InteropEHRate

EHR in people's hands across Europe

ARCHITECTURE, PROTOCOLS AND API's

MID-TERM PUBLIC WORKSHOP

21 OCTOBER 2020

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826106

ARCHITECTURE FOR DECENTRALISED HEALTH DATA SHARING

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INTEROPEHRATE GOAL

*To support **cross-border exchange** of*

personal health data

between citizens and EU organisations

HOW

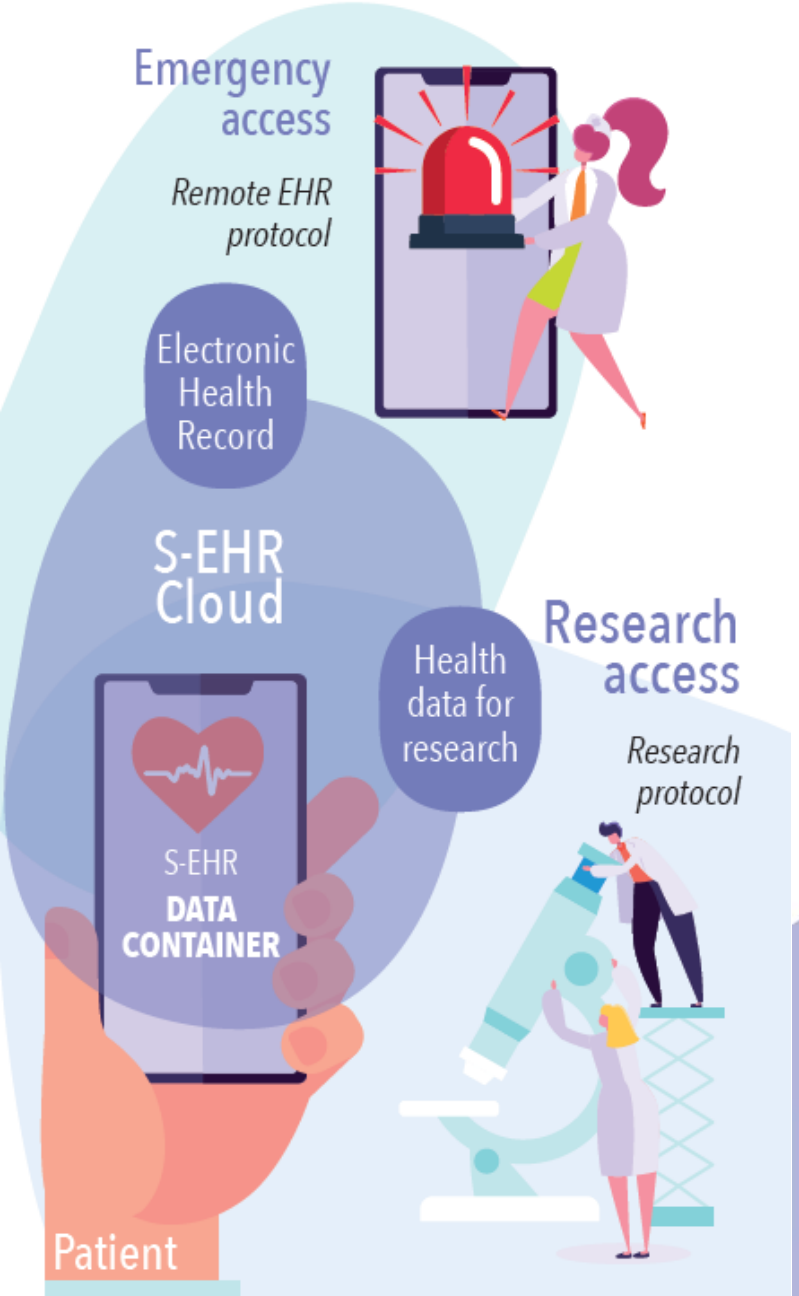
Define, validate and promote an **open specification** to securely store health data on personal mobile apps (**S-EHRs**) and exchange health data between citizens and healthcare providers or researchers of different countries using **InteropEHRate protocols**.

