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Eclipse Software-Defined Vehicle
Project Leda + Incubator

24th October 2022
Mike Haller / Christian Heissenberger
ETAS GmbH

Project Leda

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Why?

We needed
- **a place for our idea of a "SDV stack"**
- **a build system** with **automotive in mind**
- **ready-made images** for demos
- **running on near-automotive hardware**
  embedded, low-power, ARM-based, known by IoT community

Let's use Raspberry Pi + CAN-HATs

Our goals
- **Provide a quick start SDV reference stack**
- **Engage with the OSS community**
- **Sharing example use cases**
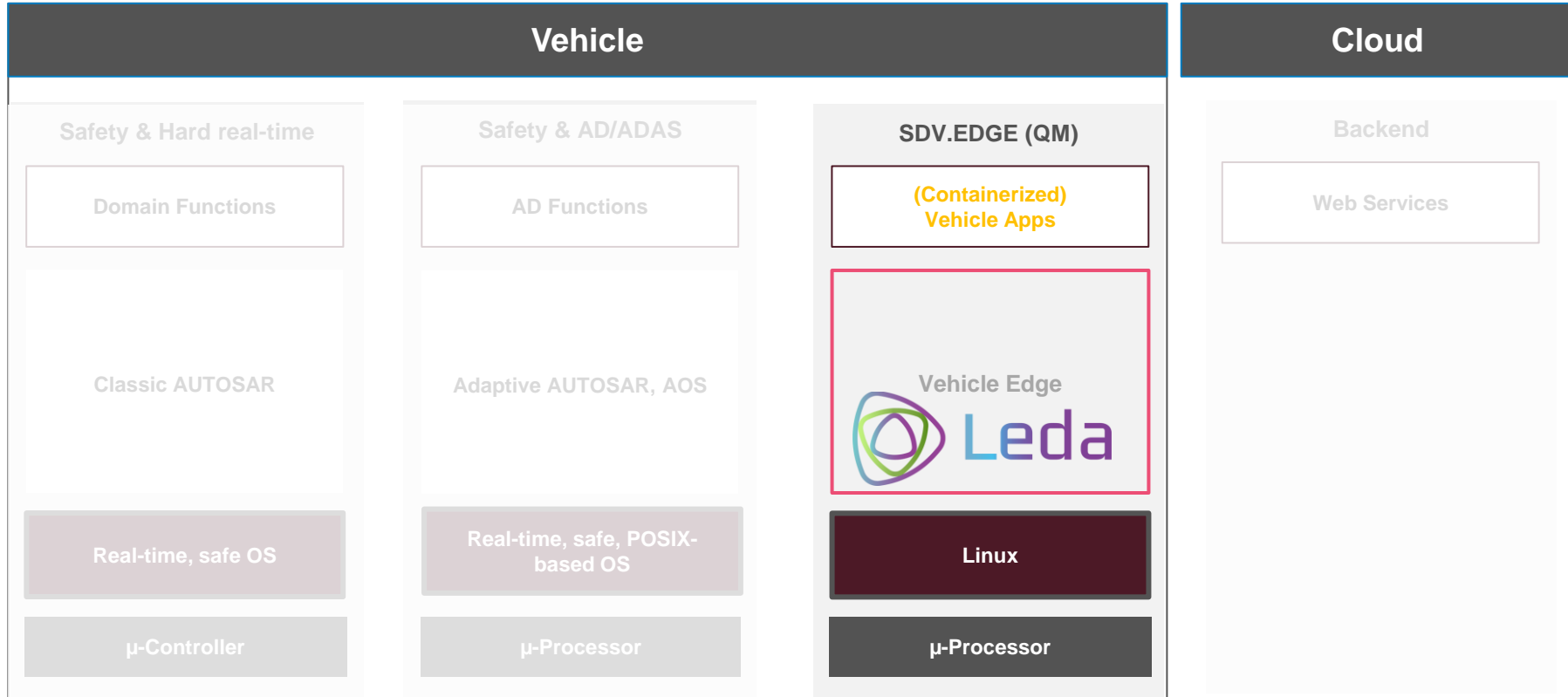- **Explore new ideas** within the community

Let's use Yocto / Poky

Let's start an open source Incubator project

Challenges in SDV

- New **challenges** and **new approaches**
- Methodology and technology from **IoT and Cloud**
- **More frequent updates** for in-vehicle software
- **DevOps** will become normal for millions of vehicles
- Continuous build-deploy-monitor cycle
- Vehicle **abstraction layers enable innovation**
- New ideas are evaluated faster
- App developers need virtual and accessible* hardware

