

*XBRL Fundamentals for the Complete Beginner*

# Understanding the Role of XBRL

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# Role of General Purpose Financial Report

- A general purpose financial report is a “**true and fair**” representation of the financial status and financial performance of an economic entity.
- It is NOT “the entity”.
- It is a “close-to-reality” information model, it is not the entity itself.
- Purpose is to exchange information from an information bearer (entity) to an information consumer (investor).

# General Purpose Financial Statement

Two economic entities, A and B, each have information about their financial position and financial performance. They must communicate their information to an investor who is making investment decisions which will make use of the combined information so as to draw some conclusions. All three parties (economic entity A, economic entity B, investor) are using a **common set of basic logical principles** (facts, statements, deductive reasoning, etc.), **common financial reporting standard terms and associations between terms** (terms, associations, structures, assertions for a reporting scheme US GAAP, IFRS, IPSAS, etc.), and a **common world view** so they should be able to communicate this information fully, so that any inferences which, say, the investor draws from economic entity A's information should also be derivable by economic entity A itself using common basic logical principles, common financial reporting standards (terms, associations, structures, assertions), and common world view; and vice versa; and similarly for the investor and economic entity B.

# Notion of Articulation (many parts are mathematically connected)

Cash Flow [Line Items]		Period [Axis]
		2020-01-01 - 2020-12-31
<b>Net Cash Flow [Roll Up]</b>		
Net Cash Flow Operating Activities		1,500
Net Cash Flow Investing Activities		1,000
Net Cash Flow Financing Activities		1,000
<b>Net Cash Flow</b>		<b>3,500</b>

$\$NetCashFlow=3500 = (\$NetCashFlowOperatingActivities=1500 + \$NetCashFlowFinancingActivities=1000 + \$NetCashFlowInvestingActivities=1000)$   
 $\$Assets\_BalanceStart=0 + \$NetCashFlow=3500 = \$Assets\_BalanceEnd=3500$

Net Assets [Line Items]		Period [Axis]
		2020-12-31 2019-12-31
<b>Net Assets [Roll Up]</b>		
Assets		3,500
Liabilities		0
<b>Net Assets</b>		<b>3,500</b>

$\$NetAssets=3500 = (\$Assets=3500 - \$Liabilities=0)$   
 $\$NetAssets=0 = (\$Assets=0 - \$Liabilities=0)$

Balance Sheet [Line Items]		Period [Axis]
		2020-12-31 2019-12-31
<b>Assets [Roll-Up]</b>		
Current Assets		500
Noncurrent Assets		3,000
<b>Assets</b>		<b>3,500</b>
<b>Liabilities and Equity [Roll-Up]</b>		
<b>Liabilities [Roll-Up]</b>		
Current Liabilities		0
Noncurrent Liabilities		0
<b>Liabilities</b>		<b>0</b>
<b>Equity [Roll-Up]</b>		
Equity Attributable To Controlling Interests		3,000
Equity Attributable to Noncontrolling Interests		500
<b>Equity</b>		<b>3,500</b>
<b>Liabilities and Equity</b>		<b>3,500</b>

$\$Assets=3500 = (\$Liabilities=0 + \$Equity=3500)$   
 $\$Assets=0 = (\$Liabilities=0 + \$Equity=0)$   
 $\$Liabilities=0 = (\$CurrentLiabilities=0 + \$NoncurrentLiabilities=0)$   
 $\$Liabilities=0 = (\$CurrentLiabilities=0 + \$NoncurrentLiabilities=0)$   
 $\$Equity=3500 = (\$EquityAttributableToControllingInterests=3000 + \$EquityAttributableToNoncontrollingInterests=500)$   
 $\$Equity=0 = (\$EquityAttributableToControllingInterests=0 + \$EquityAttributableToNoncontrollingInterests=0)$

$0 = ((\$Equity\_BalanceStart=0 + (\$Revenues=7000 - \$Expenses=3000) + (\$Gains=1000 - \$Losses=2000)) + (\$InvestmentByOwners=1000 - \$DistributionsToOwners=500)) + (\$Liabilities\_BalanceEnd=0 - \$Assets\_BalanceEnd=3500)$

Prior Period Errors [Line Items]		Report Date [Axis]	Period [Axis]
			2019-12-31
<b>Prior Period Errors [Adjustment]</b>			
Equity, Originally Stated		Prior Report [Member]	2,000
Changes in Accounting Policy		Current Report [Member]	(1,500)
Correction of an Error		Current Report [Member]	(500)
<b>Equity, Restated</b>		<b>Current Report [Member]</b>	<b>0</b>

$\$Restated=0 = (\$OriginallyStated=2000 + \$CorrectionOfAnError=-500 + \$ChangesInAccountingPolicy=-1500)$

Changes in Equity [Line Items]		Period [Axis]
		2020-01-01 - 2020-12-31
<b>Changes in Equity [Roll Forward]</b>		
Equity, Beginning Balance		0
Comprehensive Income		3,000
Investments by Owners		1,000
(Distributions to Owners)		(500)
<b>Equity, Ending Balance</b>		<b>3,500</b>

Comprehensive Income Statement [Line Items]		Period [Axis]
		2020-01-01 - 2020-12-31
<b>Comprehensive Income [Roll Up]</b>		
Net Income		3,000
Other Comprehensive Income		0
<b>Comprehensive Income</b>		<b>3,000</b>

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

$\$NetIncome=3000 = (\$Revenues=7000 - \$Expenses=3000 + \$Gains=1000 - \$Losses=2000)$

Prior Period Errors [Line Items]	Period [Axis]					
	Restatement [Axis]	Restatement [Axis]				
	2020-12-31	2019-12-31				
		Restated [Member]	Changes in Accounting Policy [Member]	Correction of Accounting Errors [Member]	Previously Stated [Member]	Restated [Member]
Equity		3,500	(1,500)	(500)	2,000	0

$\$Total=0 \text{ eq } \text{sum}(\$Each=[2000 - 1500 - 500])$

Segment Revenues [Line Items]		Period [Axis]			
		2020-01-01 - 2020-12-31			
		Segments [Axis]			
		Segment Alpha [Member]	Segment Bravo [Member]	Segment Charlie [Member]	All Segments [Member]
<b>Segment Revenues [Set]</b>					
Revenues		1,000	4,000	2,000	<b>7,000</b>

