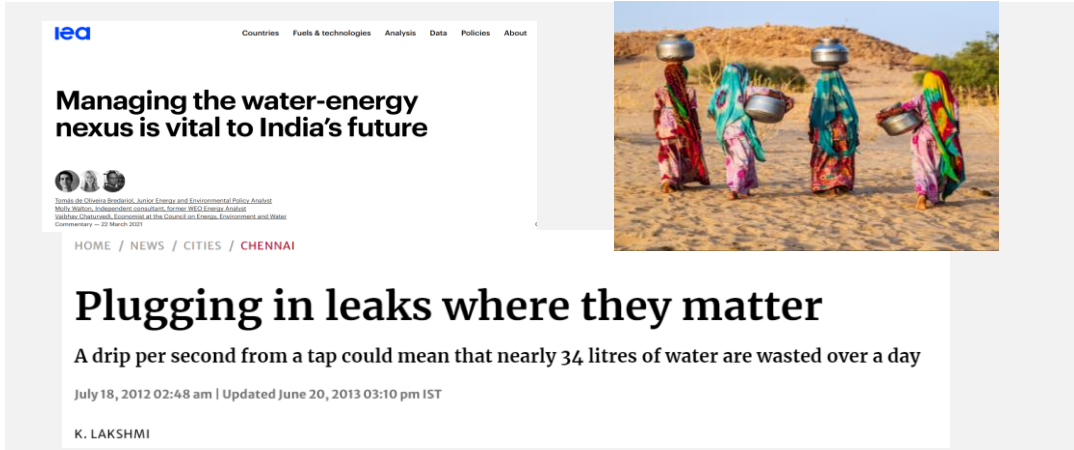


Smart Solutions for Strengthening Drinking Water Supply Value Chain

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- 33% of global population lacks access to safe drinking water
- Municipalities spend ~60 % of their total energy consumption on pumping water
- Across the globe almost 335 billion liters of water is lost every day due to leakage

Industry Challenges

Water utilities across the globe are plagued by revenue loss due to water leakage & high energy cost for pumping water

