

Building a Real-time Situation Awareness Map

Improving EPCOR Water Canada's System Reliability

Using Performance Indicators

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EPCOR Organization Overview



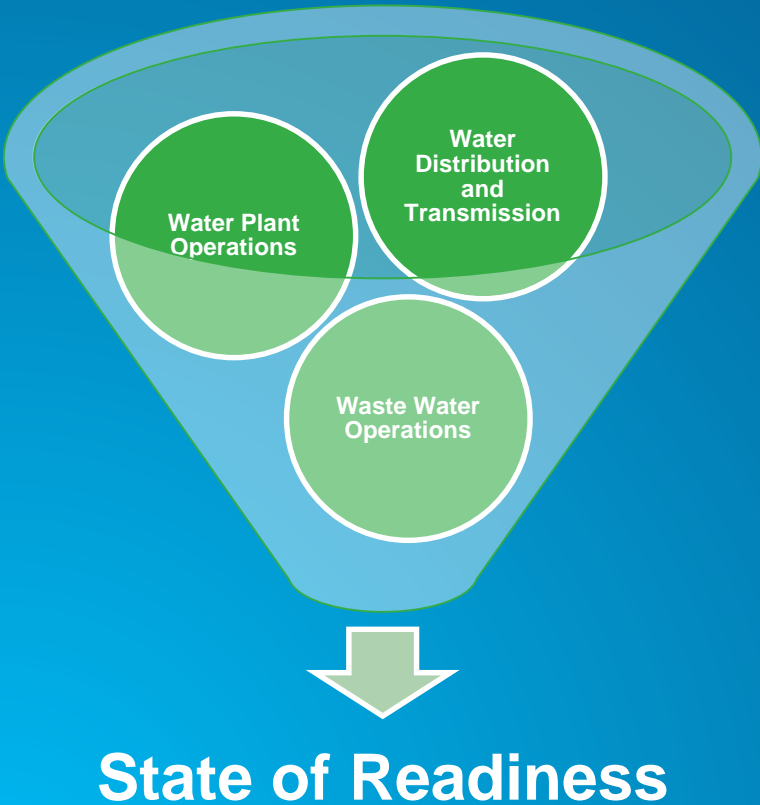
What is Situational Awareness for a Water Utility

Understanding your system

Knowing what is going on so that
we can figure out what to do

Responding to events and
changes in environmental
conditions

EPCOR Water's State of Readiness



- Each business unit has a specific mandate
- One EPCOR and One State of Readiness
- State of readiness informs our ability to:
 - to perform our day to day function
 - Respond to emergencies
 - Provide support to external entities

Important Performance Indicators

- EPCOR Water Canada operates according to Performance Based Regulations (PBR) found in the City of Edmonton Bylaw.



■ System
Reliability



■ Water
Quality



■ Environment



■ Safety



System Reliability Factors Simplified

Main
Break
Duration

Water
Main
Break

Response
Time

Water
Quality

Water
Pressure

Planned
Interruption



- Main break identification, confirmation, assessment and repair
- Water quality reporting, sampling and resolution
- Project selection and implementation
- Adequate customer notification
- Managing Hazardous Energy Isolation (closed valves)
- Transmission main shut down
- Plant shut down

Solution - Dependencies

Required a browser-based tool:

- Ease of use, access, and in application development

Collaboratively identify top 10 critical indicators

Identify data sources and define data update frequency

Solution - Data

Outages

- Water main breaks
- Hydrants out of service
- Planned shutdowns
- Projects under construction

