



Call for Experts

Call for experts to conduct a study on
**‘Urban digital twins as a tool to support
decision-making, operations, and monitoring’**

Terms of Reference

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1. Background and objective of the call

1.1 Purpose and background

The call is part of the service contract on 'Support for the Smart Cities and Communities Lighthouse project group'¹ for the European Climate, Infrastructure and Environment Executive Agency (CINEA). This service contract is implemented by the Scalable Cities Secretariat (SC Secretariat), and the contracts are issued by the AIT Austrian Institute of Technology GmbH, who is responsible for the expert calls within the consortium managing the SC Secretariat.

This is an open call for experts to execute a short-term study, which focuses on **urban digital twins** set up and operated by the Lighthouse Cities and Fellow Cities within the 20 Smart Cities and Communities (SCC) projects funded by Horizon 2020 and Horizon Europe programme (Annex 1).

Digital tools and technologies have become indispensable in the advancement of smart cities and in the achievement of climate-neutral urban development. The uptake and deployment of **urban digital twins** is a technological advancement, which enables the virtual representation of the physical nature of urban districts and areas, of processes, and of infrastructure systems. Digital twins can be applied for management purposes in different relevant domains (e.g. mobility, environment, energy, waste) and urban planning. Consequently, urban planners, cities/municipalities, researchers, and IT companies have taken a keen interest in harnessing the potential of digital twins in decision-making and monitoring processes.

Cities are encountering significant obstacles when it comes to implementing urban digital twin solutions in the context of smart cities and achieving carbon neutrality. Currently, the use of urban digital twins is not yet widespread or is in the early stages of deployment. Several challenges contribute to this situation, including the technical complexity of integrating and interoperating diverse datasets, concerns regarding privacy and security, limited resources, and expertise in managing digital twins, legal and regulatory frameworks, as well as technological components and applications, and the engagement of stakeholders. These challenges collectively hinder the full potential and successful implementation of digital twin technology.¹

The good news is that several European cities are using digital twins very successfully for decision-support, operations management and monitoring in their smart cities and climate-neutral projects and initiatives.² These examples of good practice need to be shared with other European cities to facilitate learning and replication.

The main target audiences of the study are the following: i) cities that need knowledge on the setup, the operation, and the maintenance of digital twins, and ii) the European smart city community (including European projects and initiatives such as NetZeroCities, European City Facility, Smart Cities Marketplace), and iii), researchers, IT companies involved in the development and operations of Digital Twins.

¹ Waqar et al. (2023)

² Alpagut et.al (2022, 32-34). Alpagut, B., Zhang, X., Gabaldon, A., & Hernandez, P. (2022). Digitalization in urban energy systems: Outlook 2025, 2030 and 2040. Publications Office of the European Union.



1.2 Scope of the work

The aim of the study is to provide a comprehensive overview on the state of the art and the use of urban digital twins in European cities and to analyse how digital twins can be used successfully in decision-making and for monitoring purposes in the context of smart cities. The study report is targeted at smart city stakeholders, policymakers, and urban planners alike.

The following tasks should be accomplished with the support described above.

- Provide an overview of the urban digital twin applications in various city domains (urban planning, traffic management, energy management, environmental monitoring)
- Analyse case studies of the implementation of urban digital twins in smart cities, including lessons learned and best practices (an initial list of case study examples from Smart City and Communities projects (SCC) can be found in Annex 2)
- Identify the opportunities for cities related to urban digital twins (e.g. more informed decision making, time and cost savings in operations, better citizen and stakeholder engagement and consultation, improved compliance with legal/regulatory obligations and reporting duties)
- Discuss the risks related to the set-up and the operations of urban digital twins (e.g. procurement risk, data privacy and security, integration with legacy systems, technical complexity).
- Analyse how investments in and the operation of urban digital twins are financed and discuss in this context the role of European projects and their potentials and limitations.
- Analyse financing models for the initial investment and the operation of digital twins.
- Provide an outlook on the future use of urban digital twins in cities, in terms of emerging trends and technologies.

1.3 Methods

The experts are expected to:

- Develop a sound methodology for the study.
- Review the state of the art of urban digital twins in European cities based on scientific and grey literature.
- Analyse in-depth case studies:
 - Identify and analyse relevant documents from at least those cities mentioned in Annex 2.
 - Conduct interviews with key experts from the cities.
- Analyse and evaluate the results of the state-of-the-art review and the case studies according to the following dimensions.



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- Opportunities and risks of urban digital twins for cities.
- Technological and organizational challenges.
- Financing set-up and operations.
- Factors for successful deployment and operations.
- Develop a guideline for practitioners working for cities.
 - Describe success factors identified in the state-of-the-art review and the in-depth case study analysis.
 - Give concrete recommendations for the set-up and the operations for urban digital twins in Cities.
 - A draft version of the guideline needs to be discussed with urban practitioners in at least online workshop to ensure relevance and practicability.
- Give an outlook on selected future trends shaping urban digital twins in smart cities, e.g.
 - Discuss the potential and advantages of artificial intelligence (AI).
 - Analyse the impact of using Digital Twins in various domains based on best practices use-cases.
 - Discuss the potentials and expected impacts of relevant emerging European initiatives, e.g. EDIC.