RESULTS

1. **InteropEHRate open specification**
   Vendor independent remote APIs and rules to become EU standard.

2. **InteropEHRate Framework**
   The reference implementation of the InteropEHRate open specification.

INTEROPEHRATE OPEN SPECIFICATION



1. *D2D protocol – applied to* Medical visit abroad

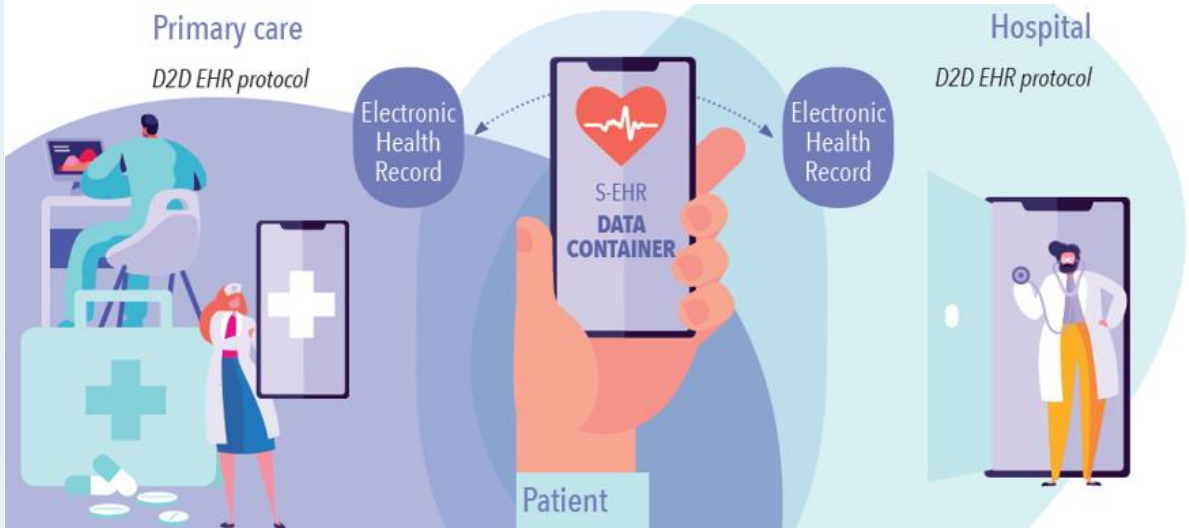
Exchange of health data with S-EHRs without internet connection

2. R2D protocols – *applied also to* Emergency access

Remote access to EHRs and to personal cloud (S-EHR Cloud)

3. *RDS protocol – applied to* Health Research study

Sharing of health data from S-EHRs with specific research studies



INTEROPEHRATE OPEN SPECIFICATION

Leverage
- *HL7 FHIR*
- *CEN IPS*
- *eIDAS*
- *Encryption*

1. FHIR profiles for EHR interoperability

2. S-EHR conformance levels

constraints that S-EHRs and S-EHR Clouds must fulfil;

3. Device to Device (D2D) protocol

exchange of health data between Citizen and *Healthcare Organisation*, on Bluetooth;

4. Remote to Device (R2D) protocols

R2D Access: download by Citizens of health data from *Healthcare organisations*;
R2D Backup: storage by Citizens of encrypted health data on S-EHR Cloud;
R2D Emergency: access by *Healthcare Organisations* to S-EHR Cloud in emergency;

5. Research Data Sharing (RDS) Protocol

exchange by Citizen of health data with *Research Centres*.

INTEROPEHRATE FRAMEWORK

PROTOTYPES OF LIBRARIES, SERVICES & APPLICATIONS

1. **S-EHR app**: prototype of app compliant to the S-EHR conformance levels: stores encrypted health data on mobile, exchanges them with Healthcare organisations and Research centres under citizen control.
2. **S-EHR Cloud**: prototype of cloud service complaint to S-EHR conformance levels. Stores encrypted health data if asked by Citizens. The S-EHR Cloud provider cannot decrypt the stored health data.
3. **HCP App**: example of desktop application used by the Health Care Professionals (HCPs) to securely exchange health data with any S-EHR (with D2D) or any S-EHR Cloud (with R2D Emergency).
4. **InteropEHRate Health Services (IHS)**: prototype of libraries and services implementing D2D and R2D.
5. **InteropEHRate Research Services (IRS)**: prototype of libraries and services implementing RDS.

