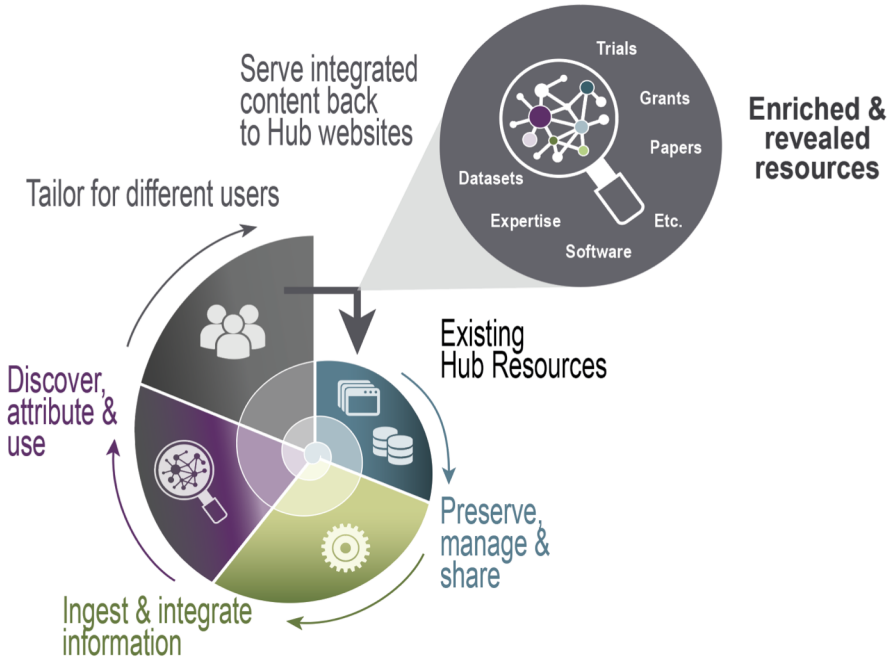
NATIONAL CENTER
FOR DATA TO HEALTH

RESOURCE DISCOVERY

COMMUNITY CORE

RESOURCE DISCOVERY COMMUNITY CORE

Enabling discovery of expertise and resources within the CTSA Hubs and beyond.



VALUE & VISION

As catalysts of research, CTSA hubs need to preserve and disseminate a wide range of research works, enhancing their visibility and opportunity for sharing and reuse. CTSA hubs also need to promote people and their expertise, supporting attribution of a wide range of contributions. We aim to create and enhance tools and information resources that empower the CTSA hubs to find, share, and credit more easily.

cd2h.org/discovery

- **Explore** current resources sourced from the CTSA program and beyond
- **Use translational workforce personas** to inform local and consortium resource development
- **Use attribution tools** to help credit a wide range of activities in translation
- **Adopt open software** to securely support sharing, preservation, credit, and discovery for data sets and a range of other scholarly products and activities
- **Adopt data models** to promote access, indexing, and discoverability of a wide range of resources, such as training, research, and engagement materials

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EXPLORE **cd2h.org/discovery**

JOIN US We are actively seeking community members to drive requirements, use our stuff, and help build out a rich translational infrastructure. Signal your interest at **cd2h.org/onboard**

SCIENCE OF TRANSLATIONAL SCIENCE PLATFORM

Making discoverable translational expertise, services, and resources across the CTSA Program

VALUE & VISION

To be efficient and effective translational agents, hubs need to make their diverse resources and services more easily discovered. Organizations expend substantial effort maintaining local databases of effectively the same content: services, people, trials, publications, grants, etc. The SciTS platform performs large-scale integration from a large variety of source using both structured and unstructured information, and makes these data available to hubs in a variety of easily consumed forms.

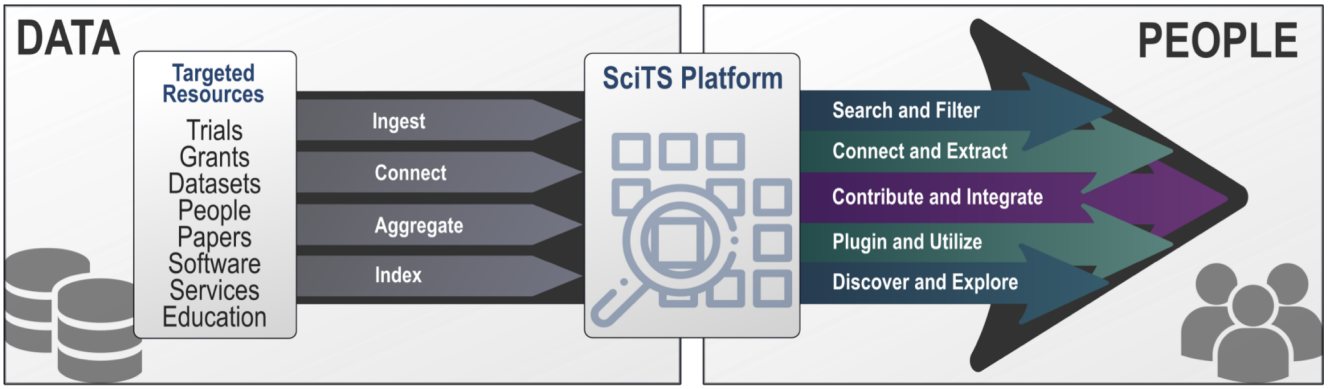
EXPLORE SciTS PLATFORM FEATURES

- Find and filter integrated information about CTSA resources: **Expertise, Software, Trials, Services, Educational resources, & Datasets**
- Execute or customize a query from the library via open GraphQL server
- Connect investigators to the information they need, when they need it

PLANNED ENHANCEMENTS

- Integration with education and service platforms
- Support for CTSA hubs to annotate web content for customized inclusion in search results
- Discovery widgets that hub websites can deploy locally

cd2h.org/scits



HOW TO GET INVOLVED

We are actively seeking community members to drive requirements, try out the platform, and provide resource information to build out a rich infrastructure of services.

