Data Standards Strategy – Action Plan

Version: 1.6

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REVISION HISTORY

Version Number	Implemented By	Revision Date	Description of Change
1.0	CDER DSPB	February 21, 2013	Initial Document
1.1	CDER OpSC	July 29, 2013	Quarterly Update
1.2	CDER OpSC	October 23, 2013	Quarterly Update
1.3	CDER OpSC	February 5, 2014	Quarterly Update
1.4	CDER OpSC	May 30, 2014	Quarterly Update
1.5	CDER OpSC	October 2, 2014	Quarterly Update
1.6	CDER OpSC	January 21, 2015	Quarterly Update

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1.0 Introduction

In 2010, the Data Standards Program Board (DSPB) was chartered to serve as the governing body for the Center for Drug Evaluation and Research (CDER) data standards initiatives. In this capacity, the DSPB oversees a portfolio of projects to deliver to its internal and external stakeholders. This action plan outlines the data standards initiatives under the authority of the DSPB. These initiatives are directly aligned with the CDER Data Standards Strategy which is currently under revision and will be published in early 2015 and, where applicable published Information Technology (IT) plans. CDER's DSPB interfaces closely with standards teams in other centers, collaborate on projects, and provide direction wherever feasible.

2.0 Purpose

This Action Plan is a quarterly update to internal and external stakeholders, with an overview and progress update of current CDER data standards initiatives. The plan will continue to be updated quarterly to indicate progress of current projects, as well as, initiation of new projects.

3.0 Program Initiatives

The initiatives in the CDER DSPB portfolio align with the Center's data standards strategic goals. For purposes of this plan, the goals are categorized in following manner:

1. **Policy and Process** – Key activities to establish critical data standards-related policy or process (e.g., standards development and adoption, guidance development process and schedule, other specific guidance).
2. **Standards Development and Implementation** – Projects to identify, develop, test, and implement a standard to meet regulatory needs
3. **Study Data Standards** – Projects that develop, test, or implement advancements in study data terminology and content standards.
4. **Research and Development** – Projects to assess a potential approach to meet a standards-related need without immediate intent to implement; these are to inform of future direction.

A. Policy and Process

The Data Standards Strategy outlines policy and process initiatives to support CDER's data standards goals. The projects commenced to address the outlined policy and process initiatives are in **Table 1**. The progress arrows in the table indicate the current stage of progress for each project. **See Table 5** for a description of the stages.

Guidance and other technical resource guide documents follow a process that includes: development, clearance, and publication, for public comment, in the Federal Register. This process is aligned with Good Guidance Practices (GGP) for issuing guidance as described in 21 Code of Federal Regulations (CFR) 10.115.

B. Standard Development and Implementation

CDER is implementing a consistent approach for its standards requirements, development, and implementation projects. An overview of the development framework is provided in the Appendix. The framework is intended to be flexible to accommodate diverse standards needs, ranging from simple vocabulary change requests, to changing existing standards, and implementation of new standards.

Further details regarding study data-specific projects are outlined in Section C. **Table 2** highlights current standards projects. Not all projects go through each stage, when not applicable, the stage is grayed out. **See Table 6** for a description of the stages.

C. Study Data Standards

This section elaborates on the Data Standard Project *Development* Stage for a study data standard. These projects are categorized separately from other data standards efforts because it is expected that most will be incremental enhancements to existing standards. For example, as discussed in the Data Standards Strategy document, it is expected that therapeutic area standards development will enhance existing "cross-cutting" Clinical Data Interchange Standards Consortium (CDISC) domains (e.g., demographics, adverse events, vital signs) and potentially add small therapeutic area (TA) -specific sets of elements and relationships. The Appendix describes the process overview and the FDA's roles/activities in the development of study data standards.

