Requirement ID	001	**Version**	0.1	**Last Update Date**	03/10/2024
Title	User Interface				
Description	Use a modern JavaScript framework, such as angular. Create a responsive navigation (mobile/tablet, PC).				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Communication, Obtain feedback, Validate satisfaction, Facilitate Citizen Actions on Shared Spaces				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)	Github/Gitlab/… repository				
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	002	Version	0.1	Last Update Date	03/10/2024
Title	Interactive Map Integration				
Description	Integrate a map service (Google Maps, Mapbox, …) for cartographic visualization. Display markers on the map to highlight desired locations, with colour based code (done, ongoing, planned, building, …). Display toggle to switch between map and orthophotography.				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Communication, Obtain feedback, Validate satisfaction, Facilitate Citizen Actions on Shared Spaces				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)	License if using a map service needing a license				
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	003	Version	0.1	Last Update Date	03/10/2024
Title	Hotspot Details				
Description	Display the hotspot details in a popup. That popup must show one or multiple pages. Data shown on these pages can be of the following type: • Pictures • 360 Google Street View • Videos • Text • Vote (for alternatives) – Is it same as OGS? • Vote (OGS, see TR_004) • KPI visualization – Should it be a type of its own or can it just be a mix of all the other items?				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Communication, Obtain feedback, Validate satisfaction, Facilitate Citizen Actions on Shared Spaces				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)					
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	004	**Version**	0.1	**Last Update Date**	03/10/2024
Title	OGS – Opinion Gathering System				

Description	To gather user feedback, the system should allow to:
	• Embed Google Forms directly in the popup
	• Create custom simple forms with the following options (one or multiple in one form):
	    o Vote [0;10]
	    o Vote [yes/no]
	    o Free text
	To be discussed: The free text field should warn user to not enter sensitive and/or personal information				

Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Obtain feedback, Validate satisfaction				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)					
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	005	**Version**	0.1	**Last Update Date**	03/10/2024
Title	Booking System				
Description	The booking system is integrated within the popup. The availability must be real-time. A reservation must be confirmed instantly, or the user is notified of an error (not available anymore, …)				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Facilitate Citizen Actions on Shared Spaces				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)					
Type	Non-Functional				
Priority Level	Optional				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	006	Version	0.1	Last Update Date	03/10/2024
Title	Management Dashboard				
Description	The system should have a dashboard allowing users (cities, not citizens) to upload/manage the data shown to citizens on the platform. This dashboard should also allow cities to see the basic survey results. The dashboard should also allow to manage bookings.				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Communication, Obtain feedback, Validate satisfaction				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)					
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	007	**Version**	0.1	**Last Update Date**	03/10/2024
Title	Backend development				
Description	The backend service must be done using a recent framework (such as Spring Boot). It must allow a connection to a data management system. The backend architecture should include a data management such as PostgreSQL. The backend service should expose one API for the UI and one API to manage/upload data (and/or management UI)				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Communication, Obtain feedback, Validate satisfaction, Facilitate Citizen Actions on Shared Spaces				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)					
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	008	Version	0.1	Last Update Date	03/10/2024
Title	Integration and Testing				
Description	System Integration: • Ensure seamless integration between frontend and backend components. • Integrate third-party services for maps, surveys, and notifications as needed. User Testing: • Conduct thorough testing with a focus group from the local population to gather initial feedback. • Iterate on the design based on user feedback to enhance usability and functionality.				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Communication, Obtain feedback, Validate satisfaction, Facilitate Citizen Actions on Shared Spaces				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)					
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	009	Version	0.1	Last Update Date	03/10/2024
Title	Authentication				
Description	Users accessing administration panel should be authenticated: This authentication can either be done using a simple user management or using something like Keycloak. Same for users accessing booking.				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Communication, Obtain feedback, Validate satisfaction, Facilitate Citizen Actions on Shared Spaces				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)					
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	010	**Version**	0.1	**Last Update Date**	03/10/2024
Title	Personal Data Handling				
Description	We should inform users about potential data collection. We should also ensure to conform to GDPR. Potential user data in free text for OGS and for booking system (mail, phone, name, …)				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Obtain feedback, Validate satisfaction, Facilitate Citizen Actions on Shared Spaces				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)					
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	011	**Version**	0.1	**Last Update Date**	03/10/2024
Title	Deployment and Maintenance				
Description	Hosting and Deployment: Deploy the application on cloud services like AWS, Azure, or Google Cloud. Maintenance and Updates: • Establish a maintenance plan for regular updates and bug fixes. • Monitor system performance and user feedback to continuously improve the application.				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Communication, Obtain feedback, Validate satisfaction, Facilitate Citizen Actions on Shared Spaces				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)	Cloud service license				
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	012	**Version**	0.1	**Last Update Date**	03/10/2024
Title	KPI integration in map				
Description	Some KPI must be rendered on the map.				
Relevant Cities	Alverca, Barcelona				
Relevant Use Case(s)	Communication, Obtain feedback, Validate satisfaction				
Relevant Task(s)	2.4, 2.5, 5.1 (?), 7.1 (?)				
Relevant Objective(s)	2, 3, 5				
Involved stakeholders/actors					
Prerequisite(s)	License if using a map service needing a license				
Type	Non-Functional				
Priority Level	Mandatory				
Identified by Partner(s)	Inetum				
Status	Proposed				
Comments/Remarks					

