Deliverable

D2.1 Policy Network Canvas - Stage 1

Project Acronym:	DUET	
Project title:	Digital Urban European Twins	
Grant Agreement No.	870697	
Website:	www.digitalurbantwins.eu	
Version:	1.0	
Date:	31/03/2020	
Responsible Partner:	imec	
Contributing Partners:	21C, AIV, DAEM, GFOSS, OASC, PLZ	
Reviewers:	Susie McAleer (21C) Gert Vervaet (AIV) Lea Hemetsberger (OASC) Andrew Stott Michiel Van Peteghem	
Dissemination Level:	Public	X
	Confidential – only consortium members and European Commission	

Revision History

Revision	Date	Author	Organization	Description
0.1	24.02.2020	Nils Walravens	imec	Initial structure
0.2	13.03.2020	Nils Walravens	imec	First draft final
0.3	16.03.2020	Lieven Raes & Gert Vervaet	AIV	First review
0.4	16.03.2020	Lea Hemetsberger	OASC	First review
0.5	17.03.2020	Nils Walravens	imec	Integration of comments
0.6	23.03.2020	Nils Walravens	imec	Addition of user stories
0.7	26.03.2020	Nils Walravens	imec	Integrated feedback from internal and expert review
0.8	30.03.2020	Nils Walravens	imec	Integrating feedback from consortium approval
1.0	31.3.2020	Jiri Bouchal	ISP	Final version

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Executive Summary

This deliverable provides a first overview of the policy value network in each of the DUET pilot regions. It identifies the key stakeholders that affect data driven policy making in each DUET pilot.

This is the first deliverable in WP2 and the start of understanding and narrowing down the user stories each of the pilots want to support using DUET. D2.1 will go hand in hand with D2.2 "Scenario specifications of the DUET solution" (M5), laying the basis for the user stories to be developed throughout the project.

This deliverable gives an overview of the local landscape of relevant actors, as well as the datasets and models that are currently present, required and lacking to support those user stories. It shows that there are strong local networks of actors present in each pilot region and a base number of relevant datasets has been identified.

However, this exercise also raises a few points of attention for the successful implementation of the pilots, which mainly relate to availability of relevant data. For Athens, only a limited number of available datasets has been identified so far. The project will explore how other datasets, for example gathered through European initiatives or community initiatives like OpenStreetMap could be used to complement this. A challenge for the Pilsen pilot will be the diversity of stakeholders that need to be engaged with during the course of the project. And for Flanders, a similar point of attention is the number of cities involved and how to best engage with them. Also the lack of private actors in the stakeholder map is a point of attention that will be tackled later on in DUET.

To ensure the success of the implementation of DUET, it will be important to treat this as a live overview that will be constantly updated throughout the project and as user stories become more concrete.

1. Introduction

The goal of this deliverable is to get a first overview of the policy value network in each of the DUET pilot regions. It identifies the key stakeholders that affect data-driven policy making in Athens, Pilsen and Flanders, and explores the links between them in the policy making lifecycle.

This is the first deliverable in WP2 and the start of understanding and narrowing down the user stories each of the pilots want to support using DUET. D2.1 will go hand in hand with D2.2 "Scenario specifications of the DUET solution" (M5), laying the basis for the user stories to be developed throughout the project.

This deliverable D2.1 is key to understanding the local landscape of relevant actors, as well as the datasets and -models that are currently present, required and lacking to support those user stories. This first version of the policy networks will be updated in D2.5 in M30 of the project.

To that end, this deliverable starts by outlining the methodology that was used to gather the information from each pilot, followed by an overview of the stakeholders and relevant datasets relevant to each DUET pilot region. These stakeholders and datasets are briefly contextualised and links are provided so that they may be explored in further detail.

2. Methodology

This section gives a brief overview of the methodology that was used to gather the required input from the different DUET pilot regions. A template was used to structure the input and several intake meetings (see below) took place to further detail and align the material provided in the template.

2.1 Template design

This chapter provides the template that was used to gather information from each DUET pilot region. Given the close link between D2.1 (M4) and D2.2 (M5), one template was used to gather input towards both. In what follows, the template and its instructions are provided.

*To get to a better understanding of the current state of the art and policy goals in each pilot region, T2.1 will gather input from the partners by completing the following statements. While the statements may appear brief, they need to be **documented in a thorough way**.*

- * **Domain**: the specific domain the epic relates to.*
- * **Epic**: "How might we⋯"*
- * **User story**: "As a... , I want to⋯, with the goal of⋯"*
- * **Stakeholders**: "We need⋯to join because⋯"*
- * **Data**: Use [this template](#) to build the overview. (See example in Annex)*
- * **Data opportunities**: "⋯might be relevant because⋯"*
- * **Feasibility**: "This is (not) possible today because⋯"*
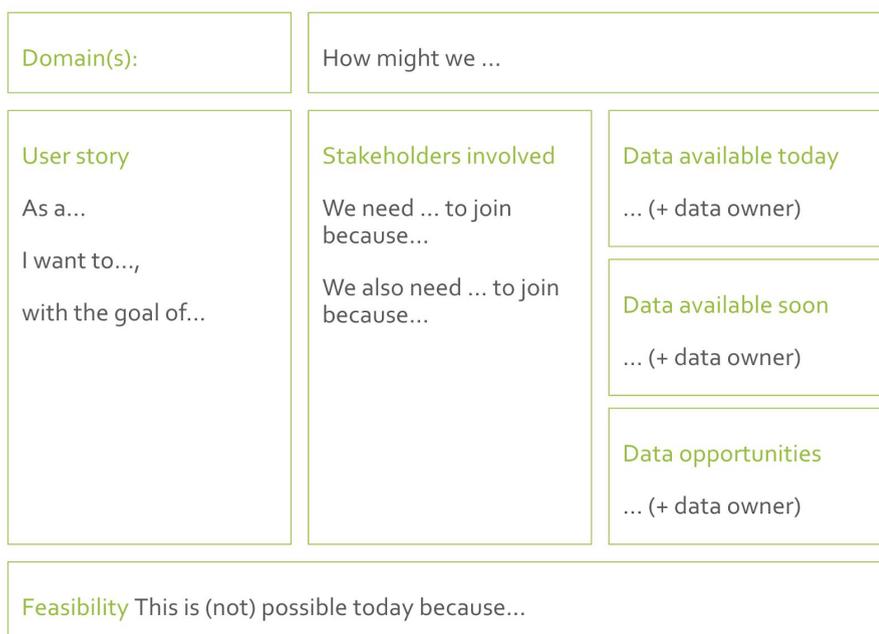
Figure 1: Overview of the D2.1 and D2.2 template

