

WEBINAR ON "SMART FLOWS: REAL-WORLD APPLICATIONS OF DIGITAL TRANSFORMATION IN WATER MANAGEMENT"



27/02/2024

Development Director - AgroParisTech-SUEZ Chair
"Water for All – General Management of Water and
Sanitation Services".



Lylian Coelho



Promo 2021-22 Dr. Letitia Obeng



Promo 2023-24 Dr. Sylvain Usher

<https://waterforall.utilities.management>

The Network of centres of excellence in the South

European-African-Asian project for the creation of an International School of Management of the Commons and the development of Leadership and Management between 2025-2030

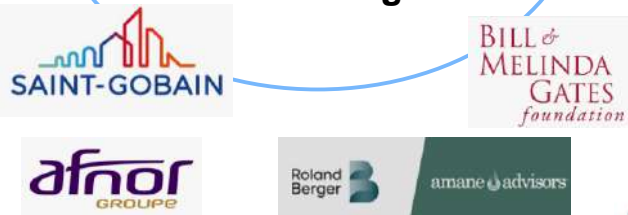
Excellence centres in the South

Complementary fields application sites

Partners



Financing



 Cheikh Anta Diop University Dakar - Sénégal	 Lomé University Togo	 Abomey-Calayi University Bénin
 Al Jazari Water Academy Lahore - Pakistan	 ESSEC Rabat - Morocco Singapore	 Kwame Nkrumah University Of Sciences and Technologies Accra - Ghana
 HOLDING COMPANY FOR WATER AND WASTEWATER	 ICIREWARD International Center for Interdisciplinary Research in Water Systems Dynamics UNESCO Centre Sous les auspices de l'UNESCO	 UNIVERSITY OF NAIR
 G-EAU Gestion de l'Eau, Acteurs, Usages Water matters	 MTD Maison de la Télédetection	


 ONEA Office national de l'eau et de l'assainissement	 L.T.C. L'Institut de Technologie du Cameroun
Burkina-Faso	
 SEN'EAU Senegal Water	 GNA5 Général de l'Assainissement et de l'Assainissement
Senegal	
 Phnom Penh Water Supply Authority Cambodge	 Siem Reap Water Supply Authority Cambodge
Phnom Penh Water Supply Authority Cambodge	Siem Reap Water Supply Authority Cambodge
 ACCRA WATER COMPANY LIMITED	Accra - Ghana
Hydopolis la Valette	



Shared Knowledge and Learning Paths

International executive
Master OpT on General
Management of Essential
Services Water, Sanitation
360°

Short courses of 1 to 2
weeks: Directors and Top-
managers



The E-learning platform
Opt shared in 2 languages.

Res'OpT Alumni Network



BenchOpT



Imagine: a Fully Digitally-Enabled Water Utility

Self adaptive, artificial intelligence driven optimisation of desal membrane systems and wastewater aeration

Advanced analytics to optimise chemical dosing

Satellite imagery, GPS, and LiDAR to create 3D maps of networks and assets

Improve water access in water- scarce communities with smart credit schemes that connect with pumps and dispensers

Seamless digital field force, with field access to work requirements , and efficient real-time scheduling

