



Disrupting Healthcare via Open standards

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Origin of FHIR: the state of Healthcare

- Health care has broken processes
- Other industries are being transformed
 - IT enables process transformation
- This process is not happening in healthcare
 - IT standards to integrate B2B and C2B do not exist
 - IT is not properly implemented
 - There are many other blockers (culture, business process, liability, regulation)
 - The “business” of health care is very sedentary

FHIR: Transforming Healthcare IT

- Reduce the cost of interoperability (90%!)
 - More outcomes for the same investment
 - Transformation is already evident, but far from complete
 - Will increase investment
- Change is not driven by IT
 - Data is worthless by itself
 - IT is just an enabler
 - Clinical Champions change culture and outcomes

About HL7

- HL7 = Health Level 7
 - 7 = Obscure reference to obsolete network model: application exchange
- HL7 publishes Health care data exchange standards
 - V2 : healthcare messaging (“HL7”) – widely adopted
 - V3 : healthcare exchange modelling framework – not much adopted
 - CDA : Clinical Document Framework (MyHR, others)
 - FHIR : API for Healthcare data exchange, based on current technology
 - CCOW, CQL, Arden Syntax, others

What is FHIR?

- **Fast Health Interoperable Resources**
- **A Community**
 - Meets under the umbrella of HL7
 - Dedicated to making it easier to exchange healthcare information
 - Uses web infrastructure to solve problems about healthcare
- **A specification**
 - Freely available on the web (<http://hl7.org/fhir>)
 - Describes how to exchange information about healthcare
 - Adds healthcare knowledge to web standard infrastructure

FHIR: The web, for Healthcare

Open Community

- Make it easier to exchange healthcare information
- Open Participation - uses web infrastructure (social media)
- Lead by HL7 - deeply connected to world wide health community

Open Standard

- Describes how to exchange healthcare information
- Public Domain (<http://hl7.org/fhir>)
- A web API - web standards where possible
- Continuity with existing healthcare standards

Building the FHIR culture

- Open community – anyone can join
- Produces open standards – community treasure
- Foundation: solid governance backed by ANSI

- Build by iteration and continuous demonstration that trust is rewarded
- Connectathons, Face to face meetings, teleconferences, email lists, community forums, instant messaging, stack overflow

Web API Specification

- Must RESTful APIs specifications are for a single server
 - “This is what this server does”
- FHIR is a specification for what any server should do
 - “This is what your server should do”
- Healthcare is inherently variable across different use cases
- We have no authority to change healthcare practices
- Most of what we work on is about this gap

