RED HAT SUMMIT 2019
ATOS smart city data platform based on Red Hat technology

Cyrille Sauvignac - Atos Innovation Lab
Darius Matboo – Atos Innovation Lab
Laurent Broudoux – Red Hat Senior Solution Architect

Mai 2019
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A wide range of use-cases

- Fleet management
- Emergency systems
- Emergency vehicles
- Connected vehicles
- Smartcity authorities
- Smartcity users
- Secure and connected bus
- Store Advertising
Interoperability standardization for IoT platforms

Provides open standard APIs that facilitate the consumption of IoT data and the processing of contextualized data in real time on a large scale.

Communication standard for intelligent transport systems.
Standardising IoT

Hell IoT is a standardized interoperability IoT platform based on the oneM2M global standards initiative for Machine to Machine and IoT in smart cities domains.

The purpose of oneM2M:

- Develop technical specifications which address the need for a **common** M2M Service Layer embedded within various hardware and software.
- **Connect** the myriad of devices in the field with M2M application servers worldwide.
- Permit device **interoperability** between IoT platforms in different functional domains.
Institutes for Energy Transition (ITE) in the field of low-carbon energy sources

**French innovative enterprise cluster**

- Responds to the challenges posed by the autonomous vehicle and mobility in the future.
- Seeks to establish itself as a French technology research institute achieving world-class excellence
- Federates all the stakeholders to quickly find solutions to tomorrow’s mobility problems
SPACE: Smart Parking to Avoid Carbon Emission

- Proactive Space Portal
- Reactive Space Portal
- Other offer Mobility plans
- IoT platform
- Incitative

Exceptions
- Bla Bla Car
- Transportation

Branding:
- redhat
- Atos
SPACE
Use cases

- **Mobile applications**
  - Carpooler, car sharer

- **Dashboard**
  - KPI, monitoring room, supervision

- **Grouping engine**
  - Segment analysis

- **Visual parking**
  - Parking space management, load-shedding
  - car park, bad parking alert

- **Calculation of CO2 emissions**

- **Parking guidance**

- **On the parking lot**
  - Display number plates and/or name access control

- **Human Resources Module**
  - Registration, incentives, Management of people with reduced mobility

- **Multimodality**
  - Self-service bicycles, public transport, etc...
Roadmap

- **2019**
  - Integration
  - User support

- **2020**
  - 05/2018
  - Car sharing
  - Autonomous vehicles
  - Urban transportation
  - Car parks
  - VTC
  - Open data
  - June
  - September
  - Incentives
  - MAAS
  - KPI
  - Free Floating
  - City observatory
  - Versailles Deployment
  - Large scale smart mobility

- **2021**
  - Maintainance
  - New cities contextualization & deployment
Demonstration
Atos | Red Hat collaboration so far...

- CLOUD-NATIVE SCALABILITY
- ANALYSIS CAPABILITIES
- METRICS & OBSERVABILITY
CLOUD-NATIVE SCALABILITY

Break the monolith ...

... where it makes sense!
Seamless deployment with Atos Managed OpenShift

Architected for POC / Value
Architected for High Availability
Easily Expandable

Fully managed and automated
12*5 or 24*7 support models
One time set up + Monthly support

Delivered on a standard Public AWS Cloud
Spread across 3 availability zones
Available on Hybrid and Private Cloud
BYO Infrastructure option
CLOUD-NATIVE SCALABILITY

Red Hat Fuse tooling for Agile Integration

Develop & Package

App
Fuse
JVM

Container

OPENSHIFT

DEV
QA
PROD

-> Deploy
-> Scale
-> Manage
Red Hat AMQ Broker 7 for message brokering

- **Scalable and flexible addressing model**
  - Scale consumers on Topic with no infrastructure reconfiguration
  - Scale replicas of brokers for large queues

- **Multiple deployment topologies**
  - Routers for handling huge connection numbers
  - Network of brokers for localization precedence and HA scenario

- **Industry standards supports**
  - AMQP 1.0 and MQTT 3.11
How to realize complex analysis on historical data?

- **Some use-cases:**
  - Detect speed / itinerary issues on public transportation
  - Detect drifting patterns on air quality
  - Compute / verify correlation of air quality and car pooling
  - ...

- **Some requirements:**
  - Make data streams persistent on configurable time frame (days, weeks)
  - Allow distributed storage of massive data
  - Standard ecosystem for easy integration of Big Data solutions (ie: Data Lake integration, Spark processing)
ANALYSIS CAPABILITIES

Red Hat AMQ Streams

Enterprise data streaming platform distribution based on Apache Kafka.

Available standalone on Red Hat Enterprise Linux VMs/bare metal or on OpenShift (based on Strimzi project).

Horizontally-scalable, fault-tolerant commit log with stream processing capabilities.
Augment with minimal impact
Out-of-the-box metrics and monitoring tools
Distributed tracing concepts

OpenTracing instrumentation

Spans

Relationships

Load balancer

Client

Auth

Billing

Resource

Web Framework

RPC + External Service API

RPC

External Service API

API

API

API

FollowsFrom relationship

ChildOf relationship
Jaeger is an OpenTracing implementation supported by Red Hat Integration tools.

- Collect sample traces
- Monitor end-to-end performance
- Low overhead (circa 1%)
- Dynamic reconfiguration
Atos Managed OpenShift benefits

**CITIZEN ISSUES**
Deliver digital services to foster healthier living and better working environments

**REGULATION**
Built in security elements to protect user data

**INNOVATE**
An extensible and flexible platform that accelerates innovation

**RESPONSIVE**
A flexible and agile platform that can match user demands

**STANDARDS**
A standardised IoT framework to ingest, analyse and present a myriad of data points

**PRODUCTIVITY**
Focus on value creation not IT operations or system integration
Atos | Red Hat, What’s Next.

SPACE project deployed on AMOS:

- Extended collaboration on platform tuning
- Exploration of Operator based deployment:
  o Components upgrades
  o Easy new platform instance
Thank you

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PARTNERS AT RED HAT SUMMIT 2019