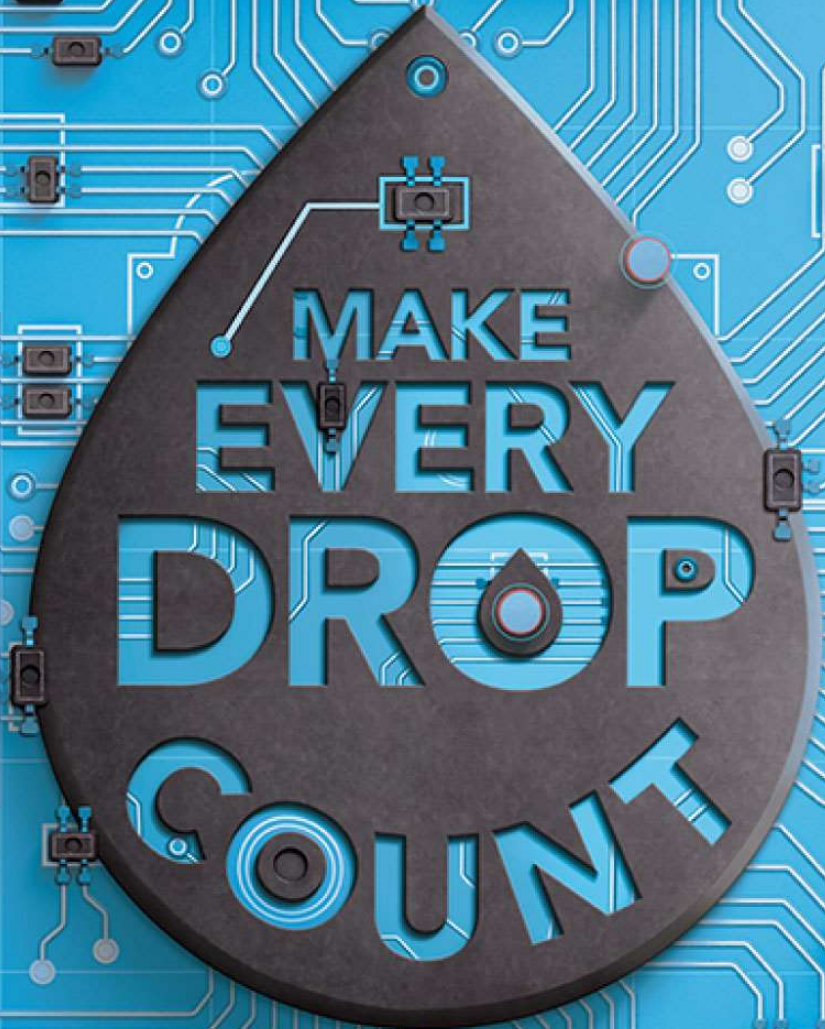
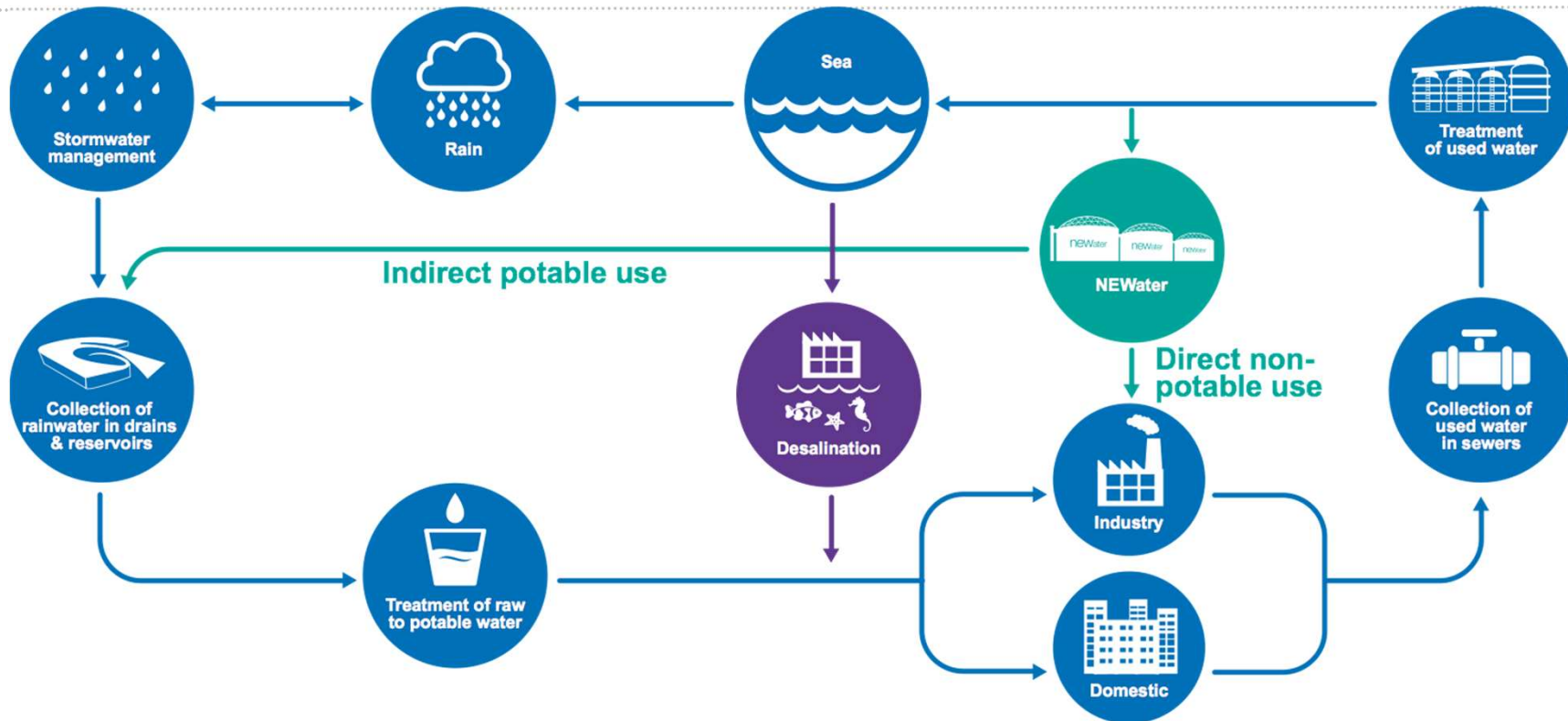