This approach allows the input to be gathered in a structured way. Pilot regions are requested to fill out the template as a basis for an interview during which more details will be gathered or unclarities tackled. Fictional examples are given as inspiration.

Domain

Choose one or more of the DUET domains this specific epic (set of user stories) pertains to. Multiple options are of course possible and please add more details if relevant. The general domains are:
- *Mobility*
- *Environment*
- *Health*

Epic

The epic in this case is a statement that captures the overall goal of a pilot activity. The statement starts with "How might we···" and outlines the main goals of the pilot activity. The different pilot regions will each formulate their own epics.

Example: How might we better understand the evolution of air pollution in our city, with the goal of improving the living environment of citizens?

User Stories

The basis definition of a user story is "an informal, natural language description of one or more features of a software system." User stories are written from the perspective of an end user of a system. We formulate these user stories according to a same basic structure, starting from the perspective of that end user: the sentence "As a... , I want to···, with the goal of···". On epic can consist of multiple user stories, depending on the perspective taken. While user stories are short, it is important to formulate them in a correct manner, ensuring that the goals mentioned are really aligned with the perspective of the user. User stories could be discussed with actual stakeholders in order to ensure this.

Example: As a public servant of the mobility department of my city, I want to visualize the most congested areas in the city over the past 5 years, with the goal of planning efficient detours needed for upcoming works.

Stakeholders

*List the concrete stakeholders that need to be involved and their level of commitment, **as concretely as possible**: list names of organisations, their type, competences, relevance to the pilot, contact details if known and so one. Different users stories will require different stakeholders, so specify to which user story they are linked.*

Data

To build a structured overview of available (or soon to be available datasets), please use this template.

Data opportunities

In this section, datasets that are not yet available but potentially of interest are listed. This could be the case for projects that have been announced or just started, and will start generating data during the course of DUET. Projects and initiatives that we are aware of, but have not yet reached out to regarding the availability of their data could also be listed here.

Example: data from the Belgian Telraam project in which passing vehicles, cyclists and pedestrians are counted using infrared sensors in a crowdsourced way could be highly relevant to DUET, but are not available as open data today.

Feasibility

This final section relates to the feasibility of the epic and which bottlenecks or challenges may exist. These factors could pertain to a lot of different things such as lack of interest from policy makers, no or limited data available, political motivations, technical challenges, lack of standardisation and so on.

Example: no (near) real-time data on air quality levels is available in a specific area of a city.

2.2 Intake meetings

Based on first input provided by the partners, several intake meetings took place with the key partners from every pilot region. Rather than providing a full report, this document gives a brief overview of the meetings that took place and their primary conclusions. The full minutes of the meetings are available to the consortium partners via the internal document sharing platform.

2.2.1 Athens

A first intake meeting with the Athens partners took place during the kick-off meeting in Antwerp on 10 December 2019. During this meeting, the first potential cases for the Athens region were explored, using a first inventory of Flemish datasets as inspiration. This led to the conclusion the Athens partners would first focus on finding available datasets, to then evaluate which cases would be most feasible in the context of DUET. After a first inventory of the available data, it was decided to also consider use cases for which data is not currently available and to more explicitly consider their feasibility throughout the project.

A second, virtual meeting was held on 13 March 2020 to further discuss the input, specifically related to the available datasets from Athens. This meeting kick-started the gathering of the relevant datasets from Athens.

2.2.2 Pilsen

A physical meeting was held on 17 February 2020 with the partners from the Pilsen pilot and a number of officials (director-level) from the city administration across municipal departments (urban planners, innovation, IT). During this meeting, each epic and the diverse user stories already developed by the Pilsen partners were discussed in detail and further refined. The input from the meeting fed back into the user stories and led to identification of additional stakeholders and potentially relevant datasets. This input was processed by the WP2 lead in close collaboration with the Pilsen project partners.

2.2.3 Flanders

On 10 February 2020, a physical meeting was held with administration representatives of 5 of the 13 Flemish major cities (all of which were invited), organised by the Flemish pilot lead, AIV and imec. The cities of Leuven, Antwerp, Roeselare, Kortrijk and Ghent were present. During the meeting, the DUET project was explained to the city representatives, as well as a previous research trajectory led by imec, gathering use cases for digital twin solutions with various administrations of the Flemish Government. Next, the cities presented potential use cases and user stories relevant to challenges they face, as well as interesting related projects. These will be included in D2.2.

On 9 March 2020 a full-day community event was organised by AIV and DUET was also presented to the organisation's wider community. During a specific session on digital twins, the concept of digital twins and DUET was presented. The initiative resulted in a discussion about the added value of Digital City Twins in Flanders and a better awareness of use cases with a mutual interest down the road.

3. Policy Networks

This section gives an overview of the primary stakeholders and relevant datasets in each DUET pilot. This initial overview serves as the foundation of the scenario specifications in D2.2 and should be considered as a preliminary *status quaestionis*, based on the high level epics and user stories defined during the first months of the DUET project. For reference, brief mention will be made on the direction of the user stories in each pilot region.