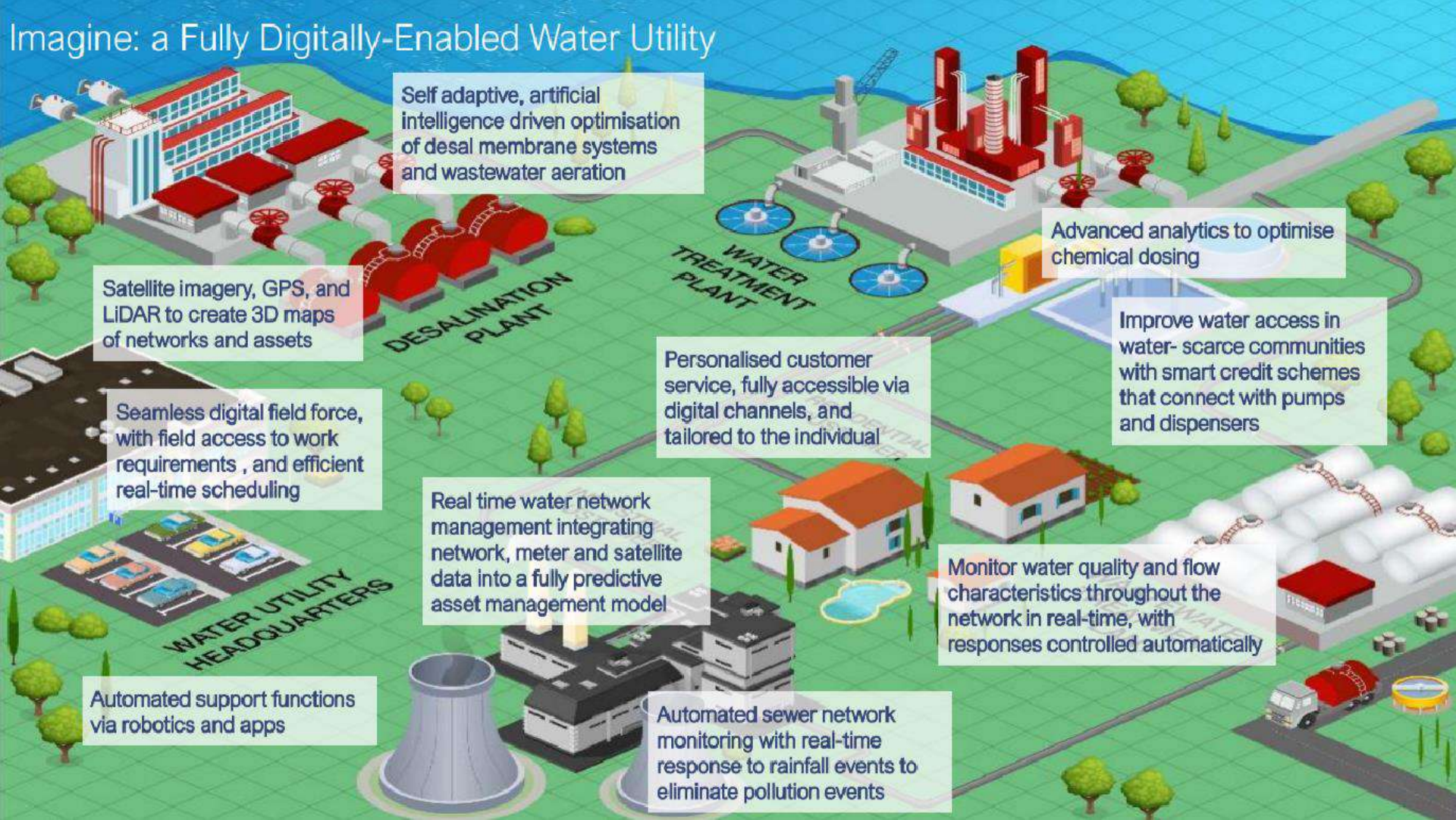
Personalised customer service, fully accessible via digital channels, and tailored to the individual

Real time water network management integrating network, meter and satellite data into a fully predictive asset management model

Monitor water quality and flow characteristics throughout the network in real-time, with responses controlled automatically

Automated support functions via robotics and apps

Automated sewer network monitoring with real-time response to rainfall events to eliminate pollution events



DIGITALIZATION : HOW NOT TO DO IT

“Let’s just add more sensors!”

“Smart metering everywhere, and we’re good!”

“Data, Data, Data and more Data – we’ll find out later why we need it”

“Hey, our existing stuff is probably fully right”

“It’s just one more thing in the day of the workers”

DIGITALIZATION: A 4-STEP FRAMEWORK

1 – Get a clear understanding of the starting point (Is your network mapped? Is it accurate? Do you collect the right data at your treatment plant? Do you know your users? And your future users?)