$\$Total=7000 \text{ eq } \text{sum}(\$Each=[4000 1000 2000])$

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

$\$NetIncome=3000 = (\$IncomeFromNormalActivitiesOfEntity=2000 + \$IncomeFromPeripheralOrIncidentalTransactionsOfEntity=1000)$

$\$Actual=7000 = (\$Budget=6000 + \$Variance=1000)$   
 $\$Actual=3000 = (\$Budget=2000 + \$Variance=1000)$   
 $\$Actual=1000 = (\$Budget=750 + \$Variance=250)$   
 $\$Actual=2000 = (\$Budget=1000 + \$Variance=1000)$   
 $\$Actual=3000 = (\$Budget=3750 + \$Variance=-750)$

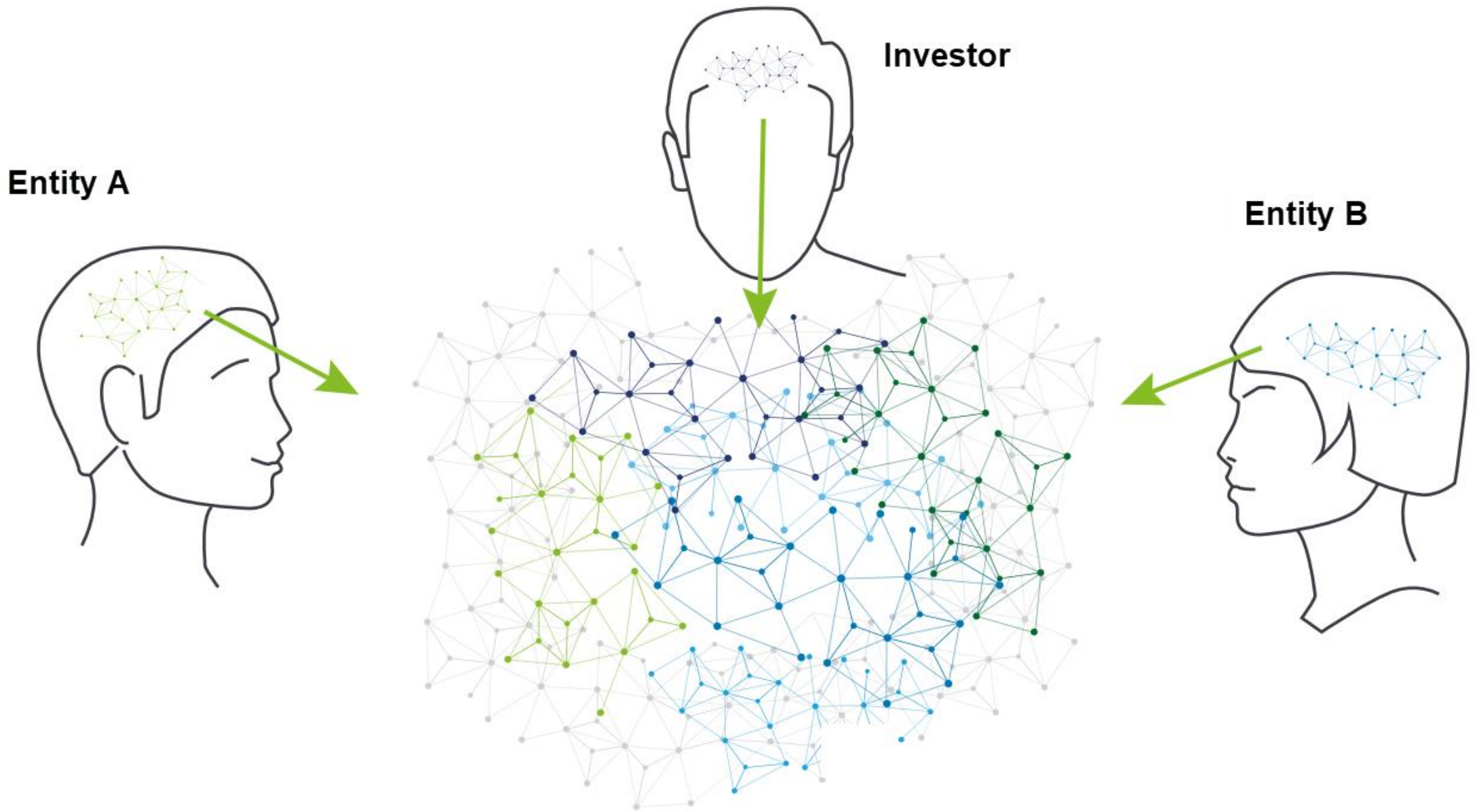
Variance Analysis [Line Items]		Period [Axis]		
		2020-01-01 - 2020-12-31		
		Scenario [Axis]		
		Budgeted [Member]	Variance [Member]	Actual [Member]
<b>Variance Analysis [Roll Up]</b>				
Revenues		6,000	1,000	7,000
(Expenses)		(2,000)	(1,000)	(3,000)
Gains		750	250	1,000
(Losses)		(1,000)	(1,000)	(2,000)
<b>Net Income</b>		<b>3,750</b>	<b>(750)</b>	<b>3,000</b>

$\$NetIncome=3750 = (\$Revenues=6000 - \$Expenses=2000 + \$Gains=750 - \$Losses=1000)$   
 $\$NetIncome=-750 = (\$Revenues=1000 - \$Expenses=1000 + \$Gains=250 - \$Losses=1000)$   
 $\$NetIncome=3000 = (\$Revenues=7000 - \$Expenses=3000 + \$Gains=1000 - \$Losses=2000)$