With regards to the stakeholders, a basic overview is given and for each organisation, the organisation type, a brief description and URL is provided. For this public version of the deliverable, any personal contact information has been removed from this table, but it is available to the consortium partners, with the further development of the pilots in mind. For what concerns the overview of the datasets, only a minimum of information is provided in this deliverable: a much more detailed overview is available to the consortium, containing also technical details related to the datasets listed. This complete overview is available as a living, online document, which will be updated continuously throughout the course of the project.

In what follows, the stakeholder network and overview of relevant datasets will be provided per pilot region in no particular order, starting with Athens, followed by Pilsen and finally, Flanders.

3.1 Athens

3.1.1 Stakeholder network

The main actors in the Athens stakeholder network are departments of the city and organisations involved with public transport, as well as shared and individual modes of transportations. This is related to the topics covered by the Athens user stories, which mainly focus on the interrelation between public mobility and the environment. The user stories under development explore how a digital twin solution can be used to better design policies around public transport, intermodal transport, the use of shared mobility systems and a healthier lifestyle. These will be further outlined in D2.2. In the visualisations of the stakeholder networks, larger circles indicate a more direct link to the project, whereas smaller circles indicate a lower involvement.

Figure 1: Athens Stakeholder network
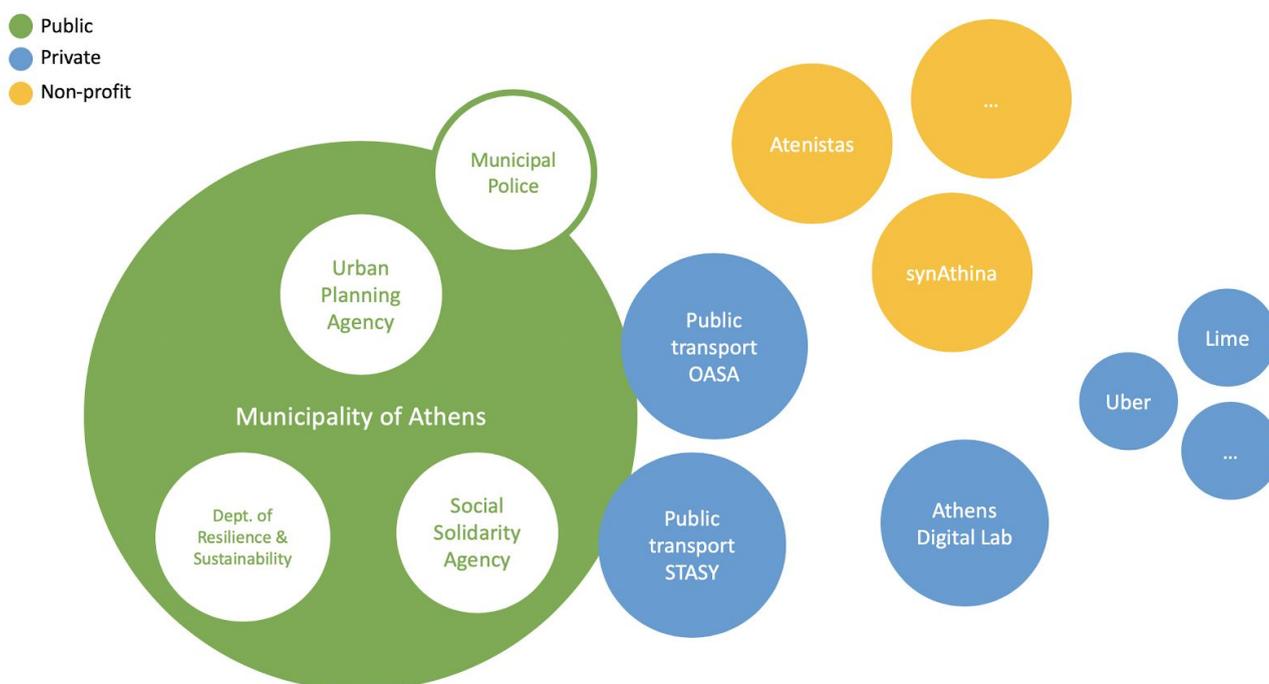
The following table gives an overview of the key stakeholders relevant to the user stories to be developed in DUET. For each organisation, the organisation type, a brief description and URL is provided.

Table 1: Athens stakeholders

Organisation name	Type	Relevance to DUET	Website (if available)
Municipality of Athens	Public organisation	Elected representatives or high-level managers of the city who decide on policies: ● Mayor ● Deputy mayor ● Director of city organisation ● Director of city department	https://www.cityofathens.gr/
City of Athens -	Public	Police force working for the city of	

Municipal Police	organisation	Athens on regulations that refer to traffic management.	
City of Athens - Department of Resilience and Sustainability	Public organisation	Agency of the city including officials and public employees focusing on the definition and execution of the Athens Resilient Strategy framed by 4 pillars, 65 actions and 53 supporting actions. The pillars refer to transforming Athens in an open, green, vibrant and proactive city.	http://www.100resilientcities.org/strategies/athens/
City of Athens - Social Solidarity Agency	Public organisation	Agency of the city including officials and public employees focusing on the services that target diverse social groups (vulnerable population, homeless, women, migrants, seniors etc).	https://www.cityofathens.gr/ypiresies/dioikitikes-koinonikes-ypiresies/dieythynsi-koinonikis-alilegiis-ygeias
City of Athens - Urban Planning Agency	Public organisation	Agency of the city focusing on urban planning of the city, on planning regulations and sustainable mobility.	https://www.cityofathens.gr/ypiresies/texnikes-ypiresies/dieythynsi-sxedioy-poleos-kai-astikou-perivallontos
Athens Digital Lab	Private Organization	Athens Digital Lab is a venture aiming at introducing innovation into the municipality of Athens structures and supports youth entrepreneurship.	https://www.athensdigitallab.gr/en
Bike Associations, Shared vehicles associations (Lime, Uber etc)	Private Organizations, NGOs	Profit or nonprofit organizations focusing on proposing alternative means of transport and moving within the city.	https://www.filoi-podilatou.gr/ http://www.podilates.gr/links https://www.grcycling.com/cycling-athens/ https://www.podilattiki.gr/ https://www.li.me/electric-scooter https://www.uber.com/global/en/cities/athens-gr/
Public Transport Means Associations (OASA, STASY, Athens Metro)	Private Organizations	OASA is responsible for the public buses and trolleys in Athens, STASY for the urban rails, the metro and tramway.	http://www.oasa.gr/?id=ind3ex&lang=en http://www.stasy.gr/index.php?id=1&no_cache=1&L=1
Citizens groups (Atenistas etc)	NGOs, unofficial initiatives	Citizens communities, groups, associations and other initiatives that focus on the improvement of Athens	https://atenistas.org/poioi/ https://www.synathina

