36th Annual Plenary & Working Group Meeting

Baltimore, Maryland

Monday, September 19, 2022
Welcome

Charles Jaffe, MD, PhD
HL7 Chief Executive Officer
KEYNOTE PRESENTATIONS
Monday

Keynote Session 1: Rockefeller Foundation

Sam Scarpino, PhD
Vice President, Pathogen Surveillance, Pandemic Prevention Institute
Good data save lives:
But what are good data?

Samuel V. Scarpino, PhD
Vice President, Pathogen Surveillance
The Rockefeller Foundation

External Faculty
Santa Fe Institute
Vermont Complex Systems Center

Affiliate Faculty, Physics & CS
Northeastern University

Co-Founder, Global.health

@svscarpino
scarpino.github.io
Keynote Session 2: Research in Public Health

Christopher Chute, MD, PhD, DrPH, MPH

Bloomberg Distinguished Professor of Health Informatics, Professor of Medicine and Chief Research Information Officer, Johns Hopkins University
Public Health Research on Real-World Data: Standards, Harmonization, and Understanding

Christopher G Chute, MD DrPH
Bloomberg Distinguished Professor in Health Informatics
Professor Medicine, Public Health, Nursing
Chief Research Information Officer, Johns Hopkins Medicine
Deputy Director, Institute for Clinical and Translational Research
Head, Section of Biomedical Informatics and Data Science

19 Sept 2022

This talk: https://bit.ly/HL7_Plen_Chute_2022
From Practice-based Evidence to Evidence-based Practice

Data
- Clinical Warehouse
  - Registries and Marts
- Patient Encounters
- Expert Systems
- Clinical Guidelines

Inference
- Medical Knowledge
  - Knowledge Management

Comparable and Consistent Harmonization
- Semantic and Syntactic Standards

Decision Support
- Foundation of Learning Health System
Data Availability vs Utility

- Collections of data are not always useful
- Even if they are available

- Consistently classified data is always more useful
What does Interoperable mean with respect to data? **Harmonized!**

**Syntactic Interoperability (harmonization)**
- One can make sense of the **structure**
- Metaphor: sentence has **good grammar**
- Domain of the data standards and data model communities

**Semantic interoperability (harmonization)**
- One can make sense of the **meaning**
- Metaphor: the **words are understandable**
- Domain of the vocabulary, ontology, classification communities
Layers of Data Representation
Source, Harmonization, and Analyses

1. Object Layer - Data Transfer, System to System
   a. HL7 FHIR, APIs

1. Integration Layer - Harmonization, Commons
   a. Relational Data

1. Analyses Layer - input for inference (SAS, R, ML)
   a. Flat files (csv/tsv)
HL7 FHIR and OHDSI

- 1 March 2021
- Formal Collaboration
- Single CDM observational research

“We are excited to have the OHDSI community join this partnership with HL7 to evolve community standards around observational research and clinical care. These standards set the foundation for our mission of global, open-science research, and this partnership will accelerate the development of effective and safe treatments for diseases facing today’s global population.”

- George Hripcsak
National COVID Cohort Collaborative (N3C)

- A **centralized**, secure portal for hosting patient-level COVID clinical data and deploying and evaluating methods and tools for clinicians, researchers, and healthcare professionals.

- A **partnership** among CTSA program institutions, distributed clinical data networks (e.g. PCORnet, OHDSI, ACT/i2b2, and TriNetX), and many other clinical partners and collaborators.