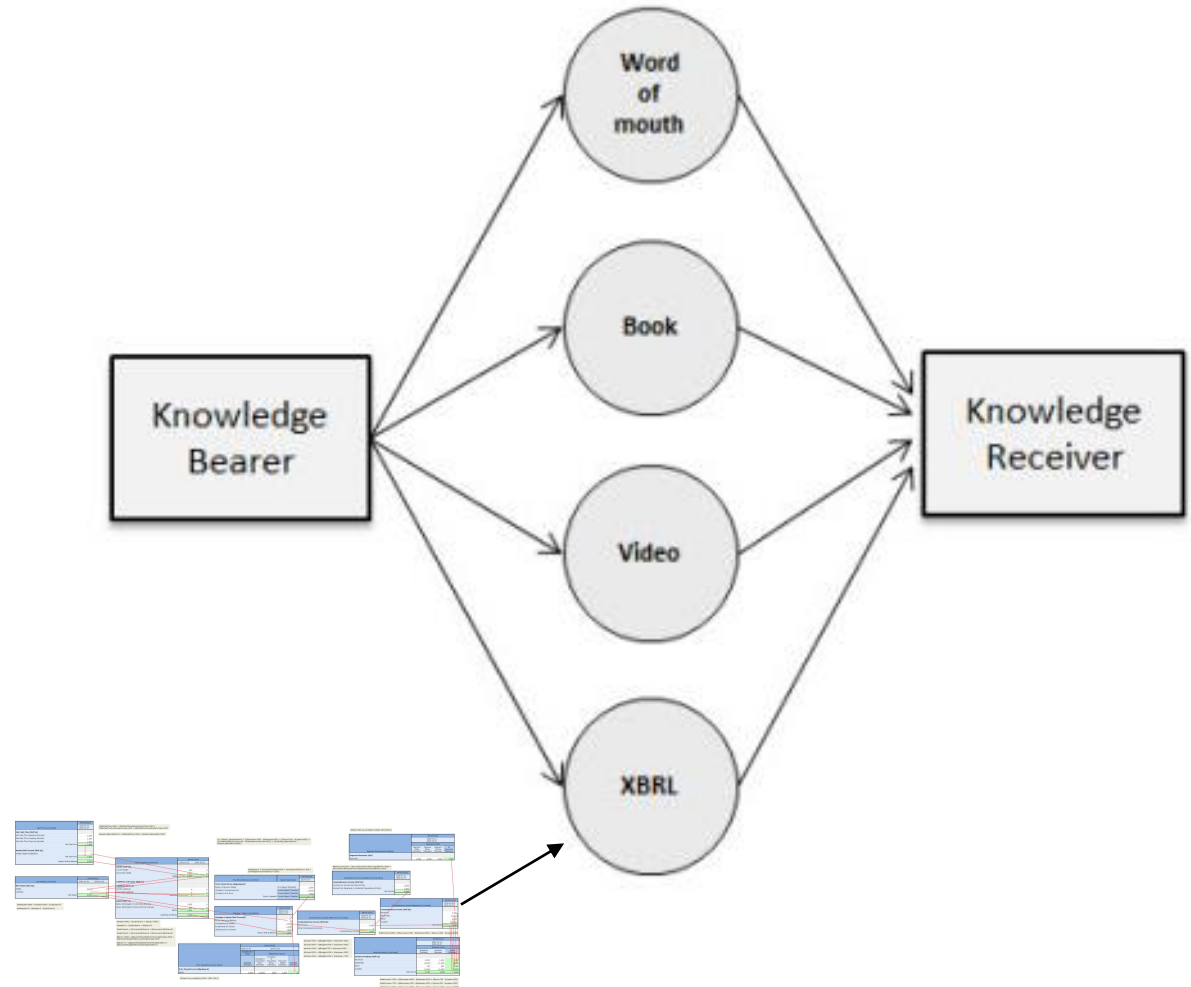
# General Purpose Financial Report is a **System**

- A general purpose financial report is a **system**.
- Many parts are mathematically connected.
- All parts are logically connected.
- Logical connections form patterns which can be leveraged.
- Patterns must be honored.
- That system should be **properly functioning** (i.e. not improperly functioning).
- “Properly functioning” means **complete, consistent, precise** (i.e. not ‘incomplete’, not ‘inconsistent’, not ‘imprecise’)





Graphic is a modified version of a graphic from this paper by Deloitte, see page 14,  
<https://www2.deloitte.com/content/dam/Deloitte/de/Documents/operations/knowledge-graphs-pov.pdf>

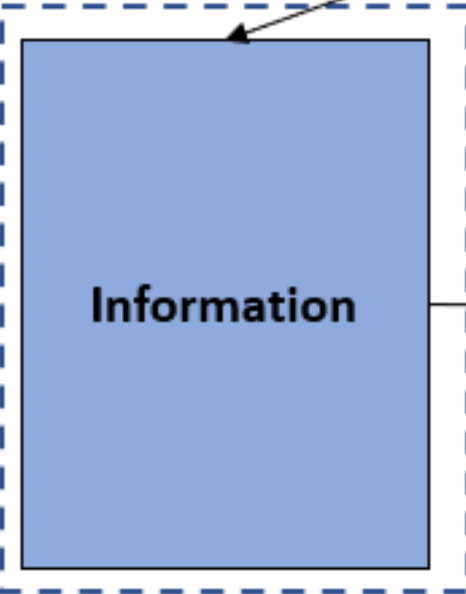




**Common Shared Background Knowledge;  
Common Shared Inference Logic;  
Common Shared World View;**

**Information Bearer**

(i.e. economic entity A, economic entity B)

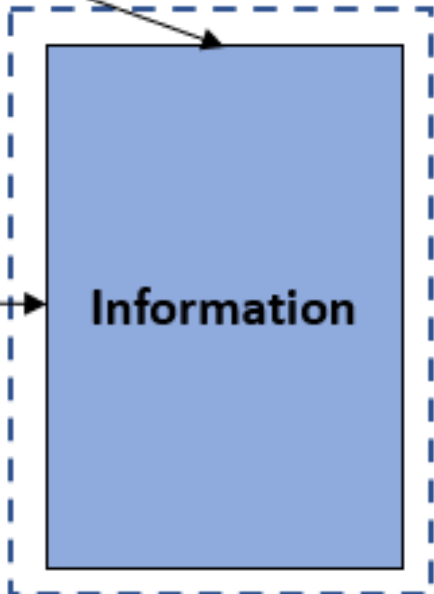


**Message** (general purpose financial report)

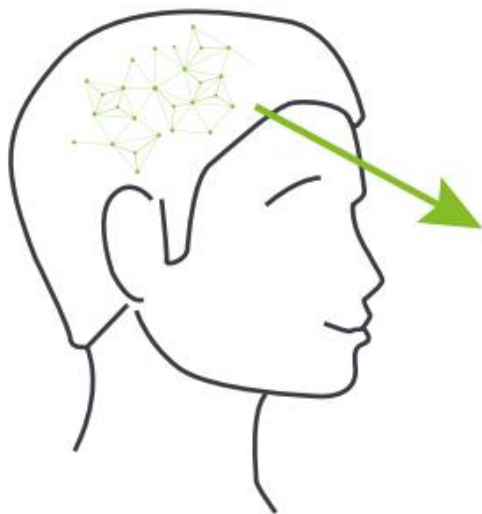


**Information Receiver**

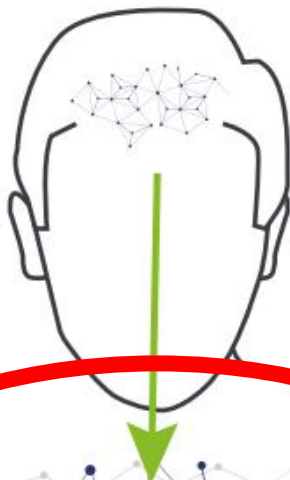
(i.e. investor, regulator, lender)



