Subject: RE: [EXTERNAL] target id in bundles

Date: Thursday, August 15, 2019 at 5:07:27 PM Pacific Daylight Time

From: Mitchell Gordon

To: Padams, Jordan (US 398A), Chen, Richard L (US 398G), Lynn Neakrase

CC: Lyle Huber, Joyner, Ronald (US 398G), Michael Evans, Mark Showalter, Matthew Tiscareno, Edward A. Guinness, Hollins, Galen A (US 398F), EXTERNAL-Karpenko, Yevgen L (398F-Affiliate), Hughes, John S (US 398B), Mitchell Gordon

Category: PDSIMG-MC, PDSEN

Okay, I think we can cancel the telecon. I've gone back and looked at everything. You three are right; I'll do it your way. The only thing that needs to be discussed is how to enforce what is clearly necessary.

We could add these requirements to the SR, but we would also need to have the validate tool verify that the target lists in the bundle and data collections are comprehensive. That sounds like an SCR, maybe two.

Richard, I've already captured this lien for the bundles we sent you for review, but you should probably note the shortfall anyway.

Cheers,

Mitch

-----Original Message-----
From: Padams, Jordan (US 398A) [mailto:jordan.h.padams@jpl.nasa.gov]
Sent: Thursday, August 15, 2019 5:59 PM
To: Chen, Richard L (US 398G) <richard.l.chen@jpl.nasa.gov>; Mitchell Gordon <mgordon@seti.org>; Lynn Neakrase <lneakras@nmsu.edu>
Cc: Lyle Huber <lhuber@nmsu.edu>; Joyner, Ronald (US 398G) <ronald.joyner@jpl.nasa.gov>; Michael Evans <mevans@seti.org>; Mark Showalter <mshowalter@seti.org>; Matthew Tiscareno <mtiscareno@seti.org>; Edward A. Guinness <guinness@wunder.wustl.edu>; Hollins, Galen A (US 398F) <galen.a.hollins@jpl.nasa.gov>; EXTERNAL-Karpenko, Yevgen L (398F-Affiliate) <EugeneKarpenko@gmail.com>; Hughes, John S (US 398B) <john.s.hughes@jpl.nasa.gov>
Subject: Re: [EXTERNAL] target id in bundles

Do any of these times work for folks? I imagine the people that should be on the call are Richard, Mitch, Lynn, Steve, and Ron.

Wednesday 8/28 (all times are PDT)
9a-10a
10a-11a

Thursday 8/29 (all times are PDT)
8a-9a
9a-10a
10-11a

Thanks,
Jordan

Jordan Padams
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-----Original Message-----
From: Richard Chen <richard.l.chen@jpl.nasa.gov>
Date: Thursday, August 15, 2019 at 2:46 PM
To: Mitch Gordon <mgordon@seti.org>, Lynn Neakrase <lneakras@nmsu.edu>, "Padams, Jordan (US 398A)"
<jordan.h.padams@jpl.nasa.gov>
Cc: Lyle Huber <lhuber@nmsu.edu>, Ronald Joyner <ronald.joyner@jpl.nasa.gov>, Michael Evans
<mevans@seti.org>, Mark Showalter <mshowalter@seti.org>, Matthew Tiscareno <mtiscareno@seti.org>, Edward
Guiness <guinness@wunder.wustl.edu>, Galen Hollins <galen.a.hollins@jpl.nasa.gov>, "EXTERNAL-Karpenko, Yevgen
L (398F-Affiliate)" <EugeneKarpenko@gmail.com>, John Hughes <john.s.hughes@jpl.nasa.gov>
Subject: Re: [EXTERNAL] target id in bundles

    Ah, that would provide a path when creating search indices, but ~90% of the bundles ingested at EN do not have a
context collection even though I suggest at every review that each bundle have it.

    Consequently, if a bundle.xml does not specifically reference the LID of a target, searching for that target will not
return the bundle.

