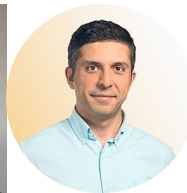# Accelerating Digital Transformation in Healthcare with Open Source and Container Platforms

Bianca Kastl, Gesundheitsamt Frankfurt
Mohammad Alavi, Health Info Net
Aarno Aukia, VSHN

GA-Lotse - Initial situation

- 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 Hessen, Germany
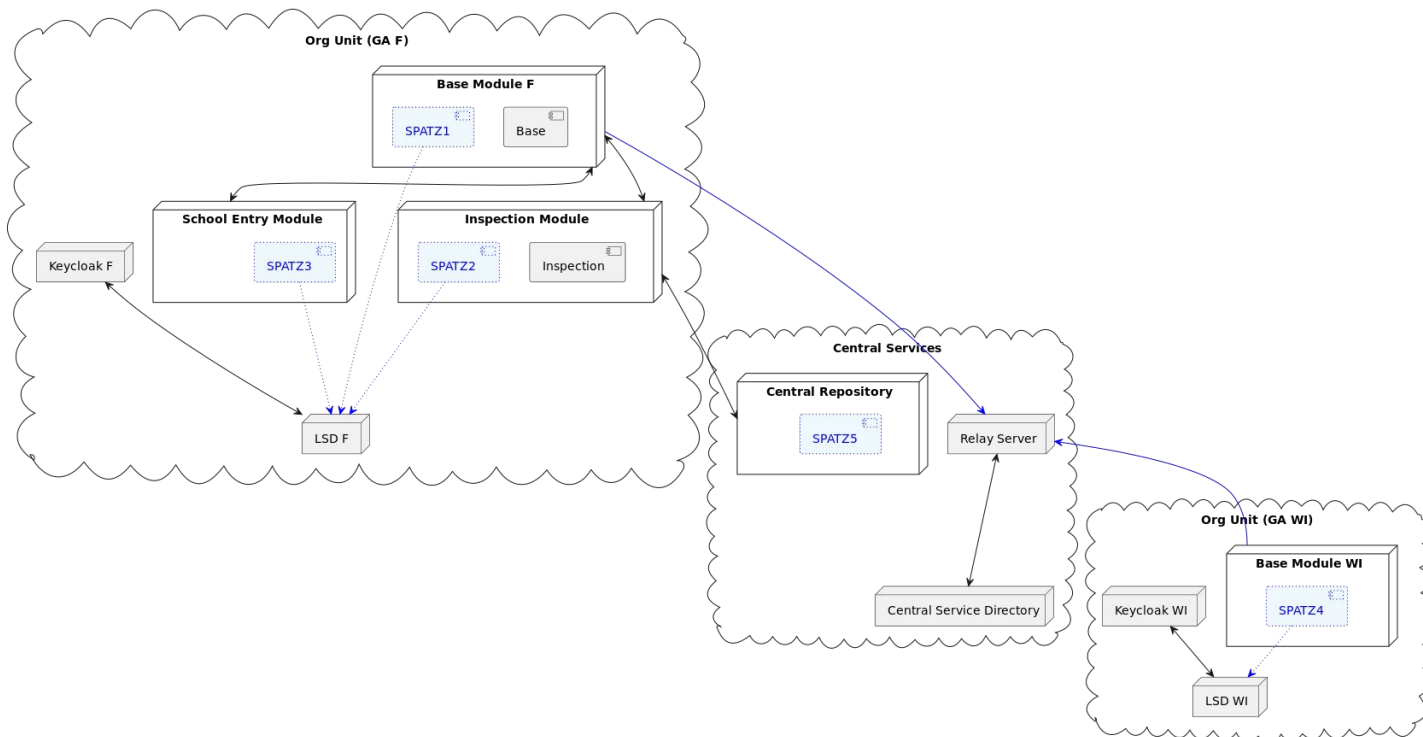
GA-Lotse - Challenges

- 25 health departments with a diverse set of business modules and different configurations
- 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