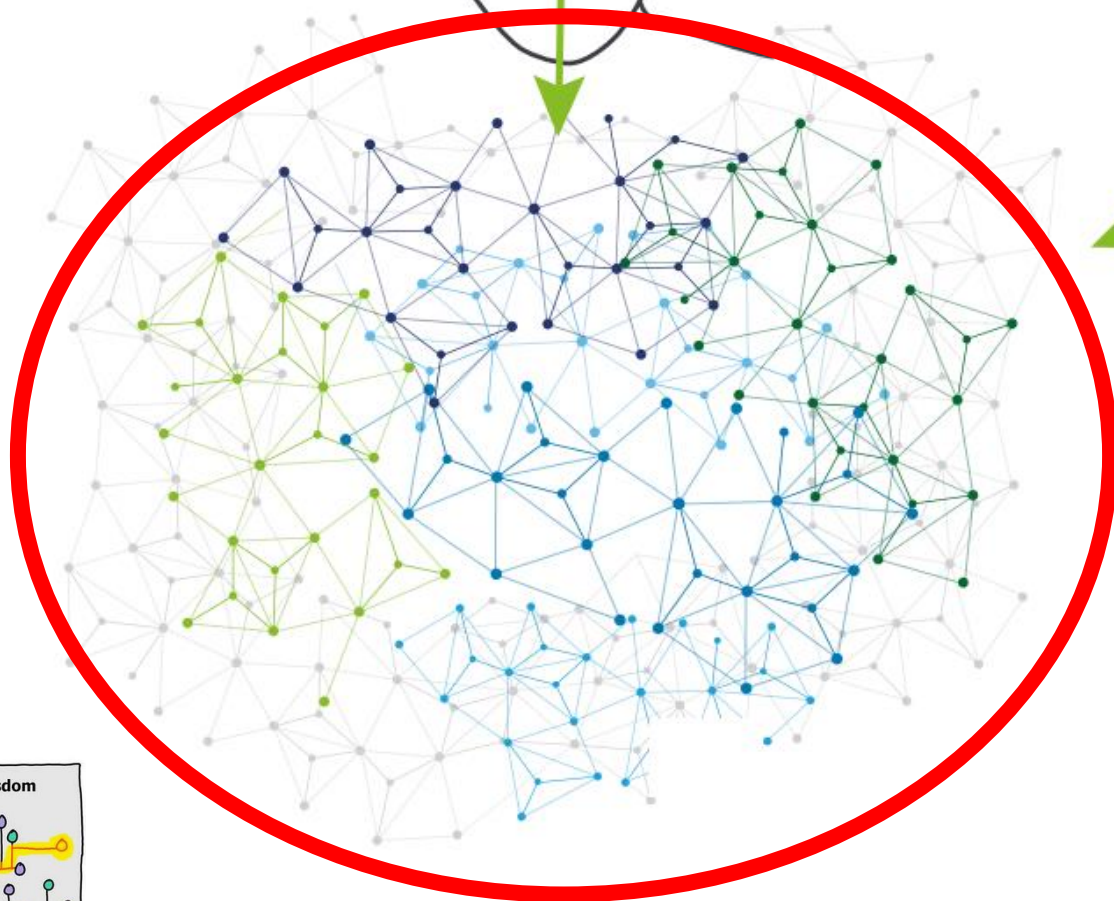
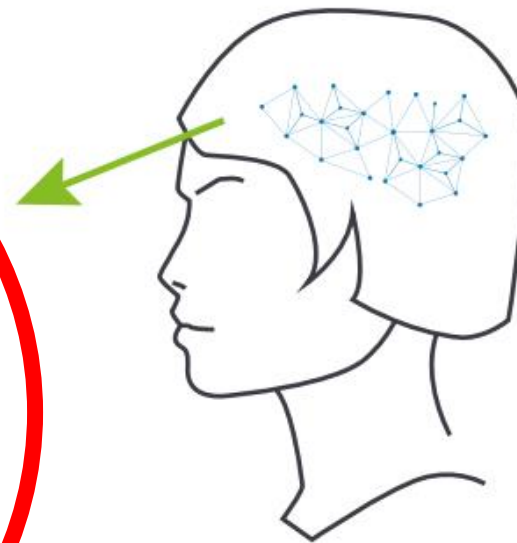
**Entity A**



