



Tigernix Water Distribution Solution

Collective Digital Intelligence for Water
Distribution Ecosystem

Introduction

Smart Collaborative Powers of Industry 4.0 Hydrologic Grid

Tigernix Water Distribution System embodies a high-calibre integration of Industry 4.0 capabilities such as AI, IoT and Digital Twin, etc., enhancing the operational and intrinsic value of stored water resources. Through intelligent orchestration of asset condition monitoring, flow telemetry analysis, and service-versus-demand optimisation, this sophisticated module redefines network agility, driving sustainable management across vast, decentralised water distribution matrices while ensuring predictive insights and strategic operational alignment.



Embedding Hyper-connected
Industry 4.0 Ecosystems for
Water Distribution Network

@ Tigernix Smart Water Solutions

Industry 4.0 Capabilities We Offer

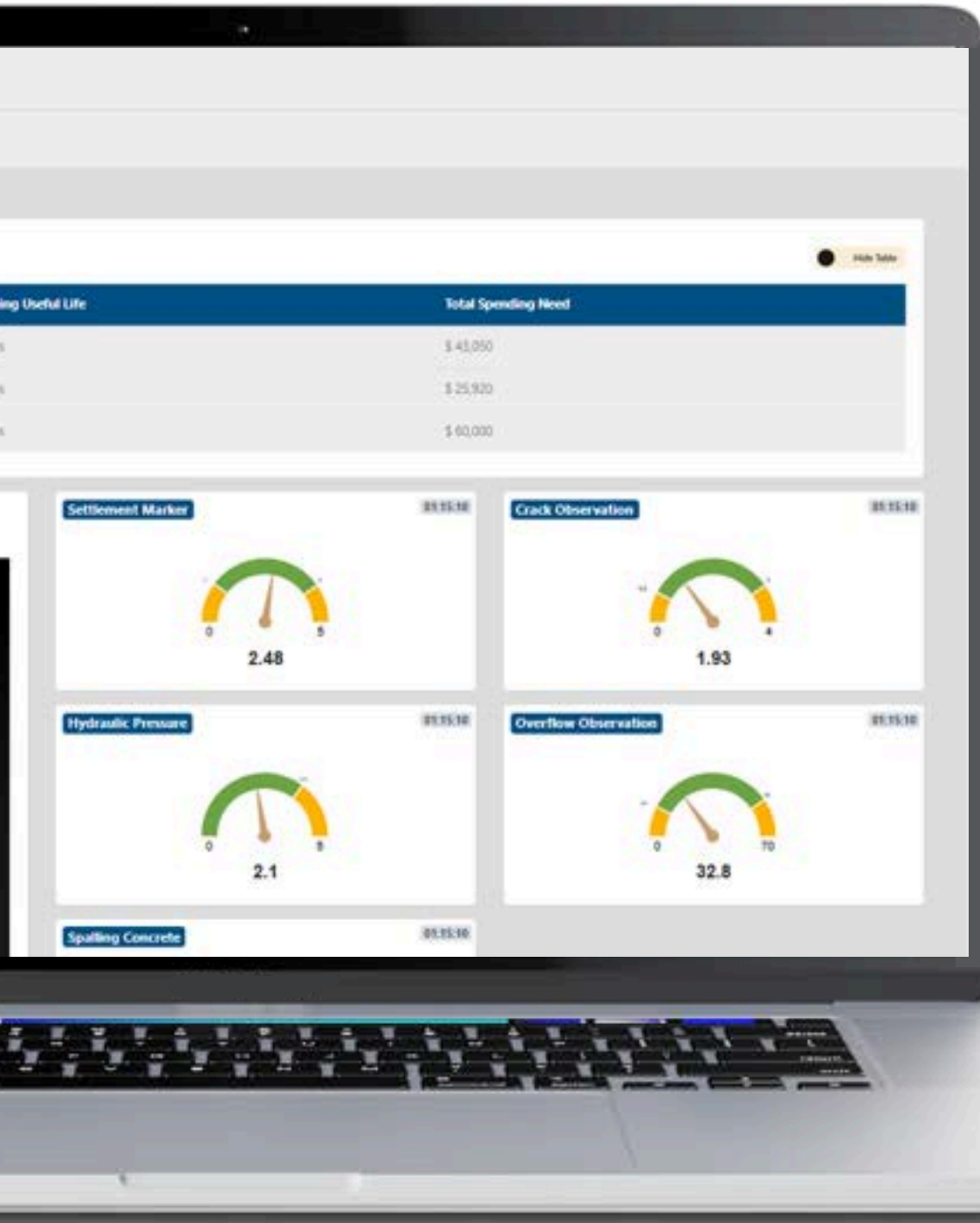
- GIS
- IoT
- AR & VR
- Predictive & Prescriptive Analytics
- 5G
- Cloud Computing
- Robotic Automation
- Digital Twin
- Simulation
- Big Data