		in several domains.	.gr/en/

3.1.2 Datasets

The following table lists the available datasets from the Athens region. This list is relatively limited at the start of the project and more sources to be used in the digital twin solution will be identified (e.g. from European data portals).

Table 2: Athens datasets

Name	Organisation	Description	URL
Atmospheric measurements	ESA		https://s5phub.copernicus.eu/dhus/#/home
Air quality measurements		PM2.5 particulate concentration monitoring network by placing measurement stations in the major Greek urban centers	https://panacea-ri.gr/index.php/atmospheric-measurements/?lang=en
Air pollution data	DRAXIS ENVIRONMENTAL S.A	Air Quality Map	https://map.envi4all.com/
Measurements of air pollution	Ministry of Environment and Energy		http://www.ypeka.gr/Default.aspx?tabid=495&language=el-GR
Daily Report of Air Pollution Levels	Ministry of Environment and Energy		http://www.ypeka.gr/Default.aspx?tabid=708
Air quality		Athens air quality and air pollution	https://www.airvisual.com/greece/attica/athens
Urban Transport	OASA	Locations of stations of Athens urban transport and timetables	http://www.data.gov.gr/dataset/dromologia

# 3.2 Pilsen

3.2.1 Stakeholder network

The actors in the Pilsen network are diverse. They include departments of the city related to planning, the public domain and energy, as well as an ecosystem of actors working with 3D modeling. This links to the topics covered by the Pilsen user stories, to be further elaborated in D2.2. The user stories relate to better understanding the evolution of traffic-related noise and pollution in the city; to building holistic digital overview of the city's public space for urban planning purposes; and to explore how a local community could be created around the digital twin and 3D-modeling. A brief overview of the overarching questions:
-   How might we better understand the evolution of traffic-related noise and air quality in the city, with the goal of improving the living environment for citizens?

- How could we get a holistic digital overview of the city public space and of various city's digital resources for urban planning purposes?
- How might we create a techie community around the digital twin, with the goal to deliver new and innovative services to citizens.

Tackling these questions leads to the following stakeholder network:

Figure 2: Pilsen Stakeholder network
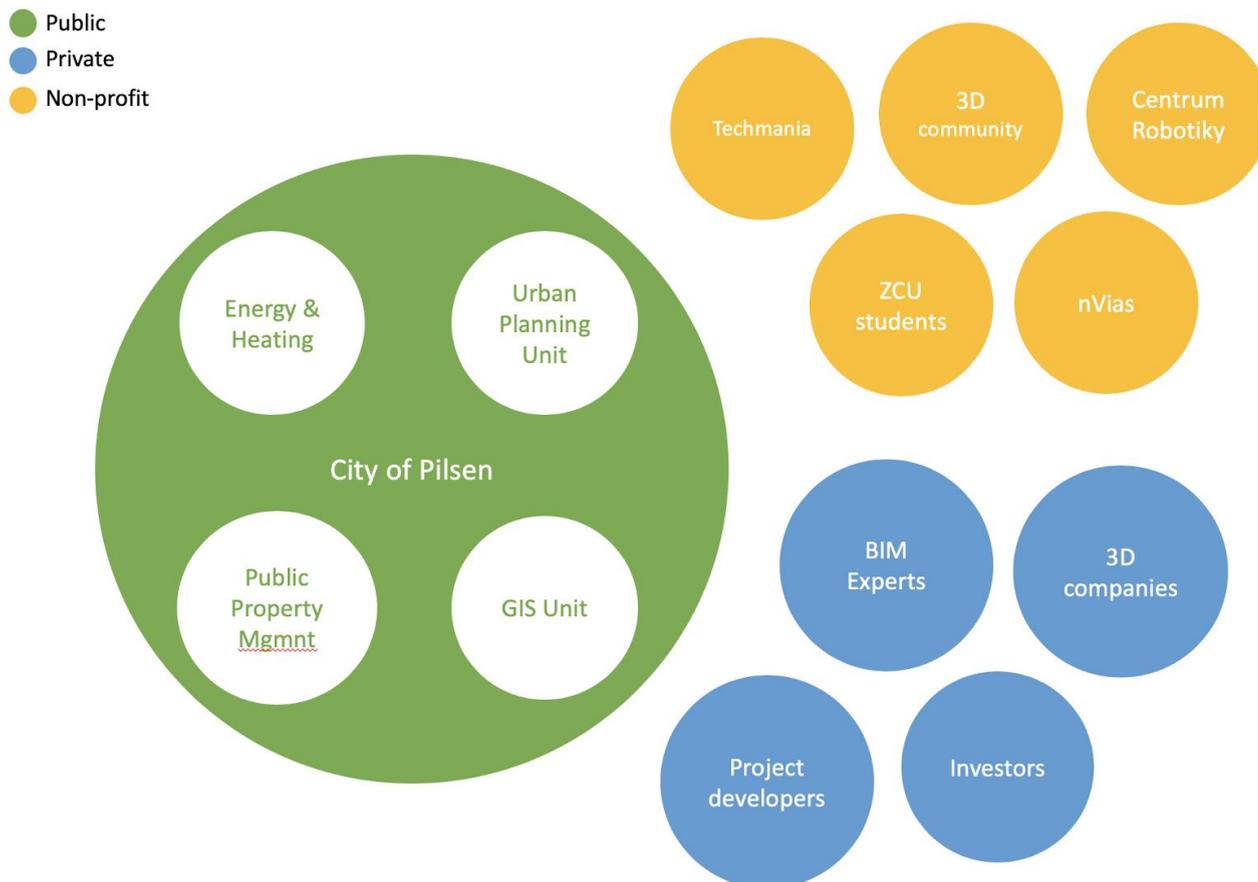
The following table gives an overview of the key stakeholders relevant to the user stories to be developed in DUET. For each organisation, the organisation type, a brief description and URL is provided.

