

Webapps

Make use of web applications at DESY cryogenic controls dept.

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EPICS-Conference at ITER June 2019

Overview

1 Motivation

2 Functional requirements

- Asset management
- Displaying archived data
- Displaying live data

3 Realization

- Implementation
- Tools
- Deployment

Motivation

Exchange of ideas

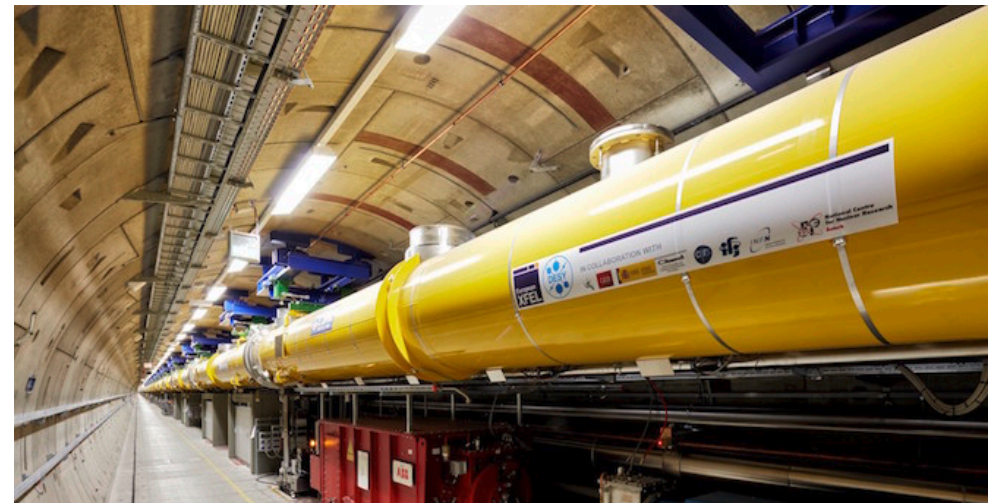
- We will be happy to learn what others do and tell what we do ...
- Are we able to participate in an open source community?

Background

- Cryogenic controls
i.e. IT infrastructure for all cryogenics
- Support for facilities group

