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Trikala: Intelligent City Transformation Overview

ICC Final Deliverable

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Executive summary

Trikala is a medium-sized city with 61.000 citizens, located in the center of Greece. The smart city of Trikala is an early “smart city story”, whose grassroots lie back in 2003, having several correlated projects have been implemented so far, in an attempt to meet topics that citizens were interested in and to form a municipal strategic vision for a digitally transformed and interconnected local environment. To that end, the city must overcome challenges that have to do with open data, sustainable mobility, and innovative tourism services, to expand the local growth and enhance citizens’ living. Although there had been actions in these directions in the past, none of them was able to bring the expected total outcomes.

The city’s authorities and stakeholders concluded an updated vision, that could serve this purpose and was described as the development of an innovative ecosystem that attracts citizens, visitors, and businesses, accompanied by a digitally transformed and interconnected local environment and by a strong stakeholder partnership and encourages new idea growth, towards an intelligent and resilient city.

To address this need, 3 ambition statements were finalized and had to do with the creation of a commonly agreed data policy and a common open data and public consultation portal, along with a digital platform for sustainable mobility activities. Finally, the utilization of digital tools to highlight local assets and tourist attractions could significantly improve the local growth that is based on tourism. Given the delays partly dues to COVID, the solution that was prioritized was the actions toward a smart tourism area, including 2 digital platforms - one for virtual tours and a second to apply blockchain technology.

During ICC, the feedback from thematic experts helped the city’s coalition to focus on achievable actions and find out about some of the best practices, worldwide, that were successfully implemented by other cities. All this info can also be used in the future, for the city’s co-operation with other cities and improving even more any similar actions.

Mayor Foreword

Trikala is a famous Greek Smart City. Its grassroots lay back in 2003, and the municipality initiated innovative and ICT-based solutions and partnered in various national and European initiatives since then, as an attempt to enhance the quality of public services provided to citizens, businesses, and visitors.

Trikala implemented several big and small-scale smart solutions during this period and participated as a fellow city in the DCC (Digital Cities Challenge) in 2017 and followed up with its engagement as a core city in the ICC (Intelligent Cities Challenge).

We recognize that a city has limited opportunities to utilize its digital transformation. Endeavors like DCC and ICC, provide cities with useful assistance through collaboration, guidance, and technical support from thematic experts, to help them design and implement their local digital transformation strategies.

A sole project may not be enough to digitally transform a city and many more are needed in this respect. This is why Trikala will always keep on implementing smart solutions and participating in similar European initiatives.

The city of Trikala 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

Reported as one section

	1 Preparation & assessment	2 Ambition & roadmap	3 Implementation	4 Review & way forward
	5 months: September 2020 – January 2021	3 months: February 2021 – April 2021	15 months May 2021 – July 2022	2 months August 2022 – September 2022
Summary	Find out where a city is, where it should go and who in the ecosystem is going to mobilise make things happen	Develop a concrete plan to achieve measured improvements, collaborating with the community; push action with immediate benefits	Get "big moves" done and see results; take action in partnership with others	Measure success, and commit to keep connections and improvements going

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Section

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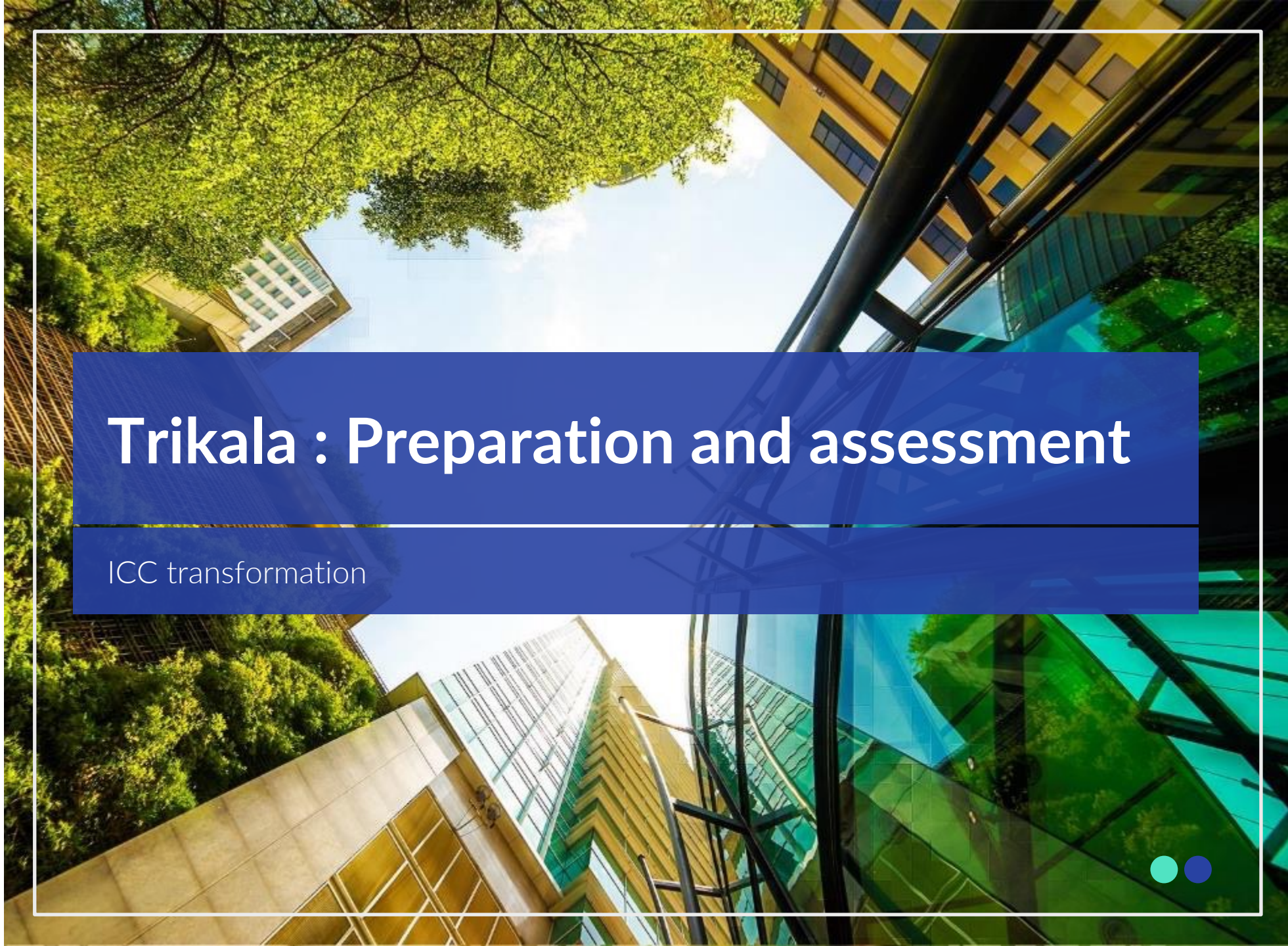

