

Interoperability in France



Thierry Dart

Interoperability

ANS

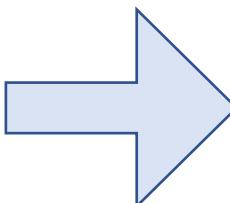
- ANS –Agence du Numérique en Santé - French e-health agency
- <https://esante.gouv.fr> / Thierry.dart@esante.gouv.fr
- Governmental agency, created in 2009 (old name: ASIP Santé)
- **Mission 1 : regulate → French interoperability framework**
 - Member of IHE int./fr, HL7 int./fr
 - Connectathon monitors
 - French collaborative center for WHO / FIC terminologies
 - Loinc active member / translation
 - French Snomed CT NRC prefiguration



Why ? → four Levels of interoperability

• # Interoperability in France

- Foundational (Level 1): Establishes the inter-connectivity requirements
- Structural (Level 2): Defines the format, syntax and organization of data exchange
- Semantic (Level 3): Provides for common underlying models and codification of the data
- Organizational (Level 4): Includes governance, policy, social, legal and organizational considerations



National interoperability Framework

Tests and projectathon

Terminology center

Terminology server

<https://www.himss.org/resources/interoperability-healthcare>



National interoperability framework

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Interoperability in France

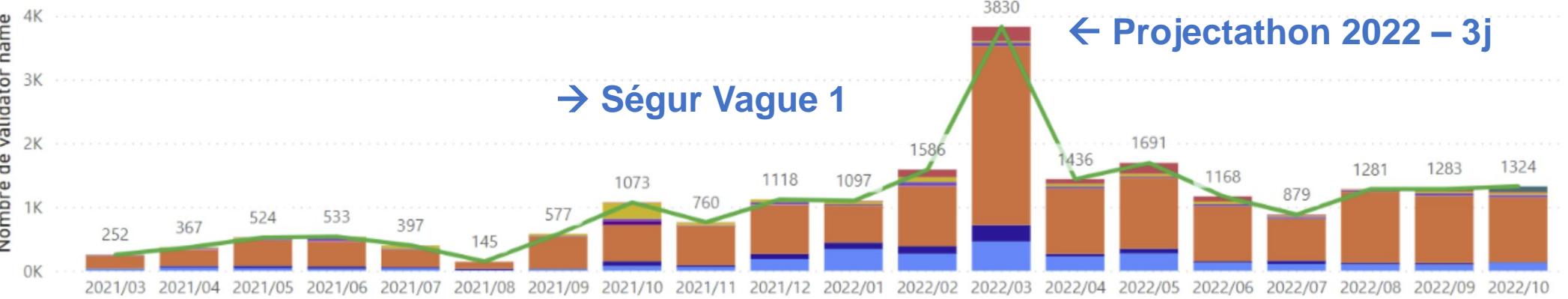
National interoperability Framework

- Main profiles:
 - Sharing identity: IHE PAM-fr (Interop'Santé)
 - Sharing documents: IHE XDS, XDM, XDR, MHDs
 - CDA content: IHE XD-LAB, PRE, DIS, IPS/VSM, ...
 - National profiles: Sharing vitals signs, Agenda, Image sharing
 - Standards: HL7-V2, CDA, FHIR, DICOM
 - <https://industriels.esante.gouv.fr/produits-services/ci-sis-cadre-d-interoperabilite-des-systemes-d-information-de-sante>
 - <https://github.com/ansforge>
 - <https://simplifier.net/ci-sis>
- Services
 - DMP – National repository of CDA
 - MES – Patient health data
 - MSSanté – MD secured e-mails
 - SAAS
 - ...

> 3230 tests / month

Bac à sable

menu ● Add-ons/MCA ● Add-ons/Xval ● ANS ● FHIR (SAS) ● HL7 France ● IHE ● IHE France ● N/A ● TEST SAS ● Nombre de validator name