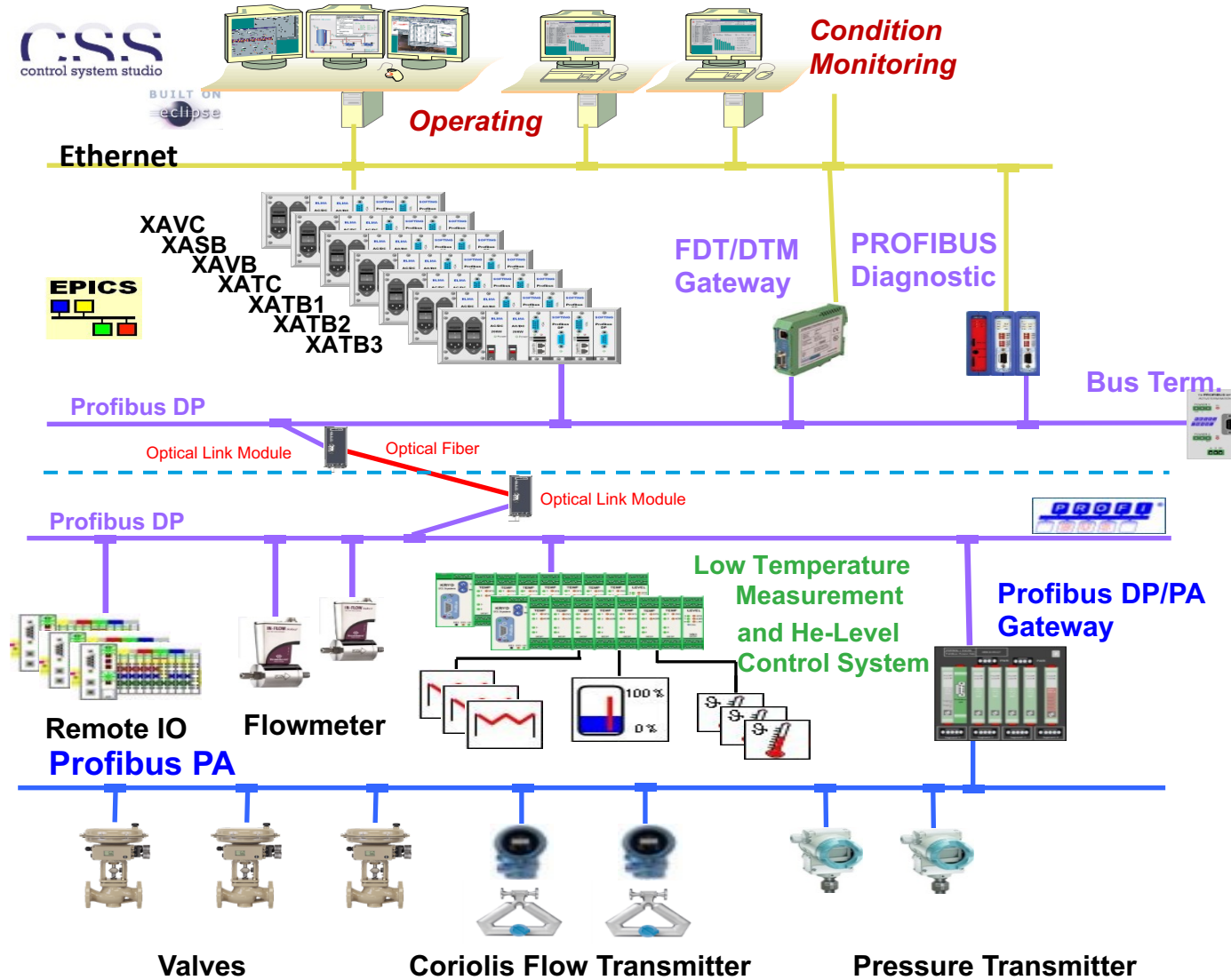
Open Source

- Of course



Motivation

A lot of different assets



- > 650 Valves
- > 2500 Temp. Sensors
- > 800 Press. Sensors
- > 100 Level Sensors
- > 200 Flow Sensors

Functional requirements

Should be accessible without further preparation, i.e. on the smart phone

Asset management

- Repair
- Stock
- Cost units

Archive data retrieval

- Watch trends when you are out-of-office on-site or on-call

Probe-style live data

- Find out about some record when you are out-of-office

OPI-style data display

- Watching the energy consumption
- Gained attention quickly at DESY

Asset management

A defective part must be exchanged

- Exchange part
 - Where are the spare parts?
 - Which procedure must be followed?
