DDI Alliance Executive Board Meeting
21 January 2020

Present: Bill Block, Cathy Fitch, Maggie Levenstein, Jared Lyle, Steve McEachern, Dana Mueller, Barry Radler, Joachim Wackerow

Temporary Working Group to Propose a Restructuring of the Scientific Board

Eight community members were nominated for the temporary working group, including: Jane Fry (Carleton University and Training Working Group co-chair), Dan Gillman (U.S. Bureau of Labor Statistics), Jon Johnson (CLOSER and Technical Commitee vice-chair), Ron Nakao (Stanford), Hilde Orton (NSD), Nicolas Sauger (Sciences Po), and Wendy Thomas (Minnesota Population Center and Technical Committee chair).

Ingo Barkow (as chair of the new temporary working group), Achim, and Jared met last week to review the nominees. They recommended that all nominees be invited to join the working group. The Executive Board reviewed the final selection of the temporary working group members and voted to approve all names (7 votes yea, 0 votes no, 0 abstentions). Jared will notify Ingo and the nominees that they are approved.

DDI Alliance Work Products

The Board discussed DDI work products, including DDI 4 Core outcomes and the Technical Committee "Proposed DDI Roadmap." Prior to the call, Arofan Gregory, MRT group chair, sent a status report (Appendix 1) and a ZIP file containing a snapshot of the working documents, including introduction (Appendix 2), architecture, model, and examples. Likewise, Wendy Thomas, Technical Committee chair, sent the "Proposed DDI Roadmap" (Appendix 3).

Regarding DDI 4, Board members expressed appreciation for the progress made by the MRT group. It was noted that the deadline for delivering the review package to the Technical Committee is now 28 February 2020. This means that the Technical Committee needs some time (several weeks) before the publication of the Public Review Release.

The two main discussion points centered on naming and encouraging broad participation in the public review. Regarding naming, the working name of the product has been DDI 4. It will need a final name before distributing for public review. One suggestion for a final name has been DDI Core, although concern was expressed that "Core" signals preference over the other products. It was suggested to characterize the purpose of each product, what the purpose of the new product is, and what users of the new product get in relation to DDI-Codebook and DDI-Lifecycle. It was noted that the purpose of the new model is to describe data in a non-domain specific way. The new product can describe social science data but it's open to other domains;

it's a kind of interoperable, cross-domain, interdisciplinary specification. The Board encouraged the MRT group to continue working with the Marketing working group on selecting a name.

Regarding encouraging broad participation in the public review, concern was raised about receiving limited responses. It was suggested to work with the Marketing working group to actively solicit input during the review process. A one-pager describing the purpose was encouraged.

For the "Proposed DDI Roadmap," it was noted that the Roadmap is really useful when talking about the full DDI suite of products, especially to create clear guidelines on the relationship of each of the DDI Alliance products. The Board noted that the Roadmap is something for the Scientific Board to build on, expand, and improve.

Appendix 1

DDI 4 Core: Status Report from the MRT Working Group

20 January 2020

Overview

This report describes the current status of DDI 4 Core from the MRT Working Group and highlights some questions which need to be addressed. It references a package of the deliverables in their current state: all are in-process, and in many cases make reference to separate documents which will be incorporated when they are finished, in order to support work in parallel.

Earlier status reports have been organized according to the technical contents of the specification. This status report is organized instead according to the specific documents and files which will be delivered as part of the review draft. This reflects a shift in focus within the group itself, from working on the substance of the specification to working on packaging and editing it for review and has occurred since the Dagstuhl sprint in fall of 2019.

Overall Status

MRT had committed to a date early in 2020 for having a draft specification ready for public review. The current deadline for delivering the review package to the Technical Committee is now 28 February 2020.

It had been hoped that a slightly earlier release would be possible, but many factors have caused a degree of delay: the holidays were an anticipated disruption, but in addition we have had to deal with (among other things) medical issues and institutional labor negotiations which have affected group members in key roles. Despite this, it is expected that a release package will be ready at the end of February, substantially agreeing with our intended timeline.

There are still some open issues, enumerated in the following section. The review package will be accompanied by a list of known issues, as has been the practice with other DDI specifications when released for review. However, resolution of those listed would be very desirable before the review.

In discussions with the TC it has been identified that the review process can be handled much along the lines of earlier ones in terms of the delivery and review mechanisms to be used. This involves agreeing on appropriate repositories and so on for reviewers to access the various parts of the specification, which is a more complex matter than the simple delivery of the specification documents, but one which is not different from other public reviews in the past. In general, MRT will work with the TC during the review process to make sure that it is conducted successfully.