- A partnership between CD2H and NCATS.
### N3C Snapshot

**Over 18B Rows of Data**

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVID-19 Positive Patients</td>
<td>6,408,030</td>
</tr>
<tr>
<td>Total Patients</td>
<td>15,540,911</td>
</tr>
<tr>
<td>Sites</td>
<td>75</td>
</tr>
<tr>
<td>Rows of Data</td>
<td>18.2b</td>
</tr>
<tr>
<td>Procedures</td>
<td>850.6m</td>
</tr>
<tr>
<td>Lab Results</td>
<td>8.6b</td>
</tr>
<tr>
<td>Drug Exposures</td>
<td>2.8b</td>
</tr>
<tr>
<td>Visits</td>
<td>916.0m</td>
</tr>
<tr>
<td>Observations</td>
<td>1.6b</td>
</tr>
</tbody>
</table>

*September 15, 2022*
N3C Dashboard

covid.cd2h.org/dashboard

- Data Available
- Data transfer signed, pending availability
- OCHIN contributing site

Engagement and Registration Statistics:
- DUAs (320)
- DTAs (93)
- Users: (4100)

31 Domain teams!
Responsibility

- Largest publicly accessible repository of EHR Data ever assembled
- Demands unprecedented level of Governance
- Enables broad access, team science, and multidisciplinary collaboration
Shared Governance

N3C Community
- Community Guiding Principles
- Attribution & Publication Policy & Committee
- N3C Community Response Team

NCATS
- Code of Conduct
- Data Transfer Agreement
- Data Use Agreement
- Publicly Available Dataset Policy
- Results download Policy & Committee
- Hashing & Data Linkage Policy**

NIH-IRB
- Data Use Request
- Data Access Committee

** In Preparation

https://zenodo.org/communities/cd2h-covid/
**Partnership:** N3C community members are trusted partners committed to honoring the N3C community guiding principles and Code of Conduct

**Inclusivity:** N3C is open to any organization that wishes to contribute data, code, and ideas, as well as anyone who registers to use N3C data to conduct COVID-19 related research, including citizen/community scientists

**Transparency:** Open processes and reproducible research is the hallmark of N3C and good scientific practice. Access to data is project-based and focused on COVID-19 research questions. Descriptions of projects are posted publicly and are searchable to promote collaborations.

**Reciprocity:** Contributions are acknowledged and results from analyses, including provenance and attribution, are expected to be shared with the N3C community.

**Accountability:**
N3C community members take responsibility for their activities and hold each other accountable for achieving the N3C objectives and acting through good scientific practices.

**Security:** All activities are conducted in a secure, controlled access cloud-based environment, and are recorded for auditing and attribution purposes.

**Mutual Respect:** Communications should be professional, concise, clear and relevant. Follow proper communication etiquette. Avoid excessive conflict, unprofessional arguments, ad hominem attacks, and/or ridicule over chat and in messaging.
Governance & sIRB Overview

Single/Central IRB (sIRB)
- Johns Hopkins serving as central IRB
- Smart IRB makes it easy - all CTSAs are already members, so if you’re willing to rely on sIRB, the paperwork is basically complete
- Not required - if you want to do the work locally, you can do so

Who to contact about reliance or local filing
Tricia Francis pfranci4@jhu.edu
N3C: Governance and Access

- Institutions contributing data
  - IRBs
  - DTAs
  - NIH IRB

- Original LDS data sets
- Harmonized data

Data steward
NIH NCATS

Data Access Committee (DAC) approval

Accessing Institutions & Users

Data Users
- Registration
  - Community guiding principles
- Data Use Request (DUR)
  - User Code of Conduct (UCoC)
  - Data use statement
  - Attestation of security training
  - Attestation of human subjects training

- Limited Data Set
- Deidentified Data
- Synthetic Data

User project-specific IRB
Leveraging Common Data Models

- These four data models are commonly used by academic medical centers throughout the US.
- CDMs are used to store EHR data in a consistent way.
- Sites participating in N3C may send data in one of these four formats—the idea is to make it as convenient as possible for sites to submit.
- Common data models *also* allow us to write a consistent computable phenotype that can be run with few local changes at sites with one or more of these data models.
Versioned data from all sources is combined into a target model (OMOP)

N3C Data Harmonization

Highly secure data “enclave;” data cannot be downloaded

Harmonized and Integrated EHR data

GovCloud

Contributed data

Merge

FedRAMP

FedRAMP Authorized

Moderate

Contributed data

Versioned data from all sources is combined into a target model (OMOP)
N3C Data Ingestion & Harmonization Pipeline

