

The European Commission's
**INTELLIGENT CITIES
CHALLENGE**

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The City of Osijek - Intelligent City Transformation Overview

ICC Final Deliverable



Executive summary

Key facts:

The city of Osijek is the 4th largest city in the Republic of Croatia with over 100,000 residents living within its administrative area. It is located in the eastern part of Croatia, where it serves as an industrial, administrative, academic, judicial and sports centre of Osijek-Baranja County (OBC), with a rapidly growing local ICT sector over the past 5-10 years. In order to foster the development of the ICT industry, the city finds crucial to digitize the local government and public services and has therefore defined development of an **e-services platform** as an end goal of this project.

City's challenges:

City's performance analysis indicated the following key challenges:

- i. Many projects are isolated projects being implemented on ad hoc basis, while only certain projects are part of the overall city strategy
- ii. Declining population & declining percentage of youth population, while the percentage of elderly has been increasing;
- iii. Insufficient human resources, i.e. workforce (project IT Academy in progress)
- iv. Silos across city departments, requires horizontal implementation of digital technologies
- v. Local elections in mid-2021.

City's vision and ambitions:

Osijek wants to become a modern international Smart city with 200,000 citizens and 25,000 students (out of which one quarter is foreign) by 2030. The ambition is for the City to constantly grow as a consequence of a healthy lifestyle provided to the citizens in the form of beautiful city promenades, recreational zones, bike trails and a lively city centre, as well as a modern and internationally-known university and most importantly numerous employment opportunities.

Prioritised solutions:

The city of Osijek has defined development of an e-services platform as a primary solution to be achieved within this project. This is expected to be achieved through: (i) internal processes enumeration; (ii) digitisation strategy development; (iii) prioritisation of initiatives and (iv) incorporation of other current initiatives.

Achieved results:

The City has enumerated over 200 internal business processes, initiated development of the City's digitisation strategy as well as made efforts to obtain EU funds for the development of the project technical documentation (however unsuccessfully).



The city of Osijek pursued an EU-supported transformation over four main stages, and this document details that journey by these sections

Overview to the city's journey and structure of this document



1 Preparation & assessment

5 months:
September 2020 – January 2021

Summary

Find out **where a city is, where it should go** and who in the ecosystem is going to **mobilise make things happen**



2 Ambition & roadmap

3 months:
February 2021 – April 2021

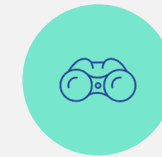
Develop a **concrete plan** to achieve **measured improvements**, collaborating with the community; push action with immediate benefits



3 Implementation

15 months
May 2021 – July 2022

Get “big moves” **done** and **see results**; take **action in partnership** with others



4 Review & way forward

2 months
August 2022 – September 2022

Measure success, and commit to **keep connections and improvements going**

Reported as one section

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Section 1

September 2020 to January
2021

The City of Osijek - Preparation and assessment

ICC transformation



Introduction | Key facts and overview of the city (1/2)



Osijek according to the 2011 census, alone has 84,104 residents, while a **total of 108,042 residents live within the administrative area of Osijek (4th largest in Croatia)**. It is located in the eastern part of Croatia, where it serves as an **industrial, administrative, academic, judicial and sports center of Osijek-Baranja County (OBC)**, with a **rapidly growing local ICT sector** over the past 5-10 years. Due to positive results of IT companies and determination of the city administration to encourage this sector, Osijek has been called the **Croatian Silicon Valley**, or Software City.



The Government of the Republic of Croatia has selected Osijek to be **the first 5G city in the Republic of Croatia**, which will significantly contribute to the development of not only the city itself, but the entire eastern part of Croatia. This is extremely important, considering the need for planning and decision-making based on large amounts of data (**Big Data**), and the need for the **Internet of Things (IoT)** inputs



In order to foster the development of ICT industry, the city finds crucial to **digitize the local government and public services**. Demand for new digital solutions in local government will create new business opportunities for ICT firms as well. New knowledge and skills are vital items of competitiveness for every company, particularly those in the ICT sector. However, less than 300 students per year are oriented or prepared to work in the ICT sector. Therefore, the development of **„Innovative education and training for up- and re-skilling”** would benefit the ICT industry and the University, as it would encourage the modernization of its programs and professors while reducing the gap between the theory and practice, promoting a flexible concept of lifelong learning for all stakeholders.

Introduction | Key facts and overview of the city (2/2)



Due to positive results of IT companies and determination of the city administration to encourage this sector, **Osijek is applying to ICC because it wants to use the potential it has, but also justify the acquired reputation.** The acquired knowledge and experience gained through the ICC program will help the city in the process of digital transformation not only within Osijek, but also the entire Osijek Functional Urban Area (UA Osijek).



UA Osijek represents an integrated area of competitive economy, sustainable development of quality of life of residents who implement their development potentials. **City of Osijek is defined as the center of urban agglomeration and is willing to transfer the acquired knowledge to all other members.** Having said this, the results of the ICC involvement will have a spill over effect on the whole region, thus improving the development of not only the applicant but also the wider region.



City of Osijek should be at the forefront of the digital transformation, and act as connecting points making sure they leverage their available capacities and resources to ensure a collective mobilization of the local digital ecosystem. Success factors for cities to act as enablers include an increased level of awareness of citizen and business needs and interests, and access to contacts with organizations who are committed to the digital transformation cause. To ensure this, local government needs to be digital itself and simplify the processes to simplify the use of its services to thriving businesses.

City Needs | State of the city overview

The state of Osijek today

The city is showing a lot of promise, especially when it comes to its ICT sector and its progressive mindset. However, **the ICT sector development may be jeopardized if certain issues are not properly addressed and resolved throughout this project.**

When compared to the data from 2001, **the picante of the youth population has been declining while the percentage of elderly has been increasing**, which is a trend that has continued since the last census

On the flip side, according to the Croatian Chamber of Commerce data from August 2019, **the number of software development companies in OBC has increased by 166% in the period from 2008-2018. The total number of employees in this sector has increased by 163%, revenues have increased by 188% while international sales have increased by a record 582%, and the net salaries rose by 37%.**

However, **the ecosystem is not connected digitally, with poor exchange and transparency of data between the stakeholders**, which requires clearer definition of data norms and policies

Key insights from city performance analysis

Higher performance observed

1 Important infrastructure projects related to the ICC are the **"IT park Osijek"**, designed as a hybrid of a business incubator and business zone that will be a central place for development of the IT sector, and the **first "5G city of the Republic of Croatia"**..

2 Within the Osijek area there are also two business incubators: **BIOS** (founder is the City) and **TERA tehnopolis** (founders are the University, OBC and the City).

3 **Osijek Software City (OSC)** brings together around 40 IT companies, which employ over 1,000 professionals, and produce quality software that is exported to foreign markets

4 **J.J. Strossmayer University is a home to 18,000 students**, and plays a key role in the development of new workforce and innovative educational approaches

5 **Electrical Engineering and Traffic High School Osijek, declared as the Center of Excellence** in the field of electrical engineering and computer science

Lower performance observed

1 **The city currently has no clear vision.** Many projects are isolated projects being implemented on ad hoc basis, while only certain projects are part of the overall city strategy

2 **Declining population & declining percentage of youth population**, while the percentage of elderly has been increasing

3 **Insufficient human resources, i.e. workforce** (project IT Academy in progress)

