

From: Debra Kazden <dkazden@igpp.ucla.edu>

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Subject: PDS DDWG NOTES 2016-08-18

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August 18, 2016

Notes by Debra Kazden

Known Attendees:

R. Chen, L. Huber, C. Isbell, R. Joyner, D. Kazden, J. Mafi, S. McLaughlin, L. Nagdimunov, L. Neakrase, A.

Raugh and R. Simpson

Meeting Agenda and Summary

1) SCRs Under Discussion:

-- CCB-77: Augment Product Update with File Area Update - S.Hughes

-- Open: under DDWG discussion

-- has been TA'd

-- 20141002: There is now a tiger to work Update in general that will start in a few months

-- 20150519: Waiting for M.Gordon ?

-- 20150922: DDWG discussion topic; SCR needs to be updated by Mitch

-- 20160324: Mitch prefers to supersede this SCR and add new SCR

(Not Discussed)

-- CCB-97: Add Composite Structure and Composite Component. (T.King)

-- 20141222: Open; Under DDWG Review

****(Not Discussed)****

-- CCB-125: The bit mask attribute seems to be misplaced and possibly missing where needed (A.Raugh)

-- 20150915: Open; needs DDWG discussion

-- 20151008: Jordan to provide example label that uses bit mask

-- 20160323: WG: J.Padams, R.Simpson, A.Raugh, R.Joyner

-- 20160617: updates discussed by DDWG

-- 20160621: Jordan waiting for feedback / comments; then will go back to DDWG

****(Not Discussed)****

-- CCB-131: Missing constraint on Special Constants attributes (A.Raugh)

-- 20150922: Open

-- 20160223: under DDWG discussion

-- 20160322: EN governance; will take lead

****(Not Discussed)****

-- CCB-133: Special Constants class precludes the ability to specify multiple invalid/missing constants (J. Padams)

-- 20151012: Open

-- 20151021: Under DDWG review

-- 20151022: WG -- Jordan, Steve and RJ; sent email to WG with proposed changes

-- 20151105: Jordan -- special constants needs to be specified per "band" not per "axes"

-- 20160706: email to Jordan asking about status / progress

****(Not Discussed)****

-- CCB-138: Mismatch between context object types and values of type in Observing System Component class (A.Raugh)

-- 20151202: Open; under DDWG review

-- 20151203: WG: Anne, Steve, Dick, Jordan, and RJ

-- 20160310: until someone volunteers to lead the effort -- on hold

****(Not Discussed)****

-- CCB-142: Create Data Quality Flags to hold metadata on Quality Flags (E.Shaya)

-- 20151229: Open;

- 20160126: Under DDWG review
- 20160322: Ed didn't like Simpson's CCB-142 implementation
 - Ed wants a lot of specifics embedded into XML
 - Simpson trying to figure out how to make it 'simpler'
- 20160323: Simpson generated presentation for DDWG review / comment
 - tabled until next session (20160410)
- 20160428: updates discussed by DDWG
 - requires IMG & others expertise to carry forward
- 20160505: discussed by DDWG; E.Shaya led discussion; 2 competing implementations
 - address 2 issues:
 - bang for buck in terms of worth doing
 - implementation recommendation
 - WG: Steve, Anne, Jordan & Chris, Lev
- ** (Not Discussed) **
- CCB-151: Bundle Member Entry and Internal Reference do not require either LID or LIDVID. (A.Raugh)
 - 20160309: Open & Under DDWG review
 - 20160322: EN governance; will take lead
- ** (Not Discussed) **
- CCB-154: Promote a Mission Information class to Discipline Governance Level. (S.Hughes)
 - 20160321: Open & Under DDWG review
 - 20160428: updates discussed by DDWG
 - formed WG: Steve, Anne, Jordan, Joe
 - 20160512: emailed Steve asking if the WG had met and is SCR ready to go back to DDWG for discussion?
 - 20160615: emailed Steve asking if the WG had met to resolve issue
- ** (Not Discussed) **
- CCB-155: Need "Example Set" to include program test data. (A.Raugh)
 - 20160323: came from discussion of CCB-144
 - 20160323: Open; request to provide additional examples; to include 'test data'

