

RED HAT  
**SUMMIT**

# Building containerized IoT solutions on OpenShift

Featuring Red Hat Enterprise Linux, JBoss A-MQ, Fuse Integration Service, BRMS, OpenShift Container Platform

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Red Hat

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# Enterprise IoT



Photo courtesy of Confluent Corporation

Smart pumps can further improve safety by standardizing the dosing units and calculating the rate in these dosing units, as well as mL/hr, eliminating the risk of calculation error.

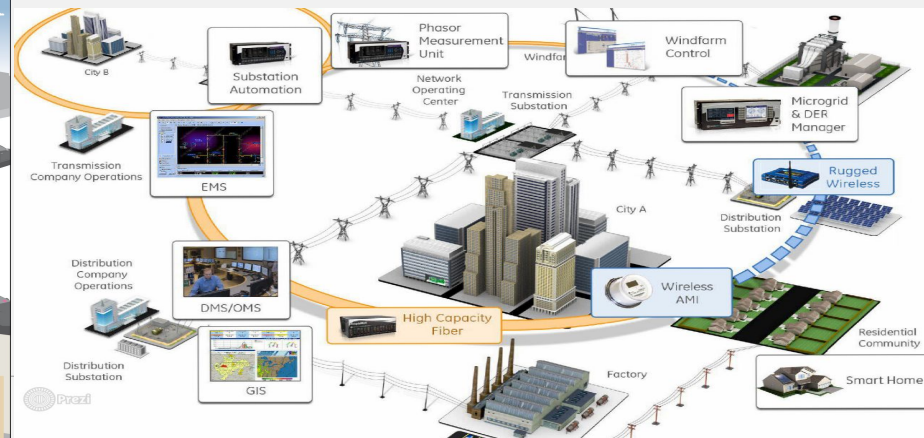
## Help with finding a parking space

30 percent of drivers in cities are looking for a parking space. Intelligent machine-to-machine (M2M) solutions make life easier in the city.

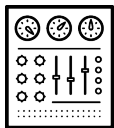
- Sensors "detect"** whether a parking space is occupied or vacant and...
- ... transmit **data to the central server**
- Smartphone app** "requests" a parking space and guides drivers to the free space
- Parking fee** is paid directly through the app
- Special permit** Administration of - parking and local resident IDs - permits for taxis, coaches, deliveries
- Legitimation** Access control to restricted traffic areas such as loading zones, residential parking

**Intelligent Street Lighting** turns on (or increases the light intensity) when the street is actually used

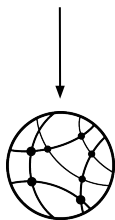
Source: Deutsche Telekom



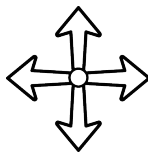
# Enterprises are Embracing Digital Transformation



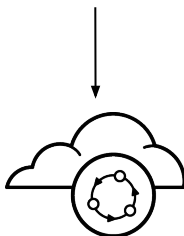
STREAMLINED  
AND AUTOMATED



PROVISIONING,  
CONFIGURATION  
MANAGEMENT



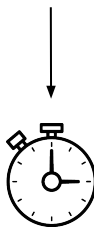
ELASTIC AND  
SCALABLE



HYBRID CLOUD AND  
CLOUD BURSTING



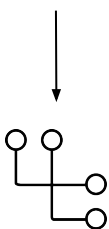
AGILE AND  
RESPONSIVE



RAPID APPLICATION  
DEPLOYMENT



UTILITY-LIKE



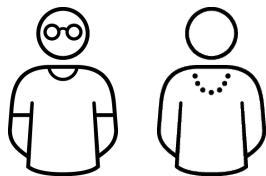
MANAGED, POLICY DRIVEN,  
AND ALWAYS ON

# Containers Help Achieve Digital Transformation



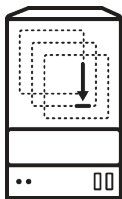
- **Packaging**

- Atomic
- Built for Continuous Integration and Continuous Delivery



- **Collaboration**

- Containers consist of infrastructure and application components
- Multiple teams participate in container creation



- **Runtime**

- Lightweight
- Distributable
- Portable

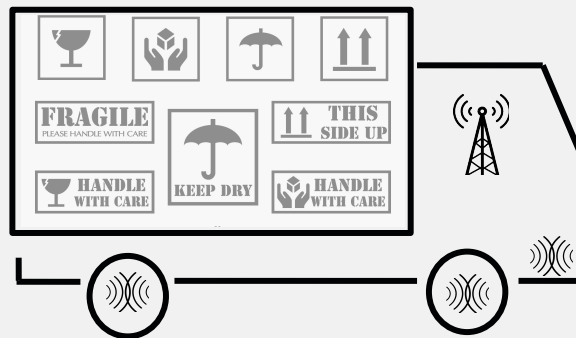
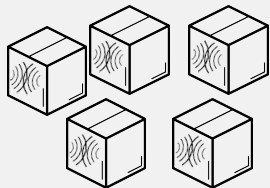
# Lab Overview

