Setting the stage!

Prof. Dr. med. Murielle Bochud
Prof. Dr. med. Stéfanie Monod

Department of Epidemiology and Health Systems
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Ruth Dreifuss, à propos de la LAMAL (introduite en 1994)
Le Matin Dimanche, 3.09.2023

"Depuis trente ans, on a bricolé, et on continue de le faire. C'est du rafistolage. ... **Il n'y a pas de pilote dans l'avion**. Ou plutôt, **il y en a trop** et tous tirent dans des directions différentes. Du coup, l'avion ne vole pas très droit. Il ne va pas s'écraser, mais trop de passagers sont secoués".

Ruth Dreifuss, über das KVG (1994 eingeführt).
Le Matin Dimanche, 3.09.2023

"Seit dreißig Jahren wird geflickt, und das wird immer noch getan. Das ist Flickschusterei. ... **Es gibt keinen Piloten im Flugzeug**. Oder besser gesagt, **es gibt zu viele**, und alle ziehen in unterschiedliche Richtungen. Das führt dazu, dass das Flugzeug nicht gerade fliegt. Es wird nicht abstürzen, aber zu viele Passagiere werden durchgeschüttelt".

Crisis?

« *A mon avis, il faudrait même envisager de supprimer l'assurance maladie obligatoire*»
«Wir sollten eine Abschaffung der obligatorischen Kranken-versicherung in Betracht ziehen»

a déclaré la directrice de la santé du Canton de Zurich Natalie Rickli (UDC) le 26 août à la «Sonntagszeitung».

NATALIE RICKLI VEUT SUPPRIMER L'ASSURANCE MALADIE OBLIGATOIRE

SOINS POUR RICHES

UN SYSTÈME DE SANTÉ POUR CEUX QUI ONT LES MOYENS...

UN DÉPART DANS LA DIGNITÉ POUR LES AUTRES.

MERCI QUI?

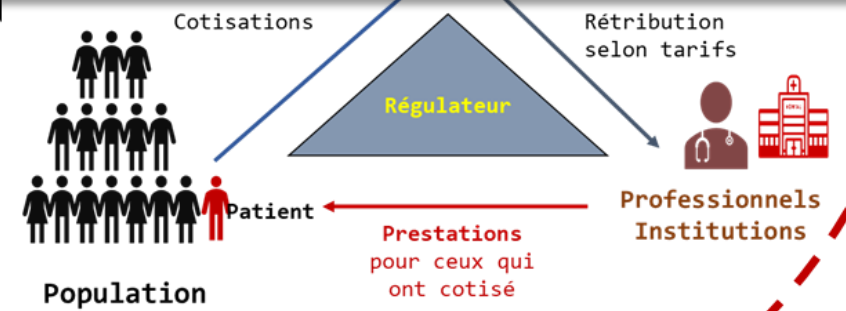SOINS POUR PAUVRES
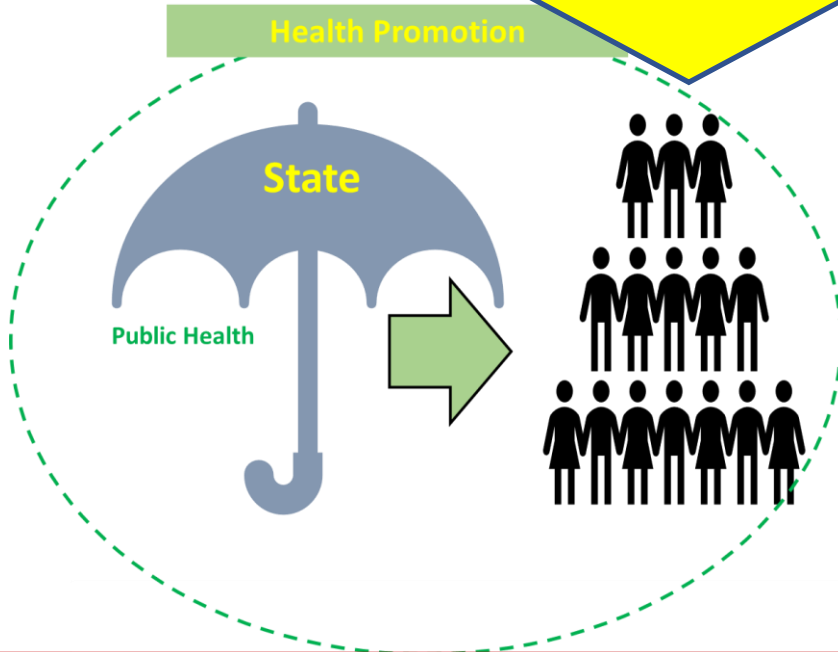
EXIT

