1. Structures

The purpose of this section is to explain the notion of a structure or the different fragments of a financial report, showing that a financial report can be decomposed into fragments.

1.1. Basics of Structures

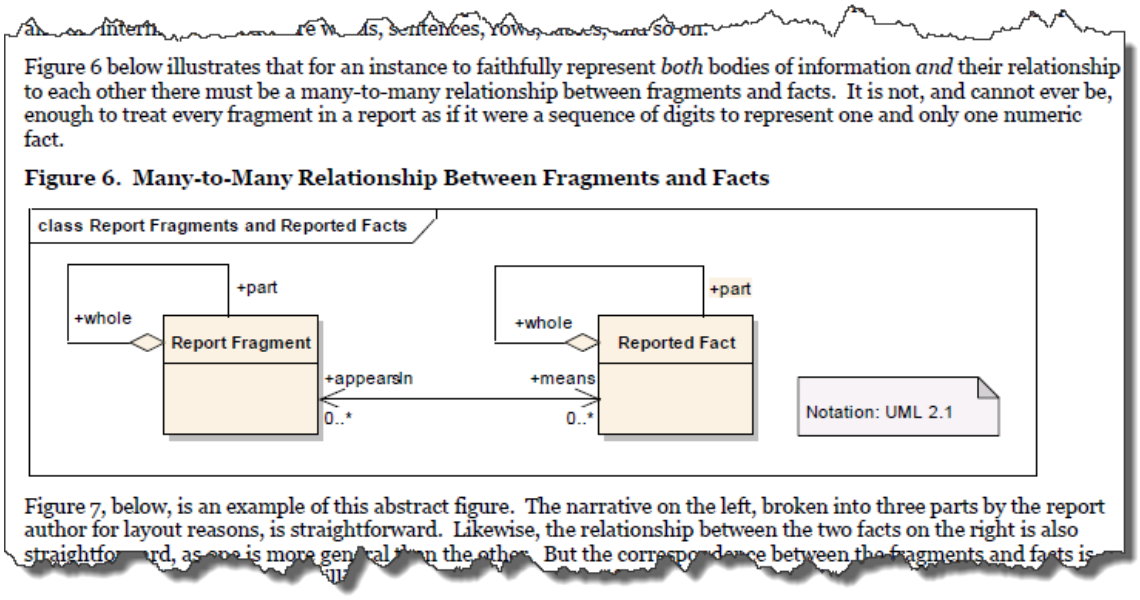
Structures provide flexibility. There are three general reasons for creating a structure. You create structures in order to:

1. Help you *sequence or organize* a financial reporting scheme or report model.
2. Because you *have to* in order to avoid conflicts within a financial reporting scheme or report model.
3. Because you want to separate pieces of a financial reporting scheme or report model.

There are some additional nuances and subtleties we need to point out related to representing structures using networks and hypercubes, but that is really the fundamentals of using structures.

1.2. Decomposing a Financial Report

A full financial **report** is made up of **fragments**, or report fragments as the *US GAAP Financial Reporting Taxonomy Architecture* calls them[1].



The *US GAAP Financial Reporting Taxonomy Architecture* goes on to explain the notion of a **schedule**. The architecture document says, "A 'Schedule' appears as a set of

[1] FASB, *US GAAP Financial Reporting Taxonomy Architecture Version 2014*, page 4, https://www.fasb.org/cs/ContentServer?c=Document_C&cid=1176163689810&d=&pagename=FASB%2FDocument_C%2FDocumentPage

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concepts within a relationship group and the root concept of a schedule is a text block.[2]" And then the architecture discusses **facts** and relations between fragments and facts even providing a UML diagram to explain the relationship[3].

So, the descriptions of these terms and the relations between the terms is not necessarily clear as provided by the *US GAAP Financial Reporting Taxonomy Architecture*; however, the architecture is trying to articulate the pieces of a financial report, what those pieces do, and how the pieces interact with one another.

I have similarly decomposed the objects of a financial report. The following is a comparison of the terms that I use reconciled to the terms the *US GAAP Financial Reporting Taxonomy Architecture* uses as best as possible:

Definition	**My Term**	**US GAAP Financial Reporting Taxonomy Term**
A **report** is information published by a reporting entity at some point in time for some purpose.	Report	Financial Report
A **fragment** is a set of one to many blocks which go together for some specific purpose within a report.	Fragment	Report Fragment
A **block** (a.k.a. fact set) is a set of facts which go together (tend to be cohesive and share a certain common nature) for some specific purpose within a report.	Block (a.k.a. Fact Set)	Schedule
A **fact** is reported. A fact defines a single, observable, reportable piece of information contained within a report contextualized for unambiguous interpretation or analysis by one or more distinguishing aspects.	Fact	Fact
A **disclosure** is a set of one to many logical blocks of information.	Disclosure	*<no such artifact>*

All the terms correlate pretty well with the possible exception of "block" and "schedule". The way the US GAAP Financial Reporting Taxonomy Architecture uses the term schedule is not as clear as it needs to be. While I did not provide the complete

[2] FASB, *US GAAP Financial Reporting Taxonomy Architecture Version 2014*, page 15, Section 3.2.2 Schedules, https://www.fasb.org/cs/ContentServer?c=Document_C&cid=1176163689810&d=&pagename=FASB%2FDocument_C%2FDocumentPage

[3] FASB, *US GAAP Financial Reporting Taxonomy Architecture Version 2014*, page 13, Figure 6, https://www.fasb.org/Page/ShowPdf?path=US-GAAP-Taxonomies-Architecture-FINAL-2014-01-31.pdf&title=2014%20US%20GAAP%20Financial%20Reporting%20Taxonomy%20Architecture

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logical model of a financial repot above, understanding that complete model is helpful. You can find the *Logical Theory Describing a Business Report*[4].

1.3. Models

A model is not the real-world thing, but if created adequately the model can serve the needs of the stakeholders of some system of interest.

A model enables a community of stakeholders trying to achieve a specific goal or objective or a range of goals/objectives to agree on important details related to capturing meaning or representing a shared understanding of and knowledge in some system of interest.

The model captures important information about the elements and relations of a system of interest. The model provides information about the patterns within the system of interest. Patterns are the orderly, regular behavior of the elements of the system of interest.

Atomic Design Methodology[5] is an approach to thinking about models.

- **Atoms** are the basic building blocks. Atoms are indivisible elementary building blocks.
- **Molecules** are combinations of two or more atoms. These combinations of atoms take on their own unique properties, and become more tangible and operational than atoms. Molecules are decomposable into the atoms that make up the molecule.
- **Organisms** are assemblies of molecules functioning together as a unit. Organisms are more complex and sophisticated than molecules. Organisms might be constructed from other organisms to create compound organisms. Organisms are decomposable into molecules and atoms.

1.4. Artifacts Used to Create Structures

There are technical oriented artifacts for working with structures and there are logical oriented artifacts for working with structures of a financial reporting scheme or a report model created to represent a report.

Technical oriented structures of a report are the XBRL **Network** and the XBRL Dimensions **Hypercube**. The smallest piece of a report is the **fact**.

Networks can be organized in arbitrary ways that might be dependent on the idiosyncrasies of a specific person creating a report model. Similarly, hypercubes can also be, to a degree, organized in arbitrary ways that might be dependent of the idiosyncrasies of the specific person creating that hypercube.

Think of it this way; a report is not one big thing, rather a report is a collection of many individual smaller things. Sometimes networks and hypercubes are too big a piece of a report to work with how we might want. But individual facts are too small to work with to accomplish what we might want to accomplish.

---

[4] Charles Hoffman, CPA and Rene van Egmond, *Logical Theory Describing a Business Report*, http://xbrlsite.azurewebsites.net/2019/Library/LogicalTheoryDescribingBusinessReport.pdf

[5] Atomic Design Methodology, https://digitalfinancialreporting.blogspot.com/2023/12/atomic-design-methodology.html

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The notion of a **component** is necessary because of the ways those creating reports represent networks and hypercubes. Because a network might contain multiple hypercubes and because hypercube names might not be unique, the notion of a component is used to identify a specific hypercube within a specific network.

A **structure** is a logical fragment of a portion of a financial report. A structure is used to differentiate one fragment of a report from some other fragment of a report. To achieve a very specific objective, I have developed the notion of the "information block" or simply "block". We will help you understand precisely what a block is in this section and how blocks can be useful when thinking about XBRL-based digital financial reports.

