



PI System for Water Management

Presented by **Almeus E. Almazan**
Telemetry Head
Maynilad Water Services Inc



PI System for Water Management

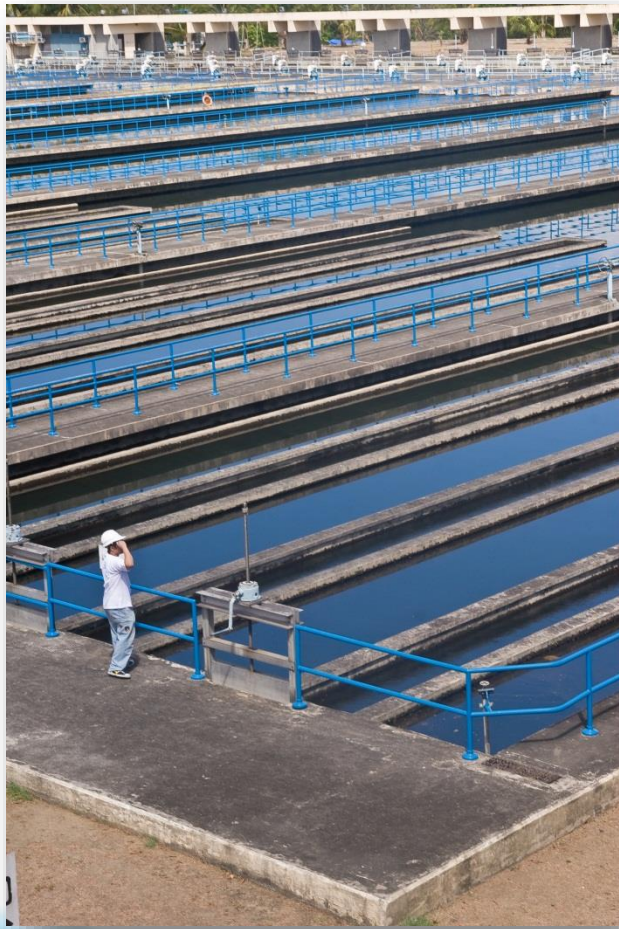
By Almeus E. Almazan
Telemetry Head

In partnership with
Information Technology Services

Presentation Outline

- I. Corporate Background
- II. Telemetry
- III. Challenges and Benefits
- IV. Processes and Developments
- V. Future Plans

Maynilad Water Services, Inc.



- Largest water concessionaire in terms of customer base in the Philippines
- Serves 8.2 million people
- Has exclusive rights to provide water and wastewater services in the West Zone of the greater Metro Manila area until year 2037
- Re-privatized on January 24, 2007
- Owned and operated by Metro Pacific Investments Corp., DMCI Holdings Inc. and Marubeni Corp.

Operations Snapshot

Service Area: 540 sq km

Coverage: 17 cities and municipalities
in Metro Manila and Cavite

Key facilities:

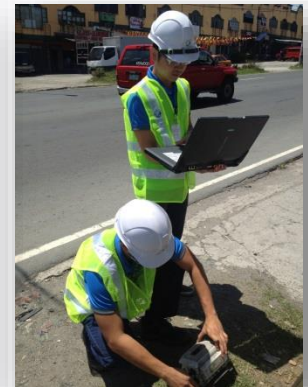
- 3 water treatment plants
(2500 MLD combined)
- 6 sewerage treatment plants
- 1 septage treatment plant
- 21 pumping stations
- 23 reservoirs

Distribution: Around 500 km sewer line
7,085 km water pipeline



Telemetry

- Part of the Maynilad Technical Services Division
- Major Thrusts
 - 24/7 operations monitoring
 - Centralized acquisition & management of operations data
 - Reliable operations information
 - Continuous improvement through innovations
- Services provided:
 - Field operation's measurements
 - Operation's data collection and handling
 - Maynilad Operations Data Summary Report



Telemetry Milestone

1. Established **Telemetry** using **radio communication**

2. Began using **data logger** with separate flow and pressure sensing instrument

3. Introduced **cellular base communication**

4. Upgraded measurement using flowmeters with higher reliability and accuracy. Adopted **SMS data protocol** for all distribution systems

5. Developed **in-house Data Management System**

6. Began **research and development** focusing on:
a. Fast paced technology
b. Changes in monitoring scheme.
c. Area coverage expansion
d. Integration with other systems

8. Developed architecture for **Integrated Telemetry and Automation Systems**

- Remote Alarm and Notification System
- Creation of centralized field monitoring system (**FieldMOUS Project**)
- 2000 remote monitoring points being supervised and measured

