



Smart Solutions for Digital Utilities

SMART METERING IN
THE WATER SECTOR



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What is Smart Metering in the Water Sector?

Smart Metering is a new way of managing water resources and a technological innovation that provides information to significantly improve the management system of the Integrated Water Service (IWTs) while respecting the environment.

In the water sector, the lack of a specific network protocol regulation for smart metering has led to the development of several application solutions using Fixed Network and/or Walk-By/Drive-By reading systems.

Fixed-network data collection is provided by long- and short-range radio-frequency network infrastructures, while Walk-By/Drive-By metering is carried out by operators collecting data at 200-300 metres, driving (Drive-By) or walking (Walk-By) through logical routes based on the meters' geographical coordinates.



Fixed Network Services & Solutions

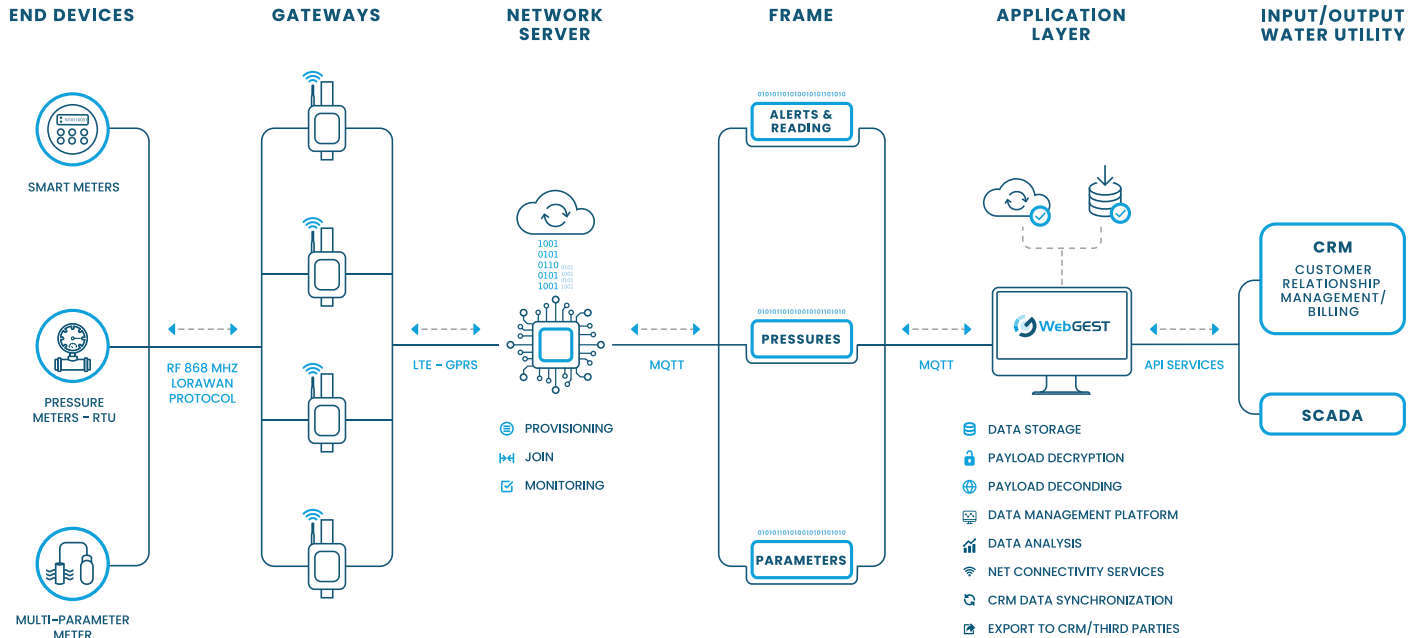
For the Collection and Management of Water Utility Data

In fixed network remote reading, GEST offers application software solutions (application server) and supports customers in the choice of the ideal technological partner and the appropriate network interface for the success of the project according to customer requirements. This support capacity is guaranteed by the know-how acquired by the GEST team over the years, which makes GEST the leading company in the Smart Metering Solutions with a proven experience in the water sector.

GEST is also a System Integrator able to identify the right technological component between peripherals and sensors for collecting different types of data, such as pressure, water quality, etc. GEST's ability is also to integrate developed representation systems to offer interactive tools that highlight their contents.

