The European Commission's
INTELLIGENT CITIES
CHALLENGE

Terrassa : Intelligent City Transformation Overview

ICC Final Deliverable

European Commission | The Intelligent Cities Challenge is funded by COSME, the EU programme for Competitiveness of Enterprises and SMEs

Executive summary

Since the beginning of the "Smart City Challenge" initiative, the city of Terrassa is in a situation of continuous change towards the consolidation of a series of pillars that will turn it into a united, open and plural city, committed to being a green city, to the preservation of the environment and the fight against the climate crisis, as well as to improving the quality of life of its inhabitants, among many other challenges.

As other cities have been hit by the pandemic situation, Terrassa has suffered the consequences of this convulsive time, but it has not stopped, among other things thanks to the existing cohesion between the government bodies and the different agents of the city ecosystem. In order to achieve our city vision "*Create a city model that allows us to rebuild our economy while ensuring sustainable and smart growth*" we have to take actions in several areas, like climate adaptation, urban resilience, promoting the health and well-being of the citizenship, collaborative and participatory new economic models, and improving citizen participation.

After an open and participatory process with the different agents of the city, the decision was made to prioritize a series of solutions, which are at the heart of our project. The four main areas are: to boost the electro mobility and collective mobility in the city (by deploying electric charging points and developing micro-mobility solutions), working in a personalized, safe and quality telecare (as a part of a bigger project, based on the analysis of behavior patterns through the non-invasive energy monitoring of elderly people homes applying deep learning techniques) and build tools for improving urban resilience (early detection of meteorological risks and rapid detection and alarm generation against a forest fire).

Executive summary part II

In reference to the progress of the different solutions that are part of the city proposal within the ICC, we can find ourselves in different phases within the sub-projects: some in the execution phase or close to its execution; others with delays derived from necessary controls in the public administration, and some in the bidding phase. The fact that we have made less progress than expected in some of the solutions implemented, in our particular case, depends on several factors.

For instance, in the case of "*Electro mobility and Collective mobility in the city. Deployment of physical infrastructure for electric vehicle charging*" there are several departments involved, with several people in charge. This situation leads us to have, for the same solution, different execution speeds, as well as possible delays due to the rethinking of the project during its progress.

In other cases, as the solution depends on a more ambitious project, in the process of defining the bidding process, having to reach agreements with the entity that co-finances the project, there have been delays with respect to what we would have liked, but which are perfectly normal in this type of projects. In one of the cases, a tender that had already been published was declared void (no company applied) and had to be readjusted and republished. These are the case of the solutions "*Personalized, safe and quality telecare. Analysis of behavioral patterns through home energy monitoring*" and "*Tools to improve urban resilience. Rapid detection and alarm generation in the event of a forest fire*".

The city of Terrassa 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

1

Terrassa : Preparation and assessment

ICC transformation

September 2020 to January 2021

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Introduction

- Terrassa, with 224.087 inhabitants (2020 census), it is the third most populous city in Catalonia, representing 2,9% of the Catalan population. Besides, it should be noted that the city has experienced population growth in recent years.
- The population of Terrassa has an age structure similar to Catalonia. It is an aging population, with a proportion of the population over 64 years of age of 16,61%.
- The city is a fairly compact city, although in the last two decades there have been some processes of dissemination, mainly in the southern part, where there is more presence of low-density residential typology.
- Terrassa has a business structure based on small and medium-sized companies, as evidenced by the fact that 97% of Social Security contribution centers in the city have between 1 and 50 employees.
- The city has 79.922 employees (2020), occupying the seventh position in number of employees in Catalonia.
- Terrassa has a strategic location in relation to the structure of mobility flows at different scales at Catalan, State and even European level.

Introduction part II

- Terrassa has leading companies in sectors that are strategic for the city, such as food retail trade or health segments and technical textiles.
- Nowadays, three quarters of the city´s economic activities are dedicated to the service sector. Besides, this sector represents more than 70% of the city`s GDP.
- All sectors of activity tend to increase in number of employees in recent years. Besides, the number of self-employed workers has had a constant growth in recent years.
- Terrassa has a long industrial tradition, historically linked to the textile sector, but with other important ones such as machinery and equipment or pharmaceutical products. Currently, the city has 13 industrial areas located along the eastern fringe of the city, which have progressively concentrated most of the city`s manufacturing activity.
- The ability to attract talent is also highlighted thanks to the presence of the Polytechnic University of Catalonia and the proximity to others such as the Autonomous University of Barcelona.
- Today the city has 9 reference nodes for applied research, which bring together up to 118 teams of research in each of its specialties, 9, which provide services and collaborate in development of new technologies and products for companies nationally and globally.

Introduction part III

Terrassa aims to become a united, inclusive, open and plural city, always committed to human rights, the freedoms and democracy.

As a city it's strategically important to progress, day by day, towards becoming a green city, and to ensure that the actions that are planned and carried out are firmly focused on reaching that goal; also, it's mandatory to being committed to preserve the environment and combat the climate crisis, turning Terrassa along the way into a resilient city.

Using technology is a key factor that will help to achieve more sustainable urban development. It means keeping in mind several aspects of city planning, such transportation, infrastructure, telecommunications or energy. Likewise, since it's people who become users of technology, it is necessary to implement appropriate measures to mitigate the so-called "digital divide", which makes it difficult for certain groups to take advantage of all that technology has to offer.

