DIGITAL TRANSFORMATION IN WATER & SANITATION UTILITY
SUEZ INDIA

October 07, 2020

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Presentation Outline

1. Suez Presence (Global & India)
2. Commercial Losses
3. Digital Transformation in Suez India
4. ROPeS – A digital Solution for NRW management
5. Examples of Digital Data and Applications which helps in reducing losses
6. Case Study – Coimbatore (Water)
7. Why data is important?
89,352 employees

€18.5 billion in revenue in 2019

49% in Water 51% in Waste

revenue per activity in 2019

38.6% of revenue outside Europe
SUEZ IN INDIA

Over 30 years of strong partnership with major cities

1. Delhi, New Delhi
   - 717 MLD WTP
   - 400MLD STP
   - Malviya Nagar Water Services project for 48,000 connections

2. Bangalore, Karnataka
   - 1560MLD WTP
   - 175MLD STP
   - Leak Detection for 1,750 km distribution network
   - D1A Project: Water Loss Reduction Contract

3. Mumbai, Maharashtra
   - 3355MLD WTP
   - 37MLD STP
   - Water Distribution Improvement Program for 15 million people

4. Kolkata, West Bengal
   - Water Loss Management Contract for 25,000 connections

5. Chennai, Tamil Nadu
   - 530 MLD WTP

6. Bissipur, Rajasthan
   - 400 MLD WTP

7. Pune, Maharashtra
   - 500 MLD WTP
   - 77 MLD STP
   - 24/7 Water Supply Project in Pimpri, Chinchwad

8. Trivandrum, Kerala
   - 74 MLD WTP

9. Kozhikode, Kerala
   - 174 MLD WTP

10. Nagpur, Maharashtra
    - 120 MLD WTP

11. Saidabad, Bangladesh
    - 450 MLD WTP

12. Kelani, Sri Lanka
    - 180 MLD WTP

13. Kandy, Sri Lanka
    - 46 MLD WTP

14. Coimbatore, Tamil Nadu
    - 24/7 Water Supply Project for 150,000 consumers

15. Davangere, Karnataka
    - 24/7 Water Supply Project for 92,000 properties

16. Kolkata, West Bengal
    - Water Loss Management For 40,000 connections

17. Udipi, Karnataka
    - 24/7 Water Supply Project For 35,000 connections

18. Puttur Karnataka
    - 24/7 Water Supply Project For 16,000 connections
Commercial Losses

IWA approach...

...simplified approach SUEZ
THE LOST WATER CIRCLE
Digital Transformation in SUEZ India Since – 2013

**ROPeS - Real-time Operational Performance System**

**Indigenous – Developed In-house (Since 2013)**

**Smart end to end solution**

1 - Collect  
2 - Assess  
4 - Action  
3 - Publish

**Centralized Platform**

Cloud based Enter. Server

**Inter Departments**

Admin  HR  HSE

O&M  IT  Legal

CS  Finance

**Tested Solution**

- Successful implementation in 12 big projects/cities of Suez India.
- Delivered 30+ solutions across various departments of Suez India.
- More than 6 million consumers mapped digitally
- More than 10 million water meters data recorded and processed

**6000 + Km Underground Water Network Mapped**

**6 Million + consumers Mapped in GIS**

**Sr. No.**  | **Project**  | **Total Submission**
---|---|---
1 | MNWS | 22208
2 | KEIIP-1 | 132098
3 | KEIIP-2 | 10768
4 | PHED | 4761
5 | D1A | 35660
6 | MWDIP | 97949
7 | Davangere | 119871
8 | Coimbatore | 272579
9 | Puttur | 13676
10 | Udupi | 31200
11 | Lucknow | 50
12 | Mangaluru | 61877