Table 3: Pilsen stakeholders

Organisation name	Type	Relevance to DUET	Website (if available)
City of Pilsen Policy makers	Public Organisation	Elected representatives or high-level managers of the city who decide on policies: ● Mayor ● Deputy mayor ● Director of city organisation ● Director of city department	https://telefony.plzen.eu/struktura/
City of Pilsen - urban planning unit (ÚKRMP)	Public organisation	Urban planners who work primarily with, city basic structure, i.e. buildings and public space,with purpose of spatial analysis and regulation (parameters such as area of built space, area of public	https://ukr.plzen.eu/

		space, green areas, roads and traffic areas, building height). Other requirements include land use and function analysis (Proximity, space syntax, accessibility of public services, etc.) and mobility. Environmental parameters such as air pollution and noise levels are also within the urban planning competence of ÚKRMP.	
City of Pilsen - unit responsible for energetics & heating	Public organisation	To provide data on air pollution generators.	
City of Pilsen - Public Property Management unit (SVS)	Public organisation	City managers who maintain public infrastructure of the city and use the related data management and visualisation tools.	https://telefony.plzen.eu/struktura/detail/16?typ=1
City of Pilsen - 3D Experts (GIS unit)	Public organisation	3D expert creating 3D models of selected public buildings in high resolution.	
Tech enthusiasts, 3D data enthusiasts, students	Public or private, community	e.g. Techmania, ZČU university students - community of 3D enthusiasts.	
Technical education financed or supported by the city (technical elementary schools, tech high schools, Centrum Robotiky etc.) + city organised/ supported hackathons	public	Schools or Centrum Robotiky could together with the City create courses on working with 3D data. Use of augmented reality technology.	https://smartcity.plzen.eu/projekty/lide/
nVias	non-profit	Technical education of children, free-time activities, tech competitions for kids.	https://www.nvias.org/
Experts and entrepreneurs	private and public sector	Experts and businesses using 3D to provide their services.	
BIM Experts	private sector	Unicorn - extended reality glasses, BIM focused.	
Investors	private businesses	Investors of major development projects that could be motivated to provide the 3D data of their projects.	

Citizens	the people	People will be the final beneficiaries of better private and public services created on top of 3D data.	

3.2.2 Datasets

This first inventory of datasets related to the Pilsen DUET pilot contains a number of datasets specifically related to the user stories under development. Additionally, datasets relevant to the creation of a digital twin environment are also provided, as well as some generic datasets that may or may not prove useful.

Table 4: Pilsen datasets

Name	Type	URL	Description
Data relevant to the DUET user stories			
Air quality sensor data	database	http://portal.chmi.cz/files/portal/docs/uoco/web_generator/actual_1hour_ix_CZ.html http://portal.chmi.cz/files/portal/docs/uoco/isko/tab_roc/2018_enh/index_CZ.html	6 air quality sensors installed in the city
Air Quality report	policy document	https://ukr.plzen.eu/zivotni-prostredi/priroda-a-krajina/ovzdusi/ovzdusi-2.aspx	aggregated air quality measurements for 2000-2014 available in a report, data from ČHMÚ
Traffic detectors	database + API, tool (web app)	https://mapadopravy.plzen.eu https://opendata.plzen.eu/dataset/gis-dopravni-detektory https://polivisuapi.plzen.eu/ https://polivisuapi.dev.plzen.eu/api/roadlinks/traffic_intensity/?start_time=2019-05-15%2005:00:00.000&end_time=2019-05-18%2010:00:00.000&aggregate=False https://polivisuapi.dev.plzen.eu/api/roadlinks/traffic_intensity/?start_time=2019-05-15%2005:00:00.000&end_time=2019-05-18%2010:00:00.000&aggregate=True	data from 1000 magnetic loop detectors available through API and visualised in an analytical Map of Traffic (created in PoliVisu)
Traffic model	database + API, tool (web app)	https://plzen.trafficmodeller.com/public/	Traffic model data + traffic modeller backend and web application for real-time traffic modelling
Strategic Plan of Pilsen - Environment	policy document	https://ukr.plzen.eu/zivotni-prostredi/koncepce-zivotniho-prostredi/koncepce-zivotniho-prostredi.aspx	Environmental conception as a part of the Strategic plan of Pilsen
Noise map (model) 2017	database, web map	https://geoportal.mzcr.cz/shm/	noise model contracted by the Ministry of Health in 2017
Noise Action plan for main transit roads in Pilsen	policy document	https://www.mdcr.cz/MDCR/media/MDCR/19-0106-01_AP_RSD_PLZ_navrh.pdf	Noise Action plan for main transit roads in Pilsen

