RealiteQ - cloud-based Real end-to-end SCADA solution

RealiteQ is cloud-based, Real-time End to end SCADA solution (Telemetry & HMI software) & service which was developed as an end-to-end information and communication technology (ICT) that gathers and controls **Real-time critical & operational data**, from sensors, analyzers, and controllers. Relevant personnel, from the CEO to the field technician, wherever they may be, can, in real-time view and control the system and by that to **minimize the risks and optimize the effcency**.

RealiteQ is the new (4th) generation of SCADA systems. It is the most advanced SCADA solution available today. With RealiteQ you can manage better crisis events by having Real-time warnings for exceptional events. You have the ability to Manage & Control remotely all system components. The real-time Information enables improved service, quick reaction time to malfunctions. By RealiteQ contributes for better and safer management of both simple and complex water, wastewater Gas & Oil, BMS, agriculture, and energy facilities and networks as well as for Industrial usage.

RealiteQ was developed by Reali Technologies is an Israeli leader in Web SCADA and telemetry technology. Reali Technologies was established as an Israeli breakthrough technology startup in 2007 that developed a **new generation of SCADA & Telemetry Solution named RealiteQ.**

Today, Reali Technologies has an advanced proven technology named RealiteQ for a wide range of water and wastewater applications, with **thousands of working sites in 40 countries and 5 continents including In Israel (since 2008), the USA (since 2010), Europe and around the world.**

RealiteQ SCADA components:

RealiteQ is one stop shop for SCADA solution (Telemetry & HMI software), The technology consists of three system components (see drawing 2):

• **ICEX** (Integrated Cellular and Ethernet Explorer) – The end unit installed in remote sites. Embedded or Encapsulated Data Producer that explores sensors, analyzers, controllers etc. over I/O, Ethernet or Serial protocols, and link them to the internet by any cellular, satellite or other connection. (see Draw 1)

• **COMP** COMP (Central Online Management Portal) Mediates all communication, define security and users permissions, manage the Historian, streams live data and send Alarms notification.

• **UI** – Browser based (HTML5) User Interface (HMI/SCADA), displays Real-Time information, Alarms, Historical data, Tables & trend charts. Enables Remote operations and modification. Work with any desktop and mobile device connected to the Internet.


Draw 1 – Icex
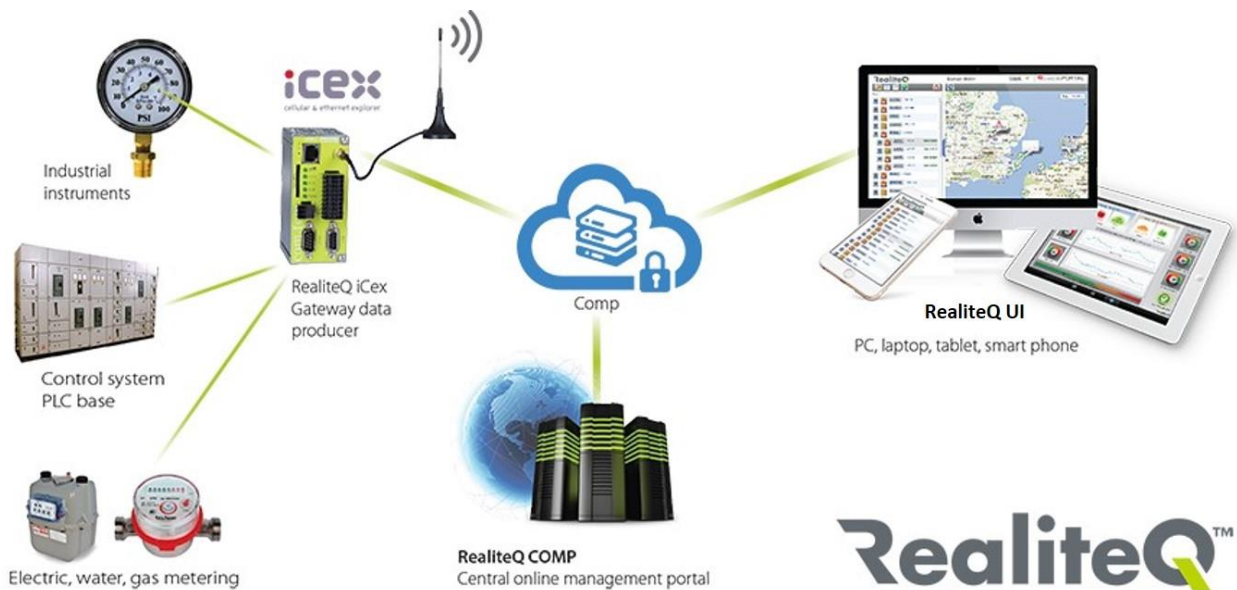
Draw 2 – RealiteQ end to end SCADA system

