DHBW Stuttgart

Team 2 - AAS Digital Nameplate

Präsentation Softwareengineering TINF21C Semester 4

Team

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Projektleiter

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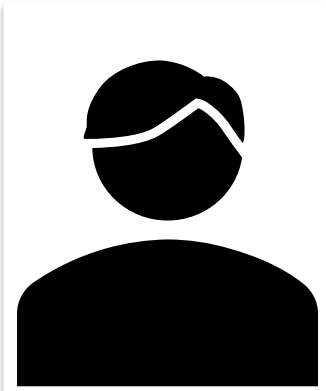

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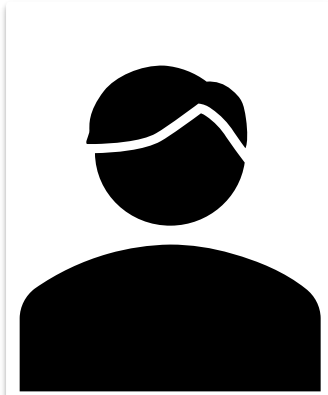

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Agenda

- **Master Usecase**
- **Produktübersicht**
- **Systemarchitektur**
- **Testen**
- **Demo**
- **Fazit und Ausblick**

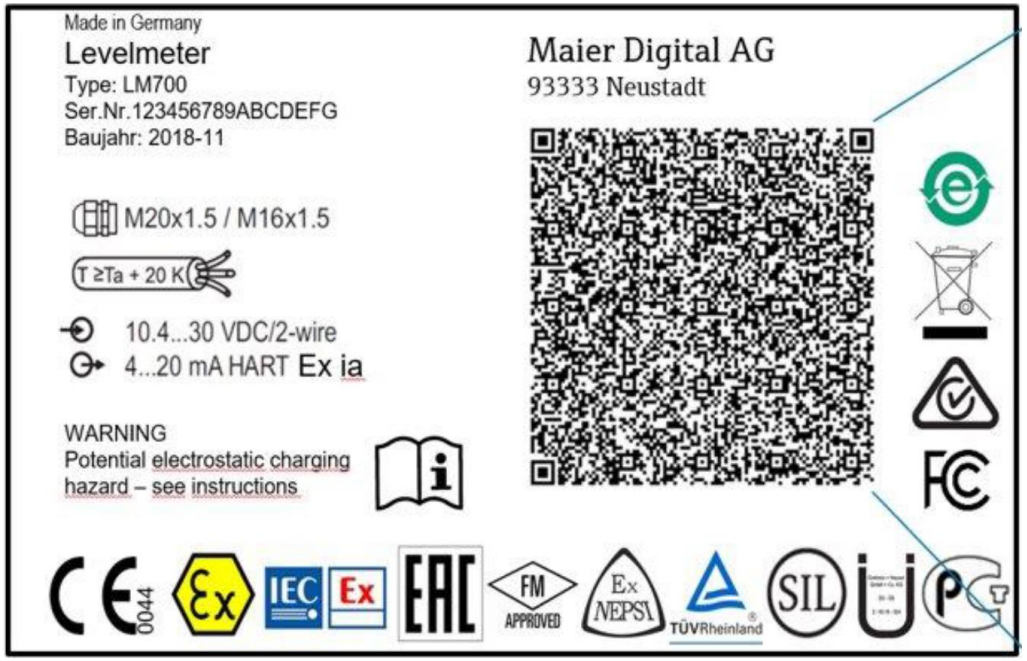
Projektkontext

- Asset Administration Shell:
  - Verwaltung von Bauteilen / Bauteilgruppen / Maschinen
  - “Digital Twin” der realen Objekte
  - Erreichbar über eine REST-API

- Nameplate Submodell:
  - Beinhaltet Daten über ein Asset
    z.B. Hersteller, Seriennummer, Betriebsrichtlinien, Zertifizierungen etc.

Projektziel

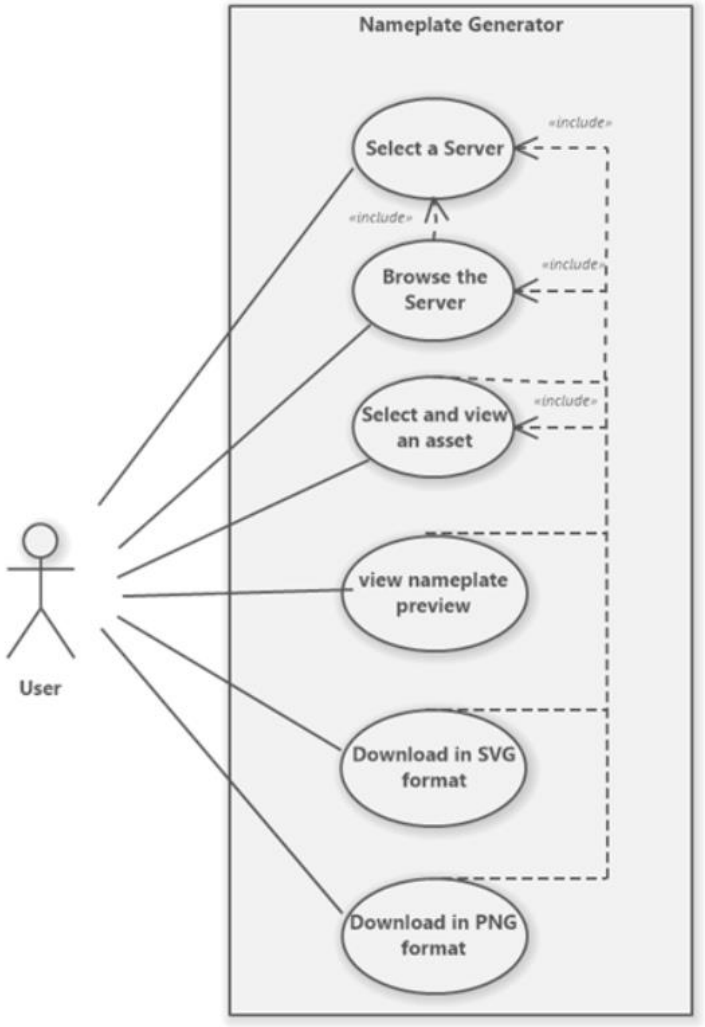
- Nameplates anhand einer gegebenen Datenquelle auf der Basis vom DIN-Standard, einer REST-API und einem AAS-Server



