Team 5
Hacking the Truck

—

BCX22

Challenge #2: Eclipse Software Defined Vehicle

IBM iX

Did you know, that Truck Drivers have a real issue with taking their mandatory break in time?

Truck driver on route

Legally mandatory time to take a break

Exceeding working hours, approaching multiple resting areas until they found a free spot.

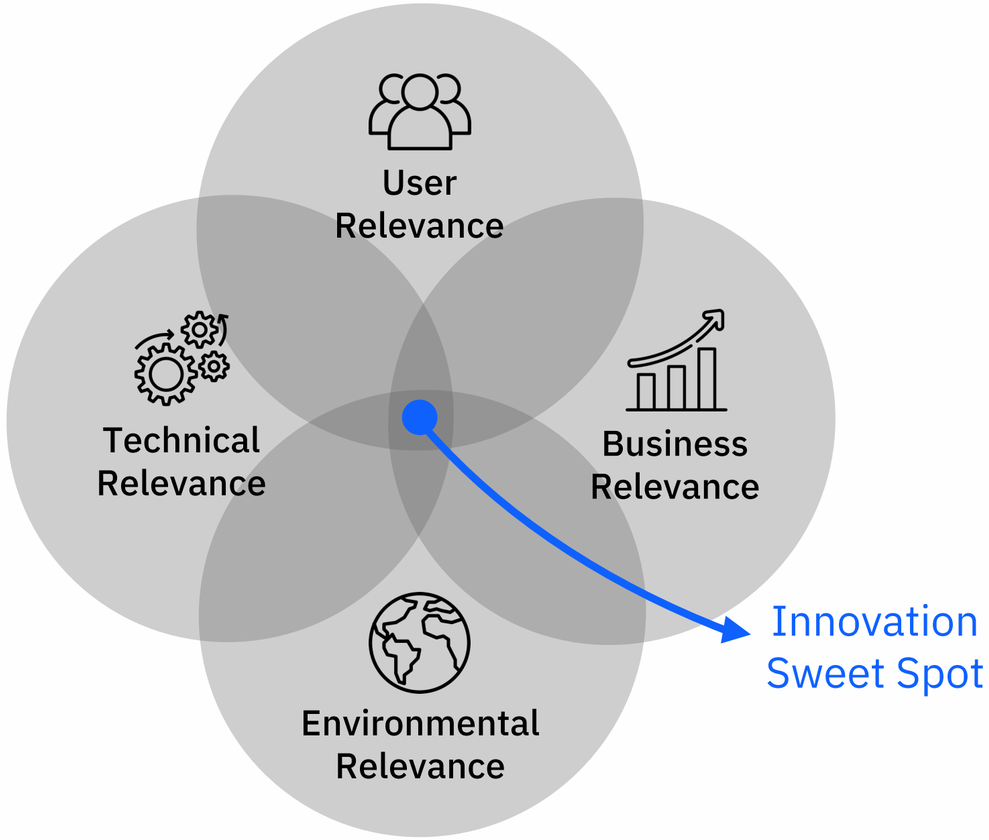
"Finding a parking spot is a nightmare!"

Thorsten L., Truck Driver (User Interview)

90% of resting areas are overcrowded, and trucks need to park in prohibited areas.

ADAC, Nov 2022

A relevant case, not only for truck drivers.



The current situation results in $6,000 loss per driver.

Truck Parking Report, Trucker Path, 2018

Breaking and accelerating a truck emits 16 kg CO_2.

Park your Truck, 2020

High risk: 89% of drivers experience fatigue and 38% fell asleep in the last 12 months.

European Transport Workers' Federation (ETF), 2021

Highly fragmented resting area infrastructure across Europe requires self-sufficient solution.

How might we:

Leverage vehicle data to determine if a rest area has parking availability...

… so that we can recommend truck drivers the optimal stop?