    Richard

    On 8/15/19, 14:04, "Mitchell Gordon" <mgordon@seti.org> wrote:

    Hi Lynn,

    I think you missed my point. I'm saying the system makes the association between all of the targets and the
bundle via the inventory in the context collection
     product. That is why we developed the context collection. We designed the bundle product to identify member
collections and at most give an overview of what's going on. I believe the bundle product is intended to provide a
high level view, not the details.

    Mitch

    From: Lynn Neakrase [mailto:lneakras@nmsu.edu]

    Sent: Thursday, August 15, 2019 3:02 PM
    To: Padams, Jordan (US 398A) <jordan.h.padams@jpl.nasa.gov>
    Cc: Chen, Richard L (US 398G) <richard.l.chen@jpl.nasa.gov>; Mitchell Gordon <mgordon@seti.org>; Lyle Huber
<lhuber@nmsu.edu>; Joyner, Ronald (US 398G) <ronald.joyner@jpl.nasa.gov>; Michael Evans <mevans@seti.org>;
Mark Showalter <mshowalter@seti.org>;
    Matthew Tiscareno <mtiscareno@seti.org>; Edward A. Guinness <guinness@wunder.wustl.edu>; Hollins, Galen
A (US 398F) <galen.a.hollins@jpl.nasa.gov>; EXTERNAL-Karpenko, Yevgen L (398F-Affiliate)
<EugeneKarpenko@gmail.com>; Hughes, John S (US 398B) <john.s.hughes@jpl.nasa.gov>
    Subject: Re: [EXTERNAL] target id in bundles

    Hi Jordan et al.,

I still think the initial suggestion I put forth makes the most sense. If you want to use planetary_system.saturn as a shorthand, the planetary_system product is still going to need to reference all the parts of the Saturn system. They

have to point to some actual target(s) for the saturn-system to be relevant to anything. Otherwise it's just another individual target — doesn't matter what the description says — linkages are based on the URNs. Currently as I see it, we'd still need to have

a new relationship type to relate the individual targets to the conglomerate target (planetary_system.saturn), which I think would be 'target_to_target'. Perhaps Richard's suggestion belongs here — in 'target_to_aggregation' or 'aggregation_to_target' (maybe

both) and we could define the aggregation as a collection of targets as part of a related system of targets.

Using the planetary_system target without having further LID-identified targets inside that product wouldn't give you the searchability down the road as stated by both Richard and Jordan — If I'm reading that correctly.

Thanks,

-Lynn

_____
Lynn D. V. Neakrase, Ph.D.
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On Aug 15, 2019, at 12:52 PM, Padams, Jordan (US 398A) <jordan.h.padams@jpl.nasa.gov> wrote:

Apologies, that email was intended for Mitch and Co.

Thanks,
Jordan

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-----Original Message-----
From: "Padams, Jordan (US 398A)" <jordan.h.padams@jpl.nasa.gov>
Date: Thursday, August 15, 2019 at 11:52 AM
To: Richard Chen <richard.l.chen@jpl.nasa.gov>, Mitch Gordon <mgordon@seti.org>, Lynn Neakrase <lneakras@nmsu.edu>
Cc: Lyle Huber <lhuber@nmsu.edu>, Ronald Joyner <ronald.joyner@jpl.nasa.gov>, Michael Evans <mevans@seti.org>, Mark Showalter <mshowalter@seti.org>,
Matthew Tiscareno <mtiscareno@seti.org>, Edward Guiness <guinness@wunder.wustl.edu>, Galen Hollins <galen.a.hollins@jpl.nasa.gov>,
"EXTERNAL-Karpenko, Yevgen L (398F-Affiliate)" <EugeneKarpenko@gmail.com>, John Hughes <john.s.hughes@jpl.nasa.gov>
Subject: Re: [EXTERNAL] target id in bundles

Hey Richard,

This may be an option as well, but would require a change to the IM.

