

Digital Maturity and AI overview

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Water Services Association of Australia



NT
Power and Water Corporation

QLD
Banana Regional Council
Cairns Water
City of Gold Coast
City of Townsville
Gladstone Area Board
Gladstone Regional Council
Gympie Regional Council
Ipswich Council
Isaac Regional Council
Logan City Council
Mackay Regional Council
Mount Isa Water Board
Redland City Council
Rockhampton Regional Council
Seqwater
Southern Downs Regional Council
Sunwater
Toowoomba Regional Council
Unitywater
Urban Utilities
Western Downs Regional Council
Whitsunday Regional Council
Wide Bay Water

NSW
Alliance of Western Councils (11 councils)
Byron Shire Council
Central Coast Council
Central NSW JO (10 councils)
Dubbo City Council
Eurobodalla Shire Council
Goldenfields Water
Hunter Water
Kempsey Shire Council
Lismore City Council
MidCoast Water
Murrumbidgee Irrigation
Port Maquarie-Hastings Council
Queanbeyan Regional Council
Riverina Water
Rous County Council
Shoalhaven Water
Sydney Water
Tweed Shire Council
WaterNSW

WA
Aqwest
Busselton Water
Water Corporation

SA
SA Water

ACT
Icon Water

VIC
Barwon Water
Central Highlands Water
Coliban Water
East Gippsland Water
Gippsland Water
Goulburn Murray Water
Goulburn Valley Water
Greater Western Water
GWM Water
Lower Murray Water
Melbourne Water
North East Water
South East Water
South Gippsland Water
Southern Rural Water
Wannon Water
Westernport Water
Yarra Valley Water

