



SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde

SNOMED CT and Semantics in Portugal

Filipe Mealha

*Coordinator for Planning, Architecture,
Compliance and Engineering*





SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde

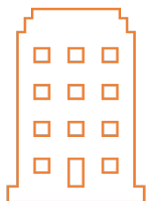


Portuguese Context



~10

**MILLION
CITIZENS**



54

**PUBLIC
HOSPITALS**



359

**PRIMARY
CARE UNITS**



~90%

**RUNNING SPMS ICT SOLUTIONS
(ADT AND EHR)**



SPMS^{EPE}

Serviços Partilhados do Ministério da Saúde



SPMS

SPMS is a public enterprise created in 2010 (Decree-Law 19/2010 of 22 March), functioning under the guardianship of the Ministries of Health and Finance.

Its aim is to provide shared services to organisations operating specifically in the area of health, in order to **“centralise, optimise and rationalise”** the procurement of goods and services within the NHS – in the areas:

PURCHASING AND LOGISTIC

FINANCIAL SERVICES

INFORMATION AND
COMMUNICATION SYSTEMS AND
TECHNOLOGIES

HUMAN RESOURCES

TELEHEALTH



SPMS^{EPE}

Serviços Partilhados do Ministério da Saúde



SPMS

SPMS is a public enterprise created in 2010 (Decree-Law 19/2010 of 22 March), functioning under the guardianship of the Ministries of Health and Finance.

Its aim is to provide shared services to organisations operating specifically in the area of health, in order to **“centralise, optimise and rationalise”** the procurement of goods and services within the NHS – in the areas:

PURCHASING AND LOGISTIC

FINANCIAL SERVICES

INFORMATION AND
COMMUNICATION SYSTEMS AND
TECHNOLOGIES

HUMAN RESOURCES

TELEHEALTH



SPMS^{EPE}
Serviços Partilhados do Ministério da Saúde



National Terminology Release Center - CTC

Competence center, focused on the use of International Clinical Classifications / Terminologies in Information Systems, in Portugal, in order to promote Semantic Interoperability.

COOPERATION PROTOCOL



CLINICAL
GUIDANCE

IT GOVERNANCE AND
TECHNICAL
IMPLEMENTATION

FINANCIAL
RULER



PROTOCOLO DE COLABORAÇÃO

ENTRE:

A ADMINISTRAÇÃO CENTRAL DO SISTEMA DE SAÚDE, I.P., adiante designada por ACSS, I.P., com o número de identificação fiscal n.º 508 188 423, com sede no Parque de Saúde de Lisboa, Edifício 16, Avenidas do Brasil, 53, em Lisboa, neste ato representada pela Presidente do Conselho Diretivo, Dr. José Carlos Ferreira Casado;

e

A SFMS - SERVIÇOS PARTILHADOS DO MINISTÉRIO DA SAÚDE, E.P.E., dovrante designada por SFMS, E.P.E., com o número de identificação fiscal n.º 509 540 716, com sede na Av.ª República, n.º 61 - 8.º, em Lisboa, neste ato representada pelo Presidente do Conselho de Administração, Prof. Doutor Henrique Manuel Gá Martins;

e

A DIREÇÃO-GERAL DA SAÚDE, dovrante designada por DGS, com o número de identificação fiscal n.º 500 037 100, com sede na Alameda D. Afonso Henriques, n.º45, Lisboa, neste ato representado pelo seu Diretor-Geral, Dr. Maia da Graça Gregório de Freitas.