The experts will write a report in MS Word which provides insight into all content outlined above, and prepare a detailed PPT presentation about the framework, methodology, and results.

1.4 Deliverables

The following deliverables are expected:

	Deliverable	Description	Timeline
D1.	Interim Report	Presentation (PPT format) highlighting work done so far on the report and preliminary results (incl. Methodology, Preliminary findings, Upcoming actions, timeline).	April 2024
D2.	Final Report	Report including all insights, chapters and content agreed with the managing team. In Word format, using template to be provided. The report will be max. 50 pages.	August 2024
D3.	Executive summary	2-page executive summary. It can also be included in the report.	Upon submission of Final Report.
D4.	PPT presentation	Presentation of key content of the Report, including methodology explanation and key actions. PPT format.	Upon submission of Final Report.



The contracted experts are expected to collaboratively write the report and deliverables in collaboration with the SG Secretariat. However, the contracted expert/s will be in charge to coordinate the drafting and final production of the report and the other deliverables and will be the sole responsible for the result. The contracted expert/s will be responsible to do the quality check and to decide which collaborators can be cited as co-authors, depending on their contributions.

The Interim and the Final Report should have a similar structure. An indicative **Table of Content** is provided below:

- Executive summary
- Scope and methodology of the study.
- State of the art of urban digital twins: A review of literature and European projects
- In-depth analysis of four good practice examples
- A guideline for the successful set-up and operations of urban digital twins in cities.
- Outlook: Future trends shaping urban digital twins in smart cities
- Bibliography

1.5 Timeline

The expected duration of the assignment is of 21 working days per expert, in total maximum 84 working days.

The work on this study is expected to be started no later than 15 February 2024 and to end on 31 August 2024.

2. Required expertise and qualification

2.1 Selection criteria

For the implementation of this project, a **panel of experts** is to be engaged. One of the experts should be appointed as Expert Lead and will coordinate the tasks of the assignment.

The experts should jointly cover all the following perspectives within using digital twins in cities:

- Geoinformatics / urban data science
- Urban governance
- Urban planning (e.g. spatial planning, urban design, transport planning, energy planning)
- Urban monitoring (e.g. related to energy, air quality, water management, transport)

The **experts** must have the following expertise:

- At least 5 years of working experience.



- At least 3 years of experience in their area of expertise

Experts are required to attach a list of their (co-)authored publications or credentials relevant for the topic of the report.

Additionally, the **Expert Lead** must have the following expertise:

- At least 5 years of expertise in relevant projects and a proven track record in coordinating and managing complex projects.

2.2 Exclusion criteria

The following criteria make an expert not eligible for the call:

- Employees of the consortia managing Scalable Cities Secretariat and the Smart City Marketplace are not eligible to apply for this call.
- The experts must be independent contractors and not be employees of the consortium members AIT, Lyon Confluence, Blue-Sight Conseil, Twenty Communications, GNE, Energy Cities, nor of CINEA and DG ENER.

3. Procedure

3.1 Application procedure

Interested panels of experts are invited to apply for this call by filling in the application form on the EU-Survey website: <https://ec.europa.eu/eusurvey/runner/Call4Experts>.

As indicated in section 2.2., applications have to be submitted by **the expert lead** of the proposed panel of experts.

The **other panel members** have to fill in information about the name and contact, professional background and work experience and the information about their Smart City Expertise profile by using the same [link](#).

For a successful application, the following information needs to be submitted:

1. Fully completed registration of the "**Smart City Expert Profile**" of the entire panel (name and contact, professional background and work experience and the information about their Smart City Expertise profile)
2. Completed **application form** which contains a motivation letter, an overview of the panel of experts, a presentation of the research and implementation approach (see Annex 4).



3.2 Selection procedure

The selection procedure consists of the assessment of the **Smart City Expert profiles** and the **application form** based on the selection criteria stated above and in **Annex 2**.

The **evaluation** will be performed by the technical manager of Scalable Cities Secretariat in coordination with the (TG) Supporting Expert and with the approval of CINEA. The final approval of deliverables will be done by a committee that consists of the (TG) Supporting Expert, the Technical Manager of Scalable Cities Secretariat and the relevant Project Officer of the European Climate, Infrastructure and Environment Executive Agency (**CINEA**).

4. Contract conditions and payment

4.1 Remuneration

The Panel of Experts will be reimbursed for their time and effort, with a reference value of **450€ per day** for a **maximum of 84 days** (with a **maximum of 21 days/expert/year**, including travel days) **plus expenses** (if needed) will be reimbursed according to the rules set out in the Commission Decision C (2007)5858³.

