Digitalization towards a sustainable & resilient Water Utility

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Digital Transformation in Water Industry & impacted areas

PEOPLE

- Aging workforce, knowledge transfer
- Adaptation, workforce development
- Change management - digital, innovation culture
- People retention

PROCESS

- Breaking siloed departments, siloed data
- IT/OT/ET integration
- Business driven operations
- Maximize CAPEX, reduce OPEX

ASSET

- Maximize existing asset
- More with less - data driven models
- Extend lifecycle - predictive maintenance
- Digital Twin, Analytics, ML/AI

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Digital Transformation in Water Industry & impacted areas

Business Value

- Definition of business objectives & outcomes
- User requirement workshops
- Definition of personas
- Definition of business, functional & technical requirements
- Technology review & gap analysis
- Cyber secure design
- Stakeholder engagement
- Roadmap

Focus Area Implementation

- Business value definition & measures
- Establish a backlog of features to be delivered
- Implementation of thin slice technology infrastructure
- Visualization wire frames
- Agile implementation of solution

Examine Value

- Defined period for monitoring results
- Business value tracking against success criteria & success measures

Operationalisation

- Implementation of complete solutions

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Where Water Companies Find Value !

Energy Efficiency

- Track Total Energy Costs and Usage
- Reduce Pumping Costs
- Forecast Water Demand
- Manage Time of Use Rates
- Leveraging Smart Water Meter Data
- Collaborate with Power Utility / Stakeholders

Process Optimization

- Keep the Utility Resilient
- Reduce Opex / Capex
- Detect and Find Leaks
- Prevent Pipe Bursts
- Reduce Infiltration
- Reduce Chemical Costs
- Forecast and Mitigate Damage from Floods / System Upsets
- Efficient Engineering

Asset Health

- Prevent Pump Failures
- Reduce Equipment Downtime
- Condition Based Maintenance of Assets
- Manage Aging Infrastructure
- Maintain Asset Performance
- Optimize Pump Schedules

Quality & Safety

- Prevent / Track Sewer Overflows
- Effluent Discharge Compliance
- Ensure Drinking Water Quality
- Detect Algae Blooms and other Anomalies
- Prevent Boil Water Advisories
- Ensure Worker Safety
- Secure Water Sources

Regulatory Reporting

- Water Quality Testing
- National Pollutant Discharge Elimination System (NPDES) Reporting
- Operational KPIs
- Monthly Compliance Reports

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How Schneider Electric supports from strategizing to implementation

The end-to-end value proposition of Industrial Digital Transformation service

	 INSPIRATION	 SCOPING	 PILOT	 SCALING
To do ...	On-site & multiple remote **technical discussion**	**Plant of the Future workshop**	Solution **engineering & execution plan**	Solution **refinement** & support for **in-site scaling**
	Reference site, SE Innovation hub visit	**Digital factory assessment**	**Installation & commissioning** of solutions in the pilot factory	Define global **governance & deployment strategy**
	World Economic Forum Lighthouse visit	**Development of digital execution plan**	**Performance tracking** to validate **value impact**	Deliver **solution integration** across geographies
To get ...	• **First inspirations for future factory** (Energy monitoring, data infrastructure, MES, etc.) • **Established trust** in a potential partnership	• Alignment on **priority digital use cases in future factories** • Definition of **value contribution with digital** • **Roadmap of solution implementation**	• Validated **technical feasibility** of pilot solutions • Demonstrated **business impact**	• Scaled financial **impact for entire production network**

Digital Transformation Workshop - **Why & What**

① Integrate Business ambition, current programs in the pre-identification of digital roadmap

Module 1 Why – day 1

Module 2 What – day 2

Business value

Topline impact
Volume increase, site expansion, new sites..

Bottomline impact
Cost reduction, lower production waste/loss,…

ESG
Less energy consum., less carbon footprint,…

Value drivers[1]

- Scalability
- Standardization level
- Flexibility
- …

- Production distur-bance/downtime
- Energy cost
- Maintenance cost
- …

- Energy consumption & CO_2 emission
- …

Technology gap definition & digital products

		Status quo	Ambition
Produc-tion	Scalability	Regional scalablity	Global scalability
	Standardization	Only alarm system	Global prod. standardization
	Energy cost	1-2% YoY reduction	4% YoY reduction
	Maintenance cost	X% of total asset value	Y% of total asset value
	Production DT	X% of OEE loss	Y% of OEE loss
	Energy consumption	Building monitoring, manual & fundamental analysis	Line monitoring and automated optimization
	CO2 Emission	X ton; X% renewable energy	Y ton; Y% renewable energy
	…	…	…
Utility	Scalability	Regional scalablity	Global scalability
	Standardization	Only alarm system	Global utility standardization
	Energy cost	1-2% YoY reduction	4% YoY reduction
	Maintenance cost	€Xmn per kWh	€Ymn per kWh
	Production DT due to C/H	X% of OEE loss	Y% of OEE loss
	Energy consumption	Daily tracking & manual analysis	Real-time monitoring and automated optimization
	CO2 Emission	X ton; X% renewable energy	Y ton; Y% renewable energy
		…	…

Digital Core model

Digital project 1
Granular energy monitoring

Digital project 2
Operational performance dashboard

Digital project 3
Machine data integration

Digital project 4
Maintenance w/ cloud data analytics

Digital project 5
Data lake for production & facility optimization

…

Client example

Program methodology

Phase 1 consists of identifying the use cases with the highest ROI & to define the scaling plan