TAS
TasWater

NZ
Watercare Services
Wellington Water

Digitalisation – establishing strong foundations



Good practice data management

DAMA – DM BOK

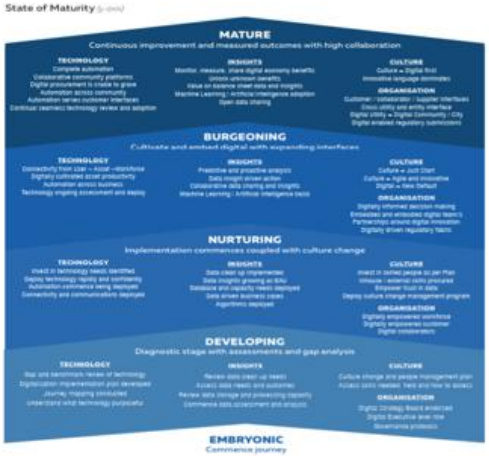
ISO 8000 Data Quality Standards



Cyber security fundamentals

ISO/IEC 27001: Cyber Security

ISA/IEC 62443: Industrial Automation and control systems



Digital maturity mapping

WSAA Water Sector Guidance



Common asset nomenclature

ISO 19650 Building Info modelling

ISO 14224:2016 Petroleum, petrochemical and natural gas industries

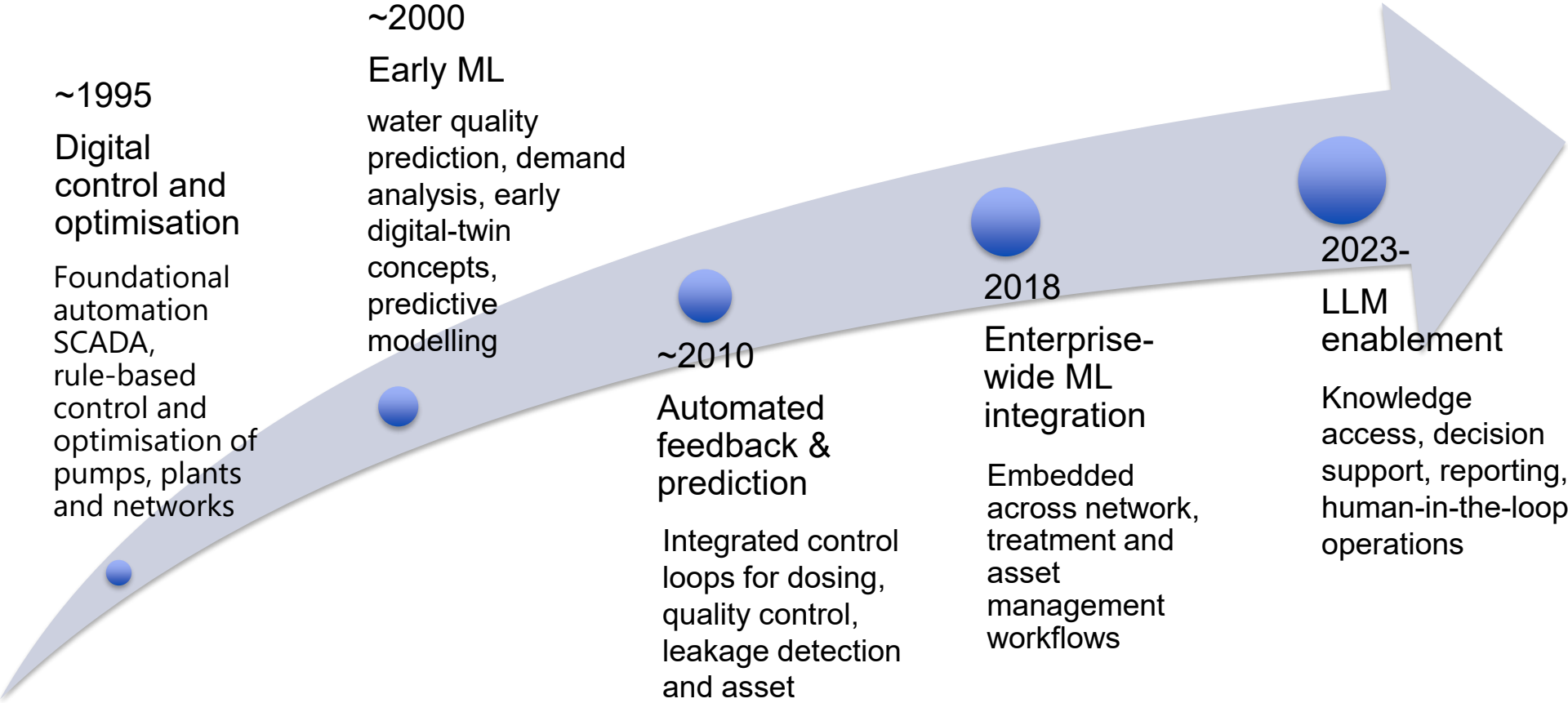


AI Guardrails

ISO/IEC 42002:2023 IT - AI Intelligence Mgt System

National and State legislation

Australian water utilities AI history



Water Sector - AI Definition

Predictive AI

1. Machine Learning (ML)



A core subset of AI where algorithms learn patterns from data to make predictions or decisions without explicit programming. ML includes supervised, unsupervised, and reinforcement learning.

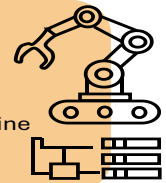
2. Advanced analytics



Using AI-driven techniques to extract insights from large, complex datasets. This includes predictive modelling, anomaly detection, and optimization for business intelligence and decision support.

3. Hyper-automation

The combination of AI and existing automation technologies such as robotic process automation (RPA) and intelligent workflows to streamline and execute repetitive tasks with minimal human intervention.



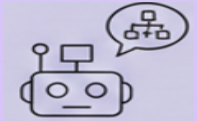
Action oriented and interactive AI

4. Generative AI



Focuses on creating new content—text, images, audio, or code—based on patterns learned from data. Examples include text generation, image synthesis, and creative design tools.

5. Agentic AI



Involves autonomous agents that perceive their environment, make decisions, and act toward achieving goals. These systems often integrate planning, reasoning, and adaptability, such as virtual assistants or robotics control.

