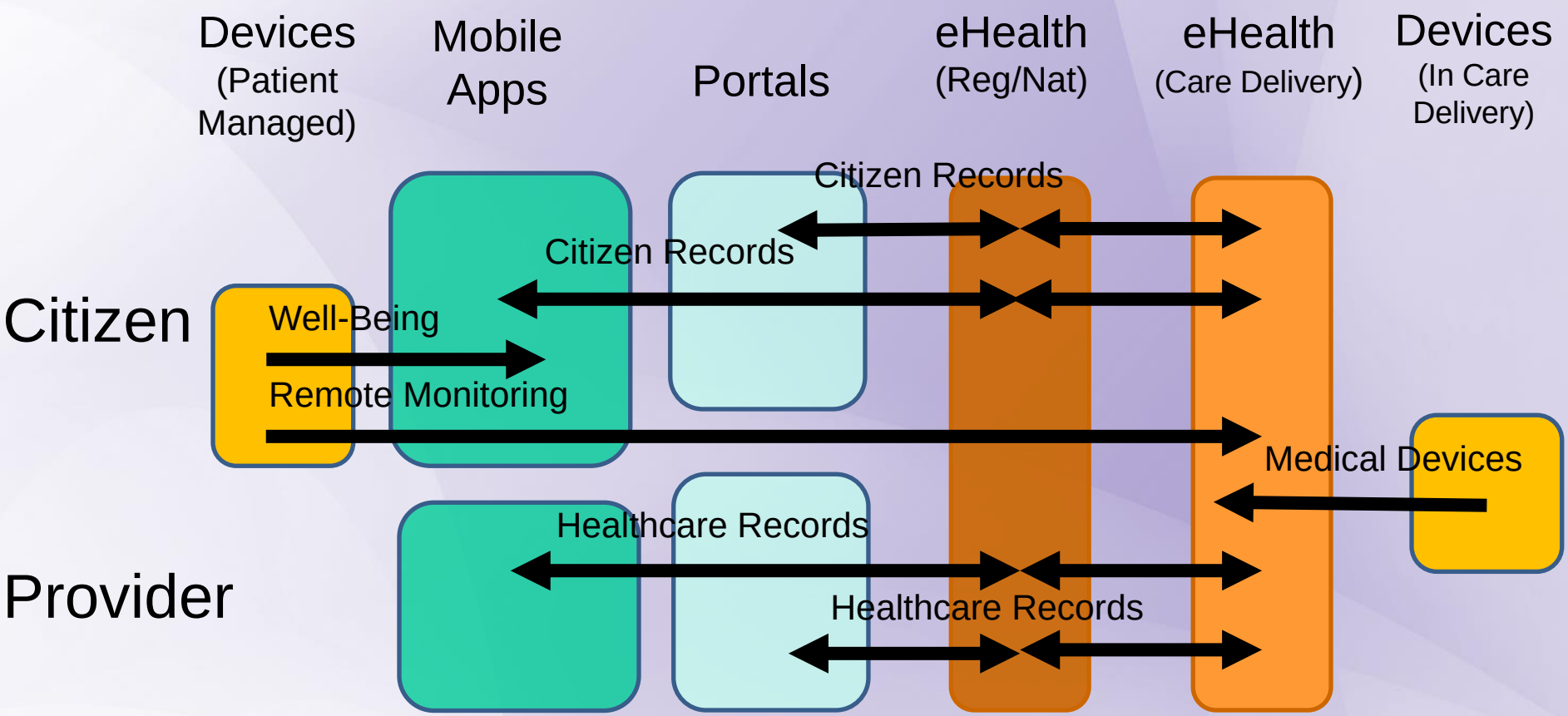
MOBILE HEALTH & FHIR

JÜRGEN BRANDSTÄTTER

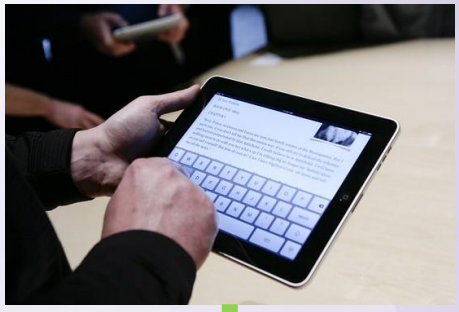
Patient Empowerment, mHealth, eHealth



mHealth, eHealth and Health/Medical Devices as components of the connected health system

Current Mobile App ecosystem in health

Mobile App for health professionals



Specific Healthcare IT system or device within a care delivery organization: EMR, PACS/RIS, etc.

Patient access App to a portal (appointments, reminders, access to results and records).

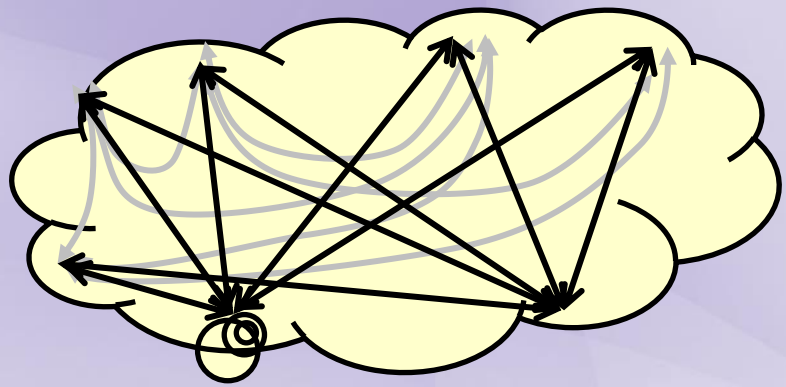
Portal of a specific Healthcare delivery organization: hospital, insurance, laboratory, etc.

Personal health management app either stand-alone or connected

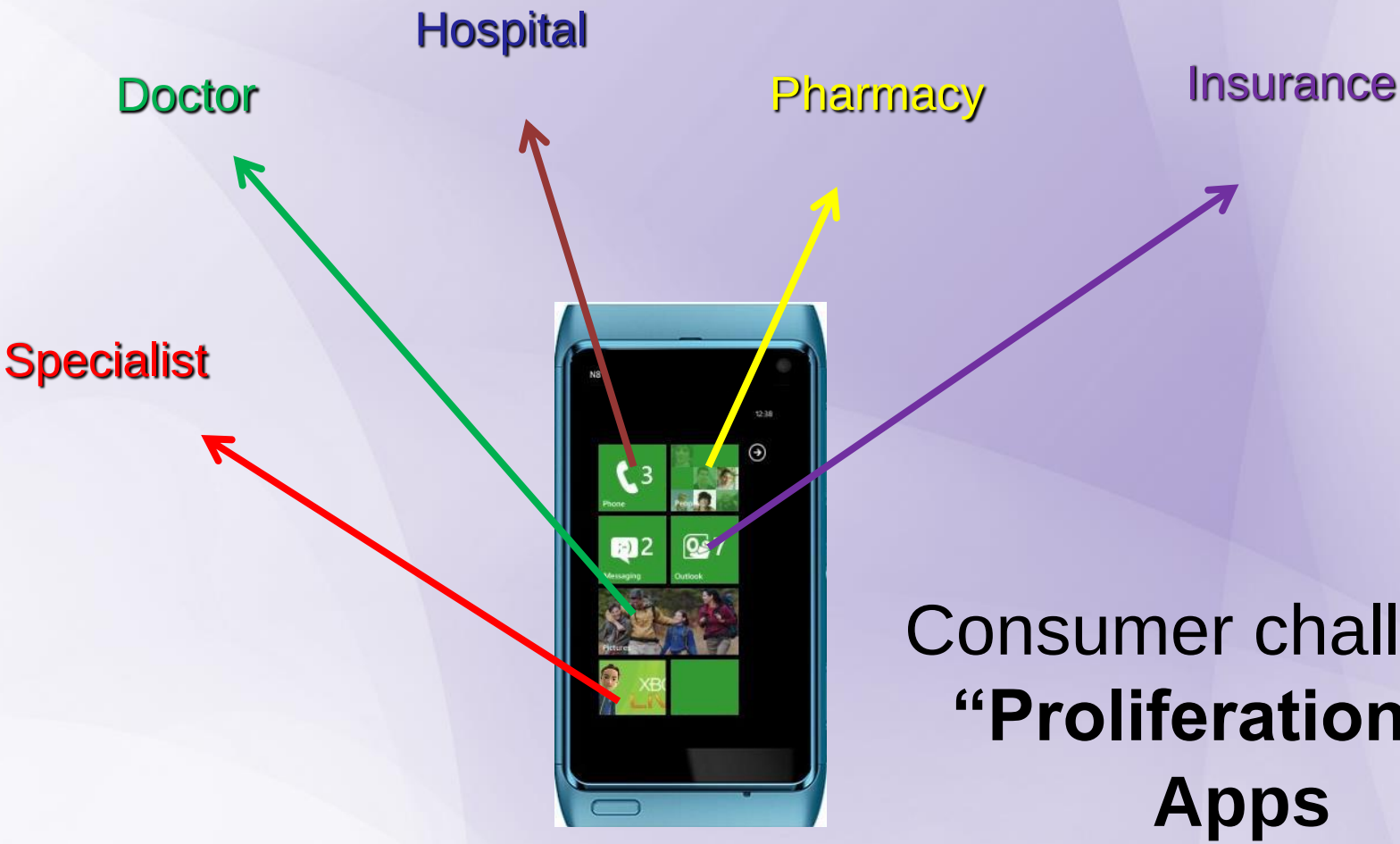
Device specific cloud-based personal health management application

Mobility increases number of silos

First: mHealth needs eHealth!