Signal your interest at cd2h.org/onboard

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cd2h.org/scits

ARCHITECTING ATTRIBUTION

Creating infrastructure to capture contributions to translational science

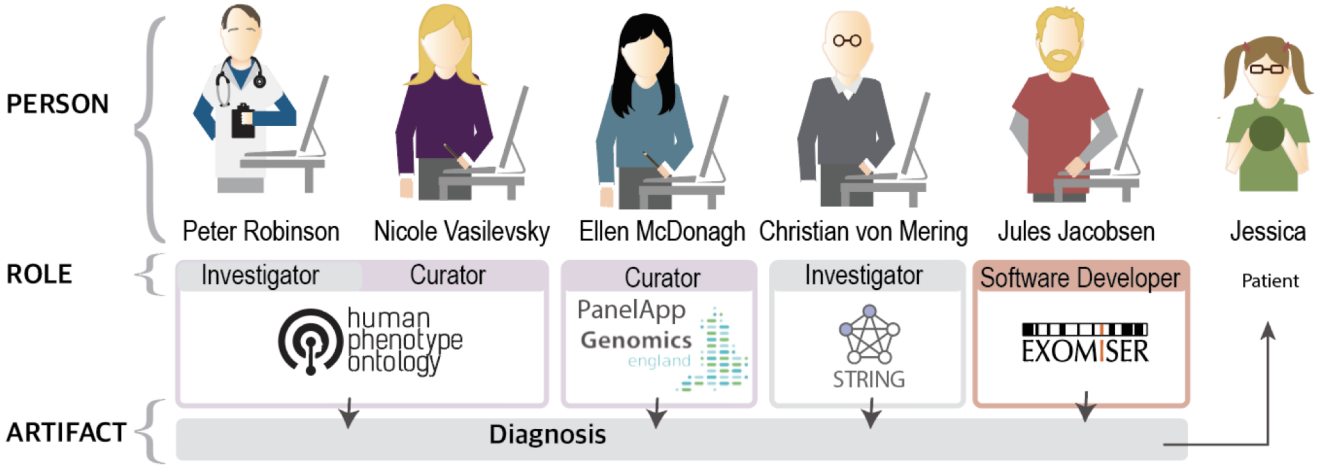
VALUE & VISION: This project enables the tracking and attribution of diverse contributions to support credit for work, better understanding of what skills and activities are needed, and incentivizes participation. Here, we aim to create infrastructure components to identify, aggregate, present and, ultimately, assess the impact of these contributions made in team-based science that vary in type and intensity, but which are vital to moving science forward.

FEATURES

A suite of tools and resources to help document and garner a better understanding of contribution across translational science

- **Contributor Attribution Model (CAM)**
- **Contribution Role Ontology (CRO):** contribution roles for documenting crediting persons or organizations
- **Information Models:** An informal representation of the logical data model is available, and a computable
- **JSON schema specification** of the information model will be available soon.
- **Tab File:** A tab file format implementation of the information model
- **Documentation:** Support to guide the use of these resources

cd2h.org/attribution



HOW TO GET INVOLVED

Interested in credit and incentives? We are actively seeking community members to weigh in with requirements and test the model, join us as we develop tools and resources, and stay connected at cd2h.org/onboard

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cd2h.org/attribution

PERSONAS

Translational workforce profiles to inform and empower CTSA Hubs in the creation of targeted tools, training, and services

VALUE & VISION: This project encompasses and describes the diversity of roles in the clinical and translational science ecosystem. By identifying CTS roles, establishing a persona to represent each role, and providing each persona with a profile, we have documented the needs, motivations, goals, and pain points in the translational workforce that can be used to inform software development, use cases, teaching materials, and more for the CTSA community

PERSONAS FEATURES

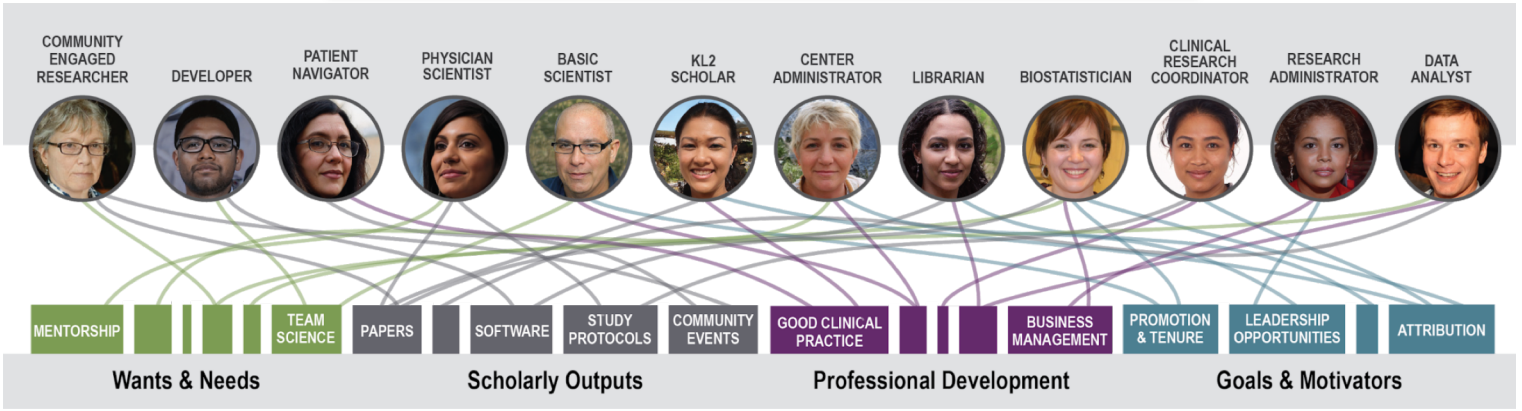
- **12 one-page profiles** of key roles in translational research
- **Additional resources** and information available via public GitHub pages site
- **Evidence-based** through systematic review of literature, job descriptions, and interviews. Two empathetic patient profiles informed by literature
- **Sample use cases informed by CTSA** project experience
- **Multiple feedback mechanisms**
- **Publication** outlining process, lessons learned and a way forward for best practices for Persona creation in biomedicine

USE PERSONAS NOW!

