

Turning Information
into **Knowledge**



Driving Operational Excellence through
OT-IT Integration & Pre-built Geospatial Enabled Actionable Insights for Utilities



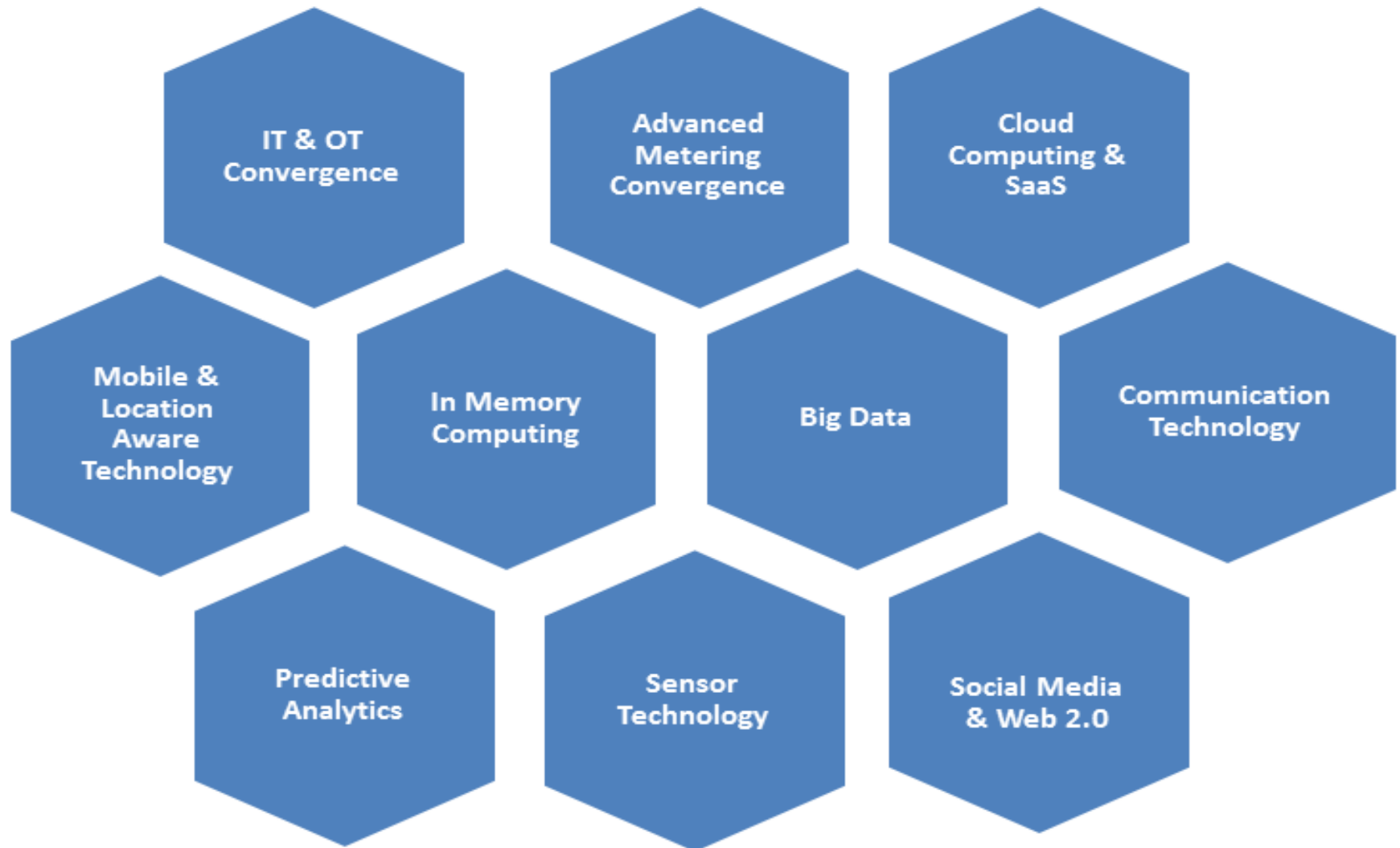
Tariq Farooqui
24th January 2017

Variety of Business Challenges

- **Aging infrastructure** with increasing capital needs to replace and upgrade
- **Increased Customer Expectations**
- **Uncertain economy** and financial instability
- **Changing workforce**
- **Regulatory and legislation compliances** - Reliability and Availability
- **Environmental Stewardship**
 - Energy efficiency, carbon reduction etc.
- **Climate Changes** impacting the demand and cost of assets maintenance
- Need of Actionable Role based insights for informed decision making



Nexus of Technology Trends Impacting



Cross functional Performance Integrity

Breaking down the silos



100 % COMPLIANCE
Best quality SERVICES
No complaints
Gain: Sustainable Business

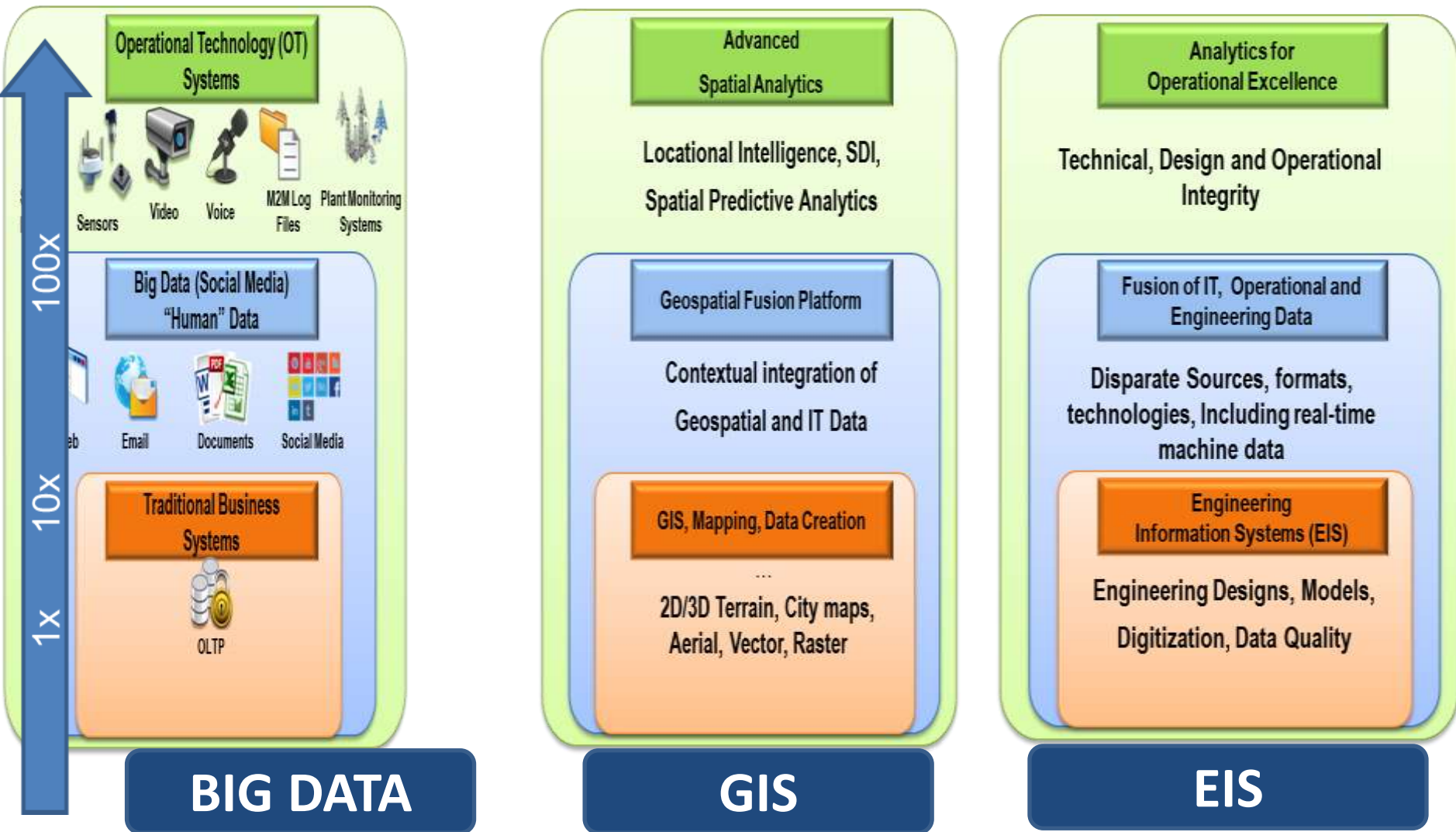
OPERATIONAL EXCELLENCE
Faster Data Access
KPI Managers
Business Intelligence
Effect: Cost Reduction

360° INFORMATION FLOW
Information at finger tips
Real time performance monitoring
Gain: Satisfied Customers and Stakeholders

BEST IN BUSINESS
Continual Improvement
Industry Trend setter
Gain: Profit maximization

Operational Excellence can help you improve stake holder value and maximize profits

ROLTA BRINGS COMPREHENSIVE & UNIQUE TECHNOLOGY SOLUTIONS



ROLTA SOLUTIONS BRING 100x VALUE OF DATA
Turning Technologies into Outcomes : Create-Fuse-Drive Insights

Comprehensive and In-depth Cross Functional Coverage Business Process Driven Knowledge Model – 3000+ KPIs



Unified Performance Integrity Model brings cross-functional visibility & modularity