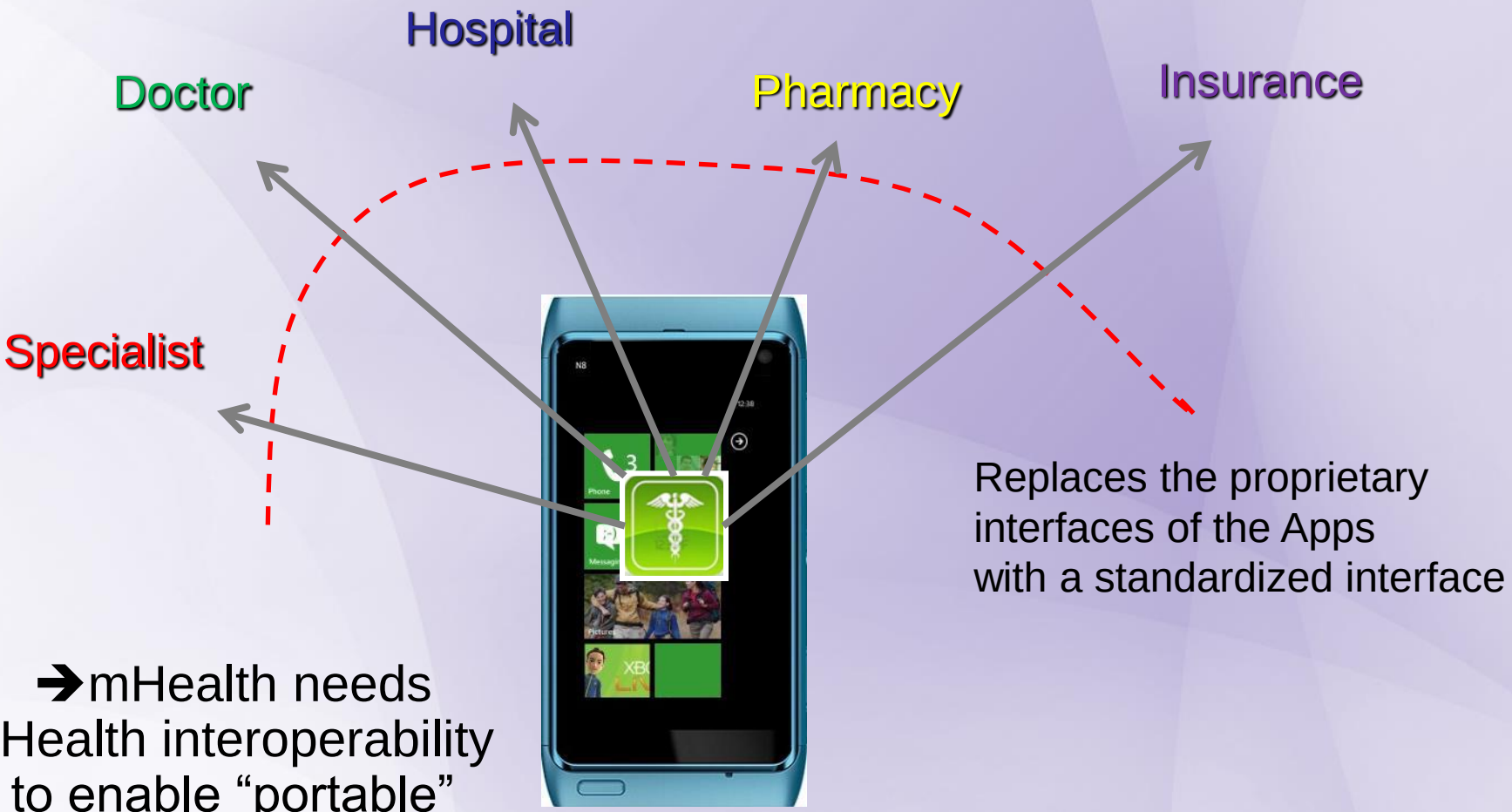


mHealth needs eHealth



Consumer challenge:
“Proliferation” of Apps

mHealth needs eHealth

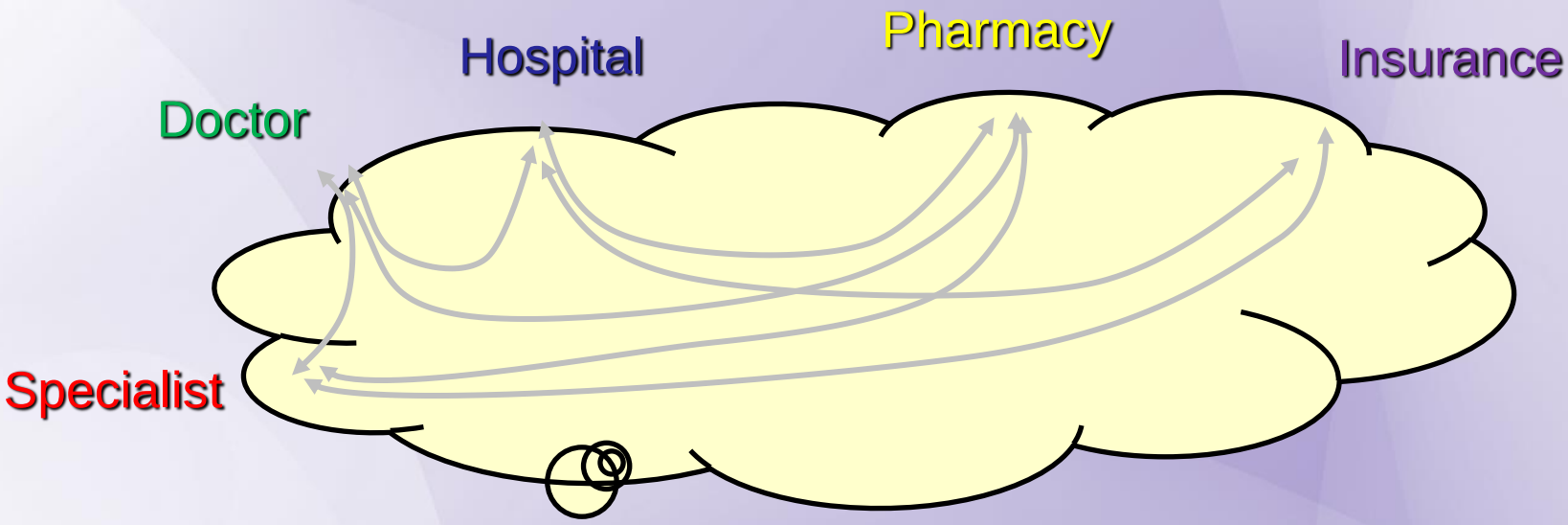


Replaces the proprietary interfaces of the Apps with a standardized interface

➔mHealth needs eHealth interoperability to enable “portable” generic Apps

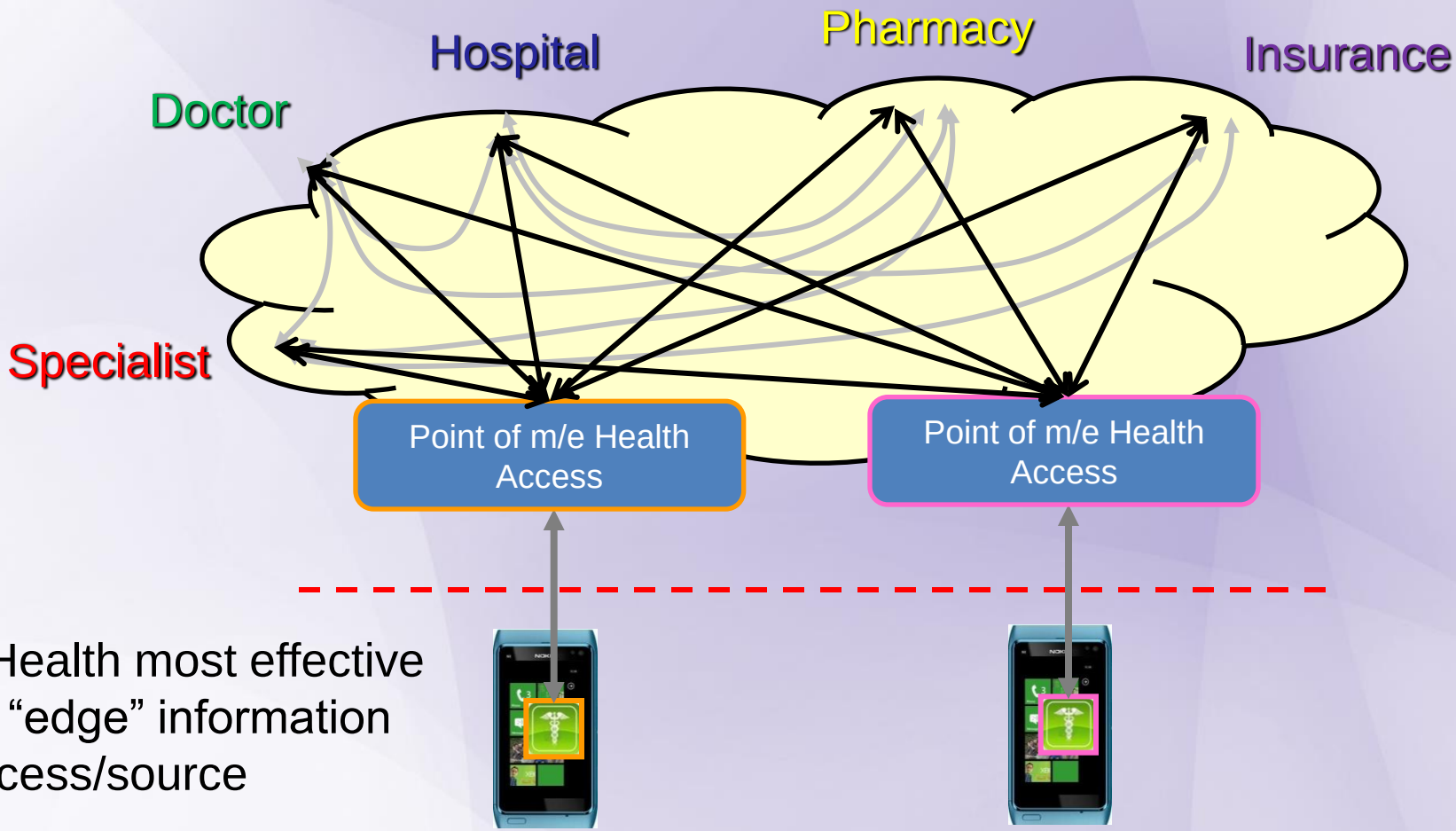
mHealth needs eHealth

➔eHealth interoperability
to provide an integrated and ubiquitous patient health view

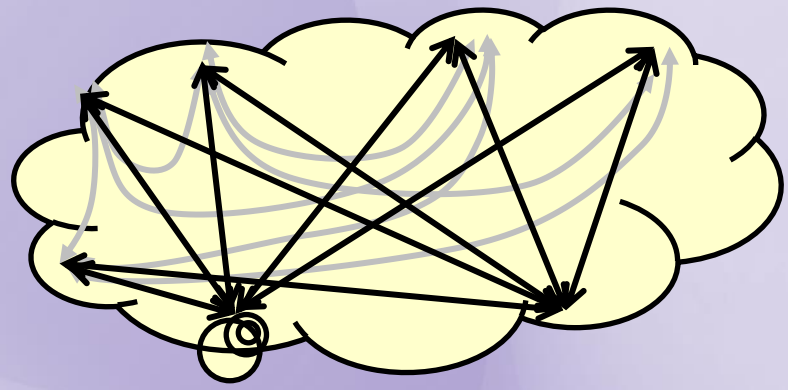


mHealth needs eHealth

mHealth needs eHealth interoperability to provide an integrated and ubiquitous patient health view



mHealth most effective as “edge” information access/source



Second: mHealth needs …

