de.NBI Cloud Trusted Research Environments (Providers)

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GERMAN NETWORK FOR BIOINFORMATICS INFRASTRUCTURE

European Network of Trusted Research Environments

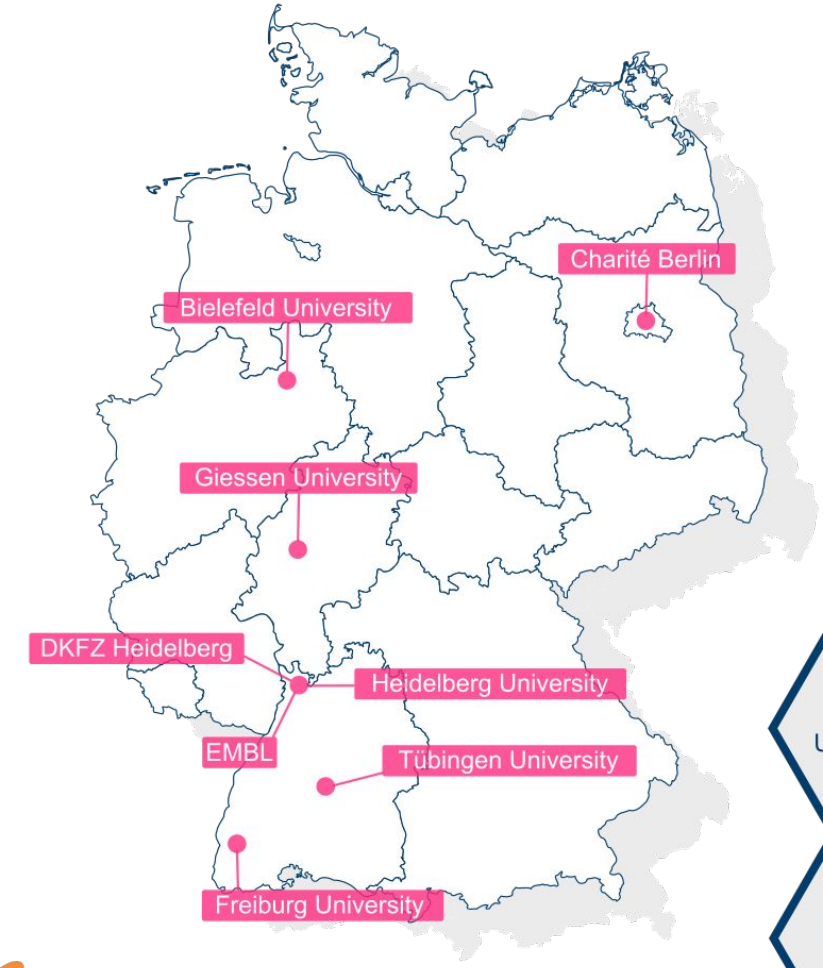
de.NBI – German Network for Bioinformatics Infrastructure

de.NBI consortium

- 24 partners
- 8 service centers
- national German node in ELIXIR
- since 2022 sustained funding via German federal budget to FZJ within Helmholtz Society

de.NBI mission

- Provision of comprehensive first-class bioinformatics **tools & services** to users in basic and applied life sciences research
- Bioinformatics **training** in Germany and Europe through a wide range of workshops and courses
- Transfer of expertise between academia and industry in our **Industrial Forum**
- **Cooperation** of the German bioinformatics community with international bioinformatics networks
- Provide **cloud computing** resources for academia in Germany at **8 sites**



56.000 CPU cores
720TB RAM with up to 4TB per node
100 PB of storage capacity with 720TB high-speed SSD storage
520 GPUs

SimpleVM
Kubernetes
OpenStack
Galaxy Europe

Annual User Meetings
3000+ Users in over 1000+ projects
900+ publications with reference to the de.NBICloud