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LoRaWAN System Architecture

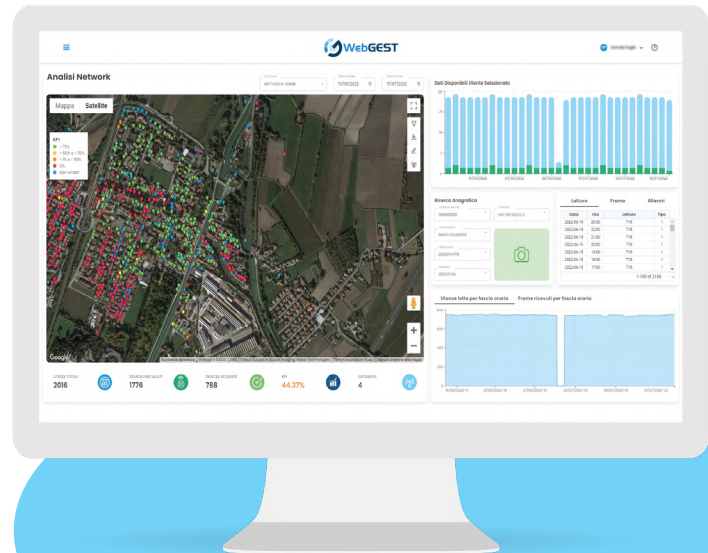


LoRa technology is suitable for all smart metering system scenarios on fixed networks and has been approved in Europe to operate in the 868 MHz band (867-869 MHz). LoRaWAN is a free protocol uses two-level security: network security and application security. LoRaWAN certified devices can be deployed on multiple networks and move from one network to another, regardless of the network infrastructure or operator.

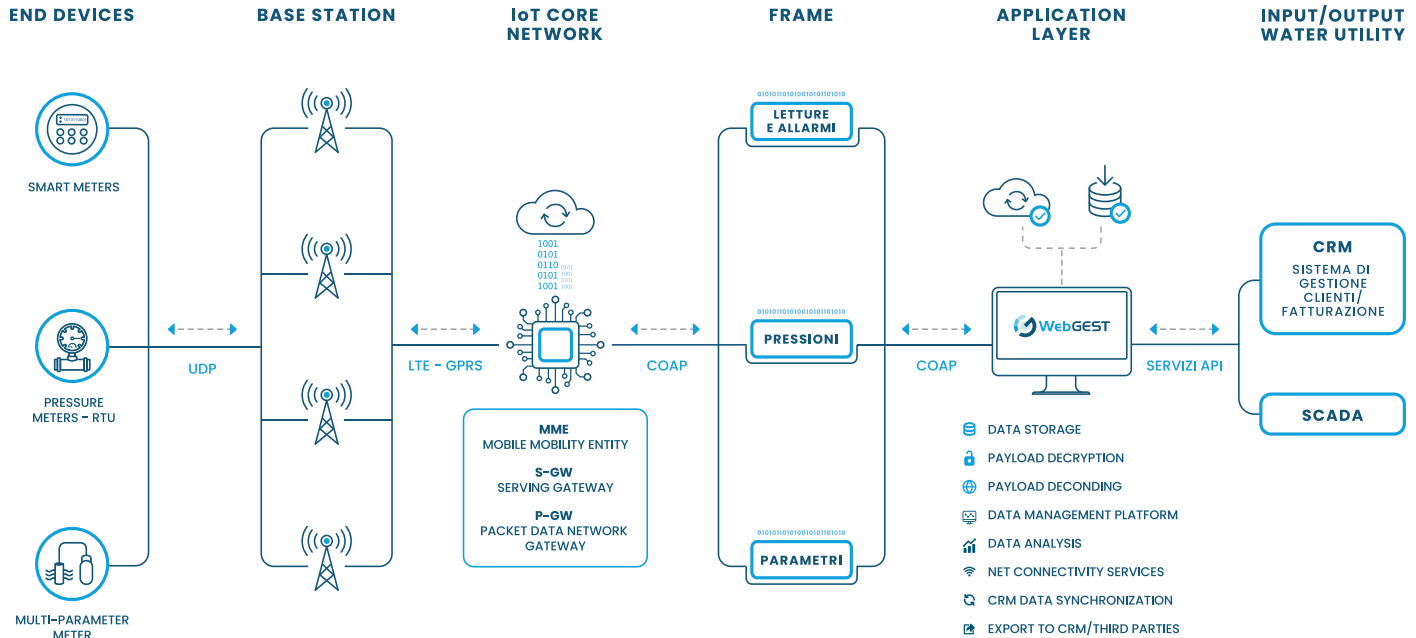
WebGEST® Network Analysis

WebGEST is a platform for consulting data from smart meters and peripheral devices in Fixed Network Remote Reading and Walk-By/Drive-By that integrates useful functions to measure, in real time, the performance level of the network and the tracked devices.