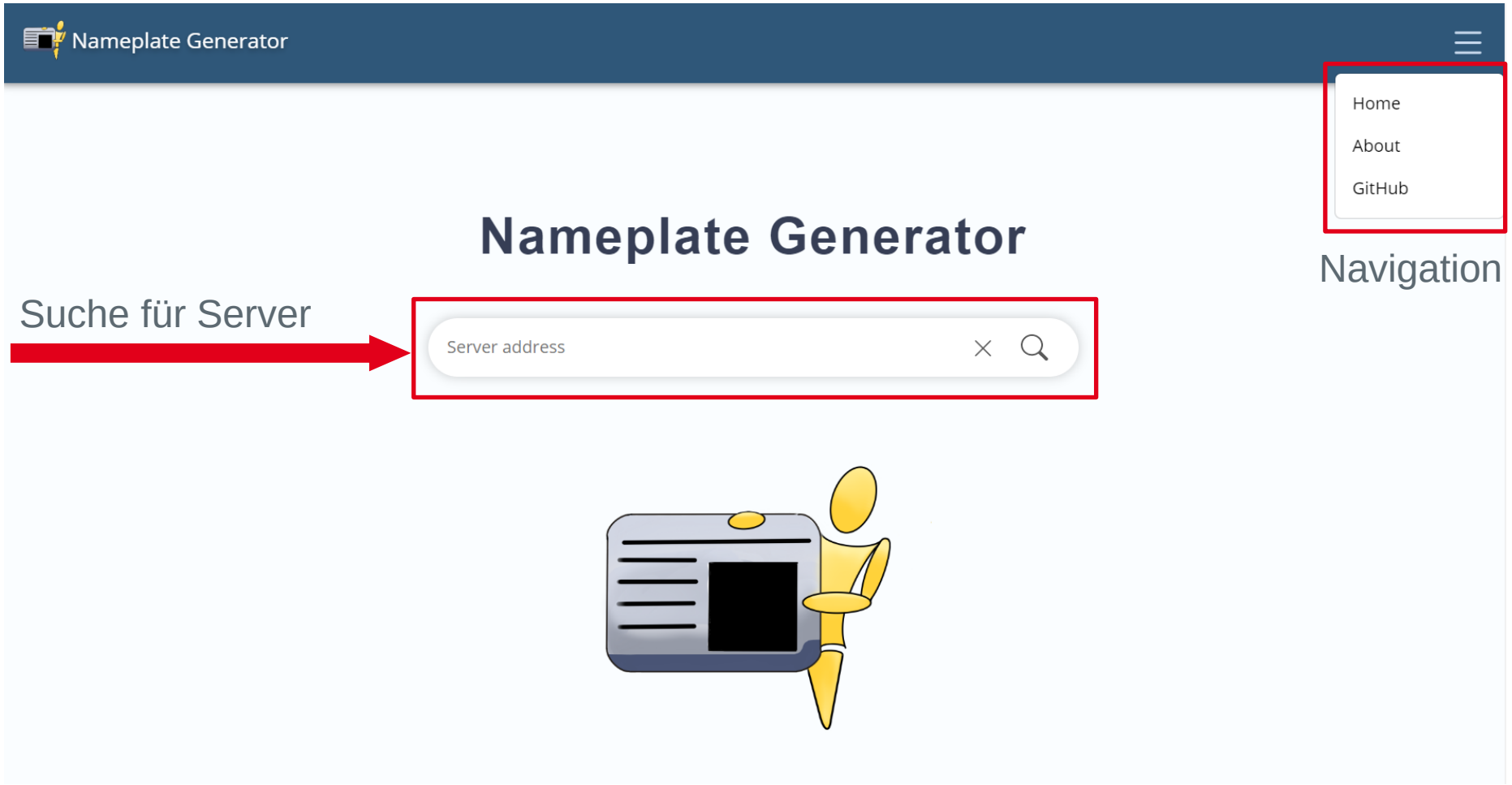
PRODUKTÜBERSICHT

Funktionalen Anforderungen

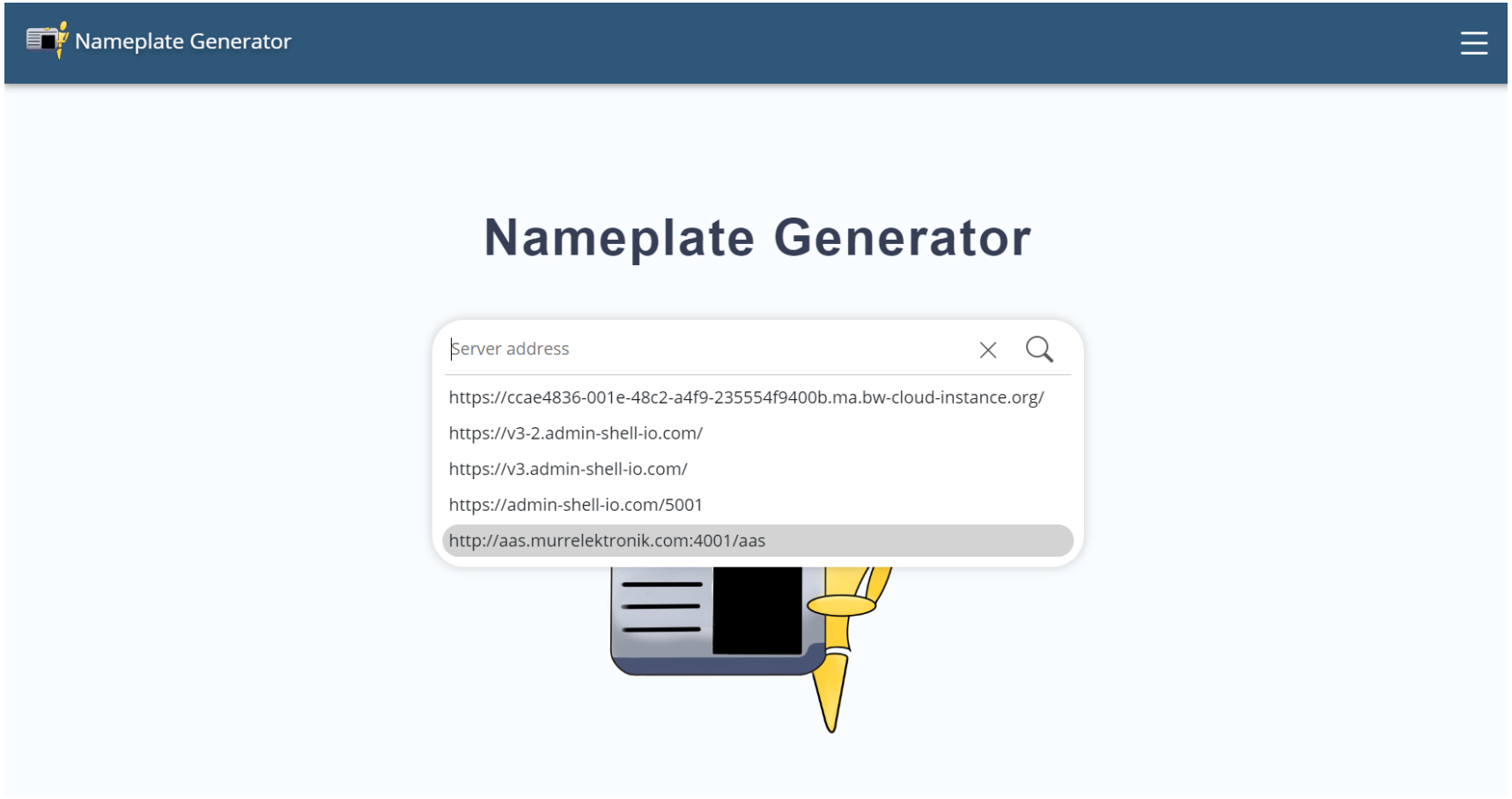
- Suche nach Asset oder Server
- Navigation
- Nameplate und QR-Code Generator
- Download Menü für SVG- and PNG-Format
- Error Message
- Laden einer Website unter sieben Sekunden



Home Page


Nameplate Generator
Home
About
GitHub
Nameplate Generator
Navigation
Suche für Server
Server address

