TNB SMARTVIEW

Tenaga Nasional Berhad
## Presentation Contents

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction</td>
</tr>
<tr>
<td>2.</td>
<td>Project Objectives</td>
</tr>
<tr>
<td>3.</td>
<td>SmartView System Architecture</td>
</tr>
<tr>
<td>4.</td>
<td>SmartView Process Flow Improvement</td>
</tr>
<tr>
<td>5.</td>
<td>System Components</td>
</tr>
<tr>
<td>6.</td>
<td>System Features</td>
</tr>
<tr>
<td>7.</td>
<td>Business Case</td>
</tr>
<tr>
<td>8.</td>
<td>Benefits of SmartView</td>
</tr>
<tr>
<td>9.</td>
<td>Outcome Measure</td>
</tr>
</tbody>
</table>
Introduction

TNB is the largest electricity utility in Malaysia with almost RM110.7 billion in assets. Group-wide to serve an estimated 8.6 million customers in Peninsular Malaysia, Sabah and Labuan.

Our core business includes electricity Generation, Transmission and Distribution activities in Peninsular Malaysia and the state of Sabah.

Other businesses include Power-Related Services (O&M, R&M, Energy Services) Electrical Equipment Manufacturing (Switchgears, Transformers & Cables), Higher Education & Research Services, Related Investments.

VISION

To implement GIS technology towards creating the most accessible, coordinated, efficient, advanced and complete company-wide GIS to improve efficiency and reduce operational costs via intelligent geospatial analysis.
In line with the Distribution division Transformation programed, TNB SmartView was initiated by TNB Careline together with ICT for the purpose of improving operation efficiency and enhance customer experience every time they interact with TNB Careline through Call Management Center (CMC).

SmartView was rolled out on 9 Mac 2015 for TNB Careline. Currently, this system is being use for other division in TNB.
TNB SmartView is a simple web-based map application with combination of Google maps and Map API technologies, it will populate all TNB’s asset on top of Google maps with real time information such as breakdown info and breakdown team vehicle location. It is simple, reliable, useful and user friendly.

Who are the users?

- Call Center
- Control Center
- Dispatch Center
- Other Users
- Station Managers
- Planners
- Data Collector
SmartView Project Objectives

1. To visualize and locate TNB assets on Google Maps
2. To display real time tripping and breakdown information on the map through integration with SCADA and MFFA system
3. To improve the performance of the application by providing fast searching functionalities (street address geocode engine)
4. Improvement of work process environment by providing mobile GIS services.
SmartView System Architecture

Web browser

Platform

TNB SMARTVIEW

TOMS

GIS

MFFA

SCADA

Ticket No., Cust Address

PE, PMU, MV/LV Location

Crew Vehicle

Real time Outage data
CMC – Tom TCS
1. Receive call
2. Create Report
   - Name
   - Address
   - Phone No
   - Ticket No/Group

Engineers/PPB update using PDA direct into Juris TCS (MFFA)

SmartView
- Auto-geocode and display pin for Ticket No/Group based on address and status.
- Display MV network asset with SCADA information.
- Display Crew Location from MFFA.

CMC with TNB SmartView Process Flow Improvement
SmartView Function Integration

- GIS
- MFFA
- TOMS
- SCADA
# System Component

<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>GIS</td>
<td>Asset Information &amp; Location</td>
</tr>
<tr>
<td>2.</td>
<td>SCADA</td>
<td>Breakdown Information</td>
</tr>
<tr>
<td>3.</td>
<td>MFFA</td>
<td>Breakdown team location</td>
</tr>
<tr>
<td>4.</td>
<td>TOMS</td>
<td>Ticket no &amp; Breakdown address</td>
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</table>
## SmartView System Features

<table>
<thead>
<tr>
<th>No.</th>
<th>Features</th>
<th>Description of the modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>GIS Data Importer</td>
<td>- Automation of importing of existing GIS data from Oracle 10g.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Change the map into Map API.</td>
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<tr>
<td>2.</td>
<td>SCADA Data Integration</td>
<td>- SOA integration with real time SCADA input data.</td>
</tr>
<tr>
<td>3.</td>
<td>MFFA Integration</td>
<td>- SOA integration with real time MFFA crew location input data.</td>
</tr>
<tr>
<td>4.</td>
<td>Layer Viewer</td>
<td>- View asset layer PMU, PPU, PE and Medium Voltage (MV)/ Low Voltage Cables.</td>
</tr>
<tr>
<td>5.</td>
<td>Real Time &amp; Outage Layer Display</td>
<td>- Display real time outage layer.</td>
</tr>
</tbody>
</table>
SmartView Roles & Functions

Distribution & Low Voltage Supply Management
1. Distribution Data
2. MFFA integration
3. SCADA integration
4. TOMS integration
5. StreetView
6. Free text Searching

Transmission
1. Transmission Data
2. MFFA integration
3. SCADA integration
4. TOMS integration
5. StreetView
6. Free text Searching