Trikala : Preparation and assessment

ICC transformation

September 2020 to January 2021

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Introduction

Trikala is a medium-sized city with 61.000 citizens, located in the center of Greece. It has a beautiful, green, and flat landscape, surrounded by beautiful hills and mountains at a distance of less than 20Km. Trikala's history goes back to 1,000BC when the ancient city “Trikki” was located in the same place.

The smart city of Trikala is an early “smart city story”, whose grassroots lie back in 2003, having several correlated projects have been implemented so far. After a decline that appeared in 2010 in terms of funding and community engagement, Trikala shortly restarted a fruitful agenda of “smart city projects”, in an attempt to meet topics that citizens were interested in, and to form a municipal strategic vision for a digitally transformed and interconnected local environment, where

1. Data openness is supported by citizen digital engagement and the cooperation between municipal agencies, for an optimal information and service delivery by the city’s authorities;
2. Citizen's living is enhanced applying methods for sustainable mobility and urban renovation;
3. Local growth is supported by innovative tourism services and digital talent development and attraction.

In this regard, Trikala applied the Intelligent Cities Challenge to methodologically define the steps and the roadmap that could support this strategic vision.

The interviews, the workshops and the meetings with thematic experts, helped city’s stakeholders finalize their needs and the actions needed to achieve the above goals.

City needs: State of the city overview

The state of Trikala today

The smart city of Trikala provides its citizens with a variety of smart services, which were released after the implementation of digital initiatives and projects during the last two decades. Most of them focus on city administration and citizen/visitor needs -like complaints registration, city Mobile App, wireless connectivity (Wi-Fi, IoT, and 5G), Smart Lighting, Smart Parking, Environmental monitoring, "Smart City" platform, traffic lights monitoring, fleet management, smart water, Geographic Information System (GIS), open data and open consultations, etc.

The above initiatives are supported by the local Innovation Hub (GiSeMi) and digital upskilling initiatives (STEM diffusion at local public schools; CISCO Academy, courses for unemployed and youth, digital marketing training, etc.).

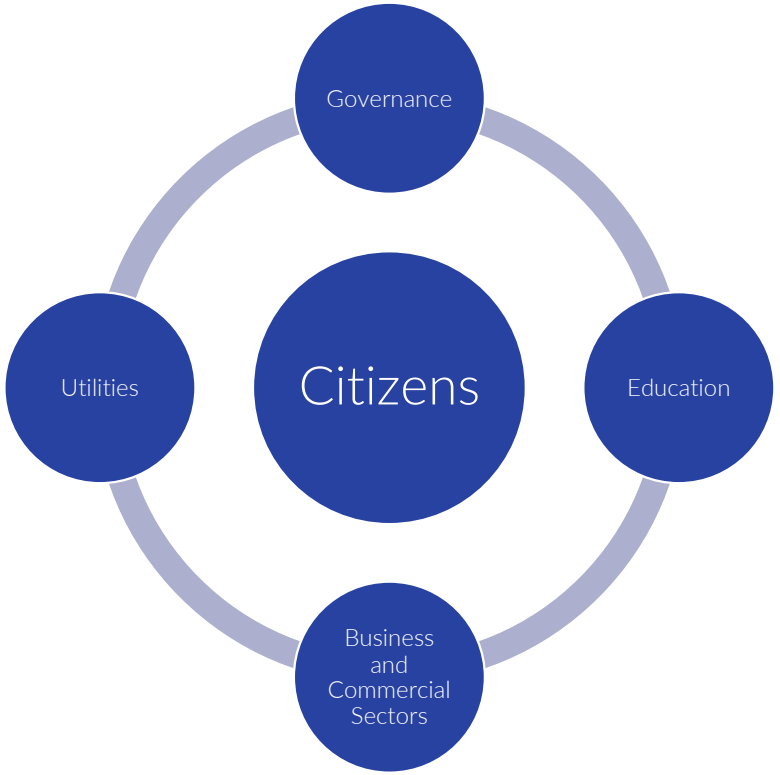
All these activities offer an attractive environment for pilot project testing and success story upscaling.