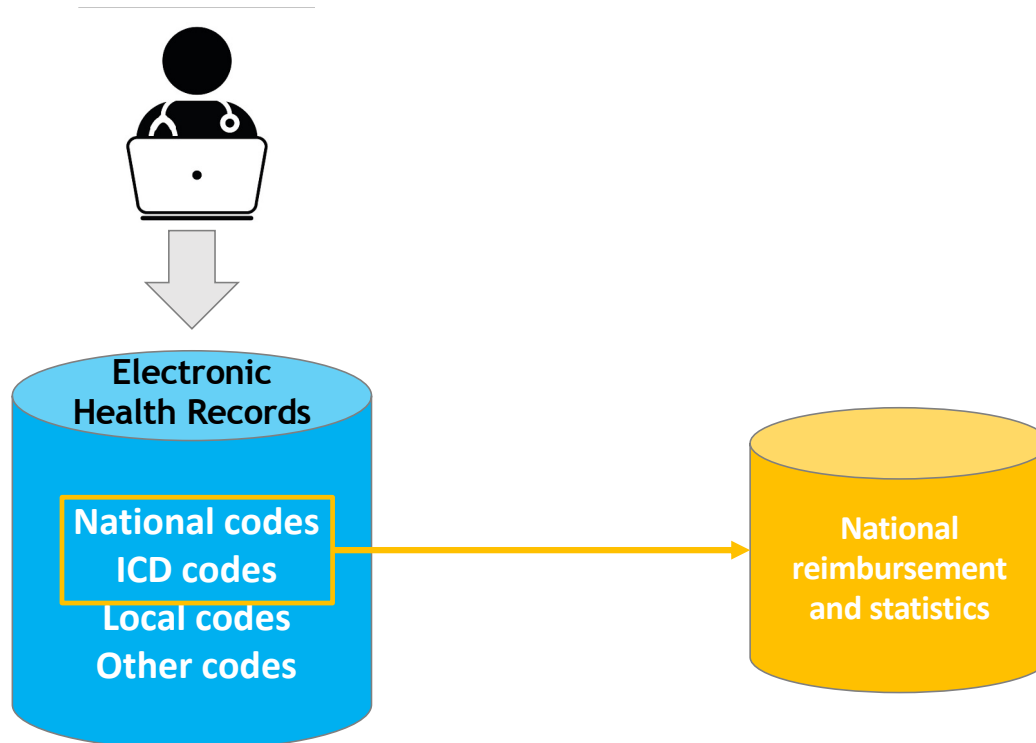


SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Where we started



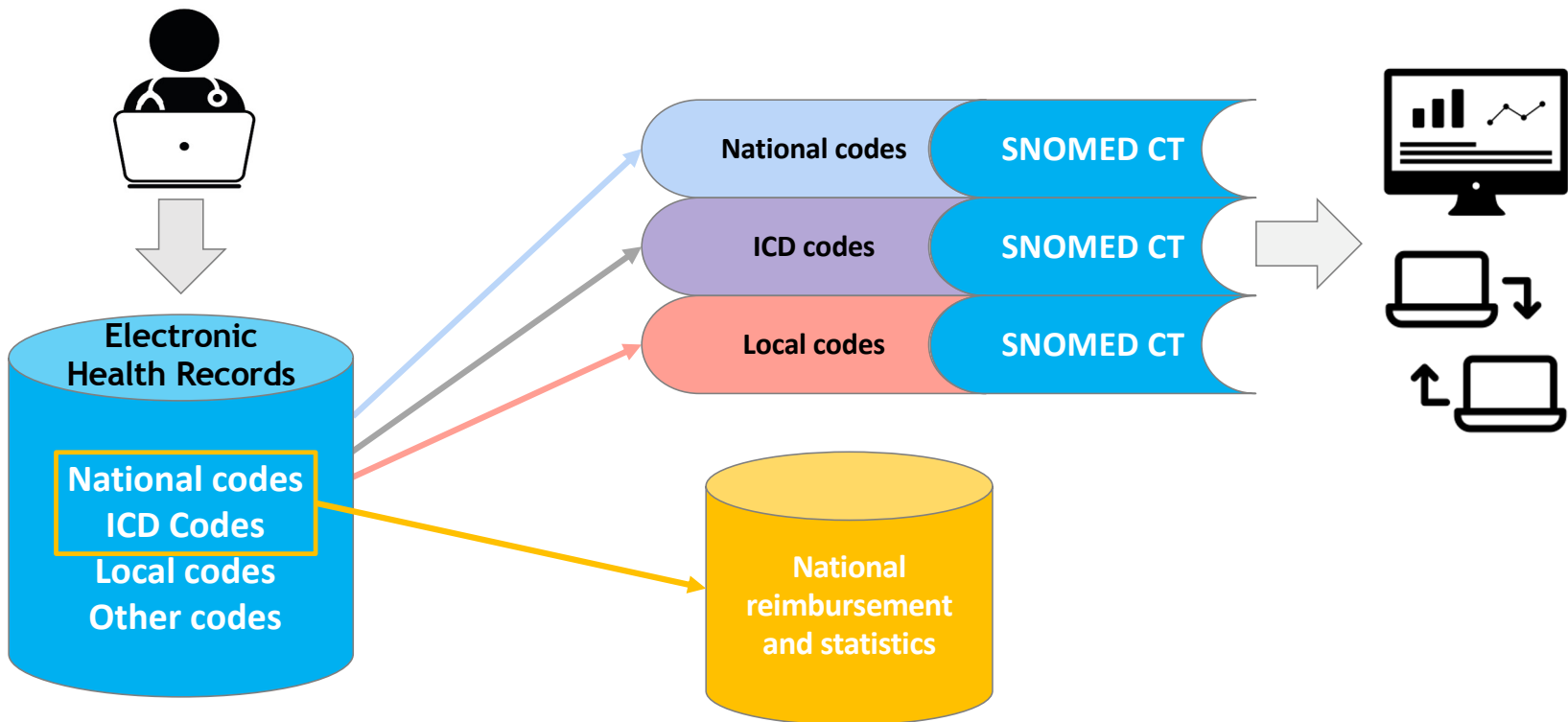


SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



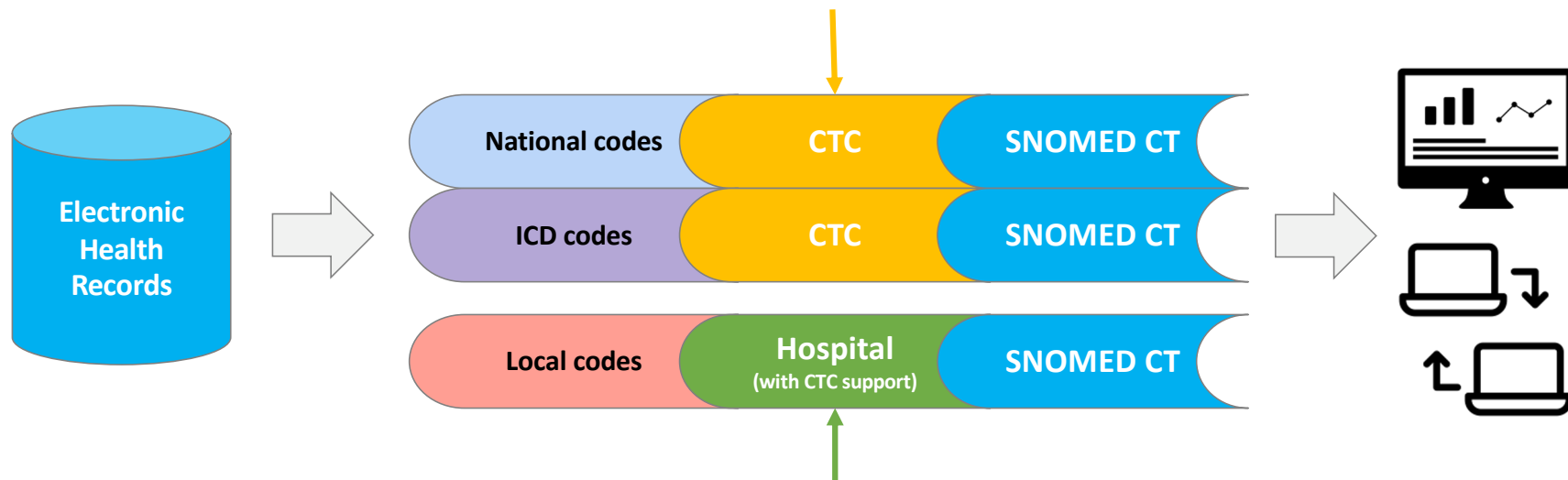
Level 1 Approach





Level 1 Approach

- The CTC provides the maps to SNOMED CT for the standard national terminologies, including National codes, ICD-10-CM and ICD-10-PCS.



