



Year in Review

Daniel J. Vreeman, PT, DPT, MSc

Regenstrief-McDonald Scholar in Data Standards, Indiana University School of Medicine
Director, LOINC and Health Data Standards, Regenstrief Center for Biomedical Informatics



INDIANA UNIVERSITY

SCHOOL OF MEDICINE

Department of Medicine



Regenstrief Institute

Center for Biomedical Informatics

Better Care. Better Health.

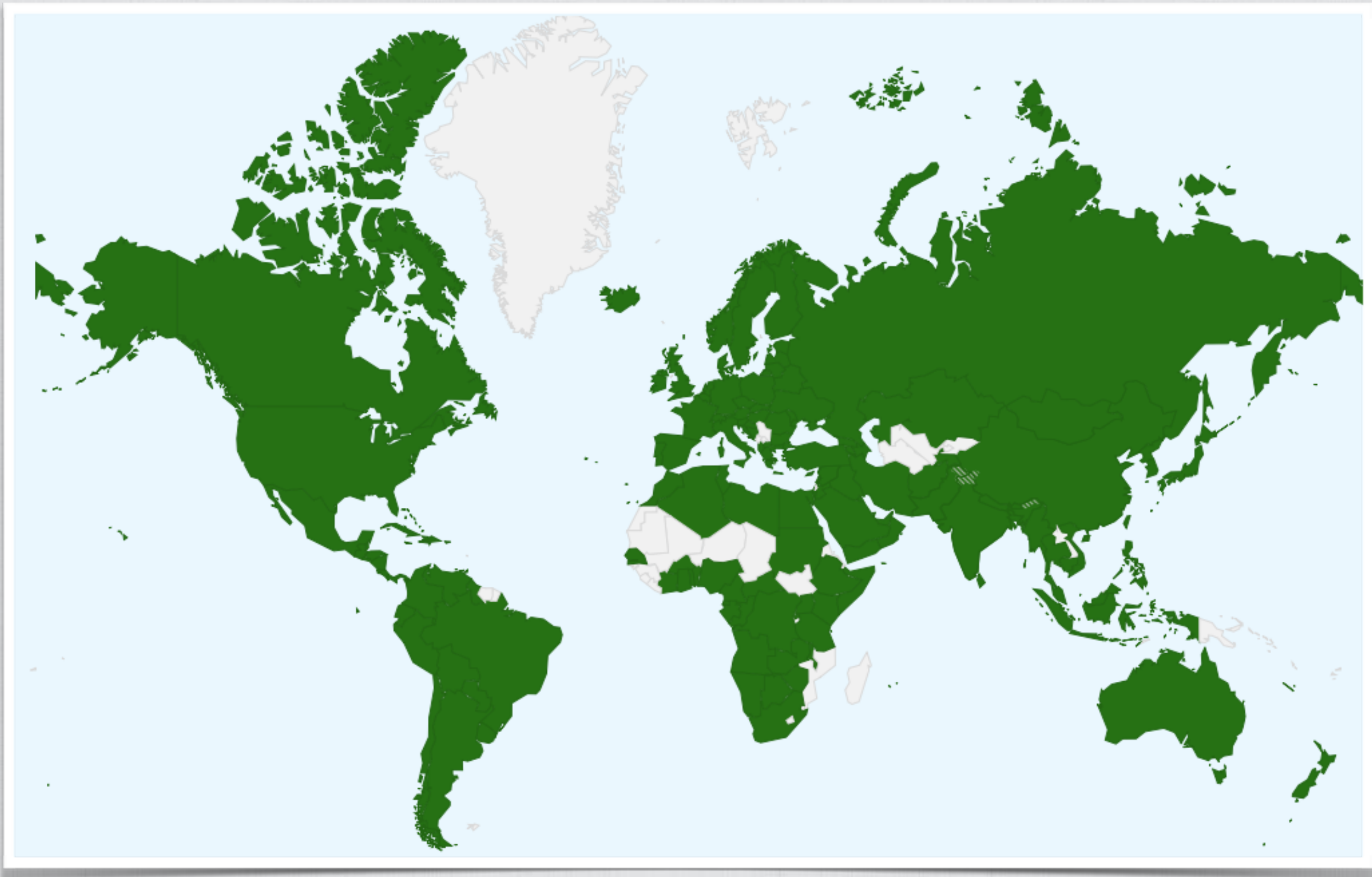
Overview

1. Growth and adoption
2. Key publications and presentations
3. Highlights and discussion of recent US Federal initiatives

