Managing IOT with the PI System

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SVP-CIO

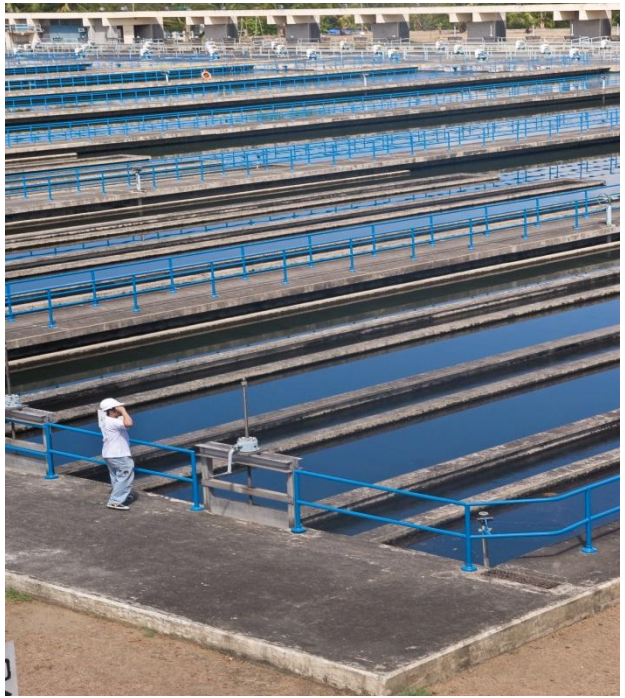
Maynilad

Outline

- Introduction – About Maynilad
- What IOT means for us
- Sample Applications
- Benefits & Conclusions

About Maynilad

About Maynilad Water Services, Inc.



- Private water concessionaire and largest in the Philippines
- US$405 million revenues (2015)
- 2,100 employees
- Serving about 9 million people in West Metro Manila and Cavite
- Provide Water, Septage and Sewerage services

What IOT means to us

What IOT means for us

- We don’t do IOT for the sake of being trendy
  - There are some real business benefits
- Is a secure way of bringing in data from the field
- Field data is needed by many of our applications
  - Our business is basically an Engineering business
- We need a single version of the truth
- We need accountability for all the data
  - Data is handled by many different people

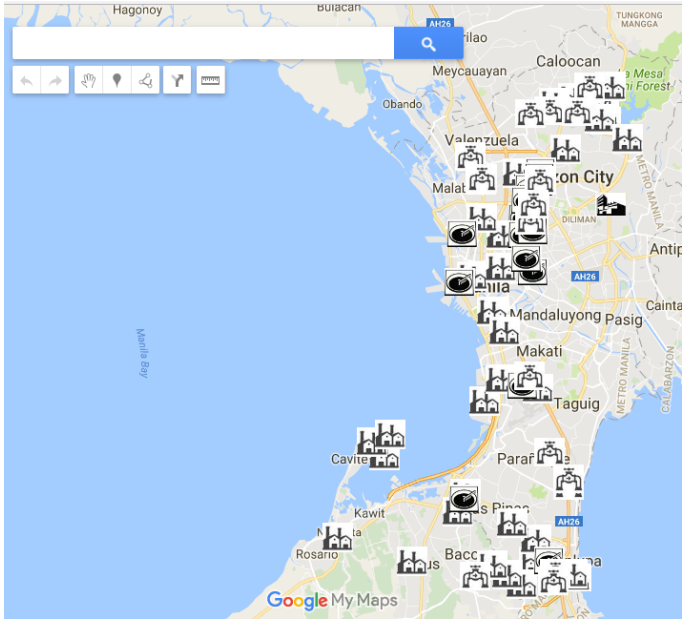
Requirements for an IOT software

- Able to store >000s of signals
- Fast retrieval
- Ability to store long-term
- Easily identified within the DB
- Robust

