Under the Patronage of His Excellency **Eng. Abdulrahman bin Abdulmohsen AlFadley**
Minister of Environment, Water & Agriculture

منتدى المياه السعودي
saudi water forum SWF 2024

Artificial intelligence applications in desalination

SWCC's digitalization journey

29 April – 01 May 2024

Hilton Riyadh Hotel & Residences
Riyadh, Saudi Arabia

Organized by

وزارة البيئة والمياه والزراعة
Ministry of Environment Water & Agriculture

المؤسسة العامة لتحلية المياه المالحة
Saline Water Conversion Corporation (SWCC)

Organizing Partners

شركة المياه الوطنية
National Water Company

الشركة السعودية لشراكات المياه
Saudi Water Partnership Company

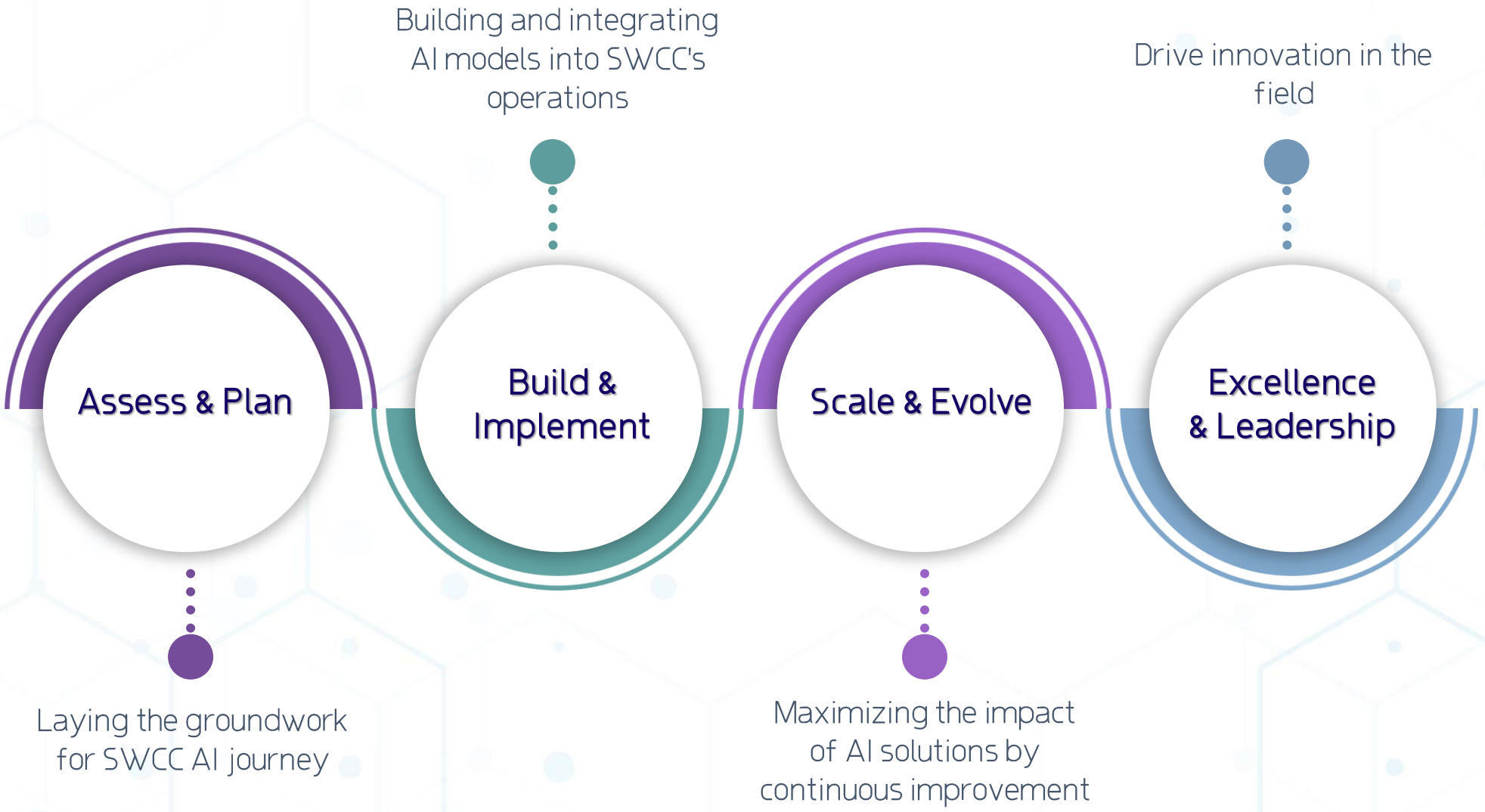
المؤسسة العامة للري
Saudi Irrigation Organization
المملكة العربية السعودية

شركة نقل وتقنيات المياه
WATER TRANSMISSION AND TECHNOLOGIES CO.

