

OCF Automotive Update

Progress Update since April 2016 F2F Meeting

Sanjeev BA

Samsung Electronics

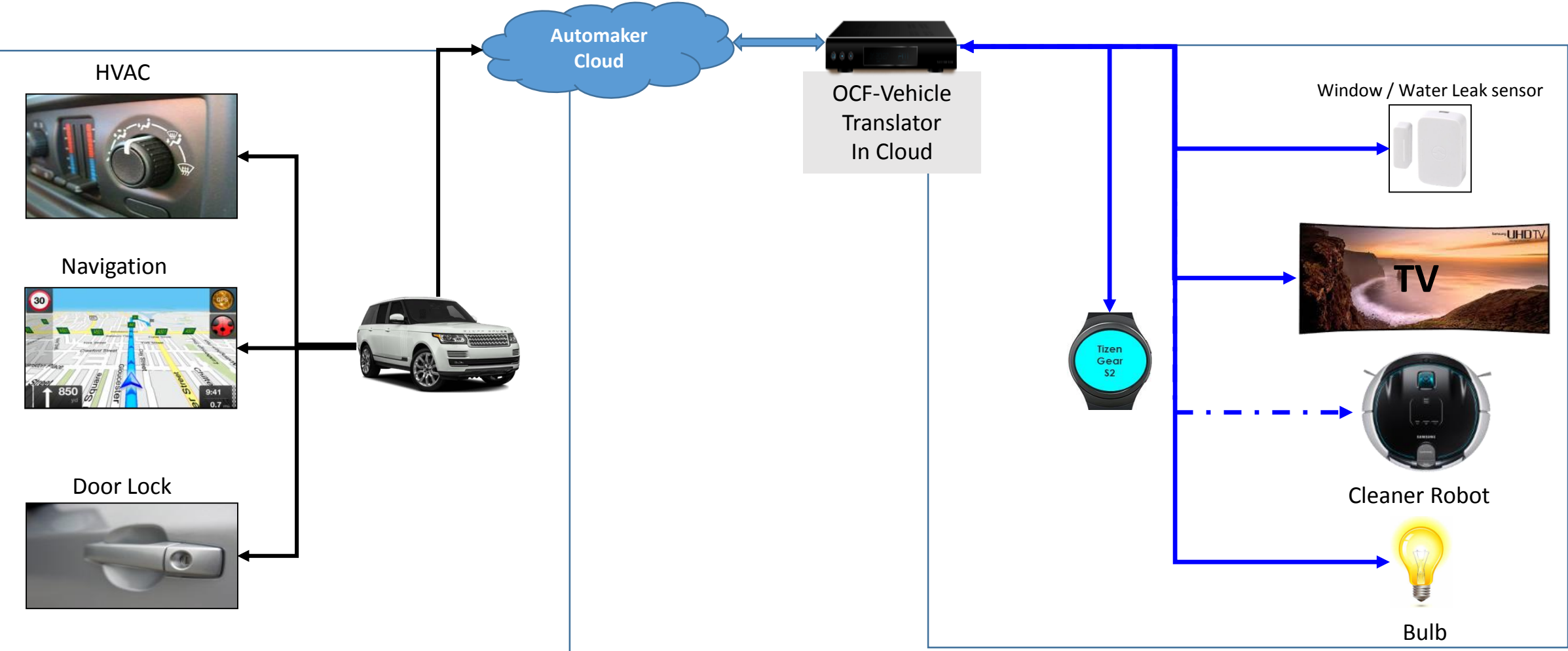
Updates since April F2F

- Shared service description schema
- Tried joining W3C (paused)
- Reference implementation (RI) improvements
 - Added Uber and Paypal API support
- Cleaning up code to submit to w3c
 - Continue development under w3c
- Contributing to librvi – native RVI library
- For further activity we needed to formally define the goals.
 - Automotive Project proposal within OCF

