EcoStruxure™ for Water & Wastewater

Digital transformation in the Water & Wastewater industry
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Global megatrends have a direct impact on water management

**Trends**

- **Rapid population growth:**
  - 2018: *7.6 bn* people
  - 2050: *9.6 bn* people

- 2018: *4.2 bn* people live in cities
  - 2050: *7.4 bn* people will live in cities

- Depletion of natural resources
  - Currently, *25%* more natural resources are used than the Earth can yield at a sustainable rate

**Challenges**

- Water consumption grows by *2.5%* per year faster than world’s population (~1%)
- *20%* of the world’s population without access to safe drinking water
- Demand shifts to regions with already scarce resources

- Rising need for sustainable infrastructure solutions
- Industrial/municipal wastewater subject to higher treatment standards
- Cities/urban regions will be competing on water quality standard

- Water involved in producing all other forms of energy
- Increasing water scarcity
- Rising energy expenses for water treatment

Sources: UN, Population Reference Bureau, World Population Data Sheet
How do we support Water & Wastewater customers?

Optimize energy consumption:  
Up to 30% energy savings

Increase operational efficiency:  
Up to 25%

Reduce total cost of ownership (TCO):  
Up to 20%
Making demand CONNECTED and EFFICIENT

IoT ACCELERATION
Driven by pervasive penetration of MOBILITY & ANALYTICS

+ CONVERGENCE

= ENERGY & PROCESS OPTIMIZATION

...enables the convergence of energy, automation, and software
The world of water management is becoming increasingly digitized.

The developments that we are seeing in technology are exciting:

- network management
- water resources
- treatment plant management
- asset management
1. Supply Good Water
2. Reclaim Used Water
3. Tame Storm Water
## THE NEED FOR PUB TO TRANSFORM

### FUTURE-PROOFING THE WATER SUPPLY FOR SINGAPORE

## DRIVERS

<table>
<thead>
<tr>
<th>Increasing Water Demand</th>
<th>Rising Costs</th>
<th>Aging Workforce</th>
<th>Higher Public Expectations</th>
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</thead>
</table>

## RISKS OF NOT INNOVATING

<table>
<thead>
<tr>
<th>Vulnerability to Cyber Threats</th>
<th>Technological Obsolescence</th>
<th>Lack of long-range solutions to meet future challenges</th>
<th>Inefficiencies and Wastage</th>
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**ADB STRATEGY 2030: MAKE CITIES MORE LIVEABLE**

**Livable cities Components:**

- **Inclusive**, participatory, urban planning, design and infrastructure
- **Environmental sustainability** including circular use of natural resources, climate change resilience and disaster risk management
- Improved, complementary and gender-responsive social services (education, health, vocational training, sports, social safety nets)
- Improved access to energy-efficient and sustainable water supply, sanitation, power, transport infrastructure and urban services
- **High-quality jobs** with focus on women’s employment and entrepreneurship
- Use of high-level technologies, data analytics and IoT-based solutions, GIS and earth observations, Fintech, etc., incorporating special needs of various groups

**ADB Water investments 2017: $2.78 billion**

**Est. Water investments needs 2016-2030: $0.8 trillion (climate adjusted)**

DIGITAL TRANSFORMATION OF WATER UTILITIES IS KEY FOR CITIES LIVEABILITY
TODAY
- Lagging behind the digital age
- Old and unknown assets
- Inefficient and inequal use of resources (poor quality, leaks, high energy, inaccurate metering and billing, no waste water treatment)
- Bureaucratic and hierarchical
- Unbalanced skills mix and manpower
- Unable to solve even today’s problems
- No strategic planning and performance monitoring

FUTURE 1
(with little active change)
- Non focused assets management
- Depleting resources / growing demand
- More and more inefficient service
- Passive to climate change events
- No useful knowledge
- No unique offerings

FUTURE 2
(with moderate active change)
- Demand driven, reactive
- Controlled resources
- Standardized offerings
- Quick and accessible

PREFERRED FUTURE
(with transformational effort)
- Demand and data driven, pro-active
- Anticipation at basin level to adapt resources
- Infrastructure known and optimized
- Connected with partners
- Customized for clients
- Trained and motivated teams
- Automated billing and cost recovery
- Real time, circular, agile, low carbon, innovative
- Solving tomorrow’s problems, today
DIGITAL TRANSFORMATION FOR UTILITIES ASSET MANAGEMENT AND OPERATIONS AND MAINTENANCE PRACTICES

CHALLENGES
Quickly changing technology / long term project cycle
Adaptation of digital solutions to project context / lack of infrastructure
Utility capacity to absorb digital solutions
Most appropriate contractual modality (O&M ? DBO ?)