- Each hospital maintains maps from local extended codes to SNOMED CT (**FUTURE WORK**)



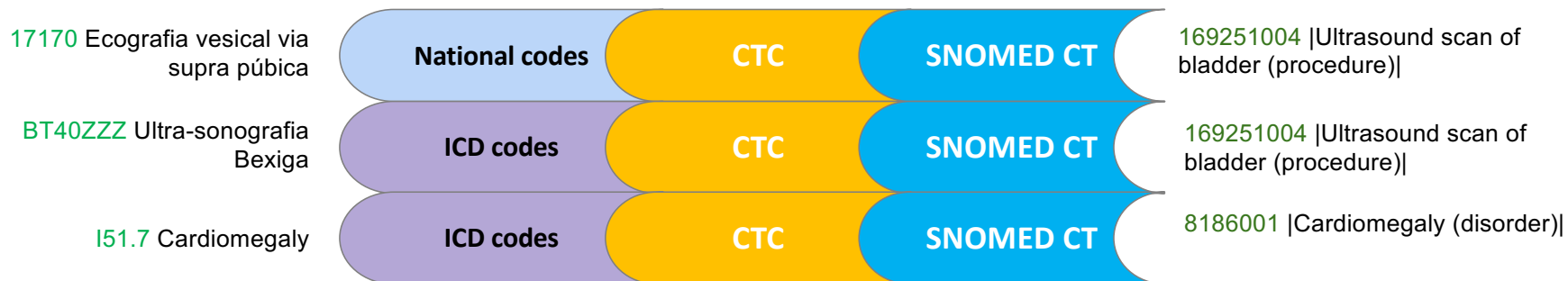
SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Level 1 Approach

- Mapping to SNOMED CT provides an uniform representation of the clinical information using an international standard, ready for data analytics and interoperability.



