Record Lifecycle Events on FHIR
W5 Analysis and Recommendations
for FHIR DSTU-2.1

Gary Dickinson

Co-Chair, HL7 EHR WG

30 September 2015

Record Lifecycle Events on FHIR Project
Key Links

- FHIR W5 Report – Current Build
  - http://hl7-fhir.github.io/w5.html?
- FHIR DSTU-2 – EHR-S Record Lifecycle Event Implementation Guide
  - http://hl7.org/fhir/ehrsrle/ehrsrle.html
- FHIR Connectathon 10
  - EHR Record Lifecycle Architecture (Track 4)
  - 3-4 October 2015, HL7 Atlanta
  - http://wiki.hl7.org/index.php?title=FHIR_Connectathon_10
- RLE on FHIR Materials – HL7 EHR Interop Wiki:
  - http://wiki.hl7.org/index.php?title=EHR_Interoperability_WG

Record Lifecycle Events on FHIR Project
Mapping to FHIR

Requirements	Are Fulfilled by…
ISO/HL7 10781 EHR-S FM R2 Record Infrastructure (RI) → 24(+3) Record Lifecycle Events	Implementable FHIR Resources
<u>Basic Lifecycle Event</u>	• AuditEvent
<u>Provenance Lifecycle Event</u> when Record Entry content is **created** or **updated**	• AuditEvent • Provenance • Other new/updated resource(s) → corresponding to Action Taken

⬆ Resources may also be indivisibly and immutably bound by one or more digital signatures in a Record Entry.
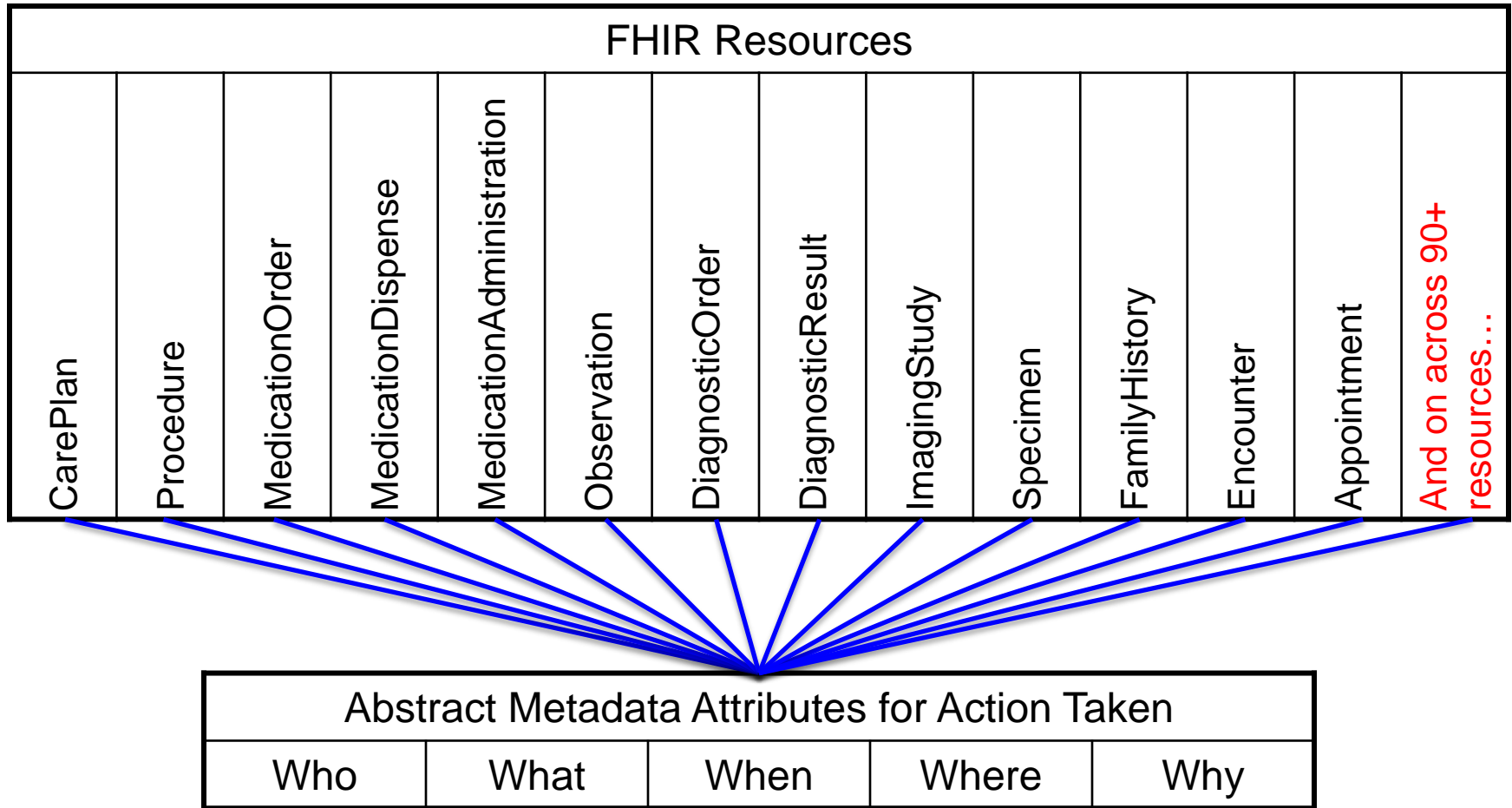
Fundamentals