Heating source of buildings	Map, database	https://gis.plzen.eu/energetika/	Heating type/source for all buildings in Pilsen
Energy policy	policy document	https://energetika.plzen.eu/koncepcni-dokumenty/uzemni-energeticka-koncepce/	information on heating energy sources
Digital technical map	database, web map	https://geoportal.plzensky-kraj.cz/gs/digitalni-technicka-mapa/ http://mapy.kr-plzensky.cz/gis/dtm/	technical infrastructure, pipes, energy and water networks etc.
Cadastre (national register)	online access	https://nahlizenidokn.cuzk.cz/	ownership of land and buildings
RUIAN (national register)	online access	example https://vdp.cuzk.cz/vdp/ruian/stavebniobjekty/24085197	information on buildings - no of floors, heating, energy sources etc
Pilsen GIS data	database	https://gis.plzen.eu/apps/data.asp	all GIS datasets managed by the city
Pilsen Urban Plan (land use)	database, web map	https://opendata.plzen.eu/dataset/gis-rastrovy-podklad-uzemni-plan-plzen-1od-koordinacni-vykres	land use regulation for the whole city
Sustainability plan for Pilsen mobility	policy document	http://www.mobilita-plzen.cz	
3D data			
3D model of the buildings	database		will be available in late 2020
Digital surface model	database		will be available in late 2020
Digital terrain model	database		will be available in late 2020
Other open data			
Pilsen Open Data	database	https://opendata.plzen.eu/dataset	all open data of the city
Public transportation data (PMDP)			
public transport routes	dataset	https://opendata.plzen.eu/dataset/gis-doprava-mestska-hromadna-doprava-useky-mhd	vector data layer with public transport routes mapped to the street network of the city
public transport stops	dataset	https://opendata.plzen.eu/dataset/gis-doprava-mestska-hromadna-doprava-zastavky-mhd	point data layer with public transport stops

3.3 Flanders

3.3.1 Stakeholder network

The main actors in the Flanders network consist mainly of departments of the Flemish Government, complemented by representatives of the 13 centre cities in Flanders, who are joined in the Smart Flanders network, the VVSG representing all other local governments and knowledge institutions including VITO, which specialises in environmental research. The lack of private actors is noticeable, but these will be involved in a later stage of the project, when specific user stories become more clear. The current themes tackled in those stories are mobility, health and environment, spatial planning and public safety. A brief overview of the overarching questions, listed per domain:

Mobility related questions:
1. How might we better understand the mobility streams in Flanders, in Flemish cities and neighbourhoods to get a better view of the mobility impact on citizens life?
2. How might we measure the impact of the implementation of mobility-related measures as low emission zones, parking schemes, and road closures/redirections on how citizens move in cities?

Health and environment questions:
1. How might we measure, simulate and understand the impact of noise and air pollution with the goal to improve the living environment of citizens?
2. How might we influence the design of public space (for example more public green, less concrete) the local climate and well being of citizens?
3. How might we guide citizens, especially vulnerable road users, in an efficient way along the most environmentally friendly and safe routes to improve people's health?

Spatial planning questions:
1. How might we measure, simulate and understand the impact of new city developments as new building developments and (attracting) new activities on citizens' life?

Public safety questions:
1. How might we foresee appropriate safety measures on those places with a higher offence or crime rate to improve citizens safety?
2. How might we measure, simulate and understand the impact of road infrastructure measures and speed-reducing measures on traffic safety?

These challenging questions lead to the first version of the stakeholder network visualised in Figure 3.

Figure 3: Flanders Stakeholder network
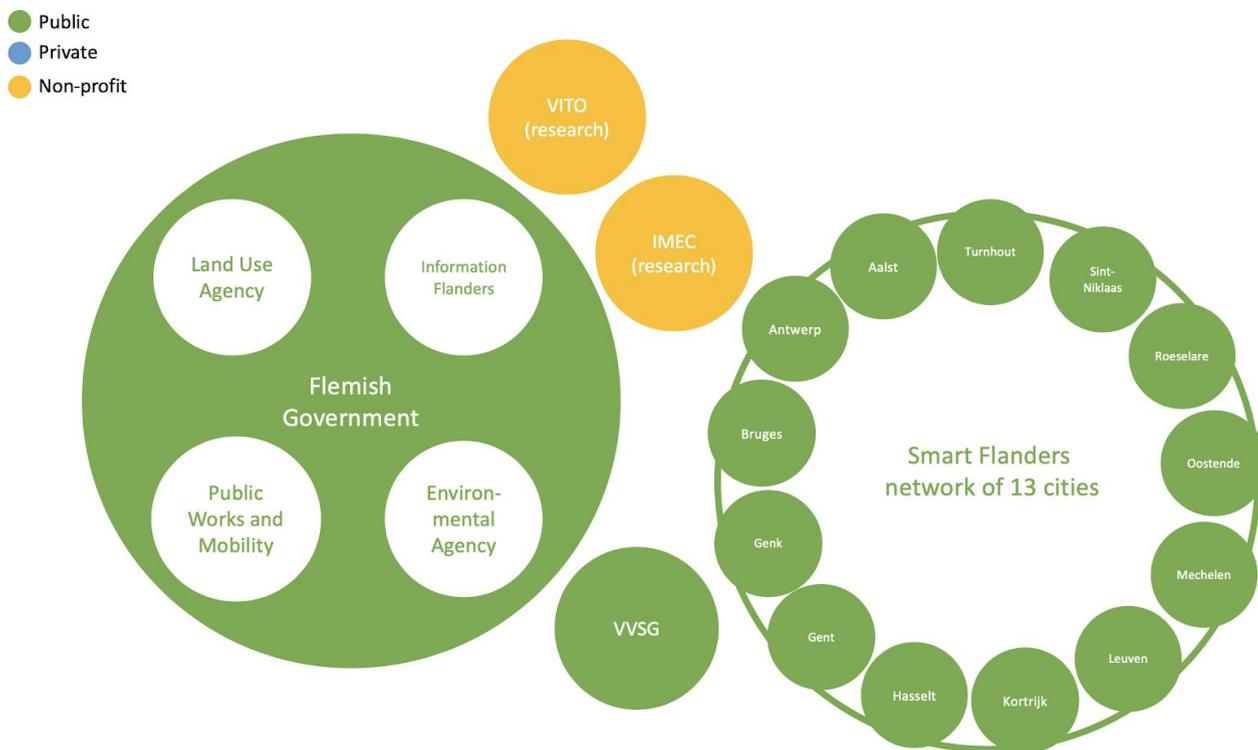
The following table gives an overview of the key stakeholders relevant to the Flanders user stories to be developed in DUET. For each organisation, the organisation type, a brief description and URL is provided.