I don't mean to beat a dead horse here, but I totally agree that the observational product is the actual product that should include its target in the Target Identification area. Putting all those targets in the Target Identification area of a bundle or
collection label probably doesn't make sense. For enabling search, putting references (via Reference_List or otherwise) to all context objects (targets or otherwise) in the data collection labels, at minimum, would simplify and streamline how EN tools looks
for and indexes metadata that informs useful search results. We can add functionality to our software to look in the context collection and figure out those relationships, but this also requires the software makes some assumptions and do things that could
be avoided if the relationships were explicitly denoted at the collection/bundle level:

1. Software will have to parse the LIDs in the context collection inventory in order to determine what the relationships actually are (e.g. u:n:p:c:target:satellite.saturn.pandora is a target, u:n:p:c:spacecraft:cassini-huygens is a spacecraft, u:n:p:c:instrument:cassini.iss
is an instrument, etc.). This seem contrary to the IM since we should not be insinuating anything from identifiers.

2. Software will have to assume all context objects are applicable to all data collections. For one data collection, this may be reasonable, but what about another data provider that has multiple data collections? This could potentially lead to false positive
search results.

If you are looking for a recommendation from the software team for best practices for informing an accurate, robust search, we recommend specifying all context relationships explicitly at the collection and bundle level.

Thanks,
Jordan

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-----Original Message-----
From: Richard Chen <richard.l.chen@jpl.nasa.gov>
Date: Wednesday, August 14, 2019 at 11:51 PM
To: Mitch Gordon <mgordon@seti.org>, "Padams, Jordan (US 398A)" <jordan.h.padams@jpl.nasa.gov>, Lynn Neakrase <lneakras@nmsu.edu>
Cc: Lyle Huber <lhuber@nmsu.edu>, Ronald Joyner <ronald.joyner@jpl.nasa.gov>, Michael Evans <mevans@seti.org>, Mark Showalter <mshowalter@seti.org>,
Matthew Tiscareno <mtiscareno@seti.org>, Edward Guiness <guinness@wunder.wustl.edu>, Galen Hollins <galen.a.hollins@jpl.nasa.gov>,
"EXTERNAL-Karpenko, Yevgen L (398F-Affiliate)" <EugeneKarpenko@gmail.com>, John Hughes <john.s.hughes@jpl.nasa.gov>
Subject: Re: [EXTERNAL] target id in bundles

I can't think more deeply about this proposal, so fire away.

In the IM (and schema), what if the Target context object added an optional <aggregation> component that listed the LIDs of constituent Targets?

+ This lets Search systematically link an aggregation to its constituent targets. Linking by text string is error-prone.
+ Because <aggregation> is optional, we can immediately add an aggregate target and in a later version specify its constituent targets
+ This reflects how we think of targets, no? Examples:
- w.r.t. this thread, the context product could be
  <logical_identifier>u:n:p:c:target:planetary_system.saturn_system</...>
  <name>Saturn System</name>
  <type>Planetary System</type>
  <aggregation> <!-- the proposal -->
   <lid_reference>u:n:p:c:target:planet.saturn</...>
   <lid_reference>u:n:p:c:target:satellite.saturn.pan</...>
   <lid_reference>u:n:p:c:target:satellite.saturn.pandora</...>
   <lid_reference>u:n:p:c:target:ring.saturn.d_ring</...>
  </aggregation>
- example: Mitch requested 1 context product for all Saturn rings. I was expecting 1 context product per ring, like the example in PDS4_Context_Products_Guide_V1.4.pdf. So
  <logical_identifier>u:n:p:c:target:ring.saturn_rings</...>
  <name>Saturn Rings</name>
  <type>Ring</type>
  <aggregation>
   <lid_reference>u:n:p:c:target:ring.saturn.f_ring</...>
   <lid_reference>u:n:p:c:target:ring.saturn.g_ring</...>
  </aggregation>
- example: Mitch requested a context product for LMC 303. What in the world does the 303 indicate? In any case, it got me thinking that for the far-away targets, our database will first have the context products with type Galaxy or Globular Cluster or
Star Cluster or other such things I google, then as detection methods improve, we'll add stars and planets within them, and we'll need a mechanism to link them.

Richard

On 8/9/19, 14:56, "Mitchell Gordon" <mgordon@seti.org> wrote:

I'm confused.

