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BUILDING ADMINISTRATIVE CAPACITIES IN THE DANUBE REGION

Terms of Reference

Smart City parking management for the city of Sombor/Serbia

V1.0, 13 December 2023

Österreichischer Städtebund

KDZ CENTRE FOR PUBLIC ADMINISTRATION RESEARCH

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WITH FUNDING FROM AUSTRIAN DEVELOPMENT COOPERATION

I Introduction

1 Project Background

In the framework of the BACID Program - Building Administrative Capacity in the Western Balkan and Moldova, with funding from the Austrian Development Cooperation and implemented by the Austrian Association of Cities and Towns (AACT) and KDZ – Centre for Public Administration Research (KDZ), in cooperation with NALAS - Network of Associations of Local Authorities of South East Europe (NALAS), a Smart City parking management for the city of Sombor in Serbia will be developed. KDZ and NALAS are committed to promoting municipal digitalization and smart city system implementations for the improvement of the quality of life of the citizens. This is key to improving the quality of local government policies and reforms, encouraging increased accountability, and facilitating citizens' engagement in policymaking.

The City of Sombor is an administrative, medical, and educational centre of the West Backa District and as such a catchment area for 200,000 people with major challenges in terms of urban mobility and parking, also due to the lack of sufficient public transport infrastructure.

This initiative for a Smart City project is for the implementation of an intelligent Parking and Air Quality Monitoring System. The core objective is to revolutionize urban mobility and enhance environmental awareness through meticulous data collection and seamless public communication. The system, designed to provide real-time information on available parking spaces and occupancy status, employs a sophisticated network comprising strategically placed Variable Message Signs (VMS) displays, user-friendly web interfaces, and a dedicated mobile application.

Incorporating an environmental dimension, the system also monitors Air Quality at the designated display locations, aligning with the Smart City philosophy of promoting environmental consciousness and informed decision-making. The open data format for web interfaces emphasizes our commitment to transparency and adaptability, inviting potential vendors to contribute to the evolution of the system.

This Smart City project encourages innovative solutions by allowing in-depth analyses of driving habits and needs. By identifying bottlenecks and patterns, the system aims to address traffic-related challenges and contribute to the city's adaptability. The immediate goal is to minimize individual drivers' search time for parking spaces, enhancing urban mobility and directly alleviating traffic congestion in the city centre.

2 Objectives and Expected Results

The objectives of the Smart City project are to revolutionize the Parking System, adopting an intelligent, smart, and holistic approach to urban mobility and environmental awareness.

- Improved local government services for Efficient Parking Management: Streamline parking information dissemination to minimize search time for individual drivers, contributing to improved traffic conditions in the city centre.

- Enhanced Citizen Engagement: Connect the Smart City project with local government sustainability and mobility plans, establishing effective communication channels with citizens to promote informed decision-making.
- Environmental Monitoring and Awareness: Incorporate an environmental dimension by monitoring Air Quality at key locations, providing residents with immediate awareness of current air quality levels.
- Data Transparency and Accountability: Implement an open data format for web interfaces, fostering transparency and inviting local researchers and urban planners to analyse data for informed policy-making.
- Implement Innovative Solutions for Urban Challenges: Act as a catalyst for innovative solutions by identifying bottlenecks and patterns in driving habits, and addressing traffic-related challenges in collaboration with local government initiatives.

The following results are expected to be achieved:

- Smarter parking management for a more efficient urban environment.
    - Improved access to timely, accurate, reliable data and real-time information on available parking spaces and their occupancy status results in reducing the time and driving in the city centre.
- Creating citizens' participation in improved Air Quality
    - Sophisticated opportunity on monitoring Air Quality at the display locations offers citizens instant awareness of the current air quality levels, stimulates advocacy for improved local government policies, legislation, and practices in improvement of air quality, as well as a personal contribution to environmental protection by using sustainable mobility options.
- Open and transparent communication with the citizens using several channels (VMS, web, and mobile apps) for collaboration in sustainability, improved understanding of real-time data collection and local government data.
- Publishing Open data on parking occupancy and availability, with details on occupancy during day hours, weekdays weekends, and months of the year facilitating in-depth analyses of driving habits and needs, identifying bottlenecks and patterns, enabling the creation of innovative solutions to address traffic-related challenges
- Publishing Open data on air quality data, with details during day hours, weekdays weekends, and months of the year enabling new solutions to sustainability and ensuring transparency and future adaptability.

