

Narrative

A **scalar** is a fact which has no characteristics; it stands on its own. For example, the value of *pi* is a scalar, the value never changes; it always has the same value for everyone. (Pi or π is the ratio of a circle's circumference to its diameter and always has the value of equal to 3.14)

Fact Value
3.14

A financial report communicates **facts**. A fact defines a single, observable, reportable piece of information contained within a financial report, or fact value, contextualized for unambiguous interpretation or analysis by one or more distinguishing characteristics or aspects. For example, below are two facts with the values of “2,000” and “1,000”. However, the two facts above are not contextualized.

Fact Value
2,000
1,000

An **aspect** describes a fact. An aspect provides information necessary to describe a fact or distinguish one fact from another fact within a report. For example, below you see the concept aspect of the numbers “2,000” and “1,000” which relates to the concepts “Revenues” and “Net income” respectively:

Concept Aspect	Fact Value
Revenues	2,000
Net income	1,000

To fully describe a fact you need more than just one aspect. In XBRL-based financial reports, a fact must always provide three **core aspects**: *reporting entity* that reported the fact, *calendar period* of the reported fact, and the *concept* that describes the reported fact. Below you see two facts which are characterized by three core aspects which are used to differentiate the two facts from one another.

Reporting Entity Aspect	Calendar Period Aspect	Concept Aspect	Fact Value
ABC Company	Jan 1, 2019 to Dec 31, 2019	Revenues	2,000
ABC Company	Jan 1, 2019 to Dec 31, 2019	Net income	1,000

In XBRL-based financial reports, in addition to the core aspects that you always must use, creators of reports can also provide additional **noncore aspects**. A noncore aspect is simply some additional aspect that is created to further distinguish facts beyond the capabilities of the three core aspects. Below you see the noncore aspect “Legal Entity Aspect” has been added to the two facts we have been working with:

Reporting Entity Aspect	Legal Entity Aspect	Calendar Period Aspect	Concept Aspect	Fact Value
ABC Company	Consolidated entity	Jan 1, 2019 to Dec 31, 2019	Revenues	2,000
ABC Company	Consolidated entity	Jan 1, 2019 to Dec 31, 2019	Net income	1,000

Facts can be numeric or nonnumeric. Numeric facts require additional information to describe the units of the numeric fact and the rounding that is used to report the numeric fact. **Units** and **rounding** are properties of the fact value that provide information necessary to describe numeric fact values. Below you see that the units of “US Dollars” and that the rounding of “Thousands of dollars”:

Reporting Entity Aspect	Legal Entity Aspect	Calendar Period Aspect	Concept Aspect	Fact Value	Units	Rounding
ABC Company	Consolidated entity	Jan 1, 2019 to Dec 31, 2019	Revenues	2,000	US Dollars	Thousands of dollars
ABC Company	Consolidated entity	Jan 1, 2019 to Dec 31, 2019	Net income	1,000	US Dollars	Thousands of dollars

To summarize where we are thus far and to be crystal clear; below you see one fact. That single fact is characterized by a set of four aspects. The numeric fact value is described as having units of “US Dollars” and that the fact value is rounded to the nearest “Thousands of dollars”.

Reporting Entity Aspect	Legal Entity Aspect	Calendar Period Aspect	Concept Aspect	Fact Value	Units	Rounding
ABC Company	Consolidated entity	Jan 1, 2019 to Dec 31, 2019	Revenues	2,000	US Dollars	Thousands of dollars

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 financial report. A common synonym for fact set is fact table. Below you see three facts that make up a fact set that are used to describe the breakdown of revenues by geographic area.

Reporting Entity Aspect	Legal Entity Aspect	Geographic Area Aspect	Calendar Period Aspect	Concept Aspect	Fact Value	Units	Rounding
ABC Company	Consolidated entity	All Geographic Areas Combined	Jan 1, 2019 to Dec 31, 2019	Revenues	2,000	US Dollars	Thousands of dollars
ABC Company	Consolidated entity	North America	Jan 1, 2019 to Dec 31, 2019	Revenues	1,000	US Dollars	Thousands of dollars
ABC Company	Consolidated entity	South America	Jan 1, 2019 to Dec 31, 2019	Revenues	1,000	US Dollars	Thousands of dollars

Rules guide, control, suggest, or influence behavior. Rules cause things to happen, prevent things from happening, or suggest that it might be a good idea if something did or did not happen. Rules help shape judgment, help make decisions, help evaluate, help shape behavior.

