Enhancing Asset Management and Customer Relationship with Geospatial Technology

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Asset Management Department
Strategic Asset Management Group
Outline

- Manila Water History
  - Public-Private Partnership
  - Pre-Privatization Challenges
  - Results/Performance

- GIS Application
  - Asset Management
  - Customer Relationship Management
  - Current and Future Projects

- Summary
Manila Water Company

Metro Manila's West Zone

Metro Manila's East Zone
PPP Objectives:

- Expand Service Coverage

21 KEY PERFORMANCE INDICATORS (KPIs) and BUSINESS EFFICIENCY MEASURES (BEMs)

- Increase Operating Efficiency
Manila Water Company

- 1400 sq. kilometer
- 6M population
- 23 cities and municipalities
- 900,000 + water service connections
- 1,180 Mld
- 2 Water Treatment Plants (1600mld)
- 2 Septage Treatment Plants (3400 mld)
- 4,650 kms of pipe
  - 300 kms of primaries (>600mm)
Pre-Privatization (1997)
The Water Supply Condition Before

WATER SUPPLY AVAILABILITY:
3.1 million customers

Only 26% had access to 24/7 water supply

NRW at 63%

LEAKS
ILLEGAL CONNECTIONS
LOW WATER PRESSURE
TO NO WATER
POOR CUSTOMER SERVICE

Manila Water
NRW Reduction Challenges

- Employees Lack of Focus
- Organizational Constraints
- High Network Losses and Inefficiencies
- Weak Customer and Stakeholder Engagement
NRW Reduction Strategy 3

Network Losses and Inefficiencies

Optimize Planning for Renewal Investment including Rationalization
Optimize Planning for Renewal Investment including Rationalization

CAPEX and OPEX Efficiency

SIMPLIFY
- Modelling
- Network Configuration
- Divided into manageable areas

MEASURE
- Accuracy
- Data Gathering
- Monitoring

EXECUTE
- Holistic Pipe Replacement
- Network Clean-up
- Effective Pressure Management and Maintenance

MANAGE
- Management Program
- Relationship Management
- Corporate Program Manager
## Manila East Zone
(Before and After Privatization)

<table>
<thead>
<tr>
<th>Year</th>
<th>Population ( Million)</th>
<th>Water Availability (hrs/day)</th>
<th>Water Coverage (% of Pop)</th>
<th>Non-Revenue Water (% of Prod)</th>
<th>Staff/1000 Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>3+</td>
<td>16</td>
<td>58</td>
<td>63</td>
<td>9.8</td>
</tr>
<tr>
<td>2012</td>
<td>6+</td>
<td>24</td>
<td>99</td>
<td>11</td>
<td>1.4</td>
</tr>
</tbody>
</table>
Awards

The First Philippine Company to win the
Asian Human Capital Award

Internationally Recognized and Multi-Awarded

ASiAMONEY

2007, 2005 Best Managed Company Small Cap Category

2007 Kapatid Award Outstanding Achievement in Strategic Visioning

The Banker, ING and BPI 2009 Deal of the Year


2009, 2008 Gold Awardee Corporate Governance Scorecard for Public Listed Companies

2009 CSR Leadership Challenge 2008 Best Annual Report

Management Association of the Philippines

2008 Triple A in Corporate Governance Rank 1 - Philippines

2008 CFO of the Year

2006 Best Workplace Practices

2006 Asia’s Best Managed Company Most Convincing and Coherent Strategy in the Philippines

2006 Intel-AIM Corporate Responsibility Award (IACRA) 1st Philippine Company to receive this distinction

2009 Intel-AIM Corporate Governance Scorecard for Public Listed Companies

2009 CSR Leadership Challenge 2008 Best Annual Report

Management Association of the Philippines

2008 Triple A in Corporate Governance Rank 1 - Philippines

2008 CFO of the Year

Enhancing Customer Relationship Management with GIS
May 15, 2013
Replicating Success Beyond Borders

Enhancing Customer Relationship Management with GIS

May 15, 2013
Stock’s Performance

The Philippine Stock Exchange, Inc.