II Technical specification

BACID III project is supporting the city of Sombor to acquire a smart parking solution that is tailor-made to meet its unique needs and objectives, ensuring the transparency, efficiency, and effectiveness of the system while fostering sustainable urban mobility and data-driven decision-making.
The main functionalities of the system are:

1- to manage and monitor a minimum of 70 parking spaces,
2- transparency and real-time data publication,
3- integration of data in the parking payment application to promote sustainable mobility, and
4- publication of parking and air quality data as open information on the municipal website.

1 Project Overview

The Smart City Parking System shall represent a cutting-edge urban solution designed to revolutionize parking management and enhance environmental awareness. Comprising a central management system, cloud service, a dedicated smart application for parking payments, and innovative sensors, this system is poised to redefine urban mobility. The heart of the system shall lie in its smart sensors, discreetly integrated into parking spaces, and accompanied by corresponding smart displays equipped with air pollution sensors. This intricate network shall communicate through network data transmission technology, ensuring real-time updates on parking space availability and air quality. The system shall not only be autonomous, thanks to built-in battery-powered sensors but also versatile, supporting all major smartphone operating systems through a user-friendly application.

Through a unified ecosystem, the Smart City Parking System shall provide users with crucial information on available parking spaces, accessible via smart displays, a dedicated application, and web portal access. Users shall seamlessly pay for parking using payment cards, minimizing reliance on traditional and often inconvenient payment methods. The Network Gateway shall facilitate the transmission of occupancy data to a Cloud service, where it shall undergo processing for effective management. Notably, the system shall incorporate an air pollution sensor, disseminating vital environmental data at designated locations. This unique integration shall empower citizens to make informed transportation choices, considering both parking availability and air quality. By encouraging the use of environmentally friendly modes of transport, the system shall contribute to reducing fuel-powered vehicles, alleviating congestion, and promoting sustainable urban living.

The overarching goal of the Smart City Parking System shall be to not only streamline parking processes but also foster a more conscious and sustainable approach to urban mobility. By providing real-time information on parking availability and air quality, the system shall equip citizens with the tools to plan transportation that aligns with environmental concerns. Additionally, the user-friendly payment application shall eliminate the need for traditional, resource-intensive parking infrastructure, marking a step towards a more efficient and technologically advanced urban landscape.

2 Work Packages

In line with this, we present a detailed list of demands and technical requirements to be included in the technical specification. They are aimed at shaping a smart parking solution that aligns with the city's sustainable urban mobility goals and fosters data-driven decision-making. Please consider the following demands and technical requirements and their comprehensive explanations as outlined in the subsequent sections. In terms of the first functionality, is to manage and monitor a minimum of 70 parking spaces. This functionality will include detailed and structured data on:

WP1. System Design and Planning:

1. Conduct a comprehensive analysis of the municipality's parking infrastructure and requirements.
2. Develop a detailed system architecture and design plan for the Smart City Parking System.
3. Define technical specifications, including sensor integration, communication protocols, and compatibility with smartphone operating systems.

WP2. Hardware and Sensor Implementation:

1. Procure and install smart sensors for parking spaces, ensuring seamless integration with the data transmission network.
2. Deploy air pollution sensors at designated locations, establishing a network for real-time data collection.
3. Implement smart displays with integrated sensors, ensuring accurate and visible information on parking space availability and air quality.

WP3. Software Development:

1. Develop a central management system to handle data processing, storage, and user authentication.
2. Create a user-friendly smart application for payment processing, compatible with major smartphone operating systems.
3. Implement a cloud service to receive, process, and store data transmitted from the sensors and displays.

