Smart Water Data Analytics

LIFT Tech Webcast

November 17, 2020

AEEC

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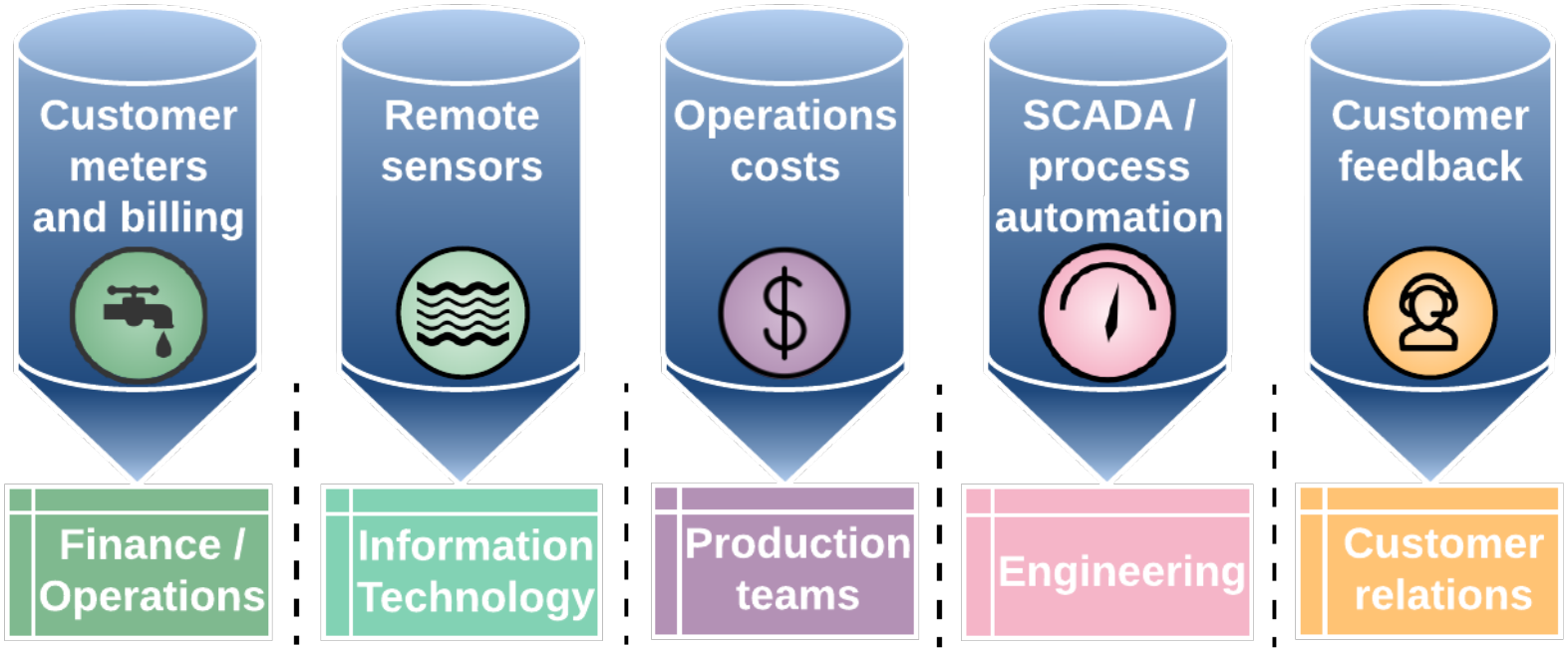
Introduction to AEEC

- **Established 1995:** Environmental, Engineering, and IT solutions
- **CMMI Level 3 Development Certified**
- **ISO Certified:** 9001, 2000-1, 27001
- **Industrial IoT Specialization**

- **Google Cloud, AWS, and Microsoft Azure authorized business partner**

- **Smart Water Data Analytics Solution** selected in the WRF LIFT program 2020
- Harvard Business Review case study “AEEC: Becoming an Innovation Catalyst”
- BlockLAB UCSD Founding Member
- DoD Nunn-Perry Award