 - Which control system processes will be affected?
- Handle the defective part
 - Do we still have warranty?
 - Where to send to for repair?
 - Do we have to fill up stock?
- Take precautionary measure
 - Do other components of this type have problems too?
 - Where are they built in?



Manuals



Price?
Vendor?
Version?

Asset management

Make use of heterogeneous databases

Asset-Database

- Manages orders and stock
- Enhanced to trace status (location)
- Enhanced to contain documentation
- IDs: Asset-ID, Inventory-ID

DCT-Database (Database Creation Tool)

- ID:s IOName, Channelname
- Side effect of creating EPICS-Databases

IO-Configuration-Database ('Device Database')

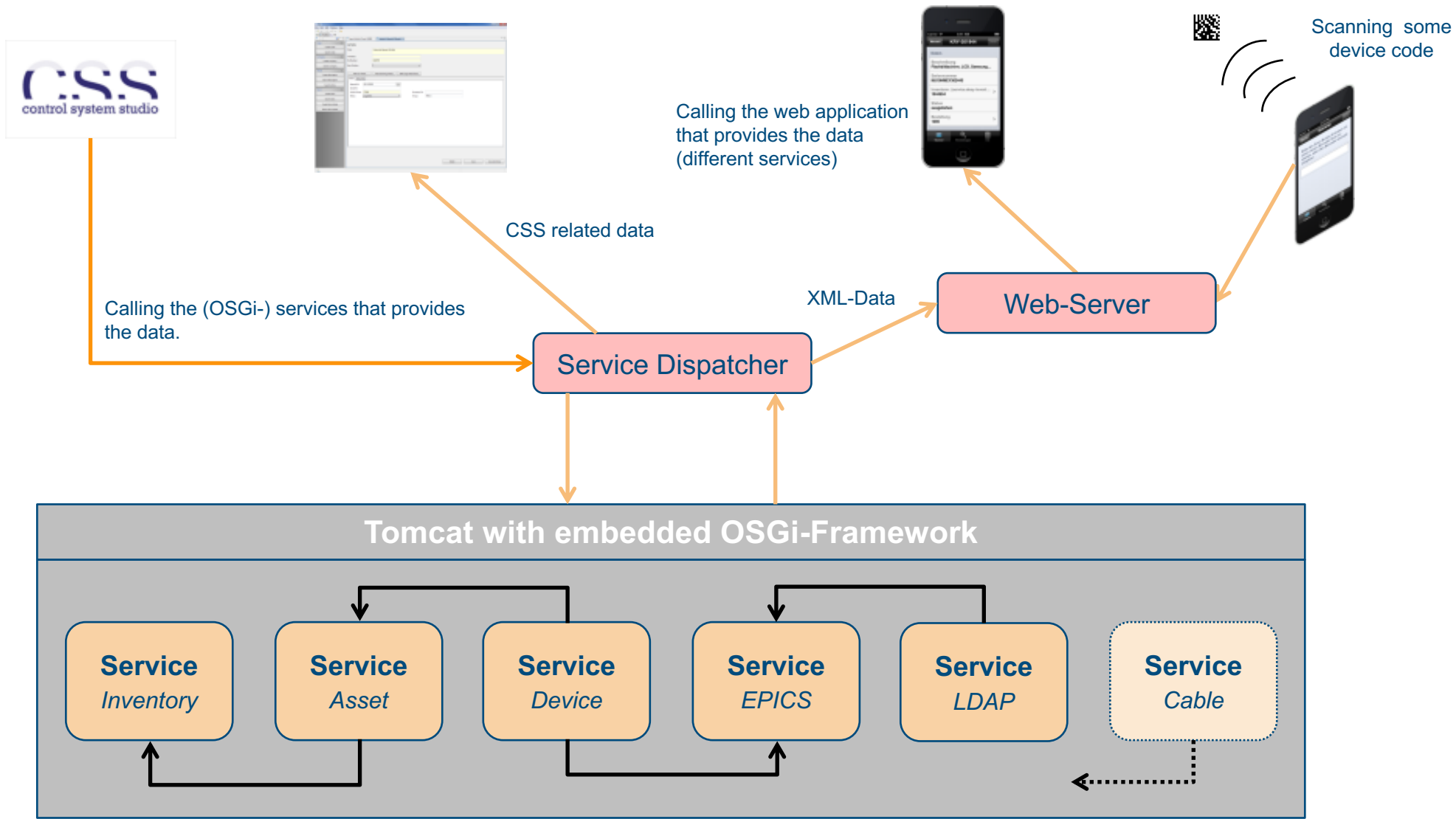
- IDs: IOName, Asset-ID
- Contains Profibus-Addresses, Documentation

