



DDF Phase 4 Public Information Webinar

2nd July 2024

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Berber Snoeijer, CDISC



DRAFT



Digital Data Flow

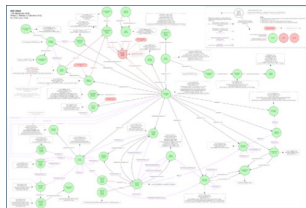
An Overview

For CDISC DDF Phase 4 Public Webinar

July 2, 2024



DDF Initiative encompasses Technical Standards & Solutions, Change Management, and Industry Engagement



cdisc
Unified Study
Definitions Model
(USDM) Reference
Architecture

TransCelerate's Study
Definitions Repository
(SDR) Reference
Implementation

Digital Data Flow Initiative

Suite of DDF Adoption
Resources, Videos & Change
Management Tools

Continued Industry Collaboration
between TransCelerate, CDISC ICH,
and HL7



Growing Solution
Collaboration Forum (SCF)*



DDF Evolution: Phases One to Four

		PHASE ONE July 2021 – July 2022	PHASE TWO Oct 2022 – Sep 2023	PHASE THREE July 2023– May 2024	PHASE FOUR Apr 2024– 1Q 2025
CDISC's USDM Reference Architecture	 USDM Data Model				
	 API Specification				
	 CDISC Controlled Terminology				
	 Implementation Guide				
	 Test Files				
	 Conformance CORE Rules			 POC	
TransCelerate's SDR & Implementation Support	 Study Definitions Repository (SDR)				
	 Common Protocol Template (CPT) Interface Tool – POC				
	 Implementation Architecture Scenarios Toolkit				
	 Persona Toolkits (MW, DM, IT)				
	 Cloud-agnostic SDR POC				
	 Vendor Solution Directory				



DDF Use Cases

From machine actionable Protocol authoring to automation of downstream connectivity



Protocol development to approval

Connectivity to downstream systems

Use cases to improve study design and analytics

Predictive model -
likelihood of
Amendments

Ingestion and mining
of retrospective
protocol data

Compute protocol
complexity, site
burden, etc

Optimizing Inclusion /
Exclusion Criteria

Determine study feasibility
including subject
recruitment

Use cases to automate downstream processes and enable E2E traceability

Setup of data
capture systems

Generation of SDTM
Trial Design datasets

Provision of study
information to a
Clinical Trial Registry

Publishing Protocol Data
into different document
templates/views

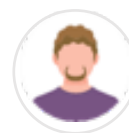
Update CTMS, TMF, and
other downstream
systems



"As a medical writer, the digitalization of data flows enables me to work faster with my team on one dedicated system, accessing study content in a single digital study design system.



"As a data manager, the digitalization of end-to-end processes from study design to EDC generates structured data that can be leveraged to track outcomes and progress made.



"As a technical expert, the digitalization of data flows reduces tedious manual work freeing up time for more complex projects that cannot be automated (value-added activities focus).

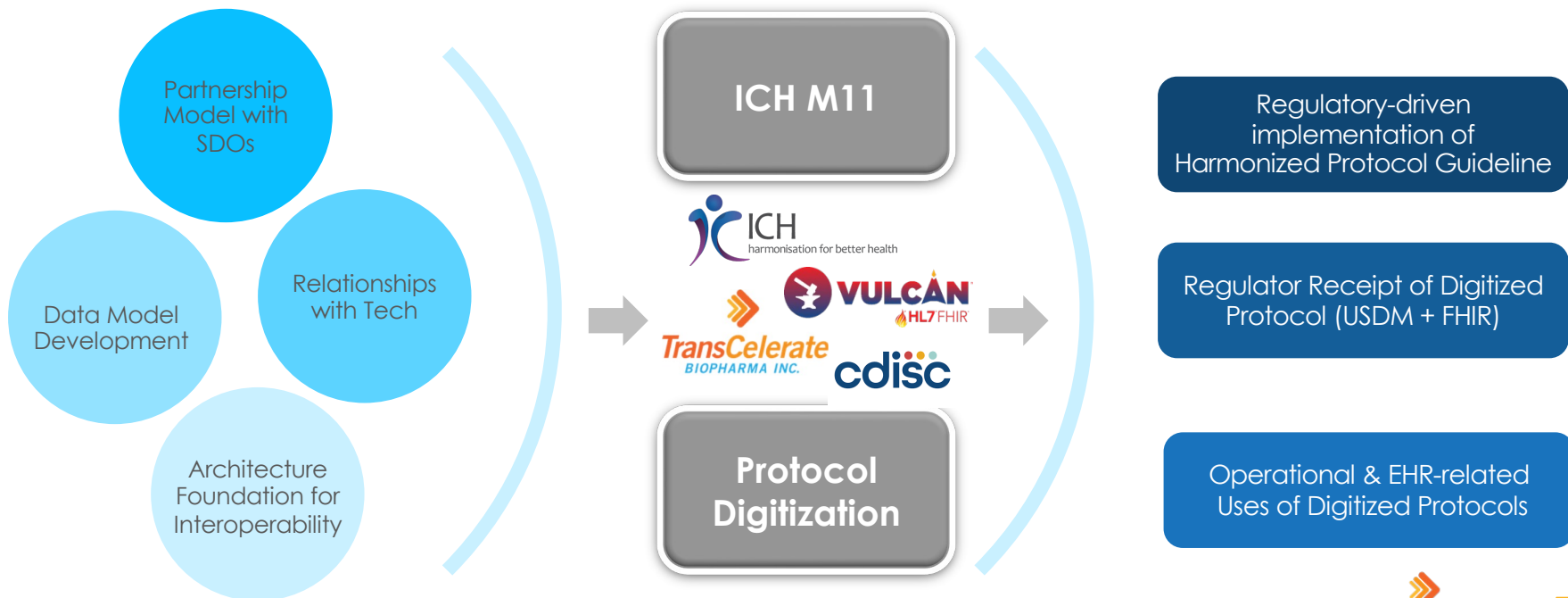
Collaboration amplifies Value of Multiple Initiatives

ICH M11, Vulcan, CDISC, TransCelerate collaborate on Digital Protocol

Capabilities, expertise, and relationships
built to date across multiple projects

collaborating to maximize
synergies & collective resources

will extend the value of multiple
initiatives across the ecosystem



Additional Opportunities to Stay Involved with DDF

You can stay involved and learn more about the Digital Data Flow initiative by visiting the following websites:



[DDF Website](#)

As the main website for DDF, learn and access all resources supporting DDF



Scan QR Code to explore DDF Website



[CDISC DDF Website](#)

Learn about and access the Unified Study Definitions Model (USDM) Reference Architecture supporting Protocol Standards.



[TransCelerate DDF Initiative Solutions](#)

Learn about DDF initiative background and roadmap



[DDF GitHub Repos](#)

Learn about and access the Study Definitions Repository Reference Implementation and supporting codebase



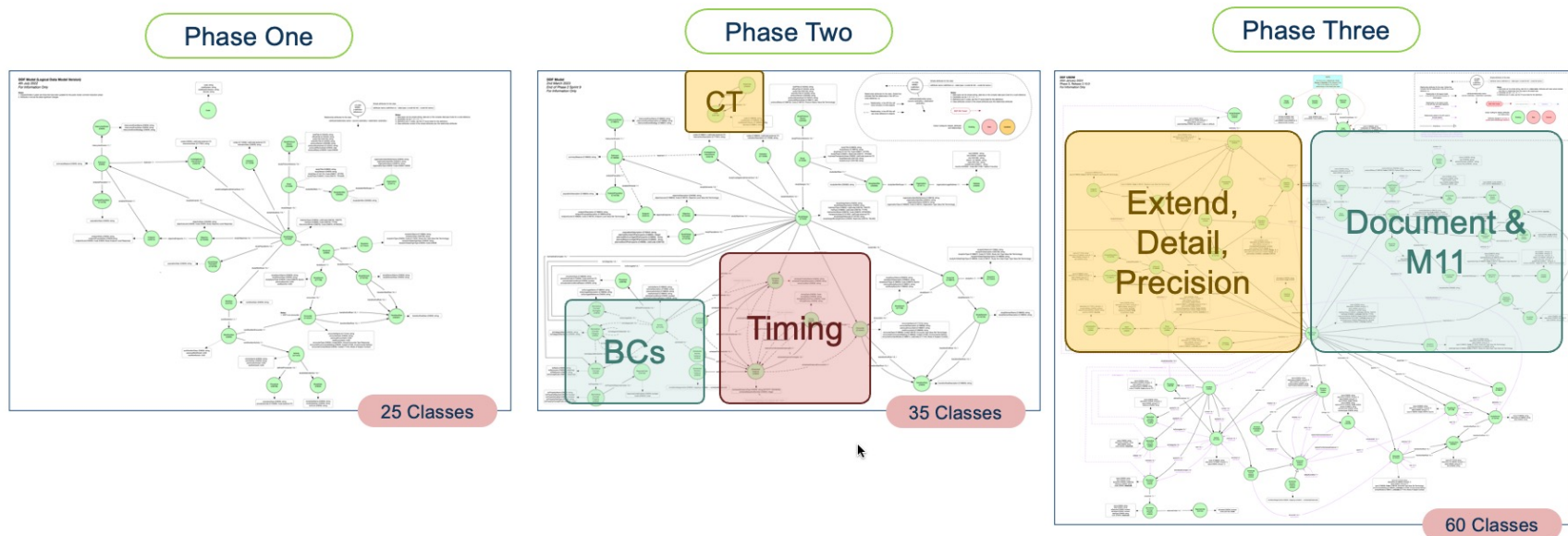
Questions? Feedback? Please email us at

DDF@transceleratebiopharmainc.com



Introduction

CDISC DDF / USDM: Phases One, Two and Three



- Solid foundation
- The protocol document was an external entity into which the structured content could be exported

- Focused on the structured elements of the protocol, e.g. the Schedule of Activities (SoA) & BCs
- The protocol document still an external entity

- Now contains structured and unstructured elements
- The entire protocol document can be held within the USDM
- Allows for the protocol document to be generated from the model

Phase Four Focus

1

USDM Enhancements Further IDMP Alignment, M11 amendments and versions, complex studies designs such as multiphase seamless designs, additional trial registration mappings, and statistical / estimands enhancements

2

Continued alignment of USDM with ICH M11

3

Participation in the Utilizing the Digital Protocol (UDP) project with TransCelerate, ICH and HL7 Vulcan

4

Continue development of USDM Conformance Rules to support USDM v3.0 and v4.0

5

Continue support and development of test data and test tools

6

Development of training and education materials in conjunction with TransCelerate's Change and Engagement team to foster adoption of DDF

7

Trial Master File (TMF) and ensuring the initial needs of TMF are accommodated within the USDM



Unified Study Definitions Model (USDM) Reference Architecture (RA)

DDF RA Phase Four Deliverables



Unified Study Definitions Model (USDM) Class Diagram

The UML class diagram (normative) as well as SQL Data Dictionary, Entity Relationship Diagram and example JSON output (informative)



Application Programming Interface (API) Specification

The API definition (normative) in JSON and HTML forms



CDISC Controlled Terminology

The controlled terminology (normative) developed for the project. Provided in an Excel format so as to be easily searched and filtered.