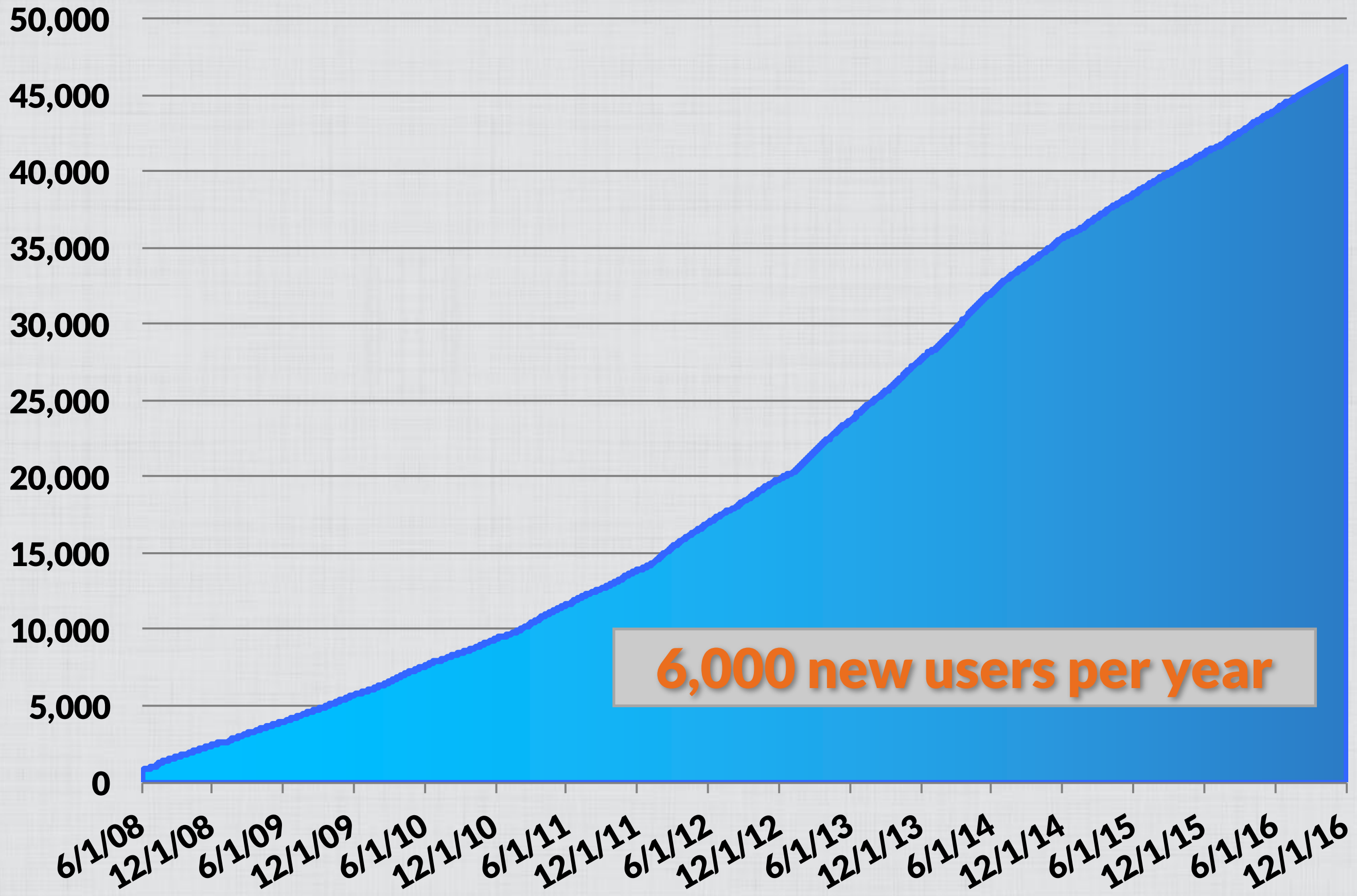
Growth and usage

A stylized graphic of a building or structure composed of horizontal bars, with the text 'Growth and usage' overlaid in a light blue color. The graphic consists of a central vertical column of five bars, flanked by two columns of three bars each, all arranged within a large, dark gray circular background.

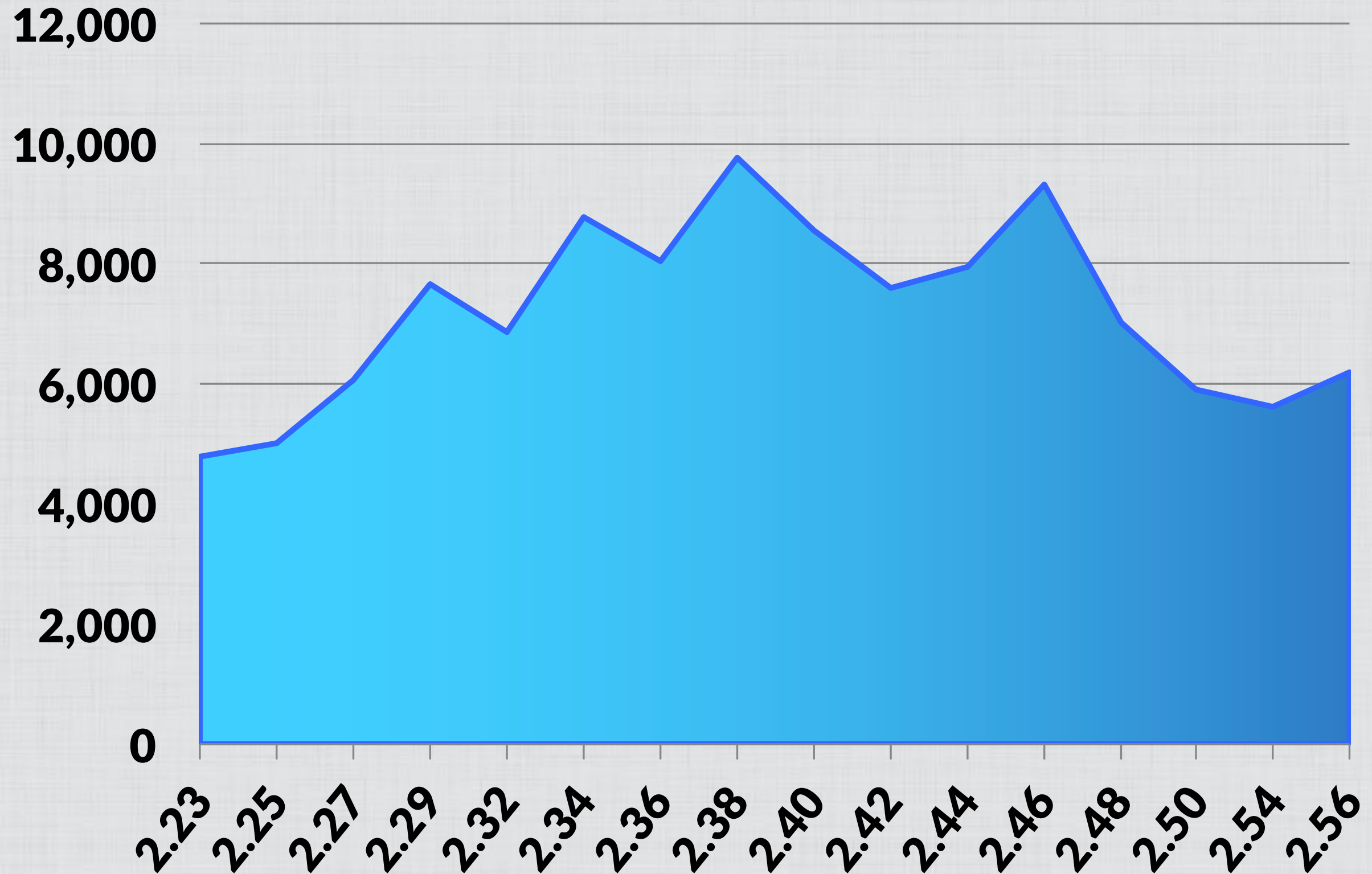
46,000+ registered users in 174 countries