-  The platform is integrated with the most common fixed network protocols thanks to the LoRaWAN network server.
-  Real-time monitoring tools for Fixed Network coverage with analysis of the number of transmissions per individual Smart Meter.
-  WebGEST provides advanced network analysis tools with map support.



NB-IoT System Architecture



NB-IoT is the upcoming technology developed to meet the requirements of M2M applications. The new NB-IoT standard has only recently started to appear on the market. 3GPP Release 13 establishes the technical specifications of the NB-IoT standard, which is suitable for massive IoT applications, such as smart meters or connected cars. NB-IoT is based on a cellular network architecture and uses the existing LTE infrastructure. The solution does not require concentrators.

WebGEST® Usage Monitor

Using Dashboards and Analytics, WebGEST combines data analysis tools and user-friendly representations that show in detail the consumption trend of the individual user and any pending alarms.



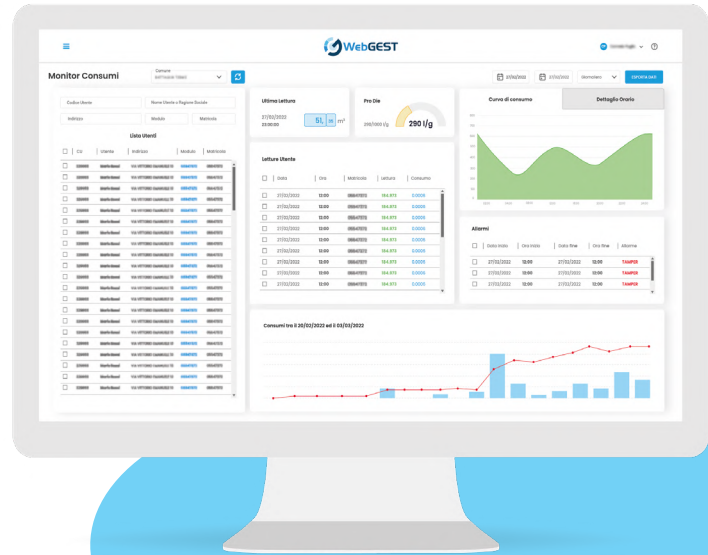
A powerful monitor for analysing and collecting data in real time from every device. Useful for front office activities and utilisation analysis.



Interface for displaying the data transmitted by the smart meters for each individual user with the possibility of exporting usage tables.



Real-time display of pressure data for each monitored point.