Even if I listed the targets in the bundle product, I would use a LID not a LIDVID. Nothing precludes using LIDVIDs in context products, so versioning isn't the point.

On the other hand, I thought the point of the context collection was to make associations to the bundle. If not, why do we have the collection?

Each target is identified in the individual observational products using <Target_Identification>.

Identifying targets in the bundle product also requires using the <Target_Identification> class. For the Cassini
ISS at Saturn bundle, there are 138 separate targets. That's an additional 1600+ lines of XML in the bundle product. Using LIDs or LIDVIDs in the context collection requires 138 lines in a csv table. My expectation has been that the system should
make those
associations.

The purpose of the bundle product is to identify the member collections, not to provide all of the details from the bundle hierarchy.

Mitch

From: Padams, Jordan (US 398A) [mailto:jordan.h.padams@jpl.nasa.gov]

Sent: Friday, August 09, 2019 5:20 PM
To: Mitchell Gordon <mgordon@seti.org>; Lynn Neakrase <lneakras@nmsu.edu>; Chen, Richard L (US 398G) <richard.l.chen@jpl.nasa.gov>
Cc: Lyle Huber <lhuber@nmsu.edu>; Joyner, Ronald (US 398G) <ronald.joyner@jpl.nasa.gov>; Michael Evans <mevans@seti.org>; Mark
Showalter <mshowalter@seti.org>; Matthew Tiscareno <mtiscareno@seti.org>; Edward A. Guinness <guinness@wunder.wustl.edu>; Hollins,
Galen A (US 398F) <galen.a.hollins@jpl.nasa.gov>; EXTERNAL-Karpenko, Yevgen L (398F-Affiliate) <EugeneKarpenko@gmail.com>; Hughes, John S (US 398B) <john.s.hughes@jpl.nasa.gov>
Subject: Re: [EXTERNAL] target id in bundles

Hey Mitch,

I agree that this is possible and valid within PDS4, but I do not believe this is the right approach for specifying targets of a particular bundle/collection. I thought the entire
point of having Reference Lists and reference types like bundle_to_target/collection_to_target was to explicitly denote in the metadata that this relationship exists.

While avoiding versioning the products and shoving it into the bundle context collection as a secondary member may be valid and easier, we are relying on software and things outside

of the information model to truly understand the relationship between these objects, versus using the Information Model for what it was designed to do, which is to explicitly describe exactly the relationships we are trying to describe here.

Also, if you are already updating the context collection, why not just version the collection/bundle instead?

Thanks,
Jordan

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From:
Mitch Gordon <mgordon@seti.org>
Date: Friday, August 9, 2019 at 9:55 AM
To: "Padams, Jordan (US 398A)" <jordan.h.padams@jpl.nasa.gov>, Lynn Neakrase <lneakras@nmsu.edu>, Richard Chen <richard.l.chen@jpl.nasa.gov>
Cc: Lyle Huber <lhuber@nmsu.edu>, Ronald Joyner <ronald.joyner@jpl.nasa.gov>, Michael Evans <mevans@seti.org>, Mark Showalter <mshowalter@seti.org>,
Matthew Tiscareno <mtiscareno@seti.org>, Edward Guiness <guinness@wunder.wustl.edu>, Galen Hollins <galen.a.hollins@jpl.nasa.gov>,
"EXTERNAL-Karpenko, Yevgen L (398F-Affiliate)" <EugeneKarpenko@gmail.com>
Subject: RE: [EXTERNAL] target id in bundles

Hi all,

This was fun. I think I've come up with a suitable compromise.

For the Target_Identification for the bundle it is permissible to use a value, like "Saturn_System". However, all of the targets identified in the
individual observational products which are primary members of the data collections in the bundle are listed as secondary members of the bundle context collection. This makes the bundle and collection labels informative for end users, and provides,
in the
context collection, a comprehensive target list for the registry.

This is the description I would include in the Saturn_System context product (suitable for mouse-over in a browser).

"The Saturn System consists of the planet, all satellites and rings orbiting the planet, and the dust, particles and fields associated with the planet. This target is used to provide a general sense of the contents
of bundles and collections. Its use does not imply the presence of observations of every target within the system. Generally this target is not appropriate for individual observations."