loinc.org registered users

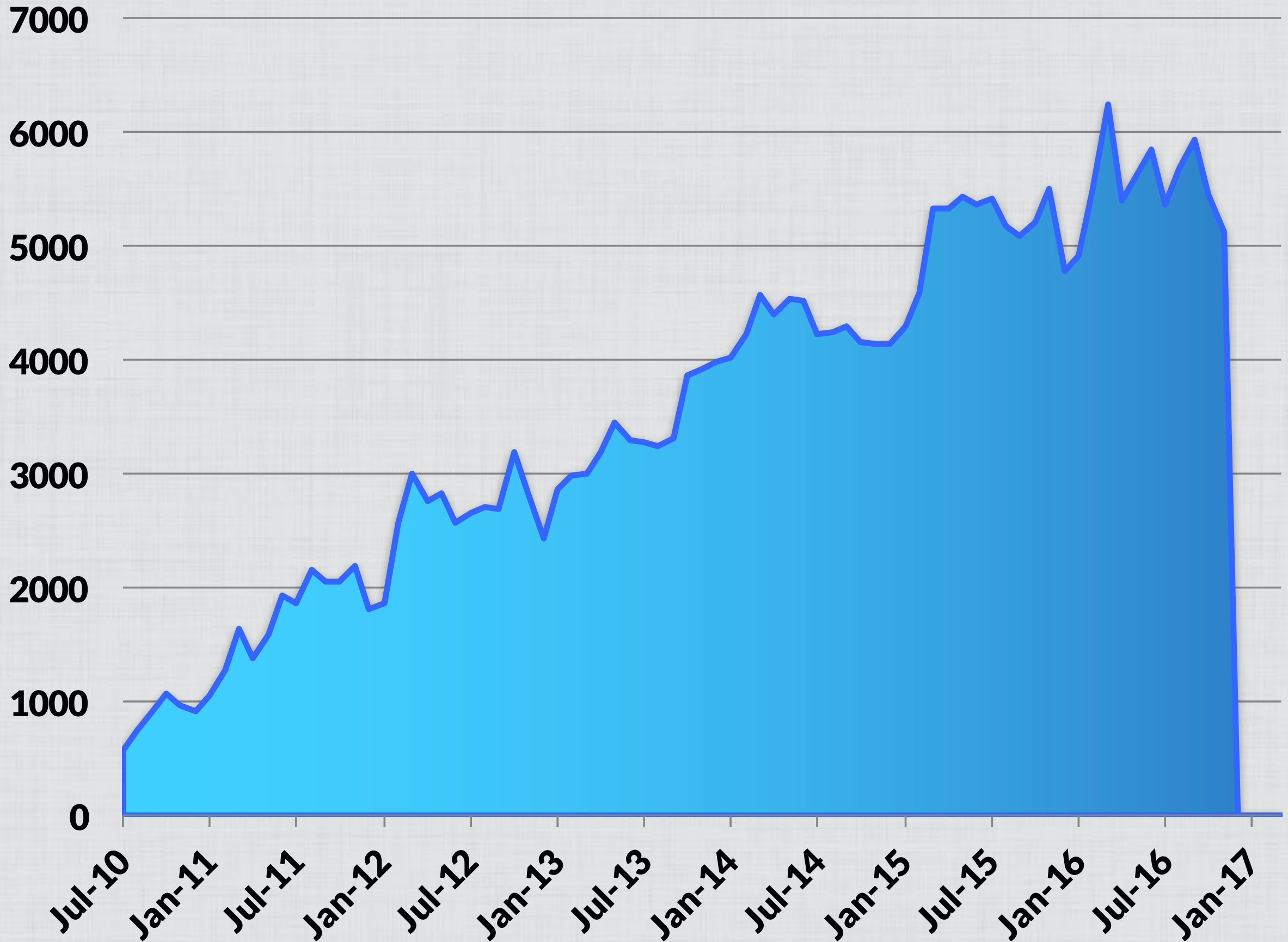


LOINC Downloads By Release

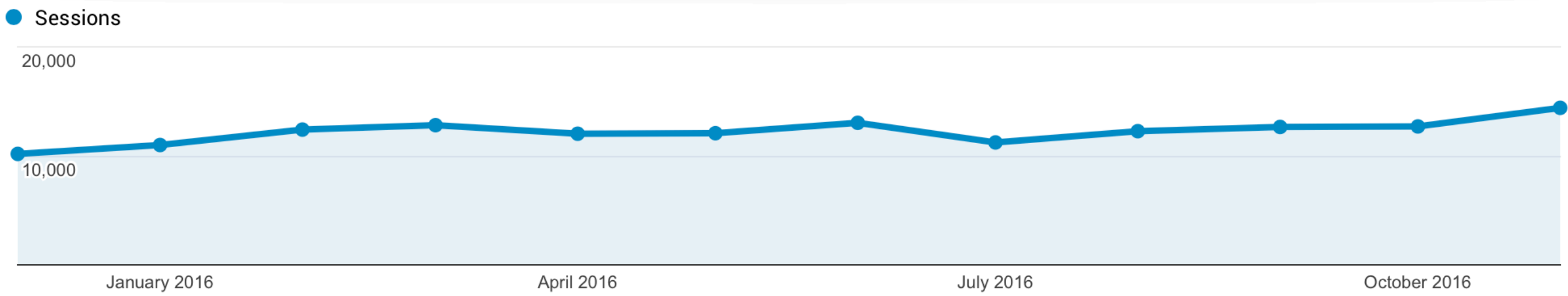


6200 downloads of 2.56 so far

search.loinc.org unique visitors



Overall loinc.org website traffic



Sessions

146,776

Users

90,308

Pageviews

484,380

Pages / Session

3.30

Avg. Session Duration

00:03:08

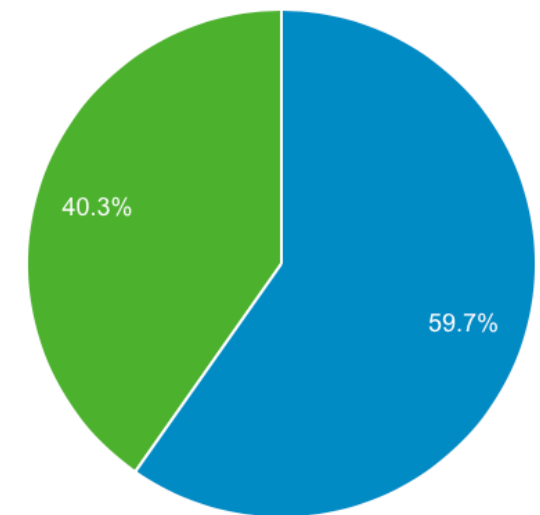
Bounce Rate

55.32%

% New Sessions

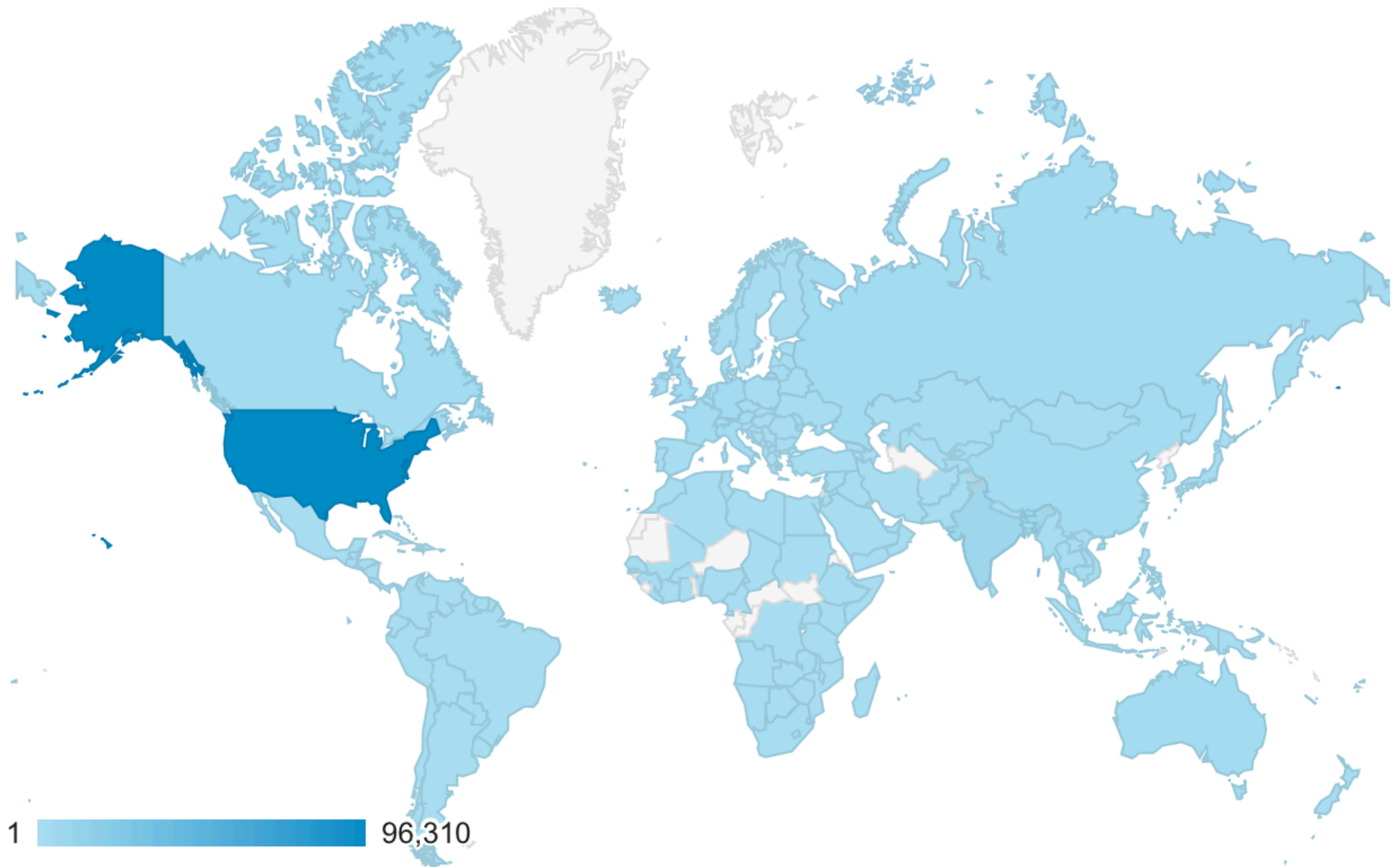
59.69%

■ New Visitor ■ Returning Visitor













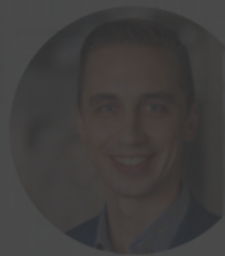
December 2015 through November 2016

Overall loinc.org website traffic

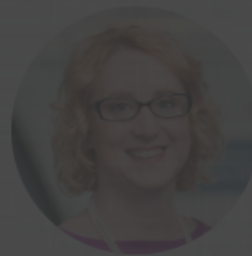


Overall loinc.org website traffic

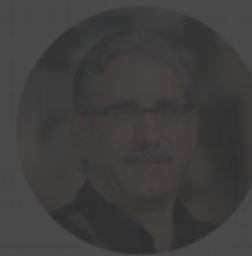
Country ?	Acquisition			Behavior		
	Sessions ? ↓	% New Sessions ?	New Users ?	Bounce Rate ?	Pages / Session ?	Avg. Session Duration ?