Table 5: Flanders stakeholders

Organisation name	Type	Relevance to DUET	Website (if available)
Information Flanders (AIV)	Public organisation	Owner of the PoliVisu pilot, driving force after the realisation of the Flanders Digital Twin in cooperation with IMEC.	https://overheid.vlaan deren.be/informatie-vl aanderen
IMEC	Public organisation	Co-owner of the PoliVisu pilot, driving force as a research institute and a digital innovation hub behind the Digital City Twin concept in Flanders.	https://www.imec-int. com/en/home
Flemish 13 major cities	Public organisation	Main customers of the Polivisu Digital Twin concept. These cities are: Aalst, Antwerpen, Brugge, Genk,Gent, Hasselt, Kortrijk, Leuven, Mechelen, Oostende, Roeselare, Sint-Niklaas and Turnhout	https://smart.flanders. be/
VVSG	Public organisation	Organisation representing the local communities in Flanders.	https://www.vvsg.be/

VMM - Flemish environmental agency	Public organisation	Flanders Environment Agency (abbreviated VMM) is an agency of the Flemish government working towards a better environment in Flanders. Water, air and the environment. These are the three domains in which VMM is active.	https://www.vmm.be/
MOW/AWV - Flemish public works agency	Public organisation	The mobility and public works department aims at policy making, both for mobility and road safety and for investment, management and operation of the transport and port infrastructure.	https://mow-contact.be/ http://mow.vlaanderen.be
OMG - Flemish land-use agency	Public organisation	"Omgeving - Environment" aims at the realisation of a qualitative environment and integrated spatial policy in close cooperation with local communities and provinces.	https://omgeving.vlaanderen.be/
VITO - Flemish institute for technology research	Public organisation	VITO's aim is a society where sustainability is the norm. They are working on global projects to promote the transition to sustainability. They create innovative technological solutions and actively share their knowledge with businesses and government bodies.	https://vito.be/en/contact
Private sector players	Private organisation	Private sector companies will play a role as data and service providers. The platform will allow private companies to be involved in a later phase of the Digital Twin development.	

3.3.2 Datasets

This first inventory of datasets related to the Flanders pilot region consists of a lot of geospatial data, to be used to refine the region-covering digital twin. Additionally, data from cities is listed as well, for example for the cities of Kortrijk and Antwerp, but also from citizen science projects like Telraam.

Table 6: Flanders datasets

Name	Type	URL	Description
Datasets			

GRB LOD 1 (Spatial reference database 3D LOD 1)	Geospatial dataset	Metadata: https://metadata.agiv.be/zoekdienst/apps/tabsearch/?uuid=42ac31a7-afe6-44c4-a534-243814fe5b58	The Large-scale Reference File (GRB) is a geographic information system that serves as a topographical reference for Flanders. It is a common geographical basis on which all users can graft their own data. The GRB only contains geographic and characteristic information of well-defined, conventionally accepted reference data: buildings, plots, roads and their layout, watercourses, railways and the road network. LOD 1 is basically a 3D presentation based on buildings footprint.
GRB 2D Base layer	Geospatial dataset, geospatial webservice	https://www.geopunt.be/catalogus/datasetfolder/7c823055-7bbf-4d62-b55e-f85c30d53162	Idem. 2D representation.
Digital height model Flanders (1 meter, 5 meter, 25 meter, 100 meter)	Geospatial dataset	Info: http://www.geopunt.be/catalogus/datasetfolder/f52b1a13-86bc-4b64-8256-88cc0d1a8735	Digital surface model of the ground level including objects in raster format with a ground resolution of 1 meter. This DSM was derived from LiDAR height data that was collected within the framework of the Digital Height Model Flanders II (DHMV II).
Orthofoto high scale (10cm)	Geospatial dataset, geospatial webservice	Info: http://www.geopunt.be/catalogus/datasetfolder/dbbeddd4-0452-4413-9f2a-fa47a4f98e55	Covering medium-scale orthophoto coverage of the Flemish Region, including the Brussels-Capital Region. This assignment includes the realization of digital photographic aerial shots in the winter flying season with a ground resolution of 17 cm and, subsequently, the production of an orthophoto mosaic with a ground resolution of 25 cm.
Antwerp LOD 2 model	Geospatial dataset	https://www.arcgis.com/home/item.html?id=d582d2a30593482a99d7505543d7070a	Idem GRB LOD 1 description, but also the roof shapes are represented.
Gent LOD 2 model	Geospatial dataset	https://stad.gent/nl/over-gent-en-het-stadsbestuur/stadsbestuur/wat-doet-het-bestuur/gent-digitale-stad/gent-3d-virtuele-realiteit-vrarmr/open-3d-data	Idem GRB LOD 1 description, but also the roof shapes are represented.
Antwerp LOD 3 model	Geospatial dataset	http://www.chrisdorreman.be/3d.html	Idem GRB LOD 1 description, but containing a detailed representation of the shape of the building outside .
Road Network (Mid scale) - 2D	Geospatial dataset	https://download.vlaanderen.be/Producten/Detail?id=6021&title=Wegenregister_19_09_2019	The Road Register (middenschalig wegenregister) makes the roads in the Road Register available to the user. The Road Register is a medium-scale reference file for roads in Flanders. It contains all roads of Flanders, with associated attribute data.