WP4. Data Transmission Network Setup:

1. Establish a Network Gateway for seamless data transmission between the smart sensors, displays, and the central management system.
2. Ensure network reliability, scalability, and security to handle data from multiple sensors and displays across the municipality.

WP5. User Interface and Experience Enhancement:

1. Design and implement an intuitive user interface for the smart application, web portal, and smart displays.
2. Conduct usability testing to refine the user experience, ensuring ease of navigation, payment processing, and access to real-time information.

WP6. Testing and Quality Assurance:

1. Conduct thorough testing of the entire Smart City Parking System, including hardware, software, and network components.

2. Address any identified issues, bugs, or performance concerns through iterative testing and debugging processes.
3. Ensure the system meets security standards and data privacy regulations.

WP7. Training and User Adoption:

1. Develop training materials for both end-users and municipal staff responsible for system administration.
2. Conduct training sessions to familiarize users with the smart application, displays, and web portal.
3. Provide ongoing support and resources for user adoption and troubleshooting.

WP8. Deployment and Integration:

1. Roll out the Smart City Parking System in phases, starting with a implementation in a specific area.
2. Integrate the system with existing municipal infrastructure and services.
3. Monitor the deployment, addressing any challenges and ensuring a smooth transition.

In terms of the sustainability, the following activities shall be implemented by the Municipality of Sombor:

A. Monitoring and Optimization:

- Establish a monitoring system to track the performance of the entire Smart City Parking System.
- Implement optimization measures based on data analysis, user feedback, and system performance metrics.
- Continuously assess and update the system to accommodate future technological advancements and changing municipal needs.

B. Documentation and Knowledge Transfer:

- Create comprehensive documentation for the Smart City Parking System, including user manuals, technical specifications, and troubleshooting guides.
- Facilitate knowledge transfer sessions to ensure municipal staff can maintain and troubleshoot the system independently.
- Archive all project-related documentation for future reference and system maintenance.

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WP1. System Design and Planning:

1. Comprehensive analysis of parking infrastructure and requirements.
2. Detailed system architecture and design plan.
3. Define technical specifications.

WP2. Hardware and Sensor Implementation:

1. Procure and install smart sensors for parking , integration with LoRaWAN.
2. Deploy air pollution sensors for real-time data collection.
3. Implement displays with integrated sensors, ensuring information on parking availability and air quality.

WP3. Software Development:

1. Develop a central management system for data processing, storage, and user authentication.
2. Upgrade or create new user-friendly smart application for payment processing on smartphone.
3. Implement a cloud service to receive, process, and store data transmitted from the sensors and displays.

WP4. Network Setup:

1. Establish a Network Gateway for seamless data transmission between the smart sensors, displays, and the central management system.
2. Ensure network reliability, scalability, and security to handle data from multiple sensors and displays across the municipality.

WP5. User Interface and Experience Enhancement:

1. Design and implement an intuitive user interface for the smart application, web portal, and smart displays.
2. Conduct usability testing to refine the user experience, ensuring ease of navigation, payment processing, and access to real-time information.

WP6. Testing and Quality Assurance:

1. Conduct testing of the entire Smart City Parking System, incl. HW, SW, and network components.
2. Address any identified issues, bugs, or performance concerns by iterative testing and debugging processes.
3. Ensure security standards and data privacy reg.

WP7. Training and User Adoption:

1. Develop training materials for both end-users and municipal staff responsible for system administration.
2. Conduct training sessions to familiarize users with the smart application, displays, and web portal.
3. Provide ongoing support and resources for user adoption and troubleshooting.

WP8. Deployment and Integration:

1. Roll out the Smart City Parking System in phases, starting with an implementation in a specific area.
2. Integrate the system with existing municipal infrastructure and services.
3. Monitor the deployment, addressing any challenges and ensuring a smooth transition.

3 Technical requirements

The technical proposal and system implementation must provide thorough descriptions of the following essential requirements.