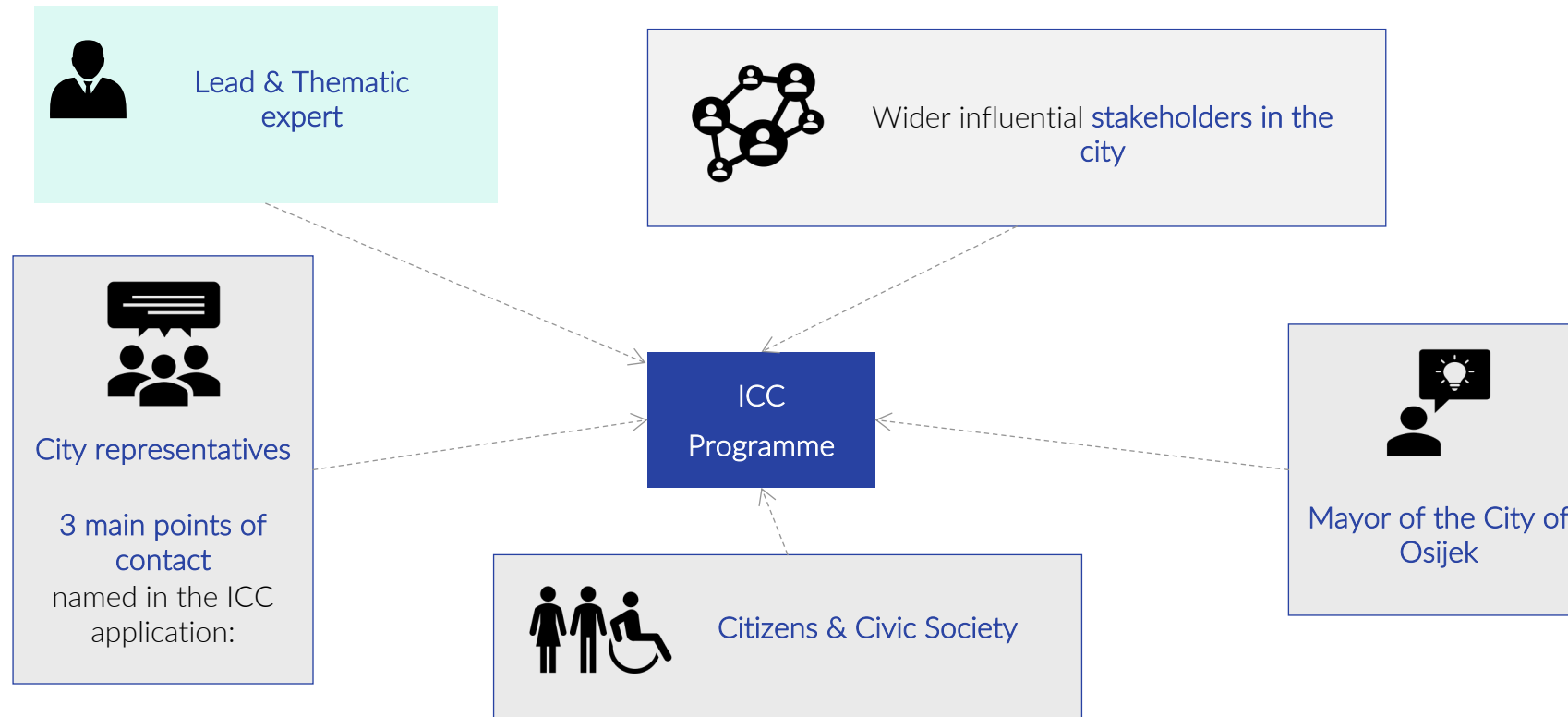
4 Silos across city departments, requires horizontal implementation of digital technologies

5 All existing **strategic documents for the City of Osijek are expiring in/by 2020.** Also, **local elections are coming up in mid-2021.**

City ecosystem | Core team and a wider city ecosystem

City ecosystem

The ecosystem of the city of Osijek consists of local administration, academia and private sector, and citizens & civic society, which will create a synergy that will enable quality execution of the project



City ecosystem | Workshops

Key discussion topics

■ Shared aspirations and vision

- Common enthusiasm towards further development and innovation in technology
- Define clear city vision and strategy to become a modern smart city
- Attract young and skilled labor and re-skill and up-skill current city population
- Enhance exchange of data in the ecosystem, and make it transparent and easily accessible
- Use digital solutions and data to better connect public administration with citizens

■ What the actors bring and how the city works together

- Experience and strong background in the IT sector
- Track record of collaboration with other cities
- Fairly strong collaboration between the public sector and the private sector
- No norms for exchange of data between the stakeholders in the ecosystem
- Lack of understanding in building long-term business models around city strategy and collaboration of stakeholders in the ecosystem

■ Urban resources for transformation

- Potential to be at the forefront of digital transformation in the wider region
- Rapidly growing ICT industry
- 5G city & IT Park
- Accelerator-incubator and specialized ICT business zone

Workshops Summary | Stakeholder workshop

Workshop overview

Stakeholder workshop was held virtually in February 2021 and included 16 participants, some of which were: City representatives, Unikom, Base 58, Orqa, Saponia, Ukop, Tržnice Osijek, GPP, RT RK, ZZSO, BIOS, J.J. Strossmayer University.

The main goal of the workshop was to introduce the ICC project to a wider local ecosystem and determine City's and citizens' needs and desires. During the workshop some of the main pain points and concerns as well as possible win-win models of engagement were identified and agreed to be discussed further in the upcoming workshops.

Key insights from the workshop

- Orqa is happy with the help of the city to the entrepreneurs, but thinks **the city is lacking sufficient human resources**, which could be resolved through: greater education and better work-life opportunities for people outside of the city (healthy lifestyle).
- City Hub, a mobile application that served to report utility problems such as improper parking, improper garbage disposal, graffiti-strewn walls, illegal dumps and the like, needs to be restored and redefined in a way that better supports citizens needs.
- Whether the city restores the City Hub application, or introduces a new unified city application, **it is necessary to integrate applications with NIAS**, in order to authenticate citizens when they interact with the city.
- It should be considered to **implement a functionality which displays the state of citizens' debt to the entire city system (city + city companies) into the city e-services platform**, which would allow citizens to check their debt status towards the city and other stakeholders in real-time.
- **The city is not sure whether to communicate with its citizens through social media, or through some other new form of communication platform**, which could potentially be implemented with a new app (there is a question of complexity – what would be easier to the citizens?).
- GPP transformed its IT system to a more modern system, which should allow for real-time tracking of public transportation – could be implemented as a functionality to the new app.
- **The citizens should be able to change their address, pay parking tickets, do taxes and vote, all in one place like the e-services platform.**
- Base 58, suggested **using blockchain as a technology supporting the application**, however, first the city needs to know how does it want to look as a society in 10 years, and then decide on technology necessary to support the vision.
- **The University wants to attract more students, especially more international students** – which requires digital transparency and ease of access to any information necessary to the student.
- **The city would like to provide information on events in the city that would be of interest to its citizens**, regardless of whether everything is reserved and / or sold out. Because information about occupancy "shows" certain values of the city.
- **Public bike trails are not sufficient to the citizens needs**, and do not satisfy basic biking requirements, like having enough space for two bikers to pass by each other
- ZZSO, Ukop and GPP would benefit from an integrated database with the city.

Workshops Summary | Maturity assessment and strategy workshop

Workshop overview

Maturity assessment and strategy workshop was also held virtually in February 2021 (only a day after the Stakeholder workshop) and included 15 participants, some of which were: City representatives, Unikom, Base 58, Orqa, Saponia, Ukop, Tržnice Osijek, GPP, RT RK, ZZSO, BIOS, J.J. Strossmayer University, Mono Software.

The main goals of the workshop were to:

- assess the current solution maturity and development needs of the City
- revisit city vision and strategy
- define priority solutions which may be most instrumental in achieving the city vision
- define high-level roles of the City ecosystem in delivering strategy
- explore potential city-ecosystem collaboration
- determine opportunities for cross-city collaboration

Key insights from the workshop

- The ecosystem refreshed its memory from the previous Stakeholder workshop.
- The city of Osijek is very ambitious and enthusiastic about the ICC project, but wants to implement smaller and quicker solutions, rather than using disruptive technologies without a solid information technology infrastructure and architecture in its place.
- For starters the city would like to implement solutions that are not as innovative, but would provide major benefits to the city internal processes as well as its interaction with the citizens like: digitized exchange of documents, push notifications to the citizens, e-Forms, integrated authentication system, display the state of citizens' debt to the entire city system (city + city companies).
- The city wants to focus mainly on one thematic track throughout this project and that is eGovernment and digitizing public services, and put on hold other thematic tracks (like reskilling and growing SMEs) for other future projects.
- The city also wants to create a digital map of transportation routes (biking, train, tram, etc.), and is currently working on a mobile solution for intermodal travel planning.
- One city smart card was mentioned as a solution that would unify all current public services provided through separate cards by each public service provider.
- Ukop is very excited about this project, as it hopes to digitize its services, which have so far put a drag on its current business processes.
- Lead expert helped the city and its ecosystem structure potential solutions and a delivery strategy for the next phase.

Vision and ambition statements

City vision

Osijek in 2030 is a modern international Smart city with 200,000 citizens and 25,000 students, out of which one quarter is foreign. The city is constantly growing as a consequence of a healthy lifestyle provided to the citizens in the form of beautiful city promenades, recreational zones, bike trails and a lively city center, as well as a modern and internationally-known university and most importantly numerous employment opportunities.

Ambition statement 1

Inverse the city population decline, by attracting people of different backgrounds and different age groups to the city, and by offering exciting employment opportunities and healthy lifestyle and balance.

Improve the communication with residents

Ambition statement 2

Make everything related to the city and its citizens transparent and easily accessible in a digitized and automated manner, which would allow for the citizen to access desired information about the city with just a few clicks in a matter of seconds, and therefore, maximize his / her experience in the city.