6. Cognitive AI



Mimics human cognitive processes like perception, understanding, and reasoning by integrating and interpreting multimodal inputs, including image, audio, and video data. It underpins applications like natural language understanding, speech recognition, computer vision, and other systems that combine these modalities to support contextual interpretation and decision-making.

7. Embodied AI



The coupling of artificial intelligence with physical robotic systems, where AI algorithms are integrated into embodied agents that can perceive, learn from, and act within the physical world to achieve defined objectives. These systems combine sensing, decision-making, and actuation, enabling robots to adapt their behaviour based on real-world interactions rather than operating purely in virtual or analytical environments.

Getting started with AI

Set the guardrails first

Let people trial it — securely

Share the learnings

Start simple, not complex

Integrate lightly at first

Don't make it feel like a threat

Consider a Roadmap to guide your approach

Intelligent Water Network and AI use examples

Who is the IWN?

intelligent water networks

IWN is a member-based Program of VicWater and a key strategy in Section 10.2 of Water for Victoria created to:

- develop a critical mass of funding and resources – level the playing field between Metro and Regional Water Authorities
- drive sector wide innovation through establishing collaborative relationships with technology providers and research organisations
- reduce duplication of effort and resources to solve sector wide challenges
- uplift adoption of innovative approaches to drive value for customers and water businesses.



Our Purpose is to be a catalyst for the transformation of the water sector by driving the exploration and adoption of innovative approaches, thinking and technologies and creating opportunities that foster emerging leadership talent.

Members and Programs

intelligent water networks

Membership from:

- 16 Victorian Water Authorities
- Department of Energy Environment and Climate Action (DEECA)
- TasWater
- **54 Active Projects, 140 Volunteers**