Key insights from city performance analysis

	Higher performance observed		Lower performance observed
1	Digital infrastructure as an enabler for digital service provision (e.g., 5G readiness, IoT-readiness, fiber-optic network, metro Wi-Fi	1	Lack of social interest in open data
2	Existing citizen attitude to accept new and innovative solutions in the city's digital transformation (transparent service delivery and digital upskilling)	2	Citizens have limited participation in policy making
3	Sustainable tourism with stakeholder partnership; digital marketing upskilling; and smart open mall that integrates tourism and market	3	Unemployment and especially young unemployment, that make difficult for some citizens to use any available digital services
4	The location at the country's center turns the city into a transportation, business, and tourism hub	4	The majority of young people don't have an interest in digital upskilling efforts
5	...	5	Citizens' attitude is against the use of local public transportation, due to ground for, short distances and poor transportation alternative solutions

City Ecosystem

The 11 stakeholders that are engaged in the ICC appear highly interested in the project's mission. They come from a variety of domains (education, business, commerce, governance, utilities) and their decisions and actions have a huge impact on the community. This diversity can be considered an advantage because the synthesis of different perspectives can become an asset for this project.



<u>Governance</u>

Municipality of Trikala

Prefecture Government

<u>Education</u>

University of Thessaly - Department of Sports

University of Thessaly - Department of Nutrition

<u>Business and Commercial Sectors</u>

E-TRIKALA (municipal company responsible for digital and tourism activities)

Commercial chamber

Commercial union of Trikala

Local Tourism Organization

Municipal company responsible for transportation, parking and sports

<u>Utilities</u>

Regional waste management provider

Urban public bus provider

ICC strategy: Vision and ambition statements

Overarching ICC city vision

The development of an innovative ecosystem that attracts citizens, visitors and businesses, accompanied by a digitally transformed and interconnected local environment and by a strong stakeholder partnership and encourages new idea growth, towards an intelligent and resilient city.

Ambition statement 1

Create an interconnected ecosystem with a commonly agreed data policy and via a common open data and public consultation portal

Ambition statement 2

Enable a common digital platform for sustainable mobility activities

Ambition statement 3

Utilize common tourism organization and digital tools to highlight local assets and safety, attract digital nomads and virtual tourists

City strategy: justification

How do the solutions interact?

Tourism and transportation are interconnected domains and solutions have to consider both of them. There is no conflict of interactions between the 3 solutions. Generally, the actions in one solution will have a positive effect on the others. By enhancing the city's mobility status will help improving the overall satisfaction level of visitors and this is something that in long term will help the tourism sector and businesses. Above all, the use of open data will support innovative solutions in mobility and tourism, and their internal connection to the city's ecosystem, will secure an overall local growth.

If you could boil down your strategy to three thoughts that have best guided you on your way, what would they be?

- Improve services provided by local authorities to citizens and visitors to enhance local growth.
- Strengthen city's ecosystem by using state-of-the-art technologies.
- Maintain the existing momentum of participation in DCC and take advantage of the city's reputation as a well-known smart city.

What are the key factors that define success across all of your solutions?

Key factors that can define the success of all solutions are the commitment of the stakeholders in providing better services to citizens and visitors, the lack of conflicts between them and the citizen's positive attitude in implementation of innovative solutions. Of course, nothing can really be implemented without finding and absorbing the necessary funds. For that reason, certain actions must be undertaken to use funds outside the narrow municipal budget, like Regional, National or European programs.

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Trikala: Ambition and roadmap