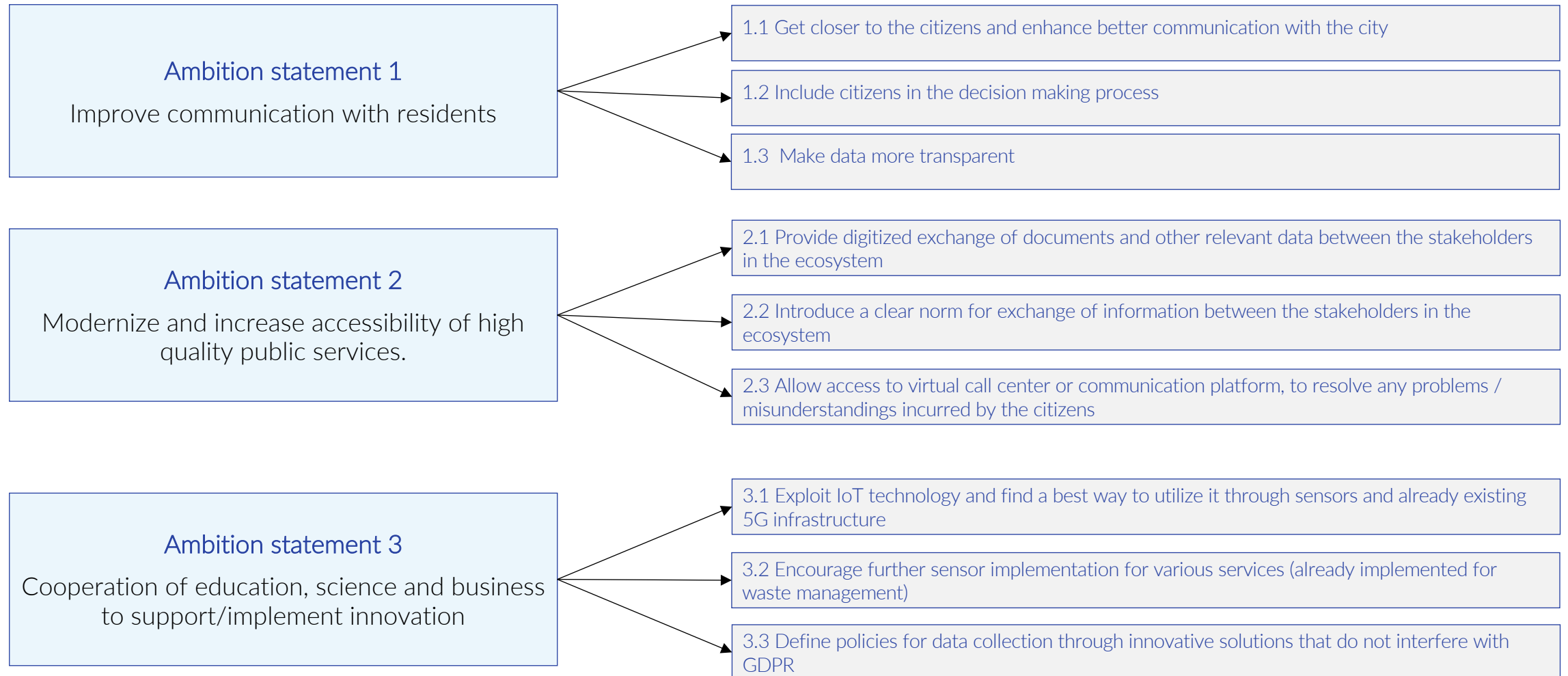
Modernization and increasing accessibility of high quality public services.

Ambition statement 3

Form a strategy and the ecosystem ready to attack this project in a strategic and well-thought manner. Moreover, collaborate and seek advice from other ICC and DCC cities on thematic tracks chosen by the city (e.g. city of Poznan)

Cooperation of education, science and business to support/implement innovation.

Ambition statements & proposed way forward (1/2)



Ambition statements & proposed way forward (2/2)

How do the solutions interact? Do some have positive synergies that reinforce the success of one another? Or are there conflicting interactions that need to be managed carefully?

- Our main solution defined within this project is a one-stop-shop e-services platform, which was planned to be supported by numerous individual interacting initiatives (infrastructure element solutions and use cases). The infrastructure elements were envisaged to be developed as a pre-condition to further development of specific application solutions, implying positive synergy between the two.

If you could boil down your strategy to three thoughts that have best guided you on your way, what would they be? These ways of thinking will be helpful when things get tough in implementation

- The strategy of the city was designed to address its declining population and decline in adequate and sufficient human resources, poor engagement and communication with citizens; importance of the development of the University and lastly, overall well-being of the citizens.
- The strategy was designed to not to be dependent on external circumstances (the need to get funding) or accomplishment of other previous projects.

What are the key factors that define success across all of your solutions? These could not be solution related, e.g., managing political cycles

- All the solutions have been widely demanded by the residents; therefore they have had a favourable acceptance.
- They make an intensive use of technology.

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Section 2

February 2021 to May 2021

The City of Osijek - Ambition and roadmap

ICC Transformation



Proposed City solutions

The main goal of the e-services platform is to provide a one-stop shop for all city services, which would be available through a mobile application. User of the e-services platform (citizen) would see and interact with a simplified and unified front-end view of the platform, while in the back-end, applications and services provided on the platform (by different vendors) would be integrated and connected with the platform through APIs.

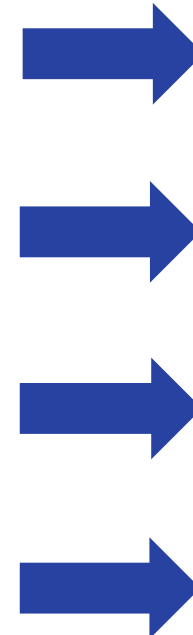
The city developed 15 initiatives throughout this project; some of which refer to elements necessary to support the infrastructure of the e-services platform, while others refer to use cases of offered services supported by the same infrastructure elements.

Infrastructure elements

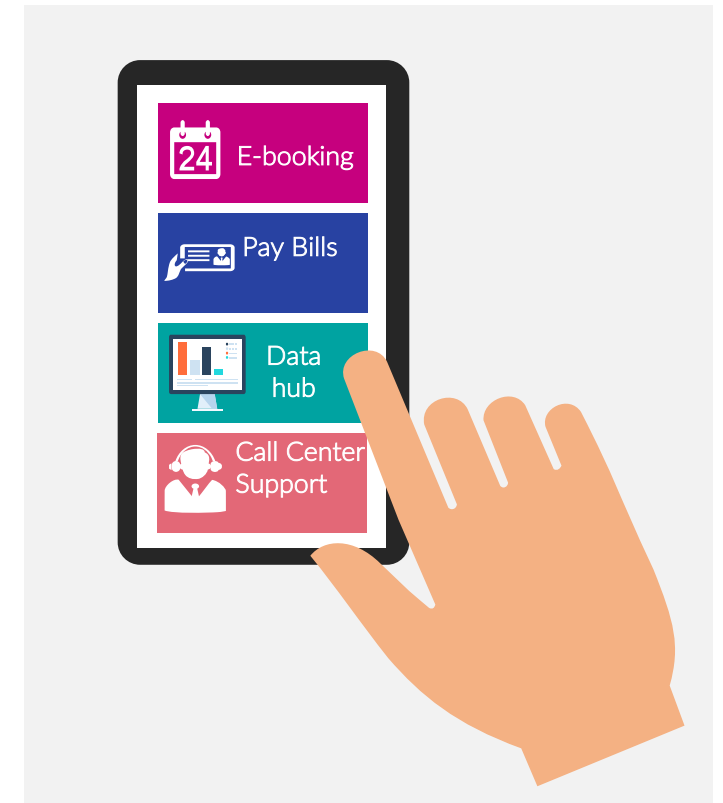
- 1 Collaboration/Discussion Platform
- 2 Centralized Document Management Platform
- 3 Payment Gateway/Platform for All City Services
- 4 Resource Booking Platform
- 5 Single Card/Digital Identity/Signature for Citizen Services
- 6 Data Hub Consolidating Citizen/Business Data on City Level
- 7 Sensor Data Collection