8 Programs of work + Champions

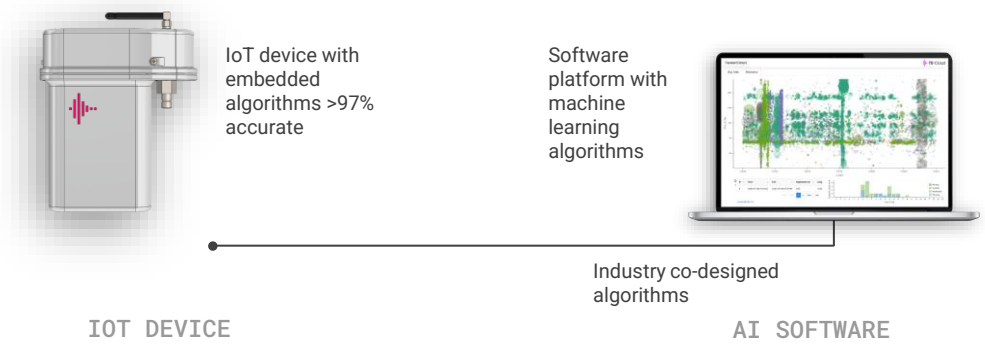


Calming the Network with AI

intelligent water networks

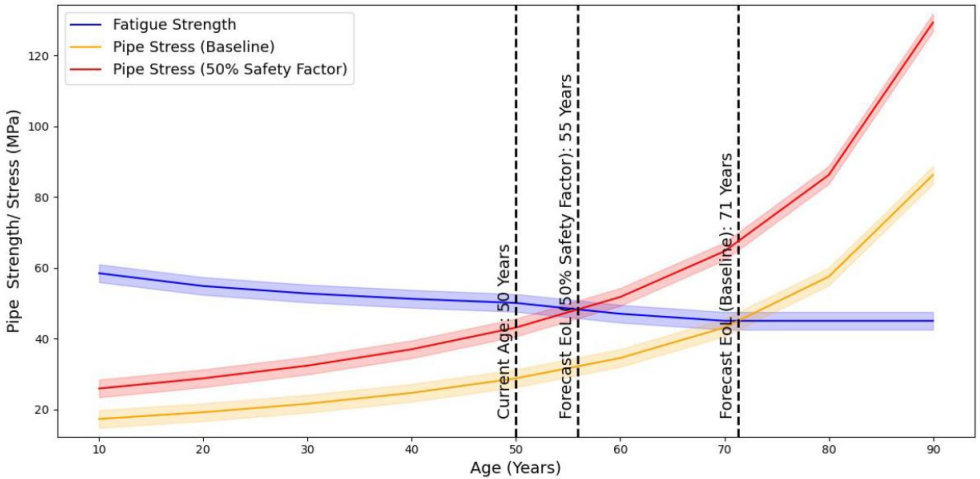
Pressure Transients

- A pressure transient is a fast moving (up to **1km per second**) high impact pressure wave caused by abruptly operating valves and pumps (Water Hammer).
- **Difficult to detect** with current pressure measurement protocols (datalogging)
- Pressure transients are responsible for approx. **60% of mains bursts**.



- Proof of concepts at SEW (3), YVW (2), GWW (3), CHW. 12-month pilot at SEW and 6-month pilot at GWW in-flight – now regional adoption
- **Operating at 100Hz** - taking 100 readings per second per sensor.

GWW Field Trial



- Millions spent on mains repairs in this area due to frequent bursts
- Correlated our transient data with customer operating data.
- Identified the valve causing the issue
- **$10 fix**
- 400% reduction in transients

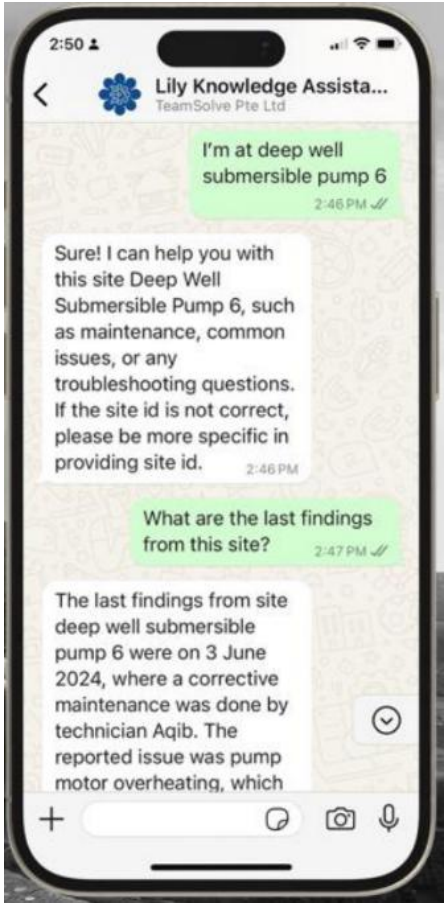
AI enabled us to calculate an estimated shortening of asset life of approximately 18 years.

AI Field Assistant

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AI Field Assistant and Knowledge Twin “Lily” developed by Teamsolve Singapore

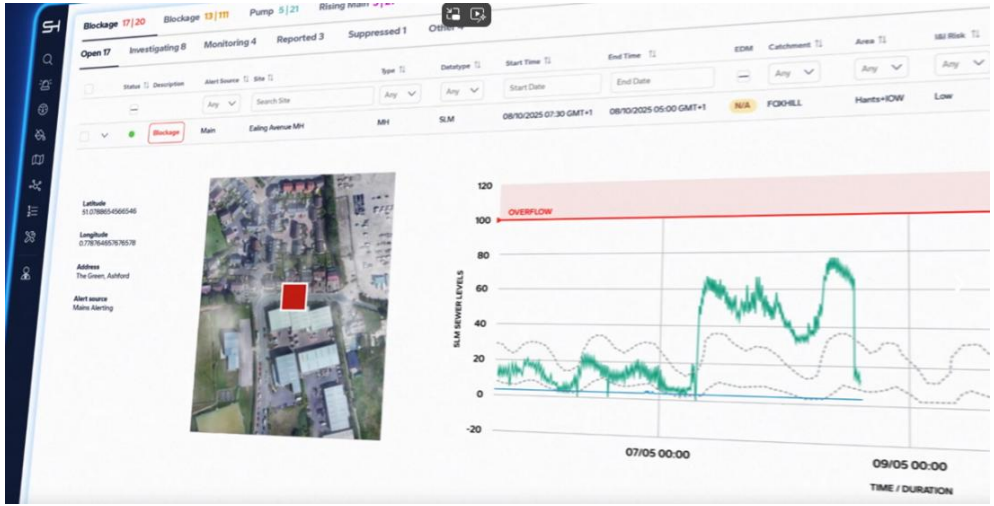
- Trial completed recently at Wannon Water and YVW
- Closed Generative AI system
- Ingests manuals, work instructions, incident reports, plans and other relevant documentation and data
- Provides point of use data and information
- The more it’s used the better it gets
- Captures legacy data and knowledge – ageing workforce knowledge capture