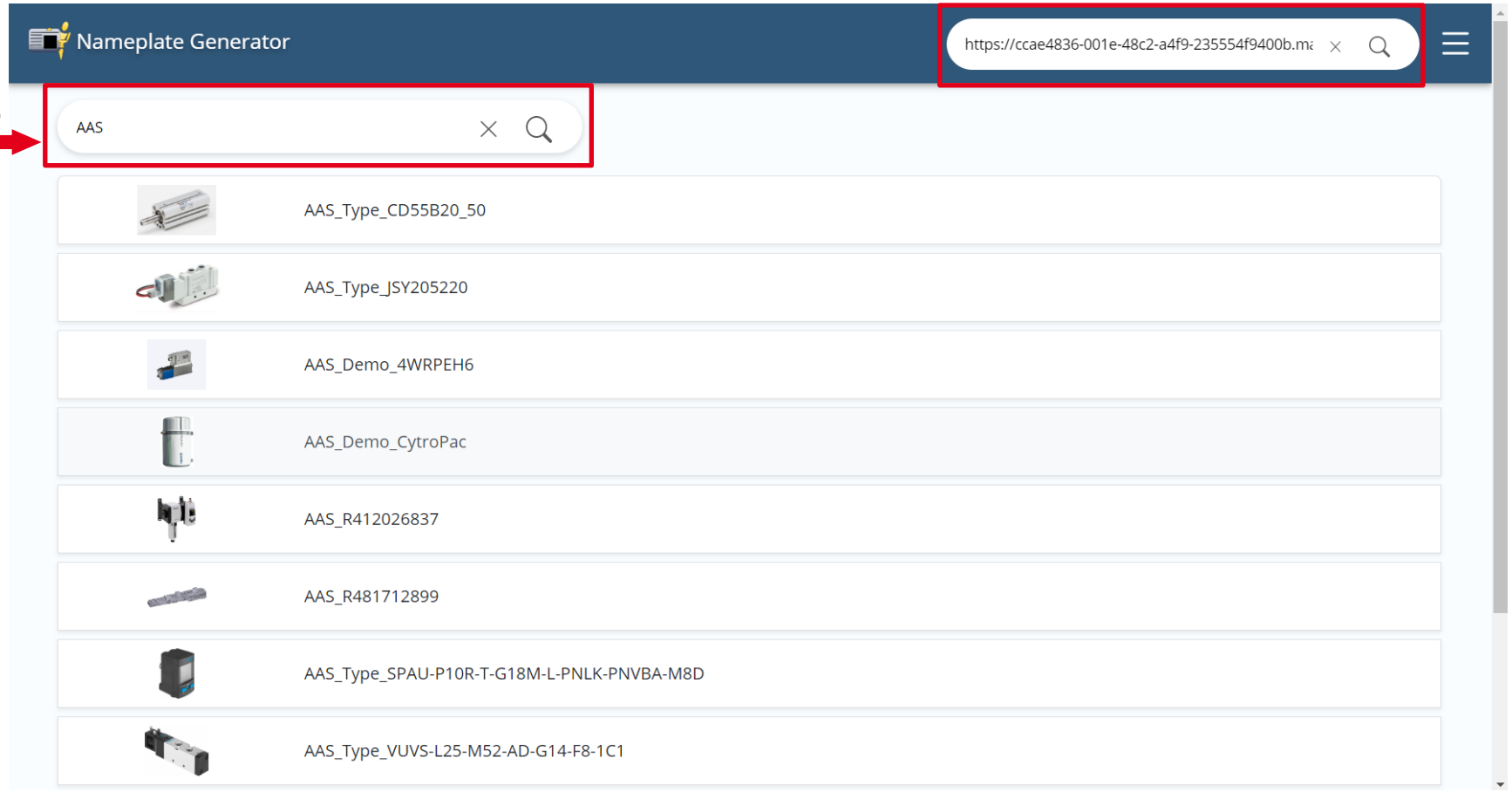
Home Page – Vorgeschlagene Server



Übersicht Assets

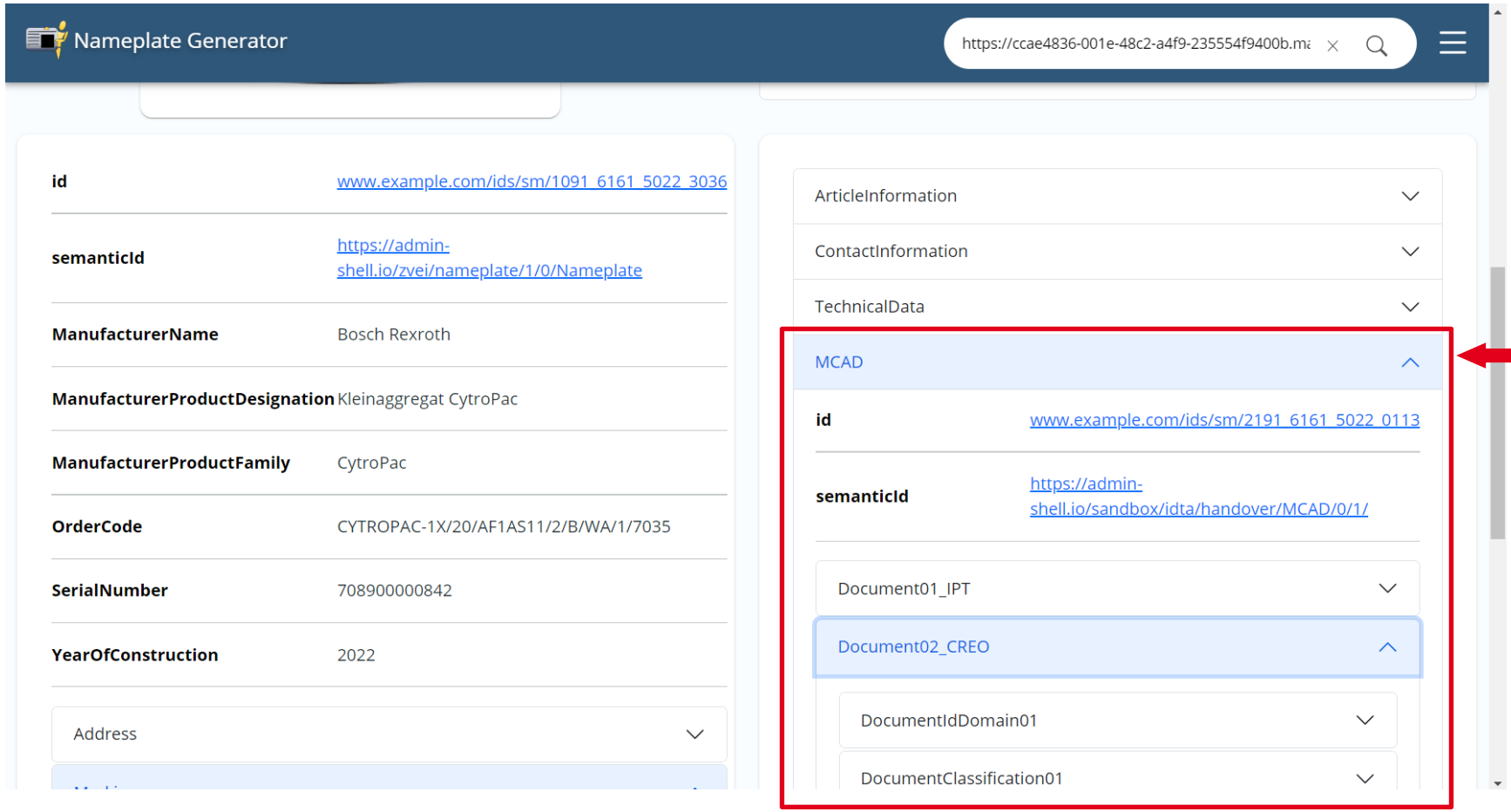
Suche nach Server

Filter für Assets



Asset Details - Nameplate

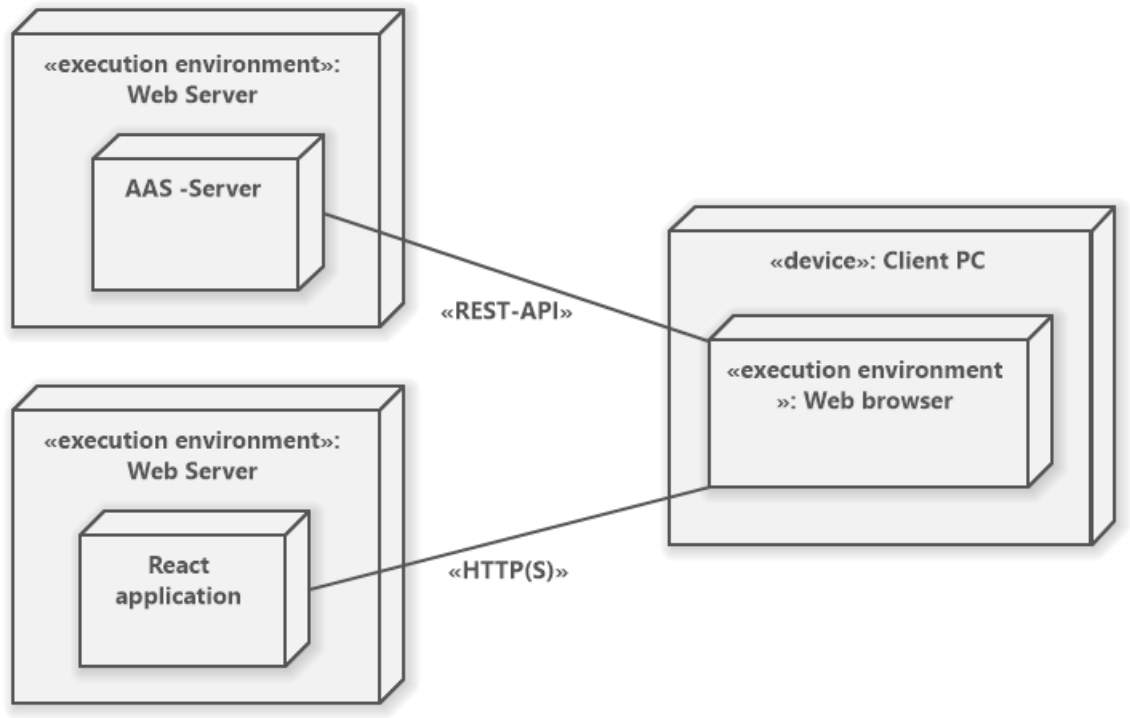
Asset Details – Weitere Informationen



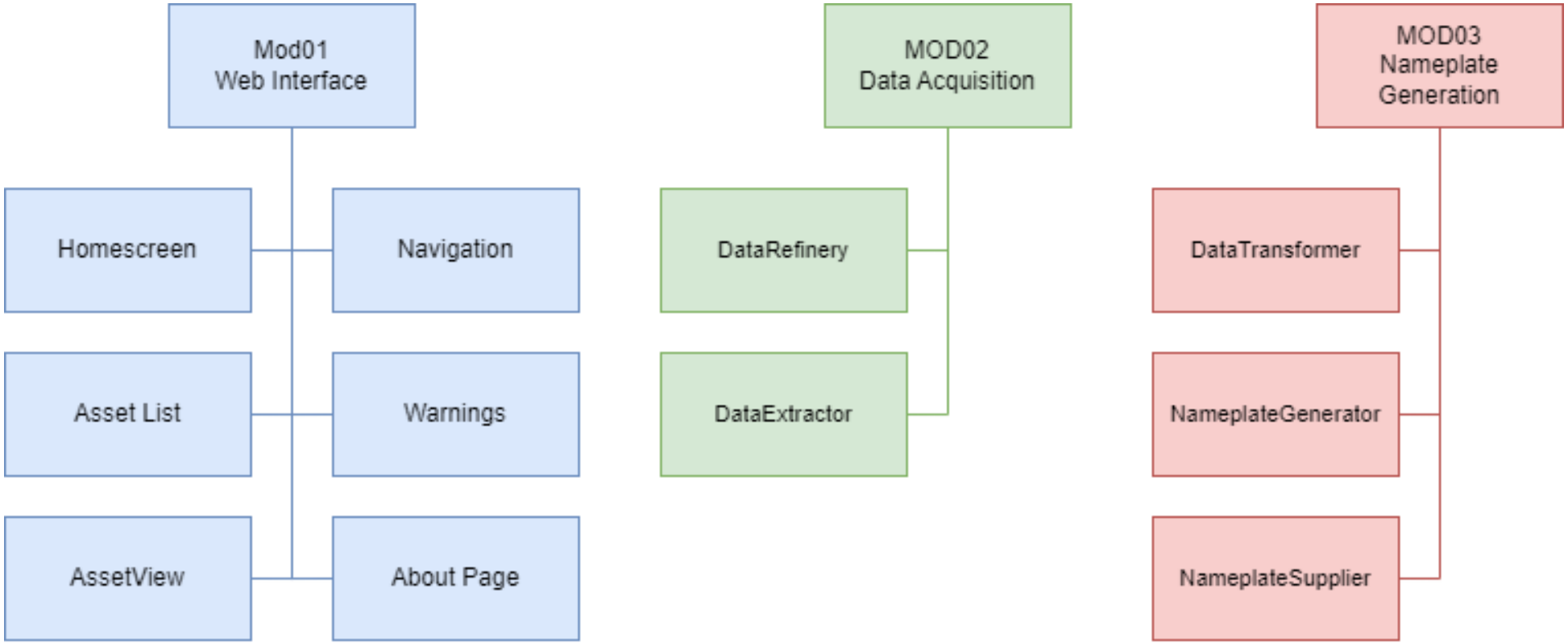
Erweiterte Details

SYSTEMARCHITEKTUR

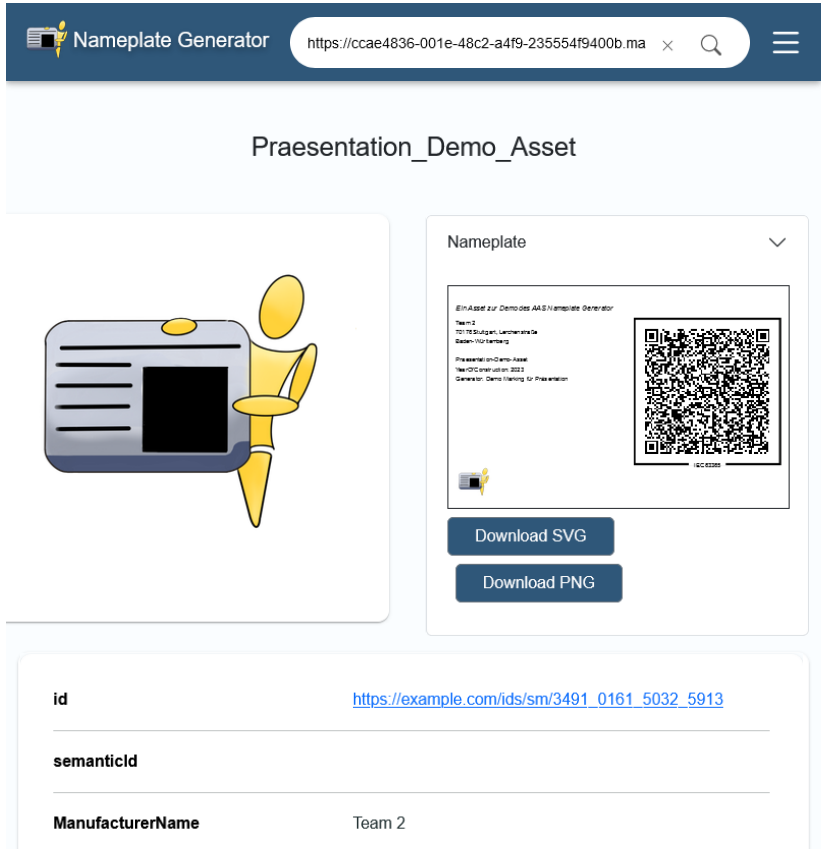
System Architektur - Systemverteilung



Module


Mod01
Web Interface
Homescreen
Navigation
Asset List
Warnings
AssetView
About Page
MOD02
Data Acquisition
DataRefinery
DataExtractor
MOD03
Nameplate
Generation
DataTransformer
NameplateGenerator
NameplateSupplier

MOD01 – Web Interface



- Interface aus modularen Komponenten
- Umsetzung in React

MOD02 – Data Acquisition

Daten von Server anfordern


```
{
    "idShort": "Nameplate",
    "description": {
        "langStrings": [
            {
                "language": "de",
                "text": "Dies ist ein Asset zur Demo des AAS_Nameplate_Generator"
            }
        ]
    },
    "id": "https://example.com/ids/sm/3491_0161_5032_5913",
    "kind": "Instance",
    "semanticId": {
        "type": "GlobalReference",
        "keys": []
    },
    "submodelElements": [
        {…
        },
        {…
        },
        {…
        },
        {…
        },
        {…
        },
        {…
        }
    ],
    "modelType": "Submodel"
}
```