Issues

Some issues remain to be resolved which are not within the purview of the MRT Working Group itself. These will need resolution, ideally before the public review, so that any needed explanation or changes to the review package can be made.

Issue 1: Naming and Branding

This issue has been discussed at different points with members of the DDI Marketing Committee and management. No final decision has yet been made. The name “DDI 4 Core” is agreed to have only a working status: the primary objection has been that – as with “DDI 2” and “DDI 3” before it, it indicates that these are versions which supplant each other, when in fact they are different products. In the same way that “DDI 2” became “DDI Codebook” and “DDI 3” became “DDI Lifecycle,” it is generally agreed that the version number in the current specification should be dropped, and a name indicating the function of the specification adopted instead. This would be consistent with the names adopted for earlier specifications.

There have been several proposed names, but the one which seems to find the highest degree of general acceptance is “DDI Core”. Insofar as MRT can make a recommendation at this point, this simple change to the name would be it.

It would be good if the name by which the standard will be released for production can be agreed before the public review occurs. The entire specification draft will require changes to the name in the text (currently it is “DDI 4 Core” or just “DDI 4” in different places, and this will require an editorial pass to fix. Further, if the review is conducted under a name which is different than the name of the production version, this could easily cause confusion among the intended user community and undermine efforts to establish brand recognition.

MRT’s current thinking is that, if the EB and Marketing Committee agree on “DDI Core,” then – given the degree of cross-membership on various DDI committees – that would constitute a broad consensus and form the basis of a decision.

Issue 2: Linked Data/RDF Syntax Representation

There has historically been an expectation that the DDI 4 Core Model would have a syntax representation which parallels the XML syntax representation. This has been a cause of some consternation, as the needed skills to design such a representation well have not always been available among the volunteers in the community, and sufficient resource for external expertise has not been available to take the work beyond the stage of an initial draft.

One of the big issues here was a question of how to best integrate with a technology platform that embraces the idea of re-use of models and vocabularies as a fundamental principle. It is considered very bad form to “re-invent the wheel,” requiring that DDI 4 Core be mapped against many vocabularies already in existence, rather than provide a competitor to them. A clear way forward on this point has hitherto eluded us. Recent work in MRT may have found a solution to this problem, but it suggests a change in our assumptions.

The culture of practice around Linked Data has embraced the notion that syntax is secondary to the model being represented. RDF itself has several different “standard” syntaxes, and

specifications such as JSON-Linked Data (JSON-LD) provide a generic means of representing almost any model in RDF. This approach has been embraced by some important technology platforms, including the major search engine providers through Schema.org (Google, Yahoo, etc.).
MRT currently feels that the most important product for supporting use in the Web of Linked Data is the model itself. In our examples, we show how DDI 4 Core can work with Schema.org, using JSON-LD as a syntax for exposing data to the search engine providers. This example is a real one, using an approach we encountered at the Dagstuhl Cross-Domain workshop in 2019. We recommend that this issue be explored further, using this example and others as a way to determine next steps. The possible paths forward (a DDI RDF syntax, a reliance on external approaches, or a combination of the two) should be investigated more fully.
It will be possible for MRT to produce a stand-alone RDF syntax binding for the DDI 4 Core Model as part of the public review if this seen as appropriate. This draft would not incorporate external vocabularies as much as we would like – this would require some further work.

Detailed Status

For each of the documents and/or deliverables in the review package, a status is provided. It should be noted that the documents being discussed are a snapshot of the current working drafts and are very much in-process. Much of the group's effort is currently focused on detailed review of specific portions of the work, which may not be reflected in these documents at this point.
We are making final changes to the model itself, although the substantive contents of the model have been fixed for some time. Until it is completely finished, however, the documents referred to here cannot be finalized, as they contain views/portions of the model. This is a last step in preparing the package, and one that will be completed in the coming weeks, but it is not at this point reflected in the documents.
Similarly, to facilitate work in parallel, many parts of the documentation have been written in isolation from the overall package documentation. Some of these parts have yet to be incorporated, although they are substantially complete and currently under review.

Document 1: Introduction

This document is attached to this report. It is reasonably complete, although still under review by the group. It contains a detailed outline of the contents of the specification.