**Total**  | **802697**

**8 Million + Assets Digitalized and Mapped**

**30 + Digital Solutions in Suez India**
ROPes
Real-time Operation Performance System

Step-1: Web form for M-GIS Survey - SUEZ Server

Step-2: Training to surveyor for M-GIS Survey

Step-3: Web Form uploaded to Cloud Server

Step-4: Data Collection at field

Post-process, Analysis & GIS linking

Final Data Base

Cloud Server

Two-way data / information sharing

Customer Services
Asset Survey
Construction
O & M
Leak Detection

GPS Signal
A-GPS Signal

GIS teams at Various Project Sites In India

**Delhi, Malviya Nagar**
- GIS Team Size: 2
- **Key Activities**
  - Data Updation
  - Support to O&M
  - Consumer complaint map
  - Water tanker monitoring map

**Lucknow**
- GIS Team Size: 8
- **Key Activities**
  - Layout Preparation
  - Survey Data updating
  - Asset Data Finalization

**Kolkata 1 & 2**
- Kolkata 1
  - HSC (Hard Copy Map) Data Integration in GIS
  - Consolidated network creation (Retained & As-built) for client submission
- Kolkata 2
  - Topo Data QC
  - Existing network alignment
  - CS data integration and parcel update
  - Network Assets Map

**Bangalore (D1a)**
- GIS Team Size: 3
- **Current Key Activities**
  - GIS data updating

**Davanagere**
- GIS Team Size: 1
- **Current Key Activities**
  - Parcel Reshaping with Topology Checking
  - Pipeline Alignment (As-built Network)
  - HSC Data Integration

**Mangalore**
- GIS Team Size: 8
- **Key Activities**
  - Parcel Modification as input to CS activity
  - Geo-tagging of consumer data
  - Consumer data delivery to HNM
  - Manage Asset Data, Create Geodatabase and Layouts Creation

**Puttur, Udupi**
- GIS Team Size: 2
- **Key Activities**
  - Creating a Kmx of parcels for HSC and highways for pipe crossing
  - Base Map alignment as per topographical data

**Coimbatore**
- GIS Team Size: 11
- **Key Activities**
  - Continue Support for O&M, HNM and other departments
  - COVID-19 map with affected areas for client as well as for our future works plan
  - Basemap Updation

**Total GIS & IoT’s Resources: 44**
Asset Digitalization & GIS Mapping

Starting from scratch digitalization of information in GIS

Building Parcel Mapping & Consumer tagging

Huge difference in available GIS data / information from client and in ground reality
Consumer Property Parcel Mapping

- Plot area Mapping and Estimation
- Unique Consumer ID assignment
- Property Type Classification
Consumer Survey with Geo-coding

- Survey form designing as per the project requirement
- Consumer information capturing in digital forms
- Allocation of Unique GIS ID to consumer
- Survey using Android app
- Integrating Consumer data with Web-GIS
- Population Estimation in an area for demand calculation

10+7+9+12+15+9+7+5+4+8+6+5+7+9+8+6+13+16+11+3+10 = 180
Total Population 180

LPCD (Litres per Capita per Day)

150 LPCD (Contractual Requirement)
Water Demand of the area is
So, the total Population x LPCD
180x150 = 27000 letter / Day
Example of Consumer Property Estimation in Urban Slums
According to Client

- Total Consumers: 98
- Total Population: 998

- Property Classification: Nil

- Total Building in Khumar Basti: Nil

After Digital Integration (Through - GIS & IoT)

- Total Consumers: 234
  - Total Rent Pop: 1188
  - Total Owner Population: 1223

- Total population of Khumar Basti: 2411

- Property Classification:
  - Both On rent and self use: 75
  - On Rent Only: 35
  - Public Building: 5
  - Self use Only: 87

- Total Building in Khumar Basti: 202
Asset Digitalization & Base Mapping – Example 2

Kolkata
Customer Survey Application is being used to collect the consumer information / consumer particulars (address, connection type, population, etc). Data collection through mobile applications also offers the ability to get GPS coordinates, images, videos, and time stamp, which can be transfer digitally on the real-time basis.