Don't make the mistake of thinking that business rules are completely inflexible and that you cannot break rules. Sure, maybe there are some rules that can never be broken. Maybe there are some rules that you can break. It helps to think of breaking rules as penalties in a football game. The point is that the guidance, control, suggestions, and influence offered by business rules are a choice of business professionals. The meaning of a business rule is separate from the level of enforcement someone might apply to the rule.

A rule states a fact about the world.

So considering our fact set below we know that the value “2,000” is for the concept “Revenues”, for the period “Jan 1, 2019 to Dec 31, 2019”, relates to the legal entity “Consolidated entity”, of the reporting entity “ABC Company” and is the total of all “Geographic Areas”. “North America” and “South America” are part of the whole “All Geographic Areas Combined”. A rule that expresses that relationship might be expressed as:

“All Geographic Areas Combined = North America + South America”.

Rules both describe and can be used to verify that reported facts are consistent with the provided description. There are many different types of rules including mathematical, structural, mechanical, logical, and accounting related rules.

Reporting Entity Aspect	Legal Entity Aspect	Geographic Area Aspect	Calendar Period Aspect	Concept Aspect	Fact Value	Units	Rounding
ABC Company	Consolidated entity	All Geographic Areas Combined	Jan 1, 2019 to Dec 31, 2019	Revenues	2,000	US Dollars	Thousands of dollars
ABC Company	Consolidated entity	North America	Jan 1, 2019 to Dec 31, 2019	Revenues	1,000	US Dollars	Thousands of dollars
ABC Company	Consolidated entity	South America	Jan 1, 2019 to Dec 31, 2019	Revenues	1,000	US Dollars	Thousands of dollars

Grain is the level of depth of information or granularity. The lowest level of granularity is the actual transaction, event, circumstance, or other phenomenon represented in a financial report.

Considering the fact set you see below the fact outlined in red is one level of granularity as contrast to the other two facts that are outlined in green which provides the same information as is provided by the fact outlined in red, but at a different level of granularity.

Reporting Entity Aspect	Legal Entity Aspect	Geographic Area Aspect	Calendar Period Aspect	Concept Aspect	Fact Value	Units	Rounding
ABC Company	Consolidated entity	All Geographic Areas Combined	Jan 1, 2019 to Dec 31, 2019	Revenues	2,000	US Dollars	Thousands of dollars
ABC Company	Consolidated entity	North America	Jan 1, 2019 to Dec 31, 2019	Revenues	1,000	US Dollars	Thousands of dollars
ABC Company	Consolidated entity	South America	Jan 1, 2019 to Dec 31, 2019	Revenues	1,000	US Dollars	Thousands of dollars

And so hopefully you get an idea of the logical model of a financial report. Now we want to shift gears a bit and be a bit more specific as to how financial reports are represented using XBRL.

An **information model description** is created to represent each fragment of a report using the XBRL format. The following pieces, or report elements, are used to construct the information model description: Network, Table, Axis, Member, Line Items, Abstract, and Concept.

Below you see the information model description of the *structure* of a fragment of a report, in this case one fact set which is used to describe the components of inventory:

#	Label	Report Element Class	Period Type	Balance	Name
1	Inventory, by Component [Table]	[Table]			gaap:InventoryByComponentTable
2	Legal Entity [Axis]	[Axis]			frm:LegalEntityAxis
3	Consolidated Entity [Member]	[Member]			frm:ConsolidatedEntityMember
4	Inventory, by Component [Line Items]	[Line Items]			gaap:InventoryByComponentLineItems
5	Inventory, by Component [Roll Up]	[Abstract]			gaap:InventoryByComponentRollUp
6	Finished Goods	[Concept] Monetary	As Of	Debit	gaap:FinishedGoods
7	Work in Progress	[Concept] Monetary	As Of	Debit	gaap:WorkInProgress
8	Raw Material	[Concept] Monetary	As Of	Debit	gaap:RawMaterial
9	Inventory	[Concept] Monetary	As Of	Debit	gaap:Inventory

Something is important to point out. We mentioned that in XBRL you have core aspects and noncore aspects. In the typical software application created today, the core aspects reporting entity and calendar period are not represented in the information model description that is typically created by software applications.