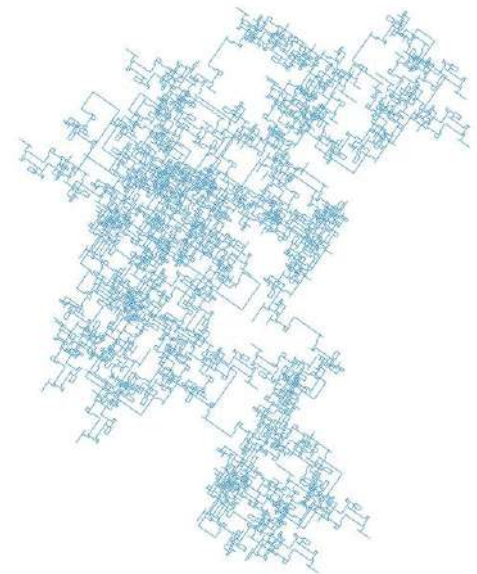
2 – Collect the right data at the right place. Historical data will enhance your vision but get a specific set of information. Remember and tell it everyone: It. Takes. Time.



DIGITIZATION: A 4-STEP FRAMEWORK

3 – Use this data to create a “Digital Twin” (rudimentary, modeled, using AI...).
Run your “Digital Twin” in parallel of your assets to calibrate it

4 – Start playing with the “Digital Twin” to derisk hypotheses, find optimizations, hidden potential, tools to postpone an investment or reduce your future infrastructure needs



Industrial and technical IT: the basis for advanced solutions

Tools for analysing and controlling performance, sharing data with elected representatives, organisations and citizens

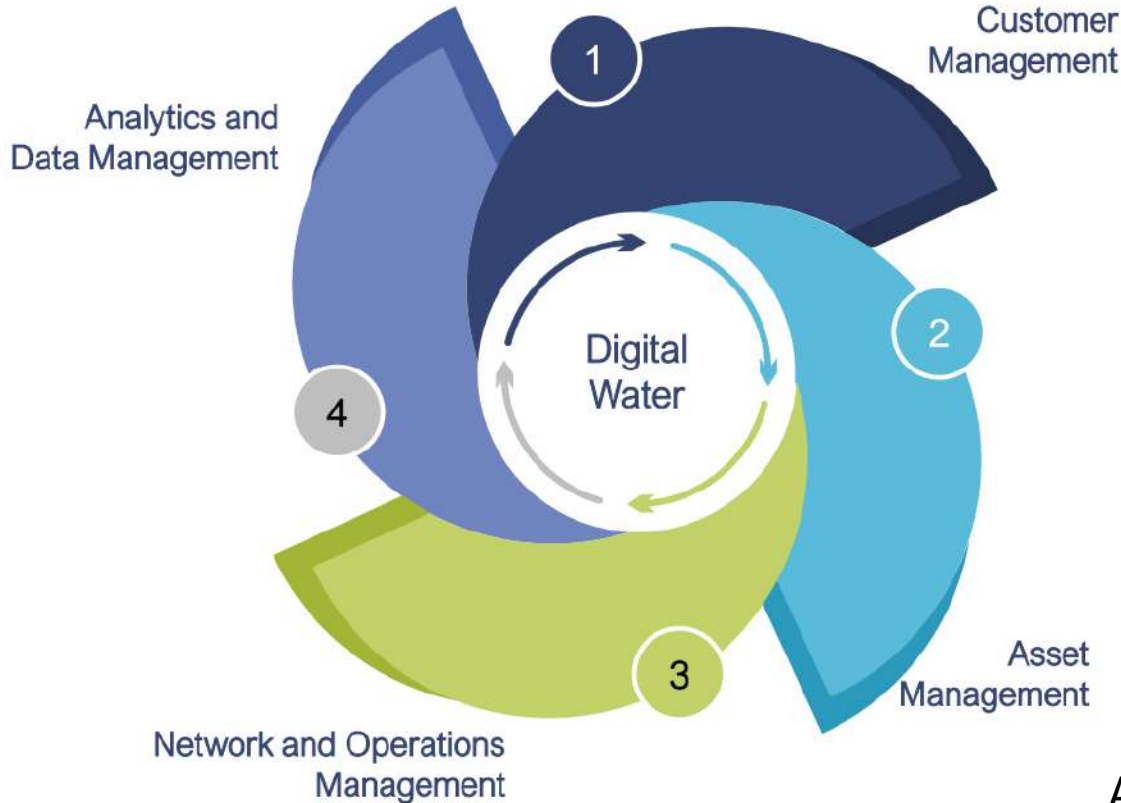
Steering and operating tools

Installation and configuration



Data acquisition - transmission - processing - qualification

Opportunities in Digital Water encompass 4 key topics...

