

# HelsIT 2010

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## Experience of ePrescription in Spain using HL7 V3

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Junta de Castilla y León



Junta de  
Castilla y León



## Alberto Sáez

- Working on eHealth since 2002.
- Working with specific eHealth standards, since 2004:
  - Certified HL7 V2.5 Chapter 2 Control Specialist (2005).
  - Certified HL7 CDA Specialist (2008).
  - Member of HL7 Spain Education WG for 4 years.
- 2007- SACYL Interoperability Office – project leader.



**Overview of Spanish  
Public Health System**

**Architecture of EHR in Sacyl**

**Solution adopted for  
ePrescription**

**Conclusions and  
project's evolution**

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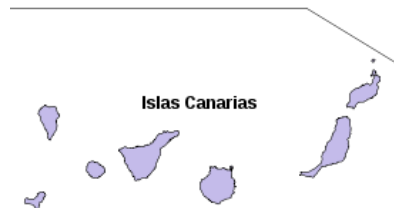
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**AGENDA**

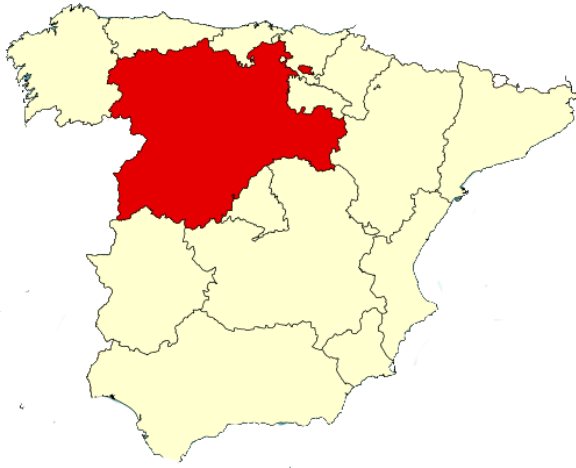


# Spanish Public Health System

- By 2002 public Health management had been transferred to each one of the 19 Autonomous Regions which make up the Spanish state.
- IT systems of each region have very little in common with the others (though they share the same roots).
- Interoperability is achieved through the services the SNS has developed: (Patient identification, referral, etc.)



# Castilla y León (Sacyl)

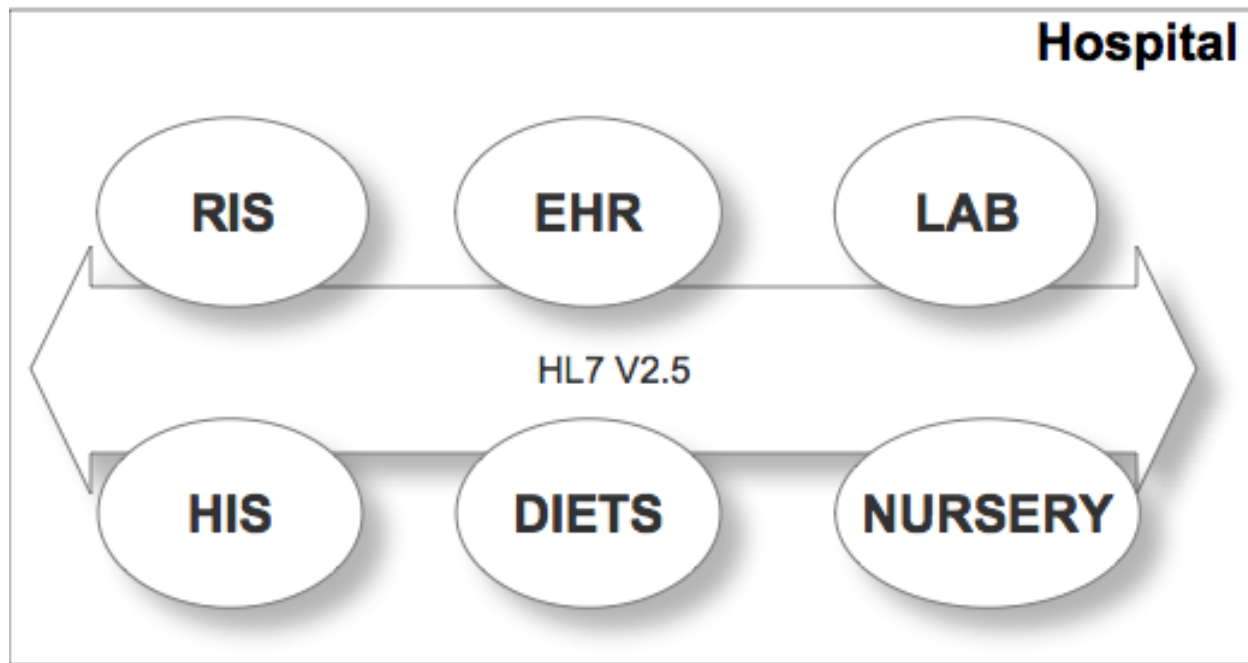


- 20% of Spain territory
- 2.5 million people (5%).
- 14 hospital complexes.
- 242 primary care centers.
- >3000 auxiliary care centers (rural areas).