Mitch

Hello all,

Sorry for the delayed response, I have been out of the office for a few days and just catching up on emails.

From a Registry perspective, the ideal case would be to have the highest level of specificity at all product levels, e.g. bundle contains references to all possible targets within
that bundle, collection contains references to all possible targets within that collection, products contain all targets within that product. I do think planetary_system context products would greatly help the Registry, especially in terms of faceting,
but
if we use them in lieu of actual targets, aren't we are almost introducing a sort of "vagueness" to the data?

In addition, by only putting the planetary_system at the top level bundles/collections, we could potentially introduce false positive search results. Either that or we would have to
search across all products in order to determine all of the "actual" targets for a particular bundle/collection, which kind of defeats the purpose.

Example of false positive search:
Let's assume we have this new planetary system Let's say we have bundle ENCELADUS_BUNDLE that contains Enceladus data and bundle TITAN_BUNDLE that contains Titan data. Both bundles
only have an association to planetary_system.saturn_system. Now if someone searches for "Enceladus", based upon the information provided by these bundles, it would have to return both the ENCELADUS_BUNDLE and TITAN_BUNDLE in the results, with TITAN_BUNDLE
obviously being invalid. The Registry would have to do a brought swath search at a product level in order to determine all products in these bundles in order to get the actual set of targets to enable a valid search. This is something we may wind
up having
to do anyways for some bundles/collections, but it is not ideal (would be slow across 1+ million product bundles).

Response to Mitch's comments:

planetary_system.saturn_system aggregates everything constructed *.saturn.* which picks up the planet, all of

the Saturn satellite context products, and all of the Saturn

ring context products. The registry is supposed to make the associations, so that we do not have to apply brute force.

The Registry is model- and data-driven. This means that if an association is not detailed in a product or a label, we don't try to make up new information. For instance, just because
a lid for a target contains *.saturn.* doesn't really mean anything to the Registry. A lid is just an identifier (technically the Enceladus target could be called anything), so we do not attempt to parse anything from the LID in order to add data
to
the model. If that target is a part of the Saturn system, the planetary_system.saturn_system should reference that target (even better if the target references back to the planetary_system as well, but not required).

Note that this way, as new Saturn system targets are discovered and their context products are added to the system, the saturn_system context product won't need to be updated, the

new association will be made automatically.

As I noted before, software (e.g. the Registry) should not have to make any presumptions about the data from the LID. Ideally you would update the saturn_system context product (for
archive's and simplicity's sake) with the new Saturn system target. As an alternative, you could add the Saturn_system as a reference in the new target (e.g. target_to_planetary_system).

That being said, is it really that much effort to submit a new version of the Saturn_system context product as you are submitting the new Target context product? This ensure top-down
relationships (planetary_system -> targets) versus mostly top-down but some bottom-up (target -> planetary_system). Search can handle the latter, it just isn't ideal.

Thanks,
Jordan

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From:
Lynn Neakrase <lneakras@nmsu.edu>
Date: Monday, July 22, 2019 at 1:31 PM
To: Mitch Gordon <mgordon@seti.org>

Cc: Richard Chen <richard.l.chen@jpl.nasa.gov>, Lyle Huber <lhuber@nmsu.edu>, Ronald Joyner <ronald.joyner@jpl.nasa.gov>,
Michael Evans <mevans@seti.org>, Mark Showalter <mshowalter@seti.org>, Matthew Tiscareno <mtiscareno@seti.org>, Edward Guiness
<guinness@wunder.wustl.edu>,
"Padams, Jordan (US 398A)" <jordan.h.padams@jpl.nasa.gov>, Galen Hollins <galen.a.hollins@jpl.nasa.gov>
Subject: Re: [EXTERNAL] target id in bundles

Hi Mitch,

I think, as Richard alluded to, the key to this approach would be to make sure ALL those references are listed as references within the planetary_system.saturn product. The mechanism for that would probably be
to create a <Reference_List> section in the planetary_system product with internal references for each. What would the internal reference_type be? Currently we have: target_to_document, target_to_instrument, target_to_instrument_host, and target_to_investigation
as the only options. What we are really stating is that we need a target_to_target, right?