Water Quality

- Pressure monitoring stations
- Pressure zones
- Water quality complaints

Customers

- Critical and top 50 customers

EPCOR Assets

- Water mains, valves and hydrants
- EPCOR locations

Solution - Architecture

GIS

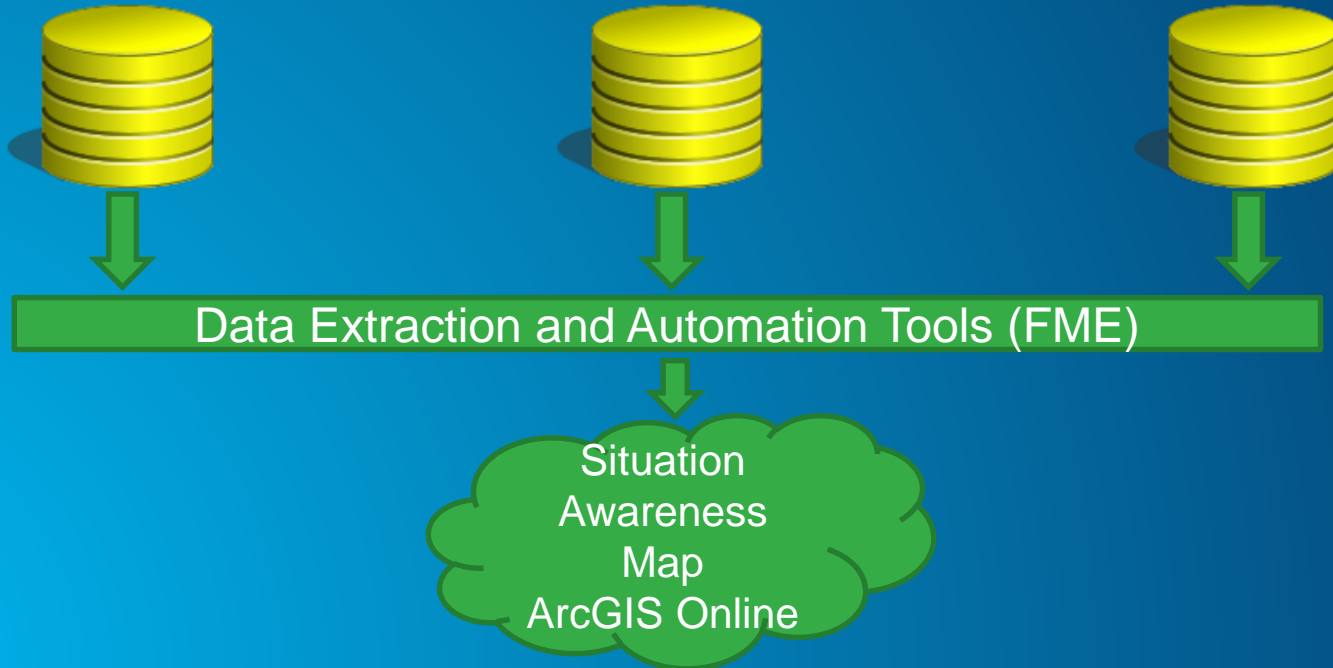
Geographic
Information System

IVARA

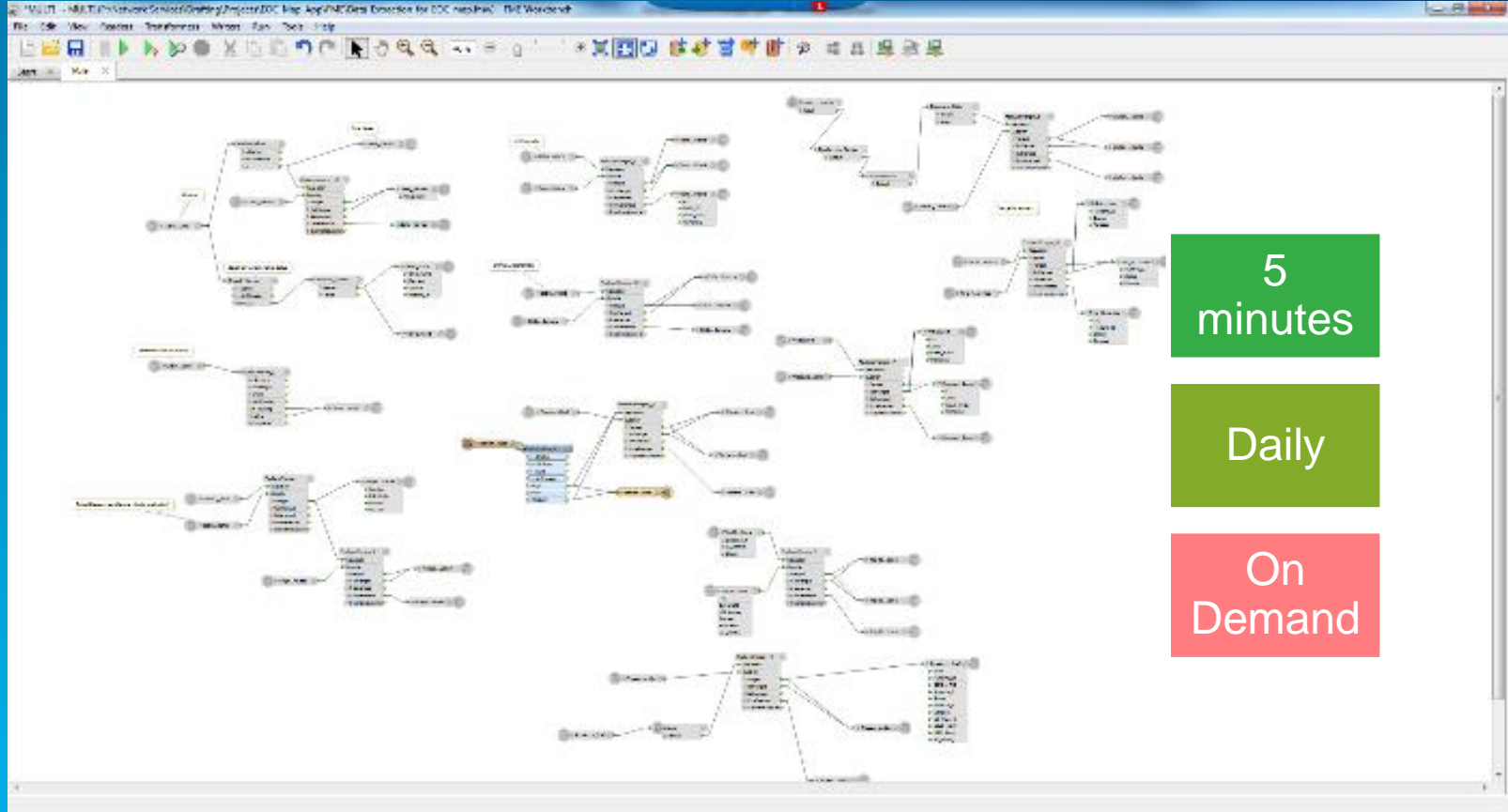
Asset Performance
Management System

SCADA

Supervisory control
and data acquisition



Solution – Data Extraction and Automation



5
minutes

Daily

On
Demand

FME Workbench View

Solution - Interface

- Browser based web mapping application built on ArcGIS Online

EPCOR WATER CANADA SITUATI... Find address or place

(1 of 2) Transmission Main Shut Down

Permit ID	225
Permit Name	Per-2016-59
SharePoint Link	More info
Shut Down Status	Active
Water Main Material	STL
Water Main Diameter	610
Permit Start Date	August 31, 2016
Permit End Date	November 25, 2016
Project Contact	Ted Helmdal
Project Description	Replacing 610 STL TM
Comments	Also replacing 1M valves V6261, V2366 & V6257

(1 of 3) Water Quality Complaints

Call Req #	220546
Location	
Facility ID	H3392
Call Received Date	November 17, 2016
Call Create Date	November 17, 2016
Concern Category	0125 - WATER QUALITY - OTHER
Nature of Call	TO TAKE WATER SAMPLE FROM THIS HYDRANT AND TAKE IT TO THE LAB;
Alleged Problem	0125 - WATER QUALITY - OTHER