Test Files

Examples of USDM JSON files



Implementation Guide

Explanation of the model and its use, examples etc



Conformance Rules

Specification of the CDISC CORE rules required for USDM conformance

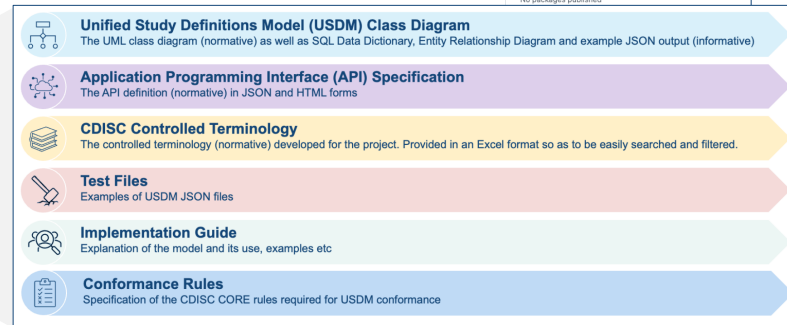
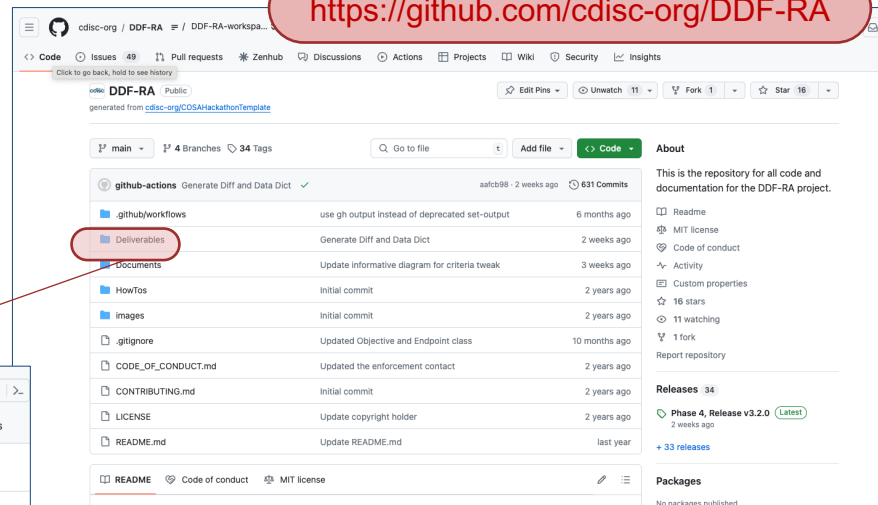
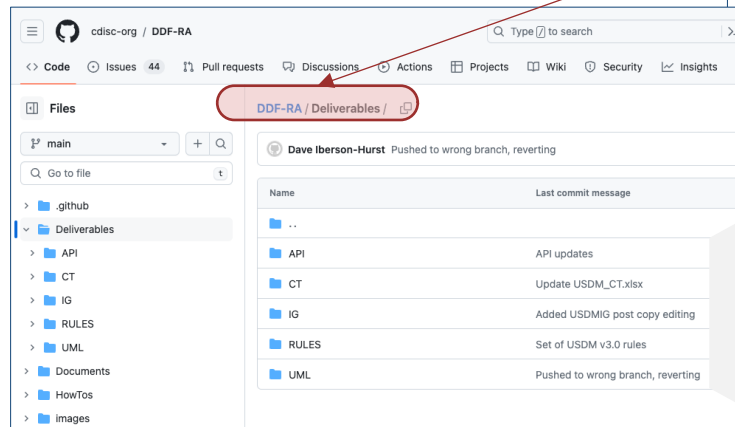


New

DDF Reference Architecture Github

- The source of DDF Reference Architecture deliverables

<https://github.com/cdisc-org/DDF-RA>





USDM Phase 4 Scope

Breadth versus Depth

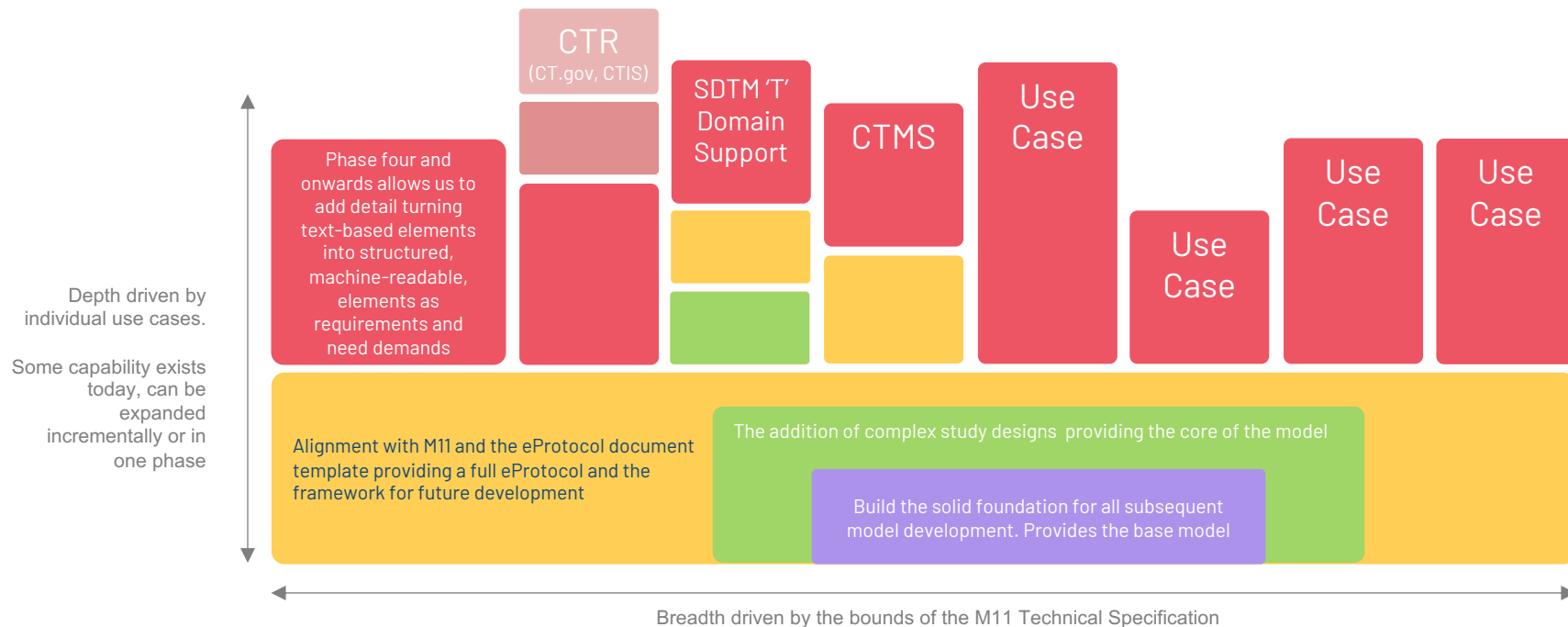
Phases

1

2

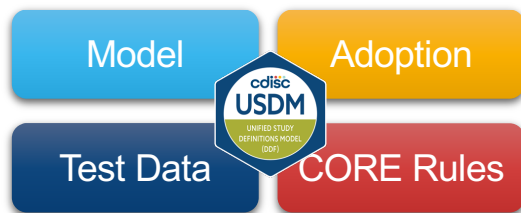
3

4



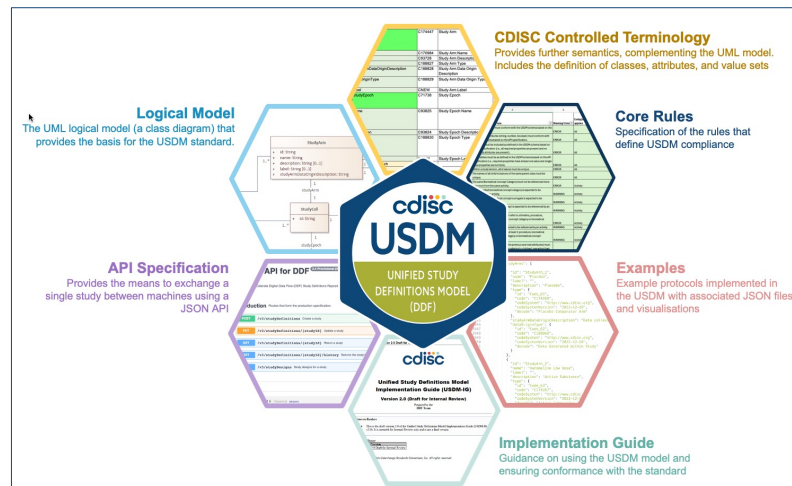
Phase 4 Overview

- More focus on refinement rather than new content
- Need to pay attention to backward compatibility
- ICH M11 is, obviously, still important
- Model rules and CORE are now part of the standard

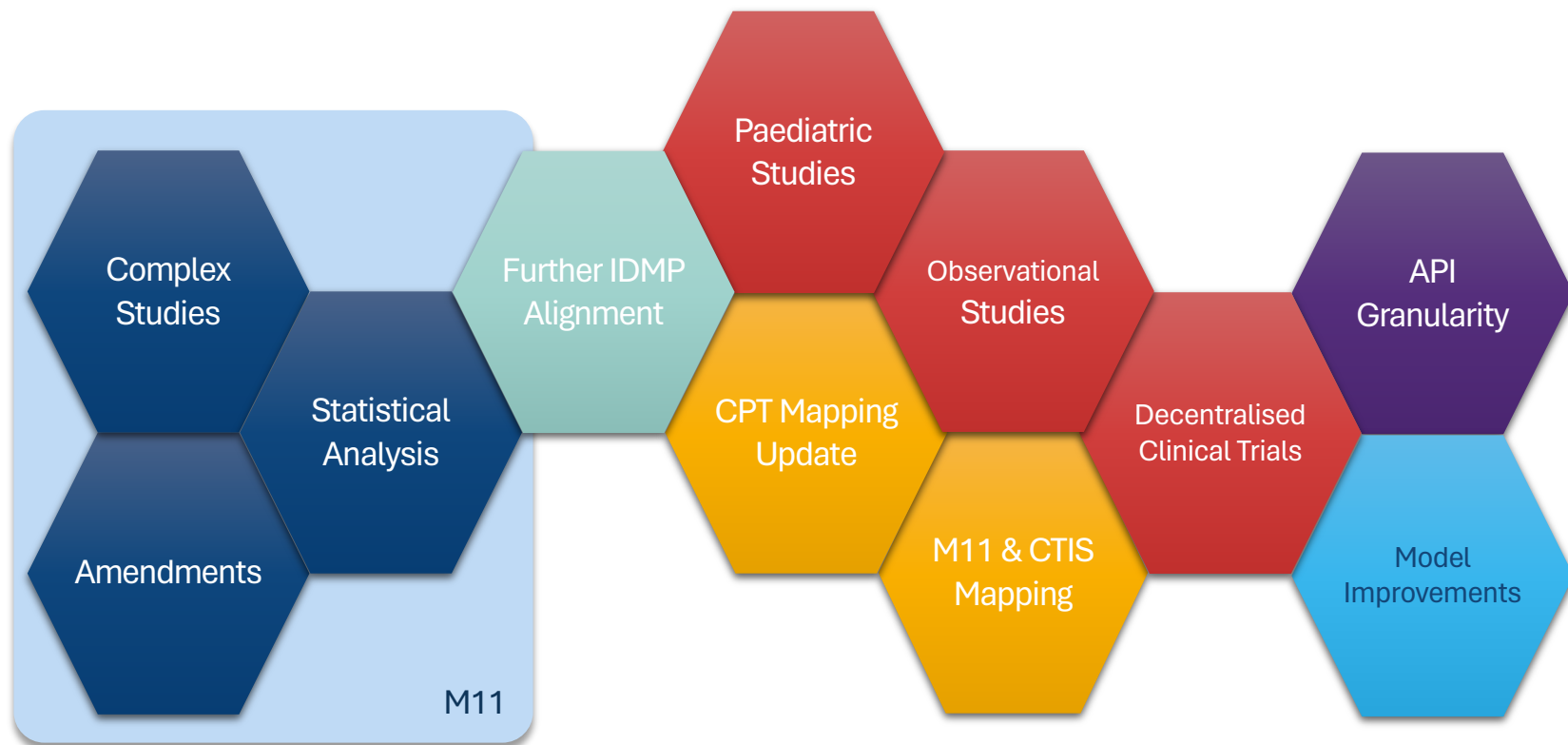


Phase Four Focus

- 1 **USDM Enhancements** Further IDMP Alignment, M11 amendments and versions, complex studies designs such as multiphase seamless designs, additional trial registration mappings, and statistical / estimands enhancements
- 2 Continued alignment of USDM with ICH M11
- 3 Participation in the Utilizing the Digital Protocol (UDP) project with TransCelerate, ICH and HL7 Vulcan
- 4 Continue development of USDM Conformance Rules to support USDM v3.0 and v4.0
- 5 Continue support and development of test data and test tools
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- 7 Trial Master File (TMF) and ensuring the initial needs of TMF are accommodated within the USDM