The CSMS is a customer complaint /request /query handling desktop and web based application. This system is capable to automate the workflow of complaints /requests and their actions. CSMS application can also be linked with existing GIS database for knowing the Geo-location of consumers to serve them better. CSMS can be accessed through web enabled computer system and on mobile devices.
This Application is mainly for recording meter readings, storing data and sending this to the server on Real time basis. This system is also capable to show connection number consumption details and to check customer’s history.

**Mobile Application** is used by field staff who collect and record meter reading data and it is also used to give remarks on connection status.

**Web Application** is used by admin to add, edit, search and fetch the database about the customer’s and meter connection.
Asset Data Digitalization

- Asset digitalization is very crucial in having information for the better management and its future upgrade.
**MALVIYA NAGAR WATER SERVICES**

**TEST PIT REPORT**

<table>
<thead>
<tr>
<th>LOCATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE</td>
<td>24/01/2015</td>
</tr>
<tr>
<td>TEST PIT No</td>
<td>TP-AS</td>
</tr>
<tr>
<td>LOCALITY</td>
<td>snab_sar_phase-I</td>
</tr>
<tr>
<td>TEST PIT TYPE</td>
<td>continuous</td>
</tr>
<tr>
<td>SUBLOCALITY</td>
<td>Jhaka, n p i</td>
</tr>
<tr>
<td>OTHER SUBLOCALITY</td>
<td></td>
</tr>
<tr>
<td>ADDRESS</td>
<td>On line at first left-hand corner of House no.01/0, Sable Sar Phase-I.</td>
</tr>
<tr>
<td>NO OF UTILITIES</td>
<td>1</td>
</tr>
<tr>
<td>UTILITY TYPES</td>
<td>Mains</td>
</tr>
<tr>
<td>GS PIPE LABEL</td>
<td></td>
</tr>
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<table>
<thead>
<tr>
<th>INVESTIGATION</th>
<th></th>
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<tbody>
<tr>
<td>DEPTH (mm)</td>
<td>65</td>
</tr>
<tr>
<td>LAT/LON</td>
<td>26.536780841, 72.986780841</td>
</tr>
<tr>
<td>PIPE DIAMETER IN ARCHIVE (mm)</td>
<td></td>
</tr>
<tr>
<td>PIPE MATERIAL IN ARCHIVE (mm)</td>
<td></td>
</tr>
<tr>
<td>PIPE DIAMETER FOUND (mm)</td>
<td>150</td>
</tr>
<tr>
<td>PIPE MATERIAL FOUND (mm)</td>
<td>D</td>
</tr>
<tr>
<td>ROAD SIDE ALIGNMENT</td>
<td>Rightside</td>
</tr>
<tr>
<td>DISTANCE FROM CLOSEST LANDMARK</td>
<td>3.3</td>
</tr>
<tr>
<td>REMAINS FROM GS TEAM</td>
<td>Existing pipeline found.</td>
</tr>
<tr>
<td>EXTERNAL CONDITION OF PIPE</td>
<td>Average</td>
</tr>
<tr>
<td>SAMPLE OF PIPE (IN N)</td>
<td></td>
</tr>
<tr>
<td>INTERNAL CONDITION OF PIPE</td>
<td>Average</td>
</tr>
<tr>
<td>PIPE THICKNESS (mm)</td>
<td>Thickness 7.8 mm</td>
</tr>
</tbody>
</table>

**PHOTOS**

- PHOTO 1 of PIT
- PHOTO 2 of PIT
- PHOTO 1 (close-up)

**RECOMMENDATIONS**

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**Underground ASSETS**
Asset Digitalization & Base Mapping

Over-ground Visible asset digitalization & QR coding

<table>
<thead>
<tr>
<th>LMC ASSET ID</th>
<th>Manage Manhole</th>
<th>MH NAME</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LKO_BAH_MH_8</td>
<td>Manhole</td>
<td></td>
<td></td>
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<tr>
<td>LKO_BAH_MH_7</td>
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<tr>
<td>LKO_BAH_MH_1</td>
<td>Manhole</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data Submitted to server can be edit, view and update through mobile application.