Why Choose Tigernix?

Integrating quantum-leap Industry 4.0 solutions, Tigernix revolutionises water distribution by amalgamating AI-centric predictive analytics, IoT-facilitated live monitoring, and dynamic digital twin modelling into a unified, intelligent platform. This digital collaboration births a self-regulating, autonomously corrective network infrastructure that systematically neutralises operational anomalies, enhances hydraulic throughput, and catalyses unprecedented reductions in lifecycle costs, establishing a new benchmark for resilient, sustainable, and high-performance water distribution paradigms across evolving infrastructures.



Cost-efficient, Risk-free and
Performance-upheaving Manner
Digital Solutions



Robust Features of Tigernix Distribution Solution

Autonomous Network Self-Optimisation Engines

- Multivariable System Feedback Loop Integration
- Cognitive Decision-Making Algorithms
- AI and IoT Self-Healing Error Detection Protocols

Cognitive Predictive Asset Integrity Frameworks

- Predictive Maintenance Algorithms
- Prognostic Failure Analysis and Simulation
- Temporal Pattern Recognition for Degradatio

Immersive Hydraulic Infrastructure

- 360 Degree Fluid Dynamics Simulators
- Real-Time Immersive Augmented Analytics
- Satellite, Drones, Radar-Based Infrastructure Mapping

IoT Sensor Distribution Network Surveillance

- Data Integrity Assurance
- Adaptive Sensor Calibration
- Water Flow Forecasting Models

Subcomponent Frameworks

- Advanced AI-Driven Expenditure Optimisation
- Automated Compliance and Audit Frameworks
- Quantum-Enhanced Financial Risk Modelling

Integrated CRP Optimisation & Analytics

- Predictive Lifetime Value Forecasting and Visualisation
- Real-Time Interaction Analytics
- 10-year CAPEX/OPEX forecasting Tools