Ui

localhost:4200

Destination: **369km | 04:30**

Test Street, 12345 Musterstadt

Mandatory break in: **~49km | 00:45**

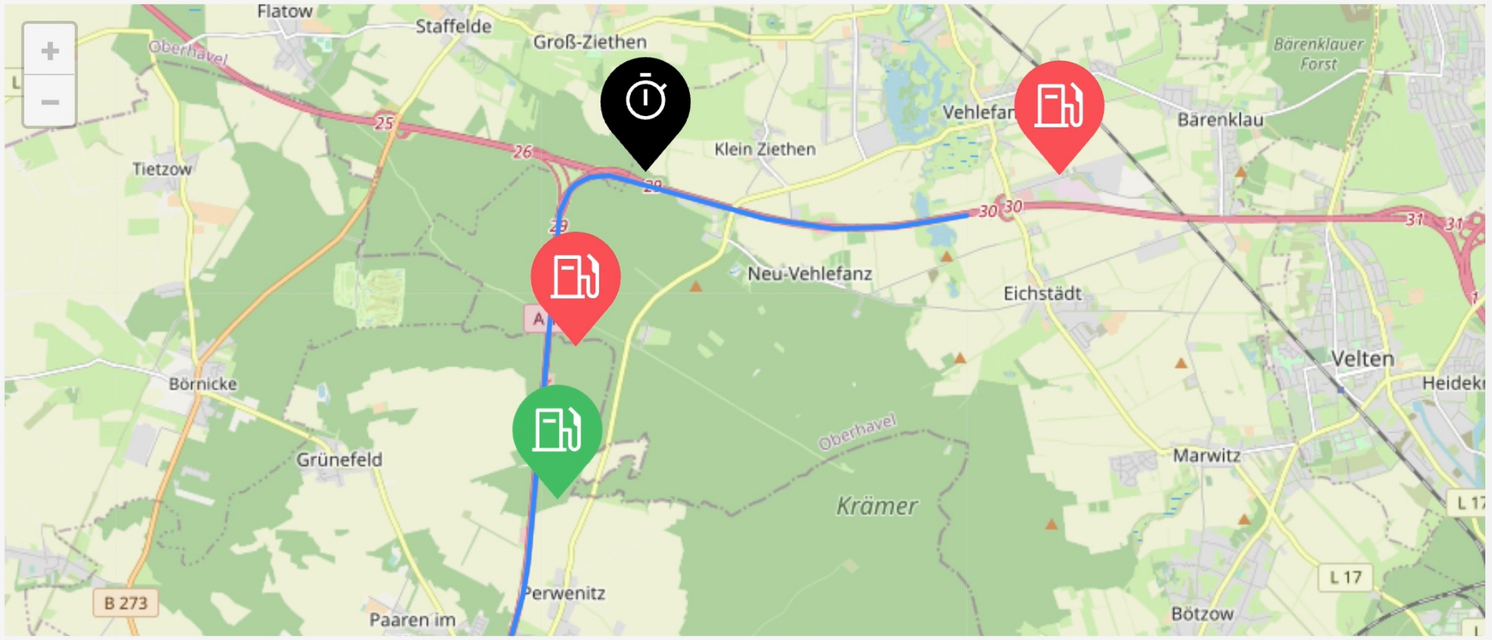
Recommended stop

Wolfslake-West **42km | 00:30**

Parking availability: *Yes*

Community rating: ★★★★☆

Details | Add to route



Ubuntu Linux 20.04

Terminal — Nov 9 14:04

hello_world_python_topic (proto:wcx.Status) — eCAL Moni...

Monitor View Windows Help

Topics

Group by: Process

Filter

Host / Process

ibmhacks

Python Hello World Pub...

Python Hello World Pub...

eCALMon

eCal-Subscriber

Expand Collapse

hello_world_python_topic (proto:wcx.Status)

Pause

Protobuf Reflection | Signals Plotting | Raw Data

Expand Collapse Display Blobs

Field	Type	Value
uuid	string	a593ff4c-562c-4f95-a5be-a6de91e13776
acceleration	int32	0
longitude	float	13,0092
latitude	float	52,6856

Drops

50 1112

50 0

andreas@andreas-Parallels-Virtual-Platform: ~

ibm_hacks@ibmhacks: ~ | andreas@andreas-Parallels-Virtual-P...


```
  "latitude": 52.68564
}
{
  "uuid": "a593ff4c-562c-4f95-a5be-a6de91e13776",
  "acceleration": 0,
  "longitude": 13.009171,
  "latitude": 52.68564
}
{
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  "acceleration": 0,
  "longitude": 13.009171,
  "latitude": 52.68564
}
```
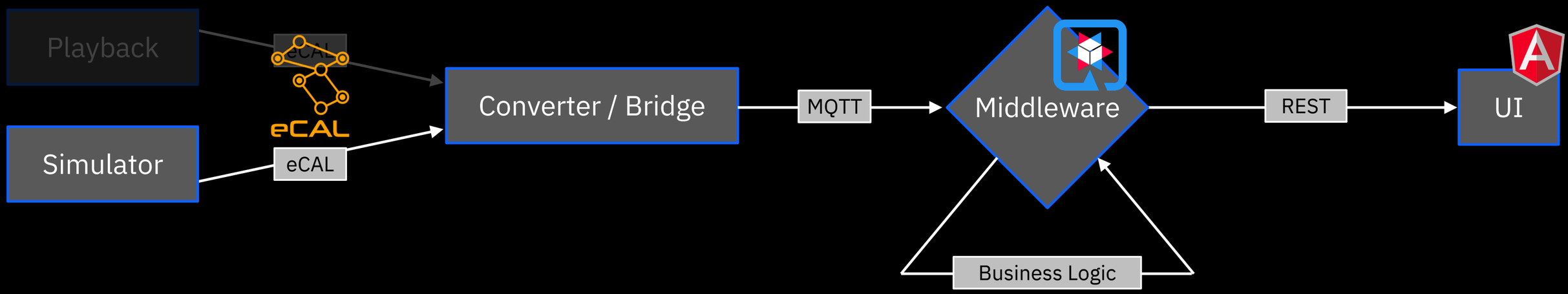

