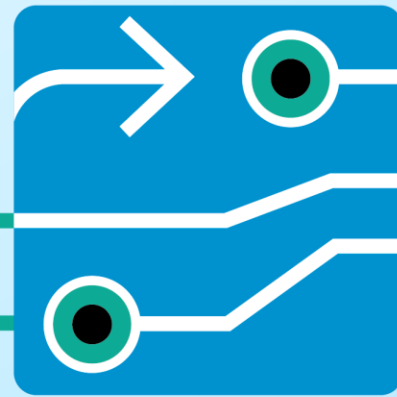


Building open digital infrastructures for public health

2 February 2025 – FOSDEM, Brussels



Das Digitalisierungspaket
der Zukunft

GA-Lotse



Cooperation:



HESSEN



Hessisches Ministerium
für Familie, Senioren, Sport,
Gesundheit und Pflege



Funded by
the European Union
NextGenerationEU

02/02/2025



Bianca Kastl

- Tech Lead /
Product Owner GA-Lotse

Government Software: How to Open Source?

What does it need?

- Someone inside the government that encourages Open Source
- A good lawyer with experience in Open Source (procurement, contracts, licensing)
- Software providers that want to build solutions, not sell products

What do public health departments usually do?

- Public health – protecting and improving people's health
- Usual topics
 - Infectious diseases (e.g. vaccinations, *monitoring of outbreaks*, hygiene supervision, HIV / STD)
 - Children and youth health (e.g. school entry examinations, dental examinations)
 - Health reports (e.g. for civil service officers)
 - Statistics about the health status of the population

The state of digital in Public Health in 2021

- Pandemic disclosed some data exchange problems between health departments
- Funding from the European Union (#NextGenerationEU)
- Cooperation between the health department Frankfurt (Main) and the ministry for social affairs in Hesse, Germany

Funding

- Budget of approx. 23 million Euro (NextGenerationEU) over three years

Team

- Internal: 2 Product Owner, 3 developers, 1 data analyst, 1 team for non-technical tasks (controlling, finances, marketing, training etc.)
- External: up to 60 developers (cronn GmbH Bonn) in 11 teams, external security experts, data protection experts, accessibility experts, total up to 130 persons

