



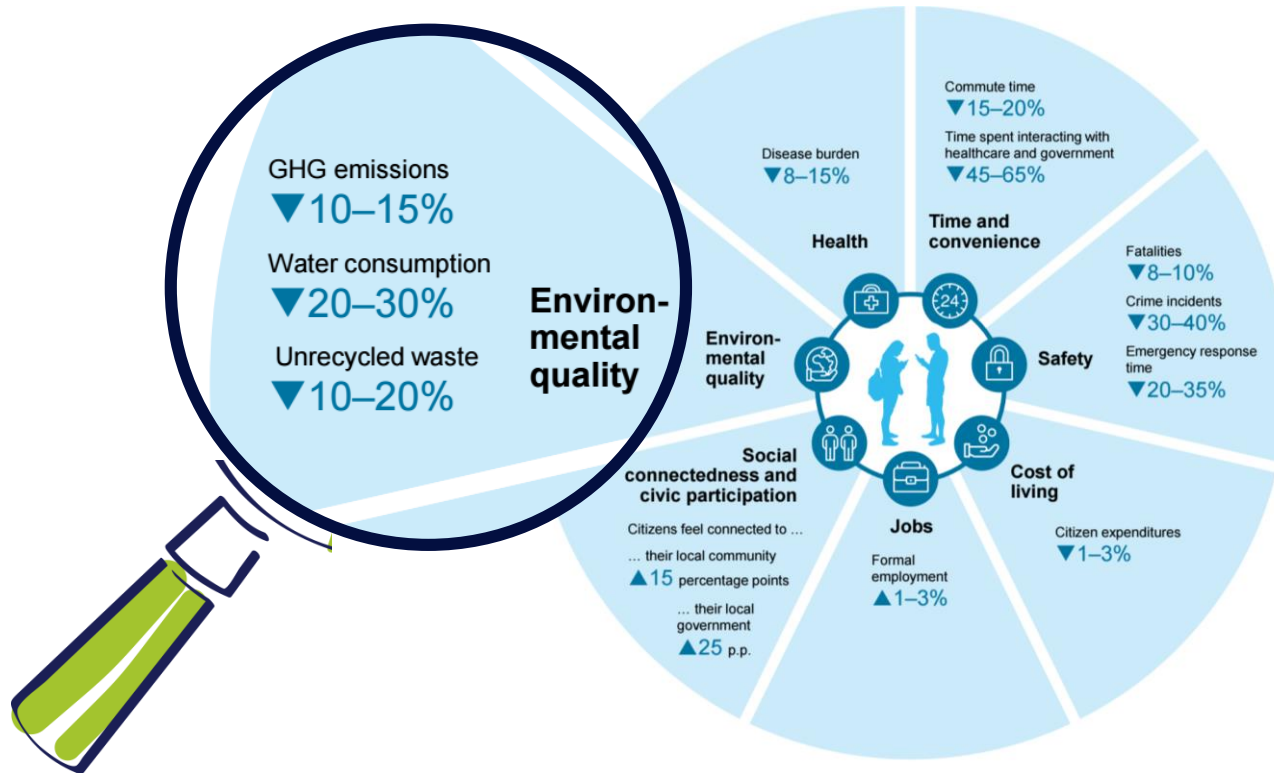
SMART SOLUTIONS for smart cities

Victor Garnreiter
Senior Executive VP
International Development & Innovation



Why smart utility in a Smart City?