Model Updates - Overview



Model Updates

M11 Dependent Changes

- Ensure support for master, umbrella, multi-phase seamless, and other complex designs is sufficient
- Ensure USDM accommodates the latest M11 updates re. statistical analysis changes
- Ensure USDM accommodates the latest M11 updates re. amendment changes

Identification of Medicinal Products (IDMP)

- Ensure we have good alignment

API Granularity

- Consider a more granular API to facilitate adoption and tool integration

Model Improvements

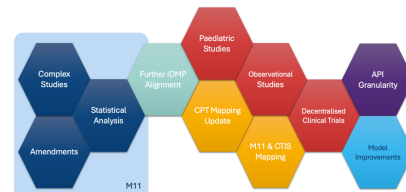
- CT definitions and extensibility
- Support for multiple document templates

Study Type Support

- Ensure support for a wider range of study types

Mappings

- Update CPT mapping
- Complete mapping to M11 and include EU Clinical Trial Information System (CTIS)

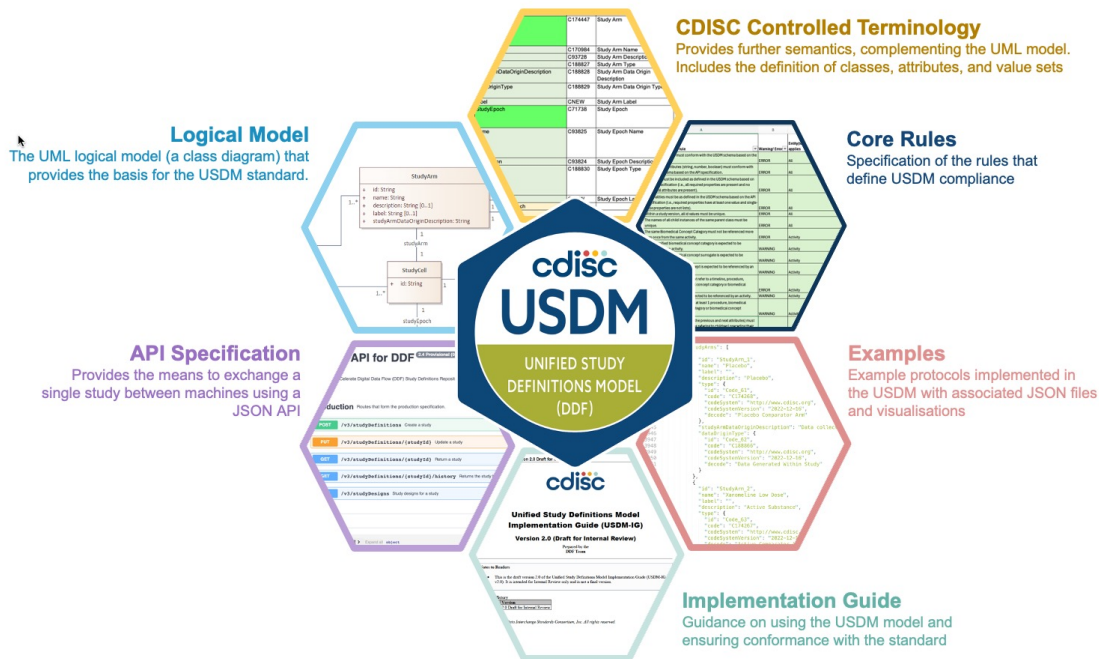




Adoption

Adoption and Feedback

- SoA Views
 - What is USDM capable of supporting, options etc
- Trial Master File
 - Downstream use of USDM
- Sponsor / Vendor feedback
 - Treat as review comments
- Automation versus Analytics
 - The prospective versus retrospective use of the model



Adoption and Training

- Opportunity to test the model
- Two PHUSE workshops
 - Birmingham, UK
 - Washington DC, US
- One full-day workshop at the CDISC European Interchange in Berlin
- CDISC US Interchange
 - Workshop scheduled
- PHUSE EU Connect, Strasbourg
 - Workshop scheduled





Test Data

Test Data

- Currently two studies aligned with USDM Version 3
 - “CDISC Pilot”, Lilly LZTZ
 - Lilly Diabetes
- One study used for Workshop at Berlin Interchange
 - Needs a check / review
 - USDM V3
- Have LZTZ using M11 presentation / template
 - Needs a little work
 - **Note, same logic, different document template**
- A further study needs an update from USDM V2 to V3
 - Roche study
- Then we will do:
 - Complex Sponsor
 - Observational example
- And then ...
 - Live at the CDISC Interchange ...

Protocol Amendment 3.1 (US) 18 Mar 2022	ALXN1840-WD-204 NCT #: NCT04573309
TITLE PAGE	
Protocol Title: A Phase 2, Open-label Study to Assess Copper and Molybdenum Balance in Participants with Wilson Disease Treated with ALXN1840	
Protocol Number: ALXN1840-WD-204	
Amendment Number: 3.1 (US)	
Compound: ALXN1840 (bis-choline tetrathiomolybdate)	
Study Phase: 2	
Short Title: Copper and Molybdenum Balance in Participants with Wilson Disease Treated with ALXN1840	
Sponsor Name: Alexion Pharmaceuticals, Inc.	
Legal Registered Address: 121 Seaport Boulevard Boston, MA 02210 USA	
Regulatory Agency Identifier Number(s) EudraCT: 2020-001104-41 IND: 119006	
Approval Date:	
Original Protocol	12 May 2020
Amendment 1	18 Aug 2020
Amendment 2	19 Mar 2021
Amendment 3	31 Aug 2021
Amendment 3.1 (US)	18 Mar 2022



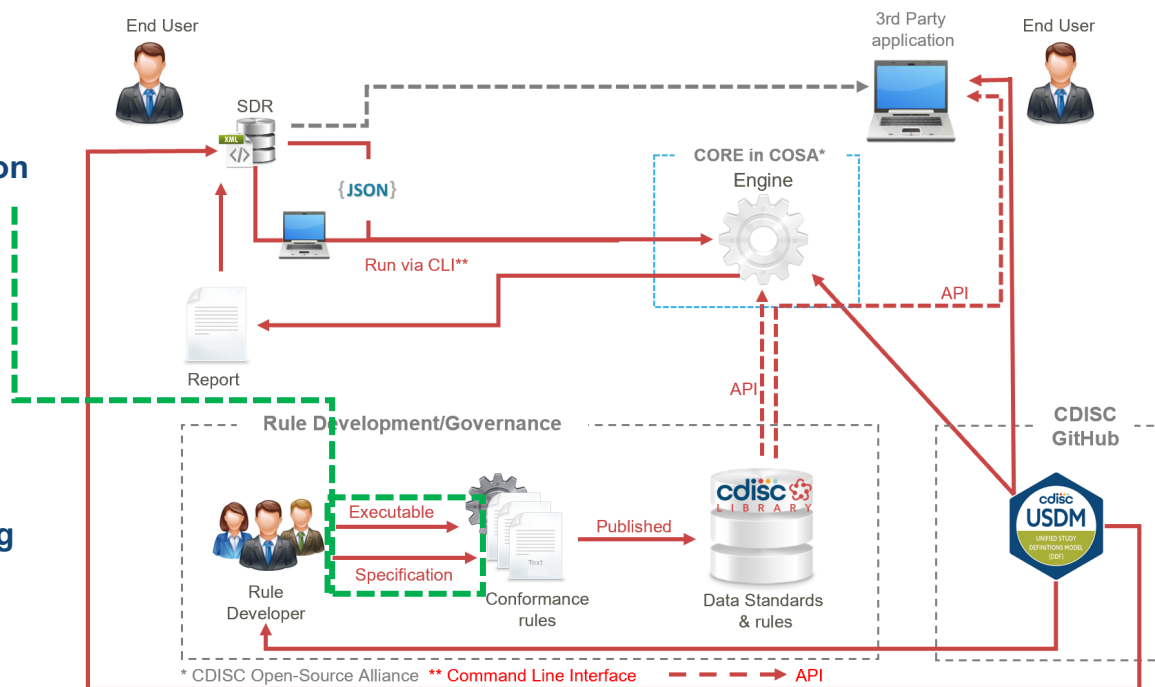


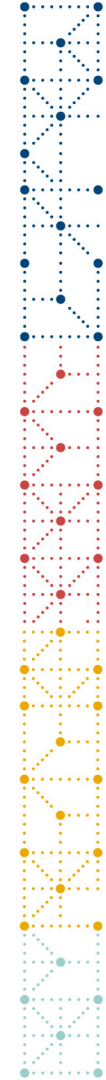
Conformance Rule Development

DDF 3 and CORE

DDF 4 will initially focus on development of the rule specifications to support USDM v3.0 and v4.0

Additional DDF 4 conformance rule work may be conducted during Phase 4 in order for the CORE engine to run all DDF rules