48 sensitive data projects

Perun

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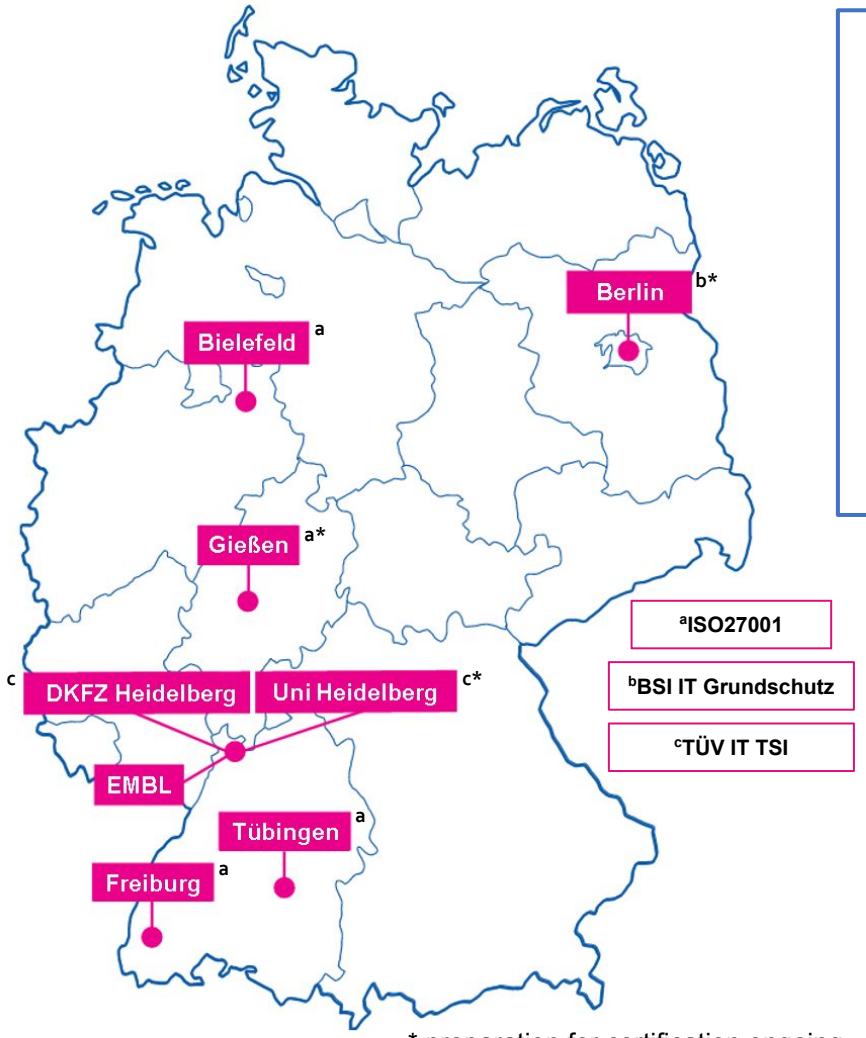
de.NBI Cloud Federation - Operational Concept



* preparation for certification ongoing

Federated Sites - Shared Responsibility

Independent Legal Entities operate each data center

- Cooperation based on de.NBI / ELIXIR-DE cooperation agreement
- **Shared technical and legal requirements** for operation of a de.NBI Cloud location
- Different project types (IaaS, SaaS, KaaS, WaaS)
- Common (cloud portal) and local (individual cloud sites) responsibility for IT / service security and data protection
- **Data processing agreements** between users and cloud site for sensitive data processing

Centrally organized by de.NBI Cloud Portal at Forschungszentrum Jülich in Bielefeld

- Project resource applications and modifications
- Project assignment to cloud sites based on requirements
- Central user helpdesk - 1st and 2nd level support

- Multiple ISMS and IT security trainings annually
- Mutual internal audits of ISMS state and adoption at each cloud site
- Monthly technical and certification coordination meetings
- Primary and secondary means of communication and disaster response
- Directory of procedures for each participating cloud site + portal

