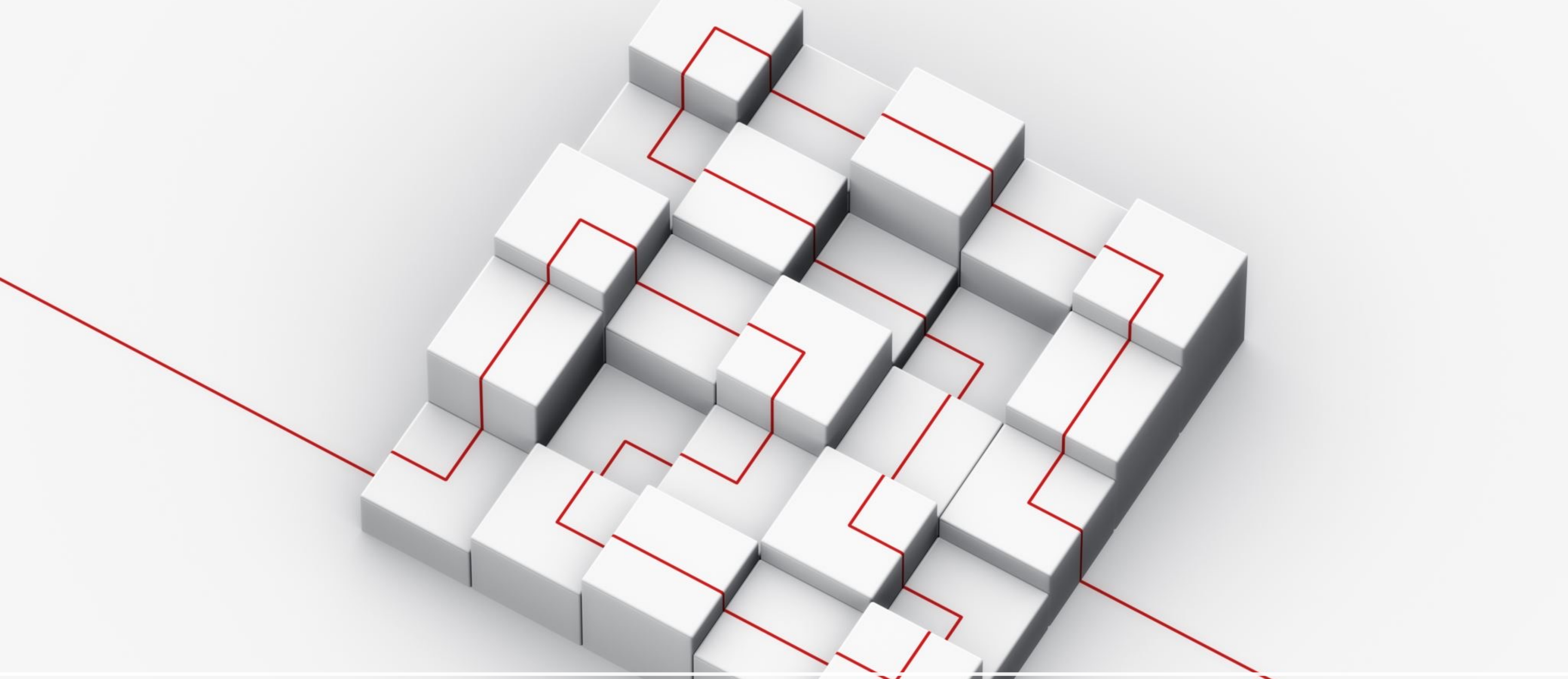
*Use of Augmented Reality, Smart Tourism Programme*