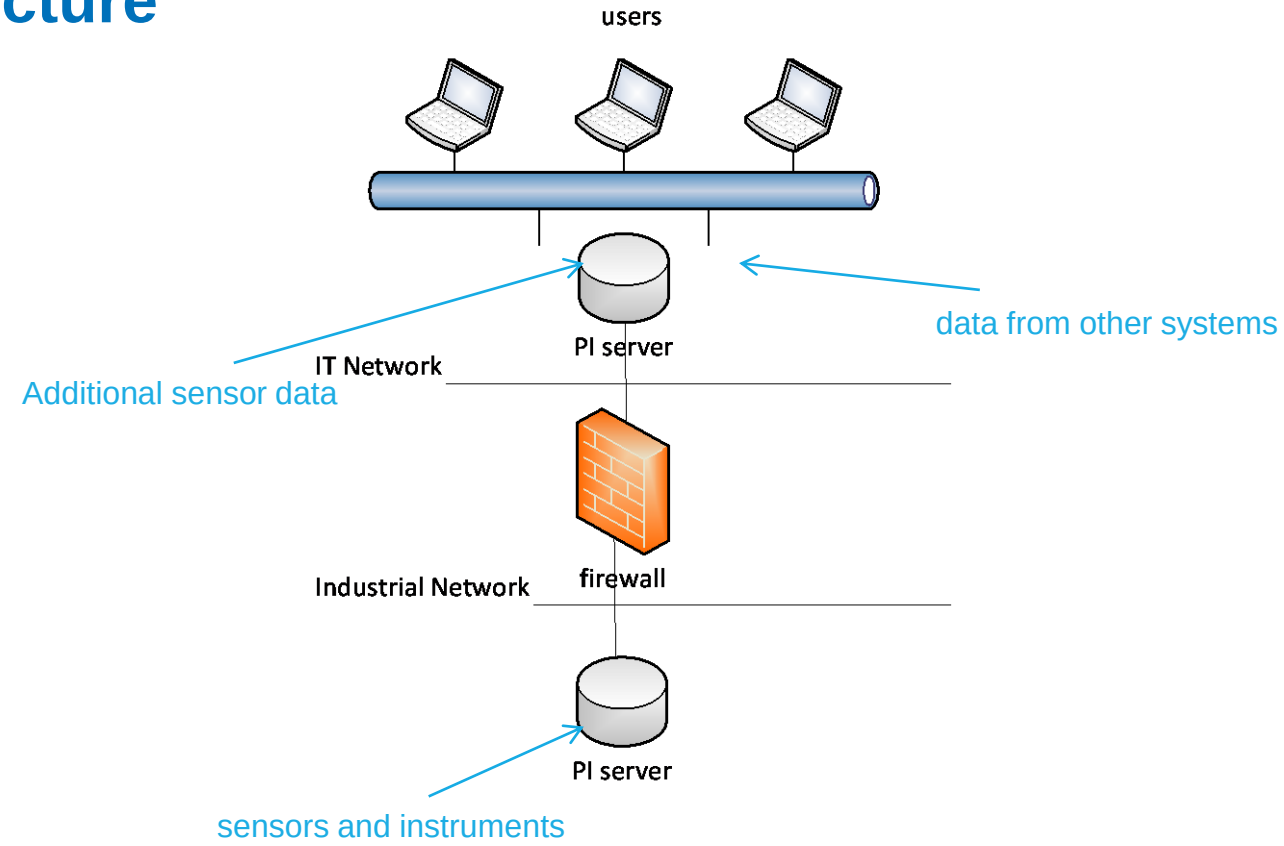
- PI System meets all these requirements

Facilities

- In the water industry, assets are distributed in many geographic areas (>40km north-south)
- Each facility has its own sensors, controls
- Integration of data must be robust and secure across all facilities