	146,776 % of Total: 100.00% (146,776)	59.74% Avg for View: 59.69% (0.08%)	87,682 % of Total: 100.08% (87,608)	55.32% Avg for View: 55.32% (0.00%)	3.30 Avg for View: 3.30 (0.00%)	00:03:08 Avg for View: 00:03:08 (0.00%)
1.  United States	96,310 (65.62%)	57.71%	55,582 (63.39%)	56.02%	3.17	00:02:54
2.  India	6,818 (4.65%)	69.16%	4,715 (5.38%)	58.20%	3.03	00:02:46
3.  Canada	4,090 (2.79%)	58.41%	2,389 (2.72%)	51.78%	3.36	00:03:13
4.  Germany	3,034 (2.07%)	69.71%	2,115 (2.41%)	49.41%	7.92	00:10:24
5.  United Kingdom 🔥🔥🔥	2,186 (1.49%)	70.45%	1,540 (1.76%)	53.48%	3.12	00:02:45
6.  Russia	2,029 (1.38%)	54.46%	1,105 (1.26%)	32.08%	2.83	00:03:26
7.  Australia	1,739 (1.18%)	60.67%	1,055 (1.20%)	57.50%	3.04	00:02:24
8.  France	1,738 (1.18%)	62.08%	1,079 (1.23%)	57.19%	3.10	00:02:39
9.  Netherlands	1,718 (1.17%)	59.14%	1,016 (1.16%)	54.83%	3.03	00:02:43
10.  Italy	1,694 (1.15%)	55.67%	943 (1.08%)	49.11%	4.04	00:03:44