An information block is driven by the logic of the information being represented in a report. A block can always be associated with a disclosure that appears in an XBRL-based report.

Every XBRL-based report has a collection of networks and hypercubes both of which are technical artifacts of digital reports. Every XBRL-based report also has a collection of blocks and disclosures. Blocks and disclosures are collections of facts described by a report model.

There are good practices for representing structures using networks and hypercubes which will be covered later in this section. Not understanding the consequences of decisions made as to how to use networks and hypercubes can cause issues when trying to use financial reporting schemes and report models.

1.5. Building on the Basics of Structures

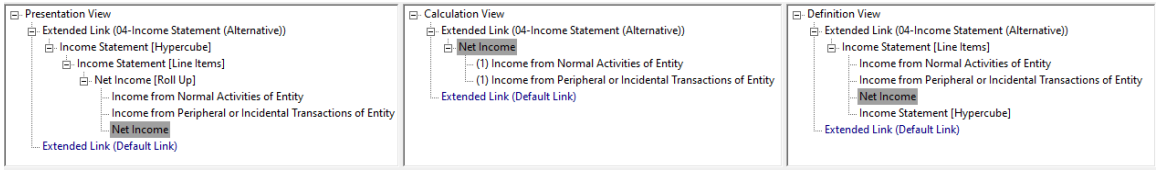
There are a few additional nuances and subtleties we need to point out related to hypercubes, networks, and the structures they represent. First, there are two reasons you create a new structure: (1) because you *have to* and (2) because you *want to*.

1.5.1. Networks

There are two important aspects to keep in mind when you think about XBRL networks. The first you have already been exposed to which is to **separate the fragments** which make up a report. As we said above, you separate things because you *have to* or because you *want to*. Sometimes it does not matter logically if two fragments are combined or if those same two fragments are separated into different networks, separating the fragments simply might be more elegant when you look at the XBRL-based digital financial report than when the two fragments are combined.

But the other thing an XBRL network does is combined information across the different technical mechanisms for creating associations. An example will make this very easy to see and understand.

Below you see one fragment of a report represented within one network and you see the three common types of associations that are represented in XBRL-based reports: XBRL presentation relations, XBRL calculation relations, and XBRL definition relations:



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How do you, or more importantly a software application, understand that the three sets of information go together? The answer is that they have the same network identifier. Each of the sets of XBRL presentation relations, XBRL calculation relations, and XBRL definition relations use the same network identifier to indicate that the information in each set of associations goes together. It is also the case that XBRL Formulas uses networks to indicate which network an XBRL formula resource goes with.

Finally, XBRL has a default network that can be used to indicate that information is global. For example, XBRL labels and XBRL references use the default role to identify information because labels and references tend to always relate globally throughout a report as opposed to be used only for one specific network.

Saying this another way; while networks are used to separate report fragments (i.e. vertical structures) the same networks are use to combine XBRL technical fragments (i.e. horizontal structures) so that users of the information understands that the technical fragments go together.

1.5.2. Hypercubes

A hypercube is a technical artifact that is used to bind things together to create a structure. All parts of a report model or the report itself must exist within a hypercube; that hypercube could be explicit or implied. The advantage of using an explicit hypercube is that additional dimensions (a.k.a. axis, aspects, facets) can be added to help describe the information you are trying to describe.

1.5.3. Structures

You *have to* create a new structure when a conflict occurs when you do not. For example, in the Proof Baseline representation there are two different roll up alternatives provided for an Income Statement which each has a different roll up of Net Income we provide here:

Alternative 1[6]:

Comprehensive Income Statement [Line Items]	Period [Axis] 2020-01-01 - 2020-12-31
Comprehensive Income [Roll Up]	
Revenues	7,000
(Expenses)	(3,000)
Gains	1,000
(Losses)	(2,000)
Net Income	3,000

Alternative 2[7]:

[6] Income Statement Roll Up 1, http://xbrlsite.azurewebsites.net/2021/essentials/Proof/evidence-package/contents/index.html#Rendering-ComprehensiveIncome-proof_ComprehensiveIncomeStatementHypercube.html

[7] Income Statement (alternative) Roll Up 2, http://xbrlsite.azurewebsites.net/2021/essentials/Proof/evidence-package/contents/index.html#Rendering-ComprehensiveIncome2-proof_ComprehensiveIncomeStatementHypercube.html

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Comprehensive Income Statement [Line Items]	Period [Axis] 2020-01-01 - 2020-12-31
Comprehensive Income [Roll Up]	
Income from Normal Activities of Entity	2,000
Income from Peripheral or Incidental Transactions of Entity	1,000
Net Income	3,000

It is literally impossible to represent both alternatives using the same physical structure, so two different structures are required to be created. In this case two networks are used to keep the two different mathematical associations from "logically colliding" with one another. There is no way around this.

But sometimes you just want to create another structure. You can do that also. For example, you could represent the balance sheet and income statement within the same structure because each of those disclosures use completely separate terms, associations, and rules so you would not get a logical conflict if you did put those two structures together into the same network or even within the same hypercube. Or, you could make the choice to use two separate structures. In this circumstance, either approach works fine logically because there are no logical conflicts. However, aesthetically it is good practice to separate these into two different networks.

1.6. Approaches to Using Hypercubes

And so, when you do create a new structure, we pointed out that there are three alternatives for doing so when it comes to whether you do or do not use hypercubes and how you name those hypercubes. Here we show each of those three approaches. We will contrast the income statement of the three approaches to help you differentiate the alternative approaches.

1.6.1.Approach 1-Implied Hypercube

Example of Implied Hypercube[8]: SFAC 6 Very Basic representation

In this first approach, note that neither the balance sheet, either income statement, nor changes in equity have hypercubes. In each case the Table (a.k.a. Hypercube) field says "(Implied)" which means that no explicit hypercube has been defined and therefore an imaginary hypercube that does not really exist is implied. Each network has a unique identifier and can be used to distinguish one structure from another.

[8] No hypercubes, SFAC 6 Very Basic, http://xbrlsite.azurewebsites.net/2021/essentials/Hypercubes/sfac6-NoHypercube/index.html

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Component: (Network and Table)	
Network	**02-Comprehensive Income** (http://www.xbrlsite.com/sfac6/role/ComprehensiveIncome)
Table	(Implied)

Slicers (applies to each fact value in each table cell)

Reporting Entity [Axis]	GH259400TOMPUOLS65II

Comprehensive Income [Roll Up]	Period [Axis] 2020-01-01 - 2020-12-31
Comprehensive Income [Roll Up]	
Revenues	7,000
(Expenses)	(3,000)
Gains	1,000
(Losses)	(2,000)
Comprehensive Income	3,000

However, consider the following. What if you combined the Comprehensive Income [Roll Up] and the Balance Sheet [Set] into the same network. Could you use the Network to differentiate one structure from the other when they share the same network? The answer is no; you would need to provide additional information.

1.6.2.Approach 2-Unique Hypercube

Example of Unique Hypercube[9]: SFAC 6 Introducing Hypercubes representation

In this second approach, notice that every structure provides a hypercube; the balance sheet, each income statement, and the changes in equity. But notice one important detail. Both of the income statements use the same hypercube name, "Comprehensive Income Statement [Hypercube]".

So, while each structure does contain a hypercube, because the hypercubes are not uniquely named, the hypercube cannot be used to distinguish or identify structures. While you can distinguish the balance sheet and statement of changes in equity; you cannot do the same with the two income statements that use the same hypercube.

Or, saying this another way; if each of the hypercubes did have a unique name, then the hypercube alone could be used to differentiate each structure.

[9] SFAC 6 Introducing Hypercubes, http://xbrlsite.azurewebsites.net/2021/essentials/Hypercubes/sfac6-UniqueHypercube/index.html

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Component: (Network and Table)	
Network	**02-Comprehensive Income** (http://www.xbrlsite.com/sfac6/role/ComprehensiveIncome)
Table	Comprehensive Income Statement [Hypercube]

Slicers (applies to each fact value in each table cell)

Reporting Entity [Axis]	GH259400TOMPUOLS65II

Comprehensive Income Statement [Line Items]	Period [Axis] 2020-01-01 - 2020-12-31
Comprehensive Income [Roll Up]	
Revenues	7,000
(Expenses)	(3,000)
Gains	1,000
(Losses)	(2,000)
Comprehensive Income	3,000

1.6.3.Approach 3-Standard Hypercube

Example of Standard Hypercube[10]: SFAC 6 Alternative Hypercube Approach representation

In this alternative representation using hypercubes, the approach where one hypercube named "Hypercube [Hypercube]" is used to represent the balance sheet, each of the two income statements, and the changes in equity. See the first income statement here and look at the line below to see each of the others. Further note that the Line Items term, "Hypercube [Line Items]", is used in the representation of each hypercube.