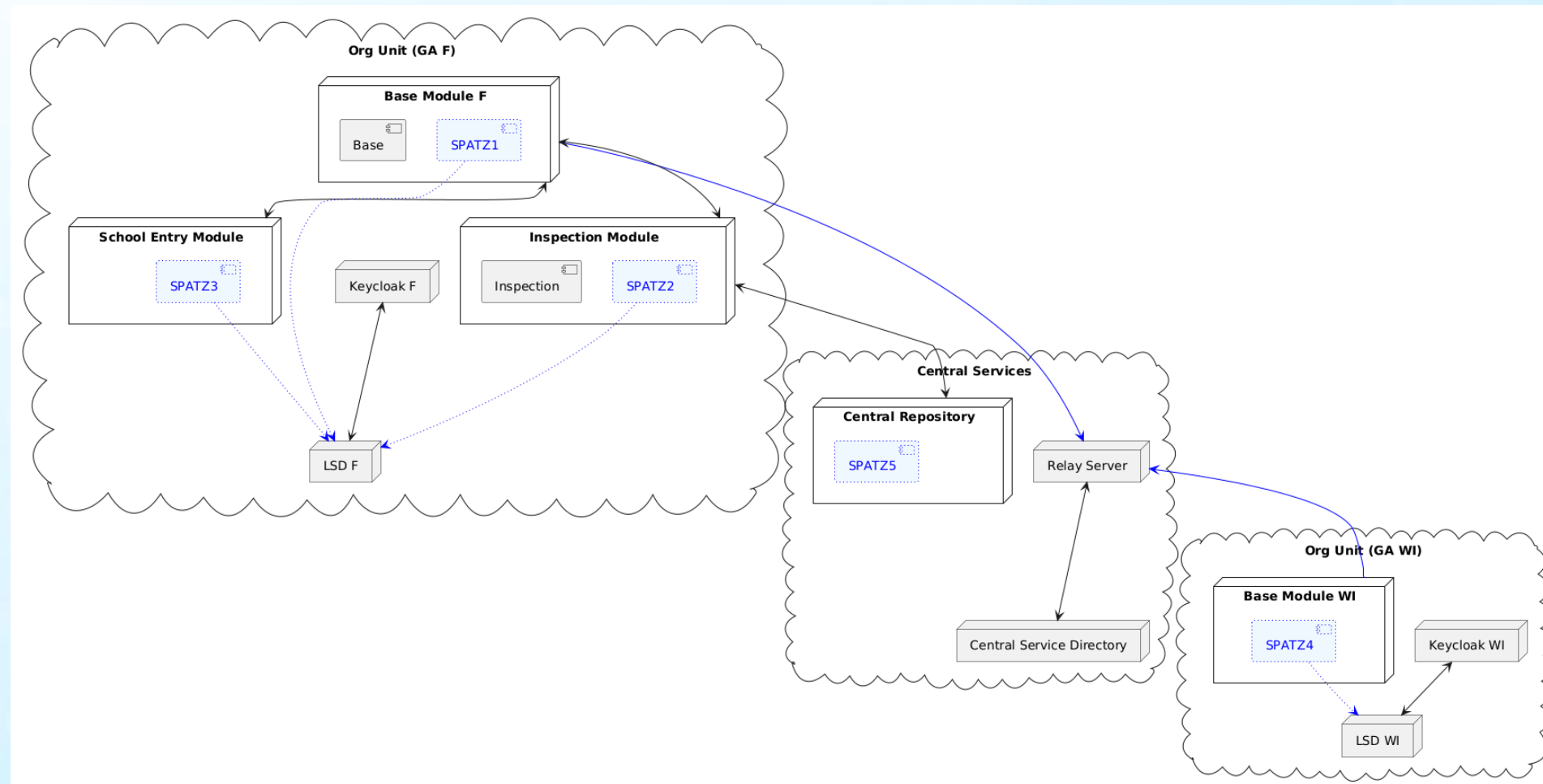
Why GA-Lotse is not a standard software task

- 25 health departments with a diverse set of business modules and different configurations (specialist applications)
- High bar for security and data protection
- Varying level of IT know-how in the various health departments
- Should be scalable and extensible
- Tight timeline (under one year from start coding to production)
- Entire project is controlled by people from within the public administration

