



The Urban Lab of Europe!

## NEWS

### PROJECT

AVEIRO STEAM CITY - Urban Network for Upgrading STEAM Skills and Increasing Jobs Added-Value through Digital Transformation in a new economic context

📍 Aveiro, Portugal

### TOPIC

Jobs and skills in the local economy

EDIT 17 NOVEMBER 2022  
BY LUCIA SCOPELLITI

# AVEIRO STEAM CITY JOURNAL 4: GET THE FINAL UPDATE ABOUT THE AVEIRO'S PROJECT

See on UIA website



This is the final journal of the project Aveiro Steam City (ASC); at the time of writing (October 2022) the project is officially closed and so it is possible to fully comment on the main goals reached, on the legacy of the project, on recommendations to share with policy makers and experts.

The project ASC," started in November 2018 and was approved under the topic "**Jobs & Skills**."

It represents the backbone of the **Aveiro Tech City Civic Initiative** and it was crucial for the local authority, in order to take the leading role in the definition and implementation of Smart Cities Strategy in the city of Aveiro, with the involvement of public and private partners.

The city of Aveiro and its partners has been committed to develop a technological urban center of reference at European level, by promoting the spread of innovative solutions, through the creation of **the first Living Lab of the city**.

The Municipality and its partners all share the same vision and are now, collectively, still working to promote the economic development of Aveiro and to promote the attraction, retention or creation of new talents.

Aveiro's Living Lab is composed of an advanced communications infrastructure and an innovative urban platform that, together, allow the provision of an open and large-scale technological laboratory in the city at the service of researchers, digital industries, startups, scaleups, R&D centers, entrepreneurs, creatives and other stakeholders interested in developing, testing or demonstrating concepts, products and/or services.

The total investment of the project reached 6.1 million euros, with funding from the European Commission through the UIA initiative of 4.9 million euros.

## PARTNERSHIP

- City of Aveiro
- Instituto de Telecomunicações - R&D Institute
- Altice Labs - R&D Institute
- Universidade de Aveiro - Universities and Research Centre
- CEDES - Universities and Research Centre
- INOVARIA - association of businesses

## PROJECT PROGRESSES

The most significant project's updates, since its end date, are described through 9 main domains:

1. Aveiro tech city living lab
2. 5G
3. Use cases
4. Digital Urban platform
5. Aveiro Challenges
6. Artistic Residences
7. Tech Labs
8. Labor Observatory
9. Tech City Hub

1. A connected infrastructure in the city of Aveiro, that contains communication, sensing and computation nodes throughout the city nurture the **Aveiro Tech City Living Lab** (ATCLL). Supported by state-of-the-art fiber link technology (spread across 16km in the city), reconfigurable radio units, 5G-NR radio and 5G network services, the access infrastructure covers 44 strategic points in the urban area of Aveiro, in the form of smart lamp posts or wall boxes on building facades with communications technologies, edge-based computing units and sensors (radars, lidars, video cameras and environmental sensors). The communications infrastructure integrates a communication network with radio terminals, multiprotocol (ITS-G5, 5G, WIFI, LoRa), spread throughout the city, connected by fiber optics to a data processing center, located at Institute of Telecommunications.
2. **5G**: A 5G-NSA network has been early deployed in Aveiro city center, around three commercial-grade 5G cell sites that proved to be a landmark for eMBB based services. 5G radio coverage of the city was later improved by the addition of two new cell sites to the network.
3. Many different **Use cases** have been demonstrated, in the environment, energy and mobility domain; with the Key Access IE, it's possible to monitor boats, cars, buses, motorcycles, bikes, and people through their communication, and through mobility sensors, such as traffic radars, LiDAR's, and video cameras, 24h/7days. Everything is now tested in an experimental environment.
4. A **Digital Urban Platform** has been developed to provide advanced data collecting and analytics services that fosters city governance efficiency and the emergence of new advanced applications centered on citizens quality of life. A City Governance portal was developed that provides a holistic view of all the information laying on the Urban Platform to facilitate the comprehensive analysis of key city services indicators. The functionalities and the potential of the 5G network and Urban Platform were demonstrated and the main results were shared in 19 different countries, competing in the two editions of the Aveiro 5G and Urban Challenges.
5. **Aveiro Challenges**: 2 editions of Aveiro Urban & 5G Challenges gave the possibility to startups and scaleups to develop and test their projects and to benefit from the Aveiro Living Lab. The challenges to be address were directly proposed by the Municipality of Aveiro or by other stakeholders, in order to tackle and resolve urban issues.
6. **Artistic Residences**: "Criatech Artistic Residence" aims at promoting the development of STEAM competences in a collaborative ideation context, with the participation of professionals and adult students from various creative areas. Artists involved work together in order to produce as final output an artistic artifact or a performance to show during the so called "Criatech Festival". Another artistic residency was ideated and developed in 2022, in collaboration with the city of Oulu. It aims to promote, specifically in the Intermediate Schools, the development of artistic content using the STEAM methodology, involving artists, teachers and students in the same project.
7. **Tech Labs**: the Tech Labs project aims to develop foundational skills and knowledge about STEAM competences in students and teachers from all educational levels. 31 Primary Schools in the Municipality were fully equipped and teachers were trained with the necessary skills to develop STEAM activities in a "classroom" context.
8. **Labor Observatory**: thanks to the creation of the Labor Observatory, it was possible to run Analysis and Diagnostics of the training needs of the private companies of the urban fabric. For this purpose, a tool for data extraction and analysis of only job advertisements, for the identification trends in the demand of competences, was launched. Within the Labor Observatory it was possible to conduct training-action programs both for people unemployed and active professionals.
9. **Tech City HUB**: the HUB was successfully equipped in the 2nd floor of the iconic building, the Atlas Building (<https://www.uia-initiative.eu/en/news/cultural-heritage-leverage-urban-regeneration-atlas-building-aveiro-tech-hub>). The official opening ceremony occurred in mid-October during the opening of Aveiro Tech Week 2021.