DESY Inventory

- ID: Inventory-ID

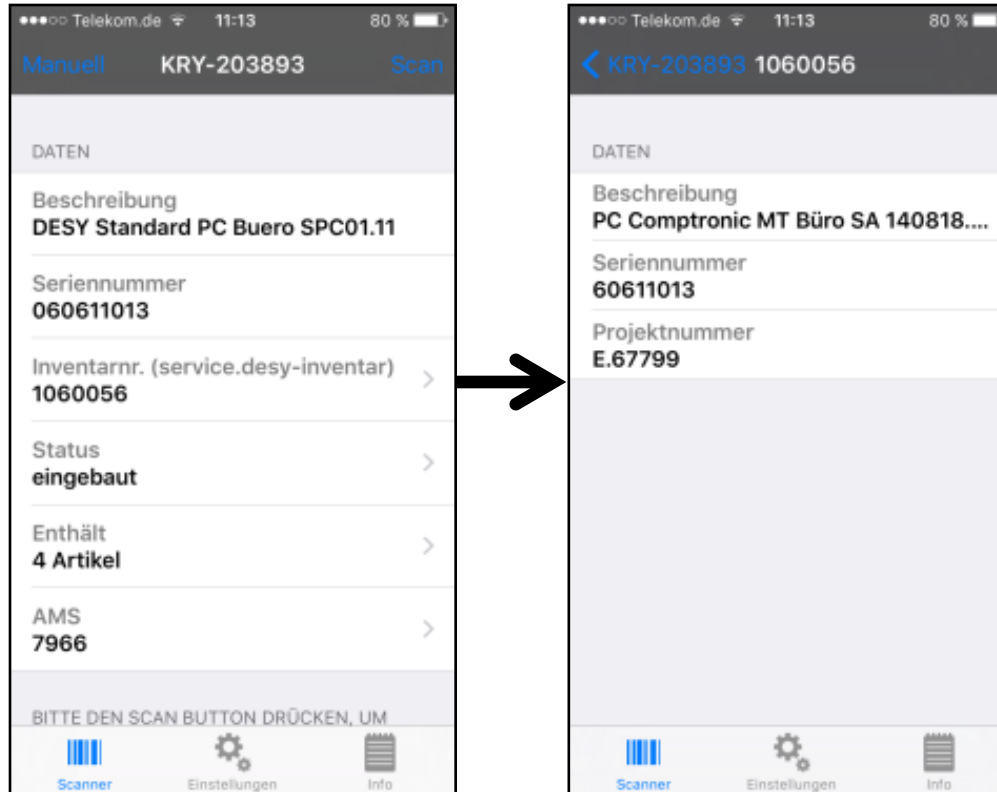
Software-Structure

Generic handling of xml data in the browser



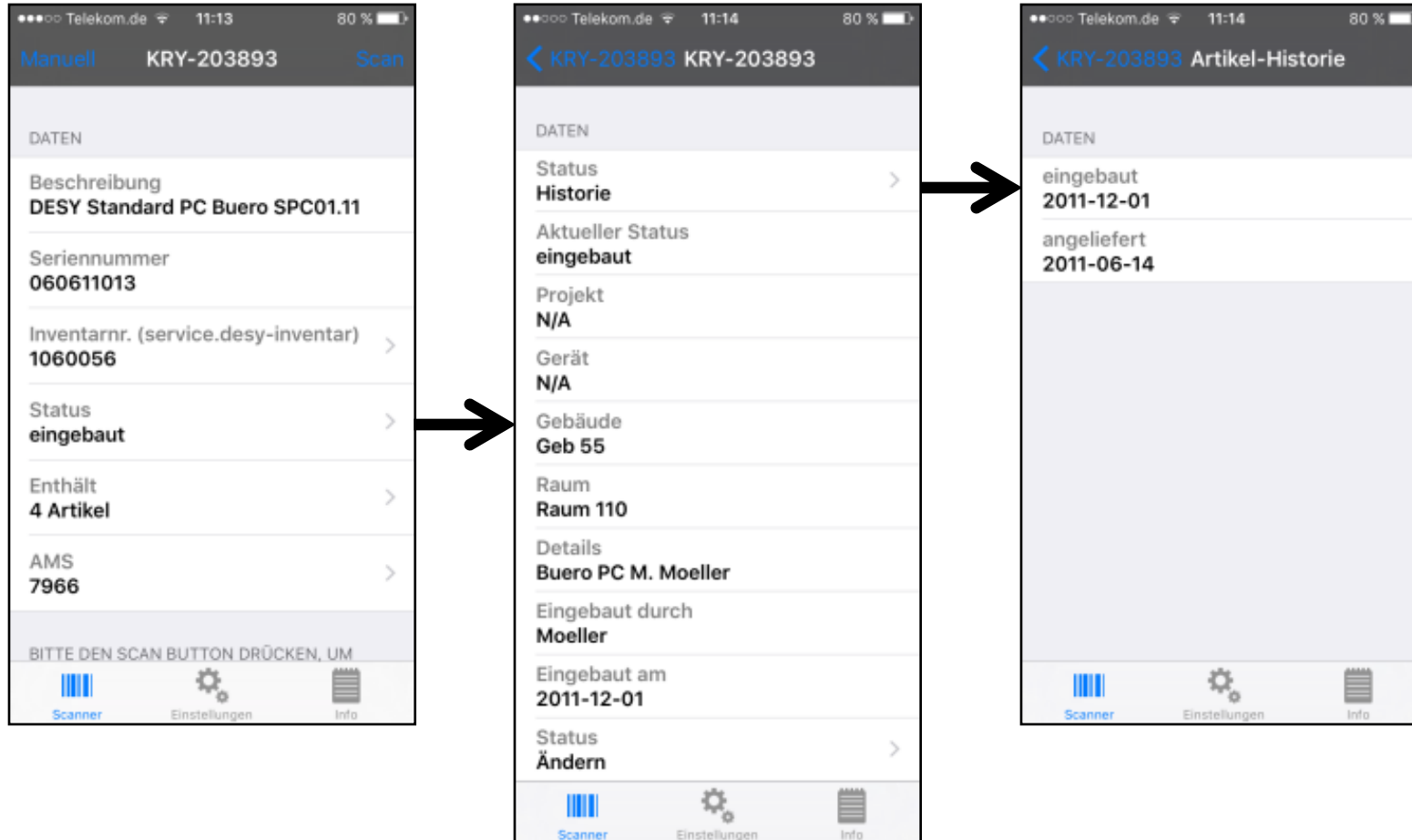
Asset management

From scanned label to inventory



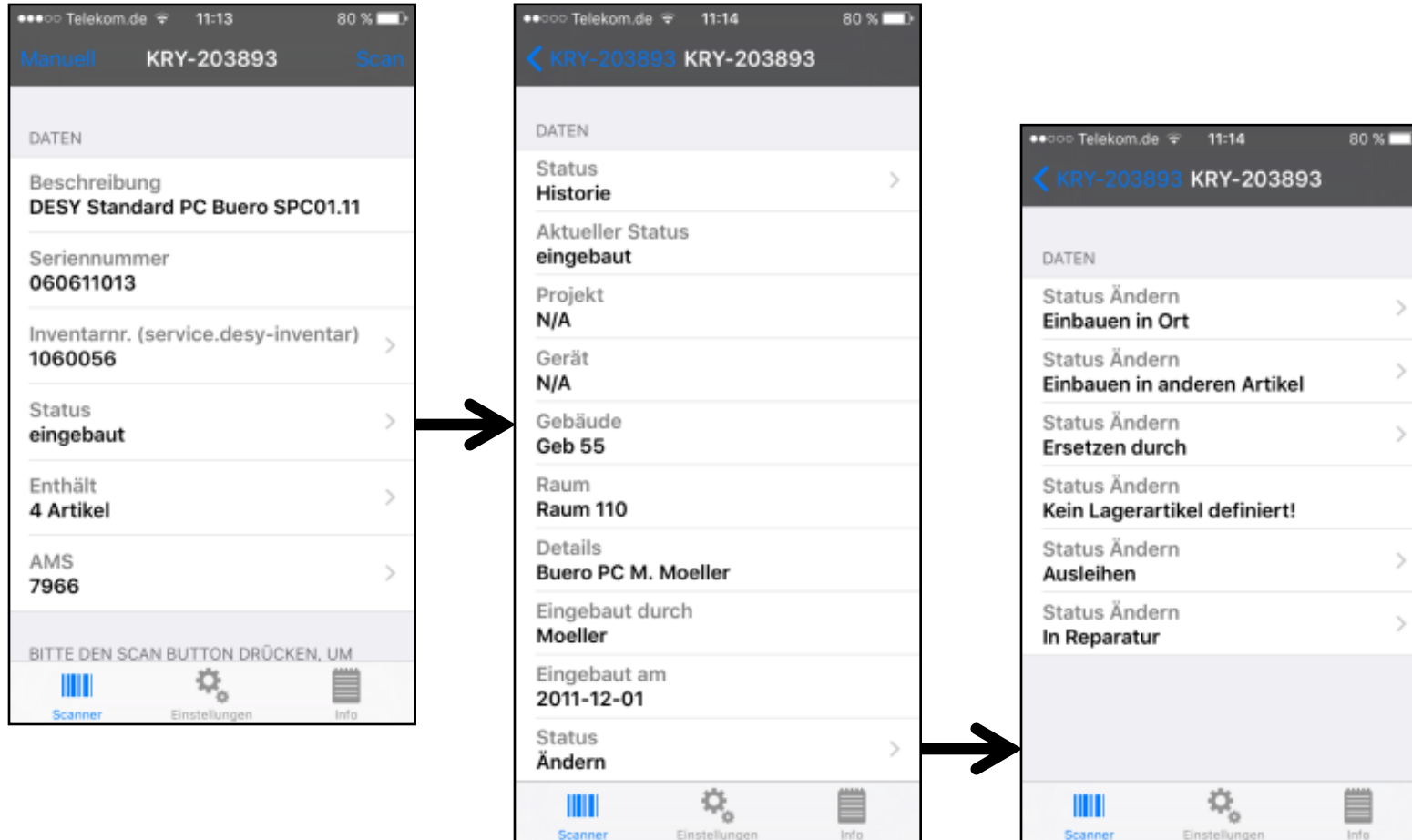
Asset management

Showing details and history



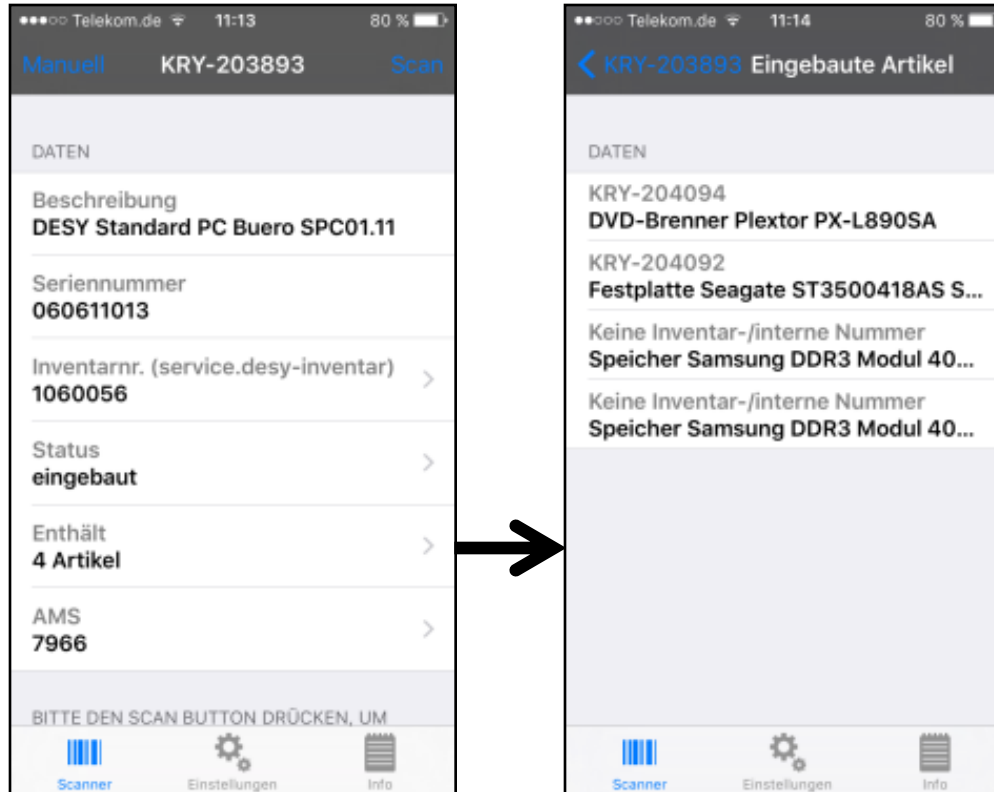
Asset management

Perform status updates



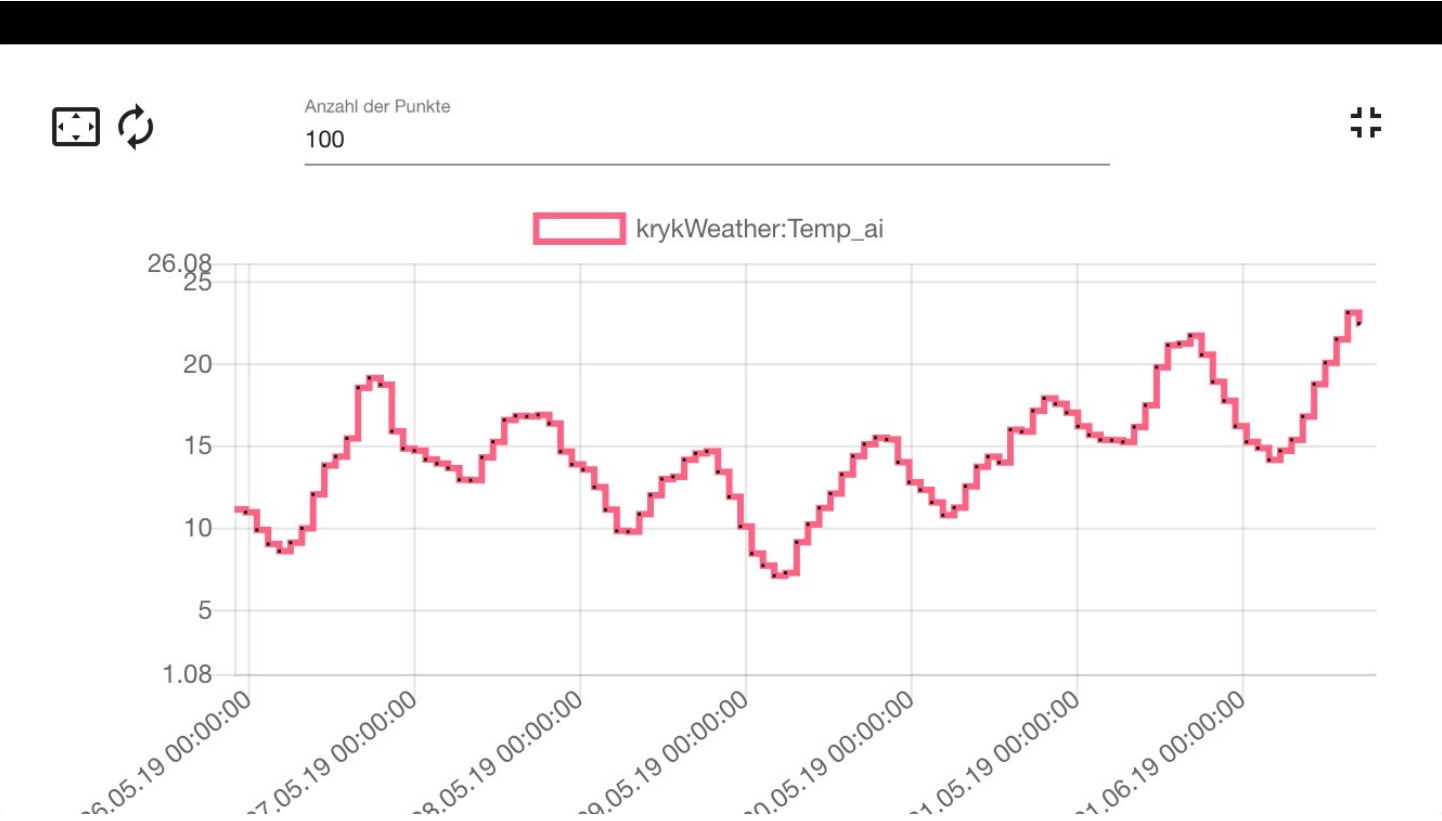
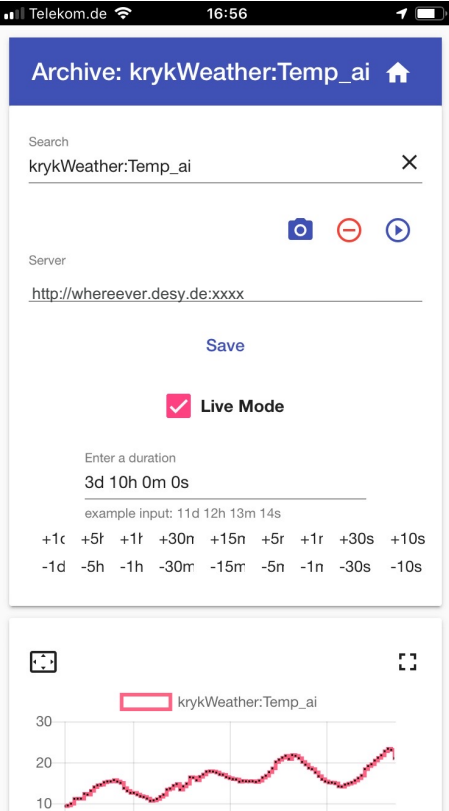
Asset management

Make use of the 'is-contained-in' relationship



Data display

Archived data via Archive Request Server



Data display

Live data in Probe-style

The screenshot shows a mobile application interface for a probe. At the top, the status bar displays 'Telekom.de', signal strength, Wi-Fi, the time '17:12', and battery level. The app header is a blue bar with the text 'Probe: xfelKryoXTL:cpuUse...' and a home icon. Below the header is a search bar with the text 'xfelKryoXTL:cpuUsed_ai' and a close icon. Underneath the search bar are three icons: a camera, a red minus sign, and a play button. The main content area has a 'Type' dropdown menu set to 'Double'. Below this is a list of data points: 'Value' (36.65848275343413 %), 'Status' (NO_ALARM), 'Severity' (NO_ALARM), 'Connection' (Connected), and 'Timestamp' (1.6.2019, 17:12:26). At the bottom, there is a blue bar with the text 'Öffne in' and two options: 'IDS' and 'Archive Viewer', each with a right-pointing chevron.

Probe: xfelKryoXTL:cpuUse...

