GOVERNO DOS AÇORES | SECRETARIA REGIONAL DA SAÚDE E SEGURANÇA SOCIAL

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24 • 25 DE JUNHO

A Regional Approach to Health Data Exchange

The Azores Interoperability Project

Paulo Bras
CIO at Hospital do Divino Espirito Santo
Ponta Delgada, Azores, Portugal

IHE Experience Days 2025
VIENA | AÚSTRIA

Uma aplicação que põe a Saúde na ponta dos dedos.

A Regional Approach to Health Data Exchange

The Azores Interoperability Project

When the information is widely shared, health data becomes more accessible to those who need it most, including patients and healthcare professionals.

Paulo Bras
CIO
Hospital do Divino Espirito Santo, Ponta Delgada, Azores, Portugal

Agenda

01

Overcoming Healthcare Delivery Challenges through Interoperability and Standardization

Tackling the critical barriers to seamless data and image exchange across healthcare systems and institutions, and enabling more coordinated, efficient, and patient-centered care.

02

A Vision for the Future: Azores' 5-Year Digital Health Strategy

Presenting a long-term roadmap toward integrated, patient-centered digital care across the region.

03

Building on Standards: The Technical Backbone of Interoperability

Leveraging IHE standards, HL7, FHIR, and DICOM to create a unified digital infrastructure.

04

From Vision to Reality

Key success factors and lessons learned in managing change and aligning stakeholders.

05

EHDS Readiness

Laying the Foundation for European Health Data Space. Positioning the Azores as an EHDS enabler through robust data accessibility and secure exchange.

06

Azores as a Digital Pioneer in Integrated Care Delivery

Demonstrating leadership in healthcare transformation by enabling a fully connected care ecosystem.

Introduction

Bridging Islands, Transforming Lives

How the Azores Digital Hospital is redefining healthcare

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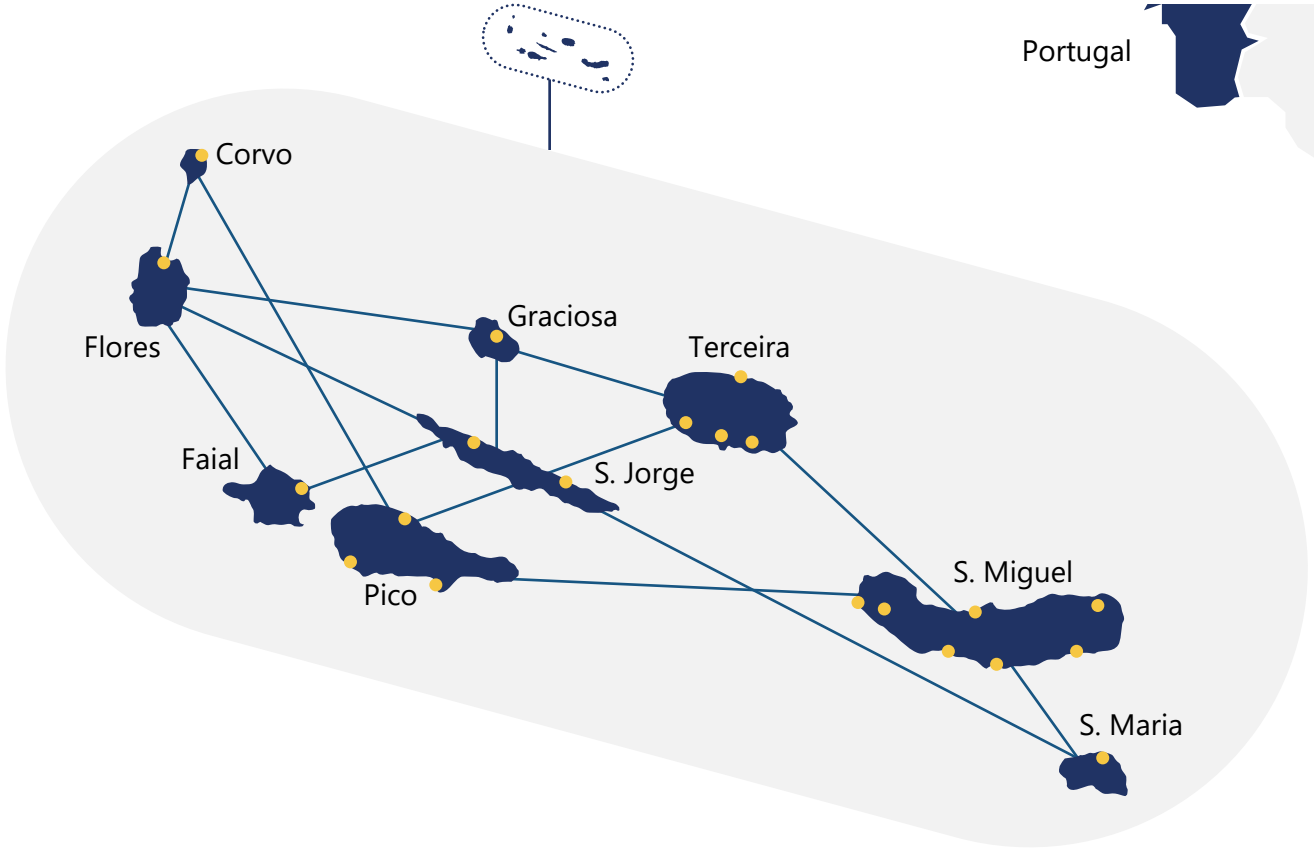
The Azores, a Remote Portuguese Archipelago in the Atlantic Ocean