****(Not Discussed)****

-- CCB-156: Inconsistent Discipline Dictionary Technique for Local Internal Reference, et al. (A.Raugh)

-- 20160418: Open

-- 20160623: Under DDWG review

-- 20160818: Will address "exposure rules" at Tech Session; A.Raugh will put together PPT

-- e.g., LDD shall reference element and not type

****(Not Discussed)****

-- CCB-159: Bug fixes for Version 1.7.0.0. (J.Hughes)

-- 20160426: Open & Under DDWG review

****(Not Discussed)****

-- CCB-162: Move <md5 checksum> from Object Statistics to Array (R.Simpson)

-- 20160622: Open & Under DDWG review

-- emailed Steve to TA

-- 20160629: TA'd; back to DDWG for discussion

-- 20160630: C.Isbell & Jordan & Dick to resolve issue(s); then back to DDWG

****(Not Discussed)****

-- CCB-164: Display Settings not required for images (A.Raugh)

-- 20160707: Open

-- 20160727: Under DDWG discussion

****(Discussed)****

-- CCB-165: Ambiguity of ASCII Numeric Base* (L. Nagdimunov)

-- 20160818: Open & Under DDWG review

****(Discussed)****

Notice sent before the telecon in email from R. Joyner - August 17, 2016 See enclosures:

-- a list of the full topics under discussion by the DDWG CCB/SCR Statuses:

-- CCB-153: SR Needs Additional Description of Packed Data Fields. (E.Shaya)

-- 20160808: Issue presented / discussed at MC

- pending MC decision
- A.Raugh & R.Simpson to resolve and propose solution
- CCB-149: Should PDS4 allow packed data? (E.Shaya)
 - 20160808: Issue presented / discussed at MC
 - pending MC decision
 - A.Raugh & R.Simpson to resolve and propose solution

This week's agenda will focus on the following topics.

(1) Please review and be prepared to discuss and possibly vote:

- CCB-164: Display Settings not required for images (A.Raugh) -- please review comment by A.Raugh for applicable set of objects
 - 20160707: Open
 - 20160727: Under DDWG discussion
 - 20160805: A.Raugh added comment to address applicable set of objects
 - 20160818: Under DDWG discussion
- CCB-165: Ambiguity of ASCII Numeric Base* (L. Nagdimunov)
 - 20160818: Open & Under DDWG review

DDWG Telecon

No DDWG meeting last week - August 11 - too many people on vacation.

CCB/SCR Statuses

There has been some email on CCBs 153 and 149.

There was an action item for nodes to look at what PDS3 packed data they have and send comments on the impact to MC.

~ The action item should have said that Anne is on the hook to provide a summary of the impact.
~ Anne had volunteered to write statement of consideration, but hasn't gotten any comments from nodes yet. Comments are due before the next telecon.

For the DDWG, status on jira is pending MC - off our agenda for now.

Question: Any questions?

Answer: (Silence)

CCB-164 - Display Settings not required for images See <https://pds-jira.jpl.nasa.gov/browse/CCB-164>

Effort was made to update the SCR with the objects.

Question: We don't have a huge forum here - is this worth discussing?

Answered immediately by same person who asked the question: Yeah, let's review the list.

In comments section - easier to track and change. Looked at schemas, but doesn't include schema changes. Broke into 2D things, 3D things and movie things. Think we have them all or will. Has an itemized list of requirements.

Question: Is anything missing? Does anyone have any strong objections?

Answered with Another Question: There are a few things covered in CCB-164, so if you have a concern with a subset of them you vote against? Like on display direction - maybe the assumption for most is that it's left to right and top to bottom - so it's not optional - was present for last discussion, but not sure it's true.

~ It's not true in SBN data, so it can't be assumed. Has to be explicit in label. Example is why units of measurement is explicit too - Nothing is allowed to be assumed - no defaults.

~ Someone isn't sure you can make a blanket statement that there are no defaults.

~ Everything has to be explicit - other than the 99 percent assumptions. Display direction isn't one of

those. No consistency. Not even 70 percent. Note even all are from spacecraft. It can be critical to have the correct information when looking at an image.

