The Urban Lab of Europe!

JOURNAL

PROJECT

DIACCESS - Digital ACCeleration for medium SizE Sustainable cities

Växjö, Sweden

TOPIC

Digital transition

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Final Journal DIACCESS

See on UIA website

This final journal provides an assessment of the DIACCESS project. It starts with brief update of the activities in the DIACCESS project since it's end date (28 February 2023), and outlines how and to what extent the activities will continue. Second, it contains an overview of the knowledge generated during the project, the lessons learned, and provides an expert opinion about the project's process, results, outcomes and legacy, including policy recommendations for other European cities that want to undertake similar projects.

Project's progress

1. **What has happened with the project since it's end date**

The official end date of the project period was end of August 2022. By then, the work of two of the three key parts of the project had been completed: the Digital Lab and the IT platform.

During the project, the **Digital Lab** functioned as a training and working ground where young unemployed and refugees have worked on-the-job to become IT experts, developing smart city solutions. It worked in the service of the city: municipal departments could approach the Digital Lab with challenges or problems, to have it explore if there is a possible digital solution. Based on such requests, supervised by professional IT experts, the trainees in the Lab produced prototypes that demonstrate how digital technology can work in practice. The Lab was embedded in the social department of the city. The Digital Lab has been quite successful in achieving its goals. Over the last 2 years, 20 young unemployed people, many of them refugees, obtained new skills, and most of them found a good job rapidly afterwards. Moreover, during the project period, the trainees in the Lab developed several prototypes. The Lab is now dismantled, and there are no concrete plans (yet) to restart it. Meanwhile, policymakers in Växjö recognize the social value of the project and currently explore opportunities to mainstream it within the social department or the IT department of the city (read more about the Lab here: https://uia-initiative.eu/en/news/unemployed-youth-and-refugees-it-talent).

The work on the **IT platform** also ended officially by August 2022. The project successfully managed to put in place an urban IT platform to store, process and visualise the data that are generated by (and used by) the new digital smart city innovations; it is still in use and will remain so. The platform provides its users with insights and information for better decisions and automated activities. It is open for all actors to provide and collect data with a built-in payment

mechanism that will encourage private actors to deliver data on commercial terms.

The **Innovation Hub** (the most important part of the project in terms of resources), had not been completed by that time. In that work package, the city co-develops solutions with suppliers in using the innovation partnership procurement model. The work of this work package has continued in during the 6-month extension period of the project, from September 2022 until February 2023. During that time, three smart city innovations were further tested and elaborated by city and commercial partners, and have reached a stage of maturity. Since February 2023, the city has continued to work with the suppliers to mainstream and scale up the innovations, to develop and elaborate the business cases, and to enter into contractual arrangements with the suppliers to purchase their innovations. Importantly, under innovation partnership conditions, the city and its commercial partners have 90 days from the end of the testing phase to set up and sign a contract. It looks likely that this deadline will be achieved for all three innovations.

The *smart waste collection solution* (developed with Bintel) has proved its value for both city and the supplier from the beginning. It has been tested in one area of Växjö. The partners are now in dialogue about the contracting details, but there are no mayor obstacles. It would mean that the solution can be scaled up to other areas in Växjö and also to surrounding municipalities for which Växjö's waste company SSAM has a mandate to collect waste. Link to the web-article.

For the *smart snow clearing solution* (with company Klimator), the results are satisfying after two winters of testing, and the developed solution will be bought by the city of Växjö in the form of a license, however there are some small remaining issues about purchasing external data. A clear sign of success is that several other municipalities are adopting the solution for snow clearance developed in Växjö during the DIACCESS project (see https://uia-initiative.eu/en/news/several-municipalities-are-adopting-solution-snow-clearance-developed-vaxjo-during-diaccess).

For the *smart heating solution* of schools (developed with WINNIO), there are some operational issues to be overcome before the partners will reach the contracting stage. Some more technical testing is still needed, and a period of several months is foreseen for a learning process in which schoolmasters and teachers will gain experience and feedback about how the solution and the interfaces work. The expectation is that the product/solution will be fully ready and operational by March 2024.