iCEX

- Remote Data gateway with or without a cellular modem.
- A Data producer, generates real-time data from controllers ,instruments and sensors.
- Includes serial, Ethernet, and I/O interfaces
- Supports standard industrial protocols such as Modbus RTU, Modbus TCP, Rockwell DF1, Siemens ProfiNet TCP/IP, GE SNPX and more.
- Does not act as a server but rather as a client that accesses the RealiteQ servers cluster. By this approach, no fixed IP and no special or private network configuration is required.
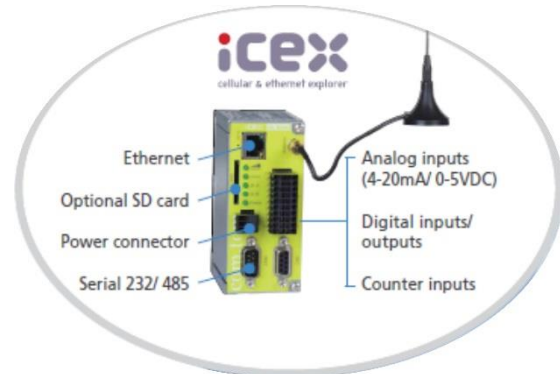
COMP

- Mediates all communication of data producers & consumers.
- Updates producers & consumers with any configuration ,data or command .
- Stores all system configuration.
- Keeps all security settings and users permissions .
- Manages the historian data .
- Sends alarm notifications .
- BI Capabilities - internal logic capabilities (analytics, statistic, formula)
- Allows data sharing among distributed sites.

UI/HMI

- Browser-based.
- Screens & Dashboards.
- Build in screen/graphics editor (customization.(
- Nodes list management.
- Geographic presentation.
- Report & trends.
- Full alarm management.
- Any language
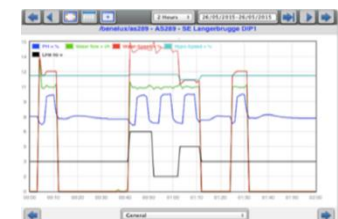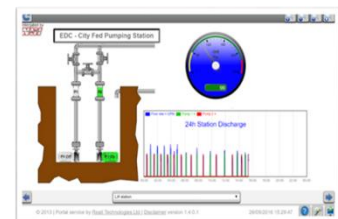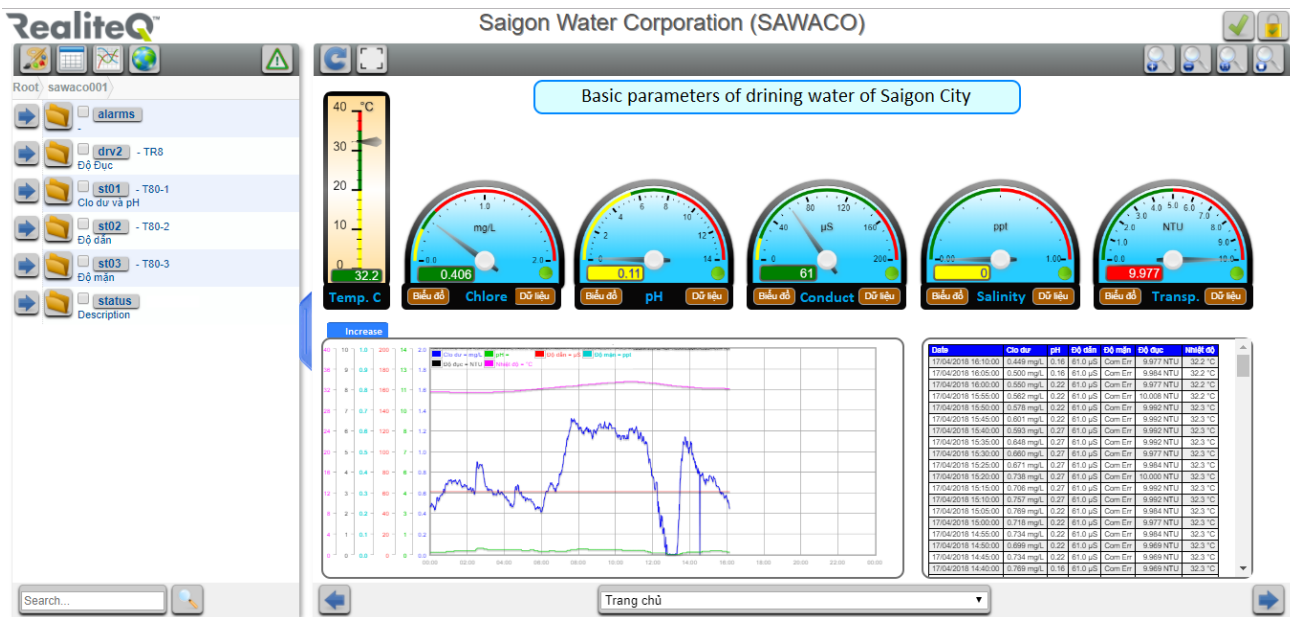
RealiteQ SCADA system benefits:

- **Affordable** - RealiteQ makes SCADA technology affordable & available to any water and sewer utility as for the very low investment needed to start, low operational cost
- **Modular** – from one unit to hundreds and more
- **No Installation & Maintenance Headache** - Fast, Simple and Non-destructive installation. Seamless interfacing with existing equipment (sensors, analyzers, PLC...) & software and low maintenance costs
- **Can be integrated to an exciting SCADA** – Upgrade, expending, Replacing
- **Build in statistical capabilities** - water Balance, counting, failures analytics, sum, max, min …
- **No limits users and Data** with no extra cost .
- **Customized screens, dashboards, reports**- Each user can personalize his own screens to his needs as the UI offers easy build-in tools to define and edit system data nodes structure
- **Web Security** – RealiteQ invests a lot of efforts in providing a highly secured Cloud-based solution, using several security levels:
    - Reliable Service – Multiple hosting (US projects are connected to Amazon)
    - Most advanced Security procedures are applied – (All communication is done over SSL, No fixed IP, False log in activates delay & block, Full user management…
    - Remote operational Notification – any remote change of values will generate a notification to the relevant personnel.
    - Option for monitoring only – for critical sites, remote operation is blocked and only remote monitoring is running (upgradable FOC to full service).
- **Two birds"** – Most advanced technology yet a mature product
    - Since 2008, (in the USA since 2010) More than 4000 sites in 40 countries in continents
    - Global & American leading enterprises users: Jonson Control, Schneider Electric, Tesla, Volkswagen, L'Oreal, Solenis (Chemicals), Unilever, Coca-Cola, city bank…

- **Optional - enterprise own Server**
    - In Case the utility doesn't want to use RealiteQ server at Amazon we can supply an enterprise own Server which will be located at the Enterprise control room. The server is actually an array of 3-5 servers which hold the entire software which usually located at RealiteQ COMP and replace it so there will be no need to use RealiteQ cloud server.
- **Cascade architecture (CASCADA)**
    - Site level – Real-time monitoring and control from any device, any place by any authorized personnel .
    - Utility level – Data sharing (& control) among sites, visibility of all the utility facilities.
    - State level – Real time state facilities status, single centralized professional & experts support.
    - National level- Real-time, Managerial and historian information for crises management, real-time event channel for immediate (emergency) actions, information analyses for system
- **Security & Safety:**

    - An advanced Firewall has been added to iCEX (field gateway) new hardware.

    - A "Monitoring only" configuration file allows monitoring only and blocks any (!!!) remote operation activities.

    - A "Value Change" Notification, function which allow, for sensitive remote operations, a real-time notification message to the relevant person in the utility with the details about the user that made this change and the new value (so any remote unauthorized change will be notified in real time and will be re change to the original value with no time).

- **Alarms handling:**

    - It is possible to define escalation mode (unlimited escalation steps)
    - It is possible to configure "Nagging" for alarms (may also combine Nagging + escalation).
    - It is possible to monitor open and duration of alarms as part of the BI part (see below).

