

Transcript

August 29, 2024, 4:50PM

Taghvaei, Paulina 1:17

Hi,

Alvarez, Marta 1:18

Hi Paulina, how are you?

Taghvaei, Paulina 1:22

Hi to you.

Thank you, Martin.

I hope you are

Yes through.

Alvarez, Marta 1:30

Good!

All good here thinking

Taghvaei, Paulina 2:23

So anything?

Williams, Andrew E 2:24

Hi, Paulina

Give people another minute or two to join before we start talking

Alright.

Let's jump right in.

This is an exciting day here at the office hours for people to standards and we are gonna get a really interesting and useful overview of mapping principles for values specifically for where you've got a specific value.

What are you going to be doing with it in some cases, partly motivated by questions from Heidi on a previous call, but more broadly about just a principles for doing that and who better to do it than Paulina Taghvaei going to be followed by a conversation on a topic that we brought to last time where we're soliciting

to previous calls, we solicited each volunteer for going to, talking about IT's challenges that people are experiencing that they thought might be relevant to what other people are experiencing

So that if we go over them, both given a chance, people kind of show what they've been doing and, you know, begin a conversation about how to help with those challenges that involve us as well as everybody else.

So that we want to use a 30-minute of solutions.

We didn't.

We were not overwhelmed by the giant wave of enthusiasm by proposing that idea, and that makes sense.

But we'll spend a little bit of time talking about this idea in general.

It is a useful one to people want to do this?

How can we make it and accessible and easy to participate in things it says people are comfortable with?

If people do want to do it so on so that they value the latter part will be when we're doing hearing from Paulina

Anything other than that to add Marty, Janet?

Alright.

Thank you so much, Paulina.

Take it away.

Taghvaei, Paulina 3:30

Thank you, Andrew.

Let me share my screen.

So the today's session will be split into two parts.

First part is the theoretical part and the second one is a demo and I hope that there will be enough time for both parts, but at least we can start.

OK, to share my screen.

Williams, Andrew E 3:32

We can see it now.

Taghvaei, Paulina 3:33

So, just as this great.

So today we will explore core principles of value mapping for clinical observations and measurements in OMOP, Umm, and OM, to the content of today's session will be the following.

First of all, value of value mapping background from using measurements and observations in OMOP and OMOP definition of value classification of values, value mapping principles and domain part.

First of all, what is it?

The value of this effort.

Value mapping is very important for ensuring that clinical observations and measurements are accurately represented or transformed into standard format, so they are interpretable and usable for large scale research and analysis.

That's why it's important.

So background you may know already that almost CDM is a set of tables and these tables are grouped for categories which you can see like standardized clinical data, standardized health system and centralized vocabularies.

And today we will focus on standardized clinical data tables.

It is a measurement and observation, and also standardized vocabularies which is needed for transformation of source data in the standardized data.

So it will be the concept table, synonym table, concept table, relationship table.

Oh, so also important to remember that we have vocabulary building blocks.

The most important component is a concept table or concept.

Because we have a lot of them there, this is an entity that defined the health related.

Semantic field or agent entity.

But anyway, each concept has metadata and among these metadata you may see concept ID, concept names, domains, vocabularies, concept classes, standards, concept codes, and validity.

When we perform mapping, we need to know these metadata and also understand the of the concept we need to use only standard concepts.

They should be valid, but usually when they start they are valid at the same time.

Topic.

So domains which will focus today, so each concept has domain ID and domain ID can be formulated in different ways.

I can be by name or alphanumeric identifier, but usually we have particular name like drug, procedure, condition, observation and you might see much value as well here and what is the most important domain group and direct the recording of clinical event or event very little to specify city.

I'm table and field.

So according to the domain, we can assign appropriate CDM tables, for instance observation or measurement or condition occurrence or procedure counts.

One of them is hierarchical such as BioRxiv data that are not dealing with concept of observations and measurements along with their corresponding values.

That also should be mapped, so usually we need to connect them with each other and also map separately.

Measurements or observations and their values.

So measurement domain, just quick recap.

Usually contains records of structured measurements represented by numerical categorical values.

Really you might see some values, but usually we have these terms related to measurements obtained through standardized testing or examination of personal person sample and you might see types of various measurements that usually covered with standard like laboratory test, vital signs, pathology reports, assessment tools, observable entities of different kind, and some clinical findings also refers to refer to measurement domain.

Now, it's observation domain.

This one?

Captures clinical facts about a person observing the context of examination question.