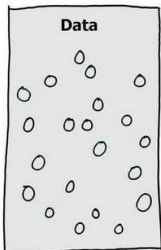
**Investor**



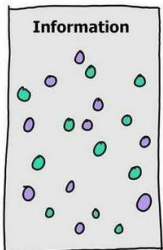
**Entity B**



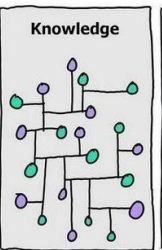
**Data**



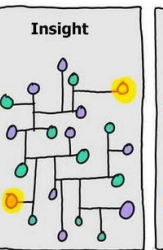
**Information**



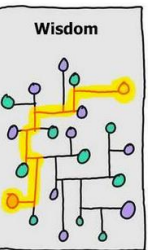
**Knowledge**

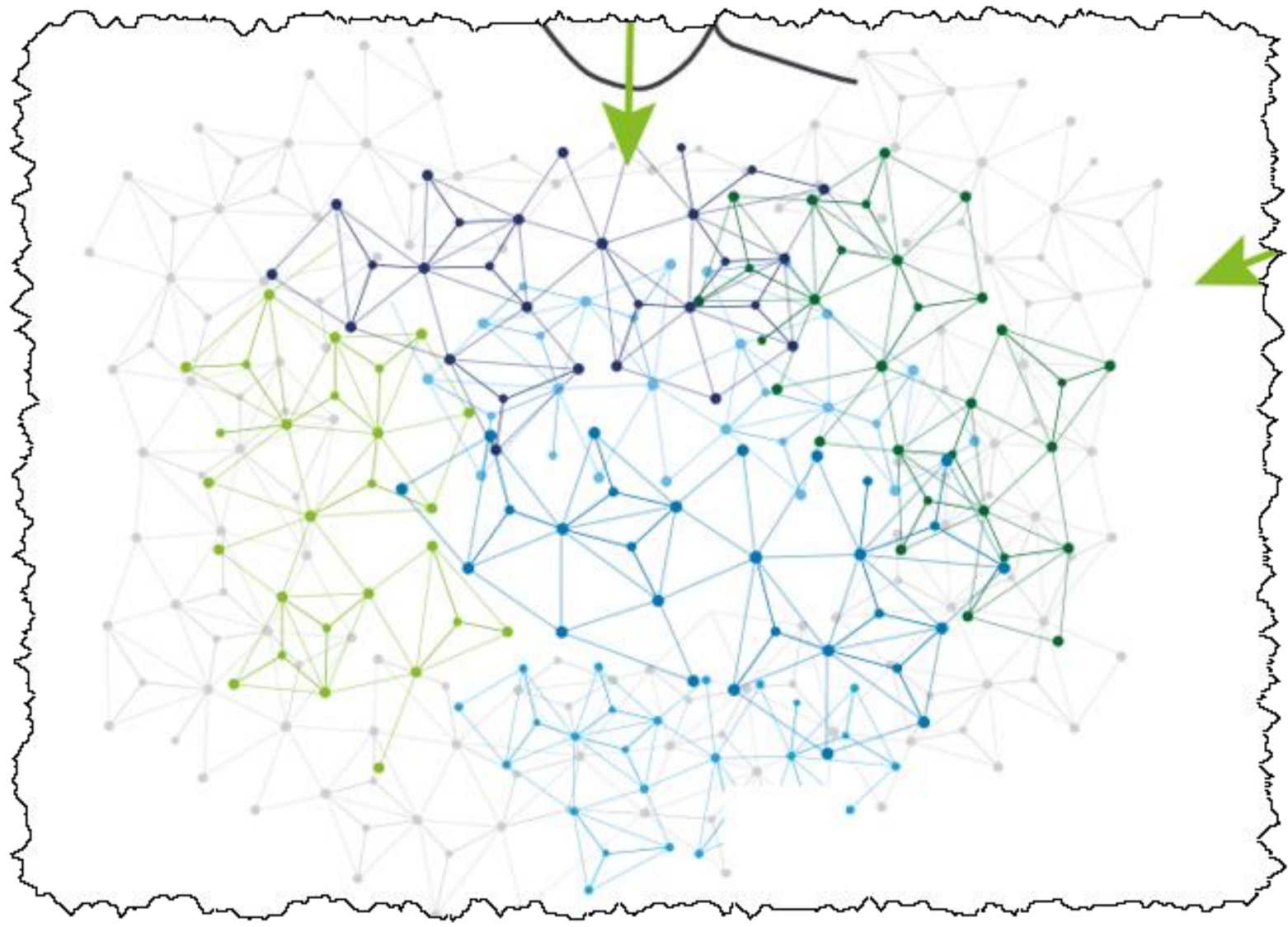


**Insight**



**Wisdom**

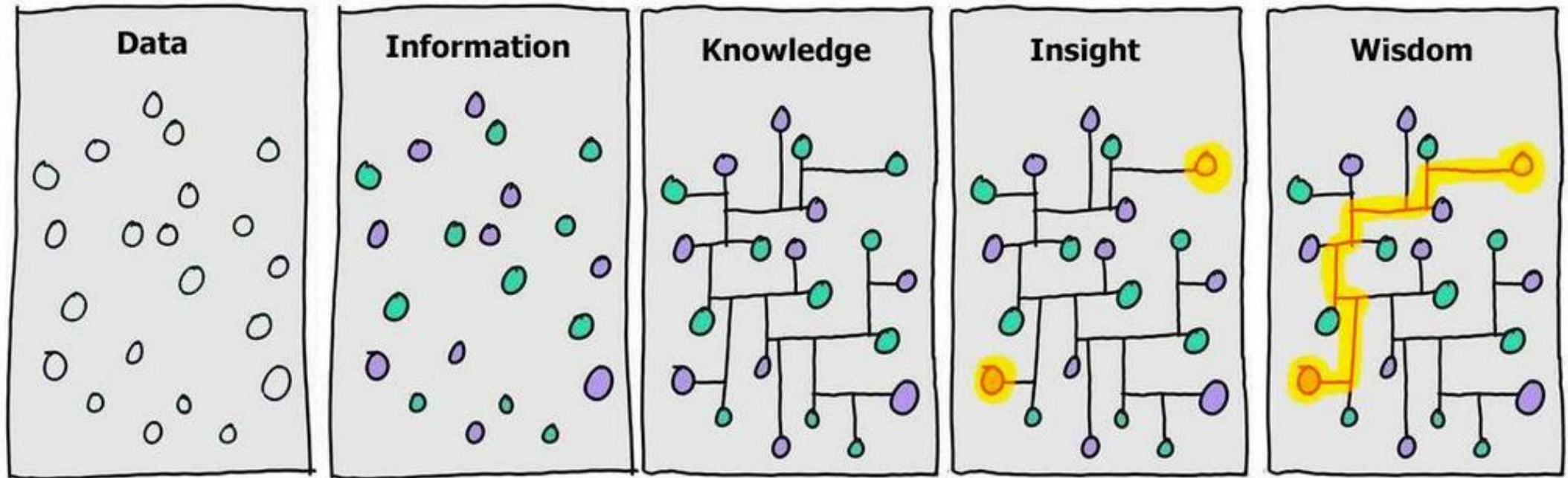




# Logical System

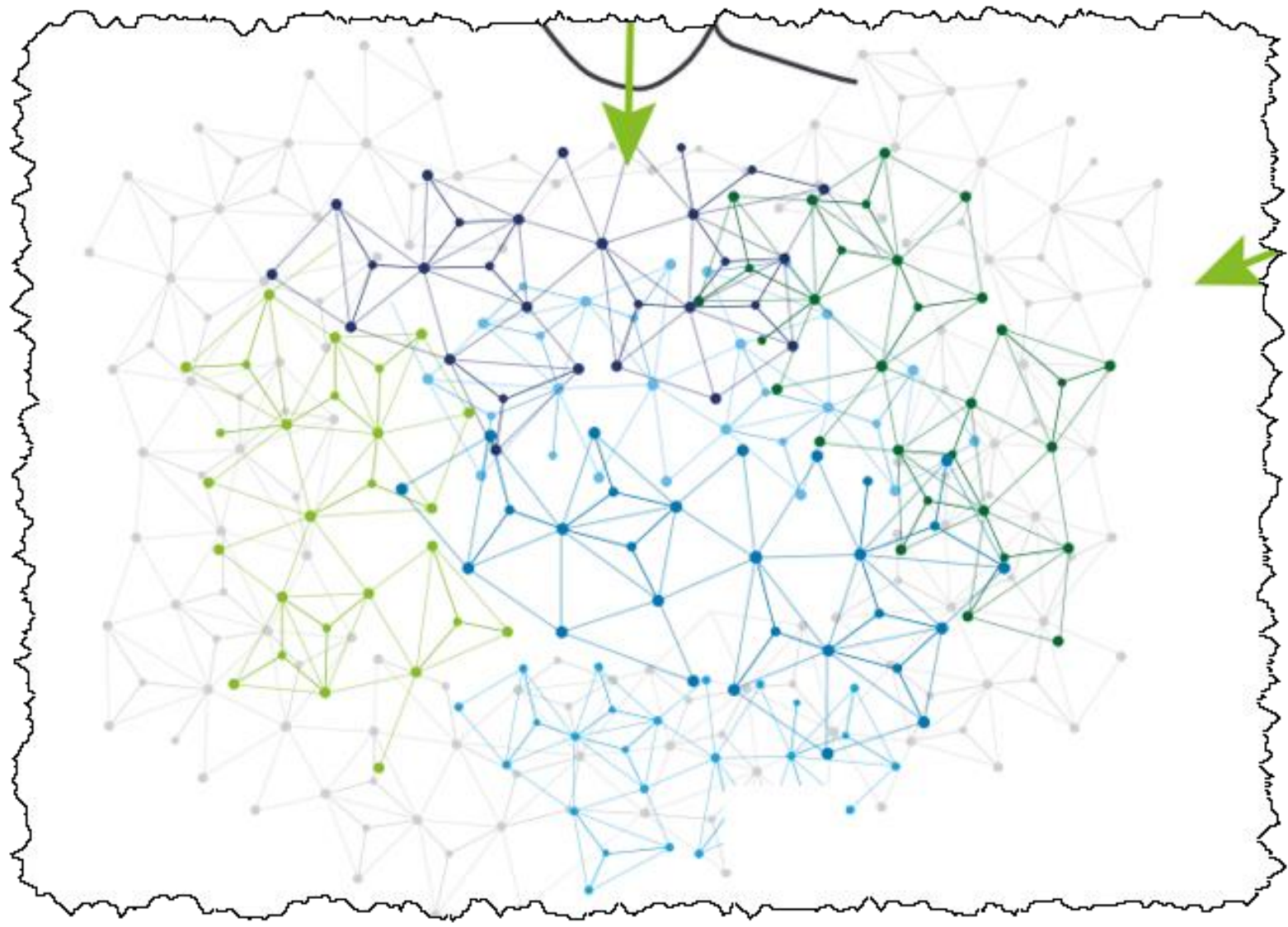
- Logical System
