The Partnership between Beit Jala (Palestinian Territories) and Jena (Germany): Developing a municipal Geoinformation System

Background and objective

Beit Jala, situated on the western outskirts of Bethlehem in the Palestinian Occupied Territories, is a municipality of about 17,500 inhabitants. The town faces several challenges, including a lack of reliable spatial data and contemporary maps that eschews urban planning and development. For this reason, the municipality decided to develop a municipal Geographic Information System (EGIS), which helps to digitalize, update and use spatial data. This system serves as a tool for urban planning and development and a trigger for digital transformation. To implement this project, Beit Jala collaborates with the German city of Jena, with the aim to develop and strengthen and foster mutual technical cooperation between the two municipalities as well as working together to improve the GIS capabilities, as Jena can contribute knowledge and experience in municipal GIS development. From 2020 to 2024, a local expert supported the development of the municipal Enterprise GIS as well as the partnership between Beit Jala and Jena.

Methodological approach

First of all, stakeholder consultations have been conducted within the municipality to understand specific needs. Beit Jala Municipality established the GIS section under the planning department where the local expert was placed along other engineering and GIS specialists and the support of an IT administrator. The inclusion of different departments of the administration as well as the frequent exchange with GIS experts from Jena municipality were crucial: This way, the knowledge from Jena could be utilized and matched with the various competences and skills, but also the needs and potential restrictions in Beit Jala, that were at least in some aspects different to those in Jena, could be addressed and considered appropriately. In the beginning, the existing data that consisted mostly of hand-written and outdated documents had to be digitalized and updated. This digitalized data then had to be enhanced numerous times as well as new levels of data related to municipal work needed to be obtained; this meant to conduct a comprehensive field survey project that took an entire year of data collection in which every parcel, building, and even building units within the city borders were inspected on the ground, including checks on the shape & area of the houses on it, the number of stories within the house, the owners of the respective parcels and more. At the same time, the data available on Google Maps was integrated into the municipal GIS that is based on open-source. After that, a user-friendly front-end of the GIS was developed to make it easy to use for the staff of the various departments within Beit Jala municipality. The main system includes a subsystem responsible for data management and updating in an easy fashion to increase the update ratio for the different staff as well as another subsystem related to map viewing.

Implementation and challenges

Confronted at the start with modest GIS expertise within the municipality, the project witnessed significant progress in establishing a user-friendly GIS and strengthening technical collaboration between both partners. The first big step was to gather, systematize and digitalize all the data needed for the GIS. The above-mentioned field-survey required a high number of volunteers and administrative staff that had to inspect each single parcel within the municipality, map it, talk to their owners and bring all the data together. Although this meant a high amount of work and took several months, this effort was unavoidable to create a GIS with reliable and sufficient data. Another challenge came in the form of Covid-19, which eschewed face-to-face meetings with the German Partner City Jena. However, with some postponed in-person visits and lots of online meet-ups, this challenge could be overcome. While creating, extending and updating the GIS was an enormous effort, a rather unexpected obstacle was in the inherent challenges in the municipal cooperate culture among the staff to use and update the database on the EGIS: While focusing a lot on technical procedures and benefits, little attention had been paid to the efforts it would take to convince other staff members to adapt a new system. It took many meetings, explanations and support by the GIS team to slowly promote the benefits of EGIS to show the other staff that the GIS was more efficient, comprehensive and practical than the previously used outdated systems to store and share data within the municipality. Throughout the whole process, all the developments regarding the GIS and its usage have been constantly documented, monitored and shared with the partners in Jena during regular meetings to exchange perspectives on certain processes and challenges and learn from the experiences from Jena.

Outcomes for the target group and the involved stakeholders

The implementation of a comprehensive Geoinformation system in Beit Jala has yielded substantial positive outcomes. The development of a database, coupled with the creation of both the back- and frontend components, has provided a robust foundation for a user-friendly web-based GIS application that can easily be used by both staff members and citizens of Beit Jala municipality. Currently, approximately 90% of municipal employees from diverse sectors within the Beit Jala city administration, including Building, Finance, and Health, actively leverage the system. Through this, relevant data is stored efficiently, connected to other data and can easily be accessed and updated. Beit Jala Municipality offered customized applications for citizens to be included: Aside of the Map Viewer application, the citizens got an application that helps them inquire about their beneficiary number, which is used in all their municipal services, only by typing their ID number/passport or mobile number. They can also use a GIS customized tool for gathering their inputs, problems, even suggestions based on location which helps to map their needs to actual sites on ground. This possibility for citizens to get in touch with the city administration enhances the transparency on both sides. Furthermore, the projects impact extends beyond Beit Jala through fruitful collaborations with the Palestinian municipalities Bethlehem and Eizarieh: After the local expert and the GIS unit Beit Jala have shared their knowledge in various meetings with Bethlehem and Eizarieh, the technical counterparts in these municipalities have seen a notable enhancement of their capabilities and benefit from the experience of Beit Jala, which helps them to set up their own municipal GIS. This not only promotes a culture of shared learning but also strengthens the inter-municipal ties, fostering a collaborative approach to GIS development in the region.

Learnings and conclusions

The development of an enterprise municipal Geoinformation system in Beit Jala has yielded specific and crucial lessons for future initiatives. One key insight is the imperative of an iterative approach, wherein projects are systematically broken down into manageable phases and where different synergies were created at both the local and international level. Another important learning is that initial rejection of a new system within an institution is a challenge that should be addressed in due time and requires a lot of patience, support and time, since a corporate culture often has developed over decades and adapts slowly to new processes. Lastly, the constant documentation, monitoring and the exchange with experts from Jena have been crucial success factors to learn from previous mistakes and develop joint sustainable solutions as a result of the municipal partnership between Beit Jala and Jena.