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https://flic.kr/p/gu8Eva

In-Vehicle Scope

Vehicle			Cloud

Safety & Hard real-time
- Domain Functions
- Classic AUTOSAR
- Real-time, safe OS
- μ-Controller

Safety & AD/ADAS
- AD Functions
- Adaptive AUTOSAR, AOS
- Real-time, safe, POSIX-based OS
- μ-Processor

SDV.EDGE (QM)
- (Containerized) Vehicle Apps
- Vehicle Edge — Leda
- Linux
- μ-Processor

Backend
- Web Services

Leda?

It takes time to ...
... find the right components
... design a working stack
... build the full stack
... deploy on a device
... configure the base services
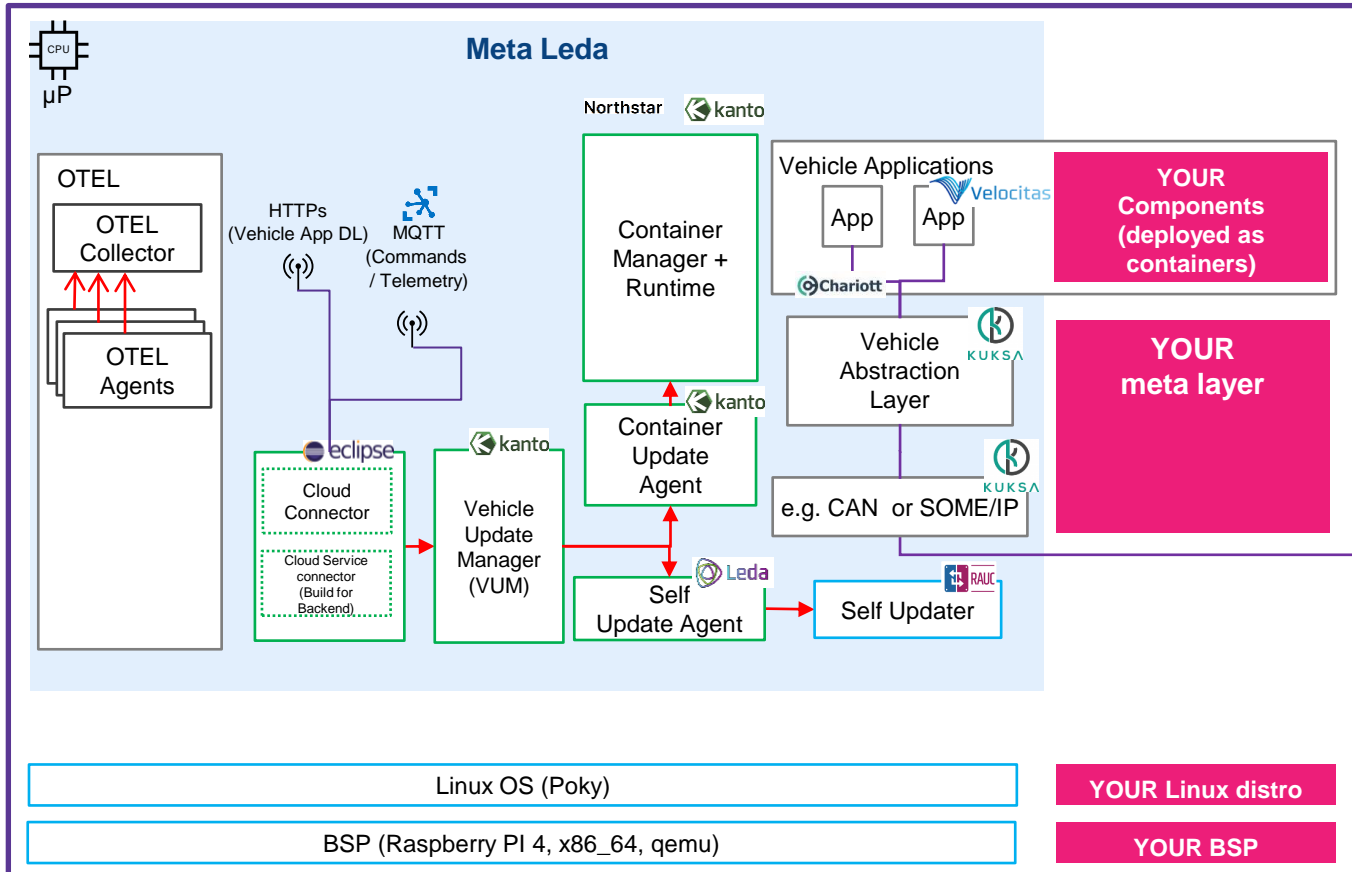... and NOW you can start developing your app.

kubectl rollout my-app

How about...