- **Download the Profiles**
- **Download the User Guidebook**
- **Sample Use Cases:** read ours and contribute your own.
- **Contribute ideas** for new Personas or improvements to the existing one.
- **Submit feedback** via the Personas Evaluation Form.

https://data2health.github.io/CTS-Personas/

cd2h.org/personas



HOW TO GET INVOLVED

We are actively seeking community members to review the sample profiles, provide feedback, and tell us about your uses cases. Learn more at cd2h.org/onboard

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cd2h.org/personas

INVENIO-RDM

Preserve translational research and make it discoverable, shareable, reusable, and citable

cd2h.org/invenio

VALUE & VISION: Research Data Management (RDM) platforms play a critical role in the research ecosystem to help ***preserve & share research***, ***enable reproducibility***, and ***empower reuse*** of datasets, protocols, engagement or study materials, as well as *a wide range of other research products.* Open source InvenioRDM has a modern web architecture and standards that make it easy to deploy, maintain, and use. InvenioRDM is being developed with a wide range of features to streamline good data practice and boost value throughout the translational research lifecycle.

EXISTING & IN-PROGRESS FEATURES TO SUPPORT TRANSLATIONAL SCIENCE

- **Research, shared.** Securely share and preserve data records and research materials with collaborators. Allows easy dissemination to the community.
- **Get credit & be cited.** Get a DOI to make records easily and uniquely citable. Pre-formatted citation text makes it easy to cite your work and be cited.
- **Metrics.** Industry standard usage statistics for record pages with all tracking completely anonymized.
- **Comply.** Comply with data sharing mandates and acknowledge your grants.
- **FAIR.** New features to help you make your research Findable, Accessible, Interoperable, & Reusable.
- **Communities.** Create and curate your own community (e.g., a workshop, project, department, lab, or journal).
- **Discoverable.** Leverages metadata standards and the powerful Elasticsearch full-text search engine retrieves, facets, sorts, and filters your searches with ease.
- **Easy.** Turn-key research data management platform & index can be easily deployed in the local environment by your team or by the service provider, TIND. Customize the look and feel to your local environment.

LEARN MORE & TRY NOW

A first minimum viable product (MVP) of InvenioRDM is available, with final product due by June 2020.

cd2h.org/invenio

Use cases, roadmap, competitive landscape analysis, and more on the **CD2H InvenioRDM project page**

http://bit.ly/CD2H-github-invenioRDM

Current code will be extracted to our new collaborative development effort with CERN. We invite collaboration and discussion on that repository. ***See you there!***

https://github.com/inveniosoftware/invenio-app-rdm

Try out the MVP! cd2h.org/invenio
Search public content now or login to try a deposit

- **Test Login:** gla3975
- **Password:** InvenioRDM@NU_2019

Get updates and test new releases
https://invenio-software.org/

PRESERVE & CURATE | SHARE | COMPLY & REPORT | CITE & CREDIT | DISCOVER & REUSE

HOW TO GET INVOLVED

We are actively seeking community members to join us for collaboration and discussion, provide feedback and requirements, and tell us about your uses cases. Learn more at cd2h.org/onboard

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https://invenio-software.org/

cd2h.org/invenio

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NATIONAL CENTER
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INFORMATICS MATURITY & BEST PRACTICES

COMMUNITY CORE

INFORMATICS MATURITY & BEST PRACTICES COMMUNITY CORE

Development and dissemination of informatics best practices and data sharing strategies for CTSA Hubs.

VALUE & VISION

Among the biggest challenges with translational science is understanding what activities and structures are most associated with success, therefore knowing where to invest resources. There have not been sufficient frameworks to define best practices or tools to help organizations identify their gaps and opportunities. We have identified and developed these frameworks and tools (maturity models) that define pathways to achieving best practices. We are also developing tools to overcome specific barriers to success in data use and sharing data for open science.

COMMUNITY CORE OBJECTIVES

To determine, define and disseminate best practices in data use and informatics. Extending work performed by members of the CTSA and research informatics community, we are identifying maturity and governance best practice models for using, sharing, and re-using health data. We are engaging the CTSA community to develop and advance existing and new models. Finally, we are creating tools to assist hubs execute best practices in data and resource dissemination.

EXPLORE OUR WORK

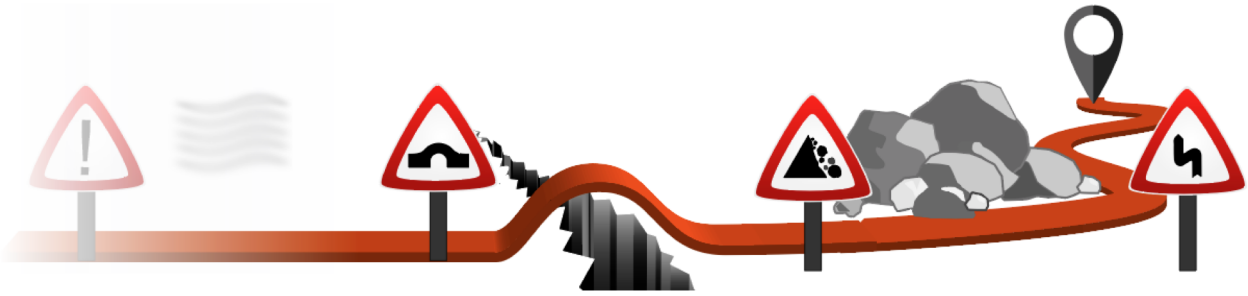
- Comprehensive library of 30+ maturity models
- Data Discovery Engine: Help others discover & use your shared data
- Defining pathways for assessing and improving research IT and data sharing

How to responsibly share my Hub's biomedical data?

Does my Hub have a good process for decision-making regarding sharing?

How can my Hub make our biomedical data discoverable?

How can we share it effectively?



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EXPLORE

cd2h.org/maturity

JOIN US

We are actively seeking community members to share data use agreements, and help us understand applicable use cases for our data discovery tools. Also, we would appreciate CTSAs being involved in the assessment of new and developing maturity models. Signal your interest at cd2h.org/onboard

DATA DISCOVERY ENGINE

Help others discover and use your shared data

VALUE & VISION

CTSA hubs and partner organizations have a wealth of data and opportunities for collaboration, yet it is challenging to identify existing datasets that can be leveraged to help power investigation. Moreover, there are increasing mandates for data sharing by funding agencies to promote reuse and access. This project creates a pathway and tooling for hubs to define and expose their data resources in a easy and reusable way so that others can find them via multiple contexts including Google Dataset Search and other search portals.

