



IRRIGATION

# HYDROPASS MOD. HK

Automated system for the distribution of irrigation water

**S.I.S. Smart Irrigation System**



# ACMO

VALVES AND TECHNOLOGIES FOR WATER WORLD

**HYDROPASS** system is the result of **AC.MO S.r.l.** research and development in the management and control of irrigation water distribution. The hydrometer integrates, in a compact solution protected by a stainless steel case, the mechanical components suitable for metering and regulation with the ACMO innovative electronic components suitable for managing and control the input/output parameters. **HYDROPASS** is a stand-alone unit, independent from external power supply and equipped with solid communication interfaces.


**S.I.S. Smart Irrigation System** is our ultimate monitoring system for the optimization of water resources and the planning of irrigation.

After several years of research, investment and **more than 70.000 successful installations** in the last **10 years**, an increasing number of water authorities are using our system, achieving brilliant results in terms of water and energy saving.

Integrating **HYDROPASS** and **SIS** represents a the real opportunity to achieve social, economical and environmental sustainability of the irrigation process.



- + Efficiency
- + Productivity
- + Competitiveness
- + Quality
- + Sustainable use of water resource
- + Agricultural income



- Management costs
- Waste
- Energy consumption
- Subsidence



### THE HYDROMETER

One-piece body PN 16, robust and reliable, solution achieved by years of research and field experience, energetically autonomous with its own battery (10 year life-time), easy to be installed and ready to use, in compliance with new standard EN 14267. It is designed with a robust stainless steel cover, easily accessible for card connection and maintenance operations.

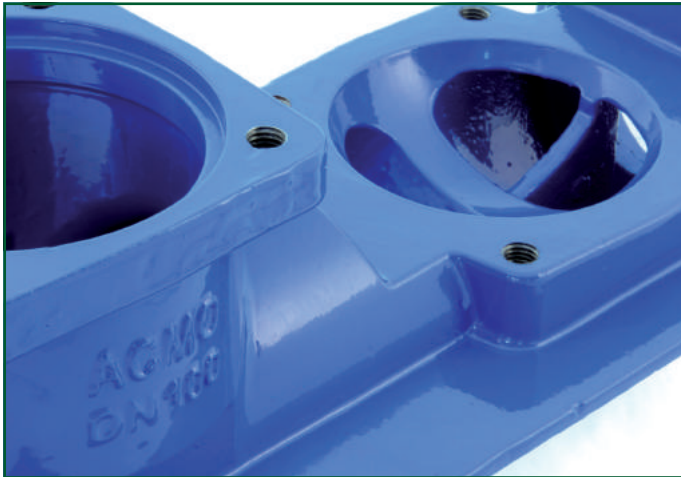
Available from DN 50 to DN 150, in 33 different configurations.



### THE METERING TECHNOLOGY

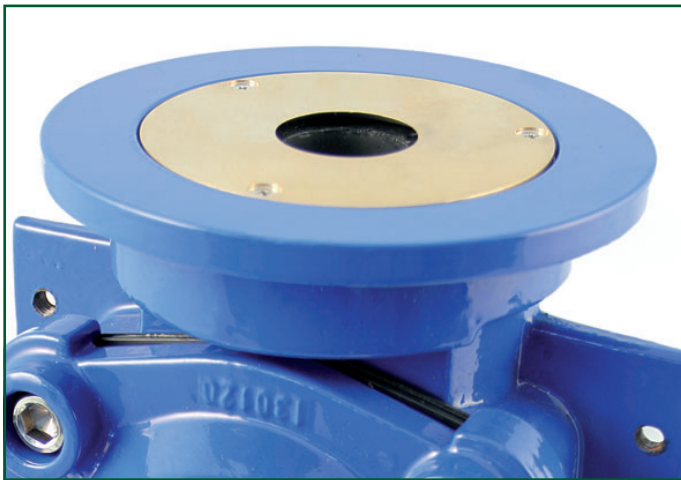
The first mechanical flowmeter for irrigation with metering technology certified by European Laboratory according to standard EN 14268.

# HYDROPASS MOD. HK



## THE CONTROL VALVE

Globe control valve with elastomeric diaphragm assembly; tested for an average of 10.000 operations, it is suitable to work both with low and high pressure (0.5 bar - 16 bar).



