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Dear Sir/Madam,

I would like to briefly comment and give my high-level perspective on a few questions from on the US GAAP Taxonomy Efficiency and Effectiveness Review.

Before I proceed, I would like to first disclose that I do not have an accountant background, but a technical, database background with a focus on XML/JSON querying technologies. I will thus abstain from commenting outside of technical considerations.

Question 1

Should dimensions be used in tagging the primary financial statements?

Yes, I think so, when this semantically makes sense. Or at least, it should not be forbidden or discouraged in principle.

Data is always managed following a data model, which is a view of the world. Data models include the relational model, tree structures, graph structures, cubes, and so on.

The XBRL syntax is used to report data that is cubic and thus inherently multidimensional. This data model is, in my understanding, very adequate and intuitive for accountants, and dimensional data can be easily represented in tables with pivot table semantics for entry and viewing. This model is rather well understood in terms of storage and querying techniques (cf. OLAP, data warehousing, MDX, pivot tables in spreadsheets), at least at small scales, and predates XBRL.

I believe that generally discouraging usage of dimensions in favour of primary line items implies a fundamentally different mindset in the reporting framework, as this would base it on a tree-based, hierarchical data model rather than a cube-based data model. Furthermore, since the Period, Entity, Language—and one could argue, Unit—as well as the more domain-specific Legal Entity Axis already act as dimensions, this would imply a hybrid, not to say ambiguous, data model, with the data being "cubic but not quite, arborescent but not quite".

In other words, either the model taken is assumed to be essentially arborescent—in this case a large part of the XBRL machinery such as the fact-based approach would be an unnecessary overhead over plain XML—or the model is assumed to be cubic¹—in this case, there is no reason to restrict (reasonable) usage of dimensions. This has significant impact on the software ecosystem, as the choice of an appropriate data model is the starting point for designing high-quality data management tools.

However, as Charles Hoffman states, relying in principle on dimensions and embracing the cubic data model of XBRL does not mean that dimensions should always be used over primary line items no matter what. The design of cube layouts and taxonomies has to be done with respect to the domain-specific application and depending on the semantics of each network. In some cases, an accountant will find a cube more meaningful and natural with more dimensions, in some other cases with primary items. The FASB may choose to influence filers' decisions (cf. "Two ways to tag the same fact") by removing some primary items where dimensions should be used, or by removing some dimensions where primary items should be used. A general rule of thumb is that dimensions should be preferred when repeating patterns start appearing in the hierarchy of primary line items, as redundancy is often correlated with more errors and less quality.

Question 2

Should dimensions be primarily used for disaggregation, with a limited set of known exceptions?

I would lean to a yes as well. Semantically, a dimension contributes to the identification of a fact, and all dimensions together allow organizing facts in cubes. Using dimensions to store fact properties increase the dimensionality of facts in an artificial way, leading to more complexity for consumers. Also, using dimensions in a non-disaggregating way could lead, in my understanding, to false negatives in collision detection, i.e., two facts could have the same (disaggregating) dimensions and thus (should) be in a semantic collision, while their properties may differ arbitrarily if no restrictions are in place, and thus hide the collision.

In my understanding, all three kinds of dimensional relations defined by Charles Hoffman (is-a, whole-part, computational) qualify as disaggregating.

To summarize, if dimensions are allowed in a non-disaggregating way, these dimensions should be appropriately identified as such so that consuming tools behave appropriately. This may involve amendments to the XBRL specifications.

¹ Note that having a fully cubic data model does not preclude dimension members from being organized in hierarchies, as is typically the case.

Question 6

Questions 1–5 seek comments on specific areas described in Review Area 1. Do you have other suggestions that would improve the efficiency and effectiveness of the GAAP Taxonomy?

I have two more comments on the top of my mind.

1. As Alex Rapp points out, programmatically finding the appropriate component in a report involves a lot of efforts for consumers. I second the idea of improving on tagging networks within a report.

I think it would be very helpful to introduce, in every report, a table that summarizes the list of networks in this report with appropriate tags. This could be done with a single standardized concept (such as us-gaap:NetworkURI) with a URI type, as well as a dimension with an extensible list of network tags (DEI, Income Statement, Consolidated Balance Sheet, and so on). The most used networks (members of that dimension) could be defined in the taxonomy for comparison across reports, while filers could add their own members for their specific statements and disclosures.

Such a summarizing table would allow report consumers to quickly find the network they are looking for without having to come up with tricks to parse network labels to infer their contents. Below is a simplified view of what it could look like in a viewer.

Statement [Axis]	Networks [Line Items]
	Network URI
Document and Entity Information [Member]	http://www.example.com/dei
Income Statement [Member]	http://www.example.com/statement-of-income
Some statement specific to my company [Member]	http://www.example.com/my-statement
...	

2. While in XBRL, one often thinks at the scale of a single report, semantically, the dimensions of a fact should uniquely identify this fact globally, across all reports. Facts may be, and are in practice, submitted in different reports and with the same dimensions, which then has the semantics of an amendment as is common in US GAAP filings, or of reporting a fact again for convenience, or of a collision.

However, in some places, this is not the case, for example in the DEI component of reports. For example, if a company files two different reports, say, 10 K and 8 K (or any other type) for the same period, then each report will contain a fact with the concept "Document Type", and these facts will have the same dimensions, but have different values in each report. While this is not a problem within a single report, this is a potential breach in the dimensional semantics of data cubes across reports.

I believe that this could be fixed by adding an extra dimension (Accession Number, or anything that would uniquely identify the DEI across reports if the accession number cannot

be known when producing the filing) to the DEI facts in order to tag all these facts with the accession number they refer to. This would make these DEI facts unambiguous globally.

Statement [Line Items]	Accession Number [Axis]
	0000000000-17-000000
	Period [Axis]
	2017-06-15
Entity Registrant Name	Example Company
Document Type	10-Q
...	...

(Note: the same machinery would have to apply to the summary of networks in bullet point 1, as networks may vary across reports).

While what I see as potential issue is still secondary and not necessarily problematic today as many users view single reports, this kind of design consideration may start becoming more crucial in the future as XBRL scales up and across reports, i.e., this is about forward compatibility.

I hope that this feedback is useful to you and I am looking forward to seeing the next developments in the US GAAP taxonomy.

With kind regards,
 Ghislain Fourny