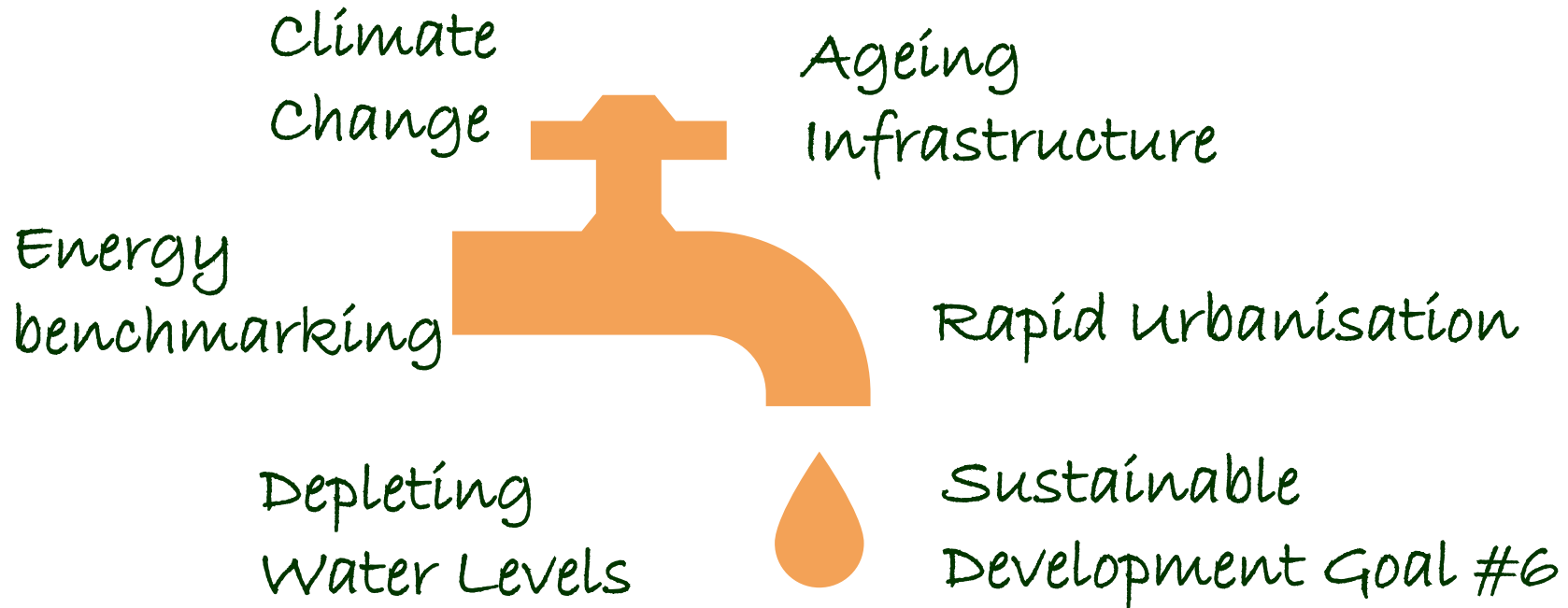
Recommended Action

Prioritized investments on drinking water infrastructure have the capacity to generate savings and in turn bring wider population under safe drinking water service

The paper promotes proactive adoption of innovative solutions tailored for demographics, landscape and problem areas in the water supply value chain

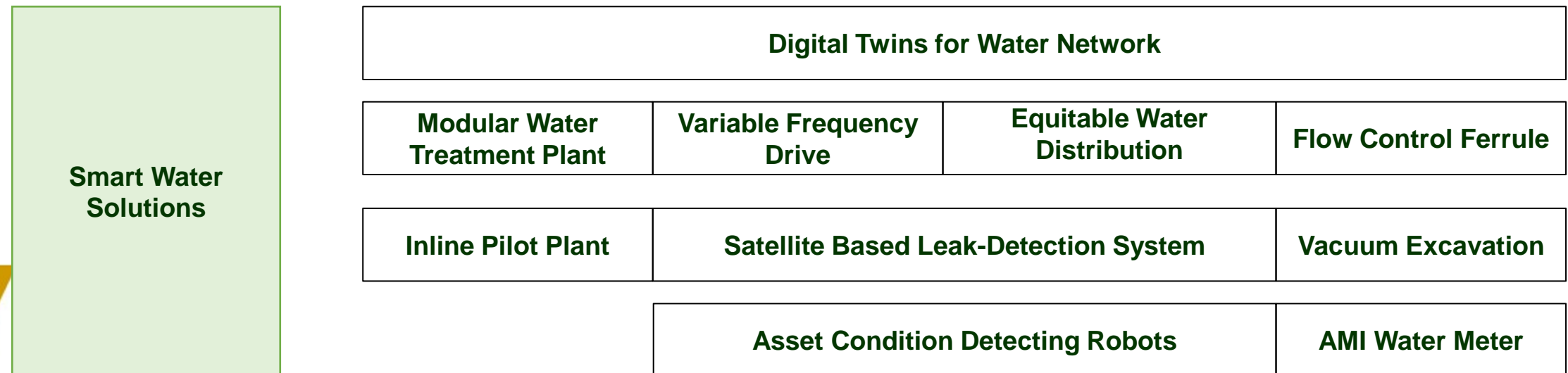
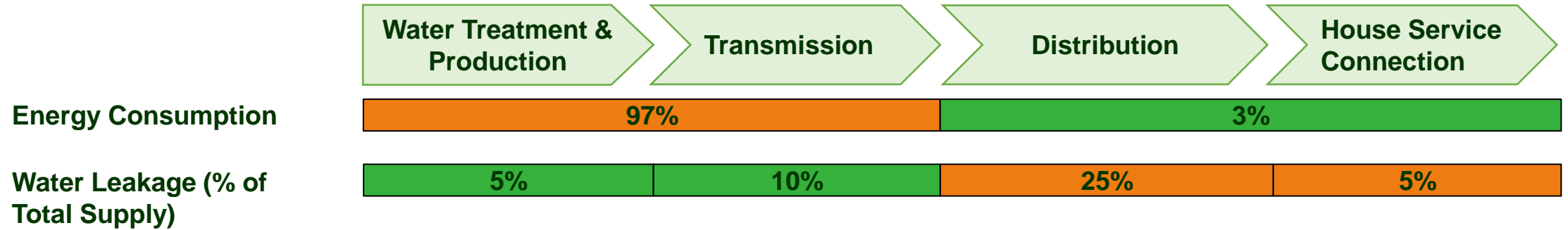
Challenges in Water Supply