DataRefinery

Daten in internes Format umwandeln


```
{
    "idShort": "Praesentation_Demo_Asset",
    "id": "Praesentation-Demo-Asset",
    "num": 16,
    "productImages": […
    ],
    "Nameplate": {
        "idShort": "Nameplate",
        "id": "https://example.com/ids/sm/3491_0161_5032_5913",
        "ManufacturerName": "Team 2",
        "ManufacturerProductDesignation": "Ein Asset zur Demo des AAS Nameplate Generator",
        "YearOfConstruction": "2023",
        "Address": {
            "Street": "Lerchenstraße",
            "ZipCode": "70176",
            "City_Town": "Stuttgart",
            "State_County": "Baden-Württemberg"
        },
        "Markings": {
            "Generator": {
                "FilePath": "https://ccae4836-001e-48c2-a4f9-235554f9400b.ma.bw-cloud-instar
                "MarkingFile": "/aasx/SWELogo.png",
                "MarkingName": "Demo Marking für Präsentation"
            }
        }
    },
    "TechnicalData": {
        "idShort": "TechnicalData",
        "id": "https://example.com/ids/sm/2184_5171_5032_0578",
        "GeneralInformation": {
            "FilePath": "https://ccae4836-001e-48c2-a4f9-235554f9400b.ma.bw-cloud-instance.c
            "ProductImage01": "/aasx/SWELogo.png",
            "MaufacturerName": "Team2"
        }
    }
}
```


DataExtractor

MOD03 – Nameplate Generation

Nameplate aus internem Datenformat generieren


```
{
    "idShort": "Praesentation_Demo_Asset",
    "id": "Praesentation-Demo-Asset",
    "num": 16,
    "productImages": [ ···
    ],
    "Nameplate": {
        "idShort": "Nameplate",
        "id": "https://example.com/ids/sm/3491_0161_5032_5913",
        "ManufacturerName": "Team 2",
        "ManufacturerProductDesignation": "Ein Asset zur Demo des AAS Nameplate Generator",
        "YearOfConstruction": "2023",
        "Address": {
            "Street": "Lerchenstraße",
            "ZipCode": "70176",
            "City_Town": "Stuttgart",
            "State_County": "Baden-Württemberg"
        },
        "Markings": {
            "Generator": {
                "FilePath": "https://ccae4836-001e-48c2-a4f9-235554f9400b.ma.bw-cloud-instar
                "MarkingFile": "/aasx/SWELogo.png",
                "MarkingName": "Demo Marking für Präsentation"
            }
        }
    },
    "TechnicalData": {
        "idShort": "TechnicalData",
        "id": "https://example.com/ids/sm/2184_5171_5032_0578",
        "GeneralInformation": {
            "FilePath": "https://ccae4836-001e-48c2-a4f9-235554f9400b.ma.bw-cloud-instance.c
            "ProductImage01": "/aasx/SWELogo.png",
            "MaufacturerName": "Team2"
        }
    }
}
```


TESTEN

Testentwurfsverfahren

White-Box

Modultest

- MOD01 Web Interface
- MOD02 Data Acquisition
- MOD03 Nameplate Generation

Verantwortung

- Jeder Entwickler testet sein Modul
- Review durch Software Architekt vor Merge

Black-Box

Anforderungsbasiert

➢ System Requirements Specification

Testfall- und Testdatenermittlung

- Äquivalenzklassenbildung (ÄK)

➢ Starker ÄK-Test

- Paarbildung
- Grenzwertanalyse

Verantwortung

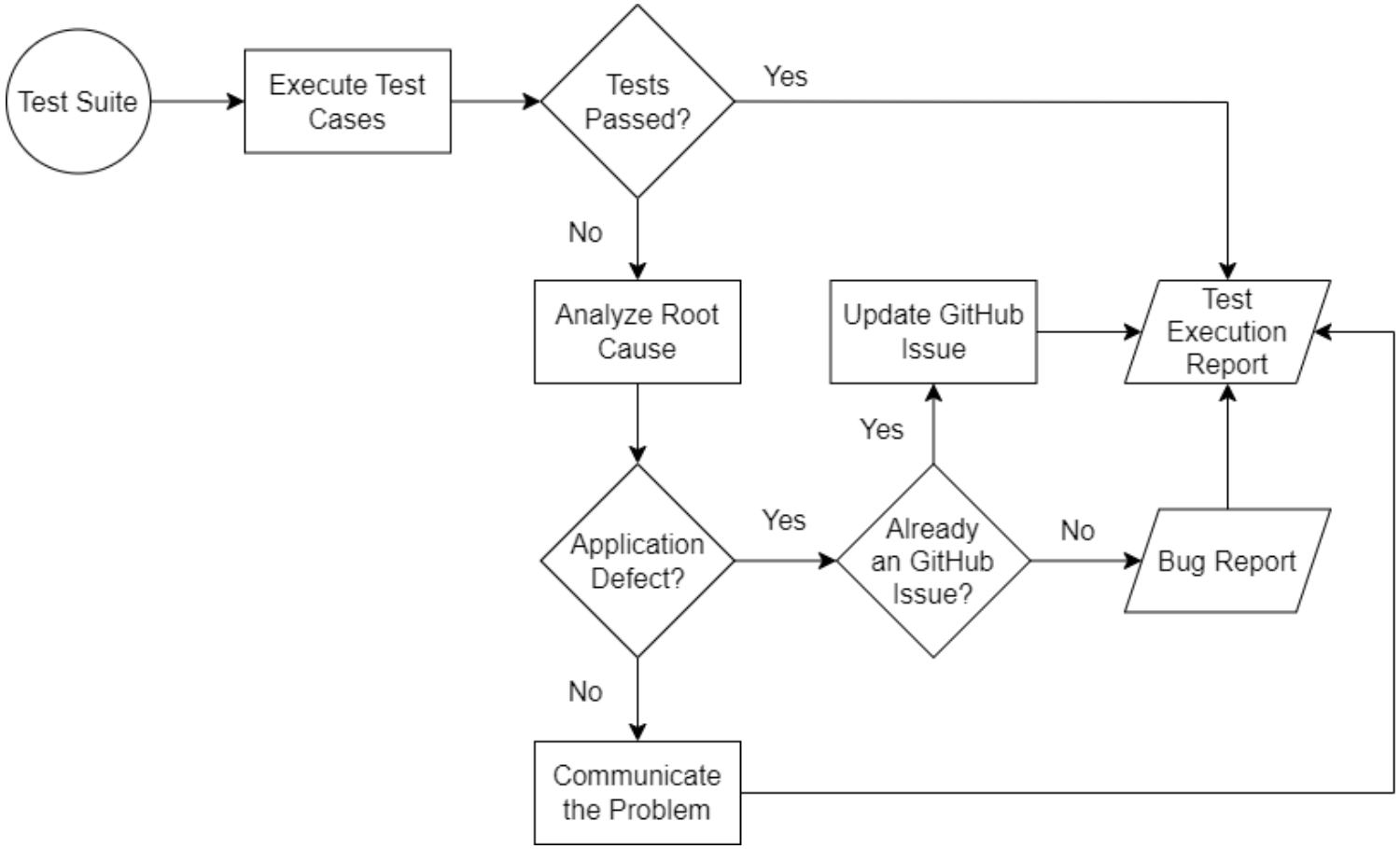
- Durchführung durch Test Manager

Requirements Traceability Matrix

Requirement ID	Functionality
DNG.GUI.001	Responsive and compatible GUI
DNG.GUI.002	Download menu for SVG and PNG format
DNG.GUI.003	Search functionality
DNG.GUI.004	Navigation buttons
DNG.GUI.005	QR-code generator
DNG.GUI.006	Nameplate generator
DNG.GUI.007	Error handling
DNG.PERF.001	Performance