4.2 Travel reimbursement

As per the contract agreement, experts are entitled to receive travel reimbursement for essential trips required to facilitate e.g., in-person meetings, workshops, and participation in conferences essential for the successful completion of their assignments. The experts shall be provided with the following financial support for their travel:

- **Reimbursement of travel expenses** of up to 800€ per person per trip.
- **Accommodation support for a maximum of 3 days** of the physical meeting: 100€ per night. (Meeting days + 1 additional night)
- **Daily allowance:** 92€ per day for meals and public transportation

4.3 Contract and payment rules

The experts will be appointed and contracted individually by the Scalable Cities Secretariat by the organisation of the technical management team, the Austrian Institute of Technology (AIT). The draft for the contract for the experts is summarized in the expert agreement in **Annex 3**. Invoicing shall be made upon the communication of approval of all final deliverables by AIT and CINEA. Payment rules can be found in the expert agreement under the **Annex 3, section 3**.

³ Rules on the reimbursement of expenses incurred by people from outside the Commission invited to attend meetings in an expert capacity (2007), https://ec.europa.eu/employment_social/eqi/docs/reglementation_experts_2008_en.pdf.



Should you have any questions or if you need help, please contact

call4expert@ait.ac.at

We are looking forward to your applications!



5. Annexes

Annex 1: List of Smart Cities and Communities Lighthouse projects

Closed projects as of March 2023

Lighthouse projects of Scalable Cities	Lighthouse Cities	Fellow Cities
Remourban	Valladolid (ES) Nottingham (UK) Tepebasi (TR)	Seraing (BE) Miskolc (HU)
Triangulum	Manchester (UK) Eindhoven (NL) Stavanger (NO)	Leipzig (DE) Praha (CZ) Sabadell (ES)
Growsmarter	Stockholm (SE) Cologne (DE) Barcelona (ES)	Cork (IE) Graz (AT) Porto (PT) Suceava (RO) Valletta (MT)
SmartEnCity	Sønderborg (DK) Vitoria/Gasteiz (ES) Tartu (EE)	Asenovgrad (BG) Lecce (IT)
Replicate	San Sebastian / Donostia (ES) Florence (IT) Bristol (UK)	Essen (DE) Lausanne (CH) Nilüfer (TR)
Smarter Together	Lyon (FR) Munich (DE) Vienna (AT)	Kiev (UA) Santiago de Compostela (ES) Sofia (BG) Venezia (IT)
SharingCities	London (UK) Milan (IT) Lisbon (PT)	Bordeaux (FR) Bourgas (BG) Warsaw (PL)
Ruggedised	Glasgow (UK) Umea (SE) Rotterdam (NL)	Brno (CZ) Gdansk (PL) Parma (IT)
MySmartLife	Helsinki (FI) Hamburg (DE) Nantes (FR)	Bydgoszcz (PL) Palencia (ES) Rijeka (HR)
MatchUp	Valencia (ES) Dresden (DE) Antalya (TR)	Herzliya (IL) Kerava (FI) Ostend (BE) Skopje (MKD)
Stardust	Tampere (FI) Pamplona (ES) Trento (IT)	Cluj-Napoca (RO) Derry (UK) Kozani (GR) Litoměřice (CZ)
IRIS	Göteborg (SE) Utrecht (NL) Nice (FR)	Alexandroupolis (GR) Focşani (RO) Santa Cruz de Tenerife (ES) Vaasa (FI)
+CityxChange	Trondheim (NO) Limerick (IE)	Alba Iulia (RO) Pisek (CZ) Sestao (ES) Smolyan (BG)



Terms of Reference

		Võru (EE)
MAKING-CITY	Oulu (FI)	Bassano del Gappa (IT)
	Groningen (NL)	León (ES) Kadiköy (TR) Trencin (SK) Vidin (BG) Lublin (PL)
SPARCS	Espoo (FI)	Lviv (UA)
	Leipzig (DE)	Maia (PT) Kfissia (GR) Kladno (CZ) Reykjavik (IS)
POCITYF	Alkmaar (NL)	Bari (IT)
	Évora (PT)	Celje (SI) Granada (ES) Hvidovre (DK) Ioannina (GR) Ujpest (HU)
Atelier	Amsterdam (NL)	Bratislava (SK)
	Bilbao (ES)	Budapest (HU) Copenhagen (DK) Krakow (PL) Matosinhos (PT) Riga (LV)
RESPONSE	Dijon (FR)	Brussels (BE)
	Turku (FI)	Zaragoza (ES) Botosani (RO) Ptolemaida (GR) Gabrovo (BG) Severodonetsk (UA)
ASCEND	Lyon (FR)	Alba Iulia (RO)
	Munich (DE)	Budapest (HU) Charleroi (BE) Prague (CZ) Porto (PT) Stockholm (SE)
NEUTRALPATH	Dresden (DE)	Istanbul (TR)
	Zaragoza (ES)	Ghent (BE) Vantaa (FI)

Abbreviations

Albania	(AL)
Austria	(AT)
Bosnia and Herzegovina	(BA)
Belgium	(BE)
Bulgaria	(BG)
Switzerland	(CH)
Cyprus	(CY)
Czechia	(CZ)
Germany	(DE)
Denmark	(DK)
Estonia	(EE)
Greece	(EL)
Spain	(ES)
Finland	(FI)
France	(FR)
Croatia	(HR)