Water is essential for sustainable future however the industry needs to address the current challenges

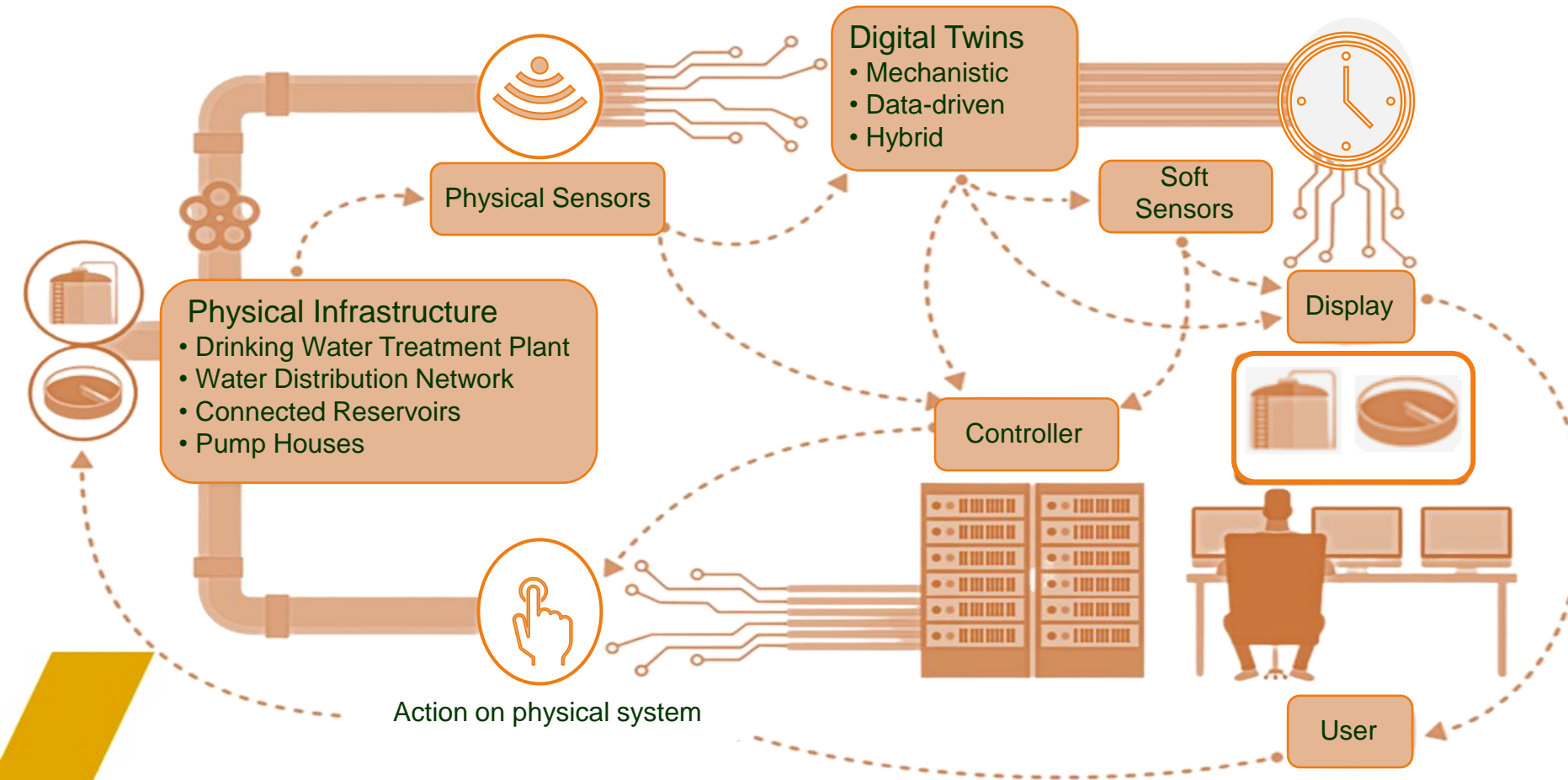


These widely varying challenges have forced utilities to explore, invest and adopt Smart Water Solutions