Supports Comprehensive Operational Excellence Program



Operational Excellence : Enterprise

Station: All Stations

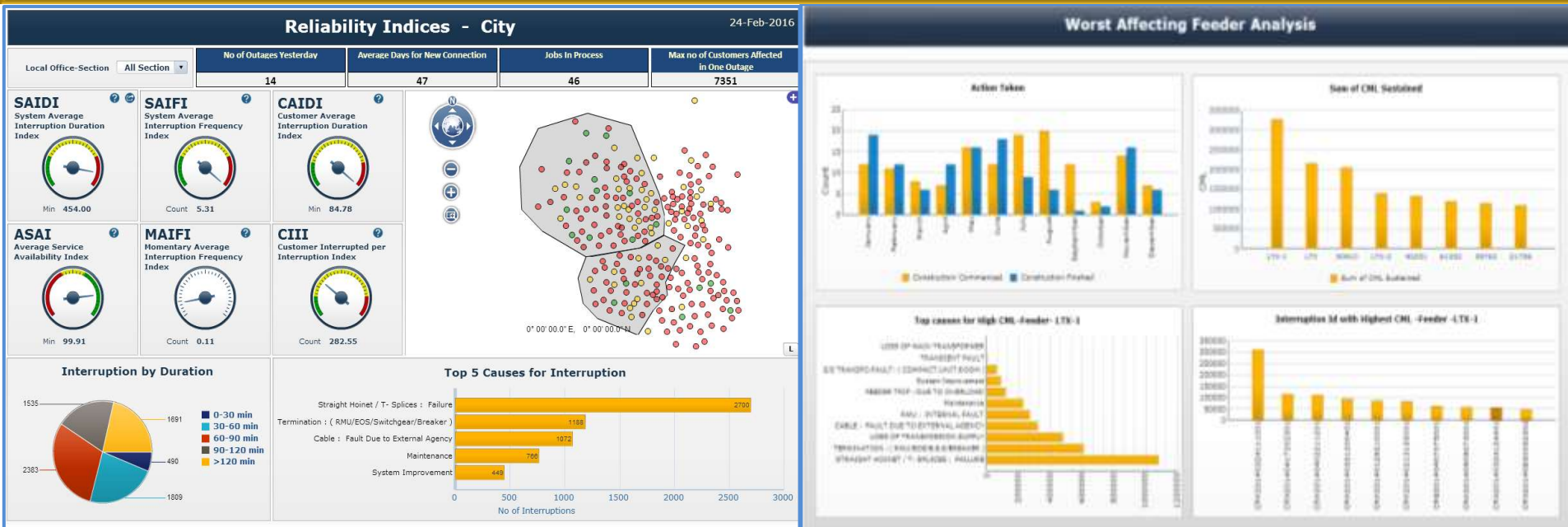
Date : Jan 20, 2017 4:19:45 PM

Unit: All Units



Power Distribution Performance Monitoring

Power Distribution Network Reliability Indices and Root Cause Analysis of Power Interruption



Geospatial Enabled Network Reliability, Outage Management and Monitoring

Business Need:

- Integrated utility power network performance indices and drill-down into root cause analysis

Rolta Solution:

- Rolta OneView™ for role-based industry-specific insights
- Rolta iPerspective™ for connecting multiple, disparate systems
- Rolta OnPoint™ for embedded spatial analytics

Key Impact:

- Proactively Detect power interruption and Identify Root cause of Power failure.
- Improved Power network Availability and Utilization, tracking of power failure.
- Identify top worst affecting feeders and Analysis
- Link Power Sub-station on Geospatial Map

Power Distribution Enterprise Dashboard



Reliability Indices - City

24-Feb-2016

Local Office-Section

All Section

No of Outages Yesterday

14

Average Days for New Connection

47

Jobs In Process

46

Max no of Customers Affected
in One Outage

7351

SAIDI

System Average
Interruption Duration
Index



Min 454.00

SAIFI

System Average
Interruption Frequency
Index



Count 5.31

CAIDI

Customer Average
Interruption Duration
Index



Min 84.78

ASAI

Average Service
Availability Index



Min 99.91

MAIFI

Momentary Average
Interruption Frequency
Index



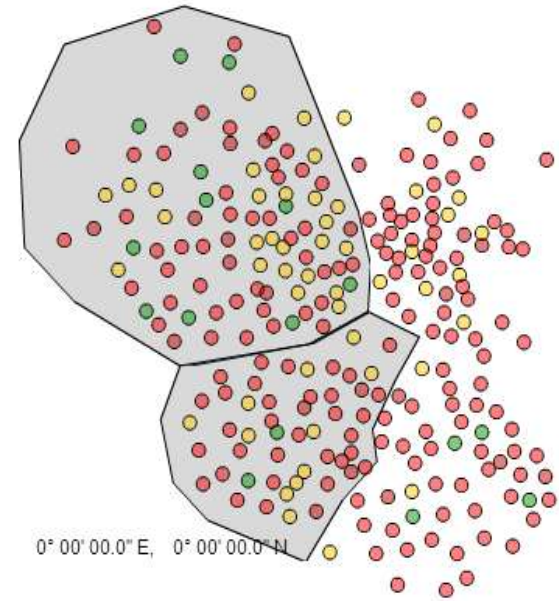
Count 0.11

CIII

Customer Interrupted per
Interruption Index

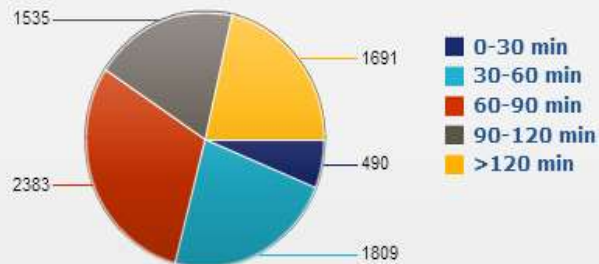


Count 282.55

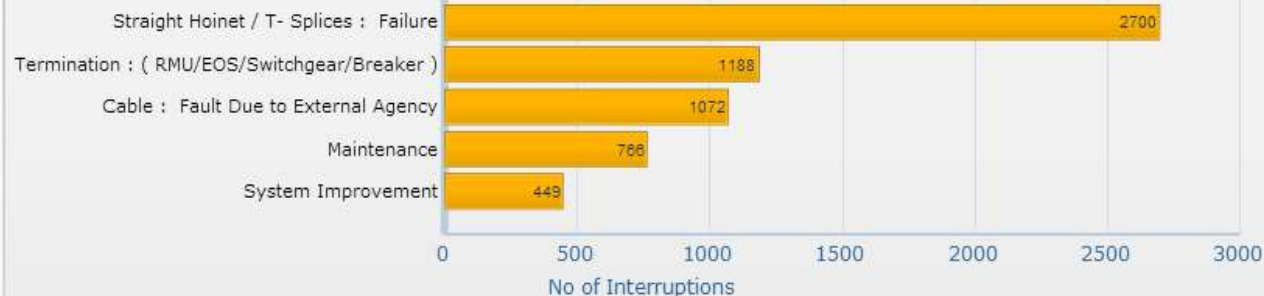


0° 00' 00.0" E, 0° 00' 00.0" N

Interruption by Duration



Top 5 Causes for Interruption



Details for all Sections – SAIDI

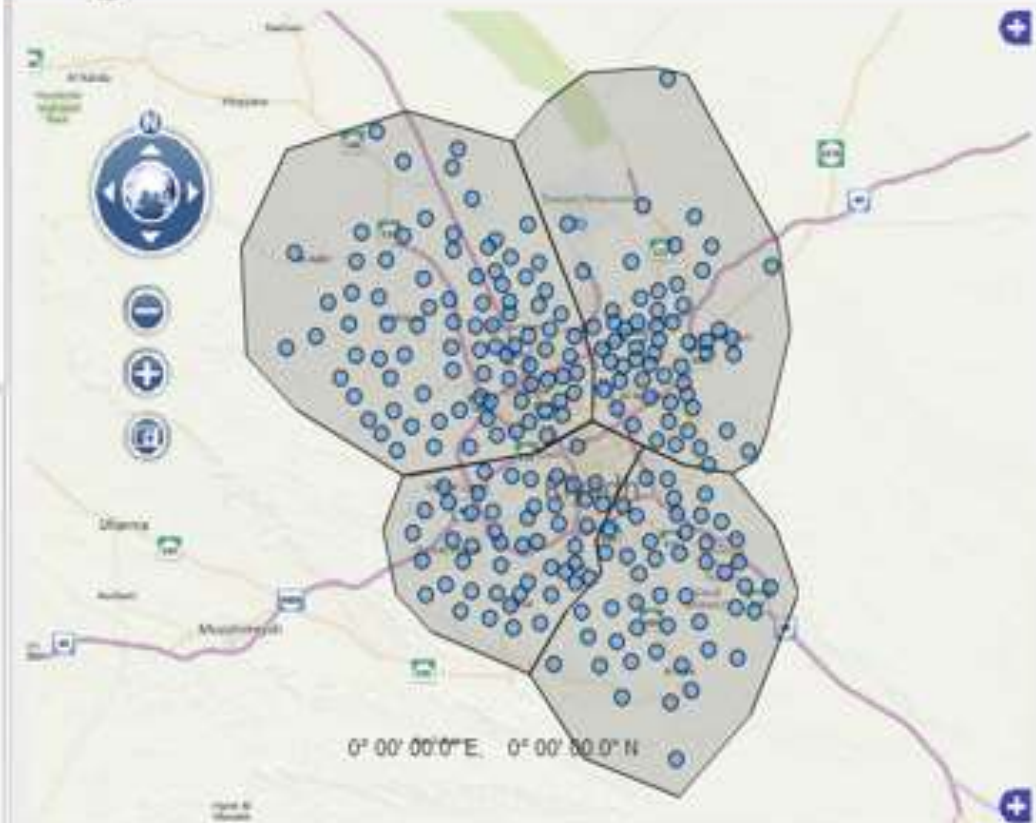
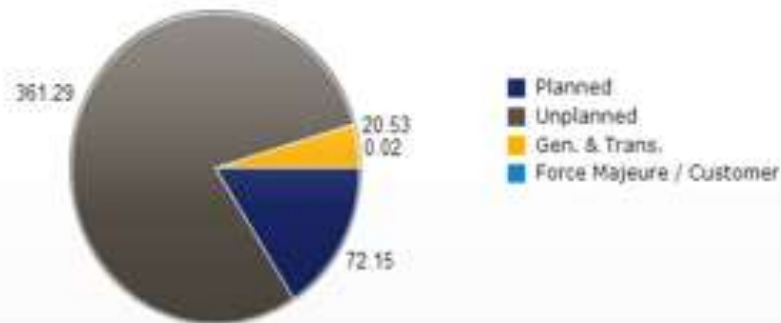
18-Jun-2015