Central database of postal addresses (CRAB)	Geospatial dataset, webservice	https://overheid.vlaanderen.be/informatie-vlaanderen/producten-diensten/centraal-referentieadressenbestand-crab	All addresses in Flanders are stored in the CRAB database together with one or more point geometries. Address means: identification of an addressable object with address components such as a municipality name, a street name, a house number and a sub-address. An address can be linked to a building or a plot. The point geometries can relate to the centroid of the cadastral parcel or the building on which an address is located, as well as refer to the entrance of the building linked to an address. CRAB is also available as a web service.
Loop-based traffic data (1-minute delay)	Dataset	https://opendata.vlaanderen.be/dataset/minuutwaarden-verkeersmetingen-vlaanderen	Traffic loop information - XML file
Dynamic speed limit and lane indicator signs (RSS) traffic management data	Dataset	https://opendata.vlaanderen.be/dataset/rijstrooksignalisatie-vlaanderen	Dynamic speed limit and lane indicator signs (RSS) traffic management data - XML/RSS
Telraam Citizen science - traffic counts and speed counts	Dataset	https://www.telraam.net/en	Citizen science data IOT device that can count pedestrians, cyclists, cars and big vehicles and also vehicle speed.
Air quality - HQ sensors (multiple elements)	Dataset	https://www.irceline.be/en/documentation/open-data	Data from the Flemish environmental agency high quality sensors in Flanders (60 sensors installed).
Luftdaten / Leuvenair - air quality sensors	Dataset	Initial platform: https://archive.luftdaten.info/ https://leuvenair.be/ https://gentenair.be/ https://influencair.be/ http://waselucht.be/	Citizen science data IOT device that counts dust particles. The device gives an idea of the air quality.
Anonymized/Pseudonymized ANPR data - Federal police platform	Dataset	NAV	Data from Advanced Numberplate Recoginition cameras. The data is anonymized or pseudonymized. The latter provide the possibility to get insight into origin/destination of the traffic.
Anonymized/Pseudonymized ANPR data - Local data platforms (local police or city)	Dataset	NAV	Data from Advanced Numberplate Recoginition cameras. The data is anonymized or pseudonymized. The latter provide the possibility to get insight into origin/destination of the traffic.
Meteo info (via VMM measuring stations)	Dataset	https://www.vmm.be/data/meteo	Meteorological information about wind speed and direction, precipitation, temperature, air pressure, humidity and sun radiation.
Kortrijk - Parking data (on-street and public parking spaces)	Simulation model	?	Parking occupancy data from public parkings and parking spaces in the public domain.

Empty and neglected business premises / Leegstaande en verwaarloosde bedrijfsruimten - Flemish vacancy inventory	Dataset	https://omgeving.vlaanderen.be/leegstaande-en-verwaarloosde-bedrijfsruimten	Empty and neglected business premises / Leegstaande en verwaarloosde bedrijfsruimten - Flemish vacancy inventory - Local communities have to deliver once a year a register containing this data.
KBO (Cross-road bank of companies - Nace activities)	Dataset	https://metadata.agiv.be/zoekdienst/apps/tabsearch/index.html?hl=dut&uuid=ecc4e0d3-e7be-4755-be91-48985559495d	Central databank of companies contains information about the Belgian companies. The Flemish cross road bank of companies also contains the geo-location, CRAB addresses etc...
Geospatial referenced register of installed cameras on public domain	Dataset	?	?
Crime and infringements geospatial register	Dataset	?	?
Road signs geospatial register	Dataset	https://verkeersborden.vlaanderen/opendata.php	Dataset containing the positioning and content of the traffic signs in Flanders
Road accidents	Dataset	Data delivery by the Federal Police	Dataset containing the official road accident statistics in an anonymized way
Data models			
Air quality models (used by Irceline / VMM) - OVL, Smogstop, Chimere	Simulation model	https://www.irceline.be/en/documentation/models	Assessment and forecast models on air quality based on four main factors: Emission resources, Meteo, Chemical processes in the atmosphere and the transport of air pollution.
Flemish multi modal traffic model	Simulation model	https://www.mobielvlaanderen.be/verkeersmodellen/	Strategic multi modal models of people- and freight transport in Flanders. Based on the BASMAT, MM and RMM instruments built with Cube Voyager.
Spatial model flanders 2050 including optimisation models for land use and infrastructures	Simulation model	https://vito.be/en/spatial-model-flanders-ruimtemodel-vlaanderen	Strategic model up to 2050 providing the long term land use and infrastructure occupation.
Land use optimisation model	Simulation model	https://ruimtemodel.vlaanderen/c/1/	
MatLabTrafficToolbox	Simulation model		

4.   Conclusion

This deliverable gave an overview of the local landscape of relevant actors, as well as the datasets and models that are currently present, required and lacking to support the user stories that will be developed in DUET.

It shows that there are strong local networks of actors present in each pilot region and a base number of relevant datasets has been identified. However, this exercise also raises a few points of attention for the successful implementation of the pilots, which mainly relate to availability of relevant data. For Athens, only a limited number of available datasets has been identified so far. The project will explore how other datasets, for example gathered through European initiatives or community initiatives like OpenStreetMap could be used to complement this. However, the Athens partners involved in the project should press their local stakeholders more in search of more useful data.

A challenge for the Pilsen pilot will be the diversity of stakeholders that need to be engaged with during the course of the project. Clear responsibilities will need to be assigned to monitor this.

For Flanders, a similar point of attention is the number of cities involved and how to best engage with them. Also the lack of private actors in the stakeholder map is a point of attention that will be tackled later on in DUET.

To ensure the success of the implementation of DUET, it will be important to treat this as a live overview that will be constantly updated throughout the project and as user stories become more concrete. The point raised above will need careful consideration to optimise the impact of the pilots.

5. Annex 1: Link to Online Data Inventory

The data inventory lists all of the aspects in the table below, bringing together as much information as possible on available datasets and data models, towards the technical teams. The list is considered a living document which will be constantly added through, during the project.

Name	User story	Type	URL	Theme	Description	Level of granularity	Time aspect - Historical	Time aspect - Live data
Conditions for reuse	Availability	Organisation responsible	Format	Version (year)	Data Model available	Remarks	Latest update	

Data inventory in online living document:

https://drive.google.com/open?id=1xrlheOOE76aDtS1GWJR2j0FBrKJ_TI6pXCeTCMvBJPo