The Origins and Nature of FHIR

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InterSystems
What if HL7 created a new interoperability standard starting from scratch?
HL7 version2 (2.x) is 30 years old.

HL7 CDA® is over 10 years old.
Interoperability: 1980s
Interoperability: The Future

- Payer
- Hospital
- Physician
- Researcher
- Social service agency
- Government
- Pharma/device company
- Bio Bank
- Genomic Sequence Lab
- Laboratory
- Home care agency
- Mobile devices
- Specialty clinic
- Pharmacy
- Rehab
- Senior center
- Home devices
- Family
- Laboratory
- Rehab
- Patient
The Burning Platform: Overwhelming complexity

Human cognitive capacity

William Stead, et al
Fast Healthcare Interoperability Resources

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REST: The Essence of FHIR

REpresentational State

Google, Twitter, FaceBook

Your favorite travel website
Your favorite travel site

Compare Cheap Flights on these Recommended Sites:

- Expedia
- CheapFareGuru
- CheapOair
- Kayak
- JustaTicket

See Rates

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FHIR is both the technology and the agreement on the meaning of the data.
"Resources" are:

- Small logically discrete units of exchange
- Known identity / location
- Smallest unit of transaction
- Defined behavior and meaning
FHIR Extensions: 80/20 Rule

FHIR Resources have data elements if **80%** of existing systems include them

Extensions are the other **20%**

- Meet specific use cases
- The encoding looks no different,
  just not in the standard

Do it in your organization, but doesn't scale unless the Extension has been shared
FHIR Profiles

Profiles are basis of implementation
Built for specific use cases from simple to complex
Encompass the entire scenario

Profiles include constraints for a use case
Multiple Resources & Extensions: FHIR building blocks
Vocabulary/terminology/code binding

Interoperability is in the FHIR Profiles
FHIR Profiles are based on information models
Only shared profiles create interoperability
Ah-ha moment on FHIR

Regardless of paradigm the content is the same*

It’s straight-forward to share content across paradigms e.g. Receive a lab result in a message. Package it in a discharge summary document.

It also means constraints can be shared across paradigms e.g. Define a profile for Blood Pressure; use same resources in messages, documents, REST and services.

* Ah-ha!!
FHIR Supports
4 Interoperability Paradigms

- RESTful
- Documents
- Messages
- Services
Timeline: Where does FHIR fit?
Today &

The Future
The Challenge
A black horse with white stripes
..... or a white horse with black stripes?

Photo by Lukas Kaffer
Clinical information model: representation of the concepts, rules, relationships, & constraints.
Why does it matter?
The Challenge of Defining Chronic Diseases

Asthma defined:
Review of 113 articles,
of which 106 articles relied upon definitions the validity of which were not justified.

Defining asthma and assessing asthma outcomes using electronic health record data: a systematic scoping review
Mohammad A. Al Sallakh, Eleftheria Vasileiou, Sarah E. Rodgers, Ronan A. Lyons, Aziz Sheikh, Gwyneth A. Davies
European Respiratory Journal 2017 49: 1700204
What if you took scissors and cut a History & Physical into data elements?
Profile for a Procedure in FHIR
Decision Support

Limited by the inefficiency of developing CDS for each EHR or System

Shared Data Element Definitions and Clinical Data Models enable CDS services that sit outside EHRs
Population Health

Population Health will increasingly require accessing data across many systems. This should be the data collected in clinical care reused.

Quality Metrics, CDS, and Clinical Registries to support Population Health will depend on implementation of shared information models.
Isn’t FHIR just a draft standard that is still being developed and tested?
iPhone Maturity Model

- People purchased and used the iPhone 2
- It did not have all of the features of iPhone 3
- Some features were improved, some were added
- iPhone 7 is even better, but you can still use earlier iPhones
Thank you.