openstack. SimpleVM kubernetes useGalaxy.eu

de.NBI Cloud Tübingen as a Trusted Research Environment

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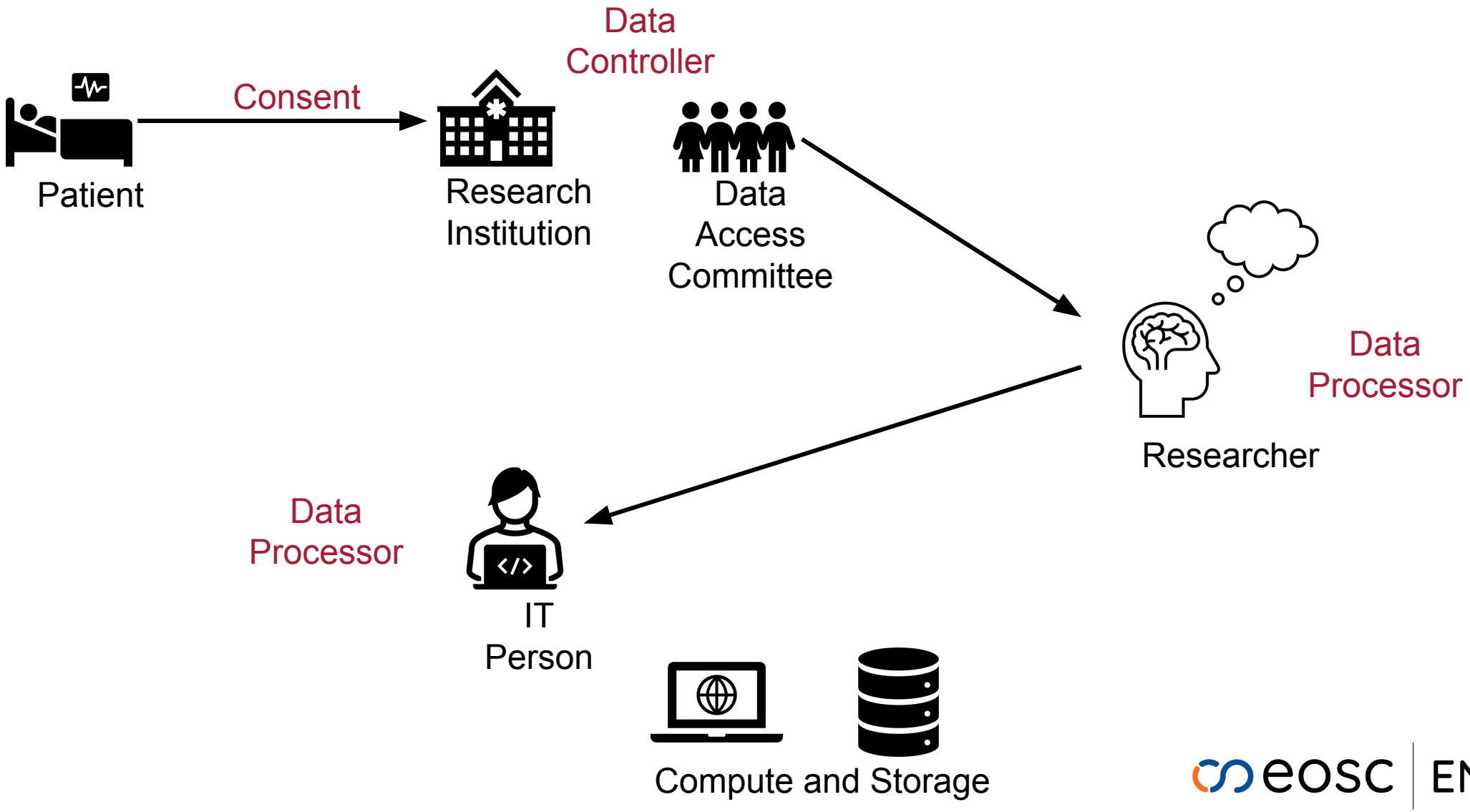
GDPR in a Nutshell