Below you see a more true information model description which includes the reporting entity and the calendar period. Also, per the US GAAP XBRL Taxonomy, the IFRS XBRL Taxonomy the term “[Axis]” is used in place of “Aspect”. Axis and aspect are synonyms and mean the same thing. Also “Period” and “Calendar Period” are the same thing.

#	Label	Report Element Class	Period Type	Balance	Name
1	Inventory, by Component [Table]	[Table]			gaap:InventoryByComponentTable
2	Reporting Entity [Axis]	[Axis]			xbri:ReportingEntityAxis
3	http://regulator.gov/id#1234567890	[Member]			http://regulator.gov/id#1234567890
4	Period [Axis]	[Axis]			xbri:PeriodAxis
5	12/31/2010	[Member]			12/31/2010
6	12/31/2009	[Member]			12/31/2009
7	Legal Entity [Axis]	[Axis]			frm:LegalEntityAxis
8	Consolidated Entity [Member]	[Member]			frm:ConsolidatedEntityMember
9	Inventory, by Component [Line Items]	[Line Items]			gaap:InventoryByComponentLineItems
10	Inventory, by Component [Roll Up]	[Abstract]			gaap:InventoryByComponentRollUp
11	Finished Goods	[Concept] Monetary	As Of	Debit	gaap:FinishedGoods
12	Work in Progress	[Concept] Monetary	As Of	Debit	gaap:WorkInProgress
13	Raw Material	[Concept] Monetary	As Of	Debit	gaap:RawMaterial
14	Inventory	[Concept] Monetary	As Of	Debit	gaap:Inventory

Another part of the information model description is the *mathematical rules* that are used to describe and verify the roll up relations of the concepts that are a part of the information model description. Here are the roll up relations that are part of this information model description.

#	Label	Report Element Class	Weight	Balance	Name
1	Inventory	[Concept] Monetary			gaap:Inventory
2	Finished Goods	[Concept] Monetary	+1	Debit	gaap:FinishedGoods
3	Work in Progress	[Concept] Monetary	+1	Debit	gaap:WorkInProgress
4	Raw Material	[Concept] Monetary	+1	Debit	gaap:RawMaterial

Another part of the information model description is the facts within the fact set themselves. Here is the fact set or the fact table for the facts that go with the information model description provided above.

#	Reporting Entity [Aspect]	Period [Aspect]	Concept [Aspect]	Legal Entity [Aspect]	Fact Value	Unit	Rounding
1	http://regulator.gov/id#1234567890	12/31/2010	Finished Goods	Consolidated Entity [Member]	600,000	USD	Thousands
2	http://regulator.gov/id#1234567890	12/31/2009	Finished Goods	Consolidated Entity [Member]	600,000	USD	Thousands
3	http://regulator.gov/id#1234567890	12/31/2010	Work in Progress	Consolidated Entity [Member]	300,000	USD	Thousands
4	http://regulator.gov/id#1234567890	12/31/2009	Work in Progress	Consolidated Entity [Member]	300,000	USD	Thousands
5	http://regulator.gov/id#1234567890	12/31/2010	Raw Material	Consolidated Entity [Member]	100,000	USD	Thousands
6	http://regulator.gov/id#1234567890	12/31/2009	Raw Material	Consolidated Entity [Member]	100,000	USD	Thousands
7	http://regulator.gov/id#1234567890	12/31/2010	Inventory	Consolidated Entity [Member]	1,000,000	USD	Thousands
8	http://regulator.gov/id#1234567890	12/31/2009	Inventory	Consolidated Entity [Member]	1,000,000	USD	Thousands

A software application takes the information model description structure, the information model description rules provided, the facts that are included within the fact set, and known best practices for rendering a business report that are coded into the software application in some manner and then generates a human-readable rendering of the reported information for a fragment of a report.

The following is the rendering of the inventory components disclosure that we are working with above:

Reporting Entity [Aspect]	http://regulator.gov/id#1234567890	
Legal Entity [Aspect]	Consolidated Entity [Member]	
	Period [Aspect]	
Concept [Aspect]	12/31/2020	12/31/2019
Inventory, by Component [Roll Up]		
Finished Goods	600,000	600,000
Work in Progress	300,000	300,000
Raw Material	100,000	100,000
Inventory	1,000,000	1,000,000

Different software applications will provide slightly different renderings using the same XBRL-based input information.