Location 1 Region wise

All Sections



Location 1 Category wise



Location 1 Monthly



CML Monthly



Transformer Health

(Transformer ID: 20005362)

Division : B

Transformer Type : HT

Transformer ID : 20005362



Design Parameters

Type of Transformer	Oil
Rating	20 MVA
Date of Manufacturing	4-Aug-1966
Frequency	50 Hz
Type of Cooling	ONAF
Oil Capacity	2000 Kg
Weight	6000 Kg
Voltage	
HT	33 kV
LT(No Load)	11 kV

Online Parameters

Voltage (kV)	
HT	32.6 ●
LT	10.9 ●
Current - Load (Amps)	
HT	273 ●
LT	889 ●
Load ratio %	84.6 ●
Tap Position	4
Oil Temperature(deg C)	
Top OIL	69 ●
Winding Temperature(deg C)	74 ●

Reliability Index ?

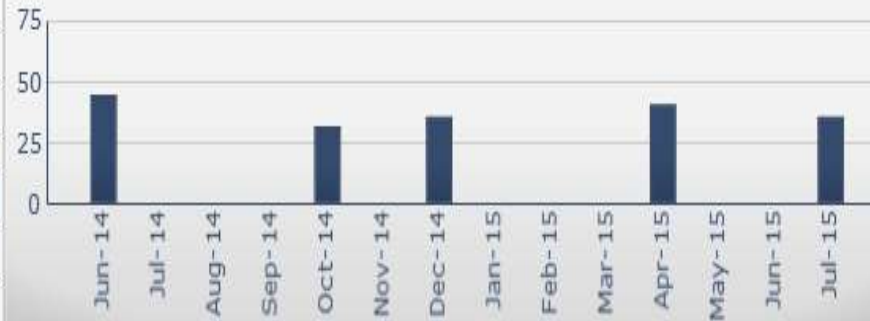


Categories

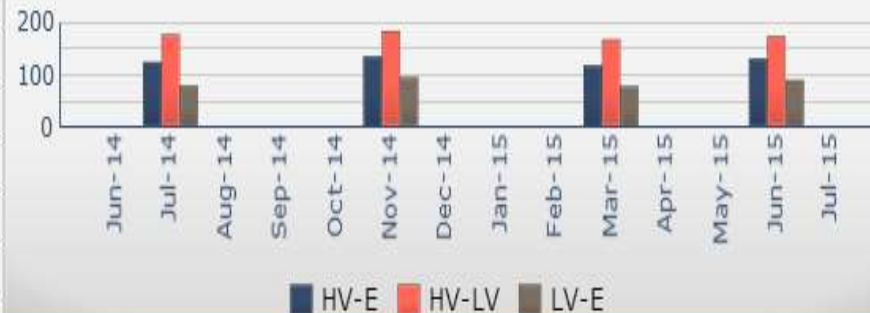
Categories	Score	Index
Electrical	12	60.0%
Temperature and Aging	16	53.3%
Health of Oil	24	48.0%
Overall	52	52.0%



Breakdown Voltage Test



Insulation Resistance Values



Asset Performance

PM Compliance	76.2% ●
MTBF	1217 ●
Stockout Spares	2
Failures (Last 10 Years)	3
Maintenance Cost	\$14,238.0
Next Overhaul Date	19-Nov-2015

Test Parameters

Dielectric Strength /kV	31.1 ●
Acidity /mg(KOH)·g-1	0.98 ●
IFT(25°C) /mN·m-1	22.7 ●
tanδ (%) (90°C)	0.71 ●
Color	Dark Yellow ●

Asset Health & Condition Monitoring



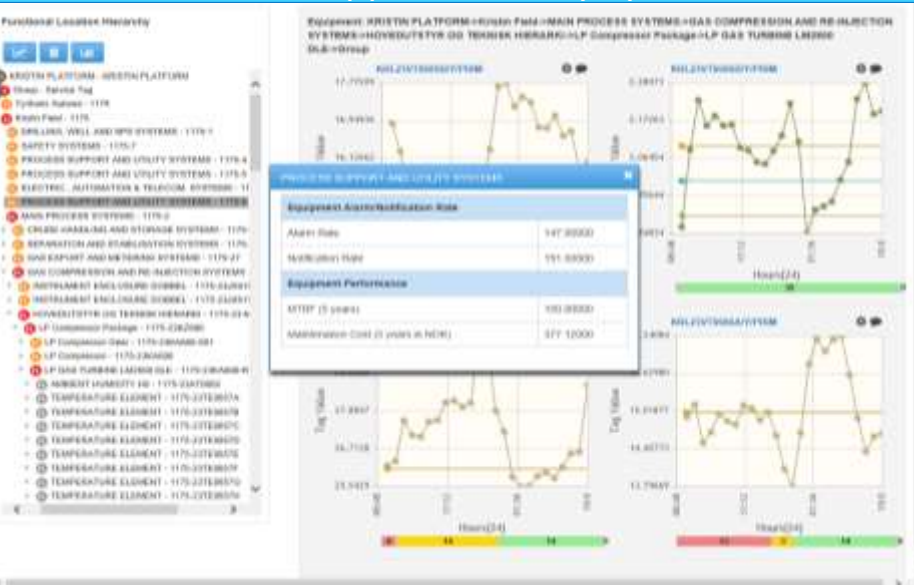
Operating Limits



Service Tag Trends & Performance



Process Support & Utility Systems



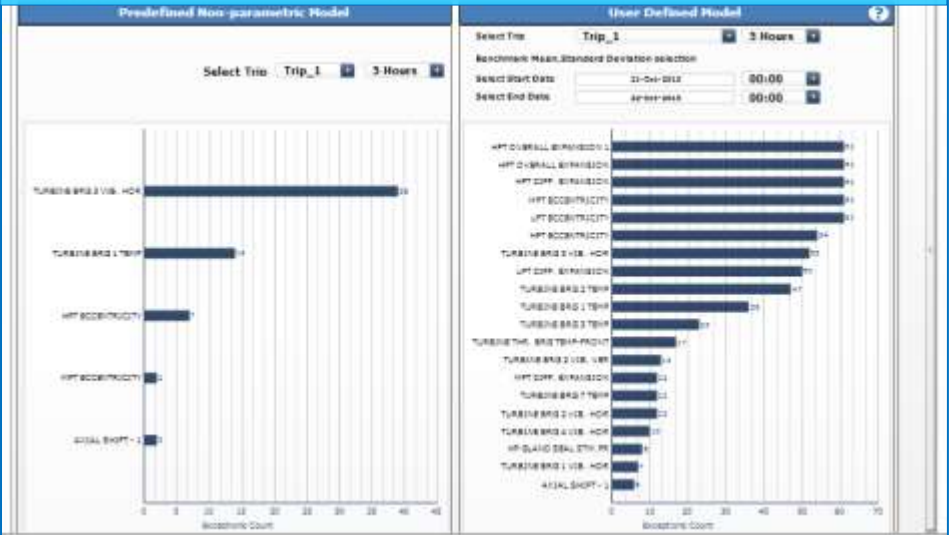
Add Comments



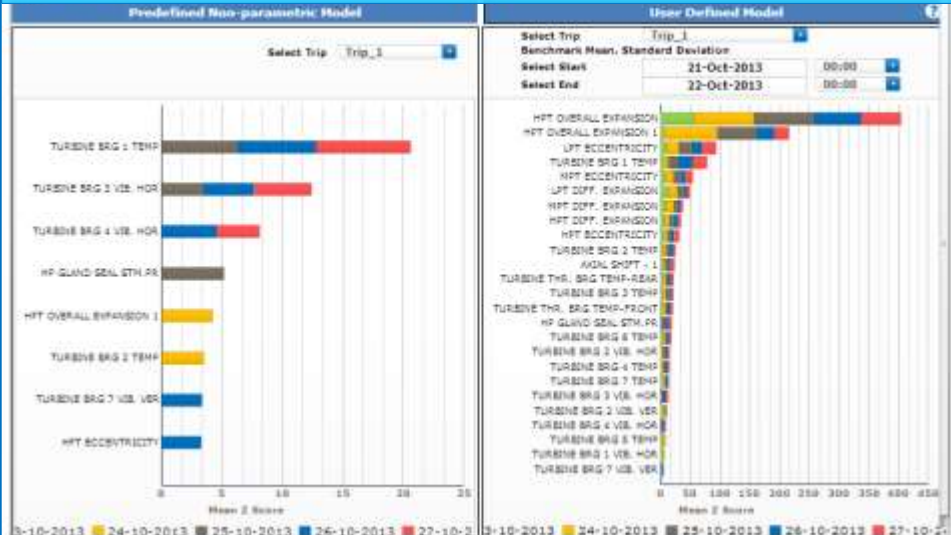
Asset Health & Condition Monitoring



Critical Variable Identification



Critical Variable Identification



Diagnostic Analysis



Real Time Alerts



Water Distribution Performance Management

Customer Satisfaction Analytics and real-time Tracking of Assets



Geospatial Enabled Customer Satisfaction, Complaints, and Asset Monitoring

Business Need:

- Integrated utility asset performance indices, customer satisfaction indices, drill-down into root cause analysis

Rolta Solution Innovation:

- Rolta OneView™ for role-based industry-specific insights
- Rolta iPerspective™ for connecting multiple, disparate systems
- Rolta OnPoint™ for embedded spatial analytics

Key Impact:

- Proactively Detect Hazardous Conditions before Utility Works.
- Improved Asset Availability and Utilization, Improved demand tracking and forecasting.
- View Utilities Assets & Assets Details as Features and Text overlay respectively on Spatial Map.
- Link Documents to Assets on Geospatial Map

Water Distribution Enterprise Dashboard



Welcome: **Vinod Ninan** | Applications ▾ | Preferences | Help menu ▾ | Log off

Home Documents **Affinity Waters** Loading... GAS Distribution Overview

< Operations Control Room Operations Service Desk Business KPIs Executive Operational Dashboard **Executive** Repeat Jobs Incidents Analytics Predictive Meter Data Management Smart Meter > ... Edit BI workspace

Executive

Ashford Reservoir

19 October, 2016

Unaccounted Water Last Day



3,383.00 m³

DMA with Max Demand - 02960



306.00 m³

Available Distribution Storage
Reservoir Capacity



9,946.00 m³

Lowest Reservoir Level



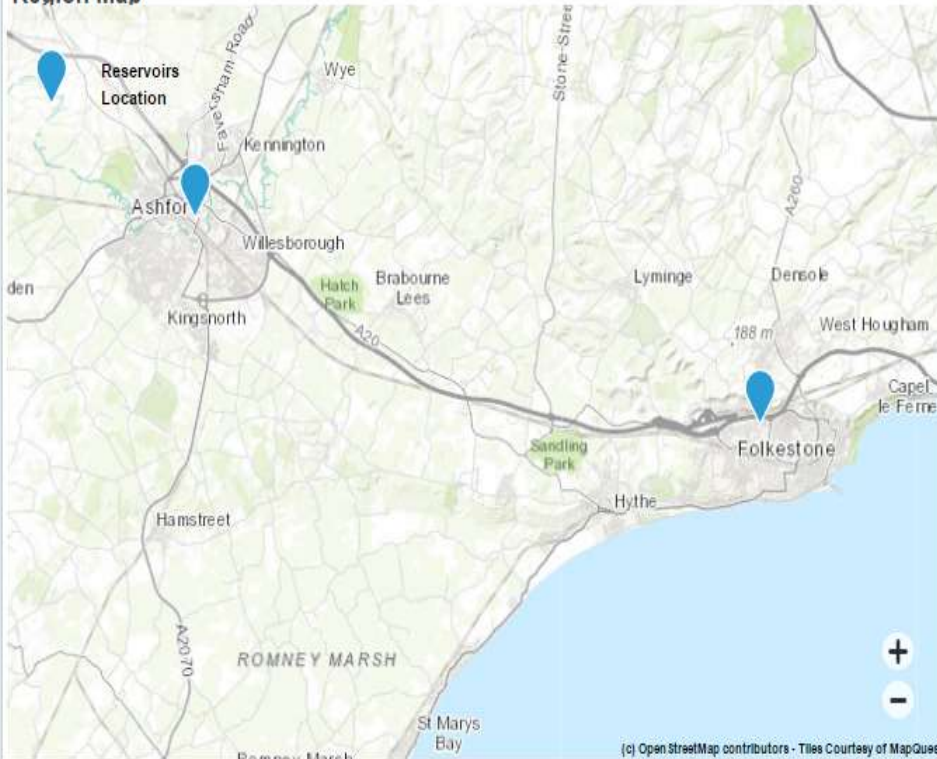
75.00 %

Missing Meter Data

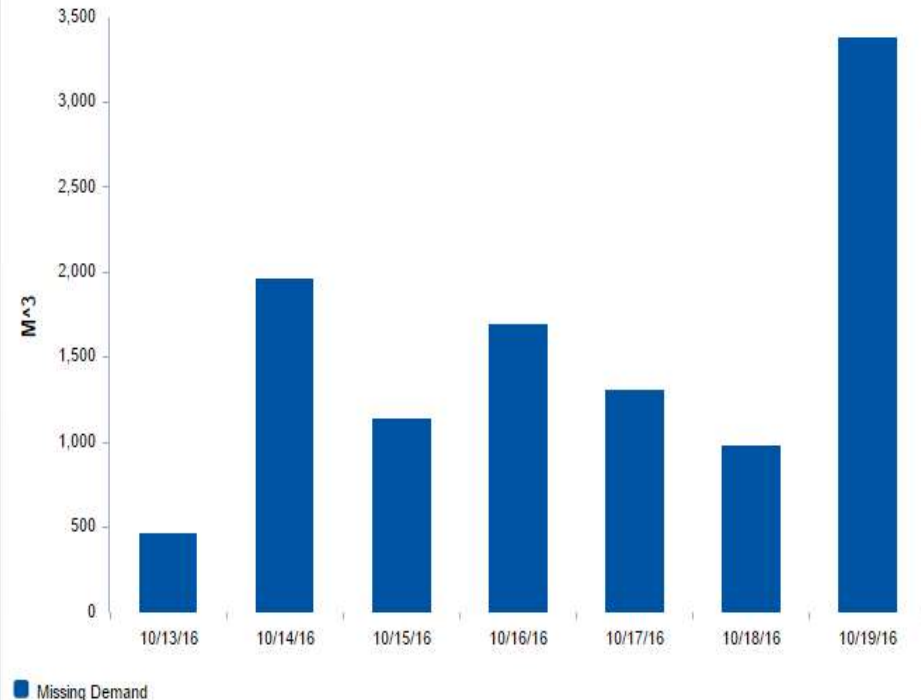


46.00 meter

Region Map



Unaccounted Water- Weekly



Situational Awareness : Operational Control Room



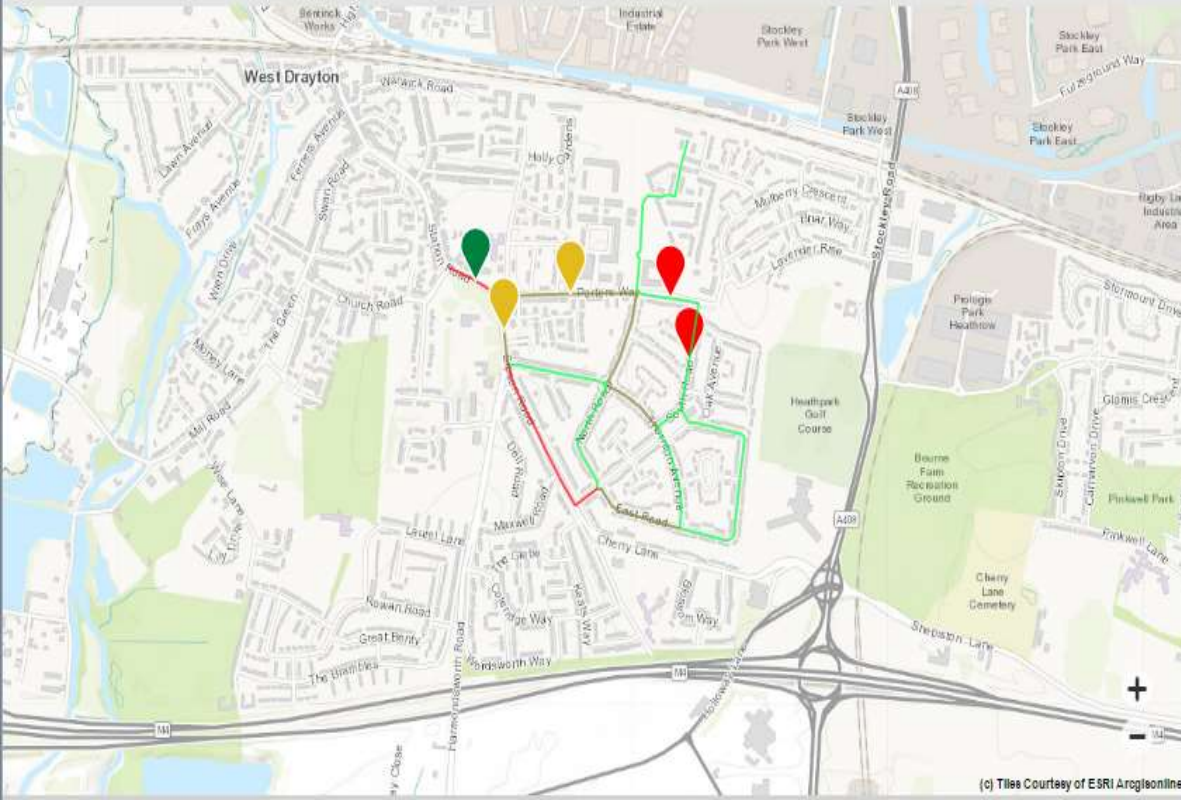
OneView™
Powered by
SAP HANA

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Home Documents Affinity Waters Loading... GAS Distribution Overview

< Operations Control Room Operations Service Desk Business KPIs Executive Operational Dashboard Executive Repeat Jobs Incidents Analytics Predictive Meter Data Management Smart Meter Re > ... Edit BI workspace

Operations Control Room



(c) Tiles Courtesy of ESRI ArcGISonline

DMA	Zone	Priority	Complaint Type	Source	Status	Confidence	Impact	Loss Mid
1234	Kings Rd	P1	Lo Pressure	Waternet	WIP	High	Customer	1.70

Showing 1 to 1 of 1 entries

DMA	Zone	Cust No	Cust Type	Postal Code
1234	Kings Rd	3300	Commerical	TW61AP
1234	Kings Rd	4400	Retail	TW61WA