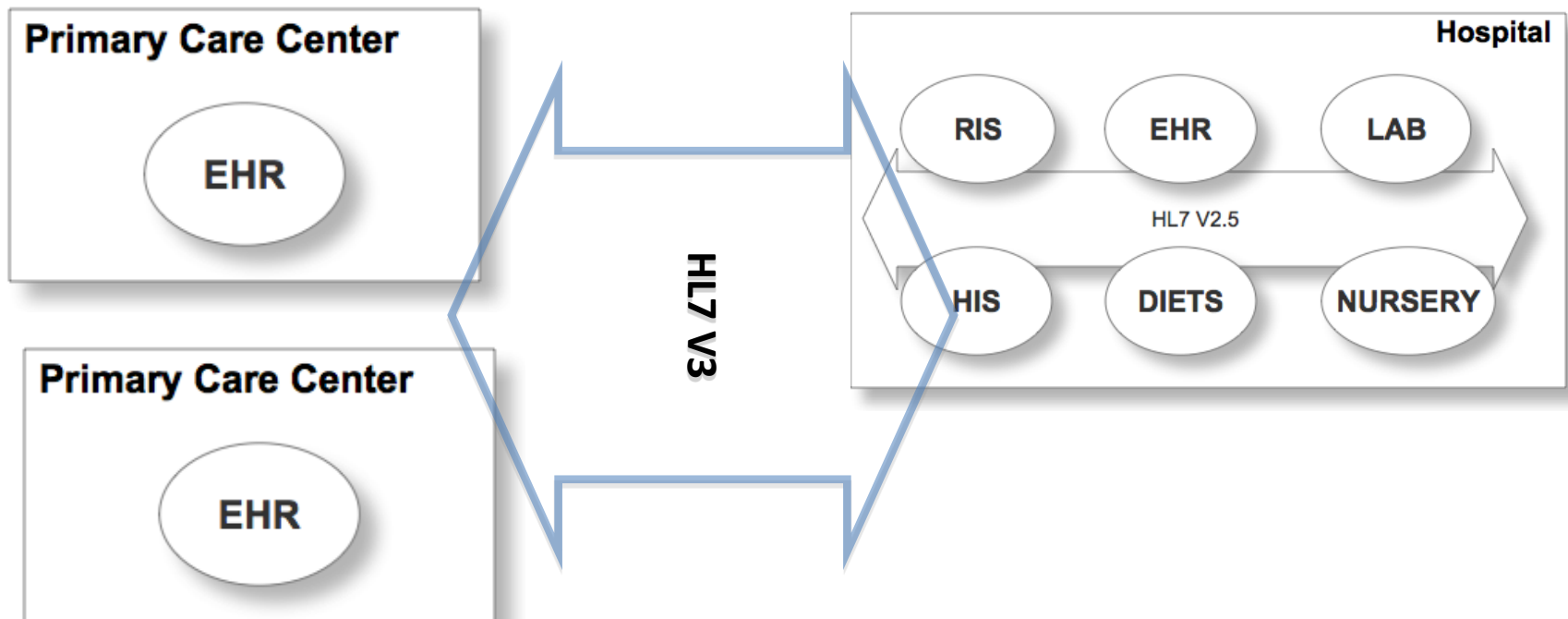


# Interoperability in Sacyl

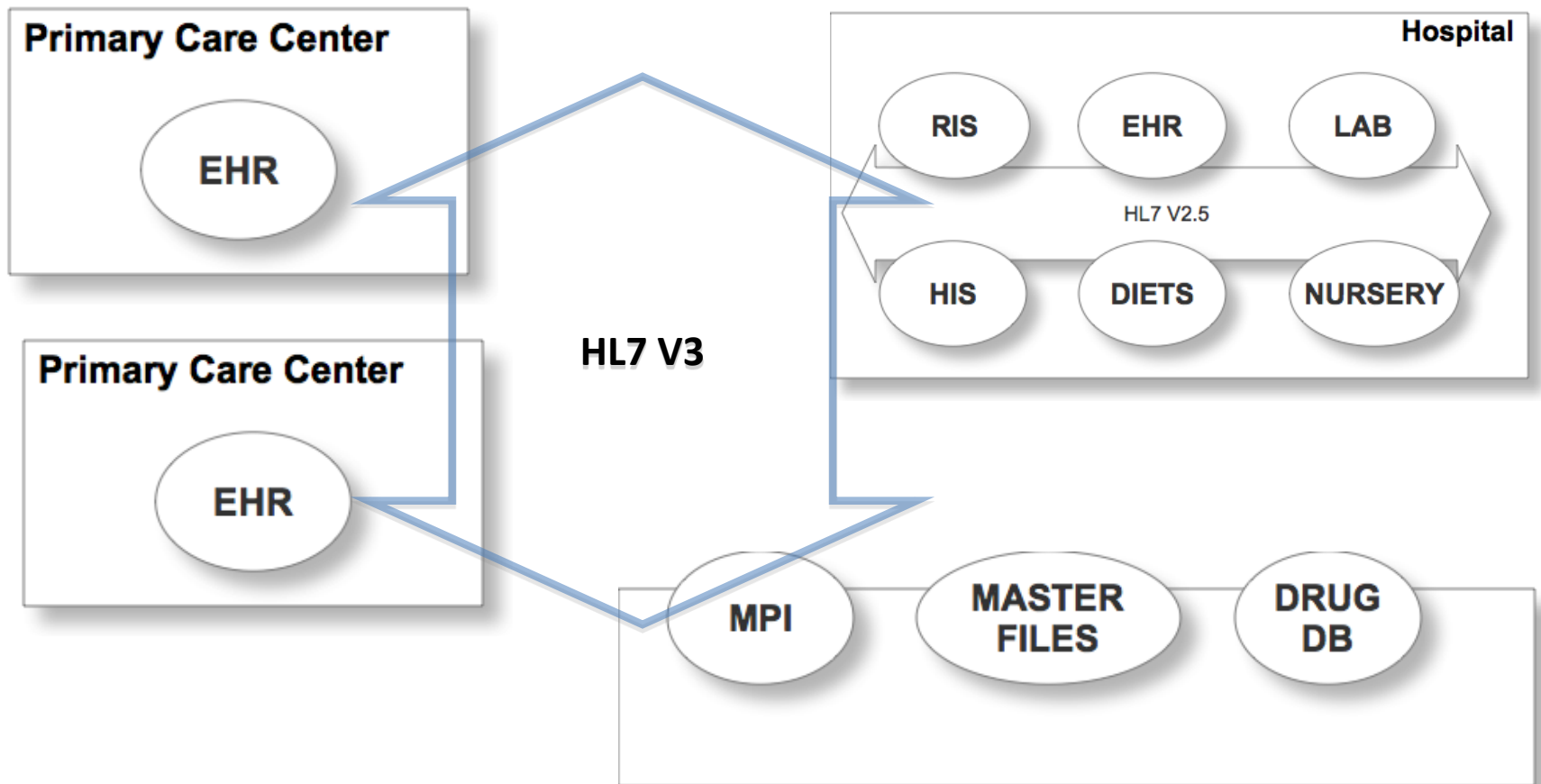
## Intra-center communications



# Interoperability in Sacyl

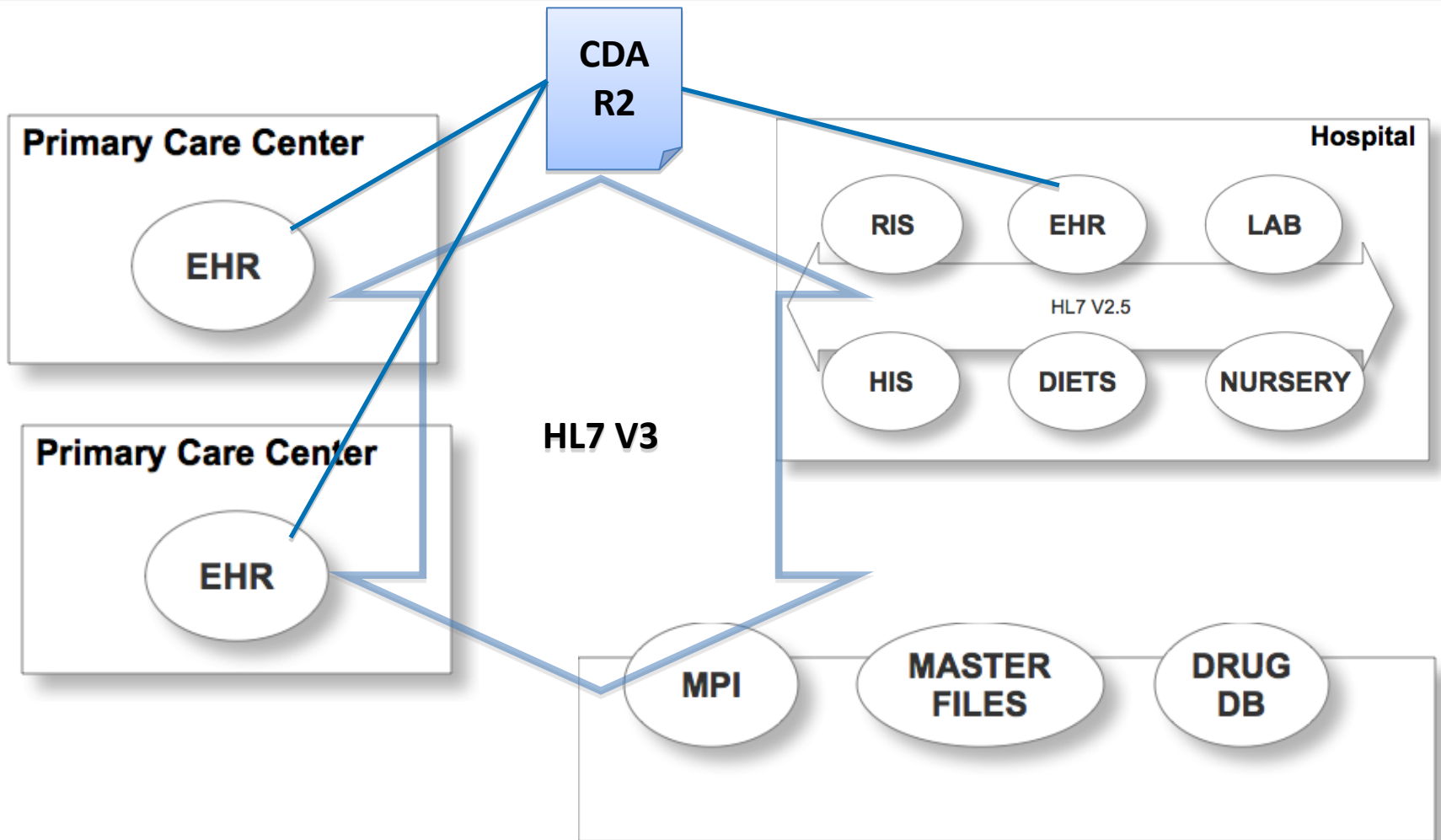


# Interoperability in Sacyl





# Interoperability in Sacyl




# Interoperability in Sacyl

- Massive adoption of V2 implementation guides in hospitals.
- Ad-hoc connections inside hospitals, has been removed.
- CDA R2 is a key element in the design of the EHR solution. All clinical documents in our repository are compliant.
- V3 messaging for inter-center communication and centralized services is in the beginning phase, including MPI, vocabulary and pharmacy products database.