This "green technology" supports green living practices (recycling, use of energy and renewable resources). Nowadays sensors are the heart of many sustainable city infrastructure and green building systems, whose function is to collect the necessary information that is generated in various parts of the city and whose goal is a subsequent decision making that allow us to improve the city day by day

In addition, to achieve inclusive and sustainable economic growth, conditions must be created that allow citizens to have quality jobs that boost the economy without harming the environment.

City needs: State of the city overview

Significance of insight to what we want to do on the ICC

- Of critical importance to ICC journey and we should be working to change
- Of importance to ICC journey, and we should act to change this along the journey as opportunity presents
- Contextually relevant, but not major point of attention in ICC and unlikely to be impacted on the journey

The state of Terrassa today

Terrassa is currently in a time of change in which it wants to consolidate a city model based on the following pillars:

- Making Terrassa a single, united, inclusive and plural city.
- Making Terrassa a vital, plural and open city.
- Making Terrassa a feminist and diverse city, committed to human rights, the freedoms and democracy.
- Making Terrassa a green city, committed to preserve the environment and combat the climate crisis.
- Designing the city tailored to people.
- Making Terrassa a cleaner, more sustainable and innovative city in the management model of the waste.
- Making Terrassa a city to live and coexist safely, preserving the freedom of the people.
- Breaking through the public space the "barrier effect", improving the life of people and connect neighborhoods.
- Having a public administration at the service of all.
- Making Terrassa a city capable of creating wealth, opportunities and quality work.

Based on this reality, in this first phase of the project, different tools have been used to advance in the identification of areas for improvement and areas of growth for the development of the city

Key insights from city performance analysis

Higher performance observed

1	Capacity to attract young talent, thanks to its strong university community.	
2	The existence of solid business and research groups that makes a clear commitment to innovation in areas of potential growth such as health.	
3	Well-established associations and entities in the territory, eager to have a more significant role in the development of the city.	
4	The existence of infrastructures linked to the information and communication society.	
5	Capacity to become a relevant transport and logistics node thanks to its geographical position.	

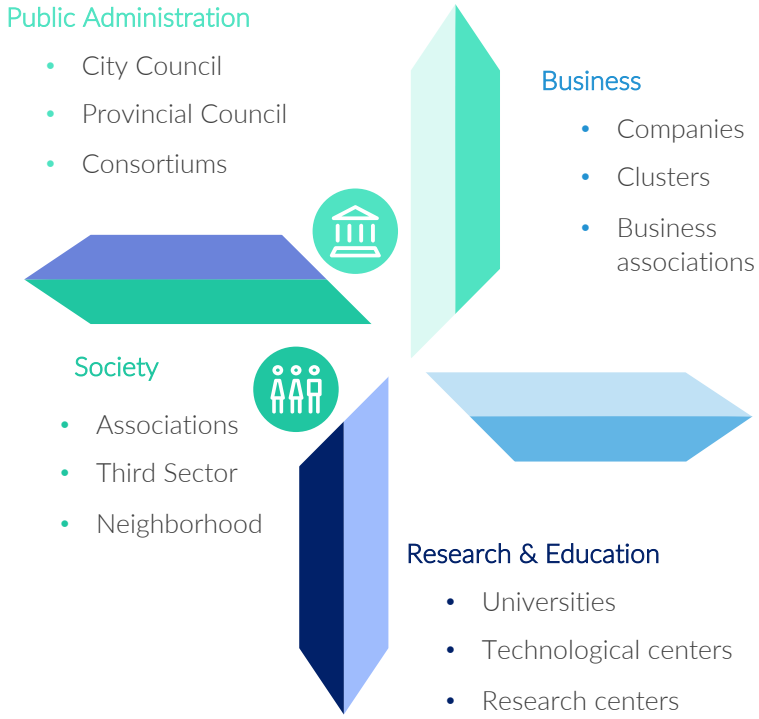
Lower performance observed

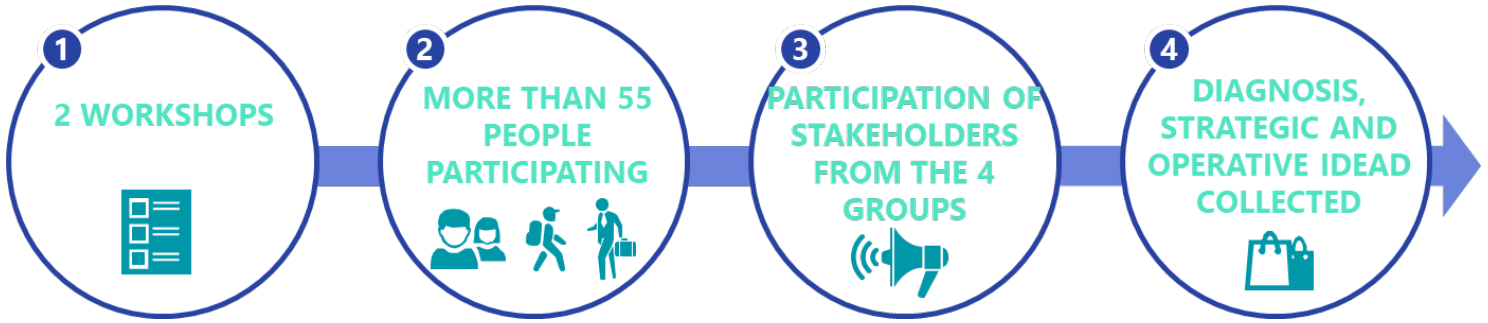
1	Significant differences in the ability to take advantage of the opportunities derived from digitization between the different groups that live in the city – lack of technological skills.	
2	Not optimal energy model, still highly dependent on polluting sources and on external sources.	
3	Limited digitization of the Public Administration – necessity to use of data to improve internal decision-making processes and creation and provision of public services.	
4	Little evolved emergency prediction and response model – necessity to make this model much more transversal.	
5	Ineffective waste management policy.	