2. **The project's plan for long-term sustainability**

The long-term sustainability of the project is reflected in several aspects and depends on the type of activity. The ***IT platform*** is now in place thanks to the DIACCESS project, and it will remain a permanent feature of Växjö's smart city architecture. It will be maintained, updated, and filled with new data, although so far, the quantity and quality of the data on the platform, especially from private partners, are somewhat below the initial expectations. The ***Digital Lab*** has been dismantled, as outlined in the previous section; there are no concrete plans (yet) to restart it, even though policymakers in Växjö recognize the social value of the project. The ***Innovation Hub*** as such will not be continued as a specialized instrument for innovation partnership type of public procurement. But the implementation of the three smart city innovations co-developed under DIACCESS will have a lasting impact on the city operations, leading to cost savings, service quality improvements and CO2 reduction. Concerning the procurement methodology, the city leadership has now gained experience with the innovation partnership procurement method. The city's departments have learned how to look at procurement in a different way, and lessons were learned how to deal with suppliers with this method and to co-create innovation with them. This all means that future urban innovations might be developed in a better way, following this procurement method or otherwise. At the same time, the method has proved to be complicated and time/resource consuming.

Generated knowledge

1. **Lessons learned**

On the Digital Lab:

The digital hub had a threefold objective: training unemployed youngsters and provide them with tech skills; developing useful digital prototypes for the city; and supporting the innovation procurement process through collaboration with the suppliers in the development of smart city innovations. The first two objectives were met (see previous section) but the latter one proved too ambitious. The Digital Lab was intended to work in close harmony with the suppliers and need owners of the procurement process, but in practice, this did not really materialise mainly because the selected suppliers preferred to work with their own staff with a higher level of professionalization. The prototypes developed in the Digital Lab were very useful, but have had little if any relation to the solutions developed by the suppliers. The key lesson is that it is well possible to train these target groups and let them develop prototypes, but one should not expect fully professional outcomes from them.

Another takeaway from the Digital Hub is the importance of dedicated and professional supervision. This was provided in Växjö by a committed private company partner, Dizparc, that believed in the project from a social perspective and saw it as a potential hiring pool for staff recruitment. The supervisors did not only teach tech skills, but along the way the trainees also improved their Swedish language skills and learned about the work culture in Sweden, which proved especially relevant for the refugees who were involved.

Furthermore, the project was positioned in the social department of the city. This department is very much used and equipped to work with such target groups, but much less wired to develop innovations for clients.

Finally, the setup of this work package was to train the young people in short periods (6 months), in batches. Although this creates a good group spirit in each cohort, the downside is that there is no overlap and learning between the groups, as each cohort starts anew unexperienced. Moreover, the work package leader Företagsfabriken indicated that 6 months is a relatively too short training period; one full year would have been better.

On the Innovation Hub & the Innovation Partnership method

In DIACCESS, Växjö has learned -the hard way, at times- that co-creating innovation with private suppliers is far from easy. At the same time, it has brought good results in the form of three smart city innovations that will be implemented and scaled. A key insight is that starting with innovation partnership is difficult and time consuming. The original plan was to have from 5 to 15 smart city innovations developed by the end of the project (5 rounds of 1-3 innovations each); in reality, only three will be realized.

A number of lessons can be drawn from this core part of the project:

- City departments must learn to formulate their urban challenges in a way that is sufficiently open to allow for co-creative innovations. It is far from straightforward for city departments to formulate well-defined challenges based on which companies can co-develop innovative solutions. Departments are not used to work in this way, their procurement methods are still traditional. It took much effort, and a change in mind-set and culture of the municipal organisation. Municipal services can become better and/or more efficient using digital technology, but that requires the integrating of the collection of challenges in the business development process within city departments, and associated capacity building among city staff.
- Introducing a new type of procurement entails a completely different relation between the city and companies. For both sides, this requires effort, change, communication, a willingness to learn, and acceptance of some risks and hiccups that any innovation always brings.
- Matchmaking meetings/events are crucial for innovators to find other innovators. Perhaps the one innovator is not equipped to deliver on his own, but if he finds a matching partner, it might end up with creation of a new company and connect problem owners (city departments) with prospective suppliers. These meetings turned out to be critical to clear up issues, to improve mutual understanding, and to answer many questions from the side of the companies.
- Negotiations with the “winning” bidder proved to be very complicated and took more time than expected. For example, the winner of the bin-emptying optimization challenge proposed to develop a smart solution that would be integrated in the existing IT systems of the municipality and its suppliers. For that however, the company needed to know many details about those systems, which the city could not give because of all kinds of NDAs. It took much time to solve this.
- Communication is queen. In the beginning of the project, the information provision to companies was too broad and unclear, and project relied strongly on passive communication, “sending out messages”. During the first two rounds of procurement, companies (the prospective suppliers) found it hard to understand what the new procurement model is about, and how it is different from normal procurement. A new proactive communication manager turned this around; among other things, she created a detailed Q&A, actively approached networks of entrepreneurs, set up a blog and article series (written by project partners and suppliers), put up a social media presence. As a result, DIACCESS became known, understood and appreciated by many more firms.
- The management of the project’s procurements was more complicated than expected. For the first two challenges (the school heating and the snow clearing), the project budget had foreseen a project manager to oversee each challenge, but not so for the following challenges. However, a true co-development process between need owner (municipal department) and supplier required a lot of management and coordination, especially in projects with a high level of technical and organisational complexity.
- A strong participatory process is needed to involve the end-users of the smart city innovations, for two reasons: first, the innovations can and do affect the daily routines of municipal workers or contractors (as is the case in the snow clearing and waste collection solutions, that imply new routings for the drivers). Second, in the testing phase, the workers can give crucial feedback on how the innovation works on the ground, which can be used to improve the solution. In DIACCESS, participation has been well-elaborated and careful from the beginning.

In Växjö, the innovative procurement approach has just started, and the DIACCESS project faced a pandemic that made everything much more difficult. Thus, the start-up problems are only natural. The Amsterdam example -the project leader did an excursion there- shows that the start is the most difficult, and that a cultural change takes time.

On the IT platform

In 2022, a license was bought for a smart city IT platform for IoT data, operated by partner Wexnet (a 100% publicly owned network company), for the limited period of one year. The platform should become a clearing house for a large number of IoT datasets from many sources (public and private). It was intended that innovators could and would use these data to further develop new smart city solutions. In the last year of the project, the platform has been tested extensively, and the experiences so far are positive, the technical features of platform enable to handle the IoT data, the visualisation features are good, and importantly, it allows exchange with other platforms in other European cities. A problem is however to fill the platform with relevant data, as for now, it has sensor data coming from the Digital Lab's prototypes and other city sensors. But the suppliers with which the city works in the DIACCESS Innovation Hub are less enthusiastic to stream their data to it. Overall, the number of datasets in the platform is still too limited, and as it stands, it does not work yet as a catalyst for data-driven smart city innovations.

2. **Recommendations to other urban authorities who wish to implement similar initiative**

Recommendations for cities that might want to equip unemployed young people & refugees with digital skills for the labour market:

The DIACCESS Digital Lab has proved its value as a way to train unemployed youngsters, especially refugees, provide them with technical, language and social skills, and hence prepare them for a labour market in which tech skills are always in high demand. Many European cities deal with an inflow of refugees, and hence this project can serve as a shining example. The following recommendations can be drawn:

- Make sure that the trainees are well supervised by experienced and committed professionals from the private sector. This proved to be a key success factor in Växjö.
- Make sure that there is a mix between new recruits and ones who are a bit more seasoned, as it will promote peer learning among the trainees.
- Make the trainees work on real digitalization projects that are relevant for city departments. It makes the work much more fun and rewarding and also leads to outcomes that are useful for the city. This aspect requires a structure in which the city departments know that the lab exist, are able to formulate their challenge/demand, and are ready to invest in collaboration with young and not-yet-fully professional young people, often with a migration background.
- Do not expect too-high level of professionalism from the outset, as these people are inexperienced and one cannot expect the same level as seasoned professionals.