Component: (Network and Table)	
Network	**02-Comprehensive Income** (http://www.xbrlsite.com/sfac6/role/ComprehensiveIncome)
Table	Hypercube [Hypercube]

Slicers (applies to each fact value in each table cell)

Reporting Entity [Axis]	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)

Hypercube [Line Items]	Period [Axis] 2020-01-01 - 2020-12-31
Comprehensive Income [Roll Up]	
Revenues	7,000
(Expenses)	(3,000)
Gains	1,000
(Losses)	(2,000)
Comprehensive Income	3,000

[10] SFAC 6 Alternative Hypercube Approach, http://xbrlsite.azurewebsites.net/2021/essentials/Hypercubes/sfac6-SameHypercube/index.html

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What does sharing hypercubes and the same line items term between structures achieve? Well, first you save having to create a new hypercube and the line items terms; you simple have to create them once and use them many times which reduces the number of terms you must define.

Second, it forces one to use the network to physically identify the structure. Because each hypercube has the same name, it is useless in the identification of which structure you are referring to.

Third, because you use the same hypercube name the creator of XBRL taxonomies is forced to only use one hypercube per network. Why? If you only have one hypercube to use and you put them in the same network, then conflicts will occur when associations between terms are defined within a network for hypercubes that have the same name. The vast majority of XBRL-based reports already have only one hypercube her network; this forces every report to use this approach.

Fourth, when you do want to extract information from a report and you want to leverage a hypercube for doing so but each hypercube has the same name plus network identifiers are of no help because both the SEC and ESMA require reporting entities to define and use their own network identifiers (as contrast to each company having to use a network identifier defined by the FASB or IASCF or SEC or ESMA) how can you possibly extract information from a report for a specific structure?

Well, that is an excellent question! The answer to that important question is to use what is known as prototype theory[11] which is beyond the scope of this introduction. In a nutshell, you use the parts of a structure to identify the structure as contrast to a unique name that identifies each structure.

1.7. Best Approach for Representing Structures

And so, this begs the question: What is the best approach for representing structures? Using Networks, Hypercubes, or both? Well, the answer to the question is not that simple and depends on your perspective.

In order to define a proper XBRL taxonomy for, say, US GAAP or IFRS; you would have to know 100% of the hypercubes in advance in order to use a hypercube to identify each possible disclosure structure. While that is possible, it is challenging.

Today, most quality creators of XBRL-based reports for the SEC are using hypercubes to represent all information in a report. For example, the Microsoft 10-K[12] has 128 Networks, 128 hypercubes (a.k.a. Tables), and 194 information blocks. Every structure is represented within a hypercube, but the hypercubes are not uniquely named (i.e. that hypercube us-gaap:StatementTable is used numerous times to identify numerous structures). Therefore, hypercubes are useless for extracting information.

Internally within the enterprise, I would speculate that people would find it easier to deal with unique hypercubes for each unique disclosure.

[11] Understanding Prototype Theory, http://xbrl.squarespace.com/journal/2013/12/21/understanding-prototype-theory.html

[12] Microsoft XBRL-based Report Analysis, http://xbrl.squarespace.com/journal/2020/4/13/microsoft-xbrl-based-report-analysis.html

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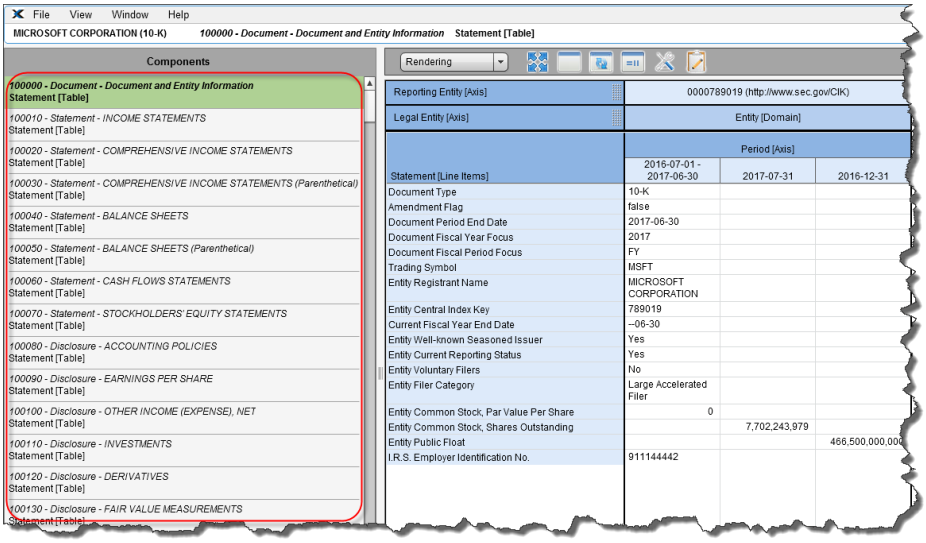
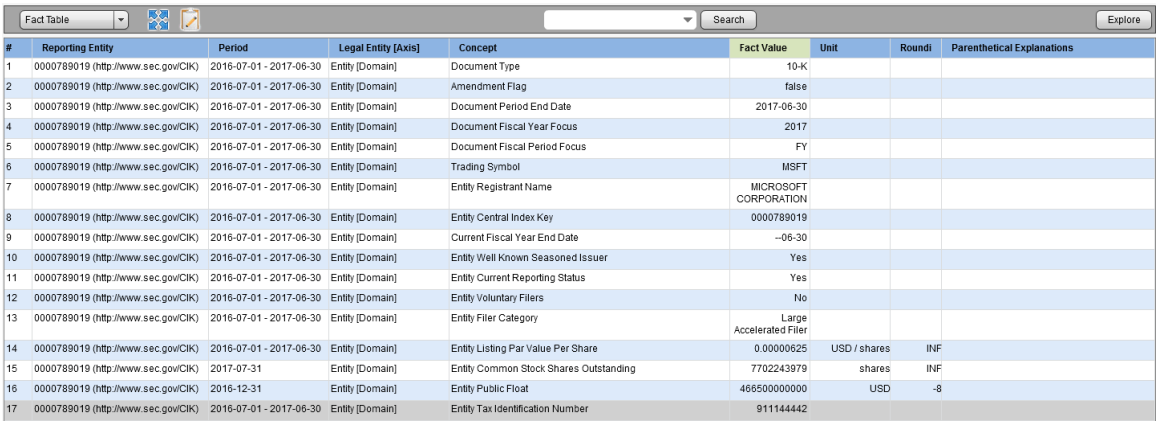
1.8. Example Report Decomposition

To better solidify the understanding of these terms let me provide a specific example. I will use the Microsoft 2017 10-K[13] report to explain the difference between a report, fragment, block, and fact. You can use the SEC Interactive Data Viewer[14], the freely available XBRL Cloud Viewer[15], or any tool of your choice that provides the sorts of information I will show you in this section.

So, here is a partial view of the Microsoft 10-K report. You see the fragments of that report in a list on the left circled in red. You see the rendering of the selected fragment on the right.



If you change to the "Fact Table" view you see what the XBRL Cloud viewer calls that Fact Table. It is simply the individual facts that make up the selected report fragment.