Showing 1 to 2 of 2 entries

Customer No	Work Order Type	Work Order Number
3300	WSP	WO660
3300	WSP	WO846
3300	LED	#
3300	M & R	WO611
3300	QOS	WO987

Job Status: WO846

Start Time	Priority	Timer	Description
10:46	P2	11:15	Isolation, Excavation, Modelled

Showing 1 to 1 of 1 entries

General data

Resource data

Type	Name	Phone No
Prod_TL	A Smith	780 167 7067
RESM	B Builder	780 167 7089
Stand_By	A Jones	780 167 7068

Showing 1 to 3 of 3 entries

Situational Awareness : Operational Service Desk



OneView™
Powered By
SAP HANA

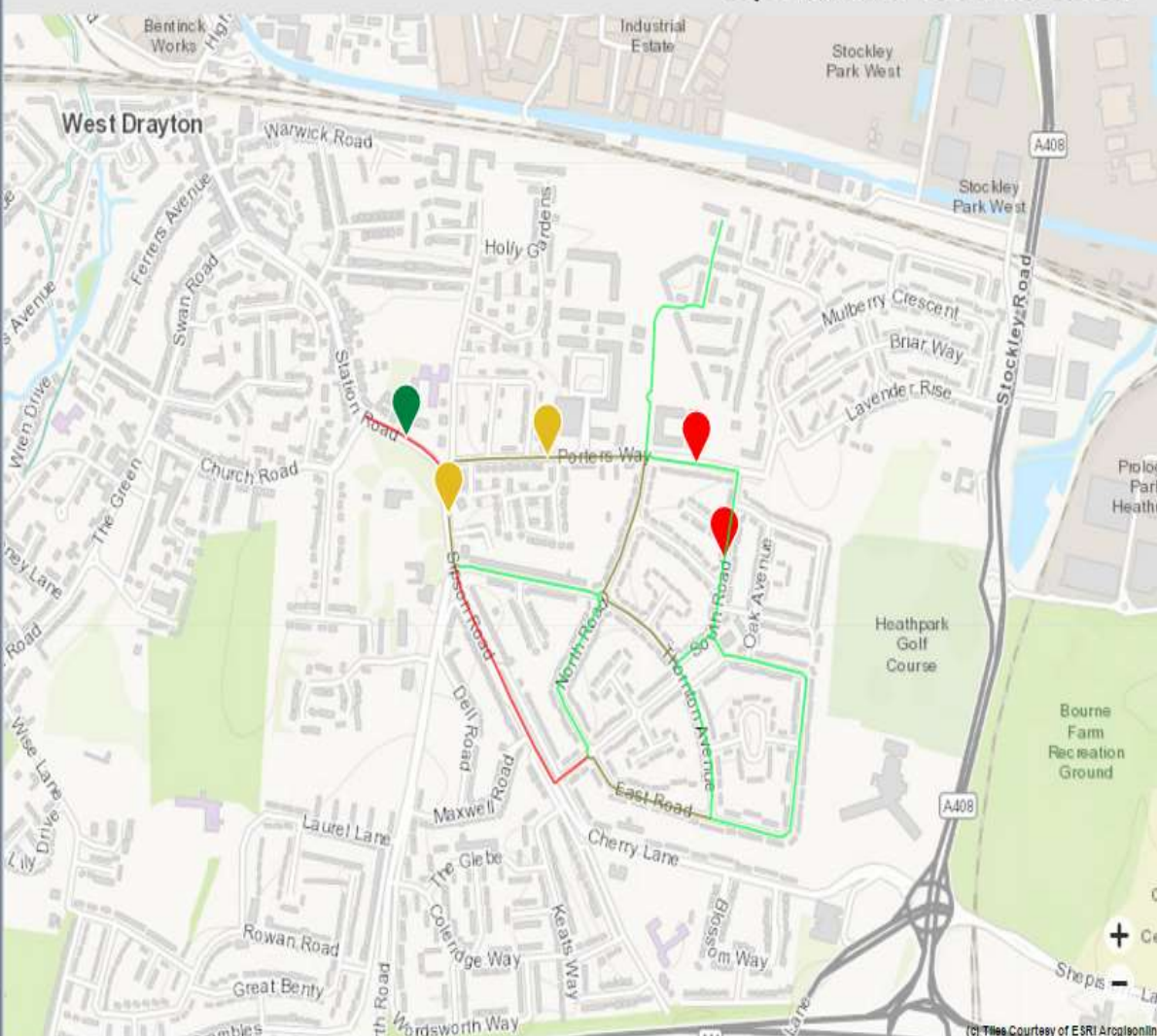
Welcome: Vinod Ninan | Applications ▾ Preferences Help menu ▾ Log off

Home Documents Affinity Waters Loading... GAS Distribution Overview

Operations Control Room Operations Service Desk Business KPIs Executive Operational Dashboard Executive Repeat Jobs Incidents Analytics Predictive Meter Data Management Smart Meter R Edit BI workspace

Operational Service Desk

Operations Service Desk



DMA	Zone	Cust No	Cust Type	Postal Code
1234	Kings Rd	3300	Commerical	TW61AP
1234	Kings Rd	4400	Retail	TW61WA
2345	East RdL	3310	#	TW61EW

Customer No	Work Order Type	Work Order Number
3300	WSP	WO660
3300	WSP	WO846
3300	LED	#
3300	M & R	WO611

Start Time	Priority	Timer	Description
01:46	P2	11:15	Isolation, Excavation, Modelled
01:46	P3	11:15	Isolation, Excavation, Modelled

General data

Resource data

General Detail	General Description	Status
Cluster	#	#
Telemetry	Kings Road low-45%	14:30pm
Tracker	Fred Jones	14:15pm
Valve Ops	6 acacia avenue	Closed
Waternet	Logger Id	none

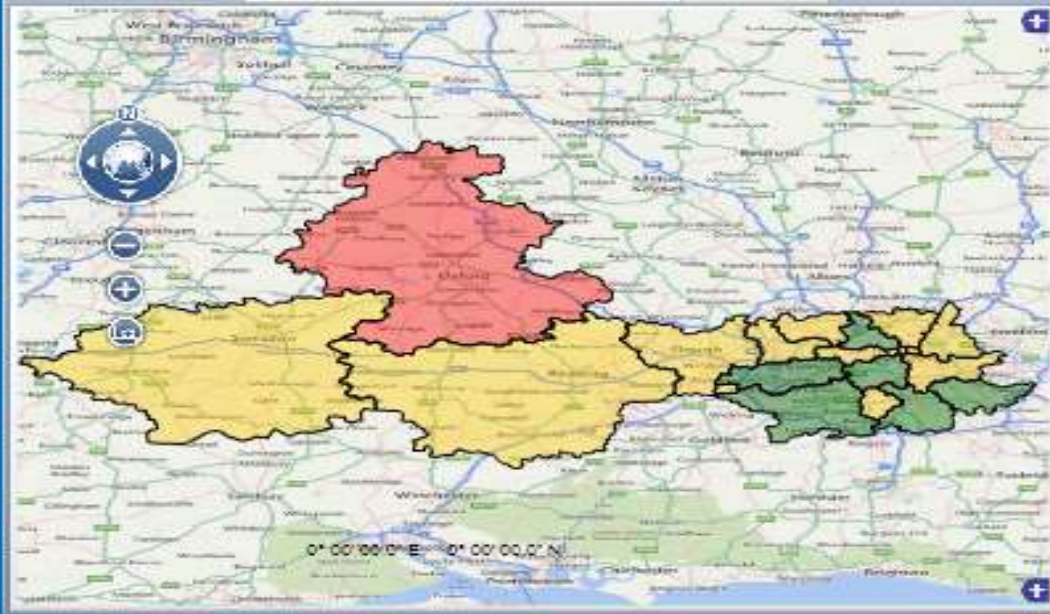
usefull links
www.digdat.com
www.roadworks.org

Waste Water Prediction Analytics Solution

Wastewater Network Monitoring System

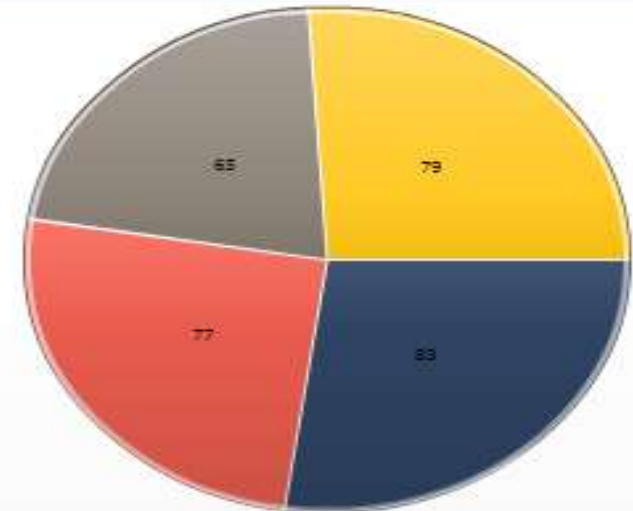
Districtwise Map - No. of Alarms

ALL



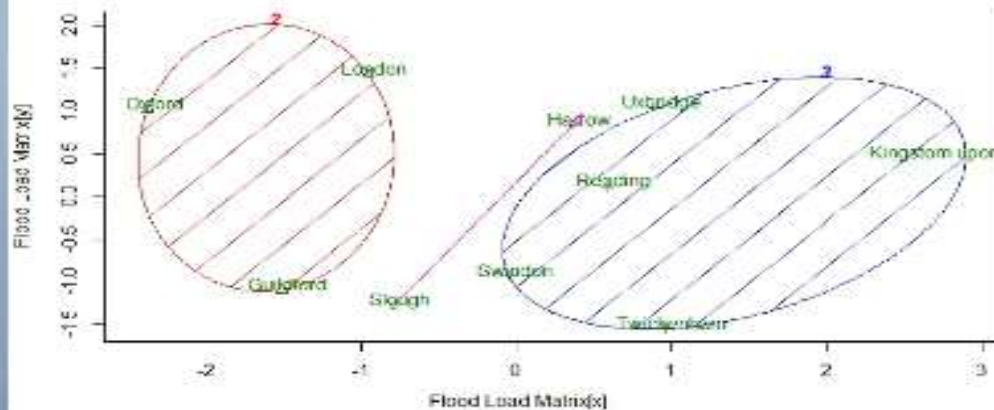
Districtwise System Condition(No. of Alarms)

