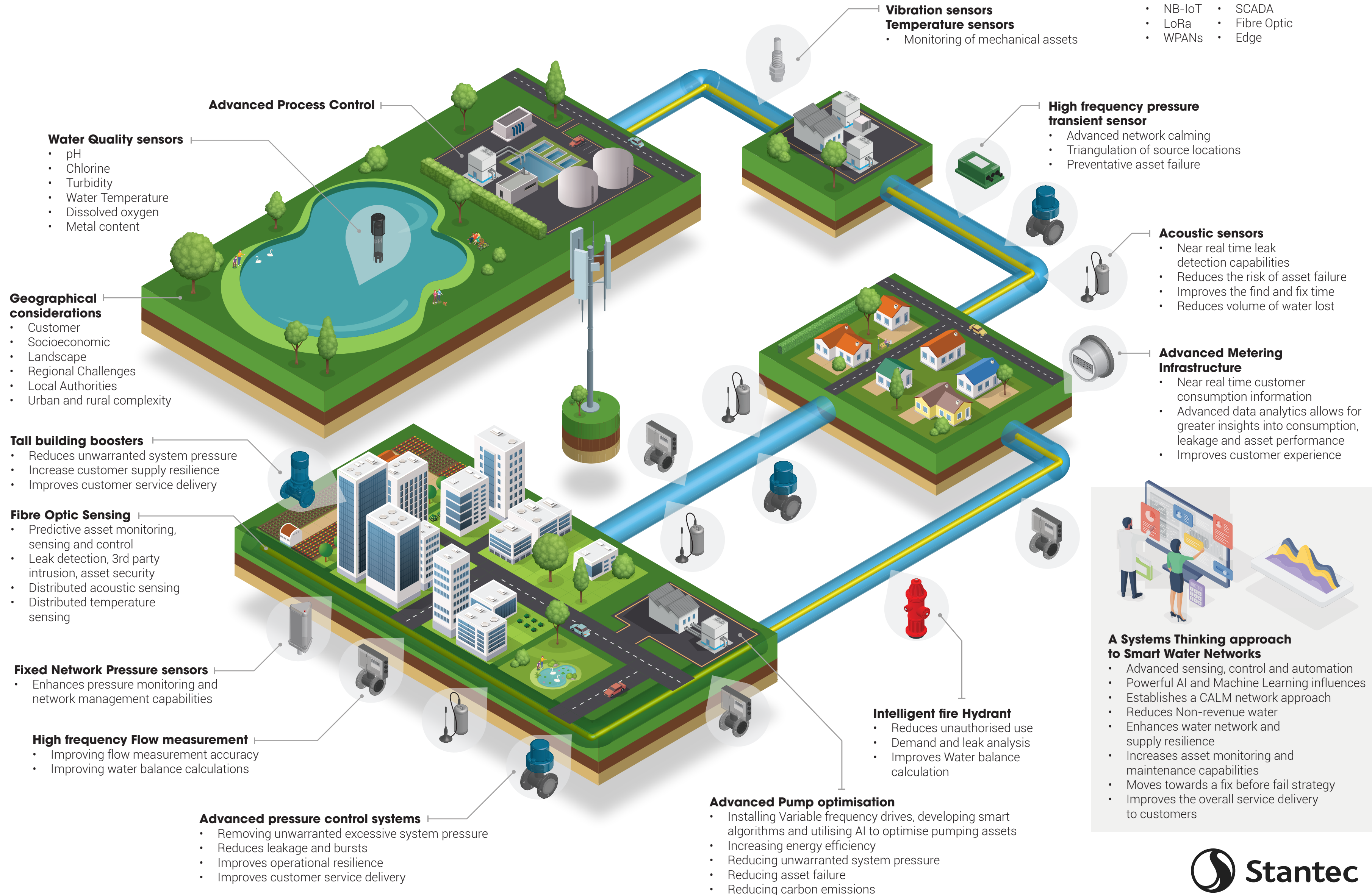


SMART WATER NETWORK



- Water Quality sensors**
- pH
 - Chlorine
 - Turbidity
 - Water Temperature
 - Dissolved oxygen
 - Metal content

- Geographical considerations**
- Customer
 - Socioeconomic
 - Landscape
 - Regional Challenges
 - Local Authorities
 - Urban and rural complexity

- Tall building boosters**
- Reduces unwarranted system pressure
 - Increase customer supply resilience
 - Improves customer service delivery

- Fibre Optic Sensing**
- Predictive asset monitoring, sensing and control
 - Leak detection, 3rd party intrusion, asset security
 - Distributed acoustic sensing
 - Distributed temperature sensing

- Fixed Network Pressure sensors**
- Enhances pressure monitoring and network management capabilities

- High frequency Flow measurement**
- Improving flow measurement accuracy
 - Improving water balance calculations

- Advanced pressure control systems**
- Removing unwarranted excessive system pressure
 - Reduces leakage and bursts
 - Improves operational resilience
 - Improves customer service delivery

- Vibration sensors**
Temperature sensors
- Monitoring of mechanical assets

- High frequency pressure transient sensor**
- Advanced network calming
 - Triangulation of source locations
 - Preventative asset failure

- Acoustic sensors**
- Near real time leak detection capabilities
 - Reduces the risk of asset failure
 - Improves the find and fix time
 - Reduces volume of water lost

- Advanced Metering Infrastructure**
- Near real time customer consumption information
 - Advanced data analytics allows for greater insights into consumption, leakage and asset performance
 - Improves customer experience

- Intelligent fire Hydrant**
- Reduces unauthorised use
 - Demand and leak analysis
 - Improves Water balance calculation

- Advanced Pump optimisation**
- Installing Variable frequency drives, developing smart algorithms and utilising AI to optimise pumping assets
 - Increasing energy efficiency
 - Reducing unwarranted system pressure
 - Reducing asset failure
 - Reducing carbon emissions

- One and two way Communication**
- NB-IoT
 - LoRa
 - WPANs
 - SCADA
 - Fibre Optic
 - Edge



- A Systems Thinking approach to Smart Water Networks**
- Advanced sensing, control and automation
 - Powerful AI and Machine Learning influences
 - Establishes a CALM network approach
 - Reduces Non-revenue water
 - Enhances water network and supply resilience
 - Increases asset monitoring and maintenance capabilities
 - Moves towards a fix before fail strategy
 - Improves the overall service delivery to customers