Logical Theory Describing Accounting and Audit Working Papers

http://www.xbrlsite.com/seattlemethod

A logical description and explanation of the mechanical, mathematical, structural, and other logical aspects of accounting and audit working papers

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Contributors

Introduction

Working papers are tools of the trade for accounting and auditing. Whether the working papers are part of a "closing book" which is used to support a financial report which has been created by an internal reporting team of an economic entity, the "audit bundle" created by an internal audit team of an economic entity, working papers supporting a complication prepared by a CPA firm, working papers supporting a review prepared by a CPA firm, working papers supporting an audit prepared by a CPA firm, working papers related to a merger or potential acquisition, working papers in support of benchmarking or peer analysis, working papers related to the preparation of a tax return, working papers related to internal management and/or cost accounting, or something similar; this document is intended to explain the logic and patterns of those working papers.

This document assumes an understanding of the fundamentals of double entry bookkeeping[1].

To better understand what is meant by working papers, reading Understanding *Global Open Industry Standards Based Model-driven Semantic-oriented Artificial Intelligence Powered Accounting and Audit Working Papers*[2] would be helpful.

The purpose of this document is to provide a logical description of accounting and audit working papers and schedules in the form of axioms such that a machine interpretable representation of such accounting and audit working papers and schedules can be created and in the form of a machine interpretable theory. This document will explain the things, associations between things, and the rules of accounting and audit working papers at a high level.

To begin, we will provide a narrative to help the reader understand accounting and audit working papers and schedules model from the 50,000 foot perspective.

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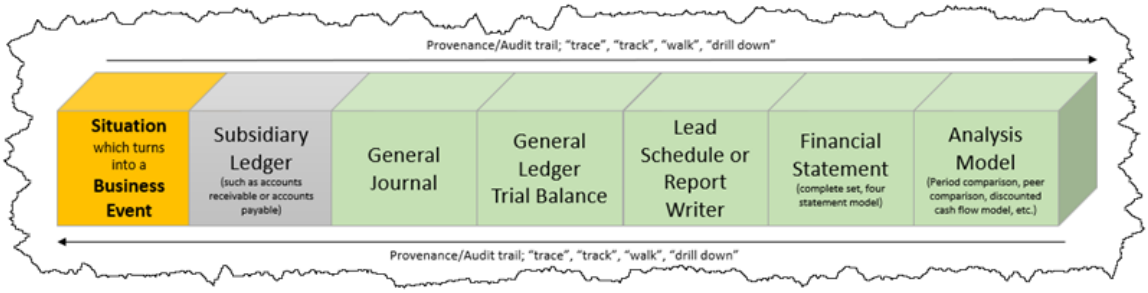
[1] Seattle Method, *Logical Theory Describing Double Entry Bookkeeping*, https://xbrlsite.azurewebsites.net/2025/library/LogicalTheoryDescribingDoubleEntryBookkeeping.pdf

[2] Seattle Method, *Understanding Global Open Industry Standards Based Model-driven Semantic-oriented Artificial Intelligence Powered Accounting and Audit Working Papers*, https://xbrlsite.azurewebsites.net/2025/library/UnderstandingModelDrivenAccountingAndAuditWorkingPapers.pdf

1. Logical Description Narrative

Working papers is a tool of the professional accountant. Such working papers can be seen as the "glue" and "trail" and "evidence" or "hooks" that are used to pull a financial statement together and support that financial statement once it has been created.



In accounting things tend to be connected and there tends to be a trail from beginning to end; or from the end all the way back to the beginning. This is commonly referred to as "the audit trail" or the notion of "provenance"[3].

Accounting and auditing are crafts. The average accountant and the average auditor are, well, average by definition. The skills of accountants and auditors follow a bell-shaped curve. Also, when it comes to accounting and audit working paper creation there are:

- Best practices (estimated to be 80% of work)
- Good practices (estimated to be about 18% of work)
- Emergent practices (estimated to be about 1.2% of work)
- Noval practices (estimated to be about .8% of work)

Estimates of the volume of working papers are approximate and meant to communicate the idea that most everything has a best practice approach which can be standardized. Saying this another way, the vast majority of accounting and auditing is science, not art; but there is art.