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Processing contracts

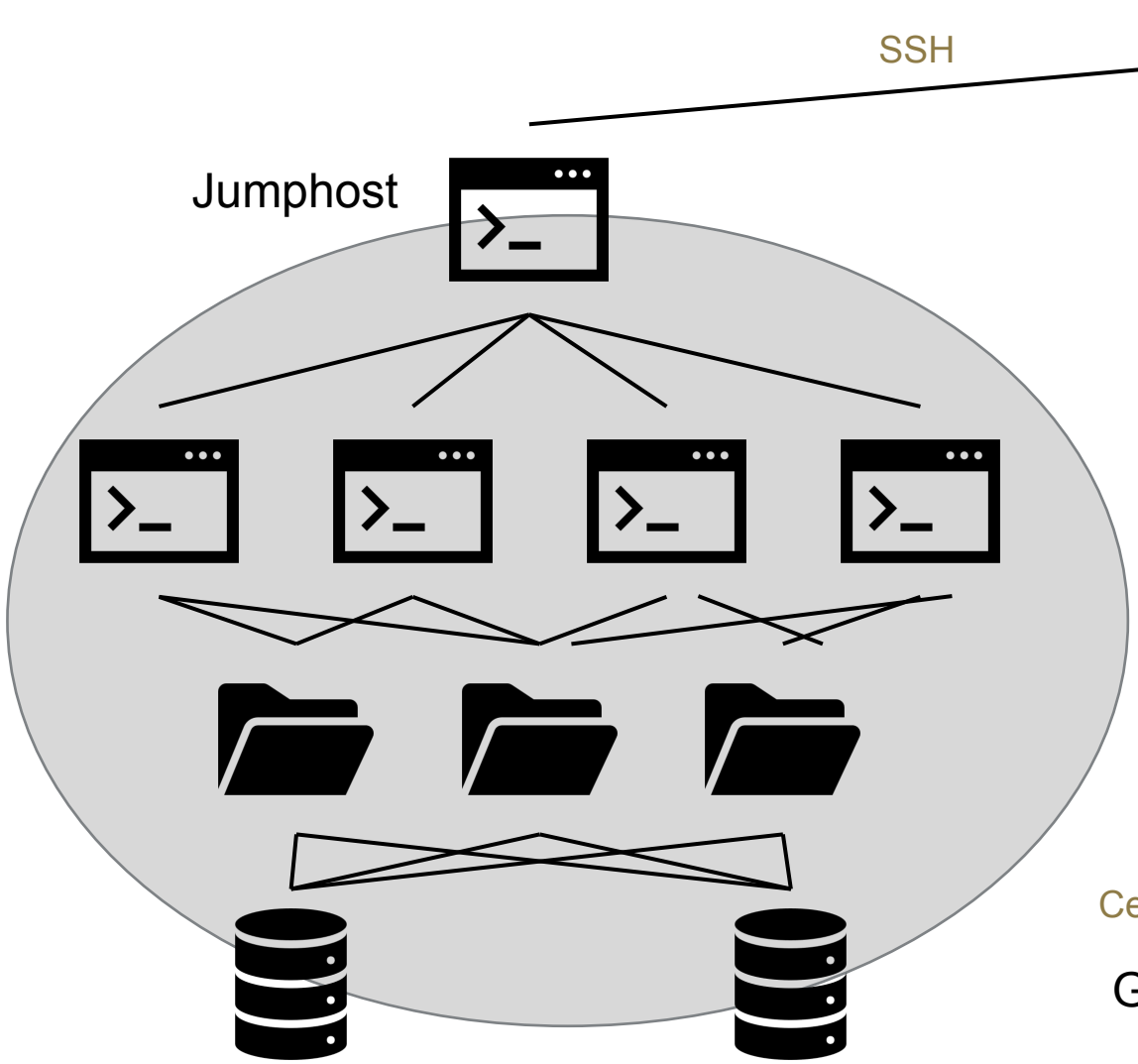
- The data controller commissions the analysis of human scientific data to a processor. The processor may have further sub-processors.
- If processors or controller belong to different legal entities a processing contract between the institutions has to be made.
- The processing contract contains the purpose of processing e.g. scientific research refereeing to the patient/donator consent.
- The contract regulates the access policies and security requirements.

- Not obeying the law or uncontrolled data leaks may have unpleasant consequences for the institutions involved.

Standard Operating Procedures

- For a given project the handling of its datasets is accompanied by Standard Operating Procedures (SOP) defining the eligible access, the protocols for transfer, the processing workflows, naming conventions and finally decommission.
- These documents are created with the principal investigators involved, making sure that regulations imposed by the data controllers or by law are followed by all people involved.