Document 2: DDI 4 Core Detailed Model

This document is attached to this report. It is a large document, and different sections are at different levels of completeness. More than any other part of the work, this document contains diagrams drawn directly from the model, and will require updating when the final version of the model is complete (in many cases, affected portions of the document are highlighted).
There is still a good deal of editing for consistency and some re-organization of material to be done in some sections, but the inclusion of illustrative examples in relevant places is evident.
The field-level documentation for the model will be distributed in clickable HTML form, derived programmatically from the XMI version of the model (all of the documentation is embedded as an integral part of the model to support reuse). It is currently undergoing an active field-by-field review to ensure completeness, consistency, and accuracy/quality, according to guidelines MRT

has established for this purpose. (The results of this review are not reflected in the current working version.)
It can be found at:
https://wackerow.bitbucket.io/DDI4Core/DDI4Core_2019-12-19_EA_HTML_Documentation/

Document 3: Architecture and Alignment with Other Specifications

This document is attached to this report. Many parts of this work are being done simultaneously by different members of the team, and so some material is not yet included in-line. Notably, the spreadsheets which show the Mappings to other DDI specifications have not yet been formatted as part of the documents but remain in spreadsheet form.
There is also a discussion resulting from comments made by people external to the group that such portions of the architecture document concerning a UML subset would be of interest as stand-alone, external documents which could be directly referenced independent of the DDI 4 Core. The best way to address this is still being discussed.

Document 4: Detailed Examples and Use Cases

This document is attached to this report. Each of the examples has been created in parallel, as a separate exercise, and some are included in the document while others are still being finalized before inclusion. The examples and use cases are also sometimes impacted by the finalization of the model and will require review and updating before they are finalized here.

DDI 4 Core Canonical XMI

This deliverable consists of a set of user notes in documentary form, and the XMI file itself (it is an XML format). The current working version of the XMI can be found at:
https://drive.google.com/open?id=1q5JNvdHKbkyMvTEmbIJYa6RvTj8IaYTc
This file is programmatically generated from the internal working Enterprise Architect model and is updated along with that file.

DDI 4 Core XML Schema Definition

This deliverable consists of a set of user notes in documentary form, and the XSD files themselves (XSD is an XML format). The current working version of the XSD can be found at:
https://drive.google.com/open?id=1MoA6Lw987ojTNQZBZn8HPCCe6Yhs2B6W
This file is programmatically generated from the internal working Enterprise Architect model and is updated along with that file.

Appendix 2

DDI 4 Core Model: Introduction

Contents

I. Overview

The DDI 4 Core specification provides a model for working with a wide variety of research data across many scientific and policy domains. It provides a level of detail which supports machine-actionable processing of data, both within and between systems, and is designed to be easily aligned with other standards.

It focuses on the key elements of the data management challenges facing research today: an exact understanding of data in a wide variety of formats, coming from many different sources. Two elements are critical for dealing with these challenges: a flexible means of describing data that can reveal the connections between the same data existing in different formats, and a means of describing the provenance of the data at a detailed (but comprehensible) level: the processes which produced it must be made transparent.

DDI 4 Core covers these areas in a fashion intended to make it optimally useful to modern systems, which often employ a variety of models, and comply with a range of related specifications for both functions related to data description and process/provenance. The model is designed to be easy to fit into such systems, by aligning with relevant external standards, and to be alignable with them into the future.

II. Contents of the Specification

The specification is separated into several documents and files, appropriate to the material covered. These are as follows:

I. Document One: Introduction and Contents (this document)
II. Document Two: DDI 4 Core Detailed Model
    a. Upper Model
    b. Foundational Metadata

III. Purpose

The DDI 4 Core specification describes a model and supporting elements for implementing it in the areas of data description and process/provenance. It is not intended to supplant existing specifications for these purposes, but to fill in the information which such specifications often do not capture. For data, this is the description of a single data point – a datum – which can be used to play different roles in different data structures and formats. For provenance and process, this is the packaging of specific machine-level processes, which may be described in many different ways, into a structure which relates them to the business processes described at a level understandable to human users.

In order to serve this purpose, the DDI 4 Core specification uses a Unified Modeling Language (UML) formalization so that it can be mapped against other models within systems more easily. Several different syntax expressions of the model are made available to support implementation.

Several important features of the specification can be highlighted, to show how it serves this purpose:

- Domain-independence
- Datum-Oriented Data Description
- Provenance and Process Description

- Foundational Metadata
- Interoperability, Sustainability, and Alignment with Other Standards

Each of these will be addressed in more detail, and an outline of the specification documents is presented.