7. Introduced **PI System**

1997

2004

2005

2006

2008

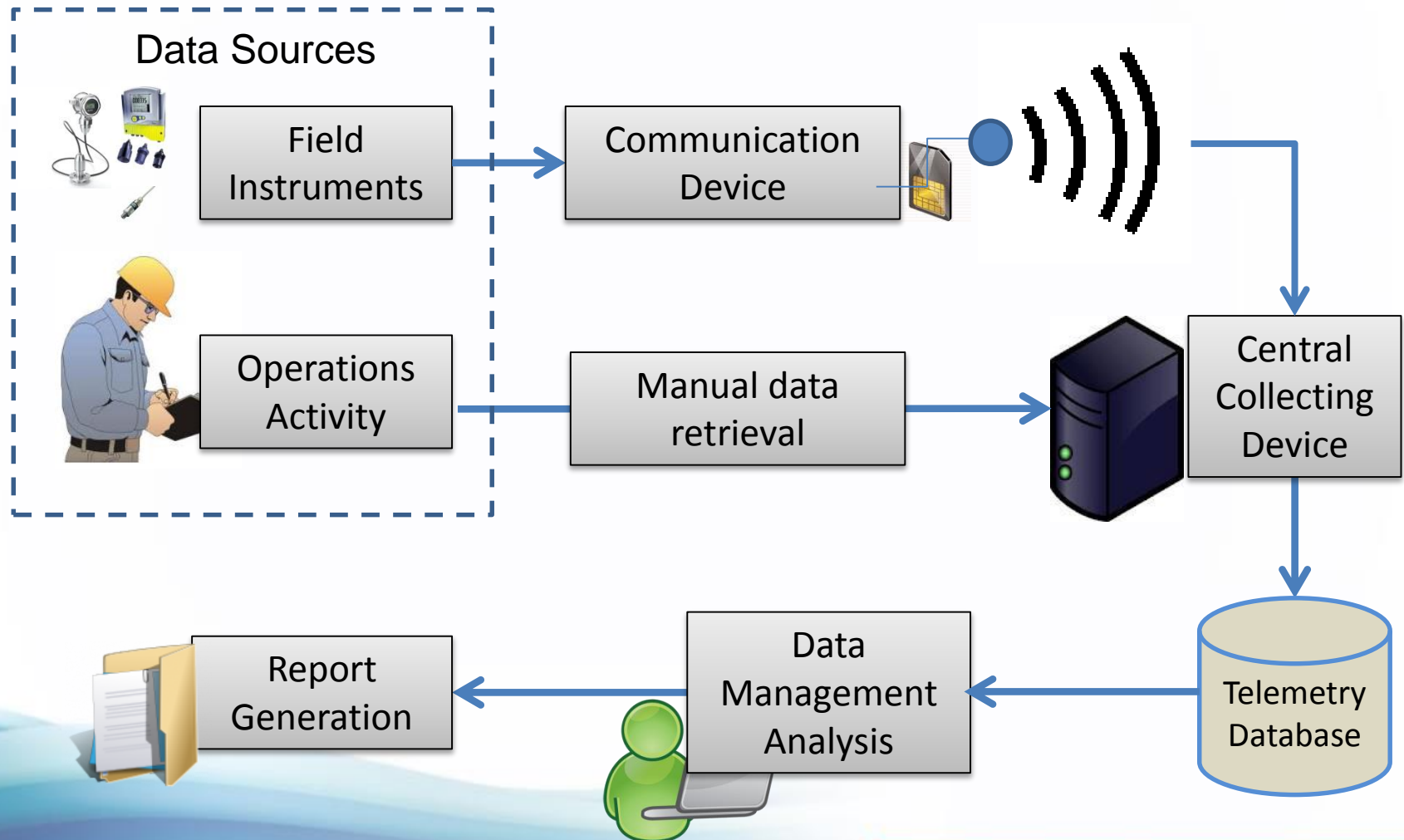
2011

2012

2013

Field Data Acquisition

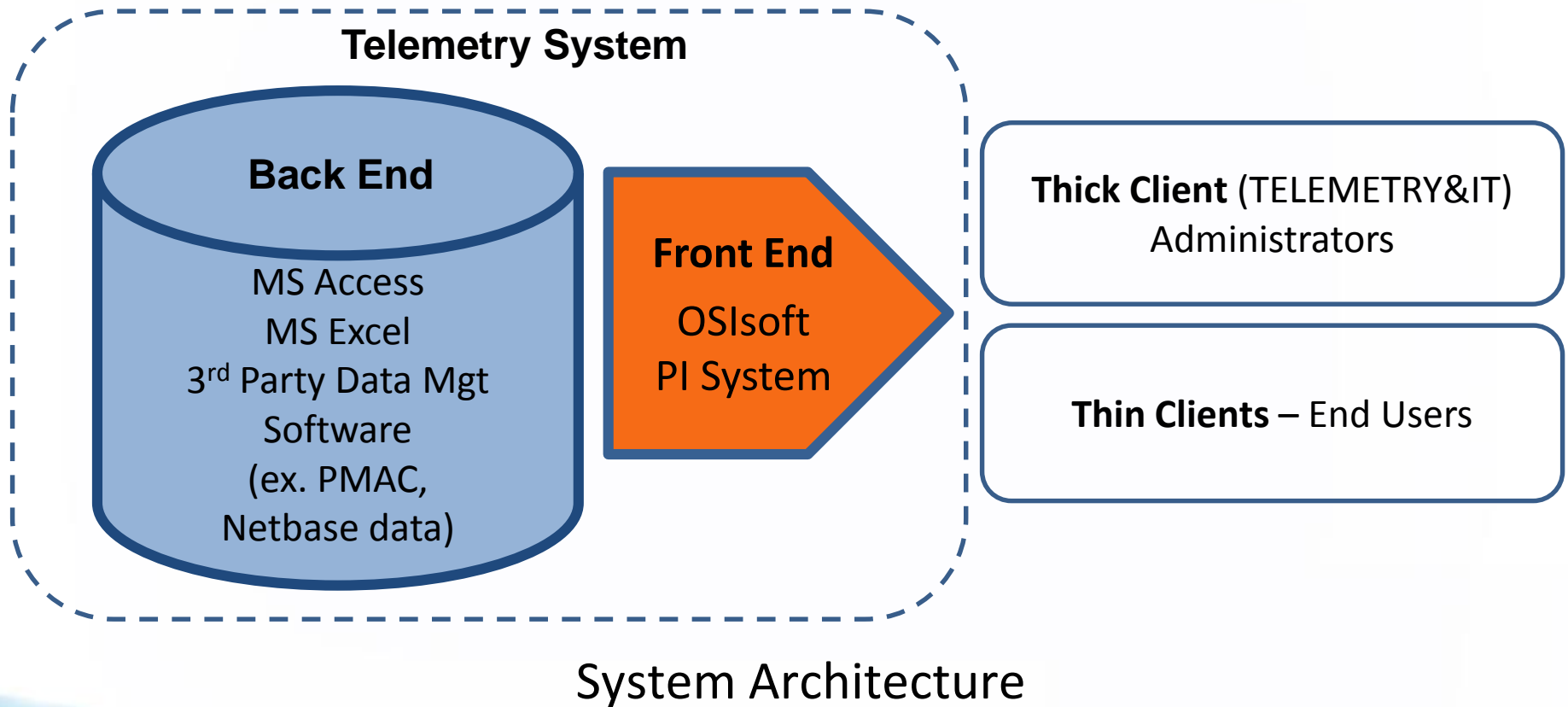
(Before PI System)



Our Challenges

- × Reports are manually sent via e-mail or FTP
- × Non real-time data sharing
- × Limited storage capacity
- × Decentralized database management
- × Manual system and data integration from different sources
- × Non-standard data & report format

Addressing Challenges



Results

(Maynilad with PI System)

- ✓ View up-to-date operations information remotely via web browser
- ✓ Automation of Treatment Plants, STPs and Pumping Stations data acquisition and monitoring
- ✓ Integration of Main distribution network to customer service line information
- ✓ Centralization of operations activity data
- ✓ Ease of access on real time data
- ✓ Developments - Customizable displays and reports

Developments

(Using PI System)

