



# Challenges connecting a large hospital to a national HIE platform

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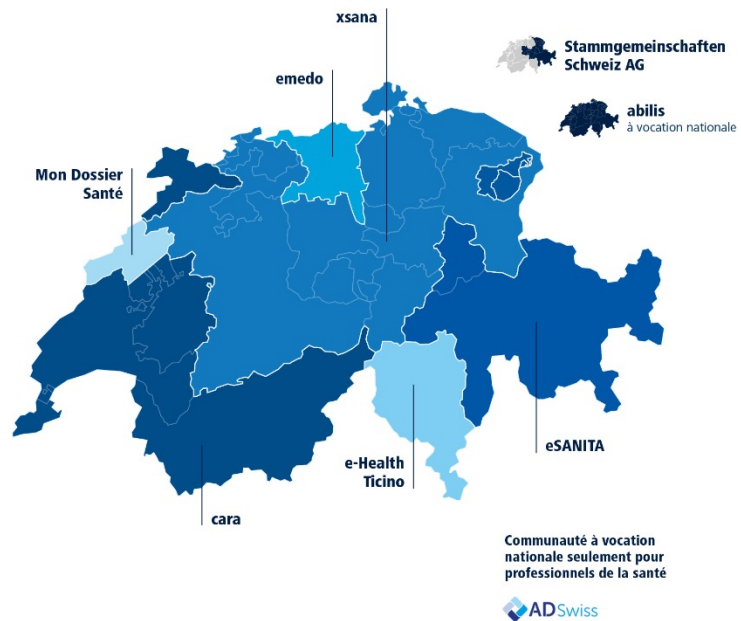
- ❑ Federal law (EPR) in force since April 2020
  
- ❑ Regulation is federal, implementation responsibility is regional
  - Several “EPR Communities” (XDS affinity domains)
  - Several technical implementations
  
- ❑ Affiliation is mandatory for primary care (2020), birth centers and institutions for the elderly (2022), newly established GP practices
  - Affiliation ≠ access & contribute to...



# EPR Communities



## Dossier électronique du patient Aperçu des communautés Avril 2021



[www.dossierpatient.ch/fournisseurs](http://www.dossierpatient.ch/fournisseurs)

Toutes les communautés (de référence) en cours de certification sont nommées. Une communauté (de référence) est assignée à un canton si celui-ci y joue un rôle important (p. ex. dans l'organisation responsable) ou s'il a officiellement formulé une recommandation (p. ex. aide financière).

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**xsana**



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XAD Stammgemeinschaft

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**Communauté de référence**  
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e-Health Ticino

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Stammgemeinschaft Südost



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**Communauté de référence**  
Südost

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**Cantons**  
Région Est: AI, AR, GL, GR, SG, TG  
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**Communauté de référence**  
Stammgemeinschaft Region Ost  
Stammgemeinschaft Region Zentral

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Centre de compétences et de coordination de la Confédération et des cantons


**HUG** Hôpitaux Universitaires Genève



# Fully IHE based → many profiles being used



The graphic is a blue and green circular chart with various icons and text labels for IHE profiles. The text is organized into three columns. The bottom right of the chart features the 'EPD profile cheat sheet' logo and the 'bright insight' logo.

 <b>ATNA</b> Audit Trail and Note Authentication Sicherheit und Logging	 <b>XCA-I</b> Cross-Community Access for Imaging Gemeinschaftsübergreifende Kommunikation für Bilddaten	 <b>XDS MU</b> XDS Metadata Update Bearbeiten von Metadaten
 <b>CT</b> Consistent Time Zeitsynchronisierung	 <b>XCPD</b> Cross-Community Patient Discovery Gemeinschaftsübergreifende Patientensuche	 <b>XUA</b> Cross-Enterprise User Assertion Benutzer Authentisierung und Autorisierung
 <b>HPD</b> Healthcare Provider Directory Verzeichnis für Organisationen und Gesundheitsfachpersonen	 <b>XDM</b> Cross-Enterprise Document Media Interchange Datensexport und -import	 <b>CH:ADR</b> Authorization Decision Request Berechtigungssteuerung
 <b>PDQ</b> Patient Demographics Query Patientensuche mit demografischen Daten	 <b>XDS</b> Cross-Enterprise Document Sharing Zur Verfügung stellen und Abrufen von Dokumenten	 <b>CH:ATC</b> Audit Trail Consumption Schreiben und Abrufen von Patientenlogs
 <b>PIX</b> Patient Identifier Cross-referencing Patientenidentifikation	 <b>XDS-I</b> Cross-Enterprise Document Sharing for Imaging Zur Verfügung stellen und Abrufen von Bilddaten	 <b>CH:CPI</b> Community Portal Index Verzeichnis der Gemeinschaften und Endpunkte
 <b>RMU</b> Restricted Metadata Update Gemeinschaftsübergreifendes Bearbeiten von Metadaten		 <b>CH:PPQ</b> Privacy Policy Query Verwalten von Berechtigungen
 <b>SVS</b> Sharing Value Sets Verwaltung von Metadaten		 <b>UPI</b> Unique Person Identification Service Nationale Personenidentifikation
 <b>XCA</b> Cross-Community Access Gemeinschaftsübergreifende Kommunikation		



# Geneva University Hospitals (HUG) context

## ❑ HUG is a regional University Hospital

- 2'000 beds, 60K inpatients / year, 1.2M outpatients visits / year
- 12'700 employees, ~2'000 physicians, ~7'300 other care professionals

## ❑ Fully integrated HIS

- In production since 1977 (fully locally developed)
- Most parts of the actual CIS are home-developed
- CIS is component-based since the end of the 90'
- Credo: Deep integration

## ❑ Dedicated team responsible for “communication with outside”

- eHealth for communication between HUG and “outside”
- Telemedicine for regional, national and international telemedicine projects / collaborations (worldwide)



# History: Regional HIE “MonDossierMedical.ch”

- ❑ Cantonal project started in 1998
- ❑ Goal: patient-centric HIE
- ❑ IHE-based + extensions (portals, access management, ...)
  