Recommendations for cities that want to work with the Innovation Partnership procurement method

- Time Management is essential. Applying Innovation Partnership requires time and continuous dialogue with bidding suppliers during the negotiation phase in order to reach solutions in a partnership.
- Focus on necessary requirements and the effects, rather than demands. In traditional procurement, the focus is placed on "SHALL" and "SHOULD" requirements, whereas in Innovation Procurement it is about minimizing such requirements that can narrow the innovation. Växjö had to learn to put more focus on formulating the organization's needs, and the type of outcome they expect from the new solutions.
- Reach early agreement on requirements for placing orders and maintenance. A key difference with traditional procurement is that the agreement includes both parties in an early stage where both parties contribute to developing solutions as well as enjoying them. Even though the agreement is settled at an early stage before its development, one must not forget to follow the contracted terms after the developed solutions are delivered.
- A good dialogue between parties is vital during the entire partnership. Dialogue is central both during the procurement process as well as during the development phase. It is important that both parties' perspectives are taken into consideration. Many meetings are required to create an understanding of the needs and its process. As new inventions will affect how the organization's employees will work in practice, the end-users should be included in the dialogue to give their perspective already at an early stage.
- Keep the focus. With a lot of dialogue, it is easy to come up with new requisites, new solutions and bigger plans than the original. It is advisable to "park" these new ideas for the future.
- Develop training for companies and civil officers. Here, Växjö learned from Amsterdam during an excursion. In

Amsterdam's Startup in Residence programme, they integrated a 4-month training period to prepare start-up firms to work with the city and co-develop a solution. It also includes an active role of the "challenge owners" from the city side. This helps to build trust and understanding, and increases the chances of success.

- Don't go for perfection and don't be too afraid to make mistakes. It is tempting to see innovative public procurement as a legal minefield (which admittedly it is, to some extent), and become paralyzed by critical questions such as: do you charge the right price? Are you 100% sure that your market consultation is watertight? How do you know that you did not exclude suppliers on the wrong grounds? Experimenting is better than doing nothing.

Conclusion

3.1 The expert's final reflection and evaluation of the project

Over the last years, the project DIACCESS tackled, in one go, two pressing yet related issues of urban innovation, namely city digitalization and innovative public procurement. None of them is entirely new, evidently: the digitalization of urban services is a challenge for every city since the emergence of information technologies, and public procurement for innovation is not new either, as the legal framework for Innovation Partnership is in place for almost a decade now (the modernised public procurement EU directives date from 2014), although few cities use it.

As always, the main challenge in digitalization projects is not the development of the technology itself but rather to embed the technology in an organizational, legal, social, cultural and participative setting so that it can really work for society. Digitalisation is a deeply social process, and the DIACCESS project has helped Växjö to a large extent to take a next step in making digitalization work for its citizens.

In the Digital Lab, Växjö has proven that it is possible to provide young jobless people -that are not generally regarded as the much wanted "tech talent"- with the digital and social skills that help them find a job. Here again, it was the social and organizational setting that made it work: good supervision, a connection with urban departments, strong leadership, and private sector involvement.

In the procurement rounds, using the innovation partnership model, it also became clear how important the human and social factor is in urban innovations. For the city departments and the companies involved, it was working in partnership, under uncertainty, without knowing what the results would be. In the beginning, this led to many miscommunications, frustration and hiccups, but in the three successful partnerships the trust was high enough to get through this and obtain results in the end. Innovative procurement with co-creation is a difficult art, that requires the mastering of many skills at the same time: legal, communication, technological, social. It also requires a deep cultural change in municipal departments: rather than buying of-the-shelf, they must think more creatively and become co-innovators. Thanks to DIACCESS, Växjö is now at the stage where a growing number of city employees have gained experience and confidence in co-creation, and this is a big win for the future. The successful projects are already attracting attention (and not only locally) which may create a bandwagon effect. But still, only a small number of city professionals have been involved so far.

The innovation partnership method is one of several methods for innovation procurement. The DIACCESS project has shown that it might not be the easiest one, and requires substantial investment from the city in terms of human resource allocation. Växjö might consider to also try other types of innovation procurement, and learn from other European cities with experience.