Search
xfelKryoXTL:cpuUsed_ai

Type
Double

Value 36.65848275343413 %

Status NO_ALARM

Severity NO_ALARM

Connection Connected

Timestamp 1.6.2019, 17:12:26

Öffne in

IDS

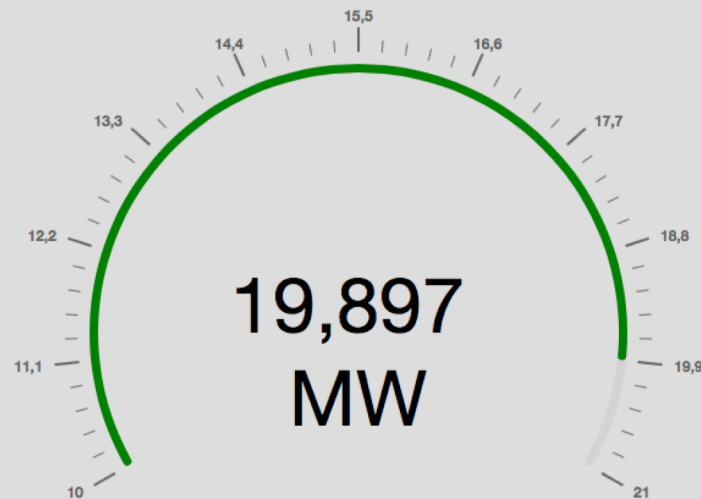
Archive Viewer

Data display

Live data in OPI-style

Lastmanagement DESY

Sat 01 Jun 2019 19:14:47



Leistungsmaximum

21.4 MW

Gesamt DESY



19.9 MW

15 Min-Wert SOLL

98.33 %

15 Min-Wert IST

91.71 %

-  Generator in Betrieb
-  Generator gestört

Overview

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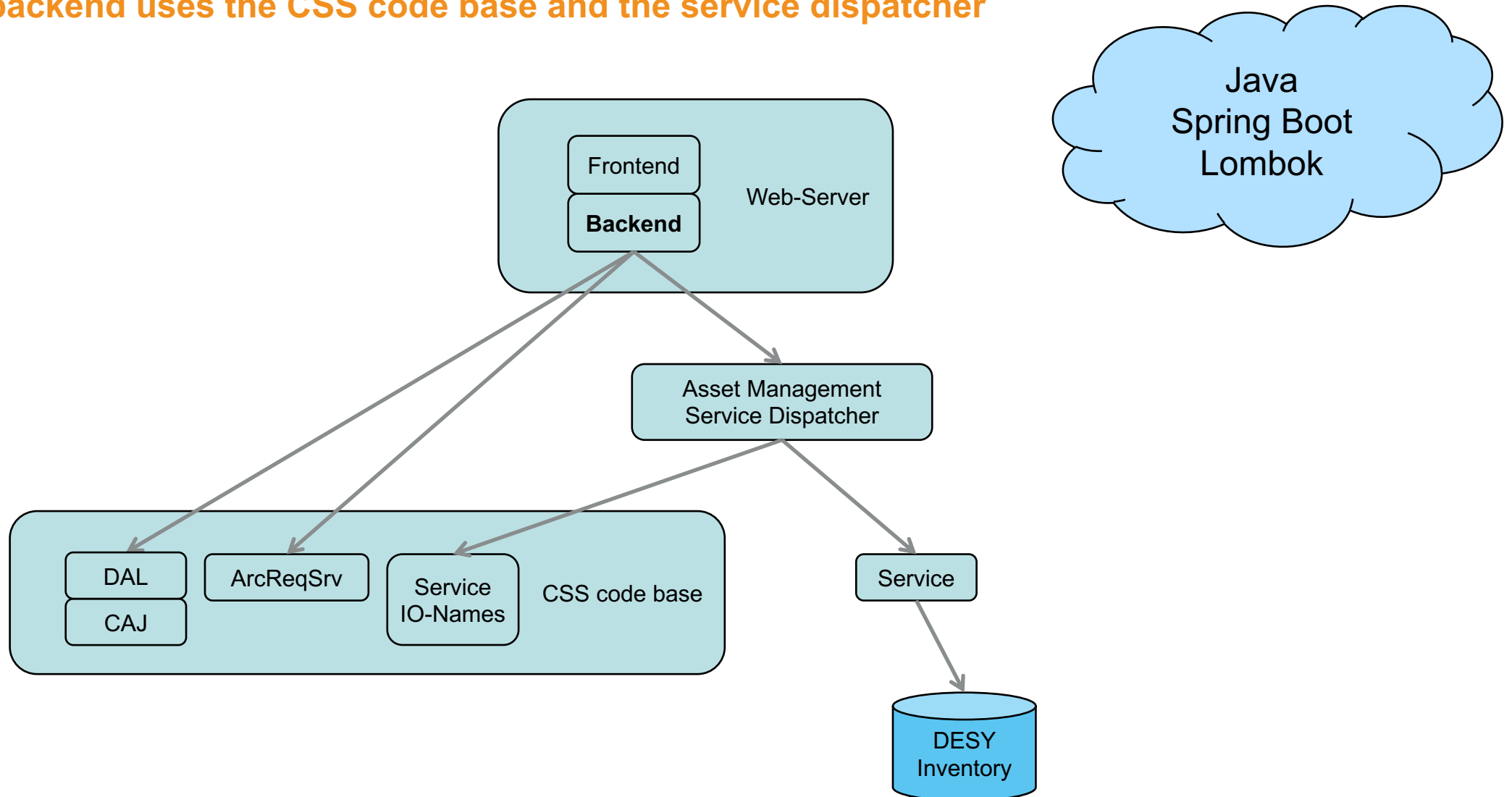
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- Implementation
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- Deployment