Core ideas

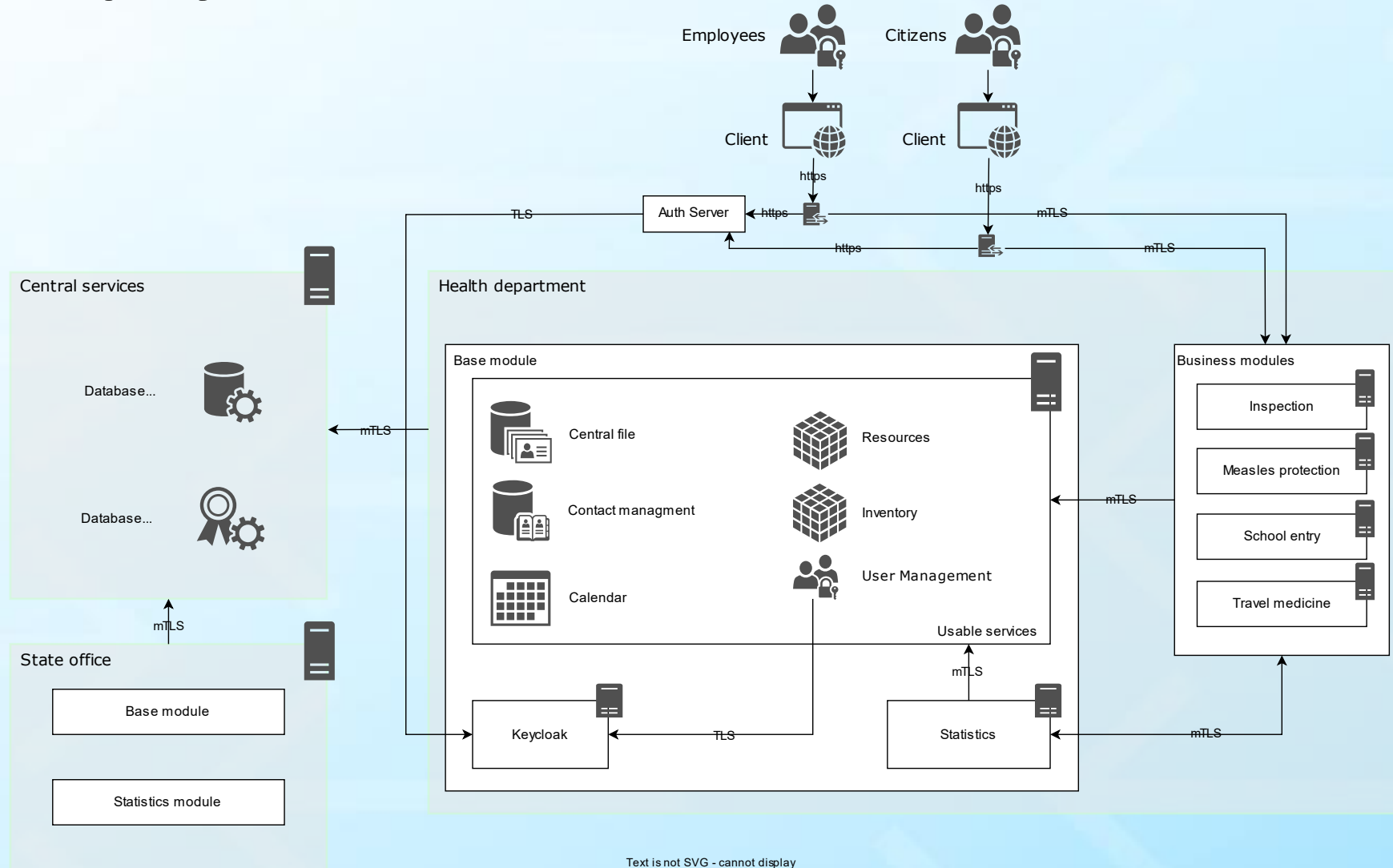
- Embrace the federalism of the german government to build a federated system
- Decentralization on a centralized cloud environment
- Zero Trust
- Security by design and privacy by design
- DevSecOps approach
- Provided as SaaS