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Hungary	(HU)
Ireland	(IE)
Israel	(IL)
Iceland	(IS)
Italy	(IT)
Liechtenstein	(LI)
Lithuania	(LT)
Luxembourg	(LU)
Latvia	(LV)
Moldova	(MD)
Montenegro	(ME)
North Macedonia	(MK)
Malta	(MT)
Netherlands	(NL)
Norway	(NO)
Poland	(PL)
Portugal	(PT)
Romania	(RO)
Serbia	(RS)
Sweden	(SE)
Slovenia	(SI)
Slovakia	(SK)
Türkiye	(TR)
Ukraine	(UA)
United Kingdom	(UK)



Annex 2: List of cities/ initial-use-cases using urban digital twins in smart city projects:

City	Link	SCC Project
Amsterdam	https://www.amsterdam.nl/innovation/digitalisation-technology/digitalisation/digital-urban-planning/	ATELIER
Helsinki	https://mysmartlife.eu/interventions/	mySMARTLife
Limerick	Limerick - Positive Energy Block IES Case Study (iesve.com)	+CityxChange
Munich	Der Digitale Zwilling München stellt sich vor München-Digital-Portal (muenchen.digital)	ASCEND/ SMARTER TOGETHER
Rotterdam	RUGGEDISED - Smart city lighthouse project Urban Data Platforms	RUGGEDISED
Valencia	Urban platform - MatchUp - MatchUp (matchup-project.eu)	MAtchUP



Annex 3: Evaluation grid

	Criteria description	Weight	Evaluation	Justification (reference)
1	Qualification of the Consortium	30%		
1.1	Motivation letter (max 1 page) <i>Explain why this group is suitable to do this study.</i>			
1.2	Panel members / Qualification and skills <i>The composition of the proposed consortium consists of max of 2 persons. Evaluation will be conducted based on the information of the experts' CV provided.</i> <i>The experts can show expertise in the topic of the call through years of expertise, projects, papers or reports at the European and international level.</i> <i>It is desirable that the consortium has a gender balance.</i>			
2	Research Approach	40%		
2.1	Summary of the Methodology (max 2 pages) <i>The methodology is explained in a comprehensible manner to achieve the expected results specified in the TOR. It includes concrete methods on how local stakeholders and the core group of the Smart Cities and Communities Lighthouse Projects can contribute with their expertise to the elaboration of the report.</i>			
3	Implementation approach	30%		
3.1	Workplan <i>The work plan covers all tasks and timings that need to be performed. The feasibility of the work plan corresponds to the indicated timeline in section 1- Deliverables. of the call text and the maximum number of working days.</i>			
3.2	Structure of the Report <i>The structure of the report corresponds to the questions which should be answered by the study. The structure should correspond to the one indicated in the TOR and specify any additions or suggestions.</i>			
		Total 100%		



Annex 4: Draft contract (non-binding)

E X P E R T A G R E E M E N T

between

AIT Austrian Institute of Technology GmbH

Giefinggasse 4

1210 Vienna

Austria

Hereinafter referred to as "AIT" or "Contractor"

and

[...]

Hereinafter referred to as "XXXX" or "Expert"

jointly also referred to as "Parties"

Preamble

AIT participated with Civiesco SRL, Energy Cities/Energy-Cities Association, Blue-sight Conseil, Algoé SA, Twenty Communications SRO, with the lead by Lyon Confluence in the Call by the European Climate, Infrastructure and Environment Executive Agency - CINEA in their Call for Support for the Smart Cities and Communities Lighthouse project Group (CINEA/2020/OP/0001). Aim of that project is to create a large-scale, long-terms support for the Smart Cities and Communities of the H2020 actions and guarantee that best use is made of results of seven years of Lighthouse projects covering the period from 2014 to 2020. Therefore, the knowledge gathered, and lessons learned in those actions of H2020 shall be retained, collected and analyzed. To be able to do this on a high-quality level the Expert was chosen after AIT has issued an Open Call for such Experts. The name chosen by AIT and the other partners in this call for the project is "SCALE".

1. Definition

- 1.1. **Agreement** shall mean this Agreement including its attachments and any modifications thereof if done according to the stipulations of this agreement.
- 1.2. **Contact Person** shall mean the persons in Section 9 of this Agreement.
- 1.3. **Confidential Information** shall mean all oral and written confidential information, such as company and business secrets, intellectual property rights, know-how, other technical and non-technical information, hereby achieved knowledge and results, written documents, drawings, blueprints, specifications, methods, formulas and programmable logic and software algorithms, acquired due to the Services.