Future work to increase interoperability





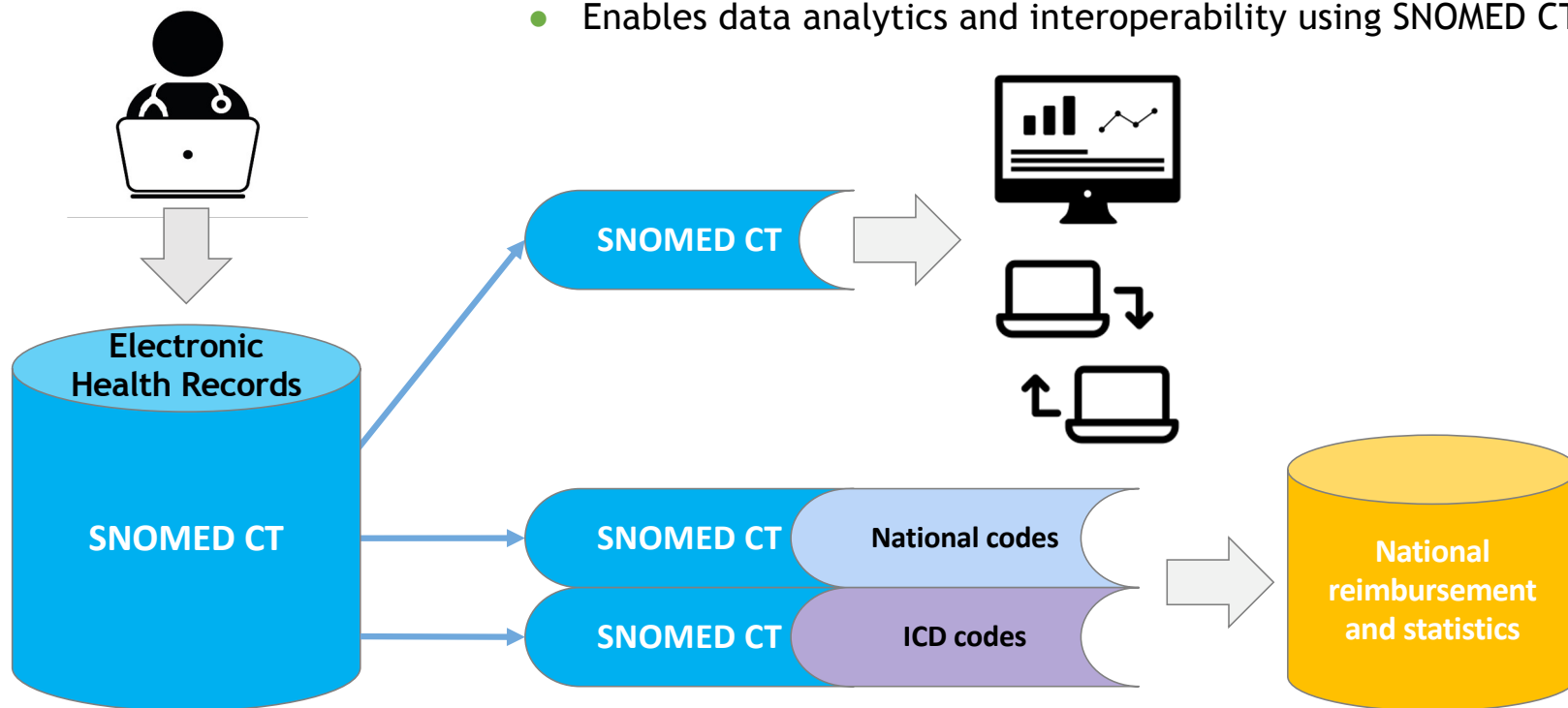
SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Level 2 Approach

- Maps between SNOMED CT and local+national codes
- Enables data analytics and interoperability using SNOMED CT