Component: (Network and Table)		
Network	JG - Schedule - Inventory, by Component	
Table	Inventory, by Component [Table]	
Reporting Entity [Axis]	1234567890 http://regulator.gov/id	
Legal Entity [Axis]	Consolidated Entity [Member]	
Unit [Axis]	USD	
	Period [Axis] ▼	
Inventory, by Component [Line Items]	2010-12-31	2009-12-31
Inventory, by Component [Roll Up]		
Finished Goods	600	600
Work in Progress	300	300
Raw Material	100	100
Inventory	1,000	1,000

Model structure:

Label	Report Element Class	Period	Balance	Preferred Label Role	Name
▼ Inventory, by Component [Table]	[Table]			Standard Label	gaap:InventoryByComponentTable
▼ Legal Entity [Axis]	[Axis]			Standard Label	frm:LegalEntityAxis
Consolidated Entity [Member]	[Member]			Standard Label	frm:ConsolidatedEntityMember
▼ Inventory, by Component [Line Items]	[LineItems]			Standard Label	gaap:InventoryByComponentLineItems
▼ Inventory, by Component [Roll Up]	[Abstract]			Standard Label	gaap:InventoryByComponentRollUp
Finished Goods	[Concept] Monetary	As Of	Debit	Standard Label	gaap:FinishedGoods
Work in Progress	[Concept] Monetary	As Of	Debit	Standard Label	gaap:WorkInProgress
Raw Material	[Concept] Monetary	As Of	Debit	Standard Label	gaap:RawMaterial
Inventory	[Concept] Monetary	As Of	Debit	Standard Label	gaap:Inventory

Rules definition:

Label	Report Element Class	Balance	Weight	Name
▼ Inventory, by Component [Table]	[Table]		0	gaap:InventoryByComponentTable
▼ Inventory	[Concept] Monetary	Debit	0	gaap:Inventory
Finished Goods	[Concept] Monetary	Debit	1	gaap:FinishedGoods
Work in Progress	[Concept] Monetary	Debit	1	gaap:WorkInProgress
Raw Material	[Concept] Monetary	Debit	1	gaap:RawMaterial

Rules verification:

Label	Rendered Value	Op	Reported Value	Calculated Value	Balance	Result	Name
▼ Inventory, by Component [Line Items]							gaap:InventoryByComponentLineItems
▼ Inventory, by Component [Roll Up]							gaap:InventoryByComponentRollUp
Finished Goods	600	+	600		Debit		gaap:FinishedGoods
Work in Progress	300	+	300		Debit		gaap:WorkInProgress
Raw Material	100	+	100		Debit		gaap:RawMaterial
Inventory	1,000		1,000	1,000	Debit	Verified	gaap:Inventory

Label	Rendered Value	Op	Reported Value	Calculated Value	Balance	Result	Name
▼ Inventory, by Component [Line Items]							gaap:InventoryByComponentLineItems
▼ Inventory, by Component [Roll Up]							gaap:InventoryByComponentRollUp
Finished Goods	600	+	600		Debit		gaap:FinishedGoods
Work in Progress	300	+	300		Debit		gaap:WorkInProgress
Raw Material	100	+	100		Debit		gaap:RawMaterial
Inventory	1,000		1,000	1,000	Debit	Verified	gaap:Inventory

Information about the **properties** of each **report element** which makes up the information model definition should be accessible to the user of the business report:

Report Element Properties	
Properties	To Do
Report Standard Label	Inventory
Base Standard Label	
Documentation	Duis sapien diam, dapibus sed, dictum quis, interdum ac, erat. Suspendisse urna. Proin non mauris. Proin sed odio. Phasellus sagittis orci quis orci.
Properties	
Class	[Concept] Monetary
Prefix	gaap
Name	gaap:Inventory
Other	
Balance Type	Debit
Period Type	As Of (instant)
Data Type	Monetary (xbrli:monetaryItemType)
ID	gaap_Inventory

Information about the **properties** of each **fact** which is represented within the report is accessible to the user of the financial report:

Fact Characteristics and Properties	
Properties	To Do
Reporting Entity	1234567890 http://regulator.gov/id
Period	2010-12-31
Legal Entity [Axis]	Consolidated Entity [Member]
Concept	Inventory
Name	gaap:Inventory
Prefix	gaap
Balance Type	Debit
Period Type	As Of (instant)
Data Type	Monetary (xbrli:monetaryItemType)
Fact Value	1000
Units	iso4217:USD
Decimals (rounding)	0