Working papers can fall into common patterns. Some common patterns of working papers include:

- Chart of accounts
- Journal entries
- Ledger trial balance

[3] Digital Financial Reporting, *Transaction Chasing*, https://digitalfinancialreporting.blogspot.com/2025/09/transaction-chasing.html

- Adjusted ledger trial balance
- Detailed ledger trial balances (a.k.a. supporting schedules like accounts receivable, inventories, accounts payable, etc.)
- Lead schedules
- Reconciliation
- Variance analysis
- Movement analysis
- Comparisons
- Tax schedules
- Supporting schedules
- Planning schedules
- Consolidation

The point is that best practices and good practices based standard canonical templates can be created. These best practices-based templates can serve as "jigs" or specialized aids for creating accounting and audit working papers. These templates or jigs can serve as guides created by higher skilled accountants and auditors to assist lesser skilled accountants and auditors.

Somewhere between 20% and 80% of accounting and audit working papers can very likely be standardized at the level of the core essence of each working paper. Then, that core essence can be extended, enriched, enhanced, and otherwise augmented to meet specific needs.

Personally, I believe that the estimate is closer to 80% than to 20%.

Lean Six Sigma[4] and Agile[5] techniques, philosophies, and practices can be leveraged. For example, Poka Yoke[6] mistake proofing techniques can be leveraged to enhance quality control.

Creating a working paper can be similar to the Agile technique of "Extreme Programming" referred to as "Test First Programming" or

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[4] Digital Financial Reporting, *Informatics, Cybernetics, and Lean Six Sigma*, https://digitalfinancialreporting.blogspot.com/2024/07/informatics-cybernetics-lean-six-sigma.html

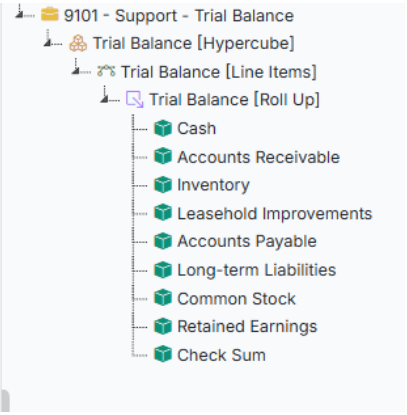
[5] Digital Financial Reporting, *Agile Accountancy*, https://digitalfinancialreporting.blogspot.com/2025/06/agile-accountancy.html

[6] Digital Financial Reporting, *Poka Yoke Mistake Proofing*, https://digitalfinancialreporting.blogspot.com/2025/06/poka-yoke-mistake-proofing.html

"Test Driven Development"[7]. But in our case, we build rules first that specify what a working paper must look like. Then software can both use those rules to assist a software user in the creation of that working paper and also to test what the user as done in order to make sure the working paper meets the machine interpretable information that specifies what the working paper should look like. All of this is "elastic" and "flexible" where it needs to be flexible, but ridged and inflexible there that flexibility is not appropriate.

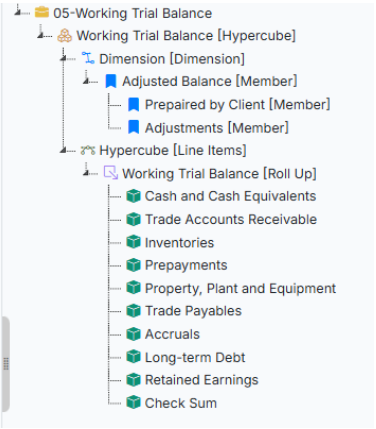
The following is an example of a working paper, a very basic trial balance:

Reporting Entity [Aspect]	AAAAAAAAAA | http://xbrlsite.com/id	
Concept [Aspect]	**Period [Aspect]**	
	2025-12-31	**2024-12-31**
Trial Balance [Roll Up]		
Cash	$ 32800	$ 0
Accounts Receivable	300	0
Inventory	39800	0
Leasehold Improvements	100000	0
Accounts Payable	(49000)	0
Long-term Liabilities	(99500)	0
Common Stock	(10000)	0
Retained Earnings	(14400)	0
Check Sum	$ 0	$ 0



The following is another example; in this case the trial balance is an adjusting trial balance:

Reporting Entity [Aspect]	GH259400TOMPUOLS65II | http://standards.iso.org/iso/17442		
	Period [Aspect]		
	2022-12-31		
	Dimension [Dimension]		
Concept [Aspect]	**Prepaired by Client [Member]**	**Adjustments [Member]**	**Adjusted Balance [Member]**
Working Trial Balance [Roll Up]			
Cash and Cash Equivalents	$ 60000	$ 0	$ 60000
Trade Accounts Receivable	180000	50000	230000
Inventories	300000	0	300000
Prepayments	0	0	0
Property, Plant and Equipment	210000	0	210000
Trade Payables	90000	0	90000
Accruals	50000	25000	75000
Long-term Debt	420000	0	420000
Retained Earnings	190000	25000	215000
Check Sum	$ 0	$ 0	$ 0



Every accounting and audit working paper works in this manner. Long ago, working papers were created using paper "spreadsheets". Then the paper spreadsheets were converted to electronic spreadsheets which still had sheets, columns, rows, and cells. Another approach to

[7] Agile Alliance, *Test Driven Development*, https://agilealliance.org/glossary/tdd/

creating working papers is to use a model-driven approach as contrast to the traditional document oriented approach.

1.1. Bookkeeping versus Accounting

Many people tend to use the terms bookkeeping and accounting interchangeably. But there is a difference.

- *Bookkeeping* is a mechanical process of recording transactions. Bookkeeping is an action; it is a record keeping process.
- *Accounting* is about determining what constitutes the transactions that are then recorded per the bookkeeping process. Accounting is the language used by bookkeeping. Accounting is a communications tool. Accounting is a classification system.

1.2. Compilation, Review, Audit

For those who are unfamiliar with the difference between a compilation, a review, and an audit; the following explanation is provided:

- A *compilation* is where a professional accountant takes management's information and that information is put into the form of a financial statement. No level of assurance is provided as to the accuracy or completeness of the resulting financial statement; a compilation is merely a mechanical exercise of organizing and presenting the information which has been provided, not evaluating that information.
- A *review* is where a professional accountant provides limited assurance that a financial statement is free from material misstatement. The professional accountant performs some analytical procedures and inquiries of management in order to provide a limited amount of assurance that the financial statement is free from material misstatement. A review is less rigorous than an audit but more rigorous than a compilation.
- An *audit* is where a professional accountant provides reasonable assurance that a financial statement is free from material misstatement. An auditor performs detailed testing of information, independent confirmation of certain specific information provided, evaluates the internal controls of the economic entity preparing the financial statement and provides reasonable assurance that there is no material misstatement that they have become aware of during their audit work.

Note that many of the core working papers are exactly the same whether a report is created internally by an internal reporting team, compiled by a third-party professional accountant, reviewed by a third-party professional accountant, or audited by a third-party professional auditor. While there are differences, fundamentally the working papers are more similar than dissimilar. What can be different is the independence of the person creating the working papers.

2. Axioms

Axioms describe self-evident logical principles that no one would argue with. Axioms deal with primitives and fundamentals.

This section summarizes self-evident principles relating to double entry bookkeeping in the form of true statements about double entry bookkeeping. Note that these are not necessarily the actual axioms that describe the theory but rather are used to derive those actual axioms.

2.1. Working papers contain and communicate facts.

Working papers communicate facts. A fact is a single, observable, piece of information. Those facts have values. Those fact values might take the form of a number, textual information, or narrative/prose.

For example, the value "1000" or "first-in, first out" might be values of a fact which are communicated within a working paper.

Numeric fact values have two additional traits in order to better understand the number. First, numeric fact values have units. For example, the units might be US dollars or number of shares. Second, numeric fact values indicate the rounding used. For example, "Is the number rounded to the nearest millions or is it accurate to the cent?"

Fact: A fact defines a single, observable, piece of information contained within a working paper, or fact value, contextualized for unambiguous interpretation or analysis by one or more distinguishing characteristics (properties of the fact). A fact value is one property of a fact. Every fact has exactly one fact value.

2.2. Facts in a working paper have aspects.

Facts have aspects (a.k.a. characteristic, dimension, axis). Aspects describe facts.

For example, the number "1000" might have the aspects of being the concept "Cash and cash equivalents"; for the period ended "December 31, 2025"; for the legal entity which is a "consolidated entity", etc.

Aspect: An aspect describes a fact (set of aspects is a property of a fact). An aspect or distinguishing characteristic provides information necessary to describe a fact or distinguish one fact from another fact. A fact may have one or many distinguishing aspects.

2.3. Working papers have fragments.

A full working paper can be broken down into fragments, or fragments of the full working paper. A fragment completely arbitrary and dependent on any arbitrary need.