... download Leda

... run on qemu/docker or some affordable HW device

... and directly start deploying your Vehicle Applications?

* Shamelessly stealing the Kuksa ideas >:-D

Initial distro

Deliverables

Leda

Build recipes
for SDV-related packages
OpenEmbedded Metalayer

Quickstart Images (Distro)
Sane default configurations
Pre-Integrated
Documentation, How-Tos

Runs on Raspi, QEMU, ... Docker

Incubator

Source Code
Experimental components

Build recipes
Documentation

No releases!

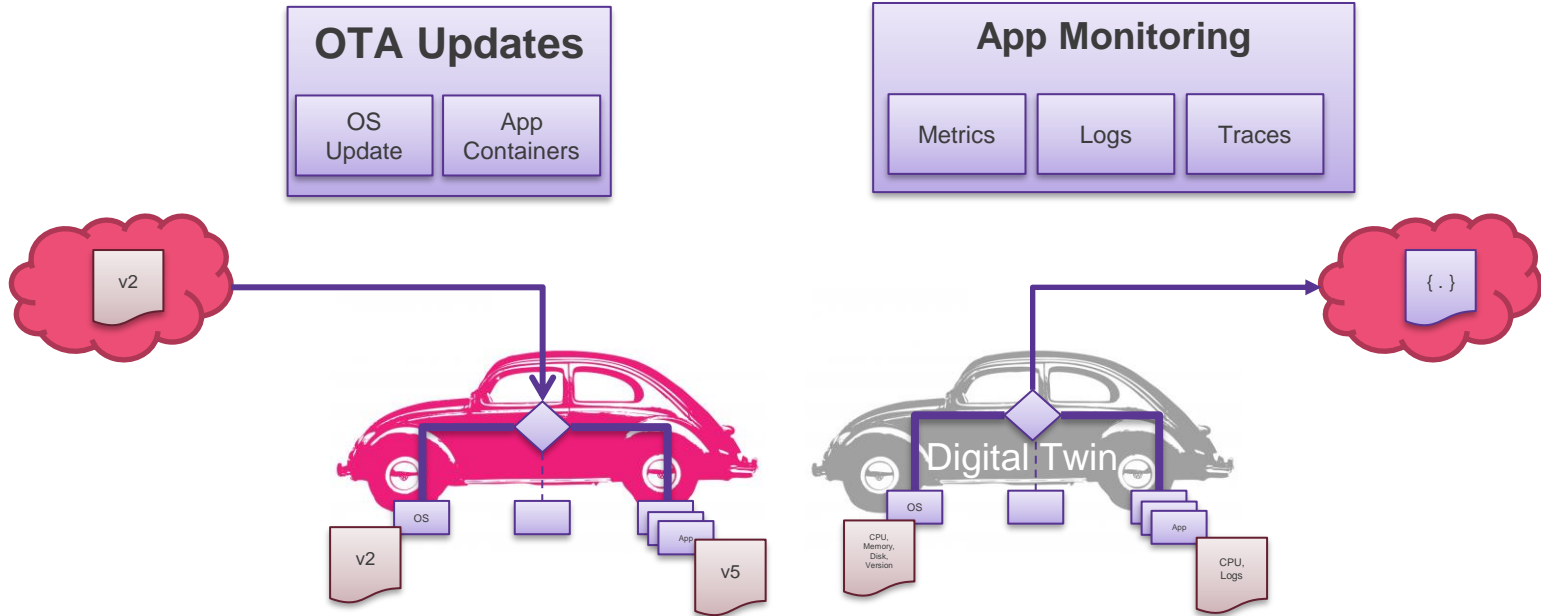Leda Incubator

Leda Incubator Goals

A place for new SDV components for integration into the Leda quickstart images.