You know, procedure and usually we put into observation domain all these terms that are not covered by other domains such as condition, drug, device measurement.

So also what is important next one that we have vocabulary tables.

We also have domains and we also have CDM tables so that is important.

So first of all, in the vocabulary table you might see domain ID field.

In that field, each concept will have some domain and we are interested in measurement and observation in parallel.

There are even tables in CDM which are in the same way like the measurement and observation, but they are tables and they're linked links which can help you to go to the

Norms of CDM will page and read about them if you not do this yet so next point.

What is interesting that measurements and observation usually stored as pairs of attributes and values together in a case of measurement.

Usually the attribute is represented by the measurement concept of these, while the value captured the result of this measurement, and usually this value can be a concept or the mapping

So in this case we will see the concept ID as value as concept ID field.

It also can be numeric value.

In this case, we will put it in your value as number, and usually if you have value as number, they can be unit of measurement.

They can be stored separately or can be in concatenation with the source term, but anyway they can be also unit concept ID observations.

They will end the measurement, but also they will also store this attribute and pair, but in this case we have a lot more options how to store these values.

We also have concept for values concept ID, no metric value and values number but here you will find the field variables for variables return value as stream also in both tables you will find the field value source value.

Usually this field will be captured the result of observation or measurement is recorded in the source data.

If there is no standard option, the field can be populated at least.

But in this case you will see this term the value in the Atlas when defining concept set is important to notice.

Oh, one definition of a value.

Umm, you know, city.

In a value or presents the outcome or result of a measurement or observation made on a person or a person.

Sample these outcomes is captured a structure in a structured format that can be the numeric, algebraic and descriptive.

In some examples, numeric, values quantitative results represented as numbers and represent and usually the quantity or magnitude of measurement.

I can be laboratory test results, vital signs, quantitative pathology.

For instance, in this case we will be we will use value as number for the number and unit concept ID for the unit.

Umm, can be combined in the same space.

Therefore, the values should be paired to separate the numeric component from the unit followed by appropriate mapping for the unit first of all, split them and then mapped separately.

If you have the unit values, then categorical values or actual values or conceptual values.

This can be discrete results represented by predefined categories or concepts that describe the outcome of measurement or observation, and you must have laboratory tests, categorical outcomes, clinical observations and assessment instruments with ordinal skills.

For instance, in this case, we will map these categorical values to the OMOP concepts and then populate values concept ID in measurement or observation table respectively.

Oh, usually, for this type of terms we will use much value domain and trivial values, so it's also descriptive results expressed in a free text.

I can be pathology report findings or patient reported outcomes, but in some cases they also can be mapped.

Not just much value domain, but to for instance condition, procedure or other domain domain even and in this case these values also can be stored as value concept ID or value as string within observation table only if it's logical.

Of course, I can keep this.

It depends on the source data that you have and how value mapping principles.

Let's talk about it. Value mapping usually use much value domain but so it's acceptable to use other concepts from other domains if it's necessary for accurate representation.

But usually we start from as well.

Domain and then we use other domains when it's necessary.

If no direct match exists, it's possible to create custom 2 billion concept IDs that it was done for measurements and observations separately.

Oh, these concepts can be a standard in the concept table, and when once they become standard standard we can create self-referenced maps to relationships within concept relationship table.

Just to make it work.

And also possible to create this and other tables constructed based on the case we can populate value source value.

But in this case they are not visible in Atlas and also important that value can contain units and/or operators for instance plus minus more or less symbols and they can be also concatenated with values.

In this case they should be parent and mapped separately.

To populate unit as concept ID or operator concept ID.

And new operators of actions.

So for, the first map we set up as unit mapping.

Usually we start to not, but only one thing that I want to say that it is

It is a predefined methodology yes, but we would like to define it.

It is a way how to do this, but there can be more scenarios.

Just notice and.

First of all, we start by setting up a lookup table for value mapping, including columns who was the regional value and target or mapping values.

If you need to parse values before, we usually do this before and then we identify numeric values using a regular expression to match digits at the beginning and at the end of the stream.

It means that it should be

I can be various numbers, but what is important that there are no words after these number and isolating these numeric values to map the field of values for mapping respectively.

Umm.

Then after these cleaning is done so we can map each source value to the corresponding concept within the match value domain by performing fully matching against the concept table.

Usually we start from full name match with the concept table and then we utilize the concept synonym table to identify visited numerical values.

Why we do this?

Why we just do not use concept name and table has this.