The Health System: **Today**

Progressive loss of the collective, social and environmental dimensions of health

Financial protection for health repair
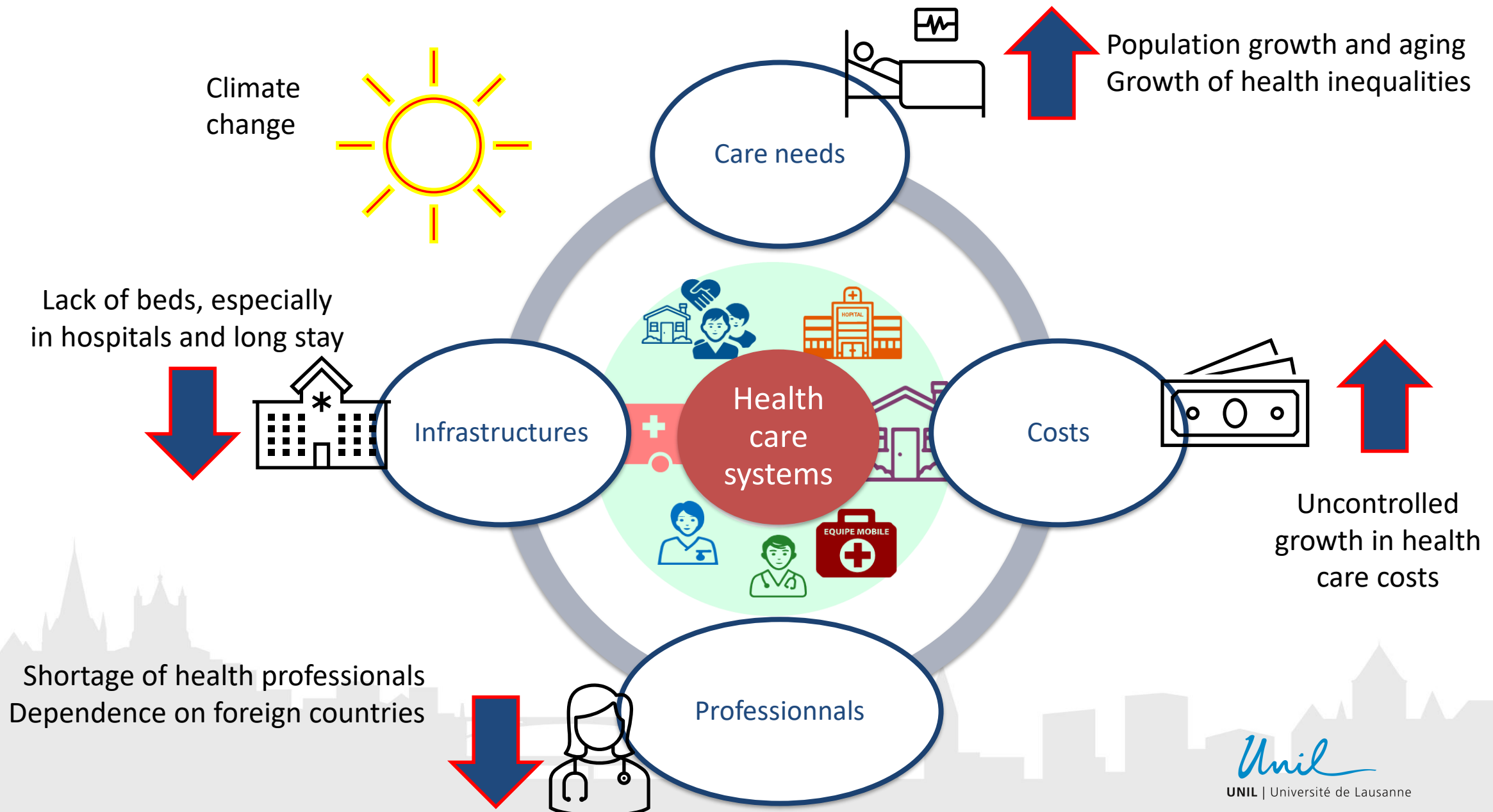
A large market for Health repair