## THE WATER FLOW LIMITER

Full bore and self-modulating elastomeric ring, with low head losses, integrated in the hydrometer with anti-tampering system. Can be provided with 3 different user connection configuration:



ELBOW

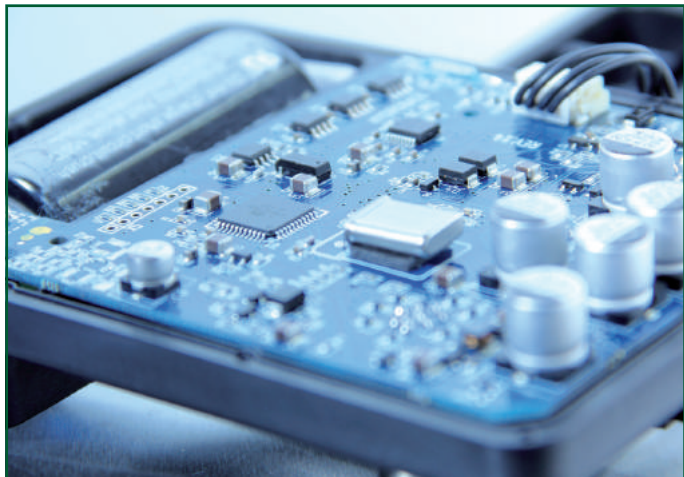


STRAIGHT

## THE ELECTRONIC CARDS (HYDROKEY)

Allow the user to get the water and the water authority to carry out the necessary checks and maintenance operations. The cards are equipped with latest generation of display, customized graphic, 4 buttons pad (user friendly), replaceable lithium battery with 5-year life guarantee, protected by an IP67 case. Available in "standard", "hybrid" e "contact less" version, according to the water authority needs and requests.





### ULTRA LOW-POWER ELECTRONIC UNIT (STAND-ALONE)

The electronic unit, which integrally control the hydrometer and its function, is installed inside the hydrometer shell. It is devoid of any component that can be damaged as display or buttons. It is enclosed in a case with protection IP68, equipped with its own battery. The battery is replaceable and guarantees an autonomy of at least 10 years. The unit can be set to operate in standard, hybrid and contact less version.



### ULTRA LOW-POWER COMMUNICATION UNIT

Fully autonomous, equipped with latest generation of GPRS modem transmission, integrally mounted into the hydrant. It is equipped with a low visual impact antenna; protected by an IP68 protective case with 10-year life replaceable battery.

### LoRaWAN™ HYDROMETER REMOTE CONTROL

Hydrometer radio device (LoRaWAN™ TRANSMITTER)

- Metering data acquisition and transmission to the Gateway.
- Able to receive working parameter and gateway status.
- Robust plastic cover, insulation grade IP68.
- Data protection crypted protocol with checksum.
- Long life battery guaranteeing at least 10 years.



• Technical data:

Radio technology: 868 MHz  
 Approval: CE, IETS 300-220  
 Data format: Security encrypted protocol AES 128  
 System operation: TX/RX with interval preset (few minutes)  
 Modulation: LoRa™ Spread Spectrum  
 Transmission power: +14dbm  
 Operating distance: 15 km in open field  
 Operating temperature: -20°C +55°C norm. -30°C +70°C max  
 Battery duration: 10 years  
 Antenna: External, low visual impact  
 Dimensions: H.144 x L.97 x P.48 mm  
 Weight: 200g  
 Protection: IP68

Radio Station Gateway (LoRaWAN™ RECEIVER)