(1) international standards

(2) profiling!!!

FHIR

IHE

What is HL7 FHIR?

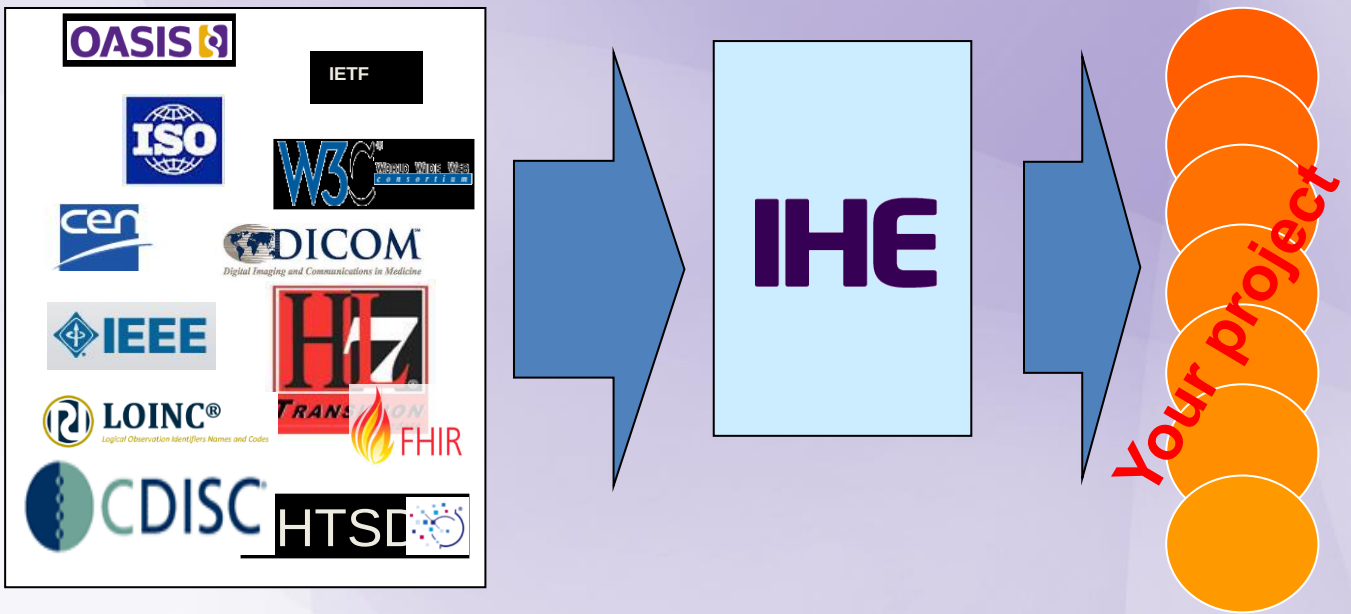
- **FHIR means “Fast Healthcare Interoperability Resources”**
  - Hot, cool, loved and hyped
- **FHIR is defining content!**
  - resources = content definitions
  - And how it’s transported from A to B (like HL7v2)
  - This is only a part of the whole
- **FHIR is an important addition to the standards portfolio**
  - But it remains complex to deploy at a multi-system level
  - The more FHIR matures and expands the more its complexity becomes apparent
- **Bad news: The complexity of use-cases does not disappear, just because you invent a new standard**
  - “The complexity must reside somewhere”