GESUND HEITS AMTFFM

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

**Funded by
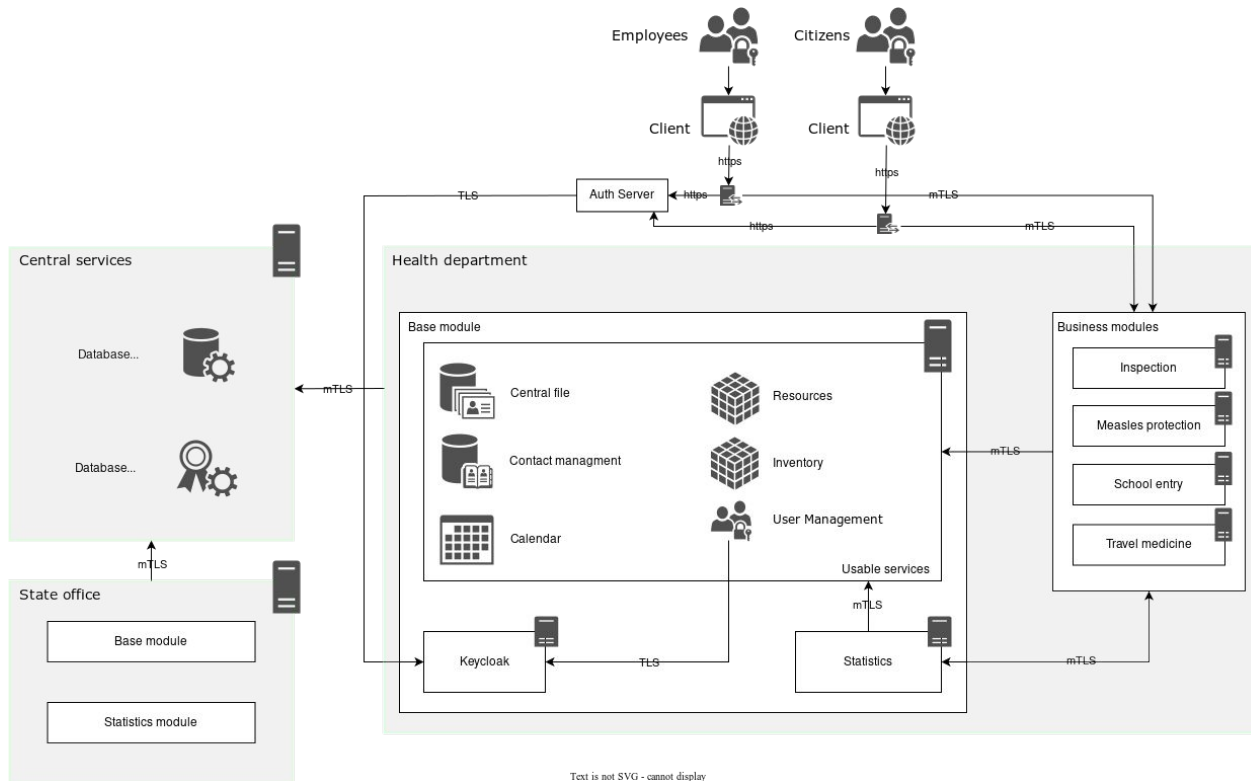the European Union**
NextGenerationEU

GA-Lotse - Concept

- 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
- Open Source all the things (Apache 2.0 / aGPLv3)
- Provided as SaaS