Generally, study data standard development projects are led by organizations external to FDA (e.g., CDISC, Coalition for the Advancement of Standards and Therapies (CFAST[1]), Critical Path Institute, Duke Clinical Research Institute University (DCRI)). This enables CDER to meet one of its strategic goals: to support open, consensus-based data standards development. To ensure that those standards can be implemented for regulatory review purposes, CDER participates at critical junctures throughout the development phase to identify scope and requirements, provide subject matter expertise and feedback, and to perform acceptance and implementation testing. When a standard is released by a Standards Development Organization (SDO) it may be available for use, but it is not necessarily supported by FDA. Following the release by a SDO, FDA will execute an acceptance testing process to determine whether it is able to support the standard. When FDA determines that a standard can be supported, FDA will publish a *Federal Register* notice announcing support for the new standard and will update the Data Standards Catalog. CDER is not a passive stakeholder and participates on many levels to influence project scope (e.g., through requirements development and expert reviews), promote timely progress, and prioritize projects through participation in steering groups (e.g., CFAST) and leadership support in relevant HL7 working groups.

A list and status of projects addressing therapeutic areas are available online at: http://www.fda.gov/Drugs/DevelopmentApprovalProcess/FormsSubmissionRequirements/ElectronicSubmissions/ucm287408.htm.

[1] http://www.cdisc.org/therapeutic

Table 3 highlights related projects that are not on the therapeutic area standards development list. Not all projects go through each stage, when not applicable, the stage is grayed out. **See Table 6** for a description of the stages.

D. Research and Development

The process for research and development initiatives is similar to that of other data standards development efforts. To ensure that CDER's standardization needs are met in the long term, research and development initiatives are undertaken to assess new approaches without immediate intent to implement, but rather to inform future decisions.

Over the past few years, CDER has increased its support for standardized study data submissions using CDISC standards, and will continue to do so in the foreseeable future. FDA has also begun to evaluate potential study data exchange alternatives. The results will inform further pilot activities in this area. In November 2013 CDER and the Center for Biologics Evaluation and Research (CBER) published a *Federal Register* notice announcing a project to evaluate, with public input, the CDISC Dataset-XML transport format for the exchange of study data in regulatory submissions. This evaluation began in 2014.

CDER is also exploring the use of Semantic Web Technologies for modeling requirements. Semantic Web technology may help support evolving models implemented by multiple stakeholders, through its potential to enable the development of bottom-up standards that can be harmonized at any level as needed.

Table 1. Policy and Process

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage
				Initiation / Development / Clearance / Publication
*Guidance on Electronic Submission of Applications (eCTD)	CDER CBER	Issue Guidance to industry specifying the required format for electronic regulatory submission.	Completed review of public comments and have updated the guidance document. The goal is to publish the final guidance by mid-2015.	Draft
Guidance for Industry Providing Regulatory Submissions in Electronic Format – Submissions Under Section 745A(a) of the Federal Food, Drug, and Cosmetic Act	CDER CBER	Issue Guidance to industry specifying on how FDA intends to implement the electronic submission requirements of section 745A(a) of the FD&C Act.	Final guidance published December 17, 2014.	Final
Guidance on Electronic Standardized Study Data (eStudy)	CDER CBER	Issue Guidance to industry specifying requirements for electronic submission of standardized study data under the Food and Drug Administration Safety and Innovation Act (FDASIA).	Final guidance published December 17, 2014.	Final
Study Data Standards Technical Conformance Guide	CDER CBER	The Study Data Technical Conformance Guide, when final, supplements the revised draft guidance for industry Providing Regulatory Submissions in Electronic Format--Standardized Study Data (eStudy Data guidance) by providing technical specifications, recommendations, and general considerations on how to submit standardized electronic study data using FDA-supported data standards identified in the Data Standards Catalog.	Technical Conformance Guide version 2 published December 17, 2014.	Final