City Ecosystem

Terrassa has been able to develop a solid ecosystem in order to articulate policies, initiatives and actions that favor its development at all levels (economic, social, environmental, etc.). In this ecosystem there is representation of all those groups of agents with the greatest relevance in the development of the city, having built a comprehensive and multidisciplinary model of cooperation and coordination.

Quadruple Helix Innovation Model





including some of the main municipal officials

The contributions made by the agents participating in the workshops have been of great importance when it comes to starting to draw what the future of Terrassa should be like.

Regarding the stakeholders that will participate in the proposed solutions, apart from the governing bodies of the administration (including City Council, Civil Protection, Local Police, Fire Department, etc), for instance, we can find: Universitat Politècnica de Catalunya (with a strong presence in our city) , CECOT (multi-sector business confederation), LEITAT Technological Center, Reby micro-mobility company, Catalonia Wheater Services, CRAHI (Applied Research Center in Hydrometeorology) among others.

ICC strategy: Vision and ambition statements

The main motivation in relation to ICC is that it could provide access to high-level experts with local and international experience who accompany us in the process of designing and implementing a new roadmap. This roadmap should take advantage of advanced technologies, allowing us to generate a city model capable of facing current and new challenges.

All that with the desire to create a city model that allows us to rebuild our economy while ensuring sustainable and smart growth.

Based on this general objective, participation in ICC aims to contribute to the achievement of some of the lines of action contemplated in our Mandate Plan 2019-2023.

- Promote the improvement of health services and equipment and correct the current deficits.
- Foster health and well-being in old age to promote active and healthy aging, respect and inclusion of the elderly
- Fight climate crisis: by an energy efficient and 100% renewable Terrassa.
- Boost to combined and shared mobility.
- Drive the use of technology and ICT to improve infrastructure and city life.

- Wi-Fi networks, universalize internet access and sustainable design.
- A prepared and resilient city.
- Promote entrepreneurship, with special impact in the initial stages and in those stages where more value can be incorporated.
- Strengthen and project our innovation ecosystem and drive the "digital city".

In the first phase, these were the initiatives or solutions that were initially chosen. With the evolution of the project, and more specifically with the participatory process that was launched (in which a large number of entities of the city participated), the four definitive solutions were defined, which appear in the next phase.

City strategy: justification

In reference to the strategy followed in order to identify which solutions are a priority for implementation in our city, several workshops were held with representatives of different entities of the city, with which the local government has a close relationship. The experience gained from the workshops, and the agreements reached, ended up defining the line of action to be followed and the solutions to be proposed.

Our four solutions (some of which have several initiatives) generally do not interact with each other, as they intend to provide solutions in different fields (including solutions that are part of a larger project that includes them) or are part of different smaller projects that provide solutions in the same area. In the first case, we can find two different solutions, "*Personalized, safe and quality telecare*" and "*Tools for improving urban resilience. Rapid detection and alarm generation against a forest fire.*", both of which are part of the same project. In the other case, the solution "*Electro mobility and Collective mobility in the city. Deployment of physical infrastructure for electric vehicle charging.*" is made up of small subprojects with different managers, because they are led by different departments within the City Council.

One of the key factors that has allowed us to face our projects has been the communication with the different managers involved (several in our case), as well as the entities involved (ranging from the city council itself, educational institutions, national entities and collaborating private companies).