Requirement ID	TR-13	Version	0.1	Last Update Date	18/10/2024
Title	2D/3D visualisation of city maps				
Description	Provide a visualisation platform for 2D cartography and 3D terrain models, integrating self-modelled buildings.				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Visualising ongoing and future city projects				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O2, O5				
Involved stakeholders/actors	City officials, citizens, urban planners, application developers				
Prerequisite(s)	Integration with GIS platforms, 3D rendering engine				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				
Comments/Remarks					

Requirement ID	TR-14	Version	0.1	Last Update Date	18/10/2024
Title	Object and layer management for 2D/3D maps				
Description	Enable system administrators (and local actors, if necessary) to create and manage (2D/3D) objects with various attributes and assign them to specific layers of the city maps.				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Managing city maps, including layers for different proposals and their KPIs.				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O2, O5				
Involved stakeholders/actors	City administrators, urban planners, application developers.				
Prerequisite(s)	Frontend and backend data management for object creation.				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				
Comments/Remarks					

Requirement ID	TR-15	Version	0.1	Last Update Date	18/10/2024
Title	Points of Interest (PoI) management				
Description	Enable city officials, local actors, and/or system administrators to create, modify, and delete Points of Interest, linking alternatives with associated KPIs.				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Managing city proposals and monitoring KPIs related to urban development				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O1, O2, O3, O4				
Involved stakeholders/actors	City administrators, urban planners, local actors, system administrators				
Prerequisite(s)	Data model design for PoI creation and management, role-based filtering.				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Approved				
Comments/Remarks					

Requirement ID	TR-16	Version	0.1	Last Update Date	18/10/2024
Title	Sensor data integration				
Description	Real-time data integration from city sensors (e.g., environmental sensors, traffic monitoring).				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Data-driven decision-making for city planning, including monitoring green area increase and pollution reduction				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O2, O4, O5				
Involved stakeholders/actors	Urban planners, data analysts, city officials, application developers				
Prerequisite(s)	Real-time data ingestion pipelines and sensor infrastructure are in place				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				
Comments/Remarks					

Requirement ID	TR-17	Version	0.1	Last Update Date	18/10/2024
Title	Role-based filtering of data				
Description	Role-based filtering mechanism to display specific PoIs and project details based on the user's role (e.g., local business, citizen).				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Communicating relevant information to stakeholders and citizens.				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O2, O4, O5				
Involved stakeholders/actors	Local businesses, city officials, citizens.				
Prerequisite(s)	User roles management system, PoI data classification.				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				