ICC Transformation

February 2021 to May 2021

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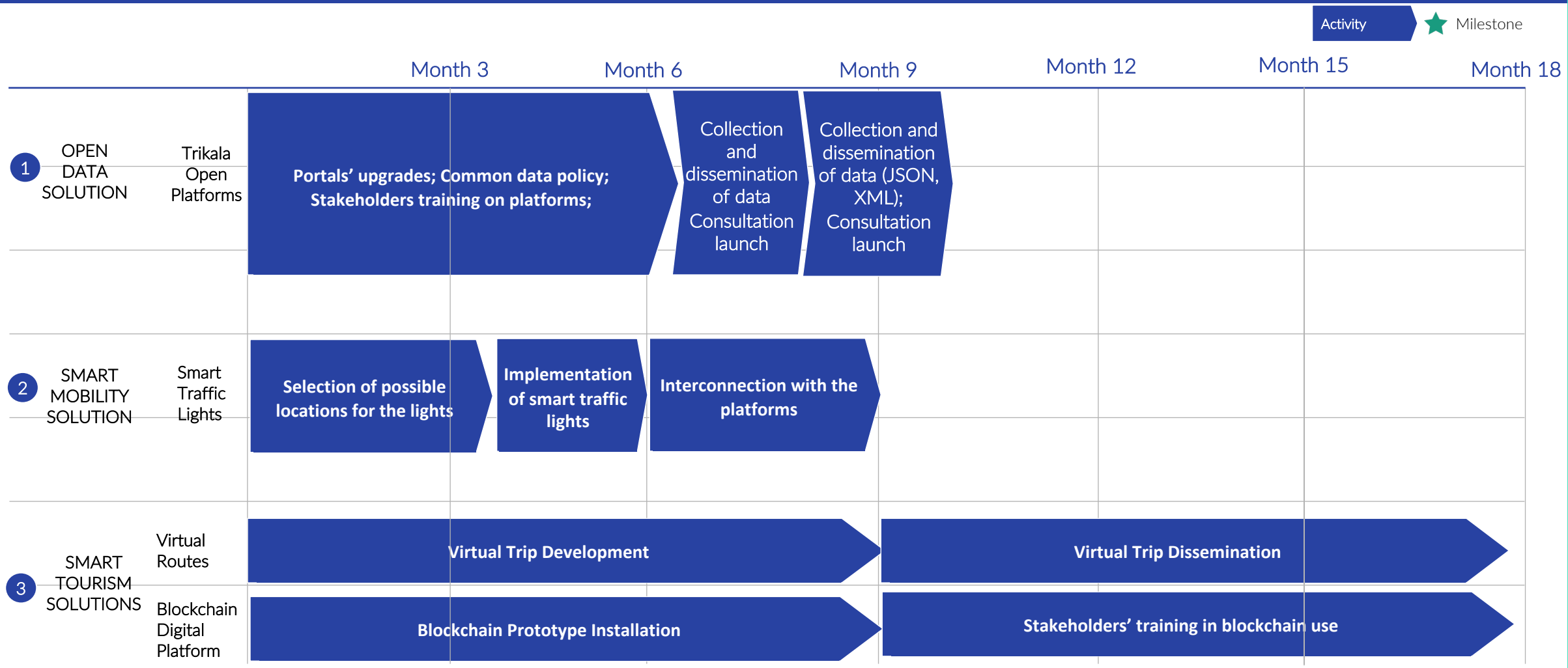
High level implementation roadmap



Rationale to road map

The digital transformation roadmap for the city of Trikala prioritized openness, mobility and tourism in order to establish citizen engagement and economic growth accordingly. Openness in data is aimed to be established with the implementation of data portal, accompanied by a commonly agreed data policy, and with a public consultation portal.

Openness leader is a municipal compary responsible for ICT projects (e-Trikala). Smart mobility prioritized harmonized people and vehicle flows downtown and addressed an issue that couses traffic bottle necks due to specific pedestrian crosses/passages, which need to be automated and controlled according to the traffic.

Finally, smart tourism priotized two innovative activities: a blockchain network that interconnect all the corresponding stakeholders (tourism unit; tourism agencies; hotels etc.) and virtual tours to specified sights.

The project portfolio aligns to the strategic vision and is organized appropriately for its successful implementation.

So far there have been resource limitations by the relevant stakeholders, in order to fully support this effort. As an outcome was that certain tasks had to be prioritized. Among others, the ambition statement that considered to be the one that would be more easily implemented and produce a big opportunity for the city, was the solutions regarding Smart Tourism.

Given the delays partly dues to COVID mostly this solution is discussed in the context of the current ICC. However, the two other solutions suggested in the roadmap continue to be highly relevant, and will be included in the discussions for both the Greek RRF and possibly ICC2.

Initiative charter <SMART TOURISM>

Strategy

Description

Utilization of an on-line platform for digital tours in specific routes.
These routes can cover different areas as local history in health, water flows and rivers and local history in music.

Utilization of an on-line platform that inform citizens and visitors about everything they need and create a smart tourist community that involve all the local tourism stakeholders.
A digital platform that will use the blockchain technology

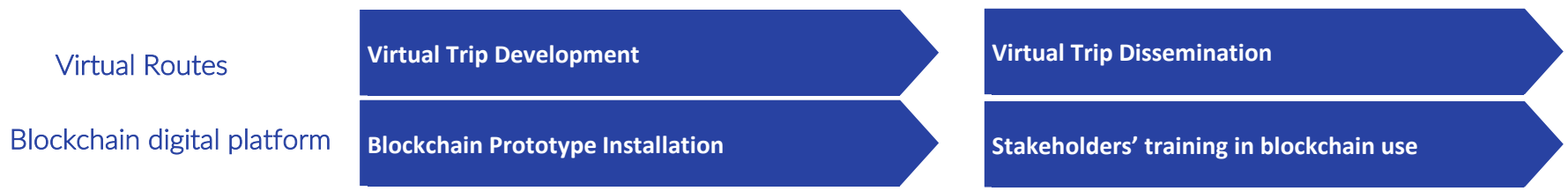
Link to vision

Solutions that encourages a new idea of local growth, by attracting more visitors