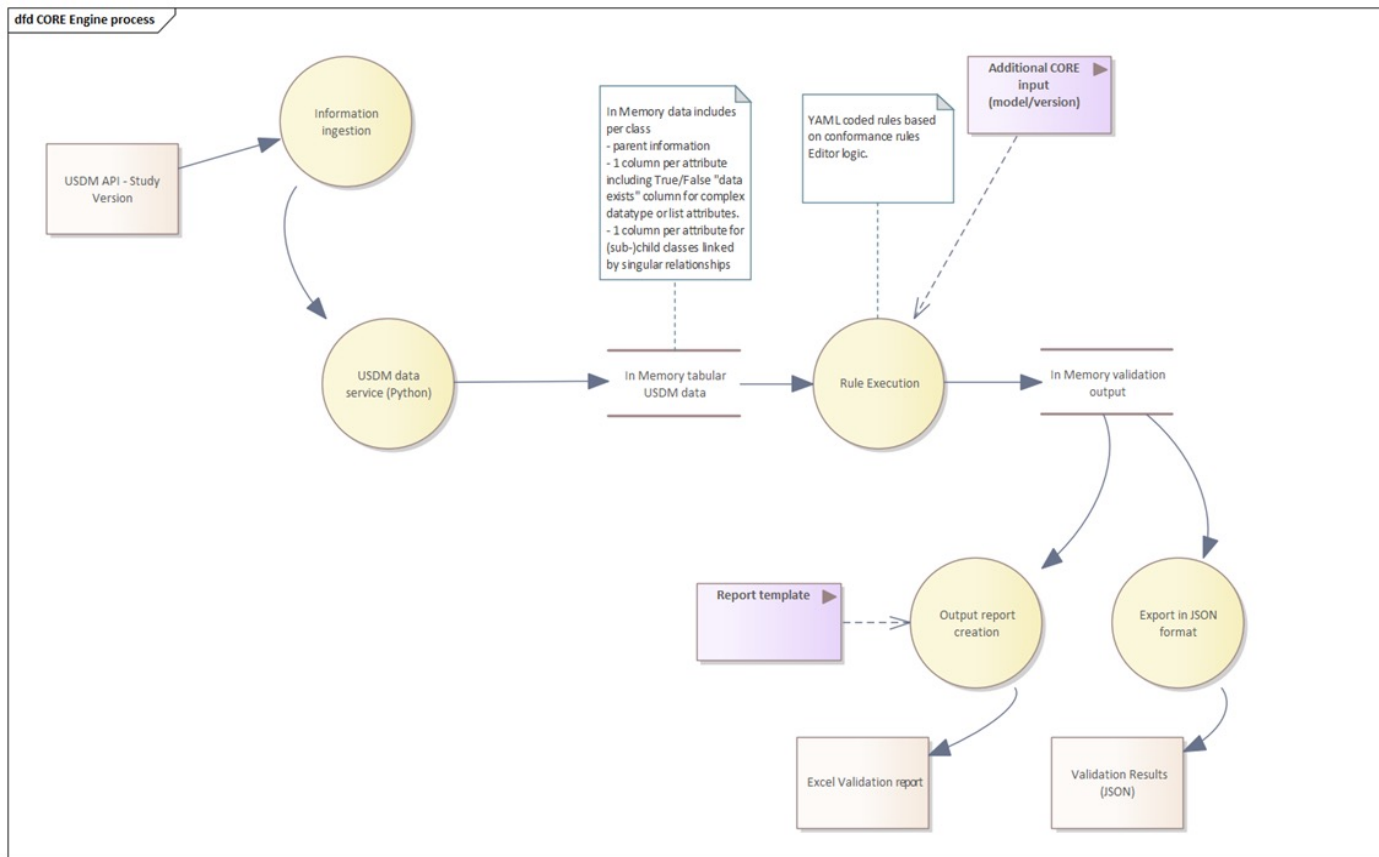




Conformance Rule Development

- Phase 3
 - Updated CORE engine to enable uptake of USDM API
 - Created test template to enable technical implementation of rules using YAML in rule editor
 - Improved technical capabilities for implementing rules like combining datasets
 - Identified additional technical capabilities that are needed for implementing all rules
- Phase 4
 - Define full set of USDM v3.0 rules
 - Define full set of USDM v4.0 rules alongside with model improvements
 - Technical implementation of rules if technically feasible with current rules
- Future updates
 - Enable direct JSON checks
 - Enable JSON schema checks
 - Enable XML checks
 - Update CORE report template to USDM format
 - Add more technical capabilities to enable all USDM checks

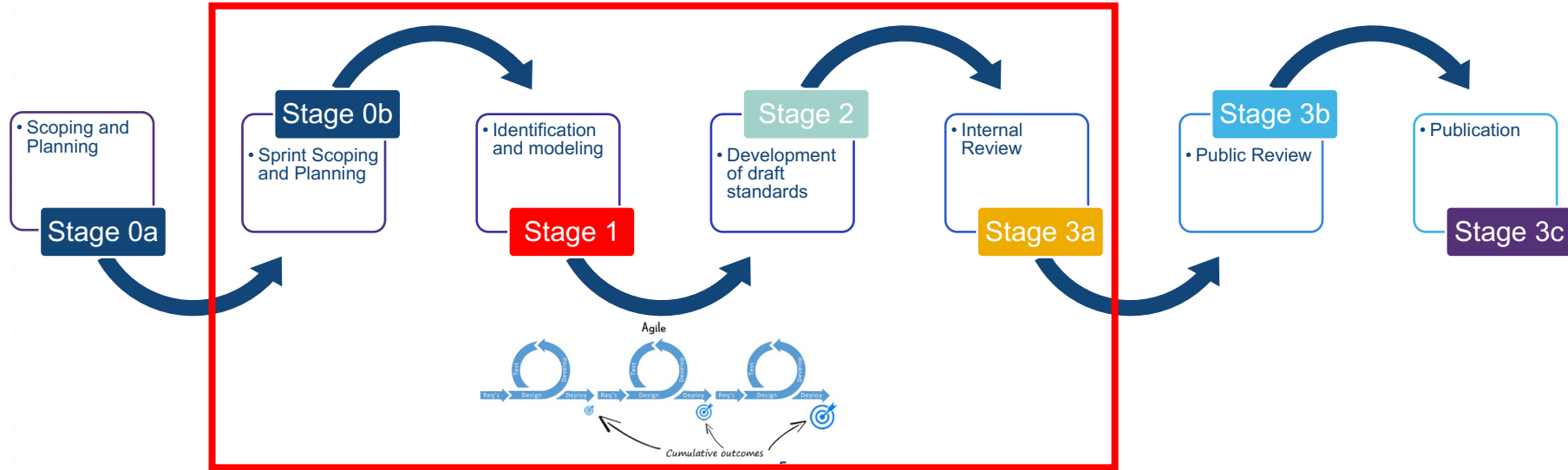
USDM CORE process





Process and Timelines

CDSIC Standards Development Process (COP-001)



Parts of Stage 0b – 3a take place for each draft release.

- After Stage 0a, the sprints begin and a small scoping effort happens as part of the planning for each sprint
- An Internal review step happens after each draft release.

Development and Review

2024

Day	Date	Week #	Stage	Sprint #
Wednesday	17-Apr-24	1	Scoping	
Wednesday	24-Apr-24	2	Scoping	
Wednesday	01-May-24	3	Scoping	1
Wednesday	08-May-24	4	Scoping	1
Wednesday	15-May-24	5	Scoping	2
Wednesday	22-May-24	6	Scoping	2
Wednesday	29-May-24	7	Scoping	3
Wednesday	05-Jun-24	8	Scoping	3
Wednesday	12-Jun-24	9	Scoping	4
Wednesday	19-Jun-24	10	Scoping	4
Wednesday	26-Jun-24	11	Scoping	5
Wednesday	03-Jul-24	12	Scoping	5
Wednesday	10-Jul-24	13	Scoping	6
Wednesday	17-Jul-24	14		6
Wednesday	24-Jul-24	15		7
Wednesday	31-Jul-24	16		7
Wednesday	07-Aug-24	17		8
Wednesday	14-Aug-24	18		8
Wednesday	21-Aug-24	19		9
Wednesday	28-Aug-24	20		9
Wednesday	04-Sep-24	21		10
Wednesday	11-Sep-24	22		10
Wednesday	18-Sep-24	23		11
Wednesday	25-Sep-24	24		11
Wednesday	02-Oct-24	25		12
Wednesday	09-Oct-24	26		12
Wednesday	16-Oct-24	27		13
Wednesday	23-Oct-24	28		13
Wednesday	30-Oct-24	29		13
Wednesday	06-Nov-24	30		14
Wednesday	13-Nov-24	31		14
Wednesday	20-Nov-24	32		14
Wednesday	27-Nov-24	33		15
Wednesday	04-Dec-24	34		15
Wednesday	11-Dec-24	35		16
Wednesday	18-Dec-24	36		16
Wednesday	25-Dec-24	37	CDISC Closed	
Wednesday	01-Jan-25	38	CDISC Closed	

Development
Continuous Internal Review

2025

Day	Date	Week #	Stage	Sprint #
Wednesday	01-Jan-25	38	CDISC Closed	
Wednesday	08-Jan-25	39	Development Sprints	17
Wednesday	15-Jan-25	40	Development Sprints	17
Wednesday	22-Jan-25	41	GGG Approval	18
Wednesday	29-Jan-25	42	GGG Approval	18
Wednesday	05-Feb-25	43	Public Review	19
Wednesday	12-Feb-25	44	Public Review	19
Wednesday	19-Feb-25	45	Public Review	20
Wednesday	26-Feb-25	46	Public Review	20
Wednesday	05-Mar-25	47	Fix Sprints	21
Wednesday	12-Mar-25	48	Fix Sprints	21
Wednesday	19-Mar-25	49	Fix Sprints	22
Wednesday	26-Mar-25	50	Fix Sprints	22
Wednesday	02-Apr-25	51	QC Sprint	23
Wednesday	09-Apr-25	52	QC Sprint	23
Wednesday	16-Apr-25	53	GGG Approval	
Wednesday	23-Apr-25	54	Publication	

Public Review

USDM v4.0

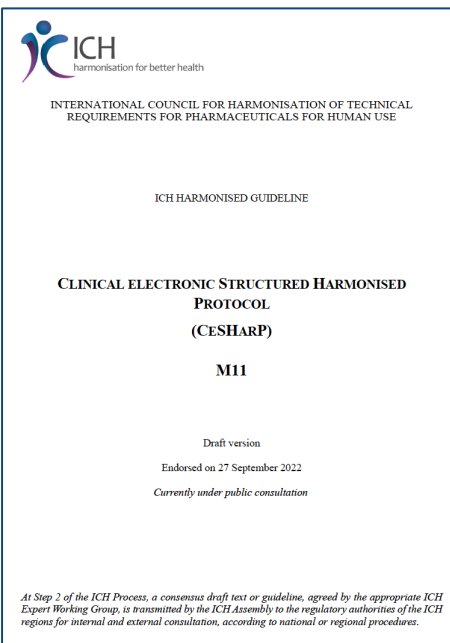
ICH M11



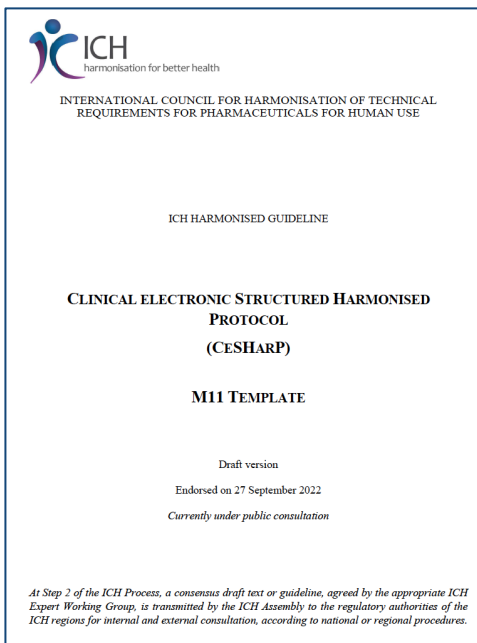
M11 Is ...

