D1.1
Initial, intermediate and final concepts, use cases and scenarios. (version 4)

(public document)

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Contributions from: full consortium

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CityStory is an ITEA 3 project from call 4 (reference 17006)

Project Key Data

Acronym and full-length title

Reference:	17006
Full-length title:	Citizen Storytelling
Roadmap Challenge:	Urbanisation

Project description

The project CityStory wants to innovate through a creative, intelligent, safe, and social storytelling development environment. Do-it-yourself and do-it-with-others, around the media and make it accessible for everyone. The project aims to stimulate collaboration with a co-creation and design platform to share ideas and get opinions heard. Through new modes of interactive storytelling, city touchpoints, interactive screens, innovative media recognition, and data analysis, tools that assist while filming and intelligent, and deep learning tools, the project will enable ideas to be turned into a story and valuable media output.

Project duration & size

Time frame:	Start: 01/09/2019 End: 31/08/2022 (36 months)

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Consortium

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Project Acronyms

AI	Artificial Intelligence
AR	Augmented Reality
EDL	Edit Decision List
GDPR	General Data Protection Regulation
IoT	Internet of Things
ML	Machine Learning

Executive summary

The current document is a living document, which will be extended with the results of research activities and workshops throughout the CityStory project. The contents of the document include concepts, use cases and usage scenarios, describing the activities and results of T1.1 and will serve to inspire several work packages throughout the project (WP2, WP3, WP4 and WP5). In the first section of the document, we discuss the usage scenarios, which were written as a result of the first workshop in WP1. In these usage scenarios, we describe how the users will interact with the technology we are creating in the CityStory project. The workshop was preceded by a questionnaire which was sent to all the partners. Furthermore, the workshop was informed by the objectives as presented in the project proposal.

The workshop consisted of a brainstorming session, an affinity diagramming phase to categorize the ideas from the brainstorm session, a dot-voting phase to select the most important ideas, and a subsequent scenario generation activity. People from all of the national partners attended the workshop. After the workshop, each scenario was fleshed out further by one project partner and shared to gather feedback from all partners. The workshop resulted in a total of three scenarios and an additional fourth scenario was written by a Finnish partner.

The first scenario we present is aimed at the silent voices. In this scenario, we propose a temporary app to be released when a city introduces major road works in a certain street. People who frequent this street will be informed about an application containing relevant information as well as a social platform on which they can communicate and help each other. An additional feature allows users to see what the street would look like when the road works are finished.

Feedback for this scenario included suggestions to frame this temporary application as a temporary campaign within a permanent application, which could allow citizens to provide the city with valuable feedback regardless of any planned changes. Furthermore, it would be interesting to put a stronger emphasis on the physical installation, which could serve as a call to action for people to participate.

The second scenario we present is aimed at urban planners and policy makers. The scenario consists of an urban digital design log, in which policy makes and urban planners can create stories to keep the citizens up to date about urban projects. Different media formats can be added to be displayed to the citizens on a website and on physical installations throughout the city. In turn, citizens can input their own ideas or provide feedback on the stories that are published by the professional users. Furthermore, the system could be used in campaigns to gather more targeted information and feedback about certain urban change projects. The design logs will reside in a permanent system which shows the evolution of the city and which can be used by journalists or other media creators to inform their work.

Feedback for this scenario suggests expanding the physical elements of the concept by creating simplistic physical prototypes of the envisioned urban changes and using the story captors to poll the opinions of the citizens regarding the suggested changes. Polling results could then be used to inquire for qualitative feedback.

The third scenario is aimed at people in a specific geographical area. The scenario consists of physical installations that are built to collect stories connected to the area in which they are placed. These stories can involve the location's history, present or future and could for instance be deployed in situations of urban change. The installations will feature a large light-bulb which will burn brighter or in a different colour depending on the number of stories that were fed to them. People will be able to watch or read the stories of previous users and in exchange share their own story.

Feedback for this scenario suggests that it may be interesting to attempt reaching a more specific audience than the broad audience the scenario currently attempts to address. This could for instance be done by dividing the full story that the installation collects into parts and requiring certain types of audiences to contribute before continuing to the next part. Furthermore, it may be interesting to have users create physical artefacts to add to their stories.

The fourth scenario consists of a set of babble boxes, to be installed in railway stations in different cities. These babble boxes will allow the users to answer a set of questions as if the box were interviewing them with the goal of working out the meaning that this place has to the user and to understand the trajectory the user is on. These responses will then be turned into stories by the system's AI, resulting in a collection of stories, giving meaning to the railway station beyond its function as a transportation hub.

In the feedback, partners suggested to break up the interview into multiple short (single-question) interviews to engage people over a longer period of time. Thus, gradually building the story of this place, together with the other travellers, as time goes on. Further ideas suggested continuing the story capturing across other areas than the railway station, to understand the journeys people take or perhaps to find unexpected similarities in the latent functions that different places serve.

While the different scenarios share some common tendencies such as producing valuable input for urban change projects, being a permanent installation with possibilities for temporary campaigns and the requirement to be engaging for users. It would be important to choose a scenario or focus to guide the upcoming research activities concerning user requirements, technical requirements and storytelling requirements, which will further shape the concept. Furthermore, the chosen scenario should be fleshed out further in terms of the shape of the interactions with the system and the media formats which will be involved.

Keeping these usage scenarios and concepts in mind a set of validation/demonstration use cases was selected to further steer the technological development. The selected Y1 use case focuses on increasing user participation in governmental decision-making and was executed in 2 parks in the City of Berchem (Antwerp). During the second project year, following the COVID-19 restrictions, it was decided to steer the further research along 6 tracks focusing on specific aspects of the overall concept, for each of which a use case was defined.

Track 1 “AudioStories” focuses on the co-creation of regional stories in a broadcasting set-up illustrated with the example of the Radio 2 Mystery series. Track 2 “PosterTalk” targets facilitating middle-out approaches in a local neighbourhood by means of a combined online and in space set-up and experimented with in the “Future of Kessel-Lo” context. Track 3 “Speech-to-text” focuses on improving speech-to-text accuracy for use with street talk and local dialects and will be demonstrated first in a case in Danmark. Track 4 “Audio Pillar” is about facilitating audio story

collection through a physical pillar at location and is demonstrated in relation to the “Bed of Napoleon” radio 2 mystery story. Whilst track 1-4 focus more on the capture of user input for treatment by professionals, track 5 “Tiktok for Cities” focuses on exploring ways to let cities and communities publish stories by themselves with a strong focus on involving young people to get User Generated Content. Finally track 6 “Mobile Media Fablab” focuses on making available on location a box supporting users to create and share stories themselves. This box concept will be tested in the Middelheim museum in Antwerp.

Introduction

The current document is a living document, which will be extended with the results of research activities and workshops throughout the CityStory project. The contents of the document include concepts, use cases and usage scenarios, describing the activities and results of T1.1 and will serve to inspire several work packages throughout the project.

The document will serve as input for the further research activities in WP1 helping to determine the focus of these activities based on envisioned concepts, use-cases and scenarios. Furthermore, it will provide input for the technical development in WP2 and WP3, the interaction design activities in WP4 and the piloting activities in WP5.

The earlier versions of the document described the outcome of a workshop centred around generating usage scenarios for the project and the usage scenarios that resulted from the activities during this workshop. These were further elaborated on based on the findings from user studies that were performed in D1.2. (section 1 & 2)

The current version of the deliverable adds information on the modified scenarios and use cases selected for actual implementation in Y1 and Y2. These are described in more detail in section 3 of this document.

1. Usage scenario generation

In order to inform activities within the different work packages of the CityStory project, we generated usage scenarios describing how the users would interact with the technology that we are creating. The usage scenarios inform many activities across the CityStory project. They can help guide further research activities in WP1 by providing interesting user groups from whom to collect user requirements or by providing the context within which use cases will reside. In WP2 and WP3, the usage scenarios, and use-cases evolving from them, will provide inspiration towards what the technical solution that will be developed should be like and what the context of use would be. In WP4, the chosen scenarios dictate the context of the interaction design and the scenarios and use-cases will inspire the required interaction designs. In WP5, the piloting activities for the first demonstrator will follow directly from the reference scenario.

In these usage scenarios, the goal is not to describe the technology in terms of concrete technical details of the interaction. Instead, the goal is to describe the technology in terms of higher-level descriptions of the interaction such as "the user speaks into the device". In addition to reflecting on the interactions with technologies, these usage scenarios reflect on who the users are, what their motivations are for using the system and what the context of use looks like. For CityStory, these scenarios should include both the toolkit for storytelling as well as the urban (social) network for publishing and are aimed to be in line with the different project objectives which are relevant to usage scenarios.

The scenarios were created in collaboration with all project partners, the basis for these scenarios was developed during a workshop in which all partners were involved. In addition to creating usage scenarios, the workshop served the purpose to re-engage all partners with the project after the project kick-off and create an active brainstorming session in which partners would share broad ideas for the project while working towards some more concrete ideas of where the CityStory project could be going.

1.1. Pre-workshop questionnaire

As a preparation for the workshop, a pre-workshop questionnaire was created and shared among the project partners. This questionnaire allowed respondents to submit their thoughts regarding what will be developed during the CityStory project, to serve as some first input and inspiration for the workshop. The answers that were thought relevant to usage scenario generation were added to the pool of ideas after the brainstorm session. We go through each question from the questionnaire and the corresponding answers, briefly.

Q1: Communities: Please share your thoughts and ideas about what types of communities we might want to look into. These can be vague ideas, such as the types of people in communities or interesting geographical areas, but they can also be very concrete ideas, such as existing communities or projects that we could directly involve in CityStory.

A: The answers to Q1 suggested involving the following user-groups:

- Suburban communities
- Marginalized groups
    - Refugees
    - Immigrants
    - Low income
    - French speakers in Flanders / Dutch speakers in Wallonia
- Activists
    - Social
    - Environmental
- City policy makers
- Hobby club members
- Schools
- Journalists
- Local news papers
- Documentary producers
- Visitors of a specific company or institution

Q2: Goals for community members: Please reflect and share your thoughts on what the goal(s) of the community members could be.

A: The answers to Q2 suggested the following goals for community members engaging with CityStory products:

- Share stories about the local neighbourhood
- Share stories about personal situations/goals
- Express their opinions and ideas
- Get access to media and build further on the work of others
- Gain a broader audience
- Make the city interesting to outsiders
- Make the system playful and engaging
- Address a specific topic or goal with the system
    - Sustainable urban planning
    - Climate change
    - Safety
    - Architecture

    - Better integration in society
    - Make the city future-proof

Q3: Goals for you as a partner: Please reflect and share your thoughts on what kind of goals you, as a project partner, have for the interactions with the communities as well as the technical or research outcomes you would like to achieve.