Trash-By Services & Solutions

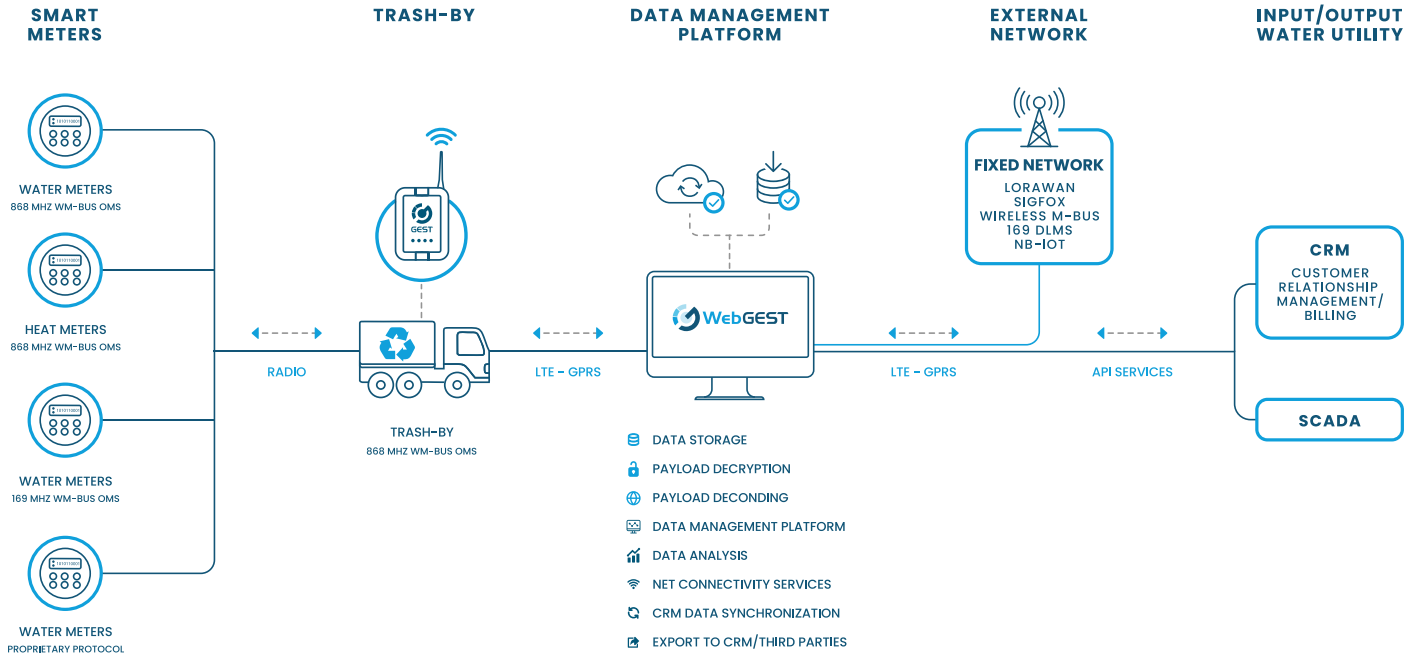
For the Collection and Management of Water Utility Data

GEST has developed an automatic data collection hardware and software solution that uses the efficiency of the operator's vehicles to collect the frames transmitted by the smart meters when the company car passes close by, at approximately 200 metres, without having to have physical access to the meter.

This system is most suited to integration with the door-to-door waste service. Using the route taken periodically by waste collectors, the system gives a very similar performance to the results achieved by a fixed network, providing data availability at much lower costs than the cost of implementing a network infrastructure. In this way, inter-operability is achieved between the different services: Ecology and Water.

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Trash-By System Architecture



The Trash-By's system is very similar to Drive-By's collection system but is different from the last one mainly due to the absence of an intermediate mobile software for the representation of the collected data and the synchronisation with the cloud server. In detail: The car driver has no interaction with the collection device, while his activity, usually dedicated to other tasks, continues to provide a non-stop stream of data collected and forwarded directly to the central management cloud server. To facilitate the transfer of data directly from the field, GEST has developed a specific hardware for data collection.

RfGEST Gateway & WebGEST®

The RfGEST Gateway is a mobile gateway designed by GEST that collects data transmitted by devices on the 868 MHz radio frequency via the standard Wireless M-Bus OMS protocol and sends data automatically by LTE technology to GEST's web server. The RfGEST Gateway is optimised for automatic operation. The device's power supply is only needed to be plugged into the car's cigarette lighter to start data acquisition.

The system has been designed to provide data acquisition even for short-term periods without power to give the continuous acquisition flow. At the core of the system's development was a close study of the operational times of the waste service, which has generated the integration of features that guarantee the best data acquisition performance. All the data collected and sent by the device are immediately available in the WebGEST platform through specially developed tools for displaying the results.