INTEROPEHRATE FRAMEWORK

INTEROPEHRATE HEALTH TOOLS (IHT)

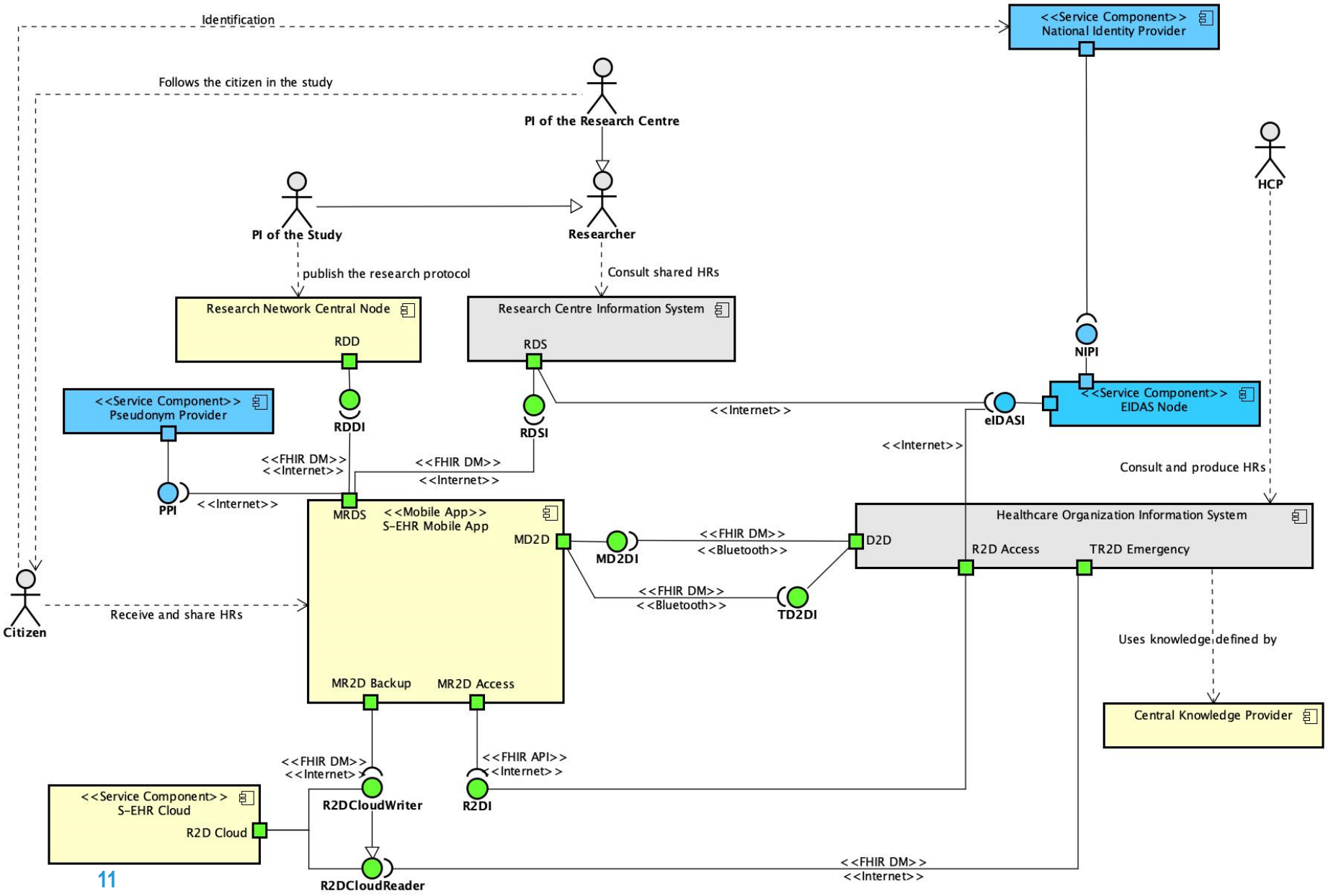
Data schema conversion
Mapping local DB schemas to the InteropEHRate FHIR profile
Conversion of records according to the mapping