#	Reporting Entity	Period	Legal Entity [Axis]	Concept	Fact Value	Unit	Roundi	Parenthetical Explanations
1	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Document Type	10-K			
2	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Amendment Flag	false			
3	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Document Period End Date	2017-06-30			
4	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Document Fiscal Year Focus	2017			
5	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Document Fiscal Period Focus	FY			
6	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Trading Symbol	MSFT			
7	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Entity Registrant Name	MICROSOFT CORPORATION			
8	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Entity Central Index Key	0000789019			
9	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Current Fiscal Year End Date	--06-30			
10	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Entity Well Known Seasoned Issuer	Yes			
11	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Entity Current Reporting Status	Yes			
12	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Entity Voluntary Filers	No			
13	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Entity Filer Category	Large Accelerated Filer			
14	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Entity Listing Par Value Per Share	0.00000625	USD / shares	INF	
15	0000789019 (http://www.sec.gov/CIK)	2017-07-31	Entity [Domain]	Entity Common Stock Shares Outstanding	7702243979	shares	INF	
16	0000789019 (http://www.sec.gov/CIK)	2016-12-31	Entity [Domain]	Entity Public Float	466500000000	USD	-8	
17	0000789019 (http://www.sec.gov/CIK)	2016-07-01 - 2017-06-30	Entity [Domain]	Entity Tax Identification Number	911144442			

[13] Microsoft 10-K for 2017, https://www.sec.gov/Archives/edgar/data/789019/000156459017014900/0001564590-17-014900-index.htm

[14] Microsoft 10-K in SEC Interactive Data Viewer, https://www.sec.gov/cgi-bin/viewer?action=view&cik=789019&accession_number=0001564590-17-014900&xbrl_type=v

[15] Microsoft 10-K in XBRL Cloud Viewer, https://edgardashboard.xbrlcloud.com/flex/viewer/XBRLViewer.html#instance=http://www.sec.gov/Archives/edgar/data/789019/000156459017014900/msft-20170630.xml

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You will get a better appreciation of the difference between a fragment and a block when we look at the balance sheet. So, switching over to the SEC Interactive Data viewer because with that I can see the entire balance sheet, you see the following:

BALANCE SHEETS - USD ($) $ in Millions	Jun. 30, 2017	Jun. 30, 2016
Current assets:		
Cash and cash equivalents	$ 7,663	$ 6,510
Short-term investments (including securities loaned of $3,694 and $204)	125,318	106,730
Total cash, cash equivalents, and short-term investments	132,981	113,240
Accounts receivable, net of allowance for doubtful accounts of $405 and $426	19,792	18,277
Inventories	2,181	2,251
Other	4,897	5,892
Total current assets	159,851	139,660
Property and equipment, net of accumulated depreciation of $24,179 and $19,800	23,734	18,356
Equity and other investments	6,023	10,431
Goodwill	35,122	17,872
Intangible assets, net	10,106	3,733
Other long-term assets	6,250	3,416
Total assets	241,086	193,468
Current liabilities:		
Accounts payable	7,390	6,898
Short-term debt	9,072	12,904
Current portion of long-term debt	1,049	0
Accrued compensation	5,819	5,264
Income taxes	718	580
Short-term unearned revenue	34,102	27,468
Securities lending payable	97	294
Other	6,280	5,949
Total current liabilities	64,527	59,357
Long-term debt	76,073	40,557
Long-term unearned revenue	10,377	6,441
Deferred income taxes	531	1,476
Other long-term liabilities	17,184	13,640
Total liabilities	168,692	121,471
Commitments and contingencies		
Stockholders' equity:		
Common stock and paid-in capital – shares authorized 24,000; outstanding 7,708 and 7,808	69,315	68,178
Retained earnings	2,648	2,282
Accumulated other comprehensive income	431	1,537
Total stockholders' equity	72,394	71,997
Total liabilities and stockholders' equity	$ 241,086	$ 193,468

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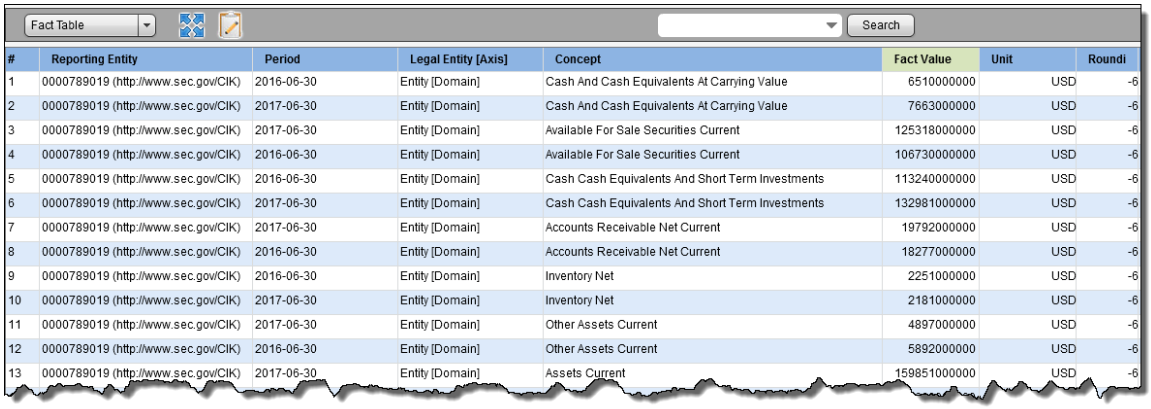
The balance sheet fragment is made up of two blocks. The first block is the set of facts that makes up the *Assets [Roll Up]*. The second block is the set of facts that makes up the *Liabilities and Equity [Roll Up]*. Now, this may not make a lot of sense. You might ask, "Why would you ever use half of the balance sheet, you need both the assets roll up and the liabilities and equity roll up to work with the balance sheet." And you would be right, you typically work with both the assets and liabilities and equity roll ups when you work with the balance sheet. But, for other report fragments, this is not true.

Further, the facts for the balance sheet all fit into one block or fact table. Why would you need to separate those out? Well, in this case that is a good question because we do not need to separate the assets roll up and liabilities and equity roll up facts. Except, when we do. We do want to separate the balance sheet fragment when we only want to work with the assets roll up facts.


Fact Table

Search

#	Reporting Entity	Period	Legal Entity [Axis]	Concept	Fact Value	Unit	Roundi
1	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Cash And Cash Equivalents At Carrying Value	6510000000	USD	-6
2	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Cash And Cash Equivalents At Carrying Value	7663000000	USD	-6
3	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Available For Sale Securities Current	125318000000	USD	-6
4	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Available For Sale Securities Current	106730000000	USD	-6
5	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Cash Cash Equivalents And Short Term Investments	113240000000	USD	-6
6	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Cash Cash Equivalents And Short Term Investments	132981000000	USD	-6
7	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Accounts Receivable Net Current	19792000000	USD	-6
8	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Accounts Receivable Net Current	18277000000	USD	-6
9	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Inventory Net	2251000000	USD	-6
10	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Inventory Net	2181000000	USD	-6
11	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Other Assets Current	4897000000	USD	-6
12	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Other Assets Current	5892000000	USD	-6
13	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Assets Current	159851000000	USD	-6

Let's go back to the first fragment we looked at, the document and entity information. Take a close look at what you see. First, the name is a dead giveaway, "Document and Entity Information". So, this is really two blocks that you have no way of separating unless you want to separate the "document information" from the "entity information" and you can even say that there are three categories because you also have "entity listing information" in that one block.

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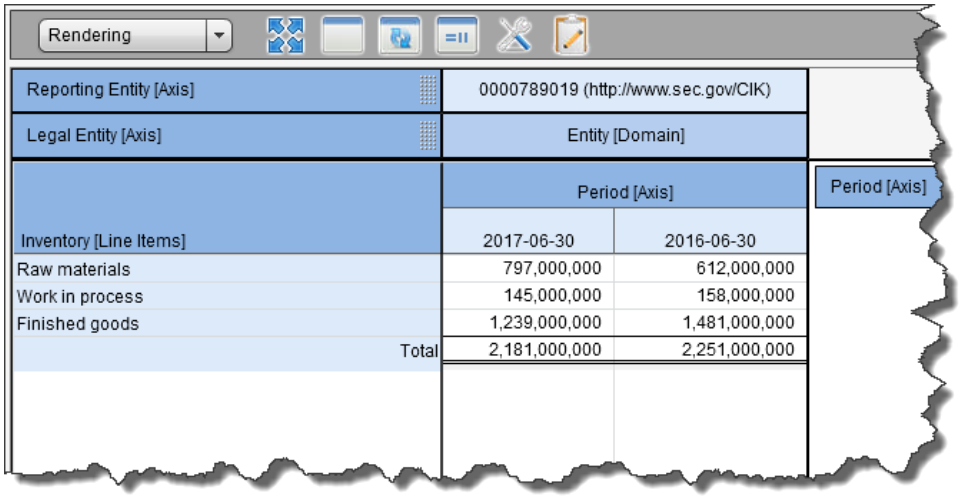
Document and Entity Information - USD ($) $ / shares in Units, $ in Billions	12 Months Ended Jun. 30, 2017	Jul. 31, 2017	Dec. 31, 2016
Document Type	10-K		
Amendment Flag	false		
Document Period End Date	Jun. 30, 2017		
Document Fiscal Year Focus	2017		
Document Fiscal Period Focus	FY		
Trading Symbol	MSFT		
Entity Registrant Name	MICROSOFT CORPORATION		
Entity Central Index Key	0000789019		
Current Fiscal Year End Date	--06-30		
Entity Well-known Seasoned Issuer	Yes		
Entity Current Reporting Status	Yes		
Entity Voluntary Filers	No		
Entity Filer Category	Large Accelerated Filer		
Entity Common Stock, Par Value Per Share	$ 0.00000625		
Entity Common Stock, Shares Outstanding		7,702,243,979	
Entity Public Float			$ 466.5
I.R.S. Employer Identification No.	911144442		