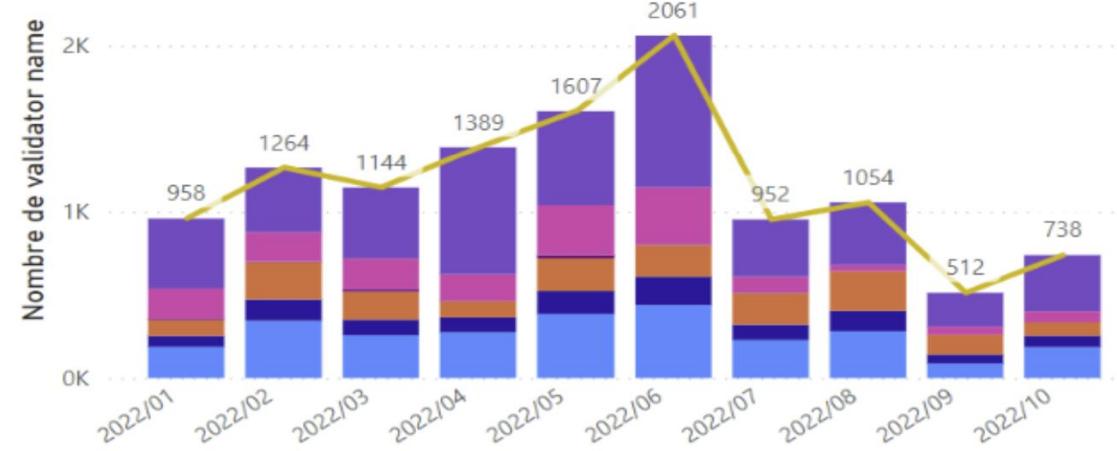


← Projectathon 2022 – 3j

→ Ségur Vague 1

« L'espace de test est devenu un outil indispensable pour la validation de nos CDAR2. Nous espérons qu'il va perdurer dans le temps. »

- <https://industriels.esante.gouv.fr/produits-services/ci-sis-cadre-d-interoperabilite-des-systemes-d-information-de-sante/espace-de-tests-d-interoperabilite>
- <https://interop.esante.gouv.fr/>





Projectathon ANS 2022

• # Interoperability in France

- 27 vendors
- 120 persons
- 208 tests, 157 validated
- 4500 messages
- 3 days

Tests and projectathon

Bilan

Satisfaction rate: 4,45 /5

« Very good dynamics, we were able to carry out several tests with other editors. The monitors were challenging and allowed us to highlight the bugs on our products »

« Gazelle platform - Speed and availability of the monitors - The duration of the Projectathon - The explanations of the organizers (before the Projectathon and during the Projectathon) »

« Excellent idea to bring together all the participants and to give them the opportunity to test their products »





Connectathon, Projectathon, JNI

Interoperability in France

Tests and projectathon

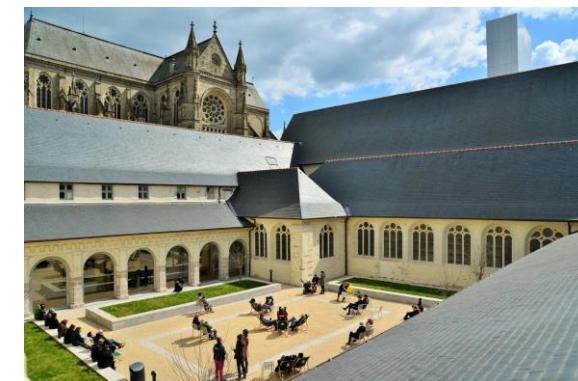
RENNES
25-29 SEPTEMBRE 2023

IHE CONNECTATHON®
EUROPE

SEPTEMBER
RENNES 2023

Projectathon
Interopérabilité

JNI
Journées Nationales des Industriels





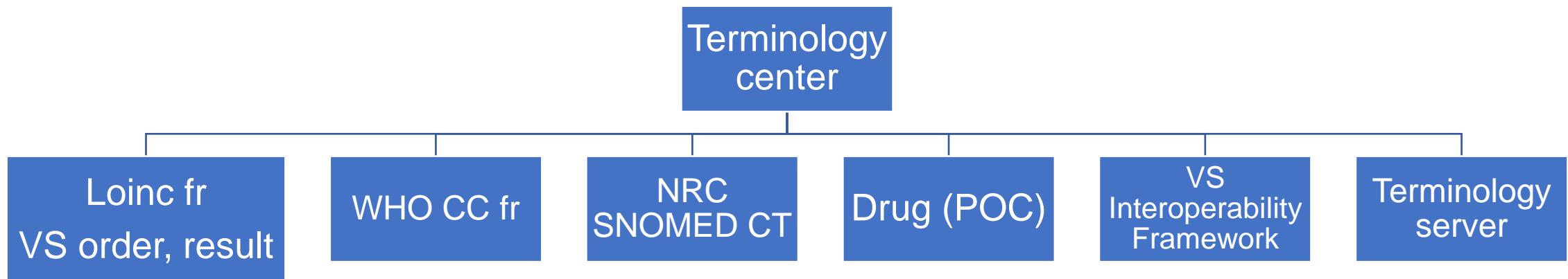
Terminology center

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Interoperability in France

Terminology center

<https://industriels.esante.gouv.fr/produits-services/cgts-centre-de-gestion-des-terminologies-de-sante>





Terminology server

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Interoperability in France

<http://smt.esante.gouv.fr>

Objectives

- Standardisation
- Trusted area for publishing
- Support

Tools

- Meta-data
- Terminologies : linked data + FHIR
- Automatic translation – deeplearning
- POC Automatic mapping



The screenshot shows an RDF file interface with a tree view of medical codes. At the top, it says "Asserted". The tree includes categories like "Classification Internationale des Maladies CIM-10-FR 2021", "Codes d'utilisation particulière", and "Codes pour usage urgent". A specific node under "Usage urgent de U07.2" is highlighted in blue. To the right, there's a panel for "Annotations" showing "rdfs:label [language: fr]" with the value "Usage urgent de U07.2", "dc:type", and "skos:notation U07.2".