# Published implementation guides




 <http://www.saludcastillayleon.es/estandaresIntegracion>

 [Presentación Guías Mensajería](#) (455,7 KB)

## Centros Hospitalarios (HL7 V2.5)

-  [Elementos comunes mensajería HL7 V2.5](#) (480 KB)
-  [Gestión de Pacientes \(notificaciones\)](#) (680,6 KB)
-  [Extensión a la gestión de Pacientes \(consultas\)](#) (346 KB)
-  [Citas, programación quirófano y lista de espera](#) (920,4 KB)
-  [Laboratorio \(bioquímica, hematología, microbiología y anatomía patológica\)](#) (695,1 KB)
-  [Imagen Diagnóstica](#) (382,7 KB)
-  [Transfusiones](#) (593,5 KB)
-  [Dietas](#) (360,5 KB)
-  [Gestión de materiales](#) (449,6 KB)
-  [Farmacia \(intra-hospitalaria\)](#) (715,4 KB)
-  [Signos Vitales](#) (204 KB)
-  [Gestión de maestros](#) (300,9 KB)

## Inter-Centros (HL7 V3)

-  [Elementos comunes mensajería HL7 V3](#) (299,7 KB)
-  [Gestión básica de HC \(solicitud de HC resumida\)](#) (309,3 KB)
-  [Receta electrónica](#) (1,2 MB)

## Documentos clínicos (HL7 CDA)

-  [Definición general](#) (668,7 KB)
-  [Intercambio de documentos por mensajería](#) (458,3 KB)

## V2.5 - Hospitals

- ADT
- Referral
- Scheduling
- Labs
- Imaging
- Blood Transfusion
- Diets
- Materials
- Pharmacy
- Vital Signs
- Master Files

## V3 – Central Services

- Enterprise Wide MPI
- E-Prescription
- CDA



# Starting conditions

- The EHR solution was not centralized.
- The EHR software of primary care and hospitals were different.
- Pharmacists didn't have a connection with the Public Health system network.
- The National Health System (SNS) maintains:
  - A Master Patient Index.
  - A Medicine products Database (*Nomenclator*).

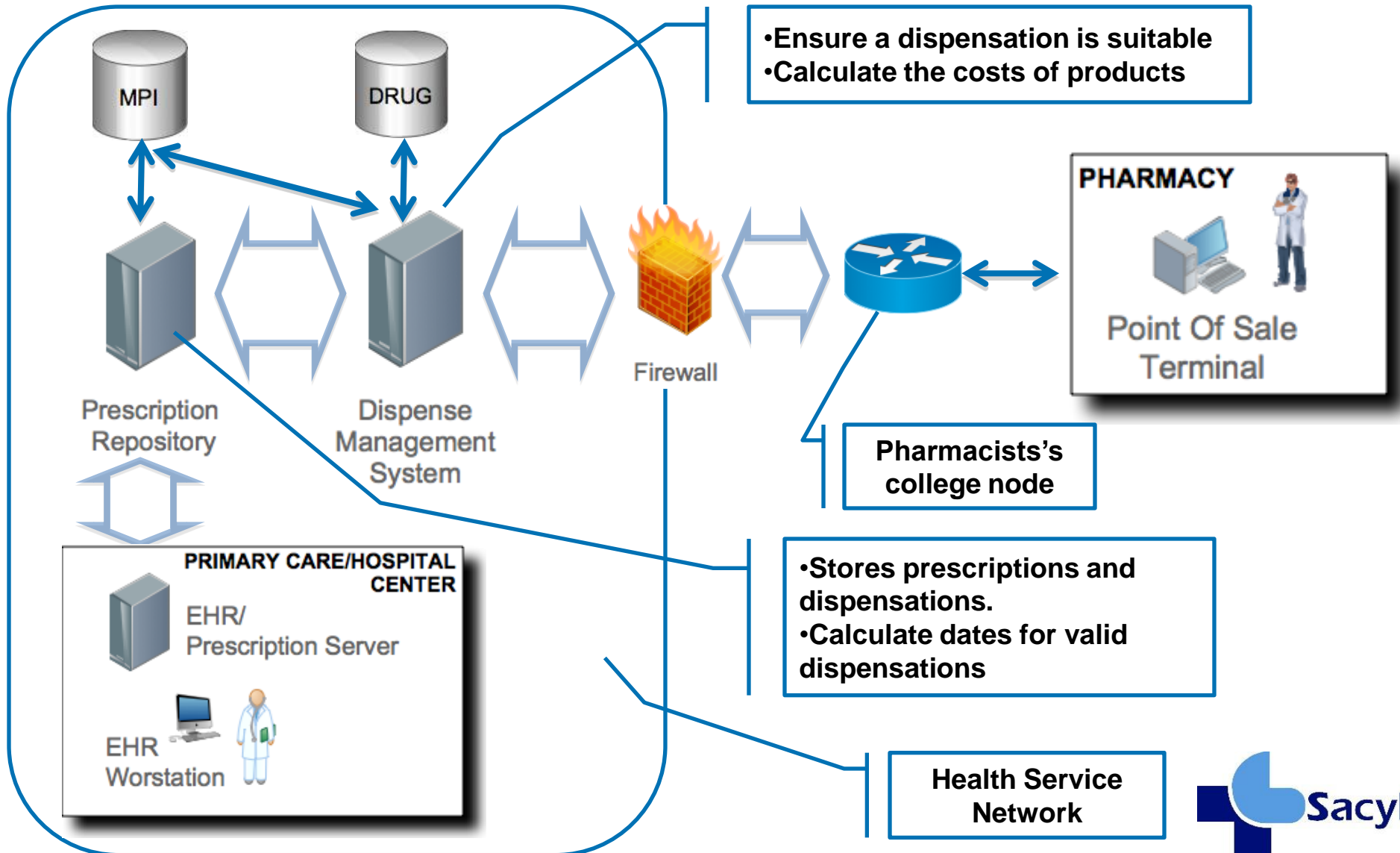


# Pilot Project Design

- The objective was to collect the experience of users and technical results, to remove from the definitive project all the issues detected.
- Used by a controlled number of doctors, centers and pharmacies.
- Centered in chronically-ill patients.
- It had to be deployed before 2010 in order to obtain sufficient results.
- The design phase started June 2009.