A program of NIH’s National Center for Advancing Translational Sciences

Span manual curation of mapping resources to industrial scale production transformation

OMOP
ACT
TriNetX
PCORNNet
Other

Ingest Server

Parsing
Prep for Translation
Primary Keys & Identifiers
Merge

Apply CDM Schema
Mapping to OMOP
Final QC Check

Field Mappings
Value Set Mappings

GitHub

N3C Release Data Set

(future)
Human mediated mapping and validation

- About 2M structure, terms, codes mapped between common data models
- Many mappings were leveraged or expanded from pre-existing work
- All were validated for this project
- Validation required human curation and sampled cross-checking
- This process parallels much work already done for CRDC by CCDH and the creation of CRDC-H versions
N3C Data Ingestion & Harmonization Pipeline

OMOP → Parsing → Prep for Translation → Primary Keys & Identifiers → Merge → N3C Release Data Set

ACT → TriNetX → PCORNNet → Other → Ingest Server → Apply CDM Schema → Mapping to OMOP → Final QC Check

Field Mappings → Value Set Mappings

Processing

HL7® FHIR® (future)
N3C Data Ingestion & Harmonization Pipeline

- OMOP
- ACT
- TriNetX
- PCORNet
- Other

HL7® FHIR® (future)

Automation at Scale
Goals / Technical requirements
Of High-Throughput Harmonization pipeline

- Complete transparency into lineage/provenance of transformation pipelines
- Robust versioning, deployment, and upgrades of pipelines to new and existing sites
- Rigorous and automated data quality checks
- Scalability of compute resources
Each of the 70+ sites has a pipeline with 100+ syntactic and 2M+ semantic transformations. The provenance between 2M+ transformations across each of the 75 sites is automatically tracked. This enables:

- pipeline developers to very quickly identify the root cause of data quality issues
- data pipelines can be refreshed in <20 minutes whenever the source data updates
Centralized Ingestion

Relative Benchmark Data for Range checking and comparison
Distribution of “COVID” test results across 17 sites (columns) in N3C

<table>
<thead>
<tr>
<th>Equivalent</th>
<th>Negative</th>
<th>Positive</th>
<th>Indeterminate</th>
<th>Undetermined</th>
<th>Not detected</th>
<th>Positive</th>
<th>Positive</th>
<th>Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>4172976</td>
<td>9189</td>
<td>9191</td>
<td>45877985</td>
<td>45864091</td>
<td>45880296</td>
<td>45884084</td>
<td>45898</td>
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<td>187</td>
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<td>2</td>
<td>1034</td>
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<td>45898</td>
<td>9699</td>
<td>33</td>
<td>4973</td>
<td>645627187</td>
<td>3</td>
<td>45</td>
<td>45</td>
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<td>63128</td>
<td>62</td>
<td>7150</td>
<td>515</td>
<td>126</td>
<td>895</td>
<td>84699</td>
<td>895</td>
</tr>
</tbody>
</table>

Obvious need to create canonical value sets for mapping data across organizations: +/-/?

- Number of COVID tests and proportion of + to -
- Average rows of data per patient per table
- Conformance to OMOP standards
- Plausible demographic distributions
- Visits with negative lengths
**Problem:** Different sites provide their data in different units

**Solution:** Harmonize each to a standard unit

- Kilograms = Pounds / 2.20462
- Kilograms = Ounces / 35.274
- Kilograms = Grams / 1000
Harmonizing numeric data

- **Problem:** Some units are missing

- **Solution 1:** Contact the source

- **Solution 2:** N3C inference engine
  
  Kilograms = \( \frac{x}{2.20462} \) ?
  
  Kilograms = \( \frac{x}{35.274} \) ?
  
  Kilograms = \( \frac{x}{1000} \) ?
Harmonization progress

- Harmonized measurements
  - By original unit
  - Across many sites

Humans measured in grams do not look the same as humans measured in kilograms!

