Mobile Cross-Enterprise Document Data Element Extraction (mXDE = MHD + QEDm)

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Documents are not optimal for FHIR clients

MHD eliminates the need to understand SOAP and ebXML.

- MHD enables API use of JSON or simple XML.

But Document format is not changed

- They are various formats (PDF, DICOM, CDA, CCR, etc)
  - CDA XML is not simple XML
- Apps tend to want summary without duplicates

Yet

- Apps will eventually need to know the integrity and authenticity of the data
- Apps may need to reference the source
- Many CDA today are just EHR data dumps –> Current Medical Summary
- FHIR provides nice sized chunks

Mobile is not excusive to Mobile

- Many IHE Profiles use “Mobile” as an indicator of use of FHIR
- Prime reason is to differentiate these from classic equivalent Profile
  - XDS vs MHD
- Secondary reason is to indicate use-case need is for lower more tool accessible technology
- Does NOT mean they are exclusive to Mobile applications

Query for Existing Data for Mobile (QEDm)

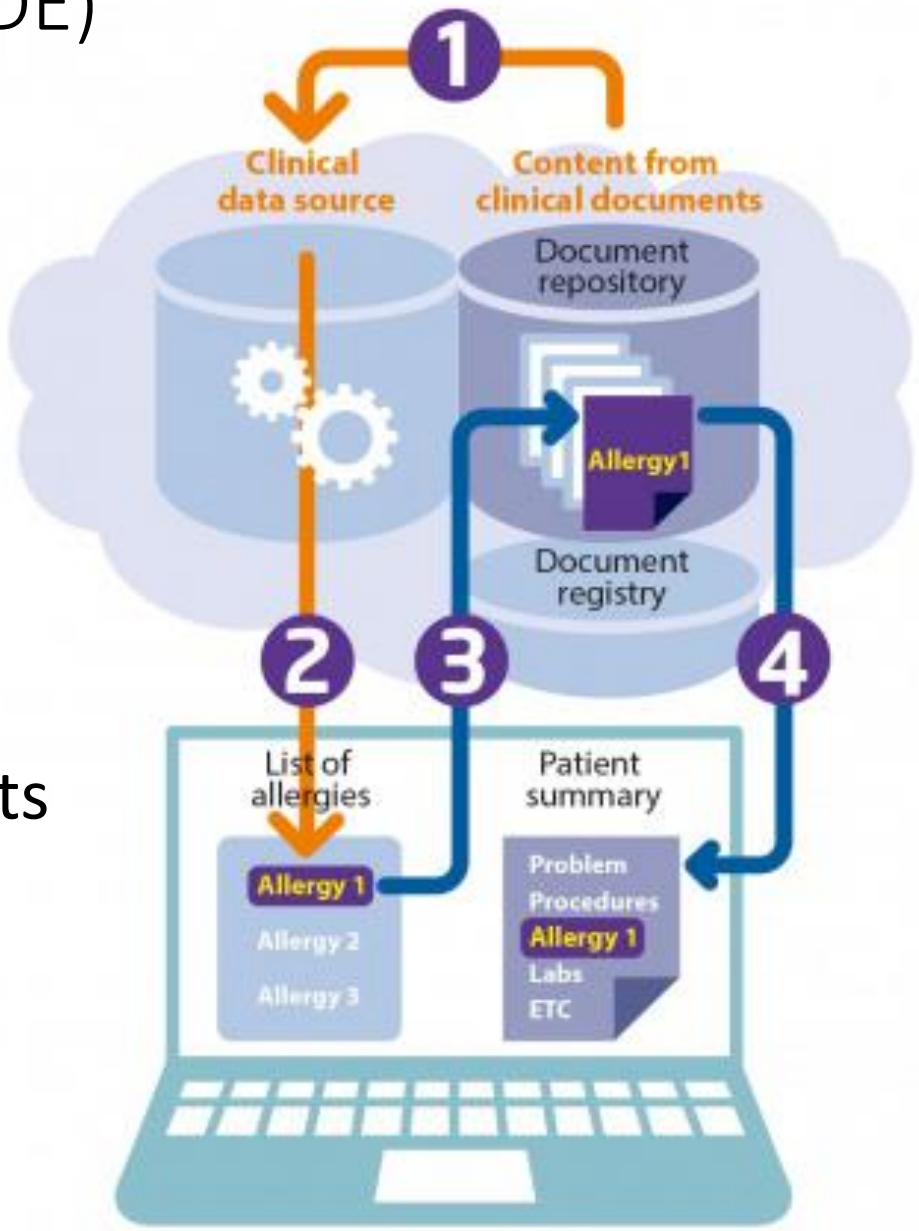
- Supports queries for clinical data elements (e.g., observations, allergies, etc.) by making the information widely available to other systems within and across enterprises
- Aimed at class of systems that are resource- and platform-constrained (e.g., tablets, smartphones, and embedded devices including home-health devices)
- Same as US Core but international

- Observation,
- AllergyIntolerance,
- Condition,
- DiagnosticReport,
- Medication,
- MedicationStatement,
- MedicationRequest,
- Immunization,
- Procedure,
- Encounter,
- Provenance,
- OperationOutcome,
- Bundle