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Section

2

Terrassa : Ambition and roadmap

ICC Transformation

February 2021 to May 2021

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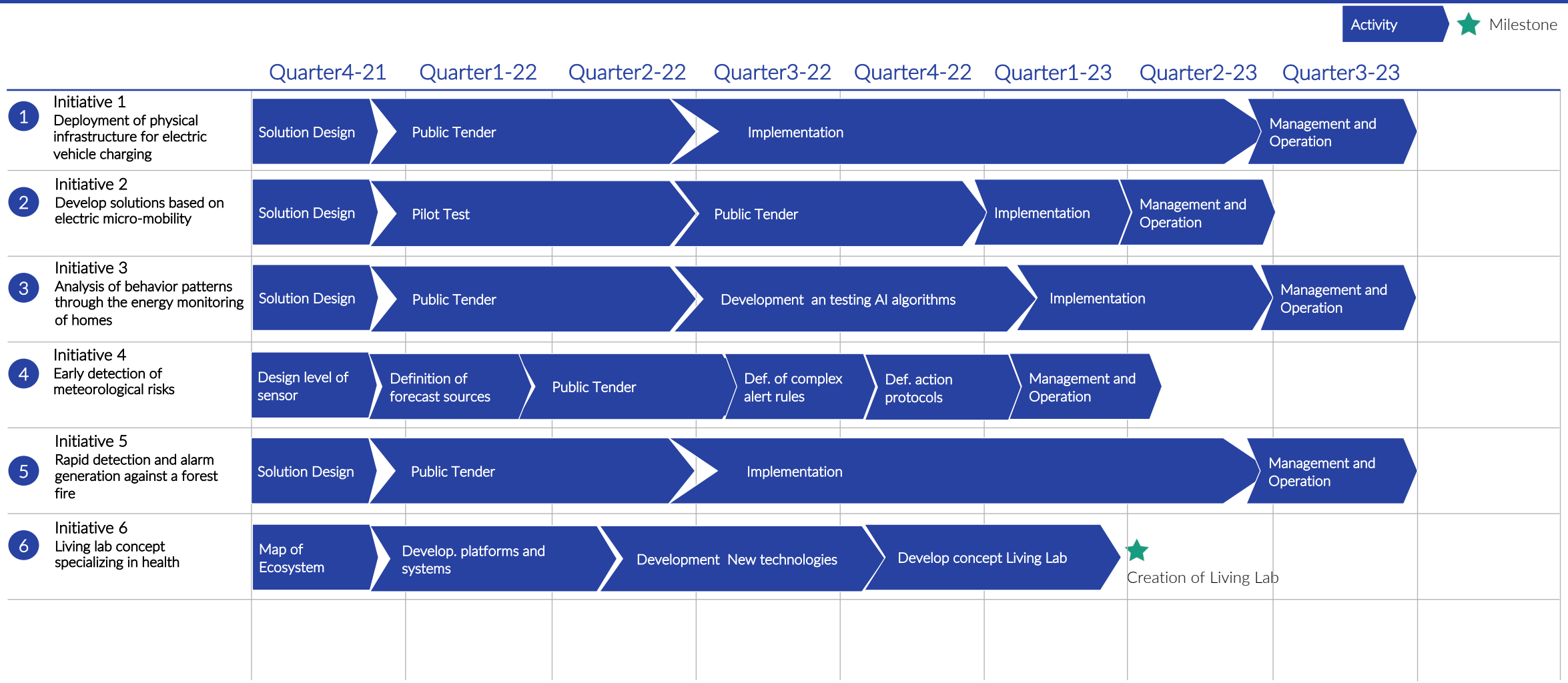
High level implementation roadmap (“10000m plan”)



Rationale to road map

Building a product roadmap starts with strategy. Since a roadmap is no more than a tool to communicate a vision, a high-level strategic product planning, time-based, we have tried to capture the different phases that will take us from the initial design process of our "product or solution" to the final delivery of our solution, once it is already implemented.

In one way or another, all solutions start with a design process, in which the responsible manager leads the process of researching, collecting ideas and requirements, translating and prioritizing this information into features, that will have the final solution, continue in a process of development and test, and finally the implementation. Once these phases have been reached, the project can be handed over to operation and closed.

In our case, in the solutions that are financed by the administration, it is necessary to carry out a bidding process, which allows us to choose, under objective criteria, the supplier that will carry out certain tasks. For example, the deployment of physical infrastructure for electric vehicle charging or the rapid detection of forest fires.

In some cases the resources have a limitation that should not be exceeded, so as with any project, which is like a living being, its scope may be affected, and some elements will be prioritized.

1 Electro mobility and Collective mobility in the city (I)

Strategy

Description

Electro mobility and Collective mobility in the city. Deployment of physical infrastructure for electric vehicle charging.

The deployment of an electric vehicle charging infrastructure is currently a priority.

Coordinate the efforts of the different departments in order to achieve a homogeneous infrastructure with unified control.

Link to vision

Create a city model that allows us to rebuild our economy while ensuring sustainable and smart growth.

Link to ambition statement

Climate adaptation. Collaborative and participatory new economic models.

Expected impact and timing

Reduction of noise and air pollution levels (that means improving the health and well-being of citizens). Streamlining urban mobility.

sept-2021 to sept-2023

Stakeholders involved

Solution lead: Terrassa City Council (Mobility Service).

Solution working team: Council, Electric Charger Operators, Energy Companies, Automotive Sector, Citizenship.

Contributors: European Commission (FEDER), Government of Catalonia.

Risks and mitigation

Difficulties related to the management of change in habits and ways of doing deeply implanted.

Lack of financing for new infrastructure. Significant investment need.

The impact of the pandemic and the post-pandemic on the use of collective public transport.

The electric vehicle market is not mature yet. Limited regulatory development.

Many different actors. Coordination is required.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

Public investment.

Initial investment for the infrastructure, adaptation and installation of recharging points for Electric Vehicles: 392.000 €

Next phases pending appraisal and investment.

Solution maturity outputs

Indicators correspond to phase 2

- Num. of charging points for EVS installed or to be installed: 141 in project (58 deployed or in early stage of deployment phase).
- Total kWh supplied (or to be supplied): 1.23Mw
- Total charging sessions: We are at a very early stage of the project. No information has yet been generated in this regard..

City performance outcomes and impacts

It is still too early to have these indicators; some projects are still in the contracting phase and others have just been installed.

We hope to make an impact in the areas of:

- Air (CO2 emissions reduction) and noise pollution level.
- Recharging points, increase of the percentage of EVs in the fleets (public and private). Currently 0,3% of city fleet. (public & privat)

1 Electro mobility and Collective mobility in the city (II)

Strategy

Description

Electro mobility and Collective mobility in the city. Develop solutions based on electric micro-mobility.

There has been an increase in micro-mobility due to the pandemic, derived from the social distancing required by health measures.

There is a need to promote initiatives related to micro-mobility.

Link to vision

Create a city model that allows us to rebuild our economy while ensuring sustainable and smart growth.

Link to ambition statement

Climate adaptation. Collaborative and participatory new economic models.