Automated Maintenance
Schedulers



Smart Alert Systems



Interactive GIS Maps



Lifecycle Optimisation
Protocol Integration

System Capabilities

Smart Tank Prediction Engine

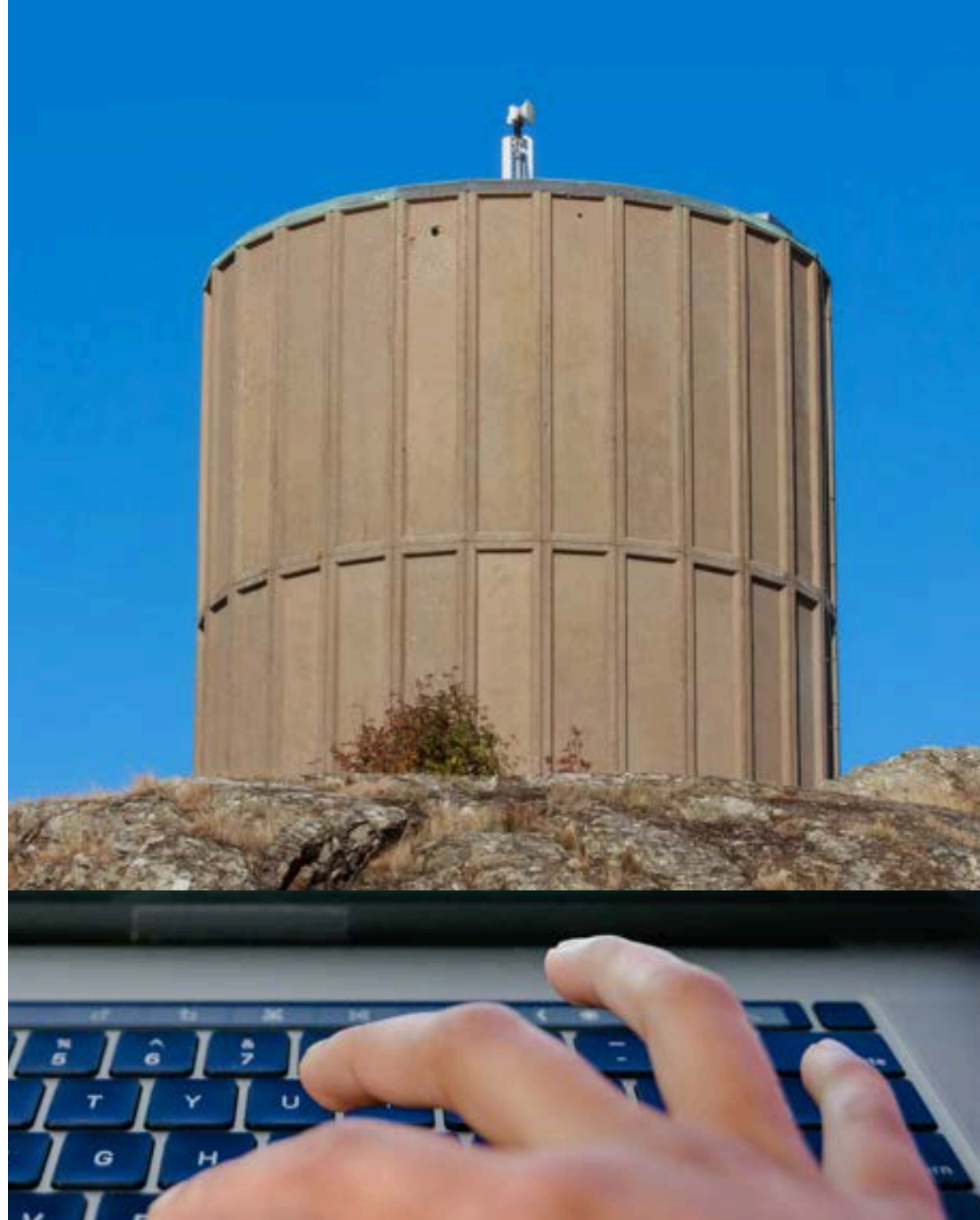
Employing sophisticated machine learning models, our system predicts water demand 72 hours in advance by analysing meteorological data, consumption trends, and over 15 tank performance metrics.

Automated Pressure Equilibrium Mechanism

Advanced self-regulating valves dynamically recalibrate hydraulic pressures across zones during peak consumption, effectively mitigating the risk of pipe ruptures by 35% and minimising strain on the system's energy infrastructure.

End-to-End Digital Twin for Hydraulics

This advanced system builds precise digital replicas of water distribution assets, including pipes, reservoirs, pumps, valves, and sensors, utilising telemetry, flow analysis, pressure regulation, and structural health diagnostics to support predictive management and system optimisation.





System Capabilities

AI-Powered Predictive Maintenance

Its AI system continuously adapts to new operational data, improving its predictions over time, ensuring evolving predictive maintenance strategies that align with distribution asset performance and environmental factors.

Procurement Analysis Module

Utilising predictive analytics, the module evaluates long-term costs versus initial capital expenditure for distribution equipment, pressure regulating valves, and reservoirs, optimising procurement for sustainability and efficiency.