- **Reports & Trends:**

High flexibility - freely selection of each column (in the table) and pen (in trends) by the user.
Smart dashboards - Possible to display inside a graphical screen several trends and tables.
Timeframe - In graphical screens, it is possible to configure a dedicated time frame (day, week, month, year) for each one of the trends/tables presented.

- **BI (Business intelligence) & Data analytics**

BI functions that use aggregated data and present, as part of the real-time system, the calculated results to be used in dashboards and all parts of the system. Some functions are for Alarms (such as average alarm duration, amount of active alarms, and amount of historical alarms over the period), some are for values (such as Max, Min, Average) and more.

References:

Most advanced technology yet a mature product since 2008

• More than 4000 sites in 40 countries in 5 continents

• Global leading enterprises: Jonson Control, Schneider Electric, Tesla, Volkswagen, L'eoreal, Solenis(Chemicals), Unilever, Coca-Cola, city bank, AMC-ImdexGroup (mining)
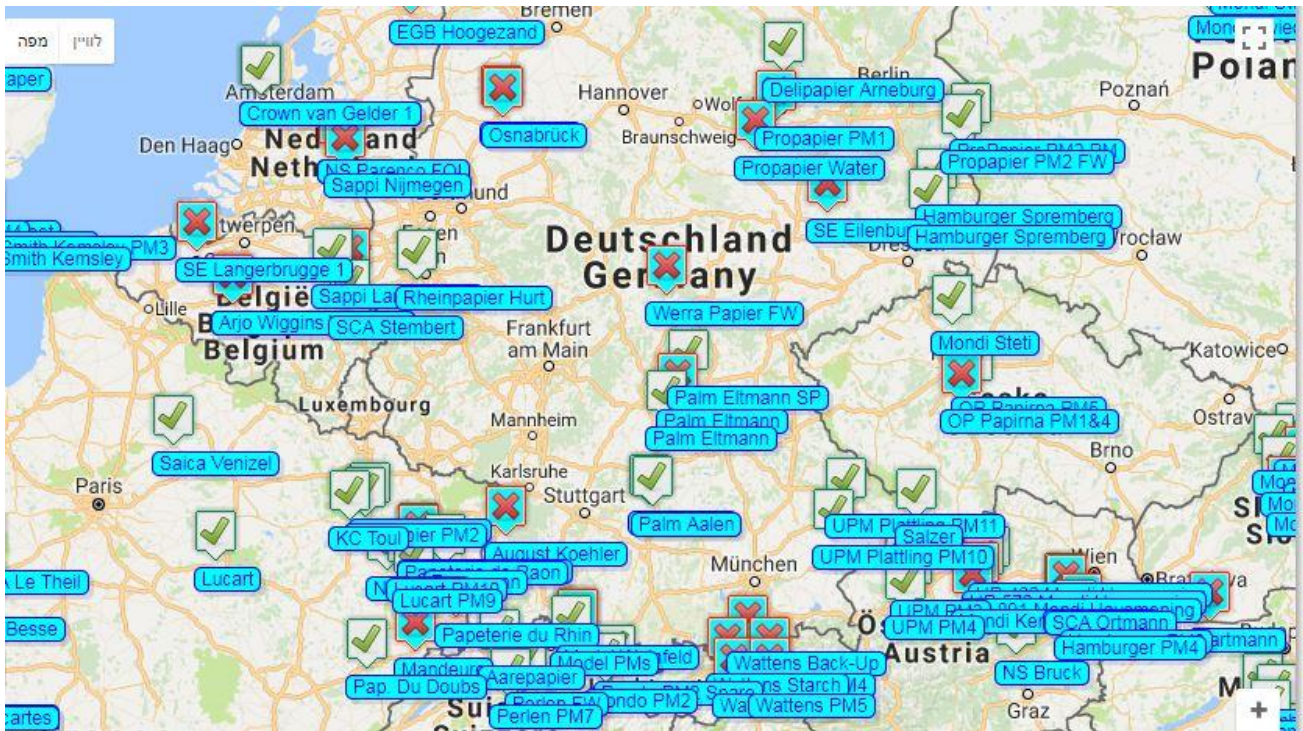
Draw 3 – RealiteQ project in Europe