

What is FRiNK, and how might you use it?

A high-level overview with something of interest for everyone, from students to the C-suite.

Justin McReynolds, University of Washington

<https://www.uwfhir.org>

UNIVERSITY *of* WASHINGTON



SPEAKER: JUSTIN MCREYNOLDS

- > **Technical Program Manager, UW Clinical Informatics Research Group**
- > **MS Biomedical & Health Informatics, UW School of Medicine**
- > **Health Informatics for clinical, consumer, population, research...**
- > **Yes, I still do like to write software!**

> **This talk: <https://github.com/mcjustin/uwfhir-talk-2020>**

<https://creativecommons.org/licenses/by/3.0> (do as you wish, but attribute)

UNIVERSITY *of* WASHINGTON

UW CIRG's FHIR STORY

WE'VE BEEN AT IT SINCE 2014...

- > **2014: Internal APIs (RESTful ajax)**
- > **2015: Nascent SMART on FHIR architectures**
- > **2017: Integrations with ~8 partners**
- > **HL7 Connectathons & ONC pilots along the way...**
- > **2020: Most new work is FHIR**

FAST HEALTHCARE INTEROPERABILITY RESOURCES “MANIFESTO”

- > Focus on implementers**
- > Target support for common scenarios**
- > Leverage cross-industry web technologies**
- > Human readability as base level of interoperability**
- > Make content freely available**
- > Support multiple paradigms & architectures**
- > Demonstrate best practice governance**

FHIR “LEVELS”

REACHING FOR THE GRAIL...

- 1. Basic framework on which the specification is built**
- 2. Supports implementation, external specifications**
- 3. Linking to real world concepts in healthcare**
- 4. Record-keeping & data exchange for healthcare process**
- 5. The ability to reason about the healthcare**

FUNDAMENTAL CAPACITIES: COMM CHANNELS

THE BASE LAYER TO KEEP YOU WARM...

- > **RESTful APIs (modern http-based comms)**
- > **Messaging (machine to machine, efficient, legacy)**
- > **Document exchange (support for legacy eg CCDA)**
- > **Bulk Data ("Flat FHIR") large volumes for population health and research analysis (nascent)**

FUNDAMENTALS: “RESOURCES” (DATA MODELS)

THE BASE LAYER TO KEEP YOU WARM...

- > **This is the actual data**
- > **E.g. Patients, Observation, Appointment, CarePlan**
- > **Categories eg: Terminology, Clinical, Workflow, Financial, Administration, Security & Privacy**
- > **Human readable**

A SIMPLE TECHNICAL EXAMPLE

Get the patient w/ medical record number 123

GET <https://myfhirserver/Patient?identifier=MR-123>



WEB STANDARD, HUMAN READABLE (VERBOSE)

GET <https://myfhirserver/Patient?identifier=MR-123>
That returns this data in JSON (JavaScript Object
Notation):

```
{
  "resourceType": "Bundle",
  "id": "1.2.840.113619.21.1.1566559555105852911.10.1599847628615.341412",
  "meta": {
    "lastUpdated": "2020-09-11T18:07:08.615Z"
  },
  "type": "searchset",
  "total": 1,
  "link": [
    {
      "relation": "self",
      "url": "https://apsandbox.fhirapi.athenahealth.com/demoAPIServer/fhir/Patient?_format=json&identifier=MR-123"
    }
  ],
  "entry": [
```



HIGHER LEVEL STANDARDIZATION & GUIDANCE

HEAT RISES: HIGHER LEVEL OF CONTEXT

- > **Implementation Guides (IG) - scores of these**
 - SMART on FHIR - “app store for EMR’s”
 - FHIR Bulk Data Access
 - CARIN Blue Button
 - Data Exchange for Quality Measures (Da Vinci)
 - Electronic Case Reporting

HIGHER LEVEL STANDARDIZATION & GUIDANCE

HEAT RISES: HIGHER LEVEL OF CONTEXT

- > **Clinical Reasoning**
 - CDS Hooks

INTEGRATION POINTS WITH OTHER INNOVATIONS

ELEMENTS OF A “REAL-TIME HEALTH SYSTEM”

- > AI / machine learning / NLP
- > IoT
- > Sensors

ADOPTION

US FEDERAL MANDATES

- > **The Office of the National Coordinator for Health Information Technology's (ONC's) Interoperability and Information-Blocking Final Rule**
- > **U.S. Centers for Medicare & Medicaid Services (CMS) Interoperability and Patient Access final rule (2020/2021)**

ADOPTION

US FEDERAL MANDATES

U.S. Centers for Medicare & Medicaid Services (CMS) Interoperability and Patient Access final rule

- Clinical data exchanged via the FHIR API, using the U.S. Core Data for Interoperability (USCDI)**
- CARIN Consumer Directed Payer Data Exchange - Medicare fee-for-service beneficiaries' digital access to their historical claims information through an application of their choice**

ADOPTION

US FEDERAL MANDATES

Open FHIR APIs

One result: open FHIR endpoints published by EMR vendors, eg:

<https://open.epic.com/MyApps/Endpoints>

ADOPTION

COMMERCIAL / CONSUMER

- > **Apple Health - iOS integration of data from multiple clinical organizations**
- > **<https://1up.health>**

ADOPTION

SOCIAL ENABLER

- > **“Data Liberation” movement**
 - Patients as a first-level participant in FHIR
 - <https://www.epatientdave.com>
 - > Check out his “Gimme my data” rap!

CHALLENGES

DON'T BURN ANYONE

- > **FHIR removes many hurdles, but “real” health informatics systems are difficult to build and own!**
- > **Enterprise-level requirements**
- > **Clinical Safety checklist**
 - <https://www.hl7.org/fhir/safety.html>
- > **Can be tough to innovate in standards, and other parts of projects simultaneously**

Thank you for your attention!
Questions?

Check out the remaining sessions!
Justin McReynolds, University of Washington

<https://www.uwfhir.org>

UNIVERSITY *of* WASHINGTON

