ALEN

Automotive Linux Edge Node

AUTOMOTIVE

LINUX
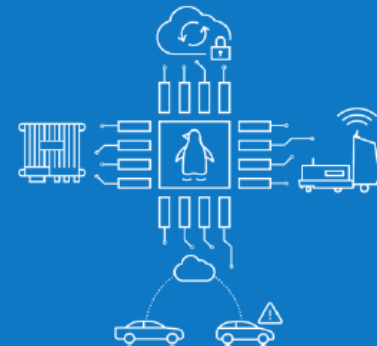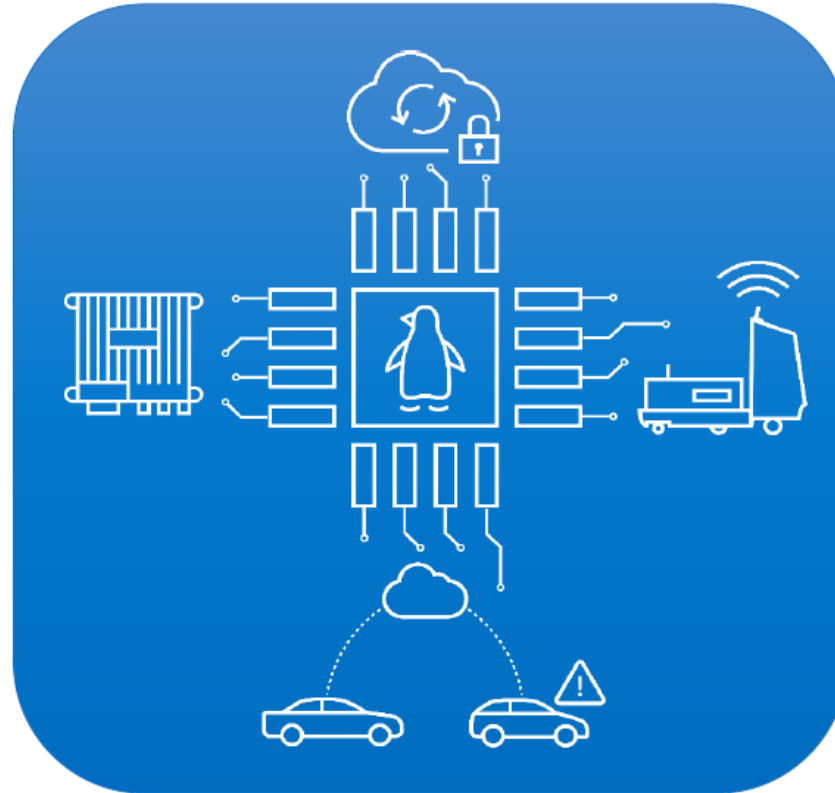
EDGE

NODE

ALEN

BOSCH

ALEN - Automotive Linux Edge Node

Embedded and cloud development platform as a service

Embedded Linux multipurpose IOT gateway

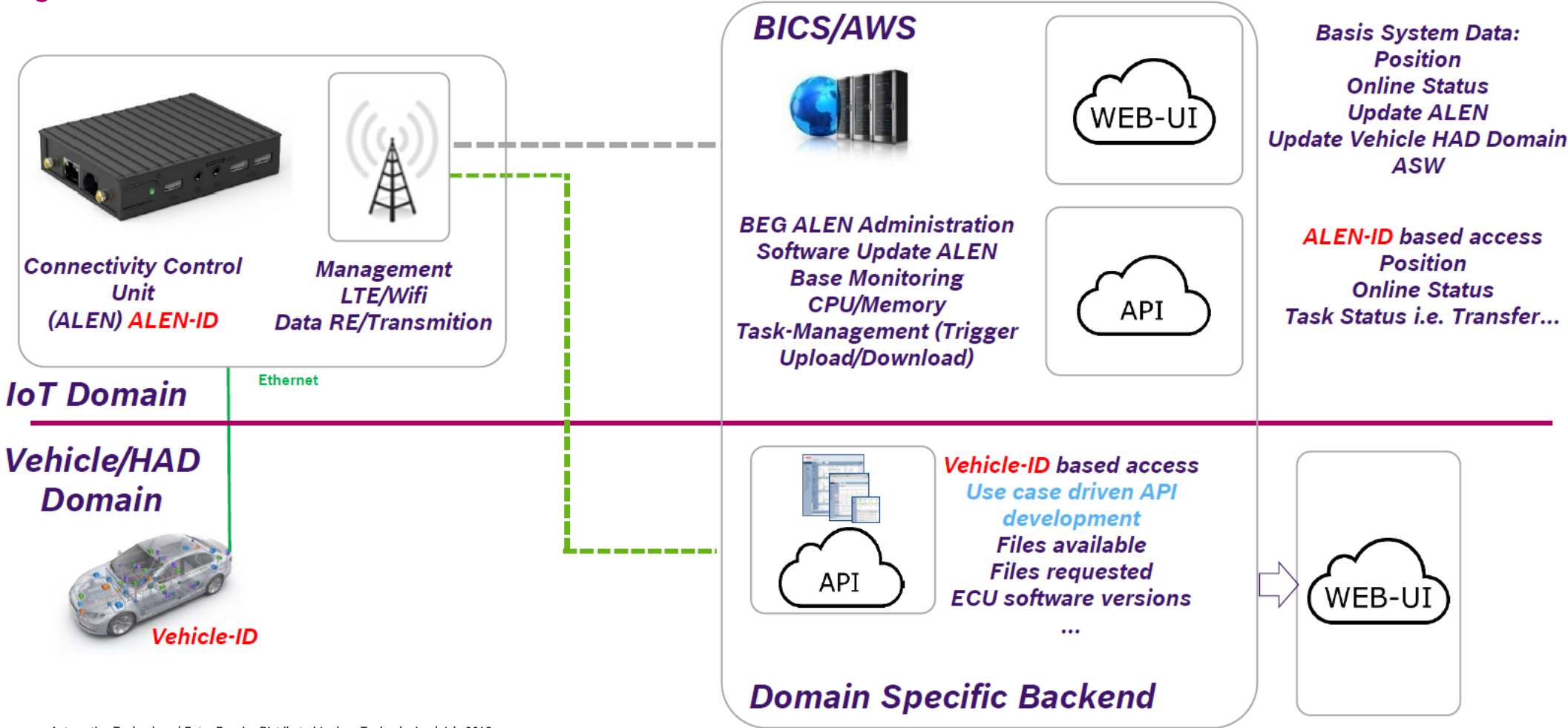Application specific hardware variants can be supported