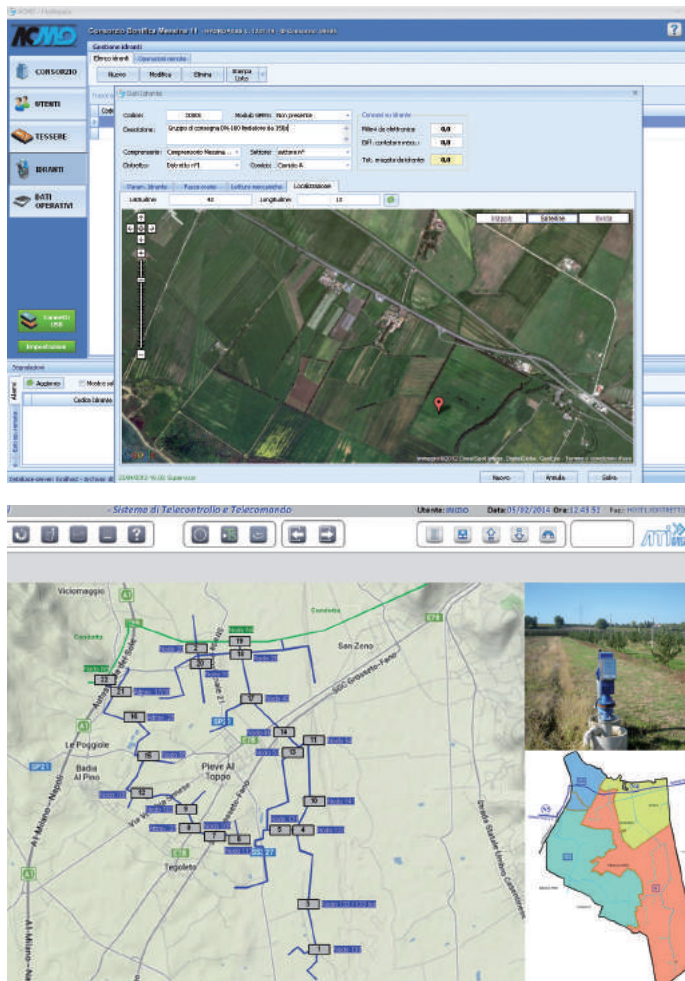
- Low power consumption.
- Better reception of data (direct view transmission 15 km, urban environment transmission 2 km) thanks to the Long Range technology.
- Costs optimization using ISM frequency bands.
- High efficiency data transmission.
- Every Gateway can manage more than 10.000 in- field units.
- Bidirectional communication with the in-field units.



• Technical data:

Radio technology: 868 MHz  
 Data format: Security encrypted protocol AES 128  
 Modulation: LoRa™ Spread Spectrum  
 CPU: ARM - platform Linux  
 Protocol: WAN (ETSI M2M), Ethernet  
 Modem: 3G With integrated IMEI code  
 LAN protocol: Open (EEE 802,154 e 6LoWPAN) on LoRa™ channels  
 Channels: Up to 49  
 Dimensions: 170 x 300 x 300 mm - Weight 2.055 g  
 Protection: IP67  
 Operating temperature: min -20°C max +60°C  
 Local interface: Ethernet, Power Over Ethernet  
 Power input: AC 220Volt with PoE (class 1, 48V) or DC (10V to 30V)  
 GPS: Integrated

# HYDROPASS MOD. HK



## THE MANAGEMENT SOFTWARE (HYDROSOFT)

It manages the whole system. It is realized through the latest programming environment in Microsoft. Completely compatible with Microsoft operating systems, from Microsoft XP on. The "User Friendly" interface coupled with the latest graphic technology make the software intuitive, easy and enjoyable.

The system allows assessing the geographical location of each hydrant and uses Google Maps to show a geo-referenced localization of them.

The software is equipped with an advanced managing system, which provides customized prints and reports. The management software (Hydrosoft) can be coupled with our S.C.A.D.A. and S.I.S. systems.

It allows to manage the entire irrigation grid. It is possible to create irrigation sectors, allocate water resource according to user' soil and crop needs, plan and schedule the water resource allocation in the short and long period.

The reference guidelines for the management of completely automated hydrometer systems are changing rapidly. We research constantly new services and features to add to the software in order to fulfill all the different needs of the Water Authorities which use this system.

HYDROPASS, the smarter solution for irrigation water management.

THE IRRIGATION WATER RESOURCE OPTIMIZATION LEAD TO REAL ECONOMICAL AND MANAGERIAL ADVANTAGES WHICH GENERATE SUSTAINABLE WATER UTILIZATION.

**Yearly water reservoir forecast**

To pluriannual simulations of the cultivated crops in the fields served by HYDROPASS, allow to calculate and optimize the volume of water reservoir needed to fulfill the next year requirements.