  - *Logical Theory (Logical Theory Describing Financial Report)*
    - **Models** (*set of structures*)
    - **Structures** (*set of statements*)
    - **Statements**
      - **Terms** (*expressed using dictionary*)
      - **Associations** (*relations between terms*)
      - **Rules** (*what is permissible, what is not permissible*)
      - **Facts** (*information being reported*)

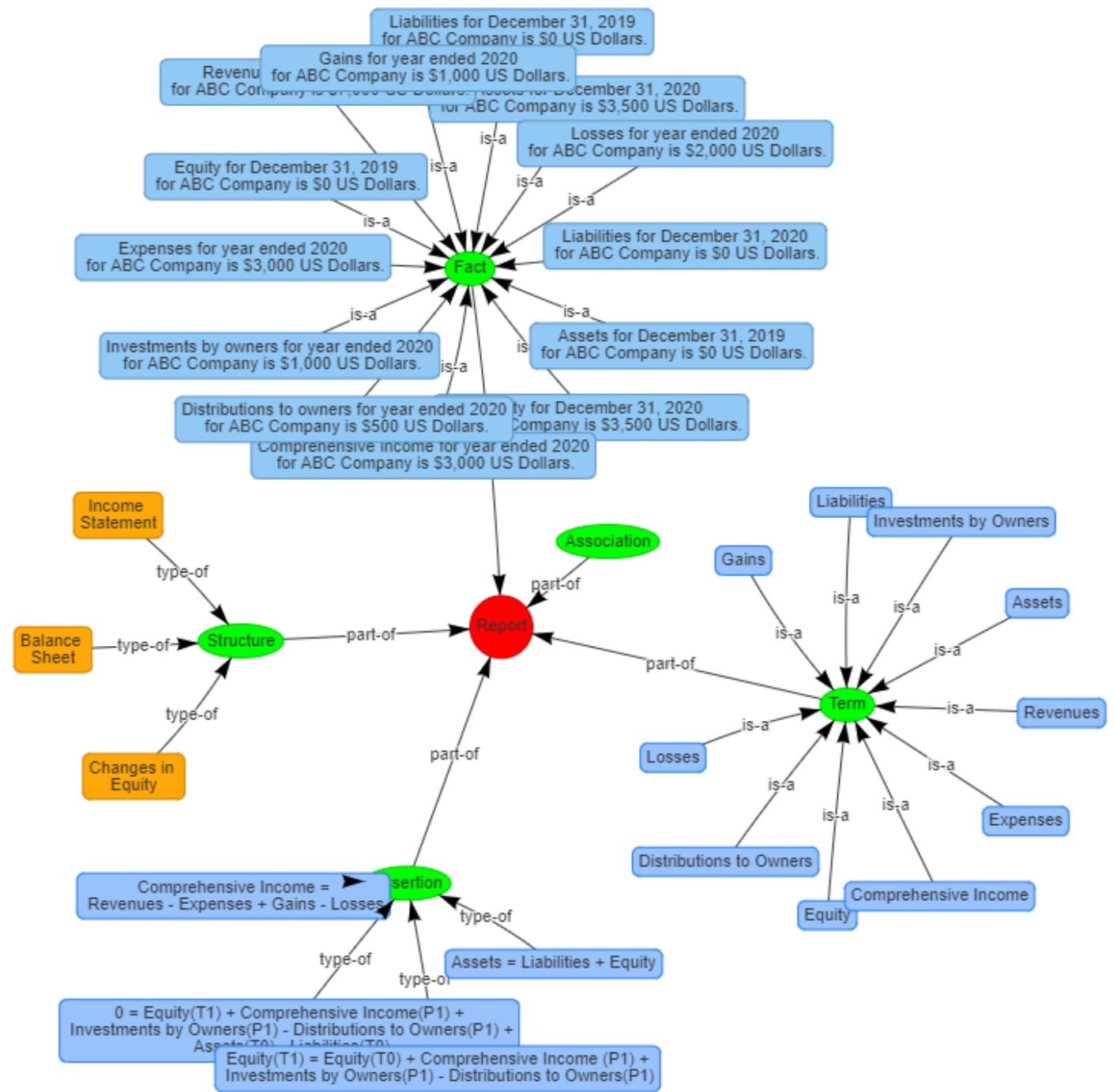
# Data, Information, Knowledge, Insight, Wisdom