But the problem is that concepts in table can contain erroneous associations.

Unfortunately, that's why it's more useful to start from the concept table and then map remaining terms using concept synonym table.

It is my personal recommendation.

Once you try it, you will see that there can be various cases when the concept synonym table offer strange terms, but it's still very useful.

It's huge table and then map all remaining concepts that are covered by the match.

Well, you don't mind using the concept table, but other domains than measured value.

For instance, condition, measurement, observation, procedure, device, they also can be represented as well you.

Then the next important step is the handling duplicates.

Unfortunately, in OMOP CDM there are still duplicates and in the match value domain, including what we need to start by eliminating any duplicate entries from the standard set that we obtained by full name machine or concept synonym machine.

So we start from removing duplicates.

Standard values for SNOMED mapping is available.

It's the first table.

Then I'll be pair with duplicates there is allowing and symmetric capability for instance Inverse or CPT four and in this case we remove duplicated standard values.

Following mapping is available, will remove low IT mapping and delete it.

Remove all other duplicated mappings then.

Also, you might see having duplicates in matching terms.

We don't need them, usually for mapping of values.

That's why because they're not actually answers.

That's why we're also find them and remove them if we have and this, this step will reduce the number of duplicates that we have here.

Oh.

Then we can prioritize clinical findings and also delete the other duplicated pairs that are not clinical findings also possible to apply first value function.

If you can't generate but the idea is to use any of the terms that first term of each mapping, not the other terms and not the others sessions and also it's possible to apply the case function to prioritize the condition, domain and consequences idea of procedure and physical object because they are more uh how to say they are more focal in comparison with qualitative value concepts.

Thus, I did that you can see in the duplicated pairs.

Oh, and after values as necessary and remove any other identified duplicates.

It means that for values we usually use one to one mapping.

In some cases, they can be one to many mapping, but it's really rare cases.

So final checks and final steps are, first of all we need to review the mapping results so that we made automatically.

Also, we need to ensure that all distinct vocabularies in table and for mapping are properly downloaded and integrated into our middle CDM instance, particularly within our vocabulary tables.

Umm.

And additionally, it's possible to consider limiting the list of vocabularies used at site based on discussion or established rules during our office hours or for the conversation.

So then after the review is done and everything is fine, we utilize the lookup table as well as mappings to update or populate the source to concept map, table or mapping tables.

For instance, concept concept relationship or stage.

If we use word directly update the basic regulatory tables, basic means without profile stage, just concept, relationship, concept, synonym if needed and other tables.

Then we use the updated concept to concept relationship table together with lookup table to populate the corresponding clinical event tables, specifically the measurement and observation table.

When we're talking about mapping of values, it means that we are going to populate values, numeric values, concept ID values three and value value respectively to the mapping that we did and the last step here is document the entire process because it's very important to write all the rules that we defined during this conversion effort.

And last but not least, it's addressed in unmapped values.

In first of all, when we look at mapped values, we need to consider any other patterns that may have been overlooked, such as units or operators.

You might see that there are a lot of values concatenated with numeric values concatenated with units or operators, and when you split them you will see a mixture of numbers and this will reduce your manual effort.

Then.

We examine and mapped values, excluding numeric values and operator operators and units through pattern matching.

Usually I will show this later and recognize that map in American value so long they are corresponding units and operators should be treated as a separate sub task because this mapping also requires some time and at the end collect any remaining unmapped values and shared them with US standards team for further analysis.

But what do we need to do here today?

I hope discuss the best practices for accuracy and effectively sharing such data, but we would be happy to see any unmarked values that you have here harmonize them in the future.

Any questions?

Oh, in first of all, questions.

Any questions?

If so, we can go to demo.

I hope at least one second let me change my screen.

Alvarez, Marta 20:25

There's a question in the

Chat from Heidi.

Taghvaei, Paulina 20:40

Umm, one SEC.

Alvarez, Marta 20:41

Umm.

Heidi, do you want to verbalize or do you want me to read it?

Schmidt, Heidi E 20:41

Sure I can verbalize.

Alvarez, Marta 20:47

OK.

Schmidt, Heidi E 20:48

I think it might be into understanding about concept synonym or not, but as I'm looking at a QCD report, this is what's coming in my mind when we're talking about value mappings as well.

And the question is a concept class that are in the concept class that covers the domain allowed to be used alongside the concept ID within the domain?

So an example of that that there is a concept class called procedure.

With those concept ID and could they be used alongside domain procedures as a concept ID?