3.1 System Capacity and Configuration:

I. Ensure the system is capable of managing and monitoring a minimum of 100 parking spaces, and fully scalable to 10.000 devices. Cloud-based solution installation is required.

II. By system design and planning, specify the required number and type of sensors for vehicle detection using infrared technology, data collectors, and relays for efficient parking space management of a minimum of 100 parking spaces.

III. By system design and planning, specify required Data collector/relay - Data collectors (Gateways) to be placed. Additionally, describe if agreements with telco operators are required or active (with operating prices included) and if full coverage is provided.

IV. List of required technical specifications for the IR sensors:

- Installation mode: Ground enclosure with interchangeable battery
- Dimensions Width Max. 76mm, Height Max. 60 mm
- Sensor height above ground Max. 16mm
- LoRaWAN data transfer technology or equivalent
- Detection Mode Min. Dual Dynamic Mode
- Maximum detection speed 15 sec
- Minimum detection speed 7 sec
- Additional energy collection Integrated solar panel
- Sun Protection Min. UV Protection
- Battery Type Min. LiSoCl2
- Power Supply Voltage: Min. 3.6V
- Minimum working temperature -40°C
- Maximum working temperature +85°C
- Protocols Min. LoRaVan, LoRa P2P
- Platform Min. STM32VLE5CCU6, BC660
- Band 850-925MHz
- Power Min. 21dBm
- Autonomy Min. 5 years
- IP Protection Min IP68
- IQ Protection Min IK10
- Internal antenna

V. Sensors warranty is required for minimum 24 months, proved by a certificate from the equipment manufacturer or the local distributors office (for the territory of the Republic of Serbia) confirming that the required warranty period is supported by the manufacturer of the equipment. The certificate is required to all offered equipment addressed on the end user.

VI. Battery warranty is required for minimum 12 months.

VII. At least 3 locations are required for placing the VMS. Describe details about the VMS, their quantity, and specific locations where they need to be installed.

VIII. List of required technical specifications for the VMS:

- Screen dimensions Width Min. 680mm, Height 480mm and Depth 118mm
- Power supply: 220V AC 50 HZ
- Electricity Max. 9.85A
- Min. TCP/IP Protocols
- IP Protection Min IP65
- Dimension of LEDs max. 35x35
- Pixel Density Min 15625
- Min 40x20 basic module resolution
- Minimum working temperature -30°C
- Maximum working temperature +80°C
- Illumination Min 4500 cd/m2
- Number of modules Min 6
- Power Max 866W/m2

IX. Warranty 24 months manufacturer's warranty

3.2 Data Collection and Connectivity:

I. Deployment of a Network for data transmission and collection is required. In the tech proposal, describe the use of the network for data collection for parking and air quality and possible use GSM/GPRS network or LORAWAN. Examine and describe the advantages and disadvantages of opting for the most fitting choice.

II. The number of data transmissions required is min 100 messages per hour. In the technical proposal specify the required data frequency and transmission protocols for efficient data retrieval and analysis.

III. The characteristics of the battery and its drainage need to be specified according to the required transactions.

IV. Deployment of a robust Central Management System to efficiently handle data processing, storage, and user authentication for the entire Smart City Parking System and to serve as the backbone of the system, ensuring seamless communication between sensors, displays, and the cloud service. The cloud service will play a crucial role in data management, supporting the overall functionality of the Smart City Parking System.

3.3 Scalability:

I. Mandatory system requirement is its scalability and expansion as well as easy integration of new sensors, in the future (noise pollution sensors).