# IoT Use Case

The packages monitored by sensors; intelligent gateway routes data; business rules create alerts for driver, operations

## Asset tracking

- Security
- Temperature control
- Vibration control
- Humidity control
- Location monitoring

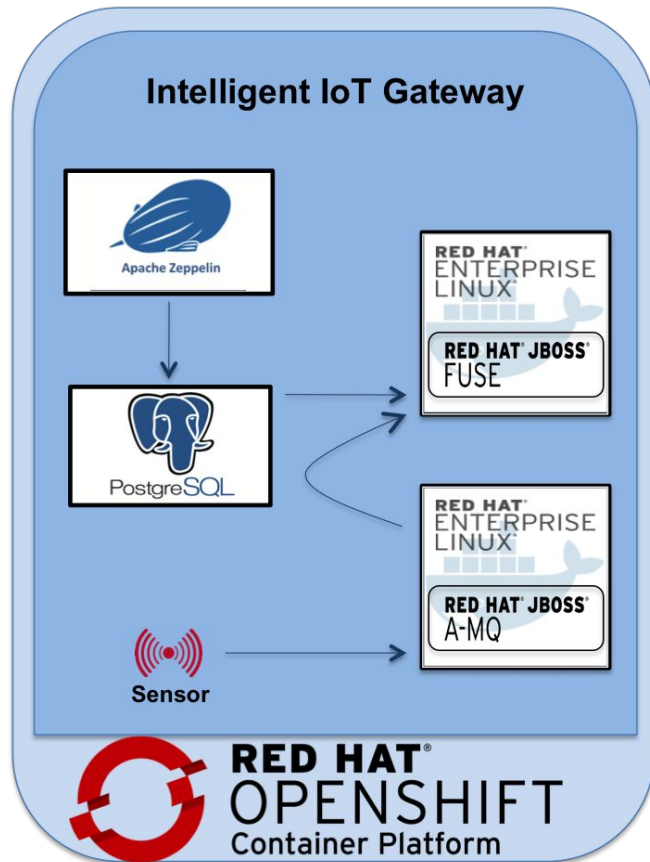


## Real-time alerts and business rules

- Dispatch control
- Customer notification
- Rerouting



# Core Components



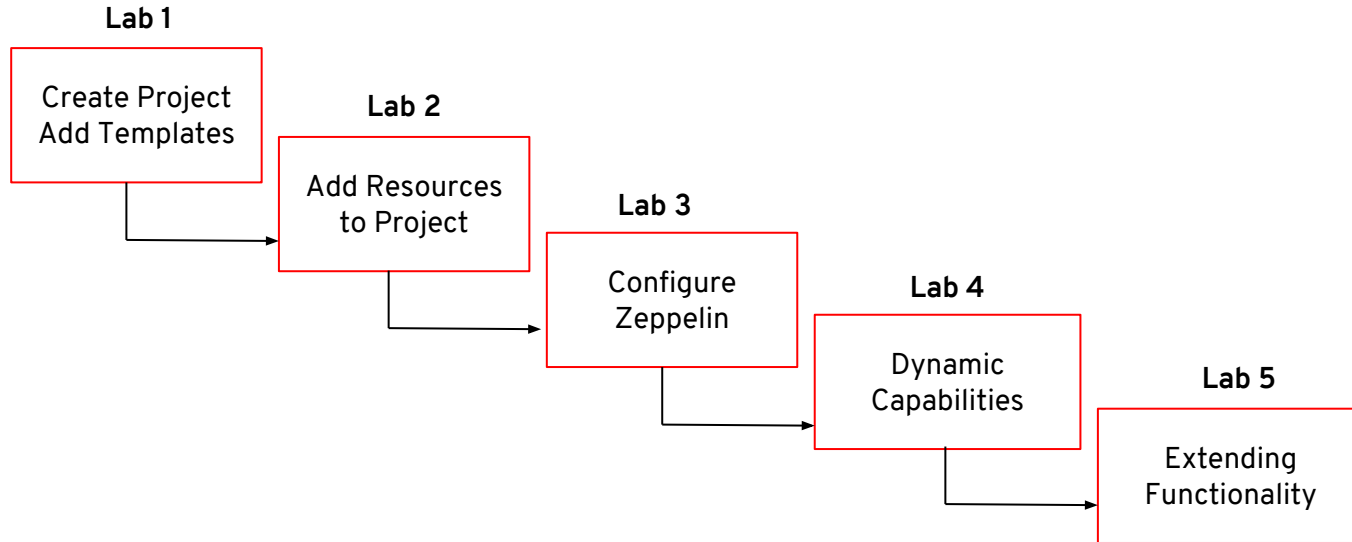
# Lab Resources

- Red Hat Container Development Kit
- Lab Repository (/home/student/iot-ocp)
  - Templates
    - Broker
    - Database & Database Seeding
    - Integration Service
    - Software Sensor
    - Visualization
  - Zeppelin Configuration
  - Software Sensor Configuration File (ConfigMap)
  - Source Code for each Deployed Container