## THE PROJECT'S PLAN FOR LONG-TERM SUSTAINABILITY

Long-term sustainability of the project is strongly related to the **leadership** that was demonstrated during the overall deployment and there is also an evident continuity in terms of active participation of all partners in spill over project's activities. The leadership of the project was led by the team from the Municipality of Aveiro, which always knew how to mobilize partners to achieve the objectives, mitigating difficulties and responding to the needs of the territory. The management of the integration between all partners and support for the governance model was competent and it was a key for the project exploitation and represents also the basis for the future of ASC.

In terms of **Upscaling and legacy**, this project had a great impact on the entire territory of the municipality. Partners are convinced that it cannot only be applied in other regions with similar characteristics, but it really set a new standard.

First of all, the **Local Partnership** of ASC already evolved in "Aveiro Tech City" network with 14 partners and an upscaling is going to be seen in the future under the program "**Aveiro Tech Region 2030**". About the Communication infrastructure, this platform will continue to be available in the city in different areas, such as environment, mobility, tourism, autonomous driving and many others.

**Tech Labs**, awarded under the European Enterprise Promotion Awards (<https://smart-cities.pt/noticias/premio-iapmei-aveiro-steam-2010/>), contributed to the creation a consolidated layer of STEAM education in the Educational Community. Currently, it is possible to provide STEAM courses to all students in the Municipality and this service not only will be provided also in the next years but it will be expanded, at all levels of education.

The **Tech City HUB** in the Atlas building is definitely one of the most tangible legacies of the project. The implementation of the Living Lab in Aveiro was a significant step in the affirmation of the City Telecommunications arena.

**MTF Labs, Challenges and Bootcamps** are activities that have been implemented without external funding and will have continuity in the future, according to the Municipality's plans.

**Aveiro Social and Educational alliance**, a project funded with 12,3M€ approved for 2023-2026 through the NRRP, will guarantee funds for the University of Aveiro in providing STEAMS programs and courses for students.

Finally, new EU funded projects recently approved will make possible to enlarge by 20% the scope of the Aveiro Living Lab.

## LESSONS LEARNED

The **Procurement** processes run during the project were an interesting learning field both for partners and for the Main Urban Authority (MUA).

Regarding the MUA, the most significant acquisition processes are related to the energy Use case, the MTF Labs, the Tech Labs Equipment, the Tech HUB and the Bootcamps. Regarding the partners we should recall, among others:

- 5G-SA radio units (RU), RAN licensing and 5G NR Evaluation and testing kit
- Urban Platform Management Portal
- Materials for the fiber installation
- Lampposts and their equipment
- Sensors for the smart parking use cases.

In all these cases it was interesting to note that the most important phase of the procurement process was the research work done upstream, precisely because the object of the purchases were highly innovative devices. Exemplary was the case of the engines sought by the municipality of Aveiro studied at a German company known through a study visit dedicated in Germany.

**Communication and people engagement** activities also represented an important learning challenge. "Communicating the smart city" and engaging people in testing and then in the use of new technologies is not trivial. It was certainly very important to focus on moments of communication that could be perceived as "popular", in which the various festivals, challenges and awards, celebratory moments were contaminated with the possibility of testing technologies or observing how they work.

Aveiro Tech week, in this sense, was "the" annual event to celebrate the achievements of the project and get the community engaged in it. Many videos were produced at the end of the project and external communication was pushed in order to secure the participation of international startups in the Challenges.

The most significant citizens engagement activities were related to the demonstration of the use cases. Moreover, several users and stakeholders have been directly involved, such as the garbage collector company, the bus company, the tourism boats companies and the mobility and innovation departments in the municipality.

## RECOMMENDATIONS TO OTHER URBAN AUTHORITIES

In terms of recommendations to other urban authorities who wish to implement similar innovative projects it is important to emphasize this. ASC was a very complex project, where the partners' ability to travel together proved crucial.