Currently

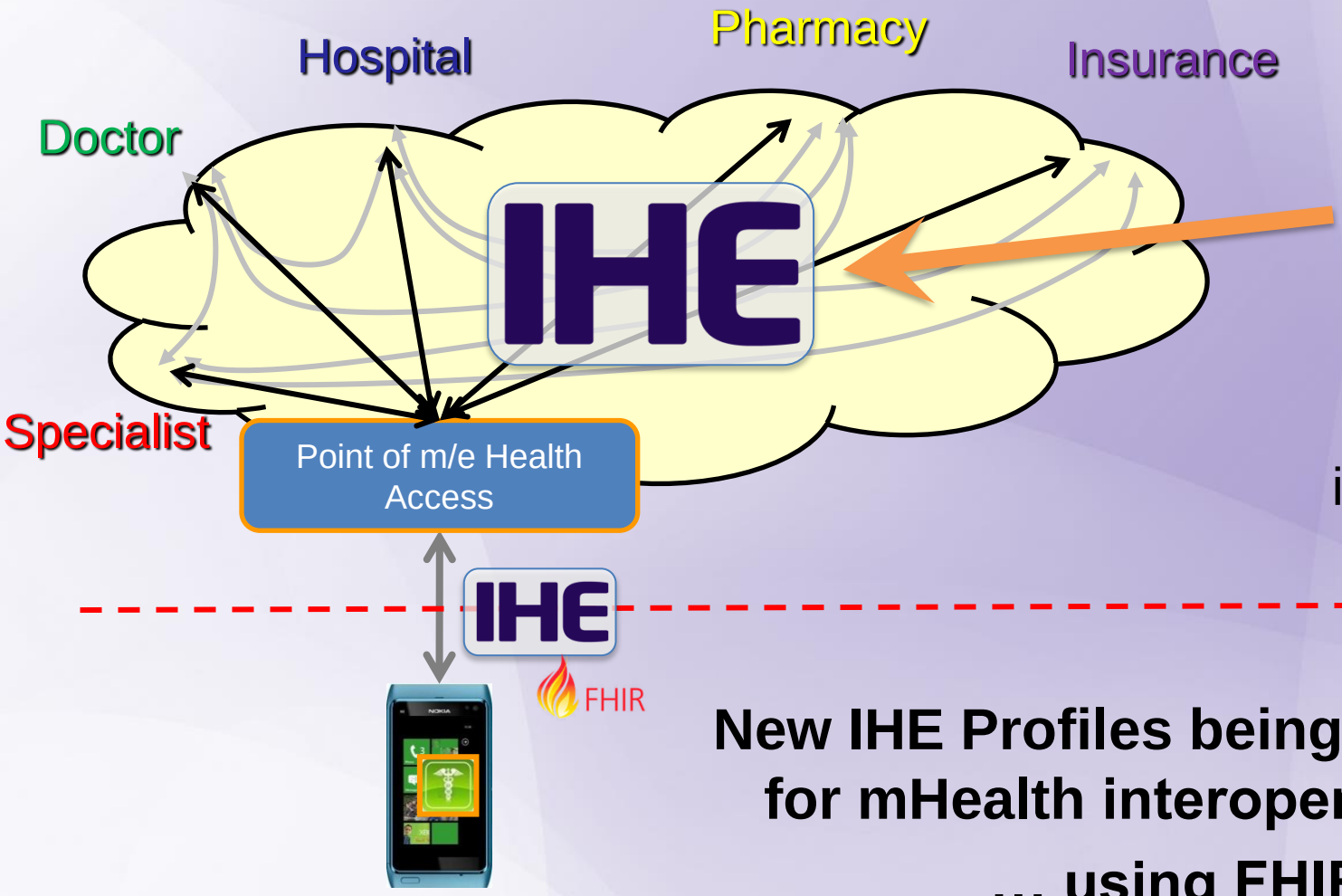
- **Current critical situation**
  - Many little Implementation projects are popping up
  - Similar situation as in 1999 when IHE was started to clear that …
    - … "everyone is implementing on standards, and nothing is interoperable"

- **Important to realize:**
  - An interoperability use-case requires so much more than just content definitions!
  - FHIR is no different than any other base standard
  - It needs serious profiling and combination with other standards

Third: Continue the sustainable approach and take what‘s already there!



IHE for „m“ and „e“



IHE Profiles available and widely accepted for eHealth interoperability

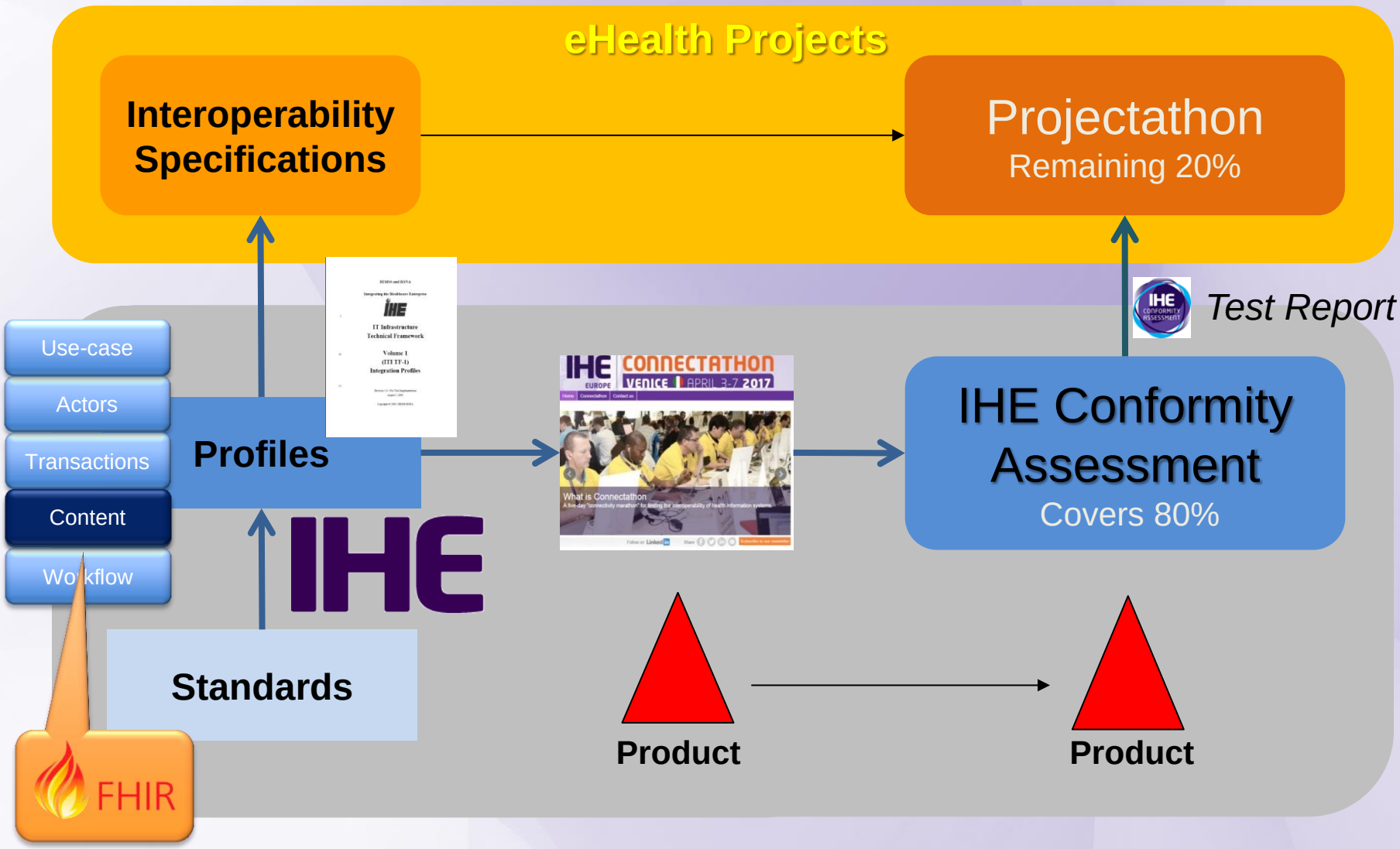
New IHE Profiles being developed for mHealth interoperability …

… using FHIR

IHE is profiling FHIR

- **IHE profiling of use-cases using FHIR is already done (see list later)**
  - We admit: much remains to bring it to a deployment maturity level it has not yet reached
  - Tricky situation for IHE: “IHE is profiling existing (= stable) standards”
    - FHIR is still STU3 (still subject to change!), but everyone is implementing
    - We took the situation as it is and started profiling anyway
- **Collaboration with HL7 FHIR working groups**
  - Shape up FHIR resources by experiences of IHE “before” they are released
- **Attention: A “FHIR profile” is <u>not</u> a profile in IHE sense**
  - It’s used to constrain FHIR resources
  - It’s just a “part” of an IHE profile

Where is FHIR?



Fourth: Pick from the list!