Requirement Identifiers	Reqs Tested	DNG .GUI .001	DNG .GUI .002	DNG .GUI .003	DNG .GUI .004	DNG .GUI .005	DNG .GUI .006	DNG .GUI .007	DNG .PERF .001
Test Cases	26	7	2	3	2	2	2	7	1
TC.INST .001.F	1							X	
TC.CON .001.F	3	X		X				X	
TC.CON .002.F	3	X		X				X	
TC.NAV .001.F	2	X			X				
TC.NAV .002.F	2	X			X				
TC.OV .001.F	2	X						X	
TC.NP .001.F	5	X	X			X	X	X	
TC.NP .002.F	5	X	X			X	X	X	
TC.PERF .001.F	3			X				X	X

Inzident Management



Test Umgebung

Geräte

No.	Resources	Descriptions
01	Computer	HP EliteBook 850 G7 Notebook Operating system: Windows 10 Home 64
02	Computer	MacBook Pro 13” Operating system: MacOS
03	Smartphone	Galaxy S20 Ultra 5G

Software

Internet Browsers:

- Firefox 111.0
- Microsoft Edge 110.0
- Google Chrome 111.0

Handy Applikationen:

- Camera
- Clock

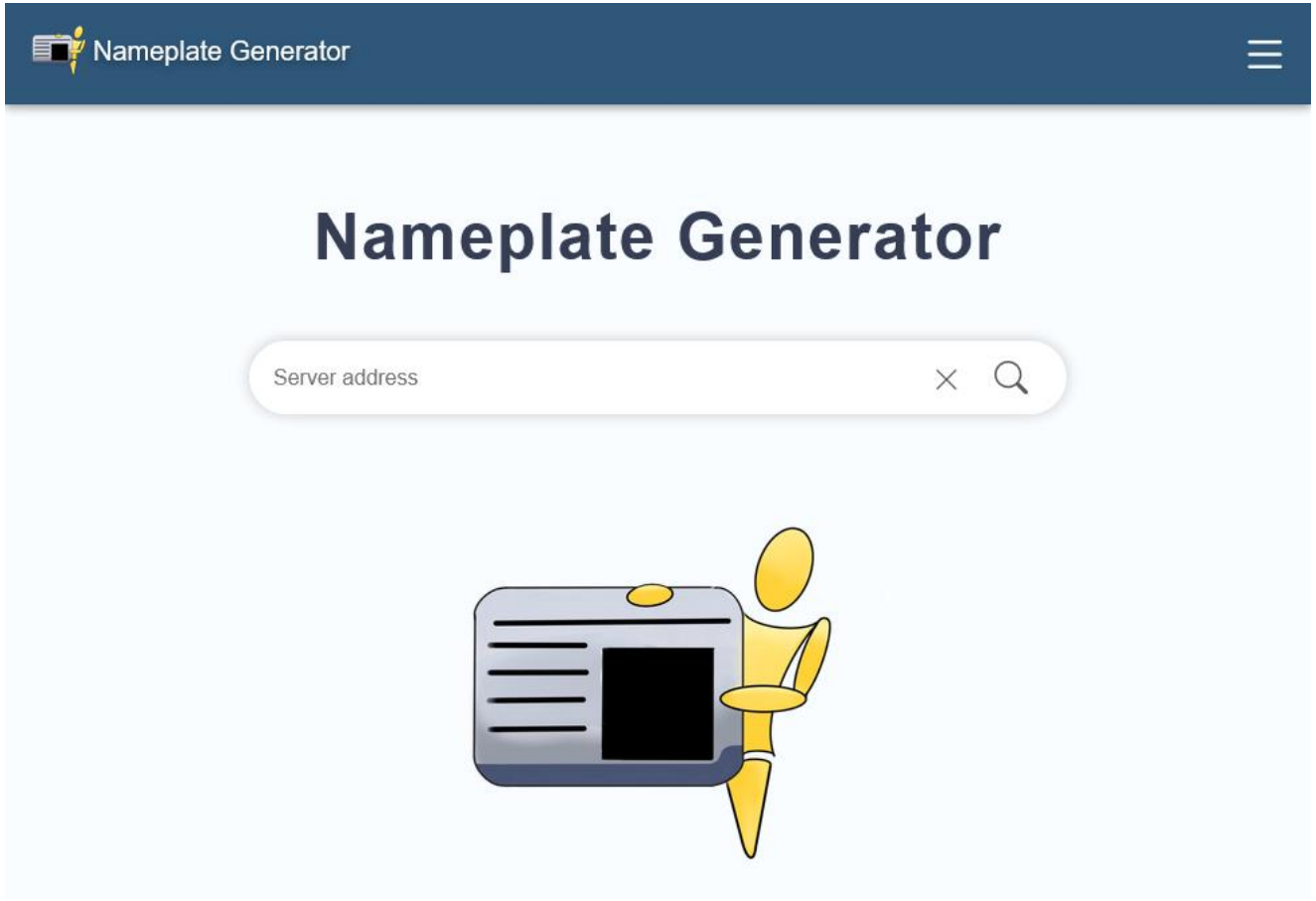
Eigener AAS-Server

Testbericht

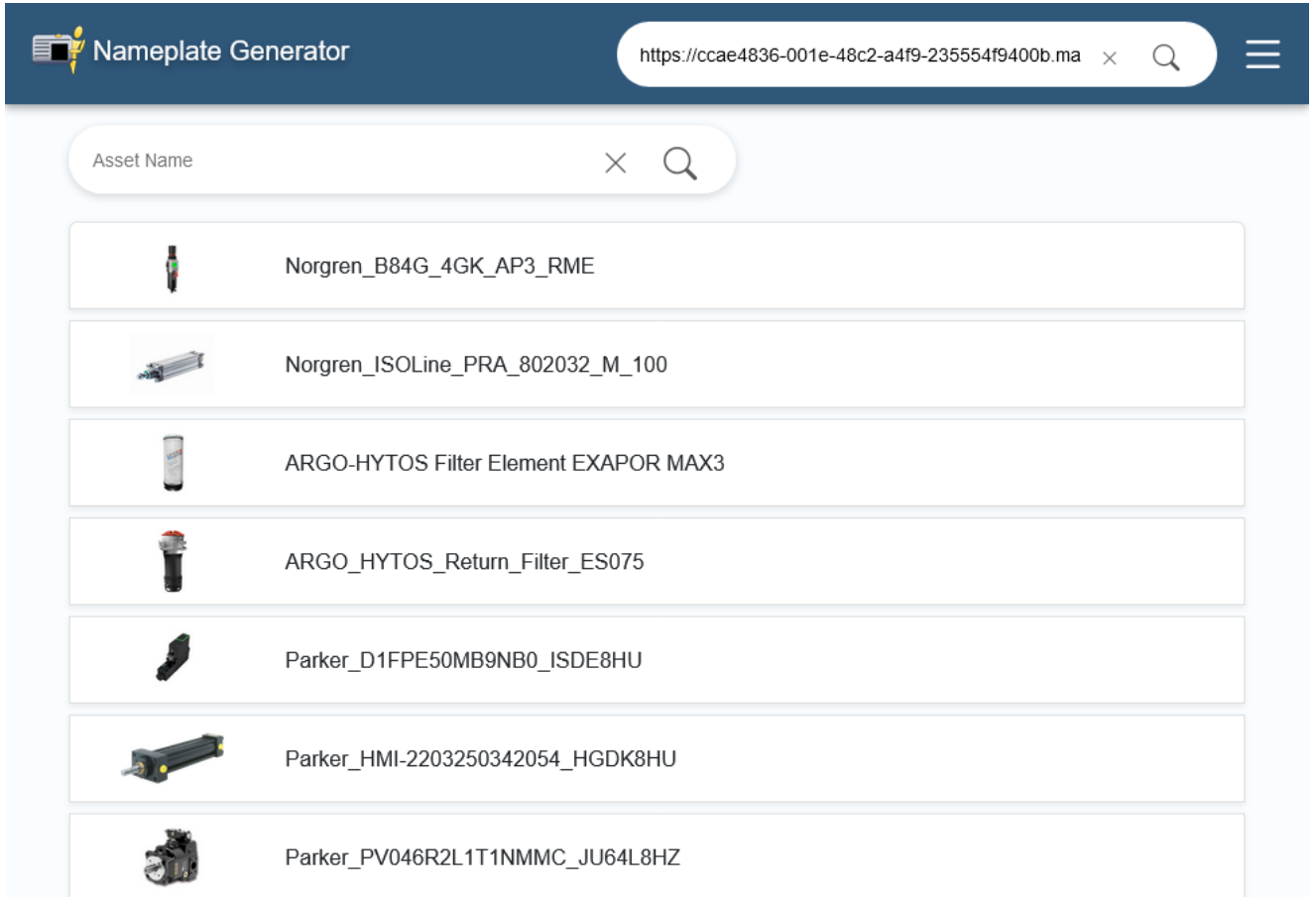
Test Case	Result
<TC.INST.001.F>: Access front end on local machine	PASS
<TC.CON.001.F>: Connect to AAS-Server via search bar	PASS
<TC.CON.002.F>: Connect to suggested AAS-Server via search bar	PASS
<TC.NAV.001.F>: Navigation bar	PASS
<TC.NAV.002.F>: Browser's navigation buttons	PASS
<TC.OV.001.F>: Choose asset of asset list	PASS
<TC.NP.001.F>: Download nameplate in SVG	PASS
<TC.NP.002.F>: Download nameplate in PNG	PASS
<TC.PERF.001.F>: Performant under expected or peak loads	PASS