Fragment: A fragment is a set of one-to-many information blocks which go together for some specific purpose within a report.

2.4. Woking papers have information blocks (a.k.a. blocks).

As stated, a fragment is defined as any arbitrary part of a full working paper. Every working paper can also be broken down by the notion of an information block. An information block is a helpful unit of a working paper.

While working papers communicate facts, those facts never really exist on their own; facts are not "free floating in space" they are always organized into information blocks. Facts are organized with other facts generally for some specific purpose and the information block is a result.

Information block: An information block (a.k.a. block) is a set of facts which go together (tend to be cohesive and share a certain common nature) for some specific purpose within a working paper.

2.5. Facts provided within working papers are logically and naturally organized into information blocks.

While working papers communicate facts, those facts never exist on their own; they are always organized into information blocks.

For example, the fact which uses the concept "Cash and cash equivalents" might exist in the trial balance information block. It might also exist within the cash and cash equivalents movements analysis information block. It might also be organized as a separate information block which contains only the single fact with the characteristic "Cash and cash equivalents".

2.6. Common aspects of working papers facts exist.

Some common aspects that describe a fact or facts in a working paper might include:

- **Entity** (which accounting or economic entity is creating the working paper which contains the fact; for example, Microsoft or Google).
- **Calendar period** (to which period of time does the fact relate; for example, which year or, current period, prior period, etc.)
- **Concept** or line item (what financial concept describes the fact; for example, Cash and cash equivalents, Assets, Net Income (Loss), etc.)
- **Scenario** (under which scenario was a fact provided; for example, actual, budgeted, etc.)
- **Segment** (to which business segment does the fact relate; for example, the consolidated entity, consolidation eliminations, subsidiaries or other business segment)
- **Geographic area** (to which geographic area does the fact relate; for example, all geographic areas combined, Europe, Asia)

Not all financial facts have all of these characteristics, but these are common characteristics. Other characteristics exist; the list is simply to provide an example of common characteristics. Not all entities which create working papers use these precise terms, however they use some term which basically means in essence what is outlined on the list above.

Other additional aspects are possible.

2.7. Facts may have comments.

Facts may have comments which provide additional descriptive information about the fact. Comments may take the form of footnotes, meaning an additional piece of information printed at the bottom of a page of a working paper.

The following is the proposed formal definition of the term "comment".

Comment: A comment provides additional descriptive information about a fact. A fact may have zero to many comments.

2.8. Aspects of a financial fact may be related.

Aspects which describe a financial fact can be related. A relation is how one thing in a working paper is or can be related to some other thing in a working paper. These relations are often called business rules. There are three primary types of relations which are:

- **Whole-part**: something composed exactly of their parts and nothing else; the sum of the parts is equal to the whole[8].

[8] Stanford University, *Mereology*, http://plato.stanford.edu/entries/mereology/

- **Is-a**: descriptive and differentiates one type or category of thing from some different type or category of thing; but the things do not add up to a whole.
- **Property-of**: A property-of association specifies that a term has a specific quality, trait, or attribute.

Another way to look at this is to consider the notion of sets as defined by set theory. A set is simply a collection of distinct objects. Is-a or type relations describe distinct sets. Whole-part relations explain the type of aggregation, if any, for the members of the set.

2.9. Working paper facts may be related.

Working paper facts may, or may not, be related. The sections below articulate the spectrum of possibilities.

For example, the parts "Petty cash", "Cash", and "Cash equivalents" are related to the whole "Cash and cash equivalents" and the sum of the parts adds up to the whole.

2.9.1. Facts can relate to one another numerically.

Facts can relate to one another numerically. For example,

- **Roll up**: Fact A + Fact B + Fact C = Fact D (a total)
- **Roll forward**: Beginning balance + changes = Ending balance
- **Adjustment**: Originally stated balance + adjustments = restated balance
- **Variance**: Actual amount – Budgeted amount = variance
- **Arithmetic**: Net income / Weighted average shares = earnings per share

2.9.2. Facts can have a non-numerical relation to another fact.

Facts can have a non-numerical relation to other facts. For example; inventory policy, revenue recognition policy, and depreciation method all relate to one another in that they are all policies.

2.9.3. Facts may not relate to any other fact.

Facts need not have a relation to any other facts; they are unrelated.