GESUND
HEITS
AMTFFM

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

**Funded by
the European Union**
NextGenerationEU

GA-Lotse - Service Mesh

GA-Lotse - Deployment View

GA-Lotse - Cloud Flow: Central file
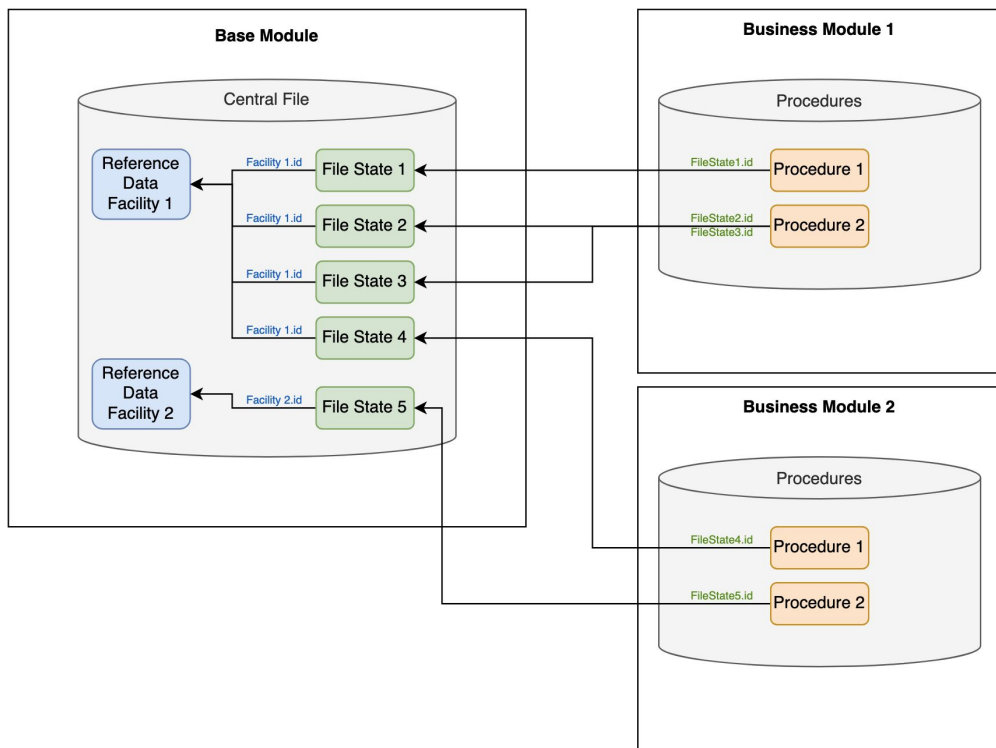
GA-Lotse - Orchestration

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

HIN - Our guidelines

- Avoid vendor lock-in
- Keep distance from tailored solutions
- Set a very high bar for security (once medical data are leaked, no compensation would be possible!)
- Ensure business continuity and disaster recovery with all possible means
- Code over documentation
- Reaching goals over following processes

VSHN

HIN - Our new IT landscape

A network of providers shape our new IT landscape based on modern technologies:

- 2 hosting providers
- 2 DevOps providers
- A network of software providers, security architects, compliance and data privacy officers

Scalable, reliable and sustainable architecture

Transparent culture enables healthy competitions and collaboration
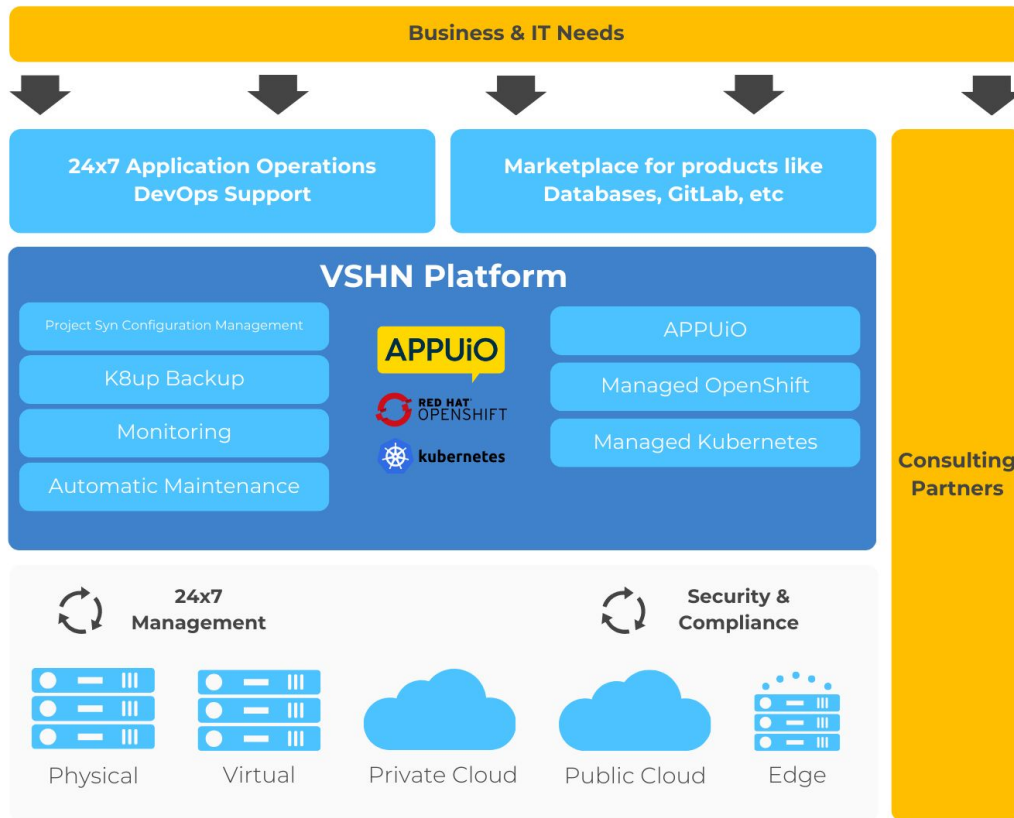
APPUiO & Managed OpenShift