Digital transformation program

3 months	12 months	
Phase 1 – scoping	Phase 2 – pilots	Global deployment
• Assess the current • Analyse gaps • Build roadmap	• Initialize DT organization & governance • Define templates & implement pilots (“**digital core model**”) • Set technical foundations (data & connectivity) for **scalability at speed**	• Digital applications portfolio deployment • Global strategies by domains • End-game organization

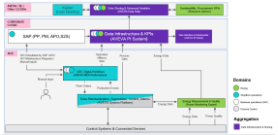
Deliverables of Digital Transformation phase 1

Deliverable 1a.: Digital Maturity assessment

or

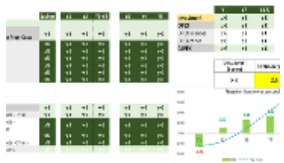
Deliverable 1b: Discovery workshops

Deliverable 2: Global IT/OT foundations



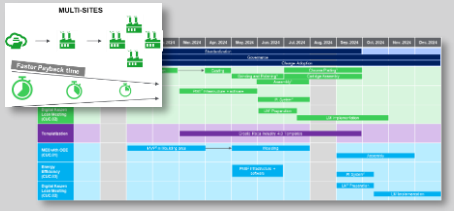
Deliverable 3: Use cases detailing

Deliverable 4: Roadmap & ROI



Client example

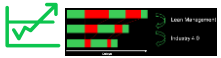
Outcome of Scoping: a solid roadmap to deliver the identified saving targets & readiness to start implementation

	DT Workshop 1 – Why & What	Digital Assessment	DT Workshop 2 – Execution Plan
Duration	**2 Days**	**~2 weeks**	**2 Days**
SE Scope of Work	✓ Preparation workshop documents/templates ✓ Alignment meetings & interviews with Client prior to the workshop ✓ Workshop facilitation ✓ Inspiration from SE experts in data analytics, lean operation, energy and sustainability ✓ Wrap-up of workshop outcomes and org. of follow-up actions	✓ Initial data request & analyses on factory data & info ✓ Site visit planning per site & project setup ✓ Assessment of digital technical maturity & identification of gaps ✓ Improvement initiatives with benefits (incl. AI use cases) ✓ Initiative portfolio with charters, incl. solution description, saving potentials, investment estimation ✓ Drafted timeline/roadmap of initiative execution for next years ✓ *Initiatives specific to WEF Lighthouse recognition at **one** potential lighthouse site[2] (e.g. AI use cases, smart factory enablers e.g. Digital Academy, IT/OT Architecture, Solution EcoSystem etc.)* ✓ Final assessment report	✓ Preparation workshop documents/templates ✓ Alignment meetings & interviews with Client prior to the workshop ✓ Workshop facilitation ✓ Finalized of business benefits[1] & ease of execution[2] per project ✓ Definition of technology stack per project ✓ Final execution plan ✓ Wrap-up of workshop outcomes and org. of follow-up actions (e.g. implementation)
Key deliverable	 • Target vision of digital transformation • Digital project ideas derived from business needs	 • Initial digital project portfolio with value impact • Definition of a smart factory core model • Draft of execution roadmap	 • Detailed project execution charter & program roadmap

Schneider Electric’s deliverables for digital transformation through:

Digital for **efficiency**. Electrical for **decarbonization**.

1 Operational Excellence & Quality

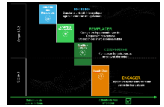


- Reduce Quality cost
- Increase productivity
- Maximize profitability

2 Asset Performance Management

- Maximize return on asset
- Minimize risk through reliable & future-proof investment

3 Energy Management & Sustainability



- Minimize environmental footprint
- Increase customer satisfaction
- Expand business opportunities through Digital

4 Governance & Change Management

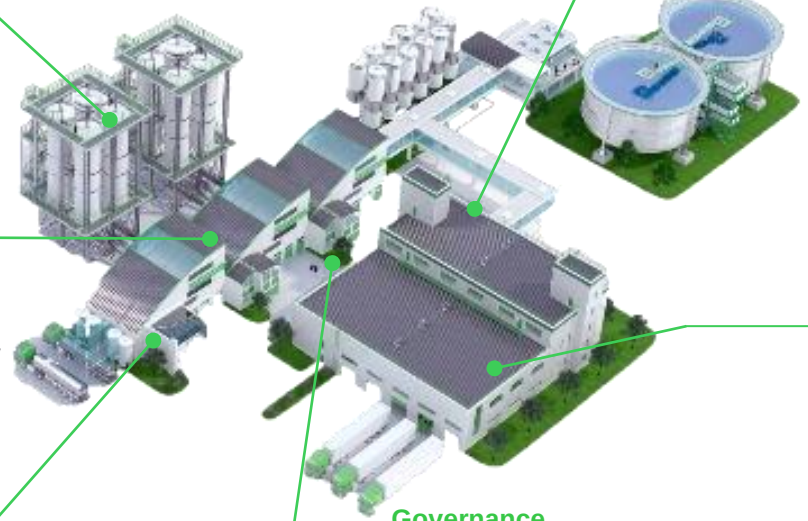
- Enhanced adoption & sustainment
- Digital competency & culture

5 Infrastructure and Cybersecurity

- Simplify compliance to regulations
- Protect people, data and assets

6 Data Management & AI

- Ensure Data governance & quality
- Optimized Data architecture & storage



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