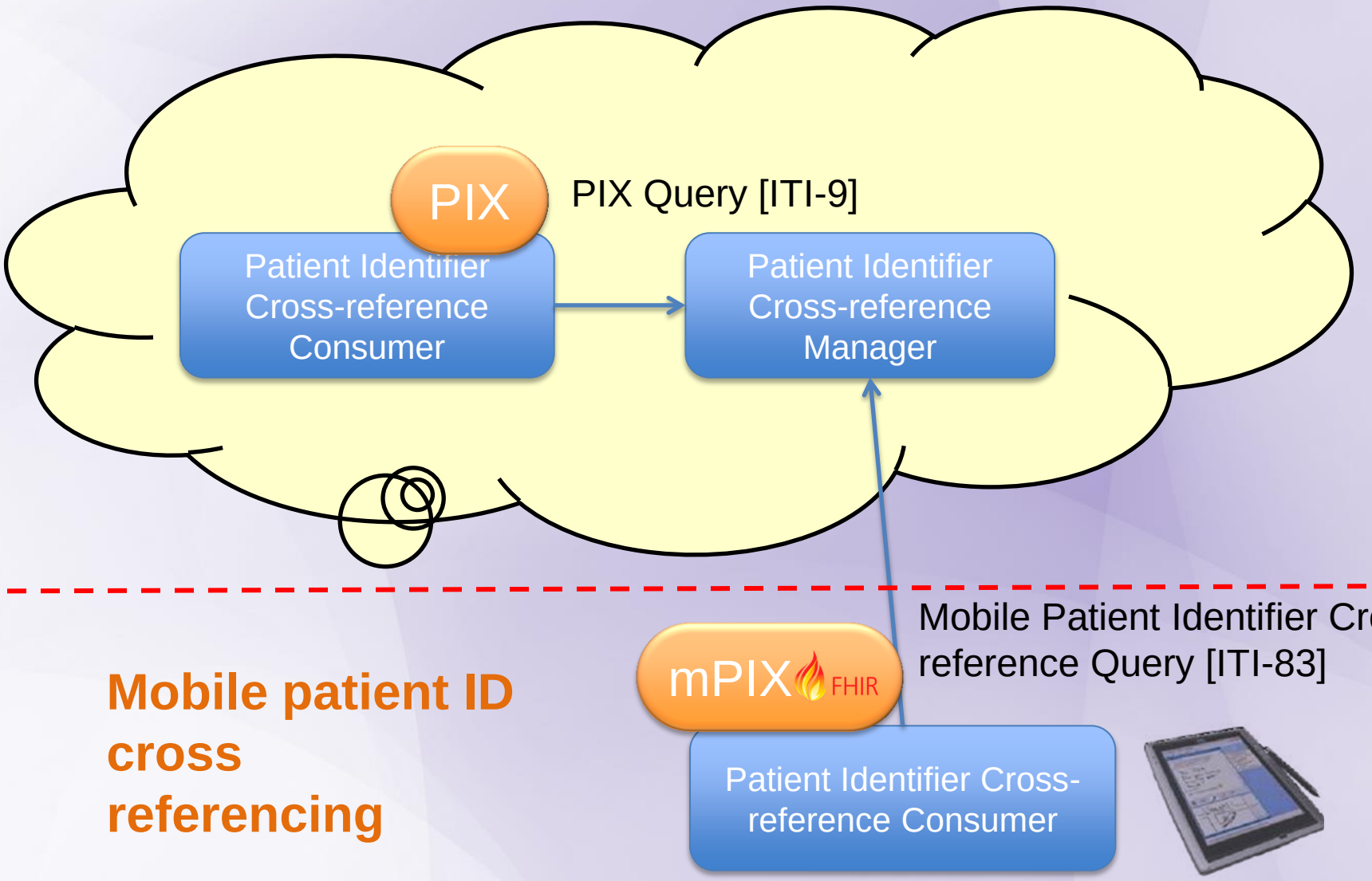
Patient Care Coordination

Quality Research and Public Health

IT-Infrastructure

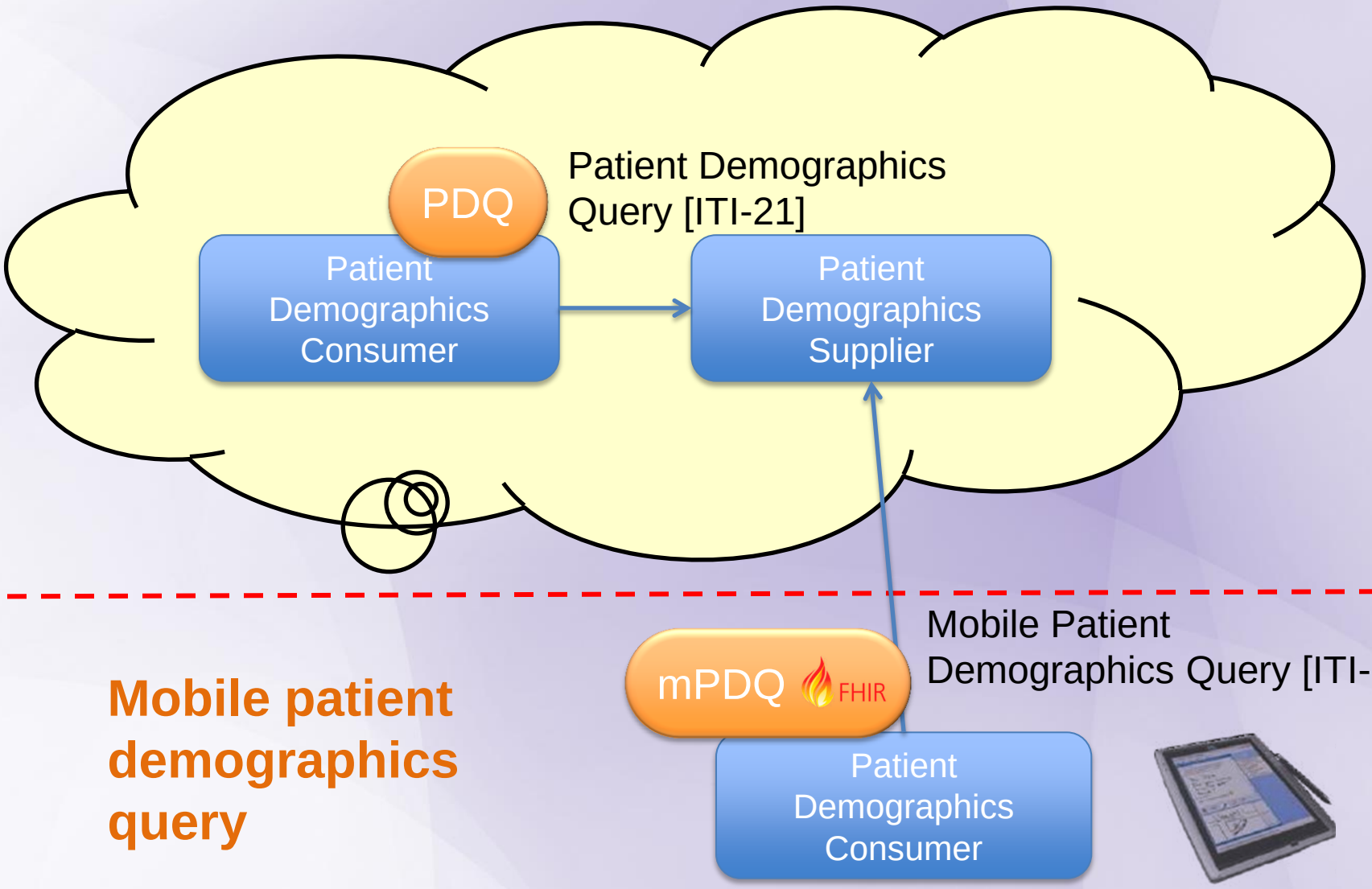
Pharmacy

Mobile Patient Identifier Cross-referencing (mPIX)



Mobile patient ID cross referencing

Mobile Patient Demographics Query (mPDQ)