Link to ambition statement

Utilize digital tools to highlight local assets and safety and virtual tourists

Expected impact and timing



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Initiative charter <SMART TOURISM>

Stakeholders involved

Solution lead:

Tourism Joint Unit

Solution working team:

STEERING COMMITTEE:	Representatives from Local Tourism Organization and Municipality of Trikala.
PMO:	Representative from Local Tourism Organization
Core team:	Representatives from Local Tourism Organization

Contributors:

Municipality of Trikala, Prefecture Government, Local Tourism Organization, Commercial chamber, Commercial union of Trikala, Urban public bus provider, E-TRIKALA (municipal company responsible for digital and tourism activities), University of Thessaly – Department of Sports

Risks and mitigation

Key risks: Novelty of blockchain systems.

Challenges: Training on new systems; Stakeholders' engagement

Mitigating measures: Highlighting the benefits of these projects

Initiative charter <SMART TOURISM>

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost	PREFECTURE OF THESSALY.
	So far there hasn't been an estimation of the total cost of both solutions on Smart Tourism
Solution maturity outputs	- Experience in partnering for big events' management has grounded a consensus that can be used in the blockchain
	- Experience in virtual museums in the area will be utilized for the development of virtual trips to selected sights
City performance outcomes and impacts	- Blockchain network for tourism service provision across the city - Virtual trip development in specific sights (i.e., Folk Music Museum) is expected to enhance city attractiveness
	The initiatives will bring together the tourism stakeholders and generate a digital tourism ecosystem in the city. Additionally, virtual tours will extend the touristic period of the city and expand the Trikala's fame beyond the national boundaries

Initiative charter < DATA OPENNESS >

Strategy

Description

Data policy will extend the municipal one according to the ICC stakeholders' capacity and provide them with specifications for data dissemination via the data portal.

Moreover, the following data sources will be connected to the portal and data collection will be based on:

- The Network of meteorological stations with integration of Precision Agriculture application
- The water measuring stations of the rivers, with Feed from meteorological stations and real time alerts
- IoT system for management and supervision of street lighting
- Parking management system for disabled people

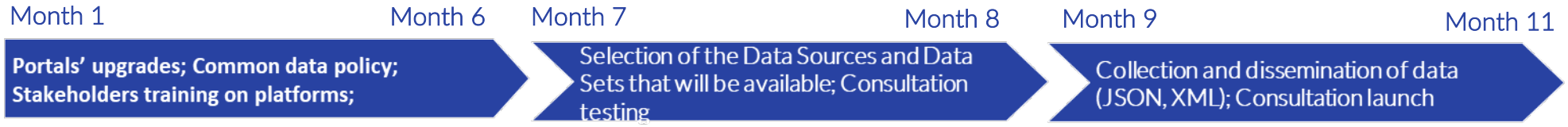
Link to vision

Build a digitally transformed and interconnected local environment

Link to ambition statement

Common open data and public consultation portal

Expected impact and timing



Initiative charter < DATA OPENNESS >

Stakeholders involved

Solution lead:	E-TRIKALA
Solution working team:	STEERING COMMITTEE: Representative from E-Trikala, Representative from Municipality PMO: Representative from E-Trikala. Core team: Representative from E-Trikala, Representative from Municipality
Contributors:	Municipality of Trikala, Prefecture Government, Commercial chamber, Commercial union of Trikala, Regional waste management utility, Urban public bus provider, University of Thessaly - Department of Nutrition
Risks and mitigation	Key risks: Lack of stakeholders' interest in training and participating, Lack of citizens interest Challenges: Change Resistance Internally to data policy; Citizen engagement Mitigating measures: data policy circulation between stakeholders; training on best practices; openness awards launch

Initiative charter < DATA OPENNESS >

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

PREFECTURE OF THESSALY

ESTIMATED COST OF 80.000 EUROS

Solution maturity outputs

- Existing municipal portal will be upgraded and fed with datasets across the city / Engaged community (adults: 20%; youth: 10%)
- Existing municipal data policy will be extended and agreed across the participating organizations / Engaged partners (100%)
- Existing municipal public consultation portal will be upgraded and host the participants' public consultations / Opened consultations (30% of policy decisions to be circulated with the community)

City performance outcomes and impacts

- Existing municipal portal will be upgraded and fed with datasets across the city / Engaged community (adults: 20%; youth: 10%)
- Existing municipal data policy will be extended and agreed across the participating organizations / Engaged partners (100%)
- Existing municipal public consultation portal will be upgraded and host the participants' public consultations / Opened consultations (30% of policy decisions to be circulated with the community)

Key Performance indicators - overview

Solution	Activities – Inputs and actions	Solution Maturity - outputs	City performance – outcomes and impacts
Tourism blockchain platform And Virtual Trips	1. Create a smart destination ecosystem; integrate security-safety-cyber security and use a blockchain installation 2. Virtual trip development	1. Fully operational, state-of-the-art digital tourism platform 2. 5 virtual galleries and tours	1. Increase tourism inflows, exploiting the attractions of the whole region 2. Increase revenue from tourism
Open platforms	1. Data portal re-organization 2. Common Data policy reform 3. Public Consultation Portal re-organization	1. Upgrade existing portal 2. Extend existing data policy 3. Upgrade existing municipal public consultation portal	1. Attract attention 2. Production of common data 3. Engage citizens and stakeholders in public consultation and decision making process