Incidentally, would you plan to point to individual targets in the data products, then — or would you plan to use planetary_system.saturn in all the individual data products? (just curious)
So I'm thinking you have the bundle point to planetary_system, collections point to planetary_system, and the data products point to whatever targets are in the images (which should be a sub-set of the planetary_system internal references)? Product
level pointing
would still need to be a subset of the entire list provided in the planetary_system.saturn.xml product to be effective right?

Currently in the Context Bundle, Target Collection, there is a single instance of planetary_system.solar_system. Currently within that product there are no references to anything that
would be considered part of the Solar System — the description lists general members, which probably won't yield any specifics for search. The issue here is that the only way you'd find products with planetary_system.solar_system was to search only
for that
specific term — it's not tied to any other searchable parameter. To me, this product is useless in this form? What was this used for in PDS3 (as it is clearly imported from PDS3)? PPI has added plasma_stream and magnetic_field as options for cruise
needs…
Not sure planetary_system.solar_system is appropriate here — delete from Context Bundle? (Perhaps a future issue would be whether or not we expect to archive exoplanet data at sometime in the future — which might require a new target type down the
road…)

So depending on the time-frame for the need here Mitch needs (?):

Option 1 (Requires DDWG/CCB clearance)

1) Write an SCR to add target_to_target for reference_type.

2) Create the planetary_system.saturn.xml product with every target listed as an internal_reference (in Reference_List). (req. target_to_target)

3) Still plan to use individual targets in individual data products to differentiate between product content. (for product-level search)

Option 2

1) Use brute force to list all possible products individually within the bundle and collection labels.

2) Subset of full list used for targets within individual products.

Option 1 is probably a cleaner more permanent solution IF we can guarantee that the reference list internal references are being used with search — meaning if someone came in looking for
 observations for a particular target - they could find something referencing through the planetary_system Reference_List in the bundles/collections.

Is this accurate?

Thoughts?

Thanks,

-Lynn

_____
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On Jul 22, 2019, at 8:37 AM, Mitchell Gordon <mgordon@seti.org> wrote:

Hi Richard,

Thanks for the thoughts.

Anyway, I favor brute force and tedium over brevity here. Say a bundle has lid_reference to target

urn:nasa:pds:context:target:planetary_system.saturn_system_1.0.xml

If someone searched for Enceladus (...:target:satellite.saturn.enceladus), your bundle would miss if we had a LID-based search. Maybe in the future
search will work that way, or maybe we write a tool that narrowly dumps only those products with such connections, which I think would be very interesting even now.

If someone searches for Enceladus, I really don't want them sent to the Cassini ISS bundle which contains more than 440,000 products. The system should
be smart enough to know Enceladus is a Saturn target, and just send them to OPUS or the Image Atlas either of which can find the subset of slightly more than 23,000 ISS observations of Enceladus.

I guess we could add a new relationship that says planetary_system.saturn_system aggregates satellite.saturn.enceladus and everything else, but that
needs a lot more thought.

Yes, but I think we can do it more elegantly.

planetary_system.saturn_system aggregates everything constructed *.saturn.* which picks up the planet, all of the Saturn satellite context
products, and all of the Saturn ring context products. The registry is supposed to make the associations, so that we do not have to apply brute force. Note that this way, as new Saturn system targets are discovered and their context products are
added to the
system, the saturn_system context product won't need to be updated, the new association will be made automatically.

Having said all of that, I'll start with planetary_system.saturn_system, and once we have time, I'll consider extracting all of the targets identified
in our enhanced metadata, and adding them to the bundle label. Of course this is a non-trivial task because we have to populate the Target_Identification class, not just list the names, for each target.