QUICK WINS
With proper infrastructure and equipment, and contractual solutions digital systems can support:
- Water savings and energy savings actions (low carbon),
- Operations and maintenance transformation (cost efficient),
- Quality of infrastructures with IOT (long term),
- Water quality & resilient watersheds (climate change adapted).

➔ Improved water and waste water services for all including poor and vulnerable

NEXT STEPS
- New contractual modalities.
- New cooperation schemes. Pilots.
- Appropriate mechanisms and business models for project design.
- Including PPPs and greater involvement of the private sector.
- Innovative financing.
## Customer Challenges
- Rapid urbanization
- Severe pressure on city resources
- Unequal distribution of city resources
- Lack of social inclusion
- Livability challenges for citizens
- Environmental sustainability
- Inefficient city operations

## Solution
- Command and control center to provide real-time monitoring of critical assets and apply analytics / generate KPIs for display in a modern dashboard system
- Automated processes to optimize response time & improve efficiency in response to incidents across multiple subsystems leveraging advanced workflows
- Utility Management System (SmartPower, SmartWater)
- Integrated e-governance system and call center to manage resident requests and city administration
- City surveillance system (APNR / speed detection)
- Building management system, BRTS, and street lighting systems
- GIS integration to visualize location of assets/incidents
- Integrated asset management

## Customer Benefits
- Operator and management efficiency
- Situational awareness and operational readiness through advanced unified dashboards
- Immediate access to critical KPIs & reporting data in the field

"Extremely well conceptualized, planned & executed. Naya Raipur will enable CG to technologically leap frog with its state of the art Central Command Centre. The infrastructure created is world class. The city is futuristic. I wish it all the best and a great future."

Amitabh Kant, CEO, Niti Aayog, Government of India

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NRDA: Naya Raipur
India’s 1st smart greenfield city will provide world-class amenities to residents, and become a financial, IT, and global education hub

EcoStruxure® for Water & Wastewater

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<tr>
<th>Apps, Analytics And services</th>
<th>AVEVA</th>
<th>EcoStruxure Building Operations</th>
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<tbody>
<tr>
<td>Water Network Optimization</td>
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<td>Water Loss Management Workflow</td>
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<td>Enterprise Asset Management</td>
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<th>Edge Control</th>
<th>Water SCADA PLCs</th>
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<td>FRTUs, RTUs, instruments &amp; sensors, building sensors, cameras</td>
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*Schneider Electric is a Strategic Technology Partner & Reseller of AVEVA
EcoStruxure™ Architecture

Water Resources | Water Treatment | Desalination | Water Networks | Wastewater Networks | Wastewater Treatment

Apps, Analytics & Services
- AVEVA Software®
- EcoStruxure Maintenance Advisor
- EcoStruxure Pumping Performance Advisor
- EcoStruxure Power Advisor
- EcoStruxure Resource Advisor
- EcoStruxure Augmented Operator Advisor

End-to-end Cybersecurity
- Magelis IIoT Box
- Medicon
- EcoStruxure™ Hybrid DCS
- EcoStruxure™ Foxboro DCS
- EcoStruxure™ Geo SCADA Expert
- EcoStruxure™ Power Monitoring Expert

Cloud and/or On Premise
- Magelis HMI
- Process Instrumentation
- TeSys
- Altivar
- O&Ksen & Blokset iPMCC
- Masterpact MTZ
- ConneXium Trio
- PowerLogic
- Gutor
- Smart Panels
- Premset

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Key takeaways

Digital transformation is driving change in the industry

Success for the transformation will be driven by successful partnerships

Reducing operational costs
Secure proper funding vehicles
Learn more about EcoStruxure for Water & Wastewater

by taking the EcoStruxure for Water Wastewater Innovation Hub Tour