Homogeneity after harmonization
• ~2x increase in usable data from our harmonization procedures

We can rescue a lot of data!
Federated vs Centralized Repositories

● Both contribute value and are synergistic
  ○ Local curation (federated)
  ○ Benchmarking data, quality improvement/salvage (centralized)
Consistent 30% reduction of Long COVID
- Two different definitions of Long COVID
- Two different analytic strategies
  - Both adjusted for other factors

<table>
<thead>
<tr>
<th>Method</th>
<th>Odds Ratio</th>
<th>95% CI</th>
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<tbody>
<tr>
<td>ICD U09.9</td>
<td>0.69; 0.59-0.82</td>
<td></td>
</tr>
<tr>
<td>ML Algorithm</td>
<td>0.69; 0.64-0.75</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method</th>
<th>Hazard Ratio</th>
<th>95% CI</th>
</tr>
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<tbody>
<tr>
<td>ICD U09.9</td>
<td>0.67; 0.56-0.81</td>
<td></td>
</tr>
<tr>
<td>ML Algorithm</td>
<td>0.66; 0.60-0.72</td>
<td></td>
</tr>
</tbody>
</table>
HHS and White House - 17 June 2022

Concern about “rebound” post Paxlovid

No federal agency had this data, including CDC

- In the 3 weeks after finishing a 5 day course of Paxlovid, 5.7% of these 14,475 patients sought COVID-related care post-Paxlovid and only 0.7% tested SARS-CoV-2 positive in a clinical setting.

- The hospitalization rate post-Paxlovid is also extremely low

- Show a moderate increase in pulmonary and urinary/kidney symptomatology for the small number testing COVID positive after Paxlovid
Impact to Date - Publications

During 18 months of N3C operation:

Pubmed cited, peer-reviewed: 45
Pubmed cited, pre-prints 18
High profile, non-cited 35
Total 98

https://covid.cd2h.org/dashboard/
https://scholar.google.com/citations?&user=tgqBz_IAAAAJ&inst=11200652687545488238
Key functions can nucleate projects:

- Education & training
- Biostatistics
- Study design
- Evaluation
- Informatics
- Clinical expertise
- Innovation & commercialization
- Community & partnerships

N3C Domain Team Expertise:

- Enclave technology
- Data model (OMOP)
- Terminologies
- Data quality
- Codesets, variables, phenotype
- Using/parsing N3C data
- Workflows, methods, algorithms

covid.cd2h.org/Domain_Teams
But what about FHIR?

- FHIR accelerators exist for oncology and translational research
- FHIR Implementation Guides (IGs) can define canonical content
- However, FHIR is an “object layer” (source layer) data rendering
  - Designed for system to system data transfer
  - Not ideal for Harmonization Layer
How can sites affordably create OMOP Datasets?

- Medical centers may spend 1-3 FTEs generating an OMOP dataset
- The target OMOP Model is well defined
- Starting points from FHIR APIs are becoming well defined within the realm
- Can we automate FHIR to OMOP transformation
  - Making this an algorithmic process
The Goals of Vulcan

<table>
<thead>
<tr>
<th>BRIDGE EXISTING GAPS</th>
<th>STRATEGICALLY CONNECT COLLABORATORS</th>
<th>MAXIMIZE COLLECTIVE RESOURCES</th>
<th>DELIVER INTEGRATED TOOLS AND SOLUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work to close gap between clinical care and clinical research to improve patient lives, decrease costs and improve efficiency</td>
<td>Coordinate strategy between stakeholders and leverage existing work within HL7 and other groups including FDA, NCATS, NLM, SCDM, TransCelerate, and academic research sites</td>
<td>Leverage shared community and resources to be able to communicate the return on investment and return on value that a unified network could realize to various parties, and provide comprehensive recommendations to global regulators</td>
<td>Develop necessary FHIR Research Resources to maturity. Vulcan will handle identified and prioritized use cases for secondary use of EHR data that meet interested parties needs and goals</td>
</tr>
</tbody>
</table>
OMOP + FHIR bidirectional harmonization are two distinct processes
OMOP + FHIR bidirectional harmonization are two distinct processes