Semantic codes conversion
Mapping local terms to international codes
Conversion of codes according to the mapping

Information extraction
Extraction of codes and structured content from unformatted content (e.g. interpretation of equivalent expressions to represent the dosage of medicines)

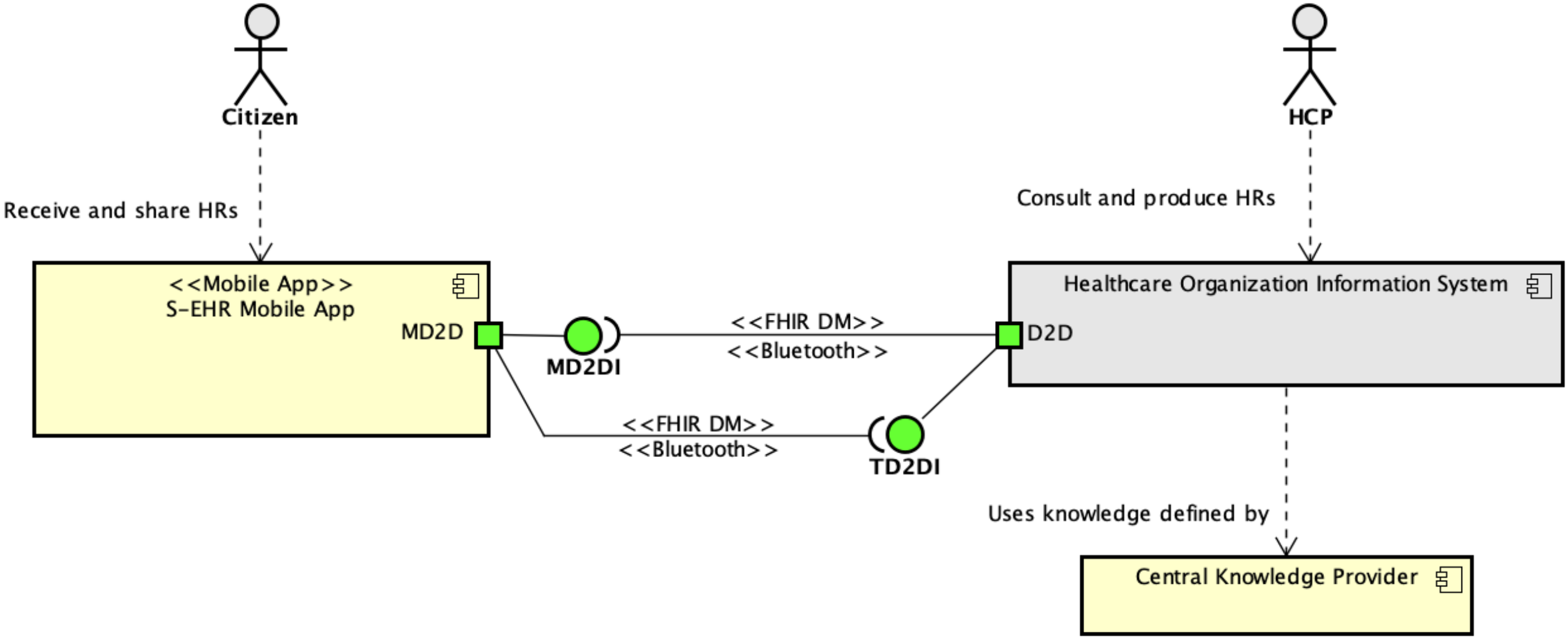
Language translation
Presentation of coded and extracted information into the language of the user
Integration with external services for free text translation