منظم المياه
Water Regulator

المركز الوطني لكفاءة وترشيد المياه
NATIONAL WATER EFFICIENCY AND CONSERVATION CENTER
MAEE

SWCC AI Transformation Journey



SWCC Strategic AI Goals

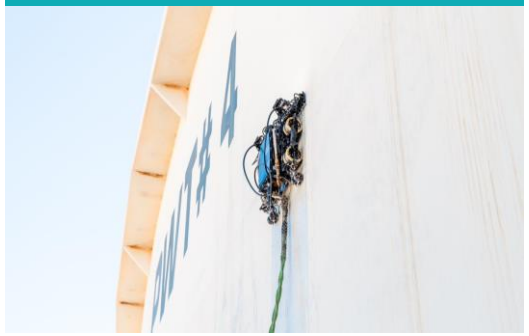
- Develop Next-Generation Desalination Plants Powered by AI
- Becoming the first reference of AI practices in desalination
- Achieving the trust of beneficiaries through quality product & services
- Capture the promising investments & build lucrative partnership
- Proactive and Preventive Risk Management and Enhance Regulatory Compliance
- Promote Responsible and Trusted AI Through a Robust Governance Framework
- Fostering an AI-centric culture and mindset

Artificiel intelligence technologies and applications

Digital Twin

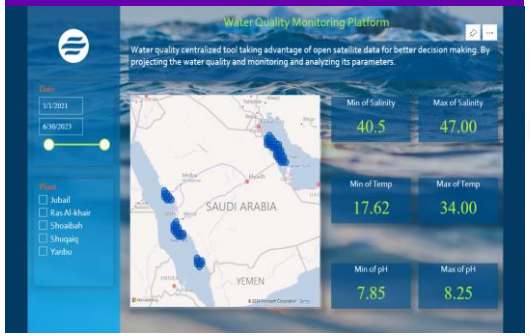
Improving performance by providing a dynamic virtual version of assets, processes, systems, or environment that matches its real-world counterpart.

Water Tank Inspection Robot



Examine and test water tanks without the need for service interruption. The robot operates autonomously to assess tank condition and detect potential issues.

Water Quality Monitoring using Satellite Imagery and machine learning



Satellites revolutionize water quality monitoring and analyze large distances efficiently , apply time-series analysis to study the seasonality impact.

Benefits

- Reduce Design Time
- Improve Performance
- Reduce Cost

- Increase Reliability
- Increase Lifespan
- Reduce Cost

- Increase Water Quality
- Real-time Monitoring
- Reduce Cost

Artificiel intelligence technologies and applications

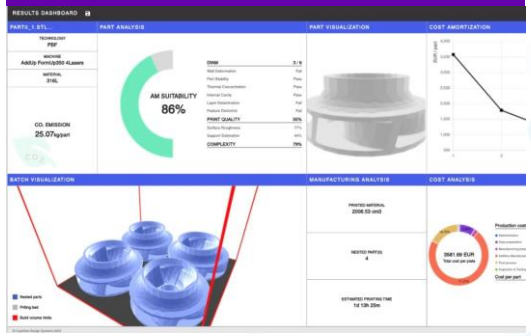
Remote control and monitoring

Remotely monitoring and controlling a well purification unit over a 318 km distance through a strategic production system.

Asset management and predictive maintenance

Predict failures and analyze the condition and health of the pumps, report the predicted time of failure and its type.

3D printing method classification CDS



identify the optimal technology of additive manufacturing for spare parts in terms of time, cost and printing method.

Benefits

- Monitoring from a central location
- Optimal response to maintenance
- Support Plant infrastructure

- Increase operation reliability
- Reduce cost and time
- Production Efficiency

- Supply chain support
- Localize manufacturing
- Reduce Cost

The Current And Future Of AI In SWCC Operations

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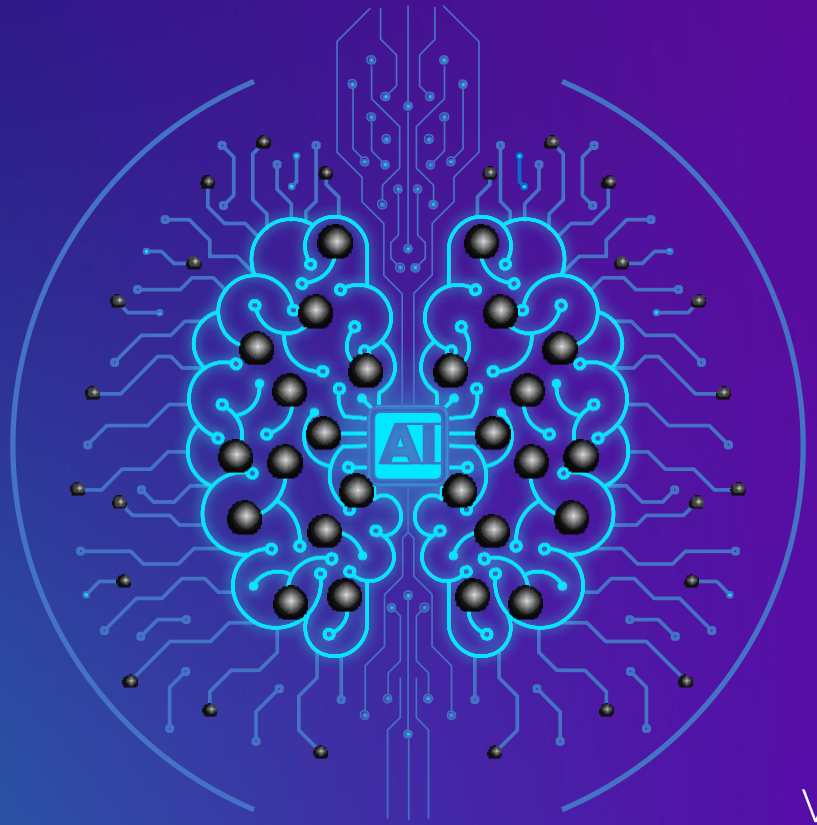
7 Days
For Tank Inspection Instead Of 2 Months

43%
Reduction In The Cost Of Manufacturing Spare Parts

67%
Increasing Reliability Of Engineering Designs Using Digital Twin



20-30%
Potential Saving On OPEX

10%
Reduction In Energy Consumption

7 plants
Will be running on smart technologies by 2030

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