OMOP Concept ID: 434376
Domain: Condition
Concept Class: Clinical Finding
Source Vocabulary / ID: SNOMED
Concept: Standard
Validity: Valid
Start Date: 31JAN2002
End Date: 31DEC2099
Synonyms:
- Acute myocardial infarction of anterior wall (disorder)
- Acute anterior myocardial infarction

FHIR

<code>
<coding>
<system value="http://snomed.info/sct"/>
<code value="54329005"/>
<display value="Acute myocardial infarction of anterior wall"/>
</coding>
<coding>
<system value="http://id.who.int/icd11/mms"/>
<code value="BA41&XA7RE3"/>
<display value="Acute myocardial infarction & Anterior wall of heart"/>
</coding>
</code>

Source: https://athena.ohdsi.org/search-terms/terms/434376


VULCAN HL7 FHIR
To make observational research scale, EHR object data must be transformed into a comparable and consistent analytic data model, typically in the form of a clinical research data warehouse.

OMOP (Observational Medical Outcomes Partnership) is the most common data model for EHR data warehouses.

A standard, reusable FHIR to OMOP mapping would dramatically reduce the cost and effort to generate and maintain research data warehouses—current mappings are almost all OMOP to FHIR.

Translation of an EHR to FHIR will be dependent on vendor specific Implementation Guides.

Vulcan’s role is:
- Co-Ordinator
- Provider of International Focus
- Provider of test facilities through Connectathons
- …
Observations

- Read-world data (RWD) from EHRs holds enormous promise for observational research
- It is already complementing conventional public-health surveillance
  - And may have an increasingly important role
- Harmonization of RWD is crucial to sustain inferencing and analyses
  - Data must be transformed into comparable and consistent renderings
- Clinical data standards form the heart of RWD data coherency
  - OHDSI OMOP is emerging as the preferred relational analytic model
- The Vulcan accelerator is contributing to this process
  - FHIR to OMOP transforms will decrease analytic repository costs
- Centralized and federated repositories are synergistic
PANEL: PREPARING FOR THE NEXT PANDEMIC
Panel: Preparing for the Next Pandemic

North America

Moderator: Ron Parker
Chair, HL7 Canada
Co-Chair, HL7 International Council
Preparing for the Next Pandemic

Plenary Panel Discussion
HL7 Plenary and Working Group Meeting

Baltimore, MD  Sept 19th, 2022
The global COVID 19 pandemic has challenged all countries in their use of information to:
- Qualify and quantify the threat
- Support an evidence-based response
- Treat the entire spectrum of the population and their co-morbidities
- Deliver health services under extreme duress and limited resources
- To manage the distribution and administration of vaccines
It is Very Evident

- The pandemic has redefined the imperative and requirements for timely and comprehensive exchange of health information, public and personal
- Countries cannot plan and work in isolation
- Standardization is a necessity
How Does HL7 Help Prepare for the Next Pandemic?

- Not “if” but “when”
- Do we understand the evolving requirements for information exchange?
- Do we know what the opportunities and challenges for standards-based interoperability are?
Today’s Panel

- Thinking globally – from the perspective of 6 major regions
  - South and Central America: Guilherme Zwicker, Brasil
  - Europe: Giorgio Cangioli, Italy
  - Africa: Steven Wanyee, East Africa
  - Oceania: Peter Jordan, New Zealand
  - Asia: Marc Hsu, Taiwan
  - North America and Moderator: Ron Parker, Canada

*DISCLAIMER: panelists are offering informed opinions only*
Monday

Panel: Preparing for the Next Pandemic

Latin America

Panelist: Guilherme Zwicker Rocha, MD
Chair, HL7 Brazil
Panel: Preparing for the Next Pandemic