So, let's walk through all the parts of a block by looking at a significantly smaller block, components of inventory. Here is the rendering of the components of inventory:



Here is the fact table (block) of the components of inventory:

#	Reporting Entity	Period	Legal Entity [Axis]	Concept	Fact Value	Unit	Roundi
1	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Inventory Raw Materials Net Of Reserves	612000000	USD	-6
2	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Inventory Raw Materials Net Of Reserves	797000000	USD	-6
3	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Inventory Work In Process Net Of Reserves	145000000	USD	-6
4	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Inventory Work In Process Net Of Reserves	158000000	USD	-6
5	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Inventory Finished Goods Net Of Reserves	1239000000	USD	-6
6	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Inventory Finished Goods Net Of Reserves	1481000000	USD	-6
7	0000789019 (http://www.sec.gov/CIK)	2016-06-30	Entity [Domain]	Inventory Net	2251000000	USD	-6
8	0000789019 (http://www.sec.gov/CIK)	2017-06-30	Entity [Domain]	Inventory Net	2181000000	USD	-6

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And here is the information model definition for the components of inventory disclosure:

Label	Report Element Class	Period	Balance	Name
Inventory, Current [Table]	[Table]			us-gaap:InventoryCurrentTable
Legal Entity [Axis]	[Axis]			dei:LegalEntityAxis
Entity [Domain]	[Member]			dei:EntityDomain
Inventory [Line Items]	[Line Items]			us-gaap:InventoryLineItems
Raw materials	[Concept] Monetary	As Of	debit	us-gaap:InventoryRawMaterialsNetOfReserves
Work in process	[Concept] Monetary	As Of	debit	us-gaap:InventoryWorkInProcessNetOfReserves
Finished goods	[Concept] Monetary	As Of	debit	us-gaap:InventoryFinishedGoodsNetOfReserves
Total	[Concept] Monetary	As Of	debit	us-gaap:InventoryNet

Then you have the business rules that define the roll up of the inventory line items:

Label	Report Element Class	Period	Balance	Name
Inventory	[Concept] Monetary	As Of	debit	us-gaap:InventoryNet
Raw materials	[Concept] Monetary	As Of	debit	us-gaap:InventoryRawMaterialsNetOfReserves
Work in process	[Concept] Monetary	As Of	debit	us-gaap:InventoryWorkInProcessNetOfReserves
Finished goods	[Concept] Monetary	As Of	debit	us-gaap:InventoryFinishedGoodsNetOfReserves

So, all that is straight forward. You have a fragment, components of inventory, which has exactly one block. Leveraging the block, the information model definition, the concept arrangement pattern, and the XBRL calculation relations, a very nice and readable rendering for the block can be created.

But what if a company did what is shown below? What you see is one fragment that has two roll ups; a roll up for the components of property, plant, and equipment and a roll up of the components of inventory. What prevents a public company from creating this type of fragment? Nothing prevents this and, in fact, it is done all the time.

Reporting Entity [Axis]	SAMP http://www.SampleCompany.com	
Legal Entity [Axis]	Consolidated Entity [Member]	
Unit [Axis]	USD	
	Period [Axis]	
Assets, by Component [Line Items]	2020-12-31	2019-12-31
Land	5,347,000	1,147,000
Buildings, Net	244,508,000	366,375,000
Furniture and Fixtures, Net	34,457,000	34,457,000
Computer Equipment, Net	4,169,000	5,313,000
Other Property, Plant and Equipment, Net	6,702,000	6,149,000
Property, Plant and Equipment, Net, Total	295,183,000	413,441,000
Finished Goods	7,000	7,000
Work in Progress	9,000	9,000
Raw Materials	2,000	2,000
Inventory, Total	18,000	18,000

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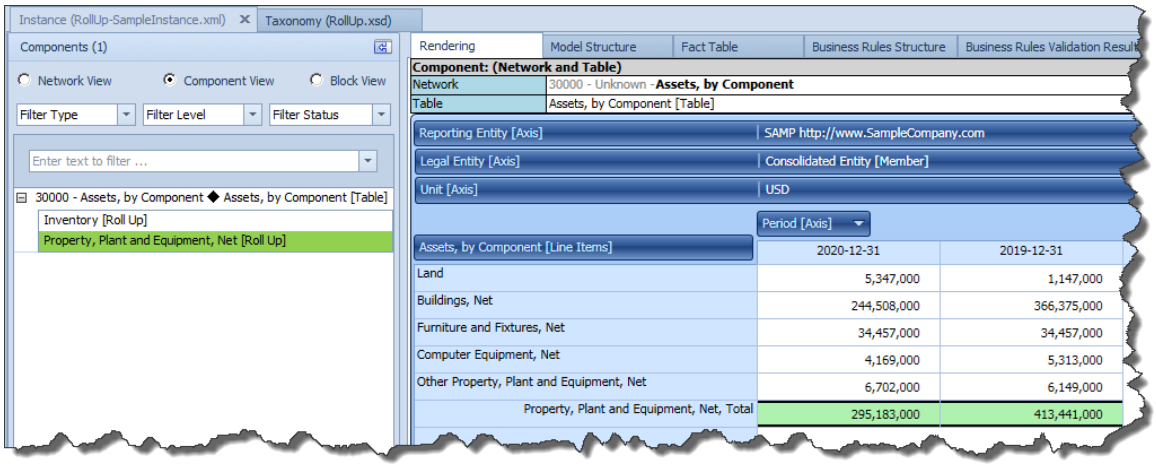
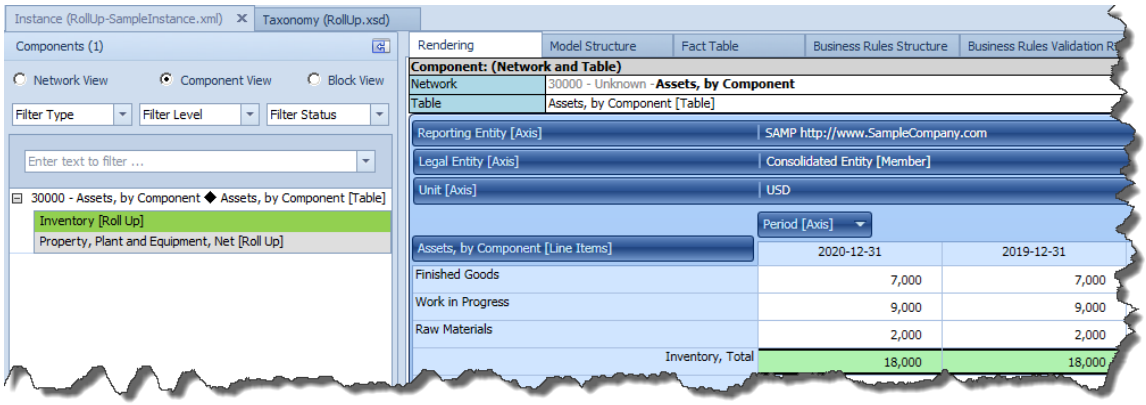
While the creator if this information might want to put these two roll ups together into one fragment; you might want to work with these two pieces of this one fragment separately; and that is exactly the sort of functionality the block provides.

