



# IoT Activities at the Ministry of Transportation and Infrastructure (MoTI)

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# Agenda

- Current Experiences and Challenges
- IoT Project Background
- Discovery Activities Involving Camera and Sensor Data at the Ministry.
- IoT Project Next Steps



## Current IoT at MoTI

- The Ministry employs a diverse range of sensor types:
  - Traffic Vehicle Counters,
  - Weather Stations,
  - Road Condition (e.g., Frost Detection, Water/Snow Depth)
  - Cameras (e.g., DriveBC, Construction Monitoring, Wild Life Detection)
  - Seismic and Structural Health Monitoring (e.g., Earthquake Detection)
- The Ministry has over 18K devices and growing.

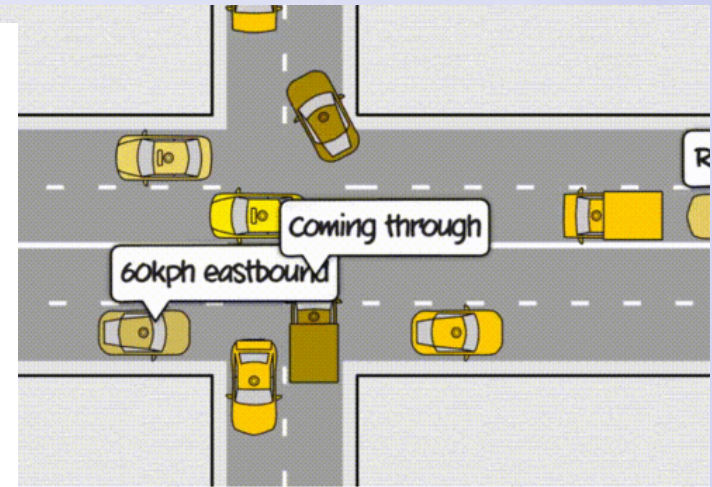
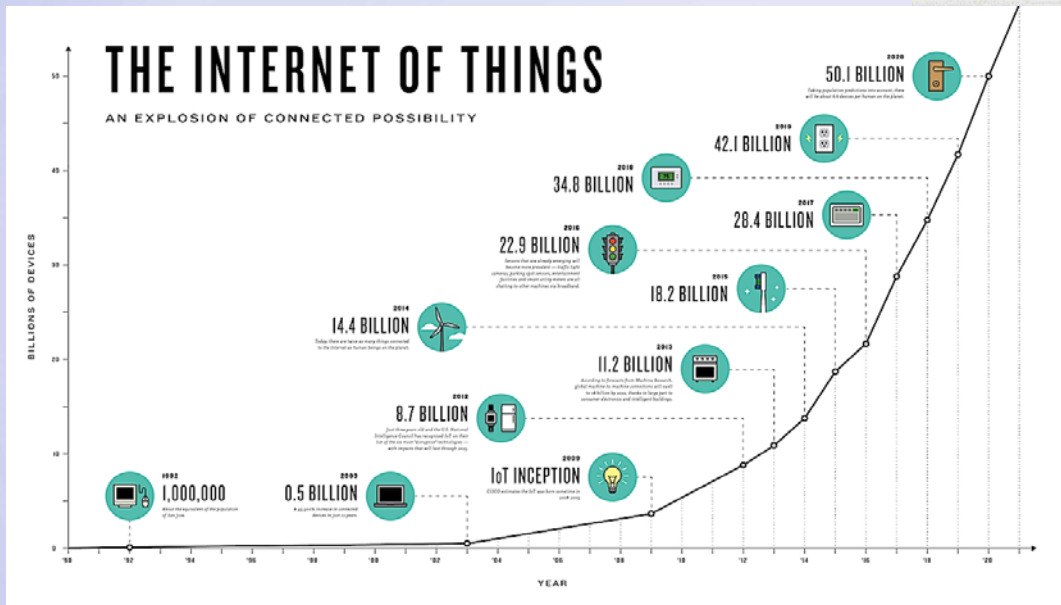