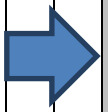
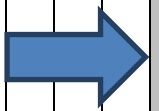
Project Title	Center	Project Description	Output and Estimated Timeframes	Stage			
				Initiation	Development	Clearance	Publication
Draft Guidance for Industry: Providing Regulatory Submissions in Electronic Format - Submission of Manufacturing Establishment Information	CDER CBER	Issue Guidance for the submission of electronic information about manufacturing establishments.	Draft guidance is in clearance and the goal is to publish the draft guidance by mid-2015.		Draft		
Draft Guidance for Industry Providing Submissions in Electronic Format- Summary Level Clinical Site Data for CDER's Inspection Planning	CDER	Provide guidance to industry on site-level standardized data elements used in the selection clinical sites and/or facilities for inspection as part of a regulatory application or supplement.	Comments received from December 2012 draft release are being addressed and near completion.		2nd Draft		
Data Standards Strategy 2.0	CDER	Periodic update to the current Data Standards Strategy v1.0 published in December 2012.	Final draft expected early 2015.		Draft		
Guidance for Industry: Providing Electronic Submissions - Bioanalytical Methods Validation Data	CDER	Binding guidance being developed by the Office of Generic Drugs (300).	Draft guidance document expected FY2015 Q2.		Draft		

*At this time FDA has not issued *final* guidance on the requirement for electronic submissions. The draft Providing Regulatory Submissions in Electronic Format—Certain Human Pharmaceutical Product Applications and Related Submissions Using the eCTD Specifications was published on July 25, 2014.

Table 2. Standard Development and Implementation

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Alt Analysis	Development	Testing	Adoption	Implementation	FRN[2]/ Guidance
eCTD v4.0 Project	CDER CBER	FDA currently uses electronic Common Technical Document (eCTD) version 3.2. This project is to support the development, testing, and adoption of the next major version of the eCTD (version 4) which includes two-way communication.	ICH Step 2 signoff in December 2014. Public comment period on the eCTD v4.0 implementation package planned for March – May 2015.							
ISO IDMP Implementation	CDER CBER	Implement International Organization for Standardization (ISO) Identification of Medicinal Products (IDMP) standards with reliable and robust repositories and processes to support efficient, consistent, and timely decision making in the regulation of medicinal product throughout the product development lifecycle.	ISO 11238 based Substance Registration System (SRS) Pilot started in FY2014 Q4. Draft SRS Governance process completed Pilot testing ongoing.							
Product Dictionary	CDER CBER	***Note:*** This Product Dictionary is not a standard in development rather it is an implementation of a controlled dictionary utilizing standards. With the release of the FDA Adverse Event Reporting System (FAERS) in FY2013 Q1, the initial implementation of the product dictionary is complete. The Centers are now focusing on the next version of the product dictionary that will leverage an ongoing CDER Master Data Management effort to create an ISO IDMP compliant Product Dictionary.	Contract awarded FY2014 Q1. Currently in the development phase. Validated data elements against ISO 11615 standard.							

[2] Federal Register Notice (FRN)

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Alt Analysis	Development	Testing	Adoption	Implementation	FRN[2]/ Guidance
Chemistry, Manufacturing, and Controls (CMC) Data Standardization	CDER	Establishing common drug quality data standards continues to provide new opportunities to transform the submission data into useful information to potentially improve time and quality of FDA's drug review process. This project is to identify and standardize data elements, terminologies, and data structures to enable automation of important analyses of CMC data to support more efficient and effective regulatory decision-making.	Identified initial list of CMC data elements for standardization. Evaluating HL7 v.3 and Fast Healthcare Interoperability Resources (FHIR) data exchange standards for CMC data.							
[3]ICH E2B R3 Implementation Assessment and Planning	CDER	Assess Individual Case Safety Report (ICSR) implementation requirements and considerations; develop implementation plan based on assessment findings.	Comment period for FDA ICH E2B (R3) Implementation Guide and Backward and Forward Compatibility guide closed. Currently addressing comments. Technical spec under revision by CDER. Project pilot to review sample E2B (R3) XML files scheduled for FY2015 Q2.							