Use cases

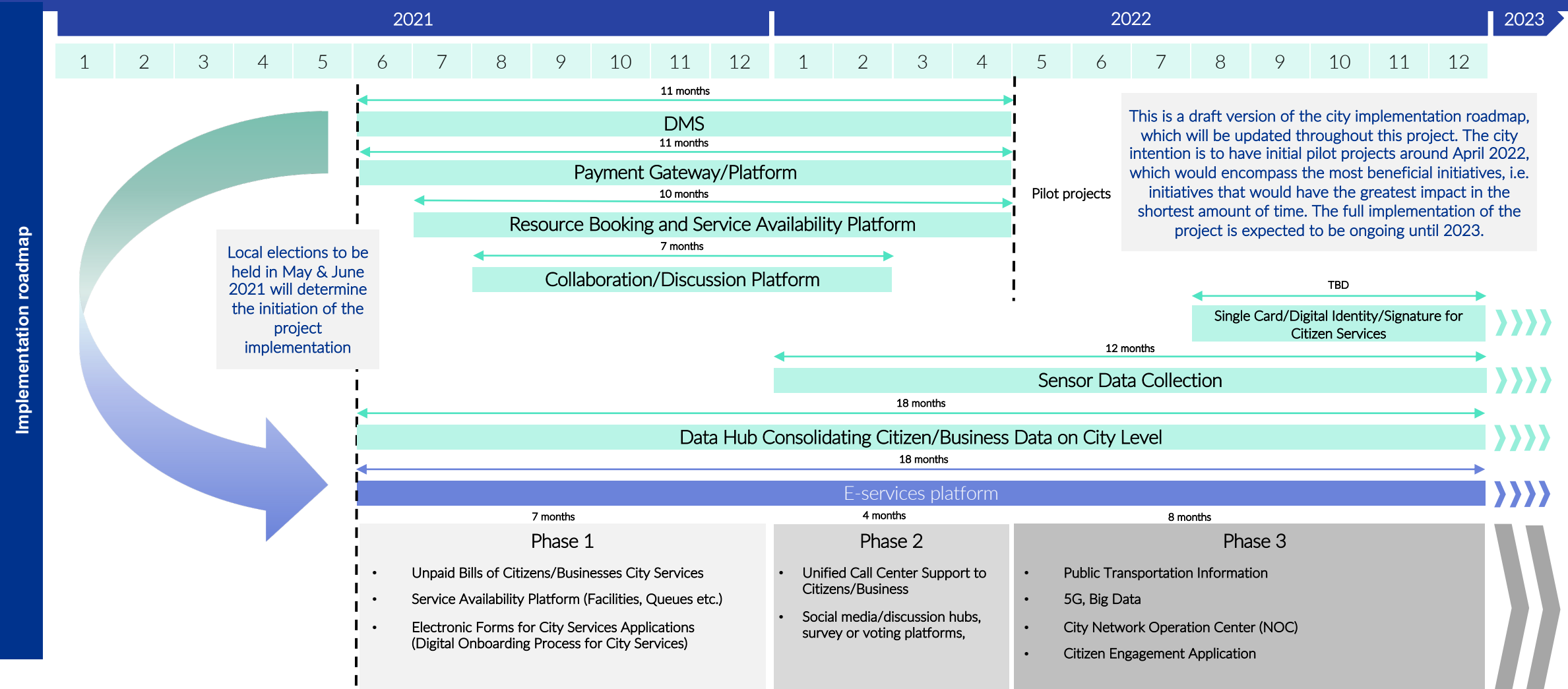
- 1 **Transaction Services**
 - Unpaid Bills of Citizens/Businesses City Services
 - Electronic Forms for City Services Applications (Digital Onboarding Process for City Services)
 - Unified Call Center Support to Citizens/Business
- 2 **Information Services**
 - Service Availability Platform (Facilities, Queues etc.)
 - Public Transportation Information
- 3 **Citizen Engagement Services**
 - Social media/discussion hubs, survey or voting platforms, eLearning, Collaboration (Open Book Development of Projects etc.)
- 4 **IoT, CCTV, Citizen Engagement Services**
 - 5G, Big Data
 - Public Transportation Data, Energy, Utilities Services, Environmental Observations, Public Spaces Video Monitoring, Maintenance etc
 - Mobile Workforce Management, Routing



E-services platform



Implementation roadmap



This is a draft version of the city implementation roadmap, which will be updated throughout this project. The city intention is to have initial pilot projects around April 2022, which would encompass the most beneficial initiatives, i.e. initiatives that would have the greatest impact in the shortest amount of time. The full implementation of the project is expected to be ongoing until 2023.

Implementation roadmap

Rationale to roadmap

How was the roadmap planned out (highest level reasoning)?

- The aforementioned implementation roadmap was created on a high-level basis, i.e. it was determined by approximating typical time requirement to develop such solutions (did not consider the risk of potential delays due to local government changes, war, pandemic, etc.)
- The main idea was to develop and set-up infrastructure elements which would support the services offered through the platform.
- The longest expected time requirement was envisaged for the consolidation of the city-level citizen/business data into a data-hub

Are there critical paths involved? If not do early tasks help enable the latter?

- Even though each infrastructure element implementation could be treated independently, there are inter-dependencies between all solutions which eventually make a one-stop-shop platform.

Are there resource limitations that mean certain tasks have to be prioritised first?

- Considering the City still does not have adequate insight into its internal processes and IT business application portfolio, a priority for the City is to enumerate its business processes and then implement solutions needed to address and optimize its internal inefficiencies.

Governance structure for roadmap implementation

City of Osijek Project Steering Committee

- Project Steering Committee serves as a governing body tasked with overseeing and supporting the ICC project and ensuring the attainment of its goals. This committee includes three committee members which are overseeing the project from start to finish and provide guidance and support throughout the project lifecycle.
- Project Steering Committee envisaged forming of a Smart City Department which would oversee development of suggested ICC initiatives as well as any other smart city projects which may be initiated outside of the ICC. Such department would include members from the public and private sector. Considering the recent local elections and changes in the structure of the Project Steering Committee, such engagement has been postponed and not considered a priority.

ICC project experts

- There are two ICC project experts from KPMG, currently involved on this project. They are responsible to provide suggestions and guidance in terms of project management, definition and implementation of project initiatives, provision of industry leading practices, etc. The experts are operationally supported by one more KPMG member.
- Experts have held multiple workshops including Needs assessment workshop, Stakeholder workshop, Maturity assessment and strategy workshop as well as workshops in later stages of the project which were focused on the implementation of proposed initiatives.

Operational support to ICC project experts

- As previously mentioned the Lead expert and Thematic experts are operationally supported by one KPMG member. That member is in charge of organizing workshops, constructing reports, communicating with the City team on a daily basis, etc.

Local ecosystem

- The local ecosystem engaged on this project is comprised of approximately 15 members, which include mainly private companies and start ups. The members of the ecosystem have mostly been engaged on the ICC project through a set of workshops conducted in early 2021 (Needs assessment workshop, Stakeholder workshop, Maturity assessment and strategy workshop), while workshops held in later project stages were primarily held between the Project Steering Committee and ICC project experts.
- The reason for lack of involvement was political instability and local elections which led to changes in the structure of the Project Steering Committee and inconsistencies in project management.

Initiative 1 | Centralized document management platform

1

Centralized document management platform

 Initiative name

Update to the existing Centralized Document Management Platform

 Initiative lead

- Mayor
- IT department

 Initiative working team

- Mayor/Smart City Department)

 Contributors

- IT architects from various IT units within the city government and municipal utilities
- Kruno Miličević - University

 Ultimate goal and scope of this initiative

1. Digitalization of business processes
2. Increased efficiency and expedited handling of work tasks
3. Paperless office in the City and City-owned companies
4. More convenient service for the citizens

 Major milestones

1. Creating a list of all businesses processes (City and City-owned companies) that are not digitalized and/or interconnected
2. Definition of high-impact processes for a pilot implementation
3. Selection of a most applicable solution for all stakeholders

 Dependencies

- Joint infrastructure
- Unpaid bills

 Key stakeholders

- IT teams in all organizational units,
 - external IT vendors (suppliers),
 - Data owners,
 - Mayor,
 - Directors
- Extensive communication during the implementation period.
Case to case basis later on.

 Impact and timing

Project timeframe of 6 months before the pilot application is launched.
The project should begin in July.
Full application roll-out is planned mid way through 2022.

 Risks

- Citizens prefer to submit requests in person
- Resentment to the digitalization of business processes by City-owned companies

 Support needed

- IT departments
- Budget
- Inhouse and external education

Initiative 2 | Payment Gateway / Platform for all city services

2 Payment Gateway/Platform

 Initiative name

Implementation of a payment functionality in the form of payment gateway / platform for all city services

 Initiative lead

- Mayor/Smart City Department
- Head of Finance

 Initiative working team

- Head of Finance
- Managers of all billing and collection services

 Contributors

- IT architects from various IT units within the city government and municipal utilities

 Ultimate goal and scope of this initiative

1. Easy and digital payment by citizens for all bills
2. Better billing collection
3. Transparency of bill collection

 Major milestones

1. Selecting a payment gateway provider
2. Integration and pilot project of the first city ERP with payment gateway
3. Roll out to all other services over time

 Dependencies

- Account review system in place - central account system
- Authorization, authentication
- Unified front-end

 Key stakeholders

- IT teams in all organizational units,
- external IT vendors (suppliers),
- Data owners,
- Mayor,
- Directors

 Impact and timing

Project timeframe of 6 months before the pilot application is launched. The project should begin in July. Full application roll-out is planned mid way through 2022.

 Risks

- Public procurement failure
- Preference of cash payment over digital payment by the citizen

 Support needed

- IT
- Sufficient budget (commission through turnover)
- Marketing campaign - motivating citizens for digital payments

Initiative 3 | Resource Booking and Service Availability Platform

3


Resource Booking and Service Availability Platform

 Initiative name

Implementation of a digital resource booking and service availability platform

 Initiative lead

- Smart City Department
- Cultural center (pilot project)
- Facility managers, management board for business premises in the city

 Initiative working team

- Smart City Department
- Managers of shared facilities

 Contributors

- Central IT team / city IT department building the platform & Smart City department (which still needs to be launched)
- Kruno Miličević - University

 Ultimate goal and scope of this initiative

1. Transparent overview of all resource and services usage - how much of it was used (disposal of city property, public transportation, supermarkets, restaurants, etc.)
2. Transparent booking fees and more efficient use of facilities and citizens' personal time, which would also adhere to potential restrictions (in case of a pandemic or crisis in the future)
3. Terms of use and conditions (in accordance with GDPR)

 Major milestones

1. Provided registration of all facilities - master data, working hours
2. Shared calendar infrastructure - booking time, booking conditions
3. Establishment of a pilot application - testing of the booking process, monitoring, approval, etc.
4. Defining booking authorizations (citizens who have the application, a person from the city service, etc.)