ICH CLINICAL ELECTRONIC STRUCTURED HARMONISED PROTOCOL (CeSHaRP)

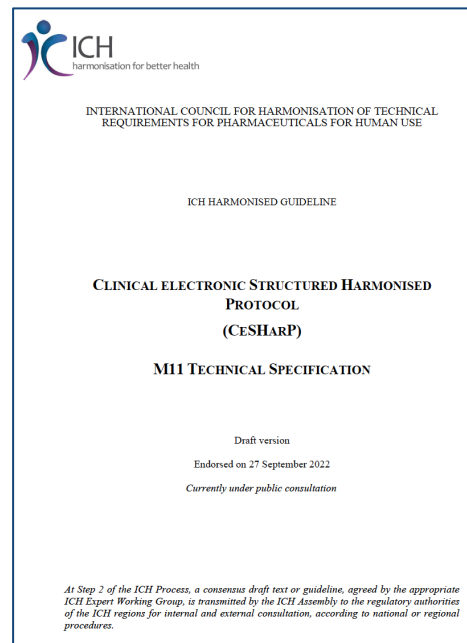
<https://www.ich.org/page/multidisciplinary-guidelines>



Defines the background, purpose and scope



The specification of the Protocol Document Template that contains embedded data elements



Provides a set of data element definitions aligned with the template specification

M11 Simple Example

Template Specification

Protocol Full Title:	[Protocol Full Title] The protocol should have a descriptive title that identifies the scientific aspects of the trial sufficiently to ensure it is immediately evident what the trial is investigating and on whom, and to allow retrieval from literature or internet searches.
Sponsor Confidentiality Statement:	[Sponsor Confidentiality Statement] Insert the Sponsor's confidentiality statement, if applicable, otherwise delete.
Protocol Number:	[Protocol Number] A unique alphanumeric identifier for the trial, designated by the Sponsor, is a standard part of trial data, and should be included for most trials.
Version:	[Version] An optional field for use by the Sponsor at their discretion.
Amendment Number:	[Amendment Number] Enter the amendment number. If this is the original instance of

Trial Phase:

[Trial Phase] [Description of Trial Phase Other]

Acceptable entries are: "Early Phase 1", "Phase 1", "Phase 1/Phase 2", "Phase 2", "Phase 2/Phase 3", "Phase 3", "Phase 4",

Compound Number(s):	[Compound Number] Enter the Sponsor's unique identifier for investigational compound(s) in the trial. Add or delete additional fields as needed.
Compound Name(s):	[Nonproprietary Name]. [Proprietary Name]. [Additional Proprietary Name] Delete this line from the table if a nonproprietary name has not yet been assigned. Omit proprietary name fields if not yet established.
Trial Phase:	[Trial Phase] [Description of Trial Phase Other] Acceptable entries are: "Early Phase 1", "Phase 1", "Phase 1/Phase 2", "Phase 2", "Phase 2/Phase 3", "Phase 3", "Phase 4",

Technical Specification

Term (Variable)	Trial Phase
Data Type	Pick list
Topic, Value or Header	D
Definition	
User Guidance	For trials combining investigational drugs or vaccines with devices, classify according to the phase of drug development.
Conformance	Required
Cardinality	
Relationship content from ToC representing the protocol hierarchy	Title Page
Relationship (reference to high level conceptual model)	
Value	Early Phase 1 Phase 1 Phase 1/Phase 2 Phase 2 Phase 2/Phase 3 Phase 3 Phase 4 Other
Business rules	Value Allowed: yes Relationship: n/a Concept: Protocol short title
Duplicate field in other sections	

Controlled Terms

Template Specification

Protocol Full Title:	[Protocol Full Title] The protocol should have a descriptive title that identifies the scientific aspects of the trial sufficiently to ensure it is immediately evident what the trial is investigating and on whom, and to allow retrieval from literature or internet searches.
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Duplicate field in other sections	

CDISC CT

Trial Phase Response (C66737)

NOT APPLICABLE
 PHASE 0 TRIAL
 PHASE I TRIAL
 PHASE I/II TRIAL
 PHASE II TRIAL
 PHASE II/III TRIAL
 PHASE IIA TRIAL
 PHASE IIB TRIAL
 PHASE III TRIAL
 PHASE IIIA TRIAL
 PHASE IIIB TRIAL
 PHASE IV TRIAL
 PHASE V TRIAL

ICH M11 and Controlled Terminology

- "Memorandum of Understanding for CDISC to facilitate the governance and maintenance of ICH terms and definitions"
- This will ensure that USDM and M11 CT is closely aligned

ICH M2 EWG Work Plan

March 11, 2024

Topic Adoption date: October 1994

Rapporteur: Mr. Hao (Ray) Wang, FDA, United States, Dr. Mihoko Okada, MHLW/PMDA, Japan

Regulatory Chair: Dr. Stephan Jaermann, Swissmedic, Switzerland

Last Face-to-Face Meeting: Berlin, Germany, June 2023

2. Timeline for specific tasks

(Note: periodic administrative activities such as SDO liaison activities are not included)

Beginning date	End date	Task / Activity	Details
Recurring	Recurring	Evaluate ICH topics at step 3 or 4 for technical risks and opportunities – stage 2	Review Step 3-4 documents for technical risks and opportunities; discuss findings with EWG Rapporteurs.
Jan. 2024	May. 2024	ICH CIOMS Glossary of Terminology Collaborative framework	Establish a collaboration framework between ICH and CIOMS for exploration of opportunities focused on enhancing the use of CIOMS Glossary of Terminology.
Oct. 2023	May. 2024	ICH CDISC MoU	Reach consensus on a MoU for CDISC to facilitate the governance and maintenance of ICH terms and definitions, in preparation for June ICH meeting.

USDM M11 Capability

- USDM V3 can “store” protocols using
 - Sponsor templates
 - The M11 template
- Further work will be performed in Phase 4 to ensure USDM and M11 are aligned as M11 continues to evolve
- We now have LZTZ in “M11 Template” format for test purposes

ICH M11 to USDM Mapping Viewer

M11 to USDM Mapping

The set of mappings from the M11 template specification to the USDM

M11 Section Detail

Sponsor Confidentiality Statement: [Enter Sponsor Confidentiality Statement](#)

Full Title: [\[Enter Full Title\]](#)

Trial Acronym: [\[Enter Trial Acronym\]](#)

Protocol Identifier: [\[Enter Protocol Identifier\]](#)

Original Protocol: [\[Original protocol\] M11](#)

Version Number: [\[Enter Version Number\]](#)

Version Date: [\[Enter Version Date\]](#)

Amendment Identifier: [\[Amendment Identifier\]](#)

Amendment Scope: [\[Amendment Scope\] M11](#)

Compound Codes(s): [\[Enter Compound Code\(s\)\]](#)

Compound Name(s): [\[Enter Nonproprietary Name\(s\)\]](#)
[\[Enter Proprietary Name\(s\)\]](#)

Trial Phase: [\[Trial Phase\] M11](#)

Short Title: [\[Enter Trial Short Title\]](#)

USDM Mapping

Mapping for 'Title', 'Trial Phase'

Class: StudyVersion

Attribute: studyPhase

Definition: A step in the clinical research and development of a therapy from initial clinical trials to post-approval studies. NOTE: Clinical trials are generally categorized into four (sometimes five) phases. A therapeutic intervention may be evaluated in two or more phases simultaneously in different trials, and some trials may overlap two different phases. [21 CFR section 312.21; After ICH Topic E8 NOTE FOR GUIDANCE ON GENERAL CONSIDERATIONS FOR CLINICAL TRIALS, CPMP/ICH/291/95 March 1998]

Terminology: [NCI C49727](#)

Path: StudyVersion/@studyPhase

StudyVersion

- string id
- string rationale
- string versionIdentifier

studyPhase

AliasCode

USDM Excel to JSON Utility

Excel File List

A list of files held within the system for which a converted USDM JSON file can be downloaded.

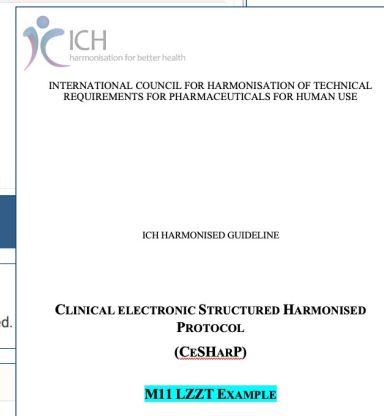
File List.

CDISC_Pilot_Study_sponsor_set.xlsx, loaded at 2024-05-28, 13:47:15Z

CDISC_Pilot_Study_m11_set.xlsx, loaded at 2024-05-18, 17:18:25Z

Upload New Excel File

[CLICK TO UPLOAD NEW FILE](#)





Utilizing the Digital Protocol (UDP)

ICH M11, CDISC & HL7

- “FHIR-based exchange standard for ICH’s Clinical electronic Structured Harmonised Protocol (CeSHarP), aligned to CDISC standards”
- Work is focused on an initial use case of transmission of a M11 protocol from Sponsor to a Regulator



For Immediate Release

Vulcan/HL7 Contact: Andrea Ribick
(734) 726-0289
andrea@HL7.org

CDISC Contact: Ann P. White
(512) 363-5826
awhite@cdisc.org

Vulcan FHIR® Accelerator Connects CDISC, HL7, and ICH M11 in a Project to Digitize Exchange of Clinical Research Protocols

HL7 Vulcan and CDISC are announcing a project that will deliver an electronic exchange standard for the ICH M11 Clinical electronic Structured Harmonised Protocol (CeSHarP)

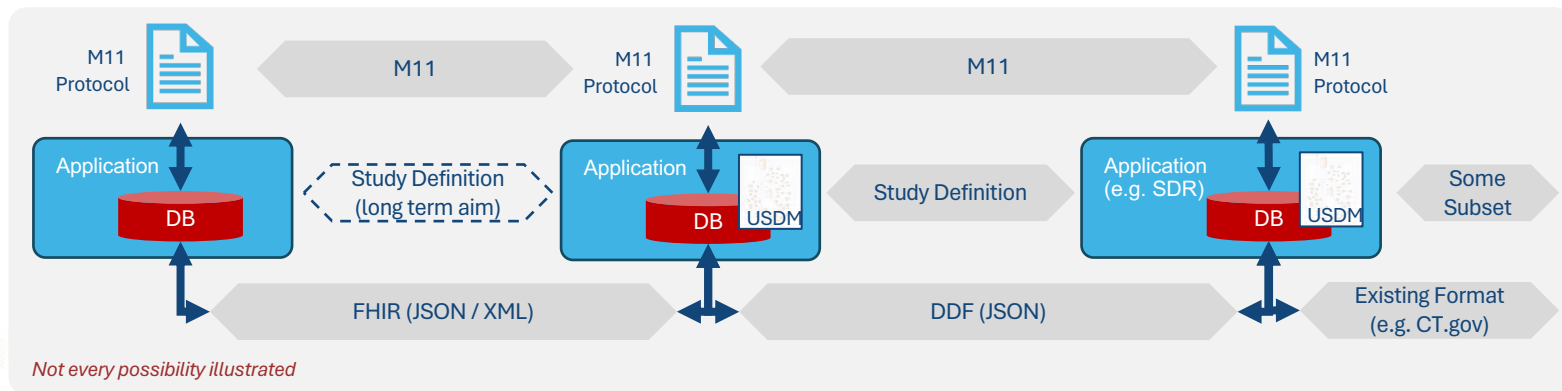
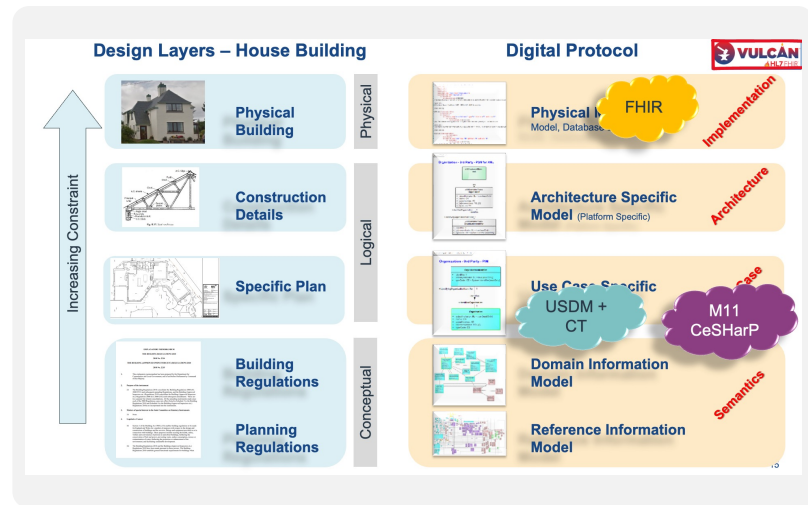
Ann Arbor, MI. and Austin, TX — June 6, 2023 — A structured, harmonized, digitized protocol accessible to the biopharmaceutical industry and to researchers in the care setting will enable transformations to improve clinical research. The project announced by HL7 Vulcan and CDISC will build on work products of ICH M11 to accelerate this vision. [Vulcan](#) is an HL7® FHIR Accelerator dedicated to connecting clinical and translational research to clinical care through Fast Healthcare Interoperability Resources (FHIR®). [CDISC](#) is a non-profit standards development organization that develops standards that support acquisition, exchange, submission, and archive of biopharmaceutical data. CDISC is also a member of Vulcan. [ICH M11](#) is the topic of the International Council for Harmonization to create a Clinical electronic Structured Harmonised Protocol (CeSHarP).