*Digital Twin for Emergency Response by Dublin Fire Brigade*



*Smart DCU digital twin project with Bentley and Insight*



Engagement with digital (visual) twin solutions

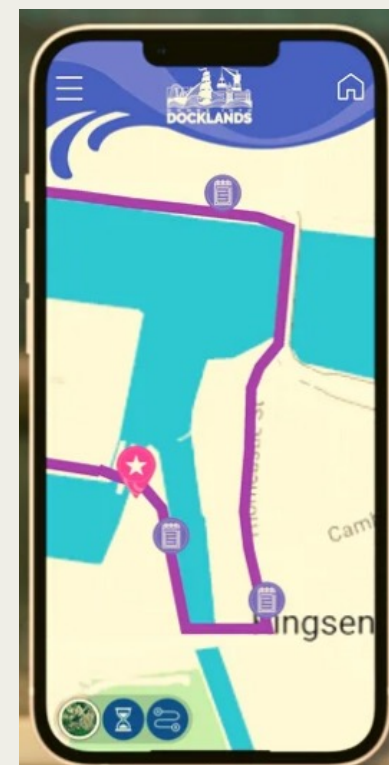
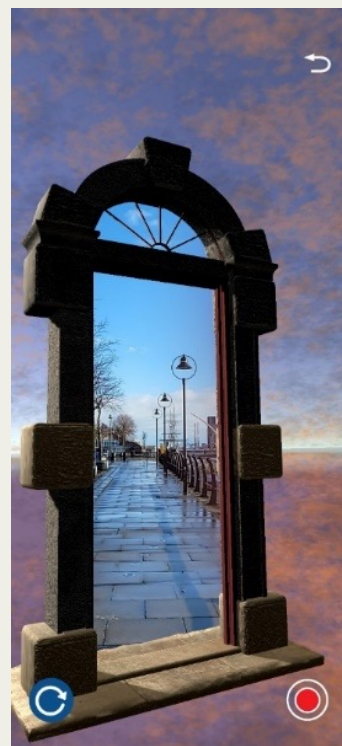
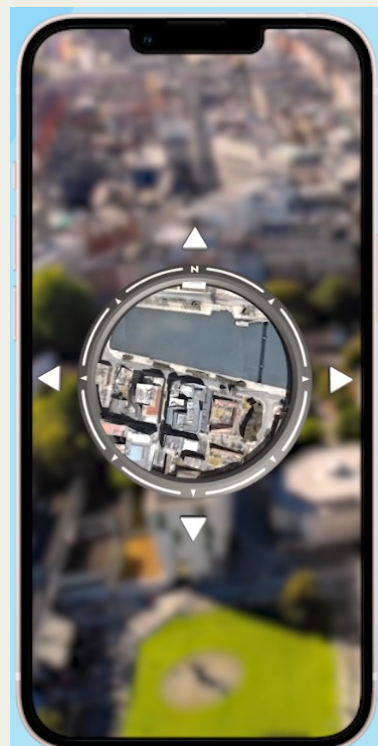
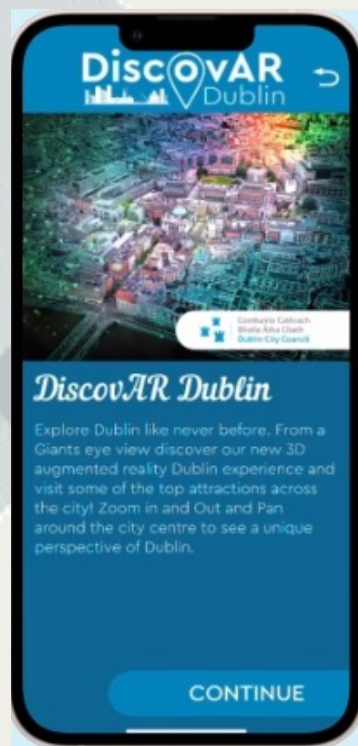
# Smart Tourism Programme

- DCC Smart Tourism Programme, supported by Failte Ireland, develops solutions based on Augmented and Virtual Reality for immersive engagement.
- Dublin Discovery Trails hosts 'Doors into the Docklands' and 'DiscovAR' apps
  - ❑ Accessibility: Means we are Open, Inclusive and Aware
  - ❑ Sustainability: Means we are Proactive, Accountable, and Measurable
  - ❑ Cultural Heritage & Creativity: Means we are Connecting, Creating, Sharing and Protecting
  - ❑ Digitalisation: Means we are Future Facing, Collaborative, Digitally Advanced



SmartTourismCapital.eu

DUBLIN 2024



# Project Google AirView



**NO2 ( $\mu\text{g}/\text{m}^3$ )**

< 10
10 - 20
20 - 25
25 - 30
30 - 35
35 - 40
40 - 45
45 - 50
50 - 55
55 - 60
> 60

# Online Engagement Platform

SMART DOCKLANDS Comhairle Cathrach Bhaile Átha Cliath Dublin City Council CONNECT SFI Research Centre for Future Networks

Smart Docklands


Do you live in, work in or visit **Dublin's Docklands**?