A: The goals the partners described they wished to achieve during the CityStory project or as a result of the project were:

- A system in which we can browse media responses
- An intelligent way of clustering the information that is captured
- Transcriptions of audio and annotated video/photos
- Use captured data as a breeding ground for concept development
- Be able to feed back to groups of people
- Finding underlying stories that can be interesting to a wider audience
- Introduce new media and communication technology
    - Investigating co-creation of media
    - Creation of new media formats
- Benefit society
    - Empower citizens
    - Create a difference for the people who use the system
- Ensure a heterogeneous user group
    - Motivate people who are usually not heard to contribute
    - Understand what triggers people to publicly share their story
- Functional and inclusive interface

1.2. Workshop outline

During the workshop, usage scenarios were created, based on a brainstorm using the 5WH technique to help think about all of the important elements of these usage scenarios. The workshop consisted of six steps that were performed on the day of the workshop and one step that was performed by several partners at a later time, to further flesh out the results of the workshop. The workshop was preceded by a short introductory presentation to introduce the participants to the goals of the workshop and its relevance within the project. The overall outline of the workshop looked as follows, the timings provided were guidelines which were interpreted with some flexibility, as an hour margin was planned to let certain activities go on a bit longer if this was thought to be sensible:

- Welcome (5 min)
- Introduction presentation (10 min)

- Step 1: Brainstorming activity (3x10min = 30min)
- Step 2: Grouping - affinity diagramming (30min)
- Step 3: Selection (15 min)

----- Short break & decision on scenario focus -----

- Step 4: Create scenario skeletons (40min)
- Step 5: Presentation (20 min)
- Step 6: Debriefing and appointing partners to scenario writing

We continue to discuss each step in more detail in the following sections of the document.

The workshop was attended by the partners from the Belgian CityStory consortium. Every project partner had at least one participant present at the workshop.

List of participants:

1. Paul Biedermann (R[x]D, KU Leuven)
2. Dries De Roeck (Studio Dott)
3. Miechel De Paep (BUUR)
4. Karen Van Der Perre (BUUR)
5. Nina Reyntjens (BUUR)
6. Hilde De Witte (NXP)
7. Klaas Baert (VRT)
8. Tine Van Hauteghem (VRT)
9. Karim Dahdah (VRT)
10. Jessica Kellner (Bits of Love)
11. Andries De Reyghere (Bits of Love)
12. David Geerts (Mintlab, KU Leuven)
13. Kevin Sanders (Mintlab, KU Leuven)

1.3 Welcome and introduction presentation

As all participants had arrived, a brief introductory presentation was given covering the contents presented in the previous sections of this document, framing the workshop in terms of work packages and the project timeline. Furthermore, the goals of the workshop were defined and the relevant project objectives were discussed briefly. These were also handed out to each group so they could be referred to throughout the workshop. Next, the concept of usage scenarios was defined for the participants and lastly the outline of the workshop was presented.

In order to ensure a focus in line with the project objectives, we compiled a list with all of the project objectives, stated in the project proposal, that are relevant during the step of creating usage scenarios. We instructed the participants to consider these objectives when generating their ideas and scenarios during the workshop. For this purpose, we supplied the following list to the participant during the workshop.

Objectives that should be part of the scenarios:

I1: Improve participation in urban projects	O1.1 Intelligent storytelling tools ● *Support citizens in the creation of meaningful storylines* ● *Enable and engage people in the creation of stories* ● *Computational support through the use of AI technologies* ● *Extract semantic information from sounds, images, video and DIY sensors or open city and community data* ● *Generate recommendations to promote sharing*
	O1.3 Design strategy and architecture of cloud-based deployment of a city story urban social network.
I2: New urban interactions	O2.1 The empirical evaluation of different tangible devices and their public interactions to facilitate the open creation, authoring and sharing of mixed-media stories in the urban domain. ● *Empower citizens to create and combine different media formats (visual, audio, local sensor information)* ● *Facilitate new forms of shared, civic media to emerge* ● *Prototypes of tangible devices to be deployed in public spaces*
	O2.2 The technological investigation of a wireless, GDPR compliant, proximity authentication system for urban interaction. ● *Proximity interactions in multiple different places in the city*
I3: Explore future media	No specific objectives

Other objectives to keep in mind (not central in the usage scenarios):

O1.2 & O2.3: GDPR compliance

O3.1 & O3.2: Create a blueprint for a Mobile Media Fablab

1.4 Step 1: Brainstorming

First a brainstorm session was organized in three rounds. For this brainstorm, we followed the 5WH technique, asking the participants to reflect on the following six questions with regards to the systems that would be developed during the CityStory project: Who? (users), What? (activities), When? (time), Where? (location), Why? (motivation) and How (means). These questions were

distributed over three tables in such a way that the ideas for the one question on the table were thought to be most likely to inspire ideas for the other question on the table and vice versa.

Table 1: Who? (users)	&	Why? (motivations)
Table 2: When? (time)	&	Where? (location)
Table 3: What? (activities)	&	How? (means)

The participants were divided into three groups, each with a mix of people from different partner organizations and different roles in the project. The groups were each assigned to a table on which they found the two questions and two stacks of differently coloured post-it notes, one colour per question. They then got 10 minutes to come up with as many ideas as possible for those questions and write them down on post-it notes with the correct colour. After 10 minutes, all of the groups would move on to the next table and continue working for 10 minutes where the previous group left off. Finally, the groups moved once more to the next table and a third session of 10 minutes was held during which each group would continue working where the previous group left off, such that each group had worked on all six of the questions (Figure 1). When two post-it notes on the same table were somehow connected to one another, the participants were instructed to add a code to both post-its to show that at a later stage, if one of the two post-its is being used, it is evident that it may need to be considered in combination with another post-it.

Figure 1: Groups working on the brainstorm sessions on different tables, rotating after 10 minutes. Each table brainstormed around two questions on differently coloured post-it notes.

1.5 Step 2: Grouping - affinity diagramming

The results of the brainstorming activity were discussed and categorized following an affinity diagramming technique. Each group would build an affinity diagram of the two questions from the table at which they had their last brainstorming session. Creating six affinity diagrams consisting of categorized groups of elements from the brainstorming sessions, one for each of the 5WH questions (Figure 2).

Figure 2: Participant groups creating affinity diagrams for each of the questions on their final table.

Once all the affinity diagrams have been finished, each group briefly presented their diagrams to the rest of the participants, so there would be a common understanding and awareness of the results of the brainstorming session and the categories that had arisen through the affinity diagramming exercise (Figure 3).

Figure 3: Brief presentations of the affinity diagrams.

1.6 Step 3: Selection

Once the affinity diagrams were completed and presented, each participant received a total of 16 blue stickers to stick on elements that they deemed important and one red sticker to stick on an element they deemed essential. They were instructed that once all stickers were used, all of the post-its with at least three blue stickers or at least one red sticker would be retrieved as essential elements to be considered during the remainder of the workshop.

1.7 Results of step 1, 2 and 3

In this section we describe each affinity diagram in terms of the categories that arose and the elements present within each of the categories. In this process, elements that are identical or very similar may be grouped into one element. We have furthermore highlighted the elements which were selected to be essential by marking them in red.

Affinity diagram: Who? (users)	
Category name	Elements in the category (essential elements in red)
Professionals	journalists, local newspapers, workers, educators, shop owners, documentary producers, (professional) media makers
Government	city policy makers, city + government, law makers, fire brigade and police, (investigative) journalists, urban designers

Types of people	minority groups, youth, children, students, invisibles (socially fragile people), people with disabilities
Specific communities	Everybody within a (1km) radius, similar location (shop, school, church...), silent voices, activists, activist groups, hobbyists, urban community by and for, city visitors, everybody has a story
Miscellaneous	Specific demographic, accessible to everyone, visitors of specific institutions

Affinity diagram: What? (activities)	
Category name	Elements in the category (essential elements in red)
Bring people together	Bring people together, Singing together, dancing together, guided tour, short-movie of the neighbourhood in which everyone has a role, book, build further on what others created, workshop
Collect & share data	Opinion gathering around themes in the city (mobility, traffic, safety, food consumption, urban projects), Data to stories, from open data to insights
Media formats	Audio message, long story formats, recording audio/video, podcasts, contextual game, short text message with emojis, short video (mostly personal feel), get access to media
Temporary	Temporary realizations, guerilla, pop-up concepts

Affinity diagram: When? (time)	
Category name	Elements in the category (essential elements in red)
Happenings	During an event, when something is going to happen, a big project is starting / going on, life events, when you are moving, disaster, when something bad happens (at a city event), during a general activity

Looking for info	When I want to inform myself about the city / sustainability (citizen), when I want to make a decision (citizen), when I need information (policy maker), when feedback is necessary for co-creation in projects, when I need information about a city (journalist), during work (urban planners / activists) to exchange knowledge, during info-sharing moments between people
Spare time	During spare time, on the weekend / leisure time, when you're with friends, when you're tipsy
The 'how' of the 'when' (pre-condition)	When it's not invasive, when it's convenient
Idle	Waiting for public transportation, when you're alone, on the way home, during conversations
Serendipity	Unexpected moments, als een toestel opspringt
Itch	Depends on the story, someone is frustrated

Affinity diagram: Where? (location)	
Category name	Elements in the category (essential elements in red)
Specific public locations	Event - At an event, reception, new-year drink Place - Neighbourhood center, city center, museum, touristic hotspots, library, local shops, public parks, school, market, café, on public transportation (in vehicle or at terminal), middle of the woods
Private sphere	In my home, at work, in my newsroom (journalist)
Online	Online, social media
Strategic location depending on question	A place you want to promote, in context, where it is going to happen, on specific geographic locations (related to the location), geographical region, infomarket / participative moments, caravan or dompi

Affinity diagram: Why? (motivation)	
Category name	Elements in the category (essential elements in red)
Citizen participation	more local interesting news stories, feedback, dialogue, having people be part of the decision-making, inspiration for improving living, awareness, polling, getting info + giving ideas & opinions, for positive messaging / debates, environmentally debate, debate about the future, social debate, Leuven 2030, start communicating, help people gain a broader audience, I need to give information, I (as an event etc) need to get feedback
Education	Ancestors + education offspring, heritage education, history
Spatial	Mobility, space & place, sustainable urban planning, accessibility, urban spatial challenges, making the city future-proof
Activism	Activism, To engage people into doing something, improve the city, better integration in society, positivity. Express opinions & ideas, personal relevance
Data / content	Better data processing & analytics, gathering objective / subjective data, information, share stories about local neighborhood, telling your story, share stories about personal situations / goals, making the city interesting to outsiders, safety
Miscellaneous	Art, to inspire people, entertainment, commercial, climate change, societal transition

Affinity diagram: How? (means)	
Category name	Elements in the category (essential elements in red)
Classic technology	Computer, Smart-phone, TV, iPad
AR/VR	VR concept, AR visualization, Digital virtual representation, Wearable
Personal interaction	Personal interaction, writing a letter / physical mail [graphic tablet], personal thing
Enriching existing media	Smart-city data + enriched media, instagram post pre-made, google map with local stories

Physical interaction	Babbelbox (personal space), Physical interaction element, voting buttons, cloud upload and browse
Contextual information	Information signs, data physicalization, billboard, beacon / GPS triggered info(tainment)
Data	Comparing data over time, digital design log, we deliver analysable data. Gather data and stories through individual physical stations in city and online media -> process centrally -> communicate back, media database
Playful concepts	Systems should be engaging / playful, tekeningen op straat, scrapbook concept, droomfabriek tv programma, urban painting/drawing, easter eggs

1.8 Step 4: Scenario skeleton creation

During a short break, some participants discussed the essential elements which were marked by the stickers and suggested three focus points for the scenarios to be created during the remainder of the workshop. Providing each group with a different focus point was necessary to ensure that the groups would not end up working around similar ideas, but instead come up with different concepts. The target audience for the system was chosen as a focus point, as three main types of target audiences were distinguishable within the "Who?" question.