INTEROPEHRATE EU ARCHITECTURE V.2

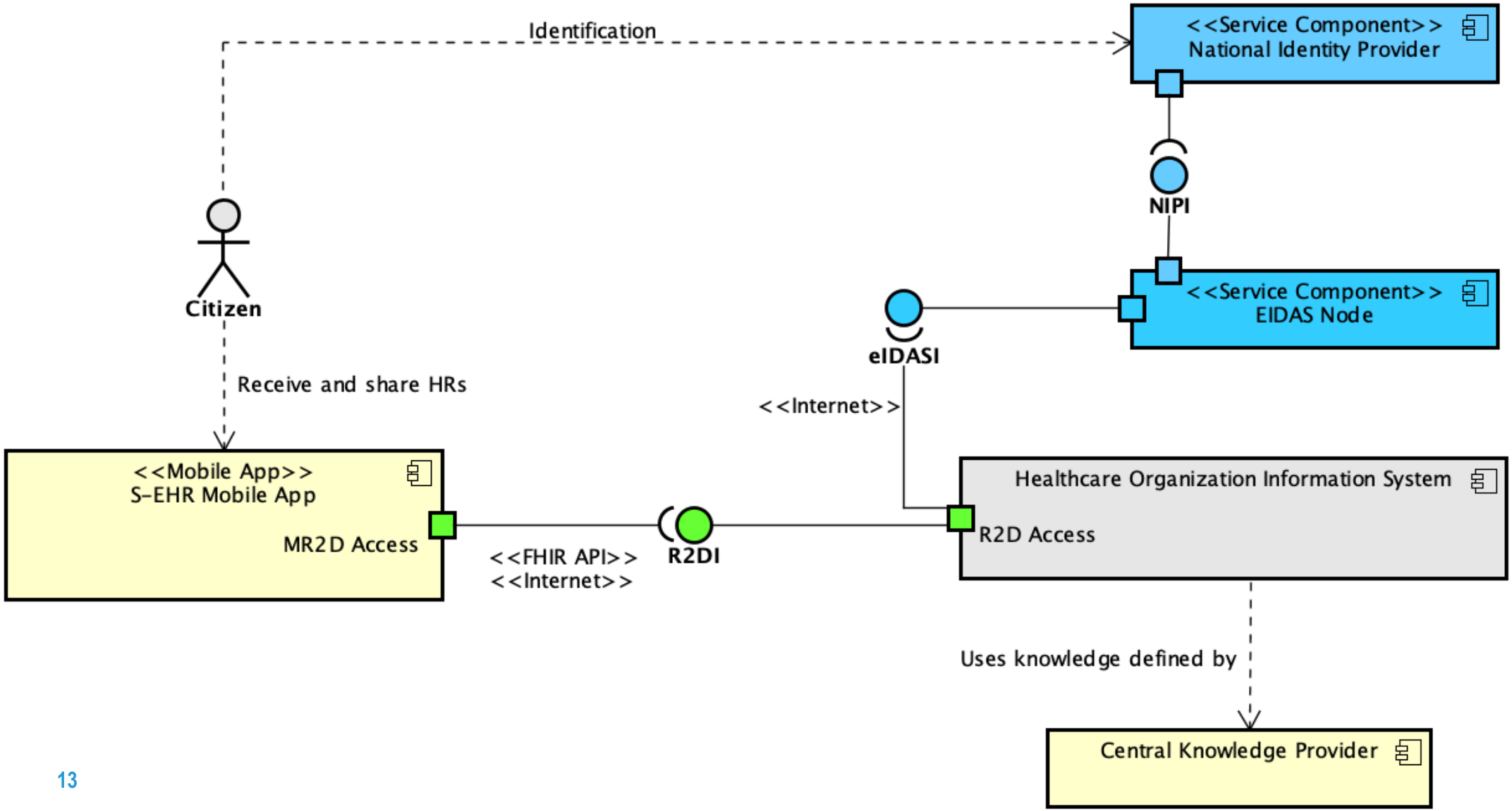


- **grey**: health organisation systems
- **blue**: EU infrastructure
- **green**: IEHR extension
- **yellow**: new products