 Dependencies

- GIS system / geolocation data / adequate mapping
- Authorization and authentication using user master data
- Cameras, GDPR compliance
- Payment gateway - card debit (e.g. if payment is not cancelled up to 3 hours before the deadline)

 Key stakeholders


- Directors,
- Facility managers,
- Sports, cultural, and other organizations, administrative departments that award grants

 Impact and timing

Project timeframe of 6 months before the pilot application is launched. The project should begin in July. Full application roll-out is planned mid way through 2022.

 Risks

- Resistance to transparency
- Billing and usage tracking

 Support needed

- Legally regulate price lists and rules for the use of facilities (e.g. booking should be possible only through a digital platform, or through a call center for less digitally aware people)

Initiative 4 | Single Card/Digital Identity/Signature for Citizen Services

4

Single Card/Digital Identity/Signature for Citizen Services

 Initiative name

Implementation of a single card/digital identity/signature for citizen services (i.e. integration of the existing cards used by the citizens for the city services)

 Initiative lead

- Mayor/Smart City Department

 Initiative working team


- Smart City Department
- GPP director (existing smart card), IT department, EU department

 Contributors

- Directors of other city-owned firms, IT vendors
- Kruno Miličević – University (connection of the student ID card benefits)

 Ultimate goal and scope of this initiative

1. Easier and more intuitive use of all city services to citizens, i.e. expansion of the availability of city system services.
2. Connection and sharing of data within the city system
3. Increased number of card users and increased citizen satisfaction.
4. Better insight into data within the city system.

 Major milestones

1. Detection of existing services / cards and potentially interesting services to citizens
2. Selection of a unique format / card.
3. Migration of existing cards to a single card

 Dependencies

- Data exchange between city companies and the city itself
- Authentication and authorization system
- Payment gateway / Internet banking

 Key stakeholders

- Citizens & students,
- City employees,
- Directors of City-owned companies,
- Mayor,
- Extensive communication during the preparation period. Case to case basis later on. Mayor's decision primarily affects the initiative.

 Impact and timing

Starting in 2023, although it could be earlier in the 1st phase (integration of Butra + Unikom cards)

 Risks

- Incompatibility of the existing infrastructure and solutions;
- Design, definition and selection of the optimal platform / card to work with;
- Director's resistance to change;
- Insufficient funds for consolidation.

 Support needed

- Budget,
- IT expertise to help develop optimal long-term solution sustainable for years to come.

Initiative 5 | Collaboration / Discussion Platform

5

Collaboration/Discussion Platform

 Initiative name

Implementation of a collaboration / discussion platform

 Initiative lead

- Mayor/Smart City Department

 Initiative working team


- Smart City Department
- Heads of all other departments

 Contributors

- Denis Sušac – OSC
- All others who can contribute with their own good-business practices

 Ultimate goal and scope of this initiative

1. More efficient management and information sharing/flow between City departments
2. Selected and implemented solution for collaboration between City departments/teams (eg. Sharepoint, PM software)

 Major milestones

1. Defining the desired way of collaboration
2. Selection of the most appropriate collaborative platform tool that will enable the collaboration process
3. Implementation and use of the selected platform

 Dependencies

- Data hub
- Social discussion platform
- Call center

 Key stakeholders

- City department heads
 - Mayor/Deputy mayors
- Intensive communication during the implementation phase and case to case basis later on. Mayor primarily affects this initiative

 Impact and timing

August 2021 – February 2022

 Risks

- Poorly defined way of collaboration
- Wrong selection of an appropriate platform
- Platform not used by all stakeholders, thus creating miscommunication

 Support needed

- External expertise for the selection of best suited collaboration practice
- Finances and funding
- Education of stakeholders

Initiative 6 | Sensor data collection

6

Sensor Data Collection

Initiative name

Implement new and increase the number of currently implemented sensors to enhance sensor data collection

Initiative lead

- Mayor/Smart City Department

Initiative working team

- Mayor/Smart City Department
- IT department

Contributors

- Kruno Miličević – University
- External entities for parking, public transport, city traffic, air quality, CCTV, ISGE, WiFi and IoT networks, etc.

Ultimate goal and scope of this initiative

1. Data collection for analysis and better decision making regarding implementation of priority projects
2. Success defined by increase of available data that will be used for decision making
3. External entities for parking, public transport, city traffic, air quality, CCTV, ISGE, WiFi and IoT networks, etc.

Major milestones

1. Defining existing internal/external sensor data sources
2. Agreement with external entities for data sharing
3. Defining new data that needs to be monitored and in what scope
4. Implementation in data hub

Dependencies

- Joint infrastructure
- Data Hub
- Big data / 5G

Key stakeholders

- City and City-owned companies,
- External entities,
- University,
- Mayor
- External entities who decide the scope of data to be shared

Intensive communication during the collection phase. Case to case basis later on

Impact and timing

Jan-Dec 2022.

Risks

- Incapability of sensor data collection
- Inconsistent data

Support needed

- City budget and EU funding
- Human resources and physical infrastructure
- Mayor and all key stakeholders and contributors

Initiative 7 | Data hub – Consolidating citizen / business data on city level

7


Data hub

 Initiative name


Data hub – Consolidating citizen / business data on city level

 Initiative lead

- Mayor/Smart City Department

 Initiative working team

- Mayor/Smart City Department
- IT departments of the City and City-owned companies

 Contributors

- Kruno Miličević – University
- Osijek-Baranja County
- Regional and national authorities that handle information regarding City of Osijek and the city itself (cadastre, statistics, Chamber of Commerce, police, etc.)

 Ultimate goal and scope of this initiative

1. Digitalization of all data in order to increase efficiency and expedited handling of work task
2. Foundation for a better and data driven decision-making
3. Paperless office in the City and City-owned companies
4. More convenient service for the citizens

 Major milestones

1. Creation of a list of all City / company data that are not digitalized
2. Definition of a joint form for data exchange
3. Definition of a single entry point for specific data

 Dependencies

- This initiative is prerequisite for the implementation of all the other initiatives.
- Joint infrastructure

 Key stakeholders

- Mayor,
- City-owned companies,
- Regional and national authorities,
- IT providers

Frequent communication with all stakeholders while the data is being collected. Mayor, directors, local and national authorities IT experts affect the initiative.

 Impact and timing

End of 2022.

 Risks

- Unwillingness of regional and national bodies to cooperate
- GDPR protection
- Poor execution of data consolidation

 Support needed

- City budget and EU funding
- Human resources and physical infrastructure
- Mayor and all key stakeholders and contributors

Initiative 8 | Unpaid bills of citizens / businesses city services

8

Unpaid bills of citizens / businesses city services



Initiative name

Digitalizing and simplifying payment of bills to reduce the number of unpaid bills of citizens / businesses city services



Initiative lead

- Head of Finance (finance sector)



Initiative working team

- Billing and collection heads from all municipal service entities



Contributors

- IT architects from various IT units within the city government and municipal utilities



Ultimate goal and scope of this initiative

1. Single view of citizen / entity financial relationships and open balances for all municipal services provided
2. Connected systems and data relating to contracts, invoices and payments per customer.
3. Unified payment gateway (pre-condition)
4. Better billing



Major milestones

1. Data exchange formats between city software
2. Gateway za central data exchange
3. Front-end system.



Dependencies

- Authorization and authentication system (e-gradani),
- Digital databases (ERP applications for certain services that are integrable),
- Initial application for citizens (UFE)



Key stakeholders

- IT teams in all organizational units,
- external IT vendors (suppliers),
- Data owners,
- Mayor,
- Directors



Impact and timing

Project timeframe of 7 months before the pilot is launched. The project should begin in July.
Full application roll-out is planned in April 2022.



Risks

- Technological risks (pairing, linking of data – e.g. utility fee database does not have OIBs in all places),
- Resistance to data provision (lower level),
- Commercial monopoly (utility companies agreeing with suppliers on projects - price escalation)




Support needed

- The physical place of city platforms (e.g. the city data center) and a single point that goes out.
- Legal regulation of data exchange between city services and companies.
- Secured budget for the central platform (EU national funding - tender) and for existing ERPs for data extraction (city budget)

Initiative 9 | Electronic forms for city services applications

9


Electronic forms for city services applications

 Initiative name

Enablement of electronic forms for city services applications

 Initiative lead

- City Office
- Smart City department

 Initiative working team

- Head of Clerk's Office,
- Smart City department
- Finance Department

 Contributors

- Denis Sušac - OSC

 Ultimate goal and scope of this initiative

1. Digitalization of all forms/requests and processes in order to expedite City's response and efficiency,
2. Increased work transparency of the local city government,
3. Resolve the issue of physical submission of requests that are not digitalized (time consuming for citizens / businesses)

 Major milestones


1. Identify all forms (paper and digital)
2. Identify best practice to be incorporated within the system
3. Selection of a certain number of forms that will serve as a pilot activity
4. Transfer of pilot activity to all other forms

 Dependencies

- Initiatives #1, #2, #4 and #5
- NIAS authorization system
- E-biljeg (government fee payment)

 Key stakeholders

- City Office
- Clerk's Office
- Citizens/Students/Businesses

 Impact and timing

July 2021 - January 2022

 Risks

- Citizens prefer to bring forms in person
- Citizens/businesses not educated enough to use the digitalized forms