Dynamic Pump Vibration Simulators

This integrates sensor data, analysing pump shaft oscillations, motor resonance, and cavitation risks in real-time, optimising operational efficiency and preventing mechanical failures within hydraulic systems.

System Capabilities

Smart Investment Planners

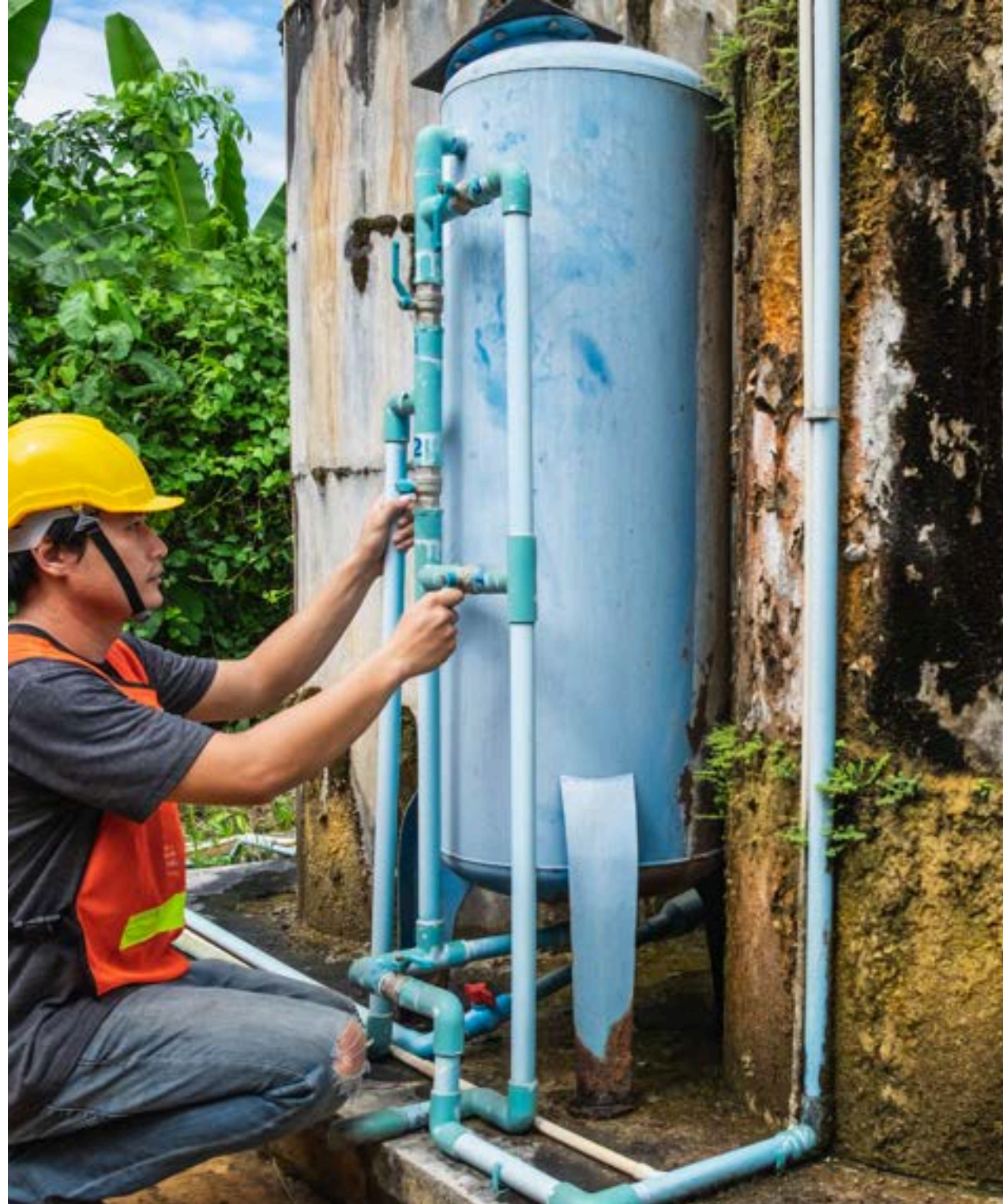
It uses predictive analytics, assessing asset longevity, hydraulic system demands, and infrastructure deterioration, enabling data-driven decisions for capital investment in pumps, pipes, reservoirs, and treatment plants.