Introduction to the Singapore Water Ecosystem

Moh Tiing Liang
Deputy Director
Industry & Technology Collaboration Department,
PUB Singapore



PUB Manages the Entire Water Loop

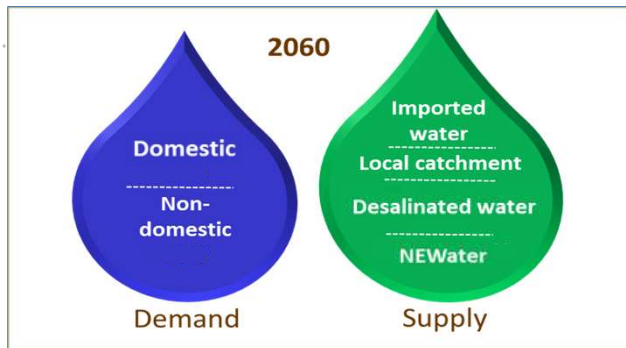


• Supply Good Water

• Reclaim Used Water

• Tame Storm Water

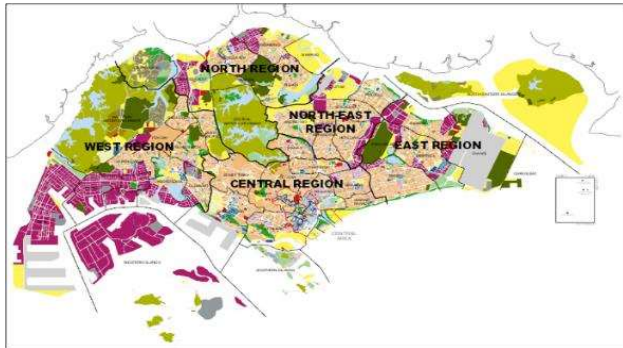
Singapore's Water Challenges



Rising Water Demand



Water Scarcity



Land Constraints



Rising Public Expectations

Technology as the Lever for Water Sustainability

PUB leverages technology to overcome water challenges and meet long-term water sustainability