IV. Key Features of the Specification

A. Domain Independence

DDI 4 Core is designed to be used with research data from any domain. In order to do this, it is fundamentally based on the structure and other generic aspects of the Things it describes. It does not attempt to be a domain model of semantics, nor a model specific to the life cycle of a particular domain of science or research. [Historically, DDI has focused on the Social, behavioral, and Economic (SBE) sciences some types of health research – to see how DDI 4 Core relates to other DDI specifications, see the last section in this document.)

DDI 4 Core is intended to be complimentary to (and used in combination with) other standards and models which focus more on domain-specific aspects (such as semantics and life-cycle models). Such generic elements such as classifications and variables are given a detailed formal treatment but are agnostic as to semantics and concepts. It is left to the user to employ whatever semantics and concepts are demanded by the data with which they are working.

This feature of the specification makes it well-suited to combining data coming from more than one domain or system, to allow a description of it that supports systems which perform data integration, harmonization, and similar functions. Cross-domain data sharing is becoming increasingly common, and DDI 4 Core is intended to provide support for this type of application.

B. Datum-Oriented Data Description

DDI 4 Core embraces a form of data description which is based on its atomic components: individual datums. Any given datum can play different roles in different formatting of the same data set, depending on how it is processed and transformed. In order to retain the continuity of a given datum across different formats and throughout a series of processes, DDI 4 Core allows it to be described playing different roles in different structures.

DDI 4 Core provides four basic types of structural description for data sets: wide data, long data, dimensional data, and key-value data. These four types (and their sub-types) provide coverage for many common data formats today. While not comprehensive, they cover the majority of cases that the developers of this specification have seen. These include many of the newer forms of data such as streaming data, “big” data, registers, and instrument data. The underlying approach is one which could – and may be – expanded in future. By assigning appropriate roles to datum in each of these different formats, however, it is possible to understand how data passes from one form to another.

C. Provenance and Process Description

If we are to fully understand data, we also need to know how it has been processed and transformed. Given our ability to describe how a different datum can be used in different data sets, it becomes desirable to understand also how those data sets relate to one another in

terms of the processes which use them. This can be understood as an important aspect of data provenance.

There are many different ways of describing process and provenance. Popular models include the Business Process Modelling and Notation (BPMN) standard and the PROV Ontology (from W3C). There are a multitude of syntaxes for driving data transformation, cleaning, and analysis in packages such as R, SAS, Stata, MATLab, SPSS, Python, and so on. There are also some emerging standard models for specifically describing such specific processes (eg, SDTL, VTL). DDI 4 Core attempts to do something which compliments the use of such models, by connecting specific processes interpretable by machines at the lowest level (described in a package-specific syntax or language) with the higher-level flows which combine these into human-readable documentation of business processes. Both traditional linear processing and the newer declarative processing approaches are supported.

D. Foundational Metadata

In order to formally describe data at a detailed level, there are many component elements which themselves must be modelled. Statistical concepts and their various uses – including as categories and variables – are a core part of this, but the range is broad. These components are included in DDI 4 Core as “foundational metadata.”

Terminology for such constructs varies widely across domains. DDI 4 Core has attempted to provide common terms for these components, and to adopt common models from other standards where it seemed useful.

One area which deserves particular attention is the “variable cascade” – a model for how the different types of variables relate to each other, and how they reflect the way data is described at different points in its creation, processing, and use. While many different models have a “variable” of some form, the one presented in DDI 4 Core reflects the experience of working with this important construct in many of the specifications and standards which have preceded it. It is a nuanced view of how variables relate and are are understood across different systems, and – although not simple – it is a powerful model which helps solve some of the commonly encountered problems in data description and management.

E. Interoperability, Sustainability, and Alignment with Other Standards

DDI 4 Core is fundamentally a model which is intended to be implemented across a wide variety of technology platforms, and in combination with many other standards. Models, and specifications. To support this use, it is formalized using a limited subset of the Unified Modelling Language (UML). The model is provided in the form of Canonical XMI – an interchange format for UML models supported by many different modelling and development tools. Further, a syntax representation is provided in XML, so that direct implementation of the model is possible if needed.

The platform-independence of the model makes it more easily applicable across a broad range of applications and helps ensure that it will be sustainable even as the technology landscape evolves.

