# The future of FHIR

It’s been almost 8 years since Grahame Grieve first brought an idea he called “Resources for Health” to HL7. Since then, we’ve reshaped HL7’s processes and priorities, held at least a hundred connectathons in various parts of the world, formed FHIR communities on every continent except Antarctica, and moved FHIR into production at thousands of sites worldwide.

So – what comes next? **(new slide)**

From HL7’s perspective, some things are pretty clear.

* The ‘common’ clinical resources – those typically used by EMRs and similar systems– have largely been defined and are increasingly stable. However, we’re going to continue to define new resources for newer interoperability areas and heavily regulated areas where FHIR adoption has been slower. For example, the drug product approval resources introduced as draft in R4, or the public health and evidence-based medicine we’re looking at now.
* These graphs are estimates, but we’ve got a decent sense of our expected scope and trajectory. Over the next 10 years or so, FHIR will continue to move more resources to normative
  + The most common of these – AllergyIntolerance, Procedure, MedicationRequest, etc. should be locked down around the end of 2020 or early 2021
* As a result of this increasing stability, the focus and energy we put into the FHIR core specification is already starting to decline – and that will continue as more and more of the core spec becomes stable.

Where is that energy going to go? **(new slide)**

* Some portion will go into developing and supporting new technologies that sit on top of FHIR – things like SMART, CDS Hooks and newer technologies like Bulk Data and FHIRCast,
  + In many ways, the technologies built on top of FIHR are even more exciting than the FHIR core specification. These technologies fundamentally change healthcare IT architectures and introduce new business models
  + We expect to continue to see new layers being designed that sit on top of FHIR, though it’s hard to predict exactly what they’ll do
* **(new slide)** Some energy will continue to go into improved support for implementers – testing tools, open source solutions, visual navigation tools, guidance for converting from other standards, language translations, etc.
* **(new slide)** However, most of HL7’s energy – and the community’s energy – will go into the creation of implementation guides
  + The base FHIR specification gives a **framework** for interoperability. Implementation guides apply that framework to solve real-world issues – for example, genomics, registries, financial management, etc.
  + At present, HL7 is balloting 20-30 FHIR IGs/year. The world at large is building many times that. That rate is going to double or triple over the next few of years, driven by the increased stability of the specification, greater implementation of FHIR in general and improved tooling for IG creation
* **(new slide)**One of the most important elements of FHIR’s success is the community:
  + The people who build the tools, test environments, reference implementations and other infrastructure implementers rely on
  + The people who ask questions and those who provide answers and nudge implementations towards greater consistency
  + The people who implement FHIR and report where the problems are so that other implementers can avoid them and future versions of the specification can fix them
* **(new slide)**The FHIR community has grown into the thousands and it’s continuing to get larger
* **(new slide)**That community isn’t just HL7. IHE is going full blast developing FHIR implementation guides. X12, NCPDP and others have also coordinated around the development of FHIR content and implementation guides. **(new slide)** New groups have also formed, such as Argonaut, Carin Alliance and Davinci
  + For older SDOs, there’s increased interest – and absolutely a possibility – of those SDOs creating and publishing their own FHIR implementation guides. The base specification and the tooling are freely available – why not leverage the standards communities that already exist to create the specifications implementers want?
  + The community can also grow beyond “traditional” standards developers. Professional organizations like ASCO (the American Society of Clinical Oncology) can and should create implementation guides that reflect the expertise and needs of their membership
* As the community continues to grow, we’re almost certainly going to run into scaling problems. We want to maintain FHIR’s open, practical, implementer-focused nature, but we’re integrating the cultures and practices of a lot of different organizations and countries. That won’t always go smoothly.
* To help mitigate some of these issues, HL7 – in conjunction with other SDOs – is developing a FHIR Community Process to encourage a degree of consistency and coordination as the FHIR community continues to expand
* **(new slide)**Obviously FHIR will continue to penetrate new spaces – driven by the market as well as regulation. Those who have held back waiting to see what was going to happen will start rolling out FHIR solutions
* Those with legacy solutions built on CDA and v2 interfaces will leverage the translation work that’s happening now to expose parallel FHIR interfaces
  + though they may find that getting the full benefit of FHIR will require re-architecting, not just data format conversion
* As specifications and implementations start to stabilize, there’ll be increased talk about certification, though we’re not yet sure how important that will be – or how it will work.
* Those who have implemented FHIR APIs will continue to make their way up the sophistication scale
  + **(new slide)** Implementers typically start with, read only access – because it requires the least changes to their existing system
  + From there, they move to write access for objects that are typically only written once (Observations, documents), but with increasing sophistication includes dynamic objects such as encounters and conditions
  + Finally comes integration into business processes – including ability for external systems to initiate activities and orders and manipulate workflow (such as suspending or cancelling processes)
* **(new slide)**As implementations move up that maturity scale, there becomes an increased need for standardization
  + The FHIR core specification standardizes the base data structures & APIs
  + Above that, useful read access and any sort of write access requires standardizing code values and how data is organized above and beyond the base standard. For example,
    - How are vaccines coded?
    - What’s the proper structure for an APGAR or a medication summary?
  + Integration into order processing and task lists starts to require standardization of business processes
    - What does it mean to have a patient-centric cross-organizational care-plan – or even a consolidated medication list?
    - Who is allowed to update a Condition and how are multiple condition records for the same issue rationalized across multiple providers?
  + The more the standardization, the more the impact on healthcare practitioners themselves – both in terms of what data they’re asked to capture and how they’re asked to interact with systems. To truly realize the benefits of increased data sharing, clinical practices will need to evolve and become more consistent. –That, in turn, is going to take a **lot** of change management because clinicians aren’t used to enforced consistency around their processes and collaboration. Doing this successfully will require significant leadership from the clinical space and from organizations outside the “IT standards” space.
* **(new slide)**Early in the creation of FHIR, a small group of us at HL7 who were driving this new standard talked about what we wanted to achieve. Grahame identified three steps along the path to where we wanted to go
  + **(new slide)**First, we needed to disrupt healthcare standards – we needed to move from a place where the focus was on getting the standard “approved” to prioritizing getting the standard “used” – and not just because a regulator required it. That meant dramatically increasing the importance of both implementers and implementability, as well as real-world testing before locking anything down. We also needed to make standards open and community driven and led That level of disruption has been largely achieved in HL7 and those same changes are making their way, one way or another, into other healthcare standards organizations.
  + **(new slide)**The second was to Disrupt Healthcare IT. With the introduction of APIs, together with SMART, CDS Hooks and similar technologies, we’re seeing a re-shaping of the old messaging and document-centric healthcare IT ecosystem. We’re a long way from done, but the momentum is such that it’s now a question of when, not ‘if’ those changes will be rolled out.
  + **(new slide)**The final step was to disrupt Healthcare itself – That’s what FHIR – and the FHIR community – is truly about. It means getting better decisions made, providing continuity of care across providers and organizations, empowering patients to make decisions, realizing greater efficiencies and, most importantly, actually helping people live longer, healthier lives throughout the world. We’re seeing signs of the impact FHIR can have in this space already, but for this level of disruption, we’ve only just started. There’s a lot more change to come and a lot more good to do
  + It’s meetings like this where we move the disruption ball forward.

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