Utility Data Challenges



Google Cloud
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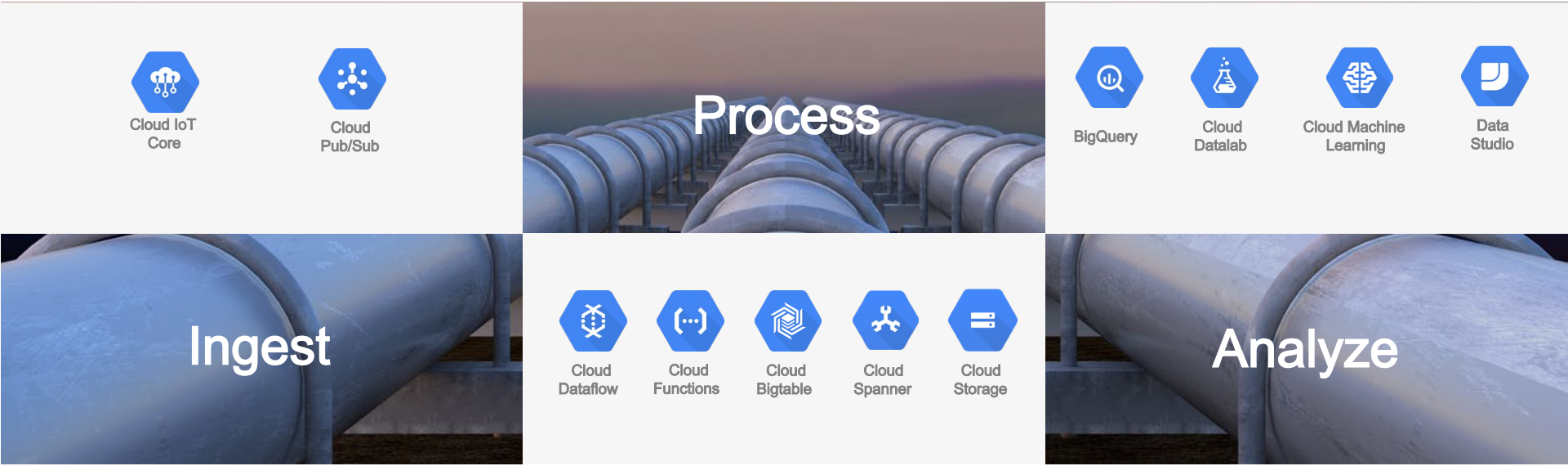
Cloud data processing platform