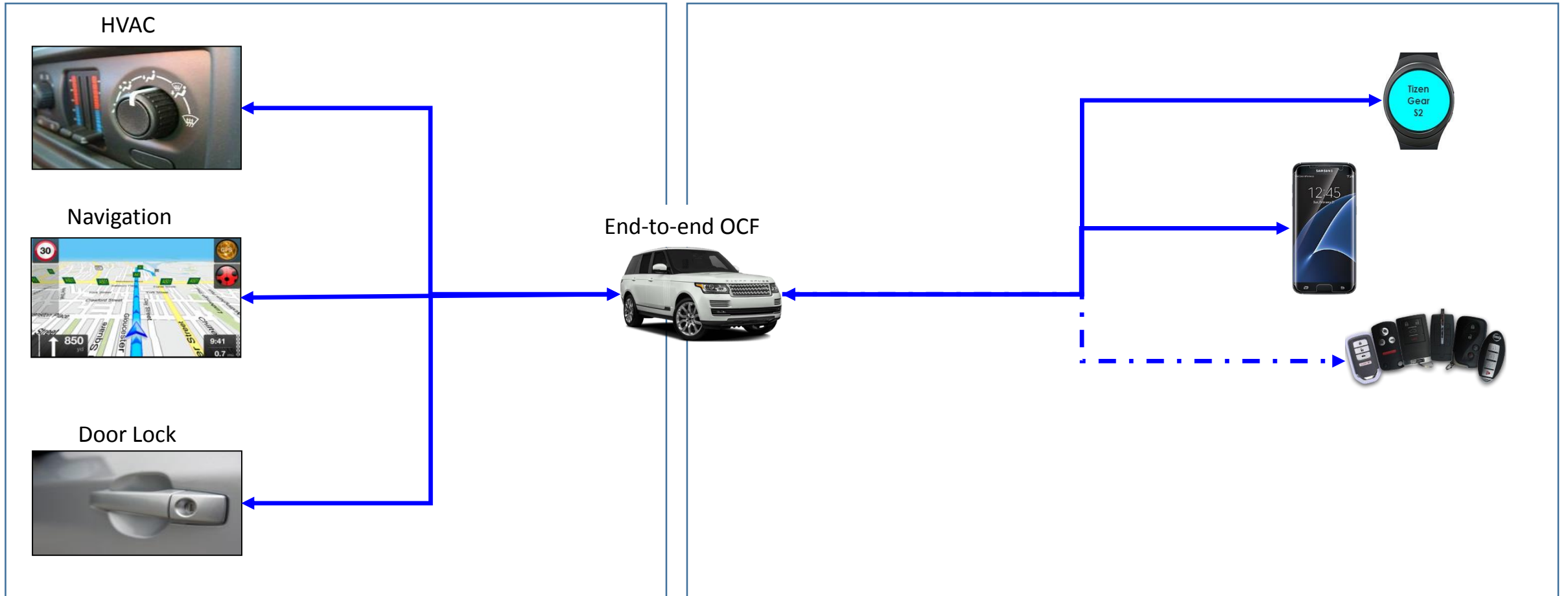
OCF Automotive Project

- Showcase work we have done so far to OCF members
 - Make a dedicated workgroup for automotive within OCF
- Organized a dedicated Automotive session during OCF F2F @Portland
 - June 29, Intel Jones Farm Campus, Portland
- Speakers from Automotive domain + interop demo
 - Remove Vehicle Interaction (RVI)
 - OCF-RVI bridge JLR + Samsung
 - Data Model Mapping discussion Michael Koster (SmartThings)
 - W3C Automotive Paul Boyes (W3C)
 - OM Auto Incubator Joel Hoffmann (OMA)
 - Perspectives on vehicle developer community (Vinli)
 - JLR Automotive Incubator (WorkFrom)
- Review process completed – official approval expected today.
 - With approvals from other OCF members