Healthcare system

Valorization of specialized activities, esp. technical and acute, with volume incentives

Health Promotion

State

Public Health

Cotisations

Rétribution selon tarifs

Régulateur

Patient

Professionnels Institutions

Prestations pour ceux qui ont cotisé

Population

Health

Disease

And the impossible equation by 2050

Climate change

Population growth and aging
Growth of health inequalities

Care needs

Lack of beds, especially in hospitals and long stay

Infrastructures

Health care systems

Costs

Uncontrolled growth in health care costs

Shortage of health professionals
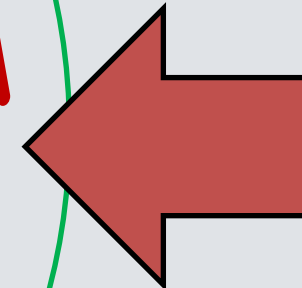Dependence on foreign countries
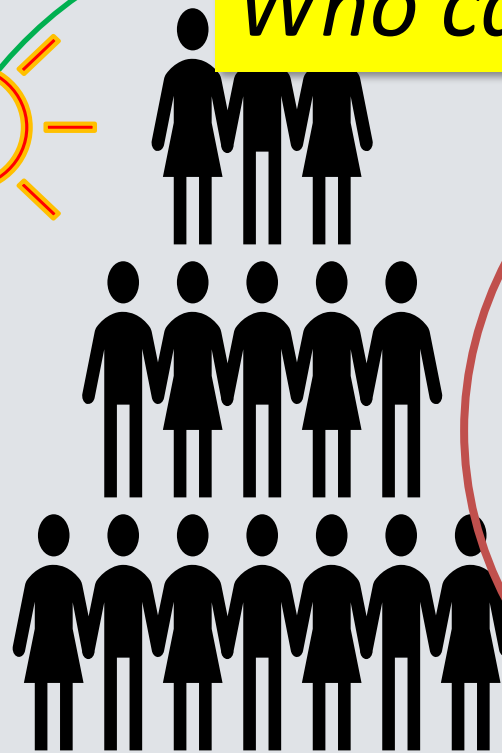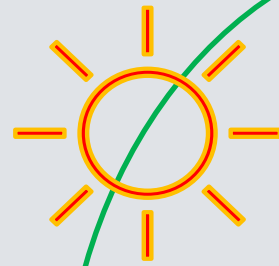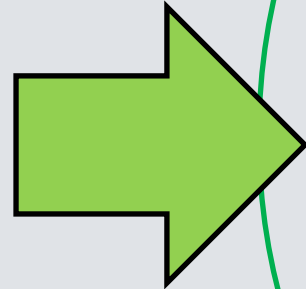
Professionnals

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5

Rethinking the **health system**:
A stronger balance between **Health** and **Care**

Who can do what?!

Public health as a duty of the State.
Population-centered and broad vision of health (social and environmental determinants).
Salutogenesis.
Collective responsibility.

Individual health as designed by medical science.
Focused on the disease, its prevention and treatments.
Pathogenesis.
Individual responsibility.

