Pentair: IoT-Enabled Smart, Sustainable Water Solutions

OPEN INDUSTRY

CONNECTED TRANSPORT

MANUFACTURING

HEALTHCARE

ENERGY AND UTILITIES

BUILDINGS & INFRASTRUCTURE

ENABLING IoT

IoT SOLUTIONS
WORLD CONGRESS

Pentair – Our Brand Promise

Pentair Solutions

RESIDENTIAL

Energy efficient water treatment, filtration products, pumps and water systems for your home

COMMERCIAL

Water treatment and movement solutions with comprehensive support for high performing operations

INDUSTRIAL

Water and fluid management solutions to increase productivity and water efficiency

MUNICIPAL & INFRASTRUCTURE

Transporting, treating and reusing water for community health and vitality

AGRICULTURE

Precision spray crop protection and solutions to efficiently direct, move and treat water

Comprehensive Range of Smart, Sustainable Water Solutions

Impact of Our Solutions

The Applications of IoT will Enable Sustainable Access to Safe Water

Industrial IoT – Beer Membrane Filters

In the past 15 years Pentair BMF products produced over 300 Billion Glasses of beer.

About 40 glasses of beer for today's global population.

Our new Connected Equipment powered by AWS boosts the installed base output by
approx. 1.5 Billion Glasses of beer annually.

This equals the Beer consumption of 5 million people in the USA annually.

Pentair's new connected equipment
Reduces your Water and CO2 consumption
Lowers your OPEX and CAPEX
Sustainability, Environment & Financial gain

BMF +Flux continuous line 700HL/H @Oettinger

Industrial IoT

- **Customer Needs**
  - Reduce water & energy usage
  - Increase product yield & quality
  - Dynamic reporting on Availability, Performance & Quality
  - Production plant optimisation through CoE knowledge sharing

- **Legacy State Architecture**
  - Multiple engineering & service points of contact per customer
  - Manual data analysis & feedback to customer
  - Sub optimised learning & global knowledge sharing
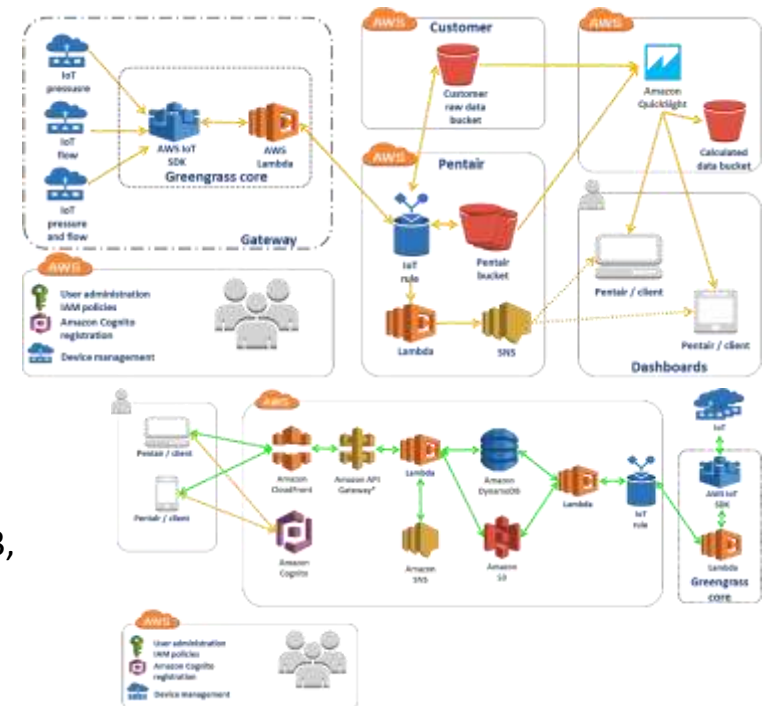 - Struggling with connectivity due to complex configurations

Industrial IoT

Business Transformation

- **AWS Cloud Based Architecture**
  - Single login access to all process & operations insights
    - Global visibility of single & multi-site views
  - Customer specific dashboard with mobile interface and push notifications
  - End to end serverless solution
  - AWS Tools
    - Greengrass, AWS IoT, API Gateway, S3, Lambda, SNS, CloudFormation, CloudWatch, CloudFront, Cognito, Route 53, DynamoDB, Athena, Kinesis, QuickSight, and CodeCommit
- **A Continuous Learning Solution**
  - Real-time trending for rapid process analytics
  - Process optimization using machine learning and other analytics tools
  - Predictive diagnosis of equipment failures

Leveraging IoT to Drive Productivity & Reliability

Commercial IoT - Aquaculture Sea Pen Monitoring

- **Customer Needs**
  - Optimize production output
  - Shorten harvest period
  - Reduce mortality rate; avert fatality events
  - Monitor multiple sea pen sites through single online interface
  - Centralized location to observe & analyze multiple data sources