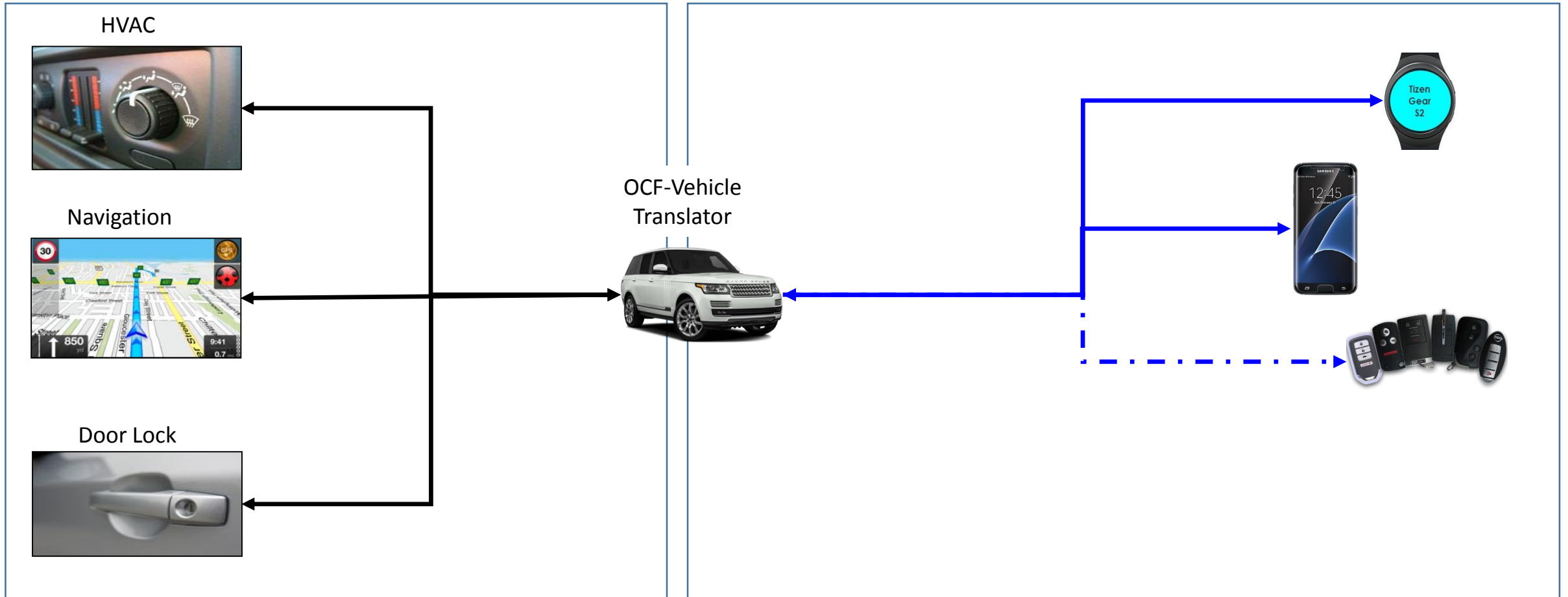
Use Case #1 : OCF-Vehicle Translator in Cloud



Use Case #2 : OCF-based Vehicle

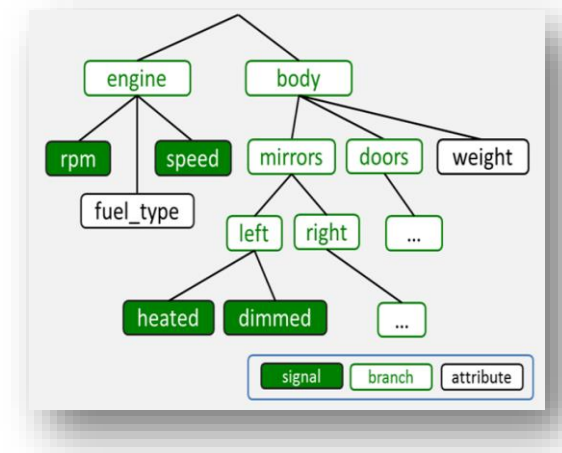


Use Case #3 : Non-OCF-based Vehicle



VSS Types

- VSS Defines a simple set of high level classes
- Branch – a node in the data structure such as
 - Engine, Body, Door, Mirror, Left, Right
- Attribute - a static value associated with a branch like
 - the capacity of the fuel tank
- Signal – a dynamically changing value associated with a branch
 - like Engine RPM
- Branches may contain Signals, Attributes, and Branches



Sample VSS JSON

```
"Engine": {  
  "description": "Engine-specific data.",  
  "type": "branch",  
  "children": {  
    "EOP": {  
      "description": "Engine oil pressure.",  
      "min": 0,  
      "max": 10000,  
      "type": "Int16",  
      "id": 434,  
      "unit": "mbar"  
    },  
  },  
}
```


Mapping VSS to OCF

- OCF Resource Model (RAML & JSON)
 - RESTful with async notification (CRUD+N) works with IETF CoAP - RFC 7252
 - Web Linking based on RFC 6690, RFC 5988
 - Resources and Resource Collections
 - OCF Resource Type definitions for VSS branches and signals

```
{  
  "anchor": "/example/vehicle/",  
  "href": "cabin",  
  "rt": ["vss.branch", "vss.cabin"]  
}
```



Branch
Resource Type

Signal Resource Type
Signal Resource Type
Signal Resource Type
Signal Resource Type
Branch Resource Type
Branch Resource Type
Signal Resource Type
Signal Resource Type

```
{  
  "anchor": "/example/vehicle/engine/",  
  "href": "ect",  
  "rt": ["vss.signal", "vss.ect"]  
},
```