Someone remembers an email between IMG and SBN over what the defaults are. Not sure it was documented. Maybe this should be a topic for the tech session. Have to decide if we want everything explicit or if there are defaults.

Someone thought everything explicit was a guiding principal.

~ Two people agree.

Question: Anyone on the other side?

Answer: Some one thinks there should be defaults.

~ Someone else agrees everything should be explicit.

~ Someone else is on the explicit side.

~ We can wait for a representative from every node.

~ Someone else agrees everything should be explicit.

Question: So, for this SCR, a set of appropriate objects have been proposed. What's the next step?

Another Question: Are local identifiers required?

Answer: Has to be. Chain of logic to make associations. Need to tie it to the required class.

~ That should be obvious, but that's a default.

~ Not obvious to software. Need local identifier.

Another person supports making it absolutely required, and references have to be identical in how they reference each other.

Question: What's the next step?

Answer: Vote.

Another Question: What are we voting on?

Answer: CCB 164.

~ Right now all of this is in the comments - maybe it should be moved to the proposed solution, then we could vote to accept that.

~ It should go in the requested changes.

~ Steve will want to know the schematron tests that he can put in the IM.

~ Not sure he will want that.

~ People can take it up with him. So, we'll move this to the list of requested changes.

Someone can't see the requested changes.

~ Someone else can.

~ Accidentally deleted it - was trying to replace it. Great system.

~ Got it - screwed up the nice spacing.

In terms of the components - quite a few listed - don't think it will effect the SR.

~ Someone would think this would be in the SR.

~ Maybe we need to add something to Chapter 9.

Question: So, we have a plan. Anyone have anything to add?

Answer: (Silence)

We will vote on this next time we meet.

CCB-165 - Ambiguity of ASCII Numeric Base* See <https://pds-jira.jpl.nasa.gov/browse/CCB-165>

This is a new one from Lev.

The issue is that from the description things are not clear (see jira). The question is if these are all unsigned decimal representations of their bases - if everyone agrees. Also, there's LADEE, that encodes a float in ASCII base 16 - which shouldn't be possible, so unclear on the intention of this.

Someone isn't sure where this came from, but thought ASCII numeric was just a number written in base 2, 8 or 16 - always unsigned, positive number, binary number...

Question: So, if encoded as 101 the question is what's the base system for that?

Answer: Could write 101 sub 2 - would be clear.

The schemas are not documented well for users - the name numeric would lead users to believe it's numeric, not integer. For people without a history with PDS the word numeric means something. Looking at the definition, it implies that there's been a mistake. The name of the data type seems at odds with the definition. There's nothing to tell us that it's a representation of the value itself - rather than something else. Using ASCII base 16 to get a bit pattern of float in IEEE is not appropriate. Actually, pattern constraints - hex is different - would need to read definition - so it's even more ambiguous. So, the name is at odds with with the data type definition and some documentation is needed. Not sure how it should go. Concerned, but there are real use cases.

Someone always assumed that hex encoding was to precisely express what a value should be.

~ It's not more precise than binary. It's an example of why should be no assumptions in PDS4.

~ In PDS3, null values or illegal values. Can't say 3.3.

~ Maybe ISIS required this for PDS3.

~ Wouldn't surprise someone.

Say there's a binary float - you can specify 0.5, not 0.4, so you can't say 0.4 is the null value.

~ Yeah, but when testing real values for equality programmers know what to do. Would prefer integer values, but that's a style thing. Maybe we need a data type to encode hex values - maybe we need to separate them out to have have explicit definitions - separate from binary.

So, someone certainly believes if one's an integer and one's a float - need to specify - if both cases you need to separate the types - call something different. There's like six assumptions for a single data type.

It's absurd. If we made something else it would require more changes than just introducing a new data type. In PDS3 we had notation that doesn't exist in PDS4. Don't know what you have in a label need to add a keyword to special constants to know what you are actually using.

Question: Is that clear?

Answer: Yes, but there's no ambiguity in my mind.

Another Question: How do we not have ambiguity in missing constant?

Answer: Wouldn't use it for missing constant.

Another Question: How do you not have ambiguity?