LIVE DEMO

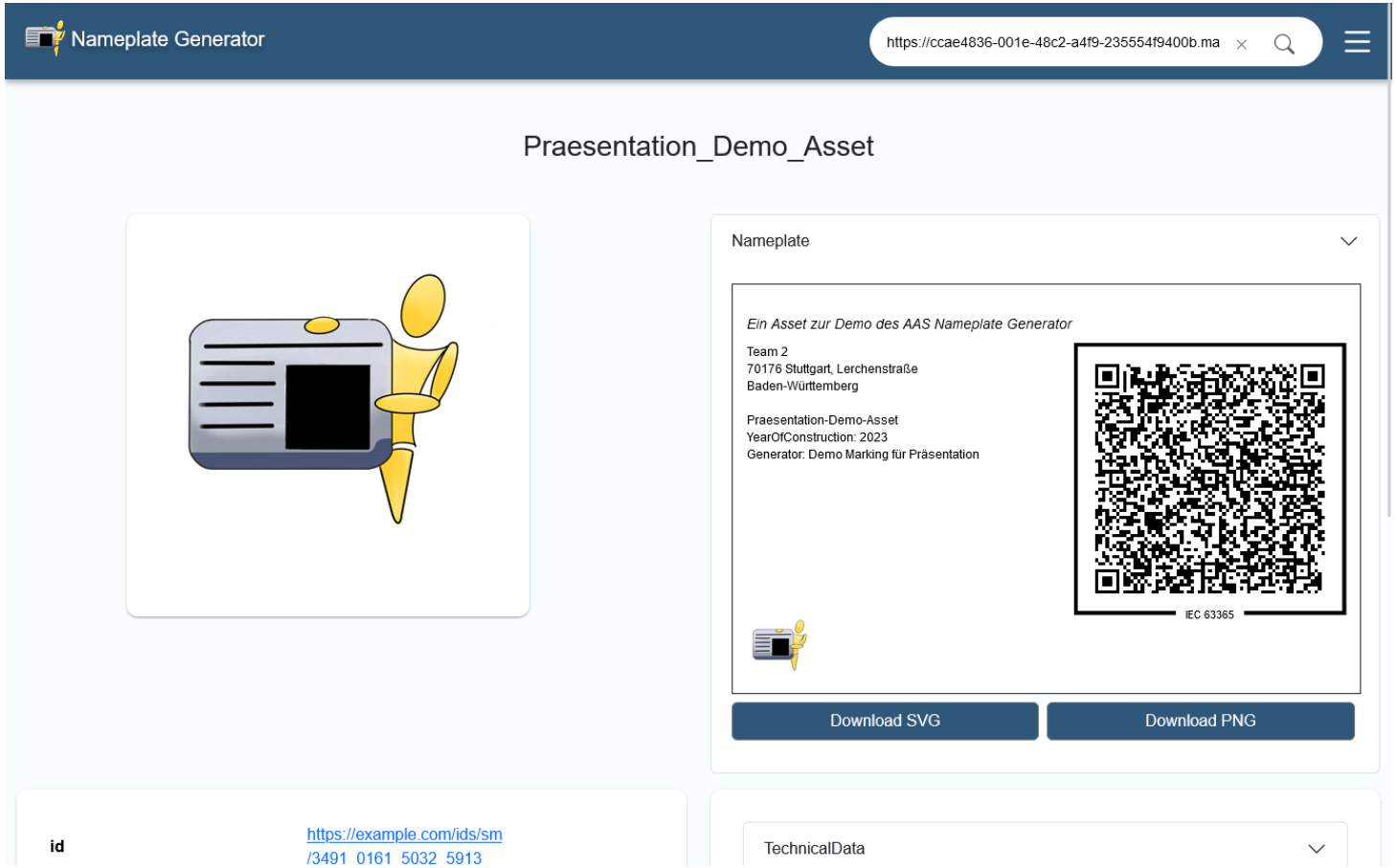
Demo



Demo


Nameplate Generator
https://ccae4836-001e-48c2-a4f9-235554f9400b.ma
Asset Name
Norgren_B84G_4GK_AP3_RME
Norgren_ISOLine_PRA_802032_M_100
ARGO-HYTOS Filter Element EXAPOR MAX3
ARGO_HYTOS_Return_Filter_ES075
Parker_D1FPE50MB9NB0_ISDE8HU
Parker_HMI-2203250342054_HGDK8HU
Parker_PV046R2L1T1NMMC_JU64L8HZ

Demo


Nameplate Generator
https://ccae4836-001e-48c2-a4f9-235554f9400b.ma
Praesentation_Demo_Asset
Nameplate
Ein Asset zur Demo des AAS Nameplate Generator
Team 2
70176 Stuttgart, Lerchenstraße
Baden-Württemberg
Praesentation-Demo-Asset
YearOfConstruction: 2023
Generator: Demo Marking für Präsentation
IEC 63365
Download SVG
Download PNG
id
https://example.com/ids/sm
/3491 0161 5032 5913
TechnicalData