9 Islands with more than **240,000** inhabitants

3 Hospitals

26 Health Units

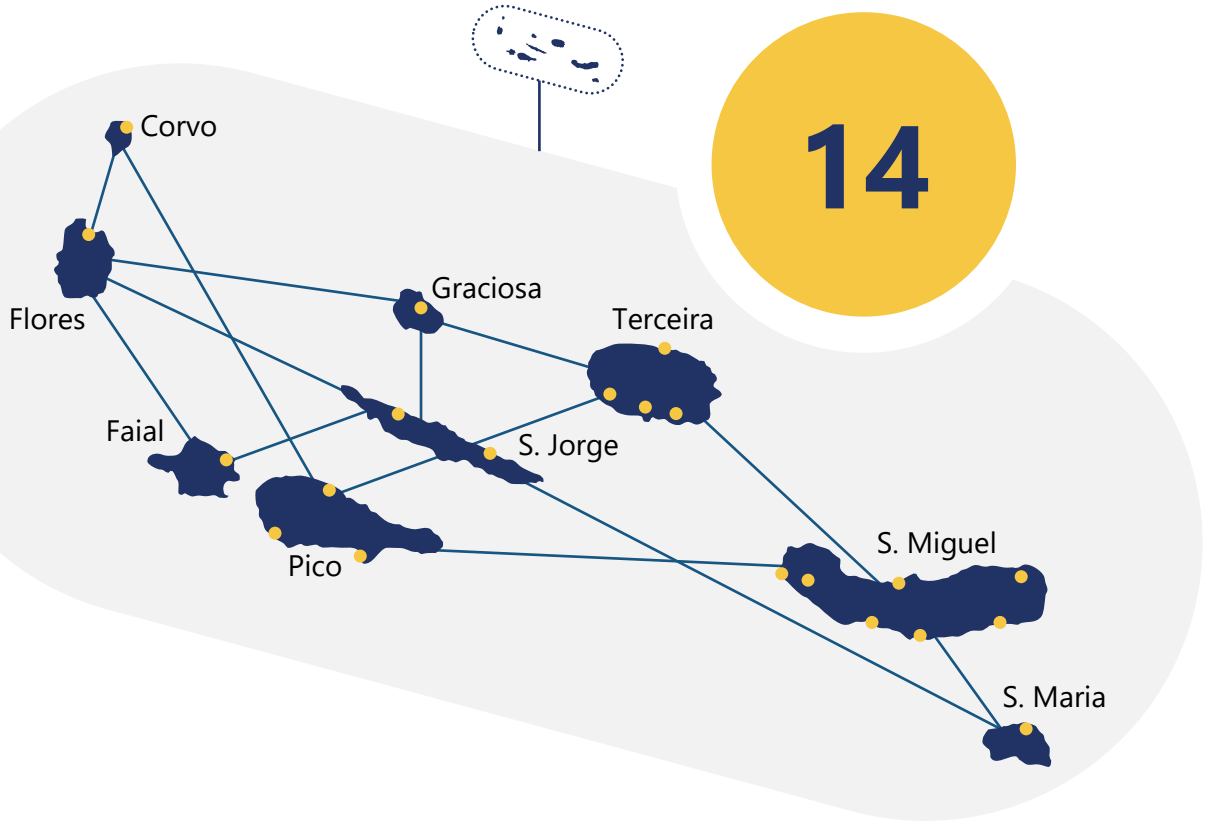
1 Oncology Center



Autonomous region of
Portugal

Azores Islands

14 Executing Entities



14

1. Regional Directorate of Health
2. Azores Oncology Center
3. Hospital do Santo Espirito da Ilha Terceira
4. Hospital da Horta
5. Hospital do Divino Espirito Santo de Ponta Delgada
6. Corvo Island Health Unit
7. Flores Island Health Unit
8. Terceira Island Health Unit
9. Faial Island Health Unit
10. Graciosa Island Health Unit
11. Pico Island Health Unit
12. São Jorge Island Health Unit
13. São Miguel Island Health Unit
14. Santa Miguel Island Health Unit

01

Overcoming Healthcare Delivery Challenges through Interoperability and Standardization

Tackling the critical barriers to **seamless data and image exchange** across healthcare systems and institutions, and enabling more coordinated, efficient, and patient-centered care

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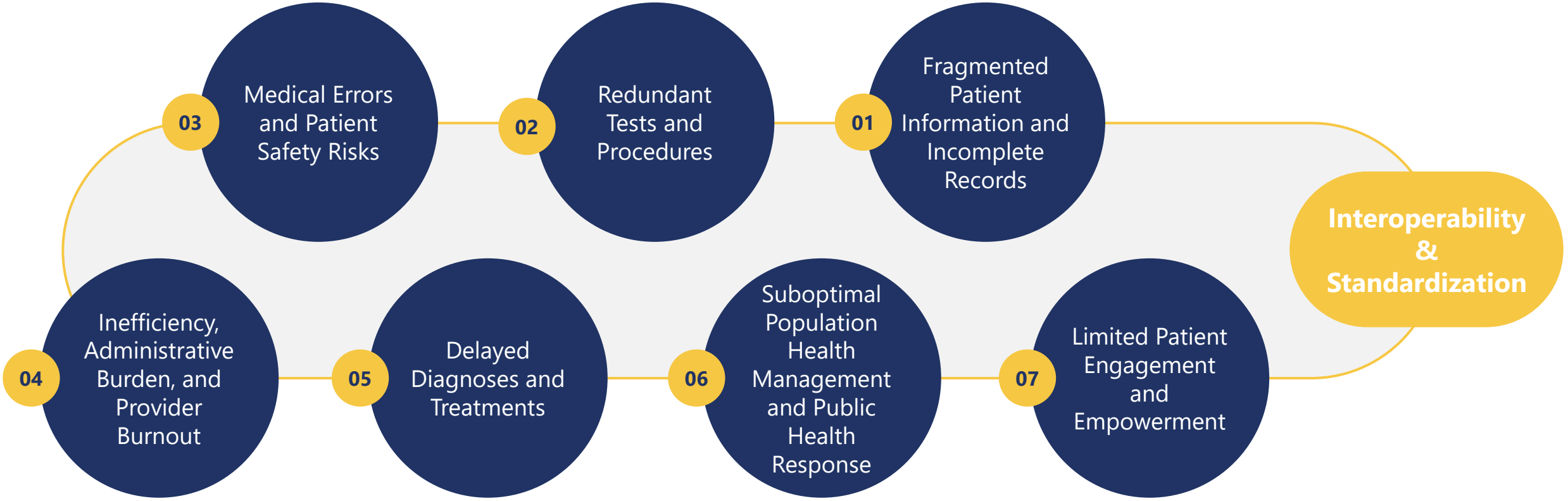
Overcoming Healthcare Delivery Challenges through Interoperability and Standardization

Major Challenges



02

A Vision for the Future: Azores' 5-Year Digital Health Strategy

Presenting **a long-term roadmap toward integrated, patient-centered digital care** across the region.

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Our Vision: Three Strategic Pillars for Healthcare Transformation

01 Equitable Access and Inclusion

- Improved Access to Healthcare
- Telehealth Expansion

02 Personalized and Proactive Engagement

- Greater User Involvement
- Personalized Care
- Preventive Health Management

03 Integrated and Coordinated Care

- Efficient Coordination of Care
- Health Information Sharing

RAA Digital Hospital

The driving force behind the transformation of the health sector in the archipelago.

Guarantees equal access to health care for all Azoreans.

Strengthens the resilience of health systems.