RDF file

SPARQL queries

The screenshot shows a SPARQL query interface with a results table. The query is:

```

PREFIX o: <http://data.esante.gouv.fr/atish/cim10>
SELECT ?code ?label ?manif_label WHERE {
?cim10_uri rdfs:subClassOf+ <http://data.esante.gouv.fr/atish/cim10> .
?cim10_uri skos:notation ?code .
?code rdfs:label ?label .
?code skos:prefLabel ?manif_label .
}
    
```

The results table has columns: code, label, and manif_label. It lists several entries, such as M01.3 (Arthrite au cours d'autres maladies bactériennes...) and M01.38 (Arthrite au cours d'autres maladies bactériennes...).

Terminology server

CATALOGUE DES CONCEPTS

The screenshot shows a search interface for concepts. It includes fields for "Rechercher en" (French), "Sélectionner une ou plusieurs terminologies", a "Search" bar, and a "RECHERCHER AVANCÉE" button. A message at the top says: "Attention : la recherche de concepts dans certaines terminologies nécessite d'être connecté." (Attention: searching for concepts in certain terminologies requires being connected.)

Web site

API (FHIR in 2023)

GET	/wp-json/ans/terminologies/zip	Télécharger le ZIP d'une terminologie.
GET	/wp-json/ans/terminologies/vendors	Obtenir les versions disponibles d'une terminologie.
GET	/api/terminologies/home	Obtenir la liste des terminologies présentes en page d'accueil.
GET	/api/terminologies/detail	Obtenir le détail d'une terminologie.
GET	/api/terminologies/search	Obtenir la liste des terminologies présentes dans le catalogue des terminologies.





Terminology server

Interoperability in France

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Terminologies (RDF/OWL)

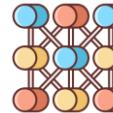
<http://smt.esante.gouv.fr>

586 800



Concepts

7



New Terminologies (2022)