2.9.4. Facts have fidelity.

Working papers can be detailed, complex logical information. Working papers have accuracy in reporting details, a characteristic of exactness to facts. There exists an exactness in a fact or with a given quality, condition, or event.

2.9.5. Financial reports have integrity.

While an individual fact of a working paper has fidelity; the working paper viewed as a whole likewise has fidelity. This holistic fidelity constitutes integrity.

2.10. Working papers can have a flow.

A working paper can have a flow, or an ordering or sequencing of the fragments or information blocks which make up the working paper. Entities creating working papers have flexibility as to this flow.

2.11. Differing sets of detailed facts for a higher-level fact does not change the definition of the higher-level fact.

Having different detailed line items for some fact does not change the definition of high-level concepts such as assets, liabilities and equity, equity, net cash flow, net income (loss).

2.12. Working paper information blocks, facts, aspects, comments, and relations have specific known properties.

Each of these primitives or fundamental parts of a working paper have properties. For example, a report fragment might have a name or other such properties.

The following is the proposed formal definition of the term "property".

Property: A property is a trait, quality, feature, attribute, or peculiarity which is used to define its possessor and is therefore dependent on the possessor (entity or thing which has the property). A property belongs to something. For example, the color of a ball belongs to and is therefore is dependent on (it is a property of) the ball.

2.13. Facts can be represented at different levels of granularity.

Facts within some working paper information block can be provided at different levels of granularity. Grain is the level of depth of information or granularity.

2.14. A block is defined as the set of facts of a working paper fragment that are part of the same concept arrangement pattern.

Recall that a fragment is defined as a part of a full working paper. Every fragment can be broken down into one or many information blocks. Therefore, a fragment is made up of some set of one or more information blocks (a.k.a. block).

A **block** is a set of facts which share the same information model.

The following is the proposed formal definition of the term "block".

Block: A block is part of a fragment which shares the same information model (member arrangement pattern plus concept arrangement pattern).

2.15. An exemplar is an example of a specific working paper which exists in some other set of working papers.

An **exemplar** is defined as an example or prototype or architype of some specific working paper.

2.16. A template is an exemplar which is used to begin the process of creating a working paper.

A **template** is defined a representation of a working paper which is used in the process of creating a working paper to pro forma that working paper. The difference between an exemplar and template is only a matter of perspective.

2.17. A slot is a location within an information block where it makes logical sense to add information to that information.

A **slot** is simply the idea of an allotted place where something can be logically and sensibly placed in the information block. Consider the information block below which represents the fragment of a working paper.

Property, Plant and Equipment, by Component [Line Items]	Period [Axis]	
	2010-12-31	2009-12-31
Property, Plant and Equipment, by Component [Roll Up]		
Land	1,000,000	1,000,000
Machinery and equipment, gross	2,000,000	2,000,000
Furniture and fixtures, gross	6,000,000	6,000,000
Accumulated depreciation	(1,000,000)	(1,000,000)
Property, plant and equipment, net	8,000,000	8,000,000

It makes no logical sense to add a second grand total to the working paper above which is a roll up. A roll up has only one total. You cannot add a second total to a roll up as a roll up has only one total. It would not make logical sense to add a second total to a roll up. It does make sense to add an entirely new period characteristic to the roll up.

A slot simply distinguishes where information can and where information cannot be added to a block using the rules of logic and information articulated by this theory.

2.18. Rules guide, control, suggest, or influence behavior

The Merriam-Webster dictionary defines anarchy as "a situation of confusion and wild behavior in which the people in a country, group, organization, etc., are not controlled by rules or laws." Rules prevent information anarchy.

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, and help reach conclusions.

Rules arise from the best practices of knowledgeable business professionals. A rule describes, defines, guides, controls, suggests, influences or otherwise constrains some aspect of knowledge or structure within some area of knowledge.

Don't make the mistake of thinking that 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 rules is a choice of business professionals. The meaning of a business rule is separate from the level of enforcement someone might apply to the rule.

Rules can exist in human-readable and machine-readable form.

3. Theorems

Theorems are deductions which can be proven by constructing a chain of reasoning by applying axioms in the form of IF…THEN statements. This section summarizes deductions derived from the axioms in the preceding section in the form of true statements which relate to accounting and audit working papers.

3.1. Facts of a workng paper should be uniquely identifiable.

If a working paper is made up of facts, then facts should be uniquely identifiable in order to differentiate facts.