“The project marks an important milestone in the long journey towards a digital protocol,” said Vulcan Co-Chair, Amy Cramer. “Over the years, various organizations have contributed key building blocks. Vulcan is pleased to serve as a convener where contributors across the global research community can collaborate towards this shared and important goal.”

“We are looking forward to partnering with ICH M11 and HL7 on this important project that aims to enable the digital transformation of protocols in support of automation,” said David Evans, President and CEO, CDISC. “This project represents another step in CDISC’s strategic evolution to embrace governance of clinical research information standards, not just clinical data standards.”

USDM and M11 FHIR

- USDM will be consistent and aligned with the M11 Template and the M11 FHIR message
- Note that, currently, the USDM has a wider scope than the M11 template
- Key aim is to ensure consistency across use cases



HL7 FHIR Connectathon

Dallas, May 2024



LZZT



Manual Translation
of the original
protocol into the
M11 Template



LZZT in M11

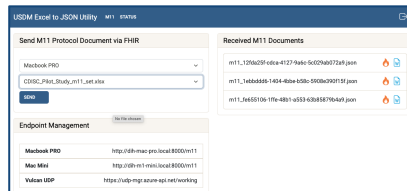


Manual creation of
the original Lilly
LZZT protocol into
USD including
SoA. Add in the
M11 presentation.



LZZT in USD,
M11 Template

Import



USD Web-based
Test Utility

FHIR M11 Message / Profile



FHIR Server

FHIR M11 Message / Profile

FHIR Viewer

NProgram Ltd



Manual
importation of the
protocol into the
FEVIR system

FEVIR Platform
Computable Publishing

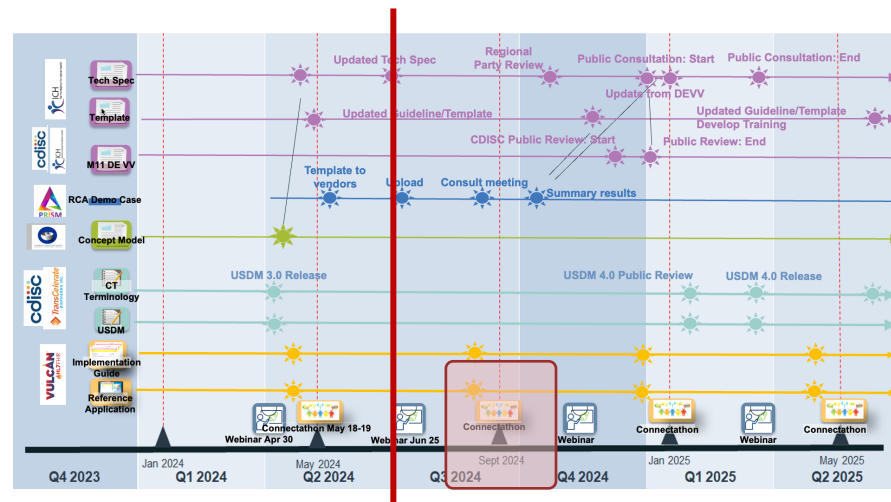


ICH M11/M2

- Brian Alper, Computable Publishing
- Matt Elrod, ONC
- Hugh Glover, Vulcan **TRACK LEAD**
- Dave Iberson-Hurst, CDISC
- Dan Newingham, ZS Associates
- Jmita Parekh, ICH M11/M2
- Khalid Shahin, Computable Publishing
- Rik Smithies, HL7 UK
- Kimberly Tableman, Espero
- Panagiotis Telonis, ICH M11/M2
- Stacy Tegan, Vulcan, TransCelerate
- Rob Ferendo, TransCelerate

Next Steps

- Now developing the message/profile based on the experience of the first connectathon
- This includes “structuring”
 - Title page
 - Objective and endpoints
 - Inclusion and exclusion criteria
- Next connectathon is in September in Atlanta





Available Resources



CDISC DDF Web Site Page



New to CDISCStandardsEducationResourcesEventsMembership

Home / Digital Data Flow

Digital Data Flow

OverviewWhat is the USDMParticipateWebinarVersionsFAQContact Us



Welcome to Digital Data Flow (DDF) for Clinical Trial Protocols

Digital Data Flow Initiative will help modernize clinical trials by enabling a digital workflow with protocol digitization. This initiative establishes a foundation for a future state of automated & dynamic readiness that can transform the drug development process.

Below are a list of the different websites sourcing specific content and resources. Depending on where you are in the journey, please feel free to explore the different websites and their information.

 CDISC DDF Website <i>You are here!</i> Learn about and access the Unified Study Definitions Model (USDM) Reference Architecture supporting Digital Protocol Data Standards	 DDF Website As the main website for the DDF Initiative, learn and access all resources for DDF solutions	 DDF GitHub Repos Learn about a technical Reference Implementation of the USDM, the Study Definitions Repository (SDR), and access the supporting codebase	 TransCelerate DDF Initiative Solutions Learn about DDF Initiative background and roadmap
Target Audience: All those interested in data standards	Target Audience: All those interested in implementing DDF Solutions	Target Audience: All those interested in SDR development	Target Audience: All those generally interested in TransCelerate initiatives

CDISC is collaborating with TransCelerate through [TransCelerate's Digital Data Flow Initiative](#) to develop a Study Definition Reference Architecture called the Unified Study Definitions Model. The USDM will serve as a standard model for the development of conformant study definition technologies.



GitHub

cdisc-org / DDF-RA (Public)
generated from [cdisc-org/COSAHackathonTemplate](#)

Notifications Fork 1

<> Code Issues 49 Pull requests Zenhub Discussions Actions Projects Security Insights

main 4 Branches 34 Tags Go to file Code

github-actions Generate Diff and Data Dict ✓ aafcb98 · 2 weeks ago 631 Commits

.github/workflows	use gh output instead of deprecated set-output	6 months ago
Deliverables	Generate Diff and Data Dict	2 weeks ago
Documents	Update informative diagram for criteria tweak	3 weeks ago
HowTos	Initial commit	2 years ago
images	Initial commit	2 years ago
.gitignore	Updated Objective and Endpoint class	10 months ago
CODE_OF_CONDUCT.md	Updated the enforcement contact	2 years ago
CONTRIBUTING.md	Initial commit	2 years ago
LICENSE	Update copyright holder	2 years ago
README.md	Update README.md	last year

About

This is the repository for all code and documentation for the DDF-RA project.

- Readme
- MIT license
- Code of conduct
- Activity
- Custom properties
- 16 stars
- 11 watching
- 1 fork

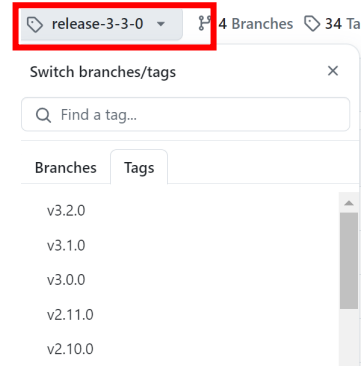
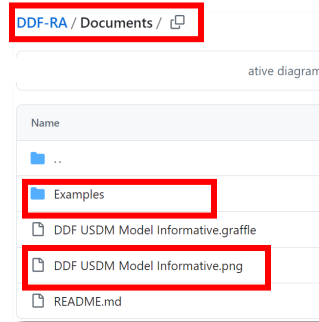
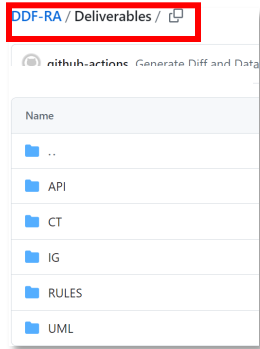
Report repository

Releases 34

Phase 4, Release v3.2.0 Latest 2 weeks ago

+ 33 releases

GitHub



<https://github.com/cdisc-org/DDF-RA>

DDF USDM Model Information Graphic

DDF-RA / Documents /

daveih Updates after review

Name

...

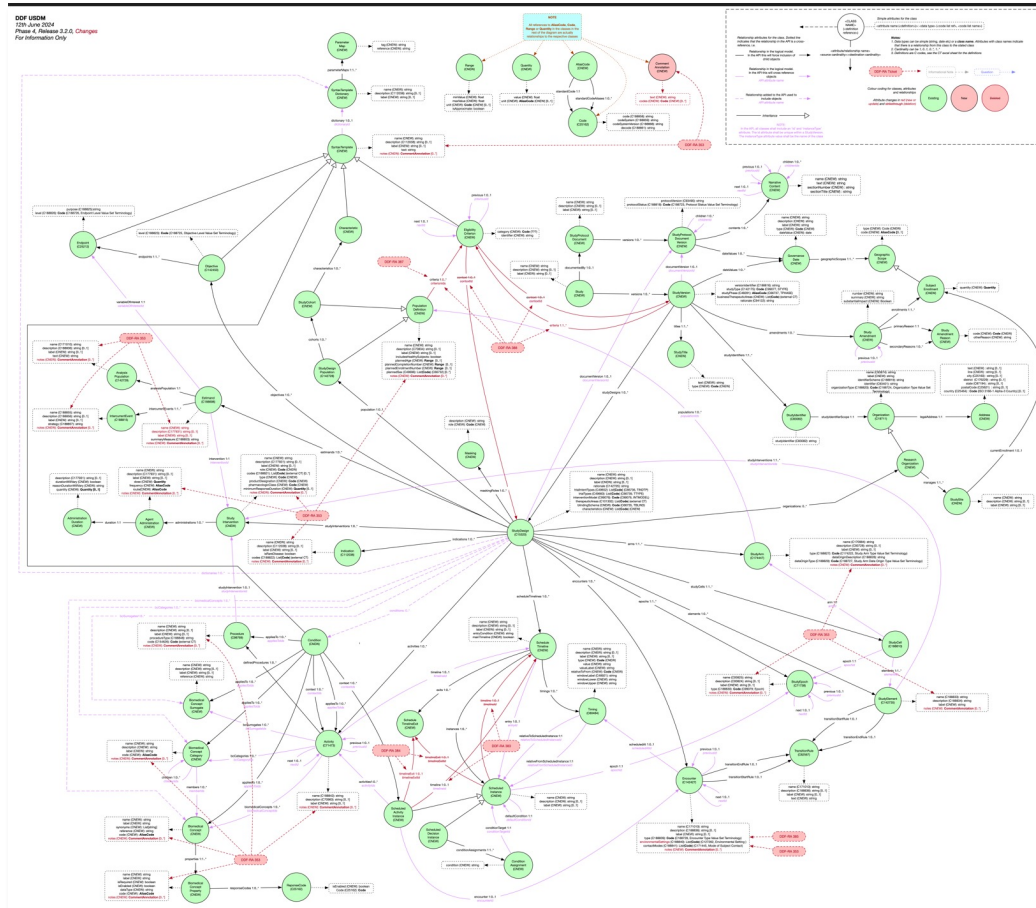
Examples

DDF USDM Model Informative.graffle

DDF USDM Model Informative.png

DDF USDM Model Walkthrough.pdf

README.md



WIKI Team Space



Digital Data Flow (DDF) Team Home

Created by John Owen, last modified on Jun 25, 2024

Welcome
DDF Orientation
DDF 4 Project Char...
Tasks & Milestones
SME Meetings
Development Dash...