Service Mesh



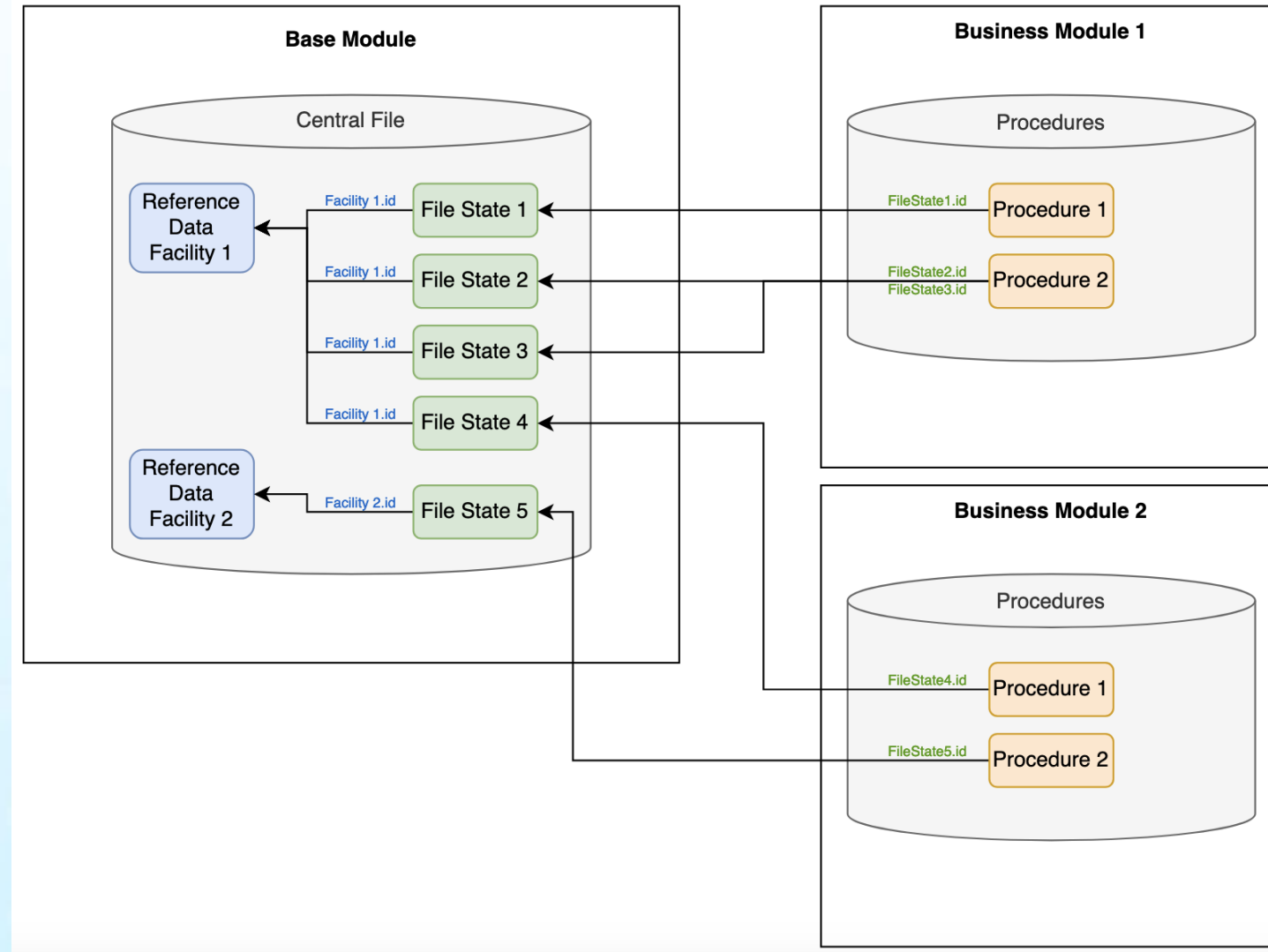
Cooperation:

Deployment View



Cooperation:

Central File



Cooperation:

Handling of all the services

- Managed Kubernetes on top of OpenShift
- Central Services for shared services
- Up to 21 modules per health department in the service mesh
- Separate database instances (up to 8 Postgres instances per health department currently)
- Caching of user sessions (Redis)
- 3 Reverse proxies (Nginx)

- Menü einklappen
- Dashboard

Einschulung

Begehung

Impfberatung

Masernschutz

HIV-STI

Medizinalaufsicht

Zahnärztl. Dienst

Amtsärztl. Dienst

DSGVO

Benutzer

Kalender

Ressourcen

Inventar

Kontakte

Kennzahlen

Guten Tag

Zuletzt bearbeitete Vorgänge

Geändert am	Vorgangsart	Beschreibung	Status
30.01.2025, 14:09	HIV-STI-Schutz	HIV-STI-Schutz	Geschlossen
30.01.2025, 13:42	Regelkind	Einschulungsuntersuchung	Offen
30.01.2025, 13:01	Masernschutzimpfung	Masernschutzimpfung	Offen
30.01.2025, 13:01	Regelkind	Einschulungsuntersuchung	Offen
29.01.2025, 15:59	HIV-STI-Schutz	HIV-STI-Schutz	Offen
29.01.2025, 15:29	Masernschutzimpfung	Masernschutzimpfung	Offen
29.01.2025, 13:29	Begehung	Begehung für Antiquariat	Geschlossen
29.01.2025, 13:29	Begehung	Begehung für Antiquariat	Geschlossen
29.01.2025, 13:29	Begehung	Begehung für Antiquariat	Geschlossen
29.01.2025, 13:29	Begehung	Begehung für Antiquariat	Geschlossen