Demo

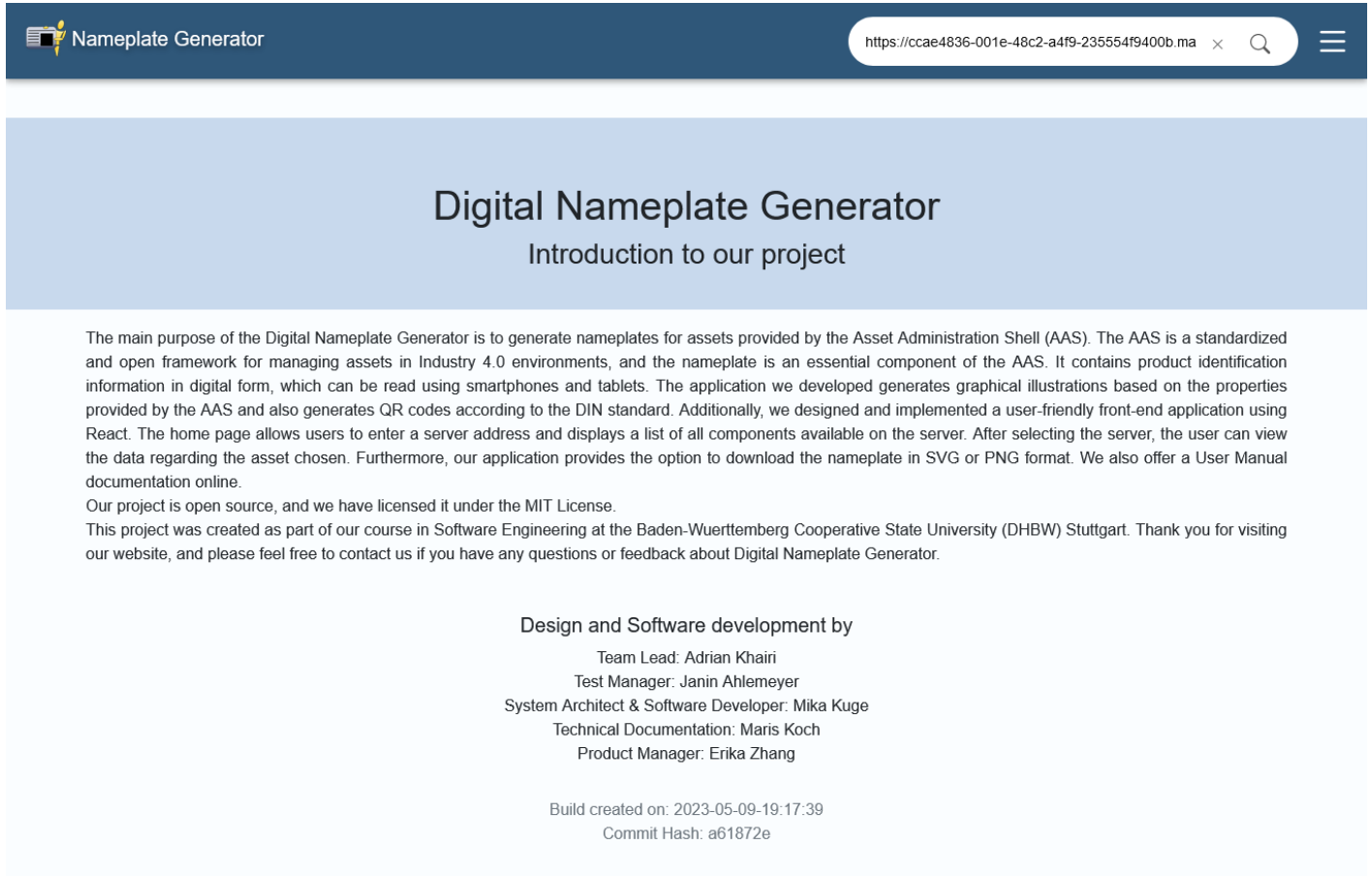
Ein Asset zur Demo des AAS Nameplate Generator

Team 2
70176 Stuttgart, Lerchenstraße
Baden-Württemberg

Praesentation-Demo-Asset
YearOfConstruction: 2023
Generator: Demo Marking für Präsentation

IEC 63365

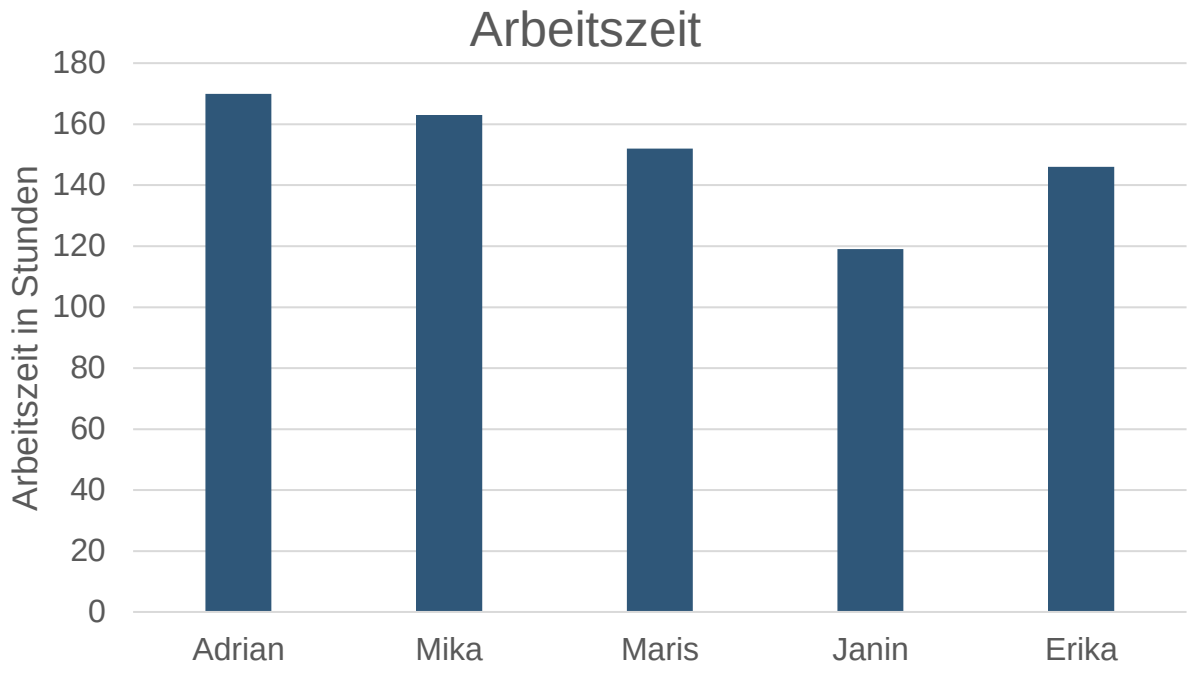
Demo


Nameplate Generator
https://ccae4836-001e-48c2-a4f9-235554f9400b.ma
Digital Nameplate Generator
Introduction to our project
The main purpose of the Digital Nameplate Generator is to generate nameplates for assets provided by the Asset Administration Shell (AAS). The AAS is a standardized and open framework for managing assets in Industry 4.0 environments, and the nameplate is an essential component of the AAS. It contains product identification information in digital form, which can be read using smartphones and tablets. The application we developed generates graphical illustrations based on the properties provided by the AAS and also generates QR codes according to the DIN standard. Additionally, we designed and implemented a user-friendly front-end application using React. The home page allows users to enter a server address and displays a list of all components available on the server. After selecting the server, the user can view the data regarding the asset chosen. Furthermore, our application provides the option to download the nameplate in SVG or PNG format. We also offer a User Manual documentation online.
Our project is open source, and we have licensed it under the MIT License.
This project was created as part of our course in Software Engineering at the Baden-Wuerttemberg Cooperative State University (DHBW) Stuttgart. Thank you for visiting our website, and please feel free to contact us if you have any questions or feedback about Digital Nameplate Generator.
Design and Software development by
Team Lead: Adrian Khairi
Test Manager: Janin Ahlemeyer
System Architect & Software Developer: Mika Kuge
Technical Documentation: Maris Koch
Product Manager: Erika Zhang
Build created on: 2023-05-09-19:17:39
Commit Hash: a61872e

FAZIT UND AUSBLICK

Projekt Statistiken

- 76 Issues
- 89 Pull Requests
- 278 Commits
- Die meisten Commits um 12 Uhr und 17 Uhr



Lessons learned

Was lief gut?

- Endergebnis erfüllt Anforderungen
- Aufgaben- und Arbeitsverteilung im Team
- Nutzung der Möglichkeiten in GitHub

Was lief schlecht?

- Ständig neue und verändernde Anforderungen
- Zeitmanagement

Ausblick

- Viel Spielraum zur weiteren Entwicklung
- Vorhandene Issues bearbeiten
- Kombination von “Viewer” und “Generator”

Verwendete Referenzen

- 241-0-25_2020-0016_Druckmanuskript_Digitales_Typenschild.pdf
- DIN_SPEC_91406.pdf
- IDTA 2006-1-1_Submodel_Digital Nameplate_Review.docx
- IEC_63365_ED1_DigitalNameplate.pdf

FRAGEN UND FEEDBACK