Level 2 Approach

Alergias - Dr(a), Medico Summit

Utente Teste Vci (88 anos) Proc: 93000036

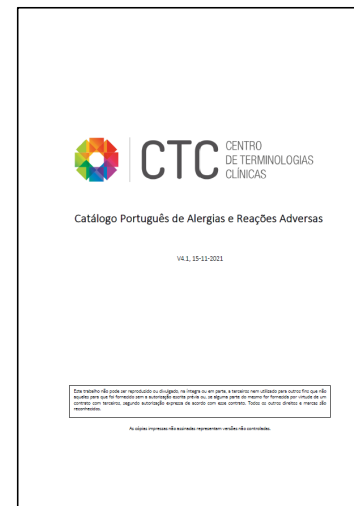
Sem conhecimento de Alergias

Data	Origem	Categoria	Alergéio/agente	Reação	Gravidade
05-05-2022	Médico	Intolerância alimentar	Atum	Asma	Ligeiro
23-03-2022	Médico	Reação alérgica	Areia	Síndrome de Stevens-Johnson	Ligeiro
15-12-2022	Médico	Alergia medicamentosa	Terbinafina	Eczema	Grave

309343006 | Physician (occupation)
 235719002 | Intolerance to food (finding)
 227144008 | Tuna fish (substance)

05, Maio 2022 17:41 Nome do profissional: Enf(a), Enfsam Estado: Ativo Confirmado

Detalhes: Médico | Intolerância alimentar | Atum | Asma | Ligeiro



Value Sets:

- Information Source
- Reaction Classification
- Allergens no Drugs (Food)
- Reaction Allergy
- Severity



Level 2 Approach

N.º Processo	Módulo	Episódio	Data/Hora entrada	Nome	Idade	Serviço	N.º Car
93000036	INT	17012350	10-12-2021 / 14.06 horas	Utente Teste Vci	88 anos	INT AVC PL	003

Fármacos	Via	Dose	Unidade	Início		Termo		Horário	Dias
				Data	Hora	Data	Hora		
espironolactona 25 mg comp	Oral (O)	25,0 MG		03-03-2022	11:35				196
polielectrol sol inj fr 1000 ml iv	Intravenosa	1.000,0 ML		18-07-2022	16.46			8/8 h	59

Observações:
observações teste 1

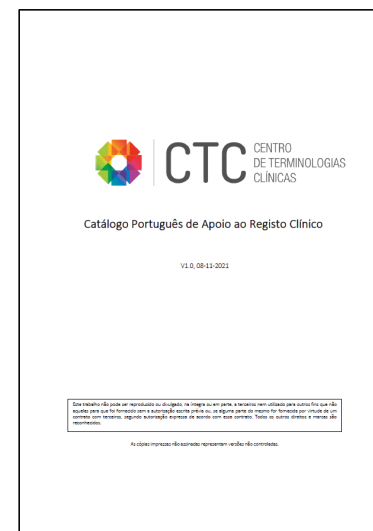
Sem horário definido
 prescrição removida

Transcritor que iniciou: Gestor Do Sistema
 Transcritor que deu termo:

Sem Horário
 de x em x horas
 dia(s) e hora(s) fixa(s)
 dia(s) e turno(s) fixos
 Agora

Freq	Início		Termo	
	Data	Hora	Data	Hora
8	18-07-2022	16.46		

307469008 | Every eight hours (qualifier value)

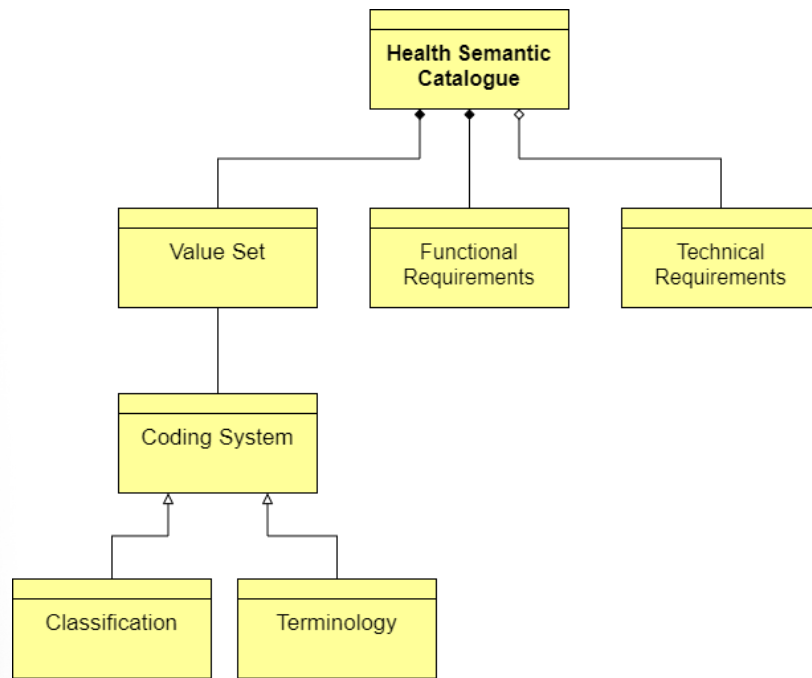


Value Set:

- Schedule



Health Semantic Catalogues





Health Semantic Catalogues



Catálogos Semânticos da Saúde publicados:	Versão	Sistema de Codificação
Portuguese Catalogue of Clinical Analysis	5.0	LOINC/SNOMED CT
Portuguese Catalogue of Allergies and Adverse Reactions	4.1	SNOMED CT
Portuguese Catalogue of Nutrition	3.0	SNOMED CT
Portuguese Catalogue of Vaccines	3.0	SNOMED CT
Portuguese Catalogue of Therapeutics	2.0	SNOMED CT
Portuguese Catalogue of Clinical Surveillances	2.0	SNOMED CT
Portuguese Catalogue of Nuclear Medicines	1.1	SNOMED CT
Portuguese Catalogue of Gynecology and Obstetrics	1.1	SNOMED CT
Portuguese Catalogue of Support to Medication Registry	1.0	EDQM
Portuguese Catalogue of Support to Clinical Registry	1.0	EDQM/SNOMED CT
ICD-10-CM/PCS	6.4	ICD-10-CM/ICD-10-PCS
Portuguese Catalogue of Gastroenterology	1.1	SNOMED CT
Portuguese Catalogue of Radiology	1.0	LOINC
Portuguese Catalogue of Cardiology	1.0	SNOMED CT
Catálogos Semânticos da Saúde sob consulta:	Versão	TOTAL
Portuguese Catalogue of Oral Health	1.0 Draft	SNOMED CT



Semantic Catalogues Life Cycle

		Life Cycle Phases						
		Need	Planning	Development and Approval	Publication	Pilot testing and Implementation	Maintenance	Recycling/ Deactivation
Actors	Entities	1 – Identify the Need			14 – Validate Catalogue in Public Consultation		20 – Identify Need for Update	
	Experts			11 – Validate Synonyms and Mappings				
CTC		2 – Formalize the Need	4 – Establish Action and Monitoring Plan	7 – Develop Training	13 – Prepare Public Consultation	17 – Develop Pilot Test Plan	19 – Catalogue Update Mechanisms	21 – Identify Need to Reuse Information for New Catalogue
		3 – Identify Existing Information	5 – Identification of Experts	8 – Select Sub Set of Terms	15 – Promote User Training and Adoption Catalogue	18 – Implementation Support	<ul style="list-style-type: none"> Select New Sub Set of Terms New Synonyms Addition Perform Mappings Approve Publication New Version Publication 	22 – Analyze and Select Terms to Reuse for New Catalogue
			6 – Prepare Document for Functional and Technical Requirements	10 – Perform Mappings	16 – Publication of the 1st Version			
			12 – Approve Publication					

Transparency mechanisms



Public Consultations

Adoption mechanisms



Clinical Guidance Standard (NOC)



Training & Capacity building



SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Work Groups (2021)



**National
Programme for
the Promotion of
Health Eating**



**Portuguese
Nutrition Catalogue**



**National
Programme for
the Promotion of
Oral Health**



**Portuguese Oral
Health Catalogue**



**National
Programme for
Cerebral-
Cardiovascular
diseases**



**Portuguese
Cardiology Catalogue**



**National
Vaccination
Programme**



**Portuguese
Vaccines Catalogue**



SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Work Groups (2022)



National Programme for the Promotion of Health Eating



Portuguese Nutrition Catalogue



National Programme for the Promotion of Oral Health



Portuguese Oral Health Catalogue



National Programme for Cerebral-Cardiovascular diseases



Portuguese Cardiology Catalogue



National Vaccination Programme



Portuguese Vaccines Catalogue



National Health Institute Dr. Ricardo Jorge



Portuguese Clinical Analysis Catalogue



SPMS^{EPE}

Serviços Partilhados do Ministério da Saúde



SPMS

SPMS is a public enterprise created in 2010 (Decree-Law 19/2010 of 22 March), functioning under the guardianship of the Ministries of Health and Finance.