Daniel J. Vreeman
PT, DPT, MSc
Director



Katie Allen
Program Manager



John Hook
Software Development Manager



PHOTO COMING SOON
Swapna Abhyankar
MD
Content Developer



Sara Armson
Content Developer

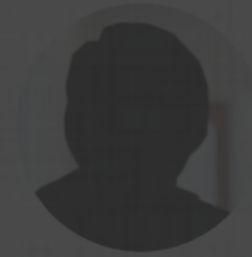


PHOTO COMING SOON
David Baorto
MD, PhD
Consultant Content Developer



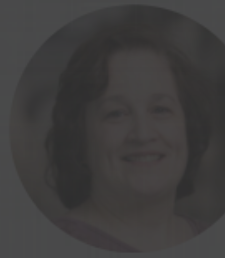
Tim Briscoe
Systems Engineer



Jami Deckard
Content Developer



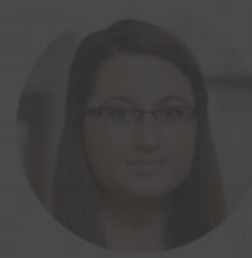
Shahid Khokhar
Systems Engineer



Susan Korsak
Content Developer



Theresa Pritchard
Program Coordinator



Brittney Reid
Program Assistant



Michele Smith
Systems Engineer



Steiner Voigt
Content Developer



Mary Zabriskie
Content Developer

LOINC Staffing Update

A small team that does BIG things



Daniel J. Vreeman
PT, DPT, MSc
Director



Katie Allen
Program Manager



John Hook
Software Development Manager



PHOTO COMING SOON
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Susan Korsak
Content Developer



Theresa Pritchard
Program Coordinator



Brittney Reid
Program Assistant



Michele Smith
Systems Engineer



Steiner Voigt
Content Developer



Mary Zabriskie
Content Developer

Support for a larger team is
the result of increased
external funding success

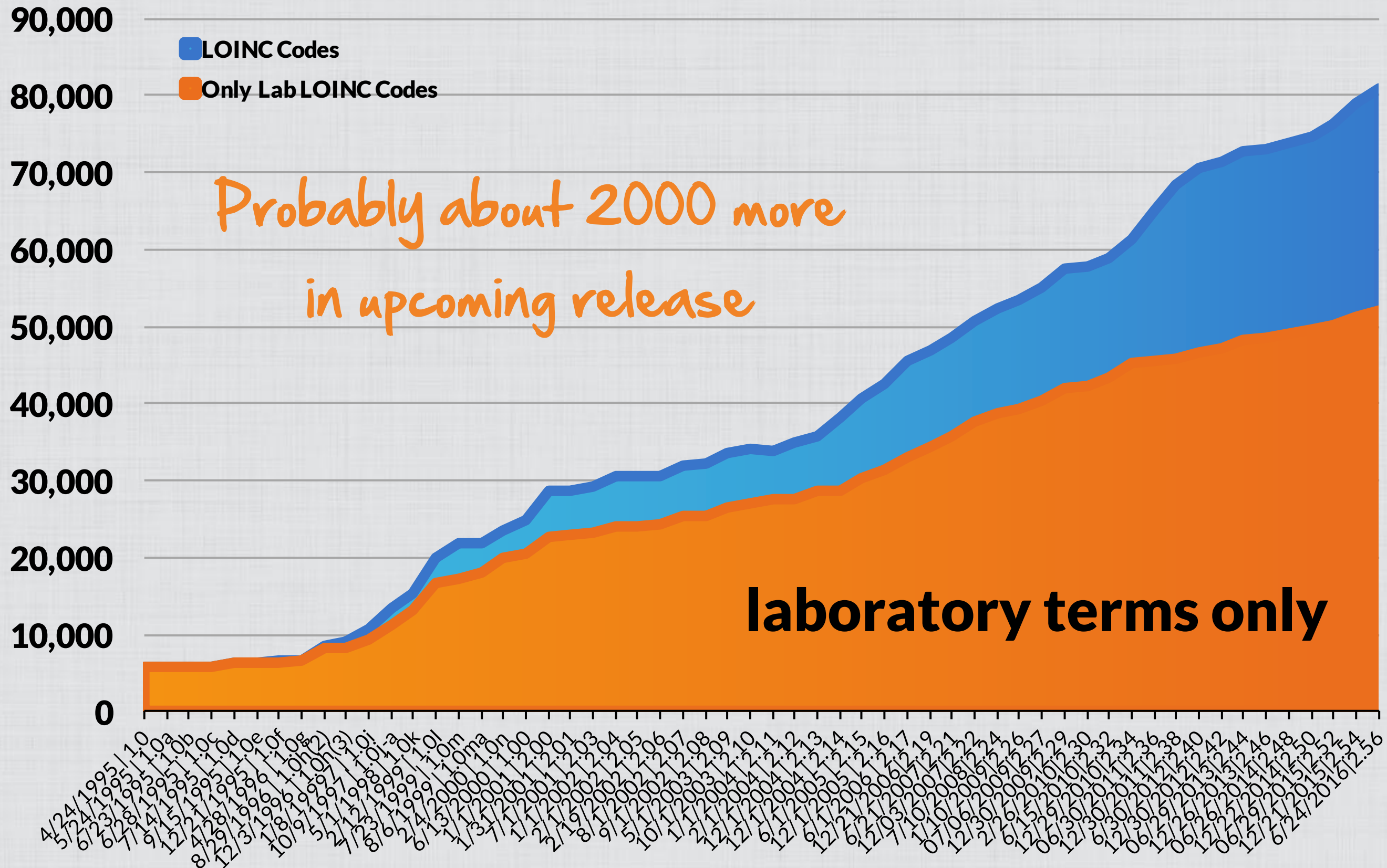
New sources/projects include:
NCATS, NIDDK, CMS, Duke University (NCCIH)