May 08, 2013:  MWC O: 40.80  H: 40.80  L: 40.50  C: 40.50

May 09, 2011 - May 08, 2013

Manila Water

Enhancing Customer Relationship Management with GIS
May 15, 2013
GIS for Asset Management
Concessionaire’s Obligations

Asset Management
“operate, maintain, renew”

Services
“provision of water supply and sewerage services”
 Assets

▪ Water Distribution
  • Raw Water Main - 127 km
  • Treatment Plant - 6
  • Reservoir - 7
  • Pump Station - 19
  • Booster Station - 21
  • Production Well - 64
  • Pipe Network - 4,611 km
  • System Valve - 25,650

▪ Wastewater Management
  • Septage
    Treatment Plant - 2
  • Sewage
    Treatment Plant - 34
  • Communal Septic Tank - 16
  • Lift Station - 17
  • Sewer Main - 327 km
Network Efficiency

Supply Management
- 1997: 26%
- 2012: 99%

Pressure Monitoring
- 1997: 8 psi
- 2012: 20 psi

NRW Monitoring
- 1997: 63%
- 2012: 11%

Asset Management & Capital Investment Prioritization

Enhancing Customer Relationship Management with GIS
May 15, 2013
MAP SHOWING WORKS DONE ON MWCI ASSETS

**LEGEND**

- **WORK DONE**
  - Assets Installation
  - Leak Repair
  - Assets Rectification
  - Assets Relocation
  - Assets Replacement

- **Water Main**
<table>
<thead>
<tr>
<th>Pipe Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Material</td>
<td>Hdpe</td>
</tr>
<tr>
<td>Diameter</td>
<td>250</td>
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<tr>
<td>Pipelaying Contract Number</td>
<td>RNWPRBA-10-022</td>
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<td>Pipelaying Contractor</td>
<td>GPM Industries Corp.</td>
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<tr>
<td>Pipe Class</td>
<td>SDR 17</td>
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<tr>
<td>Year Installed</td>
<td>2010</td>
</tr>
<tr>
<td>Asset Condition</td>
<td>Good Condition</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leak Details</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
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<tbody>
<tr>
<td>Affected Households</td>
<td>50</td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>Date Started</td>
<td>3/20/2012 3:36 PM</td>
<td>3/21/2012 10:00 PM</td>
<td>4/27/2012 11:00 PM</td>
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<tr>
<td>Date Finished</td>
<td>3/21/2012 3:53 AM</td>
<td>3/22/2012 3:15 AM</td>
<td>4/27/2012 3:00 AM</td>
</tr>
<tr>
<td>DMZ</td>
<td>B-07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Agham Rd cor North Ave (Veterans), Proj 6, QC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cause of Failure</td>
<td>DBC</td>
<td>DBC</td>
<td>MQ</td>
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### Work Details

<table>
<thead>
<tr>
<th>Work Details</th>
<th>1st Work</th>
<th>2nd Work</th>
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</thead>
<tbody>
<tr>
<td>Affected Households</td>
<td>96</td>
<td>16</td>
</tr>
<tr>
<td>Date Started</td>
<td>3/4/2012 10:30 AM</td>
<td>3/16/2012 8:52 AM</td>
</tr>
<tr>
<td>Date Finished</td>
<td>3/4/2012 4:15 PM</td>
<td>3/16/2012 9:56 AM</td>
</tr>
<tr>
<td>DMZ</td>
<td>B-07</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Pag-asa Bliss Cmpd, Bagong Pag-asa, QC</td>
<td></td>
</tr>
</tbody>
</table>

### Pipe Details

<table>
<thead>
<tr>
<th>Pipe Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Material</td>
<td>PVC</td>
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<tr>
<td>Diameter</td>
<td>200</td>
</tr>
<tr>
<td>Year Installed</td>
<td>2009</td>
</tr>
<tr>
<td>Asset Condition</td>
<td>Good Condition</td>
</tr>
<tr>
<td>Depth</td>
<td>1.2</td>
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<tr>
<td>Collection Plant</td>
<td>Pag-asa</td>
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**Valve Details**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>100</th>
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<tbody>
<tr>
<td>Year Installed</td>
<td>2004</td>
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<tr>
<td>Asset Condition</td>
<td>Good Condition</td>
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<tr>
<td>System Valve Type</td>
<td>Unknown</td>
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</table>