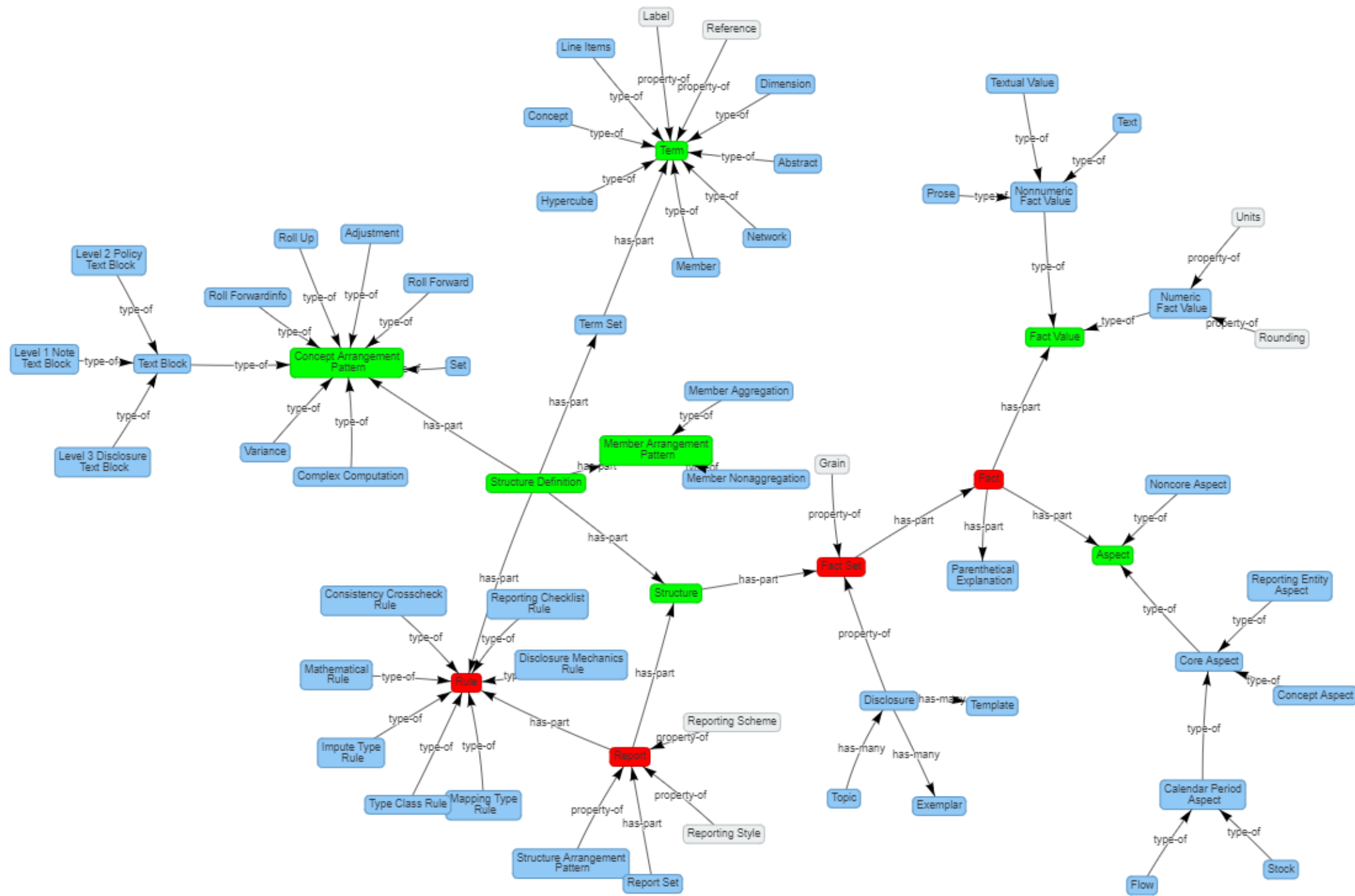


<https://random-blather.com/2014/04/28/information-isnt-power/>

<https://twitter.com/hughcards/status/423952995240648704>





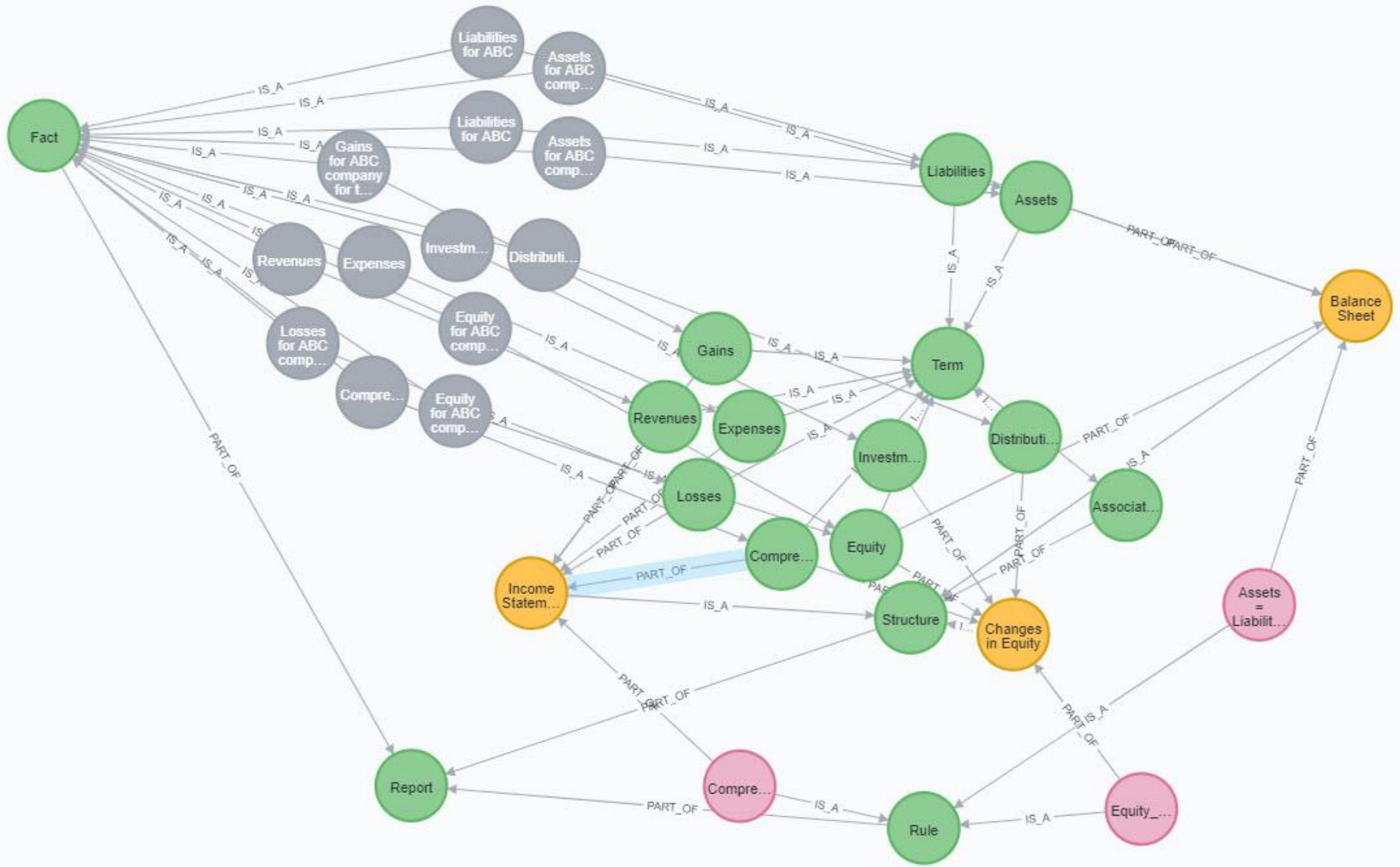




Graph

\*(35) Fact(13) Term(16) Rule(3) Structure(3)

\*(62) IS\_A(42) PART\_OF(20)





Consistent

Complete

Precise

Assets = 3,500<sup>T1</sup>; 0<sup>T0</sup>

Liabilities = 0<sup>T1</sup>; 0<sup>T0</sup>

Equity = 3,500<sup>T1</sup>; 0<sup>T0</sup>

Revenues = 7,000

Expenses = 3,000

Gains = 1,000

Losses = 2,000

Comprehensive income = 3,000

Investments by Owners = 1,000

Distributions to Owners = 500

Assets = Liabilities + Equity

Comprehensive Income =  
Revenues - Expenses + Gains - Losses

Equity<sup>T1</sup> = Equity<sup>T0</sup> + Comprehensive  
Income<sup>P1</sup> + Investments by Owners<sup>P1</sup> -  
Distributions to Owners<sup>P1</sup>

### Balance Sheet

Balance Sheet [Abstract]	Period [Axis]	
	2020-12-31	2019-12-31
Assets	3,500	0
Liabilities	0	0
Equity	3,500	0

### Changes in Equity

Changes in Equity [Abstract]	Period [Axis]
	2020-01-01 - 2020-12-31
Equity [Roll Forward]	
Equity, Beginning	0
Comprehensive Income	3,000
Investments by Owners	1,000
(Distributions to Owners)	(500)
Equity, Ending	3,500

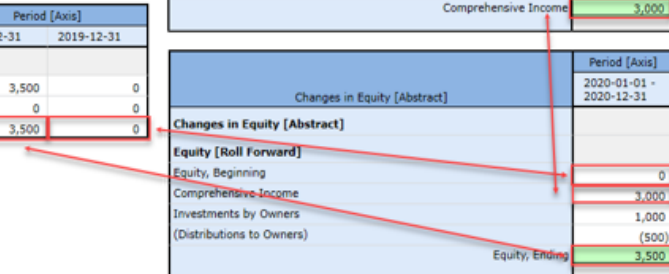
### Income Statement

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