Expected impact and timing

Reduction of noise and air pollution levels (that means improving the health and well-being of citizens). Streamlining urban mobility.

sept-2021 to sept-2022

Stakeholders involved

Solution lead: Terrassa City Council (Mobility Service).

Solution working team: Council, Micro-mobility operators , Citizenship.

Contributors: Micro-mobility operators, Citizenship.

Risks and mitigation

Response of users to the change in their mobility habits.

To make the micro-mobility model compatible with the collective public transport model.

Sharing of common spaces for all types of mobility, and pedestrians.

The current regulations must be progressively adapted to the new reality.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

Collaborative economy models and private initiatives in the future, by means of a concession.

Currently the solution is private; operating costs are not reported to the City Council.

Solution maturity outputs

Indicators correspond to phase 2

Number of users subscribed to the micro-mobility platform: about 6.5k users (who have used the service at least once).

Number of vehicles by type:

- 69 scooters
- 24 bicycles
- 74 motorcycles

Average trip: 10 min; perfect for short trips.

City performance outcomes and impacts

- About 118.000 trips using micro-mobility vehicles in 500 days of service
- About 6.5 tons of CO_2 not emitted into the atmosphere
- Air and noise pollution level reduced.
- Reduced parking issues.

2 Personalized, safe and quality telecare

Strategy

Description

Personalized, safe and quality telecare. Analysis of behavior patterns through the energy monitoring of homes.

Non-invasive monitoring systems that enable the autonomy of the elders.

Installation of sensors to obtain information on the consumption of household supplies (water and electricity).

Link to vision

Create a city model that allows us to rebuild our economy while ensuring sustainable and smart growth.

Link to ambition statement

Promote the health and well-being of the citizenship. Reduction of the digital divide. Improve citizen participation.

Expected impact and timing

Increase the capacity of citizens to access social and health care while promoting a more continuous socio-sanitary care.

sept-21 to sept-23

Stakeholders involved

Solution lead:

Terrassa City Council (Health and promotion of autonomy service).

Solution working team:

City Council, Government of Catalonia, Barcelona Provincial Government.

Contributors:

European Commission (FEDER).

Risks and mitigation

Accessibility to the service of certain population groups (deaf, people with cognitive impairment, homeless). Lack of technological knowledge of the elderly. Rejection of a more impersonal and less direct care service.

Monitoring must be transparent to the beneficiary, and at the same time he/she must perceive how the assistance provided improves.

A proactive type of assistance must be achieved, based on the decisions derived from monitoring.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

Public investment.

An initial cost estimate values the necessary investment at around 80,000 €, including both hardware and software. Pending bidding process.

Solution maturity outputs

Indicators correspond to phase 2

- Number of people benefiting from the tele-care service: between 46 and 92 people (46 apartments, with occupancy varying between 1 and 2 people; usually 1 person).
- Number of support services provided as a result of the solution: initiative not yet deployed, so metrics are not yet available.

City performance outcomes and impacts

Although we have no data yet, due to the fact that the project is at an early stage, we anticipate:

- Increase in the level of autonomy of the elderly, due to the feeling of being monitored.
- Improving quality of life and safety
- The experience gained from this initiative can provide us with valuable information to improve the rest of the tele-care systems (previous and future).

3 Tools for improving urban resilience (I)

Strategy

Description

Tools for improving urban resilience. Early detection of meteorological risks.

Mechanism for forecasting events related to floods, winds and snowfall.

Deployment of a larger number of sensors as well as improvements to the forecasting and alerting platform.

Link to vision

Create a city model that allows us to rebuild our economy while ensuring sustainable and smart growth.

Link to ambition statement

Disaster management. Predictive emergency actions. Referent city in urban resilience.

Expected impact and timing

Improve weather-related forecasting systems, as well as action protocols, for episodes derived from climate change. Gain time to mobilize teams, resources and prepare reception centers with time enough.

jun-2021 to dec-2022

Stakeholders involved

Solution lead:

Terrassa City Council (Local Police, Civil Protection).

Solution working team:

Council, Government of Catalonia, Mossos d`Esquadra. Other agents related to emergency management like Catalonia Meteorological Services, voluntary emergency associations.

Contributors:

European Commission (FEDER).
Centre de Recerca Aplicada en Hidrometeorologia (CRAHI)
Universitat Politècnica de Catalunya.

Risks and mitigation

Need to coordinate a large number of agents of very diverse typology. Many fields and areas of action to be considered.

Among the challenges to be taken into account, the main one is that there is a forecast increase in extreme weather events due to climate change. It will be necessary to have a greater safety net (systems, resources, teams and procedures) to combat them.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

Public investment.

Subscription to the ARGOS City platform: 7.260 €/year

Solution maturity outputs

Indicators correspond to phase 2

The project is at a very early stage. No information on outputs has been obtained yet, but we expect improvements in:

- Increase in level of prevention and prediction (time)
- Regarding CECAT emergency notifications, from January to October 2021:
  160 emergency notifications, of which 10 were considered as non-false positives.

City performance outcomes and impacts

The project is at a very early stage. No information on outcomes has been obtained yet, but we expect improvements in:

- The fight against the effects of the climate crisis
- Reduction of the impact of meteorological events on citizens and the maintenance of the quality of life.

3 Tools for improving urban resilience (II)

Strategy

Description

Tools for improving urban resilience. Rapid detection and alarm generation against a forest fire.

Automatic detection of anomalies that may indicate a forest fire. The system will generate alarms to the building and city platforms.