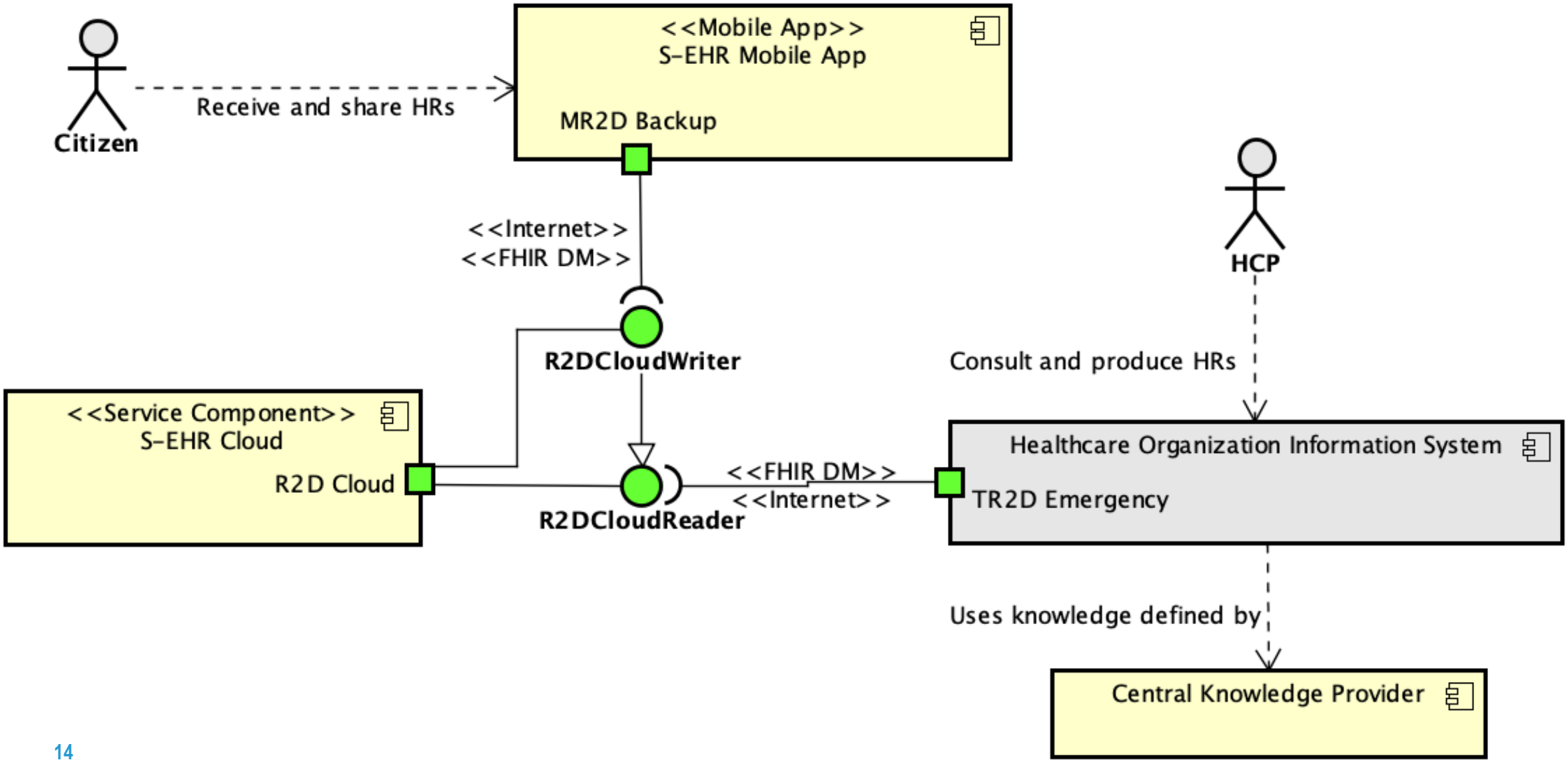
INTEROPEHRATE EU ARCHITECTURE V.2: D2D



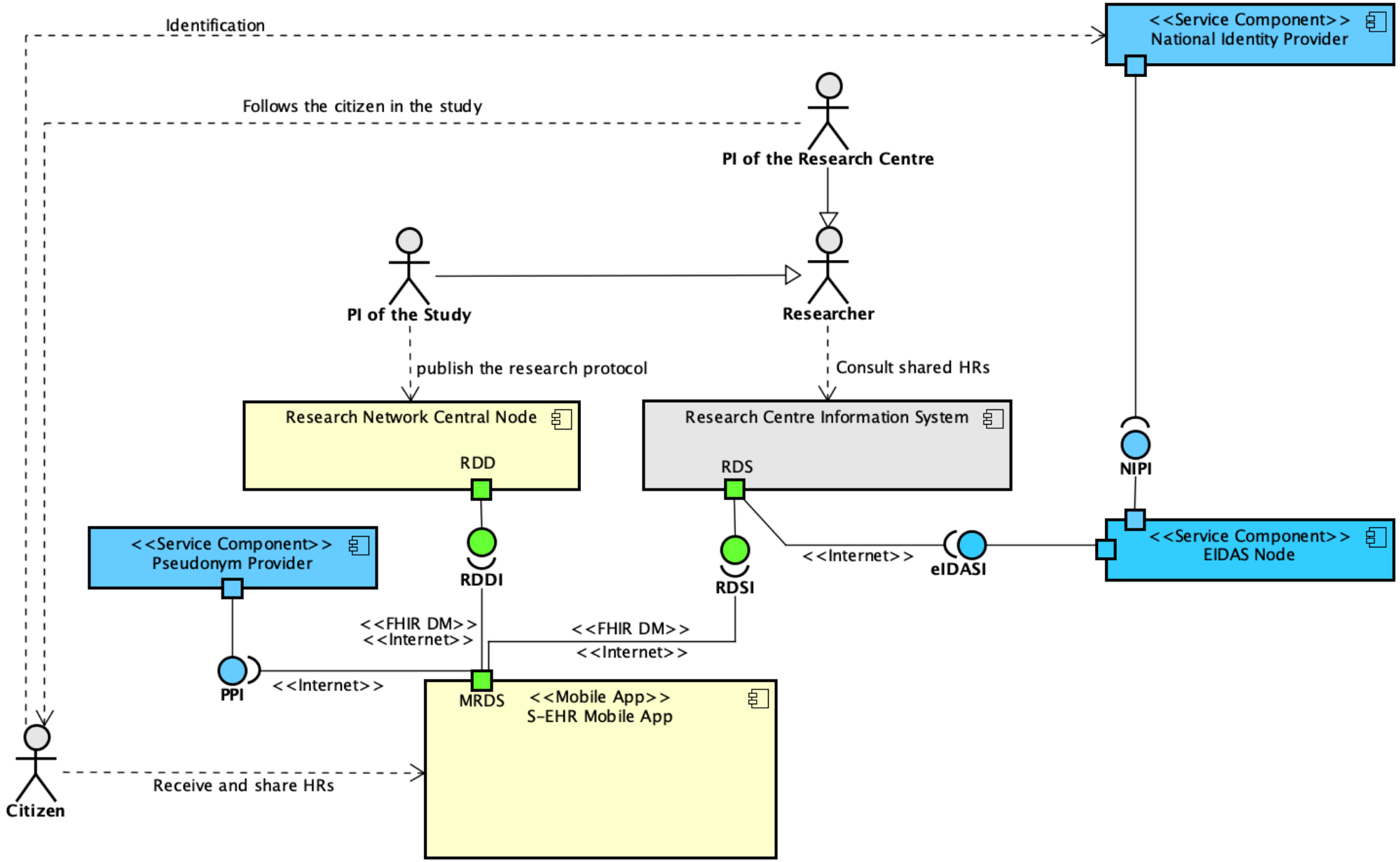
INTEROPEHRATE EU ARCHITECTURE V.2:
R2D ACCESS



INTEROPEHRATE EU ARCHITECTURE V.2:
R2D BACKUP & EMERGENCY



INTEROPEHRATE EU ARCHITECTURE V.2: RDS



THANK YOU

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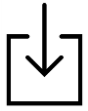

D2.5 - InteropEHRate Architecture - V2 (to be released in November)