- Red Hat OpenShift Container Platform as a Service
- APPUiO: shared multi-tenant cloud service
  - Target groups: developers, agencies, SaaS
- Managed OpenShift: private clusters in the cloud and on-premises
  - Target groups: Cloud Infrastructure Providers, Enterprise IT organizations

ISVs in the VSHN Marketplace

Red Hat
Container Platform, Developer Experience

Isovalent
Network Security & Observability

Keycloak
IAM

Airlock
Web Application Firewall

Harbor
Enterprise Container Registry

Grafana
Monitoring, Analytics, Tracing

GitLab
SCM, CI/CD, DevSecOps

MariaDB
Relational Database

Nextcloud
Files & Groupware

MySQL
Relational Database

MongoDB
NoSQL Database

Odoo
ERP

Redis/Valkey
NoSQL Database

Kafka
Event Streaming

PostgreSQL
Relational Database

RabbitMQ
Message Broker

Forgejo
Source Code Management

EnterpriseDB
Relational Database

VSHN

VSHN

End users / visitors

24/7 Support

Team Chat — Feedback — Chat bot — Alerts

Dev-Team

Version Management — Build — CI/CD

Configuration

Virtual Development Environment

Configuration Management

Configuration Management

Deploy Docker Containers & Configuration

Kubernetes
On-Prem or
Cloud

Service Monitoring & Alerting

Database
Backends
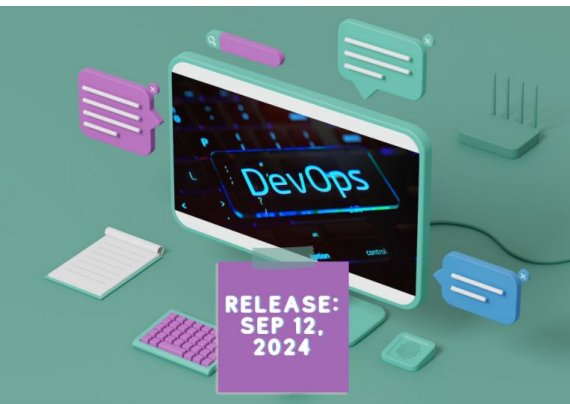
Logging

Dashboard

Backups

Metrics

Consulting

Consulting or Managed Services

Managed Services

DevOps is mainstream
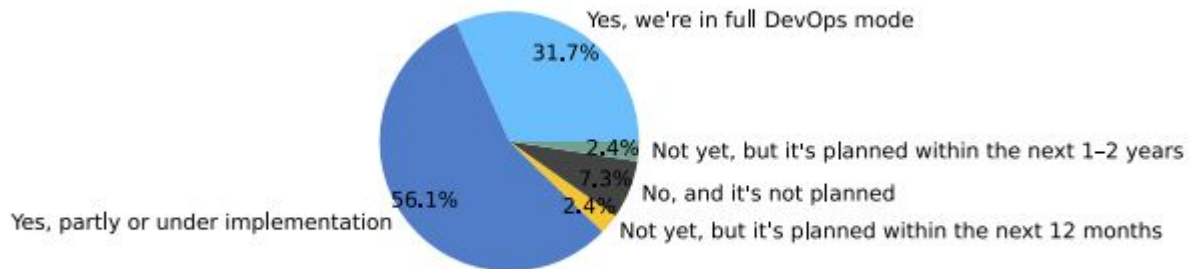

Is your organization already applying DevOps principles?

Yes, we're in full DevOps mode 31.7%

2.4% Not yet, but it's planned within the next 1–2 years

7.3% No, and it's not planned

2.4% Not yet, but it's planned within the next 12 months

56.1% Yes, partly or under implementation

Figure 36. Adoption of DevOps in 2023

RELEASE: SEP 12, 2024

DEVOPS IN SWITZERLAND REPORT 2024
zühlke VSHN

https://www.vshn.ch/en/devops-report-2024/

Thank you and feedback very welcome!

Aarno Aukia, Partner

@aarnoaukia   a@vs.hn

https://www.linkedin.com/in/aukia/