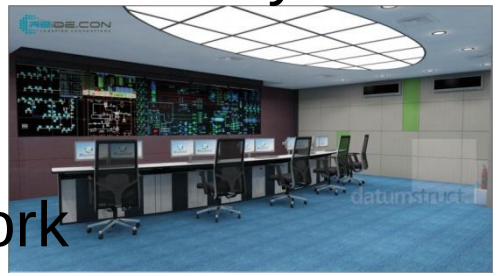


Architecture



Security

- Architecture follows Purdue model (ANSI95) philosophy
- Data from Industrial Network flows to IT network only
  - Only prescribed traffic is allowed
  - Only from authorized server
- Data can only be viewed from the IT network
- CCR can display PI Server and SCADA info (among others)
  - Video controllers take feeds from 2 different network sources



Types of data

	Captured by	Comms
Pressures, flows in pipes	Dataloggers	SMS (min interval)
Small facilities (booster pumps, lift stations)	PLCs	GPRS (sec interval)
Water and Sewerage treatment plants	PLCs	Fiber (sec interval)
Remote sensors	PLCs	Industrial Wireless (sec interval)
AMR meter data, other data	Server	Intranet (min interval)

Governance

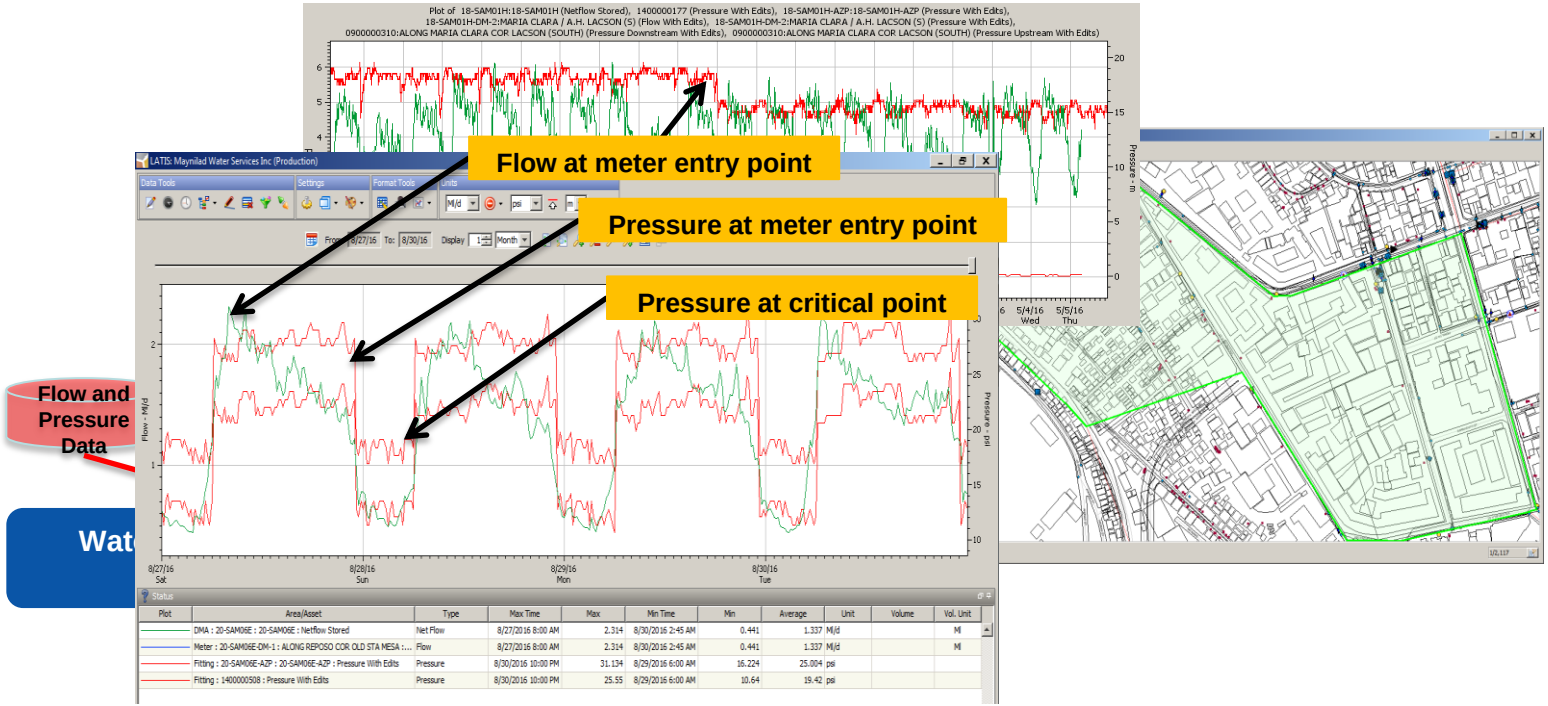
- Data is coming from many different sources, each data owner is responsible for the data
  - Cleanliness
  - Timeliness
- PI AF ensures a common understanding of the data
- We have a staging area (DEV/QA) for reports not yet “officiated”
  - Officiated once tested, documentation complete