Content Development



LOINC Codes Over Time by Release



Content development team has done a remarkable job tackling our queue of term requests

Our target was processing all requests received 3 months out of a release date

Some of our funded projects are for developing specific content (e.g. CMS)

Median turnaround time

About 90 days for lab requests

About 72 days for clinical requests

Current request queue

1680+ requested LOINCs

92% of those have been requested within the last 3 months*

**Terms older than 3 months may be awaiting submitter information, Committee review, etc.*

Continue evolving our multi-level QA process to try to decrease that time even further

Key Publications and Presentations



PCORnet Best Practices Webinar

Top 10 Tips for Mapping to LOINC

Daniel J. Vreeman

Extended recommendations available:

<https://danielvreeman.com/top-10-tips-for-mapping-to-loinc/>

The secret weapon to jumpstart your LOINC mapping

The image shows the front cover of a book titled 'LOINC Essentials' by Daniel J. Vreeman. The cover is white with a blue border. At the top, the word 'LOINC' is in large, bold, black letters with a blue dot for the 'O'. Below it, 'from Regenstrief' is written in a smaller, black, cursive font. The title 'LOINC Essentials' is in large, blue, sans-serif letters. Below the title, the subtitle 'A step by step guide to getting your local codes mapped to LOINC' is written in a smaller, black, sans-serif font. At the bottom, the author's name 'Daniel J. Vreeman, PT, DPT, MSc' is written in a blue, sans-serif font. The book is shown at an angle, resting on a desk. In the background, there is a blurred image of a smartphone and a green mug.

LOINC[®]
from Regenstrief

LOINC Essentials

A step by step guide to getting your local codes mapped to LOINC

Daniel J. Vreeman, PT, DPT, MSc

Get LOINCing FAST

danielvreeman.com/loinc-essentials

What *LOINC Essentials* covers...

LOINC basics

A framework and techniques for picking out the subtle but important distinctions between LOINC terms

A roadmap and step by step guidance for mapping with RELMA

Best practices in LOINC mapping and how to set yourself up for success in the long run

Disclosure



I'm the author of the book.

This isn't likely to be a NYT Best Seller.

I'm hoping to cover hosting/development costs.

NCVHS

Recommendations on Attachment Standards

Daniel J. Vreeman

My comments / recommendations available:

<https://danielvreeman.com/recommendations-to-ncvhs-on-attachment-standards/>



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Medical Devices

[Home](#) > [Medical Devices](#) > [News & Events \(Medical Devices\)](#) > [Workshops & Conferences \(Medical Devices\)](#)

Workshops & Conferences (Medical Devices)

[2016 Medical Device Meetings
and Workshops](#)

[2015 Medical Device Meetings
and Workshops](#)

[Medical Device Webinars and
Stakeholder Calls](#)

Public Workshop - Workshop on Promoting Semantic Interoperability of Laboratory Data, November 8, 2016



SHARE



TWEET



LINKEDIN



PIN IT



EMAIL



PRINT

The Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the National Library of Medicine (NLM) of the National Institutes of Health (NIH), the Office of the National Coordinator for Health Information Technology (ONC), and the Centers for Medicare and Medicaid Services (CMS) announced the following public workshop titled "CDC/FDA/NLM/ONC/CMS Workshop on Promoting Semantic Interoperability of Laboratory Data." The purpose of this public workshop was to receive and discuss input from stakeholders regarding proposed approaches to facilitate the adoption and implementation of interoperability standards in a manner that enables consistent, accurate, and harmonized descriptions of *in vitro* diagnostic tests and results.

- [Date, Time and Location](#)
- [Federal Register Notice](#)
- [Webcast Archive and Presentations](#)

A stylized, light gray globe is centered in the background. It shows the outlines of the continents, with North and South America visible on the left and Europe and Africa on the right. The globe is set against a dark gray background.

LOINC Adoption and Use



Medical Devices

[Home](#) > [Medical Devices](#) > [News & Events \(Medical Devices\)](#) > [Workshops & Conferences \(Medical Devices\)](#)

Workshops & Conferences (Medical Devices)

[2016 Medical Device Meetings
and Workshops](#)

[2015 Medical Device Meetings
and Workshops](#)

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2016 Interoperability Standards Advisory


Office of the National Coordinator for Health IT

*BEST AVAILABLE
STANDARDS AND
IMPLEMENTATION
SPECIFICATIONS*

HITSC ISA 2017 Task Force

Clem, Susan Matney,
and I are members

1st set of
recommendations
published



Collaboration of the Health IT Policy and Standards Committees
Policy and Standards Federal Advisory Committees on Health Information Technology
to the National Coordinator

July 27, 2016

Karen DeSalvo, MD
National Coordinator for Health Information Technology
Department of Health and Human Services
200 Independence Avenue, SW
Washington, DC 20201

Dear Dr. DeSalvo,

The 2017 Interoperability Standards Advisory Task Force (ISATF) convened on March 8, 2016, as part of a joint collaboration between the Health IT Policy Committee (HITPC) and Health IT Standards Committee (HITSC). The Task Force was charged to submit recommendations to the Health IT Standards Committee regarding revisions and enhancements ONC should consider as it creates the Draft 2017 Interoperability Standards Advisory (ISA), taking into account feedback from the public comment process. This transmittal offers these recommendations, which are informed by the deliberations among the Task Force members, and consideration of testimony from public and private industry stakeholders.

Charge:

Over the course of two phases, the 2017 ISA Taskforce is charged to develop recommendations for the HITSC on the following:

Phase 1 (May -> July)

- Updates to the ISA based on an analysis of public comments;
- Structural and framing improvements to the ISA, including elements that could provide additional clarity and context for stakeholders that would use and consult the ISA;
- Limited set of new "interoperability needs" that should be included in the ISA along with attributed standards and implementation specifications;
- The explicit "best available" designation to a standard or implementation specification, where appropriate (and in consideration of available implementation experience).

Phase 2 (July -> Nov 1)

- Discussion and recommendations around the TF's priority list for inclusion in the 2017 ISA's "Projected Additions" section.