- Platform “MonDossierMedical.ch”
  - Live from December 2010 until September 2021
  - 55'000 patients onboarded, ~9M documents (> 90% from HUG)
  - Deep integration with HUG HIS (through proprietary interfaces)
    - Patient onboarding
    - Automatic publication of documents, including update & removal
    - Deep integration of HP access into HUG’s EPR





## 2021: Moving to the National IHE

→ From MonDossierMedical.ch to CARA





## □ Processes

- How / when to match patients?
- What / when to publish?
  - Quarantine?
  - Documents containing third parties information?
  - Documents never published (e.g. pedo-psychiatry)?
- Who will be allowed to access patient's EPR → impact on structure / update of the HPD?
- Training and onboarding of authorized HPs?
- Optionally onboarding of patients?

## □ Certification

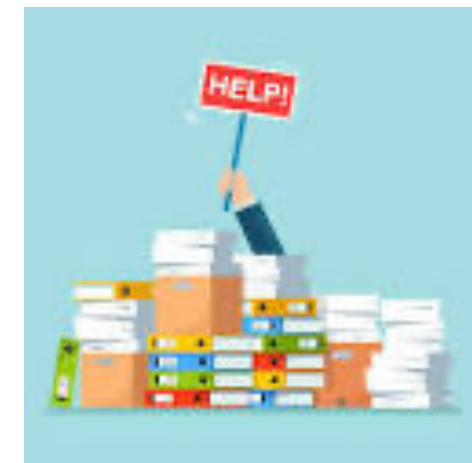
- Audit before authorization to go live → documentation of each process





## □ Technical competences

- Many IHE profiles involved when implementing a full deep integration (MPI, XDS, HPD, ...)
- National profiles & access policies
- Security aspects (communications, IdP integration, ...)



## □ Automate to reduce manual processing & delay

- Automatic matching at admission time if EPR exists
- Automatic publication
  - Including whole history at matching time
- Establish processes in case of changes or errors (replacement or removal of published documents)



# Challenges related to Healthcare professionals

- ❑ Complexity of the system
  - Onboarding, training, certified eID
  
- ❑ Strong interest in retrieving information, less in contributing
  - Feeling of ownership of information regarding their practice
  - Additional workload for retrieving & publishing information without financial incentive
  
- ❑ Few private physicians have an EHR
  - Need to use the portal → increased work, less user-friendliness
  
- ❑ Responsibility regarding EPR content
  
- ❑ HUG: Not enough content to make EPR attractive!



# Patients related challenges

## ❑ Raise awareness (November 2022 figures)

- CARA Community: 11'500 patients enrolled after 18 months (67% enrolled in Geneva in 13 months) [Geneva pilot EPR platform: 55'000 patients (14%) after 10 years]
- Switzerland (including CARA): 15'000 patients enrolled

## ❑ Security versus usability

- Enrolment process is rather complicated
- Need for a secure eID → formal identification, mobile app, ...
- Establish on-line processes + onboarding offices

## ❑ Patient training and support

- Access control is fully managed by patients
- Enhance patient literacy for understanding EPR content + “Q&A offices”





# Challenges for Software Providers

- ❑ Deep integration is a key success factor
  - Who pays for the development?
  - Currently low demand from users
  
- ❑ System is complex and relates to many different technical domains
  - Lack of technical knowledge
  - Processes to be established and harmonized across the country
  
- ❑ Move towards more structured information
  - At the moment most of the published information is in PDF/A



- ❑ The HIE is live. However, this raises a lot of concerns
  - Quantity of documents – how to find your way through?
  - What is given to the patient and when?
  - Responsibility
  - How to integrate data generated by mobile devices?
  
- ❑ Usability will be a key factor for acceptance
  - Deep integration into existing software – made easier by HUSKY toolkit (IHE-CH, HL-CH, eHealth-Suisse)
  - User friendly interfaces
  
- ❑ IHE offers a strong methodology and technical support
  - Paves the way towards successful implementation
  - Independence against vendor-specific solutions
  - Testing tools – Connectathon - Projectathon



# The national HIE/EPR is not the ultimate goal...

## □ HIE/EPR “2020” = Key & Necessary foundations

- Users’ authentication
- Patient identities management
- Document archive
- Traceability
- ...

## □ Success of the EPR will come through additional services:

- eMedication – work in progress in CARA
- Lab results related tools (e.g., spreadsheet with *all* lab results)
- Integration of images (integration requirements published)
- Integration of mobile apps – as clients and data providers
- ..







# Questions ?

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