[3] CBER vaccine program has completed various activities including Electronic Vaccine Adverse Event Reporting System (eVAERS) guidance and technical specification, Phase I parser development and testing, and Electronic Submissions Gateway (ESG) enhancements to support ICSR exchange with Centers for Disease Control and Prevention (CDC). The vaccine program is collaborating with the overarching CBER/CDER ICSR(R3) implementation but progressing at a different pace.

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Alt Analysis	Development	Testing	Adoption	Implementation	FRN[2]/ Guidance
Data Fit Project	CDER	Develop an advanced data quality and conformance checking program (i.e., Data Fit service) for use by CDER to evaluate and report on clinical trial data that is submitted in standard format in support of registration applications.	Program testing completed in FY 2014 Q3. Estimate integration completion by FY 2015 Q4.							
[4]Annual Report Project	CDER CBER	Improve submission requirements to ensure that essential facility location and production information is captured completely and in a form conducive to electronic receipt, storage and usage.	Began CDER pre-clearance review process of proposed regulation changes. Formal clearance targeted to initiate FY 2015 Q2.							
Standards Testing and SOP Enhancement	CDER	Using the testing methodology developed in FY 2014, several data standards will be tested and process documentation updated based on lessons learned.	CDISC foundation standards and Therapeutic Area standards are being prioritized for testing iteratively based on the availability. CDISC SDTM IG 3.2 is being assessed and test plan is being developed.							
Bioanalytical Methods Validation Terminology	CDER	Transform Office of Generic Drug (OGD) technical specifications into a terminology that can be used by sponsors for the submission of these data.	Draft technical specification document expected FY 2015 Q2							

[4] Formally titled Facilities Production/Distribution Standardization Project.

Table 3. Study Data Standard Development

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Initiation	Development	Testing	Adoption	Implementation	FRN/Guidance
SEND Cardiovascular and Respiratory Safety Pharmacology Pilot	CDER	Pilot the Standard for Exchange of Nonclinical Data (SEND) data standard for cardiovascular and respiratory safety pharmacology study types.	Safety Pharm studies received are pending mapping and uploading for review.							
[5]FDA Therapeutic Areas Data Standards Efficacy Requirements	CDER	Building on the work completed in the initial pilot to capture data requirements for review of clinical efficacy, the project continues to conduct requirements collection for additional TAs.	Requirement gathering for 12 TAs completed in FY 2015 Q1. Additional 8 TAs will be completed by the end of FY 2015.							
FDA Therapeutic Areas Data Standards Analysis Requirements	CDER	Develop the approach for standardizing analysis data sets, using Hepatitis C Virus (HCV) resistance data as the project use case.	Project completion estimated in FY 2015 Q3.							
Impact Assessment and Transition Planning for Meaningful Use Standards	CDER	Assess impact of adopting and/or harmonizing with specific Office of National Coordinator's (ONC's) Meaningful Use standards	First draft Impact Analysis report for Logical Observation Identifiers Names and Codes (LOINC) and Unified Code for Units of Measure (UCUM) complete. Draft report for Unique Ingredient Identifier (UNII) and Systematized Nomenclature of Medicine (SNOMED) under review.							

[5] Formally titled: "TA Requirements Gathering & Small Clinical Information Models Development". Refer to Section 3C for a link to the website with the Table of Priority Therapeutic Area Standards.

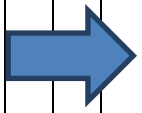
Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Initiation	Development	Testing	Adoption	Implementation	FRN/Guidance
Integrating REMS Information into Structured Product Labeling (SPL)	CDER	Make it possible to capture and submit structured information about Risk Evaluation and Mitigation Strategies (REMS) and official FDA-approved REMS Documents in Structured Product Labeling (SPL).	Developing draft SPL artifacts, including style sheet, data elements, and controlled terminology. We (roughly) anticipate being able to develop an implementation guide by the end of Q3 FY2015.							