Background:

The Interoperability Standards Advisory (ISA) was ONC's first deliverable in support of the Nationwide Interoperability Roadmap towards a Learning Health System. The document provides the industry with a single, public list of the standards and implementation specifications necessary to fulfill specific clinical health information technology interoperability needs. The ISA Documents known limitations, preconditions, and dependencies as well as known security patterns among referenced standards and implementation specifications when they are used to fulfill a specific clinical health IT interoperability

HITSC ISA 2017 Recommendations

Focus on needs for certified EHRs (not research)

Evolve to be more dynamic

Use consistent format for Q/A style vocab recommendations

“Best Available” -> “Recognized Standards”

Be more transparent / data-driven

Clarify listed value sets (normative, starter, etc)

LOINC / SNOMED for functional status

Add more detail re API-based approaches

Draft 2017 ISA: Comments Being Considered

The screenshot shows the HealthIT.gov website with the following elements:

- Header:** HealthIT.gov logo, navigation links (Blog, Consumer Toolkit, Contact, Get Email Updates), and social media icons.
- Sub-navigation:** Reports & Data, Tools & Resources, Multimedia, Newsroom, and a search bar.
- Primary Navigation:** Providers & Professionals, Patients & Families, and Policy Researchers & Implementers.
- Secondary Navigation:** Policymaking, Regulation, & Strategy; Research & Innovation; Privacy & Security Policy; ONC Health IT Certification Program; Interoperability; and HITECH Programs & Advisory Committees.
- Page Title:** Draft 2017 Interoperability Standards Advisory.
- Left Sidebar:**
 - Draft 2017 Interoperability Standards Advisory
 - Introduction
 - Section I: Vocabulary/Code Set/Terminology Standards and Implementation Specifications
 - Section II: Content/Structure Standards and Implementation Specifications
 - Section III: Standards and Implementation Specifications for Services
 - Section IV: Questions and Requests for Stakeholder Feedback
 - Appendix I – Sources of Security Standards and Security Patterns
 - Appendix II - Revision History
 - Appendix III – Responses to Comments Requiring Additional Consideration
- Main Content Area:**

Section I	Section II	Section III
▶ I-A: Allergies	▶ I-B: Encounter Diagnosis	▶ I-C: Family Health History
▶ I-D: Functional Status/Disability	▶ I-E: Health Care Provider	▶ I-F: Imaging (Diagnostics, interventions and procedures)
▶ I-G: Immunizations	▶ I-H: Industry and Occupation	▶ I-I: Lab Tests
▶ I-J: Medications	▶ I-K: Numerical References & Values	▶ I-L: Nursing
▶ I-M: Patient Clinical "Problems" (i.e., conditions)	▶ I-N: Preferred Language	▶ I-O: Procedures
▶ I-P: Race and Ethnicity	▶ I-Q: Research	▶ I-R: Sexual Orientation and Gender Identity
▶ I-S: Social Determinants	▶ I-T: Tobacco Use	▶ I-U: Unique Device Identification
▶ I-V: Vital Signs		
- Footer:** Introduction >

<https://www.healthit.gov/standards-advisory/draft-2017>

ONC Tech Lab - Lab US Realm



Home

Interoperability Proving Ground

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Laboratory US Realm Pilot Project

Description

Goals of the program are to encourage market adoption of the HL7 US Realm Laboratory Results R1 DSTU2 (LRI), Laboratory Orders R1 DSTU2 (LOI), and electronic Directory of Services R2 DSTU2 (eDOS) R2 Implementation Guides absent any other incentives or regulatory requirements to do so. Demonstrations must implement to a baseline and may optionally extend scope and complexity as defined in the technical requirements set forth in the Reference Specifications.

- <http://wiki.siframework.org/Lab+US+Realm+Pilot+Project>

Start Date 3/4/2016

Projected End Date 09/30/2016

Project Tags

- eDOS
- Labs
- LOI
- LRI

Project Point of Contact: bob@rtyllc.com

Con riferimento alle politiche di accesso, ciascuna Regione o Provincia Autonoma può definire proprie politiche, le quali devono essere federate con i gestori dei privilegi degli altri sistemi di FSE, attraverso operazioni di mappatura dei profili di accesso.

Al fine di garantire la tracciabilità delle operazioni svolte sul sistema e di chi le ha eseguite, in modo da abilitare funzionalità di auditing e di certificazione sulle attività svolte per le diverse finalità previste, devono essere registrate tutte le operazioni, sia quelle andate a buon fine che quelle annullate.

5. Sistemi di codifica dei dati.

Ai sensi delle disposizioni dell'articolo 24 del decreto, ciascuna Regione e Provincia Autonoma ha il compito di redigere i documenti sanitari e socio-sanitari utilizzan-

ratore italiano dell'Organizzazione Mondiale della Sanità per la Famiglia delle Classificazioni Internazionali.

La classificazione ICD-9-CM adottata per i documenti del FSE è la versione 2007 in lingua italiana.

5.2. LOINC.

LOINC è un sistema di nomi e codici universali che identificano in maniera univoca osservazioni cliniche e di laboratorio al fine di facilitare la condivisione e lo scambio di risultati di indagini diagnostiche fra sistemi elettronici di strutture sanitarie differenti. Il Regenstrief Institute si occupa dell'aggiornamento dello standard terminologico con release semestrali.

La classificazione LOINC adottata per i documenti del FSE è la versione 2.3.4 in lingua italiana.

Italian law adopting LOINC for identifying lab tests

« Les éléments de l'identification qui figurent sur l'étiquette apposée sur le prélèvement sont définis par le laboratoire dans le cadre de ses procédures préanalytiques. Le numéro d'identification du patient fait partie de ces éléments.

« Lors de la transmission d'un échantillon dans le cadre des dispositions de l'article L. 6211-19, les deux laboratoires s'assurent de la traçabilité du prélèvement par le numéro d'identification du patient.

« Art. D. 6211-3. – I. – Le résultat de l'examen de biologie médicale est validé par un biologiste médical avant toute communication.

« Le nom et le prénom du biologiste médical apparaissent en toutes lettres sur le résultat communiqué de l'examen.

« II. – L'interprétation contextuelle du résultat mentionnée aux articles L. 6211-2 et L. 6211-19 consiste à écrire la signification biologique d'un ou de plusieurs résultats, pris individuellement ou dans leur ensemble, en fonction des éléments cliniques pertinents. L'interprétation contextuelle peut être postérieure à la validation du résultat dans les cas de décision thérapeutique urgente ou dans les périodes de permanence de l'offre de biologie médicale. Elle est réalisée dans le même temps que la validation dans les autres cas. L'interprétation comporte la signature du biologiste médical.

