Revolutionizing Municipal Services through GIS

By Safaa Zakaria Karaki Aldwaik

Numbers from Ramallah's GIS Database at a Glance:

- Area of Ramallah City is 18.7 km^2
- Ramallah City has 8,596 parcels
- Ramallah City has 4,623 buildings, 125 of them are preserved historical buildings
- Solid waste containers number 1,218
- Streetlight poles number 3,895
- The length of sewage pipes is 107.3 km
- Wastewater collection system has 4,236 manholes

Ramallah City has emerged as the political, commercial, and cultural center of the Palestinian territories, and as a result has experienced population growth and urban expansion. Ramallah's current population is estimated to be approximately 70,000 full-time city inhabitants, with an additional average of 150,000 persons who visit the city every day. An estimated quarter of Ramallah's landowners live abroad. In response to this growth, the Ramallah Municipality has sought to bring technological advancements for the benefit of its citizens and visitors through the use of Geographic Information Systems (GIS).

The GIS platform, an integrated cross-sectoral platform, has revolutionized the way the municipality collects, manages, compiles, reviews, analyzes, and visualizes spatial data, using the power of maps to bring together information that describes city details ranging from parcels, land use, buildings, facilities, and landmarks to infrastructure such as water, sewers, roads, traffic signs and fixtures, emergency incidents, and even international relations. Data is updated in real time, enhancing the quality and inclusiveness of the database and providing reliable information for the purposes of planning and decision-making. Internal policies and procedures have been significantly reengineered to be compatible with the new technological tools. Each department at the municipality now has an application on the GIS which has become part of its work flow and documentation procedures. Thus, the GIS department has provided logistical support for other municipal services; for example, by providing optimized routes for municipal vehicles as they go from task to task. Similarly, the optimization of garbage pickup routes has cut fueling costs, which allows monetary resources to be used for other projects.

The GIS department has been active since 2011, when it started to collect and process data from the surveying and planning sections. Initially, this data was used internally; however, in 2012 a decision was made to make some of it available to the public through the website www.ramallah.ps/gis. Since then, the Ramallah Municipality's staff has developed a number of Web applications for the general public: Tourist Interactive Map, Municipal Mapping, International Relations, and Must See in Ramallah.

The open information exchange with the public creates a number of benefits for both citizens and private businesses. For example, GIS allows citizens and visitors to give the municipality specific locations for any complaints or feedback, including malfunctioning city assets such as streetlights, sewage pipes, or garbage pileups.

Working in conjunction with the Ministry of Telecommunications and Information Technology (MTIT), Ramallah Municipality has developed an application that illustrates the borders of the new postal-code zones and the full addressing system of the city. Ramallah Municipality is the first, and till now, the only municipality in Palestine to have implemented the postal-code zones with a full addressing system across the city. The MTIT supported the project and is working on disseminating it to other municipalities in Palestine. Thus, in the near future, citizens who live abroad will be able to have mail packages delivered straight to their relative's homes in Ramallah.

The Tourist Interactive Map application, accessible to the public at www.ramallah.ps/navigation, is multifunctional and designed with the interests of visitors in mind. It contains all the landmarks such

as tourist attractions, government facilities, and health sites, and includes a network feature that allows users to obtain directions to anywhere within Ramallah's city limits. This is achieved by using the location of starting and destination points, either by street address, landmark name, or even a point placed on the application itself. The application is capable of processing multiple locations, and the route can be optimized. The output shows either a map that demonstrates the best route or written directions.

Citizens can use the Municipal Mapping application (accessible at www.ramallah.ps/e-maps) to locate and obtain important information about any parcel of land, such as its area and shape, the designated land use, and relevant regulations and restrictions. The application displays a picture of any existing building on a property and related information, such as the address. If you own a parcel of land in Ramallah, you may apply for a user name and password that will give you access to the taxes function that displays any municipal fees associated with your account. The municipality has plans to streamline the process further by allowing electronic payments; at present, this option is still limited due to the lack of national laws pertaining to e-payment and e-signatures.

GIS applications that are used to report and track incidents and complaints have proven very useful during emergencies and snowstorms. The International Relations application (www.ramallah.ps/pr) has contributed to the promotion of Ramallah by showing the world cities that have twinning agreements with Ramallah Municipality and providing detailed information about those agreements. Must See in Ramallah is a bilingual application that contributes to the promotion of tourism and economic development. It illustrates the most important touristic places within Ramallah City and can be accessed at www.ramallah.ps/must-see.

Launching free Wi-Fi with the governor, the mayor, and the private sector.

Through the GIS, Ramallah Municipality has revolutionized its data-management system and significantly improved the quality of its services. It has innovatively overcome challenges posed by the complex political and security context, providing, for example, alternative means of navigation, as access to Google Maps is restricted in Palestine. Ramallah is now a leading city on GIS applications that inspires other cities in Palestine and beyond. Invited to participate in many international events to present its unique experience and success stories, Ramallah has an international reputation that was secured when it was elected deputy chair of the Committee on Smart Cities (2014 to present) of United Cities and Local Governments for Middle East and West Asia (UCLG-MEWA). Ramallah has been awarded prestigious international honors that include the Special Achievement in GIS Award of the Environmental Systems Research Institute (ESRI) for the exceptional application of geospatial technology.

Ramallah Municipality remains dedicated to promoting technological advances that will benefit citizens both in Ramallah and worldwide. It is working on integrating the aforementioned applications with the e-municipality program, which will give citizens even more power to conduct interactions with the municipality. Furthermore, in full cooperation with Paltel and MTIT, the municipality has implemented the first phase of installing a citywide fiber network that provides a wireless access zone on all main streets and within the facilities of the municipality, providing 24-hour free access to all GIS applications through the "Ramallah Smart City" network. The smart application that includes links to these GIS applications is available on Google Play and in the Apple Store. To locate it, simply search "RAMALLAH."

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