Table 4. Research and Development

Project Title	Center	Project Description	Output and Estimated Timeframes
CDISC Dataset-XML Pilot	CDER CBER	FDA envisions several pilot projects conducted to evaluate new transport formats. The purpose of this pilot project is to obtain additional experience with CDISC Dataset XML. A successful pilot may allow CDER and CBER to routinely receive study data that employ CDISC Dataset XML as the transport format.	Evaluation pilot project began in FY 2014 Q2. Six sponsors participated. Testing completed in FY 2015 Q1. Final report to communicate pilot results will be published FY2015 Q2.

Table 5. Policy and Process Project Stages

Policy and Process Project Stage	Center	Stage Description
Initiation	CDER CBER	The business need is articulated and a work plan for the project is developed.
Development	CDER CBER	During this stage the proposed new or changed policy/process is developed and a draft of the new/revised policy or process is created and internally reviewed by subject matter experts. Once complete, the document will begin the clearance process.
Clearance	CDER CBER	This is a formal process whereby a guidance document is reviewed for consistency with CDER policy, Good Guidance Practices, format, style, clarity and content. The review is conducted by leadership at the office and center levels prior to submission and review at the Agency level and subsequent publication.
Publication	CDER CBER	For guidance and other external documents having policy impact, a notice of availability is published in the Federal Register and the document is made accessible to internal and external stakeholders. For internal processes, publication is made as a CDER Manual of Policies and Procedures (MaPPs) if appropriate.

Table 6. Standard Development Project Stage and Description

Rows highlighted in yellow* are processes owned by Standards Development Organizations, other rows are CDER owned process. As discussed in the next section, there is variation in all data standards projects so not all processes are needed for every project.