Here is the property, plant, and equipment roll up:



Here is the inventory components roll up:



And so, how did the software application separate the two blocks within the one fragment and be able to work with them individually? (Try this in most software applications and you will not be able to do this.)

The answer to the question is that the software above does understand what a block is and it uses information from the model description to break the two blocks out from the one fragment. What is the information that provides this metadata reliably? The XBRL calculation relations. Each roll up has XBRL calculation relations and each set of XBRL calculation relations has one root element. It is that one root element that (a) tells you the name of the block (see on the left) and which facts go into the block (or fact table). See:

Property, plant and equipment components block:

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#	Reporting Entity	Period	Concept	Legal Entity [Axis]	Fact Value	Unit	Rounding
1	SAMP http://www.SampleCompany.com	2020-12-31	Land	Consolidated Entity [Member]	5347000	USD	0
2	SAMP http://www.SampleCompany.com	2019-12-31	Land	Consolidated Entity [Member]	1147000	USD	0
3	SAMP http://www.SampleCompany.com	2020-12-31	Buildings, Net	Consolidated Entity [Member]	244508000	USD	0
4	SAMP http://www.SampleCompany.com	2019-12-31	Buildings, Net	Consolidated Entity [Member]	366375000	USD	0
5	SAMP http://www.SampleCompany.com	2020-12-31	Furniture and Fixtures, Net	Consolidated Entity [Member]	34457000	USD	0
6	SAMP http://www.SampleCompany.com	2019-12-31	Furniture and Fixtures, Net	Consolidated Entity [Member]	34457000	USD	0
7	SAMP http://www.SampleCompany.com	2020-12-31	Computer Equipment, Net	Consolidated Entity [Member]	4169000	USD	0
8	SAMP http://www.SampleCompany.com	2019-12-31	Computer Equipment, Net	Consolidated Entity [Member]	5313000	USD	0
9	SAMP http://www.SampleCompany.com	2020-12-31	Other Property, Plant and Equipment, Net	Consolidated Entity [Member]	6702000	USD	0
10	SAMP http://www.SampleCompany.com	2019-12-31	Other Property, Plant and Equipment, Net	Consolidated Entity [Member]	6149000	USD	0
11	SAMP http://www.SampleCompany.com	2020-12-31	Property, Plant and Equipment, Net	Consolidated Entity [Member]	295183000	USD	0
12	SAMP http://www.SampleCompany.com	2019-12-31	Property, Plant and Equipment, Net	Consolidated Entity [Member]	413441000	USD	0

Inventory components block:

#	Reporting Entity	Period	Concept	Legal Entity [Axis]	Fact Value	Unit	Rounding
13	SAMP http://www.SampleCompany.com	2020-12-31	Finished Goods	Consolidated Entity [Member]	7000	USD	0
14	SAMP http://www.SampleCompany.com	2019-12-31	Finished Goods	Consolidated Entity [Member]	7000	USD	0
15	SAMP http://www.SampleCompany.com	2020-12-31	Work in Progress	Consolidated Entity [Member]	9000	USD	0
16	SAMP http://www.SampleCompany.com	2019-12-31	Work in Progress	Consolidated Entity [Member]	9000	USD	0
17	SAMP http://www.SampleCompany.com	2020-12-31	Raw Materials	Consolidated Entity [Member]	2000	USD	0
18	SAMP http://www.SampleCompany.com	2019-12-31	Raw Materials	Consolidated Entity [Member]	2000	USD	0
19	SAMP http://www.SampleCompany.com	2020-12-31	Inventory	Consolidated Entity [Member]	18000	USD	0
20	SAMP http://www.SampleCompany.com	2019-12-31	Inventory	Consolidated Entity [Member]	18000	USD	0

So while the fragment that holds the two block contains the property, plant, and equipment components facts and the inventory components facts; you can also separate the facts into the individual blocks.

1.9. Important Things to Understand about Representing Information using XBRL

This section gets a little bit technical because I have to explain a few things about how XBRL is employed to represent information. If you want to understand this section, please read through the basic *XBRL Technical Primer*[16].

In XBRL, an information model description is created by creating Networks, putting Tables (hypercubes) in those Networks, and then putting other report elements within those Tables. Alternatively, you might not explicitly define a Table within a Network. And so if you do not explicitly provide a Table and put any report elements within a Network; essentially what you are doing is creating a single implied table that contains each report element that is not represented within a Table within a Network.

And so, Networks and Tables (explicitly defined or implied) are used to represent the information model description of a report.

Sometimes you MUST separate things using Networks to avoid conflicts; other times you get too choose whether to separate things using Networks. Tables work the same way; sometimes you MUST use a Table to separate blocks and other times you get to choose whether you want to (a) use an existing Table or (b) create a new Table to represent some piece of a report.

A representation of information can have exactly four possible states or features:

1. An information representation is ***logically represented*** and ***easy to comprehend***.

[16] Charles Hoffman, CPA and Rene van Egmond, XBRL Technical Primer, http://xbrlsite.azurewebsites.net/2017/IntelligentDigitalFinancialReporting/Part00_Chapter01.2_XBRLPrimer.pdf

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2. An information representation is ***logically represented*** and ***hard to comprehend***.
3. An information representation is ***illogically represented*** and ***easy to comprehend (but illogical)***.
4. An information representation is ***illogically represented*** and ***hard to comprehend (but illogical)***.

States #3 and #4 are incorrect by definition. Information that is defined illogically is simply wrong.

State #2 is not incorrect, but neither is it a best practice. State #1 is the only best practice, information that is logically represented and as easy to read as possible. A **best practice** is a method or technique that has been generally accepted as superior to any other known alternatives because it produces results that are superior to those results achieved by other means or because it has become a standard way of doing something.

And so, let's have another look at the report rendering that I showed earlier where property, plant, and equipment components roll up and the inventory components roll up are combined into one report fragment:

Reporting Entity [Axis]	SAMP http://www.SampleCompany.com	
Legal Entity [Axis]	Consolidated Entity [Member]	
Unit [Axis]	USD	
	Period [Axis]	
Assets, by Component [Line Items]	2020-12-31	2019-12-31
Land	5,347,000	1,147,000
Buildings, Net	244,508,000	366,375,000
Furniture and Fixtures, Net	34,457,000	34,457,000
Computer Equipment, Net	4,169,000	5,313,000
Other Property, Plant and Equipment, Net	6,702,000	6,149,000
Property, Plant and Equipment, Net, Total	295,183,000	413,441,000
Finished Goods	7,000	7,000
Work in Progress	9,000	9,000
Raw Materials	2,000	2,000
Inventory, Total	18,000	18,000

Now, look at this almost identical representation of the same information and note the slight difference. In the report above, a root presentation relation which is an [Abstract] concept that holds all of the other concepts from the property, plant, and equipment [Roll up] and distinguishes those concepts from the inventory [Roll Up].

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Reporting Entity [Axis]	SAMP http://www.SampleCompany.com	
Legal Entity [Axis]	Consolidated Entity [Member]	
Unit [Axis]	USD	
	Period [Axis]	
Assets, by Component [Line Items]	2020-12-31	2019-12-31
Property, Plant and Equipment [Roll Up]		
Land	5,347,000	1,147,000
Buildings, Net	244,508,000	366,375,000
Furniture and Fixtures, Net	34,457,000	34,457,000
Computer Equipment, Net	4,169,000	5,313,000
Other Property, Plant and Equipment, Net	6,702,000	6,149,000
Property, Plant and Equipment, Net, Total	295,183,000	413,441,000
Inventory [Roll Up]		
Finished Goods	7,000	7,000
Work in Progress	9,000	9,000
Raw Materials	2,000	2,000
Inventory, Total	18,000	18,000

So, is the first rendering at the top of the page without those two [Abstract] concepts wrong and the second rendering at the bottom right? No, that is not what I am saying. Both the top and the bottom representations are logically correct. But at the same time, I point out that if the second representation is easier to read than the first, then the second is a better practice that the first.

You might think that this discussion is silly and that as long as the representation is logical, you can represent XBRL-based information however you want. And yes, it is true that you can do that, represent information however you want as long as the information is not illogical.

However, if you are a software engineer that is constructing software that helps business professionals do things right or to automatically follow best practices or to not let software users to things wrong; this is incredibly helpful information.