Improve some key quality-of-life indicators by 10 to 30 percent



SOURCE: McKinsey Global Institute analysis

Drivers for smart water utilities



Reduce
Operating Cost



Improve
Sustainability

The water
sector is going
DIGITAL



Optimise
Asset Utilisation



Enhance
Customer experience

Value of smart water utilities



safety



- **Forecast** natural or accidental events (floods and pollution)
- **Improve reliability of operations** on a daily basis and during a crisis
- **Comply** with regulatory requirements
- **Secure** the drinking water supply



environment



- **Reduce** water losses
- **Preserve** the quality of the natural environment
- **Commit** to an energy performance



information



- **Communicate** and inform stakeholders in real time
- **Improve** the understanding of on-going operations
- **Reinforce** control over operator commitments



economy



- **Optimise** the output from plants or network installations
- **Rationalise** operational costs and investments
- **Increase the value** of existing assets

A new set of skills & Technologies for a Smart Utilities

1 Industrial connected devices

On-board or fixed devices



2 IOT Network

Collect data within shared communication networks



SMART
systems



3 Business IT system

Existing IT management systems

4 Data repository

Data Analytics, Data Science,
Machine Learning



5 Services

Open Data
Web portals, mobile apps





Three layers of “smartness”:

Adoption and usage, often leading to better decisions and behavior change

Smart applications and data analysis capabilities

The **tech base** includes networks of connected devices and sensors

Traditional infrastructure (physical and social)

SUEZ, a global leader in smart and sustainable management of resources

we help cities and industries to optimize
water management, recycling and waste recovery

our fields of activity



Engineering,
design and
construction



Smart and
sustainable
management of
the water cycle



Smart solutions
for cities



Recycling and
waste recovery

#1
in smart water in Europe

€17.3 billion
revenue in 2018

90,000
employees

on **5**
continents

€120 million
invested in R&D

SUEZ digital roadmap and ambition

Make SUEZ the leading digital, data-driven environment and smart city player

**BUSINESS
PRIORITIES**

Digitalization of the
Customer Experience



Asset & Operations
Performance



New Business
Models



Technology & solutions



Organization & culture



Build / buy / partner



ENABLERS



Our references in Asia

SUEZ: a reference of Smart Services provider

5 Advanced Solutions Factories

Smart Metering, Smart Water, Asset Management,
Revenue Management, Env Quality Monitoring

10 VISIO™ Centers

deployed in France in 2018

27,495 kms of remotely
monitored networks

3,308 sites monitored 24/7

763 municipalities served

+4M Smart Meters monitored real time

Leader in Europe in AMI services

>3000 fully equipped plants

Automated and operated by SUEZ

+700 AQUADVANCED™ hypervisors

+80 000 km of networks monitored

Plants, Networks, Sewers, Urban Drainage

8,6M inhabitants protected from flooding by predictive & automated systems

SMART
WATER

PROTECTING PEOPLE, GOODS AND THE ENVIRONMENT

KEY DATA

Scope
~ 100,000 ha,
1 M inhabitants

Type of contract
Design and installation

Duration
Since 2015



Marina Barrage

THE CLIENT

Public Utilities Board (PUB)

CLIENT EXPECTATIONS

**PROTECT** people, goods and the environment**REDUCE** reaction time**ENSURE** cleaner waters

WHAT WE BROUGHT TO THE CLIENT

SUEZ implemented and expanded its AQUADVANCED® Urban Drainage software to assist in the real-time management of the open-channel storm water network of the Marina catchment.

The system provides optimal strategies to anticipate the operations of Marina Barrage, helps anticipate flash floods in the city, and monitors water quality in the reservoirs and canals.

VALUE CREATED FOR THE CLIENT

By allowing the levels of Marina Reservoir to be controlled more closely, the system helps **reduce flood risks** while maintaining reserves for water supply.

Thanks to the flood operations dashboard, better monitoring and **anticipation of flash floods** is achieved.

By detecting anomalies and assisting with event analysis, the system **helps reducing the reaction time** in dealing with water quality issues.



