

1. Workshop name/title (and acronym is applicable)

The Geo perspective on Digital Twins:
How can GI science advance the value of city-level and nationwide Digital Twins?

2. Description of the workshop by listing topic(s), objective(s) and planned outcome(s)

2.1 Topic(s)

What is the value of geospatial solutions - data, methods, tools, standards etc - for designing, building, maintaining, simulating, visualising and (inter) connecting Digital Twins?

2.2 Objective(s)

The overall objective of the workshop is to obtain a common understanding of the significance of research and work within the geospatial community for DTs and vice versa.

As the first AGILE workshop of this kind, we propose to study the overlaps and gaps between the geospatial and DT communities. Specifically, we will explore:

- What specific areas of DT present new concepts and challenges for the geospatial community?
- Where does the geospatial community have expertise that they could contribute to DT initiatives?

This is important knowledge to ensure that the value of geospatial data within the DT environment is clearly understood and articulated and accordingly integrated in DT-initiatives. These insights will be translated into guidelines on how the community can contribute to city-wide and national Digital Twin initiatives.

This workshop will contribute to European level research into DT, currently being carried out within EuroSDR, and will strengthen the collaboration between EuroSDR and AGILE.

2.3 *Planned outcome(s)*

The results will form the starting point for a Cookbook on Location Digital Twins from the GI science perspective, similar to the SDI cookbook from 2004

http://gsdiassociation.org/images/publications/cookbooks/SDI_Cookbook_GSDI_2004_ver2.pdf

In addition, the results of the workshop will be complemented with a literature study and structured in a Journal paper.

3. **Abstract**

Digital Twins (DT) are realistic digital representations of physical things with two-way flow of information from the physical to the model and back. DTs underpin areas ranging from urban administration to telecommunications and contribute to local and national Net Zero initiatives.

Within the geoscience community, DT concepts are not new; indeed, the location foundations of a DT may seem obvious. However - perhaps due to DT origins in manufacturing - there is as yet a lack of common understanding as to:

1. How geoscientists can best support, engage with and benefit from the increasing number of city-wide and national DT initiatives
2. What geoscientists can learn from the DT community

This is the focus of this workshop.

We're keen to hear from a wide range of people so if you:

- think DT are going to be the next biggest thing for geo, or
- think DTs are hype, or
- don't know anything about DT and want to learn, or
- know about DT but not about location data

then this workshop is for you!

4. **Short description of the intended length (half day) and the format of the workshop**

The workshop will be a half day event:

Session 1: contributions from both workshop participants (who will be invited to present their views in short pitches) and expert speakers - including keynotes from other communities (sensors, Internet of Things) to give us an external perspective on the topic.

Session 2: break out groups where you'll be given an opportunity to contribute your views on the topic and have discussions with other experts.

The invitation to participate in the workshop will also be distributed within the EuroSDR network

5. Brief statement of the relevance of the workshop for AGILE

Design - the key theme of AGILE 2023 - is a core application area for Digital Twins, which are being seen as digital/physical models that can be applied across the full life of objects in the built environment, with the DT being created early in the concept stage of design. The spatial data that underpins design - in particular 3D city models, BIM and GeoBIM - are also seen as core underpinnings for Digital Twins. Last, designing our common future requires efficient collaboration: between domains (eg health and mobility), between disciplines (eg urbanism and Deep learning) and between territories (eg cities collaborating to define relevant indicators for sustainability) The city-level and nationwide Digital Twin can support these effective and efficient collaboration, in a way similar as paper maps did in the non digital age.

We strongly believe that the AGILE community could provide valuable contributions to the Digital Twin discussions and developments, and to date the conference has not been active with regards to this topic. This underpins the relevance of the workshop for AGILE.

Additionally, this workshop offers an opportunity for those working in DT but currently not familiar with the potential of location data in the DT context to learn more and engage with the community, increasing the visibility of the domain.

The workshop will also strengthen the collaboration between the AGILE community and the EuroSDR community.

6. What is the approximate number of expected participants?

Around 40

7. Names and e-mail addresses of the organizing member(s)

Jantien Stoter, Delft University of Technology, j.e.stoter@tudelft.nl (Agile member), contact person

Claire Ellul, University College London, c.ellul@ucl.ac.uk

Benedicte Bucher, IGN France, Benedicte.Bucher@ign.fr (Agile member)

Lars Harrie, Lund University, lars.harrie@nateko.lu.se (Agile member)

Joep Cromptvoets, joep.cromptvoets@kuleuven.be, Secretary-General EuroSDR

8. Additional information about previous workshops, if held.

EuroSDR workshop on Digital Twins for national mapping and cadastral agencies and other governmental organisations (January 2022)

<http://www.eurosdrr.net/workshops/digital-twins-nmcas>

9. Expected resources needed

No break out rooms needed, but the main room would need to be set up as round tables to enable smaller group discussions

Funding for invited keynotes will be covered by EuroSDR

10. Other information

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