Solution approach: Connecting a web UI to vehicle data



Simulator

- generate needed data from KML
- output eCAL telemetry

Converter / Bridge

- subscribe to eCAL
- filter/transform (not implemented yet)
- output MQTT

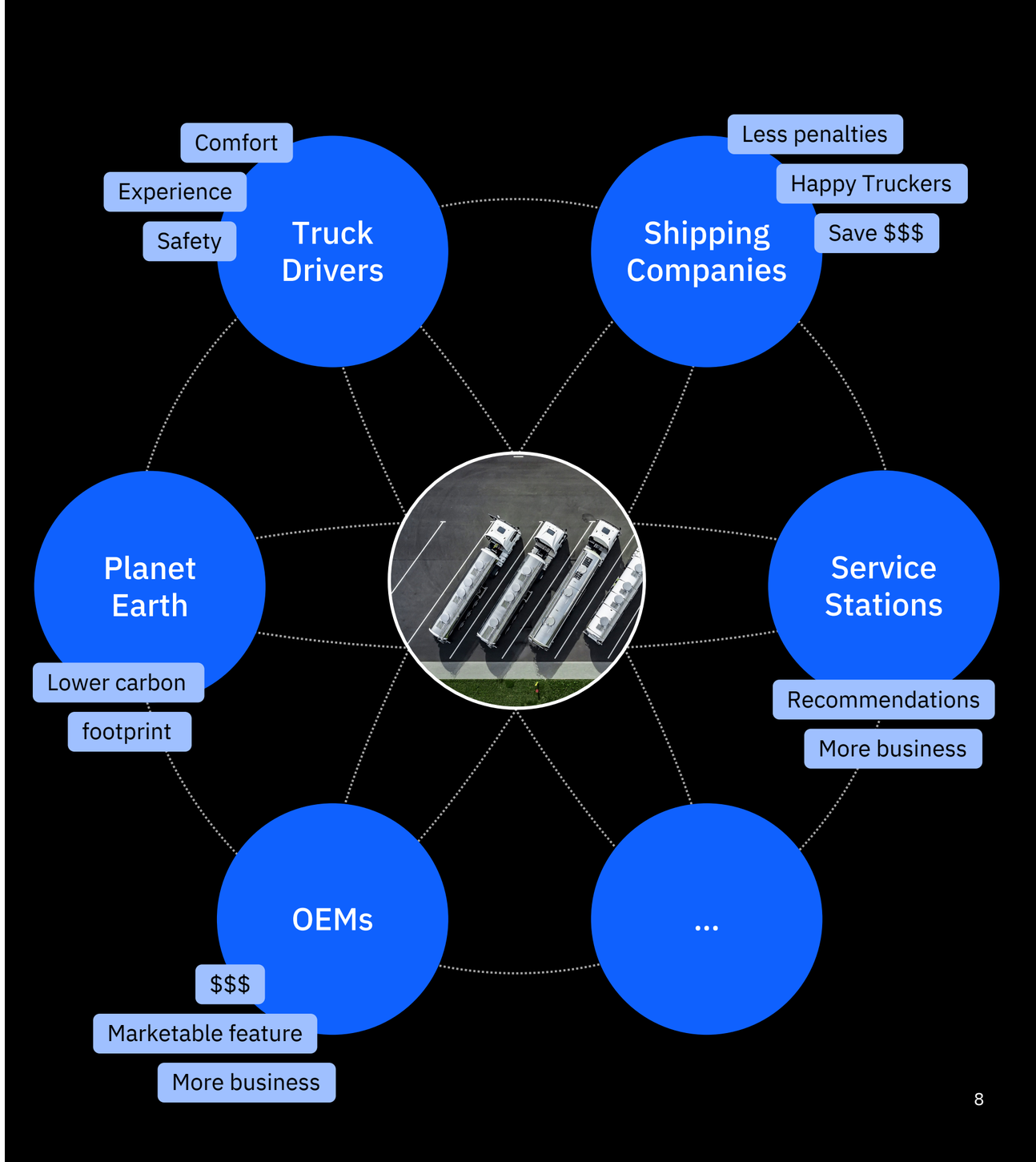
Middleware

- subscribes to MQTT
- evaluate parking situation from car data
- provide REST API

Web UI

- consume middleware to get parking situation
- display route with station data

Beyond code: We can create impact for an entire ecosystem.



We believe that the **experience** needs to be an integral part of any SDV project from the very beginning.

What do you think?