FieldMOUS Project

Field Monitoring User System

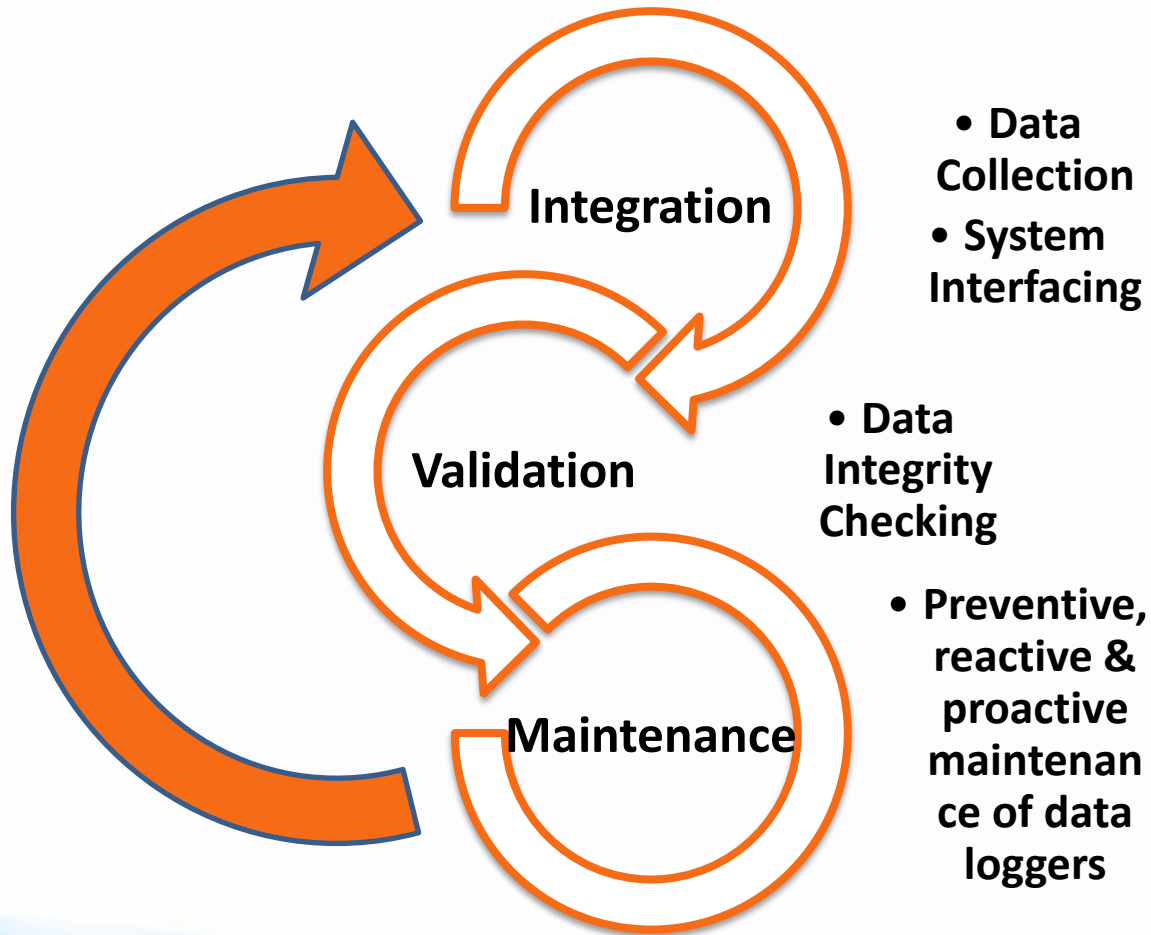
A joint project of Telemetry & ITS

Overview

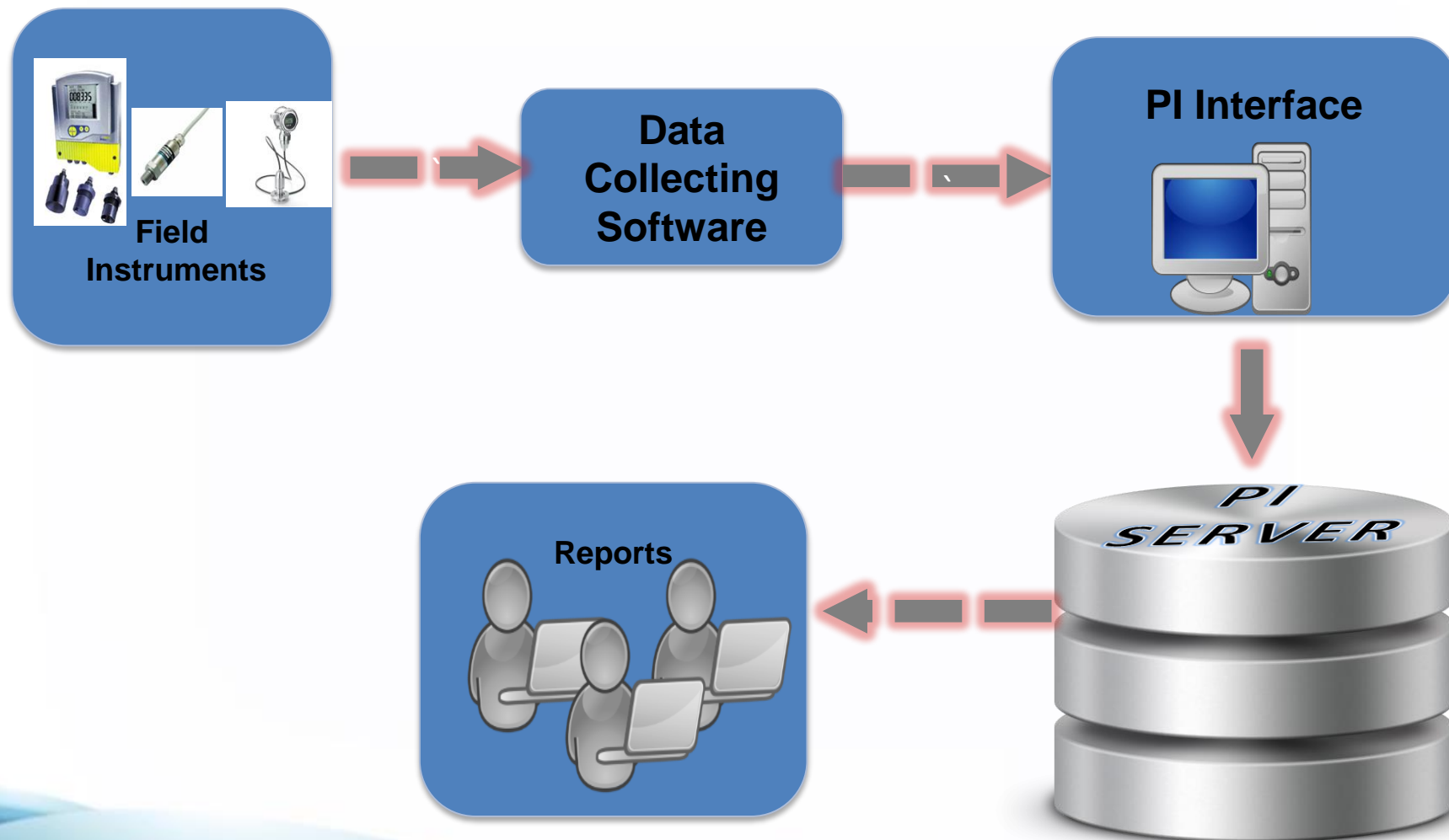
- Provides details of Operation's information from **Production to Distribution line** level
- Delivers **detailed and updated operational data** about the company's current progress that shows **Operation's efficiency**
- Serves as a **data historian**
- Provides an automated, **synchronized and centralized** operations data monitoring from a **single centralized repository**