cd2h.org/discoveryengine

FEATURES

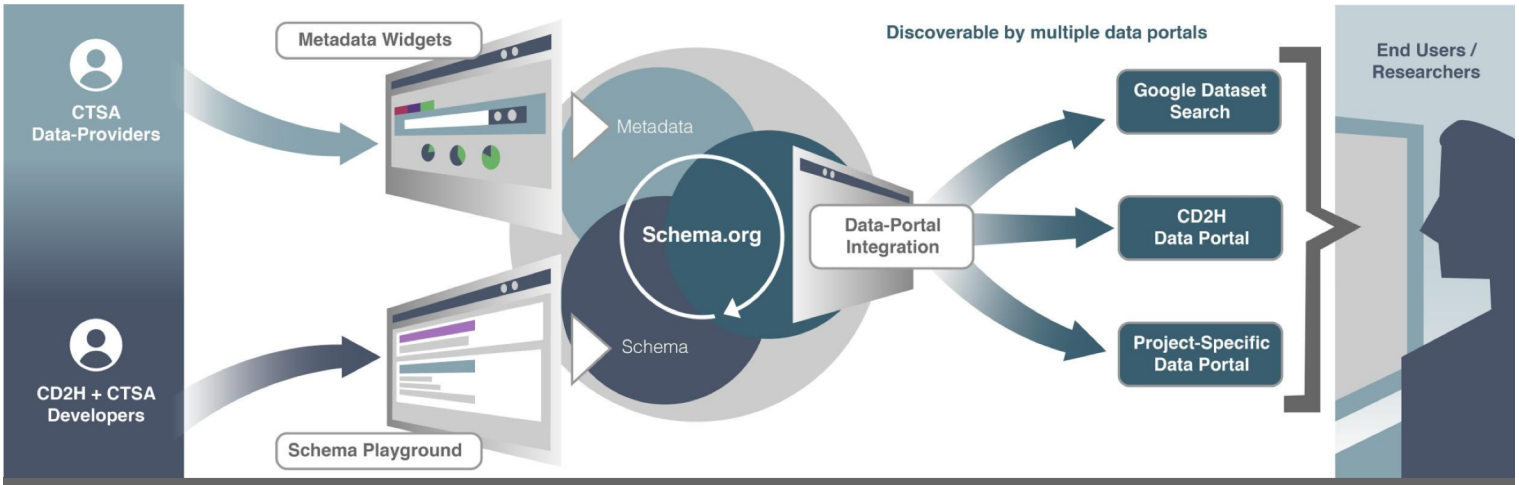
Tools to describe data sources help data providers to describe their data for people to use them.

Schema playground helps developers build metadata schemas on top of existing ones.

Data-portal integration maximizes discoverability by harvesting metadata and distributing to data portals.

TRY THE PORTAL OUT!

- **Register your dataset** with our metadata widgets
- **Enhance dataset discovery on your OWN hub site** by embedding structured metadata
- **Extend metadata schema** to cover your favorite dataset types
- **Define a use case** to help others find similar data



HOW TO GET INVOLVED

We are actively seeking community members to try our data discovery tools and share their use cases to help expand the functionality. Signal your interest at cd2h.org/onboard

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cd2h.org/discoveryengine

github.com/data2health/RDP-PORTAL

INFORMATICS MATURITY MODELS

Advancing maturity models to improve open science and research IT at CTSA hubs

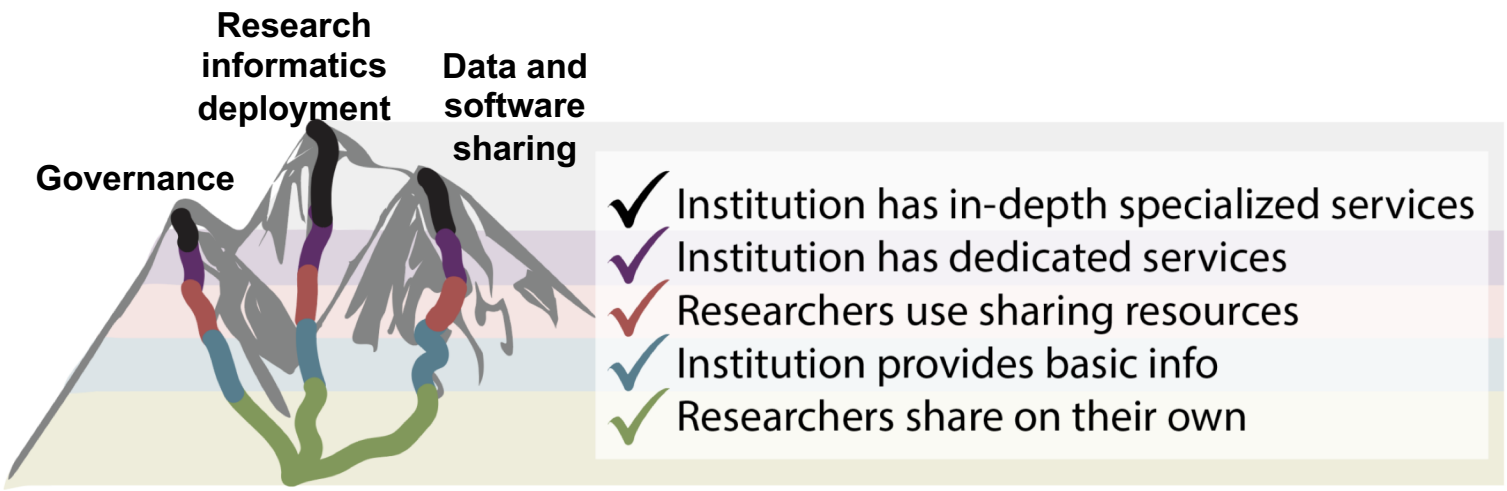
VALUE AND VISION

The path to a mature, high-performing and effective research informatics system varies by topic, is evolving rapidly and is often undefined. Organizations can be strong in some areas but weak in others, and it is difficult to know what areas of focus are most important for investment and improvement to achieve broader success. CTSA hubs are often unclear of where their specific gaps are, how best to prioritize and address them, and what resources are required to do so. Maturity models enable hubs to assess, advance, and innovate their open science and research IT.