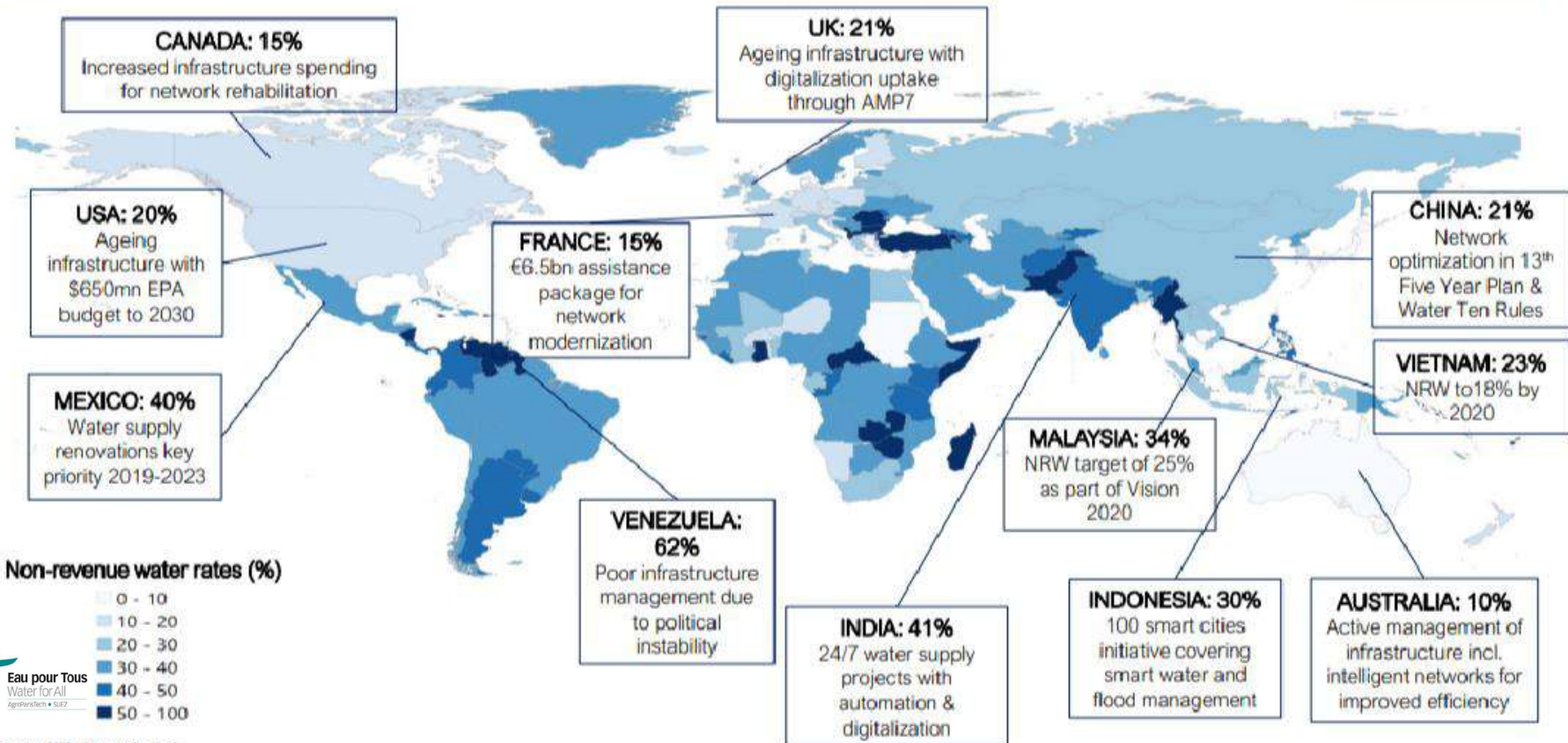


Digital Water refers to the use of digital solutions in water / wastewater utilities, and includes offerings that **automate processes, improve customer experience, support decision-making, improve efficiency, improve productivity, reduce operating costs, generate new revenue streams and increase customer stickiness**

Non-revenue water rates vary significantly globally with some areas having losses as high as 60-70%...