Secure processing environments



Virtual Machines
or Cluster

Shared or isolated

Dedicated
Project-Volumes

Certificate-based Access Control

Georedundant
Storage

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ISMS and Certification

- The de.NBI Cloud Tübingen has a state-of-the-art Information Security Management System (ISMS)
- A set of security controls and well-trained personnel ensure the confidentiality, availability, and integrity of assets from threats and vulnerabilities

- The cloud is certified according to ISO27001

CERTIFICATE

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

DIN EN ISO/IEC 27001:2017

Technical equivalent to ISO/IEC 27001:2013 including Cor 1:2014 and Cor 2:2015

DEKRA Certification GmbH hereby certifies that the organization

Eberhard Karls Universität Tübingen

Scope of certification:

Operation of the de.NBI Cloud site Tübingen

Certified location:

Wächterstraße 76, 72074 Tübingen, Germany

has successfully implemented the above-mentioned information security management system according to the standard and to the statement of applicability from 18.11.2021 and applies it effectively. The conformity was inspected during the certification audit documented in audit report no. A21091322.

Certificate registration no.: DS-0222009 Certificate valid from: 2022-02-24
Validity of previous certificate: - Certificate valid to: 2025-02-23

Language translation

Dr. Gerhard Nagel
DEKRA Certification GmbH, Berlin, 2022-02-24

DEKRA Certification GmbH * Handwerkstraße 15 * D-70565 Stuttgart * www.dekra.de/audits

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HEALTH-X as a Trusted Research Environment

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Berlin Institute of Health @Charité

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Gaia-X at a glance

Goal: Envision a **Federated, open data ecosystem**

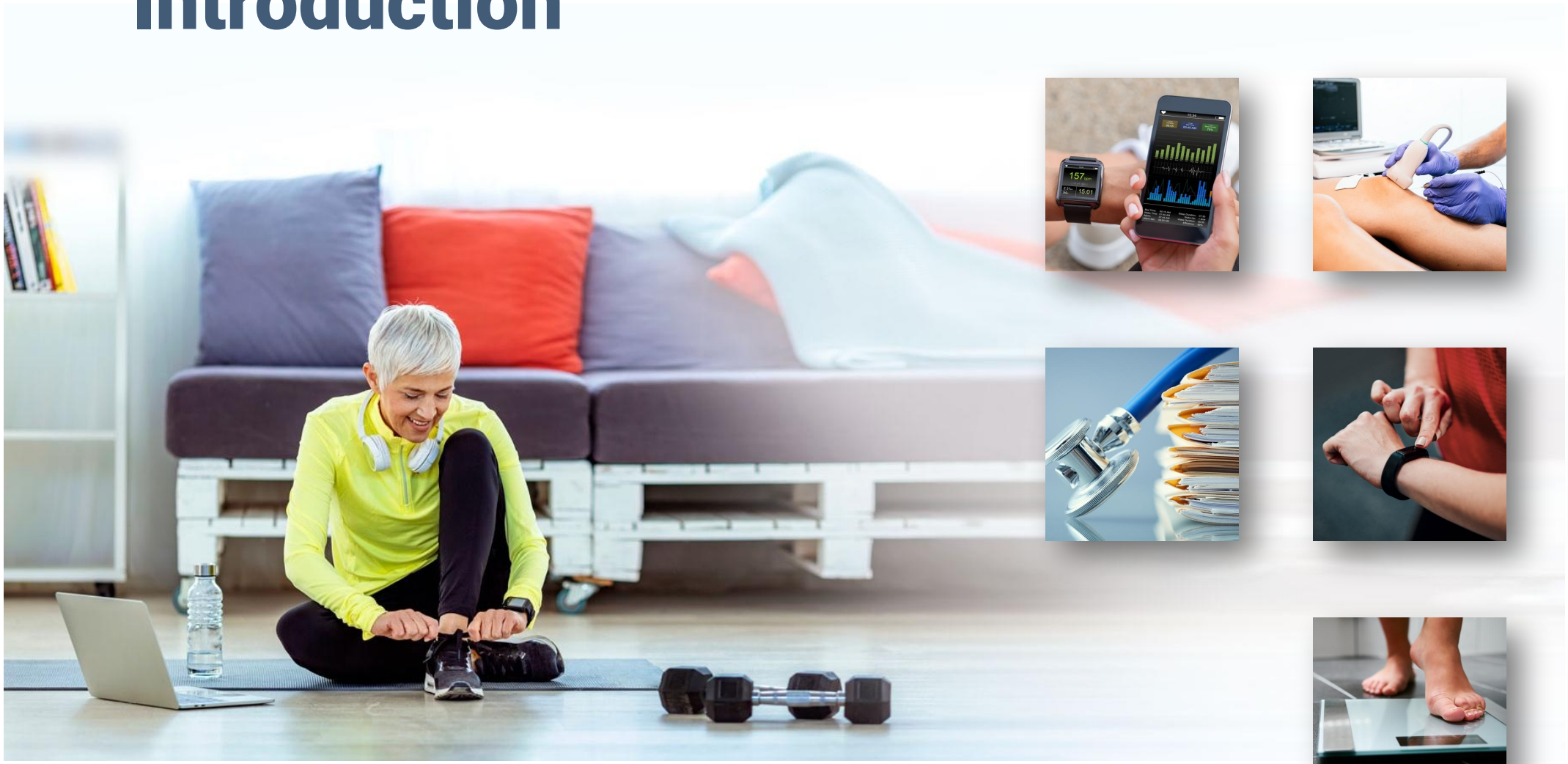
Design and implement a **Blueprint**:

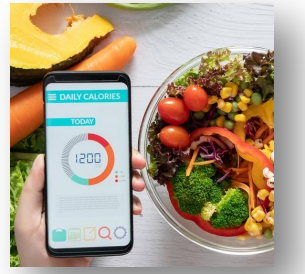
- Specifications
  („How does Gaia-X work?“)

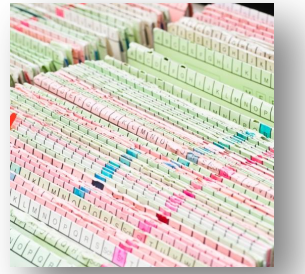
- Develop Open Source **Federated Services**
  („How can I build within Gaia-X?“)

- Definition of Labels and **Qualification criterias a**nd
  –**processes**
  („How do I ensure Gaia-X conformity?“
- „How do I set rules for my own data space?“)

Introduction







HEALTH-X dataLOFT: Vision of a European Health Data Space

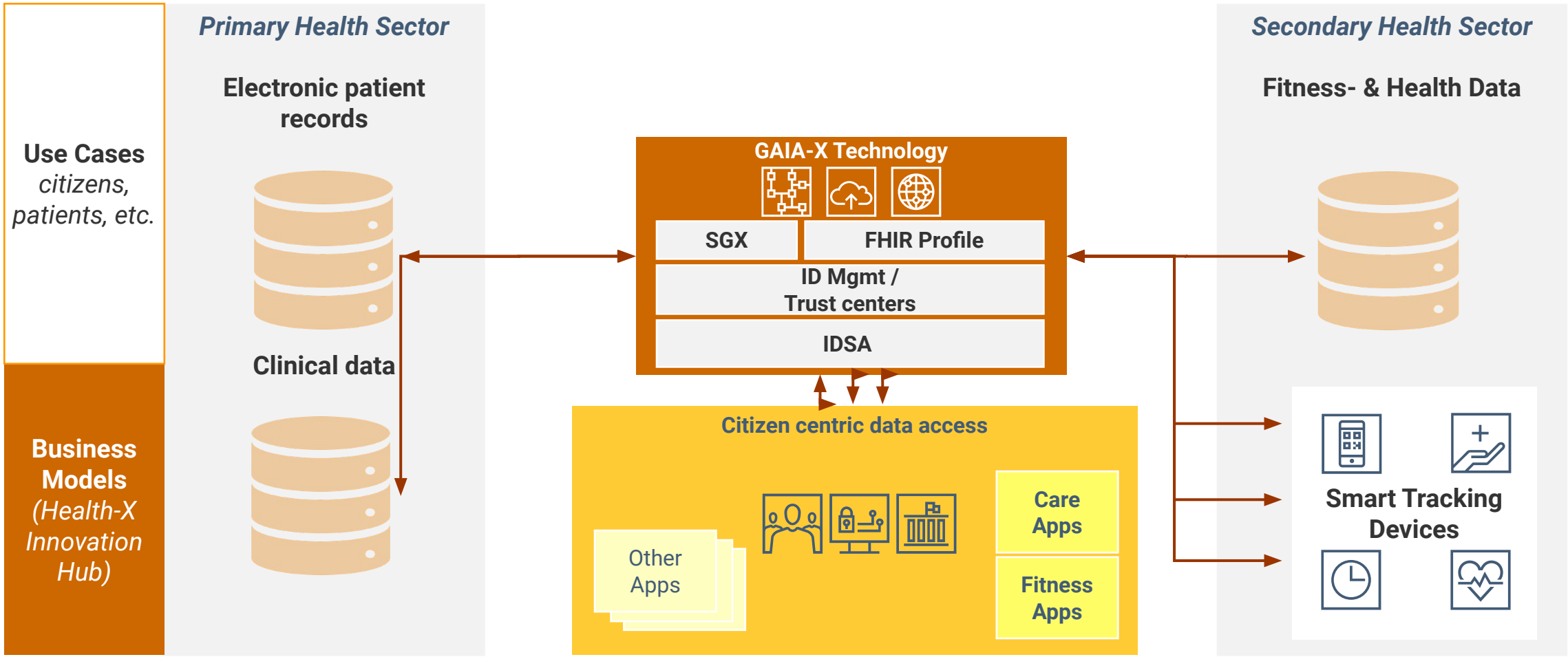
Transformation of primary and secondary Health Data Spaces

- Citizens as active participants in the health system
- Combine data use from different sources
