

Introducing Waterford City & SETU

Dr Robin Stubbs





**SE
TU**

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an Oirdheiscirt
South East
Technological
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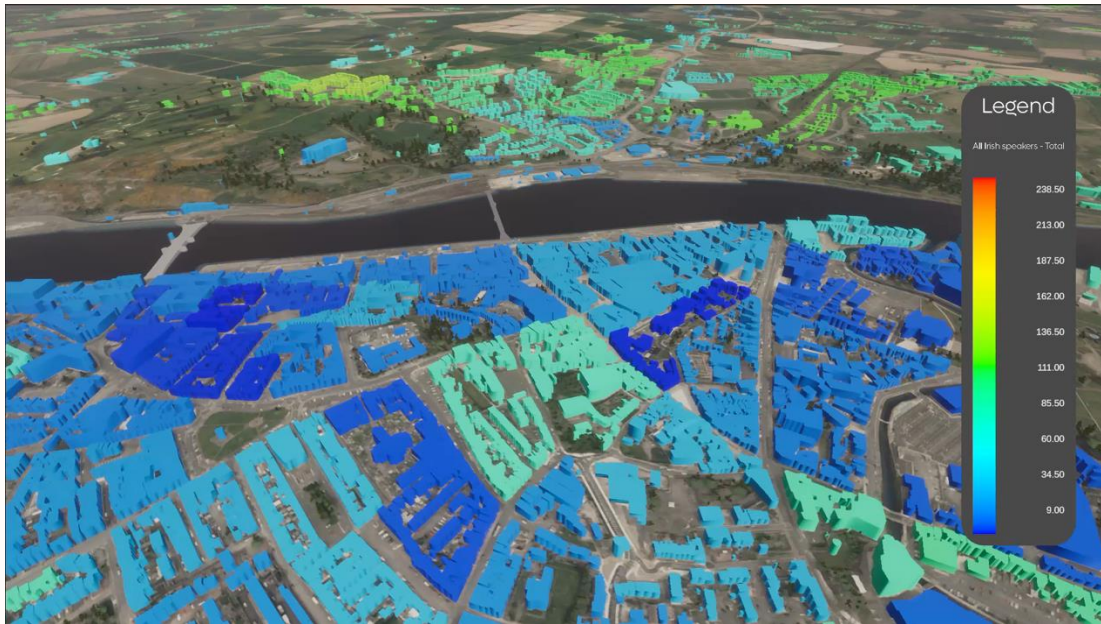


Mr Sean McKeown

City CEO
Waterford County & City Council

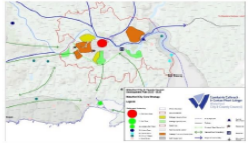
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DIGITAL TWIN WATERFORD (DTW)

Virtual Replica of the City – essential for a Smart, Innovative, Sustainable, Intelligent, Beautiful, Liveable, Vibrant, Agile and Resilient Waterford
Co-created, engaging and useful to all – Citizens, Council, Business and SETU



Integrated Platform of connected purposeful trustworthy 'Digital Twin' Models with XR/'Gaming' interface for all Buildings, Infrastructure and Nature in the City
- using AI with verifiable Geospatial Data, Information and Knowledge sources (including GIS, BIM and Sensors): Legacy and New; Static, Dynamic and Simulated.

Multiple Purposes and 'Use Cases' of DTW – Ethics and Trust are vital (Gemini Principles)

- **Achieving Climate Action Plan 2024-2029** Identifying the Baseline and Verifying the Transition(s)
- **Achieving Project Ireland 2040 Targets** Bigger City with more Citizens (+20k) and increased Employment
- **Achieving Housing for All 2030 Targets** Mix of New and Refurbishment of in-use/vacant Buildings
- **City to be Beautiful, Agile and Resilient** Bauhaus ambition, Cope with 'Disasters' & Extreme Weather Events
- **Better Public + Private Development Decisions** Easier to Visualise Current and Future Projects
- **Enhanced Transparency and Openness** Access to DTW for all Citizens & encourage engagement/co-creation
- **Deep Knowledge for a Circular City** Embodied Energy and Existing Materials Repository
- **Link to funded SMART-SE Initiative** Key General Data about the City, Specific Sensors/'Live Data'?

Buildings - Categories & Details, Existing & Planned

- Housing – Public (WC&CC), Associations and Private
- Education – Primary, Secondary, WWETS and SETU
- Retail – Shopping Centres, Individual Units, Garages
- Culture – Churches, Theatres, 'Open Spaces/Exhibition Areas'
- Social – Hotels, Pubs and Community Centres
- Offices – Public (WC&CC & Government) and Private
- Manufacturing – Industrial Estates

Infrastructure - Categories & Details, Existing & Planned

- Roads & Rail – Public (WC&CC, NRA) + Private (Estates?); Irish Rail
- Bus – Public (Bus Eireann) + Private Operators
- Waste – Public (WC&CC) + Private Operators
- Water – Public (Irish Water, WC&CC) + Private
- Electricity & Gas – Public (ESB) + Private (Energia, Elec Ire, BGE, GNI, others?)
- Telecoms – Eir, Vodafone, 3, Virgin Media, SIRO (others?)
- EV Charging – Public (WC&CC) and Private (Ionity, others?)

Nature - Categories & Details, Existing & Planned

- Parks & Gardens – Public (WC&CC, NRA) and Private (Estates?)
- Trees – Public (Parks, Gardens and Streets) and Private (Gardens and Estates)
- Sports – Golf, GAA, Football, Rugby, other?
- Water, Soils & Geotechnics – Rivers, Canals, Ponds, Estuary/Coast*, other?