Requirement ID	TR-18	Version	0.1	Last Update Date	18/04/2024
Title	Backend for real-time data management				
Description	Develop a backend to handle real-time data ingestion and API management for sensor data and city map updates.				
Relevant Cities	All cities				
Relevant Use Case(s)	Supporting real-time decision-making by ensuring continuous data flow into the platform.				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O2, O4, O5				
Involved stakeholders/actors	IT teams, data engineers, application developers, system administrators				
Prerequisite(s)	Real-time data pipelines, API development.				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				

Requirement ID	TR-19	Version	0.1	Last Update Date	18/10/2024
Title	Cloud deployment and monitoring				
Description	Deploy the system on cloud infrastructure (e.g., AWS, Azure), ensuring scalability, monitoring, and regular updates.				
Relevant Cities	All cities				
Relevant Use Case(s)	Ensuring system stability, scalability, and continuous operation for the digital twin platform.				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O2, O4, O5				
Involved stakeholders/actors	IT administrators, cloud engineers, database operators, application developers				
Prerequisite(s)	Cloud infrastructure, monitoring tools.				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				

Requirement ID	TR-20	Version	0.1	Last Update Date	18/10/2024
Title	Opinion gathering system (OGS)				
Description	Implement a feedback system to collect opinions from users through surveys, rating systems, and textboxes.				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Gathering feedback for internal decision-making processes.				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O2				
Involved stakeholders/actors	Citizens, city officials, urban planners.				
Prerequisite(s)	Frontend and backend integration for data collection and analysis.				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				

Requirement ID	TR-21	Version	0.1	Last Update Date	18/10/2024
Title	Opinion data analysis and reporting				
Description	Analyse collected data from the OGS, such as sentiment analysis and commonly used feedback terms.				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Supporting city decision-making with real-time citizen feedback.				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O2				
Involved stakeholders/actors	Data analysts, city officials.				
Prerequisite(s)	Backend integration for data processing and reporting tools				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				

Requirement ID	TR-22	Version	0.1	Last Update Date	18/10/2024
Title	Administrative tools for proposal management				
Description	Provide administrative capabilities for city officials to define and manage proposals, link them to KPIs, and handle real-time data integration.				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Managing ongoing and future city projects and their impact through KPIs.				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O2, O4				
Involved stakeholders/actors	City officials, project managers, application developers				
Prerequisite(s)	Backend development for proposal management, KPI data integration.				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				

Requirement ID	TR-23	Version	0.1	Last Update Date	18/04/2024
Title	KPI-based proposal visualisation				
Description	Display KPIs linked to project proposals, visualising data such as environmental impact (green area increase, pollution reduction).				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	WP2 and WP3 tasks				
Relevant Task(s)	Enabling city stakeholders to assess the effectiveness of different urban proposals.				
Relevant Objective(s)	O2				
Involved stakeholders/actors	City officials, project managers.				
Prerequisite(s)	KPI definition, data model for proposals, real-time data integration.				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				

Requirement ID	TR-24	Version	0.1	Last Update Date	18/10/2024
Title	6 DoF user interaction system				
Description	Implement a 6-Degrees of Freedom (DoF) system for users to freely navigate within the 3D city model.				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Allowing stakeholders to explore and visualise city areas with maximum flexibility.				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	O4				
Involved stakeholders/actors	City officials, citizens, urban planners.				
Prerequisite(s)	3D engine integration, frontend development for interaction.				
Type	Functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				

Requirement ID	TR-25	Version	0.1	Last Update Date	DD/MM/YYY
Title	User acceptance testing (UAT) and iteration				
Description	Perform UAT with stakeholders to gather feedback and iterate on the platform design and functionality.				
Relevant Cities	Paris, Bucharest, and their replicator cities				
Relevant Use Case(s)	Ensuring the platform meets the functional needs of all stakeholders.				
Relevant Task(s)	WP2 and WP3 tasks				
Relevant Objective(s)	All				
Involved stakeholders/actors	City officials, citizens, urban planners, application developers				
Prerequisite(s)	Completed development, test case creation.				
Type	Non-functional				
Priority Level	Mandatory				
Identified by Partner(s)	DIGI				
Status	Proposed				