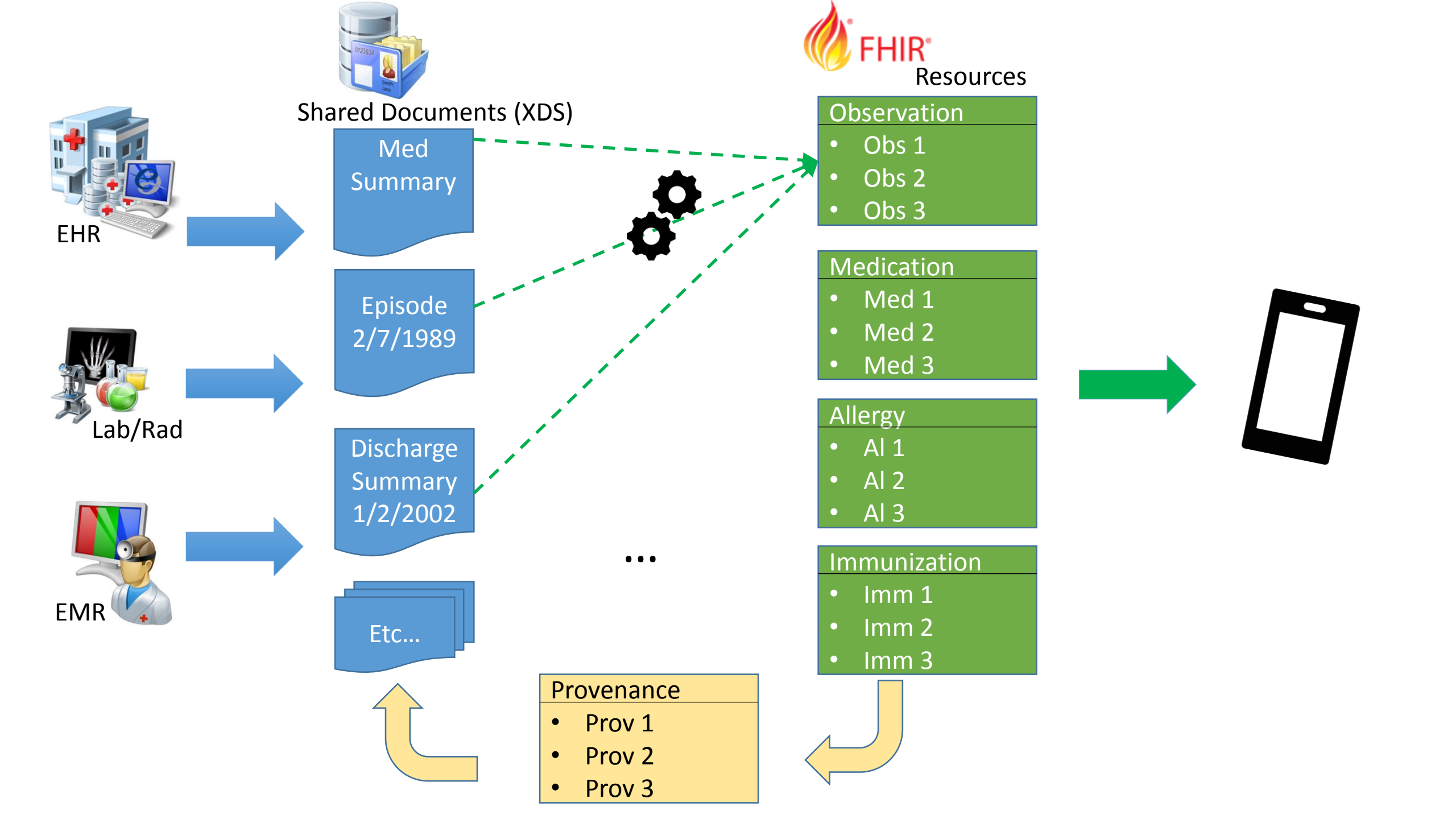
- Source: https://wiki.ihe.net/index.php/Query_for_Existing_Data_for_Mobile

Mobile Cross-Enterprise Document Data Element Extraction (mXDE)

- Provides means to access data elements extracted from shared structured documents
- Enables the deployment of health data exchange infrastructures where fine-grained access to health data coexists and complements the sharing of coarse-grained documents and the fine-grained data elements they contain
- Marries - MHD with QEDm



- Source: https://wiki.ihe.net/index.php/Mobile_Cross-Enterprise_Document_Data_Element_Extraction


Shared Documents (XDS)
FHIR
Resources
EHR
Lab/Rad
EMR
Med Summary
Episode 2/7/1989
Discharge Summary 1/2/2002
Etc…
...
Observation
• Obs 1
• Obs 2
• Obs 3
Medication
• Med 1
• Med 2
• Med 3
Allergy
• Al 1
• Al 2
• Al 3
Immunization
• Imm 1
• Imm 2
• Imm 3
Provenance
• Prov 1
• Prov 2
• Prov 3

Using Provenance

- Determine how often the Data Element is referenced (1 document vs all)
- Determine who has published the Data Element
- Pull the metadata -- DocumentReference
- Pull the Document
- Model for Provenance
  - One Provenance for each Document
  - Where a data Resource came from many documents, it will have many Provenance.target pointing at it
  - **Provenance.target** → 1..* Resources (the resources that came from this document)
  - **Provenance.recorded** → when the decomposition happened (might inform cache)
  - **Provenance.policy ==** "urn:ihe:pcc:qedm:2017:document-provenance-policy"
  - **Provenance.agent** → the software "ASEMBLER" that decomposed this document into these target Resources
  - **Provenance.entity** → the DocumentReference representing this document

Conclusion

Enabling technology for FHIR accessibility of Document Sharing

1. Builds upon Document Sharing
2. Utilizes IHE Profiles on FHIR (MHD, PDQm, QEDm, …)
3. Get Decomposed Documents as FHIR Resources
4. Get Provenance, so that get source Document

IHE Integrating the Healthcare Enterprise

References

- https://wiki.ihe.net/index.php/mXDE
- https://wiki.ihe.net/index.php/QEDm
- https://wiki.ihe.net/index.php/MHD
- https://wiki.ihe.net/index.php/Category:DocShare
- https://wiki.ihe.net/index.php/Category:FHIR