II. In the tech proposal, please specify the scalability and compatibility with additional sensors.

III. Software development and platform upgrades are required. Please describe it in the technical proposal.

3.4 Variable Message Sign Systems (VMS) interface:

I. Required information to be displayed on VMS are: real-time parking availability, air quality index, or sustainable mobility tips.
II. Visual presentation of the interface is required in the proposal
III. Multilanguage options are required and visual signs for the AQ data for communication with different age groups

3.5 Payment Application Development/Enhancement:

I. Required new development or an upgrade to the existing parking payment application with features for Smart cloud payment for all OS (Android and IoS).
II. If an upgrade is proposed, please specify the software development and platform upgrade to be provided, including processing of all of the custom requirements, with proposed development hours.
III. Vital motivational inputs such as a feature that calculates calories burned when using a bike or walking for 15 minutes need to be included

3.6 Air Quality Monitoring:

I. AQ Monitoring using sensors is required. Air pollution sensor is required for the PM particles 2.5, 4, 8 10. Possible measurement parameters may include nitrogen dioxide (NO2), sulfur dioxide (SO2), carbon monoxide (CO), ozone (O3).
II. The accuracy level for each measured pollutant, considering the intended application needs to be described.
III. It is required to clearly state the detection range for each pollutant, indicating the minimum and maximum concentrations the sensor can reliably measure.
IV. AQ Monitoring configurable with the necessary software based on Cloud technology is required.
V. Placements is envisaged on the VMS.
VI. The Tech proposal needs to specify the installation of indicative sensors for air quality (AQ) and their placement on the VMS.
VII. It is required to describe the calibration methods to be applied and intervals to ensure the sensor's accuracy over time.
VIII. Operating temperature min -20°C, max 40°C
IX. Expected lifespan of sensors is min 3 years. It is required to provide information on the sensor's durability in different environmental conditions.
X. In the technical proposal specify the required data frequency, and transmission protocols for efficient data retrieval and integration in the system.
XI. Data Outpput with the format and data structure, using units of measurement need to be specified and harmonized within the system
XII. Define the symbols and indicators to be used on the VMS for displaying AQ information.

3.7 Open Data Publication:

I. Open Data: Uploaded data for the interactive visualizations shall be made available for download as open data. This basically means the ability to add the following information per uploaded dataset: Indicating an open license (e. g. CC-BY); technical formats that allow re-use (e. g. CSV, JSON, XML or RDF); described by Metadata according to DCAT.AP

II. The tech proposal needs to describe the implementation of the required publication of parking data and air quality data as open data on the municipal website to ensure transparency. Specifying the format, frequency, and accessibility of this open data and alignment with the national regulations of Open Data publications is required.

3.8 Sustainable Urban Mobility Plan (SUMP):

I. It is mandatory to enable data collection capabilities alignment with the development of the Sustainable Urban Mobility Plan. Tech proposal shall specify how it will be offered.

II. The data inputs required for the planning and development of the SUMP are CSV/JSON or RestAPI protocol

4 Outputs and Deliverables under the contract

The contractor shall cooperate with NALAS and KDZ in each stage of development, as per the agreed implementation methodology and time and action plan. In particular, the contractor shall provide KDZ and NALAS following outputs and deliverables:
Output 1. Parking Infrastructure Analysis Report, methodology, time, and action plan for implementation.
Output 2. System Architecture and Design Plan: with the overall structure of the Smart City Parking System and Design plan specifying the integration of smart sensors, displays, and air pollution sensors.

D1. Smart Sensors Installation Report:

- D 1.1. An installation report detailing the deployment of smart sensors, ensuring they seamlessly integrate with the LoRaWAN or similar network.
- D 1.2. Include testing procedures and verification of sensor functionality to validate accurate data transmission.

D2. Network Gateway Establishment:

- D 2.1. Implementation of a fully operational Network Gateway to facilitate seamless data transmission
- D 2.2. Verification of the Gateway's functionality through testing, ensuring it effectively relays real-time data from sensors and displays.
- D 2.3. Implementation of security protocols and measures to safeguard data integrity and privacy, along with scalability features to accommodate future expansion and increased data flow.

D3. Smart Displays Implementation and Performance Documentation:

- D 3.1. Detailed documentation report on the procurement and implementation of smart displays with integrated sensors. The technical specifications of the smart displays, including display accuracy, visibility, and integration with the parking sensor network.
- D 3.2. Performance assessment, ensuring that the smart displays accurately convey real-time information on parking space availability and air quality.