Data Acquisition

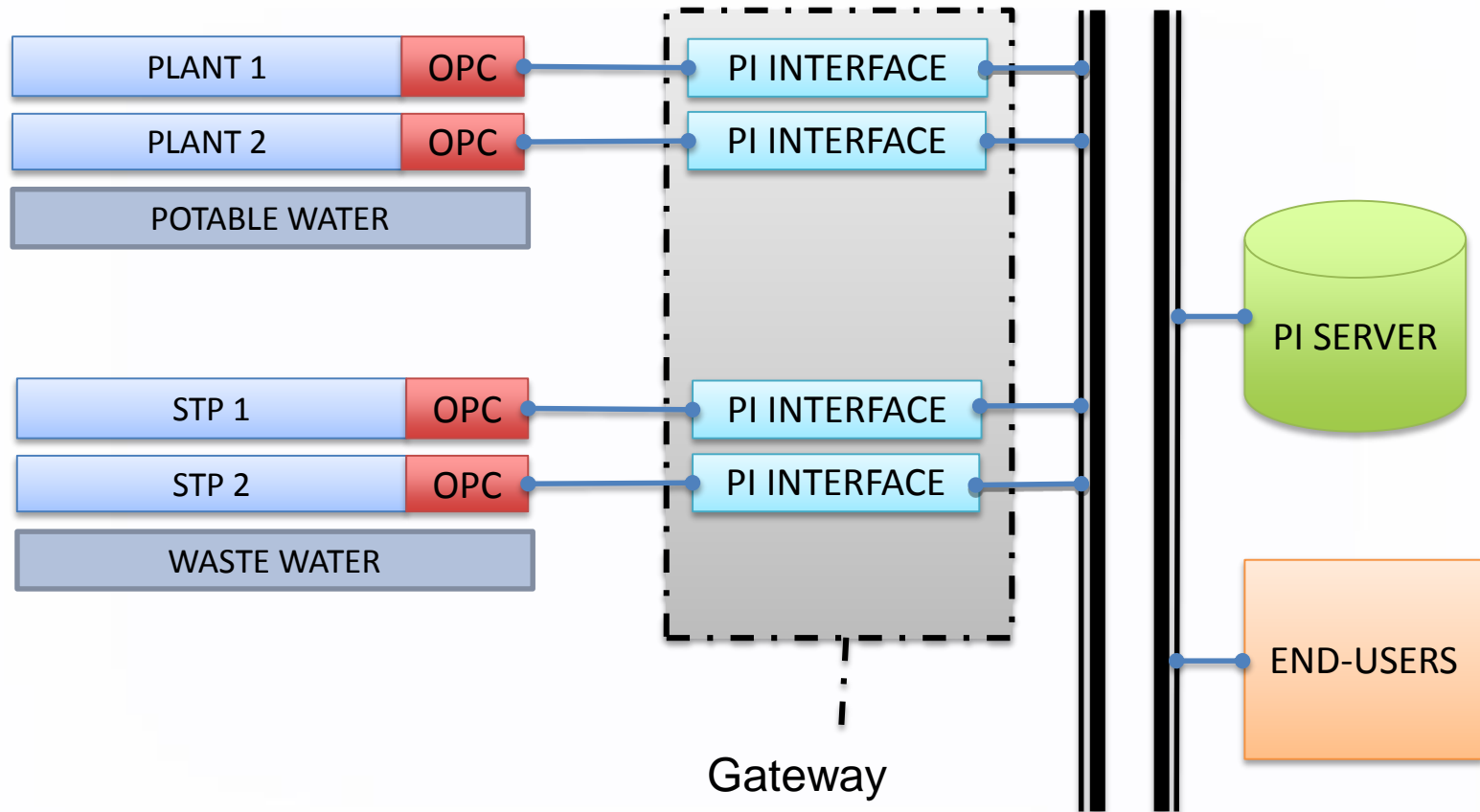
(Methodology)