**Proper maintenance scheduling of irrigation structure**

Simulating the possible inflow/outflow configuration of the structure is possible to optimize the maintenance operation on the system.

**Optimization of irrigation duties**

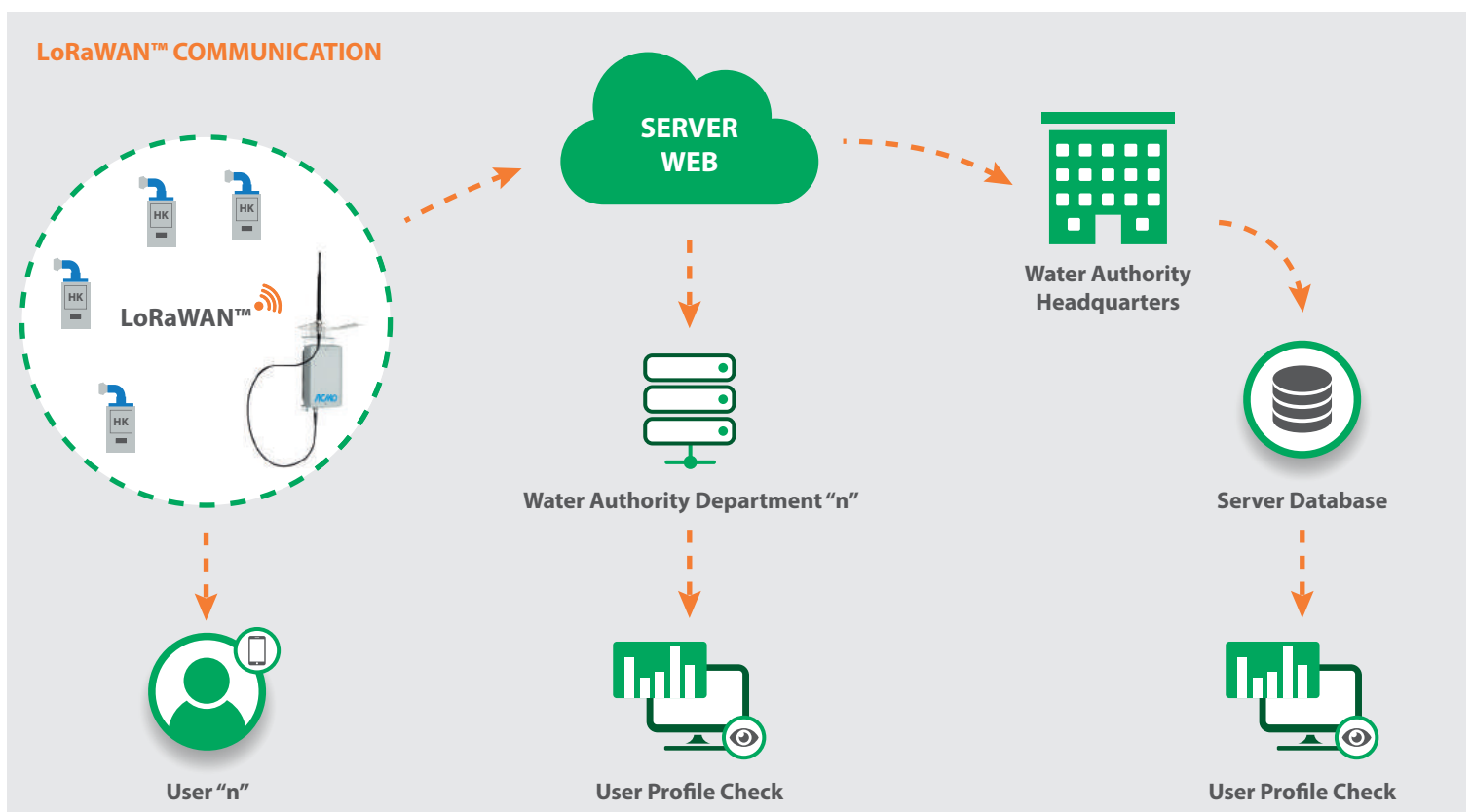
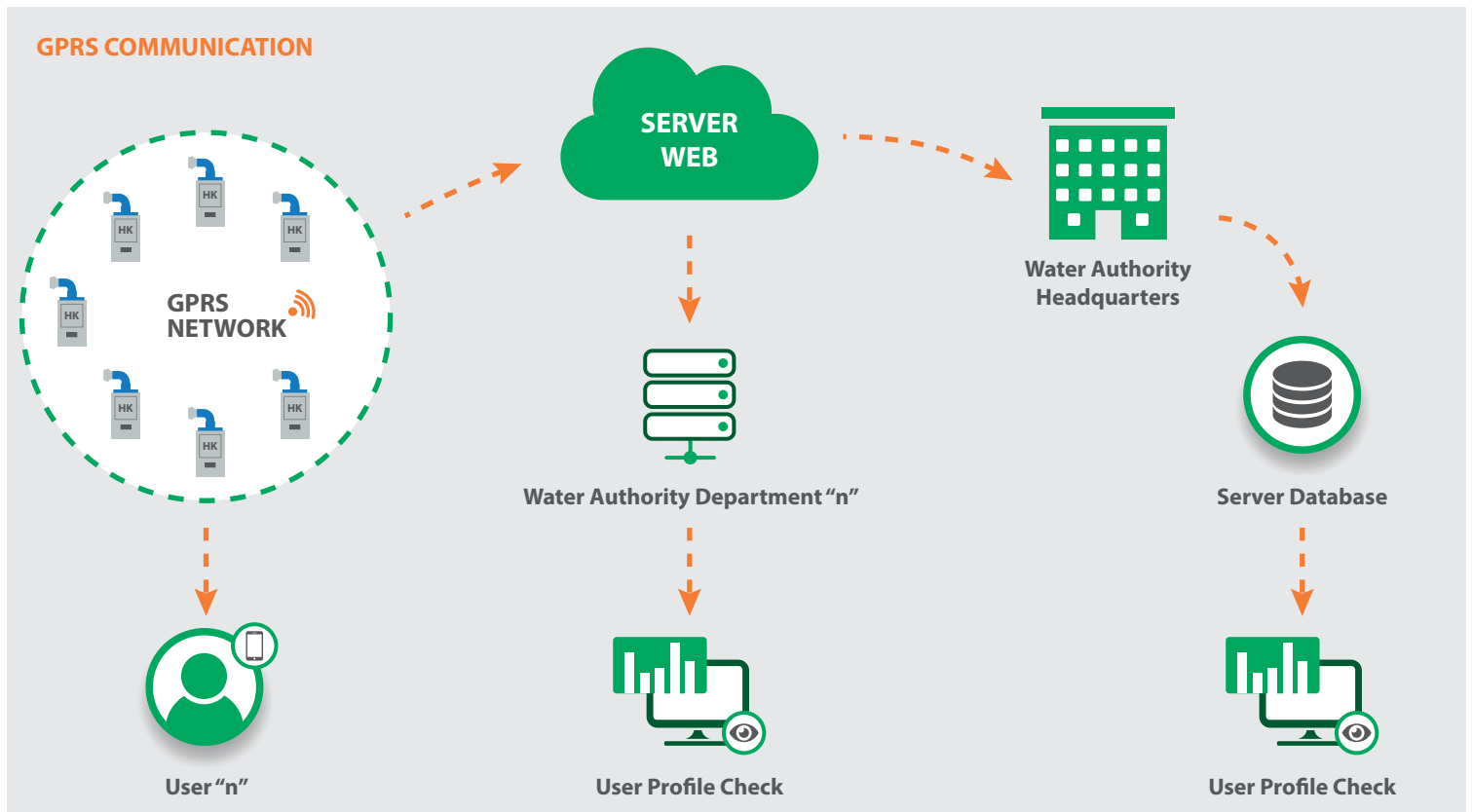
Yearly simulation to optimize irrigation duties needed to maximize the crops production.