We would like to get your feedback on your experience in the Docklands area. **What do you like about the area and what are the issues or challenges you face?**

Click here to take part in a **short survey** and comment on an **interactive map!**

anielskk@tcd.ie **Keep me updated**

Your email will be used to contact you about project updates. You can unsubscribe at any point. Please read our **privacy policy**.



More than **400 contributions**.  
Almost **300 responses** to the survey  
and more than **100 comments and agreements** on the map!



About the project Timeline Latest news

HAVE YOUR SAY

3 proposals

Active

Comment on the map

Tell us how you feel about different areas in the Docklands using our interactive map!

Completed

Take part in the survey

We are gathering feedback about challenges and potential solutions that could be implemented in the Docklands t...

Do you live in, work in, or visit the Docklands area?

What kind of smart city or digital solution would you like to be prioritised in the area?

What topics are important to you?

What do you like about the Docklands?

What are the issues or challenges you face?

Have your say today!

smartdocklands.commonplace.is



Comment on the map

Comments 64  
Agreements 39

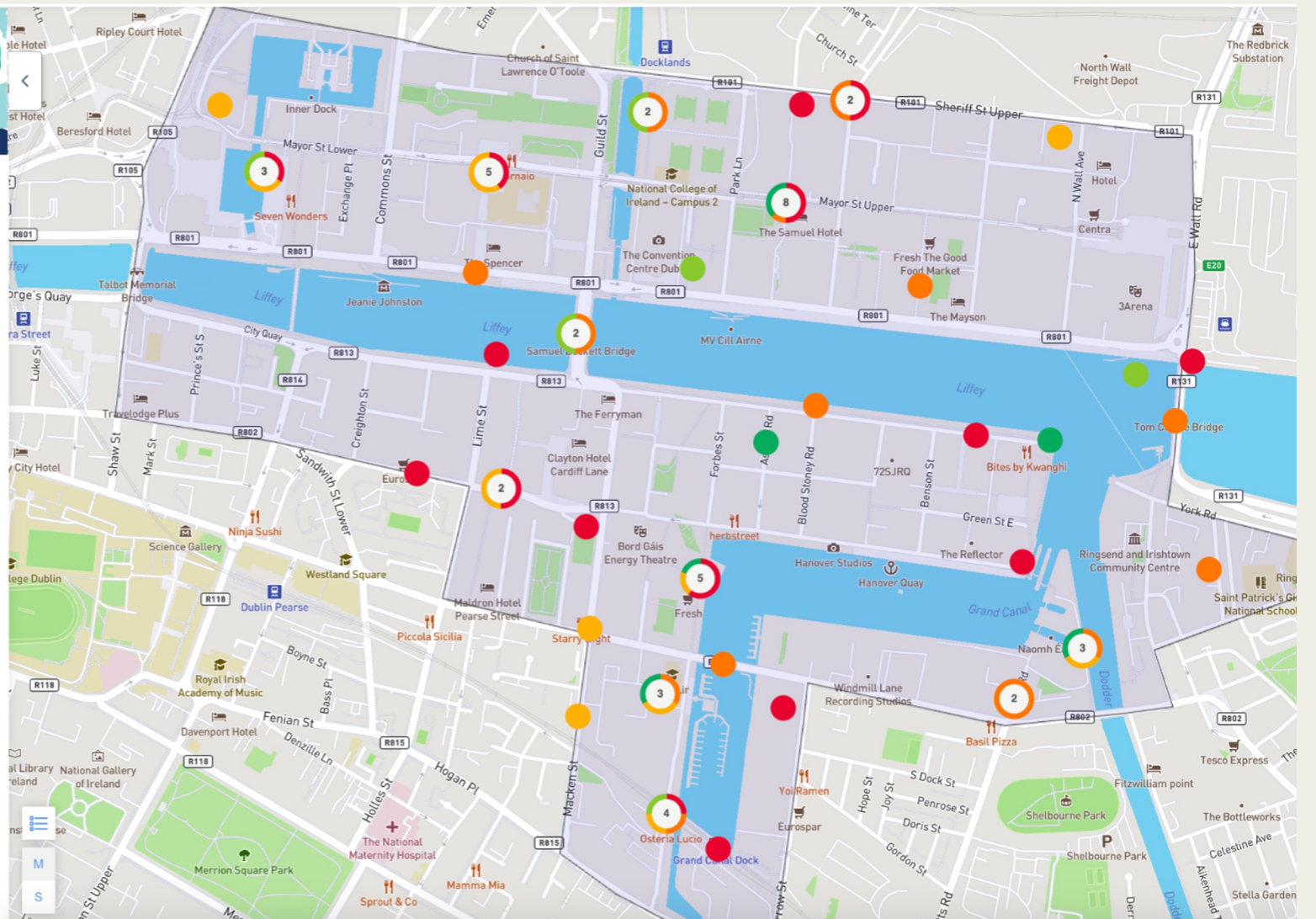
Have an impact on the Docklands area and identify issues and challenges that could be addressed with smart city and digital solutions.