Its aim is to provide shared services to organisations operating specifically in the area of health, in order to **“centralise, optimise and rationalise”** the procurement of goods and services within the NHS – in the areas:

PURCHASING AND LOGISTIC

FINANCIAL SERVICES

INFORMATION AND
COMMUNICATION SYSTEMS AND
TECHNOLOGIES

HUMAN RESOURCES

TELEHEALTH



SPMS^{EPE}

Serviços Partilhados do Ministério da Saúde



**CROSS BOARDERS
(EUROPE)**

PATIENT SUMMARY AND ePRESCRIPTION/eDISPENSATION IN EUROPE



DATA MANAGEMENT

DATA WAREHOUSE AND VISUALIZATION



INTEROPERABILITY

NATIONAL HEALTH INTEROPERABILITY PLATFORM



**CENTRALIZED/NATIONAL
SERVICES**

PATIENT SUMMARY

Allergies and chronic medication
Diagnosis
Medical Procedures
Medical devices



ePRESCRIPTION & eDISPENSATION



PATIENT REFERRAL



PATIENT
PORTAL



MEDICAL EXAMS PRESCRIPTION



NATIONAL DOCUMENT INDEX



PATIENT APP



**LOCAL
SYSTEMS**

ELECTRONIC HEALTH
RECORDS
ADMINISTRATIVE/ PATIENT
MANAGEMENT

LOCAL
INTEROPERABILITY
PLATFORM



OTHER BUSINESS
APPLICATIONS
(SPMS or 3rd PARTIES)

**CENTRALIZED
REPOSITORIES**

PATIENT REGISTRY



PROFESSIONALS REGISTRY



INSTITUTIONS REGISTRY





SPMS^{EPE}

Serviços Partilhados do Ministério da Saúde



**CROSS BOARDERS
(EUROPE)**

PATIENT SUMMARY AND ePRESCRIPTION/eDISPENSATION IN EUROPE



DATA MANAGEMENT

DATA WAREHOUSE AND VISUALIZATION



INTEROPERABILITY

NATIONAL HEALTH INTEROPERABILITY PLATFORM



**CENTRALIZED/NATIONAL
SERVICES**

PATIENT SUMMARY

Allergies and chronic medication
Diagnosis
Medical Procedures
Medical devices



ePRESCRIPTION & eDISPENSATION



PATIENT REFERALL



PATIENT
PORTAL



MEDICAL EXAMS PRESCRIPTION



NATIONAL DOCUMENT INDEX



PATIENT APP



**LOCAL
SYSTEMS**

ELECTRONIC HEALTH
RECORDS
ADMINISTRATIVE/ PATIENT
MANAGEMENT

LOCAL
INTEROPERABILITY
PLATFORM



OTHER BUSINESS
APPLICATIONS
(SPMS or 3rd PARTIES)