FEATURES

- **Self-assessment maturity assessment** in open science and research IT
- **Comprehensive library** of over **30** maturity models relevant to healthcare that can be searched and compared
- **Best practices** for developing new maturity models
- **Data-driven deployment roadmaps** in areas specific to research informatics and open science maturity

cd2h.org/maturitymodel



HOW TO GET INVOLVED

We are actively seeking community members to explore maturity models, apply them for organizational self-assessment, and comment on their utility. Onboard at cd2h.org/onboard

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champieu@ohsu.edu

cd2h.org/maturitymodel

THE REUSABLE DATA PROJECT

An evaluation platform and rubric for research data licensing

VALUE & VISION

Computing and analytics have altered the landscape of what it means to use data, thereby straining the legal frameworks that govern it. Research and industry alike are in need of new legal frameworks that facilitate data access and redistribution rights while securing accountability, attribution, and the sustained availability of the merged and underlying data sources. The Reusable Data Project hopes to do for data sharing what the Uniform Biological Material Transfer Agreement (UBMTA) has done for materials sharing across institutions.

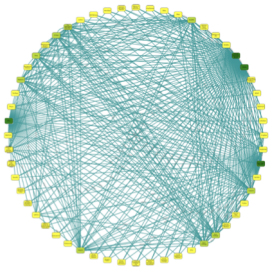
cd2h.org/reusabledata

EXPLORE THE REUSABLE DATA PROJECT

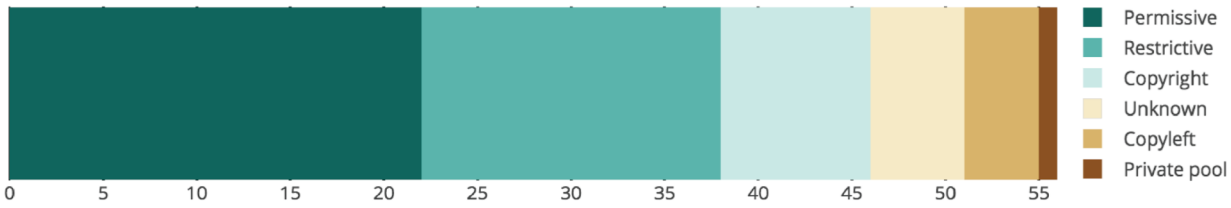
- **Rubric** for evaluating the reusability and redistribution of data
- **Portal** for reviewing evaluations of data resources and their suitability for reuse
- **Github repository** for evaluating new databases and submitting requests
- **Manuscript** "An Analysis and Metric of Reusable Data Licensing Practices for Biomedical Resources." PLOS ONE 2019: PMC6436688

LICENSE INCOMPATIBILITY THWARTS INNOVATION

Permissively licensed data is like a universal donor: it doesn't get much "back" from more restrictively licensed data.



Restrictively licensed data can only be combined with permissively licensed data, not most other restrictively licensed data.



License Type	Percent	Count	Description
Permissive	39.3 %	22	Permits reuse, transformation, and redistribution, allowing for attribution; e.g. MIT
Restrictive	28.6 %	16	Includes terms that may hinder data integration & reuse; e.g. CC BY-ND 4.0
Copyright	14.3 %	8	Asserts a resource provider's exclusive copyrights.
Unknown	8.93 %	5	Terms very unclear or conflicting.
Copyleft	7.14 %	4	Allows for reuse, transformation, and redistribution, but derivatives must have the same license; e.g. GPL 3.0
Private pool	1.79 %	1	Requires data users to add their own data to the pool, or limits reuse to those users already in the pool.

HOW TO GET INVOLVED

We are actively seeking community members to contribute resource evaluations or requests at the Reusable Data Project. Signal your interest at cd2h.org/onboard

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sjcarbon@lbl.gov

cd2h.org/reusabledata

github.com/reusabledata/reusabledata

DATA QUALITY PROJECT

Tagline here

VALUE & VISION

Ipsum lorem

cd2h.org/<TBD>

CURRENT ACTIVITIES

PLANNED FEATURES

IPSUM LOREM

HOW TO GET INVOLVED

We are actively seeking community members to XYZ. Signal your interest at cd2h.org/onboard

TBD

cd2h.org/

github.com/TODO

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NATIONAL CENTER
FOR DATA TO HEALTH

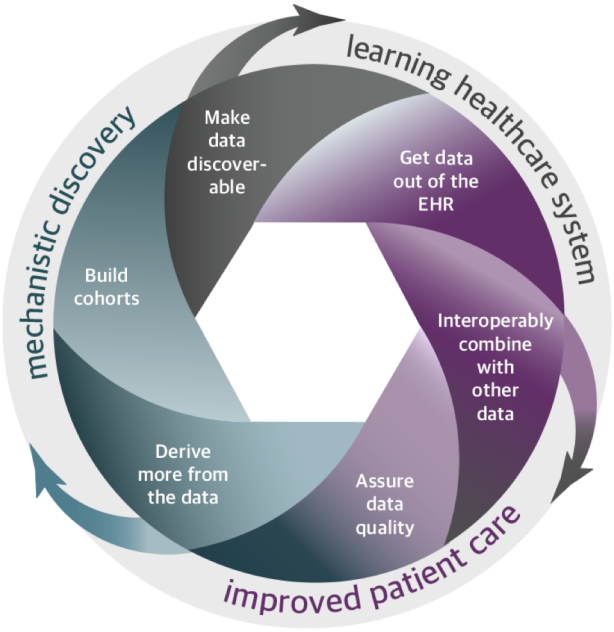
NEXT GENERATION DATA SHARING
COMMUNITY CORE

NEXT GENERATION DATA SHARING COMMUNITY CORE

Harmonizing the data ecosystem and enabling translational EHR analytics across CTSA Hubs

VALUE AND VISION

Federated analyses of clinical data across CTSA hubs is one of the strongest potentials of the network. However, the CTSA clinical data landscape is very heterogeneous in its structure, data quality, and data access. Data harmonization and new semantic technologies can support innovative, collaborative phenotyping and analytics at scale. Fundamentally, we aim to develop an open-science ethos and unite CTSA community data sharing with broader global efforts.



cd2h.org/sharing

COMMUNITY CORE OBJECTIVES

- **Support interoperability** of common data models
- **Explore HL7 FHIR** as a canonical hub for data transformation and exchange
- **Develop and apply** standards, Common Data Elements (CDEs), and other data models
- **Realize** community-developed terminology services for translational science
- **Advance** clinical phenotype characterization

EXPLORE OUR WORK

- **Slides and videos** from our Federated Data Query workshop (May 20-21)
- **Read our phenotyping study** in Nature Digital Medicine [PMID: 31119199]
- **Check out** our Prototyped FHIR terminology services for Health Open Terminologies
- **Join a task group** in the data harmonization project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Core community co-chair
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EXPLORE

cd2h.org/sharing

JOIN US

We are actively seeking community members to participate in our task groups.
Signal your interest at **cd2h.org/onboard**