Europe

Panelist: Giorgio Cangioli

Technical Lead, HL7 Europe
Chair, HL7 Italy
Member, Technical Steering Committee
Monday

Panel: Preparing for the Next Pandemic

Africa

Panelist: Steven Wanyee Macharia
President-Elect, Health Informatics in Africa (HELINA)
Monday

Panel: Preparing for the Next Pandemic

Australasia

Panelist: Peter Jordan

Chair, HL7 New Zealand
Affiliate Director, HL7 International Board of Directors
Panel: Preparing for the Next Pandemic

Asia

Panelist: Marc Hsu
Chair, HL7 Taiwan
The Questions (2-minute response per panelist)

Q1: In the current pandemic, what have been the top 3 information exchange challenges in your region, and why?

Q2: Will the information exchange systems and infrastructure(s) developed to this point be sufficient for the next pandemic?

Q3: What kinds of interoperable applications, information flow, functional capabilities will need to be available?

Q4: What are the non-technical enablers required to meet the interoperability demands of the next pandemic?
Q1:

IN THE CURRENT PANDEMIC – WHAT HAVE BEEN THE TOP 3 INFORMATION EXCHANGE CHALLENGES IN YOUR REGION, AND WHY?
Q2: WILL THE INFORMATION EXCHANGE SYSTEMS AND INFRASTRUCTURE(S) DEVELOPED TO THIS POINT BE SUFFICIENT FOR THE NEXT PANDEMIC?
Q3:

WHAT KINDS OF INTEROPERABLE APPLICATIONS / INFORMATION- FLOW / FUNCTIONAL-CAPABILITIES WILL NEED TO BE AVAILABLE?
Q4:

WHAT ARE THE NON-TECHNICAL ENABLERS REQUIRED TO MEET THE INTEROPERABILITY DEMANDS OF THE NEXT PANDEMIC?
Audience Questions for the Panelists? (10 minutes)
THANK YOU!
HL7 INTERNATIONAL 3-YEAR PLAN
Monday

HL7 International 3-Year Plan

Charles Jaffe, MD, PhD
HL7 Chief Executive Officer

Daniel Vreeman, DPT
Chief Standards Development Officer

Viet Nguyen, MD
Chief Standards Implementation Officer

Diego Kaminker
Deputy Chief Standards Implementation Officer
HL7 International
3-Year Plan

36th Annual Plenary
Working Group Meeting

Charles Jaffe
HL7 CEO
cjaffe@hl7.org

Viet Nguyen
HL7 CSIO
viet@hl7.org

Dan Vreeman
HL7 CSDO
dan@hl7.org

Diego Kaminker
HL7 DCSIO
diego@hl7.org
Our Foundation: Core Principles and 2022-2024 Strategic Goals

Focus
Advance the global adoption of HL7 FHIR, while maintaining other HL7 standards currently in use

Agility
Optimize HL7 processes and make HL7 more approachable and simpler to be engaged in

Global Relevance
Ensure all our products and services have global relevance and reach a global market

Community
Expand HL7 reach beyond our traditional communities to include implementers and consumers

Sustainability
Pursue diversification and expansion of our funding sources to increase long-term sustainability of the organization
From the **Principles** and the detailed Re-envisioning Task Force(s) **Recommendations**, we developed **10 overarching Strategies**

- **S01** - Leverage and expand the success of the HL7 FHIR Accelerator program
- **S02** - Increase quality, value, and reach of HL7 education offerings
- **S03** - Create a platform to enable discovery and testing of HL7 specifications
- **S04** - Pursue new communities
- **S05** - Empower patient participation and patient-awareness/friendliness of our standards
- **S06** - Work proactively in global outreach
- **S07** - Develop and execute a contributor engagement program
- **S08** - Extend our portfolio of standards advancement projects through external funding
- **S09** - Migrate legacy web platform to a modern content management system
- **S10** - Continue HL7’s “flywheel” activities that perpetuate our momentum
The Plan is organized by this framework