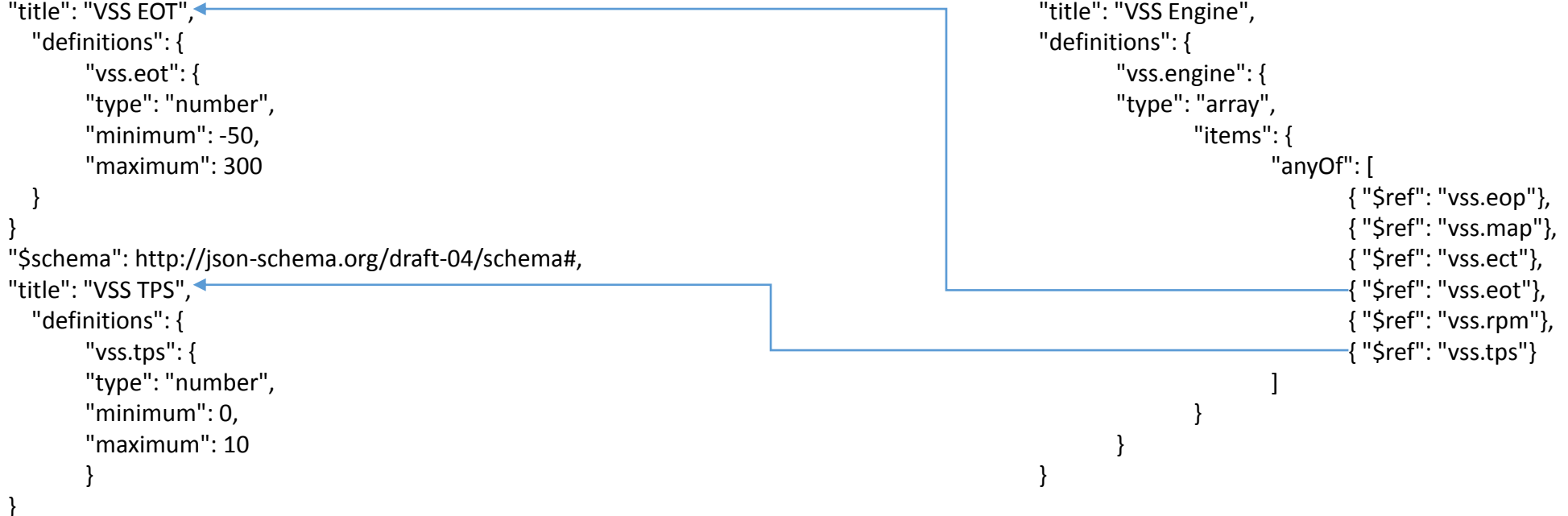


Signal
Resource Type

Example OCF JSON Schema

```
"$schema": http://json-schema.org/draft-04/schema#,
"title": "VSS EOT",
  "definitions": {
    "vss.eot": {
      "type": "number",
      "minimum": -50,
      "maximum": 300
    }
  }
}
"$schema": http://json-schema.org/draft-04/schema#,
"title": "VSS TPS",
  "definitions": {
    "vss.tps": {
      "type": "number",
      "minimum": 0,
      "maximum": 10
    }
  }
}
```

```
"$schema": http://json-schema.org/draft-04/schema#,
"title": "VSS Engine",
  "definitions": {
    "vss.engine": {
      "type": "array",
      "items": {
        "anyOf": [
          {"$ref": "vss.eop"},
          {"$ref": "vss.map"},
          {"$ref": "vss.ect"},
          {"$ref": "vss.eot"},
          {"$ref": "vss.rpm"},
          {"$ref": "vss.tps"}
        ]
      }
    }
  }
}
```



Mapping Summary

- OCF Resource Type definitions for VSS terms
- Branches can be modeled by OCF Collections
- Signals and Attributes can be modeled by OCF Resources
- Interaction models for Branch, Signal, Attribute classes
 - mapping to RAML files per class
- JSON-Schema to define specific types
- Issues
 - Conflicts among branch names resolve through context:
 - Cabin.Lights has different children from Body.Lights
 - can they use the same definition?

Next Steps

- Setup liaisons with W3C, Genivi, OM Auto (Oct 2016)
 - Decide on memberships
- Open Source Development
 - Translation tool from VSS YAML to OCF RAML
 - Open Source implementation and support in iotivity.
 - librvi development
- OCF Specifications
 - Add new resource models to OCF based on VSS & W3C
 - Certification requirements and test tool development
- Joint Interop demo involving
 - Genivi, W3C and OCF at either CES or MWC
- Host reference implementation under W3C
 - Allocate resources to work with Dr. Powell.