Health policies in all public policies

Regulatory policies in healthcare system

Brief analysis of health system governance in Switzerland

Health system performance assessment: A primer for policy-makers (who.int)

POLICY BRIEF 49

Health system performance assessment

A primer for policy-makers

Dheepa Rajan
Irene Papanicolas
Marina Karanikolos
Kira Koch
Katja Rohrer-Herold
Josep Figueras

Centre universitaire de médecine générale et santé publique · Lausanne

Health System *Governance* for Health System Performance

Policy and vision
To provide a clearly articulated strategic vision for the health sector

Legislation and regulation
as powerful levers for the achievement of health system goals

Stakeholder voice
as the real possibility for key stakeholders to contribute meaningfully to health policy decisions

Information and intelligence
to support an environment where evidence generation and use are the norm

➢ Health improvement

➢ People-centerdness

➢ Financial protection

Societal goals

Economic development

Social cohesion

Well-being

The Swiss Health system governance

Policy and vision
To provide a clearly
articulated strategic vision for the health sector

Legislation and regulation
as powerful levers for the
achievement of health system goals

Stakeholder voice
as the real possibility for key stakeholders to contribute
meaningfully to health policy decisions

Information and intelligence
to support an environment where
evidence generation and use are the norm

- There are explicit health strategies but there is no authority over their execution and implementation that remains at the whim of each of the actors.

- Switzerland, with the absence of a clear health responsibility at the federal level, is not in a position to achieve a "public health in all policies" strategy.

- The Health Insurance Act (KVG) adopted in 1996 is the only major piece of legislation at the federal level that deals with the regulation of the healthcare system and attempts to regulate, wrongly, the entire health systems.

- Citizens and patients do not have an assigned role in healthcare system governance

- **The information system is weak, organized in silos**

Next steps?

➢ The **cantons and the Confederation** must rebuild a **new dialogue** to define of a common position with regard to the health care system

➢ A **Federal Health Act** (with a modification of the Constitution) could make it possible to (re)define Health, define a vision and rearticulate the elements of governance

[Loi fédérale sur la santé (samw.ch)](samw.ch)

➢ Opening up **reflection outside the narrow circles** of historical stakeholders in parliament (Citizens, Patients)

➢ Building a real **capacity for data** production and monitoring and to **arbitrate resource allocations**