Facts of a working paper should be uniquely identifiable. No two working paper facts are exactly the same (i.e. there are no duplicate facts).

3.2. Information blocks of a working paper should be uniquely identifiable.

If a working paper is made up of fragments, then working paper fragments should be uniquely identifiable in order to differentiate fragments.

Fragments of a working paper should be uniquely identifiable. No two working paper fragments are exactly the same (i.e. there are no duplicate fragments). Providing duplicate fragments is akin to providing duplicate facts.

3.3. Different sets of detailed facts do not change the definition of higher level fact in general.

If the axiom "Differing sets of detailed facts for a higher-level fact does not change the definition of the higher-level fact" is true; then it should also be true that having different line items which detail a fact at any level should not change the definition of a fact.

For example, if the line items which make up the assets section of a balance sheet does not change the definition of the concept assets; then the line item property, plant and equipment, net should not change the definition of property, plant, and equipment, net. This same reasoning works at all levels within a working paper. Said another way, the composition of property, plant, and equipment, net such as land, furniture and fixtures, buildings, office equipment and so forth does not change the definition of the total concept property, plant, and equipment, net.

3.4. Fragments and facts of a working paper are comparable to the extent that the fragments and facts are identifiable and common.

If the characteristics of a fact within one or more working papers are the same then the facts are comparable.

Comparability is created. Comparability can be created by two or more working papers using the same identifiable characteristic.

3.5. An information model is a combination of association patterns.

An information model is a combination of association patterns. An information model is a combination of the member arrangement pattern plus the concept arrangement pattern.

3.6. Information blocks of a working paper should be uniquely identifiable.

If a working paper is made up of fragments and fragments are made up of information blocks; then working paper information blocks should be uniquely identifiable in order to differentiate information blocks effectively.

Information blocks of a working paper should be uniquely identifiable. No two working paper information blocks are exactly the same (i.e. there are no duplicate information blocks).

4. Ethics or Worldview of Working Papers

Ethics is the worldview of working papers. While axioms are irrefutable facts which form a foundation, which describes a working paper and theorems build on those axioms by deduction and therefore both axioms and theorems are objective; the ethics or worldview which describes a working paper report can be more subjective. Observation, experience, introspection, and intuition determine the worldview; not tightly reasoned arguments. This section summarizes the worldview, or ethics, of accounting and audit working papers.

1.1. Working papers are a true and fair representation of the entities information.

The objective of a financial report is to provide a true and fair representation of the entity which issued the financial report. Any representation in any form should be a faithful representation of the financial position and financial condition of the entity. A financial report is a true and fair representation if it is complete, correct, consistent, accurate, has fidelity and integrity. Below are definitions of these terms.

- **Completeness**: Having all necessary or normal parts, components, elements, or steps; entire.
- **Correctness**: Free from error; in accordance with fact or truth; right, proper, accurate, just, true, exact, precise.

- **Consistency**: Compatible or in agreement with itself or with some group; coherent, uniform, steady. Holding true in a group, compatible, not contradictory.
- **Accuracy**: Correctness in all details. Conformity or correspondence to fact or given quality, condition. Precise, exact. Deviating only slightly or within acceptable limits from a standard.
- **Fidelity**: Where accuracy focuses on the details of one fact; fidelity is accuracy of all facts considered as a whole in the reproduction of something as compared to actual facts.
- **Integrity**: Holistic accuracy, accurate as a whole. The quality or condition of being whole or undivided; completeness, entireness, unbroken state, uncorrupt. Integrity is a concept of consistency of actions, values, methods, measures, principles, expectations, and outcomes.

If it is true that a financial report is a true and fair representation; then it also must be true that working papers that support a financial report must likewise be a true and fair representation.

4.1. Working papers have traits which impact their quality.

The following list expresses the traits of a quality working paper.