D4. Air Pollution Sensor Network Deployment Documentation:

- D 4.1. Report on the deployment of air pollution sensors at designated locations.
- D 4.2. Network architecture for real-time data collection, detailing sensor placement, coverage areas, and communication protocols, including testing results to confirm the effective functioning of the air pollution sensor network.

D5. Central Management System (CMS) development and deployment and implementation of Cloud Service

- D 5.1. Development of the system outlining the architecture, functionalities, and technical specifications of the Central Management System.
- D 5.2. Deployment of cloud service to have a crucial role in data management, supporting the overall functionality of the Smart City Parking System.
- D 5.3. This documentation shall serve as a reference for administrators, developers, and any stakeholders involved in the system's maintenance and future enhancements.

D5: Smart Application Software with documentation (upgrade or new development shall be agreed in the WP1)

III Invitation

Teams of individual consultants, businesses, or companies with proven experience and expertise in conceptualizing and developing tools and websites for data visualizations and web design are invited to submit a proposal for these ToRs.

1 Proposal submission

The following format and sequence should be followed in order to provide consistency in the Consultant response and to ensure each proposal receives full and fair consideration. All pages should be consecutively numbered.

Technical Offer:

a. Title Page, showing Consultant name, address, and contact information;
b. One-page letter of introduction;
c. Table of Contents, including page numbers;
d. A presentation of the consultant and its suitability for the assignment;
e. A summary of the key features of the proposal;
f. The body of the proposal focusing on the methodology of the proposed research approach, including: objectives, a detailed approach for the execution of the assignment, the rationale behind the proposal of different tools and data visualization options, proposed time and activity plan.

Certifications:

g. A presentation of a list of certifications or standards for the system implementation, sensors, VMS, and compliance with EU standards.

Maintenance Requirements:

h. The offer shall include maintenance and warranty periods, including periodic checks, to ensure continued reliable operation.

Financial Offer:

i. The Financial Offer shall contain the total budget for execution of the contract, showing separately expert fees, costs for the purchase of additional external products and services, and additional expenditures (if any). The prices should be stated in Euros, VAT excluded, following the specified Terms of Payment.
j. The financial offer shall be divided into components in accordance with the Work Packages
k. The total budget available is limited to 30.000 Euros including VAT.

Organizational Capacity Guarantee:

l. A consultant Reference List with at least 3 similar contracts
m. CVs of the experts proposed to execute the assignment.
n. Documents confirming the financial capability of the consultant.

2 ToR Terminology

The following terms will apply to these Terms of Reference and to any subsequent Contract.
Submission of a proposal in response to the ToR indicates acceptance of all the following terms:

Terminology

a) "KDZ" means Zentrum für Verwaltungsforschung (Center for Public Administration Research);
b) "BACID Program" means the project 'Capacity Building in the Western Balkans and the Republic of Moldova',
c) "NALAS" means the Network of Associations of Local Authorities of South East Europe;
d) "Contract" means the written agreement resulting from the Request for Proposal executed by KDZ and the successful vendor;
e) "Contractor" means the successful vendor selected from this Request for Proposal;
f) "Must", "Mandatory" or "Required" means a requirement that must be met in order for a proposal to receive consideration;
g) "Consultant" means a team of individuals or a company that submits, or intends to submit, a proposal in response to this Request for Proposal.

3 Closing Date and Application

To be considered, proposals must be received in email to NALAS no later than February 18th, 2024, at the following email address: info@nalas.eu, with subject "ToR: Development of Smart Parking Platform'. The Technical and financial offer should be presented in separate as clearly marked documents.

4 Enquiries

This ToR can be downloaded from NALAS website at nalas.eu and BACID website at www.bacid.eu. Questions regarding this Request for Proposal should be directed to NALAS by e-mail to info@nalas.eu.