- Group 1 worked around the target audience "Silent voices", being the people who are usually not heard or not actively joining in discussions regarding the city they live in.
- Group 2 worked around the target audience "Urban designers / policy makers", being the professionals who work towards planning for the future of what a city should look like or how it should function.
- Group 3 worked around the target audience "Geographical area", being people who are connected to each other through geographical proximity, for instance around a specific point of interest in the city or within a certain neighbourhood.

The group split up in three again to each create the skeleton of a scenario. Such a skeleton shows a collection of elements that are represented on post-its and shows how these elements are connected together to form a usable system. It forms the basis for the story which explains the use of the system in a realistic situation.

In order to create these scenario skeletons, each group received a large sheet of paper (from a flipchart), markers and stacks of post-its. Participants were instructed to look at the different post-its in the affinity diagram, focusing first on the essential post-its (with at least three blue or one red sticker), before looking at the other available elements. Elements taken from the affinity diagrams were copied onto new post-its in order to leave the diagrams themselves intact. Additionally, groups were allowed to add new elements if these were required for their scenarios to work. Whenever a

group used one of the elements, they would add a checkmark on tho post-it in the affinity diagram to indicate that it was being used. Other groups could then be encouraged to include the essential elements that are so far not yet being used, if this makes sense within their concept. It was allowed for multiple groups to use an element that another group was already working with.

This resulted in three scenario skeletons (Figure 4, 5 and 6)

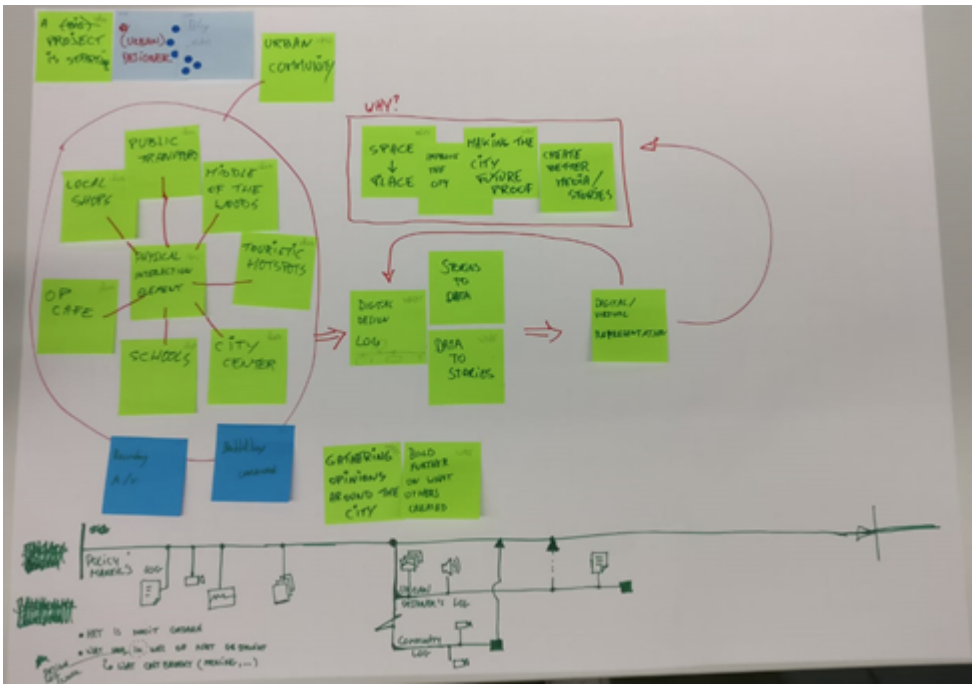

Figure 4: Scenario skeleton urban designers / policy makers

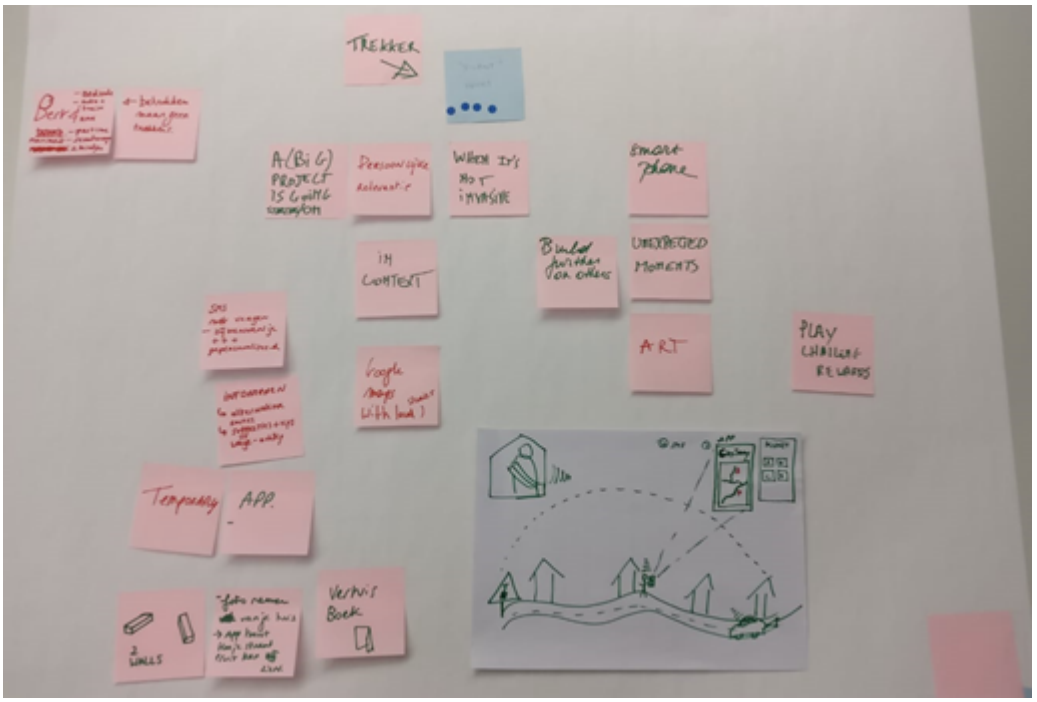

Figure 5: Scenario skeleton silent voices

Figure 6: Scenario skeleton geographical area

1.9 Step 5: Presentation

After the scenario skeleton creation step, each group would present their scenario to the other groups, using the skeleton they had created as a reference. Each of these presentations were filmed and shared with the consortium so they could be revisited by all the partners and used for the upcoming scenario writing activity (Figure 7).

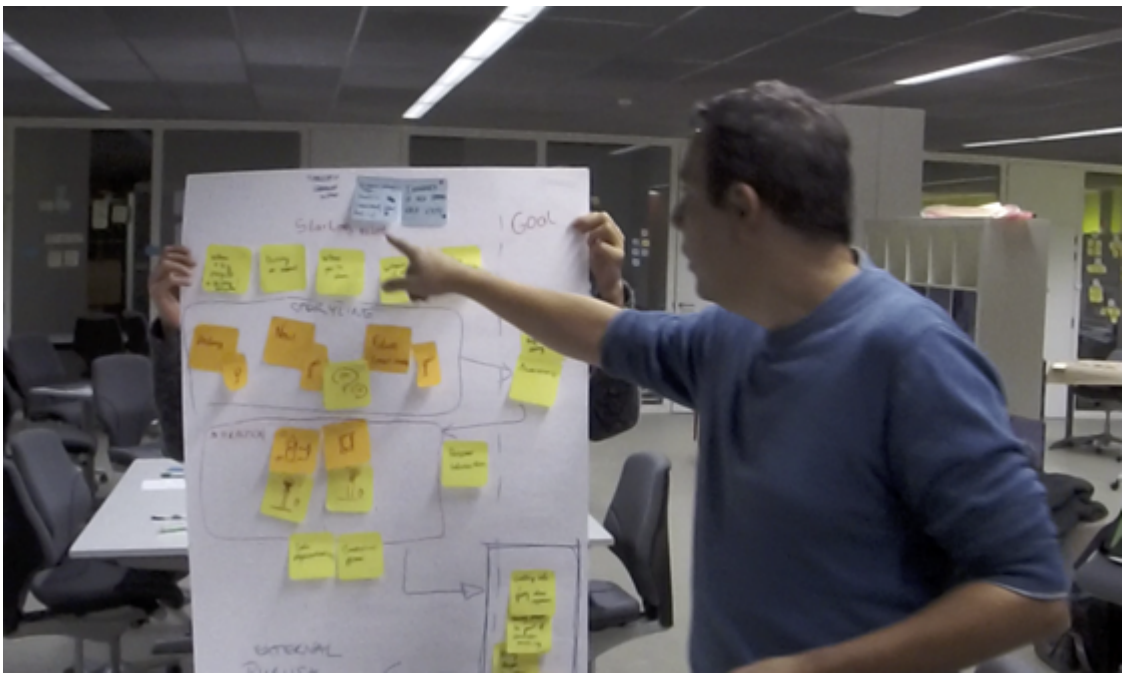

Figure 7: Screenshot from the scenario presentation video targeted at a geographical area

1.10 Step 6: Debriefing and next steps

Finally, the workshop was concluded with a short debriefing and discussing the following steps. As a part of this, the three scenario skeletons that had been created were divided amongst three partners who would each continue to write out the scenario that was appointed to them.

Writing the scenario

Three partners each wrote out one scenario using the materials that were created and the presentations that were given during the workshop as a reference, but fleshing out the scenario a bit further to create a more compelling scenario.