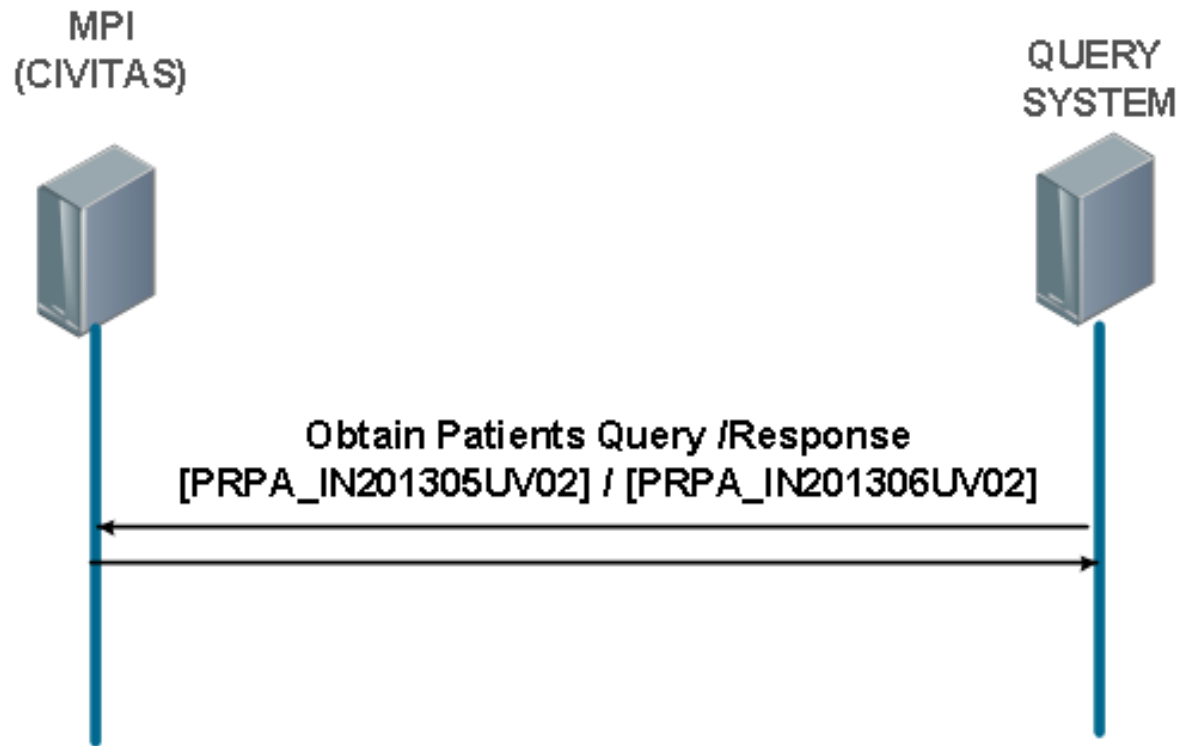
# Pilot Project Design



# Interface definition

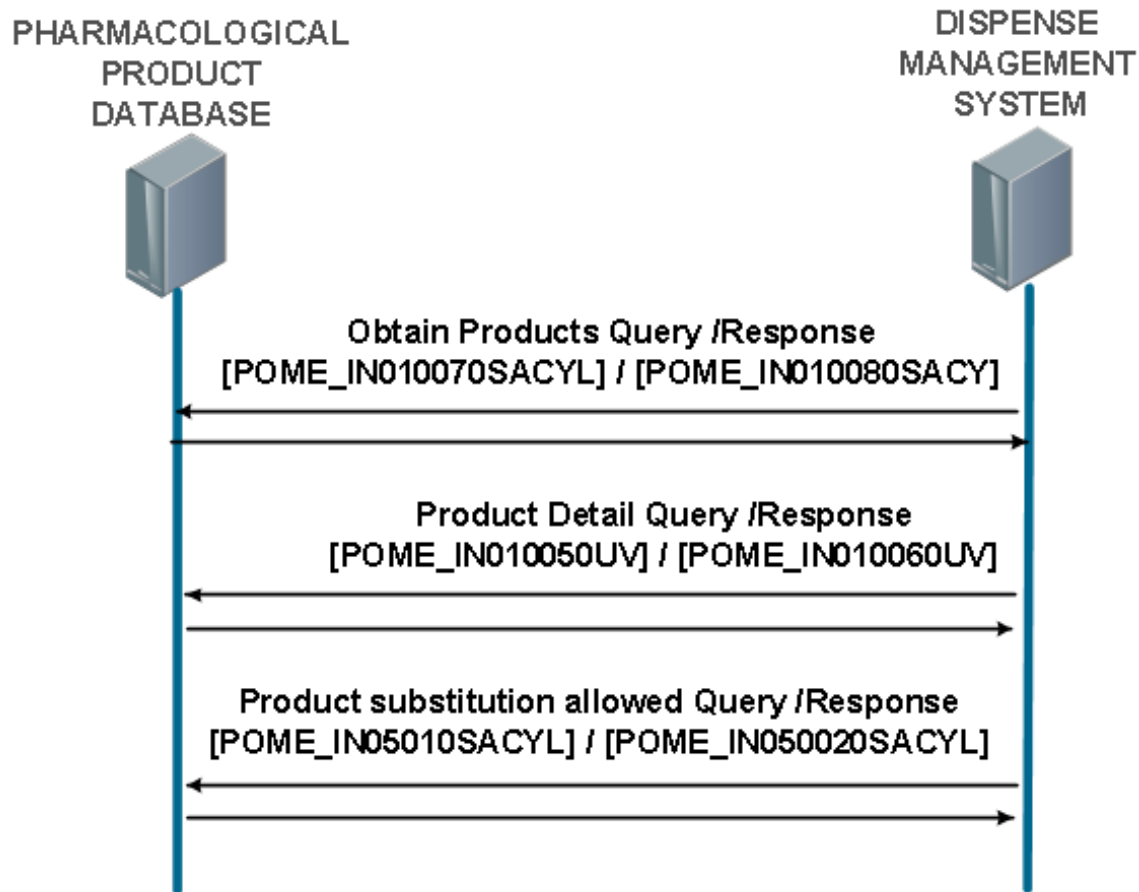
- HL7 V3 for all interfaces based in WS (normative version of 2008).
  - An implementation guide was defined by the Interoperability Office.
- ➔ This way, the pilot project could serve to evaluate the design cost and behavior of a V3 implementation.