- **Legacy State Architecture**
  - Single site monitoring
  - Manual analytics
  - Limited site to site learning
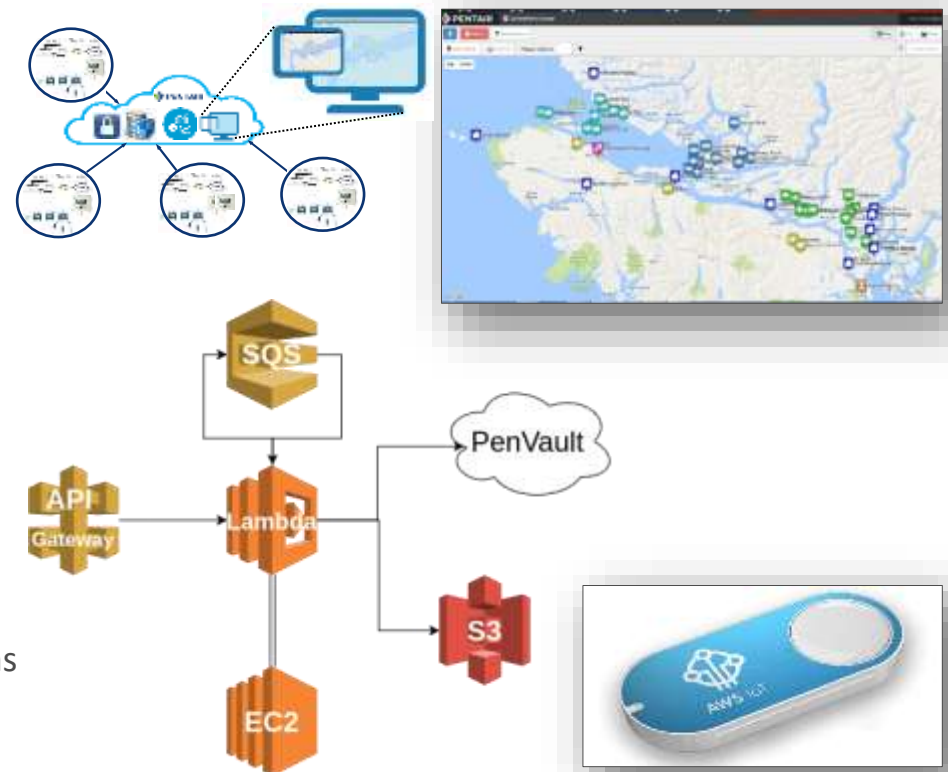
Commercial IoT - Aquaculture Sea Pen Monitoring

BUSINESS TRANSFORMATION

- **AWS Cloud Based Architecture**
  - Site, regional, and global performance visibility
  - Single aggregate source for multiple data sets
    - Critical water quality & growth rate parameters
    - Local environmental data
  - AWS Tools
    - API Gateway, S3, Lambda, SQS, EC2, and CloudWatch
- **A Continuous Learning Solution**
  - AWS analytics & visualization tools
    - Analyze patterns, trends, anomalies, & correlations
  - Implement system optimization strategies
  - AWS IoT button for event tagging

Leveraging IoT to Drive Productivity & Reliability

Residential IoT – IntelliConnect^{TM} Pool Control & Monitoring

Key Features

- Owners can monitor and control their pool's functions conveniently and easily
  - Controls up to five pool devices
  - No trips to the pool pad to adjust equipment settings
  - Get detailed equipment status, all in one place
  - Receive alerts when further attention is needed
  - Enables seamless scheduling and rescheduling
  - In-app notifications of maintenance and performance improvement recommendations
  - Useful maintenance tips to cut costs and improve equipment efficiency

Lessons Learnt from our IoT Journey

- **Delivering commercial IoT solutions of <u>REAL Value</u> is an iterative process**
  - Focus on creating realizable value for your customers & engage them throughout the innovation process
  - Learn, Test & Modify to get to MVP's quickly; Be flexible and plan for change
  - What you build today will evolve quickly as technology changes and customer needs are identified

- **Don't expect your customers to give you access to all of their data**
  - Start with what data is available
  - Find and present patterns, trends, and anomalies from the data that is easily available and monitored
  - This begins with trust and soon after, they will volunteer more contextual information

- **Above all, the relationship with your customers is built upon a long lasting trust knowing that**
  - Their data is secure
  - Your intentions are focused on helping them to create real value
  - You are interested in helping them be more successful as your relationship evolves from selling product to providing business intelligence

IOT
SOLUTIONS
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DIGITALIZING INDUSTRIES

COME JOIN US!

SAVE THE DATE
29 - 31 October 2019

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