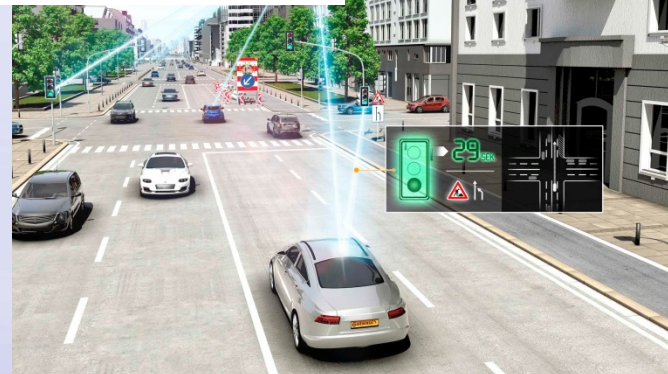


# Sensors Everywhere



memeguy.com

The Internet of Things – infographic The Connectivist based on Cisco data



Self-Driving  
Vehicles

Smart  
Highways  
and Cities



## Current IoT Challenges at MoTI

- The continuous growth of sensors is pushing existing systems and associated systems to their limits.
- Wide range of sensor technologies (e.g., from analog to IP enabled devices) makes integration difficult.
- Inability to effectively share between camera and sensor system used within the ministry – critical information is locked in siloed systems.
- Increasing maintenance / operational costs – lots of independent application and procedures to support.
- There are also security and privacy challenges.



# Current IoT Security and Privacy Challenges

## Security Challenges:

- Patching
- Secure Communication
- Event Logging
- Access Control

## Privacy Challenges

- Cameras
- Inadvertent Personal Information Collection





## IoT Project

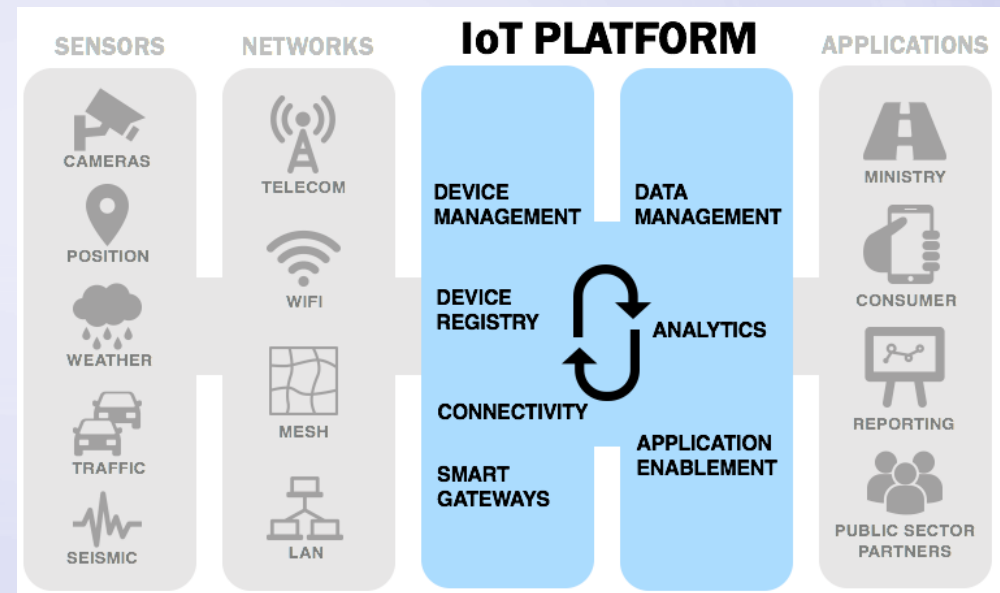
MoTI is investing in a flexible, multi-user IoT platform designed for continuous improvement and that enables the ministry to:

- Establish a single source of truth for camera and sensor data.
- Develop an open platform to improve interoperability.
- Provide capability for real-time analytics and on demand analysis
- Enable applications to be built quickly, intelligently and in a cost-effective manner.
- Provide open data.

# IoT Scope

Build an IoT platform that provides connectivity layer for sensor data and communication interfaces for applications.

- Secure, scalable, enterprise solution.
- Modular, allow IoT features to be sourced from different suppliers.
- Based on open standards and defined APIs.