Fourth scenario - Locality lovers and curious tourists

An additional, fourth, scenario was created by an international partner in the consortium who could not attend the workshop, inspired by the results of the workshop and the scenarios that were written within the Belgian consortium. This fourth scenario was targeted at Locality lovers and curious tourists and was taken along with the three other scenarios through the following steps.

Feedback on the scenarios

Next, the project partners got the opportunity to provide feedback on the scenarios that had been created. Minor comments or adjustments could be added as in-text comments and suggestions, major comments and ideas that would drastically alter the scope of the scenario were added separately to the bottom of the scenario document as these will be considered separately.

2. Usage scenarios

In the current section we discuss the four different scenarios that emerged after the workshop.

- We describe the original scenarios in more detail, additionally we discuss the major comments that have been suggested by the partners during the review process to see how these challenge the scenario to potentially make it better.
- We discuss how (some of) these comments could be addressed by altering or extending the scenarios.
- We investigate to what extent project objectives and essential elements that were retrieved from the affinity diagrams are addressed in these scenarios.

2.1 Silent voices

2.1.1 Scenario

A major part of the usage scenario can best be explained from the perspective of a specific family situation consisting of the couple Bert and Fatima, and their two children Sam and Fay, living on the Dorpstraat in Wetteren.

Bert - 34 years old - works a full-time job as a bank clerk, leaving the house at 8:00 and returning home at 18:30. Bert generally travels to work by bicycle, so Fatima has the car available to her during the day. Occasionally, he might take the car and drop Fatima off at work in the process. Bert does not care too much about what is going on in his neighbourhood in terms of urban projects, as long as it doesn't impact him in a negative way, he is quite alright with it and does not pay too much attention to what is going on. Bert usually goes to take the children to their sports and hobby activities in the evenings and during the weekends, which, if weather and time permits, he will do by bicycle.

Fatima - 35 years old - works a part-time job as an interpreter, mediating communications between companies in the entertainment industry. Her plan is to go back to a full-time position in a few years, once they consider the children to be old enough to care for themselves outside of school hours. Most of the times, Fatima takes the children to and from school by foot as this is merely a 500-meter walk. Since the start of the school year, she has started giving the children a bit more responsibility and occasionally allows them to go to school on their own. Granted that it is light outside, the weather is good and the children stay together until they arrive at their destination. She finds this exciting and a little scary, but she does trust that her children can handle the responsibility and

believes they live in a safe neighbourhood. Fatima uses the car as her main mode of transportation when going to work and uses it during the day to do groceries and run errands. Similar to Bert, Fatima is not very engaged with the urban changes and city policy in the neighbourhood, as long as it doesn't affect the children.

The concept

Currently, if the city implements changes in the street in which you live, you will receive a letter in your mailbox inviting you to a meeting to discuss the changes that will be occurring. However, people like Bert and Fatima will generally not be interested in joining these meetings and are thus unlikely to be engaged in discussing these upcoming changes, even though they will likely end up being affected by them. Ideally, we would want to engage the people who are affected by this process of urban change so they know what is going on and may be able to contribute to these changes in a positive way. We envision to do this by creating a **temporary app** to accompany the changes and encouraging the people who are affected by the changes to consult it.

Engaging and informing people

The idea is to try engaging the people more with the urban changes occurring in streets that are in some way important to them. This is done by sending all of the affected people an initial text message that is designed to address them in a personally relevant way. This includes the people living in this street but also those who travel through this street and those who visit the people who live there.

For instance, if the Dorpstraat in Wetteren is being re-built, people who are affected by these changes will receive a message that may look like this:

> "From November 22nd until January 4th, we will be working on reforming the Dorpstraat. What are the consequences of these reforms? How can you bring your children to school? When will the street be closed down for traffic? What alternative routes are there? Check it all in the temporary app"

In the case of Bert and Fatima, the message touches upon a couple of personally relevant factors for them. While they may not inherently be interested to know the consequences of the reforms, they are likely to be triggered by the part mentioning consequences for how to bring one's children to school. Especially, since they are now sometimes allowing Sam and Fay to walk to school by themselves, they will want to be aware of things that change during and after the road-works. Will the children still be able to follow their usual route, also while road-works are occurring? Is it safe for the children to pass these road-works unsupervised at the different stages of the works? If the street is closed down for all modes, including pedestrians, how much further would they all have to walk to school, would they need to reconsider their schedule for this to leave earlier in the morning? These are all questions that may be sparked by the message, giving Bert and Fatima a very concrete reason to consider consulting the temporary application.

The information that is provided by the application will allow Bert and Fatima to get an idea of the practical information concerning their children but also practical information concerning their own travels through their street. Will they be able to get past the road-works in their street to go to work or do groceries? Can Bert easily cycle through the street in order to go to work and can he cycle

through with the children when dropping them off at their activities? Can they get off the driveway with the car, or should they park it elsewhere if they want to use it during the road-works?

Promoting social interactions

In addition to information about what will be going on during the different phases of the road-works, the application will also feature functionalities geared towards more social interactions between the app's users. If part of the street is being closed down, parking may become a bit of a problem. Say for instance, the family's house is currently unreachable by car, but the grandparents are planning to visit Sam and Fay on a wednesday afternoon, as they don't have school at that moment. Grandpa however is recovering from a surgery, making it hard for him to walk. The family could share a message in the system, asking the neighbours whether one of the accessible houses may have a parking spot available to them for the afternoon. A neighbour a couple of houses down the road could then reply saying their driveway will be free from 8:00 until 18:00, as they are out to work with the car during that time, thus granting the grandparents permission to use their driveway.

In similar fashion, google maps integration in the app could allow commuters who use the street on their daily commutes to insert suggestions of detours for other users to see, or ask the people living in the street about the progress of the road-works and an update of the current situation, to know whether or not they are going to be able to pass through the street yet with their chosen mode of transport.

Playful and artistic interactions

Sam and Fay have been playing in the street in front of their house for a long time already and many of the features of their street are central to the games they have devised with the friends with whom they play there. This means that the reconstruction of the street is a moving time for them, as not only can they not play in front of their house for the duration of the construction period, they might also lose some elements that are important to the games they play as a result of these changes. A feature within the application will help them to take away some of the uncertainty and see what the street will look like once the works are completed. App-users can take a picture of their house from across the street and upload this to the app. As the picture is uploaded, that part of the street will be displayed in the app the way it looks now (before the works) and another version will show what that section of the street will look like once the works are completed. This way, a before and after photo album of the street can be created by the people living there.

A physical wall could be placed in the street where people can add print-outs of their pictures and potentially customize them in a creative way to include one's own ideas in this view of what the street will look like in the future or for instance adding pictures of the people living in that house. This could be a fun activity to engage all of the residents and users of the street in visualizing what the street will be like in the future.

2.1.2 Major comments

1. In this scenario, the proposed app is primarily a one-way information channel, it only exists during the time roadworks take place and has little to no continued use before and after this period. One of the important core CityStory ideas was to create a way for continuous citizen interaction, independent of specific events. A suggestion could be to regard the roadworks as a way to spark engagement on 'the' existing app offered by the municipality.
2. The artistic installation part is currently a byproduct of the scenario, where it might as well be the foreground of the scenario. A physical touchpoint for urban interaction seems what we would need to be after. Although I follow the train of thought regarding the 'app' we need to be wary about the difference in interaction qualities between a digital and physical installation.
3. Based on previous discussions, I believe this scenario could be me made stronger by including an engaging way to offer 2-way interaction between citizens and city. Currently it is one way between city and citizen (route optimisation) and two way between citizens (driveway sharing). For example, a challenge-like concept launched by the city to gather feedback about the roadworks, virtual neighbourhood parties, asking 'tinder style' questions about the neighbourhood,...
4. [idea: introduce physical call-to-action] The app could be accompanied with a physical "interface" that invites passers-by to make the actions that are proposed. As a simple example, a moveable, life-size, physical CityStory frame could be introduced inviting smartphone pictures to be taken 'through' it. For the social interaction side-track, it could consist of highlighting the missing parking spot, together with a clear call-to-action. Such a situated "interface" also answers the suggestion to make the installation the foreground of the scenario (and could fit NXP's tech expectations).
5. [idea: make the playful interactions immediately useful] During the road works and road closure phase itself, the temporary urban infrastructure itself could be used to augment social interactions by providing citizens with a responsibility that has immediate effect. Passers-by could for instance help design the wayfinding signs, propose parking spots, announce local shop promotions, etc. in order to minimize the impact. All these decisions are based from the experience of the local passer-by. Nowadays, all these decisions are made on a managerial level, only following local regulations while attempting to not impact local mobility.
6. [idea: make a mobile/temporary kit] Overcoming real road closures might be quite contentious in a real situation. Maybe this context is not required to still fulfill all the goals proposed in this scenario?
7. [provocative rant] I think that a scenario starting from a young, gentrified family working normal office hours seems a bit idealistic, and not conform the fact that young families are still leaving Flemish city centers in droves towards the suburbs. For instance, I think it's the local shop, the elderly / handicapped couple, the recently arrived immigrants, the family having financial difficulties and working night shifts, the youngsters being bored, the bicycle commuter passing through the street, ... who will have much more trouble of the work roads? (the scenario only implies these stakeholders: maybe make them more apparent?)

8. [provocative rant II] I think citizen participation in terms of place-making (i.e. designing the public environment) must occur *before* the actual decision making, instead of when the road works have already commenced - and everything has been approved, funded, and licensed?

2.1.3 Integrating major comments

The scenario could be altered to address several major comments (1, 2, 3, 4 and 8) by framing the application that is suggested in the scenario from being a temporary application towards being a temporary campaign within an existing permanent application.

A permanent application may provide the inhabitants of a city with the opportunity to send in their feedback about the cityscape, helping the city policy makers to get an overview of the citizens' opinions. At times when the decisions are getting more concrete to re-build or alter a certain street or area, the city could launch a temporary campaign which feeds into the app to inform their decisions and guide the citizens through the transformations during the different stages of the transformation.

Stage 1: Before the transformation

When a certain area has been picked for a transformation, a campaign could be started using physical objects as a call to action for people to provide their thoughts about how the area could be improved. These physical objects would be movable frames which could be used by the citizens to take a snapshot of specific elements of the area, helping them to explain their ideas for that part of the area. This way, one could point out ideas such as where new parking spaces are needed, which parts of the area are currently dangerous and opportunities for providing a place to sit and rest. Ideas could be browsed, voted on or elaborated on by other users. These inputs could then be utilized by the urban planners and policy makers to help shape their ideas for the area.

Stage 2: During the transformation

The scenario as it was originally described will be put in place once the plans have been finalized and the transformation is going on. A specific thing that would be important here is to keep a close eye on safeguarding the personal approach as it was suggested in the original scenario, with the goal of speaking to the silent voices. The picture frames could be reintroduced during the road works to document the process of the transformation.