Implementation of the detection and alarm systems, as well as the city platform.

Link to vision

Create a city model that allows us to rebuild our economy while ensuring sustainable and smart growth.

Link to ambition statement

Disaster management. Predictive emergency actions. Referent city in urban resilience.

Expected impact and timing

Decrease losses associated with risks. Achieving a more coordinated and effective response to risks. Increase the capacity of the city to prevent threats.

sept-2021 to sept-2023

Stakeholders involved

Solution lead:

Terrassa City Council (Local Police, Civil Protection).

Solution working team:

Council, Government of Catalonia (Fire Department). Other agents related to emergency management like voluntary emergency associations.

Contributors:

European Commission (FEDER).

Risks and mitigation

Limited technological resources of early detection.

Increased frequency of forest fire episodes increased by the current climate change process, specifically high temperatures, low humidity, droughts due to lack of rain in long periods, and strong winds.

It will be necessary to be aware of the incident as soon as possible (prevention and monitoring), and to optimize resources to combat this type of episode.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

Public investment.

An initial cost estimate values the necessary investment at around 70,000 €. Pending bidding process.

Solution maturity outputs

Indicators correspond to phase 2

The project is currently in the design phase. The implementation phase has not yet been reached. It is expected to obtain:

- Increase in the level of prevention and prediction (time)
- Decrease in losses due to impacts (€)
- Reduction of cascading effects between impacted services.

City performance outcomes and impacts

The project is currently in the design phase. The implementation phase has not yet been reached. It is expected to obtain:

- The fight against the effects of the climate crisis, especially regarding forest fires.
- Reduction of the impact of meteorological events on citizens and the maintenance of the quality of life.

4 Promotion of Innovation in the social-health field

Strategy

Description

Promotion of Innovation in the social-health field. Living lab concept specializing in health.

The socio-health fabric in the city has been severely tested during the pandemic.

Updating the map of the ecosystem of socio-health care companies in the city.

Funding search to promote collaborative projects of socio-health innovation.

Link to vision

Create a city model that allows us to rebuild our economy while ensuring sustainable and smart growth.

Link to ambition statement

Promote the health and well-being of the citizenship. Reduction of the digital divide. Digital health.

Expected impact and timing

Promote the health and well-being of the citizenship. Reduction of the digital divide. Digital health.
All people in the city will have access to basic living conditions. Generation of an innovative.

sept-2021 to dec-2022

Stakeholders involved

Solution lead:

Terrassa City Council (Innovation Service).

Solution working team and contributors:

City Council, CoOrbital 40 Terrassa Science and Technology Park, Terrassa Health Consortium, LEITAT Technological Center, Disorder Institute Foundation, Polytechnic University of Catalonia, Terrassa´s hospital.

Risks and mitigation

Lack of economical resources.

Lack of interrelation and collaboration between companies in the sector.

Uncertainties about future trends in the social-health field.

Funding search to promote collaborative projects of socio-health innovation.

Inputs, outputs, outcomes and impacts

Source of funding and estimated cost

Collaborative economy models (City Council, Consorci Sanitari de Terrassa, Leitat, Polytechnic University of Catalonia, Borderline Disorder Foundation.

Executed investment (from 2017 to last quarter 2021) around 2.8 million €.

Solution maturity outputs

Indicators correspond to phase 2

LIVINGLAB SALUT (*2019 vs 2020*)

Researchers/year in co-financed projects: +100%

E-MOTIONAL REG (*2019 vs 2020*)

Researchers/year in co-financed projects: +187%

TACTIVA (TERRASSA HEALTHY and ACTIVE) (*2019 vs 2020*)

Researchers/year in co-financed projects: +80%

City performance outcomes and impacts

The types of impacts on the city that we expect - but we are in an early stage to see them- are related to:

- Percentage of the socio-sanitary sector in the total economic ecosystem.
- Increase in the number of socio-health care companies in the city
- Number of technological spaces focused on the health sector.

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Key Performance indicators - overview

Solution	Activities – Inputs and actions	Solution Maturity - outputs	City performance – outcomes and impacts
Electro mobility and Collective Mobility in the city	• Num. EVs • Num. of charging posts EVs • Num. private electric scouters • Num. private electric bikes	• Num. of charging posts EVS installed • Total kWh supplied • Total charging sessions • Num. users micro-mobility platforms	• Air and noise pollution level • Percentage of EVs in the private fleets
Personalized, safe and quality telecare	• Number of elderly people living alone • Impact of the digital divide • Coverage of home support services • Level of population aging	• Number of people receiving telecare services • Number of supports made	• Increasing the level of autonomy of the elderly group • Improving quality of life and safety • Improvements to the care ecosystem
Tools for improving urban resilience	• Areas and public services identified as possible affected. • Level of service and availability of response equipment (time, %) • Losses resulting from impacts. (€)	• Increased level of prevention and prediction (time) • Decrease in losses due to impacts (€) • Reduction of cascading effects between impacted services.	• Improvement in the fight against the effects of the climate crisis • Maintaining the standard and quality of life
Promotion of Innovation in the social-health field	• Number of graduates in socio-sanitary careers • Investment in innovation in the socio-health sector and return on investment (€)	• New socio-sanitary careers in the city • Increase in graduated technicians in the socio-sanitary sector	Percentage of the socio-sanitary sector in the total economic ecosystem.