Includes **new components, experimental, pre-mature**, temporary implementations etc. to fill the current gaps.
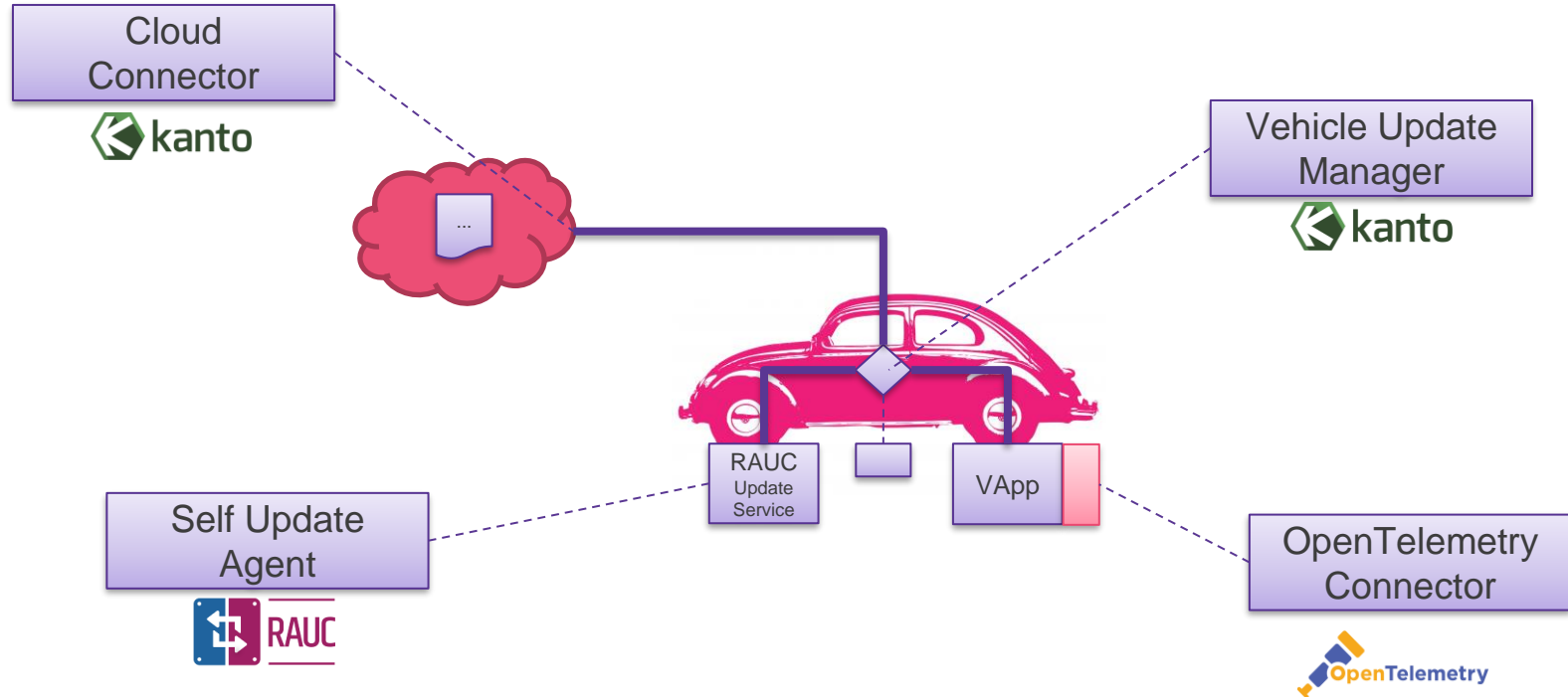
Leda Incubator can be a home until the "right" upstream projects are identified, contributions are worthy or the component may even become a standalone project.

Low entry barrier regarding overhead (don't need project proposals, project websites, build environment etc. > Leda can be reused)

Incubator Components

Current Work

Roadmap

2022 — Q4-2022 Milestone 1 Release — **2023**

- Support for Yocto **Kirkstone** LTS until Apr'24
- Migrate to better build and layer tool: siemens/**kas**
- Recipes for ESRLabs **Northstar**: embedded container runtime
- Build recipes for first **incubators**
- ETAS sponsoring an Eclipse Leda introduction video
- Setup build environment on Eclipse infrastructure

- Support for Yocto Langdale
- **Prepare binary OSS build ("nightly")**
- Setup Eclipse ORT license scanning
- Setup of dependency track + CVE checks
- Dockerized qemu images

Join us!

You can help us by using Leda!
We're grateful for feedback

Mailing List:
`leda-dev@eclipse.org`

We're looking for ...
- additional hardware to support
- ideas for use cases
- contributions (ideas, code, docs)

Teaser

Website

Mike Haller
ETAS GmbH
Christian
Heissenberger
ETAS GmbH

THANK YOU

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