**Energy saving**

Pumping station operations scheduling, optimized through yearly simulation to achieve the maximum money and energy savings.

## MONITORING

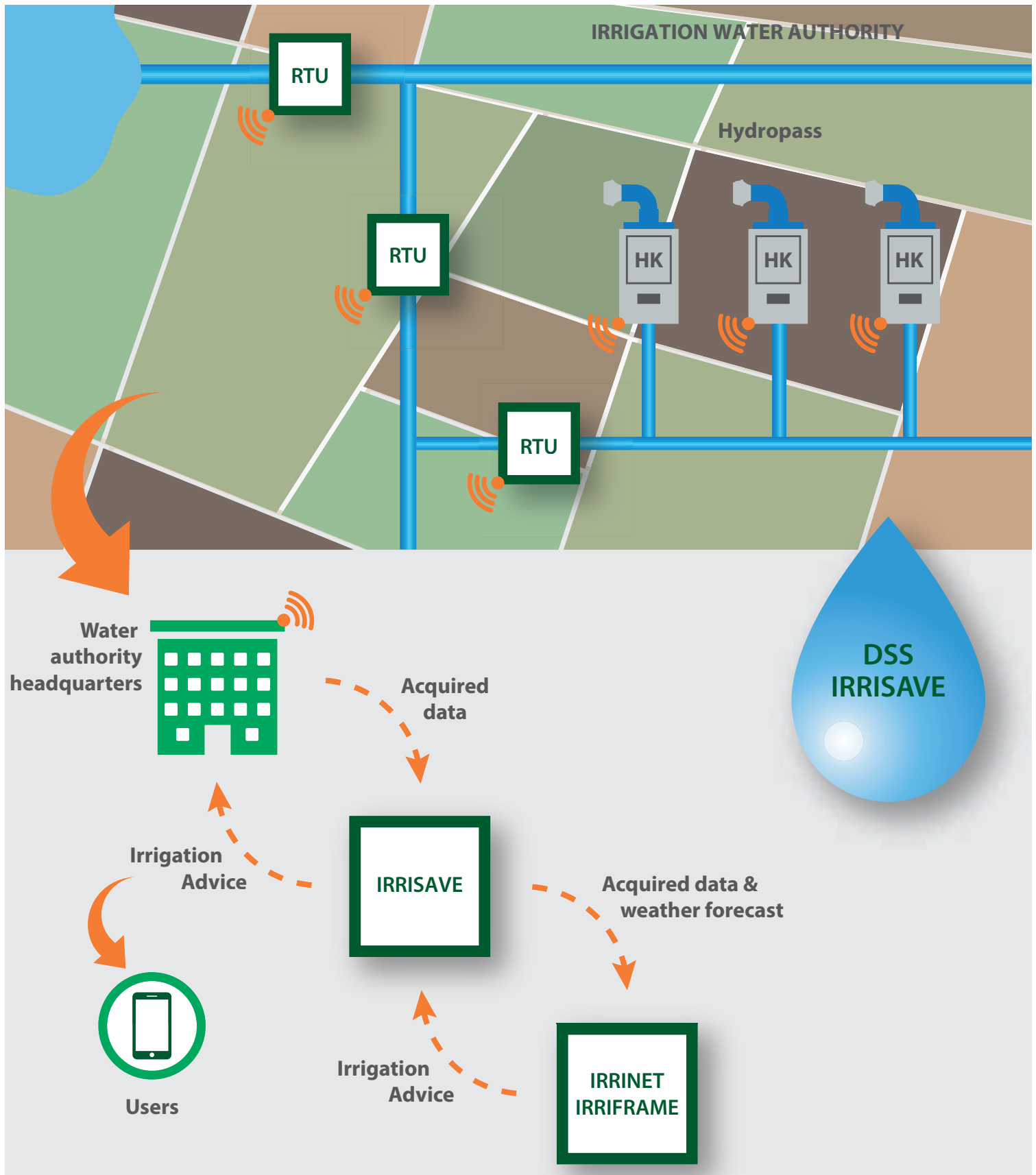
A distributed communication system has been developed to fulfill the need of updated and instantaneous data from the irrigation system. The communication network allows to have all the information regarding the user outline and his water consumption with the capability to communicate with the hydrometer in emergency or failure situations.



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## INTEGRATION WITH S.I.S. AND WITH THE IRRIFRAME PLATFORM (IRRISAVE MODULE)

The SIS - HYDROPASS system can be coupled with the national databases with weather and soil data to forecast the most sustainable irrigation scheduling. This forecasted scheduling leads to immediate and clear improvement of the irrigation operations with consequent economic, management and environmental benefits.





# ACMO

Member of the **AVR** group

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