# MPI Interface

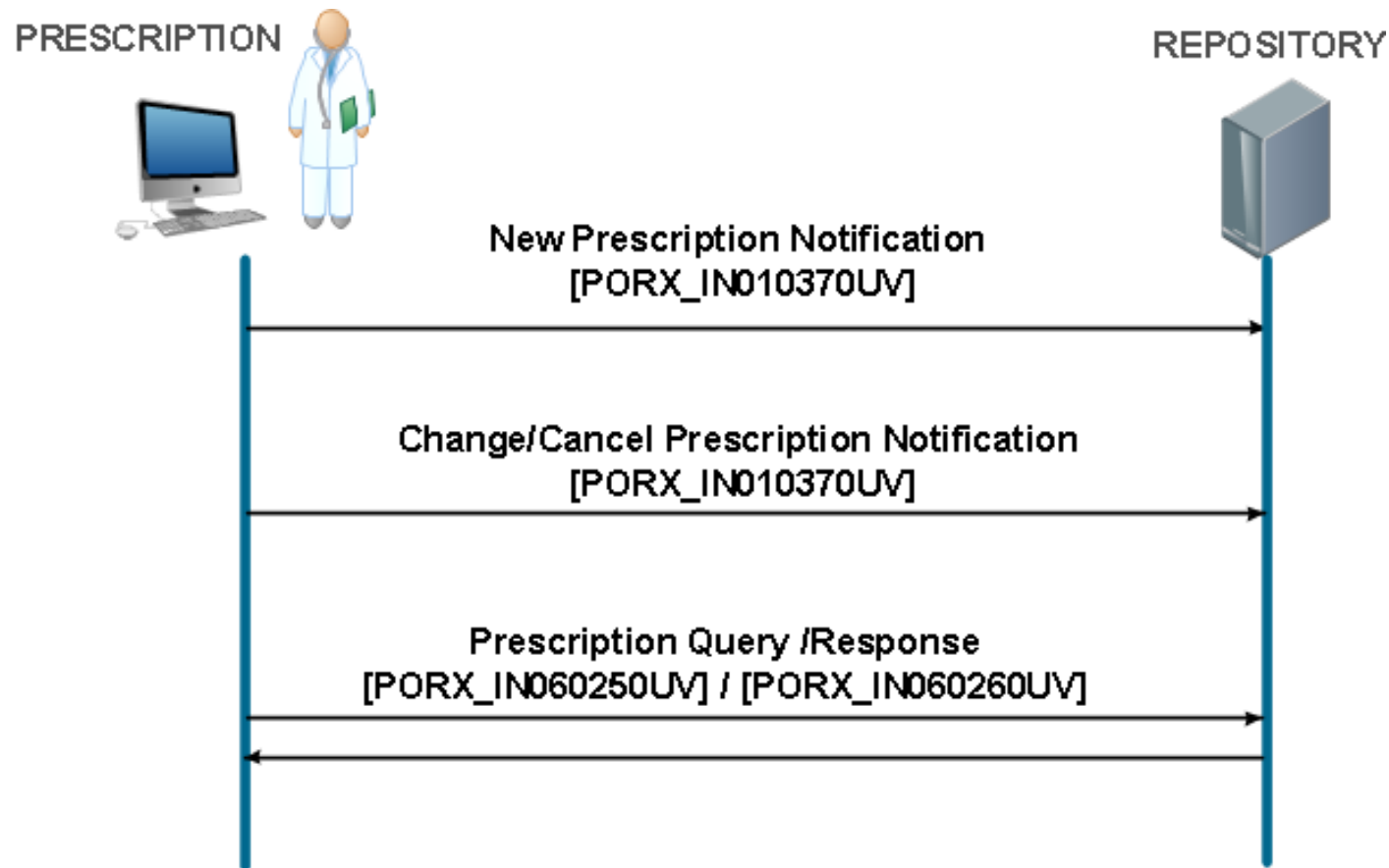




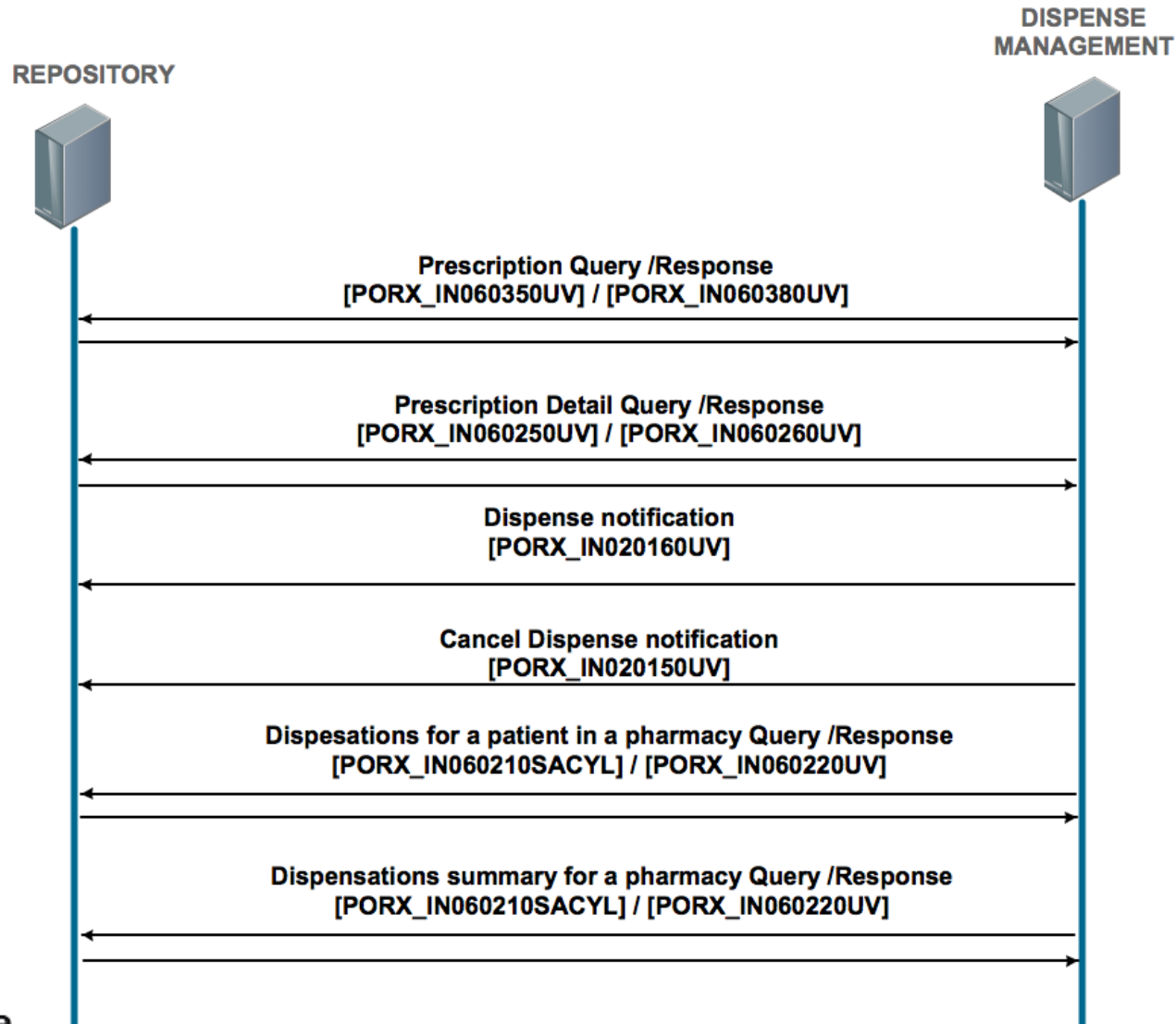
# Interactions on Product Database



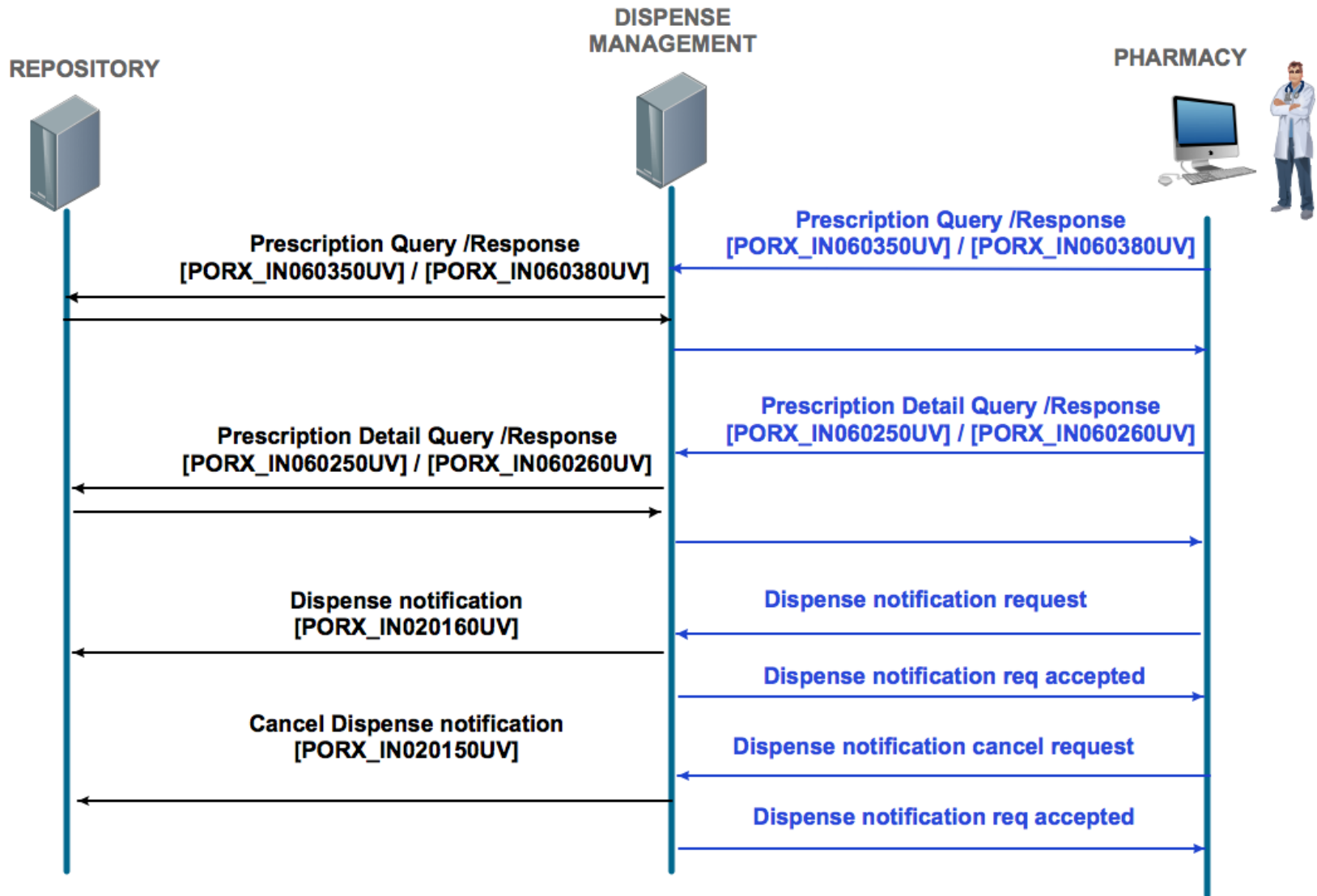
# Interactions Prescription/Repository



# Interactions Repository/Dispense Management



# Interactions Dispense Management /Pharmacists' POS



\* Limited deployment

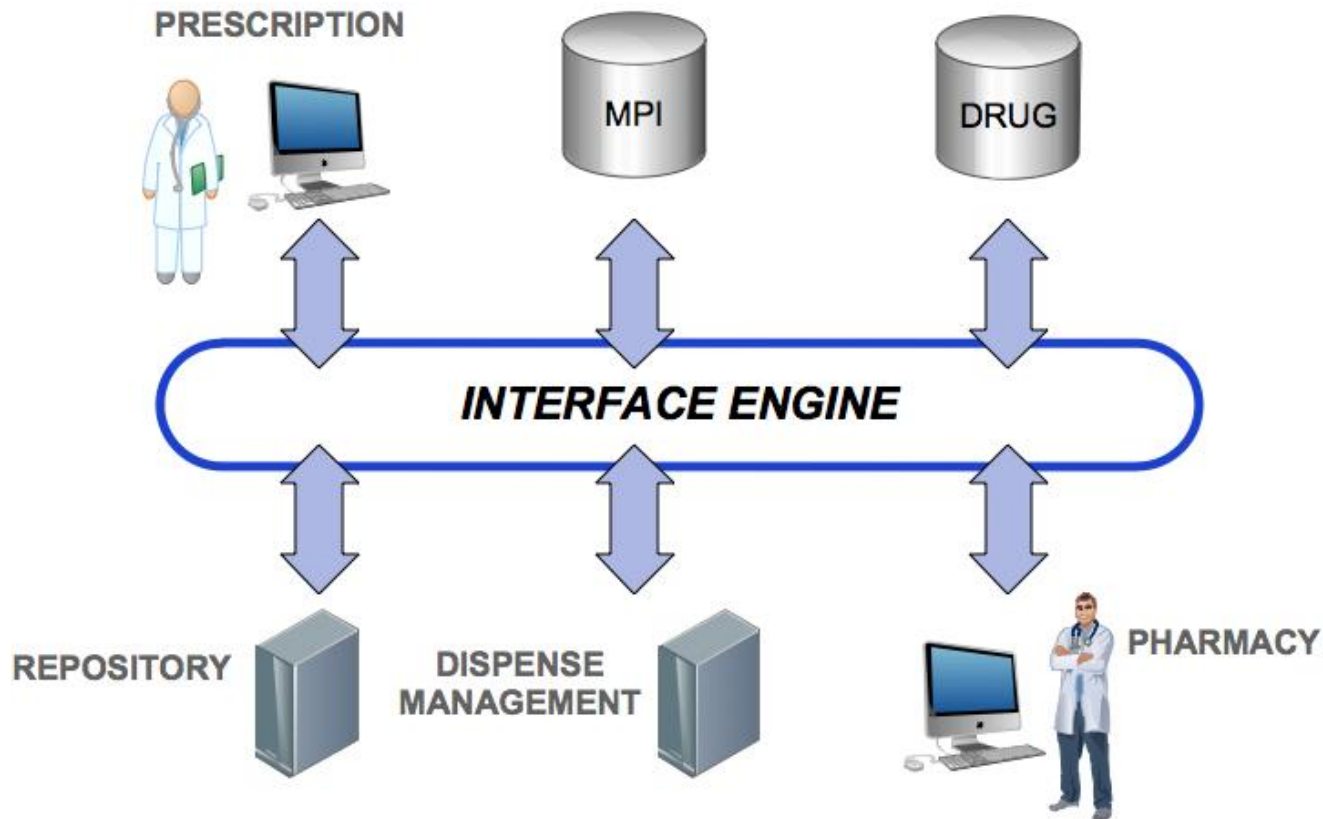
# Implementation details

- Due to time frame (6 months from requirements to go-live), implementers decided not to use any HL7V3 specific messaging software.
- Tools:
  - Traditional XML tools (XPath, XMLBeans, templates).
  - Interface documentation XML-oriented.
  - XSD Schemas (plus locally-defined elements).



# Implementation details (II)

- All messages should be interchanged between systems using an Interface Engine (IE) software.



# Project Results

- The project began its production phase in mid December 2009.