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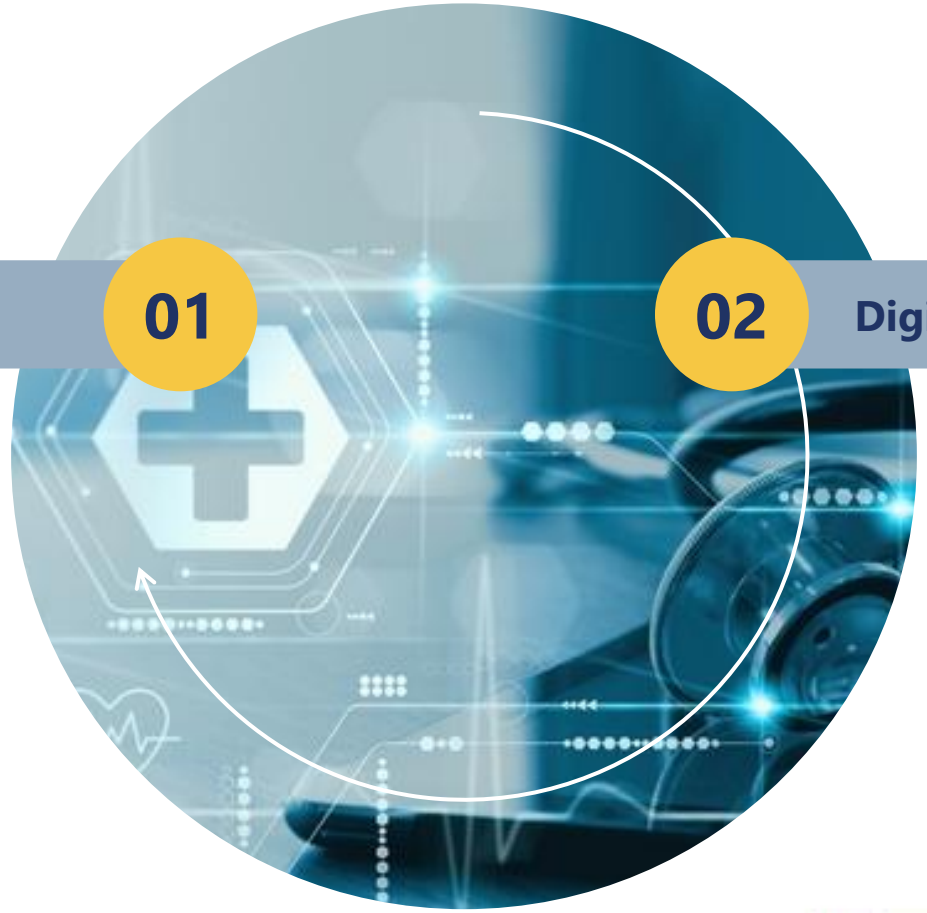
RAA Digital Hospital: 2 measures



01 Improved SRS Performance

- Making electronic health records available to every citizen
- Sharing clinical information, boosting prevention
- Reliable, public and transparent information

02 Digitalization of the Health Sector

- Innovation, substitution, intercommunication and interoperability of system data

Improved SRS Performance

Targets Group A - Patient portal - 25,000 of SRS patients (users) - 30/09/2025

Objective: Access to the healthcare system to provide an electronic health record for each citizen, enabling the sharing of clinical information among all levels of care with healthcare professionals, to create equal conditions for healthcare accessibility in the more isolated islands without hospitals, and to leverage information not just for cure, but also for prevention. Make reliable, public, and transparent information available within the SRS, including production, financial, quality, and satisfaction indicators

Ensure greater digital access to health services and respective clinical information for SRS users

Empower health professionals for the digital transition of the SRS

Reform the governance model of health units

Plan and develop an integrated human resources management information system

Plan and develop an integrated assets management system

Improve the information system for medical emergency evacuations in the SRS

Improved SRS Performance

Targets Group B - Telehealth - 1,000 consultations -30/09/2025

Objective: Ensure the digitalization of the healthcare sector through innovation, replacement, intercommunication, and the interoperability of data from the health systems of the Regional Health Service (SRS) and the National Health Service (SNS), and within the Health Units of the Regional Health Service, as well as with private units.

Increase Telehealth in the SRS

Enhance the interoperability of information systems in the areas of labs, imaging and other diagnostics

Improve and increase the dematerialization of clinical processes in the SRS

Promote the modernization and integration of Primary Healthcare

Promote the improvement and optimization of SRS information systems

Support the digital transition through the acquisition of new medical equipment

Modernize the IT assets

03

Building on Standards: The Technical Backbone of Interoperability

Leveraging IHE standards, HL7, FHIR, and DICOM to **create a unified digital infrastructure**.