**The pandemic situation** experienced since 2020, for example, had a significant impact on the implementation of some of the planned outputs. This brought extra complexity in project activities coordination due to the need to manage integration activities among partners.

In this sense, a general understanding between all the partners was evident, as well as a team spirit and a clarity of objectives, pursued within a very dynamic context. For this, strong coordination has proved indispensable, an agile but structured organization, with all the tasks and deadlines being communicated well ahead of time.

The other aspect to mention is certainly related to **Communication**, with respect to technological innovation. Going straight to the point: communication cannot be improvised; it is a job and you have to know how to do it. Specifically, we all remember the controversy of public opinion that moved around 5G. In some cities in Europe, it was not even possible to finalize the testing phases, due to disinformation and the phenomenon of fake news. In Aveiro this sensitivity on the themes of the introduction of experimental technologies has never been lacking and, even if there were "hot" moments, the communication was handled with professionalism and without smudging and this made it possible that all the experiments were carried out correctly and in time.

## FINAL REFLECTIONS AND EVALUATION OF THE PROJECT

Considering all the activities under analysis throughout entire duration of the project, the overall evaluation is

positive.

All the **main objectives where achieved** and results could be measured: Steam Education [Tech Labs + UBBU], Arts & Tech Pilot projects [Criatech + MTF Labs], Challenges for Startups [5G + Urban], Training [Bootcamps], Effective management of the Project, Communication [National and International visibility], Use Cases were deployed.

The data collected during the project development led to understand that Aveiro is considered to be a **welcoming environment for start-ups**, companies, R&D Centers, etc. and other players in the domain of technological innovation.

This perception, together with the quantitative positive results collected by Cedes, will assure the sustainability of the Aveiro Tech City program. Some activities had notably a higher performance than others, the Tech City Bootcamps, for example, were undoubtedly successful in redirecting individuals' careers in order to enter the labor market as developers.

The Tech Labs **set a new standard** and have definitely raised the bar when considering not only the increased capacity of children and teachers in STEAM and digital skills, but also the public-school offer in terms of education.

Taking into account the qualitative and quantitative analysis conducted to the 5G challenges, we know that the Living Lab infrastructures effectively enable real environment testing of 5G solutions.

It is useful to also remember that according to the data collected, with training and steam education activities, partners were able to:

. Increase the STEAM and digital skills by 69% in unemployed people and 82% in school community (teachers and students);

. Increase by 80% the opportunity for participants to obtain better paying, more sustainable, productive and qualified jobs;

. Include 75% of trained participants into the job market.

Last, but not least: 100% coverage of **5G communication services** in the defined area was reached. The data collected in the mobility and environment domains, provide an understanding of the current traffic in the city, in the different areas, including the driving behavior of the people, difficult times and areas of the city, and even the mobility flow of all transport means. The integration of mobility and environment data enables the development of routing based on environment and the understanding of mobility effects on the environment.

In the opinion of the writer, the ASC project will have some challenges for the future:

- a more practical one, linked to the maintenance of the IoT, 5G and living lab infrastructure in general;
- a higher one, linked to the governance model of the infrastructure, not 100% settled;
- a third one, for city makers, linked to the real usage of the data coming from the digital urban platform with the departments of the Municipality, from a business intelligence perspective.

## THE MAIN LEGACY OF THE PROJECT

ASC represented one of the most significant contributions for the development of the **National Smart Cities Strategy** in Portugal. In terms of knowledge, it had an impact on national policies but also the rich communication abroad has certainly produced fruitful connections, just thinking of the collaboration with Finland and, in particular, with the city of Oulu, European Capital of Culture 2026. ASC it also demonstrated how, in a medium-sized local context, it is possible to test a durable smart city model close to the "human smart city" philosophy.

The project has become a reference also for those who think that there is **innovation and progress** without a long run perspective. Many investments in technologies, made by European and overseas cities, have been made without an overall vision and a long-term plan and this has resulted in a waste of money and a negative environmental impact. Aveiro's vision has been from the beginning an "integrated" vision, oriented towards a continuous relaunch on the future. Hence, there is reason to believe that ASC represents a generative investment.

Actually, the Municipality was also shortlisted for the well-known competition "**i-Capital: European Capital of Innovation Awards**", among the European Rising Innovative Cities; the final winners are going to be announced by the end of 2022 [https://eic.ec.europa.eu/news/discover-european-capital-innovation-awards-icapital-2022-finalists-2022-10-28\\_en](https://eic.ec.europa.eu/news/discover-european-capital-innovation-awards-icapital-2022-finalists-2022-10-28_en).

The **political continuity** that was perpetuated during the development of the project was certainly a happy and fortunate element, probably decisive for the success of the project.

ASC, finally, show that technical institutions, research and companies, can work side by side with the municipality and make a positive impact in the city, recalling the fact that public private partnership are one of the key elements to make innovation happen in our cities.

---

Jobs and skills in the local economy

---

See on UIA website