Click on the "Have your say" button and place your pin on a location to tell us how you feel about it.

Feel free to return to this map after you have submitted to submit multiple pins.

This work is being developed through the Smart Docklands programme which is a partnership between Dublin City Council and CONNECT SFI Research Centre for Future Networks headquartered at Trinity College Dublin.

Learn more about Smart Docklands







# Smart Docklands Engagement

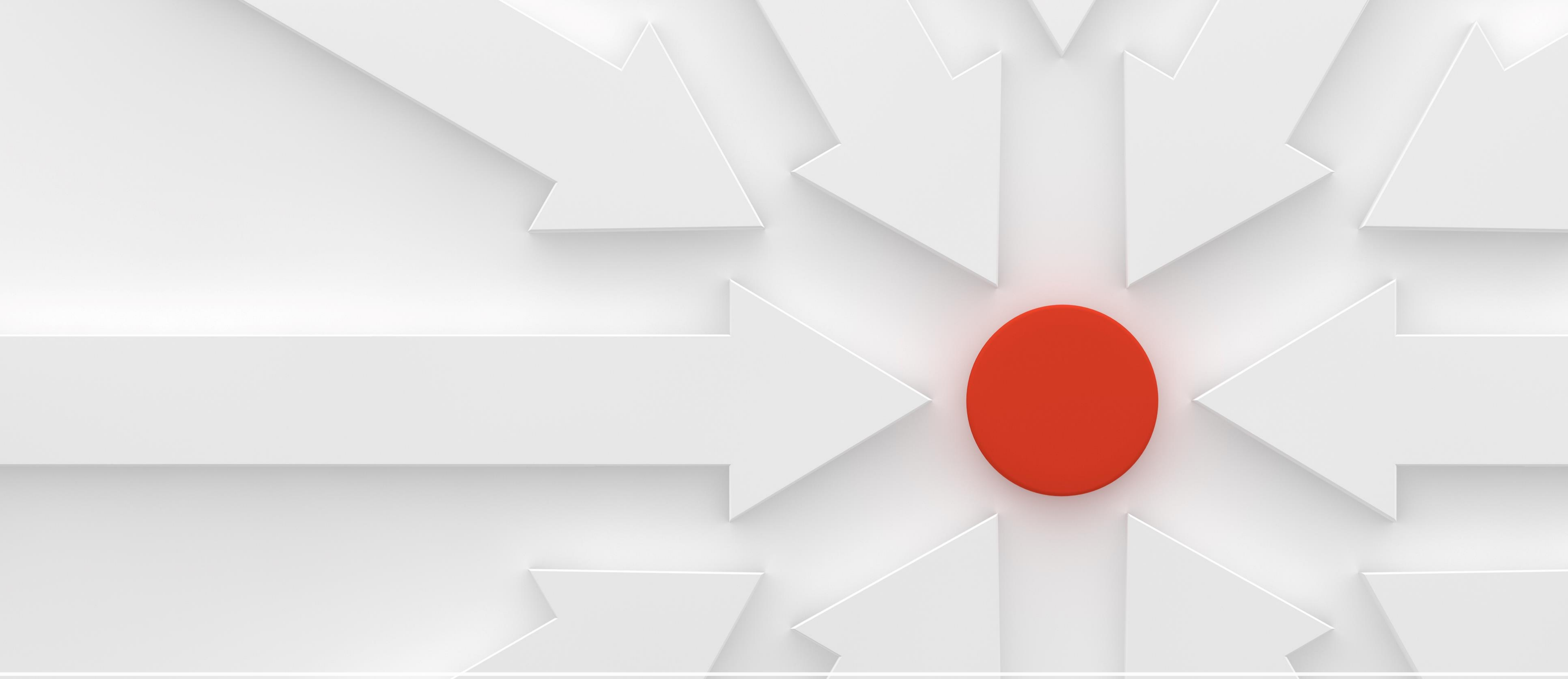


Docklands area has been experimenting with 3D modelling and VR/AR technology in innovative ways for community engagement.



Partnership with Irish Centre for High End Computing, EuroCC Digital Innovation Flagship

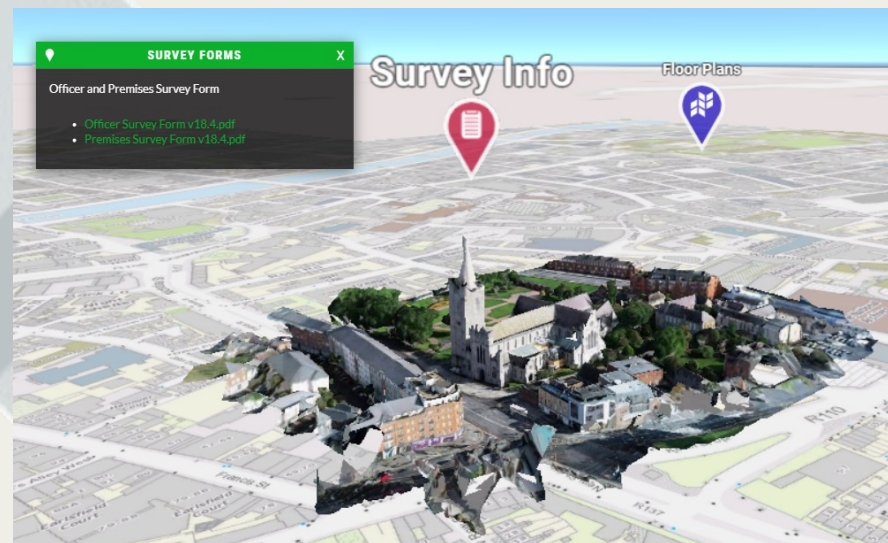




# Digital Twins for Decision Making

# Digital Twin for Emergency Response

- Dublin Fire Brigade (DFB) has generated reality mesh models of multiple sites in the city using drones. Some of these sites include Trinity College, Christchurch, St. Patrick's Cathedral, Poolbeg, Hugh Lane etc.
- The models are used for emergency pre-incident planning and personnel training by the DFB officials, especially for the ones which are considered as high-risk zones.



# Smart DCU Digital Twin

Launching  
Sept 2024  
20,000  
students  
and staff

All Three academic campuses will have an **interactive 3D Digital Twin**



Web interface  
Make the campuses more people friendly  
Search for a Building  
More Autism Friendly  
Explore the campus from laptop or Mobile Phone  
Users can give feedback



Bentley®



OpenCities Planner Digital Twin Software

DCU is proud to be one of the worlds leading Young Universities  
with a mission to transform lives and societies