Rationale to KPI approach

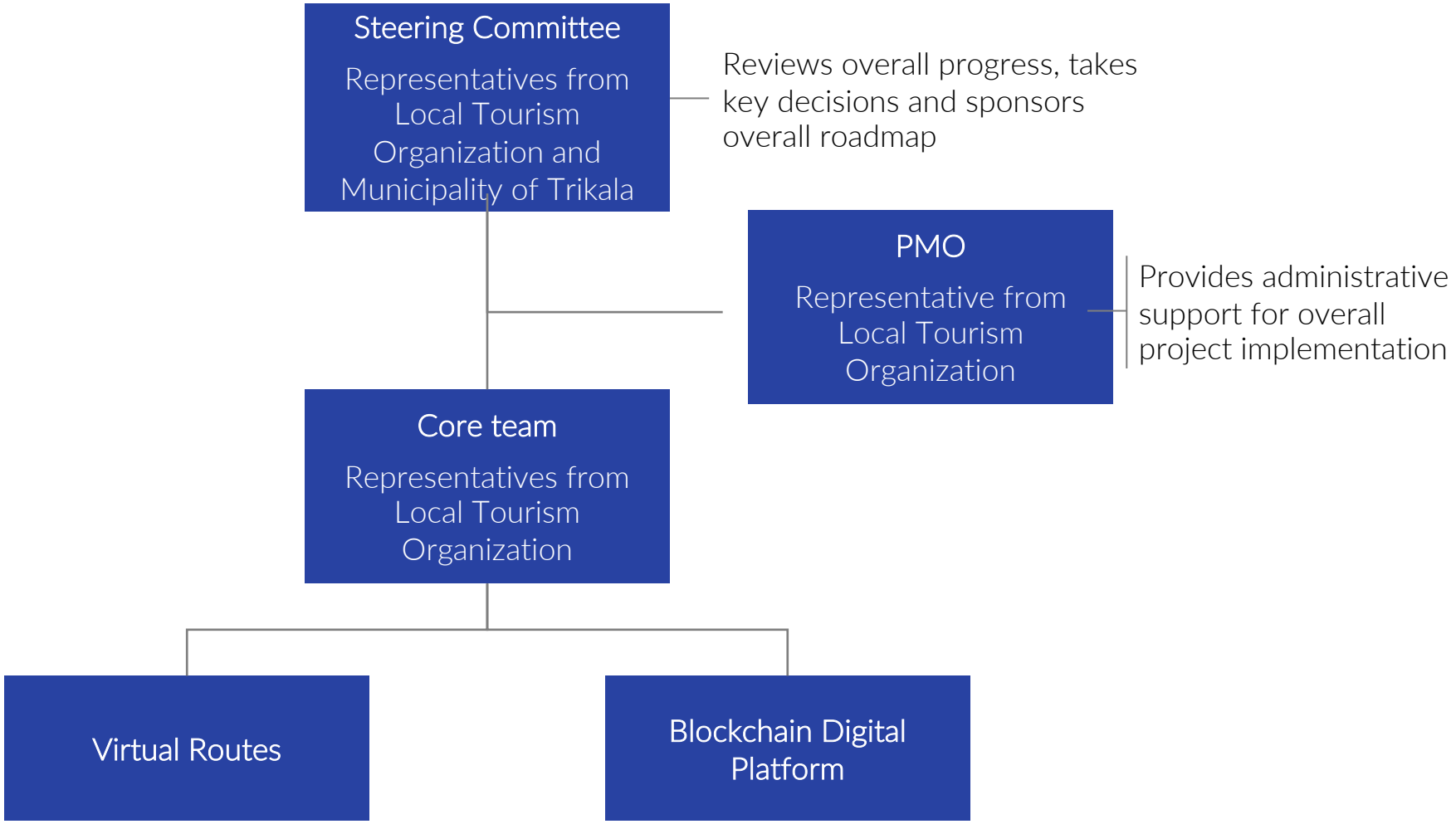
KPIs for Smart Tourism were selected based on the expectations from a modernized tourism infrastructure.

Tourism is an area where Trikala can develop rapidly exploiting both cultural heritage of the municipality itself as well as attractions from the neighborhood. New technologies that are already used elsewhere help design real and virtual facilities for tourism attraction. KPIs are expected to reflect the immediate result of the investments in these solutions as well as the longer-term impact which is increasing tourism and tourism revenues.