Aufgaben

[Zur Aufgabenübersicht](#)

Einschulungsuntersuchung

Fachmodul: Einschulungsuntersuchung
Typ: Einschulungsuntersuchung durchführen
29.01.25 13:28 Uhr Offen Frist: 28.02.25

Einschulungsuntersuchung

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Menü einklappen



Mustafa Schmidt Geb. 19.02.2020

Vorgangsdaten

S1 - Anamnese

Impfstatus

Untersuchung

Verlaufseinträge

Einschulung

Vorgänge

Wartezimmer

Terminblöcke

Kennungen

Posteingang

Begehung

Vorgänge

Teamansicht

Checklistendefinitionen

Datenaustausch

Objektypen

Textbausteine

Einrichtungen suchen

Packlistendefinitionen

Posteingang

S1 - SOPESS 2019

Körperkoordination

Sprungzahl

Grobmotorik

RM

Visuomotorik

Punkte

Feinmotorik

RM

Händigkeit

Ergebnis

Visuelle Perzeption

Punkte

Visuelle Wahrnehmung

RM

Sprache

Erstsprache

Deutschkenntnisse Hauptbezugsperson

Familiensprache

Deutschkenntnisse

Artikulation, Dyslalie

unauffällig

S, Z

Sch

T, D

Ch

G, K

L, N

R

F, Pf

B

tr, dr, kr, gr

0

U

Präpositionen

Plurale

Punkte

Punkte

Sprache

RM

Pseudowörter

Punkte

Auditive Invoerarbeitung

RM

Untersuchungen

Sehscreening

Hörscreening

S1 - SOPESS 2019

S1 - Befund

Berichte erstellen

Schulinfobrief erstellen

Arztbrief erstellen

Cooperation:



HESSEN

Hessisches Ministerium
für Familie, Senioren, Sport,
Gesundheit und PflegeFunded by
the European Union
NextGenerationEU

53.8 D

02/02/25

14

- Menü einklappen
- Zahnärztl. Dienst

Prophylaxen

Kinder

Amtsärztl. Dienst

DSGVO

Benutzer

Kalender

Ressourcen

Inventar

Kontakte

Kennzahlen

Auditlog

Auditlog Freigabe






Open Data

Posteingang

Statistik

Kennzahlen

Letzte 12 Monate

Alle Vorgänge	Offen / Entwurf	in Bearbeitung	Abgebrochen	Erledigt
 125	 115	 4	 0	 6

Begehung

Typ	Alle Vorgänge	Offen / Entwurf	in Bearbeitung	Erledigt	Abgebrochen	Dauer
Begehung	11	2	4	5	0	0 Sekunden

Masernschutzimpfung

Typ	Alle Vorgänge	Offen / Entwurf	in Bearbeitung	Erledigt	Abgebrochen	Dauer
Masernschutzimpfung	11	11	0	0	0	-

Einschulungsuntersuchung

Typ	Alle Vorgänge	Offen / Entwurf	in Bearbeitung	Erledigt	Abgebrochen	Dauer
Regelkind	29	29	0	0	0	-
Eingangsstufe	11	11	0	0	0	-
Entwurf Schulliste	9	9	0	0	0	-
Entwurf Bürgeramtsliste	36	36	0	0	0	-
Kann-Kind	15	15	0	0	0	-