Stage 3: After the transformation

Once the transformation has finished, the campaign could be wrapped up by showing before, during, and after pictures, using the picture frames. This way one can show how ideas that were

provided were used in the redesign of the area and how the area has changed. New campaigns can be launched for future areas that will be transformed.

Further comments:

In addition to the suggested extension of the scenario, further effort needs to be spent to investigate how comments 5, 6 and 7 can be addressed. Meaningful suggestions for these would require better insights in terms of user requirements and possibilities for both the citizen target groups as well as the city policy makers involved.

2.1.4 Implication first round requirements gathering

Based on the user requirements gathered in D1.2, several changes and implications to the scenario described in the previous sections are discussed. We continue by looking into the three-stage system described in 4.1.3 of the current document.

Target audience:

Throughout all stages, it is important to realize that within this scenario, there are three different groups of people who are targeted to use the system: residents, visitors, and travellers. The residents and visitor groups are likely to be able to stop at the installation for an interaction, the traveller group however, is likely not to have this possibility or intention. Therefor, the installation would feature a compelling call to action which, besides inviting people to use the physical installation, would also inform people about the campaign in the app, so travellers can look into that once they have arrived at their destination.

Since residents often know each other and visitors will often know residents, there is potential to include several collaborative functionalities or group interactions in the system. People might want to create stories together or discuss ideas by commenting on stories.

Stage 1: Pre-transformation

During the pre-transformation phase, two different types of stories could be useful to collect, descriptive stories and pesronal stories. Both story types can be told through the frames that are placed in the neighbourhood. People can use the frames to describe wishes or ideas they have for improvements, but they can also use it to share more personal stories, for example children might use the frame to bring attention to specific parts of the neighbourhood they use when playing outside so designers become aware of the personal meaningfulness of certain elements of the area.

Stage 2: During transformation

During the transformation, the local government and designers can use the system to communicate their plans and the schedule of planned works, as well as other important information.

Stage 3: After transformation

After the transformation, the systems can be used to showcase before and after pictures of the area, using the input from the pre-transformation phase to show how the citizens' input served as inspiration to the designers and how the citizens had a say in the final results.

2.2 Urban planners / policy makers

2.2.1 Scenario

The key element in this usage scenario is the urban digital design log. It is a platform for story creation that's open to policy makers and urban designers, city inhabitants and media creators, containing multimedia story elements like text, photographs, audio fragments, video clips, data, design sketches and plans, … Everyone can contribute to the design log and consult it. The digital design log is created by a policy maker with the purpose to support an urban transformation and/or transition project. This can be a classic spatial change, like a public space refurbishment or neighborhood (re)development, but also a more systemic transition like the evolution towards a more sustainable mobility or a more circular urban economy. The digital design log can be consulted through online channels (website), but other channels could be used as well. The basic concept of the design log is to turn stories into consultable and usable data, but also to turn these data gains into (media/urban) stories. Through a digital and/or virtual representation the data and stories are accessible to all users.

The goals for the digital design log are to help policy makers and urban designers to better understand the needs and opinions of the population and to share and test design ideas or visions for the future for a broad audience. Urban designers can show design proposals through the platform and gather feedback to improve those proposals. For inhabitants the design log is a way to stay informed, be heard and to contribute to the (local) urban story. The digital design log also has clear benefits for media creators, who have better and broader access to local stories and multimedia material. At the same time, they can enlarge the audience of the log. The end goals of using a digital design log are to create better cities and better stories.

The design log is created in relation to a concrete project or vision but remains active after the project is 'over'. It can split in different sub-logs, merge with a log from another project, … Story elements can be related clearly to the project or vision, but can also be 'sidetracks' focusing more on personal stories, local history, social cohesion, … Above all it is a collaborative tool, where all different users and contributors work together to create valuable content. The start and the focus are based

on the transformation or transition project, but the design log relates to the whole neighborhood or city.

Contributions to the design log can be made in various ways. One important element will be the use of physical 'story captators' in the public space, for example to ask questions, show plans and ideas, make videos, record audio, … They can be combined with online channels, mobile applications or even more classic interview or questionnaire techniques. Also classic and new media can/will be involved, like radio & television, online bloggers/vloggers, … An identification system (cfr. badge) can help to regulate access, identify contributors and take care of privacy and consent issues.

Example: Plein op Komst!

The Graanmarkt square in city X has been used as a car parking since many decades. The city hall decides that they want to refurbish the place, get rid of the cars and create a real square. They create a digital design log and invite all inhabitants to consult it. In a first phase people are asked to share their memories of the Graanmarkt, post videos and photographs of how they use it, what they like and what they don't, what activities are happening on and around the square, … The local heritage society posts historical pictures and stories of how the Graanmarkt used to be full of life in the past. On the square an info booth is put where people can get an idea of the new ambitions for the square and answer questions, record little videos in a 'babbelbox', … In a selection of shops around the square different 'story captators' are put, little screens that ask people about how they came to the shop, where they parked their car, what other activities they had planned, … Traffic behavior on the square is measured, but also the walking lines of people, the sun exposure, … is mapped. All the material is stored in the digital design log, processed and the valid material is published on a website and shown in the info booth. Each week, the local radio station broadcasts a selection of inspiring citizen contributions in a 'Plein op Komst' radio item. At key moments, longer segments are broadcast on radio and local (or even national) television, as well as made available through online channels (social media or media sharing platforms).

In the meantime, a design office has been selected to design the new square. They can use all the material produced, but also ask specific questions via the platforms in the info booth and the local shops. After three months, the first design scenarios are shown during a special event on the square and put on display in the info booth and online. People are asked to react, both generally and through specific questions, by choosing between alternatives, … All this material is always gathered and published openly on all relevant channels. For key issues (How many parking spots are kept? What activities are put on the square? Etc.) there is a debate format created where everyone can share their ideas and opinions, both online and live. When a topic turns out to be very controversial, a special debate evening is organized with key actors and selected inhabitants and broadcasted live. Visualizations and data models are used as support to make sure that it is clear what certain choices would mean in reality.

At the end of this process a final design is made and presented through all available channels. The digital design platform and all related initiatives and channels stay active, also during the construction phase and after the square is finished.

2.2.2 Major comments

1. [idea: introduce physical prototyping] We suggest to consider augmenting this scenario with a physical format of placemaking, i.e. moving from showing visualisations and data models to simplified urban designs. For instance, some of the new design ideas (e.g. the new square needs benches, plants, trees, bicycle path, road closures, the work roads themselves) could be physically prototyped for a limited duration, with cheap and disposable materials. The opinions of passers-by could then be immediately asked (e.g. by one or more polling displays that are located in the immediate vicinity, see our Citizen Dialog Kit). This would make their opinion opportunistic (e.g. immediate, voluntary) and situated (e.g. contextual). Different alternative layouts could be experienced, per day or week, and the polling could occur continuously
2. The log could then call for stories that react upon the polling results and/or reveal 'why' people have particular preferences and/or open discussions. A display could reveal these discussions to passers-by of the square.
3. This physical addition to the current scenario would allow much more opportunistic interactions, i.e. interactions not requiring the time and effort of opening an app or website. It would augment citizen participation from workshops with plans and 3D renderings to actually experiencing the advantages and disadvantages(!) in physical space itself. It would deliver both quantitative (e.g. voting) as well as qualitative (e.g. reasoning) information
4. The continuous polling (and storytelling) in the physical space would also make a nice technological challenge that falls within NXPs ideas.
5. In the current scenario example, the focus is on a specific urban design project. I wonder if we should flesh out the concluding paragraph a bit more, which focuses on the continuity of citizen engagement (RE: comment made by Andrew above). In that way, the tool/platform/collection of tools would be omnipresent and whenever a specific urban design project is planned or bound to happen the focus of the whole system could be tweaked temporarily.

2.2.3 Integrating major comments

In terms of integrating the major comments that were provided for this scenario, the scope of the scenario could change from being a temporary solution, placed specifically to support a major urban design project, into a more permanent installation, which could continuously poll passers-by for their opinions and invite them to discuss things (comment 1 and 4). In the case of a major urban design project, the questions and topics it prompts can then be aligned to provide valuable insights to the project (comment 5).

It could also be used in combination with other (physical) attributes such as real-world visualizations of what the area could look like, reflecting the ideas of the designer and then allowing for quick citizen feedback through the polling system (comment 1). This way, more attention can be drawn to the design and people could get a better idea of that it could be like once implemented. The system can be used to get both quantitative (through polling) and qualitative (through discussing the poll

results) data (comment 2 and 3). In order to keep the system interesting over time, the topics addressed should vary and be engaging.

2.2.4 Implication first round requirements gathering

Based on the user requirements gathered in D1.2, several changes and implications to the scenario described in the previous sections are discussed. We continue by looking into the system described in 4.2.3 of the current document.

The system that is proposed in this scenario consists of three potential parts: Large physical (low-cost) prototypes of the envisioned design, a polling system and a qualitative feedback system. These three parts allow different types of users to utilize the system. The polling system should be a very quick action in which people with little time on their hands, such as passers-by, can quickly contribute by sharing their opinions on design ideas. The qualitative feedback system will allow people with some more time on their hands to share more detailed opinions and ideas on the different proposed designs.

The large physical prototypes of the envisioned design can allow people with even more time on their hands to create and submit their own ideas using these materials in the public space. This activity could be aimed at groups of people and might be prompted by certain challenges, such as: "Create a set-up that is perfect for relaxing" or "create a set-up that provokes physical activity". This way, the people engaging in the challenge will re-arrange the physical elements in the space and capture an explanation of their set-up for the area. These ideas can then be used in the polls as well as serving as inspiration to the designers. The design log created by the designers can be used as background information to the challenges, to explain what the relevant goals for the area are, additionally the materials created by citizens performing these challenges can serve as additional input in the design logs. This way, the design logs can be used to communicate how the citizens' ideas were used in the design process and what influence they might have had on the result. This challenges part of the installation could be seen / communicated as a contest.

2.3 Geographical area

2.3.1 Scenario

The goal of this scenario is to create awareness and to engage people into doing something to help them to become part of the decision making for that specified location in the city. Becoming part of the process also leads to bringing people to come together and let them feel to be part of a common goal and community.

To help this process we need to give people information and context, and in return trying to get their ideas and opinions. These can be given physically (for example creating art to let people think of the

subject) or mindset (for example giving some meaningful opinion that lets other people think about that opinion).

Multiple situations (or "starting points") for this scenario can be defined:

- Something happens in the city (for example a fire has burnt down some important building)
- Big changes are coming to the city (for example roads will be closed and will be re-used as walking space)
- People are visiting the city and want to discover interesting places inside the city
- New citizens are coming to live in the city and want to find out more about the history of the city

Most situations of change are built around three specific moments: now, the history and the future.