Digital Switzerland Strategy 2023

Vision

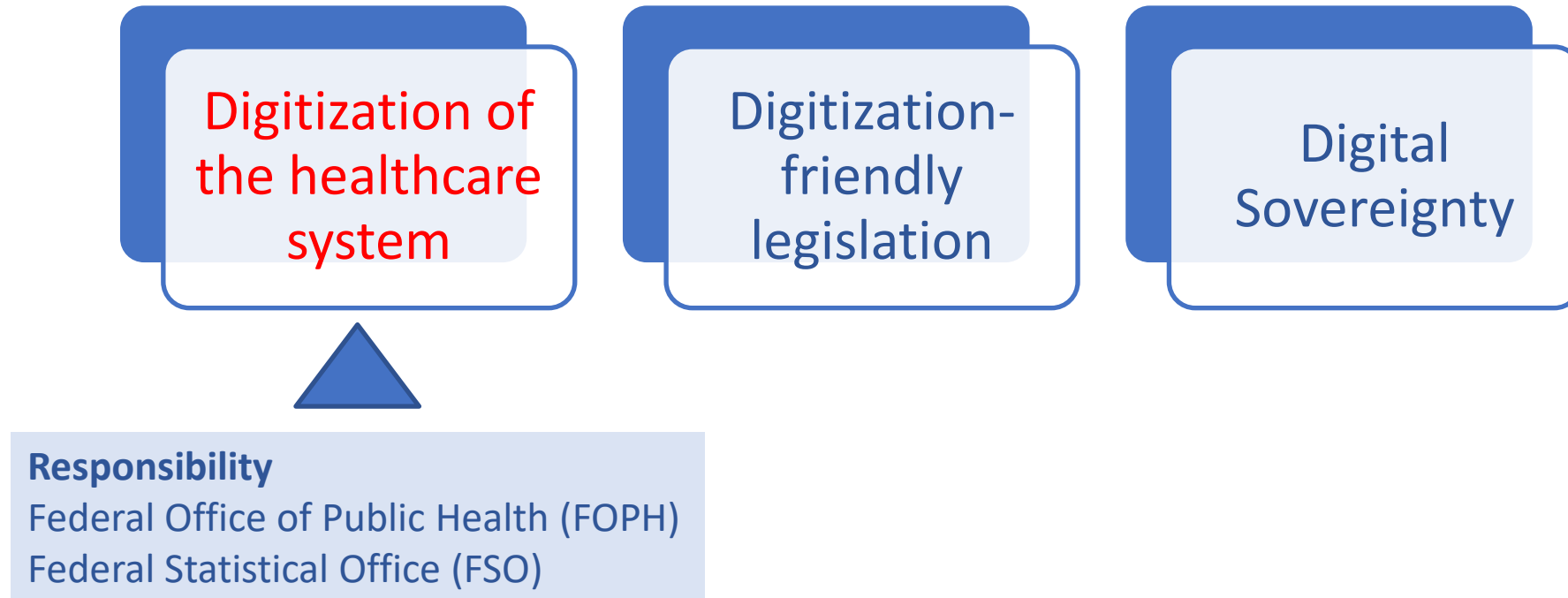Switzerland systematically applies the "**digital first**" principle for the **benefit of its population**.

It takes advantage of **digital transformation** to ensure that everyone benefits in the long term.

Switzerland is one of Europe's most competitive and innovative countries in the digital arena.

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PRIORITY THEMES OF THE DIGITAL STRATEGY SWITZERLAND 2023

Digitization of the healthcare system

Digitization-friendly legislation

Digital Sovereignty

Responsibility
Federal Office of Public Health (FOPH)
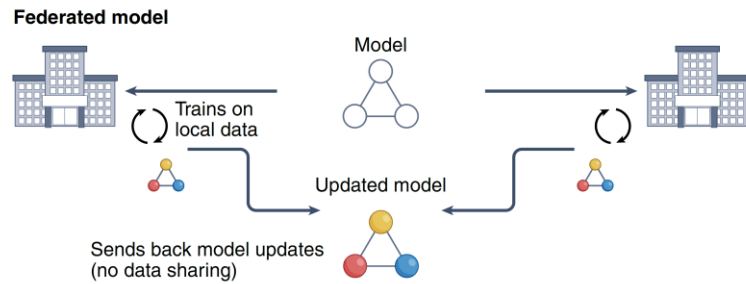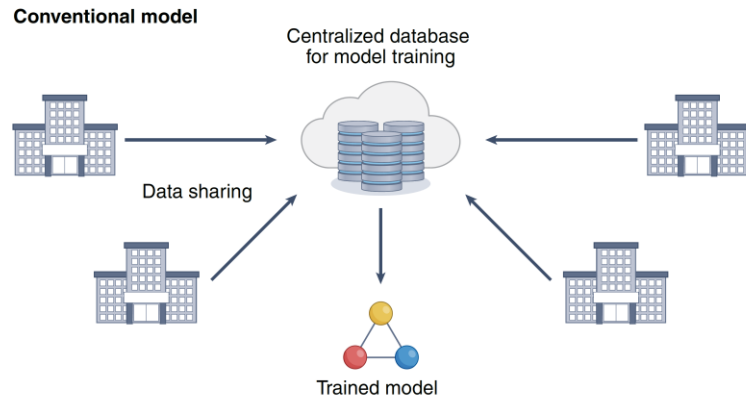Federal Statistical Office (FSO)

DigiSanté

- DigiSanté is the Federal Department of Home Affairs's (EDI/DFI) program to promote the **digital transformation of the health system**.