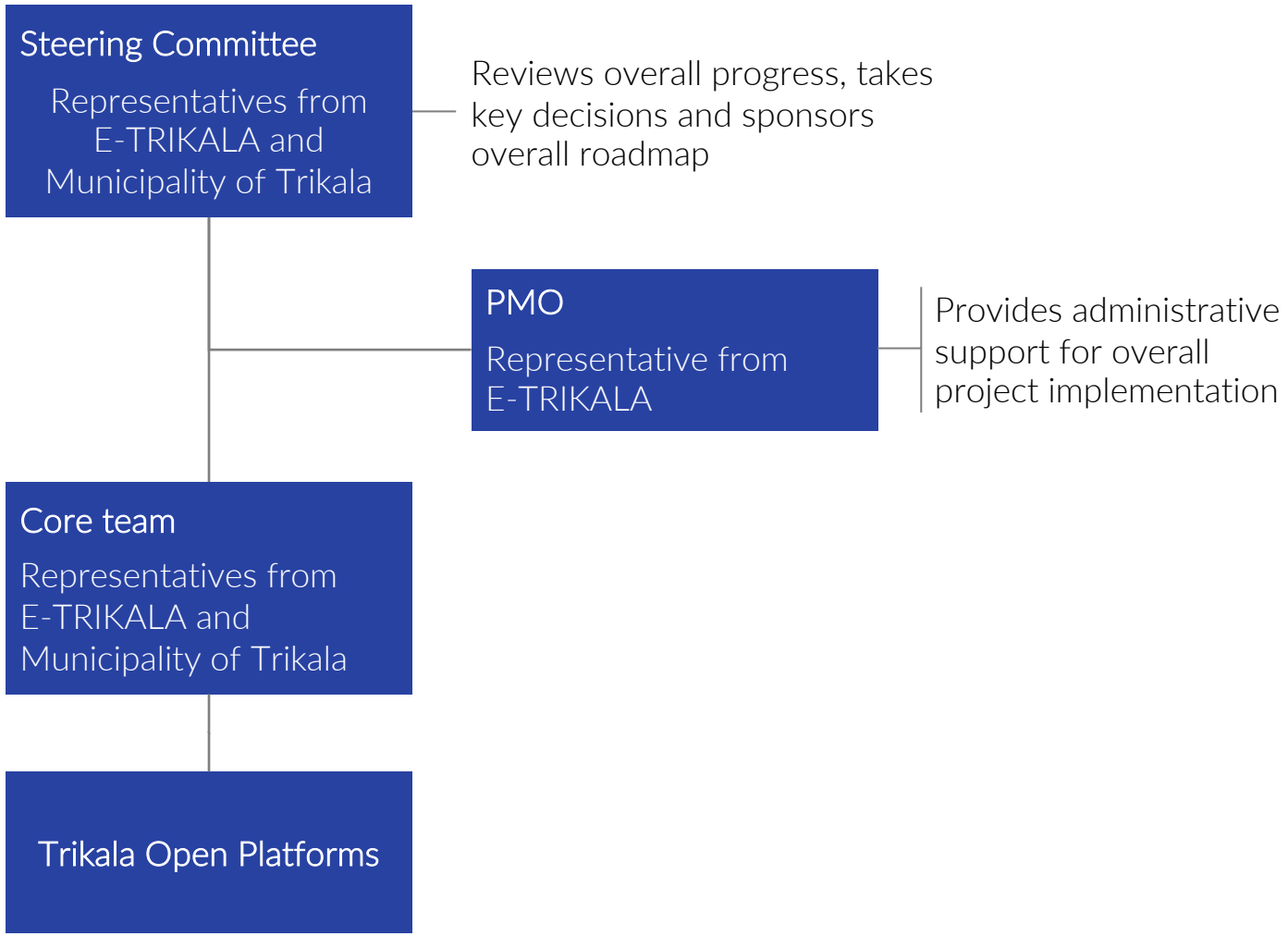
KPIs for the Open Data were selected based on the expectations for more active citizens' participation in everyday topics.

Since Trikala is already a well-known city as a Smart City, its time for citizens to use and apply any available tool, that have been implemented so far and it is still less known to them.

Governance structure for roadmap implementation <SMART TOURISM>



Governance structure for roadmap implementation <OPEN DATA>



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Trikala: Impact

ICC Transformation

February 2021 to May 2021

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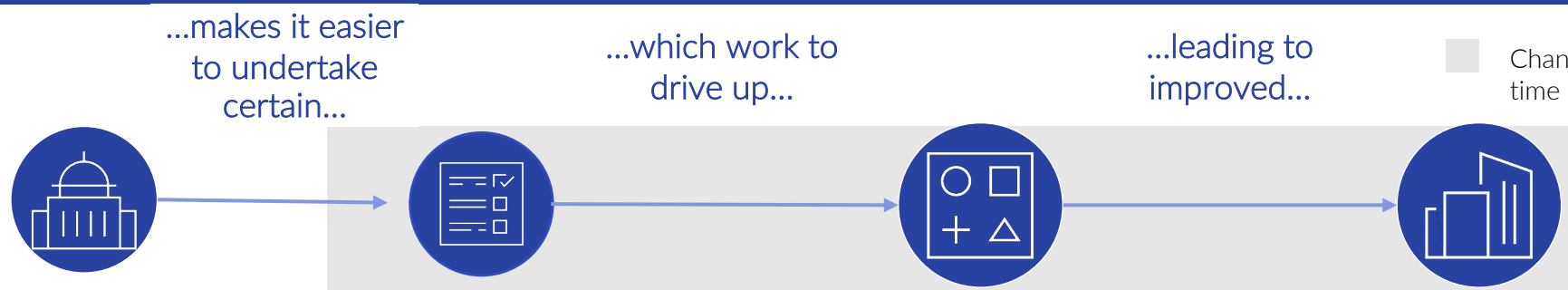
Impact executive summary

During ICC, city stakeholders had a chance to set up a new vision for city, which is the development of an innovative ecosystem that attracts citizens, visitors and businesses, accompanied by a digitally transformed and interconnected local environment and by a strong stakeholder partnership and encourages new idea growth, towards an intelligent and resilient city.