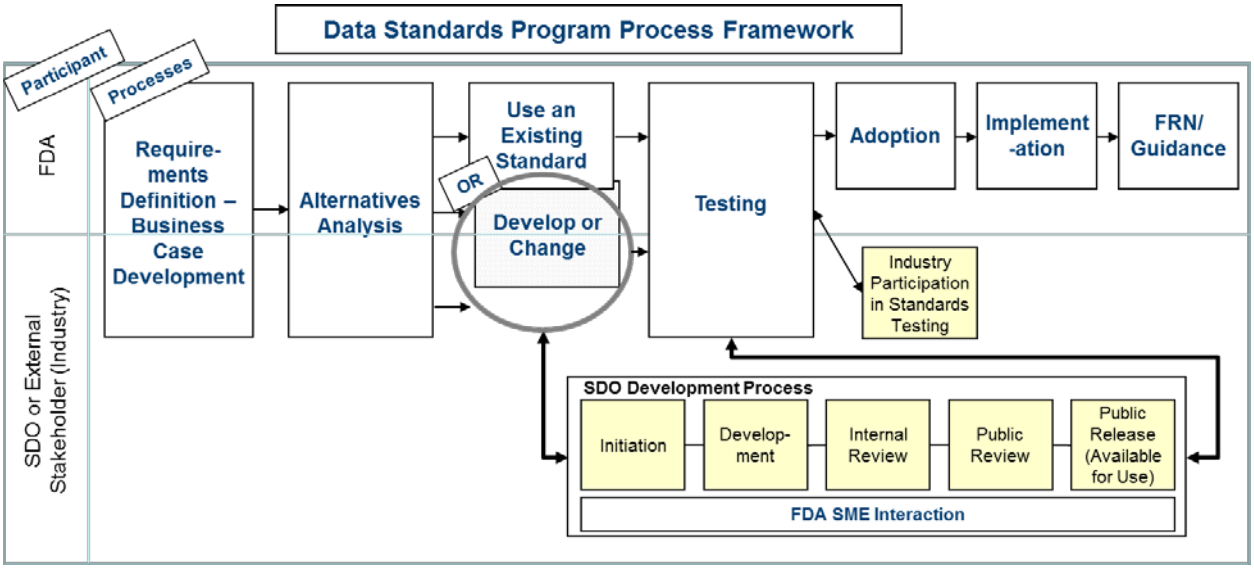
Data Standard Project Stage	Stage Description
Requirements Definition - Business Case Development	A business case is developed that can include a description of the data standard need, impact on tools, processes, and information technology infrastructure, high-level concept of operations, future state benefits, and high level requirements. For study data-related projects, FDA subject matter experts and document resources (e.g., case report forms, guidance documents) are used to develop requirements for study data standards development.
Alternatives Analysis	If needed, FDA can conduct alternative analyses to assess options and recommendations for addressing the data standards need defined in the business case. Stakeholder input is a critical part of this effort and could include a request for public comment or input in addition to planned communications (as outlined in the Communication Plan).
Alternatives Analysis - Pilot	If needed, FDA would conduct a single option pilot to further assess the feasibility of a data standards alternative or a competitive pilot to compare more than one identified alternative that meets the business need.
Initiation*	The SDO, grantee, or other lead group working with the FDA and other subject matter experts defines the project scope (e.g., what is needed for regulatory review decision making), develops a charter to define the project and ensure available resources, develops a plan, and conducts a kick off of the project.
Development*	The SDO, grantee, or other lead group conducts an iterative process of data element identification (e.g., elements need to describe the study primary endpoint), definition, validation, and conducts a review with defined expert groups. FDA's subject matter experts participate throughout the development phase. A key output is an implementation guide for the study data standard.
Internal Review*	During this stage, the lead group conducts an internal review to ensure readiness for the public review period.
Public Review*	The lead group facilitates a public review comment period. Comments are addressed per the lead group's process.
Public Release*	An initial release of the study data standard is released for public use.
Testing	A project may be required to test that all identified factors are assessed (e.g., scale, impact, suitability for FDA regulatory review needs, compatibility with FDA infrastructure) and that all policy, regulatory, guidance, and technical specification needs are identified. For study data, FDA may use converted or sample data sets to test the study data standard to simulate regulatory review decision making. Having the business rules and/or conformance checks available for a new or updated

Data Standard Project Stage	Stage Description
	standard at time of SDO release will be important to FDA's testing efforts.
Adoption	If needed, policy, regulatory, guidance, and technical specification needs identified for a given data standards change are addressed to support implementation.
Implementation	The data standard change is being implemented into the FDA environment. This phase includes all the steps to make this part of the regulatory review process.
Federal Register Notice (FRN)/Guidance	FDA will issue Federal Register Notice (and guidance as needed) if the use of a new standard is required.

Appendix A. Standard Development and/or Implementation Project Stage Description

This section provides more detail on the processes utilized by the projects described in Section 3.0B and 3.0C. **Figure 1** illustrates the process framework CDER is implementing for its data standards identification, development, and implementation projects. Depending on the scope, projects will proceed through the appropriate phases (i.e., not every project will proceed through all of the listed processes). For example, projects only capturing CDER's TA requirements will not proceed through Testing, Adoption, and Implementation. Those would be addressed in a subsequent project. Most processes in this framework require collaboration with external stakeholders; these are depicted as process boxes that cross between the FDA and SDO or External Stakeholder participant rows.

Figure 1. Data Standards Development Project High Level Process



Use of this approach ensures that identified data standards needs are articulated, reviewed, approved internally, external stakeholders are engaged, adequate testing is conducted, and that roll out is planned. The figure also illustrates the general development process utilized by external SDOs (shown with yellow boxes). As discussed in Section 3.0C, these projects are led by groups external to FDA (e.g., CDISC, Critical Path Institute) and FDA participates throughout the process to provide subject matter expertise. **Table 6** summarizes the definitions for each of the process stages in the framework.