Satellite Imaging and Geo-Mapping Module

This integrates high-resolution satellite data with GIS, mapping water distribution networks, pipe alignments, pressure zones, and reservoir conditions for precise asset management and strategic planning.

Intelligent Work Order Planning Tools

These tools integrate real-time flow data, valve status, and pump health metrics to dynamically generate and prioritise maintenance tasks, ensuring seamless water distribution operations and system longevity.





System Capabilities

3D Visualisation of Distribution Network

It integrates hydraulic modelling and real-time sensor data, offering immersive, interactive models of pipelines, pumps, valves, and pressure zones for precise asset management, fault detection, and strategic planning.

Integrated Distribution Health Assurance Tools

Tigernix employs AI, IoT sensors, and hydraulic modelling to continuously monitor pipeline integrity, pump efficiency, pressure variations, and leak detection, ensuring proactive maintenance and maximum water quality.

Digital Cost, Risk and Performance Evaluators

Using advanced simulations, this tool combines historical asset performance, environmental factors, and real-time data to assess risk exposure, ensuring optimal risk mitigation strategies for water distribution systems.

Key Challenges & Solutions

This solution is battle-tested and trained to predict the water demands and hydraulic states of your water distribution networks effortlessly. Continuously measure and monitor the acoustic, hydraulic and water quality-related parameters to learn how efficient and effective your water distribution networks are. Let your practitioners exploit new-age technologies to keep your water distribution infrastructure performing to the golden standards.



Multi-Model Distribution Asset Synchronisation

Employing deep learning and reinforcement learning frameworks, this system autonomously adapts and refines asset lifecycle management by continuously analysing multi-dimensional operational data, enabling intelligent decision-making processes that extend asset lifespan, reduce operational disruptions, and enhance resource efficiency.



Resolving Distribution Leaks 50% Faster

Since our solution employs the capabilities of AR and VR, combined with quantum computing's parallel processing power, it can offer near-instantaneous leak detection. It simulates intricate network behaviours, enhancing real-time decision-making, reducing detection times by 50%, and expediting leak resolution processes.



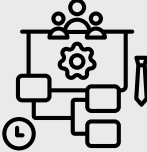
Key Challenges & Solutions

Monitor the labyrinth of water distribution networks buried under your cities with exquisite pipe monitoring tools. Tigernix Pipe Monitoring Solutions are advanced with out-of-the-box software suites that help your pipe operators get a consolidated view of your pipe performances, conditions and potential capabilities under one glass pane—detect pipe bursts, isolating critical pipes and detecting longer-term trends using this solution.



Reducing Distribution Pipe Bursts by 35%

Utilising AI-driven predictive analytics, this system forecasts pressure fluctuations and autonomously adjusts distribution parameters in real-time, preventing stress accumulation and reducing pipe bursts by 35%, while optimising water flow and reducing infrastructure wear, reducing non-revenue water loss on a grand scale.



Decade-Long Infrastructure Integrity


AI-powered sensors continuously assess infrastructure conditions using deep learning algorithms, predicting potential failures and automating preventative measures. Our system ensures decade-long infrastructure integrity by mitigating wear and stress accumulation through real-time insights and autonomous interventions.




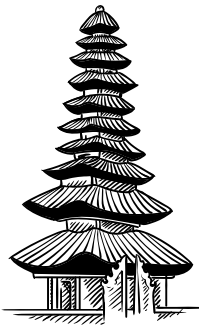
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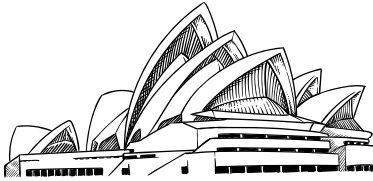
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