March 2018 designated as world's first Autism-Friendly University



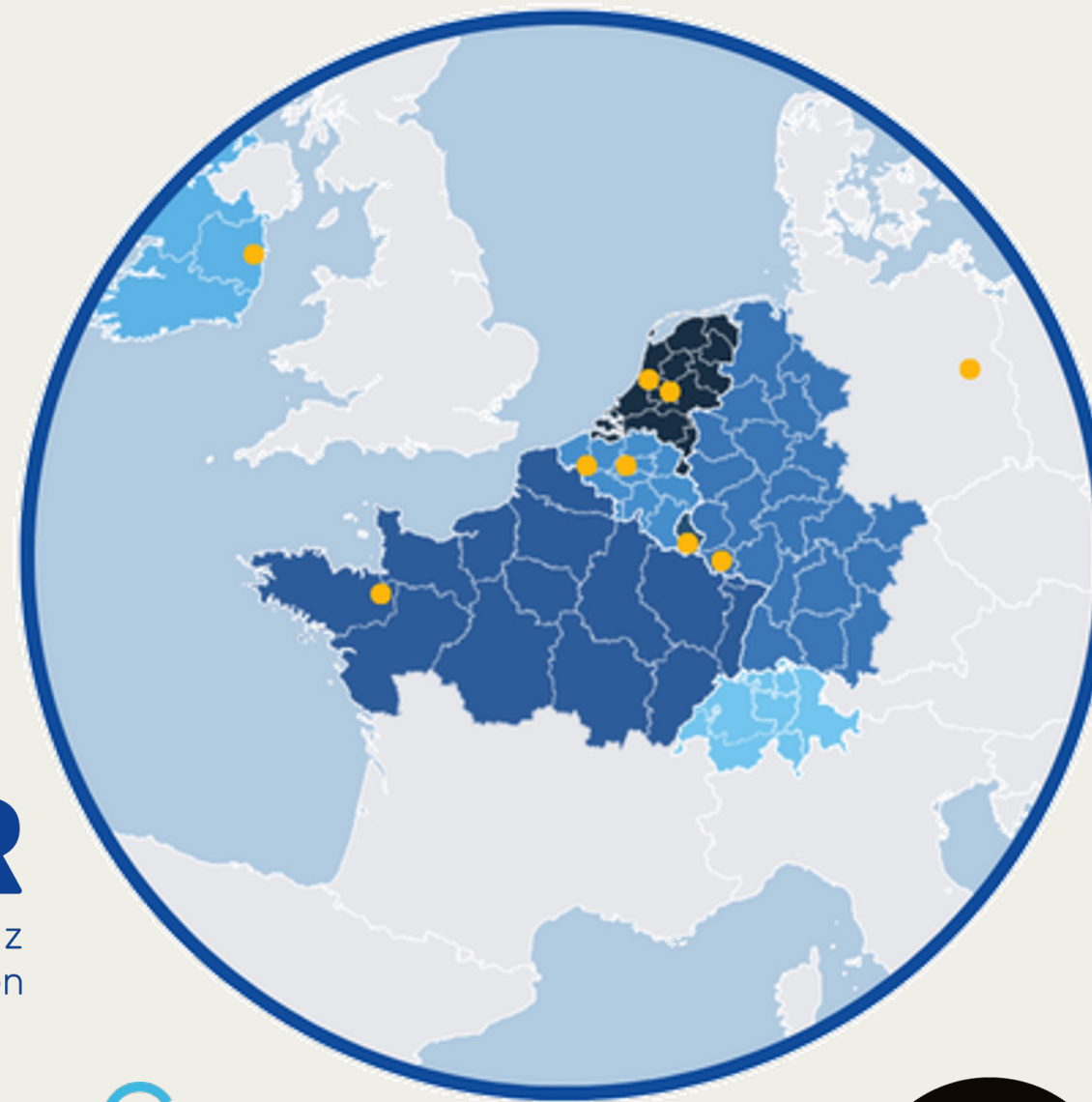
# European Project Twin4Resilience (T4R)

- ❑ **6 countries** in NWE - **14 Project Partners** - City of Utrecht Lead Partner.
- ❑ DCC leading **Ethics, Inclusion, and Democratization framework** with Brussels and **WP 2 Resilient Pilot Actions** with DKSR
- ❑ **Resilient Pilot Action** proposed in one of the thematic clusters - Energy, Environment, Mobility and Integrated Planning
- ❑ **300 trainers** to-be-trained.
- ❑ **Local Stakeholders Group for Dublin** and **Transnational Community of Practice** (138 organizations so far).
- ❑ **42 months** long project until June 2027