DDI 4 Core builds on many other standard models and is aligned with them where appropriate. This is shown in the model itself, where formalizations from other models and specifications are

refined, extended, or directly used. The specification includes a description of what these other standards and models are, and how they are used in DDI 4 Core.

V. DDI 4 Core and the Suite of DDI Specifications

DDI 4 Core is a different type of specification than its predecessors. It is not a continuation of or replacement for earlier DDI specifications such as DDI Codebook or DDI Lifecycle. It is intended to be complementary to these specifications for those applications – mostly in the SBE sciences – where DDI is used.

The DDI 4 Core Model is the first specification produced by the DDI Alliance which uses a conceptual model expressed in UML as its basis. It is intended to describe many of the types of data which earlier DDI specifications describe. Due to the way in which data today is increasingly used across traditional domain boundaries, however, DDI 4 Core is also (and of necessity) capable of describing data from many related domains.

The purpose of the specification differs somewhat from the earlier DDI Codebook and DDI Lifecycle specifications. Due to changes in the way in which information technology is applied to research and statistics, some new features are emphasized. Notably, the diversity of data types analyzed in a given project has increased, and the range of sources for that data has grown, with corresponding changes in the technology used to manage it.

The functional goal of the specification is also different: where DDI Codebook was an XML representation of a data dictionary, and DDI Lifecycle a more complex model designed to support metadata from data conception and capture through publication and reuse, DDI 4 Core is an attempt to describe data and its provenance independent of these contexts.

Both DDI Codebook and DDI Lifecycle combine the description of structure (e.g. a table of records) and the description of meaning. In both, the primary structural form is a table or a cube. A variable and a column are basically synonymous. DDI4 disentangles structural description from description of meaning. This allows description of structural forms like tall tables or key-value stores.

The growing demand for data from different sources, and from external domains, requires that some different types of data be described. The provenance of this data – that is, the processes by which it has been assembled for use – are of increasing importance in understanding what it is and how it can be used. While traditional SBE data was often collected using questionnaires, alternate sources of data such as registers and sensors are becoming increasingly common and have in some cases always been typical. Completely new types of data from social media and other “mined” sources are also increasingly used.

The DDI 4 Core model applies the important features of DDI 4 to these functions: describing various types of data in a way which makes them subject to integration and transformation into useable forms, and providing the information needed to understand their origins and provenance.

Because the way in which such a model can be implemented is more variable than it is for traditional SBE data management systems, the emphasis in DDI 4 Core is on a model, formalized in UML, and made available using the Canonical XMI format which supports the

exchange of UML models between various tools, including both modelling and development environments. While XML is still supported, it is no longer the canonical format for the specification.

DDI 4 Core is aligned with earlier DDI specifications, most notably DDI Lifecycle, as it is anticipated that it might be used as an integration model for systems based on these earlier specifications. The intention is that DDI 4 Core be a tool which can supplement systems using earlier versions of DDI, enabling them to better handle new types of data.

Appendix 3

Proposed DDI Roadmap for Discussion by Scientific Board

Summary of discussion at Technical Committee, October 2019 Working Meeting
DDI Technical Committee – 2019-12-19

This roadmap builds on the 2017 DDI Roadmap accepted by the Executive Board in 2017 and presented to the Scientific Board at the 2018 annual meeting. It reflects discussions taking place within the Technical Committee during the October 2019 week-long working session in Minneapolis. The general approach has been shared with the Modeling, Representation, and Testing Lifecycle Working Group in terms of the pursuing a "DDI Suite" of products. The purpose of this document is to layout the approach and implications for the work-plan of the Technical Committee and the Scientific Board. It notes implications for each product and possible use by the Marketing and Training groups as they present DDI to the public.

DDI Suite of Products

This approach presents a means of presenting DDI as a suite of products each providing coverage of all or part of the DDI conceptual area. Products are differentiated primarily by the type of application areas they support and the level of technical infrastructure required.