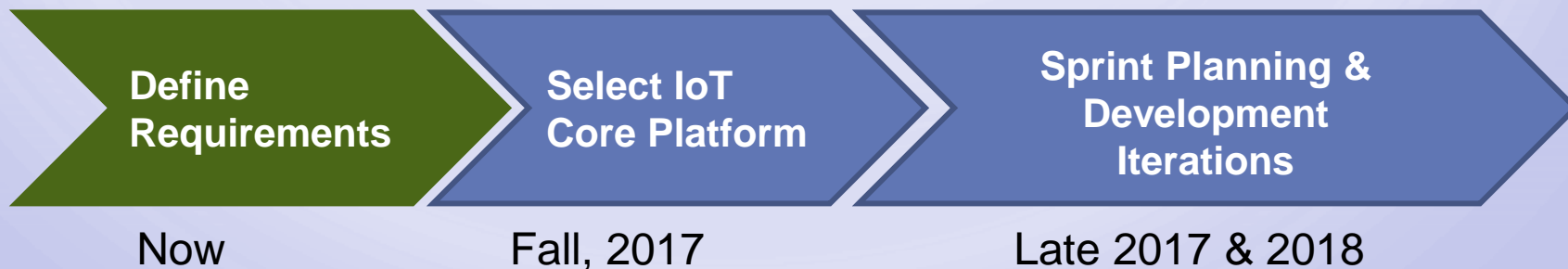


# Activities Underway

## IoT Proof-of-Concept (POC) Challenges

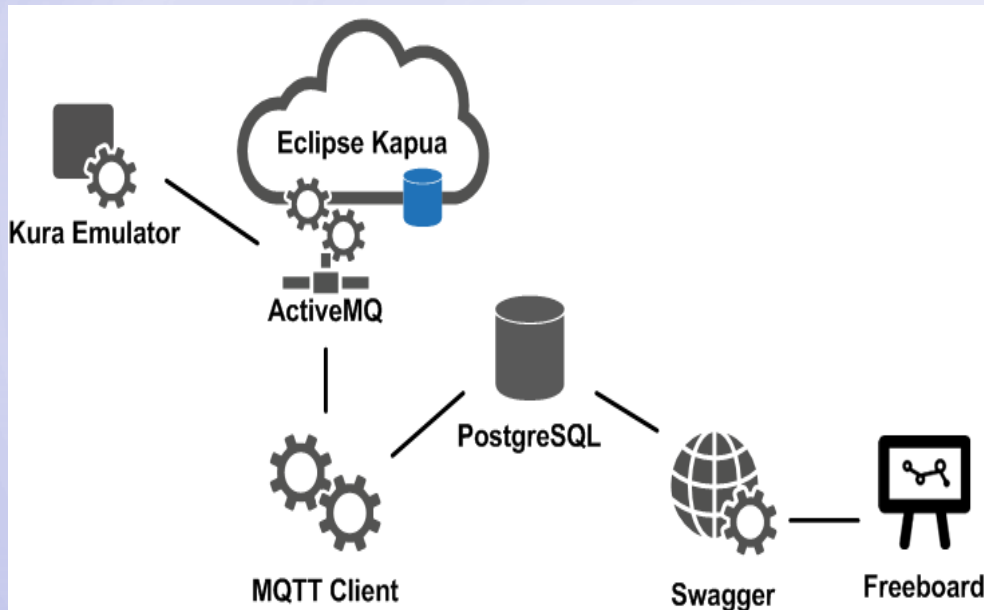


## Planning & Initiation Phases for the ACSIS Project





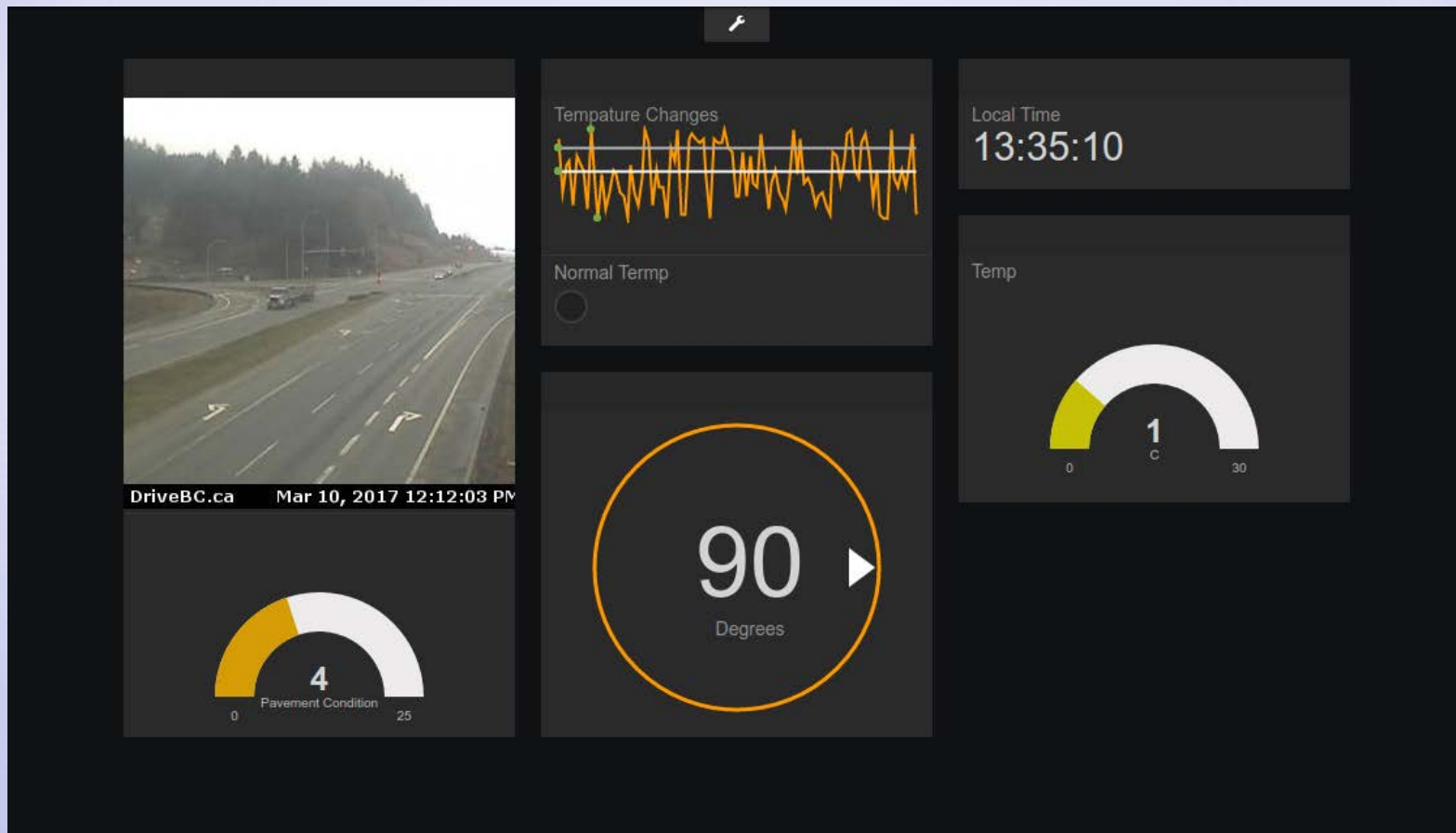
# IOT Proof of Concept: What We Built



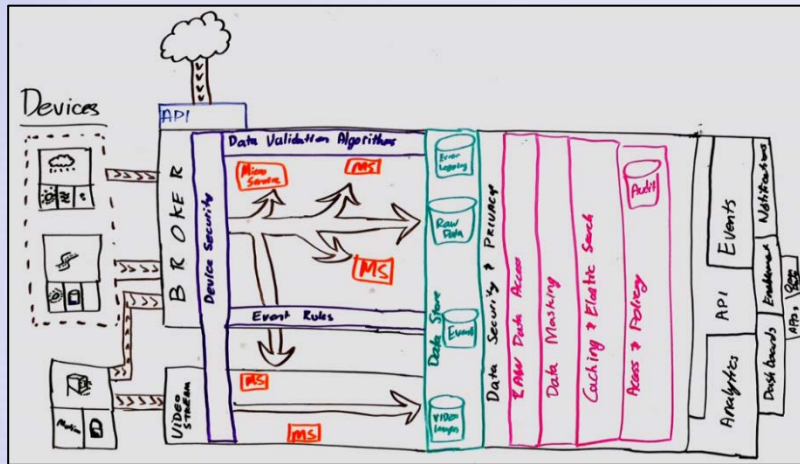
## Key Considerations:

- Open source software
- Relies on open and well adopted standards
- Works with the BC Developer's Exchange framework
  - OpenShift infrastructure
  - Using GitHub
- Modular integration & components
- Facilitated fast development