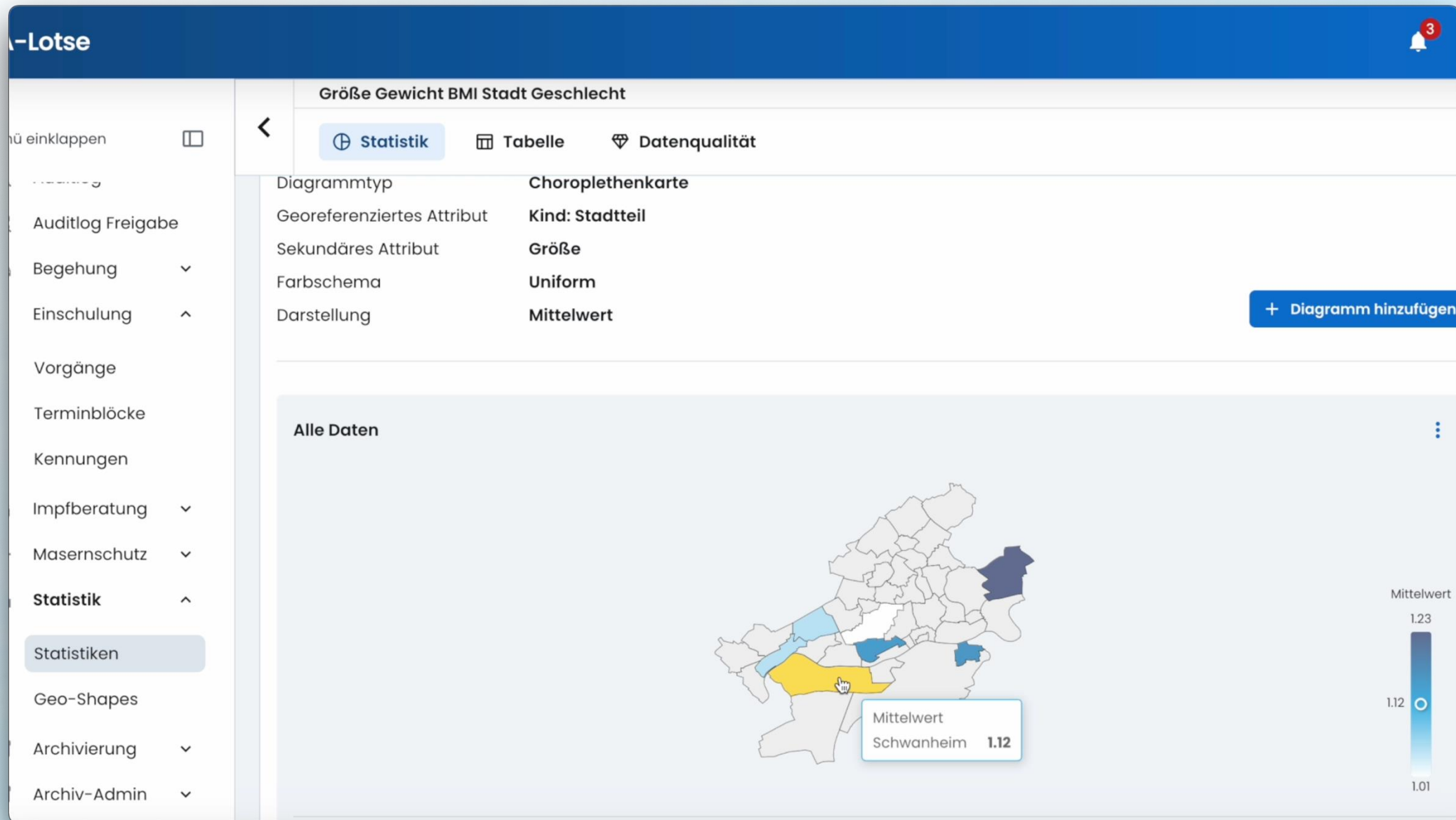
Cooperation:



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Mein Termin

Mein Bereich verlassen 

Verfügbare Termine

Terminverschiebung

Sie können Ihren Termin noch 2 Mal verschieben.