I think it's made an assumption that could, because they are at least in the same concept class, and they matched what I was looking for and the equity has alerted on 25 of them.

Even though they are standard invalid.



Telapone, Pauline 20:55

To OK, because class procedure has been used alongside domain.

Yeah, it's possible.

It's legal, in fact, that uh, we have procedures, concept class, AD and procedures.

Domain ID hang in some cases.

Uh,

Procedure as concept plus ID can have other domain IDs and procedure but for some reason it's difficult to explain why, but it's not a mistake if you see that the *concept plus ID* procedure and *domainity* procedure.

But is it?

Answering to your question or not, do you please tell me?

Schmidt, Heidi E. 27:40

Yeah, I think and I'll restate that the concept class procedure is legal and that QCD reported on it, but that in this case for those 25 entries, I can eventually, uh, ignore it, that I'm not that I'm not in noncompliance that, that, that QCD didn't.

No.

To make that relationship, and now I'm reading Jared's note, sorry, distracted.

It's good.

Hoagshel, Jared 28:17

Yeah, I can.

But given as a high-level concept class is helpful for getting additional context about your concept, but there are few if any constraints in the data model on the concept class fields like in your general measurement or observation table or whatever.

Everything's primarily based off of the domain of the concept.

The concept class is more or less as an add of supplementary information to the domain, so it's not necessarily the case like something that has a concept class of procedure.

That alone cannot be used to place it somewhere that you might want to place it.

The domain is really what the concept class is going to be based upon.

I guess if that's what your question was, but.

Schmidt, Heidi E. 29:00

Yeah.

So then it actually is that those 25 are are getting the equivalent of the the one in the family field, you know the.

Williams, Andrew E. 29:14

Yeah, it's not safe to ignore QCD result if the concept class and domains are consistent with each other, which I think is the gist of what you're asking.

Like is it not I can say there are blue alarms and I think that's not the case.

Schmidt, Heidi E. 29:23

Yeah.

Williams, Andrew E. 29:29

The it's coming up in the QCD, it's pretty likely that it's something worth paying attention to. Sorry.

Schmidt, Heidi E. 29:36

I'm am paying attention, but that's why I asked, so it's OK.

Williams, Andrew E. 29:39

I meant I meant even when there was, when the concept class in domains are consistent, it's.

That's all.

Thanks for your question though.

Schmidt, Heidi E. 29:47

No worries.

I'll find you back.

Thank you.

Telapone, Pauline 29:50

Think give me a question.

So I try to show the next thing though.

OK.

So we will use the table for demonstration that will show you this table.

Here we have some *Flowchart* code flow chart name, some count and counters and this can help us to sort if you need the terms and also concatenated sample values.

So the next step to analyze how can we parse the table and in my case I will use *Pages* split to table function and in this case you might use that all values are split.

Then we'll go further.

Uh, we will create a *lookup* table that I said before for value mapping and there will be columns for regional and mapped values.

Ohm, we will identify.

We will start from a day to find numeric values using regular expressions to match digits at the beginning and the end of the string to isolate numeric values from our further mapping and the first part is just splitting my values and the second part assigning the numeric data type QAS concept ID you don't need it, but I would like to combine and numeric values with other values in one table.

That's why I make it in this way, but it's possible to split it and do it in another way, but what I would say may that have also value as number field.

Uh, we will find value that identify the CDM field that we will use.

Then when populating CDM event tables and also have the pattern for finding 25 in no numerical values that I would like to select start and end of the screen with numeric values and also that small OK.

Great, let's do this.

So we created our first portion of the table.

Let's look at this table.

So we see the sample values numeric sample values and all of them are here.

So then the 2200 values, the next step to assigned or map each numeric value to the appropriate category within the *mesh* value domain.

In this case we are doing insert into the values mapped table and also starting from the splitting our values ohm and the signing their.

Uh,

Required look like *Flowchart* name.

Sample value then data type terms.

Then we use concept ID concept name, domain ID concept class ID, VOCABULARY ID from the concept table that I have in my vocabulary instance and values concept ID as CDM field for my convenience to direct me to the future.

What else do we have for domain?

So I would like to use only measure value concepts only standard concepts and also exclude numeric values from this query.

OK.

Uh, so we get we go to 7000 plus terms, but again there are a lot of duplicates as you understand because values can be the same for various measurements.

It's also possible to map only primary unit values, but I depends on the approach we select.