Generation
1. Generation Data
2. MFFA integration
3. SCADA integration
4. TOMS integration
5. StreetView
6. Free text Searching

Corporate Services
1. Corporate Service Data
2. MFFA integration
3. SCADA integration
4. TOMS integration
5. StreetView
6. Free text Searching

Careline
1. Substation location, MV cables, LV Cable, Customer Data
2. MFFA integration
3. SCADA integration
4. TOMS integration
5. StreetView
6. Free text Searching

Regulatory Economic & Planning (REAP)
1. Transmission Data
2. MFFA integration
3. SCADA integration
4. TOMS integration
5. StreetView
6. Free text Searching
Business Case
TNB Careline / LVSM

CMC Operator
• Receives customer complaint on power interruption
• Refers to TOMS to check breakdown status
• Unable to quickly update customer on progress of repair
• Unable to quickly update information to customer.

Integration to GIS, SCADA & MFFA
• Automation visualization of customer complaint/breakdown (ticket) location on Google base map.
• Visualization of GIS network & asset location.
• Access to real-time breakdown data from SCADA (MV outage)
• Access to fault finder location on site and current ticket status from MFFA (for LV breakdown)
• Operation boundaries on map for customer ticket assignment.

Benefits
• Improved customer experience
• Able to provide immediate feedback to reassure customer
• CMC agent can visualize the customer and breakdown location.
• Single point of reference for breakdown and crew information.
• Fast ticket assignment according to operation boundaries

Before

After
## Operations Support

### Operations Team & Management
- Attends breakdown on site
- Need to manually get information from RCC on network SCADA status.
- Need to manually get information from breakdown crew on-site status.
- To get fastest route and correct location to site.

### SmartView Mobility & Map Dashboard
- Searching by PE name or address.
- Navigate to site, based on fastest route as recommended by Google Maps (real-time traffic info)
- Visualize real time outage location (MV)
- Get online and updated breakdown status from crew on-site.
- Visualize breakdown and crew vehicle location.

### Benefits
- Shorter respond time to site.
- Increased productivity (information on-the-go)
- Map dashboard for breakdown information and status.
- Consolidated information for operation support.

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**Current**

**Future**
New User Request: Supply New Connection & Service Team

PKP front liner & Service Team

- Receives new supply application from contractor or customer
- Submits form to service team for site visit and cost estimation
- Prone to inaccurate data e.g. address
- Estimation of length of cable for supply connection or replacement of faulty cable.

Access Smartview via desktop

- Enter address or coordinates to view customer location and network connectivity.
- Verify with contractor/customer on exact location of new supply application.
- Calculate and estimate cable length on the spot.
- Identify nearest network connectivity point (e.g. Pole etc..)

Benefits

- Improved response time to customer/contractor for the request.
- Provide accurate info for service team.
- Increased productivity (in support of Distribution’s 7 days supply connection initiative)
Benefits of SmartView

From ... To ...

Unable to provide real time response/information to the customer
CMC agents able to view real time information and advice customer in detailed/immediate information

Unable to locate the exact location of outage address given by customer.
CMC agent can visualize the exact outage address/location via the map display

Unable to get Real-time Outage information from SCADA & Fault Finder crew location.
Outage information & Fault Finder Crew location can be view on the map at real time

Multiple sourcing of information (TOMS, SCADA, MFFA, GIS)
Single channel (360° view) of information hence improve CMC agent handling time
TNB GIS ACHIEVEMENTS

- First Malaysian Company to Have GE Smallworld Full-Time Internal Support Team
- First Company in South-East Asia to Deploy the Integrated Data Capture (IDC) Devices & In-House Data Collectors
- Awarded – GIS Excellence Award for Utilization of GIS Technology for Electric Utilities 2011
- Awarded – Asia Geospatial Excellence Award for Application of Geospatial Technology in Electricity 2015
### Outcome Measure

<table>
<thead>
<tr>
<th>EESI satisfaction</th>
<th>Average Handling Time</th>
<th>No’s of Return Calls to Customer</th>
</tr>
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<tbody>
<tr>
<td>By providing reliable and friendly user system to the agents, it has increase staff’s satisfaction. The average satisfaction survey scored 4 points (out of 5 scale points)</td>
<td>Reduce average handling time (AHT) from 3.04 minutes in January to 2.57 minutes in April 15 – June 15</td>
<td>Reduction by 70% of return calls to customers</td>
</tr>
</tbody>
</table>

**EESI increase**

**Within new target** 3 minutes

**Reduce return call to customer**

**Improve accuracy information to the customer by 100%**
SmartView Web Access Log in

SmartView can be accessed via TNB GIS Web portal through tnbgis.tnb.com.my/TNBWebPortal or through URL: https://smartview.tnb.com.my
This homepage basically for user’s to select their roles and map view.
TNB SmartView

ADDRESS SEARCHING

SCADA OUTAGE LOCATION

FAULT FINDER LOCATION

TNB ASSETS LOCATION
THANK YOU