- It has been considered a success.
  - Including patients at the maximum rate.
  - More than 2.000.000 interactions.
  - No system failures related to the messaging infrastructure.



F. Blanco (ABC)



# Conclusions

- HL7 V3 Pharmacy and Medication universal domains models are valid, covering approx. 98% of our needs.

Only a few specific requirements were solved using local extensions:

- Support complex cost composition.
- Additional parameters to queries.
- Administrative-centered queries.





- The use of a Interface Engine (IE) as a communication node is a success.
  - One control point for all systems.
  - Allows solving application specific implementation problems until systems can be updated.
  - The IE must be “HL7 V3 ready”.



# Conclusions

- From an implementer point of view, is it possible to face a V3 project without previous V3 knowledge ?
    - ➔ It's possible, though an expert group is needed to contribute guidelines in the design phase. But:
      - It implies a high cost in documenting interfaces for the implementer (IG).
      - There are no adequate tools to document interfaces.
      - It is difficult to use a model-driven architecture.
      - Messages seem too complex to most developers.
- And:
- It has low impact on the implementers project's budget.



# Project Evolution

- Inclusion of new use cases.
- No changes needed in the interface design.
- V3 has been consolidated as a solution, and there are no doubts about its readiness. It's been using in new projects: referrals, laboratory (inter-center), ...
- A working group has been established to work in RIM technologies to ensure new developments could use the full potential of HL7 V3 model.



# THANKS FOR YOUR ATTENTION

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Castilla y León**

