MEXICO

2018 Statistics*

Population (2018 est.)	125 million
Life Expectancy (2018 est.)	76.3 years
GDP Per Capita (2017 est.)	US$19,900
Mobile Penetration (2018 est.)	85%

*Sources: CIA World Factbook (https://www.cia.gov/library/publications/the-world-factbook); Mobile penetration data provided by Ovum World Cellular Information Service and based on market intelligence.

Smart Water

Increasing water quality through IoT solutions and community engagement

The only source of drinking water in the Yucatan Peninsula in southeast Mexico comes from a karst aquifer system that is highly susceptible to pollution from human-activities. In collaboration with s::can, Junta de Agua Potable y Alcantarillado de Yucatán (JAPAY) – the Yucatan public water authority – the Social Intelligence Unit, Grupo LAN, and Colectividad Razonatura, the Smart Water project provides accurate and real-time data to increase awareness and understanding of water quality in the local community through Internet of Things (IoT) solutions and community engagement activities.. Smart Water features smart sensors powered by Qualcomm® wireless technologies to measure key parameters of water quality, providing access to information to government administrators from JAPAY through the use of the Dime H2O mobile application. Local citizens are encouraged to participate in an educational campaign designed to learn about preventing water contamination, reporting problems, and improving water stewardship.

Challenge

- The absence of robust sanitary drainage networks in the Yucatan Peninsula makes the karst aquifer highly vulnerable to contamination.
- There is limited public understanding about the uniqueness of the karst aquifer geology and its highly permeable limestone composition and deposits.
- Water authorities rely on labor-intensive and expensive water quality measurements, which are prone to human error.
- Groundwater resource management is inadequate and available water quality data is limited.
- Water quality test results are not readily available to the public.

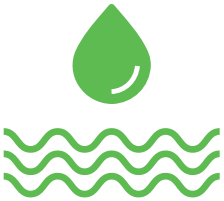
Solution

- Smart IoT sensors, powered by Qualcomm® wireless technologies, are installed in two strategic locations in Merida City. The first is located at the largest water distribution plant in the City and the second is found at the Water Distribution Center, which is responsible for servicing the Dolores Otero neighborhood.
- Connected to a 4G Wireless Network, the smart IoT sensors measure turbidity, free chlorine, dissolved organic carbon (DOC), total organic carbon (TOC), water conductivity, temperature, nitrates, and pH. This information is uploaded to the Dime H2O system for analysis and the generation of a Water Quality Index.
- The Dime H2O mobile application provides both the community and JAPAY:
  - Access to the scientifically designed Water Quality Index for the Yucatan Peninsula karst aquifer system
  - Instant access to critical water quality parameters from the s::can's sensors, making it possible for team members to take immediate actions, if necessary
  - To the community only:
    - Access to multimedia educational content
    - An interactive feature for reporting problems such as water leaks
    - Technology. Members of 100 households in Dolores Otero were provided with Qualcomm-enabled smartphones and participated in an education campaign designed to increase local awareness on how to preserve water resources and prevent water contamination from human activities
  - To JAPAY administrators only:
    - Delivery of alerts when water quality parameters are out of range, requiring follow up action from JAPAY
    - Graphic visualization of water quality parameters
    - Immediate access to JAPAY's laboratory test results

Impact

Operational efficiencies in administering water quality tests

80% less time spent by JAPAY personnel collecting measurements. Over 2,000 more DOC, TOC, and nitrates measurements collected during a three-day data collection period.



More effective management of pollutants that are found in water once extracted from the karst aquifer system.

88% of water quality index measurements were within Mexican water quality standards due to the improved water quality monitoring process in JAPAY.

Increase confidence in water quality understanding.

Nearly 100% of household representatives reported an increase in confidence in water quality knowledge after participating in the water education campaign activities.

Program Stakeholders

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JAPAY JUNTA DE AGUA POTABLE Y ALCANTARILLADO DE YUCATÁN 2018-2024

[1] Herrington, P., Newborne, P., & Saade-Hazin, L. (2003). Social issues in the provision and pricing of water services. Paris: OECD.
[2] CONAGUA (2015). Programa Hídrico Regional 2014-2018 de la Región Hidrológico-Administrativa XII Península de Yucatán.
[3] CONAGUA. Programa Hídrico por Organismo de Cuenca, Visión 2030, Región Hidrológico-Administrativa XII, Península de Yucatán.

November 22, 2019

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