Then we eliminate any duplicate entries for the standard set and I will do this on the fly, but it's possible to do at the end of all asserts that you perform.

It depends on your approach, but let's look at these duplicates as it's modified query not only duplicates, but also these duplicates that have already mapping to SNOMED and it's not here in the result, but all the other values that I would like to delete because all of them are duplicate of *cross Med* term and I can look at them and then delete.

Allowed on duplicates as you may want.

Next, it's practice how to in duplicate pairs with low link and non-SNOMED vocabularies.

And also there are other domains with domains but vocabularies not like building and we can use *Neser* here a lot of *Neser CPT 4* all of them are duplicates but we don't don't like to use them.

Yes, that's why we can delete them.

But now we must use to check for duplicates within each vocabulary and remove low and documents related to mesh value.

So here you may use everything that I'm going to delete.

It's a measure value of CDM.

And doing *cross Med* setting is not particular answers to questions or values.

It's a document related value specific to setting.

That's why we also can remove them.

OK.

And now at the end and we need to verify if a single value has multiple mappings.

We would do not have them, but let's test now some 42 cross with duplicates and you might use *Intersect* for instance, and different concept IDs for the same basis.

Also *Neser* value and if you look in *Athens* to these values you will see that all of them relates to various variables and that's why we don't want to use them as well.

That's why we will remove them, but later.

As you see, leave them for now.

Let's leave.

Ah, now we will utilize the concept scene in table to identify additional measure values after joining of this concept table that we did before.

Now we use concept synonym table.

40 and named in this case.

Then we map alternating concept that are not covered by the *Measur* prior domain using the concept table.

So all other domains and you will see how the domain ID in condition *SPIC*, *anatomic*, *measurement*, *procedure*, *observation* *device* and *track*.

But you can find these lists or extend if you would like, but usually it's enough to cover some space of value mapping especially automated part of this mapping.

Also, we exclude numbers only primary concepts and excluding those which are already mapped.

Let's wait a bit.

344 terms are added.

Then again turned to the other duplicates, and we know that we had 42, but now it's more 170.

That's why we need to clean up them again.

So first of all, let's look at we have this moment, case the CS values *UK* *Barack* closing, they have an even *ICD 9* procedure.

So this have this duplicates?

That's why we can remove them.

Then it's optional, but we can get priority to clinical findings when the existing duplicate pairs.

Yes, for instance, there is an assess as a condition and worry as a clinical finding and as more abnormality, comparing clinical finding and morph abnormality, clinical finding is used much often more often than more formalities.

That's why I better to use that concept.

That's why we use clinical finding instead of other options for value mapping.

But it's not crucial.

It's a might be that you will select another domain, but it's not a problem.

Uh, I hope that our standardization effort of values will be successful and collecting all the data and analyzing all the data per use.

We can be sure that our values are distinct set of standard terms with our duplicates and all duplicates will be reported and submitted to the core vocabulary team.

We will do this for sure, but currently we need to do this.

Uh, I think to reduce the number of duplicates.

To help remove this for duplicates, then eliminate other heterogeneous duplicates using the first value function.

This how to say the last choice scenario but it's also possible to apply just to make you aware that it's possible to do it and it's also legal.

To find all of let's look at the terms.

And then remove all other rules first values.

So 70 terms because they are heterogeneous and logic will be very, very granular.

And, but it's possible to apply if you have time enough time to do this, but in some cases we can use the first value approach.

Then we need to map the remaining values utilizing the concept synonym table and also other domains as we did before.

OK.

That's this.

Because *ICD 9* turned added then we can check duplicates and use 44 duplicates again and then examine this duplicate by applying the case function to identify terms for removal and logic for rule adjustments as necessary in the future.

So it's possible to change the case logic, but now I see we have a table with markers.

Remove action.

What we would like to remove, we can check it, adjust if needed and then remove what we would like to remove so it runs very nice.

Then look at mapping results.

And now we have.

It's a distinctly on values mapped.

We have 80 terms with mapping to CDMF.

Remove to terms various domains there.

But let's imagine that we reviewed all the terms and everything is fine.

But it looks good mapping.

So as I also mentioned before, we need to ensure that all these things vocabularies use for mapping properly downloaded integrated into CDMF CDMF instance, especially within the vocabulary tables in my mouth CDMF instance use all vocabularies that are valuable to be downloaded without license and it means that you can do this or for instance select some predefined list of vocabularies.

It can be downloaded at one or here at office hours.

Some rules can be established, but after my exercise we serve value mapping.