- "Now" defines what's going on at the current moment in time. It explains what's happening, what's the situation is and why it is changing or needs to be changed. In this phase, we want to inform people.
- "History" defines what had been at that specific location. It is built on existing information like open data and historical facts. But also on the personal stories that people have on a specific location or context. In this phase, we want to collect personal stories.
- "Future" defines what will, or could, be, we call it more as "the next chapter of the story". It will be the end of the current process. In this phase, we want to get people's opinions on what and how the new situation could be built. These opinions can be used as the basis for decision making.

What's interesting in this scenario is that we can use different forms of interactions and use different kinds of storytelling formats. We can combine digital and non-digital interaction forms. This will help to bring in a diverse group of people, even people with mobile disabilities to join the process.

The gathered data and stories can help to bring the story of the change to a broader audience, which in return can foster more discussions and stories and bring in more people and thus engagement. This loop will generate in itself more data and more stories. More opinionated views and stories can help cities in decision making. At the same time, there is also a social impact: we bring more people to the topic and help them to be part of a common goal and community. Because of the nature of this scenario, the so-called silent voices also have a chance to be heard.

An example of such a scenario could be:

The city decides that a specific place in the city needs to be rebuilt. Old buildings will be destroyed and the city thinks that three future scenarios would be beneficial for the citizens: a shopping mall, a

new indoor swimming pool or a park with a children's playground. The city wants to involve people to help make the decision.

The city installs big light bulbs across the location that will be rebuilt. They hang up posters across the city to tell about the mysterious light bulbs. The light bulbs attract the attention of passers-by. People who stand near the light bulb get information on how they can interact with it to hear the story of what's going on. After they have listened or read the story, they are invited to listen to audio from people who have left a story on the specific location. In return, the installation asks people if they also have a story to share with other people. The system can also ask questions in the form of a scripted interview to gather feedback and opinions on the proposed future solutions. With each story or feedback shared, the light bulb will shine brighter (or will have a different colour). Because of several light bulb installations, which will have different colours or brightness, more people will be triggered by that situation, drawing them into the collaborative process.

The city will share realtime visualisations of the shared stories and opinions on digital screens across the city, as well as on digital platforms like their website, Instagram and the like. Local media can tap into the stories to tell the big story to more people. People at home are also invited to share stories and opinions through a mobile application. This will help people to be involved and drive the discussion based on the different opinions to the next level.

The city decides that a moment has come to bring in the results of the captured opinions to a town hall meeting. They organise round table discussions where they share more details on the proposed solutions (like necessary budget and impact of the works) which will help the city in the decision making.

2.3.2 Major comments

1. The target group in this scenario appears very broad, involving new and long-established locals (consisting of several communities) as well as tourists. We have concerns regarding the creation of functional sparks, that equally prompt participation amongst this diverse target group(s). We suggest to either divide the intervention into several elements, each designed to attract a specific public, or to further narrow the target group. Also, we emphasize to view communities not only as a group of citizens sharing the same geographical area, but also to take into consideration communities (people who identify as a community through religion, political views, sports, hobbies, etc.) within that geographical area.
2. The artwork (data physicalization) seems to be an interesting idea to call for passers-by attention. Perhaps we could think of an installation, that does more than visualizing quantities (where and how many narratives have been submitted), but also render the qualities of the stories. This could be done by making the artwork itself interactive. By enabling on-site prototyping, users could be invited to craft and submit „physical/tangible stories", thereby creating an interactive artifact (or a gallery of multiple artifacts). These physical objects could be helpful to 1) augment the users narrative (audio/text/video), 2) attract passers-by through a playful activity and give a reason to come back to spectate or continuously interact with a shape shifting installation, and 3) communicate immediate feedback through the change of of the artwork.

3. Another idea (or additional feature?) could be a frictional interface, that only allows a story to be published, once all or for a specific storyline relevant communities have contributed to that story. For instance: participants (planners, policymakers, citizens…) could initiate a storyline that needs to run through several iterations (each to be carried out by a member of a different community). Only once all required parties contributed to that story, it will be published. In this way we could call directly for individuals (or groups of people) to participate. This could also be linked to e.g. a donation for a good cause per published story, to prompt participation.
4. Also, we would like to emphasize the future making aspect of this scenario. Past and present narratives are important to understand, to speculate about the future. We are thus a bit unsure about involving tourists in this scenario. Tourists have no or little own knowledge to contribute to the past of a place they are visiting, they are also unlikely to share future visions, that they will probably not be able to experience becoming reality.

2.3.3 Integrating major comments

As a way of speaking to more specific target audiences (comment 1), it could be interesting to require the contributions from these different types of people in order to get into further stages of the interaction (comment 3). People can add their stories to the system but they will only get published once a wide enough array of audience types have participated. The lightbulb (or other highly visual feature) could then be used to indicate how close to completion a certain story is, and may help drawing in the last types of people required to finish the story. Maybe the user can somehow create a visualization of their own profile (or choose to identify with an existing one) and the feature could show all of the different profiles that have given input so far (comment 2).

2.3.4 Implication first round requirements gathering

Based on the user requirements gathered in D1.2, several changes and implications to the scenario described in the previous sections are discussed. We continue by looking into the system described in 4.3.3 of the current document.

In order to help including a more varied audience in the story creation, it may be a good idea to actively search for this variety through strategic deployment of the system instead of trying to attract a varied crowd to come and interact at a one location. The research in D1.2. has shown that different locations in a certain area are likely top be frequented by different types of people. Therefor, it would be interesting to deploy a network of light-bulb installations which are all connected to address the same stories. The installations in this network will be deployed in strategically chosen locations across the area of interest which attract people with different goals and demographics. This deployment style will aid in reaching a broad variety of respondents.

In addition to focussing on getting a broad variety of respondents, it would be interesting to also prompt people to submit different story types, so both personal and descriptive stories are being collected – discussing a variety of topics, in order to get an even completer picture.

2.4 Locality lovers & Curious tourists

2.4.1 Scenario

I think stories are there in our surroundings already, waiting to be found. At the same time they are in the hearts and minds of the people inhabiting the city. Therefore, place-stories are like atoms being in two places at once according to quantum theory.

Let's imagine a story about a place. It is floating around "in space", in the head of a person who knows it.

Of the same place, there will be dozens, hundreds, or thousands of stories, in as many heads around the world. Many stories are not very far from home: they are in the mind of the *loyal locals, the curious tourists or the daily commuter.* Stories may be happy or sad, but they are in essence what gives meaning to a thing. Therefore place-stories are what give meaning to the place, from the perspectives of all of the people involved with that place. Why not share more of them? And of course we may share place-stories every day, so why not do it more consciously too? This could be called *distilling* the essence of the stories we know. Everybody needs meaning - we all depend on it for our lives.

So our task would be to bring the place-stories back to the roots, the place where it all happened - according to a storyteller. She/he might be lying or imagining too, but let's stick to some historically-really-happened *historia*, or a plausible story anyway, for now. From bringing these vividly into mind, the storyteller might be able to dream out loud, and consequently inspire city developers to do their own very best in developing the city.

<u>Proposed method</u>

By bringing a Babblebox to the Helsinki Railway Station Tunnel we could distill the essence of the place as felt and recalled by locals. Two key questions would be:

A. What happened to you *here*? (Why is this place important for you?), with the ability to somehow share the story in text and/or image.

- We would get a series of stories of this place.

B. Where did *X* happen to you? (Example: Where did you meet your spouse?)

- We would get a map of the places where storytellers met their spouses.

After the local has shared a couple of their past stories of the tunnel, the mechanical interviewer might proceed to ask them three questions about future stories:

C. What would you like to see here? (What cultural events would be possible?) The user could be free to choose their communication medium, such as (spoken) text, images or quick sketches.

- We would get a collection of dreams of a possible Tunnel, that offers so much more than it does now.

D. Who would you like to see and hear here? Doing what? => Here the storyteller could draw a line of where the desired person lives… all the way to the Helsinki Tunnels.

- We could make out a map that shows the itineraries of desired people to the place, to do what they do best.

E. Where do we go from here? => Here the storyteller can draw a line on a map, where they would like to access through the Tunnel.

- We will get a Dream Tunnel Network.

<u>Using the results</u>

After the Dream Tunnel interviews, the machine would ask the interviewee, now turned into storyteller, if they agree to having their story published on CityStory platform. The stories will be analyzed, edited, mixed, sped-up to produce "Tunnel Mixes 1 – 10". These make up a surprising compound of local stories that will be interesting and amusing to both loyal and new Helsinkians, curious tourists, and ultimately inspiring local planners/developers/ key stakeholders to think up what the people "need" from the place.

The same machine interviews, with appropriate local variations, would be conducted in each of our case cities and towards the end of the project we'd have 10 City Mixes from each one. In some cases, they would portray a Dream Marketplace, Dream Park or Stadium, or whatever. These would be used in different workshops or *charrettes* for various place-branding, urban planning, and street design purposes.

Shows on-site

Thus the CityStories bring runaway stories back to the place, both the stories of the past and of the future. Both the realistic/nostalgic past stories and the future-oriented, even perfectly utopian dreamed-up stories would be fun to watch on-site after the collecting period. (Naturally, relevant privacy or GDPR issues must be tackled beforehand.) In different cities, the past stories might be about My Childhood Park, the Campus of Our Youth, etc. and the future stories could be about My Dream Marketplace, Dream Harbour etc. videos. Perhaps the walls of the Babblebox can be used for projecting these, so that the Stories & Dreams Abox becomes apparatus that conveys a sense of possible cities within the city we live in.

2.4.2 Major comments

1. We propose that this scenario must have a story of its own. I.e. why are passers-by motivated to partake in this scenario? That story can be situated, i.e. be only relevant for that place.

2. Perhaps the citizen engagement can happen more than once. It would solve the relatively large amount of questions that must be solved, while also breaking up the relative complexity and multi-dimensionality of this kind of data gathering. E.g. passers-by could perhaps “add” little snippets of information each day. They could be encouraged by the contributions of others, and/or react upon them. With the tech of NXP, they could be automatically recognized and automatically add to their story (or that of someone else?)

    - This makes me think that this could be developed or approached along the structure of an ‘alternate reality game’ - in which information is given or uncovered in tiny bits. In case if the whole installation is approached as an unfolding story in itself, other parts could be ‘unlocked’ after a set amount of responses has been recorded. In this way, there is an extra incentive for people to participate in the installation.

3. If you were to put up these babbleboxes with similar kinds of questions (e.g. why is this location important to you? / what personally important event happened here?) you may be able to find how certain physically distant and maybe even functionally different locations might share similar kinds of emotional attachment or utilizations. Or in case the backstories are very different for each location, it might reveal the "secret functions" that these places fulfill in addition to their overt functionalities as for instance being a transport hub or shopping area.