Confidential Information shall not include information that demonstrably:

- 1.3.1. is known and on record at the recipient prior to disclosure by AIT / SCALE or;
- 1.3.2. is furnished by the third party without similar restrictions to those herein contained as to the use or disclosure thereof or;



- 1.3.3. is developed by recipient completely independently of any such disclosure by AIT / SCALE or;
- 1.3.4. has been excluded from confidentiality or;
- 1.3.5. is required by mandatory law, court order, administrative orders or any other legal obligation.
- 1.4. **[Expert]** shall mean the Party mentioned in the head of the Agreement through his key person [...] . Any change of that key person will need the explicit consent of AIT.]
- 1.5. **Pre-Existing Material** means any material, document, technology or know-how which exists prior to the Expert using it for the production of a Result or in the performance of the Agreement
- 1.6. **Pre-Existing Right** means any industrial and intellectual property rights on Pre-Existing Material; it may consist in a right of ownership, a license right and/or right of use belonging to the Expert, the creator or any other third party.
- 1.7. **Result** means any intended outcome of the performance of Service, whatever its form or nature. A Result may, in addition to newly created materials produced specifically for AIT and/or SCALE by Expert or at its request, also include Pre-Existing Material.
- 1.8. Union means the European Union.
- 1.9. **SCALE** shall mean the overall project for the CINEA Call, including the partners mentioned in the Preamble of this Agreement as well as other experts and shareholders needed to reach the aim of the project.
- 1.10. **Services** shall mean services as specified in Attachment./1.
- 2. Service**
 - 2.1. The Expert shall consult within AIT and other participants of SCALE regarding Services and perform them at such times as is requested by AIT. Expert will perform the Services faithfully, diligently and to the best of Expert`s skill and ability.
 - 2.2. All documents created during the performance of Services shall become owned by AIT shall receive the exclusive license hereto regarding the intellectual property rights contained thereon or therein with the complete compensation of the respective invoice of the creation of the document for the aim of using them on the Smart Cities Marketplace website and within social media channels and making them available for the public and Union.
- 3. Compensation**
 - 3.1. In consideration of Expert`s Services under this Agreement, AIT shall pay euros [450] / day plus value added tax. The fee shall be paid at the end of every three months (March, June, September and December) against provisions of a valid invoice within 30 days of invoice date.



- 3.2. AIT shall reimburse Expert for travel and other incidental expenses incurred by Expert in providing the Services, to the extent such expenses were approved by the Contact Person in advance.
- 3.3. At the latest with each invoice, the Expert shall forward to AIT a list of all Pre-Existing Rights to the Results or parts of the Results or a declaration stating that there are not such Pre-Existing Rights in the Results.

4. Independent Contractor

It is understood and agreed that the Expert is an independent contractor and not an employee of AIT. Expert has no authority to obligate AIT by contract or otherwise. [Expert`s employees used for the Services will not be eligible for any employee benefits at AIT.]

5. Non Disclosure

- 5.1. During the period of validity of this Agreement and for as long as the information or document remains confidential as defined in Section 1.3. Expert will keep confidential all Confidential Information and shall not disclose, directly or indirectly, Confidential Information or anything related to such information without the written consent of AIT except as required in performing the Services. [Therefore Expert represents, that he shall only make the Confidential Information available to his key personal providing the Services and secure that only that key personal has access to these Confidential Information].
- 5.2. Expert must (i) not use the Confidential Information for any purpose other than to perform its obligations under this Agreement without prior written agreement of AIT, (ii) ensure the protection of such Confidential Information with the same level of protection as its own Confidential Information and in any case with due diligence.
- 5.3. Upon termination of the Agreement or at any time upon request of AIT, Expert shall promptly return to AIT or destroy (at AIT choice) all Confidential Information furnished to Expert by AIT or a SCALE participant, directly or indirectly or produced during SCALE. Should Expert not receive any information in this regard at the end of this Agreement, Expert shall destroy all such Confidential Information.

6. Conflict of Interest and third party rights, no conflicting obligations

- 6.1. Expert declares that no conflict of interest exists with his partaking in Scale and that Expert will inform the AIT immediately, if any such conflict should arise during Experts duties.
- 6.2. Expert represents that to Expert`s knowledge Expert`s performance of this Agreement and performance of the Services do not and will not to its knowledge breach or conflict with any third-party rights.
- 6.3. Expert further represents that the execution and delivery of this Agreement and the fulfillment of the terms hereof do not require the notification or consent of any person or entity.



7. Intellectual Property

7.1. AIT shall acquire ownership of all Results as defined in this Agreement. These Results may be used in particular for but not limited to:

7.1.1. Use for SCALE purposes and all follow-up projects:

7.1.1.1. Making available to the staff of CINEA and DG ENER

7.1.1.2. Making available to the persons and entities working for CINEA and DG ENER or cooperating with it, including contractors, subcontractors whether legal or natural persons;

7.1.1.3. Making it available to the other Union institutions, agencies and bodies, Members States' institutions;

7.1.1.4. Installing, uploading, processing

7.1.1.5. Arranging, compiling, combining, retrieving,

7.1.1.6. Copying, reproducing in whole or in part and in unlimited number of copies.

7.1.2. Distribution to the public in hard copies, in electronic or digital format, on the internet including social networks as downloadable or non-downloadable file;