Answer: Wouldn't let it be a float.

Another Question: So, if it's integer, why not change it to something that's not confusing to anyone?

Answer: Things are in binary - hex, octal - we tend to convert everything.

~ But the ultimate presentation is binary. In octal, the intent is if number 5 - it could really be 65 in base 10. Has to be an authoritative base or it's unclear what the number represents.

~ Don't follow. If ASCII numeric base 8 would assume base 8.

~ That assumes integer - not float. Not a clear assumption. Goes back to the argument that things should be explicit.

Someone would be inclined to re-work the data. Only sees it in bit types for now - not sure if we need to worry - would probably redefine things - make them clear with definitions that says what it is. Actual definition and constraints on data types.

~ Simpler not to make it a float. More work to make it a float. Need a second thing to tell you that.

~ Probably would create different data types in different bases so mission LDD writers could do the right thing automatically. No unnecessary complications. Would give clear, appropriate names to data types.

There's a gray area where we need to address things - things like floating point nulls.

So, heard people say we only need integers. Others said maybe we need floats.

~ Someone is feeling washy-washy on this. People used floats in PDS3. There's no PDS4 example.

~ If it's been done before, someone might want to do it again. PPI had no instances with floats or signed

in anything other than base 10.

Question: Are there any PDS4 bundles where people described float with hex or octal?

Answer: LADEE.

Another Question: Are you sure that's float?

Answer: There's a PDF that says it's float. Real.

~ Bummer.

~ So, it's already used as a real, so I dunno, but this confusion means something needs to be done.

Another Question: Could it be a mistake in the documentation?

Answer: Would be a lot of mistakes. Since it's used in PDS3 it's probably not a mistake.

Question: If you have a binary float and want to express the precise null value - how do you do that in PDS4?

Answer: Two options - modify (note-taker can't read word - maybe set?) of null to something that could be precisely represented or give test for equality. Check for if it agrees in the significant digits - hope you chose a value that was far enough away. ISIS uses the not a number value and the rest of the bits to encode information, but the label would need hex code. NAN is not a specific bit pattern. Would have to specify bit patterns.

~ Even if data type was well defined, the way to constrain in missing constants would still have to add a keyword to tell you...

~ Not the implementation I would do. Missing constants all decimal. Maybe would need a new optional class or mission DD element. Data type definition just allows it for use.

~ Fair.

Too bad that Steve and Sean aren't on the call cause this could have a big impact on the tools. Want their input. Originally thought these were all integers - this conversation has been interesting.

~ Not impossible.

~ We had it in PDS3 ISIS cubes.

~ Not terribly common at SBN - maybe more in future.

Looking at the label that the SCR references -they all seem to be ASCII Real.

~ Look around line 300 or search ASCII numeric base 16.

~ Going there now.

Question: Looking at the CSV file - looking at fields - sees things like hex numbers. Should I expect decimal points? See none...

Answer: Hex can represent four bits - so can use hex bytes - byte pattern. Basically saying it's binary - but need to know how to interpret the bytes.

~ Think I understand.

~ Someone else looking at the label - doesn't see any ASCII base 16 that makes sense as real numbers.

Thinks there are mistakes in the documentation.

~ It does say integer for some.

~ This is a housekeeping file - very few people will ever look at it - usage will be low - this is a bunch of flags - came down with telemetry. None of this makes sense as a real number.

Before we assume we have an example, we should check with the team. We don't need to design for a use case we don't have.

~ That's fair.

Question: Does anyone know who to ask?

Answer: Someone can contact them, but it's not a high priority for them.

Question: Is this housekeeping file applicable to all of the instruments on LADEE or a specific one?

Answer: Specific.

~ Housekeeping or not, we need to understand what it means. Will try to contact the team to see if this is an incorrect usage. We still need to decide if we want this in PDS4 or not.

Leaning towards not. The action item is to contact the team and forward their response to the DDWG.

****(Action Item - Lev)****

Question: Anything else on this?

Answer: (Silence)

Question: Anything else anyone wants to bring up? SCRs? Issues? Looking for topics for the tech session

- please email suggestions to Ron. Anything else?

Answer: (Silence)

Next week...