Mobile patient demographics query

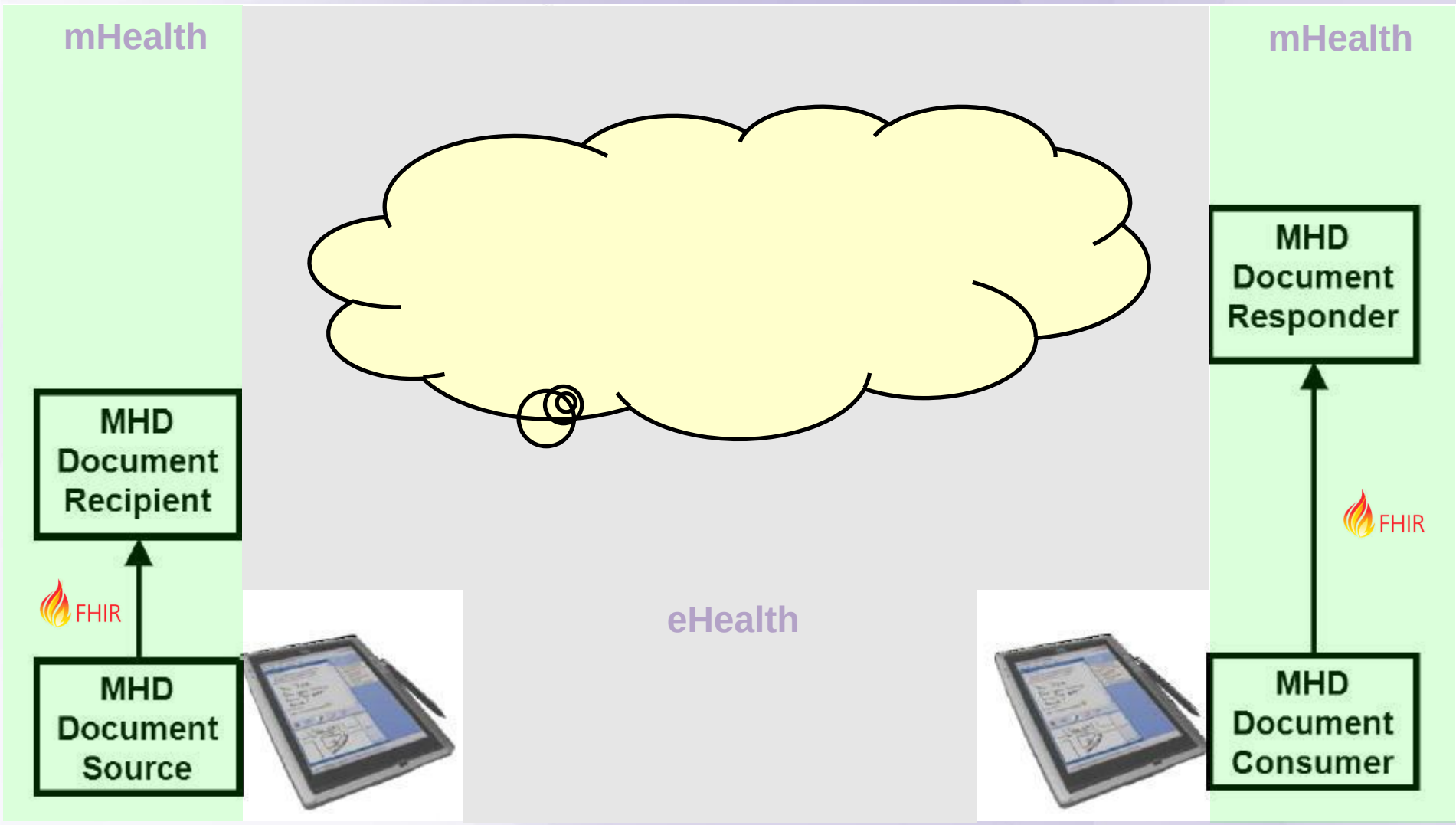
Granularity of data exchanged

Health information sharing relies on different granularity of exchanges:

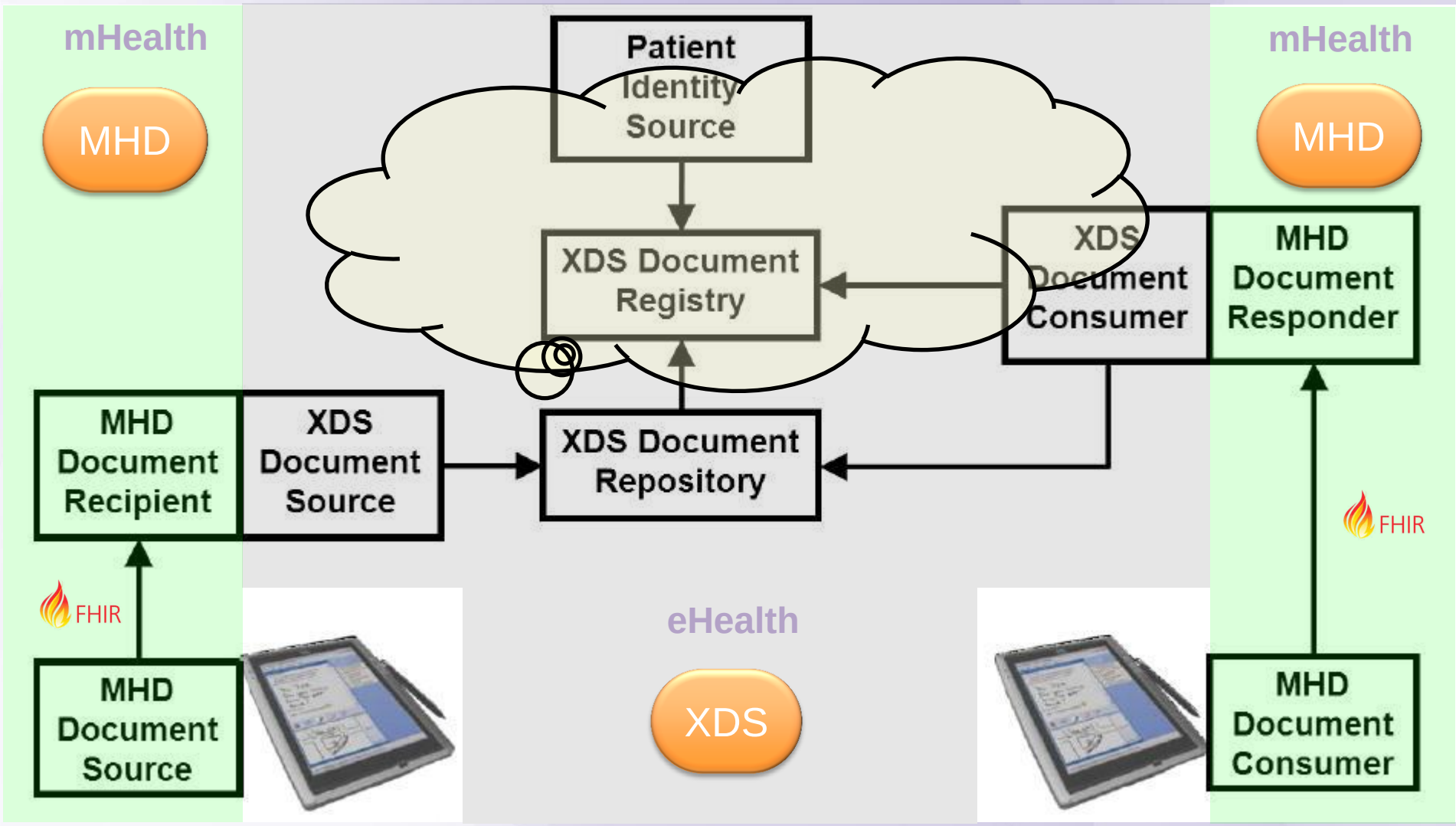
Document-Level Granularity:
optimum to ensure that contained data has clarity of context in care delivery and reflects source attestation (responsibility) of clinical data shared

Data Element-Level Granularity:
optimum when list of Data Elements relevant to a “time span” or a set of encounters are of interest (e.g.: the list of allergies at the time of medication dispensation, or information reconciliation at the time of hospital admission)

Mobile access to Health Documents (MHD)



