TI_ctf –
The TI Capture The Flag Event of the National Digital Health Agency in Germany
Stockholm, 26.09.2023
Intro

- **Who** are we and **what** are we doing? – gematik in a nutshell
- **Why** are we hosting a CTF?
- **What’s** our approach?
- **How** are we implementing it?
- **Results** – Honestly, does it add up?
Health Care in Germany
An overview
Germany’s healthcare system in a nutshell

- **Care providers**
  - KZBV
  - KBV
  - BDC

- **Insurance funds**
  - GKV ( Spitzenverband PKV)

- **BSI and BfDI**

- **Federal Ministry of Health**
  - Bundesministerium für Gesundheit

- **Industry**

- **Patients**

- **147 statutory and private health insurance funds**

- **gematik**

- **~ 83 Mio. insured persons**

- **~ 5.7 Mio. employees**

- **~ 360.000 doctors**

- **~ 1.900 hospitals**

- **~ 19.000 pharmacies**

- **~ 110.000 doctor’s offices**
Current State of Play of main applications

- Received e-prescriptions (process): 1,532,095
- Electronic doctor’s letters sent (process): 6,045,292
- Electronic health records (process): 651,532

From 25th November 2022; Source: https://www.gematik.de/telematikinfrastruktur/ti-dashboard
CDC: From Design to Response

**DESIGN**
- Zero Trust
- European Health Data Space
- Identity Management
- Security & Data Protection Concepts
- Continuous Product Improvement

**CERT**
- Continuous Security Situation Report
- Security Monitoring
- Scans & Pentests
- Vulnerability Management
- Incident Handling

**Security**

**Management**
- Coord. ISMS
- Gematik ISMS
- Business Continuity Management
- Risk Management
- Partner Management
TI_ctf

• Telematik Infrastructure Capture The Flag – since 2021

• It’s a Cyber Security Event with a Hacking Contest and presentations in context with e-health and security

• Product focused design

• Bringing together gamification and security
Why are we hosting an CTF?

gematik is a Facilitator, Host & Consultant

Visibility
Cooperation & Collaboration
Understanding
Improve Security Posture

gematik
Why are we hosting an CTF?

- Digitalization within health sector concerns us all
- gematik as national agency is the central enabler for digitalization of the health and care sector
- Security is a profound element of e-Health

- We want to engage with the community and bring TI products in context of security closer, such as ePA & eRx
- We want to increase cooperation & collaboration
- We want to increase visibility, networks and by that increase indirectly the overall security posture

Goal: Host a CTF Event
What's our approach?

Challenges:
- OSINT, Brute Force, Penetration testing, cryptography, programming, forensics
Overview: Technical Infrastructure

Virtual World → Conference Platform → CTF Framework

- Workadventure
- JitsiMeet
- CTFd
**ePrescription**
The fast and safe way to a new medicine

With the e-prescription, medicines are prescribed digitally. The e-prescription can be filled at the pharmacy via an app, a QR code or, in the future, an eGK.
Recap 2021: Capture The TI-eRx

- Over 25 challenges
- 130 contestants
- In the final hour neck-and-neck race
- Partner presentation on the community level
- Significant positive feedback from participants
The electronic patient record (ePA) stores all of a patient's data and documents securely in one place. Patients can manage their data themselves and release it to their doctors.
Recap 2022: The Secret of the ePA-TI

- Over 25 challenges
- 83 contestants in 24 Teams – lower no show quote
- Mini-Level to unlock CTFd
- More Partner presentation on the community level
- Again absolutely positive feedback from participants
KIM
Secure email and data exchange

Secure communication between all institutions connected to the telematics infrastructure (TI)

Suitable for applications/payloads such as eAU, eHKP, billing, laboratory data, findings, doctor's letters, DMP, etc.

First nationwide and cross-sector service; Out of the Box - Authenticity, Integrity and Confidentiality

Application register at gematik, overview of all KIM applications

Sending confidential messages, data and other documents, protection of patient data

Successful expansion of the user groups

Potential through further specification development by gematik with additional features, e.g. file dispatch over 25 MB, primary system integration

Automation of workflows through service identification
Teaser 2023: The Adventure of KIM & TIM
Chapt. I – Mission (K)IMpossible

- Over 20 challenges already
- Goal: 35 participating teams
- Improving the Mini-Level to unlock CTFd
- Engaging with and inviting the gemmunity
- Establishing the Story of KIM and TIM
Results

Honestly, does it add up?

- **Thinking & working out of the box** – First CTF in Germany with a virtual world

- **Bringing the partners together** in an other setting – internal CTF always afterwards just for the colleagues

- **Presenting our approach** within the community and winning new event partners

- **Created an own blue print** – reducing the workload

- **Connecting to the outside** – People know, who to address

- **Sending new impulses** into the community, redefining gematik