The COVID-19 pandemic, the novelty of proposed solutions, the need for continuous training and the limited stakeholders' engagement were some more factors that delayed the efforts.

So far, there has been no implementation of any of the proposed solutions, in its final form, for the progress tracking.

There are four types of measurable concepts that come together to drive success in the ICC



Idea	Local enablers –city characteristics	Activities – actions and inputs	Technology maturity – outputs	City performance – outcomes and impacts
Description	Each city has unique strengths and weaknesses that help action happen. These can be stakeholder networks, local capabilities, cultural factors or many more that drive success in ICC projects.	A cities main intervention on the ICC is to take actions. These can be direct (e.g., procuring technology), or indirect, (e.g., forming a working group on a topic). The right actions can lead to the right inputs going in to the ICC (e.g., funding, time)	Cities can drive technological solutions to try and improve city performance. How well these solutions are currently used can be described as their 'maturity', - considering whether they are available for stakeholder use, what stakeholders think of them, and so on	Success of an intelligent city is ultimately measured by its ability to address city needs. These can be considered an improved quality of citizen life and a better environment for stakeholders
Example	A history of strong collaboration between city and a local university...	...allows the creation of a new e-health pilot project using social housing in the city...	...leads to the launch a new tele-health solution utilising 4G data connections...	...resulting in pre-emptive diagnosis and lower wait times at medical facilities

Assessment of city performance - progress against KPIs

City performance	Where we started	Midway through the challenge	Final results
1 KPI 1 Increase tourism inflows, exploiting the attractions of the whole region	--	5%	10%
2 KPI 2 Increase revenue from tourism	--	10%	20%
3 KPI 3 Community engagement	--	10% adults, 5% youth	20% adults, 10% youth
4 KPI 4 Partners' engagement	--	50%	100%
5 KPI 5 Open consultations	--	15%	30%

Assessment of city performance - discussion

So far, no solutions were fully implemented to track their progress against KPIs.

In the meantime, Municipality of Trikala concluded to an updated public policy, regarding Open Data. New and more definitions, along with the goals, were presented in this policy statement.
In its body, the Standards for each type of open data were stated, the way they will be stored and secured, who will be the owner and the responsible agency, and the criteria based on which data will be selected and sorted.

Assessment of solution maturity - discussion

So far, no solutions were fully implemented to track the way solution maturity defined the progress

Assessment of city ecosystem and activities - discussion

So far, no solutions were fully implemented to track their progress against KPIs

5 key lessons

Lesson	Reflections
1	Securing the right staff and continuous engagement by all stakeholders is a critical factor for project's success
2	Searching for and applying successfully implemented solutions by cities with similar challenges, adds in city's experience and preparation for any future obstacles
3	The sooner funding is secured, the higher are the chances for successful pressure to the max total budget
4	Projects that effect the quality of provided services to citizens, must always take into account their real needs and secure people's participation and engagement

Reflections on city collaborations

There were not any collaborations with other cities so far.

On the other hand, during the project meetings, the discussions with other cities' representatives highlighted major aspects of how certain obstacles and challenges and how a city can overcome them.

Identifying that there are cities, in European level, that face similar challenges, might be very helpful for future collaborations.

Commitments

Commitments to on-going resources	Commitments to on-going collaboration	Commitments to on-going KPIs
The stakeholders for each solution will continue to provide the necessary resources, until the end of each project.	Collaboration between partners was very well established and they all commit to continuing in such a way.	

3 Year plan - ambitions

Building on the ICC, what would will the city aim to achieve in 3 years time?	To gain the necessary know-how - tools and knowledge – to address the described needs, and by that to provide better services to citizens and visitors. This would affect local ecosystem's growth, toward an intelligent and resilient city.
What steps will you take over the next 3 years to achieve these goals?	First of all, the specific projects must be fully operational and the impact on the citizens to be positive and above the anticipated levels. Then, the continuous learning on the cutting-edge solutions and best-practices, that have been successfully implemented by other cities, will help expand the usefulness of the undertaken projects.

3 Year plan - targets

KPI	Category	What commitments will the city make to this end?
1	Smart Tourism	To increase the tourism flows for an extra 10%
2	Smart Tourism	30% is the goal of increasement of todays' revenues from tourism activities
3	Open Data	An average of 30% of citizens will be actively engaged in policy decision initiatives
4	Open Data	All the relevant stakeholders will still support the open data policy and portal and participate in its process
5	Open Data	Most of public consultations will be performed digitally, through smart platforms