Smart Solutions to Overcome Water Supply Challenges



Digital Twins – An Effective Way to Control Leakage



Virtual model involving on-field assets

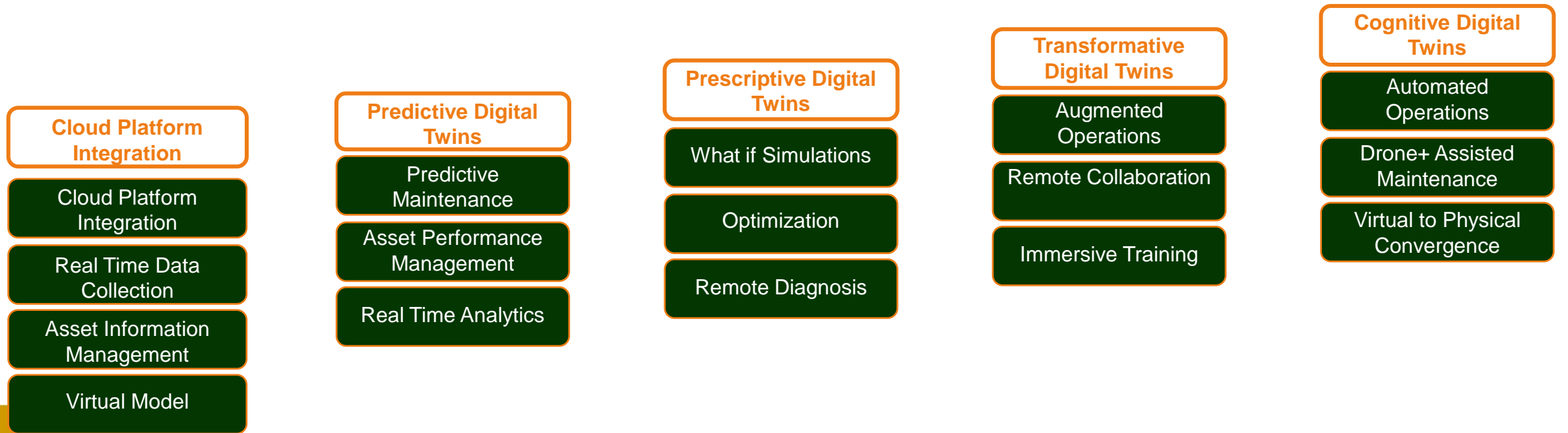
Water industry can use for identifying leakages