Welcome to the DDF Wiki Space!

CDISC, in collaboration with [TransCelerate's Digital Data Flow Project](#), is developing a reference architecture, which will serve as a standard model for the development of a Study Definitions Repository. The Repository is a novel central component aimed at facilitating the exchange of structured study definitions across clinical systems using technical and data standards.

Visit the [TransCelerate DDF website](#) for more information about the DDF goals

Visit the [CDISC DDF Website](#) for more information

Status

★★★ DDF PHASE 3 IS NOW COMPLETE - [USDM v3.0](#) was published

📅 16 Apr 2024

 ★★★

★★★ Phase 4 Scoping and planning is now in progress ★★★

[Navigate to the DDF 4 scoping and planning pages](#)

- [DDF 4 Scoping](#)
- [DDF4 Agendas and Minutes](#)
- [DDF 4 Reference Material](#)
- [CDISC Internal DDF4](#)
- [DDF Phase 1](#)
- [DDF Phase 2](#)
- [DDF Phase 3](#)
- [CDISC/ICH M11 Internal](#)
- [Action Items](#)
- [File lists](#)

WIKI Team Space – Development Dashboard for SMEs

Digital Data Flow (DDF) Team Home

Created by John Owen, last modified on Jun 25, 2024

Welcome

DDF Orientation

DDF 4 Project Char...

Tasks & Milestones

SME Meetings

Development Das...

Link to the draft USDM Implementation Guide (USDM-IG) v4.0

Link to USDM GitHub <https://github.com/cdisc-org/DDF-RA>

➤ Internal Review Instructions

Draft Release Deliverables

Release	Summary	UML Changes	CT Changes	API Changes	USDMIG Changes	Test Data Changes	USDM Core Rule Specifications	Other Changes	SME Meeting Link	Internal Review Start	Internal Review End	Internal Review Status
3.1	- Definition of relationships in CT - Set of USDM 3.0 conformance rule specifications	None	Definition of relationships in CT Link to CT Changes file	None	None	None	Set of USDM 3.0 conformance rule specifications	None	Recording (00:06:08 - 00:11:40) Slide Deck (Slides 4-8)	18 Jun 2024	01 Jul 2024	IN PROGRESS
3.2	- New standard "note" attribute added to the model using the commentAnnotation class - Added name, description and label to estimand class - Changed eligibility criteria relationships and correspondingly removed context attribute - Moved timeline timelineExit attributes from ScheduledInstance to ScheduledActivityInstance - Amended EnvironmentalSetting to EnvironmentalSettings in Encounter class - IG updates relating to relationship definitions	UML (Delta File)	Definition of relationships in CT Link to CT Changes file	API json API yaml (use diff program to compare yaml API v3.0 versus API v3.2)	USDM Implementation Guide (USDM-IG) v4.0 (changes documented in Revision History)	None	None	None	Recording (00:11:40 - 00:22:39) Slide Deck (Slides 4-8)	18 Jun 2024	01 Jul 2024	IN PROGRESS



WIKI – USDMIG

USDM Implementation Guide (USDM-IG) v4.0

Created by John Owen, last modified on May 13, 2024

This is the landing page for the USDMIG-v3.0. What would you like to do?

- **Read the USDMIG**

There are two options, depending on your reading preference:

- [USDM-IG compiled](#) — This lets you view the entire document as a single web page, but is more prone to errors with the JIRA Connector.
- [USDM-IG sections](#) — This displays each section on its own page, and comprises the source of the content displayed on the compiled view.
 - [Jump to a specific section:](#)

- **Other artefacts**

- [USDM UML Class Diagram](#)
- [USDM Controlled Terminology](#) (click the “view raw” link to download the CT spreadsheet)
- [API Specifications](#)

- **Provide feedback**

- [Instructions for Reviewers](#) — Detailed instructions for how to use JIRA to provide feedback on the USDMIG-v3.0 are given here.

Other resources you may find helpful:

- It is recommended to familiarise yourself with the Digital Data Flow project by reading resources from [TransCelerate's Digital Data Flow Project](#) and [CDISC's Digital Data Flow](#) information.
 1. If readers are new to Digital Data Flow it is recommended to watch the video presentation on the TransCelerate DDF video library
 2. Of particular interest will be the video on the [USDM Overview](#)

Comments on the USDMIG-v3.0 should be entered into JIRA at: <https://jira.cdisc.org/projects/DDF/summary>. For more detail, see the [Instructions for Reviewers](#).

Status

This is a **DRAFT** standard, which means that it is still in development and not yet ready for provisional or general use.



This document is best read online.



A PDF snapshot of the [USDM Implementation Guide for Public Review](#), exported at 2023-01-29 12:00, is available for those who prefer to review offline.

As a courtesy to the DDF Team, please still enter comments in JIRA as described in the [Instructions for Reviewers](#) if possible.

JIRA – Internal and Public Review Comment Tracking



Digital Data Flow

Resolution: Unresolved | Search: Contains text | More | Search | Advanced

Columns | Filter

T	Key	Summary	Affects Version/s	Components	Review Period	Assignee	Reporter	P	Status	Resolution	Created	Updated	Due	Labels	CDISC Disposition	CDISC Disposition Description	Description	Review Team
1	DDF-472	UML Model		USDM UML Diagram	Internal Review	Dave Barton-Hurst	Shawn Malcom	1	IN PROGRESS	Unresolved	05/Aug/23	23/Aug/23		None			Some feedback on the 'UML Diagram issue' raised recently. Intended to be constructive - happy to provide more detail if needed: - Enterprise Architect is a PROPRIETARY tool and both the exap and xmi file formats that it exports are PROPRIETARY schema. Please choose an open-source format for publishing your canonical model. Edgecase Modelling Framework (EMF) is open and there are many UML modelling tools available. I cannot justify investing in EA (Enterprise Architect) just for one model. - Either UML is your canonical model or it is not. If you are generating the UML, then it cannot be the canonical model - the thing you are generating is FROM the canonical model. - Over the last 20 years and I have never seen a machine-generated UML diagram that is human-readable (unless it is trivially small). - Human readable UML diagrams are human readable because they are created by a human as a means of communicating with another human - this will take several small diagrams, not one large diagram. - If you want UML to continue to be the canonical model for USDM then you will need a workflow that is UML-centric - i.e. all changes/edits are done to the UML model first and other schema (json, mcd4, etc) are generated from the UML not the other way around. - Note that CDISC are using LinkML as modelling language for BC, CDISC, AISC. This might be an alternative to UML, that it provides a sufficiently rich mechanism to express USDM, and it can address some of the UML Diagram issues using LinkML documentation generation tools.	
2	DDF-475	Naming of the new content class		USDM UML Diagram	Internal Review	Dave Barton-Hurst	Dave Barton-Hurst	1	IN PROGRESS	Unresolved	18/Aug/23	23/Aug/23		None			Just to be aware, I don't believe 'Content' is a good name for the class. I am all for short names but this is too generic; it should be something like	
3	DDF-473	Id fields are marked non mandatory - Sprint 3-1		API Specification	Internal Review	John Owen	Indu/Sahar Saja	1	TEAM APPROVED	Unresolved	08/Aug/23	21/Aug/23		None	Persuasive	The API has been updated and mandatory fields restored. The API has been sent for re-review during release 2.2.	All the Id fields/properties under each per USDM V2.0 and SDR API implement is there any specific reason to mark it Sprint 3.2?	
4	DDF-474	USDM IG Wiki Page Down		USDM Implementation Guide		John Owen	Miten Mistry	1	TEAM APPROVED	Unresolved	10/Aug/23	15/Aug/23		None	Persuasive	User added to the DDF group that is used to access the USDMIG.	Page cannot be accessed anymore.	

* Zenhub | Discussions | Actions | Projects | Wiki | Security | Insights

Repos (2/2) | Label | Sprint | Assignee | Estimate | Release | Author | Milestone | Find Issues (4)

Sprint Backlog
5 Issues / 15 Points

- DDF-RA #142 Additional Name Changes part 2 [API] [Feature] [Sprint 2.3]
- DDF-RA #125 Additional Standard Class Attributes [API] [Feature] [Release 2.3] [Sprint 2.4]
- DDF-RA #136 Syntax Templates [API] [Feature] [Release 2.3]
- DDF-RA #125 Inclusion/Exclusion [CT/Model] [Feature] [Release 2.4]
- DDF-RA #144 Potential Issues in CT Definition [CT] [Feature] [Release 2.4]

In Progress
5 Issues / 21 Points

- DDF-RA #48 Add Syntax Template Capability [Feature] [Sprint 3.4]
- DDF-RA #147 Model Attributes [Feature] [Release 2.3] [Sprint 3.4]
- DDF-RA #137 Syntax Templates [IG Updates] [Feature] [Release 2.3] [Sprint 3.4]
- DDF-RA #125 Additional Standard Class Attributes [CT/Model] [Feature] [Release 2.3] [Sprint 3.4]
- DDF-RA #148 Improved UML Diagram [Feature] [Release 2.3]

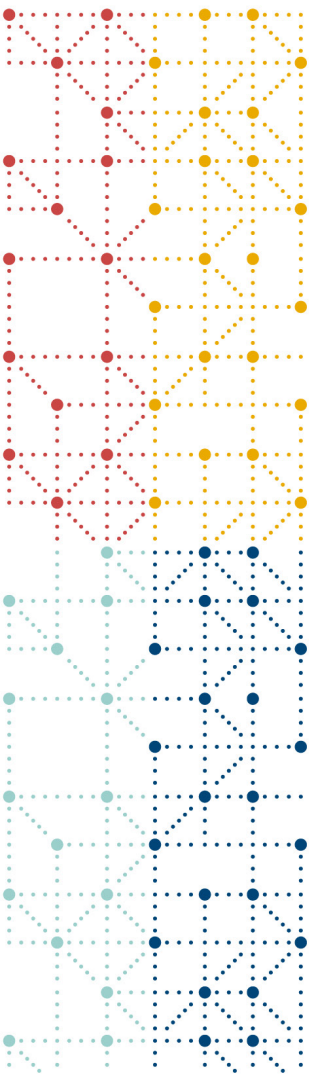
Review/QA
6 Issues / 21 Points

- DDF-RA #132 Documentation for tools that are being handed over [Feature] [Sprint 3.4]
- DDF-RA #131 Learn the DDF/Data Dictionary generator [Feature] [Sprint 3.4]
- DDF-RA #134 Content class description/user notes [IG] [Feature] [Release 2.3] [Sprint 3.4]
- DDF-RA #133 Transfer EA Workflow [Feature] [Release 2.3] [Sprint 3.4]
- DDF-RA #135 Syntax Templates [CT/Model] [Feature] [Release 2.3] [Sprint 3.4]
- DDF-RA #141 Additional Name Changes part 2 [CT/Model] [Feature] [Release 2.3] [Sprint 3.4]

Done
6 Issues / 18 Points

- DDF-RA #117 Additional Name Changes [CT/Model] [Feature] [Release 2.2] [Sprint 3.3]
- DDF-RA #122 Blinding/Unblinding [CT/Model] [Feature] [Release 2.2] [Sprint 3.3]
- DDF-RA #134 API support for Blinding and Unblinding [Feature] [Release 2.2] [Sprint 3.3]
- DDF-RA #127 Required attributes [Feature] [Release 2.2] [Sprint 3.3]
- DDF-RA #120 Extended Syntax Template Proposal [Feature] [Release 2.2] [Sprint 3.3]
- DDF-RA #119 Blinding & Unblinding [Feature] [Release 2.2] [Sprint 3.3]

<https://jira.cdisc.org/projects/DDF/summary>



Onboarding as a volunteer to the CDISC DDF Team

How to get involved

Process to Request a CDISC Wiki Account



- Create a free [cdiscID](#) (if you don't have one already)

A screenshot of a web form for creating a CDISC ID. The form is titled 'cdiscID' with a logo featuring four colored dots (red, orange, yellow, green) above the 'i'. Below the title, it says 'Please provide the following details.' and 'Verification is necessary. Please click Send button.' The form contains several input fields: 'Email Address', 'New Password', 'Confirm New Password', 'Full Name (First Name and Surname)', 'First Name', and 'Surname'. There are two checkboxes at the bottom: 'I agree to the Terms and Conditions' and 'Stay Informed. Sign Up for Communications from CDISC'. A blue 'Create' button is at the bottom. A 'Cancel' link is at the top left of the form area.