- It will be developed jointly by the FOPH and the FSO by the end of 2023, on behalf of the Federal Council.

https://www.bag.admin.ch/bag/fr/home/strategie-und-politik/nationale-gesundheitsstrategien/digisante.html#-1502000513

Examples of projects that could be supported by the program:

- support primary data collection and promote interoperability between players, while guaranteeing data protection.

- continuously digitize and improve government processes, and publish data in accordance with the principles of Open Government Data (OGD).

- make health data accessible to research, subject to data protection and ethical principles.

- identify, define and publish technical, semantic and process standards, and guarantee their ongoing maintenance and improvement.

- provide unique identifiers for people, companies, services and objects, or provide common services, such as registers, interfaces or applications, with a view to guaranteeing data security.
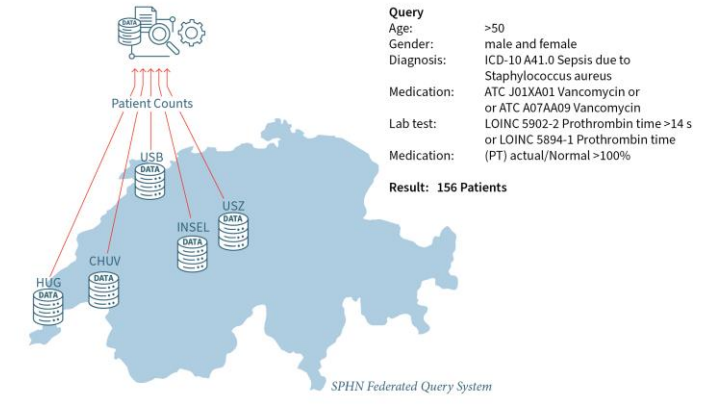
https://www.bag.admin.ch/bag/fr/home/strategie-und-politik/nationale-gesundheitsstrategien/digisante.html#-1502000513

Conventional model

Centralized database for model training

Data sharing

Trained model

Federated model

Model

Trains on local data

Updated model

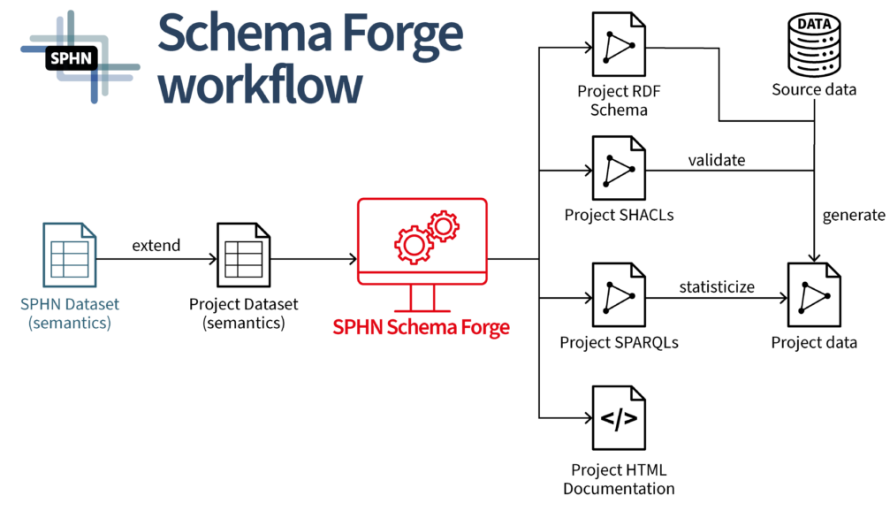Sends back model updates (no data sharing)

Fig. 4 | Evolving procedures for data sharing. An advantage of federated learning is that it is decentralized, representing a major potential advance in data security.