Examples of IOT usage

- Analysis reports
- Hydraulic modeling
- Leak Management
- Displaying of field data on maps (GIS)
- Linking with customer data
- Maintenance (CBM)
- Operational alarms

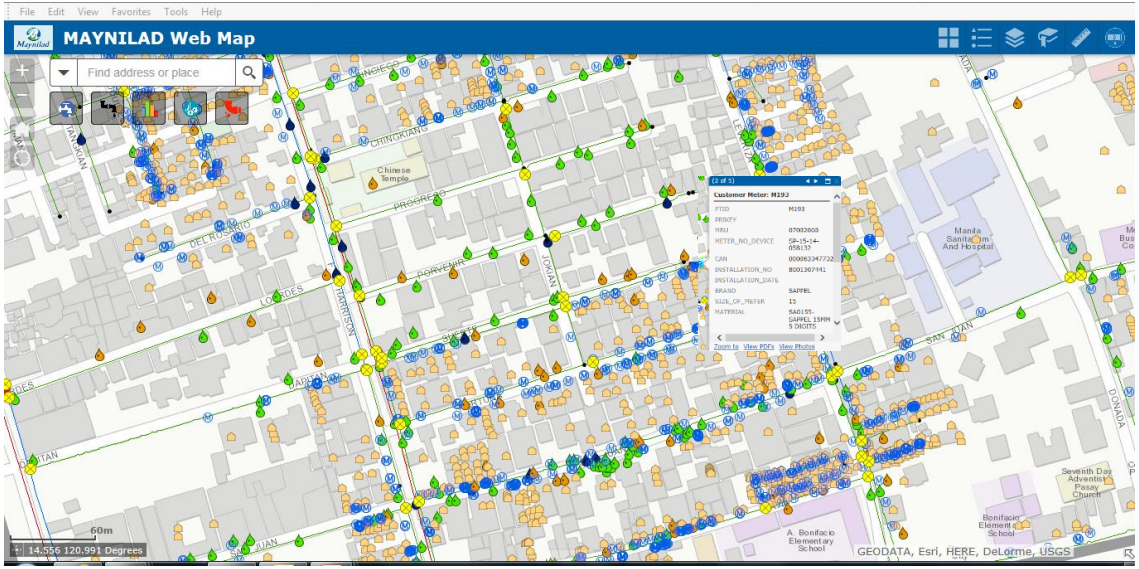
Leak Management

- Ability to identify leaks



Linking with GIS (ongoing)

- Mapping of all customers, meters, pipes, appurtenances
- Knowing which customer is connected to what

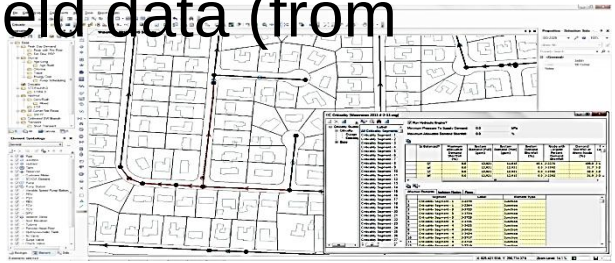


Water supply & availability (on-going)