< Cancel

cdiscID

Please provide the following details.

Verification is necessary. Please click Send button.

Email Address

Send verification code

New Password

Confirm New Password

Full Name (First Name and Surname)

First Name

Surname

☐ I agree to the [Terms and Conditions](#)

☐ Stay Informed. Sign Up for Communications from CDISC

Create

Process to Request a CDISC Wiki Account



- Navigate to the CDISC Volunteer form
 - <https://www.cdisc.org/volunteer/form>
 - Review of volunteer information

Become a Volunteer

Thank you for your interest in volunteering at CDISC. Please review the following video and documents and complete the form.



[CDISC Policy 001 Code of Ethics and Conflicts of Interest Policy](#)

[CDISC Policy 003 Intellectual Property](#)

[COP-001 Standards Development](#)

[COP-005 Education](#)

[COP-019 Volunteer Engagement](#)

[CDISC Volunteer Charter and Handbook](#)

Please submit your volunteer information by checking the acknowledgment boxes and entering your name and contact information.

☐ I acknowledge that I have watched the training video and have read and understood CDISC's Policies and Procedures that apply to being a CDISC Volunteer.

☐ I have read and understood the CDISC Volunteer Charter and Handbook version 2019 and agree to abide by its content.

Process to Request a CDISC Wiki Account - DDF

- Navigate to the CDISC Volunteer form
 - Enter your contact information
 - Choose DDF from the team selection
 - Leave TA box blank
 - Enter brief text into the “Specify in which capacity....” box
 - Click Submit

First Name *

Last Name *

Organization *

Email *

Alternate Email

This email will be used for team mailing lists and Wiki/Jira account creation if you do not already have one.

Select the CDISC Standards Development team that you would like to join. (Please choose one)

☐ SEND

☐ CDASH

☐ SDS

☐ ADaM

☐ Controlled Terminology

☐ Medical Devices

☐ CORE Rules

☐ DDF

☐ Digital Health Technologies

☐ Genomics Subteam

☐ QRS

☐ Safety User Guide

☐ Tobacco Implementation Guide

☐ Other...

Additional standards information can be found on our [Standards Page](#).

Specify which Therapeutic Area you would like to join, if any.

[View current Therapeutic Area User Guides in development.](#)

Specify in which capacity you want to participate and explain why you want to be a volunteer.
If you are interested in joining another team, leave your interest here.

☐ Stay Informed. Sign Up for Communications from CDISC.

Submit

Process to Request a CDISC Wiki Account - DDF

- The CDISC Volunteer coordinator will process your request
 - A CDISC WIKI and JIRA account will be created (if you don't have one already)
 - You will be added to the DDF mailing list
 - Your request will be forwarded to the DDF PM who will add you to the DDF WIKI group
 - You will then be able to access the DDF WIKI materials and submit comments in JIRA



Upcoming DDF Events

Upcoming DDF Events

2024 Events*	Date
Vulcan UDP Webinar Vulcan UDP (Utilizing the Digital Protocol): Collaborating to Accelerate ICH M11 and End User Value (transceleratebiopharmainc.com)	11 July 2024
DDF Vendor Showcase Webinar Series	26 September 2024
2024 CDISC US Interchange 2024 CDISC + TMF US Interchange CDISC	21-25 October 2024
SCOPE Europe 2024 Digital Data Flow: Digitalising Clinical Protocol Information to Accelerate Clinical Research and Enable Healthcare Interoperability	29-30 October 2024
PHUSE EU Connect 2024 PHUSE EU Connect 2024 (phuse-events.org)	10-13 November 2024

SAVE THE DATE

“DDF in Action” Day

- **When:** Oct. 10, 2024
- **Where:** EU (Novo Nordisk, Copenhagen, Denmark); US (J&J, Raritan, New Jersey)
- **Registration opens Mid-July**

An in-person full day event, involving sponsor companies, clinical solution providers, and key industry stakeholders, offers an **interactive experience to exchange knowledge** about implementing the Unified Study Definition Model (USDM) and Study Definitions Repository (SDR) Digital Data Flow (DDF) solutions.

** Please note, related industry events are not formally endorsed by TransCelerate and are listed for awareness only*



Conferences

2024 China Interchange

2024 Korea Interchange

2024 US Interchange

Webinars

Upcoming Webinars

Public Webinars Archive

All Events

COSA

Partner Events

DDF 4 CDISC US Interchange

2024 CDISC + TMF
US INTERCHANGE

PHOENIX/SCOTTSDALE

23-24 OCTOBER: CONFERENCE & EXPO | 21, 22, 25 OCTOBER: TRAININGS

Day 1
23 October 2024

Digital Data Flow Workshop

October 22, 2024 8:45 AM-4:00 PM MST

Following on from the first public, in-depth, workshop on the Unified Study Definitions Model (USDM) at the EU Interchange in Berlin, the DDF team is pleased to announce a sister workshop at the US Interchange. The workshop will take a deep dive into all aspects of the model and how study protocols and designs can be represented using the USDM.

The day will be organised as a series of focused sessions, with each session covering the theory on an individual aspect of the model combined with hands-on exercises and discussion.

Workshop agenda:

- Model Overview
- Structured and unstructured content, Study, Protocol and Titles
- Inclusion and Exclusion Criteria
- Objectives and Endpoints
- Population and Cohorts
- Schedule of Assessments, Timing and Planning
- Amendments
- Narrative content, Protocol document and ICH M11

14:00 - 15:30

Session 3A: Digital Protocol, Part I

Peter Van Reusel, CDISC

14:00 - 14:30

ICH M11, TransCelerate, CDISC & HL7: Driving the Adoption of Digital Protocol

Peter Van Reusel, CDISC

14:30 - 15:00

Digital Data Flow: Achieving Protocol Digitalization and Clinical Research Interoperability through Multi-stakeholder Collaboration

Bill Illis, TransCelerate Biopharma

15:00 - 15:30

USDM in Action - From Protocol to SDTM

Dave Iberson-Hurst, data4knowledge

16:00 - 17:30

Session 4A: Digital Protocol, Part II

Bron Kisler, Nurocor

16:00 - 16:30

DDF and Breaking Down the Document Barrier

Bob Brindle and Frederik Malfait, Nurocor

16:30 - 17:00

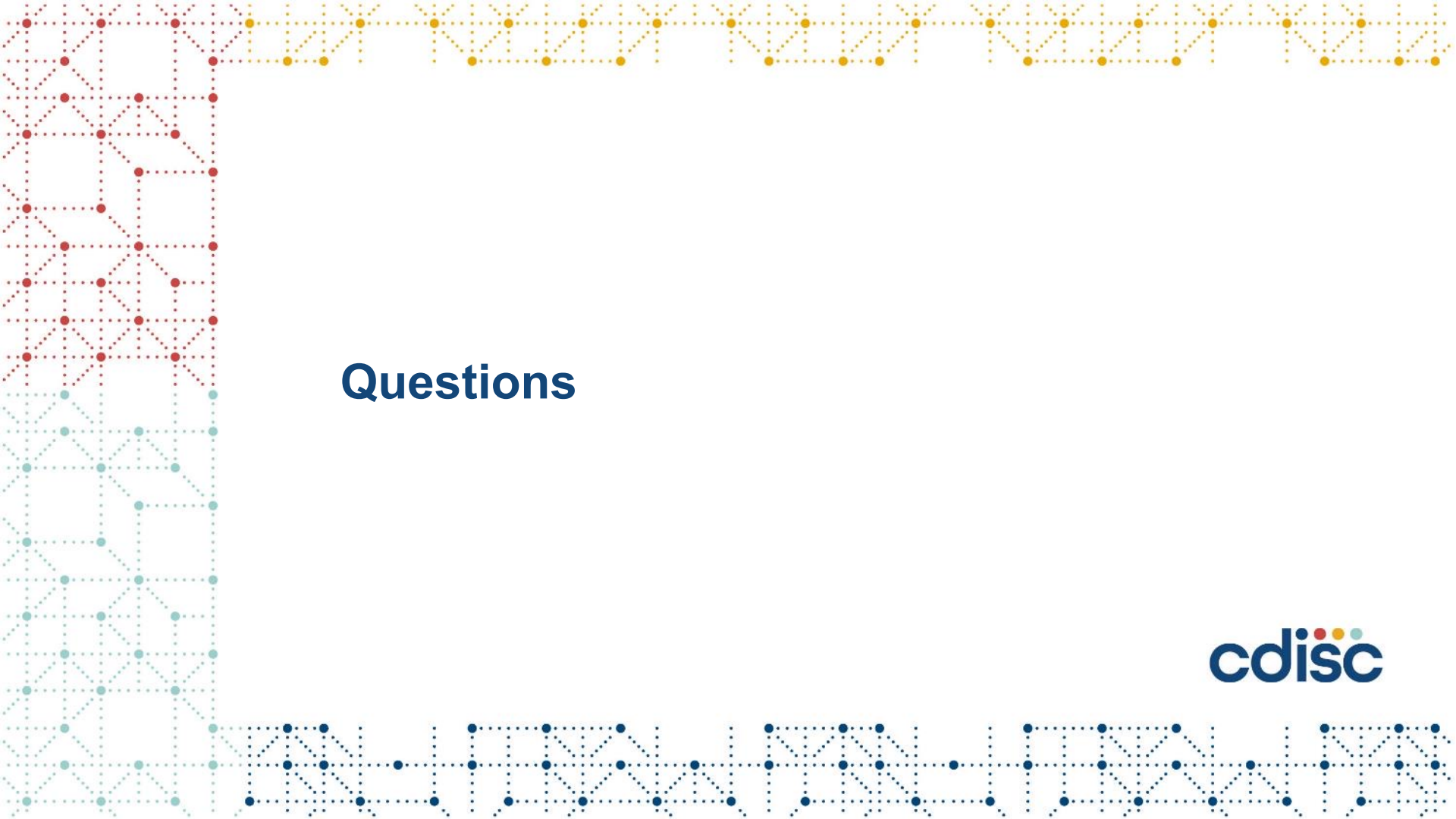
Trial CAD: Constrained Optimisation Approaches to Parametric Clinical Study Design

Daniel Roythorne, AstraZeneca

17:00 - 17:30

Digital Protocol Panel Discussion





Questions