Rajpurkar, AI in health and medicine, Nature Medicine | VOL 28 | January 2022 | 31–38

SPHN federated query system

Query
Age: >50
Gender: male and female
Diagnosis: ICD-10 A41.0 Sepsis due to
                Staphylococcus aureus
Medication: ATC J01XA01 Vancomycin or
                or ATC A07AA09 Vancomycin
Lab test: LOINC 5902-2 Prothrombin time >14 s
                or LOINC 5894-1 Prothrombin time
Medication: (PT) actual/Normal >100%

Result: 156 Patients

Patient Counts
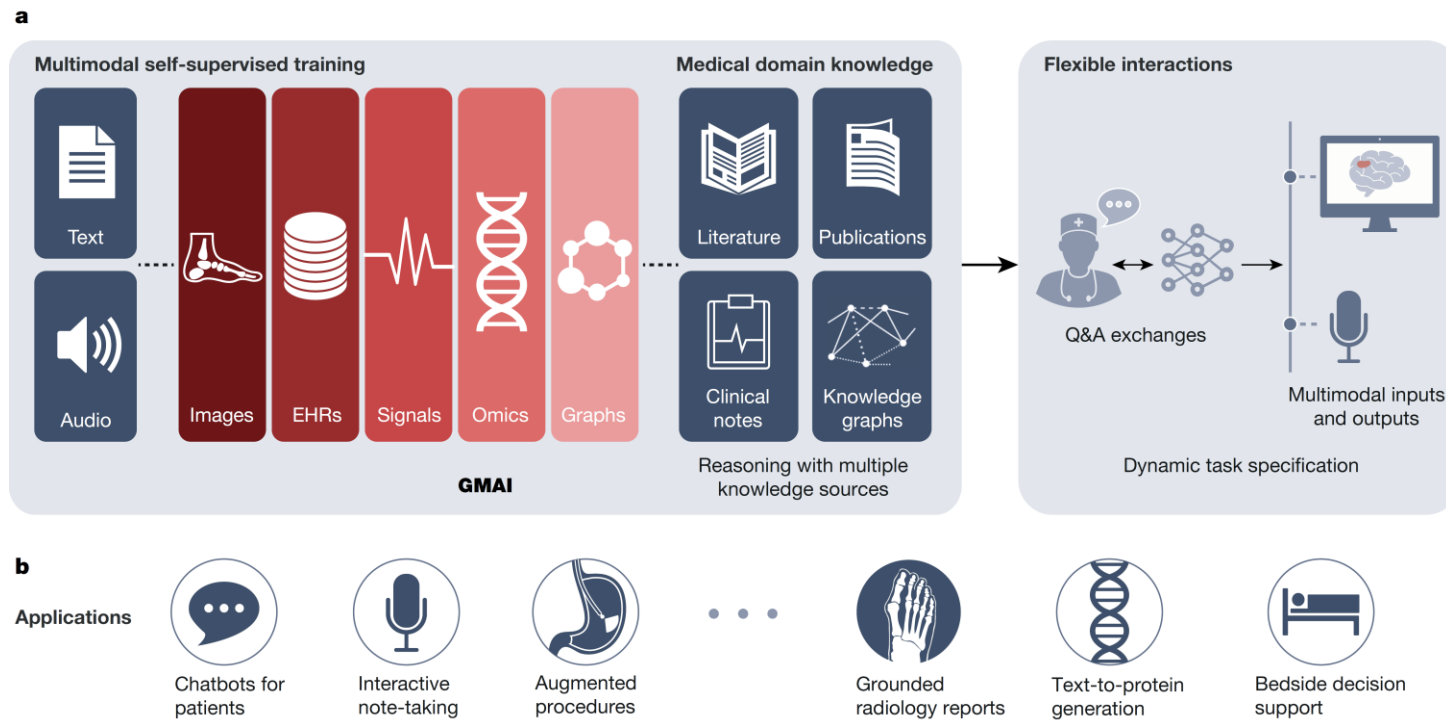
USB DATA
USZ DATA
INSEL DATA
CHUV DATA
HUG DATA

SPHN Federated Query System

The SPHN Semantic Interoperability Framework builds a complete ecosystem around Semantic Web technologies to make health-related data FAIR.