Each **Strategy**:  
- links to the **Recommendations** on which it is based  
- has a responsible person from one of HL7’s 3 divisions  
- has a corresponding **Business Plan**
### Components of Each Strategy’s Business Plan

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Summary description of the strategy, including value proposition</td>
</tr>
<tr>
<td><strong>Customers</strong></td>
<td>Target customer segments, market, and competition analysis</td>
</tr>
<tr>
<td><strong>Partners</strong></td>
<td>Key partners providing in-kind support, funding (seed or recurring), or on whom we depend</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Activities to be performed under this plan</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>Personnel and infrastructure resources (including role, time allotment, and cost estimates)</td>
</tr>
<tr>
<td><strong>Budget Requests for 2023</strong></td>
<td>Budget needs for 2023 funding</td>
</tr>
<tr>
<td><strong>Revenue</strong></td>
<td>Planned revenue streams that this plan influences (creates or depends on)</td>
</tr>
<tr>
<td><strong>Roadmap</strong></td>
<td>3-year roadmap specifying planned achievements in each year</td>
</tr>
<tr>
<td><strong>Risks and Mitigations</strong></td>
<td>Analysis of key risks (related to cost, schedule, etc) and mitigation approaches</td>
</tr>
<tr>
<td><strong>Metrics</strong></td>
<td>How we will monitor and evaluate success: impact, sustainability, global outreach</td>
</tr>
<tr>
<td><strong>Discussion</strong></td>
<td>Issues needing strategic input by the Board</td>
</tr>
</tbody>
</table>
Ride with us into the future…
3 years from now…we’ll be able to say:

- We are a vibrant, diverse, global and continuously-welcoming community
- We have a complete portfolio of role-based courses and certification tracks
- We have an active portfolio of grant/contract funding complementing other revenues
- We have a place to understand and test every HL7 Implementation Guide
- We have a network of training partners
- The robust HL7 FHIR Accelerator program catalyzes standards development and use
10 Strategies for Becoming the Re-envisioned HL7
Leverage and expand the success of the HL7 FHIR Accelerator program

**Program Management**

Based on the best practices learned through our experience, we will develop a standardized and sustainable *Accelerator Blueprint* as the model to grow our community and support the adoption of FHIR around the world.

**Anticipated Outcomes**

- Establish and apply the *Accelerator Blueprint* as the model for going from a nascent idea to a thriving group
- **Increase revenue** through the HL7 FHIR Accelerator program with new groups and efficiencies to existing ones
- **Expand** the Accelerator portfolio by proactively pursuing new domains
- **Increase HL7 membership** by demonstrating its value to HL7 FHIR Accelerator participants who are not yet
Increase quality, value and reach of HL7 education offerings

SID (Diego Kaminker)

Education

Create new education programs to increase the value (through *credentialing*), volume (through *partnering*) and quality (through *certifying education providers*) of HL7 Education.

Anticipated Outcomes

**HL7 FHIR Credentialing**: improve employability of credentialed individuals, assist hiring organizations via a recognizable marker.

**HL7 FHIR Certified Education Provider**: increase the value for participants through recognized expertise of their educators.

**HL7 Partnering Program**: expand training opportunities for the industry, and increase value for the Partners because of HL7 evaluation and further co-branding or recommendations (link from our pages).
The FHIR Foundry

Create an open platform (the FHIR Foundry) where anyone in the world can discover, test/try, and install (reference) implementations of the HL7 specifications.

Anticipated Outcomes

Outreach and Discovery: the Foundry is the recognized place for discovering reference implementations for FHIR specifications

Continuous Testing: the Foundry enables implementers to test apps and servers against reference implementations and test engines with robust sample data at any time.

Standards Rigor: Over time, standards development includes Foundry-deployed reference implementation software as part of QA and Publication processes.
Outreach

We will proactively reach new communities and leverage opportunities in the industry. Our first focus will be creating events featuring networking opportunities and new content tailored for our growing audience.