HARMONIZING CLINICAL DATA MODELS

Advancing clinical data interoperability supporting translational research analytics

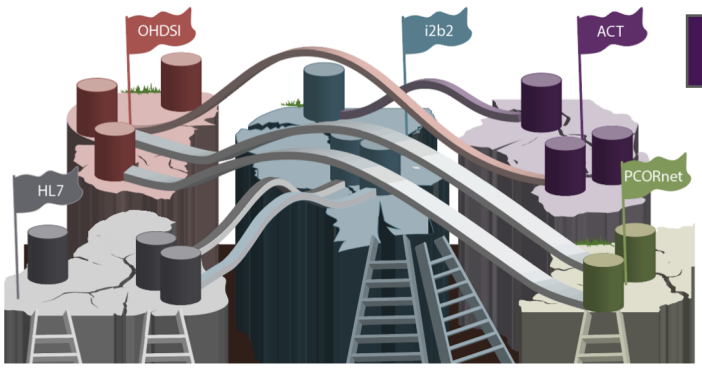
VALUE AND VISION

Clinical data is among the most valuable artifacts among CTSA hubs. Appropriately leveraging that data for translational research, while respecting privacy and honoring hub autonomy, will advance CTSA goals and demonstrate our power as a network. The HL7 FHIR standard makes it possible for hubs to develop a next-generation repository that is truly integration-ready, whether directly for federated query or for transformation to any number of common standards.

cd2h.org/harmonization

CTSA PAIN POINTS

- **Multiple data models** to choose from
- **Significant effort required for transforms** to model and between models
- **Data islands** that are invisible to each other
- **Inability to share or discover** transformation methods
- **Difficulty assessing suitability of data source** for collaboration without performing a transformation



CD2H SOLUTIONS

- **Centralized portal and directory** to all things FHIR
- **Tools** to facilitate sharing, collaboration, discovery, and transformation between data models
- **Sharable/discoverable transformation methods**
- **Catalog** of who is using FHIR, how they are using, and where

HOW TO GET INVOLVED

We are actively seeking community members to map, extend, and connect clinical data through common and canonical models. We have four task groups: HL7 Engagement, CDM-FHIR Gap Analysis, FHIR Server Options, Sustainability and Change Management

Signal your interest at cd2h.org/onboard

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cd2h.org/harmonization
cd2h.org/fhir

ONTOLOGIZING THE EHR

New methods for collating and analyzing EHR phenotypes for mechanistic discovery and precision medicine

VALUE & VISION

Phenotyping is the foundation of precision medicine, but it is challenging because information is distributed in many EHR locations and there is a lack of interoperability across sites. This project will extract detailed patient phenotypic profiles and encode them using the Human Phenotype Ontology (HPO) and other ontologies and vocabularies. The transformed data provides a foundation for conducting phenotype-based translational research including biomarker discovery, differential diagnosis, and disease stratification. We are extending our approach to larger datasets across multiple CTSA sites to look for biomarkers and conditional markers. The library will develop into a tool for phenotype-based stratification algorithms across multiple hubs.

cd2h.org/ontologizing-ehr

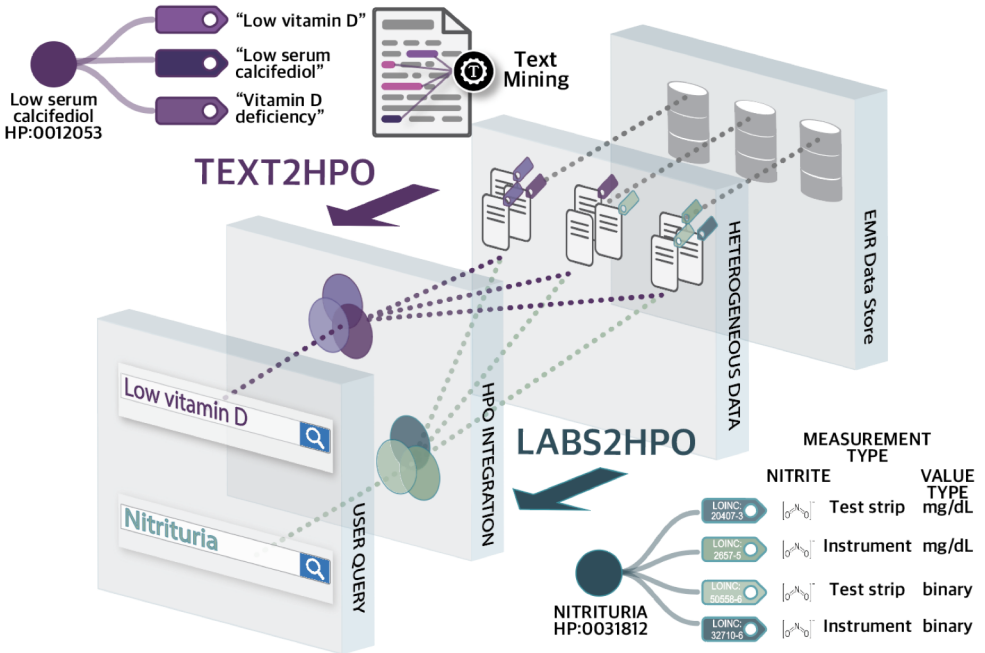
FEATURES

Tool that transforms lab tests into HPO

Pilot project identified candidate biomarkers of asthma (NPJ Digit Med. 2019; PMID:31119199)

SMART on FHIR application ready for deployment

Demo application illustrates functionality



HOW TO GET INVOLVED

Try the demo; analyze your cohort (i2b2,FHIR,PCORNET, ACT; etc.); contribute requirements and use cases.