7.1.3. Communication through press information services;

7.1.4. Inclusion in widely accessible databases or indexes, such as via "open access" or "open data" portals, or similar repositories, whether freely accessible or accessible only upon subscription;

7.1.5. Modification by the contracting authority or by a third party in the name of the contracting authority, including:

7.1.5.1. Shortening;

7.1.5.2. Summarizing;

7.1.5.3. Modifying the content, the dimension;

7.1.5.4. Making technical changes to the content (necessary correction of technical errors) adding new parts or functionalities, changing functionalities, providing third parties with additional information concerning the results (e.g. source code) with a view to making modifications;

7.1.5.5. Additions of new elements, paragraphs, titles, leads, bolds, legend, table of content, summary, graphics, subtitles, sound:

7.1.5.6. Addition of metadata, for text and data-mining purposes; addition of right-management information; addition of technological protection measures;



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- 7.1.5.7. Preparation in audio form, preparation as a presentation, animation, pictograms story, slide-show, public presentation;
 - 7.1.5.8. Extracting a part or dividing into parts;
 - 7.1.5.9. Incorporating, including by cropping and cutting, the Results or parts thereof in other works, such as on websites and webpages;
 - 7.1.5.10. Translating, inserting subtitles, dubbing in different language versions.
- 7.1.6. Rights to authorize or license the modes of exploitation set out in any of the Sections 7.1.1 to 7.1.5 to third parties, provided however that this does not apply to Pre-Existing Rights and Pre-Existing Materials, if they are only licensed according to Sections 7.2 to 7.7
- 7.1.7. Other adaptations which the parties may later agree; in such case, the following rules apply: AIT must consult with Expert. If necessary, Expert must in turn seek the agreement with any creator or other right holder and must reply to AIT within 14 days by providing its agreement, including any suggestions of modifications, free of charge. Expert may refuse the intended modification only if a creator can demonstrate that the intended modification may harm his/her honor or reputation, thereby violating his/her moral rights.

This list above is in addition to whatever rights already accrue by AIT / Scale or CINEA on the basis of existing exceptions in the applicable legislation, such as the copyright exception to ensure the proper performance or reporting of administrative proceedings, in cases where such exceptions apply.

- 7.2. AIT does not acquire ownership of Pre-Existing Rights under this Agreement.
- 7.3. Expert licenses the Pre-Existing Rights on a royalty-free, non-exclusive and irrevocable basis to AIT, SCALE participants mentioned in the Preamble and/or the Union, which may use the Pre-Existing Material for all of the modes of exploitation set out in this Agreement. Unless otherwise agreed, the license is non-transferable and cannot be sub-licensed, expert as provided thereafter:
- 7.3.1. The Pre-Existing Rights can be sub-licensed by AIT, SCALE participants mentioned in the Preamble and/or the Union to persons and entities working for it or cooperation with it, including contractors and subcontractors whether legal or natural persons, but only for the purposes of their mission for CINEA or the Union.
 - 7.3.2. If the Results is a "document" such as a report or a study, and it is meant to be published, the existence of Pre-Existing Materials in the Result may not prevent the publication of the document, its translation or its "reuse", it being understood however that the "reuse" may only be made of the Result as a whole and not of the Pre-Existing Materials taken separately from the Results; for the sake of this provision, "reuse" and "document" have the meaning given by the Commission Decision of the 12 December 2011 on the reuse of Commission documents (2011/833/EU)



- 7.4. All Pre-Existing Rights are licensed to AIT and the Union from the moment the Results are delivered and approved by the contracting authority.
- 7.5. The licensing of Pre-Existing rights under this Agreement covers all territories worldwide and is valid for the duration of intellectual property rights protection.
- 7.6. The payment of the price as set out in this Agreement is deemed to also include any fees payable to the Expert in relation to the licensing of Pre-Existing Rights, including for all forms of exploitation and of use of the Results.
- 7.7. When the contractor retains Pre-Existing Rights on parts of the Results, reference must be inserted to that effect when the Result issued as set out in this Agreement, with the following disclaimer “© - year- European Union. All rights reserved. Certain parts are licensed under conditions to the EU” or with any other equivalent disclaimer as the Union may consider best appropriate, or as the parties may agree on a case-by-case basis. This does not apply when insertion such reference would be impossible, notably for practical reasons
- 7.8. If natural persons appear in a result (e.g video) or their voice or any other private element is recorded in a recognisable manner, the Expert must obtain a statement by these persons (or, in the case of minors, by the persons exercising parental authority) giving their permission for the described use of their image, voice or private element and, on request, submit a copy of the permission to the contracting authority. The Expert must take the necessary measures to obtain such consent in accordance with the applicable legal provisions. In case the Expert himself appears in a result (video or audio recording or pictures) he explicitly gives his consent to the use of this image, video, audio or similar recording.
- 7.9. Where the implementation of the Agreement requires that Expert uses Pre-Existing Materials belonging to AIT or a SCALE participant, AIT or that SCALE participant may request that the Expert signs an adequate license agreement. Such use by Expert will not entail any transfer of rights to Expert and is limited to the need of this Agreement.
- 7.10. When delivering the Results, Expert must warrant, that, for any use that may be envisaged within the limits set in this Agreement, the newly reacted parts and the Pre-Existing Material incorporated in the Results are free of claims for creators or from any third Parties and all the necessary Pre-Existing rights have been obtained or licenses. To that effect, the Expert must establish a list of all Pre-Existing Rights to the Results of this contract or parts thereof, including identification of the rights’ owners. If there are no Pre-Existing Rights to the Results, the contractor must provide a declaration to that effect. The Expert must provide this list or declaration together with the last invoice for payment at the latest.
- 7.11. In the Result, Expert must clearly point out all quotations of existing works. The complete reference should include as appropriate, the following: name of the author, title of the work, date and place of publication, date of creation, address of publication on the internet, number, volume and other information that allows the origin to be easily identified.