Anticipated Outcomes

**Outreach**: expanding interest in HL7’s standards to a broader audience

**Implementation**: support implementers by focusing on key uses, innovations, best practices, and widely available tools

**Advance standards**: add new perspectives and bridge the gap between standards development and implementation
Patient Empowerment

We seek to reinforce HL7’s commitment to proactively involve patients and caregivers in the full life cycle of standards development and implementation. HL7’s vision is broad – for everyone to access the health data they need when they need it – and we want to underscore the importance of their perspective throughout the process, including work on use cases that support active creation, access, and use of one’s own data.

Anticipated Outcomes

- **Expanded participation** of patients and representation of patient interests in HL7 activities
- **Enhanced patient-friendliness** of HL7 specifications
Truly International Reach

We aim to improve the vitality of our affiliate network and expand our partnerships through deliberate outreach, targeted communication, and developing shared services available for use in their local programs.

Anticipated Outcomes

- **Strengthened Affiliate relationships** and new Affiliates added
- **Regional partnerships** serving as incubators for deepening knowledge and interest in HL7 standards
- **Robust collaborations** worldwide
- **New resources for implementation** being adopted and adapted by Affiliates
Contributor Engagement

The individuals of HL7’s global community fuel our collective progress. We must inspire, expand, and engage with an ever-broader set of stakeholders to support development and implementation of HL7 standards.

**Anticipated Outcomes**

- Improvements on community development metrics
- Increased HL7 membership retention
- Post-internship participation and leadership within the community
Standards Advancement Through External Funding

We will continue delivering on our existing funded portfolio, while cultivating and expanding externally funded activities through grants, contracts, and cooperative agreements.

Anticipated Outcomes

- Continued success in **accomplishing HL7 key initiatives** with external support
- **Sustainable financial management** of projects funded through external support
- **Increased collaboration** with funding organizations whose objectives align with HL7’s mission
Modernize our web platform

Modern Web Platform

The current hl7.org web platform and associated applications are cumbersome, difficult to maintain, and fail to convey that HL7 is at the leading edge of health IT innovation. We need to revamp and re-imagine our web platform on a modern, open-source content management system.

Anticipated Outcomes

- Better user experience and onramp from “what’s HL7 about?” to using our standards and contribution in the community
- API-enabled updates to our public standards portfolio (Jira and registry.fhir.org integration)
- Improved accessibility, performance, security, findability, and reusability of web content
Continue HL7’s “flywheel” activities that perpetuate our momentum

Core “Flywheel” Activities

HL7’s core activities serve as the organizational circulatory system that sustains our vital momentum. Although not directly addressed in the recommendations, we include them here for completeness and consideration with an approach more towards monitoring and optimization than wholesale new strategies.

Anticipated Outcomes

HL7 continues and optimizes its core business process of standards development supported by infrastructure, personnel, and events

HL7 continues and optimizes its core operational services (accounting and finance, education, events management, HR, IT, legal, marketing and communications, member services, etc.)
Here today. *Towards* tomorrow.

**HL7 International 3-Year Plan**

Becoming the re-envisioned HL7

**Our Foundation**

Core Principles and 2022-2024 Strategic Goals

- **Focus**
  Advance the global adoption of HL7 PHIR, while maintaining other HL7 standards currently in use

- **Agility**
  Optimize HL7 processes and make HL7 more approachable and simpler to be engaged in

- **Global Relevance**
  Ensure all our products and services have global relevance and reach a global market

- **Community**
  Expand HL7 reach beyond our traditional communities to include implementers and consumers

- **Sustainability**
  Diversify and expand our funding sources to increase long-term sustainability of the organization
Here today. *Towards* tomorrow.

Join us tomorrow Q4 for a Listening Session

(*Maryland Ballroom B*)

Webinars for others in the HL7 community who couldn’t join us today will be hosted soon.
Closing Comments

Charles Jaffe, MD, PhD
HL7 Chief Executive Officer
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Have a great day!

Monday, September 19, 2022