Further, have a look at this fragment from an XBRL-based financial report of a public company submitted to the SEC:

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Commitments (Details) (USD $) In Millions, unless otherwise specified	12 Months Ended		
	Oct. 31, 2012	Oct. 31, 2011	Oct. 31, 2010
Commitments			
Rent expense	$ 1,012	$ 1,042	$ 1,062
Sublease rental income	37	38	46
Property under capital lease	882	577	
Accumulated depreciation on property under capital lease	453	454	
Minimum lease payments, sublease rental income			
Minimum lease payments, 2013	780		
Minimum lease payments, 2014	665		
Minimum lease payments, 2015	517		
Minimum lease payments, 2016	351		
Minimum lease payments, 2017	218		
Minimum lease payments, thereafter	805		
Minimum lease payments, total	3,336		
Less: Sublease rental income, 2013	(28)		
Less: Sublease rental income, 2014	(23)		
Less: Sublease rental income, 2015	(18)		
Less: Sublease rental income, 2016	(9)		
Less: Sublease rental income, 2017	(4)		
Less: Sublease rental income, thereafter	(12)		
Sublease rental income, total	(94)		
Minimum lease payments net of sublease rental income, 2013	752		
Minimum lease payments net of sublease rental income, 2014	642		
Minimum lease payments net of sublease rental income, 2015	499		
Minimum lease payments net of sublease rental income, 2016	342		
Minimum lease payments net of sublease rental income, 2017	214		
Minimum lease payments net of sublease rental income, thereafter	793		
Minimum lease payments net of sublease rental income, total	3,242		
Capital lease commitments			
Capital lease commitments, 2013	59		
Capital lease commitments, 2014	240		
Capital lease commitments, 2015	11		
Capital lease commitments, 2016	7		
Capital lease commitments, 2017	4		
Capital lease commitments, thereafter	33		
Capital lease commitments, total	354		
Less: Interest payments, 2013	(8)		
Less: Interest payments, 2014	(6)		
Less: Interest payments, 2015	(3)		
Less: Interest payments, 2016	(2)		
Less: Interest payments, 2017	(2)		
Less Interest payments, thereafter	(12)		
Interest payments, total	(33)		

That representation you see above is from an actual XBRL-based report created by a public company to the U.S. Securities and Exchange Commission. While logically, the information is 100% correct, the rendering of the information is hideous and downright ugly.

I have provided you with one simple, basic use of blocks. This basic explanation is useful in that it helps you get a true sense of what a block really is. But it is only a basic example; there are many other uses for the notion of blocks.

So, one use of blocks is to avoid hideous, ugly, and unreadable information representations such as these two examples:

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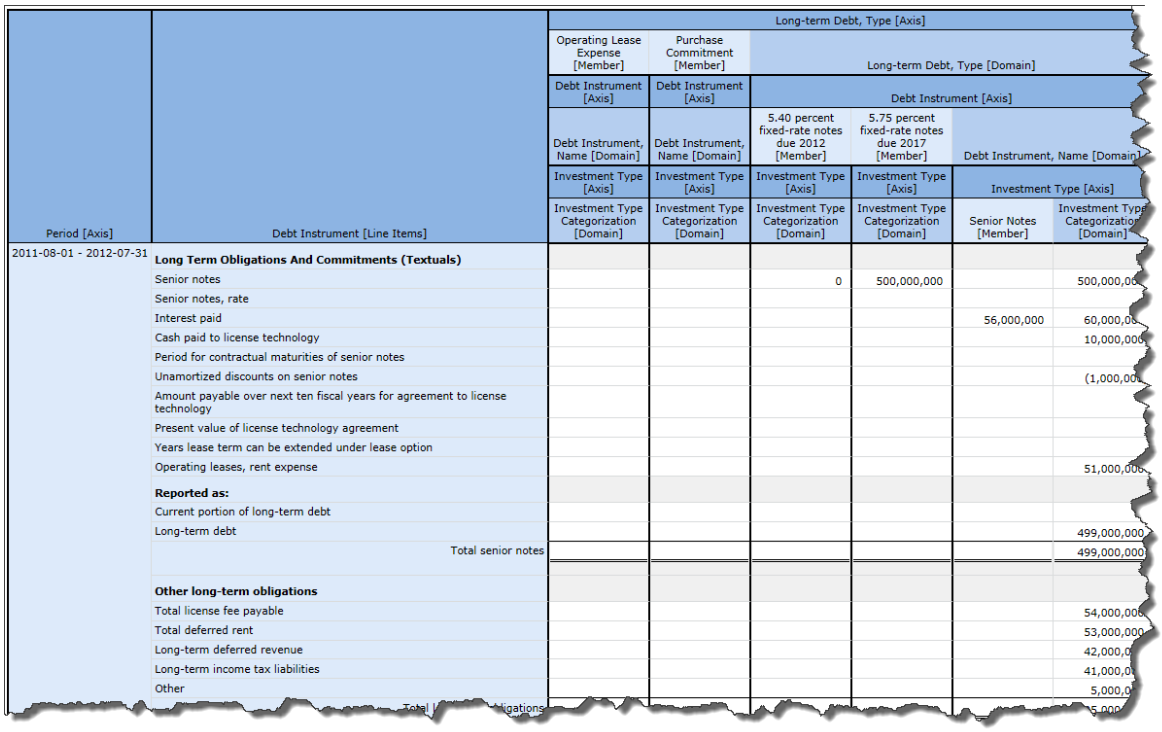
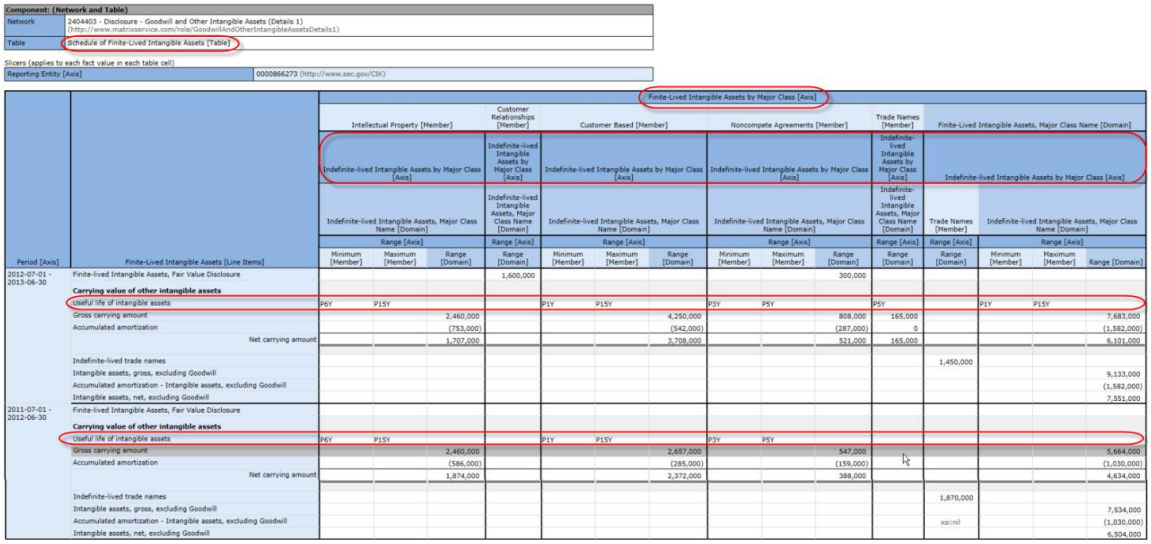


		Long-term Debt, Type [Axis]					
		Operating Lease Expense [Member]	Purchase Commitment [Member]	Long-term Debt, Type [Domain]			
		Debt Instrument [Axis]	Debt Instrument [Axis]	Debt Instrument [Axis]			
		Debt Instrument, Name [Domain]	Debt Instrument, Name [Domain]	5.40 percent fixed-rate notes due 2012 [Member]	5.75 percent fixed-rate notes due 2017 [Member]	Debt Instrument, Name [Domain]	
		Investment Type [Axis]	Investment Type [Axis]	Investment Type [Axis]	Investment Type [Axis]	Investment Type [Axis]	
Period [Axis]	Debt Instrument [Line Items]	Investment Type Categorization [Domain]	Investment Type Categorization [Domain]	Investment Type Categorization [Domain]	Investment Type Categorization [Domain]	Senior Notes [Member]	Investment Type Categorization [Domain]
2011-08-01 - 2012-07-31	**Long Term Obligations And Commitments (Textuals)**						
	Senior notes			0	500,000,000		500,000,00
	Senior notes, rate						
	Interest paid					56,000,000	60,000,00
	Cash paid to license technology						10,000,000
	Period for contractual maturities of senior notes						
	Unamortized discounts on senior notes						(1,000,00
	Amount payable over next ten fiscal years for agreement to license technology						
	Present value of license technology agreement						
	Years lease term can be extended under lease option						
	Operating leases, rent expense						51,000,000
	Reported as:						
	Current portion of long-term debt						
	Long-term debt						499,000,000
	Total senior notes						499,000,000
	Other long-term obligations						
	Total license fee payable						54,000,000
	Total deferred rent						53,000,000
	Long-term deferred revenue						42,000,0
	Long-term income tax liabilities						41,000,0
	Other						5,000,0
	Total [illegible] obligations						5,000