Walk-By/Drive-By Services & Solutions

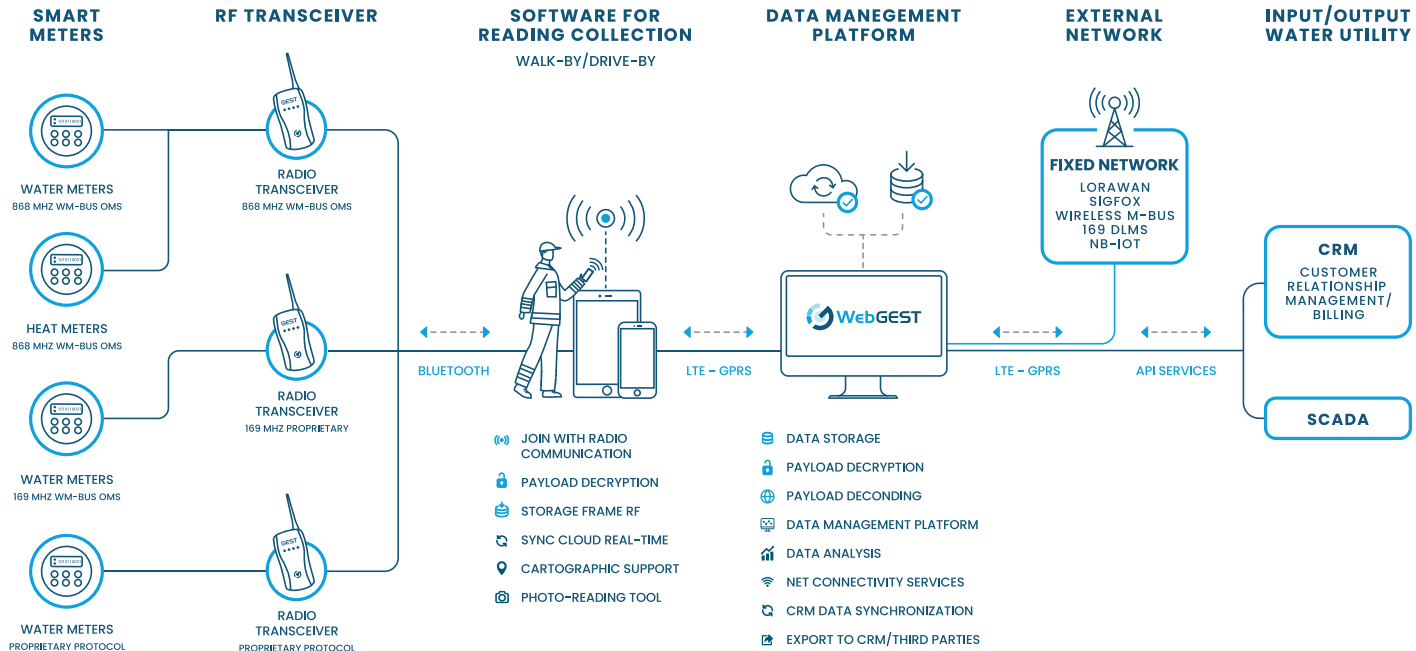
For the Collection and Management of Water Utility Data

The remote reading service in Walk-By/Drive-By mode provides for the operator passage near the meter. The data acquisition distance depends on several factors related to the meter location and the presence of obstacles between the operator and the meter. Under normal conditions, the data is acquired from about 200 meters.

There are many advantages of using this technology. First, the speed of acquisition, the certainty of data that is not conditioned by manual acquisition procedures and finally the possibility of detecting the readings without disturbance even in case of meters placed inside the houses.

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Wireless MBUS System Architecture



Wireless MBUS (W-MBUS) is a European standard protocol developed for metering applications. The technology can be used in all operational scenarios of smart metering systems. WM-Bus is the reference standard for the use of the 169 MHz band in gas smart metering, but the same protocol is also used in the water sector in the 868 MHz frequency for collecting data transmitted by water Smart Meters. Solutions based on this technology involve the use of Walk-By/Drive-By and fixed network detection mode.

RfGEST Receiver & MrGEST®

RfGEST Receiver is a receiver designed by GEST that collects data transmitted by devices on the 868 MHz radio frequency via the standard Wireless M-Bus OMS protocol. RfGEST Receiver is specially optimised for the best performance in data collection using MrGEST Application.

MrGEST is the Android application for mobile data collection. It can be installed on both smartphones and tablets to operate in standard mode by reading photos and simultaneously in Walk-By/Drive-By mode. It can record and translate in real-time the frames received in 868 MHz or 169 MHz radio with M-Bus protocol, OMS wireless protocol or with the proprietary protocols of the main brands of smart meters. The main feature of the software includes the map element that suggests ideal routes in the field.