Digital Report

STPS & MPS ASSET REPORT
Lucknow
ASSET MANAGEMENT

GENERAL INFORMATION

<table>
<thead>
<tr>
<th>DATE OF SURVEY</th>
<th>CITY</th>
<th>TIME</th>
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<tbody>
<tr>
<td>24-02-2020</td>
<td>Lucknow</td>
<td>13:34 pm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARD</th>
<th>LAT/LONG(DD)</th>
<th>LAT/LONG</th>
<th>INLET SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahanagar</td>
<td>26.84516954852375,80.9286473403544</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SURVEYOR NAME: Rammohan

ASSETS INFORMATION

<table>
<thead>
<tr>
<th>ASSETS NAME</th>
<th>CODE</th>
<th>ASSETS CONDITION</th>
<th>ASSETS TYPE</th>
<th>ASSETS STATUS</th>
<th>ASSETS RENEWAL</th>
<th>ASSETS OWNER</th>
<th>ASSETS CARETAKER</th>
<th>ASSETS FUNCTION</th>
<th>ASSETS REMARK</th>
<th>ASSETS PHOTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSET</td>
<td>DO set -B</td>
<td>LKO_WGZ_9</td>
<td>Good</td>
<td>Electronics &amp; Instrumentation</td>
<td>Working</td>
<td>NO</td>
<td>Suze India Pvt Ltd</td>
<td>ASSETS BRAND</td>
<td>Kirloskar</td>
<td>ASSET CORROSION PHOTO</td>
</tr>
<tr>
<td>ASSET</td>
<td>DO set -B</td>
<td>LKO_WGZ_9</td>
<td>Good</td>
<td>Electronics &amp; Instrumentation</td>
<td>Working</td>
<td>NO</td>
<td>Suze India Pvt Ltd</td>
<td>ASSETS BRAND</td>
<td>Kirloskar</td>
<td>ASSET CORROSION PHOTO</td>
</tr>
</tbody>
</table>

JE CONTACT INFO: INST. DATE 2001-06-18

ACTUAL AGE (MO): 224

ESTIMATED AGE (M): 240

RECOMMENDATIONS

FINAL REMARK

<table>
<thead>
<tr>
<th>Supervisor representatives</th>
<th>Suez India Pvt Ltd representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name(S)</td>
<td>Name(S)</td>
</tr>
<tr>
<td>Signature</td>
<td>Signature</td>
</tr>
<tr>
<td>Date</td>
<td>Date</td>
</tr>
</tbody>
</table>

DESIGN MANAGED BY GIS CELL - HQ(SPL)
Asset Inventory, Survey and Gis Mapping Report

Client: City Municipal Corporation Udupi

Project: Construction of Distribution system for 24*7 Water Supply including Services for Operation and Management for Udupi City


Asset Inventory Report - Udupi City - CMC UDUPI OHT / GLSR Management Asset Survey Report

Asset Information

<table>
<thead>
<tr>
<th>Asset Name</th>
<th>Asset ID</th>
<th>Asset Type</th>
<th>Asset ID (Optional)</th>
<th>Asset Description</th>
<th>Asset Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Photos

Recommendation

### Photos

- Asset Condition
- Asset Status
- Asset Maintenance

### Recommendation

- Description
- Recommendations

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Information Collection without GIS and IoT’s

- My Location
- Excess Paper work
- More Resources
- No digital transfer

Information Collection with GIS and IoT’s

- Online Data Transfer
- Authenticates Location
- Works in both Online / Offline
- Digital Data
- No Data Duplication
- Save Resources
- Better Planning
- More Resources
THANK YOU