- Actors take Actions
- Actors may be individuals, organizations and/or software/devices
- EHR and PHR Record Entries <u>document</u> (show <u>evidence</u> of) Actions Taken in health and healthcare
- Actions and Record Entries have separate (yet corresponding) sets of metadata
- Thus: Action W5 + Record Entry W5

Action/Record Entry W5 Metadata

Action	Is documented/evidenced by	Record Entry
Action W5: Who/role – Action focus, subject, patient Who/role – Action performer, assistant, witness What – Action taken When – Action date/time/duration Where – Action physical location Why – Action rationale, purpose		**Record Entry W5:** Who/role – Entry target, subject, patient Who/role – Entry author, scribe, verifier, attester, witness… What – Entry Action: originate, update, verify, attest, exchange… When – Entry date/time Where – Entry device ID, network address Why – Entry rationale, purpose
Expressed across all FHIR resources		Fully Expressed in FHIR AuditEvent and Provenance resources when bound to other FHIR resources

Action Metadata
Abstract Attributes

FHIR Resources

CarePlan | Procedure | MedicationOrder | MedicationDispense | MedicationAdministration | Observation | DiagnosticOrder | DiagnosticResult | ImagingStudy | Specimen | FamilyHistory | Encounter | Appointment | And on across 90+ resources…

Abstract Metadata Attributes for Action Taken				
Who	What	When	Where	Why

W5 Recommendations

- Differentiate intent and outcome sections in Provenance

- Distinguish:
  - Action W5
  - Record Entry W5

W5 Recommendations

- Establish W5 elements in
  – AuditEvent as a base set, then
  – Select Provenance set, then
  – Select <any resource> set
- Ensure clear semantics of value sets

W5 Recommendations

- Encourage high degree of consistency of W5 element names, descriptions, data types, code/value sets

  - Establishing consistent set of resource participants

  - Minimizing need for a mapping table, such W5 Report

  - Focus on code/value sets as separate step

W5 Recommendations

- Establish what could/may be "left behind" at the point of exchange
  - Yet preserving backward traceability
- Ensure W5 synchrony at same Action Instant (point in time)?
  - As captured in FHIR instance
  - Synchronous Snapshot to ensure we can actually track
    - Who did What, When, Where and Why

Use Cases

- FHIR RLE Use Cases to demonstrate use of
  - Audit log evidence (AuditEvent) and
  - EHR record entry evidence (Provenance bound to FHIR Action-related Resources) and
  - W5 metadata
- Security Audit – Glen Marshall
- Pharmacy Medication Tracking – Julia Chan