Rationale to KPI approach

When choosing the performance indicators to evaluate the progress of the actions that lead us to the achievement of our objectives, we took into account what all good indicators must fulfill: that they be realistic (an indicator that we can use) and that they allow us to quantify (that they give us information on how the project is progressing), among other things.

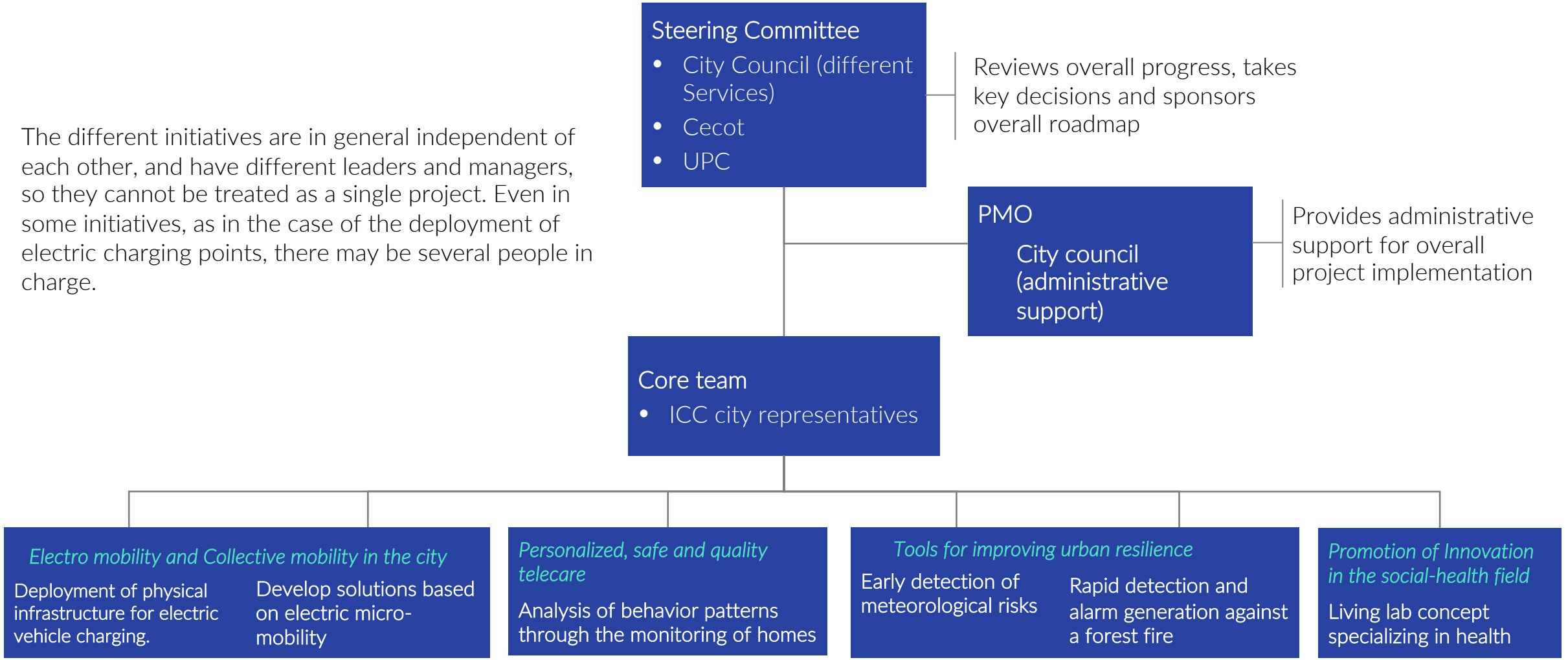
For instance, in the solution "Electro mobility and Collective mobility in the city. Deployment of physical infrastructure for electric vehicle charging" it was common sense to have as indicators the number of charging points (planned/deployed) as well as the total watts that these charging points would supply. Another indicator we could have chosen would have been the number of recharge sessions and the average duration of these sessions, but since we are not yet receiving the information from the recharge points through the OCPP protocol, it was not a candidate KPI.

About the solution "Electro mobility and Collective mobility in the city. Develop solutions based on electric micro-mobility." obtaining indicators has been relatively easy, since the company that is providing the service in our city has provided us with a scorecard in which to obtain information on the service.

In solutions that have not yet reached the implementation phase, we have chosen indicators that we believe will give us the information we want in the future, but some of them are still in the bidding phase. In initiatives that we do not lead, the indicators have been provided to us, as in the case of the solution "Promotion of Innovation in the social-health field".

Governance structure for roadmap implementation

The different initiatives are in general independent of each other, and have different leaders and managers, so they cannot be treated as a single project. Even in some initiatives, as in the case of the deployment of electric charging points, there may be several people in charge.



The European Commission's
INTELLIGENT CITIES
CHALLENGE

Section

3+4

Terrassa : Impact

ICC Transformation

February 2021 to May 2021

European Commission | The Intelligent Cities Challenge is funded by COSME, the EU programme for Competitiveness of Enterprises and SMEs

Impact executive summary

From the beginning, when Terrassa joined the ICC initiative, our city thought of bringing a series of solutions. During the subsequent phases some were discarded, and others were consolidated through the intervention of the different agents of the city in participatory processes.