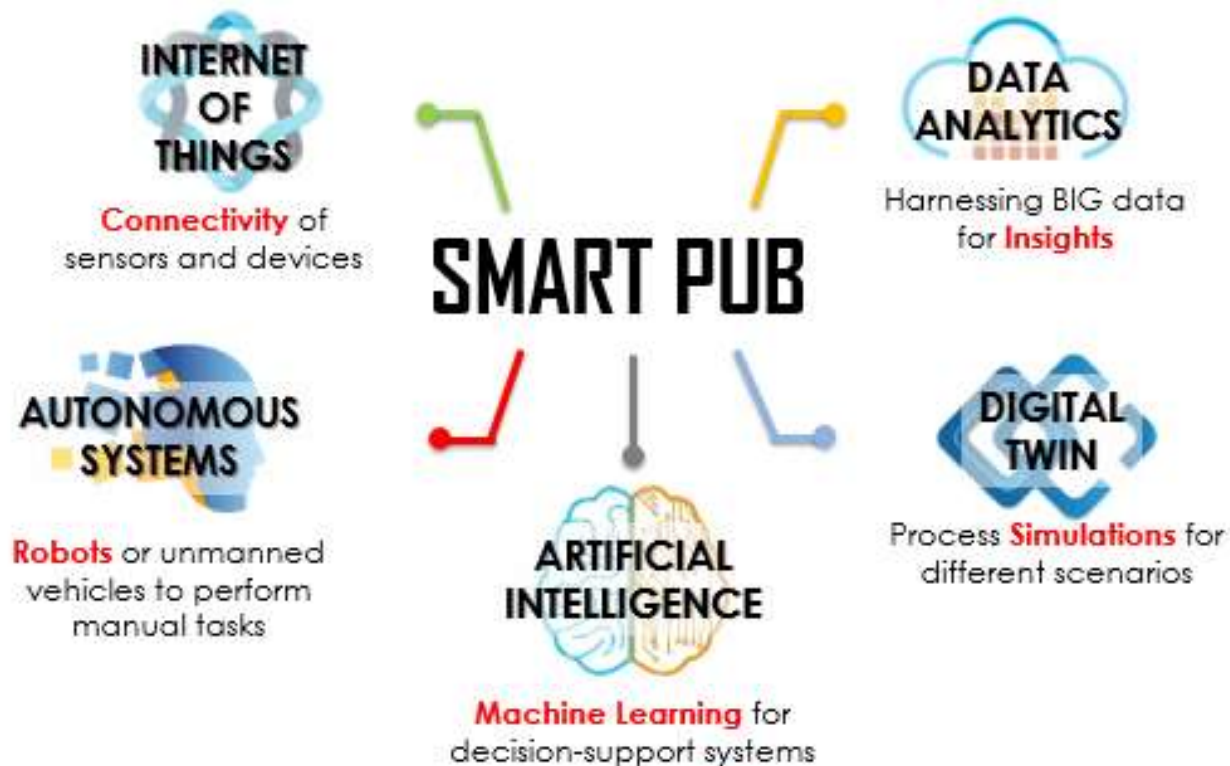


Why Digitalise?

- Digitalisation is a key aspect to achieve “**Adequacy, Resiliency and Sustainability**”.
- Advancements in digital and information communications technologies offer new opportunities.
- Enhance productivity and efficiency in planning, operations and service delivery

Digital Technologies; SMART PUB

The SMART PUB Roadmap is a 5-year plan to deploy 5 identified tech enablers across PUB and across the entire value chain from planning to operations & maintenance



Exploring Potential Applications Across PUB

Catchment and Waterways

Water Supply Plants

Water Supply Network

Water Reclamation Network

Water Reclamation Plants

SMART DRAINAGE GRID

- Extensive hydrometeorological monitoring
- **Predictive** drainage and flood management
- Analysed data to support **strategic planning** and **maintenance of drainage infrastructure**



SMART PLANTS

- **Optimised operations** and **decision support**
- **Man-less** operations with automation
- **Autonomous security and safety** surveillance



SMART WATER GRID

- Extensive monitoring of network pressure, flow and water quality
- **Pre-emptive leak detection**
- **Predictive load dispatch:** Demand forecasting via machine learning



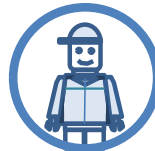
SMART SEWER GRID

- **Pre-emptive asset repair** and replacement
- **Monitoring** network and tunnel structural integrity
- **Illegal discharge tracing** and modelling



OPS SUPPORT

- **360° situational awareness** and **system oversight** with improved ops dashboards and mobile connectivity
- **Reducing wastage** and **enhancing resilience** with data analytics



DIGITAL WORKPLACE

- Enhancing productivity by **automating manual workflows**
- Encouraging **collaboration** and **knowledge sharing** through digital platforms
- **Improving service delivery** via digital platforms



Smart Plants

OPERATIONS EFFICIENCY

- More **extensive data capture** by sensors & robots.
- **Enhanced analytics** using **machine learning & AI**, enabling prescriptive & predictive decision support systems
- **Automation** using robots (e.g. sample collection, surveillance)



Augmented reality



Pump monitoring using IoT

SAFETY & SECURITY

- Surveillance **robots & drones** (UAVs)
- CCTVs with **video analytics**
- Wearables with indoor & outdoor positioning



Operations Dashboard



Surveillance Robot Trial

Collaborating with the Industry

Vibrant Water Ecosystem with over 200 Companies & more than 25 Research Centres



Singapore Water Exchange

- The Singapore Water Exchange houses an ecosystem of water companies that leverage mutual strengths to push the frontiers of water innovation and business growth.



Commercialisation Ecosystem



Singapore International Water Week

SIWW2021 Event Format



SIWW2021 SPOTLIGHT



21 June 2021

- High-level summit for water leaders in governments, utilities, academia and industry
- Hybrid: physical for Singapore attendees, virtual for overseas attendees
- Co-located with World Cities Summit



SIWW2021 ONLINE



21 June – 2 July 2021

- Thematic webinars
- Virtual Water Convention technical and poster sessions
- Virtual Water Expo and product showcases

SIWW2021 Key Thematic Areas

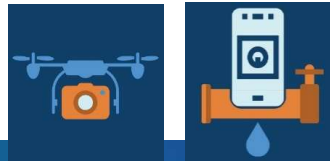
Climate Resilience

Building resilience to impacts of climate change on urban water systems



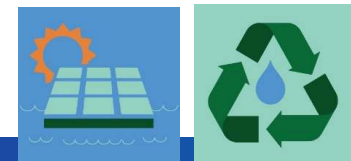
Digital Water

Leveraging digital technologies across urban water cycle to achieve optimization and efficiency



Resource Circularity

Embracing circular resource management to reduce water, energy and resource footprint



Thank You

MAKE
EVERY
DROP
COUNT