*Kick off - 05<sup>th</sup> to 07<sup>th</sup> March 2024*

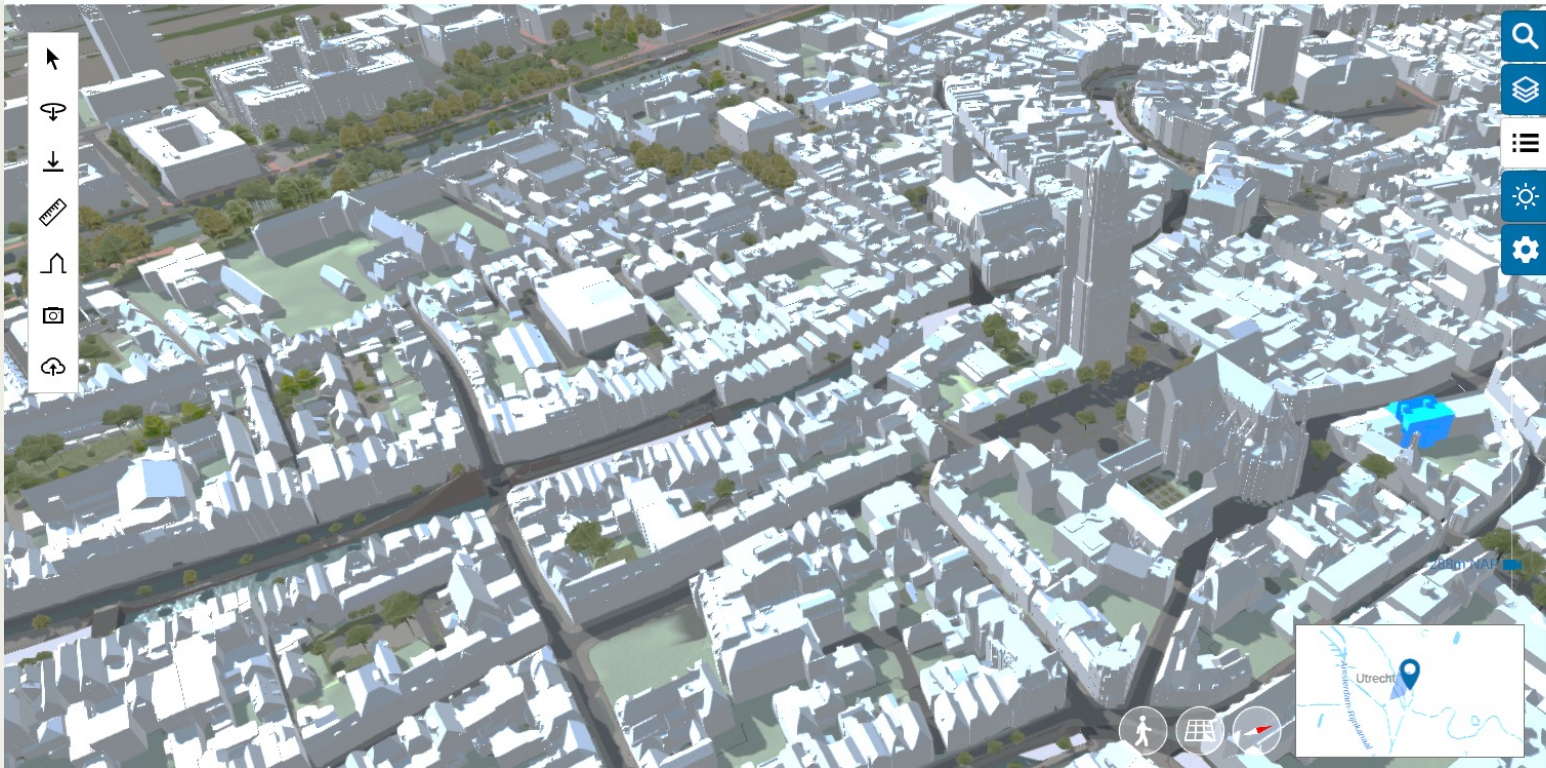
# Project Partners



## K8








**Feature request**

**Object informatie**



Pand 034410000005280

Naam	034410000005280
Bouwjaar	1850
Status	Pand in gebruik
Meer pand informatie	
Adressen	
Domstraat 4	3512 JB UTRECHT

**Cadastre Solaire**

Propriété solaire en tant que producteur d'électricité grâce à l'énergie solaire photovoltaïque

- Évaluer l'investissement de votre toiture
- Pré-dimensionner une installation photovoltaïque
- Estimer vos économies d'énergie

J'ai lu et j'accepte les conditions d'utilisation.