Sonntag, 16. Februar ^

07:15

Sonntag, 23. Februar ▾

Mittwoch, 12. März ▾

Übersicht



Name

Paul Winter



Geburtstag

29.01.2020

Termin verbindlich buchen

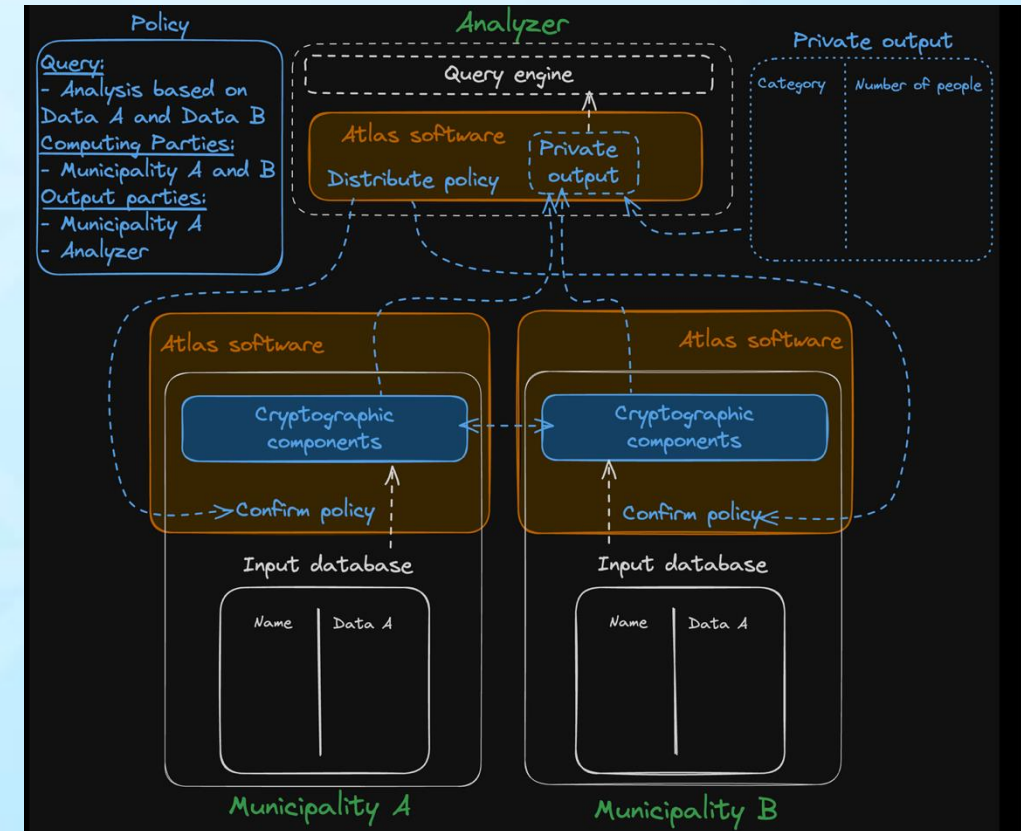
Zurück

Matrix

- One homeserver for every GA-Lotse instance
- SSO in combination with Keycloak
- Evaluation of deeper integration into the administration of cases (internal communication, external communication etc.)
- In the process of getting evaluated as a official TI-Messenger client / service (gematik)

Secure Multiparty Computation

- Business modules are currently heavily isolated
- Evaluation of Secure Multiparty Computation for privacy preserving data linkage across business modules
- Cooperation with Project ATLAS (Polyteia, HPI, Sine Foundation, and others, Funding BMBF)



Dual Licensing

Base components are permissive.
(Apache License, Version 2.0)

Enables other actors in the government to build their own applications on top of that platform.

All business modules are copyleft (AGPLv3).

The market for specialist applications for public health currently only has proprietary solutions.

Selection

- Infrastructure
 - Docker, Kubernetes, Postgres, *Redis*
- Backend
 - Keycloak, nginx, Synapse, Grafana, Grafana Loki, Liquibase, Spring Boot, Hibernate ...
- Frontend
 - node.js, next.js, Joy UI ...
- Supply Chain
 - Sigstore, Dependency-Track

A look into the future

- GA-Lotse was a software project for one federal state (Hesse) only at the start
- Right now, Bavaria is building a new business module for water quality on top of it
- Bavaria has built a citizen portal to connect to the GA-Lotse backend
- Different talks with various federal states in Germany (advantage: same codebase, freedom of operation, modularity)

Repository

Documentation



Find us on OpenCoDE

Code



Cooperation:

HESSEN

Bianca Kastl

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@bkastl:matrix.org