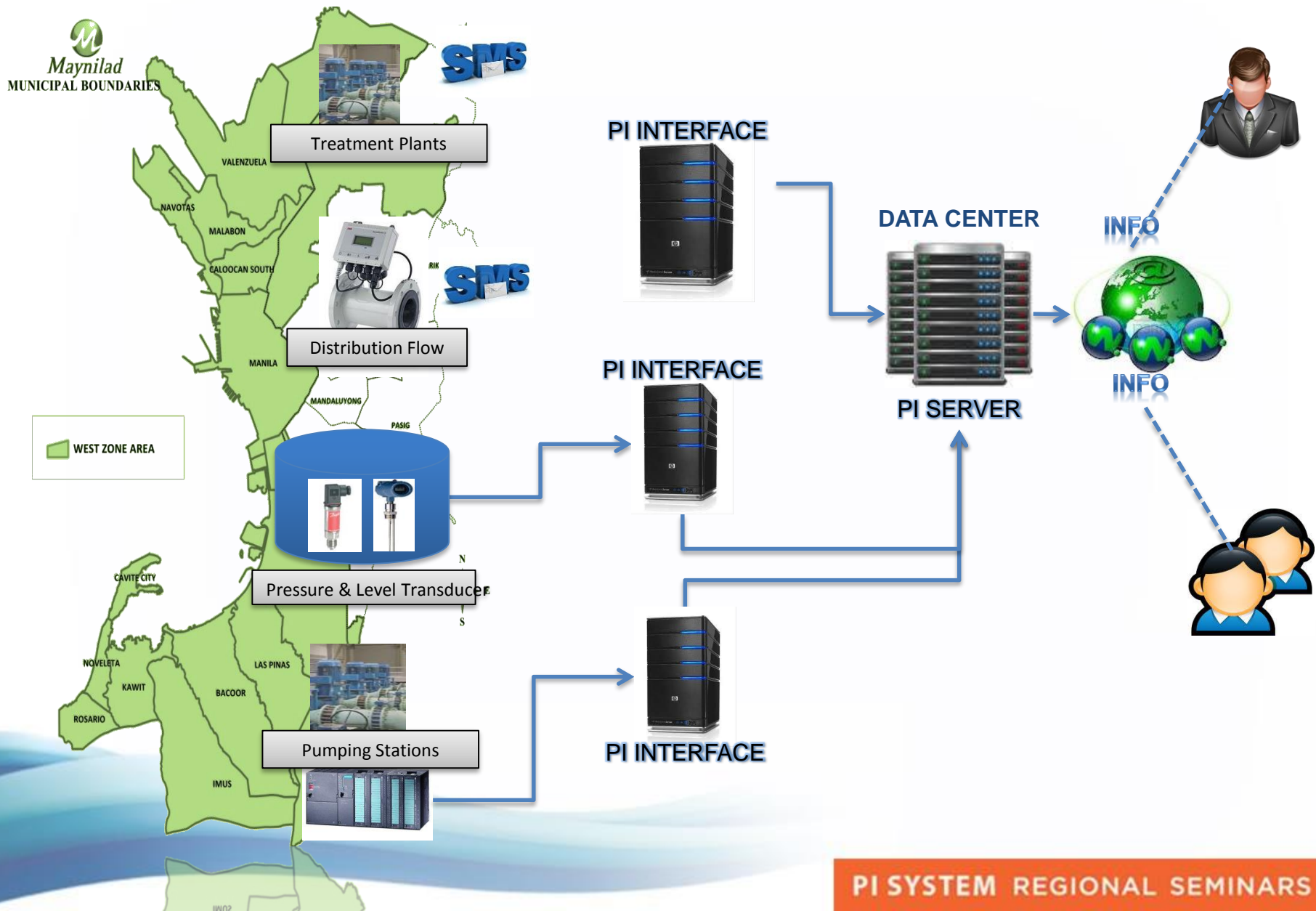
Distribution Network Setup



Plant Setup

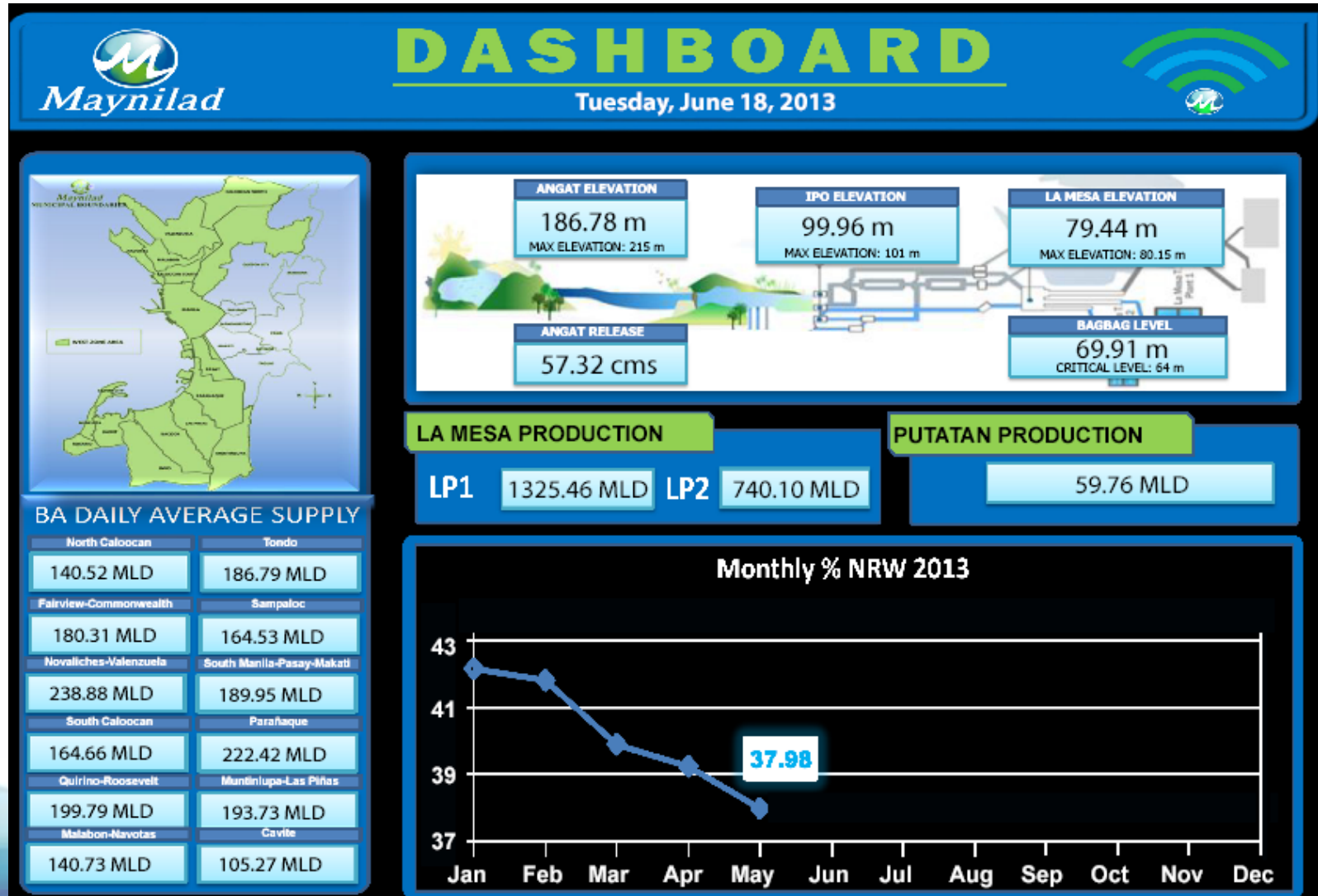


Architecture



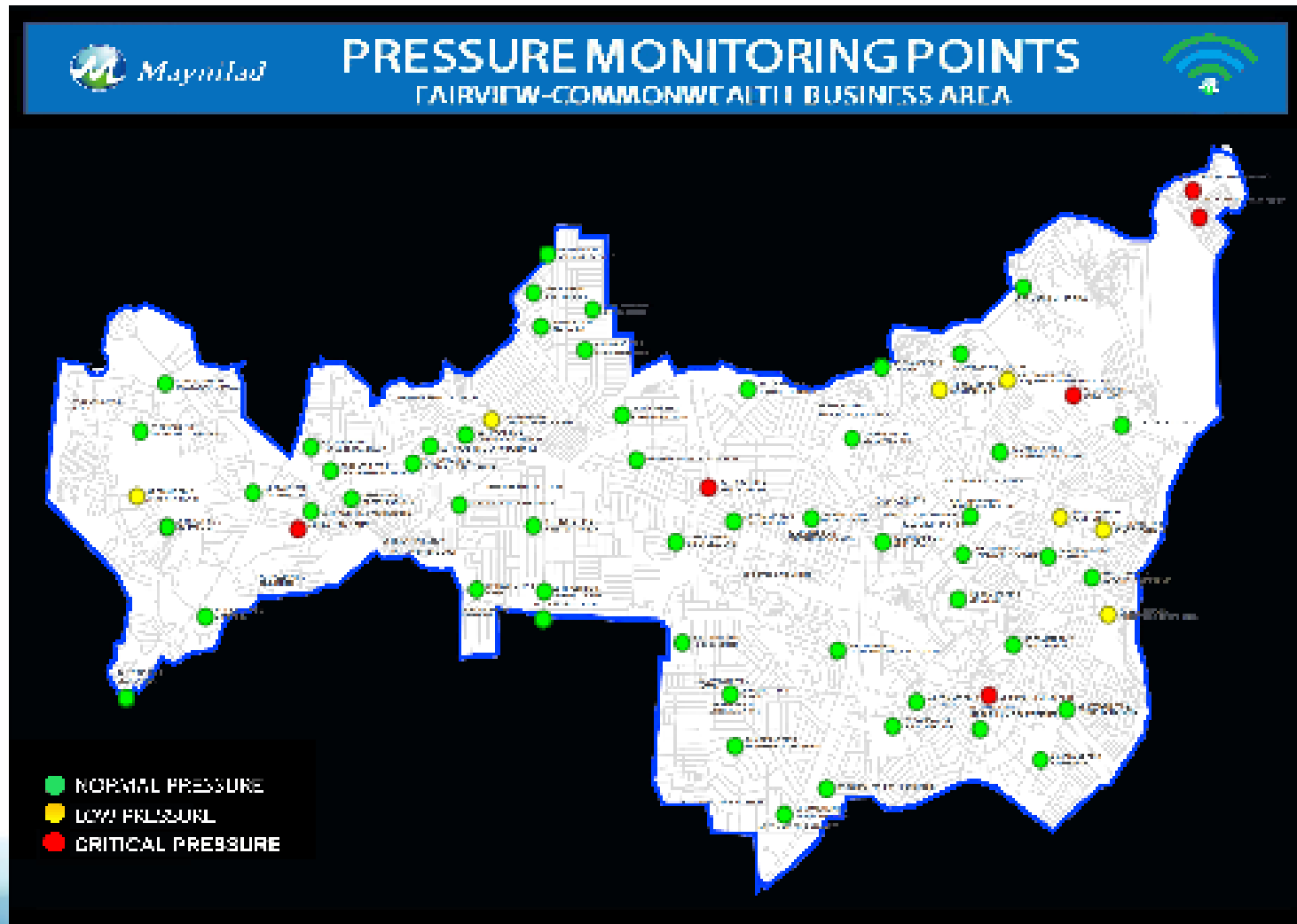
Developments

(PI Webparts)



Developments

(PI Webparts)