 Support needed

- National-level support for the integration with the NIAS authorization system
- Budget for the implementation and education

Initiative 10 | Unified support call center for citizens / businesses

10

Unified support call center for citizens / businesses



Initiative name

Provision of a unified support call center for citizens / businesses



Initiative lead

- Mayor
- Smart City department



Initiative working team

- Smart City Department
- Representatives of City departments and city-owned companies



Contributors

- n/a



Ultimate goal and scope of this initiative

1. Better and faster availability of information for citizens.
2. Reduction of work overload of the City-system employees
3. 24/7 support
4. Better citizen satisfaction
5. Increased work productivity of City-system employees



Major milestones

1. Identification of FAQ from the City departments and City-owned companies
2. Selection of best suitable collaboration platform
3. Implementation and pilot activity testing
4. Transfer to all other services



Dependencies

- Initiatives #1, 3, 5, 7, 9



Key stakeholders

- IT architects,
- Citizens
- Mayor's decision affects the initiative



Impact and timing

February – April 2022



Risks

- Service not used
- Ratio service-cost
- In house call center or external vendor
- Wrong model selection



Support needed

- Budget
- Staff
- Education/training

Initiative 11 | Public transportation information

11


Public transportation information

 Initiative name

Collection and sharing of public transportation information

 Initiative lead

- Smart City Department
- GPP

 Initiative working team

- Smart City Department
- Heads of IT department and Technical service of GPP

 Contributors

- TBD

 Ultimate goal and scope of this initiative

1. Better information sharing regarding public transportation for improved service to citizens
2. Initiative is resolving an issue regarding non-existence of real time public transportation availability

 Major milestones

1. Identification of data that is digitalized/needs to be digitalized (timetables, bus and tram station location, distance to/from, location of vehicles, etc.)
2. Selection of the best suitable integration platform
3. Digitalization of data, i.e.. Purchase of hardware that will enable this.

 Dependencies

- Joint infrastructure
- Sensor information
- Data Hub

 Key stakeholders

- GPP

 Impact and timing

May 2022

 Risks

- Wrong data sets
- Insufficient starting data to work with


 Support needed

- Budget (own/EU Funds)
- IT advisors and architects
- Integration with traffic management

Initiative 12 | Social media / discussion hubs, survey or voting platforms

12

Social media / discussion hubs, survey or voting platforms

 Initiative name

Citizens engagement through social media / discussion hubs, survey or voting platforms

 Initiative lead

- Mayor's Office

 Initiative working team


- Head of Mayor's Office
- IT department

 Contributors

- Mayor,
- Deputy Mayors,
- Department Heads,
- Company Directors
- Denis Sušac - OSC

 Ultimate goal and scope of this initiative

1. Better communication with the citizens
2. Enhanced citizen engagement
3. Increased level of transparency of the City administration
4. Increased number of citizens who participate and engage with the city

 Major milestones

1. Definition of the content to be communicated on the platform
2. Platform selection
3. A pilot project on one, most attractive service / content which would later be extended to others.

 Dependencies

- Authorization and authentication system
- Document sharing platform

 Key stakeholders

- Citizens,
- Entrepreneurs,
- The mayor

 Impact and timing

Project starts with initiation of the content or project preparation, because even then the citizens are involved in the work of the administration... start January 2022

 Risks

- Negative and irrelevant comments, misrepresentation... low level of engagement and response of the citizens for this type of communication
- Increased communication requires additional engagement and adequate human resources support.

 Support needed

- Establish communication department
- City budget and EU funding
- Adequate IT support
- Citizen engagement and support for the project

Initiative 13 | 5G, Big Data

13

5G, Big Data

Initiative name

Utilization of the 5G network and big data which comes along with it

Initiative lead

- Mayor
- Smart City department

Initiative working team

- Smart City Department
- All city-owned companies

Contributors

- Kruno Miličević - University

Ultimate goal and scope of this initiative

1. Collection of all types of data/information for enabling data-driven decisions
2. Conclusions and decisions currently being made based on insufficient data
3. Ultimate success is achieved by better decisions or new city services that have come out from the data that was not collected until now.

Major milestones

1. Identifying all information/data channels
2. Selection of platform for collecting/sharing data and information
3. Creation of processes and models that will enable better decision-making

Dependencies

- All stated initiatives

Key stakeholders

- Mayor,
- Smart City Department & other City departments,
- City-owned companies, traffic, parking,
- University,
- Weather forecasters,
- Entrepreneurs that will develop new products and services from collected data

Impact and timing

January 2023

Risks

- Large amount of data, which cannot be stored and handled by the supporting IT system of the City
- Difficult to consolidate all the gathered data into a bigger picture or into relevant insights
- Wrong data interpretation, which follows data consolidation challenges
- Wrong models/implementation

Support needed

- Budget (city and EU Funds)
- Human resources for business intelligence, IT architects.

Initiative 14 | City Network Operation Center (NOC)

14

City Network Operation Center (NOC)

Initiative name

Provision of energy, utility services, environmental observations, public spaces video monitoring, maintenance

Initiative lead

- Mayor/Smart City Department

Initiative working team

- Smart City Department
- GPP
- Department for transportation and communal wardens

Contributors

- City-owned companies
- Public institutions (police, fire department, etc.)

Ultimate goal and scope of this initiative

1. Continuously monitoring a wide variety of information and network systems, city resources (parking, traffic, public spaces/security, environment/air and water quality)
2. Providing timely response to all incidents, outages and performance issues.
3. Notifying citizens and third-party service providers of issues, outages and remediation status.

Major milestones

1. Identification of services that we want/can monitor (public transportation, traffic, parking, video surveillance of public areas, air quality)
2. Establishment of a pilot segment - testing process, monitoring, approval, etc. (eg. monitoring of several traffic intersections)
3. Test/use of NOC for better decision-making
4. Development of best practices for all other services

Dependencies

- Initiatives: #5, #6, #12, #14
- GIS system

Key stakeholders

- GPP (currently implementing own NOC for public transport and will potentially manage parking and traffic)
- Department for communal wardens (public spaces)

Impact and timing

End 2022

Risks

- Lack of collaboration/coordination across teams
- Difficult to integrate with existing systems, due to the need to connect to critical systems of record with high security and latency requirements, and across multiple business silos
- Misinterpretation of data that will lead to wrong decision-making





Support needed





- City budget and EU funding
- Human resources and physical infrastructure
- Mayor and all key stakeholders and contributors




Initiative 15 | Citizen Engagement Application

15

Citizen Engagement Application

	Initiative name
Allowing citizens to engage with the city and have a voice when it comes to city improvements through a citizen engagement application	
	Initiative lead
<ul style="list-style-type: none"> Mayor/Smart City Department 	
	Initiative working team
<ul style="list-style-type: none"> Smart City Department Division for communal wardens 	
	Contributors
<ul style="list-style-type: none"> City-owned companies 	

	Ultimate goal and scope of this initiative
<ol style="list-style-type: none"> Better communication and information exchange with citizens and greater transparency of the city safety, cleanliness, accountability Allow citizens to report issues via an app, which allows active citizen participation - save money and make the City cleaner by engaging the citizens Keep the backlog of issue tickets public and transparent >>> make public servants accountable to the public, create better responsibility 	
	Major milestones
<ol style="list-style-type: none"> Definition of the initiative scope and design of the application Building the application infrastructure Establishment of a pilot application - testing process, monitoring, approval, etc. / restoring and integrating City Hub application with the e-services platform Communicating the importance of the application to the citizens 	
	Dependencies
<ul style="list-style-type: none"> Data Hub (infrastructure) to support collection of large amounts of data in one place Hardware dependencies specific to the mobile aspect 	
	Key stakeholders
<ul style="list-style-type: none"> Residents 	

	Impact and timing
End 2022	
	Risks
<ul style="list-style-type: none"> Difficult to integrate into existing systems, due to the need to connect to critical systems of record with high security and latency requirements, and across multiple business silos Difficult to manage sensitive data, the reason being usage of mobile devices when performing field work Technological drain on the staff and organization - requires ongoing, proactive development of integrations, without system outages Citizen inactivity 	
	Support needed
<ul style="list-style-type: none"> City budget and EU funding Human resources and physical infrastructure Mayor and all key stakeholders and contributors 	

Register of Key Risks





There are 4 key risks which should be closely followed within this project, mostly related to financial, stakeholder and IT risks...