Cheers,

Mitch

-----Original Message-----
From: Chen, Richard L (US 398G) [mailto:richard.l.chen@jpl.nasa.gov]

Sent: Saturday, July 20, 2019 7:23 PM
To: Mitchell Gordon <mgordon@seti.org>; Lynn Neakrase <lneakras@nmsu.edu>
Cc: Lyle Huber <lhuber@nmsu.edu>; Joyner, Ronald (US 398G) <ronald.joyner@jpl.nasa.gov>; Michael Evans <mevans@seti.org>; Mark
    Showalter
        <mshowalter@seti.org>; Matthew Tiscareno <mtiscareno@seti.org>; Edward A. Guinness <guinness@wunder.wustl.edu>; Padams,
    Jordan
        (US 398A) <jordan.h.padams@jpl.nasa.gov>; Hollins, Galen A (US 398F) <galen.a.hollins@jpl.nasa.gov>
Subject: Re: [EXTERNAL] RE: target id in bundles

I view LIDs and reference_type as the ultimate determinants as to whether two things are connected. The most practical reflection of that could be
search, though I doubt search currently works that way.

Anyway, I favor brute force and tedium over brevity here. Say a bundle has lid_reference to target

    urn:nasa:pds:context:target:planetary_system.saturn_system_1.0.xml

If someone searched for Enceladus (...:target:satellite.saturn.enceladus), your bundle would miss if we had a LID-based search. Maybe in the future
search will work that way, or maybe we write a tool that narrowly dumps only those products with such connections, which I think would be very interesting even now.

I guess we could add a new relationship that says planetary_system.saturn_system aggregates satellite.saturn.enceladus and everything else, but that
needs a lot more thought.

Richard

Thanks Lynn. I appreciate your response, but I'm not yet persuaded.

I'm thinking about the use after the bundle enters the registry. In my view, the bundle provides an overview – a set of broad associations, not
a high degree of specificity.

A "Saturn System" context product would indicate observations of the planet, its rings, its moons, and the region containing all of the above.
Individual data products would

narrow the targets as would supplemental metadata. I just don't see listing 60 to 100 targets in the bundle product as meaningful.

Oh wait. I just looked at the IM Specification. For "type" under Target we already have

Planetary System - This type indicates a target consisting of a primary body and its satellite(s), ring(s), or similarly associated objects. For
example:

Saturn and its rings, Jupiter and its moons, etc.

Currently there are no context products for either the Saturn system or the Jupiter system. I'll draft them shortly:

planetary_system.jupiter_system_1.0.xml

planetary_system.saturn_system_1.0.xml

Lyle may want to use the latter for the CIRS Cubes bundle.

Thanks again,

Mitch

Hi Mitch,

Lyle and I were discussing this earlier today. I think entertaining the idea of grouping context products together could be dangerous. We'd start with the whole system like Saturn System — but where do you draw

the line on the grouping? — do you add one for rings later, do you add one for shepherd satellites, etc. Each of the groupings would need to have their own products submitted as new target context products perhaps with a new type?

The simple approach is probably the best — just list out all the target products in the Bundle and Collections — do it once and copy it. Possible
other solutions could be to set up separate collections by subgroup

where the target list would be a subset of the master list in the bundle file - or have separate bundles. PDS4 is certainly flexible to do that
— it's just a question of the type of work you want to do for it. Incidentally this is part of the reason I still

fill out context collections because it helps in checking the master list of hosts/instruments/targets for a given project. We've had something
similar with a set of wind tunnel data from multiple facilities with multiple analog targets. The bundle file has

the whole list, collections have the whole list, individual products inside the collection have combos of 3-4 of the list.

Does this make sense? Discussion?

My 2¢,

-Lynn

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On Jul 18, 2019, at 3:55 PM, Mitchell Gordon <mgordon@seti.org> wrote:

Hi,

I'm looking for expert opinions relating to context products & LIDs.

For the various Cassini instruments, what do I put in Target_Identification for the bundle and data collection labels? I'm looking for an all-encompassing

value, like "Saturn_System". Do we have planetary system context products? Just saying "Saturn" doesn't work since that is specific to the planet.
Listing all of the individual targets from the 13 years at Saturn seems wrong.

Thanks,

Mitch

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