7.12. By delivering the Results, Expert warrants that the creators will not object to the following on the basis of their moral rights under copyright:

7.12.1. That their names be mentioned or not mentioned when the Results are presented to the public;

7.12.2. That the Results be divulged or not after they have been delivered in their final version to AIT;

7.12.3. That the Results be adapted, provided that this is done in a manner which is not prejudicial to the creator`s honor or reputation.

7.12.4. If moral rights on parts of the Results protected by the copyright may exist, Expert must obtain the consent of creators regarding the granting or waiver of the relevant moral right in accordance with the applicable legal provisions and be ready to provide documentary evidence upon request.

8. Term

8.1. This agreement shall come into force as of the date of its last signature and shall continue in full force and be effective until [...]. In case of positive Evaluation as described in Attachment ./1 the Contractor can extend this agreement for another year.

8.2. Either Party may terminate this Agreement upon thirty (30) days written notice.

8.3. Notwithstanding the above, this Agreement may be terminated by either party upon written notice of seven (7) days if the other party has committed a material breach of the Agreement and fails to correct the same after receiving written notice with respect thereto from the first party.

8.4. Notwithstanding any of the above any termination of this Agreement for any reason, the obligation set forth in Sections 3, 5, 7 and 9 will survive any termination of this Agreement. Upon termination of this Agreement (i) Expert will promptly deliver to AIT all documents and other materials of any nature pertaining to the Services together with all documents and other items containing or pertaining to any Confidential Information and (ii) AIT will promptly pay any due compensation in accordance to the Agreement.

9. Contact Person

9.1. Any notice shall be in writing and may be delivered by hand or by courier, by registered mail or by facsimile or other electronic means that provide paper record of the text of the notice, addressed to the contact person as listed below. Any notice shall be deemed to be effective on the day it is received at that address.

9.2. Contact person of AIT shall be [...] and all written information per e-mail shall be sent as cc: to [...]



- 9.3. Contact person of Expert shall be [...] and all written information per e-Mail shall be sent as cc: to [...]
- 9.4. The parties reserve themselves the right to change these contact persons at any time through written information to the contact person of the other party.

10. Miscellaneous

- 10.1. This document comprises any and all agreements entered into by and between the Parties. There are no written or oral ancillary agreements. Modifications of or amendments to this agreement shall only be valid, including modifications of or amendments to this provision, if implemented by written agreement duly signed by all Parties.
- 10.2. All disputes or claims arising out of or in connection with this contract, including disputes relating to its validity, breach, termination or nullity, shall be finally settled under the Rules of Arbitration (Vienna Rules) of the Vienna International Arbitral Centre (VIAC) of the Austrian Federal Economic Chamber by one or three arbitrators appointed in accordance with the said Rules. The number of arbitrators shall be three (Article 17 Vienna Rules). The language to be used in the arbitral proceedings (Article 26 Vienna Rules) shall be English. The substantive law applicable to the contractual relationship, the substantive law applicable to the arbitration agreement (both Article 27 Vienna Rules) shall be Austrian Law excluding any legal norms referring to other legal systems, and the rules applicable to the proceedings (Article 28 Vienna Rules) shall be the Vienna Rules of the VIAC. The provisions on expedited proceedings (Article 45 Vienna Rules) shall be applicable.
- 10.3. Each party irrevocably waives any objection which it might at any time have towards the VIAC, being nominated as the forum to hear and determine any proceedings and to settle any disputes and agrees not to claim that the VIAC is not convenient or appropriate forum.
- 10.4. Should any provisions of this agreement be or become wholly or partly invalid or unenforceable, this shall not affect the validity or enforceability of the remaining provisions. In this event, the invalid or unenforceable provision shall be substituted by such valid/enforceable provision, which comes as close as possible to the legal and economic purposes pursued by the Parties with such invalid/unenforceable provision.
- 10.5. This agreement shall be governed in its entirety by the laws of the Republic of Austria excluding any legal norms referring to other legal systems. This includes disputes on its conclusion, binding effect, amendment and legal consequences of this agreement.