Signal your interest at cd2h.org/onboard

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cd2h.org/ontologizing-ehr

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TOOLS & CLOUD INFRASTRUCTURE

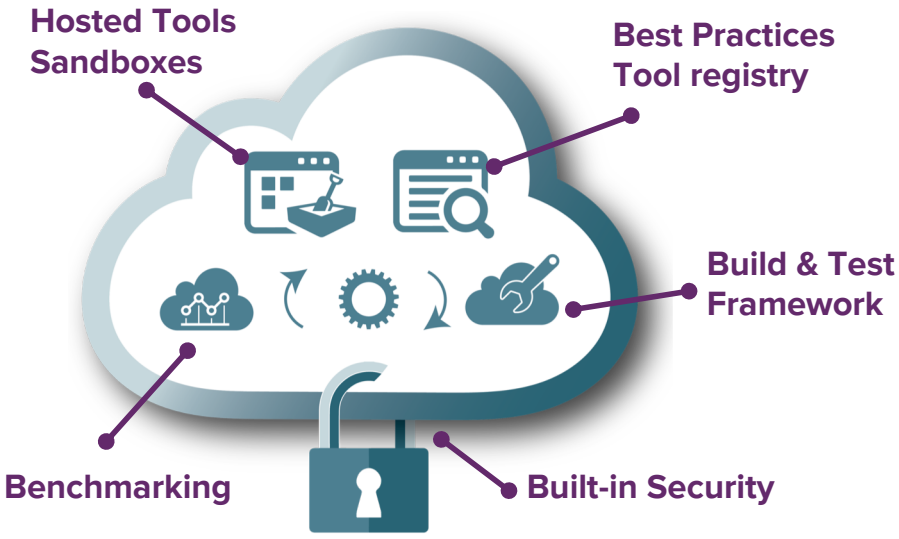
COMMUNITY CORE

TOOLS & CLOUD INFRASTRUCTURE COMMUNITY CORE

Creating cloud compute infrastructure for shareable, scalable dissemination and execution of tools across CTSA hubs

VALUE AND VISION

Computational technologies and tools are vital to clinical and translational research; however Hubs currently develop, deploy, and manage these independently. As a result, these processes are tedious, costly, heterogeneous, and less secure. This core is establishing a common tool and cloud computing architecture to provide CTSA hubs with an affordable, easy to use, and scalable deployment paradigm. Hubs can promote and deploy their own tools as well as adopt others' products, thereby transcending long-standing "boundaries" and solving common and recurring information needs.



cd2h.org/cloudinfrastructure

- Review and comment on our Cloud Architecture proposal.
- Request NCATs cloud resources to deploy your tool or service.
- Stress-test your clinical algorithm on an NCATs hosted evaluation system using SynPuf data.
- Participate in the EHR DREAM Challenge.

Visit our two exemplar projects for hosted cloud services:

- "Competitions": platform to run NIH-style peer review
- "Leaf": interface for querying clinical data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EXPLORE

cd2h.org/cloud

JOIN US

We are actively seeking community members to provide feedback on architecture, contribute test cases, and help build infrastructure. Signal your interest at **cd2h.org/onboard**

COMPETITIONS

A platform to run NIH-style grant competitions across the CTSA including pilot projects and research awards

VALUE STATEMENT & VISION

A platform to support robust peer review within and across CTSA hubs does not currently exist. Competitions fills this gap with a cloud-based, single-sign on software tool for investigators, reviewers and administrators. With Competitions, you can **post opportunities, submit applications and review and score those submissions**.

competitions.cd2h.org

COMPETITIONS FEATURES

- **Log in** easily using your institutional credentials
- **Create** new grant announcements
- **Manage** a NIH-style review and scoring of applications and make awards
- **Enable** applicants to view available opportunities, submit applications, be notified of outcome
- **Deploy** your own locally or use NCATS Cloud instance
- **Flexible** for all types of internal competitions, including pilot awards, KL2/TL1 competitions, and more

USE COMPETITIONS NOW!

- **Navigate** to **competitions.cd2h.org**
- **Log in** using your institutional credentials
- **Try** it out
- **Browse** resources and documentation
- **Sign up** for demos and webinars
- **Contribute feedback** or **feature requests**

https://competitions.cd2h.org/

Create a Competition for your program → **Publish your RFA** → **Receive, review, and score submissions** → **Notify applicants**

HOW TO GET INVOLVED

We are actively seeking community members to test, provide feedback and contribute to open-source development. Signal your interest at cd2h.org/onboard

firas.wehbe@northwestern.edu

COMPETITIONS.CD2H.ORG

GITHUB.COM/DATA2HEALTH/COMPETITIONS-PROJECT

LEAF

A lightweight, open-source, model-agnostic web application for querying clinical data

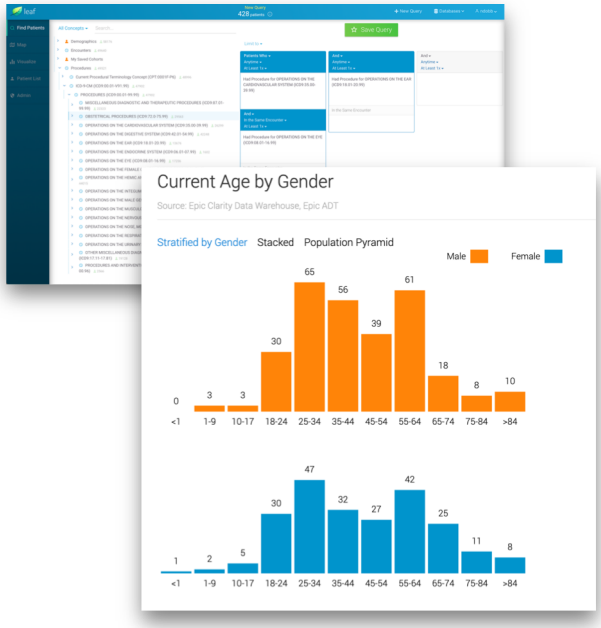
VALUE STATEMENT & VISION

Leaf helps query clinical databases of nearly any data model for cohort estimation and data extraction. Leaf seamlessly integrates with clinical databases and existing enterprise authentication systems to unleash the potential of translational biomedical research. Leaf advancement is made possible by engaging several CTSA hubs to pilot the tool at their institution. UW developers have been working closely with resources at CTSA hubs to implement Leaf, file bugs, features and collaborate via GitHub.

cd2h.org/leaf

FEATURES

- **Flexible:** Leaf can work data models: OMOP Common Data Model, i2b2 and SHRINE, or other proprietary or non-standard data models.
- **User Friendly:** Leaf is a simple drag-and-drop web application that queries clinical databases, so users can focus on accomplishing research, not waiting for data.
- **Secure:** Leaf implements current best security practices to make clinical data both accessible and safe.
- **Open:** Leaf is an open-source project *by CTSAs, for CTSAs*.