5 Ownership of Proposals

All documents, including proposals submitted in response to this Request for Proposals become the property of NALAS and KDZ. However, only the submissions by the successful consultant will be used. Once a contract has been awarded, the name of the successful consultant will be available to the public upon request.

6 Evaluation Criteria and Scoring

The evaluation of proposals will be undertaken by joint KDZ and NALAS Evaluation Committee. At the sole discretion of the Committee, a short list of the highest-scored consultants will be developed. The short-listed applicants may be invited to make a presentation to the Committee. After the presentation(s), the Committee will re-evaluate the short-listed proposals.
The proposals will be evaluated and rated based on the criteria set out in this ToR document. In order to do so:

- the proposal must be in English;
- the proposal must be submitted by the appropriate date and time;
- the proposal must clearly list, in detail, what services will be provided with the associated costs for each component;
- the responses must contain a list of references of past projects and work of this nature, with contact names and telephone numbers.

The Evaluation Committee will evaluate the proposals based on the following criteria:

- 40% Methodology, technical requirements, and approach – a work plan including the proposed method to accomplish the tasks identified in the ToR. Provide a brief description of your approach to execute the contract, including objectives, a detailed research approach including the tools planned to be used during the execution of the assignment and the rationale behind their use, proposed time and activity plan, based on the requirements provided in this ToR document, including explanation of any modification you would make.
- 20% Quality of the team - Appropriateness of the proposed consultants and fulfillment of the qualifications for the professional ability of the applicants in this ToR.
- 20% Previous Experience in undertaking similar work - indicate the number of projects of similar professional services and type or the number of projects of similar scale. Examples and samples of similar researches and other reports of a similar nature that have been prepared by the consulting company. Provide references from previous clients including specific contacts and phone numbers.
- 20% Cost and Ability to Meet Deadlines - the Financial Offer with a total budget for execution, broken into different budget lines, expert fees, costs for purchase of external products and services and additional expenditures (if any) with associated timelines and a detailed explanation of the deliverables and services you will provide to KDZ. The prices should be stated in EUROS, VAT included, following the specified Terms of Payment in this ToR document.

7 Terms of Payment

The payment will be done in 2 instalments, first of 30% when the WP1 is accepted and the second of 70% with the final delivery and confirmation by receiving documents signed by Municipality and contractor.

8 Consultant Expenses

Consultants are solely responsible for their own expenses in preparing a proposal and for subsequent negotiations. Short-listed proposals may be asked to make a presentation to the Evaluation Committee, which will be solely at the Consultants own expense.

9 Contract Negotiation

NALAS and KDZ reserve the right to negotiate specific terms of the contract with the short-listed proponents prior to the final award of the contract. NALAS and KDZ also reserves the right to negotiate specific terms of the contract with the Contractor as the contract progresses.

10 Logistics and timing

Location

The implementation of the project is at the location of Municipality of Sombor, Serbia. The contractor is required to deliver and install the equipment at the location, but it may work remotely and travel as needed on a need basis. Coordination with NALAS and KDZ shall take place through online tools and in person meetings.

Start date and period of implementation
The period of implementation of the contract is from 20.02.2024 to 31.5.2024.

11 Contractual Provisions

The selected Consultant - Contractor shall be contracted by KDZ-Centre for Public Administration Research as responsible implementing partner.
The final approval of deliverables shall be done by NALAS and KDZ.

Thank you for your interest in submitting a proposal. It is hoped that the information provided is of value and should anything be unclear, please contact NALAS directly.