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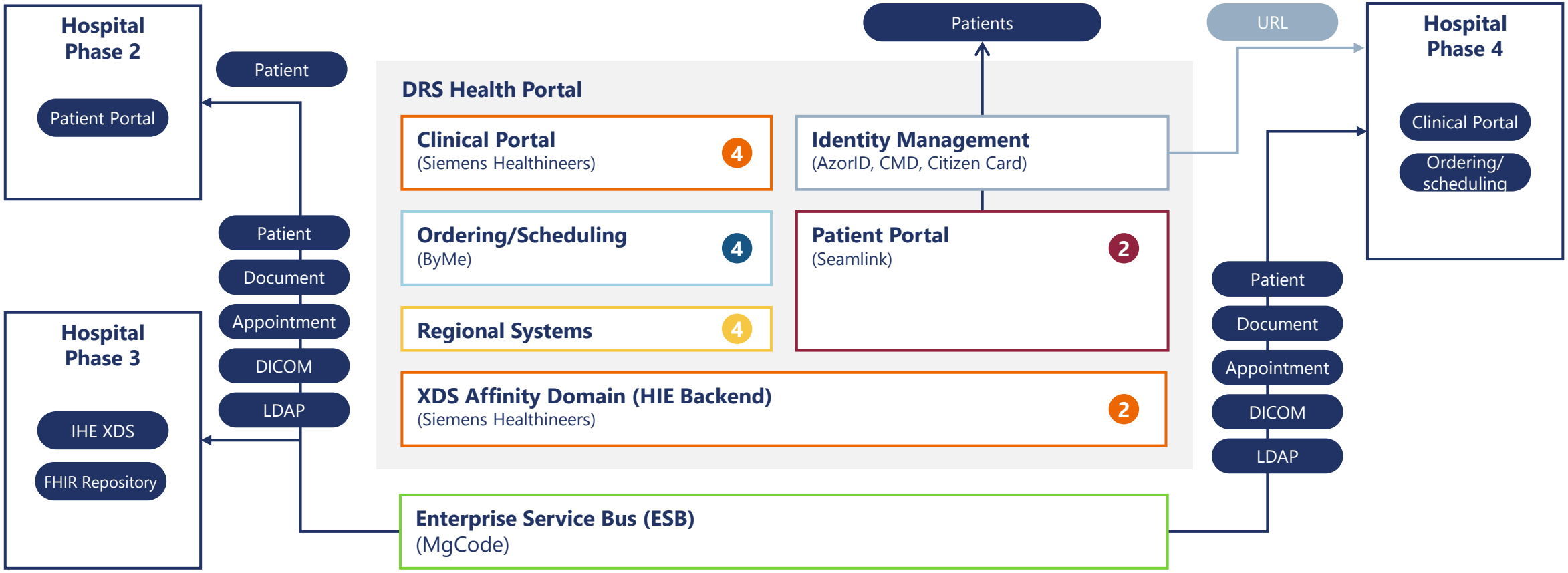
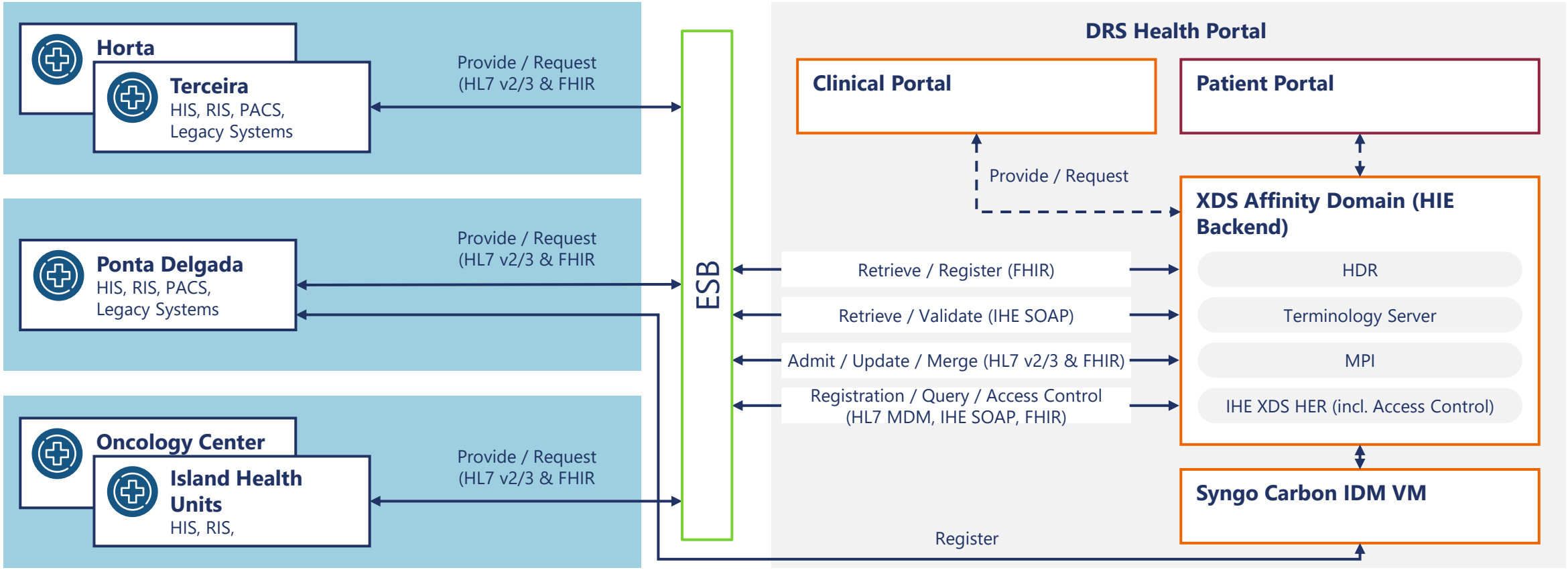
Technical View
Solution Presentation including Architecture

Overview of the Overall Architecture



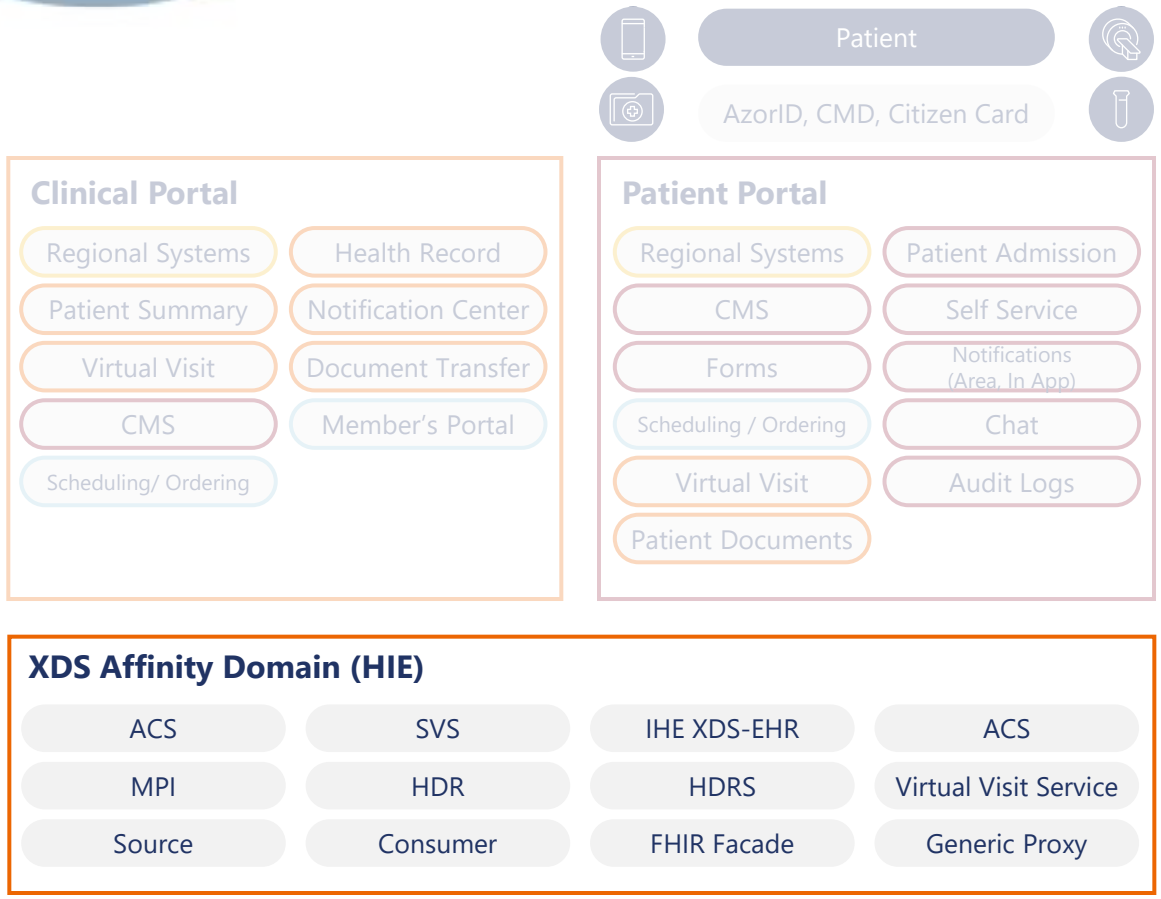
Technical View
Solution Presentation including Architecture