Application specific software and services over the air

Generic data acquisition and transfer service

Device management portal – provisioning and enrolment

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System Architecture

BICS/AWS

WEB-UI

**BEG ALEN Administration
Software Update ALEN
Base Monitoring
CPU/Memory
Task-Management (Trigger
Upload/Download)**

API

**Basis System Data:
Position
Online Status
Update ALEN
Update Vehicle HAD Domain
ASW**

ALEN-ID based access
**Position
Online Status
Task Status i.e. Transfer...**

**Connectivity Control
Unit
(ALEN) ALEN-ID**

**Management
LTE/Wifi
Data RE/Transmision**

Ethernet

IoT Domain

**Vehicle/HAD
Domain**

Vehicle-ID

API

Vehicle-ID based access
Use case driven API
development
Files available
Files requested
ECU software versions
...

WEB-UI

Domain Specific Backend

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| Base Software: BSP (Yocto) | Remote Update and 2nd Partition | System Status and Monitoring | Connectivity Manager | Base data e.g. GPS | MeasureD | Secure Communication |

- Yocto based build system (Version: Pyro)

- New meta layer for ALEN

- U-Boot as boot loader (with modification for FOTA)

- Linux Kernel– 4.1.15

- Systemd as an init system

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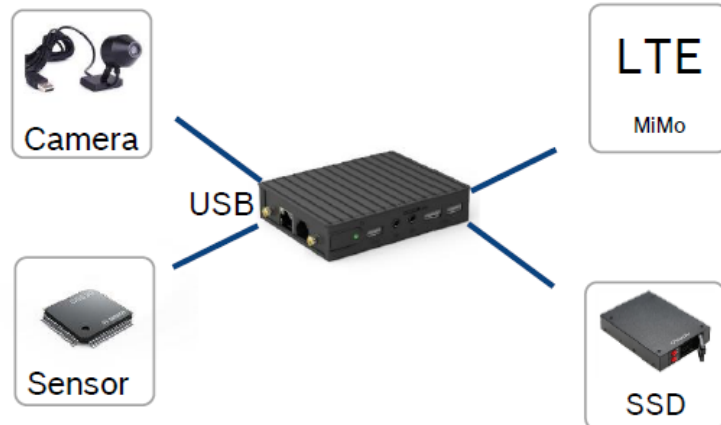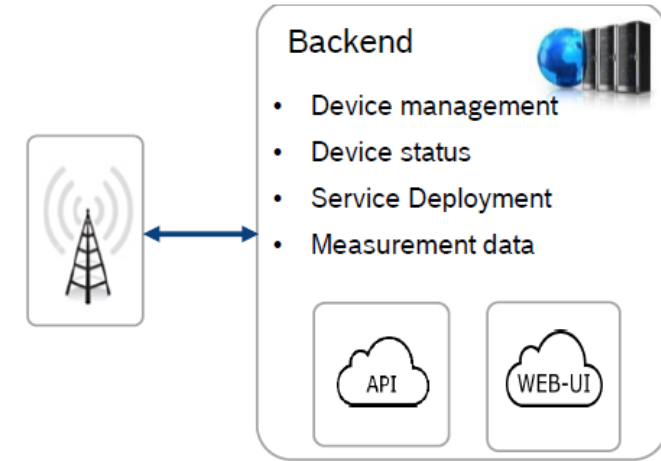## Example Use Case: Data Acquisition

Application:

- Big Data Acquisition.
- Storage of measurement data on 2 TB SSD drives in a rack.
- Online Device Management e.g. Failures or full memory

Scope:

- Big Data acquisition e.g. camera data

Usage:

- User observance for development of new services and improvement of user experience

Backend

- Device management
- Device status
- Service Deployment
- Measurement data

API WEB-UI

Camera **USB** **LTE** MiMo **Sensor** **SSD**

ALEN device:

- Embedded Linux
- USB for Sensors/Cameras
- FOTA capability
- PCIe for specific application
- LTE for device management

ALEN overmind:

- Scalable backend
- Platform as a Service (PaaS)
- Service deployment on devices
- User/Usage statistics
- Measurement API
- Optional: WebUI

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API Interface

➢ API Info on local WebSite!

➢ Prepared Yocto Image already installed on ALEN device

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