MHD – the „XDS on FHIR“



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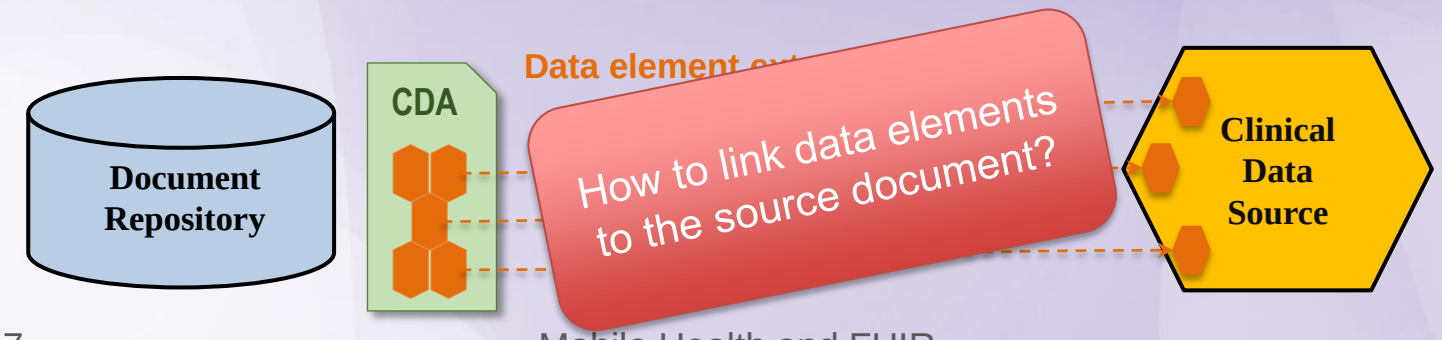
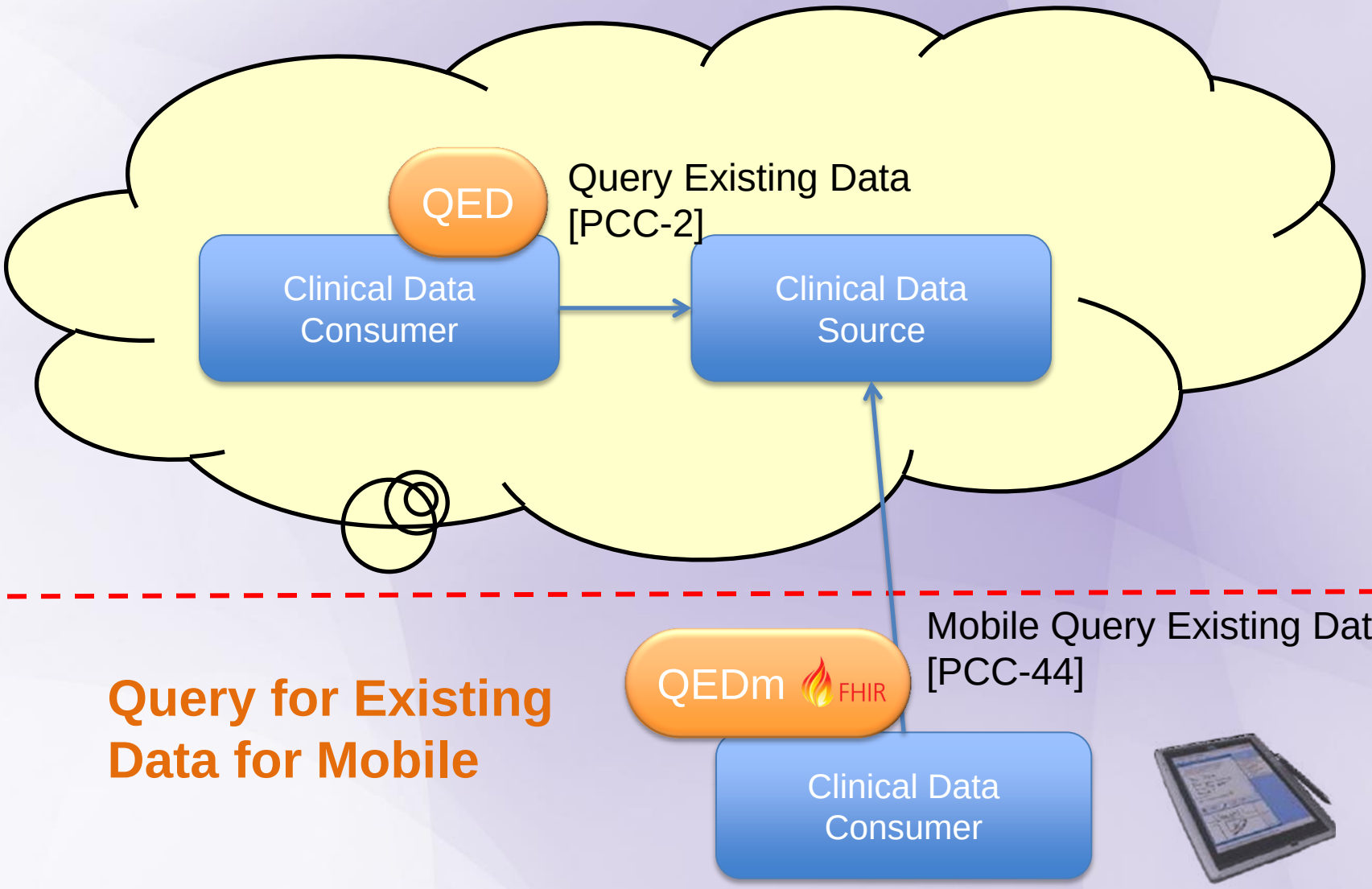


Query for Existing Data for Mobile (QEDm)



Query for Existing Data for Mobile

mXDE combines MHD & QEDm

mXDE = Mobile Cross-Enterprise Document Data Element Extraction

Health information sharing relies on different granularity of exchanges:

XDS & MHD

Document-Level Granularity:
optimum to ensure that contained data has clarity of context in care delivery and reflects source attestation (responsibility) of clinical data shared

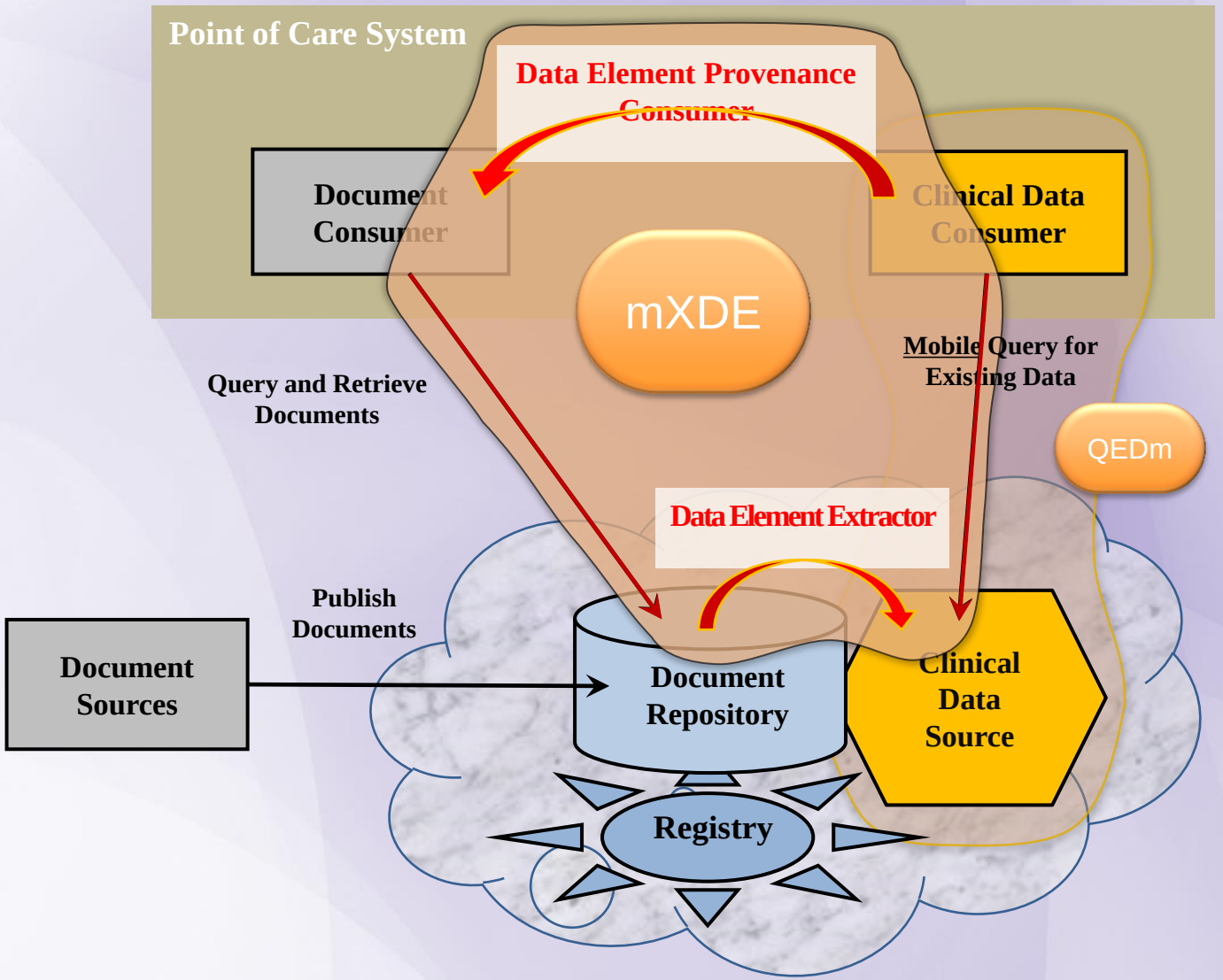
QED & QEDm

Data Element-Level Granularity:
optimum when list of Data Elements relevant to a “time span” or a set of encounters are of interest (e.g.: the list of allergies at the time of medication dispensation, or information reconciliation at the time of hospital admission)

mXDE

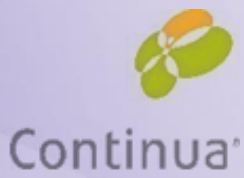
→ **Both granularity levels deliver different benefits and their efficient coexistence is the objective of the mXDE profile**

mXDE combines XDS & MHD with QEDm



IHE Integrating the Healthcare Enterprise

Fifth: IHE is not alone!