**Work Details**

<table>
<thead>
<tr>
<th>Valve Replacement</th>
<th>Vertical Leak (1)</th>
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<tbody>
<tr>
<td>Date Started</td>
<td>Date Finished</td>
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<tr>
<td>10/4/2009 8:00 AM</td>
<td>10/4/2009 5:00 PM</td>
</tr>
<tr>
<td>3/16/2012 8:52 AM</td>
<td>3/16/2012 9:56 AM</td>
</tr>
</tbody>
</table>

**DMZ**

C-07

**Location**

Imperial cor New York  E. Garcia

**Amount**

Php 4,028.94  Php 5,725.29

**Service Provider**

ABDA  ABDA

**Type**

RM  RM
GIS for Customer Relationship Management
Project Title: Plotting of Customer Meter and Digitization of Service Pipe

Objective

- Improve customer complaints resolution using GIS data.
- Update hydraulic models.
- Serve as a planning and decision making tool

Challenges

- Limited service provider for geospatial project
- Presence of grouped or clustered meters (far from the customers’ houses)
- Outdated base map
  - Western part based on 1989 national mapping data
  - Eastern part based on 2004 Digital Globe Image of 60 cm resolution
- No available building footprint of the whole franchise area
  - Customer meter installed are in groups in some area
  - Building footprint to meter relationship is complicated
Project Title: Plotting of Customer Meter and Digitization of Service Pipe

 département Methodology

- Map customer base on location of meter installed
- Use of GPS with RTK feature with range finder
  - 8 Trimble Rover (R6)
  - 2 Trimble Base (R6)
  - Pentax Total Station (W800)
- Match field data (meter serial number) with SAP records to get customer information
Supplemental Project – Upgrade of Base Map

- Different accuracy level of old base map and GPS plotted points
  - Old map positional error at +15m
  - GPS plotted point accuracy level is 30 cm.

- Upgrade of base map
  - Aerial photo with 10 cm resolution as reference
  - Extracted features using stereo plotter from orthophotos
  - Adjustment of all asset layers on the new base map
“Tubig Para Sa Barangay” Project (Water for the Poor Project)
Mapping of Customer Meters
Project Title: Plotting of Customer Meter and Digitization of Service Pipe

- Project Result

- Base Map upgrade and adjustment of asset layers completed on December 16, 2012.
  - GPS plotted point accuracy level is $+30\text{ cm}$.
- 791,000 customer meter mapped as of May 31, 2012;
- Service pipe digitization completed on March 02, 2013;
Mapped customer’s meter
GIS-CRM-BI integration: Locates customer on a map via CAN
Software

- GIS
  - ArcGIS for Server 10.0
  - ArcGIS Desktop 10.1
  - ArcFM from Telvent

- Hydraulic Model
  - WaterGems
  - SewerGems

- Engineering
  - ACAD 2013

- Microsoft
  - CRM Dynamics 4.0
  - Business Intelligence
  - Sharepoint for Document Management

- SAP
  - Financials
  - Controlling
  - Treasury
  - Materials Management
  - Plant Maintenance
  - IS-U (Industry Solution for Utilities)
  - Financial Consolidation
  - Project Systems
Moving Forward

- Phase 2 of Plotting Customer Meter and Digitization of Service Pipe (Additional 103,000 customers)

- GIS integration with Enterprise Asset Management (EAM)
2009-2010
GPS position of manholes

2010-2012
Mapping of Water Meters & Topographic Map

2012-2013
Service Pipe Digitization

2013
GIS Dashboard with BI integration & Building Footprint Tagging

2014
Enterprise Asset Mgt., Work Management & Mobile Application

Enhancing Customer Relationship Management with GIS
May 15, 2013
Summary

- Manila Water has one of the most accurate and updated maps in the Philippines today;

- The first company to successfully integrate Microsoft Dynamics CRM with ESRI GIS;

- By 2014, a fully integrated GIS with Enterprise Asset Management is expected.
Thank you

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