# IOT Proof of Concept: Demonstration



# IOT Proof of Concept: Learnings

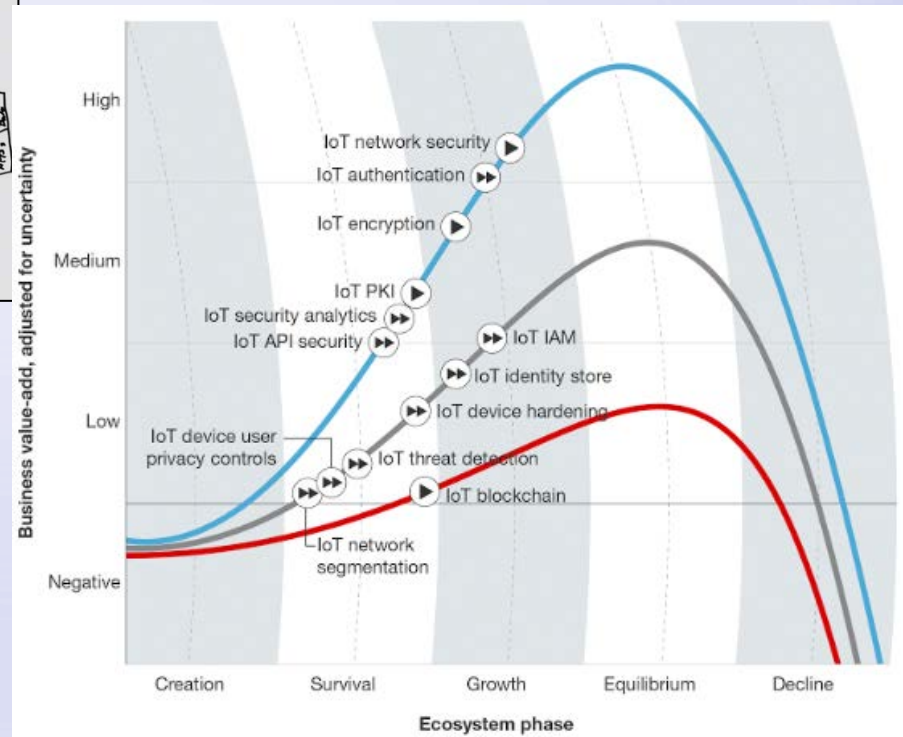


- *IoT ecosystem is large & rapidly evolving*
  - *Changing business models*
  - *Expanding technologies*
- *The way forward:*
  - *Open standards*
  - *Loosely coupled modular components*
  - *Secure and scalable infrastructure*

FORRESTER RESEARCH

TechRadar™: Internet Of Things Security, Q1 '17

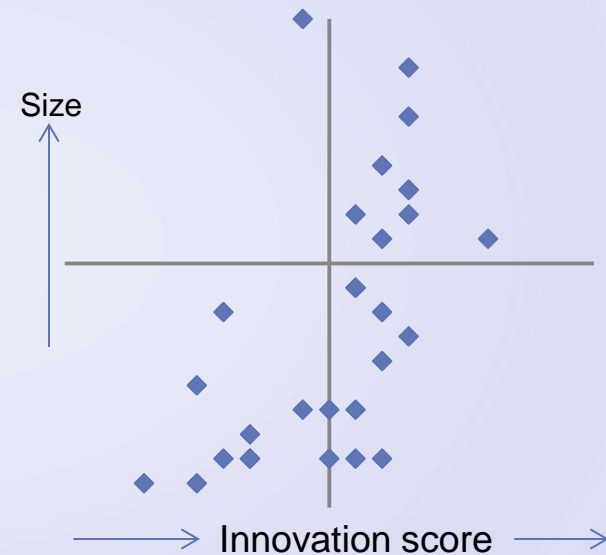
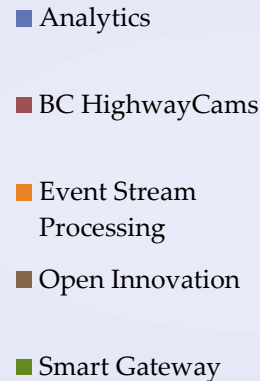
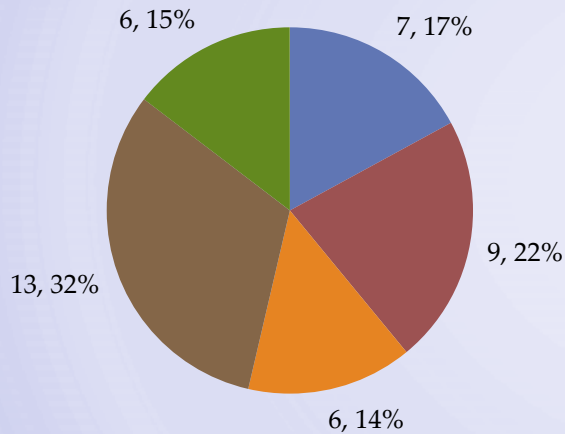
TechRadar™: Internet Of Things Security, Q1 2017





# 40 Challenge Submissions

## Distribution



- A wide range of start ups and established organizations participated in the IOT Challenge program



## IoT Project: Next Steps

- Complete the IoT Challenges with BC innovators.
- ACSIS team will continue to learn how to build an IoT solution and develop system requirements and operational principles.
- ACSIS team will select an IoT platform suitable for a production environment.



Thank You.

Questions?