SPHN Schema Forge workflow

SPHN Dataset (semantics) — extend → Project Dataset (semantics) → SPHN Schema Forge

Project RDF Schema — Source data
Project SHACLs — validate
generate
Project SPARQLs — statisticize → Project data
Project HTML Documentation

Generalist medical artificial intelligence (GMAI)

GMAI tools ➔ diverse set of tasks using very little or no task-specific labelled data.

GMAI flexibly interpret different combinations of medical modalities, including data from imaging, electronic health records, laboratory results, genomics, graphs or medical text.

Models produce expressive outputs such as free-text explanations, spoken recommendations or image annotations that demonstrate advanced medical reasoning abilities.

Fig. 1 | Overview of a GMAI model pipeline. a, A GMAI model is trained on multiple medical data modalities, through techniques such as self-supervised learning. To enable flexible interactions, data modalities such as images or data from EHRs can be paired with language, either in the form of text or speech data. Next, the GMAI model needs to access various sources of medical knowledge to carry out medical reasoning tasks, unlocking a wealth of capabilities that can be used in downstream applications. The resulting GMAI model then carries out tasks that the user can specify in real time. For this, the GMAI model can retrieve contextual information from sources such as knowledge graphs or databases, leveraging formal medical knowledge to reason about previously unseen tasks. **b**, The GMAI model builds the foundation for numerous applications across clinical disciplines, each requiring careful validation and regulatory assessment.

Moor, Nature | Vol 616 | 13 April 2023 | **259**

75 NRP Big Data
National Research Programme

2016-2023

Society must anticipate the potentially disruptive changes that big data and machine learning applications can bring about.

Healthcare: assisting physicians and personalising medicine

Balancing privacy: digital divide and asymmetry

Open research: accelerating discoveries («FAIR principles)»

Making algorithms accountable

Decreasing the footprint of big data

3.6% of Switzerland's total electricity consumption in 2019 was due to data centres, a rise of 30% in 6 years.

77 NRP

Digital Transformation
National Research Programme

2020-2025

to generate knowledge about the opportunities, risks, challenges and solutions related to digitalisation in the Swiss context.

"The Federal Council has long neglected digitalisation"

Mobile health data: what may artificial intelligence do?

The Internet of Things to Promote Health in the Workplace

Digital health for the benefit of the entire population

https://www.snf.ch/en/hRMuYd5Qqjpl1goQ/page/researchinFocus/nrp/nrp77

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What do we need (related to health data)?

- Education (**data literacy**) of decision makers, health care professionnals and citizens

- Massive investment into the **interoperability of routinely collected data** (not only for hospitals but also for **ambulatory care and primary care**) and application of «FAIR principles».

- Legal framework to conduct linkages using a **unique ID at national level (trust center)**.

- **LDEP** modification to allow for **authorized access for research**.

- Massive investment into **IA for health** (not only for healthcare but also public health) with a **nationally controlled** «chatGPT» like tool.

- **Large scale national cohort (Swiss Cohort & Biobank)** to complement routinely collected data.

We need to change entire systems...

- Population-health record: David Buckeridge will present what has been developped in Canada.

- Katrin Crameri will present how digitization can help improving health.

- The Swiss food system: Dominique Barjolle will present the TRUE-COST- of food project (SNF-Sinergia): From Farm to Fork

- Urban environment to promote physical activity: Myriam Pasche will talk about physical activity in the city of Lausanne.

... and this needs monitoring data to guide decision making to make the Swiss systems more sustainable

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Conclusions

- ## Need for:

    - Governance change: a new Federal Health Law needed!

    - Citizens and patients involvement in healthcare system governance.

    - Large scale national cohort and biobank under public health governance.

    - Better and efficient use of routinely collected data (hospital-based & ambulatory-based & DEP) : SPHN ➜ ecosystem for data interoperability.

    - Transformation of the entire health system to integrate AI-based advancements.

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