- Create a Health Data Ecosystem
- Data based Real World Evidence Research!

Combination and Cooperation with existing solutions ePA, MII, nPA, eiDAS

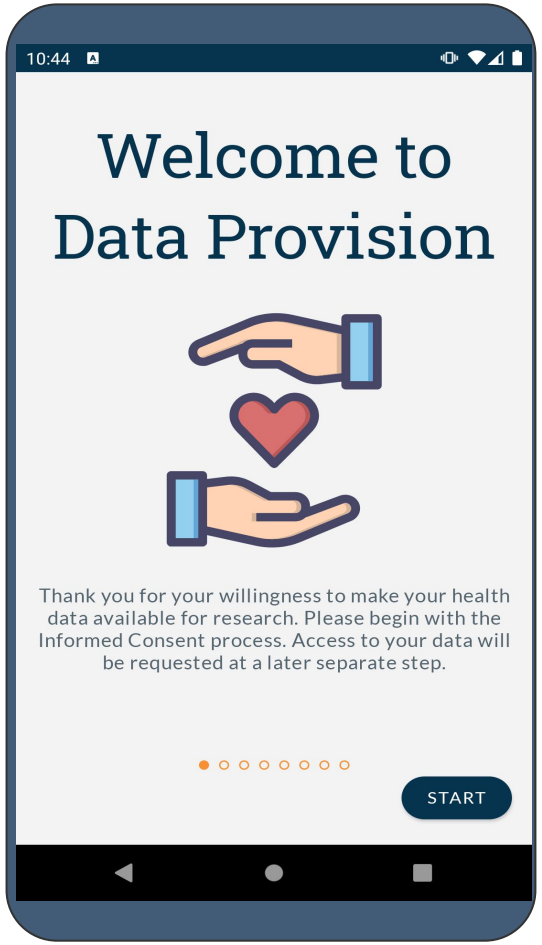
Bundesministerium für Wirtschaft und Klimaschutz

dataLOFT: Architecture



Use Case: Secondary use of data

- Self-determined data provision by citizens via a mechanism for secondary use by specialised data users
- Data provision: de-identification, harmonisation and transfer of diverse health data
- Interoperability through FHIR & EU standards
- Selection process of data users



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