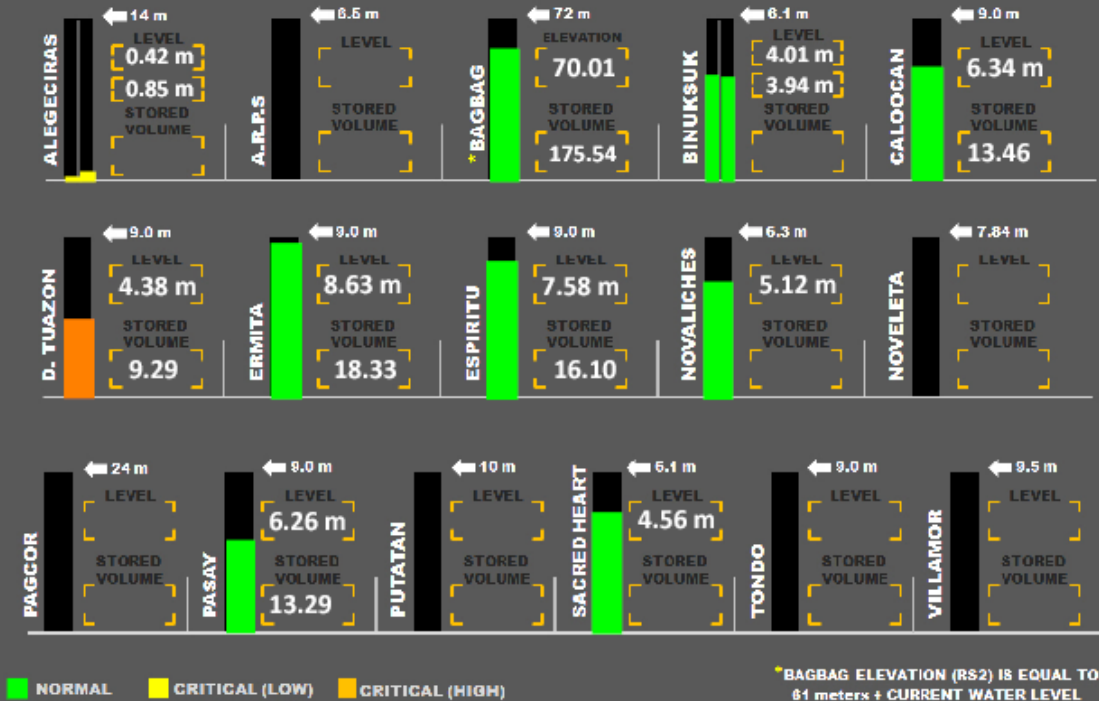
Developments

(PI Webparts)

RESERVOIR	CAP (ML)	CRITICAL LEVEL (m)	
		HIGH	LOW
ALGECIRAS	38	13	2.0
A.R.P.S	50	6.2	2.0
BAGBAG	200	71	62
BINUKSUK	30	6.0	1.0
CALOOCAN	19	4.0	0.5
D. TUAZON	19	8.4	0.6
ERMITA	19	8.8	2.0
ESPIRITU	19	8.8	2.0
NOVALICHES	7	6.25	1.0
NOVELETA	8	7.65	0.2
PAGCOR	23	23	3.0
PASAY	19	8.2	1.0
PUTATAN	14	9.9	1.5
SACRED HEART	10	6.0	1.0
TONDO	19	8.5	1.0
VILLAMOR	10	9.5	1.3