« III. – Les résultats validés du ou des examens de biologie médicale et leur interprétation contextuelle figurent dans un compte rendu qui comporte les éléments mentionnés à l'article D. 6222-3, les éléments d'identification mentionnés à l'article D. 6211-2, l'identification du ou des biologistes médicaux signataires. Le compte rendu reprend les principaux éléments pertinents du contexte clinique. Lorsque des résultats sont communiqués de façon partielle, le compte rendu porte la mention "résultat partiel" ou "résultats partiels".

« IV. – La communication appropriée du résultat au prescripteur et au patient se fait, pour chaque examen, dans le délai que permettent les données acquises de la science pour la phase analytique, en urgence si nécessaire. Le laboratoire est organisé de façon telle que les délais de rendu en urgence sont respectés pour toutes les situations médicales qui le nécessitent.

« V. – La communication du compte rendu au prescripteur s'effectue par la voie électronique.

« La communication du compte rendu au patient s'effectue par la voie électronique ou, à sa demande, sur support papier.

« Art. R. 6211-4. – Le compte rendu des examens de biologie médicale est structuré conformément au référentiel d'interopérabilité dénommé "volet compte rendu d'examens de biologie médicale", pris en application du quatrième alinéa de l'article L. 1111-8. L'identification et l'authentification du biologiste médical sont réalisées conformément aux référentiels mentionnés à ce même alinéa. Ce compte rendu structuré est produit, conservé et échangé par voie électronique conformément aux référentiels d'interopérabilité et de sécurité arrêtés par le ministre chargé de la santé après avis du groupement d'intérêt public chargé du développement des systèmes d'information de santé partagés mentionné à l'article L. 1111-24.

« Lorsque le compte rendu des examens de biologie médicale est communiqué au prescripteur par voie électronique, l'échange se fait en utilisant une messagerie électronique sécurisée de santé. Dès lors qu'il contribue à la coordination des soins, le compte rendu des examens de biologie médicale est inséré dans le dossier médical personnel mentionné à l'article L. 1111-14.

« Art. D. 6211-5. – Un arrêté du ministre chargé de la santé détermine la nature des échantillons à conserver après la réalisation de la phase analytique ainsi que la durée et les conditions de conservation de ces échantillons. En cas de transmission d'un échantillon, le laboratoire qui a la responsabilité de la réalisation des examens du patient au sens de l'article L. 6211-19 s'assure que le laboratoire qui réalise la phase analytique respecte cette disposition dans ses procédures.

French law mandating LOINC for identifying lab tests via
IHE XD-LAB profile

LOINC Award for Distinguished Contributions



LOINC Award Honors Outstanding Contributors to Advancement of Health Data Interoperability

by [Daniel Vreeman](#) — last modified 2016-07-13 09:01

INDIANAPOLIS (June 30, 2016) -- LOINC, the world's most commonly used universal code system for identifying medical test results, observations and other clinical measurements, has announced the inaugural recipients of the LOINC Award for Distinguished Contributions. The new award honors individuals whose work advances the interoperability that ensures that medical data can be recorded, electronically exchanged and ultimately used to improve health -- when and where needed.

J. Gilbert Hill, M.D., Ph.D., of Canada and Cindy Johns, MSA of the United States were presented with the award at the annual LOINC meeting in June. Both are long-time active members of the LOINC participant community.

Hill, who worked at the Hospital for Sick Children in Toronto as director of the Clinical Biochemistry Service for 30 years, then as consultant to the electronic Child Health Network (eCHN) for 20 years, is an internationally respected scientist who, working with Canada Health Infoway, has influenced terminology standardization and the employment of LOINC for lab tests across Canada for over a decade.

Johns, a senior information technology specialist for LabCorp with responsibility for maintaining LabCorp's LOINC database, has presented LOINC courses throughout the medical laboratory industry. Three years ago she was recognized at the American Society for Clinical Pathologists with a Lifetime Achievement Award and currently serves on the organization's Board of Directors.

In addition to hospital systems, clinical laboratories, health information exchanges and other private and quasi-private sector entities, LOINC users include ministries and departments of health around the world. U.S. government agencies in the LOINC community include the National Library of Medicine, the departments of Veterans Affairs and Defense, the Indian Health Service, the National Cancer Institute and the Centers for Disease Control and Prevention.

LOINC is used in 172 countries and is available in Chinese, Dutch, Estonian, French, German, Greek, Italian, Korean, Portuguese, Russian, Spanish, and Turkish in addition to English.

LOINC traces its roots to the mid-1990s when Regenstrief Institute investigators, using their extensive experience with electronic medical records, developed the Indiana Network for Patient Care, the nation's first citywide health information exchange. They found they could receive data from various INPC-member institutions but that the clinical content was difficult to interpret because each used a different code for the same test or observation. A blood sugar result at one institution might be called a blood glucose score at another and something different at a third facility. It was as if the computer system was receiving messages in Vulcan, Klingon and Ferengi when all it had been programmed to understand was English.

To solve the problem the Regenstrief researcher-clinicians, led by Clement McDonald, M.D., developed the lingua franca they called LOINC, short for [Logical Observation Identifiers Names and Codes](#). The Regenstrief Institute is the owner, developer, and overall steward for LOINC.

"Today, LOINC is the most accepted and used international standard of names and codes for medical results, observations and other clinical measurements in the world," said Regenstrief Institute investigator Daniel Vreeman, DPT. "Thanks to dedicated people like Gil Hill and Cindy Johns we are constantly expanding both in terms of codes and users with the ultimate goal of improving human health." Vreeman serves as associate director for terminology services in the Center for Biomedical Informatics at the Regenstrief Institute.

With support from the National Library of Medicine, the Regenstrief Institute and other organizations, LOINC is an open, freely available standard. Updates to LOINC are issued twice annually.



Media Contacts

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The background features a dark gray field with two overlapping circles. The front circle is a medium gray and contains a white speech bubble shape pointing downwards. The text "Active Collaborations" is centered over the speech bubble in a light blue color with a subtle drop shadow.

Active Collaborations

IEEE (heard)

IHTSDO (more later)

CMS (new)

Duke University - ADAPTABLE (new)

RSNA

HL7

NIDDK (new)

HSC (previously SCO)

More cooking...

Especially in social determinants of health



**Our best days are
yet to come...**