Ingest, manage and optimize your IoT device data

Secure Device Connections

Process, clean and store data

On-Demand Solutions that Scale

Analyze, visualize and predict outcomes

Generate Actionable Insights

Smart Water Digital Transformation

Data Management Dashboards and Reports Level 3

Data Management Dashboards and Reports Level 2

Data Management Dashboards and Reports Level 1

Executive User

Management User

Project User

Regulatory User

Smart Water Data Analytics

Ingest, Manage and Optimize Data

Secondary Data

Weather

River and Stream

Operator Field Data

Digital Round Sheets

Analytical Data

Laboratory and Sample Data

Process and Sensor Data

SCADA and HMI

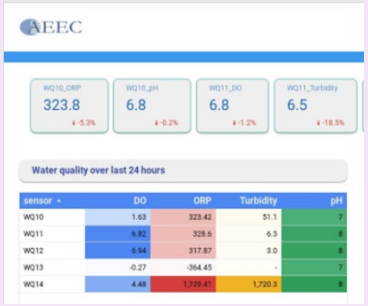
Smart Sensors

Data Loggers

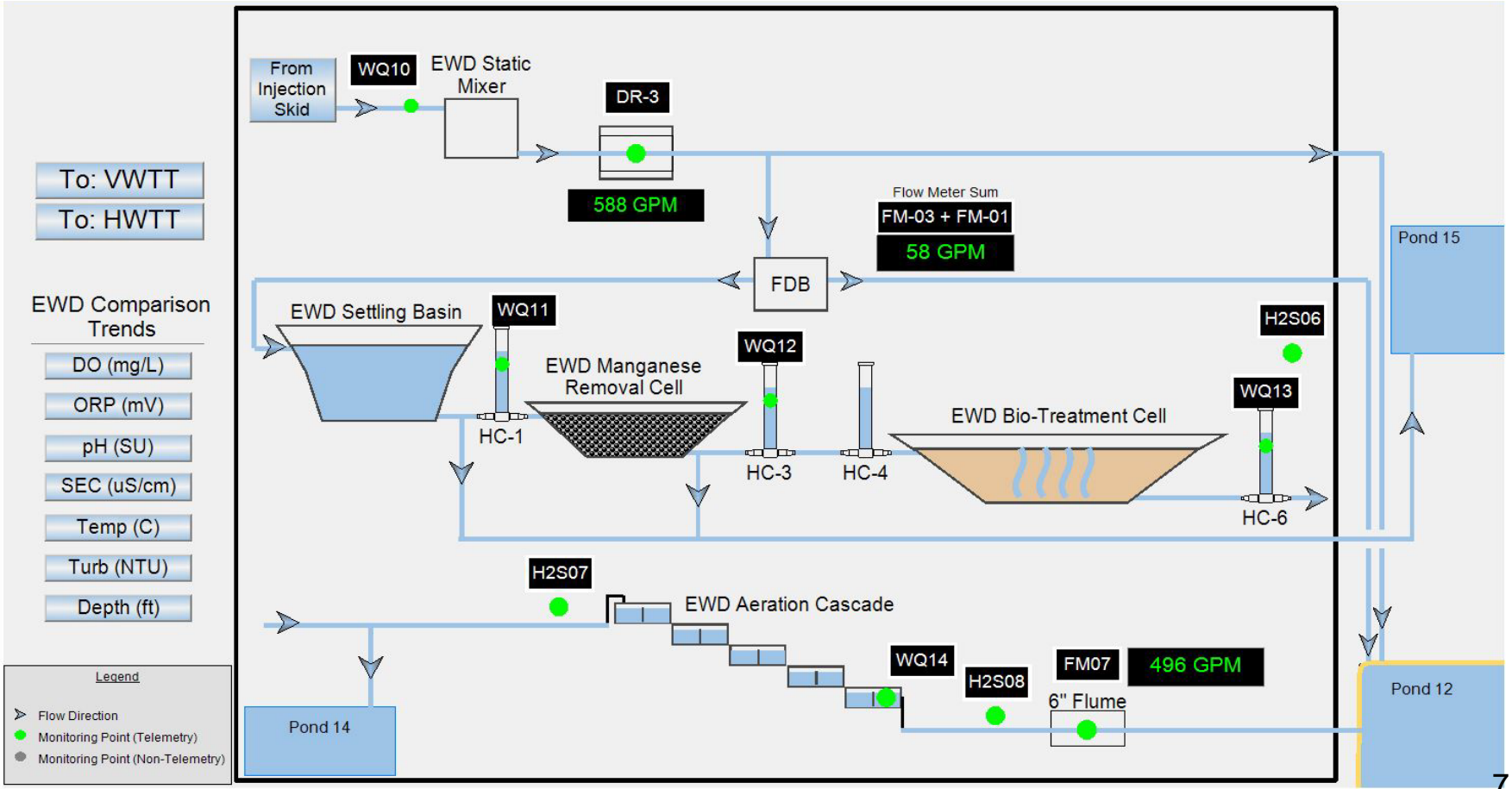
PLC

Process, Clean and Store Data

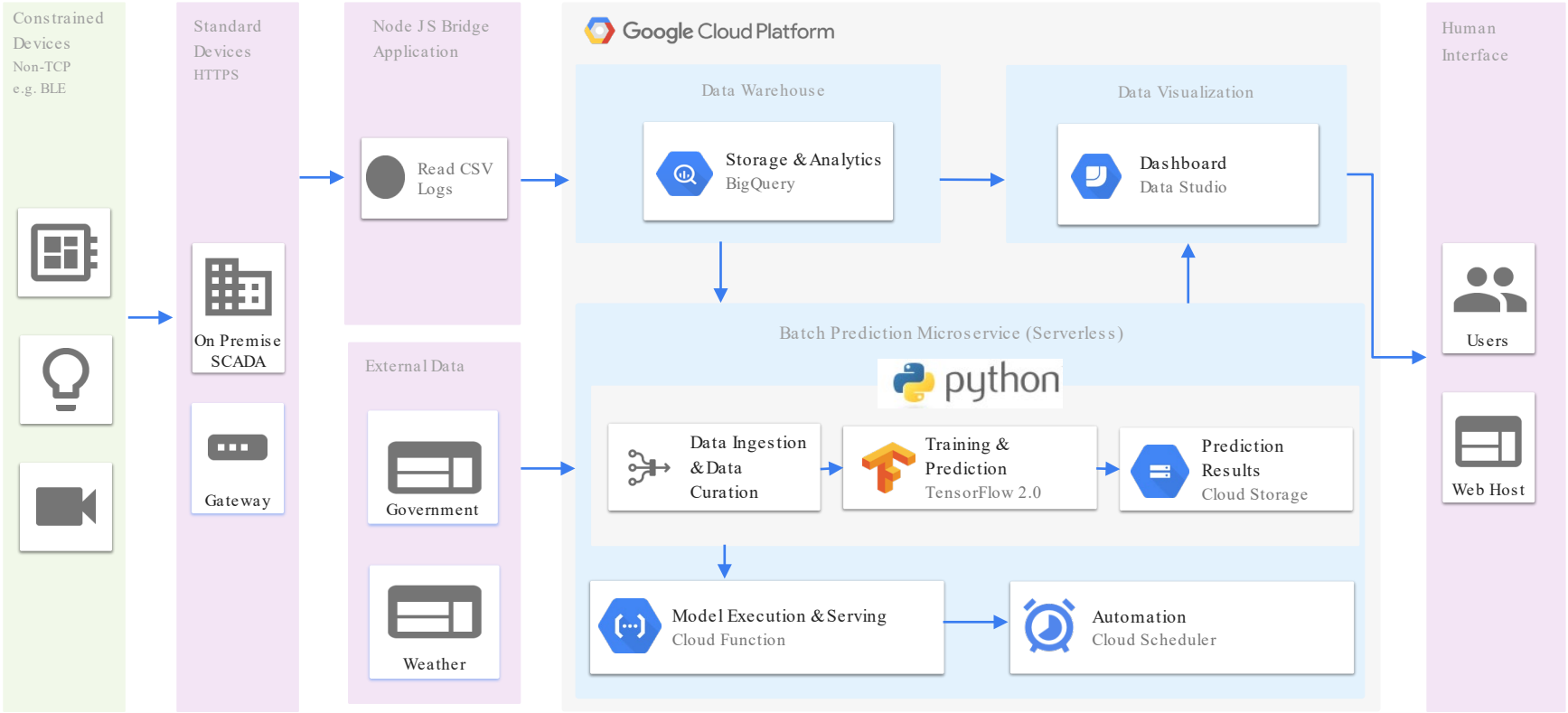
Analyze, Visualize and Predict Outcomes



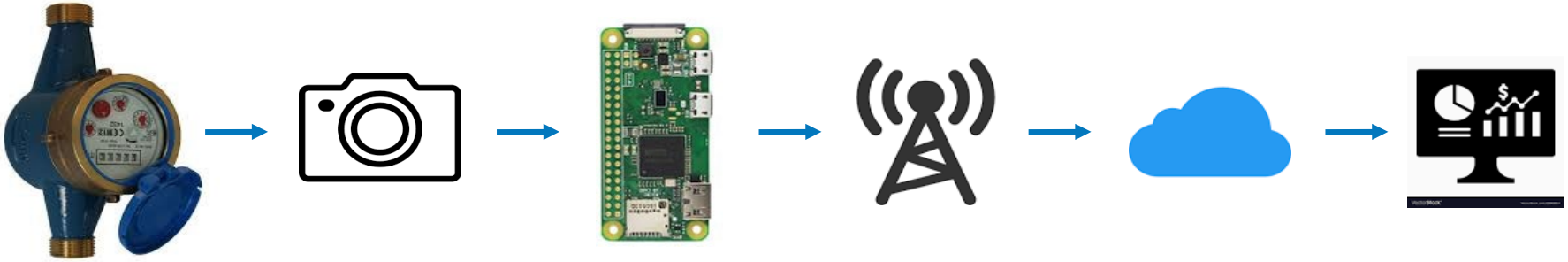
Process Flow Diagram



Cloud System Architecture

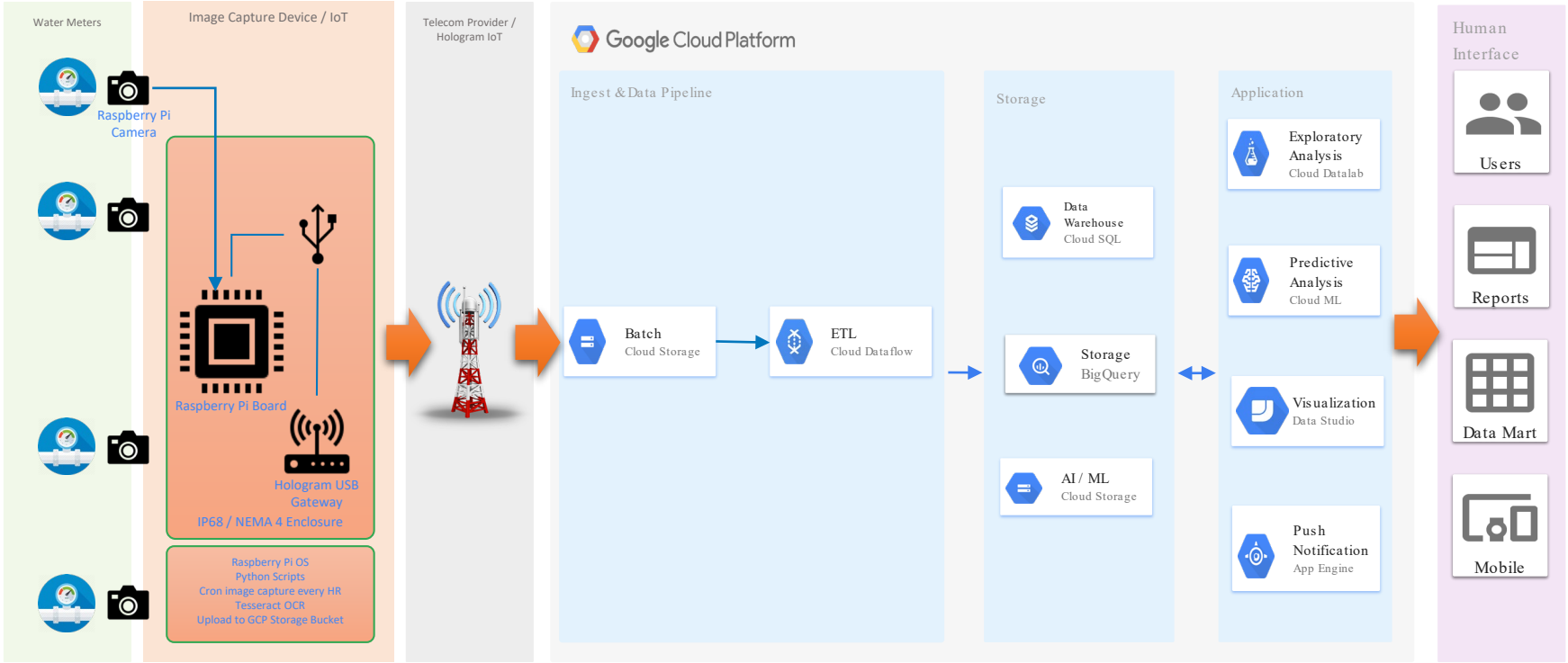


Digital Transformation of Manual Flow Meters to Smart Flow Meters



Manual Flow Meter → Photo Capture → Image Process and Send → Transmit to Cloud → Store and Convert Image → Data Visualization

Digital Transformation of Manual Flow Meters to Smart Flow Meters



Health and Safety

Cost Savings

Environmental Quality

System Health

"Less than 50% of structured data is used to make decisions"*

** Harvard Business Review magazine; May-June 2017*

Next Steps - Future Possibilities

Visualization

- ❑ Custom Reports Based on Individual
- ❑ Mobile Interface
- ❑ Geospatial (GIS) Visualization

System Models

- ❑ Pipe Occlusion
- ❑ Aeration Demand
- ❑ Cell Degradation
- ❑ Maintenance Log
- ❑ Flow Prediction
- ❑ Maintenance Prediction

Instrumentation

- ❑ Specific Vendor Drivers

Stakeholders

- ❑ Asset Management
- ❑ Infrastructure Failure Prediction
- ❑ Executive Reporting
- ❑ Compliance Reporting

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