FHIR Building Blocks

5. Clinical Decision Support, Clinical Knowledge Management, Care Plan Management

4. Clinical Content / Clinical Record / Care Management

3. Health Administration (Patients, Organizations, Provider/Staff Management, Scheduling)

2. Terminology/Conformance (Getting systems to talk)

1. RESTful Framework (+ more)

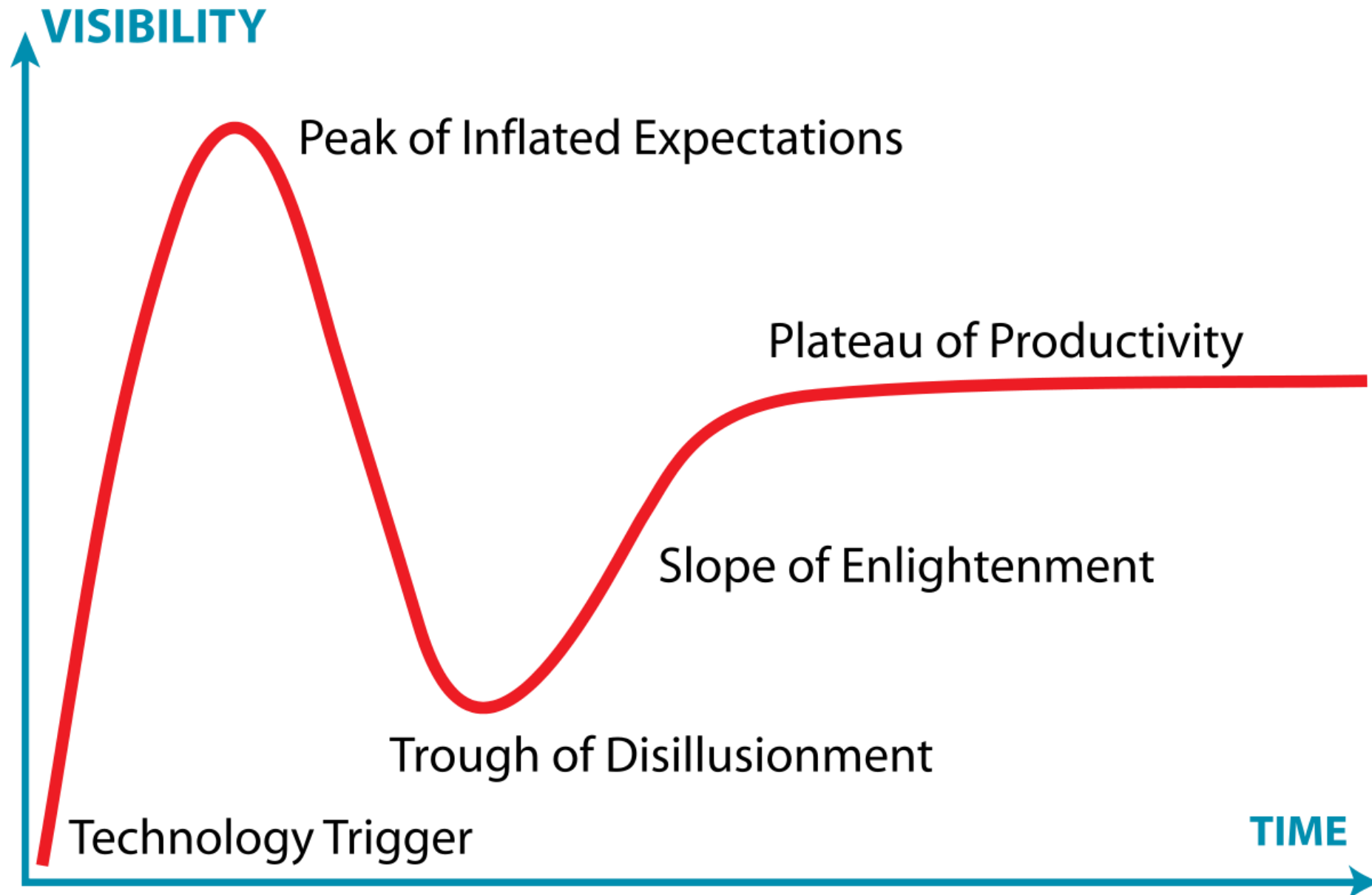
Localization

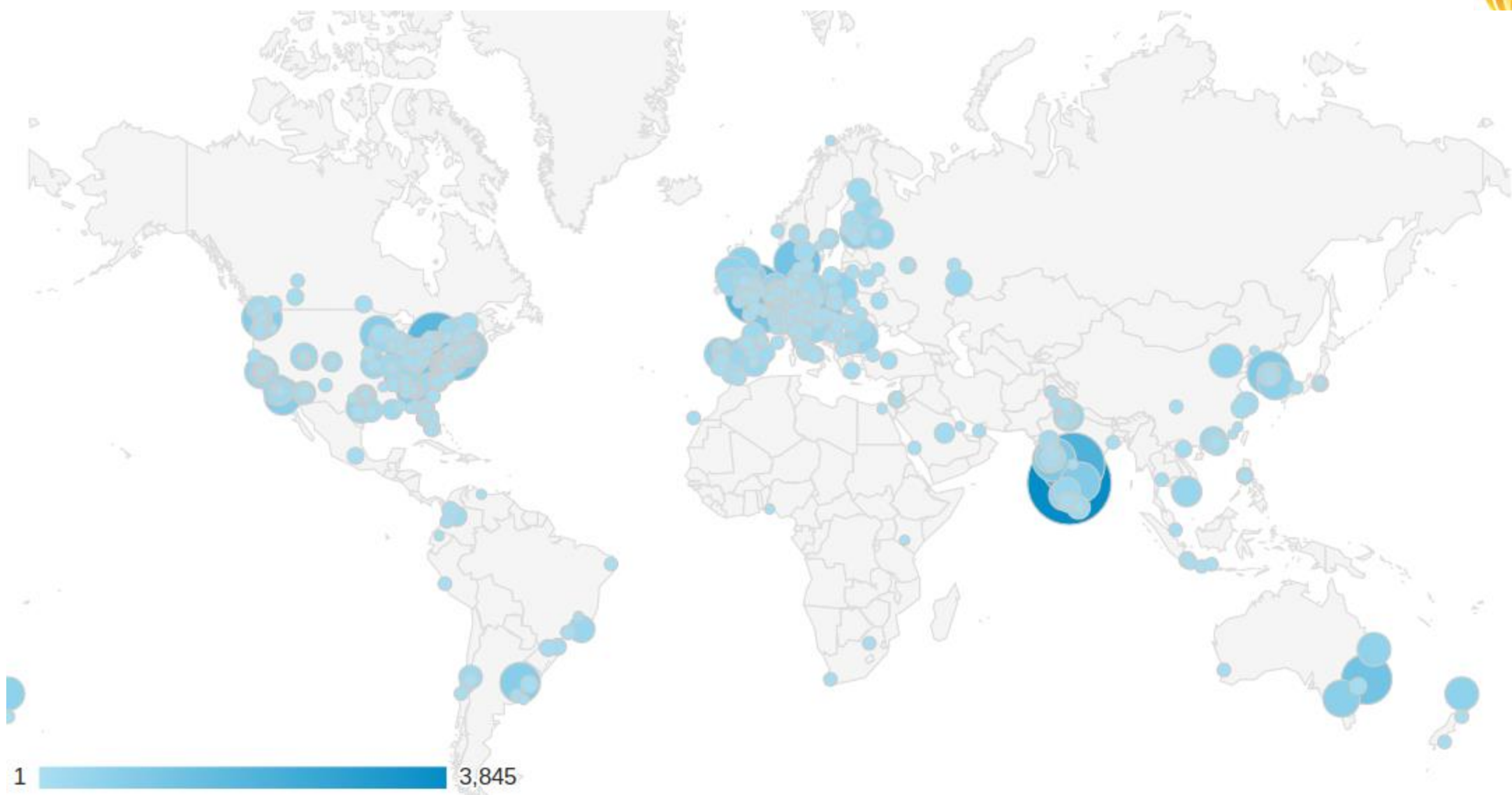
- FHIR is an international standard
 - All jurisdictions, all kind of functionality
- Countries, Vendors, Projects have to use FHIR
 - Create their own rules – profiles, value sets, mappings, extensions
- FHIR tames Localization
 - Built in extensibility/localization framework
 - Define, publish, find localizations, Use them
 - Tooling for managing this
- This tames the overall specification

FHIR Advantages

- Web API (capability based)
- Use of common content model across the entire spectrum
- Open License
- Internal philosophy: pragmatism
- Open community
- Public Tooling/Testing Infrastructure
- Continuity with existing healthcare standards

Gartner Technology Adoption Curve





Major Project: US Argonaut

- Main EHR vendors – common API to access clinical summary
 - <http://www.fhir.org/guides/argonaut/r2/>
- Builds 2 things:
 - Patient access to data
 - App eco-system around the EHR systems
- Adopted by Apple for healthkit

- EHR companies & Apple have a global reach
 - Argonaut coming to you

FHIR Use in Australia

- National Clinical Terminology Service (on Ontoserver)
- Provider Directory Project (supporting secure messaging)
- Document access to MyHR for mobile apps
- Agency strongly interested in FHIR documents going forward
- Lots of internal use in vendors (Telstra)