4. Would it be interesting to use the results from questions such as "where did you come from?" and "where are you going?" to determine locations where these babbleboxes may be installed next? This might result in more longitudinal stories of how people move around the city.
5. Could babbleboxes be virtual instantiations? Perhaps it would be interesting to have a combination of physical 'boxes' coupled with a webapp which runs on personal devices.

2.4.3 Integrating major comments

Several comments suggested that the scenario would benefit from having a more engaging story themselves (1 and 2). Comment 2 suggest an interesting way of doing this by turning the somewhat long interaction (answering multiple questions at once) suggested in the scenario into a collection of shorter interactions (answering one question on multiple subsequent occasions). The content and questions inquired and displayed by the device could be building a narrative, revealing part of the narrative over time as the users interact with it. In addition to thinking about interactions with the system over time, it could also be interesting to consider interactions with similar systems over different places by placing several instances of the system in different locations (comments 3 and 4) or even allowing for digital (off-site) interactions with the system (comment 5).

2.4.4 Implication first round requirements gathering

Based on the user requirements gathered in D1.2, several changes and implications to the scenario described in the previous sections are discussed. We continue by looking into the system described in 4.4.3 of the current document.

Since the railway station is a place that a lot of people visit regularly on constant times as a commuter, they are places where strangers may come to recognize each other as they run into each other on a daily basis. Storytelling booths here could allow people to share their story with other travellers, allowing these relative strangers to get to know each other better on either a personal or a professional level. This could even serve as a networking opportunity. Furthermore, getting acquainted with fellow travellers might make the time spent travelling more pleasant.

As a railway station is a very busy location, with people moving quite quickly into different directions - often being in a hurry, it is essential that the design and placement of the systems do not interfere with the flow of people passing through the railway station, to avoid conflict and annoyance amongst the users of the area.

2.5 Scenario fit with objectives and essential elements

In the following table, we present a brief overview showing how well the different scenarios (and the ideas proposed in the feedback) cover the project objectives and essential elements that were selected during the workshop. The objectives and elements indicated with dark blue cells are

addressed in the original scenarios (and possibly also in the feedback in the major comments), the objectives and elements indicated with light-blue cells are not part of the original scenario but are addressed by the feedback in the major comments, and the white cells are not addressed in either the original scenario or the feedback in the major comments.

	Scenario Silent voices	Scenario Urban planners / pol...	Scenario Geographical area	Scenario Locality lovers & cur...
O1.1 Support citizens in the creation of meaningful stories				
O1.1 Enable and engage people in the creation of stories				
O1.1 Computational support through the use of AI				
O1.1 Extract semantic information from sounds, images, video and DIY sensors or open city and community data				
O1.1 Generate recommendations to promote sharing				
O1.3 Design strategy and architecture of cloud-based deployment of a city story urban social network				
O2.1 Empower citizens to create and combine different media formats				
O2.1 Facilitate new forms of shared, civic media to emerge				
O2.1 Prototypes of tangible devices to be deployed in public spaces				
O2.2 Proximity interactions in multiple places in the city				
O2.2 GDPR				

	Scenario Silent voices	Scenario Urban planners / pol...	Scenario Geographical area	Scenario Locality lovers & cur...
Who: Policy makers	■	■	■	■
Who: Urban designers	■	■	■	■
Who: everybody within a (1km) radius	■		■	
Who: similar location (shop, school, church..)	■	■	■	■
Who: silent voices	■		■	
Who: Urban community by and for	■	■	■	
What: Bring people together	■		▒	
What: Short-movie of the neighbourhood in which everyone has a role				
What: Build further on what others created	■	■		
What: Opinion gathering around themes in the city (mobility, traffic, safety, food consumption, urban projects)		■	■	■
What: Data to stories		▒		■
What: recording audio / video		■	■	

What: contextual game				
What: Temporary realizations				
When: During an event				
When: A big project is starting / going on				
When: When it's not invasive				
When: When you're alone				
When: Unexpected moments				
Where: City center				
Where: Touristic hotspots				
Where: On public transportation (in vehicle or at terminal)				
Where: Middle of the woods				
Where: In my newsroom (journalist)				
Where: Online				
Where: A place you want to promote				
Where: Where it is going to happen				

	Scenario Silent voices	Scenario Urban planners / pol...	Scenario Geographical area	Scenario Locality lovers & cur...

Where: On specific geographic locations (related to the location)				
Why: Dialogue				
Why: Having people be part of the decision-making				
Why: Awareness				
Why: Getting info + giving ideas & opinions				
Why: For positive messaging / debates				
Why: Mobility				
Why: Space & Place				
Why: Making the city future-proof				
Why: Activism				
Why: To engage people into doing something				
Why: Personal relevance				
Why: Better data processing & analysis				
Why: Share stories about local neighbourhood				
Why: Art				
Why: To inspire people				
How: Computer				
How: Smartphone				
How: Digital virtual representation				
How: Wearable				
How: Personal interaction				
How: Google maps with location stories				
How: Babbelbox (personal space)				
How: Physical interaction element				
How: Data physicalization				
How: Digital design log				

How: System should be engaging / playful				
How: Easter eggs				

some of the project objectives and essential elements are not addressed in any scenario or major comment. In part, this seems to be because they may be too specific and thus actually a scenario by itself (short movie of the neighbourhood in which everybody has a role), or too technical or detailed to be adequately addressed in the user-scenario (O1.1, extracting semantic information, O2.2, GDPR).

Other essential elements are not often explicitly mentioned in scenarios or major comments, but are also not explicitly excluded and could actually make sense within the context of some of the proposed scenarios. This includes locations (e.g. middle of the woods and touristic hotspots), means (e.g. wearable device and smartphone), and reasons (e.g. activism and making the city future-proof).

3. Implemented use-cases

This section describes the use-cases as they have eventually been selected for implementation and demonstration.

3.1 Year 1 Use Case

Use Case Owner: Municipality of Antwerp
Partners involved: BUUR, KU Leuven, VRT
Goal: contextual Story Catching
Targeted users: local inhabitants and visitors frequenting the location

Description:
The Y1 use case focuses on increasing user participation in governmental decision-making.
For year 1 a use case in the City of Berchem (Antwerp, Belgium) is selected.
The municipality of Antwerp is planning a large-scale architectural project concerning the ring road of the city. In this, the ring road is supposed to be covered with a terrace to create new social spaces, connect various neighbourhoods and reduce emissions generated by the large quantities of vehicles circulating the road. As a first step in this process many parks neighbouring the ring road are supposed to be connected and equipped with new architectural elements to improve “liveability” and reception amongst the residents for the construction project. In this process, BUUR and the municipality of Antwerp are carrying out a series of consultation processes within the city, to include local citizens in the decision-making processes. The CityStory research prototypes will be deployed in two parks neighbouring the ring road, to gather insights from local residents about their usage and ideas for the future development of both locations.
The selected parks, Brillschandspark and De Villegaspark are located in Berchem, southern Antwerp and are separated by the city's ring road. Despite their close proximity, the demographics of both

parks differ quite substantially. While De Villegaspark attracts many people of diverse ethnic backgrounds from its workers-class surroundings, the Brillschandspark is visited by primarily Belgian locals from the upper-middle class neighbourhoods outside of the ring road. Also, in terms of age, both parks are fairly different. Because of its close by located kindergarten and football field many kids and teenagers spend their free time at De Villegaspark, while the Brillschandspark attracts mostly families and elderly people.
For the experiment one CDK is deployed in each park in close proximity to the pedestrian bridge connecting both parks. These locations are chosen, as many people commute from one side to the other and thereby frequently pass the displays. Particularly, the CDK in De Villegaspark is mounted to a fence of a dog walking area at the outer edge of the park while the CDK at Brillschandspark is mounted to a lantern next to the main walking path crossing the park, as indicated in figure 8. The storycatchers are set up within walking distance from the CDK's to attract a substantial number of passers-by.

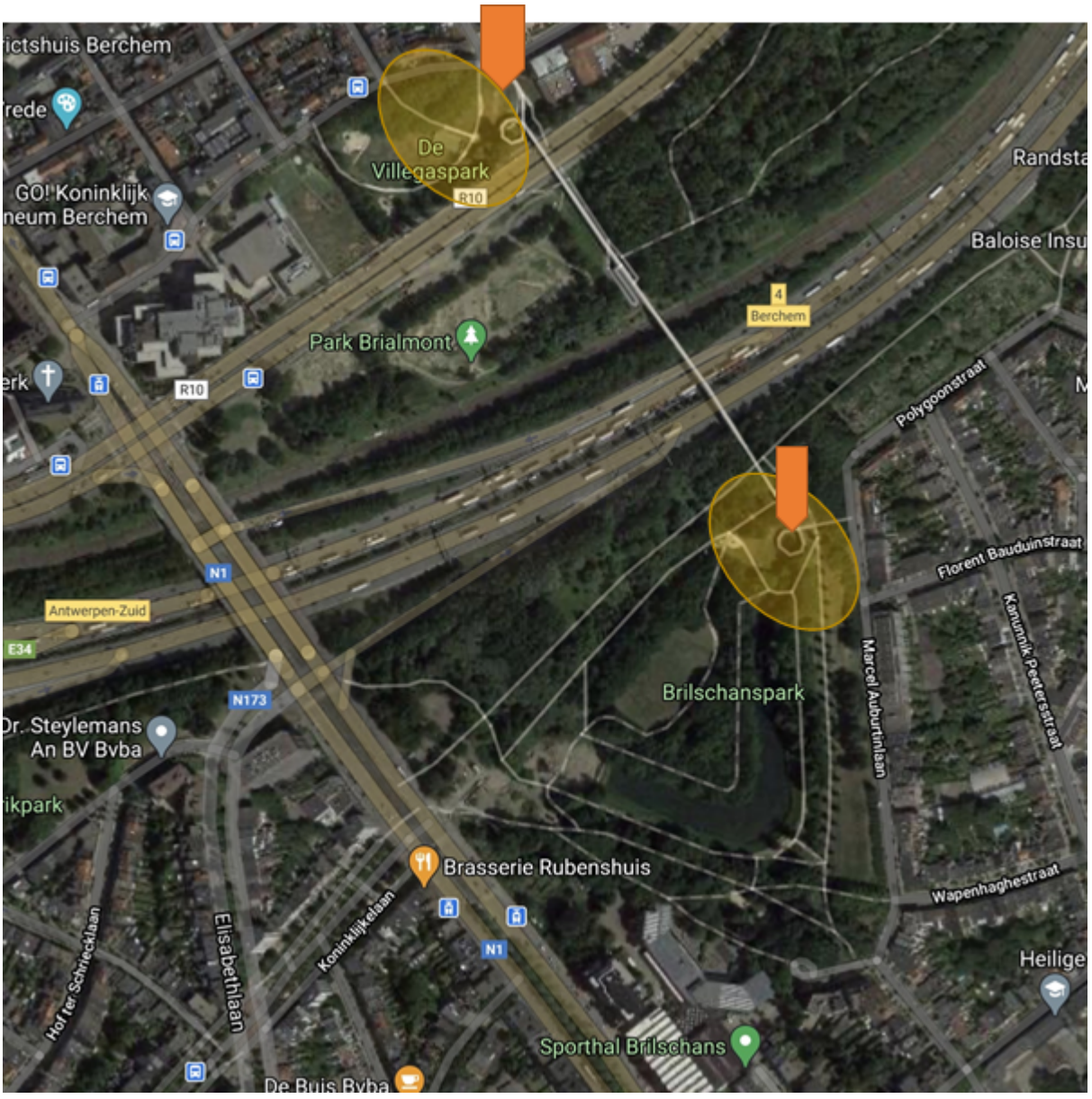

Figure 8. The read markers indicate the locations of the CDK, while the yellow circles mark the areas of the StoryCatcher deployments

3.2 Year 2 Use Cases

As the 2nd year of the CityStory project was fully in COVID-19 pandemic times, VRT as a coordinator took the decision to work in 6 parallel tracks, each focusing on specific, concrete elements in the defined usage scenarios. During a workshop with all participants present the different tracks were defined. The related use-cases and demonstrator settings are described in the following sections. The results and findings of these tracks will come together in a final demonstrator during Y3.