**CENTRALIZED
REPOSITORIES**

PATIENT REGISTRY



PROFESSIONALS REGISTRY



INSTITUTIONS REGISTRY





Local Interoperability



> 500
Operations configured

60
Connected
Systems

+ 240M
Events Processed
per year

500 000
Events per day



SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde

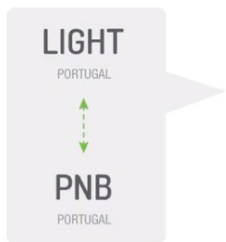


Central Interoperability



PNB

**REDE DE
INTEROPERABILIDADE
NACIONAL**



 **LIGHT**

35
Types of
messages

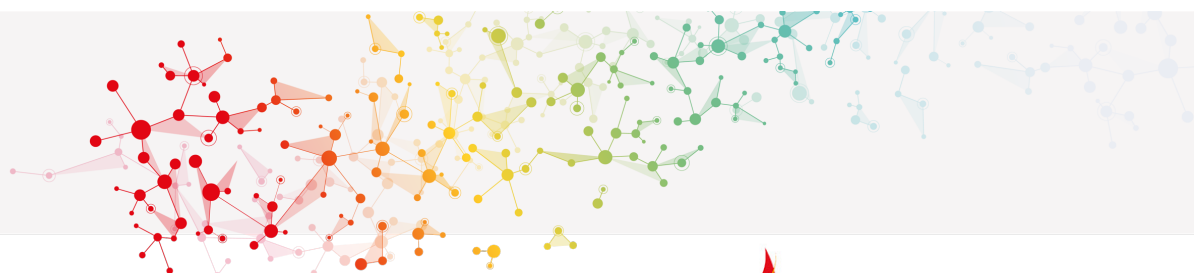
30
Connected
Systems

+ 115M
Events Processed
per year

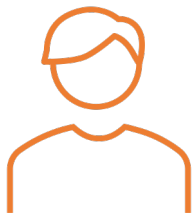
380 000
Events per day



SPMS_{EPE}
Serviços Partilhados do Ministério da Saúde



Central Interoperability Specifications



Patients



Professionals



Institutions

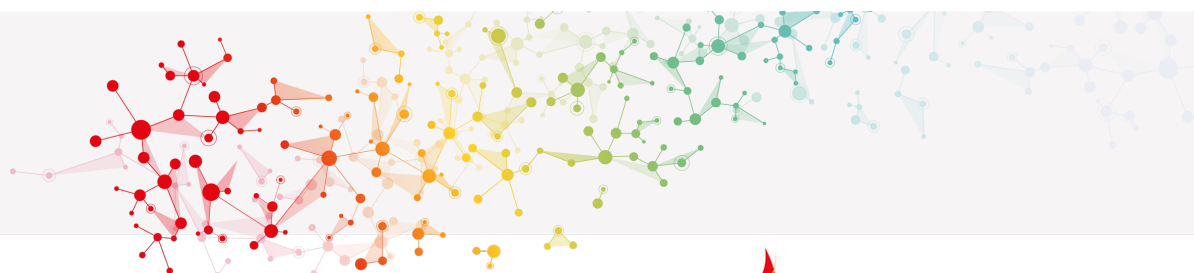


Encounters



SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Central Interoperability Specifications



HL7[®] FHIR[®]

valueSet Professional Title

valueSet Professional Degree

valueSet Medical Specialty

valueSet Dentist Specialty

valueSet Medical Sub-Specialty

valueSet Medical Competence

valueSet Practitioner Qualification Status

valueSet Healthcare Professional Role

valueSet Medical Specialty

valueSet Dentist Specialty

valueSet Medical Sub-Specialty

valueSet Assistance Activity

valueSet Priority

valueSet provenance

valueSet Finding

valueSet Additional Arrangement

valueSet Destination

...



SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Challenges

- + **Translation** and **mapping** processes are lengthy, costly and detract projects from starting on time. Additionally, it is **hard to keep the consistency of translations** without specific tools;
- + Shifting the **mindset of decision makers** is paramount, but hard;
- + Catalogues that are based on existing **billing tables fall short** of Clinical needs;
- + Being a **publicly run company** means we are subjected to a **lot of scrutiny**, and this slows down processes;



SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Data Strategy



HORIZON 1 SHORT-TERM



HORIZON 2 MID-TERM



HORIZON 3 LONG-TERM





SPMS_{EPE}

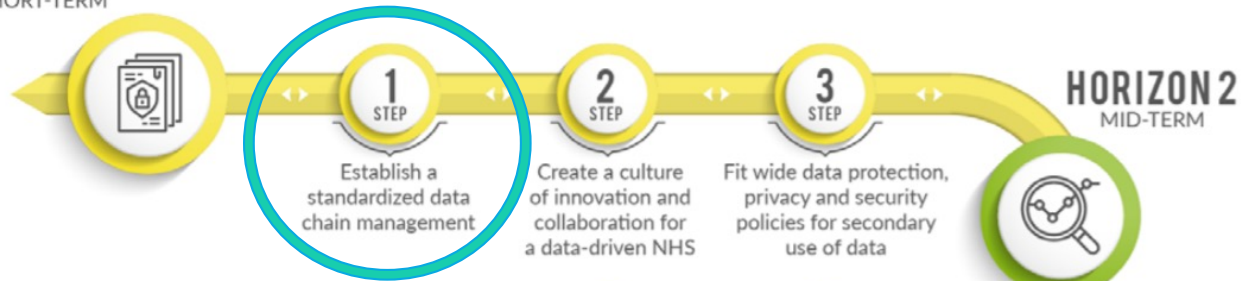
Serviços Partilhados do Ministério da Saúde



Data Strategy



HORIZON 1 SHORT-TERM



HORIZON 3 LONG-TERM





SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Establish a standardized data chain management

- + **Standardize values and definitions** used in reporting systems to allow uniform understanding of data stored in the NHS information systems;
- + Publish an integrated, accurate and **consistent set** of master **data** for use by other applications;
- + Create and operationalize **metadata standards** for health information systems;
- + Enforce **compliance** with metadata quality requirements in national health information systems;
- + Build a standard data repository and distribution system (data lake) where **standardization occurs at the source**.



Some up-coming projects



versão 1.0





SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



Some up-coming projects



- + **3.8.1 – National Compliance Platform** – Creating a compliance assessment platform and adjacent processes
- + **3.8.2 – Semi-automatic translation of terminologies** – Creating a set of tools to allow the sem-automatic translation of internacional classifications and terminologies
- + **4.5.2 – National Terminologies Server**
- + **4.5.3 – Interoperability Services** – Creating a set of new interoperability services to expand existing digital capabilities
- + **4.5.4 – Architecture Services** – Creating reference specifications for the procurement of building blocks for our national infrastructure

Thank you