- Products are defined in terms of:
    - Coverage of DDI conceptual area
    - Types of applications supported
    - Technical infrastructure requirements
- The user should use the product that addresses their needs
- There is not the assumption that one should/must move from one DDI product to another except to access different functionality
- Development of products will work within the defined technical infrastructure requirements and intended application areas, but will extend coverage of the conceptual area to meet the needs of the user community

Implications for Product Design Rules, Coverage, and Definition

The currently published products of the DDI Alliance include:

- DDI-Codebook
- DDI-Lifecycle
- DDI Controlled Vocabularies
- XKOS

Additional products currently in active development:

- Disco

- DDI4 Core – working name

Each product should be reviewed and defined in terms of the following aspects:

- Name should reflect its role in the overall suite of products and each product will have its own semantic versioning (semver.org)
- Relationship of coverage to an overall DDI conceptual model
- Definition of intended audience
- Supported applications
- Technical requirements

Changes in Design Rules:

DDI Codebook:

- Move to COGS providing a development environment that is more accessible to implementers and supports a more iterative development cycle
- Review based on coverage limitations and backward compatibility constraints and rewrite in terms of technical infrastructure constraints and intended applications
- Review appropriate binding options in terms of supporting applied use
- Initiation of a product specific versioning system

DDI Lifecycle:

- Move to COGS providing a development environment that is more accessible to implementers and supports a more iterative development cycle
- Review current XML construction rules in particular:
    - XML management structure approach vs. full serialization of content
    - XML centric content that requires generalization to support multiple binding formats
- Review appropriate binding options in terms of supporting applied use
- Initiation of a product specific versioning system

DDI Controlled Vocabularies:

- Review and track appropriate usage across the full range of DDI products

XKOS:

- Review relationship between XKOS and other DDI products
- Define in terms of supported applications and interactions with other DDI products and other products in its coverage area

Definition of a DDI Coverage Area

- Complete mapping of current and actively developed products
    - Include primary related models including GSIM, GSBPM, etc.
- Extrapolate a conceptual model of the DDI Coverage Area (upper model)
- Map each product to the upper conceptual model
- Identify areas where alignment is needed to better support the transfer of content from one product to another to support different applications

    - Example: common descriptive information should be captured in a similar way with known translation path so that metadata content can be exported within different product to support different applications or provide a user with a familiar format
    - Develop rules for verifying and maintaining alignment over time

Managing Future Development Requests

Content Coverage

- Requests for added content coverage will be handled as described in the Bylaws and "Standards Development and Review: Process and Procedures." In addition, the content request would be evaluated for its appropriate inclusion in each product, for example,
    - Codebook may add coverage at a descriptive level
    - Lifecycle may add coverage at an increased depth to support metadata driven systems
    - Controlled Vocabularies may identify and provide related vocabularies

Supported Applications

- Requests for support of additional application areas would be evaluated for inclusion in one or more products, or provide impetus for a new product
- Developments in technology and application areas should be monitored to identify new needs and opportunities
- Relationships to related standards should be monitored and pursued to provide clear points of contact and interaction between standards to support increased cross-community research and data access
- Applications should be reviewed to ensure a continued mix of support across the OAIS model and FAIR data practices as well as Discovery, Dissemination, and Implementation

Short-term Activities for Current Scientific Board Working Groups

Technical Committee:

- Codebook
    - Review current issues for update
    - Map to conceptual model and identify alignment requirements
    - Set up structured electronic meetings with members and users about options for Codebook structure and content
    - Define product in terms of supported applications and technical requirements
    - Develop a proposed set of new development rules for this product
- Lifecycle
    - Map to conceptual model and identify alignment requirements
    - Generate 3.3 content in a new serialized structure using COGS system for review
    - Generate optional bindings for review
    - Develop a proposed set of new development rules for this product
    - Define product in terms of supported applications and technical requirements

- XKOS
    - Map to conceptual model and currently existing models of Statistical Classification (DDI Lifecycle, DDI4 Core, GSIM, and Neuchâtel)
    - Define product in terms of supported applications and technical requirements
- Overall
    - Review conceptual model in terms of potential inclusion in product mix

MRT:

- Map to conceptual model and identify alignment requirements
- Define product in terms of supported applications and technical requirements

Controlled Vocabularies:

- Map controlled vocabulary intended usage points to conceptual map
- Identify potential locations for development of DDI Controlled Vocabularies

Marketing:

- Explore ways to leverage this cross product content as a means of marketing and describing DDI
- Shift focus of marketing content to intended best use "happy path" of each product
- Refine definitions of audience in terms of marketing. Some suggested audiences have included:
    - Decision makers – High level decision makers. General high level functionality. What the standard does and how it works with others (marketing world)
    - Content providers – information on how objects work together (Training world)
    - Developers who are focused on the model and how to implement use of the standard (technical world)

Training:

- Explore ways to leverage this cross product content as a means of describing the coverage of DDI and supported applications