Shaping Chongqing a smart, resourceful & International city

KEY DATA

Scope
18.67 square km

Type of contract
Installation and management

Duration
Since 2017



BACKGROUND

- Chongqing, an annual rainfall of over 1,000mm
- As a typical mountainous area, Chongqing has an ecosystem that is sensitive, fragile and difficult to restore, as well as climate, water, vegetation and man-made factors to deal with

CLIENT EXPECTATIONS

- 1 of the first 16 National Sponge City pilot projects
- **Full scale monitoring** of storm water system and sponge facilities
- Evaluate and monitor **KPIs** of sponge city
- **Early warning** of urban flooding

WHAT WE BROUGHT TO THE CLIENT

- **AQUADVANCED® Urban Drainage Smart Solution**
- **Specific development** to meet requirement of sponge city management
- Integrate **on-line 2D model and radar forecast** to anticipate flooding
- **“Real time – Online – Continuous ”** performance evolution
- **Rainfall characteristics** analysis
- **2-hour early warning** of urban flooding
- **Events** detection

ENVIRONMENTAL
QUALITY MONITORING

Zone Libellule® for Environmental Quality Monitoring

KEY DATA

Scope
nearly 50 hectares

Duration
Since 2017

THE CLIENT

Shanghai Chemical Industry Park

Using wetland to purify industrial wastewater: A wetland works to purify water quality, prevent flooding and drought, conserve water, and serve as a wildlife habitat.

WHAT WE BROUGHT TO THE CLIENT

- **Eco-Wetland** design experience based on industrial wastewater environment characteristics and wetland self-purification capacity.
- **Wetland digital management platform:** automatic control of various hydraulic facilities based on real-time data and simulation.

VALUE CREATED FOR THE CLIENT

- **15,000** cubic meters of river water treated per day
- **10,000** cubic meters of industrial wastewater treated per day
- **Effective water quality improvement:** stable key pollutants removal rate, TN removal rate approx. 60%, TP and ammonia approx. 50%, and COD approx. 20%.




 SMART
WATER

REAL-TIME HYPERVISION OF A WATER NETWORK

KEY DATA

Scope

667,400 inhabitants

Type of contract

Design and installation

THE CLIENT

Macao Water - China

Macao Water manages water distribution for the entire city, delivering 390,000 m³/day on the peninsula and the island (capacity will be increased to 510,000 m³/d upon commission of new WTP)

WHAT WE BROUGHT TO THE CLIENT

SUEZ implemented its **AQUADVANCED® Water Networks** solution to monitor the entire drinking water distribution network. A dashboard enables the state of the network to be visualised in real-time. Smart event detection enables faster maintenance rollout, and reports are a valuable decision-making support tool to better manage system performance.

SUEZ's **AQUADVANCED® Energy System** is also installed. It regenerates a solution every 30 minutes to adapt to the changing environment, and allows reasonable arrangement of waterworks, pumping stations and valves in order to achieve the lowest operating costs.

VALUE CREATED FOR THE CLIENT

- **Non-revenue water** registered went from 18% to less than **9%**.
- The data help to **optimize facility capabilities** and prioritize actions to be taken.
- The return on investment is between **2 and 3** years.
- **Cost reduction of 7%** per year for the network could be realized by effective dynamic operation of the storage capacity, pump station selection, treatment plant selection and pump selection.



Growing our strongholds in Smart Water, Waste & City

Scaling up Air quality & Smart agriculture



Aquadvanced® Suite

- > 4+ million connected SUEZ sensors, 700 global references
- > Improve customer experience and infrastructure efficiency



Smart Waste

- > Customer base already built
- > In line with SUEZ recyclability and traceability objectives



Smart Cities

- > Global multiservice performance offer to Cities
- > Leveraging on SUEZ existing footprint worldwide and longstanding operator's track record



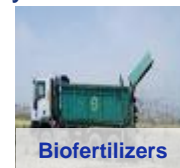
- > A unique Control Command Centre integrating urban flows and services with 65% energy savings at the end of the 12y contract

Smart Agriculture & Air Quality

- > In line with SUEZ DNA around Water and Sustainability



Irrigation

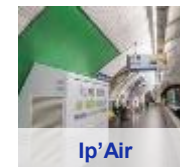


Biofertilizers

- > Expertise in monitoring & treatment of pollution, odors and GHG emission



Carbon sink



Ip'Air

失敗乃成功之母

Failure is the
mother of the success

Thank you