HOW TO GET INVOLVED

We are actively seeking community members to run Leaf on their infrastructure, and contribute to the Leaf Github. Please signal your interest at cd2h.org/onboard

Liz Zampino
ezampino@uw.edu

cd2h.org/leaf

github.com/uwrit/leaf

EHR DREAM CHALLENGE

A digital ecosystem for enabling AI on electronic healthcare data

VALUE STATEMENT & VISION

Machine learning algorithms are increasingly being developed to aid physicians in clinical decision making. Limiting the adoption and deployment of these algorithms into clinical practice is a lack of rigorous assessments and clear evaluation standards. Through data challenges, we seek to incentivize data providers and algorithm developers to collaborate in the development and evaluation of biomedical algorithms.

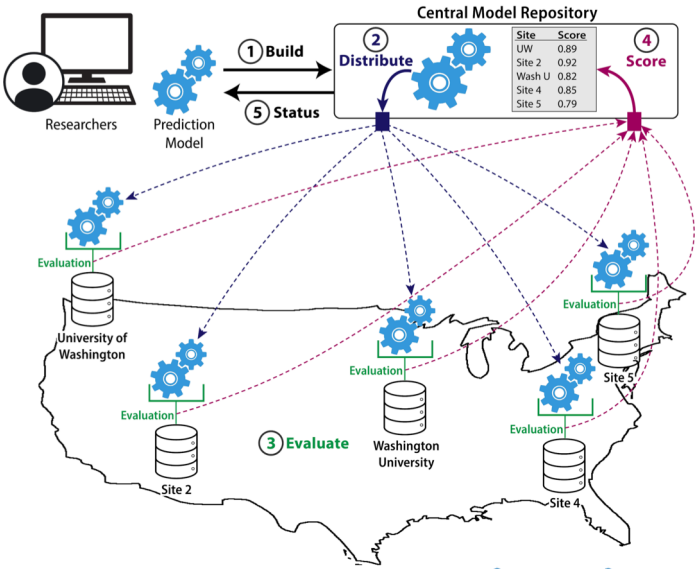
cd2h.org/mortalitychallenge

GOALS

Host a **DREAM Challenge on patient mortality prediction**. In doing so, we aim to

- Develop standards for data quality & assessment across EHR systems.
- Build and deploy infrastructure to promote the dissemination and application of algorithms within secure cloud environments.
- Develop benchmarking standards for clinical AI.
- Grow a data hosting network across CTSAs supporting the assessment of AI.
- Engage the broader AI community in the development and dissemination of clinical algorithms.

Challenge launched Sept 9. First submission round starts in October. Join today!



DREAM CHALLENGES

powered by Sage Bionetworks

HOW TO GET INVOLVED

Pre-registration has opened for the challenge; sign up at synapse.org/ehr_dream_challenge. We welcome community members to share feedback on challenge design and participate in future benchmarking efforts. Signal your interest at cd2h.org/onboard

thomas.schaffter@sagebase.org

cd2h.org/mortalitychallenge

GITHUB.COM/DATA2HEALTH/DREAM-Challenge

METADATA DREAM CHALLENGE

Automating annotation of cancer datasets

VALUE STATEMENT & VISION

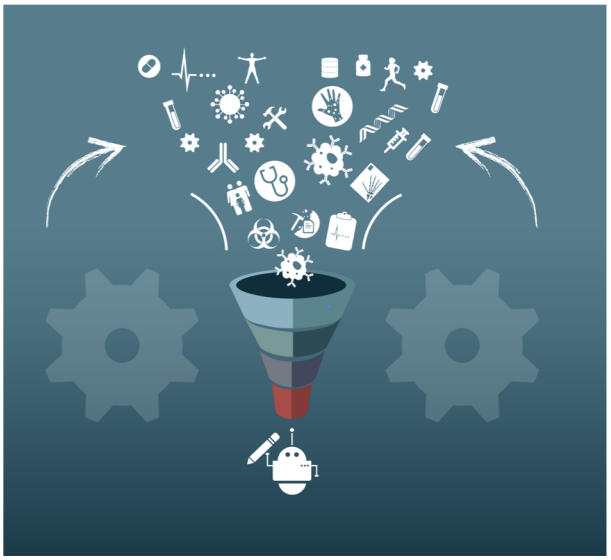
There is a significant burden in both retrospective harmonization as well as data query, discovery, and interpretation prospectively. This challenge addresses this time-consuming task with semi-automated metadata annotation of structured data. Through data challenges, we seek to incentivize data providers and algorithm developers to collaborate in the development and evaluation of biomedical algorithms.

cd2h.org/metadatachallenge

GOALS

Host a **DREAM Challenge on semi-automated annotation of cancer datasets**. In doing so, we aim to

- Advance metadata standards and their use for data quality & assessment.
- Build and deploy infrastructure to promote the dissemination and application of algorithms within secure cloud environments.
- Develop benchmarking metrics & standards for metadata annotation.
- Grow data annotation capabilities across CTSAs supporting supporting improved analytics
- Engage the broader AI community in the development and dissemination of annotation tools and algorithms.



Challenge to launch Fall 2019. Join today to receive updates!

NCI CANCER MOONSHOT
A program of the National Cancer Institute of the National Institutes of Health

DREAM CHALLENGES
powered by Sage Bionetworks

HOW TO GET INVOLVED

Pre-registration has opened for the challenge; sign up at cd2h.org/metadatachallenge. We welcome community members to share feedback on challenge design and participate in future benchmarking efforts. Signal your interest at cd2h.org/onboard

james.eddy@sagebase.org

cd2h.org/metadatachallenge

NATIONAL CENTER FOR DATA TO HEALTH

NIH National Center for Advancing Translational Sciences

CTSA Clinical & Translational Science Awards Program

Learn more at
cd2h.org/cloud

Register interest at
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github.com/data2health

The CTSA Program National Center for Data to Health (CD2H) is supported by the National Center for Advancing Translational Sciences (NCATS) at the National Institutes of Health (Grant U24TR002306) to help guide the cultural and technological changes necessary for data and informatics to improve research and health care. If you conduct research that benefits from CD2H resources or personnel in some way, please cite our grant. Research reported in this work was supported by the National Institutes of Health's National Center for Advancing Translational Sciences, Grant Number U24TR002306. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.