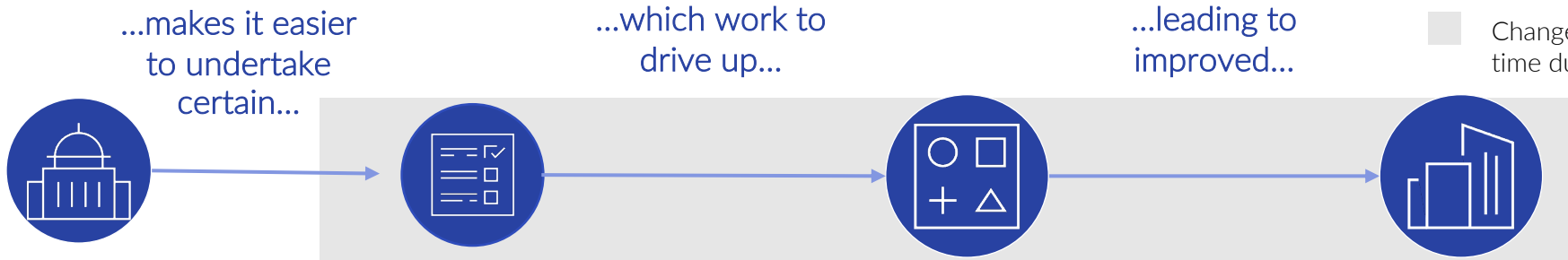
The following initiatives are the ones that were finally presented by the city of Terrassa:

- Electro mobility and Collective Mobility in the city
- Personalized, safe and quality telecare
- Tools for improving urban resilience
- Promotion of Innovation in the social-health field

One of the greatest successes during the ICC has been, with no doubt, the involvement of the different actors in the project; this result was predictable, since one of the strengths of our city is undoubtedly the good relationship established between the government institutions and the different entities of the city. As for the obstacles encountered along the way, and without taking funding into account, it could be said that projects managed by the administration have longer time phases for each activity due to the numerous controls that have to be complied with.

Regarding the progress controlled by the different indicators, we could say that, related to the strict need to comply with the necessary controls required by the administration, we have solutions in different phases: some are in the implementation phase, others are in the bidding phase, and some may be modified in terms of their initial scope.

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
Electro mobility and Collective Mobility in the city (i) physical infrastructure for electric vehicle charging (ii) electric micro-mobility	1 # of charging points for EVS (i)	141 in project (58 deployed or in early stage of deployment	141 in project (58 deployed or in early stage of deployment	
	2 W supplied (i)	1.23Mw	1.23Mw	
	3 # charging sessions (i)	No information yet	No information yet	
	4 # of users susbcribed (ii)	6.5k users	7k users	
	5 # of vehicles (ii)	167 (69 scooters, 24 bicycles, 74 motorbikes)	291 (161 scooters, 28 bicycles, 102 motorbikes)	
Personalized, safe and quality telecare	1 # of beneficiaries (max 92)	Solution not yet deployed	Solution not yet deployed (on tender phase)	

Assessment of city performance - progress against KPIs

City performance			Where we started	Midway through the challenge	Final results
Tools for improving urban resilience (i) Early detection of meteorological risks (ii) Rapid detection and alarm generation against forest fires	1	Regarding CECAT notifications (i)	Regarding CECAT emergency notifications, from January 2021 to March 2022: 222 emergency notifications, of which 13 were considered as non-false positives	Regarding CECAT emergency notifications, from January 2021 to March 2022: 222 emergency notifications, of which 13 were considered as non-false positives	
	2	Decrease in losses due to impacts (€) (ii)	Solution not yet deployed	Solution not yet deployed (on tender phase)	
	3	Reduction of casc ading effects bet ween impacted se rvices (ii)	Solution not yet deployed	Solution not yet deployed (on tender phase)	
Promotion of Innovation in the social-health field.	1	LIVINGLAB SALUT	LIVINGLAB SALUT (2019 vs 2021) Researchers/year in co-financed projects: +100%	LIVINGLAB SALUT (2019 vs 2021) Researchers/year in co-financed projects: +179%	
	2	E-MOTIONAL REG	E-MOTIONAL REG (2019 vs 2021) Researchers/year in co-financed projects: +187%	E-MOTIONAL REG (2019 vs 2021) Researchers/year in co-financed projects: +386%	
	3	TACTIVA (TERRASSA HEALTHY and ACTIVE	TACTIVA (TERRASSA HEALTHY and ACTIVE) (19 vs 20) (Ended at 2020) Researchers/year in co-financed projects: +80%	TACTIVA (TERRASSA HEALTHY and ACTIVE) (19 vs 20) (Ended at 2020) Researchers/year in co-financed projects: +80%	

Assessment of city performance - discussion

About the progress in certain solutions, as in the case of "Electro mobility and Collective mobility in the city. Deployment of physical infrastructure for electric vehicle charging" there are indicators that have not progressed. This may be due to certain factors. In this initiative there are several departments of the City Council involved, this means that there are several decision makers, and in some cases they have rethought the solution to adapt to the changing situation of a city in constant movement. Because of this we have preferred not to update these indicators until these changes are consolidated and we can continue with the deployment of the electric vehicle charging points in their final locations.

In the case of other solutions, which depend on larger projects, as is the case of the solutions "Personalized, safe and quality telecare. Analysis of behavioral patterns through home energy monitoring" and "Tools to improve urban resilience. Rapid detection and alarm generation in the event of a forest fire", which are managed in a single block, progress has been slower due to the validation processes and agreements to be reached, in this case with the RED.ES institution. Once progress has been reached, both solutions have been able to enter the bidding phase.

The rest of the solutions have progressed adequately, within expectations.