This brings us to the cultural dimension of innovation. During the visits to Växjö, the discussions with stakeholders (among which internationally active companies), and also the visit to Amsterdam, the picture emerged that cultural attitudes towards experimentation and the associated uncertainties and risks with public procurement vary from country to country, with the Danish and the Dutch taking a somewhat more risk-taking approach, and the Swedish being more careful and preferring stay in absolutely safe legal territory. Although these are generalisations, this makes it harder to transfer lessons and practices from one cultural context to the other. **In the end, given the strong context dependency of urban innovations, each city must ride its individual learning curve in its process of digitalization and innovative public procurement. Each city must be prepared to mobilize resources, to take the leadership, to start break the ground for collaborative innovation. And surely the leadership in Växjö was strong, not only on the project level, but also the top-level political support helped to get results.**

The strong context dependency of such innovations does not mean that cities cannot learn from each other across borders: on the contrary. But peer-city learning requires deep insights in each other's context, and this cannot be achieved by reading a report or doing just one mutual visit. From this perspective, the new peer learning approach

of European Urban Initiative (EUI) is a promising one, offering scope to more in-depth and well-prepared exchanges between cities on complex topics.

From a monitoring perspective, this project falls short on its initial promises. In the project proposal, Växjö expected to deliver from 5 to 15 smart city innovations though innovation partnership, but in the end only three materialized. One should read this gap not as a resulting from a lack of effort or commitment, but rather as a gross initial underestimation of the difficulties in applying this procurement method. Moreover, several of the proposed connections between the work packages did not materialize. It proved hard to connect the work of the trainees in the Digital Lab to the smart city innovations developed in the innovation partnership. Moreover, the private companies were reluctant to stream their data to the new urban IT platform. Overall, initial expectations in the proposal proved overoptimistic.

A more serious flaw is the discontinuation of the Digital Lab (it is inactive since August 2022, the end of the official project period), despite its good track record in training people and delivering smart city prototypes. The Lab typically is an action that does not fall in the regular categories of the municipality: it is a hybrid between a social workplace and an innovation/IT hub, and while active, it sat somewhat uneasily in the social department. It would be recommendable to redouble efforts to re-invigorate the Digital Lab, as it is a great example of how to combine social and innovation/digitalisation policy.

When it comes to scaling up of the project or parts of it -an important justification for granting UIA funding), two aspects of scaling can be discerned at this stage. First, the project will probably lead to a wider application of innovation procurement methods (among which innovation partnership) and has ignited a culture of co-development and experimentation in the city. Second, scaling is relevant for the suppliers that co-develop solutions with the city. There are strong indications that companies involved in DIACCESS manage to attract new clients because they have Växjö as their launching customer.

DIACCESS has clearly benefitted the city of Växjö, and has significantly contributed to capacity building. It would be good if the learnings on the adoption of innovative procurement and digital innovation could be transferred to smaller municipalities in the wider region. This process is already happening in the school heating subproject, where a regional network of schools are following the results and plan to join in a later stage.

3.2 The main legacy of the project, both in terms of knowledge generated and the solution implemented

The legacy of the project is fourfold:

The main legacy is the capacity building and organizational learning within Växjö municipality of how to do co-development in procurement processes, how to formulate and define urban challenges in a more open way, and how to implement such innovations. The purchasing department (a limited number of) city staff in other departments have learned to deal with the contractual and other complexities of such innovations.

Second, the concrete three innovations that have been developed will have a lasting legacy. After DIACCESS, the city demonstrates having 1) better and cheaper snow clearance services, benefiting the citizens and making the city safer; 2) better and cheaper waste collection, and 3) energy savings because of much more efficient heating of schools. These innovations are already spreading, as other municipalities have expressed their interest in working with the companies that were involve in the project.

Third, DIACCESS has given the opportunity to 20 young people to develop their ICT and social and language skills.

Fourth, DIACCESS has put Växjö on the map as forward-looking innovative city, offering a testing ground for companies and willing to try new approached towards urban innovations. Växjö's urban solutions featured in national TV emissions and attracted attention on national innovation events, and companies involved in DIACCESS praise the city for its courage to enter in such co-creative innovation processes.

Digital transition

See on UIA website