ALL



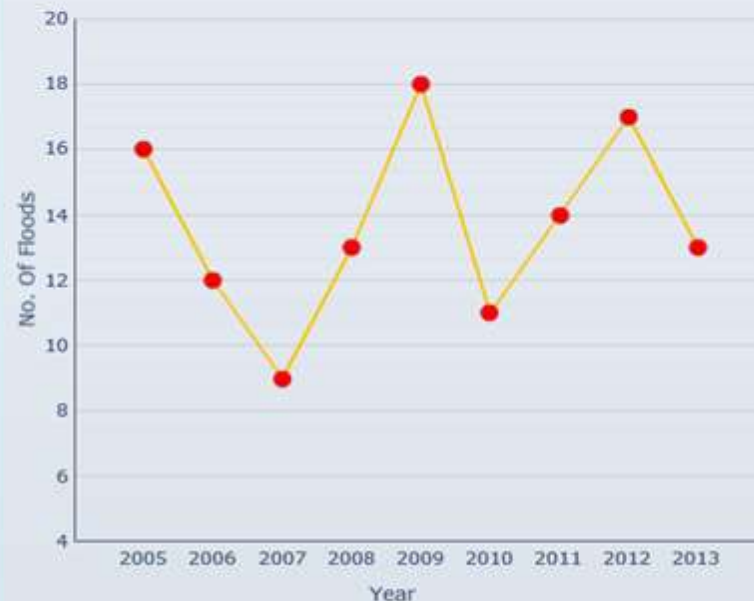
■ Intrusion ■ Tripping ■ High Temp. ■ Rapid Mix Fail

K-Means Cluster - Historical Flood Analysis

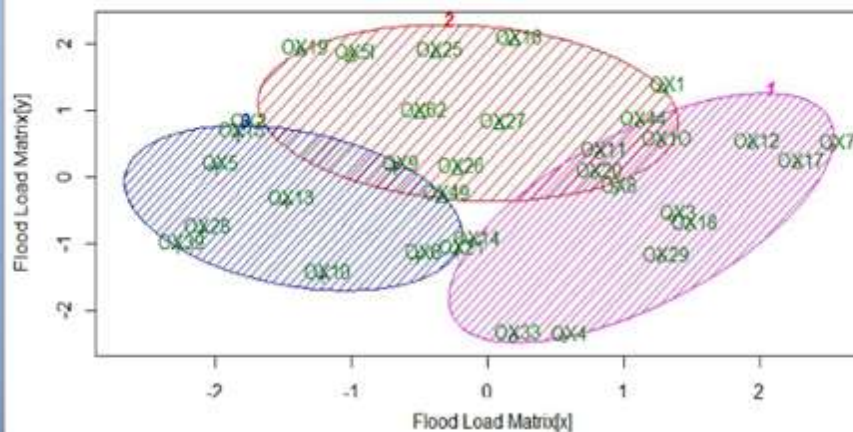


District No. of Alarms Status

Oxford	● 24	Risk
Guildford	● 19	Warning
London E	● 19	Warning
Slough	● 17	Warning
Harrow	● 16	Warning
London WC	● 13	Warning
London SE	● 13	Warning
Reading	● 12	Warning
London N	● 12	Warning
London N	● 12	Warning
Swindon	● 12	Warning
Uxbridge	● 11	Warning
London W	● 11	Warning
Sutton	● 11	Warning

☒ No of calls

K Means Cluster - Historical Flood Analysis (Post-outcodewise)



Weather Predictions for Next 24 hours

Hrs	Rainfall(mm/s)	Temp(°C)	Prediction
14:00	4	10	Rain
16:00	4	10	Rain
18:00	3	8	Rain
20:00	4	6	Rain
22:00	3	4	Rain
0:00	2	4	Light Rain
2:00	1	3	Light Rain
4:00	0	2	Cloudy
6:00	0	3	Cloudy
8:00	2	5	Light Rain
10:00	2	7	Light Rain
12:00	3	8	Rain

Wastewater Network Monitoring System



Geo Flood Analysis - OX-SWT-0

Predict Flood Impact:

3 Hours

6 Hours

9 Hours

Pump Det...

Select Pump:

PS260301

PS260302

PS260303

PS260304

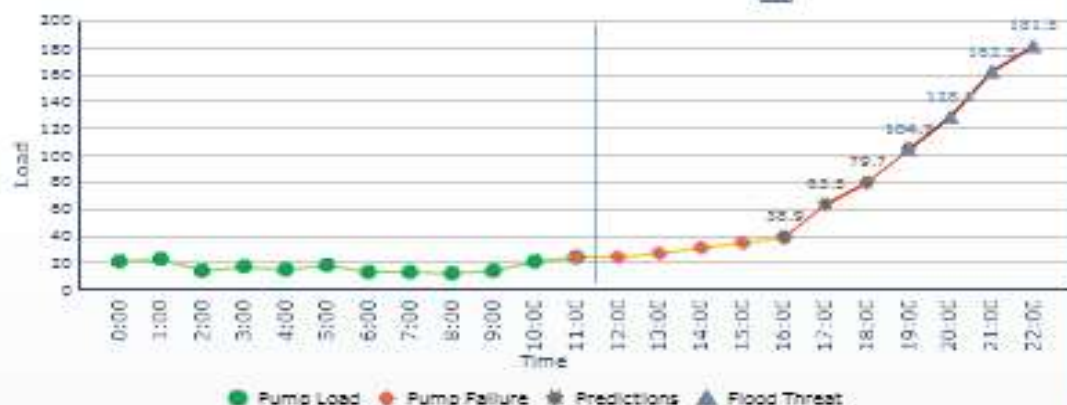
Pump Details

Parameter	Value
Pump ID	PS260301
Asset Tag Number	TW-PACDU111-P104
Acquisition Date	37277
Make	KSB
Acquisition Value(\$)	1650
Suction Pressure(Kg/Cm ²)	2.83
Discharge Pressure(Kg/Cm ²)	11.01
Inlet Temperature	5.9
Outlet Temperature	7.8
Pump Condition	OK

Flood Predictions for Failed Pump

Current Time: 11:25 AM

☒ Review Forecast on Map



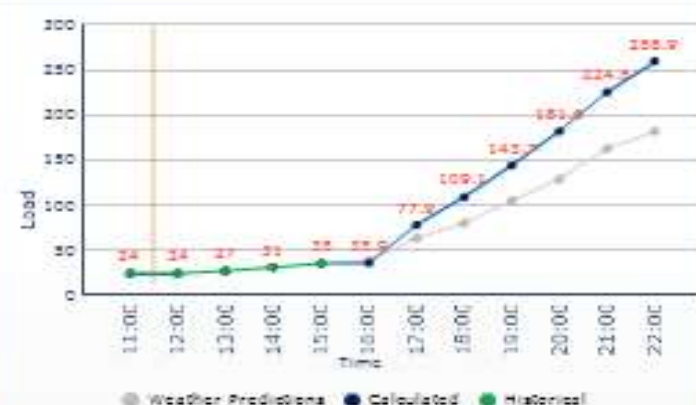
Scenario Based Prediction Calculator

Rainfall (mm/hr):

4.00

Blockage:

Yes



Wastewater Network Monitoring System

Geo Flood Analysis - OX-SWT-02

Predict Flood Impact:

3 Hours

6 Hours

9 Hours



Route

Pump Det...

Pump Station Details:

PS ID: P52603

PS

OX2 9LA

Service Station

Service Station: 5500362

Postcode: OX1 1NJ

Gang Availability: Gang0163

Gang Size: 4

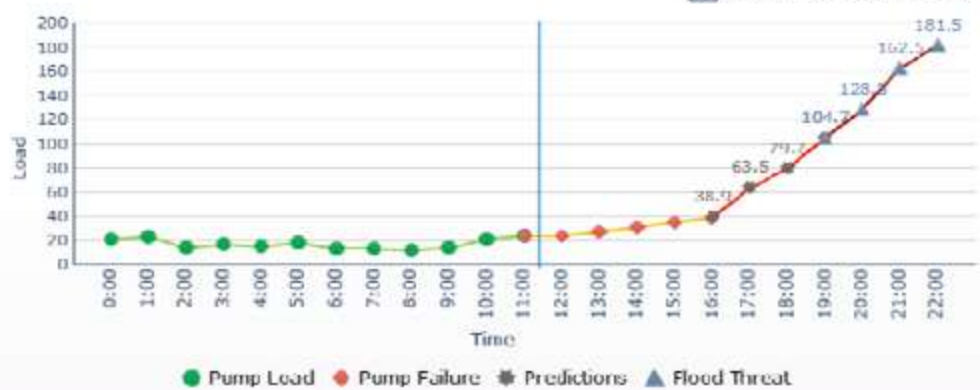
Availability: Yes

Show Route

Flood Predictions for Failed Pump

Current Time: 11:25 AM

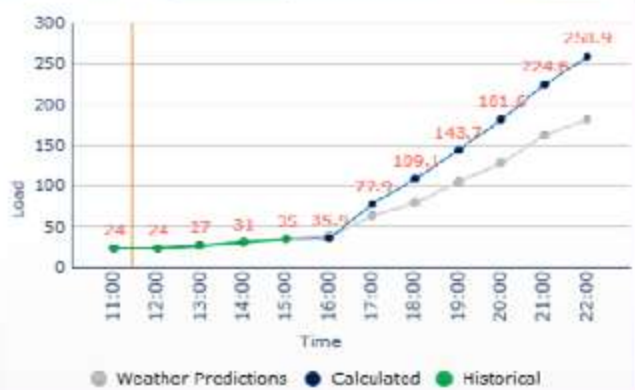
☒ Review Forecast on Map



Scenario Based Prediction Calculator

Rainfall (mm/hr): 4.00

Blockage: Yes



Wastewater Network Monitoring System

Geo Flood Analysis - OX-SWT-02

Predict Flood Impact:

3 Hours

6 Hours

9 Hours



Route

Pump Det...