4

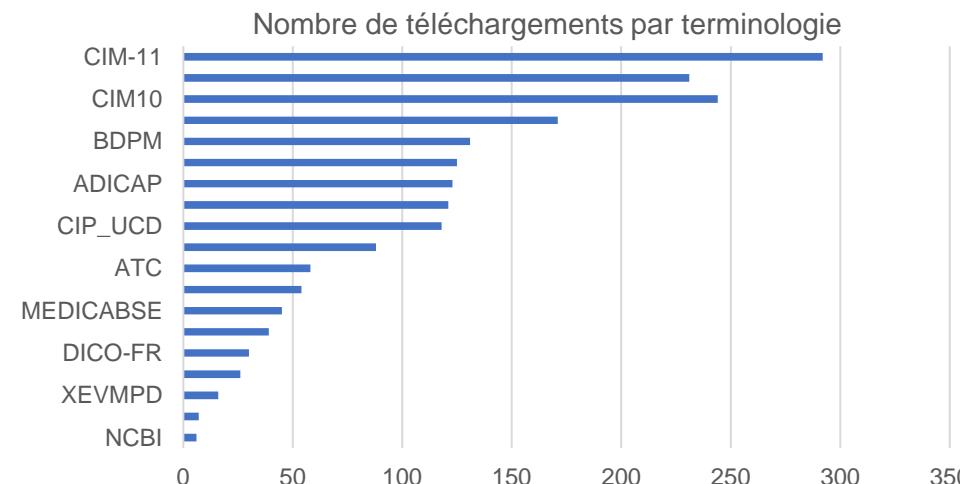


- Files RDF/OWL
- API
- SPARQL
- IHM

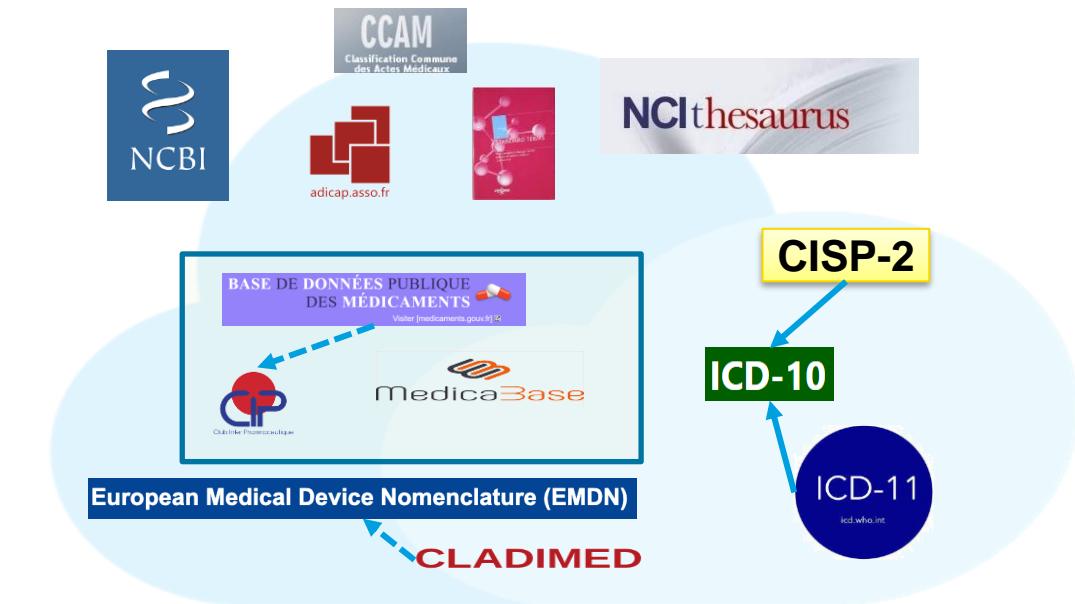
+1900



Downloaded files (since 01/2022)



Terminology server





La transformation commence ici 



Semantic interoperability (Level 3)



ICD 10/11

ICPC



CIF

LOINC



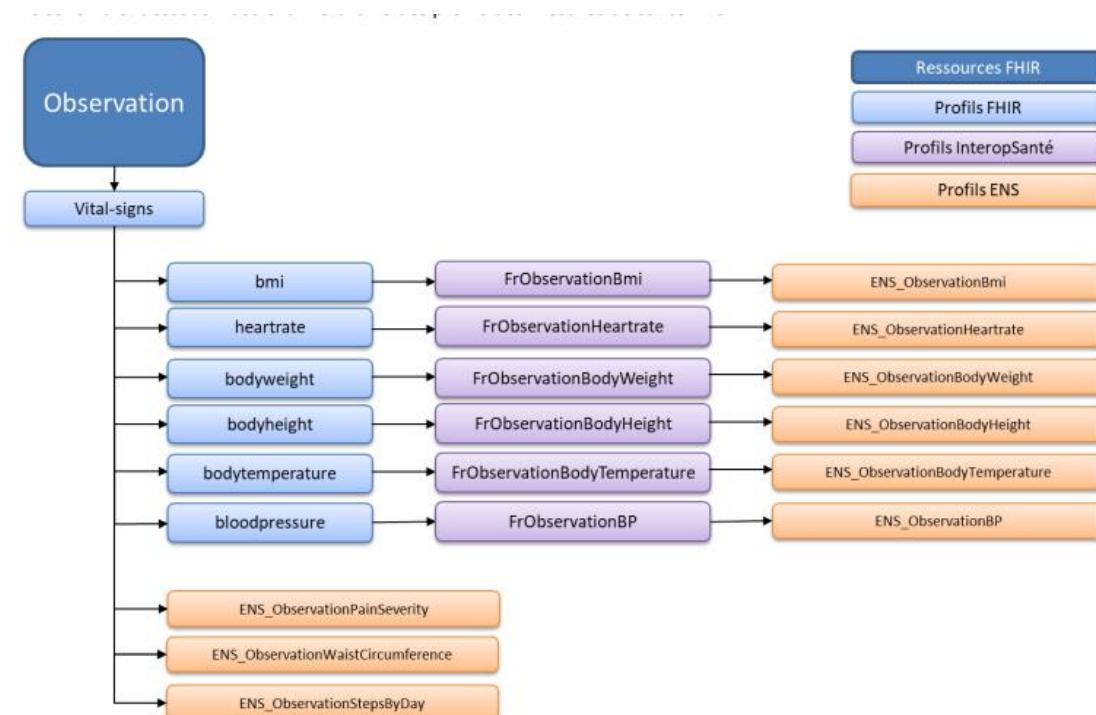
SNOMED CT

ATC

...

How ? → semantic + structure

Structural interoperability (Level 2)



<https://industriels.esante.gouv.fr/produits-et-services/ci-sis-cadre-d-interoperabilite-des-systemes-d-information-de-sante>