Component: (Network and Table)

Network	2404403 - Disclosure - Goodwill and Other Intangible Assets (Details 1) (http://www.matrixservice.com/role/GoodwillAndOtherIntangibleAssetsDetails1)
Table	Schedule of Finite-Lived Intangible Assets [Table]

Slicers (applies to each fact value in each table cell)

Reporting Entity [Axis]	0000866273 (http://www.sec.gov/CIK)

		Finite-Lived Intangible Assets by Major Class [Axis]														
		Intellectual Property [Member]			Customer Relationships [Member]	Customer Based [Member]			Noncompete Agreements [Member]			Trade Names [Member]	Finite-Lived Intangible Assets, Major Class Name [Domain]			
		Indefinite-lived Intangible Assets by Major Class [Axis]			Indefinite-lived Intangible Assets by Major Class [Axis]	Indefinite-lived Intangible Assets by Major Class [Axis]			Indefinite-lived Intangible Assets by Major Class [Axis]			Indefinite-lived Intangible Assets by Major Class [Axis]	Indefinite-lived Intangible Assets by Major Class [Axis]			
		Indefinite-lived Intangible Assets, Major Class Name [Domain]			Indefinite-lived Intangible Assets, Major Class Name [Domain]	Indefinite-lived Intangible Assets, Major Class Name [Domain]			Indefinite-lived Intangible Assets, Major Class Name [Domain]			Indefinite-lived Intangible Assets, Major Class Name [Domain]	Trade Names [Member]	Indefinite-lived Intangible Assets, Major Class Name [Domain]		
		Range [Axis]			Range [Axis]	Range [Axis]			Range [Axis]			Range [Axis]	Range [Axis]	Range [Axis]		
Period [Axis]	Finite-Lived Intangible Assets [Line Items]	Minimum [Member]	Maximum [Member]	Range [Domain]	Range [Domain]	Minimum [Member]	Maximum [Member]	Range [Domain]	Minimum [Member]	Maximum [Member]	Range [Domain]	Range [Domain]	Range [Domain]	Minimum [Member]	Maximum [Member]	Range [Domain]
2012-07-01 - 2013-06-30	Finite-lived Intangible Assets, Fair Value Disclosure				1,600,000						300,000					
	Carrying value of other intangible assets															
	Useful life of intangible assets	P6Y	P15Y			P1Y	P15Y		P3Y	P5Y		P5Y		P1Y	P15Y	
	Gross carrying amount			2,460,000				4,250,000			808,000	165,000				7,683,000
	Accumulated amortization			(753,000)				(542,000)			(287,000)	0				(1,582,000)
	Net carrying amount			1,707,000				3,708,000			521,000	165,000				6,101,000
	Indefinite-lived trade names												1,450,000			
	Intangible assets, gross, excluding Goodwill															9,133,000
	Accumulated amortization - Intangible assets, excluding Goodwill															(1,582,000)
	Intangible assets, net, excluding Goodwill															7,551,000
2011-07-01 - 2012-06-30	Finite-lived Intangible Assets, Fair Value Disclosure															
	Carrying value of other intangible assets															
	Useful life of intangible assets	P6Y	P15Y			P1Y	P15Y		P3Y	P5Y						
	Gross carrying amount			2,460,000				2,657,000			547,000					5,664,000
	Accumulated amortization			(586,000)				(285,000)			(159,000)					(1,030,000)
	Net carrying amount			1,874,000				2,372,000			388,000					4,634,000
	Indefinite-lived trade names												1,870,000			
	Intangible assets, gross, excluding Goodwill															7,534,000
	Accumulated amortization - Intangible assets, excluding Goodwill												xsi:nil			(1,030,000)
	Intangible assets, net, excluding Goodwill															6,504,000

There are two strong arguments for not creating ugly, hideous renderings. First, for every one bad example of a rendering, there are 50 or 100 or good examples. The good examples are best practices, the bad examples are not. Second, if you can help software engineers the problems you are having representing information using XBRL and making it right; the software engineers can help you be more successful.

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1.10. Complex Structures are Really Groups of Simple Structures

Consider the set of three Blocks below which make up an income statement[17]:

Statement [Line Items]	Period [Axis] 2016-07-01 - 2017-06-30	2015-07-01 - 2016-06-30	2014-07-01 - 2015-06-30
Revenue			
Product	57,190,000,000	61,502,000,000	75,956,000,000
Service and other	32,760,000,000	23,818,000,000	17,624,000,000
Total revenue	89,950,000,000 [2,3]	85,320,000,000 [1]	93,580,000,000
Cost of revenue			
Product	15,175,000,000	17,880,000,000	21,410,000,000
Service and other	19,086,000,000	14,900,000,000	11,628,000,000
Total cost of revenue	34,261,000,000	32,780,000,000	33,038,000,000
Gross margin	55,689,000,000 [2]	52,540,000,000	60,542,000,000
Research and development	13,037,000,000	11,988,000,000	12,046,000,000
Sales and marketing	15,539,000,000	14,697,000,000	15,713,000,000
General and administrative	4,481,000,000	4,563,000,000	4,611,000,000
Impairment, integration, and restructuring	306,000,000	1,110,000,000	10,011,000,000
Operating income	22,326,000,000 [2]	20,182,000,000	18,161,000,000
Other income (expense), net	823,000,000	(431,000,000)	346,000,000
Income before income taxes	23,149,000,000	19,751,000,000	18,507,000,000
Provision for income taxes	1,945,000,000	2,953,000,000	6,314,000,000
Net income	21,204,000,000 [2,5]	16,798,000,000 [4]	12,193,000,000
Earnings per share:			
Basic	2.74 [2]	2.12	1.49
Diluted	2.71 [2,5]	2.10 [4]	1.48
Weighted average shares outstanding:			
Basic	7,746,000,000	7,925,000,000	8,177,000,000
Diluted	7,832,000,000	8,013,000,000	8,254,000,000
Cash dividends declared per common share	1.56	1.44	1.24

There are three Blocks. The first Block is a roll up of "Net income". The second Block is a hierarchy (or set) that represents a summary of earnings per share. The third Block is a hierarchy (or set) that represents a summary of weighted average shares outstanding.

Could have this information been presented in different manners? Sure. Could this information have been represented in a different manner? Could the meaning of the information have been different simply based on the preferences of the creator of the representation? Certainly not.

Blocks are about the objective representation of information, not about subjective and perhaps even arbitrary presentation choices which are consciously or sometimes even unconsciously made by accountants. Blocks are about structural rules, mechanical

[17] Microsoft, Income statement, http://www.xbrlsite.com/2017/Prototypes/Microsoft/evidence-package/#Rendering-StatementINCOMESTATEMENTS-us_gaap_StatementTable.html

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rules, mathematical rules, logical rules, and certain accounting rules that are all objective and not open for debate. That leaves the judgement to the professional accountants, hiding the technical details that they do not care about and should not have to concern themselves with to the software application to deal with.

If these ideas are discussed with a professional accountant, care needs to be taken to be sure that you are having the right discussion. The typical professional account will make the statement that everything within a financial report is subject to professional judgement which is simply not true. Professional accountants get no latitude as to whether a roll up should roll up, if a roll forward should roll forward or if a balance sheet balances. This logic is universal and to which all domains, even the domain of accounting, must subscribe. If explained to professional accountants correctly, the vast majority will concur with these ideas. Proof of this is that the vast majority of information reported within an XBRL-based report subscribes to these ideas.

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