(1 of 2) Pressure_Monitor

Station Type	City PM or Regional Customer
Station Name	TAMS
Address	13410 STREET Albert
Assigned Pressure Zone	City PM or Regional Customer
Scada Tag	TRM_TAMS_PIT_LGC
Status	LO
Current Pressure	283.00
LO Alarm Limit	320.00
LO LO Alarm Limit	270.00
MEDIUM Alarm Limit	
HIGH Alarm Limit	560

(1 of 2) Main Control Valves

Valve Number	8528
Valve Diameter	300
Valve Purpose	MAIN CONTROL
Valve Type	GATE
Normal Status	OPEN
Current Status	CLOSED
Status Change Date	November 9, 2016
Status Change Reason	CONSTRUCTION ACTIVITIES (PD OR INFRA.)
Status Comments	By MAP
Inspection Condition	OK
Inspection Date	September 7, 2016
Marker Post	N

(1 of 2) Transmission Mains

DIAMETER INDICATOR	762.00
MATERIAL INDICATOR	STL
PURPOSE INDICATOR	TRANSMISSION

(1 of 2) Critical Transmission Mains

Water main diameter	1050
Material	CCP
Criticality	High
CRITI_REA	Supply from EL Smith to W/NW Edmonton and Parkland County. Fill into Grimby. If possible can't supply into that portion of the Primary Pressure Zone to enable stepping Grimby, Thorsberg and RUP so the water storage would deplete.

Main Break Information

Case# Water Main Break

Date Received: Nov 07 11:50 AM

Estimated Time for Water Restoration: Customers are NOT out of Water

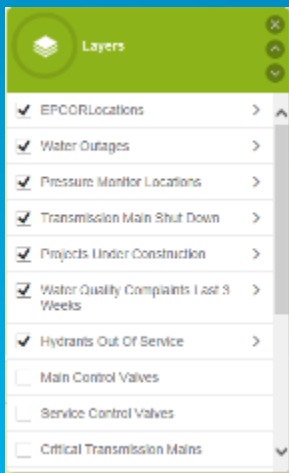
Status: Water main break has been repaired. Awaiting surface restoration. If you're experiencing a water outage, please report it to 783 812 6886.

More Details: Road restoration is carried out by a 3rd party and may take up to 6 weeks to complete.

Solution - Interface

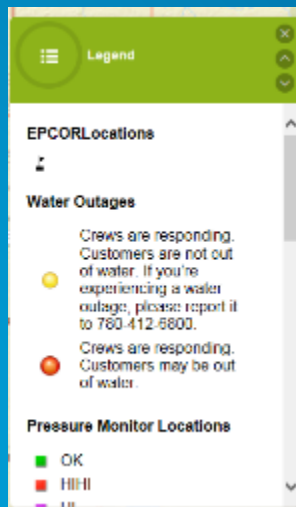
Layer Control

Manages layer visibility



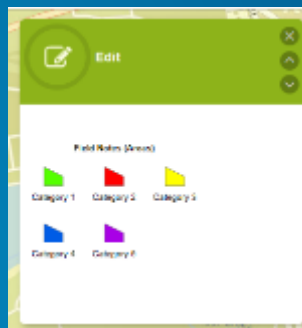
Legend

Aligns to layer presence and visibility



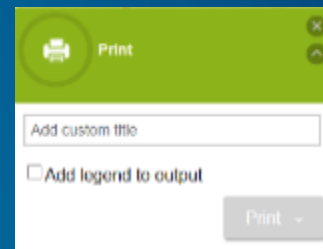
Edit

Allows users to create data to support EOC operations



Print

Allows users to print quality maps on demand



Benefits

- **Improved ability to communicate situational awareness for our operations**
- **A dependable, predictable resource in place to support the emergency operation centers (EOC)**
- **A tool that is woven into how we do our work**
- **The SAM synergizes our data and synchronizes our work flow processes**

User Stories

- User Stories

Thank you
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