Pump Station Details:

PS ID: PS2603

PS

OX2 9LA

Service Station

Service Station

SS00362

Postcode:

OX1 1NJ

Gang Availability:

Gang0163

Gang Size:

4

Availability:

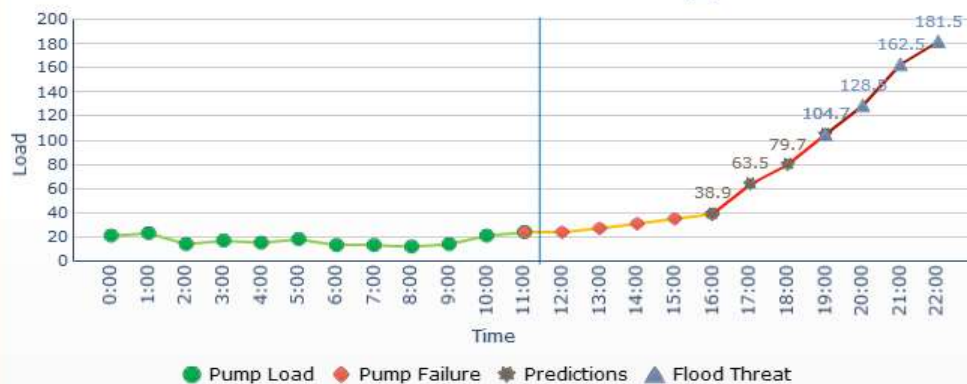
Yes

Show Route

Flood Predictions for Failed Pump

Current Time: 11:25 AM

☒ Review Forecast on Map

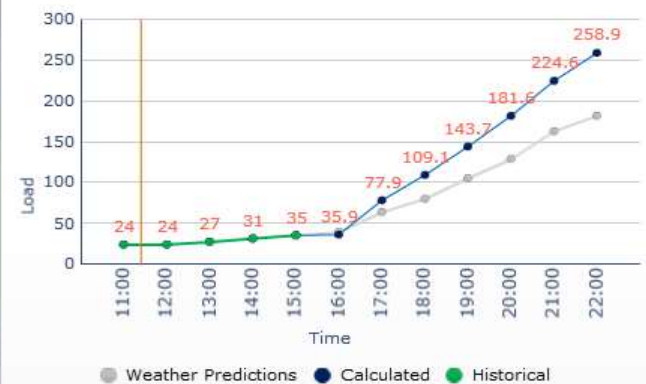


Scenario Based Prediction Calculator

Rainfall (mm/hr):

4.00

Blockage: Yes





Wastewater Network Monitoring System

Geo Flood Analysis - OX-SW1-02

Predict Flood Impact:

3 Hours

6 Hours

9 Hours

Route

Pump Det...



Pump Station Details:

PS ID: PS2603

PS

OX2 9LA

Service Station

Service Station SS00362

Postcode: OX1 1NJ

Gang Availability: Gang0163

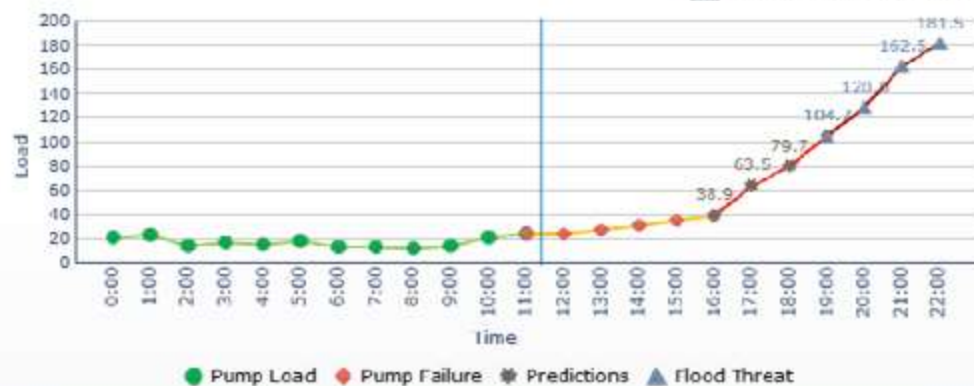
Gang Size: 4

Availability: Yes

Show Route

Flood Predictions for Failed Pump

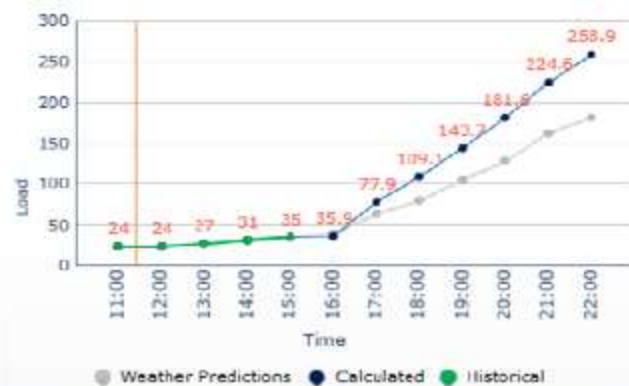
Current Time: 11:25 AM

☒ Review Forecast on Map

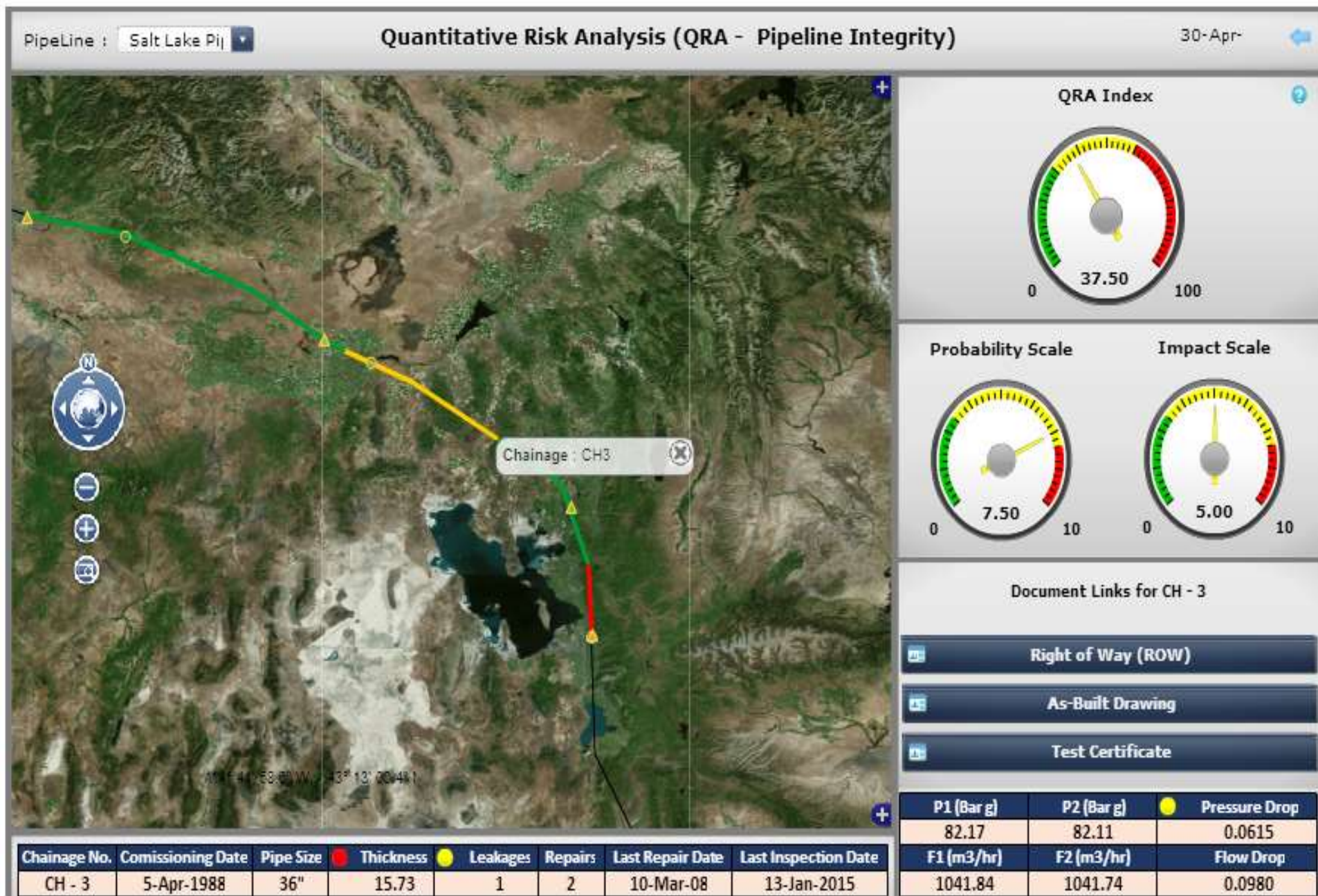
Scenario Based Prediction Calculator

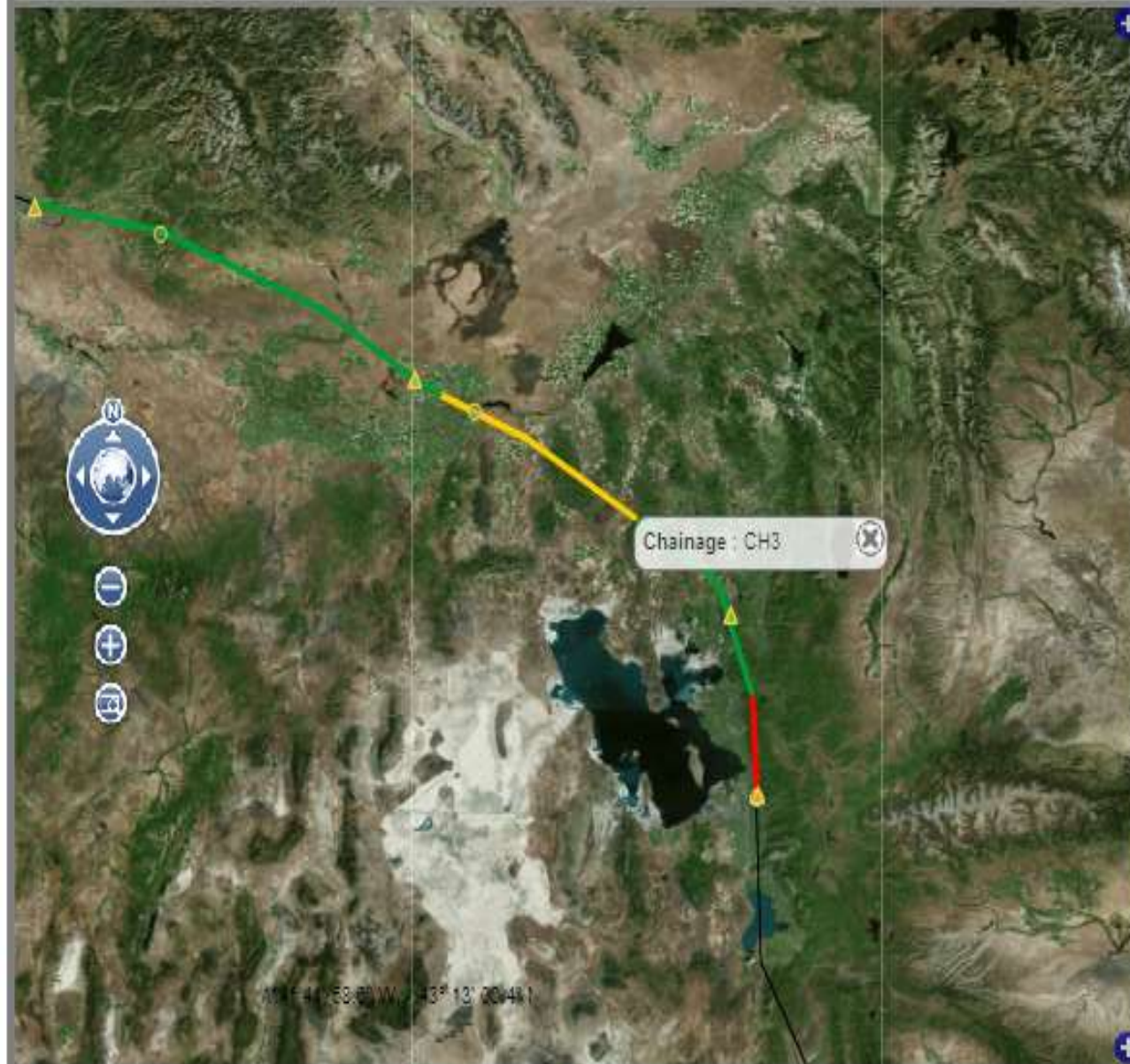
Rainfall (mm/hr): 4.00

Blockage: Yes



• GAS - Distribution Performance Monitoring





QRA Index



Probability Scale



Impact Scale

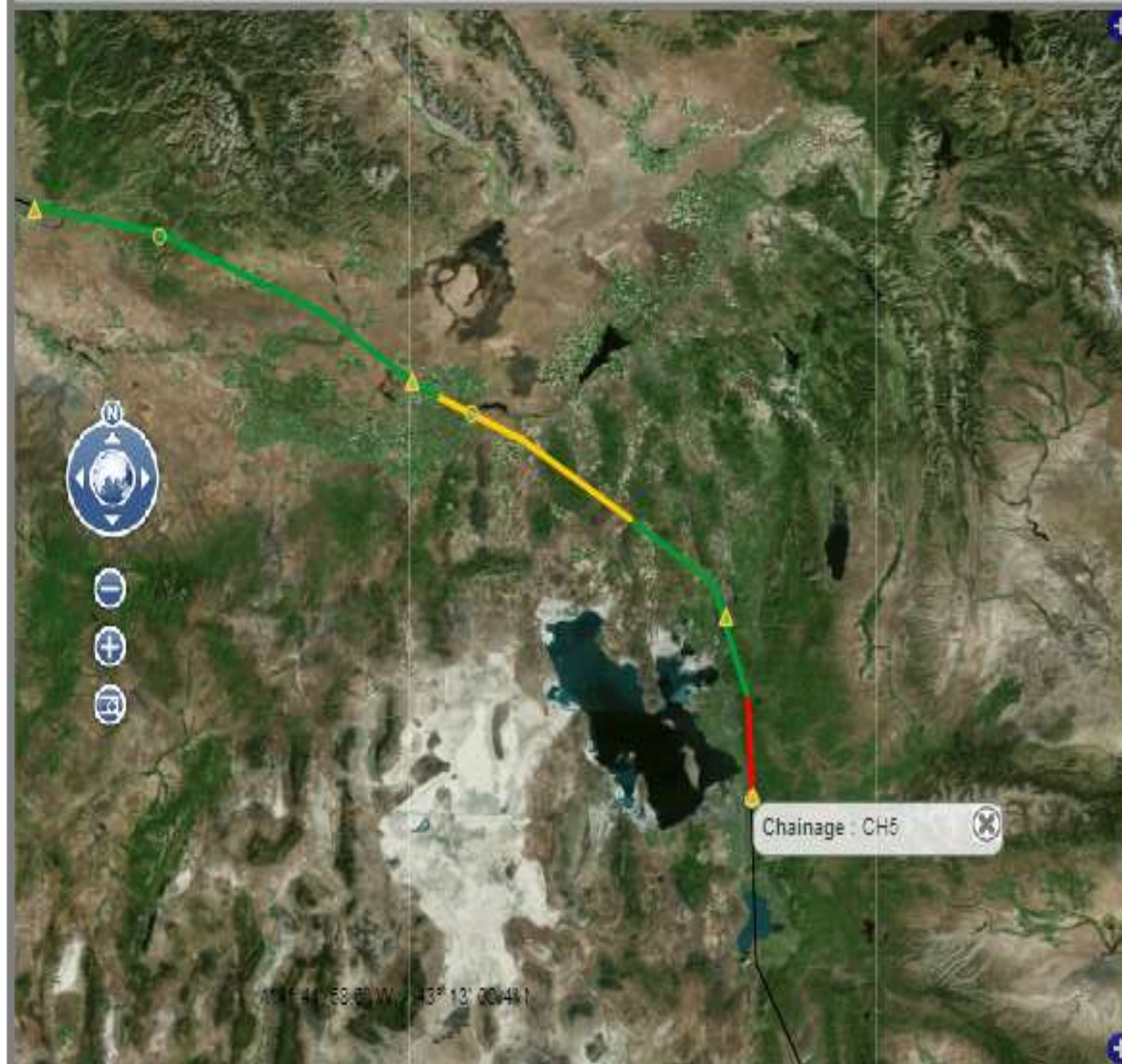


Document Links for CH - 3

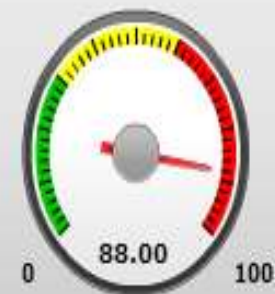
[Right of Way \(ROW\)](#)[As-Built Drawing](#)[Test Certificate](#)

Chainage No.	Comissioning Date	Pipe Size	Thickness	Leakages	Repairs	Last Repair Date	Last Inspection Date
CH - 3	5-Apr-1988	36"	15.73	1	2	10-Mar-08	13-Jan-2015

P1 (Bar g)	P2 (Bar g)	Pressure Drop
82.17	82.11	0.0615
F1 (m3/hr)	F2 (m3/hr)	Flow Drop
1041.84	1041.74	0.0980



QRA Index



Probability Scale

Impact Scale



Document Links for CH - 5



Right of Way (ROW)



As-Built Drawing



Test Certificate

Chainage No.	Commissioning Date	Pipe Size	Thickness	Leakages	Repairs	Last Repair Date	Last Inspection Date
CH - 5	6-Apr-1985	36"	15.68	2	3	4-Mar-12	12-Jan-2015

P1 (Bar g)	P2 (Bar g)	Pressure Drop
82.03	81.96	0.0620
F1 (m3/hr)	F2 (m3/hr)	Flow Drop
1041.65	1041.52	0.1235



- Role based integrated actionable insights with cross functional visibility
- **3000+** pre-built business critical scenarios and KPIs with Vertical specific Knowledge Model
- Pre built OT-IT, Geospatial & Engineering integration
- Real time, Diagnostic, Predictive, Spatial Analytics,
- Instant ROI

Thank You