3.1 Track 1: AudioStories

Use Case Owner: Radio 2 (national Flemish radio brand combining national and regional radio))
Partners involved: VRT
Goal: cocreation of (regional) stories
Targeted users: (regional) radio listeners for delivering inputs; professional storytellers for making a story out of the inputs

Description:
Track 1, AudioStories, is a track to enhance interaction and stimulate co-creation and community building around hyperlocal short form audio. As such it aims to facilitate cocreation in broadcasting settings, by providing a feedback loop towards the end-user.
As a concrete use case the Radio 2 mysteries concept was selected. In the summer of 2021 every week one mystery for each of the five regions in Flanders was launched. Radio 2 appointed 5 mystery Chasers, one for each region and asked the mystery Chaser, who is a professional storyteller, to come up with 8 mysteries for that region. Stories that might be urban myths or open secrets. 40 mysteries in total. During the summer every week in each of the 5 regions a mystery was launched on air with a call to Action targeted at the listeners to help and solve the mystery by contributing in the radio2 app. With these contributions that were also published in the app in the mystery-feed, a short daily follow-up item would be aired on the radio and also published in the mystery-feed and then by the end of the week as a conclusion to the mystery, once it was solved, a small short podcast would be created and also published in the app.

Additional use cases: As a second use case in this track the concept was repeated in the framework of the 20 years 9/11 activity on Radio 1, where (during 1 day) information was collected on how people remembered that day.

3.2 Track 2: PosterTalk

Use Case Owner: OBK (Overleg Buurtcomités Kessel-Lo, local neighbourhood organization in Kessel-Lo (part of Leuven)
Partners involved: KU Leuven, VRT, Studio Dot (Legind Technologies, BUUR)
Goal: facilitating middle-out approaches in a local neighbourhood
Targeted users: local inhabitants
Description:

The PosterTalk track aims at bringing solutions for reducing hierarchical distances between decision makers and citizens by facilitating a middle-out approach for opinion capturing.
As a concrete case a citizen consultation case in Kessel-Lo was chosen. The OBK is interested in gathering citizen opinions regarding the development of a new circulation plan initiated by the city of Leuven—a long pending and controversial development project. In particular, the city launched a citizen consultation initiative named Vorm3010, aimed at collecting the voices of local residents via tangible markers and QR-codes. However, certain concerns regarding the transparency of the project arose. For instance, in the first phase participants are polled a series of questions in regard to the use and perception of the neighbourhood, however there is no feedback in place or opportunities for participants to communicate with one another to exchange ideas and debate over potential suggestions. In the second phase a small group of citizens will be recruited to evaluate the gathered feedback in collaboration with urban planners and representatives of the city. According to the OBK this procedure was perceived as rather exclusive and doubts arose amongst the citizens of Kessel-Lo whether or not the recruited people will be representative for their neighbourhood.
As the OBK maintains a good relationship with the city of Leuven, it is important to not create a conflicting intervention or to position it as a form of protest towards the official city initiative. Instead they aim to collect additional insights that would help to draw a more thorough picture of citizen opinions to inform the city's proposal or communicate potential concerns of the neighbourhood.
The idea is to create an inclusive and collaborative platform from citizens for citizens that would enable the OBK, as well as all people of Kessel-Lo to publicly communicate their own ideas or questions to the neighbourhood.
The solution combines an online platform where users can create and react to questions regarding the “The Future of Kessel-Lo” and question-related in space posters with QR codes connecting to the online platform to trigger people on location.

Additional Use Cases:
An additional similar use case is planned in the City of Esbjerg during Q4 2021. New developments are springing up in the city including many high-rise buildings, changing the face of the city. Also the upcoming local elections are hot topics in Esbjerg. The local Museum is curious about the opinion of the citizens regarding the future face and development of the city. For this a set-up will be used similar to the Kessel-Lo one extended with audio capture facilities.

3.3 Track 3: Speech to Text

Use Case Owner: Legind technologies
Partners involved: Legind technologies
Goal: facilitating oral story catching
Targeted users: local inhabitants

Description:
The Speech to Text track aims at improving speech-to-text conversion to enable spoken language as an input for capturing stories. In order to use the solution to collect information from people ‘on the street’ in a non-discriminatory manner it is important that local dialects, street language and non-native speakers are sufficiently covered by the system.
The use case started with working out and validating a solution for the Danish language.

Additional Use Cases: In the next step it is intended to adapt the solution to Flemish as well.

3.4 Track 4: Audio Pillar

Use Case Owner: radio 2
Partners involved: VRT, NXP, KU Leuven (concept definition)
Goal: facilitating oral story catching in context
Targeted users: voluntary tourists passing by a point of interest and curious to learn and share further information

Description:
The Audio Pillar track aims at the development of an installation for capturing audio stories in context. The Audio Pillar concept consists of a physical pillar, including an audio playing and recording option, and a headset for the user that will be used to play and capture audio files.
The specific use case for testing the story pillar set-up is one of the previously mentioned radio 2 mysteries "Heeft Napoleon echt geslapen in "Het Bed van Napoleon" in Linden?" (*Did Napoleon really sleep in "The Bed from Napoleon" in Linden?)*
The mystery is closely coupled to a physical location, being a restaurant located in Linden (Flemish Brabant) called 'The Bed of Napoleon". It is a local myth that Napoleon slept there when he was in the region. Taking this story as a starting point, passers-by and visitors to the restaurant are asked to give their reaction using the audio pillar installation. These reactions can then be used by the professional storyteller to tell his 'bigger' story.
Via the head set, users are invited to listen to a pre-recorded podcast telling the local story. Then the user is asked to approach the audio pillar closer and tell/record his own story reflections. This recording can be stored or deleted.

3.5 Track 5: "TikTok for Cities"

Use Case Owner: Jong Volk Brugge
Partners involved: Bits of Love
Goal: allowing lay people to publish their own stories
Targeted users: young individuals

Description:
The aim of this track is to explore ways to enable cities and communities to publish (or broadcast) stories by themselves. Thus becoming a kind of media distributor.
In the selected use case an easy to use concept will be used which goes well with younger people and allows for a modern seamless video content experience, including "fun". The solution should allow for posting challenges, creating (video) content, editing/commenting content and
The solution will be an iteration of the Y1 related demonstrator, with some additional requirements: focus on youth, open format, driven by challenges, hyper local, video first, user generated content.
The hyperlocal use cases will be further defined in collaboration with Jong Volk by the end of 2021.

3.6 Track 6: Mobile Media Fablab

Use Case Owner:Middelheim Park Antwerpen
Partners involved: VRT, Studio Dott, (KU Leuven)
Goal: provide on the spot storytelling support
Targeted users: less media savvy audience interested in bringing their story

Description:
This track aims at experimenting with the concept of a unit which can be brought on location to support people in telling their stories and experimenting with new media. It will act as a social meeting point in an urban environment. The box will be a packaging of existing building blocks for media gathering and analysis brought together in a single product towards the end users.
As a specific use case, the Middelheim museum park in Antwerp has been selected. Middelheim wants to apply John Falk's personas in their specific context. (*John Falk describes 5 types of personas, typically for the museum context:: explorers, professional/hobbyist, facilitators, experience seekers, rechargers*) They wonder which aspects of the museum appeal to which type of visitor? This could help Middelheim to reach and serve all types of visitors. The idea is to find out what kind of persona the visitors are by analyzing their stories in the context of the Museum.
Important in this case is to find ways to engage people to tell their story by making them part of something, allowing them to learn/experiment and further share their story.
This case will be split in 3 parts: 51) an exploration phase to create a reference dataset with persona behaviour, (2) technology supported dataset enrichment linking observed and/or hidden motivations to persona's and (3) an operational phase (*out of scope of the project)*

3.3 Year 3 Use Cases

In Y3 some of the concepts introduced in Y2 will be further validated either on their own and/or in combination in a final demonstrator.
As a preliminary final demonstrator use case a Mobility project in Heverlee has been selected focusing on a street where a primary school is located and a number of accidents have already happened. Through a participatory process, it will be investigated how to make the school environment safer. The street is used by a wide variety of users e.g. school, residential care, restaurants, and public playground. The goal of this experiment will be to (1) investigate whom can be reached and what input can be get through the different tools already developed and see how the tools interact and (2) based on the user stories about the way different users move around the street, create understanding for different concerns and desires and trying to get a supported street design solution.
An additional use case will be focusing on the development of the Spacial Policy Plan for the city of St Niklaas
The Y3 use cases will be described in more detail in the next version of the deliverable.

4. Conclusion

In all of the proposed scenarios or their corresponding major comments, gaining insights for urban planning and policy making is part of the focus. This appears to be one of the most valuable goals and it would therefore be logical to consider this in the scenario that would be developed. Another recurring concept is that of a system which is permanently in place for some general functionalities, but which can also be used to run certain specific campaigns to gather stories and ideas about very specific events such as planned urban change in the area where the physical installation resides. Furthermore, it is often stressed that it is important to consider how the system can be made in such a way that it will attract passers-by to interact with it. This could be done by creating an element of surprise with the system's appearance, which draws the attention.

Going forward, it would be valuable to do some additional work on defining the shape of the interactions with the system, the media formats which will be supplied by the different parties using the system and how to keep the installation interesting and compelling if it were to be a permanent installation. For the next steps, a scenario should be chosen to guide the research activities concerning user requirements, technical requirements and storytelling requirements which will further shape the concept.