- By seeing it on the map real-time, customer care will be able to better service complaints
  - Relate several complaints to single incident
  - Pinpoint where the problem is
- Simulate scenarios
  - How an incident will affect customers downstream

Maynilad actual example: Reducing water leaks

- Issue:
  - water leak in Malabon (port area)
  - Replacement of whole pipe segment was US$1.7million
- Able to simulate our water distribution network using advanced software
  - Hydraulic modeling using actual field data (from PI Server)



Reducing water leaks

- Solution:
  - Simulate the pipe network in that area
  - Pinpoint the most probable location of the leak

Total cost of repair: US$1,250

- Won the top prize in the Bentley Systems' "Be Inspired Awards" in London 2013

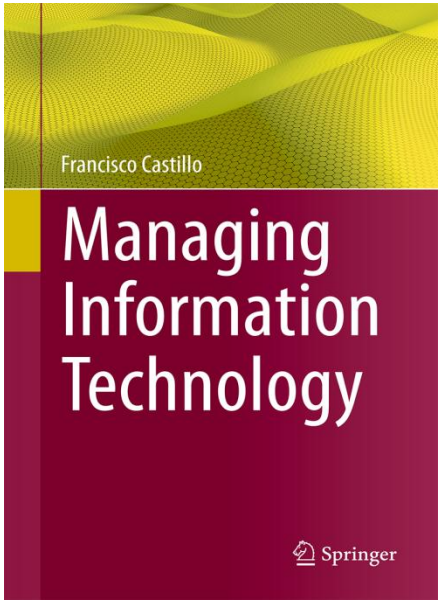
Benefits

- IOT data is pervasive in our business
- Ability to capture it and use it with different IT systems allows for better understanding, management
- You never know when and what data you will need
  - Best is to capture and store all sensor data
- Management can understand actual state of what is happening
- Different systems share the same IOT data

book **“Managing Information Technology”**
By Francisco Castillo, Ph.D.

Released August, 2016
by Springer (Germany)

Best practices in running an IT operation as learned through the years



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谢谢

Danke

Gracias

Merci

Thank You

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Спасибо

Obrigado

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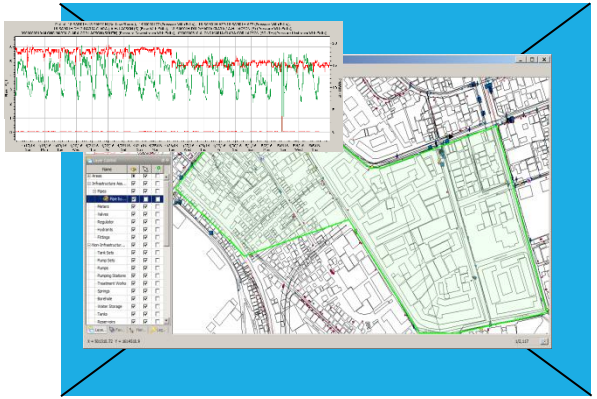

COMPANY and GOAL

Describe (see slide notes for examples)

1) Largest water distribution co. in the Philippines
2) Using IOT data for different applications

Maynilad

CHALLENGE

Ability to integrate field data into the different applications needing it

- Distributed assets
- Many different sensors
- Security

SOLUTION

By using PI, it was able to capture the data long-term and securely and integrate that with IT applications for analysis sys and reports

- PI
- PI AF
- PI on sharepoint
- PI Datalink
- PI integrator with ESRI
- PI Processbook

RESULTS

Better decision making through the availability of accurate data

- reduced cost of leak repairs (sometimes >90%)
- Better customer service
- More efficient energy management

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