GEST Integration System Services & Solutions

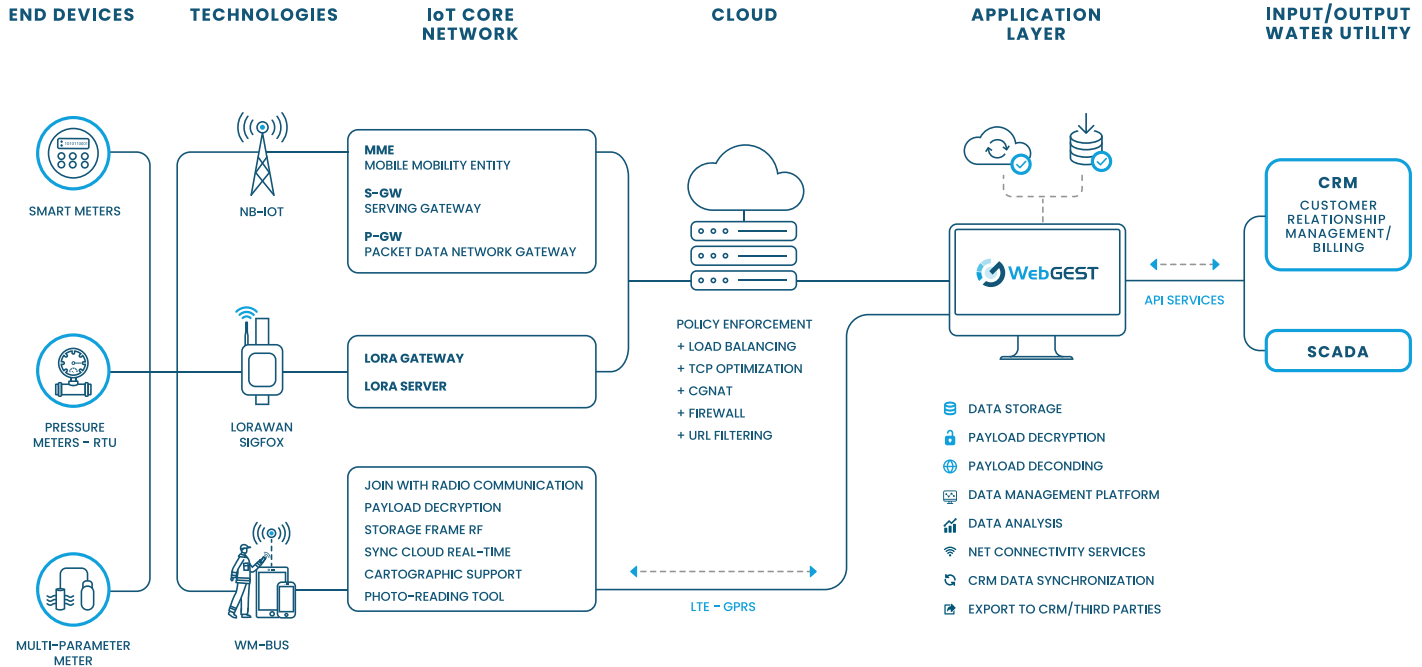
For the Collection and Management of Water Utility Data

To facilitate the manager's job in this application scenario, which presents a wide range of technological applications, the GEST solution is identified as the tool for the integration in a single system of every protocol and acquisition mode currently available on the market.

GEST also offers different hardware acquisition solutions designed to be adapted to each application context and to achieve the best results. To support the data representation platform, batch procedures, web services and APIs are always in place for the translation, decoding and archiving of each item collected, as well as for the export of data to be automatically transmitted to billing or remote-control systems.

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GEST System Architecture



The availability of different communication protocols suited to the diversified needs of water utilities based on the morphology of the territory is the distinctive element which that if managed by a single integration system, can guarantee coverage of 100% of the smart meters installed, and ensure the greater efficiency of the water service for the environment and the recovery of water. GEST has oriented the development and design of its software solutions to ensure their use regardless of the data transmission technology, communication protocol or network system used.





We are system integrators, platform, and mobile App developers as well as technological and digital project consultants. We are also specialised in the water industry, with over 22 years of experience in Metering and Smart Metering. We offer software solutions for utilities and private individuals to facilitate the integration and management of smart meter data, providing the tools to make the most of their content.

The GEST development team consists of computer engineering, electrical engineering, design and visual communication graduates, all professionals with a great capacity for development and an aptitude for problem-solving, coupled with an in-depth knowledge of the latest programming languages and web design tools.

Development work is always geared towards creating solutions to help customers analyse the data managed in a simple and intuitive way, with the help of user-friendly data analysis and representation tools.



**Years of
experience**



**Ongoing IoT
projects for the
Water Sector**



**Brand
Integrated**



**Open and
proprietary
protocols**



**Smart Meters
Payload**



**Managed AMR
Readings**

CONTACT US



Viale Cristoforo Colombo 13/C
95037 San Giovanni La Punta (CT)



Tel. +39 095 221654



info@gestsrl.it
www.gestsrl.com

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