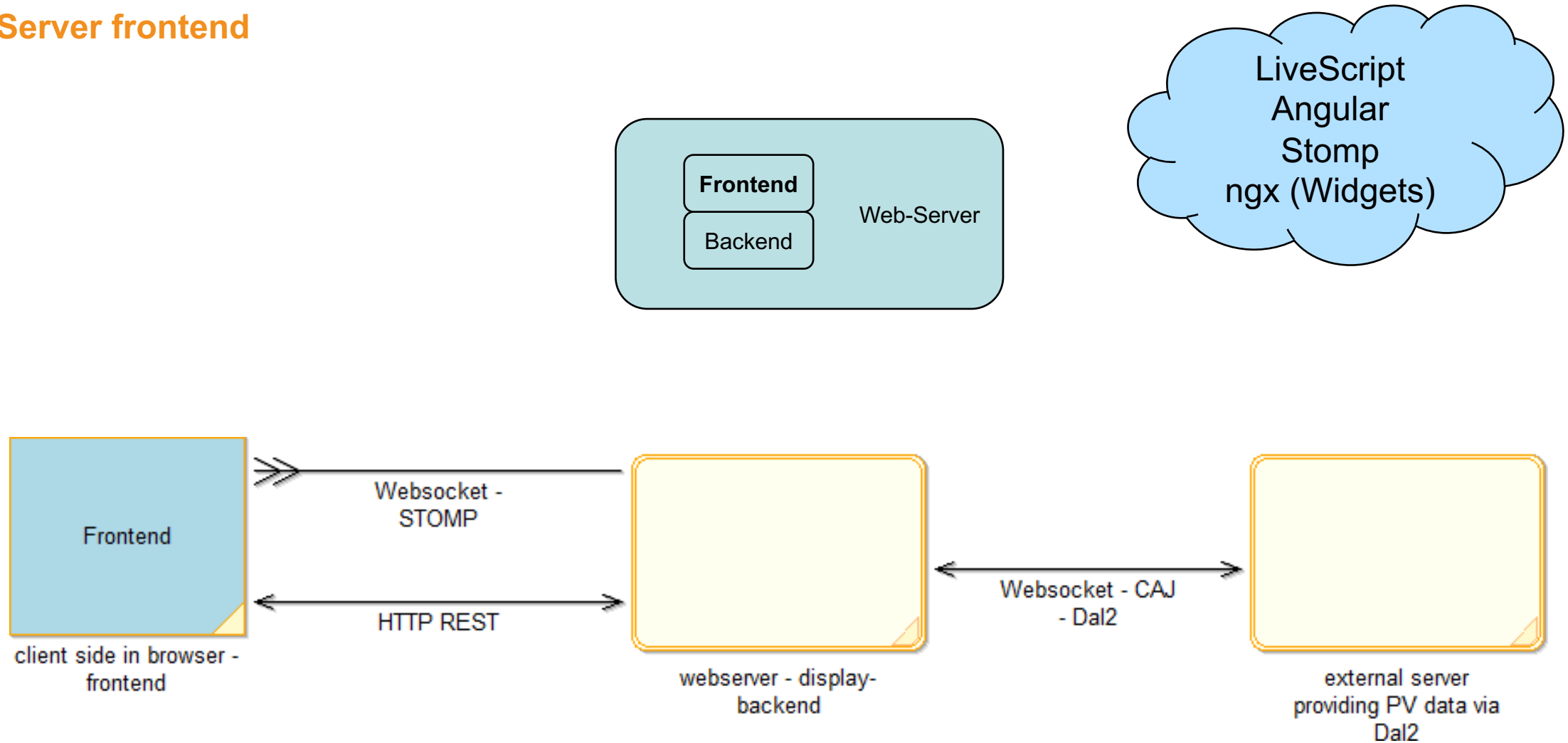
Implementation

Web-Server backend uses the CSS code base and the service dispatcher



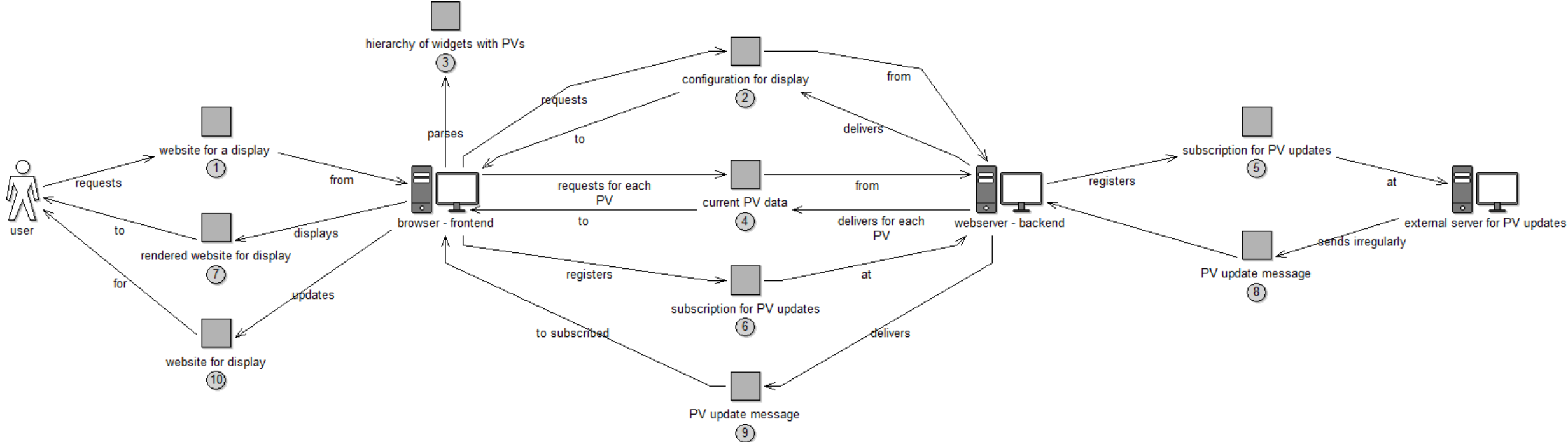
Implementation

Web-Server frontend



Implementation

Web-Server frontend communication



Tools

Eclipse

- Web-Server-Backend
- CSS code base

Visual Studio Code

- Web-Server-Frontend
- Live Script

Git-Repository

- stash.desy.de
- (not yet) 😞

Deployment

What do we need to make it run?

Web-Server

- Spring Boot application is deployed as a .war file to some DESY-Server
- IT opens the gate for us

Scanner-App

- Is required for scanning the data matrix labels
- Available for iOS and Android

Thank you

Contact

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