**Commencer**

Qualité production d'électricité est-elle écoresponsable ?

**Créer une installation photovoltaïque**

**34% de réduction**

84,6 m<sup>2</sup> Surface de toiture disponible

28,5 m<sup>2</sup> Surface installée

**Votre installation**

Mon installation photovoltaïque simulée

**12 panneaux photovoltaïques**

soit 4,80 kWc de puissance installée

Orientation: 30° Inclinaison: 38° Surface: 2160m<sup>2</sup>

# JOINT IMPLEMENTATION



# JOINT LEARNING

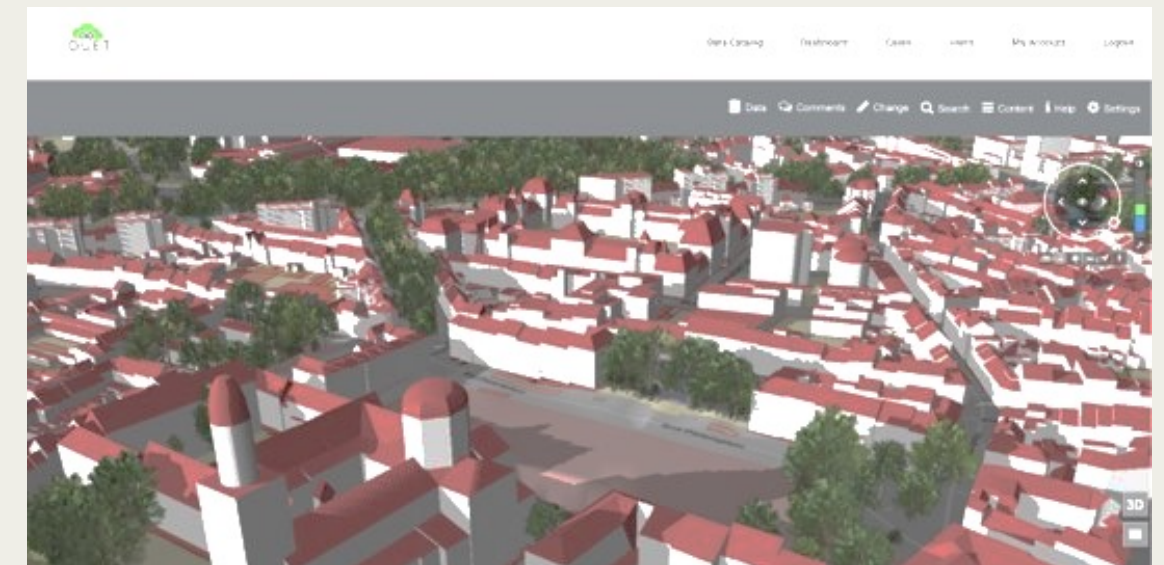
# JOINT STRATEGY



Themen Werkzeuge Legende Informationen TwinBy Digitaler Zwilling Stadt Schwabach

- Historiegrundkarten
- 3D
- Fachdaten
  - Parkl. Dräsen
  - Strassen
  - Verkehrsnetze
  - Angeschlossene Netz
- Ausgewählte Themen

aconium DKSR ui!



# Hopeful Futures!!



**LEAVE  
NO ONE  
BEHIND**

“ **JUST** and **GREEN** transition **LEAVING-NO-ONE-BEHIND** in **Digital Age** ”

*Impactful  
Use-Cases*

*Informed  
Decisions*

*Sustainable  
Communities*

*Resilient  
Society*

*Participatory  
Governance*

*Inclusive  
Solutions*

*Building  
public trust*

## *Community of Practice*



**LIVING-IN.EU**



**EURO  
CITIES**



**Bloomberg  
Philanthropies**



# THANK YOU

● FOR YOUR NICE ATTENTION

*[Visit Homepage - Smart Dublin](#)*

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