11. Checks and audits

- 11.1. The Union and the European Anti-Fraud Office may check or require an audit on the performance of the contract. This may be carried out either by OLAF's own staff or by any outside body authorized to do so on its behalf. Such checks and audits may be initiated at any moment during the performance of the contract and up to five years starting from the



Terms of Reference

payment of the balance. The audit procedure is initiated on the date of receipt of the relevant letter sent by the Union by AIT; If the audit requires an audit with the Expert, AIT will inform the Expert accordingly. Audits are carried out on a confidential basis.

11.2. The Expert must keep all original documents stored on any appropriate medium, including digitized originals if authorized under national law, for a period of five years starting from the payment of the balance.

11.3. The Expert must grant the contracting authority's staff and outside personnel authorized by contracting authority the appropriate right of access to site and premises where the contract is performed and to all the information, including information in electronic format, needed to conduct such checks and audits. The Expert must ensure that the information is readily available at the moment of the check or audit and, if so requested, that information is handed over in an appropriate format.

11.4. On the basis of the findings made during the audit, a provisional report is drawn up. When AIT receives such report regarding the Expert, AIT will inform the Expert and inform him of the deadline for any possible response.

Attachments:

Attachment./1 Services

[place], [date]

Attachment./1 Services



Annex 4: How to access the EUSurvey

Step 1 – Follow the Link: [EUSurvey - Edit contribution \(europa.eu\)](#)

You will be led to the EU Survey website to apply for the call.

Step 2 – Login: Access to the EUSurvey

In the following screenshot, the website is presented. On the website, you can log in with your **user account** or with your **“Contribution-ID”**.

- If you have **no user account** for the EU-Survey tool, then log in with the Contribution-ID. Please note that without your Contribution-ID it is not possible to go back to your Smart City Profile and edit the additional information required for the application of the call. If this is the case look at Step 3.



- If you have a **user account**, you can log in with both variants the Contribution-ID or directly with your user account. Go back to the EUSurvey website use any web browser of your choice and click the login button to access the application if you have created an account at the EU Survey platform, otherwise click on edit contribution.





Online surveys made easy with EUSurvey!



Have you ever needed to collect stakeholders' views on a specific issue?
Quickly consult businesses, citizens or other interested parties?
Conduct user satisfaction surveys? Prepare registration forms for conferences?

Step 3 – Finding your contribution ID

All applicants, as long as they have filled in their Smart City Profile and saved their contribution ID by **print** or **get PDF** are able to edit their contribution to fill in the application form the call on 'Systemic changes in local governance'. You can find your contribution ID in your PDF.

If you haven't saved your contribution-ID, please do not hesitate and contact us: call4expert@ait.ac.at

Step 4 – Fill in the required information for the application

If you succeeded to access your Profile. Please go to the section 'Expression of Interest' and select the call you are interested in and complete the application form



Application form

'Digital Twins as a tool to support Decision-Making, Operations, and Monitoring'

More details on the content of the call (deliverables, schedule etc.) can be found in the right column under background documents "*Terms of Reference – Innovative Smart City Business Models and Financing*".

Please note that we only consider applications from a panel of experts with min. 2 people. Individual applications are not eligible for the evaluation of the applications.

In case of questions about the form, kindly write to **call4expert@ait.ac.at**.

1. Qualification of the consortium

Please indicate the members of the panel of experts and their experience.

Expert lead

Last name:

First name:

Organisation:

Job title:

Professional background:

Email address:

Phone number:

Please name five of your most relevant works related to the scope of this contract.

#	Name of the project	Reference description and justification	Link to the project website or final report



Please upload the expert CV in the indicated EUSurvey section, together with any relevant documents.

Expert member 1

Last name:

First name:

Organisation:

Job title:

Professional background:

Email address:

Phone number:

Please name five of your most relevant works related to the scope of this contract.

#	Name of the project or study	Reference description and justification	Link to the project website or final report (

Please upload the expert CV in the indicated EUSurvey section, together with any relevant documents.



Motivation letter (max 1 page) *(Please explain below the motivation of the panel and why the members are qualified for this assignment)*

[Please insert here your text]



1. Research Approach

Proposal for the methodological approach (max 2 pages) *(Please explain how you want to implement the methodology determined in the terms of reference)*

[Please insert here your text]



2. Implementation Approach

3.1. Proposal work plan *(Please describe the work plan for fulfilling the tasks and assignment. The work plan should cover all tasks and timings that need to be performed. It needs to adjust to the indicated timeline, deliverables, and tasks specified in the TOR and specify any additional ones.)*

Number of the task	Name of the action	Short description of the action	Time plan (Date or Calendar week) 2023/ Month/Date or CW)	Responsible person	Number of working days foreseen for this task



3.2. Structure of the report *(Please indicate a tentative structure of the report. The structure should correspond to the high-level structure indicated in the TOR and specify any additions, improvements or suggested changes.)*

#	Chapter/Subchapter	Title	Key Questions	Method	Relevant literature/ sources