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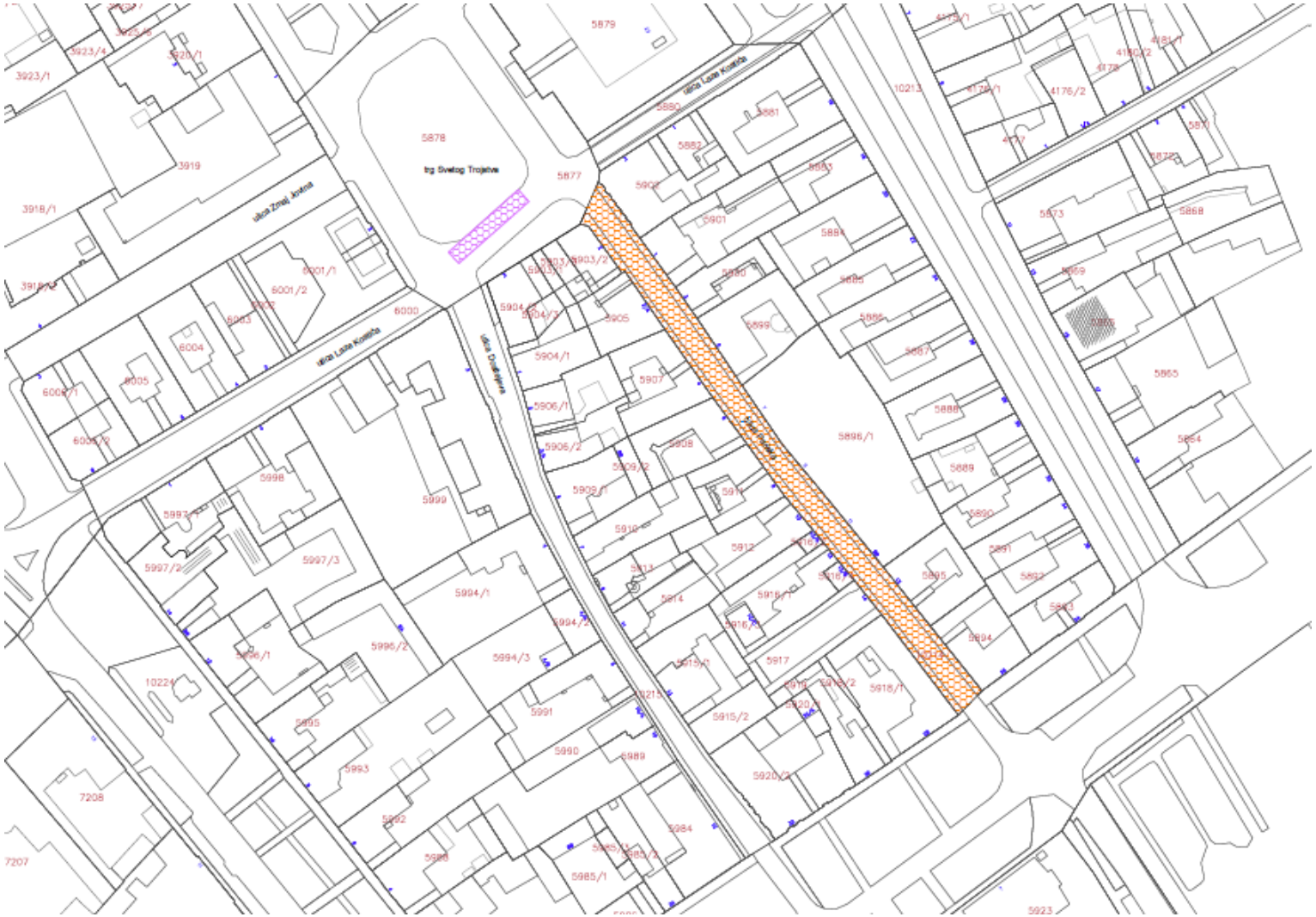
IV Annex 1- Maps of streets in Sobor



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Gant Chart Project Plan

Select a period to highlight at right. A legend describing the charting follows.

Period Highl 16

Plan Duration

Actual Start

ACTIVITY	PLAN START	PLAN DURATION	Weeks 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WP1. System Design and Planning	1	2																
WP2. Hardware and Sensor Implementation	2	12																
WP3. Software Development	3	8																
WP4. LoRaWAN Network Setup:	2	6																
WP5. User Interface and Experience Enhancement	4	2																
WP6. Testing and Quality Assurance	6	3																
WP7. Training and User Adoption	5	3																
WP8. Deployment and Integration	5	3																

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