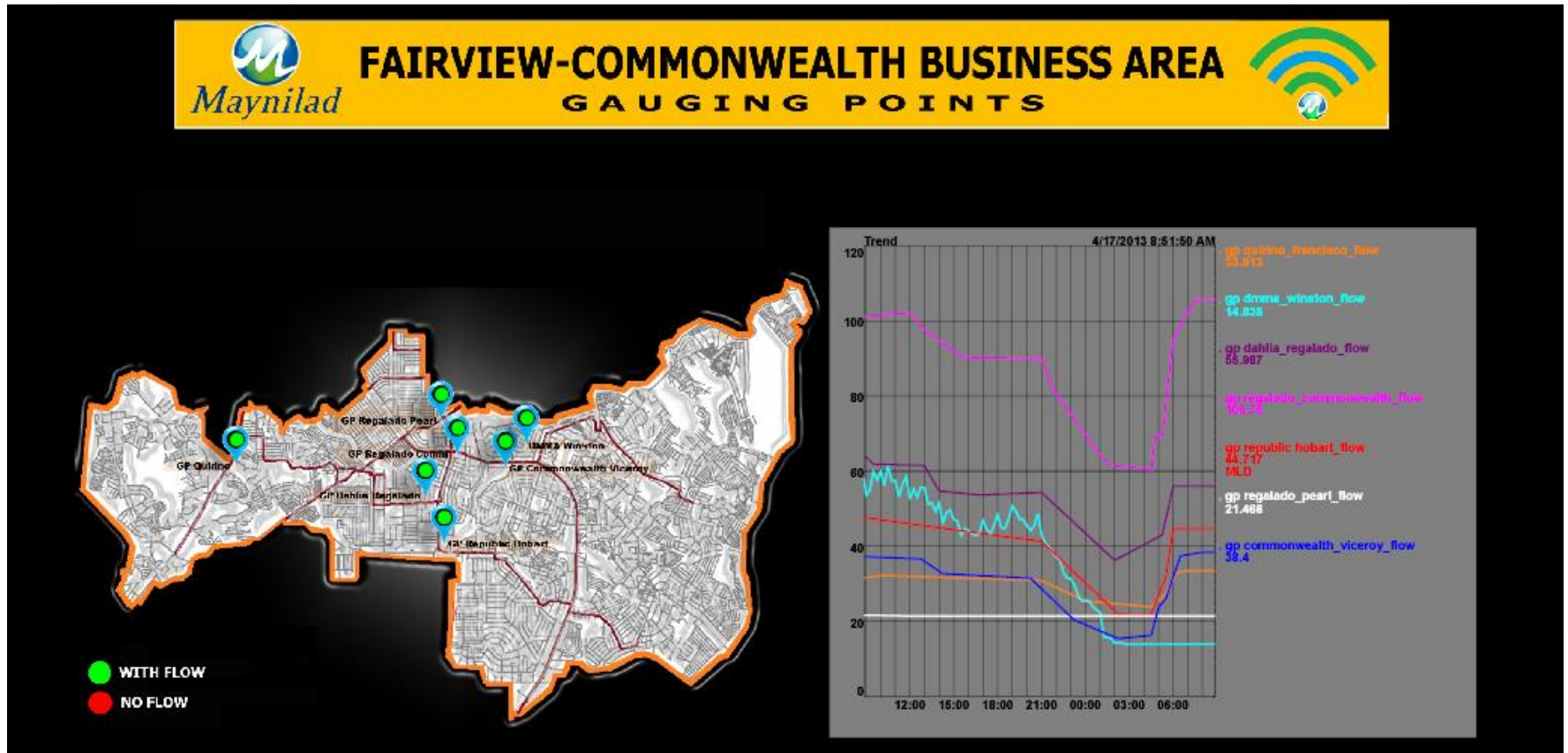


RESERVOIR MONITORING



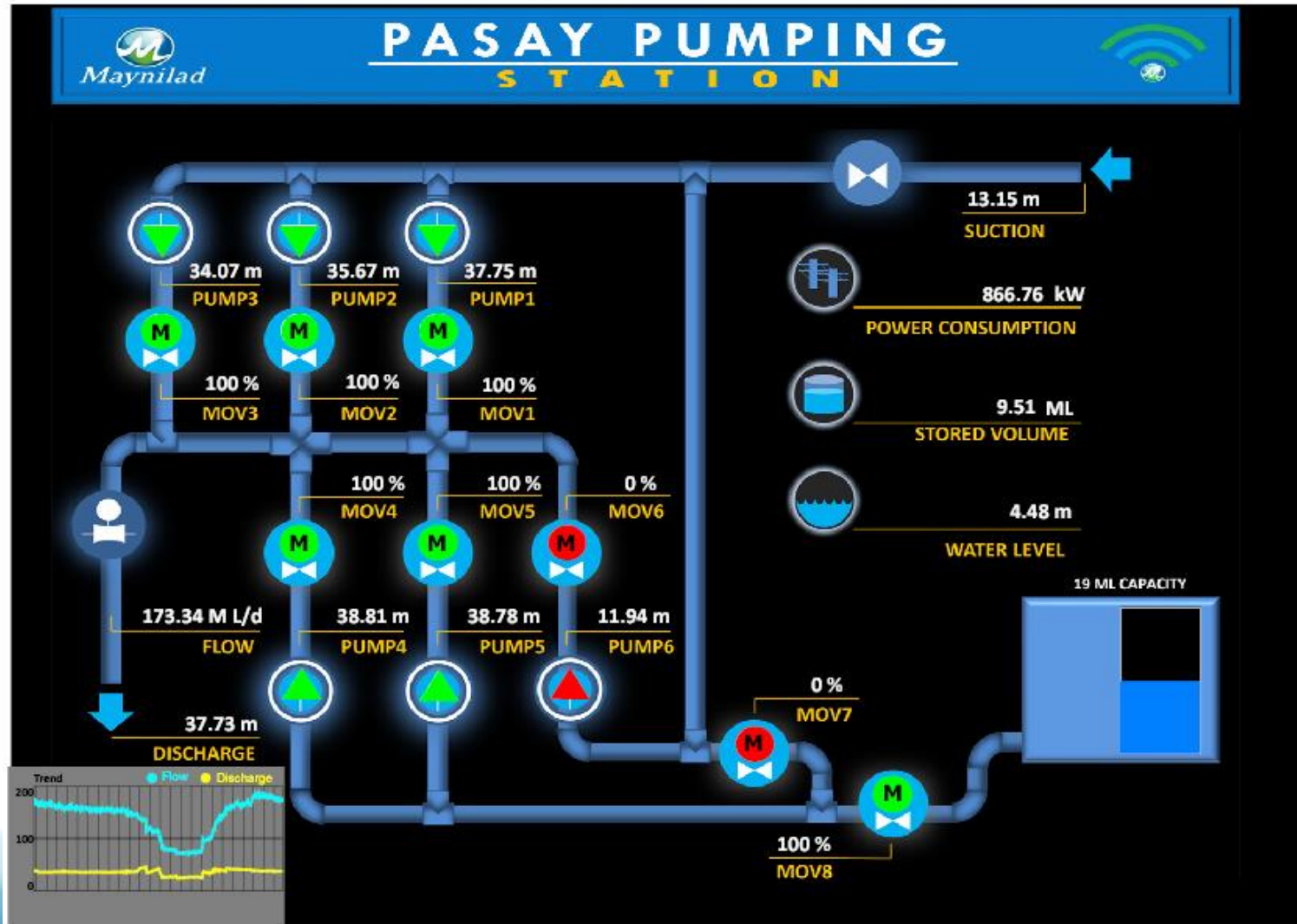
Developments

(PI Webparts)



Developments

(PI Webparts)



Developments

(PI Datalink)

The screenshot displays the Microsoft Excel interface with the 'PI ADD-IN' ribbon active. The 'PMP SUMMARY REPORT' for 'Fairview-Commonwealth BA' is shown, featuring the Maynilad logo. The report includes a table of pressure data for various locations. Annotations highlight the 'PI ADD-IN' ribbon, the 'Generated Values' section, and the 'Click to update' button in the 'Advanced' settings panel.

PI ADD-IN

Edit Parameters

Generated Values

Click to update

		Maximum(psi)	Minimum(psi)	Average(psi)
Start time	07-Feb-13 00:00:00	07-Feb-13 00:00:00	07-Feb-13 00:00:00	
End time	08-Feb-13 00:00:00	08-Feb-13 00:00:00	08-Feb-13 00:00:00	
1	05-FRV01A-PM-1 VILLA SABINA_Pressure	38.32	4.24	17.06
2	05-FRV01B-PM-1 KING HENRY_Pressure	24.83	2.82	15.36
3	05-FRV01E-PM-1 #119 ABBEY ROA_Pressure	46.83	4.94	20.57
4	05-FRV01F-PM-1 #20 JEREMIAH_Pressure	58.91	24.12	37.30
5	05-FRV02H-PM-1 MAGSAYSAY-CALU_Pressure	29.09	6.37	18.80
6	05-FRV02H-PM-1 MAGSAYSAY-LAPU_Pressure	41.18	17.75	23.68
7	05-FRV02I-PM-1 RUBY_Pressure	12.76	1.40	7.38
8	05-FRV02L-PM-1 SUGARBIRD RAI_Pressure	39.77	9.24	15.67
9	05-FRV02M-PM-1 B12 L34 METROG_Pressure	36.19	4.24	16.00
10	05-FRV03F-PM-1 TANGUILE-MAHOG_Pressure	21.29	9.22	12.06
11	05-FRV03G-PM-1 EVANGELISTA-FR_Pressure	31.92	23.40	29.65
12	05-FRV04B-PM-1 ST.PETER-ST.JO_Pressure	42.60	20.59	27.83
13	05-FRV04E-PM-1 ZAMORA-A.BONIF_Pressure	24.82	9.91	16.51
14	05-FRV04F-PM-1 SALVADOR DRIVE_Pressure	28.38	21.99	23.64
15	05-FRV04G-PM-1 A.DELA CRUZ-DI_Pressure	24.12	17.73	19.14
16	05-FRV05A-PM-1 DIRHAM NEAR DR_Pressure	36.91	11.35	21.89

Developments

(PI Asset Framework)

The screenshot displays the PI System Explorer application window. The left pane shows a hierarchical tree of assets under the 'Elements' tab. The right pane shows the 'Bagbag' asset details under the 'General' tab. The 'Bagbag' asset is a 'Floor Elevation' with a value of 61 m. The 'Value' field is set to 61 m, and the 'Unit Of Measure' is meter. The 'Data Reference' is set to <None>. The 'Settings...' button is visible at the bottom of the right pane.

Elements

- Maynilad
 - Distribution Gauging Points
 - Central A District
 - Central B District
 - North District
 - South District
 - PRV
 - NRW Report Management
 - Pressure Monitoring Points
 - Central B
 - Central A
 - North Caloocan
 - North District
 - Fairview-Commonwealth
 - North Caloocan
 - Quirino-Roosevelt
 - Pump Stations and Inline Boosters
 - ARPS (La Mesa Booster)
 - North A
 - North B
 - North C
 - Pasay
 - Reservoir
 - Algeciras
 - ARPS
 - Ayala-Alabang R1
 - Ayala-Alabang R2
 - Bagbag
 - Binuksuk
 - Caloocan
 - D. Tuazon
 - Emita
 - Espirtu
 - Novaliches
 - Noveleta
 - Pagcor
 - Pasay
 - Sacred Heart
 - Tondo
 - Treatment Plants
 - La Mesa Treatment Plant 1
 - La Mesa Treatment Plant 2
 - Putatan Treatment Plant
 - Water Sources
 - Dams
 - Angat

Bagbag

General | Child Elements | Attributes | Ports | Version

Filter

Name	Value	Unit Of Measure
Floor Elevation	61 m	meter
Level R2	8.50240039825439 m	meter
Stored Volume	155.996741543476 M L	megaliter
Water Elevation at 6:00	69.93 m	<None>
Water Elevation R1	69.7324003982544 m	meter
Water Elevation R2	69.5024003982544 m	meter

Name: Floor Elevation

Description:

Configuration Item: ☒

Categories:

Default UOM: meter

Value Type: Single

Value: 61 m

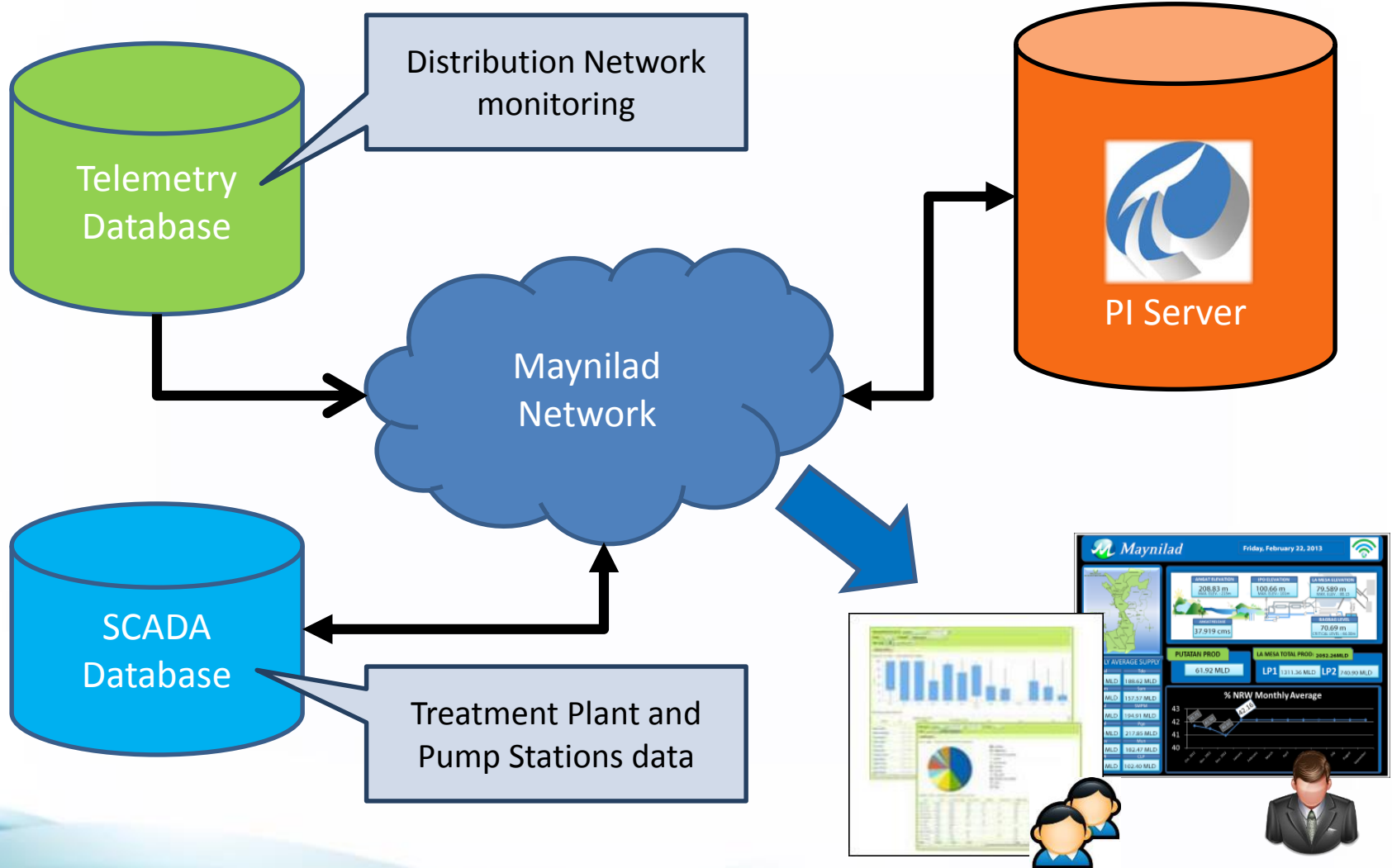
Data Reference: <None>

Settings...

Benefits

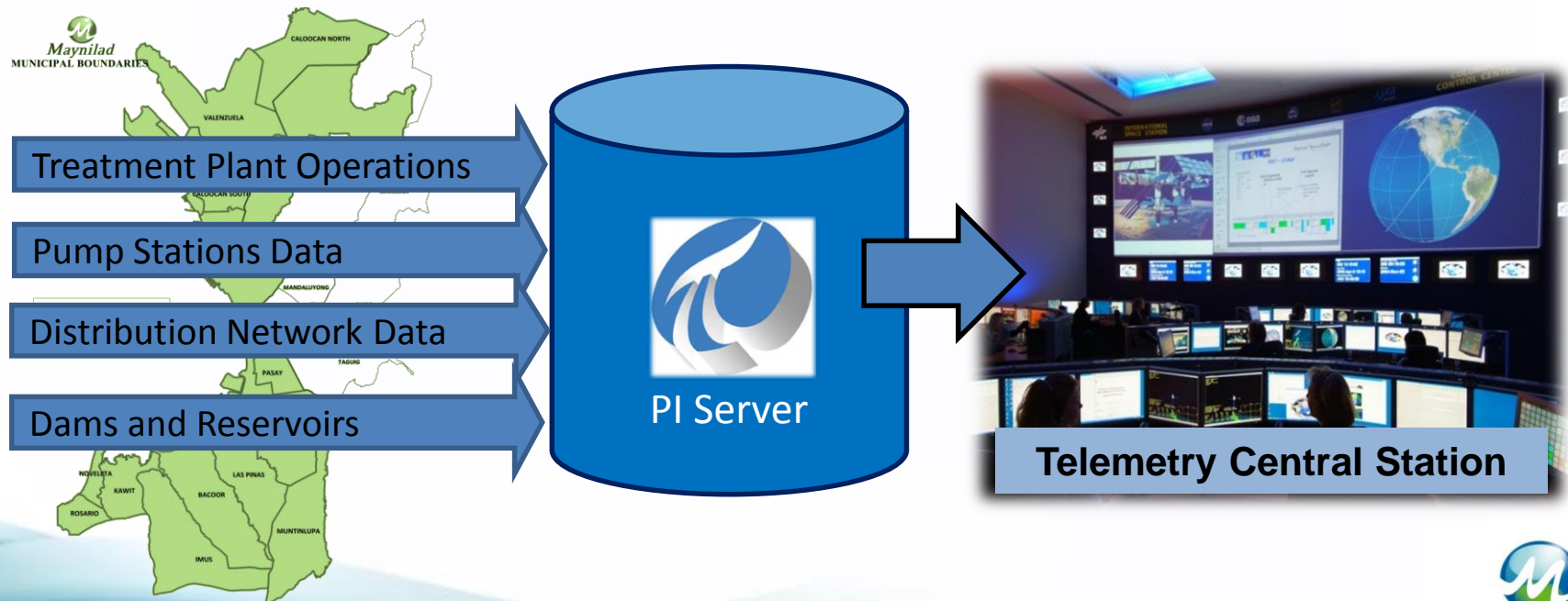
- ✓ Quick response to unusual distribution network changes
- ✓ Better asset condition management
- ✓ Faster assessment on operations efficiency
- ✓ Cost on Operations
 - ✓ Less outsourcing
 - ✓ Reduced downtime
 - ✓ Less manpower
- ✓ Secure, scalable and redundant data management system

Future Plans



Future Plans

- Interface
 - Water Treatment Plants
 - Sewage Treatment Plants
 - Sewerage Lift Stations
 - District Meters
- Creation of Central Monitoring Station



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Telemetry Head

Maynilad Water Services, Inc.



TELEMETRY

Reliable Information for Better Operation



THANK

YOU