Risk	Description	Risk implication	Mitigation
Financing risk	<ul style="list-style-type: none"> EU funds may not be available for the City of Osijek to finance the proposed initiatives and / or the project may require the return of the EU funds (e.g. non-compliance with EU grant rules or covenants). 	<ul style="list-style-type: none"> There may be a lack of available EU funds which are specifically intended for the ICC cities. Moreover, even if the EU issues calls for proposals which address the City's needs, the City may be unable to access the funds due to insufficient and inadequate project documentation and/or non-competitive project proposal. 	<ul style="list-style-type: none"> Close monitoring and reporting on EU Grant compliance requirements and continuous communication with the EU commission to prevent potential non-compliance. Consider contingent financing which investigates different financing structures, in order to ensure there are alternatives to the initially proposed structure (research alternative EU funds, form a pool of private investors which may be interested to invest in the project, prepare and enable financing flexibility to attract private investors, research other financing opportunities which may provide funding for similar projects, etc.).
Stakeholder risk	<ul style="list-style-type: none"> Lack of coordination and progress in discussions and agreement on project setup and execution between the City and other relevant public bodies. Lack of support and/or engagement by the local community and other relevant stakeholders. 	<ul style="list-style-type: none"> There may be a lack of professional and fast decision making as well as proactive achieving of the development goals of the project. There is a possibility there is a misalignment between all the relevant stakeholders on key project issues. 	<ul style="list-style-type: none"> It is important to ensure that any potential misalignment between the local community, the city and the state is addressed early in the process.
Breach of terms risk	<ul style="list-style-type: none"> There is a possibility of breach of terms of the contract with the EU (in case any funding is received), which may stem from: (i) the change of the local government, (ii) new political developments which may reduce the level of initial commitment, (iii) lack of alignment between the local community, the local government and the state, etc. 	<ul style="list-style-type: none"> There are potential implication scenarios which may breach the terms due to lack of commitment by the public entity and which should therefore be properly addressed and hedged during the initial process 	<ul style="list-style-type: none"> Potential breaches of terms should be communicated well in advance in order to hedge any potential unforeseen changes to the general terms of the contract with the EU.
IT development risk	<ul style="list-style-type: none"> There is a possibility for potential delays related to application development, which may include (i) low availability of developers (influences team velocity), (ii) time-consuming functional and technical specifications development, (iii) uncomprehensive project documentation, etc. 	<ul style="list-style-type: none"> Inadequate preparation of project development may lead to unexpected project delays and setbacks. This may reduce probability of successful project completion. 	<ul style="list-style-type: none"> Develop and use mock-up services to be able to test the application. This can however result in rework, retest and impact go-live dates. Engage with potential developers early in the process.

Key Performance indicators - overview

Infrastructure	Use cases	Activities – Inputs and actions	Solution Maturity - outputs	City performance indicators
Centralized Document Management Platform	<ul style="list-style-type: none"> Service Availability Platform (Facilities, Queues etc.) Electronic Forms for City Services Applications (Digital Onboarding Process for City Services) 	<ul style="list-style-type: none"> Implementation of a DMS Creation, storage and management of electronic documents Digital archiving of documentation 	Modern DMS, which should facilitate internal and external collaboration of the city, as well as enable seamless search of structured and non-structured documents and access management of the documents in the repository (e.g. SharePoint).	<ul style="list-style-type: none"> Employee satisfaction Share of documentation available online (electronically) Acceptance/use of digital offerings Collaboration among city departments or between the city and other stakeholders within the project scope
Payment Gateway/Platform for All City Services	<ul style="list-style-type: none"> Unpaid Bills of Citizens/Businesses City Services 	<ul style="list-style-type: none"> Implementation of a payment functionality Generation of payment slips and bar codes to prepare the payment Payment processing through an external application 	Enabled payment functionality, through the e-services platform, for services provided by the public service providers, which will provide improved billing collection and transparency, and most importantly the easy way of paying bills by the citizens.	<ul style="list-style-type: none"> Citizen satisfaction/NPS overall Acceptance/use of digital offerings Time taken to pay the bill Compliance rate of bills paid on time Revenues / rate of collected bills (compared to previous years)
Resource Booking and Service Availability Platform	<ul style="list-style-type: none"> Service Availability Platform (Facilities, Queues etc.) Unified Call Center Support to Citizens/Business 	<ul style="list-style-type: none"> Implementation of a resource booking and service availability platform Digital registration to use certain facilities or resources Shared schedule of city resources / services availability 	Transparent overview of all city's resources and services usage, which would instil better trust of the citizens towards the city and allow citizens to register more easily and use the city's assets more often.	<ul style="list-style-type: none"> Usage of the city's facilities, resources, etc. Rate of registration through digital channels Citizen satisfaction and number of complaints received
Single Card/Digital Identity/Signature for Citizen Services	<ul style="list-style-type: none"> Public Transportation Information Energy, utility services 	<ul style="list-style-type: none"> Integration of currently existing city cards (Butra, Unikom) into a one single card / digital identity by the citizen 	One city card that would allow the citizen to have one single digital identity, to pay and access all the city services and to easily move around the city.	<ul style="list-style-type: none"> Usage of city system services Number of citizens using the city services Revenues collected by the city ((public transportation, public spaces, etc.)
Collaboration / Discussion Platform	<ul style="list-style-type: none"> Citizen Engagement Application Social media/discussion hubs, survey or voting platforms 	<ul style="list-style-type: none"> Implementation of a collaboration / discussion platform Increase citizen awareness of the collaboration platforms Collect feedback and use it to make improvements 	Platform that would allow citizens to have their voice heard and to freely engage with the city and other city residents. However, the platform would have to give authority to engage only to real residents, i.e. citizens that can be identified through a digital identity, and limit inappropriate communication.	<ul style="list-style-type: none"> Frequency of resident surveys, votings Number of citizens engaging on the platforms Citizen satisfaction with the platform
Sensor Data Collection	<ul style="list-style-type: none"> 5G, Big Data 	<ul style="list-style-type: none"> Developing IoT technology to support and make sense of the vast amount of collected information Expanding sensor implementation 	Continuous collection of environmental data (or other data) as well as processing and visual display of data in real-time through an e-services platform	<ul style="list-style-type: none"> Number of IoT devices deployed % of city covered with 4G/5G Availability of IoT infrastructure (LTE-M network /NB-IoT network)
Data hub	<ul style="list-style-type: none"> 5G, Big Data City Network Operation Center (NOC) 	<ul style="list-style-type: none"> Digitalization of data which is currently not digitized Defining ways to exchange data and one entry point where the data will be entered and stored 	One entry point for data collection and exchange of data with other public service providers as well as private companies, which visualizes the data and in that sense is transparent and trustworthy.	<ul style="list-style-type: none"> Extent of publicly available data Number of data storage silos Compliance by citizens and other stakeholders to provide data to the city

Key Performance indicators - Cross cutting indicators

Activities	Inputs and actions	Activities KPIs	Maturity
Meetings	<ul style="list-style-type: none"> Prepare a schedule of daily, weekly, monthly meetings or calls on an annual basis Holding meetings with owners of initiatives as well as key stakeholders involved on this project Prepare minutes reports from the meetings to keep track of the discussed topics in the meetings 	<ul style="list-style-type: none"> Number of planned meetings held Number of expected stakeholders involved in the meetings 	
Collaboration	<ul style="list-style-type: none"> Keeping close contact with the stakeholders and providing guidance and help where necessary Making sure there are no misunderstandings or missed steps in the process 	<ul style="list-style-type: none"> Responsiveness and involvement by the stakeholders Quality and speed of provided feedback Number and severity of complaints 	
Funding	<ul style="list-style-type: none"> Polishing the city strategy to adhere to the citizen well-being and needs, as well as EU pillars and initiatives towards green and digital transition Preparing project pipeline that would correspond to the city's smart city strategy Actively looking and preparing for funding opportunities 	<ul style="list-style-type: none"> Compliance of the smart city strategy with the EU pillars and initiatives Number of prepared project pipelines Secured funding sources / opportunities 	
Implementation roadmap progress	<ul style="list-style-type: none"> Preparing progress reports on the initiatives' and solution implementation Revise how well behind or ahead projects are 	<ul style="list-style-type: none"> Progress of solutions and initiatives Achieved milestones Initiative / solution roll-out 	

Rationale to KPI approach

- The idea behind the development of KPIs was to link them to the project solution (i.e. e-services platform) with the purpose and the vision of the City of Osijek.
- It is important to collect different information and sources of information to calculate the KPIs, which will allow for the capacity to demonstrate the benefit of the activity /project.
- KPIs were designed to be easy to keep track off as well as easy to implement and calculate

The European Commission's
**INTELLIGENT CITIES
CHALLENGE**



Section ③ + ④

February 2021 to May 2021

The City of Osijek: Impact

ICC Transformation



Impact executive summary

What were the major successes during the ICC? What were the major obstacles?

- The major successes of the ICC include: (i) building an ecosystem of collaboration, urban innovation and public-private partnerships, (ii) learning about the experiences of other cities, (iii) initiating development of smart city solutions.
- Considering the City of Osijek had not been involved in major cross City learning opportunities, it is important to highlight the fact that having the opportunity to learn from other European cities has been an outstanding benefit for the City of Osijek.

How was your progress against the KPIs you initially set?

- Our progress against our proposed KPIs is still somewhat stagnant due to all the pre-condition activities we are aiming to achieve before implementing the solution.

What will you commit to over the next 3 years? How will you achieve these goals?

- We want to extend the influence of the ICC methodology to other areas and City departments, and hopefully formalize our ideas into existence. We will closely follow upcoming EU funding opportunities and aim to obtain sufficient funding to cover for the full scope of the project realization.
- Moreover, we hope to continue building on our current achievements as well as relationships with other European smart cities.