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

Balance Sheet [Abstract]	Period [Axis]	
	2020-12-31	2019-12-31
Assets	3,500	0
Liabilities	0	0
Equity	3,500	0

Changes in Equity [Abstract]	Period [Axis]
	2020-01-01 - 2020-12-31
Equity [Roll Forward]	
Equity, Beginning	0
Comprehensive Income	3,000
Investments by Owners	1,000
(Distributions to Owners)	(500)
Equity, Ending	3,500



# Role of XBRL

- XBRL is a global standard approach to representing a knowledge graph.
- The knowledge in the knowledge graph is used to generate *human-readable financial reports* and *machine-readable financial reports*.
- Software can understand information in the knowledge graph.
- Right knowledge can “supercharge” artificial intelligence software.
- If the knowledge in the knowledge graph is **complete**, **consistent**, and **precise**; then processes can be controlled and high quality financial reports can be generated.
- Part of a digital platform for accounting, reporting, auditing, and analysis





# Platform

- Business Week article, ***The Greatest Innovations of All Time***, Larry Keeley defines platform:
  - "broad capabilities that have the potential to cut across industries, markets, and applications. Platforms often have some proprietary capabilities at the core, but not always. Indeed, it is common for platforms to integrate many otherwise ordinary ideas into a whole that is collectively remarkable."