Enterprise Service Bus (ESB)



Technical View
Solution Presentation including Architecture

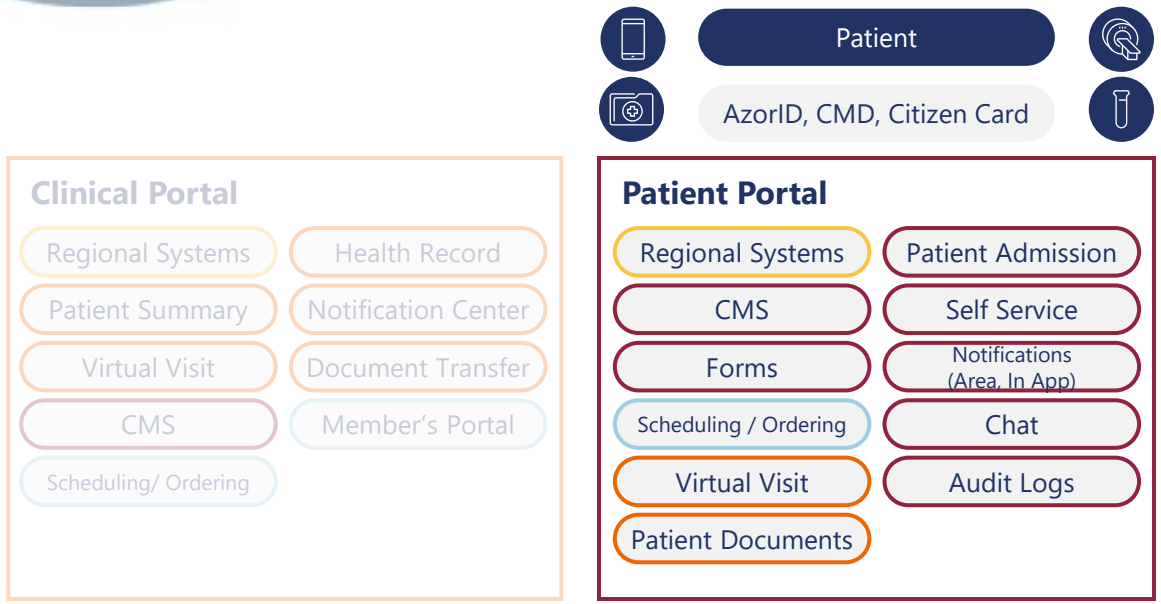
XDS Affinity Domain (eHealth Solutions)



- **IHE XDS-EHR IHE compliant Registry and Repository incl. Access Control (ACS)** to store and manage transmitted documents from connected primary systems in a decentralized manner.
- **Master Patient Index (MPI)** uniquely identifies patients across the healthcare network by storing patient identifiers and demographics transmitted from the connected primary systems.
- **IHE compliant Terminology Server (SVS)** to harmonize terminologies.
- **Health Data Repository (HDR) central FHIR-Server** to store and manage FHIR resources.
- **Health Data Reporting Service (HDRS)** generates template-based reports using FHIR resources and data from the eHealth Solutions HDR.
- **Healthcare Provider Directory (HPD)** central management of healthcare provider organizational structure.
- **Connectors** (Source, Consumer, FHIR Facade, Generic Proxy) Standard and proprietary interfaces (FHIR, HL7v2, HL7v3, WS SOAP, IHE native) to receive patient data such as demographics, documents and discrete data.

Technical View
Solution Presentation including Architecture

Patient Portal (Seamlink)

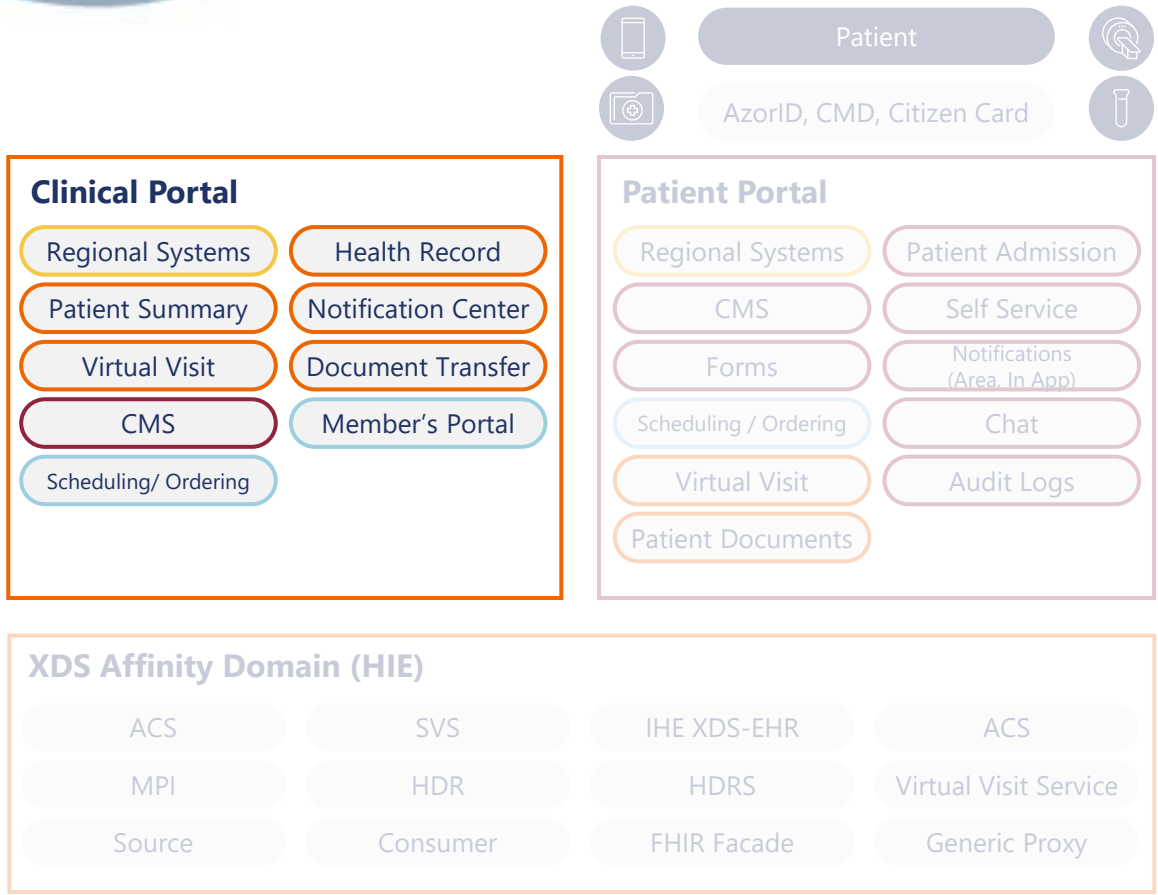


The Patient Portal allows access for patients to their data and the following functions:

- View and access of personal Health Record (Patient Documents), Regional Systems (Surgery, eVaccination, Prescription, Reimbursement, Sick Leave Certificates)
- Patient Admission
- Self-Service
- Filling of various forms
- Notifications
- Scheduling / Ordering of appointments
- Chat with back-office of healthcare professionals
- Audit Logs through eHealth Solutions interface to the ARR, teleconsultation with eHealth Virtual Visit (incl. Chat), accessing custom content (CMS) in the virtual waiting rooms, upload & Download of DICOM studies and documents

Technical View
Solution Presentation including Architecture

Clinical Portal (eHealth Solutions)



The Clinical Portal is the central place where healthcare professionals will have access to patient information and the following functionalities:

- Regional Systems (Surgery, eVaccination, Prescription Reimbursement, Sick Leave Certificates)
- View and Access of patient's health record with patient summary and on-demand-documents (ODD)
- View Notifications
- Teleconsultation with eHealth Solutions Virtual Visit (incl. Chat)
- Forward & receive documents
- Working with the Member's Portal (ByMe)
- Ordering and Scheduling of Appointments (ByMe)
- Accessing Custom Content (CMS)

04

From Vision to Reality

Key success factors and lessons learned in managing change and aligning stakeholders.

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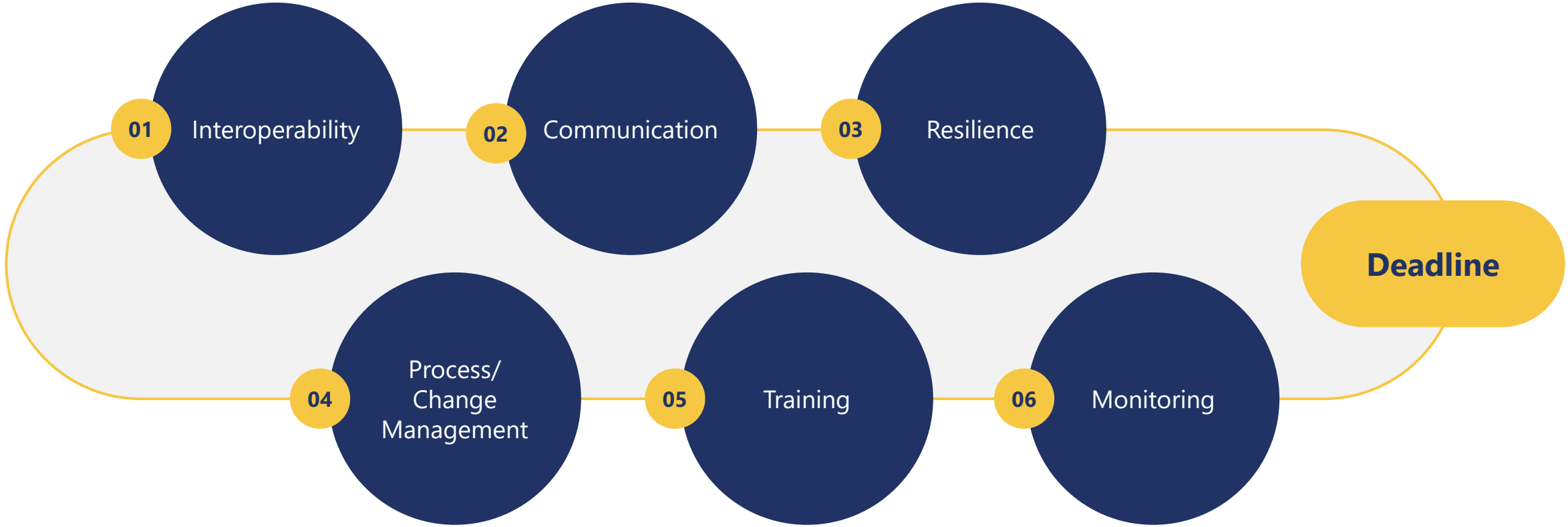
Interoperability Deployment: Project Hurdles

Challenges to be considered



Project Implementation & Process Identification

Objectives of the Project Phase

01

Phase 1

Analysis and Planning

- Analysis and Planning Report
- Review of the Implementation Plan

02

Phase 2

Go-Live Patient Portal

- Partial acceptance report
- Data protection impact assessment

03

Phase 3

Go-Live of Core FHIR/XDS and ESB

- Partial acceptance report
- Technical interoperability documentation

04

Phase 4

Go-Live of the Clinical Portal

- Partial acceptance report
- Data protection impact assessment

05

Phase 5

Closing the project

- Business continuity plan
- Final self-receipt of the solution
- Administration, data protection impact assessment, configuration and use manuals
- Affinity Domain implementation guide