- Some classic interop in GP space
 - Appointments / decision support
- Not in common use in institutions yet

Opening up EHRs

- Provide an API that allows access to EHR data and services
- With Integrated security
- US Argonaut Project
- Potential is there
 - prototype → specification → delivery → production
- Need a much broader set of data

Analytics

- FHIR Bulk Data interface
- Large scale transfer of data
- Store build as FHIR resources natively
- Use generic big data / text-nlp tools
- Outcomes shared/reported in FHIR formats
- Google Brain project
 - <https://ai.googleblog.com/2018/03/making-healthcare-data-work-better-with.html>

Empowering Patients

- Making data accessible to Patients
- Making Data from patients accessible to system
- Allowing patient to control data sharing
- Creating a single common patient record
- Services not Data are empowering
- FHIR offers the ability to extend services to the patient

Coordinated Care

- Common Frustration of Patients:
 - Scheduling/Communication problems
 - Conflicting care plans / payment options
 - Conflicting system definitions of success
 - Must be resolved by the patient
- FHIR enables Services for
 - distributed care plan
 - virtual clinical review
- Virtual Institutions
- Integrated Home Care (medication management)

FHIR & Disruption

FHIR disrupts healthcare (& healthcare it):

- Significantly reducing the cost of data exchange
- Making it easy and natural to use the web
- Encouraging the development of open community
- Building a solid base to scale computation about healthcare

At the same time as wider web / open community transforms are happening.

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