Irish Exemplars / Smart Cities and Key Data Sources

Dublin smartdublin.ie/	Cork www.corkcity.ie/en/doing-business-in-cork/smart-city/	Limerick www.limerick.ie/smart-limerick/
Galway galwaydashboard.ie/	Belfast smartbelfast.city/	Derry www.intelligentcitieschallenge.eu/cities/derrylondonderry/
Smart Cities Forum smartcitiesireland.org/	OSI osi.ie/resources/	GeoHive www.geohive.ie/
CSO www.cso.ie/en/index.html	ESA esa-worldcover.org/en	SEAI www.seai.ie/
		GSI www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx

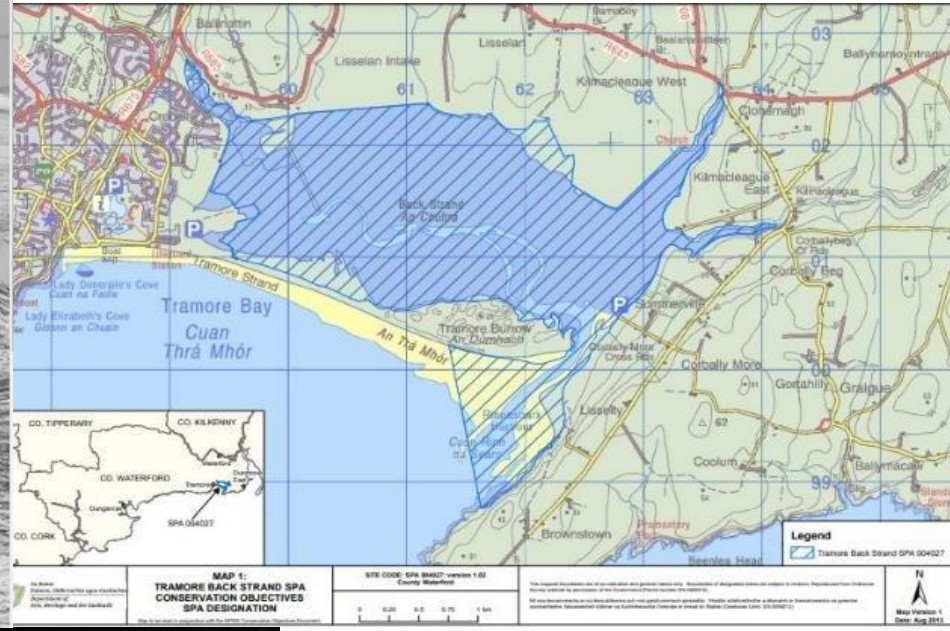
UK, EU and International Exemplars

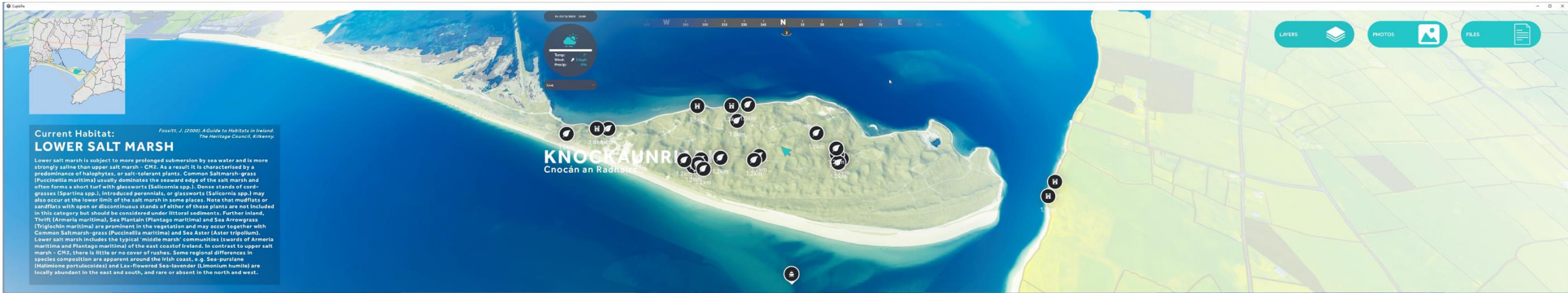
UK National DT https://digitaltwinhub.co.uk/	EU LDT-CitiVerse https://living-in.eu/news/ldt-citiverse-edc-fact
Liverpool https://www.youtube.com/watch?v=180E_3Mthv	Amsterdam https://www.youtube.com/watch?v=1Wkrm0kzyQ
Barcelona https://www.vcity.tech/	Hamburg https://www.citysciencelab.hamburg/projects/connected-urban-twins
Flanders https://www.digitalurbantwins.com/flanders-twin/	Munich https://muenchen.digital/projekte/digitaler-zwilling
Luxembourg https://list.lu/en/institute/strategic-priorities/digital-twin/	Klagenfurt https://www.klagenfurt.at/digitaler-zwilling
Gothenburg https://www.land.vic.gov.au/maps-and-spatial/projects-and-programs/digital-twin-victoria/	Helsinki https://virtualhelsinki.fi/
Victoria https://climateadaptationplatform.com/digital-twins-wellington-award-winning-model-and-their-value-in-climate-adaptation/	Australia & NZ www.digitaltwinhub.org/
Wellington https://www.beiingchilab.com/projects/ldt-digital-twin-of-helsinki/	Singapore www.nrf.gov.sg/programmes/virtual-singapore
Seoul https://smartcity.go.kr/en/	Japan www.sci-japan.or.jp/english/
Orlando https://orlando.org/	MIT Senseable City Lab https://senseable.mit.edu/

Cúpla Trá

| Project Motivation

Combining **Digital Twin Technology** with a **Landscape Biography methodological framework** to establish, better understand and communicate the competing influences, priorities and impact on the region from human and more-than-human activity to allow for improved regional planning and infrastructure initiatives.





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Thank You

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