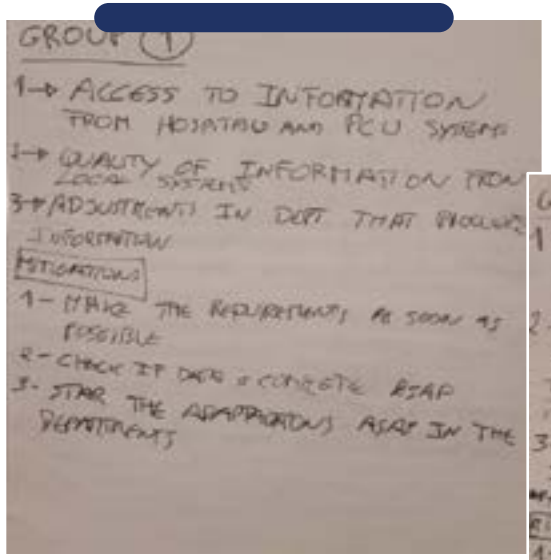
Equitable Access and Inclusion

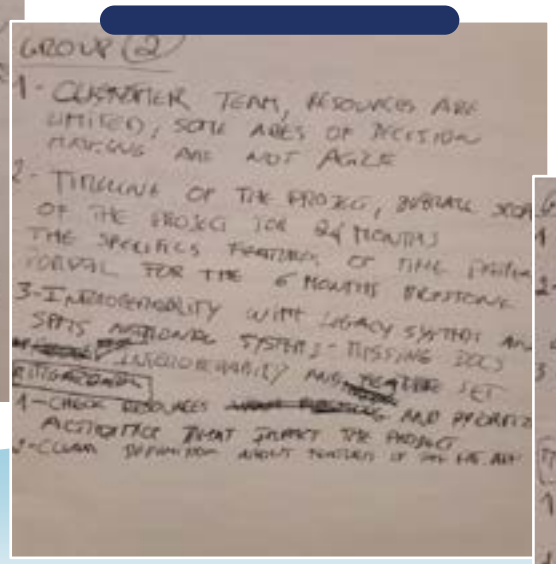
Personalized and Proactive Engagement

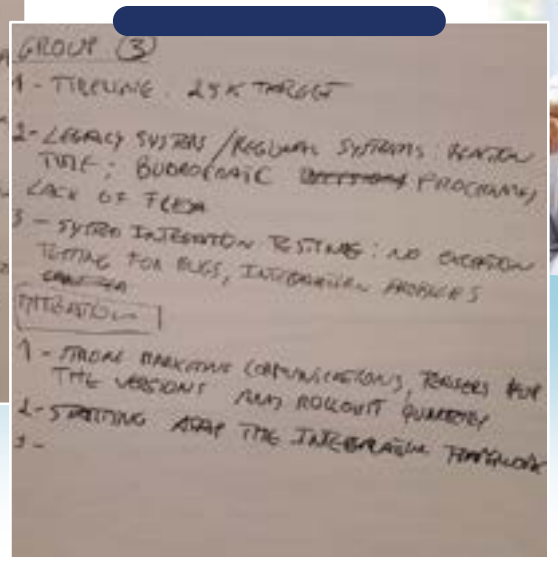
Integrated and Coordinated Care

Partnering with Siemens Healthineers

Smooth Planning and Transitions







PRR Plano de Recuperação e Resiliência
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REPÚBLICA PORTUGUESA
Financiado pela União Europeia NextGenerationEU

Patient Portal

Targets Type A - Patient portal - 25,000 of SRS patients (users) -30/09/2025

Objective: To increase proximity to the patients by creating an electronic health portal

For the Patients

- Quick and convenient access to your up-to-date health information
- Two-way communication with Health Units and Hospitals in a private and secure manner
- Sharing health information with professionals
- Dematerialization of processes

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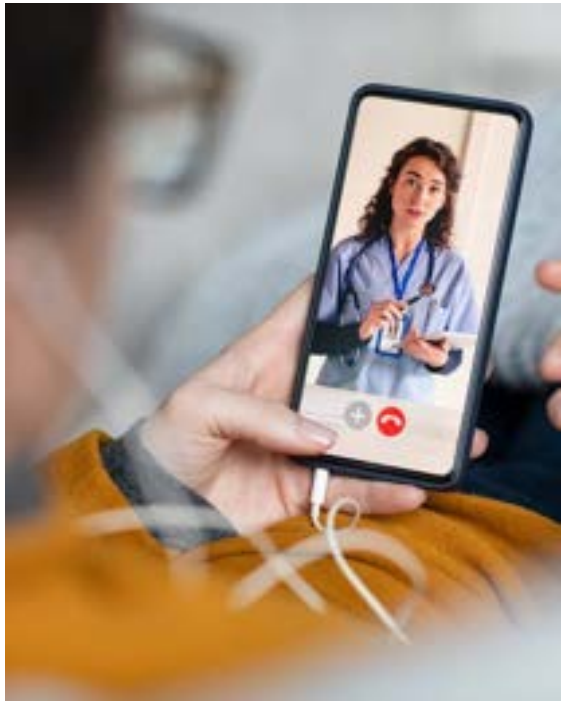
Telehealth

Target Type A – Telehealth - 1,000 consultations -30/09/2025

Objective: To create better conditions for patients by institutionalizing telemedicine

For the Patients

- Accessibility
- Security
- Convenience and comfort
- Combating isolation



Measure 1 MUSA

Azores Single Health Model

01 Patient Portal

- Access to personal information
- User empowerment and involvement
- Communication with healthcare providers
- Consultation management
- Medication management
- Laboratory results and diagnostic tests
- Educational material and notifications

02 Teleconsultation

- Improved access to health care
- Convenience and time saving
- Continuity of care – continuous communication - better follow-up
- Episode prioritization
- Cost reduction

03 Clinical Portals (Professionals)

- Single point of access to user information
- More efficient coordination of patient care
- Secure access to information
- Scalability and flexibility
- Access to the referral portal

Measure 1 MUSA

Azores Single Health Model

04 Member Portal

- Sharing application information & results delivery
- Access to clinical protocols
- Consultation of medical history and records
- Scheduling appointments and procedures
- Communication and data sharing

05 Administration Hub

- System configuration
- User management
- Auditing and monitoring
- System maintenance and upgrades
- Troubleshooting and support
- Reports and analysis

06 Scheduling

- Multi-entity
- Multiple resources
- Multi-protocol
- Recurring
- List management
- Configuration rules
- Absence management
- Forms, questionnaires and instructions
- Reports and analysis

A Vision for the Future

Azores' 5-Year Digital Health Strategy

01 Potentiate the Azorean Uniqueness Regional Profile

Geographical Dispersion
Highlight the challenge of delivering integrated care across nine islands, each with distinct health units. Robust digital tools are essential for data exchange, patient flow, and collaboration -making interoperability a necessity, not a choice.

Autonomy
As an Autonomous Region, the Azores offers a model for how regional governance can align with national and EU-level interoperability strategies.

Scale and Resources
Illustrate how a smaller-scale system drives complex digital transformation, offering valuable lessons for other regions or countries.

02 Build the Foundational Interoperability Backbone

Beyond EHRs
The project goes beyond implementing Electronic Health Records—it's about building a full digital ecosystem with modern infrastructure, strong cybersecurity, and integrated systems.

Standardized Data
Focus on structured data using clinical terminologies (e.g., SNOMED CT, LOINC, CIPE) and HL7 FHIR to ensure semantic interoperability for EHDS.

HIE Development
Establishing regional data exchange (across islands and care levels) that connects with national HIEs (e.g., RSE Portugal) and eventually EHDS, possibly involving IHE profiles.

03 Solving Real-World Problems

Continuity of Care
Enable seamless patient data flow across islands and EU borders – key to EHDS.

Health Tourism
Support secure access to patient summaries for tourists via EHDS, leveraging strong HDA-RAA.

Secondary Data Use
Regional data lake enables de-identified data use for research, public health, and policy—aligning with EHDS goals.

05

Azores is Getting EHDS-Ready

Building the foundation for secure health data exchange, improved accessibility, and interoperability in line with the European Health Data Space

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How an IHE-Compliant HIE Aligns with EHDS

Building bridges

1 Shared Goal of Interoperability

- Both IHE and EHDS are fundamentally driven by the need for robust, semantic interoperability in healthcare

2 Leveraging Existing Standards

- **EHDS Mandates Standards:** The EHDS regulation explicitly requires the use of common standards, including HL7 FHIR, for the exchange of electronic health data (e.g., patient summaries, ePrescriptions).
- **IHE Builds on Standards:** IHE does not create new standards but profiles existing ones. Many modern IHE profiles are already built on HL7 FHIR and other key standards like DICOM, SNOMED CT, and LOINC. An HIE implementing these IHE FHIR-based profiles is directly implementing the technical requirements for EHDS.