Stormharvester

intelligent water networks

STORMHARVESTER



- Predict the impact of rain events on assets
- Blockage Detection
- Infiltration detection and reporting
- Capital deferment for regional water authorities

Digital readiness self assessment for regional utilities

Draft digital self-assessment for regionals

Building on the 2018 WSAA roadmap with updated AI, cyber security, data governance and shared-capability priorities, with the NSW Water Directorate

Intended Audience

Councils and utilities with small teams and constrained budgets

Covers dispersed assets and variable connectivity

Supports a facilitated discussion, not a compliance audit or utility comparison

Utility improvement outcomes

Evidence based digital readiness survey

Select 3-5 achievable priority options

Set a realistic target over 12–24 months

https://www.waterdirectorate.asn.au/digital-readiness

Digital readiness - five levels

1 Embryonic	Reactive work and reliance on individuals
2 Developing	Assessment of foundations and organisation-wide planning
3 Nurturing	Priority capabilities in place and becoming repeatable
4 Burgeoning	Digital and AI embedded across most relevant services
5 Mature	Continuous improvement, measured outcomes and collaboration

Scores should reflect consistent practice and evidence, rather than a single item or future intentions

Digital readiness example

Level 2	Technology	Insights	Culture	Organisation
Developing	• Core systems, connectivity, cyber risks and technology gaps are assessed • Practical standards and a prioritised implementation plan are emerging • Controlled pilots begin	• Critical data sets, quality issues and reporting needs are identified • Basic dashboards and analytics are trialled • AI opportunities and prerequisites are assessed	• Leaders begin a digital conversation • Skills and change needs are assessed • Foundational awareness, privacy, security and responsible AI training commences	• A digital roadmap and governance arrangements are endorsed • Accountable leaders are nominated • Partnerships, shared services and funding options are evaluated

Regional priorities and AI readiness

Regional operating realities

Service priorities shape investment decision

Connectivity and remote support needs shape technology choices

Partnerships and shared services can fill capability gaps

Conditions for responsible AI

Reliable data and clear accountability

Privacy, security and human oversight

Low-risk uses before broader adoption

Measured outcomes and model risks

Fit-for-purpose controls and outcomes determine maturity

Evidence-based workshop assessment

Assessment sets

1. Confirm scope, participants and service priorities
2. Score each criterion individually before discussing group result
3. Discuss differences and agree an evidenced score
4. Set realistic targets for the next 12–24 months based on priorities and needs

Scoring rules

Use repeatable practice as the test

Use the lower level when evidence for the higher level is insufficient

Use “not applicable” sparingly and explain why

A small cross-functional group combines service and corporate perspectives

A practical 12–24 month roadmap

Three to five priority actions

Address material service, safety, cyber, regulatory or workforce risks

Consider dependencies and shared-service opportunities

Record an owner, timeframe, effort and expected outcome

Use a simple excel workbook

Instructions
Scope, participants and scoring rules

Self-assessment
Current score, evidence and target

Priorities and action plan
Actions, owners and dependencies

Summary
Readiness scores, strengths and gaps

Reassess annually and after major organisational or technology changes

Questions ?