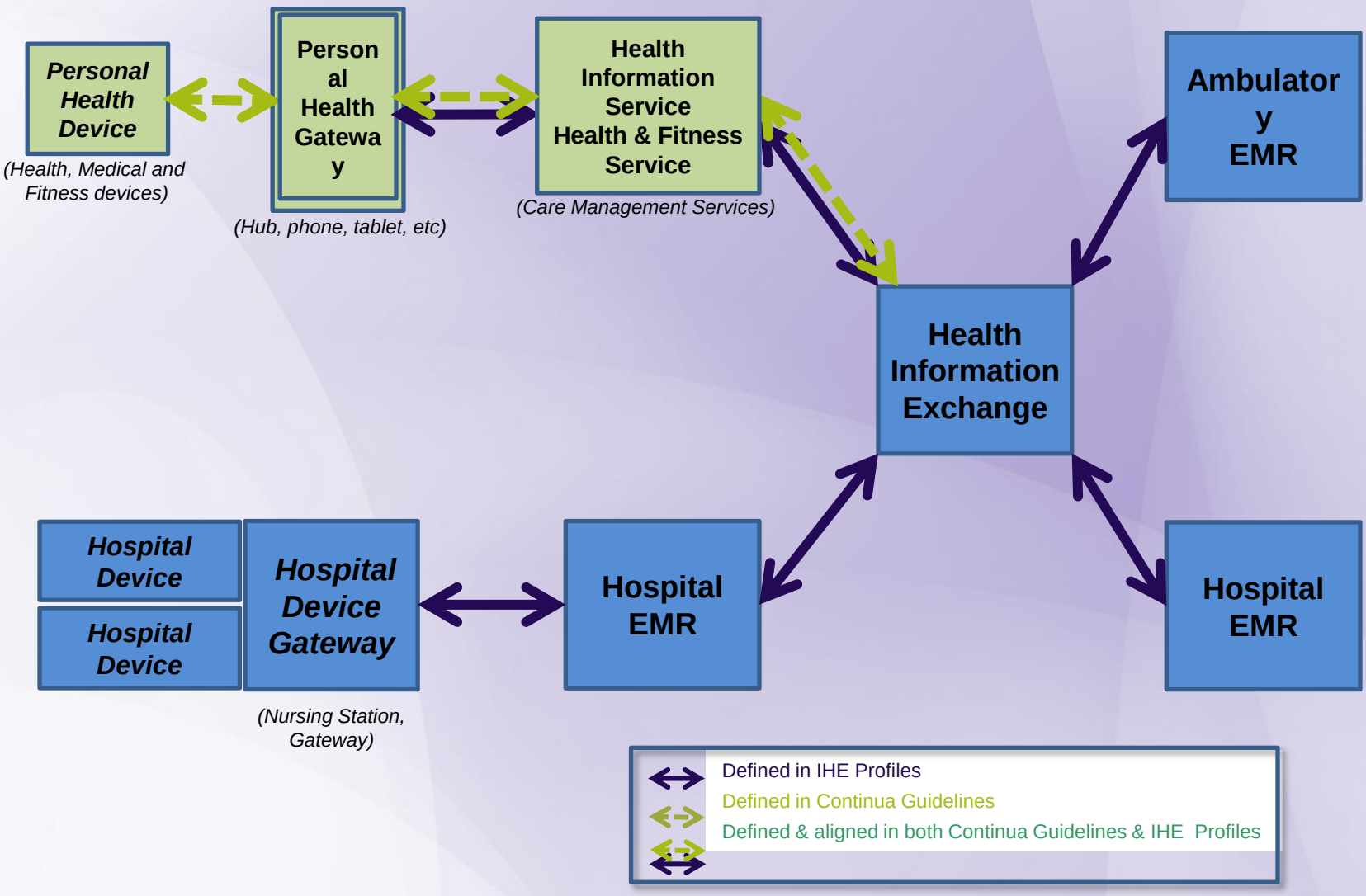


IHE and PCHA

- **IHE and Personal Connected Health Alliance (PCHA) are each focused on improving the ways health IT systems share information**

- **IHE Profiles and PCHA's Continua Design Guidelines are both standard-based, open specifications for health information exchange:**
  - Where they overlap they are consistent, resulting in a mature and interoperable information ecosystem
  - Together they ensure that device data whether captured by the patient or in a care delivery setting flows into electronic health records in the same format and coded content

Where to deploy IHE Profiles and PCHA's Continua Guidelines



How We Are Leading Together

(3 pronged plan)

- **Collaborating on future Profiles and Guidelines development**
  - Coordinating work programs between the two organizations
  - Enabling seamless integration between products using IHE Profiles and the Continua Design Guidelines to ensure the combined deployment of fully interoperable systems
- **Collaborating with each other's conformity testing and certification programs**
  - Aligning tools and processes
- **Collaborating on Communication, Education, and Product Interoperability Demonstrations**
  - Eliminating confusion among providers, vendors, and standards bodies about both organizations' standards and tools

For your offline viewing

FHIR based profiles of IHE (ITI)

- Mobile access to Health Documents (MHD) a profile on DocumentReference and DocumentManifest to provide a HTTP REST and Mobile application friendly API for the usecases profiled in XDS, XDR, and XCA. The MHD profile may be used as an API to these Document Sharing infrastructures, or may be used alone
- Patient Demographics Query for Mobile (PDQm) a profile of the FHIR Patient resource for simple lookup and reference. Following the functionality requirements profiled in PDQ (HL7 v2), and PDQv3 (HL7 v3)
- Patient Identifier Cross-reference for Mobile (PIXm) an operation profile for retrieving just cross-referenced identifiers for a given patient
- RESTful Query to ATNA a profile on AuditEvent for query and reporting
- Mobile Cross-Enterprise Document Data Element Extraction (mXDE) accesses data elements extracted from shared structured documents

FHIR based profiles of IHE (ITI)

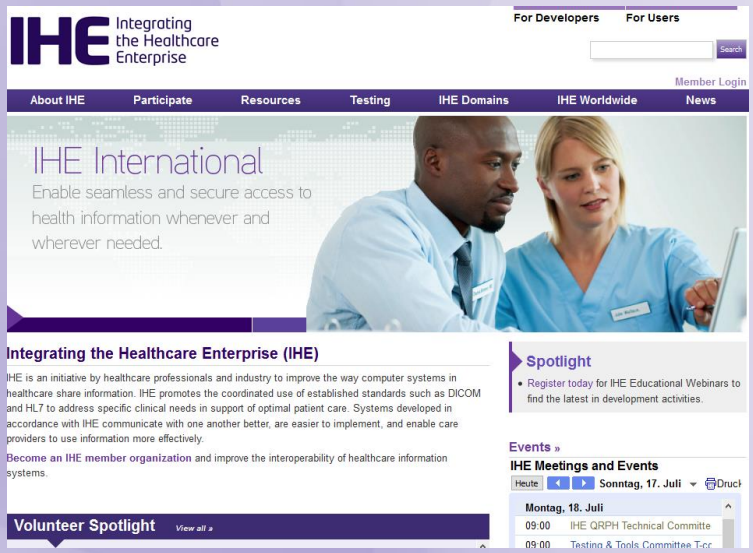
- Mobile Alert Communication Management (mACM) a profile on Communication for alert notifications
- Mobile Care Services Discovery (mCSD) provides a RESTful interface to discover Care Services: Organization, Location, Practitioner, and Health Services
- Mobile Cross-Enterprise Document Data Element Extraction (mXDE) accesses data elements extracted from shared structured documents
- Non-patient File Sharing (NPFSm) provides a RESTful interface enable sharing of non-patient files such as clinical workflow definitions, domain policies, and stylesheets
- Internet User Authorization (IUA) a profile of OAuth for use with HTTP REST access
- IHE Appendix Z on HL7 FHIR covers general constraints

FHIR based profiles of IHE (Other)

- Query for Existing Data for Mobile (QEDm) queries for clinical data elements, including observations, allergy and intolerances, conditions, diagnostic results, medications, immunizations, procedures, encounters and provenance
- Mobile Retrieve Form for Data Capture (mRFD) describes the exchange of context data to allow a seamless form launch with supporting clinical context
- Dynamic Care Planing (DCP) Profile provides the structures and transactions for care planning, sharing Care Plans that meet the needs of many, such as providers, patients and payers
- Mobile Medication Administration (MMA) describes the requesting and registering of administration of medication in a mobile setting
  (under development)

Links

- IHE Homepage
  - http://www.ihe.net/
  - http://www.ihe-europe.net/
  - http://www.ihe-austria.at/



- IHE Wiki
  - http://wiki.ihe.net/

- IHE International Social Media
  - YouTube channel: https://www.youtube.com/user/IHEIntl
  - IHE Webinars: http://www.ihe.net/Webinars/
  - Twitter: https://twitter.com/IHEIntl

- Google groups
  - https://groups.google.com/forum/#!search/ihe

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Changing the Way Healthcare CONNECTS

http://www.ihe.net

Jürgen Brandstätter

juergen.brandstaetter@ihe-europe.net

LinkedIn: https://www.linkedin.com/in/jbrandstaetter

Twitter: JuBrandstaetter