Global NRW is estimated at 126 billion litres per year, equating to \$40 billion/yr.

If the global volume of NRW was reduced by one-third, the water saved would be enough to supply 800 million people



Machine Learning Use Cases



Bluspark

Water demand

- › Water usage analytics
- › Water data processing
- › Water demand & supply optimization



Water infrastructure

- › Predictive maintenance or condition monitoring
- › Process optimization



Financial Services

- › Risk analytics & regulation
- › Customer segmentation
- › Revenue evaluation



Warehouse

- › Predictive inventory planning



G.I.S.

- › Image recognition
- › Update GIS
- › Launch the proper inspection procedures



Social media

- › Watch and semantic analysis
- › Alerts from real-time social media data
- › Proactive detection management
- › Global opinion analysis



Asset Advanced APPROACH

PLAN THE RENEWAL OF YOUR ASSETS IN 6 STEPS



mapping the state of the network



Data processing and enhancement

Facilitating access to data
Integrating multiple parameters
Carrying out reviews
database, **processed** and **accessed** from a **single** platform.



Condition assessment

Improving inspection and maintenance strategies
network with a minimum of inspections.

NETWORK DEGRADATION MODEL



Analysis of failures

Assessing risks
Obtain a clear vision of the future state of the estate
each asset according to your needs (multi-criteria, stochastic and Machine Learning).



Analysis risks

Anticipating the impact of failures
consequences of failure.
Assess the impact of failures on service levels.

OPTIMISING RENEWAL



Prioritise

Compare thousands of scenarios
Optimising investments.
increased operating costs and exposure to risk.
Define **alternatives to renewal** to preserve your assets over the long term.



Geographical grouping

Group and **rationalise tasks** for different assets in the same area and create an **operational renewal plan**.

SEN'EAU's innovations - Digital transformation (Senegal- Dakar)

Customer dematerialization: AAR SENEAU

- ✓ Electronic invoices
- ✓ Connected customer account
- ✓ Dematerialization of billing /invoices



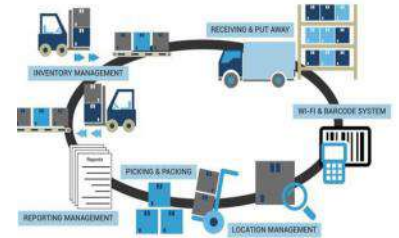
Digitalization interventions: VISIO

- ✓ Intervention
- ✓ Network follow up
- ✓ Geolocalisation
- ✓ Invoice Dematerialization and operations (DIGIMET)



Store digitalisation

- ✓ Bar code
- ✓ stocks
- ✓ Automatic supply



Drinking water networks and connection

- ✓ Sectorisation
- ✓ Pressure and flow regulation
- ✓ Hydraulic modelling



ON'connect™ of the meter connected to the service



An open, scalable system for the intelligent city of tomorrow



Shared Infrastructure

- MULTI-FLUID: WATER, GAS, ELECTRICITY
- MULTI-SENSOR: AIR QUALITY, TEMPERATURE, VOLUNTARY DROP-OFF POINTS, ETC.

Smart cities and Africa or Asia

TALKING ABOUT THE OBSTACLES TO SMART CITIES IN SOUTHERN COUNTRIES:

- **Improve Human resources and organization rather than technology**
- **Require a constant energy service and 24/7 operation**
- **Have an advanced corporate culture to share data between departments and avoid operating in silos**
- **Get innovation and operations departments to work together, Move towards smart multiservices, not just water**

“DON'T FORGET WATER, COLLECTIVE AND NON-COLLECTIVE SANITATION IN SMART CITIES, ARE SECTORS OFTEN LEFT BEHIND AND CAN BE BOOSTED BY DIGITAL MANAGEMENT.”

CONTACTS



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