I met the following vocabularies which contain standard terms available for measure, value or just value mapping, and it's interesting.

I found a PC.

It's not very popular vocabulary, but it's here, but and taking into account that these vocabulary is not widely used, it can be excluded from the list.

It's also possible to do them across *Measur* CDMF to try to get best picks from *ICDM* *Neser* CDMF parameters or source *SNOMED* *SNOMED* vocabulary.

Even if it also can be excluded from the list, but I just everything that I met and you give me a back.

All these vocabularies should be present in my CDMF instance, because I want to go to these terms, so we need to document this and limit the capabilities if needed.

Ah, then remove all media or source values, including numeric values.

So here we have 802 terms with mapping and let's look what we will see.

So we see the portion of numeric values they have considered into values number CDMF field and then some mappings for instance in progress mapping.

Luckily, some percentages, but I also can be marked as numeric, so also percentages unit concept ID.

Alice, Scroll down a lot of numbers, but also some mappings are there.

But that would be for a huge amount of values.

Uh, now we can look at it mapped.

And you might see again a huge number of unnamed values in this case, but they are not uh, how to say that a lot of them look like a plain text or free text, and such values can be stored as a value as value or mapped separately, or also suggest can be run, but we would ask you to collect all mapped values and share with us if it's possible according to the policy.

OK, what next?

So we looked at that mapped and now we can consider what other patterns we may have overlooked.

Such units and operators, when we talk about operators such symbols, we can find them in our data.

To sample values that contain operators.

It means that these operators should be mapped separately and there is operator as concept ID field.

Then it can be stored.

Then units.

Remember, talk about units.

It's value pattern matching using *regex* like function and I just selected several units that they met and the data, but it's possible to extend this list and you will see.

I hope, yeah.

I even found them.

Uh, so the list of values numeric values with unit attached to it, and if we parse it, we will receive notices.

Sorry, the units as this which we be mapped automatically or manually using a mapping.

And now we will examine and mapped values while excluding operators and units through pattern matching to reduce the list of unnamed patterns.

So we see the numbers less than we see, so previous numbers, but still a lot of them.

But it's my data set.

To your case I then use the story more systematic.

So yeah, we are there and we can collect and mapped values and share them with standard team if it's possible I can stop sharing.

I hope, yeah.

Thank you very much if you have any questions please.

I'm ready to go.

Williams, Andrew E. 40:00

That wonderful Pauline.

Thank you so much.

That was really very clear and that's going to be a great recording for people to refer back to and be able to see.

Um, yeah, I agree.

Telapone, Pauline 40:19

And.

Williams, Andrew E. 40:20

Jared showed Out to us several coding, both of you willing to go out on the wire and public meetings doing it coding.

It's really great, Um.

And in there, you may have said it and I missed it.

So so the code you actually were working with is that that's available um for people to look at, is that right?

Telapone, Pauline 40:45

It will be after today's session.

Williams, Andrew E. 40:48

After today's session and where will people find it?

Telapone, Pauline 40:50

Yes.

A good question.

Uh, I can put it into the mapping.

The branch on the GitHub it's, my plan for vocabulary, documentation and mapping documentation and various schemas.

So I can share link with Mary maybe and Mary can help me with the distribution of this link please.

Williams, Andrew E. 40:55

To be.

Alana, Monte 40:56

We could also put it in the folder for the for today's meeting 'mp.

Telapone, Pauline 40:20

Oh, yeah, yeah, of course as a text.

Williams, Andrew E. 40:20

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Yeah, yeah, of course as a text.

Williams, Andrew E. 40:20

Yeah, yeah, of course as a text.

Williams, Andrew E. 40:20

Yeah, yeah, of course as a text.

Williams, Andrew E 03:27

Terrie:

In questions for Palina?

Yeah, why not both?

I think that's a good idea.

Whether this version control is one reason, one obvious answer to that is version control.

Like you have duplicate places that one of them gets updated, the other doesn't.

If there's any near then errors, one place is generally better but.

Anyhow, we'll come up with a decision and Andy will share with that decision as well.

So.

Should people expect to do this as data get updated like they're doing it once?

Once they go through the whole process, are they complete?

Or if they're CMO's version is refreshed, do they go through the whole process again?

And I assume it's faster once they do it, but it's right that people will probably need to.

Check and see if new values that weren't covered by the initial queries need to be handled after CMA professions.

Is that right?

Palina, Palina 03:45

Right.

Williams, Andrew E 03:47

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