Adopts predictive analytics to triage approximate location

Ingests data from IoT devices present in the water network

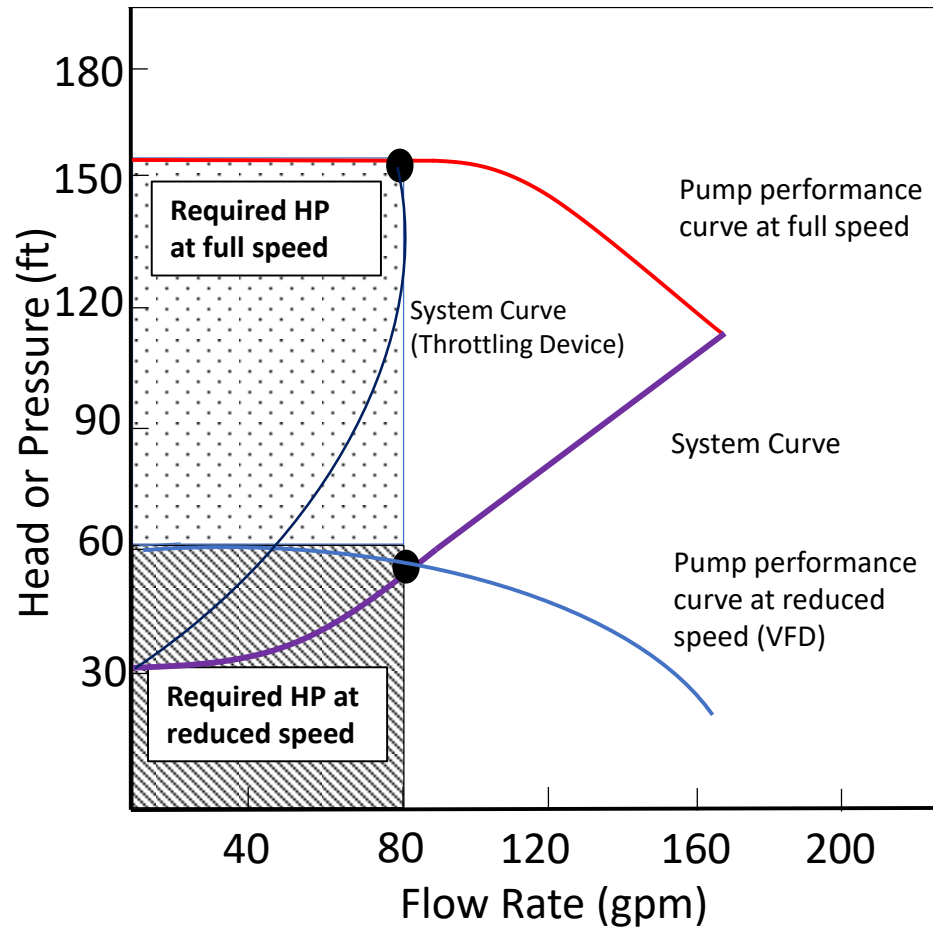
Digital Twins - Maturity Model

Adoption of Digital Twins is a multi step journey starting from virtual model visualisation to automated operations triggered by feedback from remote sensors



Different Utilities are at varied stages of maturity, and they are deriving value proportional to the digital Twins adoption

VFD Enabled Pumping Stations to Reduce Energy Consumption



- Pump and Motors selected based on rated peak capacity while peak water Supply demand is only for ~3 hours per day
- VFDs enable the pumps run at a speed in sync with water demand
- VFDs with soft starters alleviate water hammer effect & prevents pipe bursts
- As water networks in India & across the globe are moving from intermittent to safer 24X7 water supply, adoption of VFDs are essential for energy efficiency

Benefit of VFDs can be fully realized when there is a dynamic feedback of network pressure & flow from pressure & flow transmitters, respectively

Smart Water Solutions - Others

#	Solutions	Technology	Use Case	Business Benefit
1	Satellite based leak- detection system	Synthetic Aperture Radar (SAR)	Water network of a large city can be examined at once to start its journey towards leakage reduction. Utilities can then move on to traditional leakage detection techniques	Quickest identification of leakage locations within area of scan
2	Leakage/ Asset Condition Detecting Robots	AI/ML based Anomaly Detection	Self-propelling robots introduced inside pipe network capture photograph of pipeline and flags detected leakage, degraded material condition aided by AI/ML	Condition assessment of ageing pipes for replacement
3	Equitable water distribution	IoT, SCADA Programming	Zonal water distribution commensurate to population served. This is done by regulating supply at the entry point of each zone by using flow control valve (FCV)	Water network across undulated terrain, contrasting population density
4	Vacuum Excavators	Vacuum Excavation	Vacuum excavation ensures safety of field engineers and minimize downtime by avoiding utility strike (electrocution/ leakage)	Excavating areas with dense utility network
5	AMI Water meters	Radio Frequency Communication	AMI meters provide an opportunity for the utilities to leverage the live data and engage customer on consumption	Automated invoicing & real time consumption mapping

Looking Ahead - Secured Future

Globally drinking water supply costs \$ 1.2/m³, a reduction in water loss by 20% can fund for serving additional 500 million people

Technology leads in the effort to reduce energy consumption and makes water supply charges affordable

Resilient, robust & dependable water supply network ensuring tapped drinking water for all



Thank You

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