Traffic Control Systems

From a monolithic Architecture to a distributed IoT Infrastructure with the help of OSGi

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About Us

- Founded in 2010
- Located in Jena/Thuringia - Germany
- OSGi Contributing Associate Member
- Independent RnD
- OSGi and MDSD Technologies
The Case

- Traffic Control System
- Previous Tomcat as Gateway/Broker between Traffic Light Units and Frontends
- Replaced by JEE Server, that is not suited to the task
- Customer currently migrates to a smarter modular Infrastructure by leveraging the power of OSGi
The Case

- A lot constrains dictated by law
- Realtime OS
- State machine controlling traffic lights and detectors
- Updates secured by EPROM changes
- Third Party Software (Interfaces etc.) use the same resources (deployed as monolithic artefact)
- No zero-downtime Software updates possible
The Case

- JEE Application
- Monitoring of TLCs
- Multi protocol Data retrieval
- Mostly Pull based Data retrieval
- Data Transformation and Persistence
- Interfaces to Third-Party Systems
- Interfaces to UIs
The Vision we are working on
The Business Value of using OSGi

- Reduction of Code by half (Less Code -> less error prone) by using Bundles and Services
- Easy to maintain Software Components with clear and understandable Contract (API)
- Functionality can evolve independently because the System can handle multiple Versions of the same Bundle at Runtime
  - OOTB OTA Updates of individual OSGi Bundles (Cloud, Edge or at Customers Server Center)
- Customer specific Assembly of Solutions
Customer specific Assembly of Solutions

Traffic Light Controller

RT Hardware

StateMachine

OSGi Framework

SM Connector

TLCDataService

Singel Board Computer

OSGi Framework

OCIT Service

TLCDataService

MQTT Producer

TLCDataService

REST API

TLCDataService

On Premiss Solution

DB Cluster

MQTT Broker

OSGi Framework

DBPersistersService

TLCDataService

MQTT Consumer

Customer API

TLCDataService

Data Indexing

TLCDataService

MQTT Consumer

REST API

TLCDataService

Monitoring

TLCDataService

OCIT Client

TLCDataService

Incident Notifier

Content restricted to IIC Members
Not for External Publication
Customer specific Assembly of Solutions

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Server Bundle on Edge Device
Development close to the real world
Questions?