3 Use Case Driven Approach

- **EHDS Defines Use Cases (Primary & Secondary Use):** The EHDS clearly outlines scenarios for data exchange, such as cross-border patient summaries, ePrescriptions (Primary Use), and data for research (Secondary Use).
- **IHE Profiles Solve Use Cases:** IHE's methodology is inherently use-case driven. Its integration profiles are designed to solve specific clinical and operational interoperability problems. An HIE leveraging IHE profiles directly addresses the practical implementation of these EHDS-defined use cases. For instance, IHE's Cross-Enterprise Document Sharing (XDS) profile and its newer FHIR-based equivalents are highly relevant for the document-sharing aspects envisioned by EHDS

How an IHE-Integrated HIE Aligns with EHDS

Building bridges

4 Testing and Conformance

- **EHDS Requires Conformance:** The EHDS regulation will establish compliance frameworks, requiring EHR systems and other health applications to meet specific interoperability requirements to be placed on the EU market.
- **IHE Provides Testing:** IHE's rigorous Connectathon testing events and the resulting Integration Statements provide a proven mechanism for vendors to demonstrate conformance to interoperability specifications. This greatly simplifies the assessment of EHDS compliance for individual products and systems within an HIE.

5 Building Blocks for Infrastructure

- **EHDS Defines Infrastructure:** The EHDS envisions a decentralized network of interconnected systems (e.g., MyHealth@EU, HealthData@EU for secondary use).
- **IHE Provides Building Blocks:** IHE profiles act as "building blocks" or "actor-transactions" that can be assembled to create complex, interoperable health information exchange infrastructures. An HIE that integrates systems using IHE profiles is essentially building the very components that the EHDS requires to function

6 Addressing "Information Blocking“

- **EHDS Fights Blocking:** The EHDS regulation aims to prevent "information blocking" and ensure data flows freely for legitimate purposes.
- **IHE Promotes Open Exchange:** By providing a common, non-proprietary framework for data exchange, IHE inherently promotes open interoperability and discourages vendor lock-in, aligning with the EHDS's anti-blocking stance

06

Azores as a Digital Pioneer in Integrated Care Delivery

Demonstrating leadership in healthcare transformation by enabling a **fully connected care ecosystem**.

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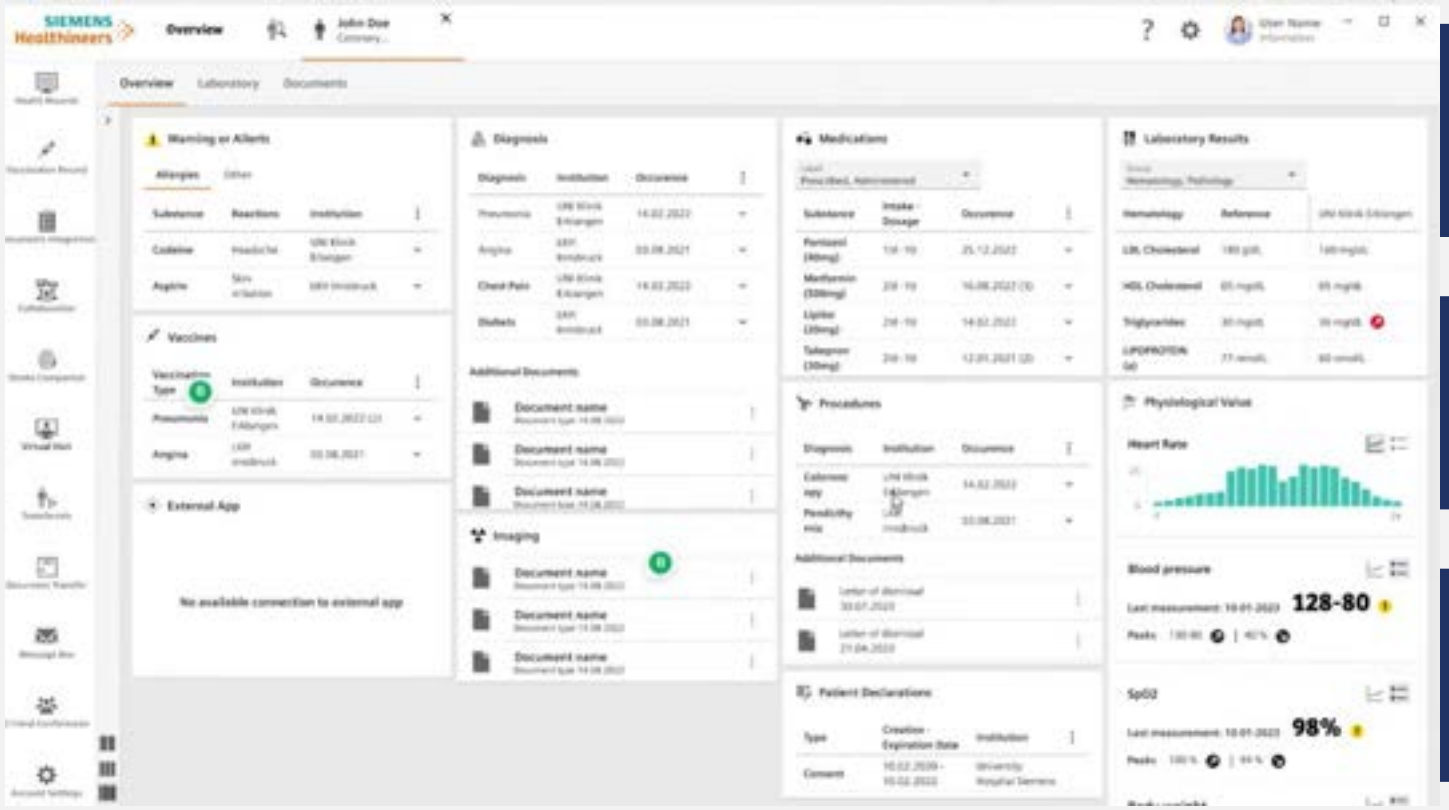
Integrated Care Delivery

With Patient Summaries through Clinician Portal



Customization, enabled with highest level

Complete overview of patient health data & health condition

Bringing patient summary into reality through Clinician Portal

BACK UP SLIDES

Present at the end to share the videos

Social Media Inserts

Regional Secretary for Health and Social Security

Promotional Videos

Regional Secretary for Health and Social Security

Promotional Videos

Mónica Seidi

Regional Secretary for Health and Social Security

Promotional Videos

José Manuel Bolieiro

President of Regional Government

Thank you!

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