Assessment of city performance - progress against KPIs

	Where we started	Midway through the challenge	Final results
City performance			
1 KPI 1 - Centralized Document Management Platform	Base line	40%	80%
2 KPI 2 - Payment Gateway/Platform for All City Services	Base line	40%	60%
3 KPI 3 - Resource Booking and Service Availability Platform	Base line	20%	30% - This initiative was described in a great level of detail within the City's digitization strategy
4 KPI 4 - Single Card/Digital Identity/Signature for Citizen Services	Base line	15%	30% - New feature was added to Butra in which allows the users of social services to download social assistance packages.
5 KPI 5 - Collaboration / Discussion Platform	Base line	0%	20%
6 KPI 6 - Sensor Data Collection	Base line	20%	40%
7 KPI 7 - Data hub	Base line	20%	40x%

Assessment of solution maturity - progress against KPIs (1/2)

Where we started

Midway through the challenge

Final results

Solution 1 - Centralized Document Management Platform

1	KPI 1 - Service Availability Platform (Facilities, Queues etc.)	Base line	0%	10%
2	KPI 2 - Electronic Forms for City Services Applications (Digital Onboarding Process for City Services)	Base line	40%	80%

Solution 2 - Payment Gateway/Platform for All City Services

1	KPI 1 - Unpaid Bills of Citizens/Businesses City Services	Base line	50%	80% - The platform supports all City debts, while it is still developing such features for local businesses
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Solution 3 - Payment Gateway/Platform for All City Services

1	KPI 1 - Service Availability Platform (Facilities, Queues etc.)	Base line	0%	10%
2	KPI 2 - Unified Call Centre Support to Citizens/Business	Base line	0%	10%

Assessment of solution maturity - progress against KPIs (2/2)

	Where we started	Midway through the challenge	Final results
Solution 4 - Single Card/Digital Identity/Signature for Citizen Services			
1 KPI 1 - Public Transportation Information	Base line	10%	20% - The City is awaiting for funds to further develop this initiative
2 KPI 2 - Energy, utility services	Base line	0%	10%
Solution 5 - Collaboration / Discussion Platform			
1 KPI 1 - Citizen Engagement Application	Base line	0%	10%
2 KPI 2 - Social media/discussion hubs, survey or voting platforms	Base line	0%	10%
Solution 6 - Sensor Data Collection			
1 KPI 1 - 5G, Big Data	Base line	0%	10%
Solution 7 - Data hub			
1 KPI 1 - City Network Operation Centre (NOC)	Base line	20%	30% - The solution is describe in a high level of detail in City's digitization strategy. There are currently 8 cameras at various intersections within the City
2 KPI 2 - 5G, Big Data	Base line	0%	10%

Assessment of city ecosystem and activities - progress against KPIs

Where we started

Midway through the challenge

Final results

Solution 1 - Centralized Document Management Platform

1	KPI 1 - Employee satisfaction	Base line	60%	90%
2	KPI 2 - Share of documentation available online (electronically)	Base line	50%	80%
3	KPI 3 - Acceptance/use of digital offerings	Base line	Yet to be developed	Yet to be developed
4	KPI 4 - Collaboration among city departments or between the city and other stakeholders within the project scope	Base line	80%	80%

Solution 2 - Payment Gateway/Platform for All City Services

1	KPI 1 - Citizen satisfaction/NPS overall	Base line	20%	35%
2	KPI 2 - Acceptance/use of digital offerings	Base line	60%	85%
3	KPI 3 - Time taken to pay the bill	Base line	30%	50%
4	KPI 4 - Compliance rate of bills paid on time	Base line	Yet to be developed	Yet to be developed
5	KPI 5 - Revenues / rate of collected bills (compared to previous years)	Base line	Yet to be developed	Yet to be developed

Assessment of city ecosystem and activities - progress against KPIs

Where we started

Midway through the challenge

Final results

Solution 3 - Resource Booking and Service Availability Platform

1	KPI 1 - Usage of the city's facilities, resources, etc.	Base line	0%	5%
2	KPI 2 - Rate of registration through digital channels	Base line	0%	0%
3	KPI 3 - Citizen satisfaction and number of complaints received	Base line	0%	0%

Solution 4 - Single Card/Digital Identity/Signature for Citizen Services

1	KPI 1 - Usage of city system services	Base line	30%	30%
2	KPI 2 - Number of citizens using the city services	Base line	20%	20%
3	KPI 3 - Revenues collected by the city ((public transportation, public spaces, etc.)	Base line	Yet to be developed	Yet to be developed

Solution 5 - Collaboration / Discussion Platform

1	KPI 1 - Frequency of resident surveys, votings	Base line	0%	0%
2	KPI 2 - Number of citizens engaging on the platforms	Base line	0%	0%
3	KPI 3 - Citizen satisfaction with the platform	Base line	0%	0%

Solution 6 - Sensor Data Collection

1	KPI 1 - Number of IoT devices deployed	Base line	5%	5%
2	KPI 2 - % of city covered with 4G/5G	Base line	100%	100%
3	KPI 3 - Availability of IoT infrastructure (LTE-M network /NB-IoT network)	Base line	100%	100%

Assessment of city ecosystem and activities - progress against KPIs

Where we started Midway through the challenge Final results

Solution 7 - Data hub

1	KPI 1 - Extent of publicly available data	Base line	40%	60%
2	KPI 2 - Number of data storage silos	Base line	15%	14%
3	KPI 3 - Compliance by citizens and other stakeholders to provide data to the city	Base line	0%	0%

5 key lessons

Lesson	Reflections
1	<ul style="list-style-type: none">▪ Ecosystem of collaboration is key when it comes to approaching impactful City projects
2	<ul style="list-style-type: none">▪ ICC Secretariat is a resourceful commonplace of communication which provides a lot of valuable material
3	<ul style="list-style-type: none">▪ It is key to set strict goals and act on them in a timely manner.
4	<ul style="list-style-type: none">▪ The projects and Solutions to be implemented must be motivated by a persistent and clear society need.
5	<ul style="list-style-type: none">▪ It requires patience and time to transform and implement specific changes.

Reflections on city collaborations

What are the main lessons the city has learned from working with other cities during the ICC? Can you give specific examples?

- Even though we prefer in-person communication, which was limited throughout this project due to COVID-19, **using the ICC platform and applications helped overcome such obstacles and support discussions.**
- While communicating with other cities, we have found numerous similarities in terms of strategy, proposed solutions, etc., which served us as a learning platform and guiding tool for our future projects.
- **Discussions with our Lead and Thematic Experts as well as experts of different cities and local authorities helped formulate solutions and avoid difficulties in suggested solutions**

Commitments

Commitments to on-going resources

1. The City has been going through a lot of challenges in regards to political changes and reorganization of the City's departments. Therefore, the City was unable to fully commit specific resources to the proposed initiatives on an on-going basis.
2. The City finished development of its digitization strategy which closely follows the initiatives proposed within the ICC programme. As soon as the City finishes reorganization of its internal resources, it will continue its commitment towards the initiatives on an on-going basis.

Commitments to on-going collaboration

1. FERIT
2. OSC
3. Udruga gradova

Commitments to on-going KPIs

1. The City is actively seeking for EU funding opportunities and will continue to do so upon completion of the ICC programme.
2. In the upcoming budget period, financial resources are planned to support the initiatives in accordance with the City's digitization strategy which closely follows the initiatives described within the ICC programme.

The European Commission's
**INTELLIGENT CITIES
CHALLENGE**



Section **5**

The City of Osijek: Appendix

ICC Transformation



City ecosystem | Workshops

Needs assessment workshop

27.01.2021

- 10 participants
- 5 participants from the local city government, 1 from academia & 1 from the city leading software company

Stakeholder workshop

23.02.2021

- 16 participants
- Participants: City representatives, Unikom, Base 58, Orqa, Saponia, Ukop, Tržnice Osijek, GPP, RT RK, ZZSO, BIOS, J.J. Strossmayer University

Maturity assessment and strategy workshop

24.02.2021

- 15 participants
- Participants: City representatives, Unikom, Base 58, Orqa, Saponia, Ukop, Tržnice Osijek, GPP, RT RK, ZZSO, BIOS, J.J. Strossmayer University, Mono Software

City ecosystem | Workshops

01 Needs assessment workshop

27.01.2021

- discussed and selected solutions available in city ICC chosen thematic track
- evaluated city high and low performance areas
- highlighted a wide range of inspirational solutions from other cities within a given theme
- deepened thematic knowledge in city representatives
- developed initial vision, ambition statements, and a list of possible solutions
- laid out following steps in the process

02 Stakeholder workshop

23.02.2021

- introduced a wider local ecosystem to the ICC project
- determined citizen needs and desires
- identified win-win models of engagement throughout the ICC

03 Maturity assessment and strategy workshop

24.02.2021

- assessed current solution maturity and development needs
- revisited city vision
- defined priority solutions most instrumental in achieving the city vision
- created an intelligent city strategy with short-term and long-term goals
- defined the high-level role of the city ecosystem in delivering strategy
- explored potential city-ecosystem collaboration
- determined opportunities for cross-city collaboration