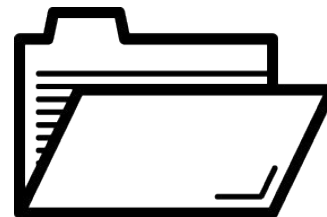
# Lab Workflow



# Resources

# Project Directory Structure

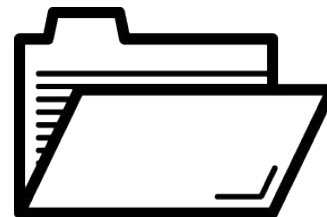
- **iot-ocp-routing-service**
  - Consumption, transformation and routing of messages
- **iot-ocp-software-sensor**
  - Simulated software sensor
- **rhel-zeppelin**
  - Visualization tool
- **summit2017-lab**
  - Tooling to support the 2017 Red Hat Summit lab
- **support**
  - Tooling to support the standalone project



# Lab Directory Structure (cont.)

Located within the summit2017-lab directory within the project

- **image-build**
  - Tooling to build the lab environment
- **runtime**
  - Assets for attendees to utilize during the lab session
- **scripts**
  - Executables to build the lab environment

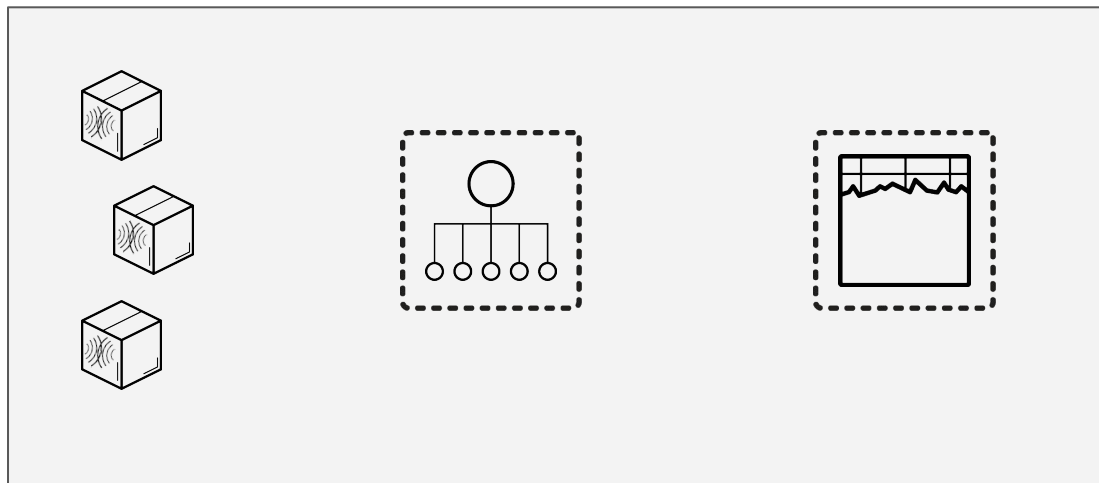


# Additional Resources

- Red Hat Container Development Kit
  - <https://developers.redhat.com/products/cdk/overview/>
- OpenShift Container Platform
  - <https://www.openshift.com/container-platform/>
- Red Hat JBoss Fuse Integration Services (FIS)
  - [https://access.redhat.com/documentation/en-us/red\\_hat\\_jboss\\_middleware\\_for\\_openshift/3/html/red\\_hat\\_jboss\\_fuse\\_integration\\_services\\_2.0\\_for\\_openshift/](https://access.redhat.com/documentation/en-us/red_hat_jboss_middleware_for_openshift/3/html/red_hat_jboss_fuse_integration_services_2.0_for_openshift/)
- Red Hat A-MQ
  - <https://www.redhat.com/en/technologies/jboss-middleware/amq>
- Red Hat JBoss BRMS
  - <https://www.redhat.com/en/technologies/jboss-middleware/business-rules>
- Apache Zeppelin
  - Project Page: <https://zeppelin.apache.org/>

# IoT on OpenShift Example Project

- Build containerized IoT Solution on Openshift
  - Code: <https://github.com/sabre1041/iot-ocp>



**Don't forget to submit the survey!**

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# THANK YOU



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