- **All working papers formats convey the same message**: A working paper can be articulated using paper and pencil, Microsoft Word, PDF, HTML, XBRL, or other format. But while the format may change, the message communicated, the story you tell, should not change. Each format should communicate the same message, regardless of the medium used to convey that message.
- **Information fidelity and integrity**: A working paper foots, cross casts, and otherwise "ticks and ties". A working paper is internally consistent. The accountant community understands this and many times this fact disappears into unconsciousness because it is so ingrained in the minds of professional accountants. Of course, things foot and cross cast; of course, the pieces tie together. Said another way, a working paper must be correct, complete, consistent, and accurate.
- **Justifiable/defensible working paper characteristics**: Facts provided and the characteristics which describe those facts should be both justifiable and defensible by an entity providing such facts.
- **Consistency between periods**: Generally financial information expressed within one period should be consistent with the financial information expressed within subsequent periods, where appropriate. Clearly new information will be added and

information which becomes irrelevant will be removed from a working paper. Changes between report elements which existed in both periods should be justifiable/defensible as opposed to arbitrary and random.

- **Consistency with peer group**: If an entity chooses one approach and a peer of that entity chooses another report element selection choice; clearly some good reason should probably exist. This is not to say differences would not or should not occur. Rather, why the differences exist should make sense. Generally information between two peers should be more consistent as compared to inconsistent.
- **Logical representations indicated by understandable renderings**: Human readable renderings of facts; characteristics that describe facts; comments which further describe such facts; and other such representation structures should make sense and be both consistent with other similar representation structures. While there may be differences of opinion as to how to format or present such information; there should be significantly less or no dispute about the logic of a machine-readable representation.
- **Unambiguous meaning**: A working paper should be unambiguous to an informed reader. The meaning of a working paper should be clear to the creator of the working paper and likewise clear to the users of that working paper. Both the creator and users should walk away with the same message or story.

4.2. Working papers may be expressed using different medium.

Working papers may be expressed using different medium. For example,

- Paper and pencil, printed versions of electronic or digital, or photo static copies
- Electronic including HTML, PDF, word processor format, etc. Electronic working papers cannot be interpreted by machines such as computers.
- Digital including XBRL, within a database or within some software application. Digital working papers may be interpreted by machines such as computers but also by humans with the assistance of computer software which understands.
- The ISO standard Z Notation, the ISO/IEC standard Common Logic, the OMG standard Semantics of Business Vocabulary and Business Rules (SBVR), the W3C standard RDF/OWL 2 DL, SROIQ Description Logic are all probable approaches to representing working paper information.

The medium used to express a working paper MUST NOT change the meaning of the working paper.

4.3. Working papers may contain financial or non-financial information, sustainability information, or other information.

A working paper is not limited to financial information. A working papers can also support representation of non-financial information, sustainability information, and other types of information.

4.4. Categorization of working papers can be helpful.

Breaking a set of working papers into some categorized list can be helpful in making use of the working papers.

4.5. Facts reported within a fragment may be illogical without the existence of other facts.

Facts within a fragment or other fragment of a working paper may be illogical without the existence of other facts.

4.6. Working papers makes the closed world assumption.

There are two perspectives which can be adopted when evaluating information in some knowledgebase: *open world assumption* and *closed world assumption*. In the open world assumption, a statement cannot be assumed true on the basis of a failure to prove the statement. On a World Wide Web scale this is a useful assumption; however, a consequence of this is that an inability to reach a conclusion (i.e. not decidable). In the closed world assumption, the opposite stance is taken: a statement is true when its negation cannot be proven; a consequence of this is that it is always decidable. In other applications this is the most appropriate approach. So, each application can choose to make the open world assumption or the closed world assumption based on its needs. Relational database applications tend to use the closed world assumption.

4.7. A conclusion must always be reachable as to the correctness or incorrectness of the mechanical aspects of a working paper.

A notion critical to a digital working papers is that of decidability. Decidable means that no interpretations that are not satisfied (unsatisfied or inconsistent) by at least one interpretation of the information in the knowledgebase exists. If a representation of information is not decidable then the represented information is

ambiguous because you cannot determine if the information is inconsistent or simply unsatisfied which means that a conclusion cannot be reached.

If any ambiguity exists, a meaningful exchange of information between the creator of the information and the consumer of information has not occurred. For something like a working paper, a conclusion must be reachable as to the consistency of mechanics of provided information to expectations.

A notion critical to decidability is the closed world assumption. When an open world assumption is made, then a knowledgebase of information can never be decidable. Because a conclusion must always be reachable as to the mechanical consistency of a working paper against the rules of the knowledgebase, the closed world assumption is made.

A critical distinction to understanding is the distinction between the *mechanical aspects* of a working paper and the *subjective or judgmental aspects* of a working paper. A conclusion about the correctness or incorrectness of the mechanical aspects in no way suggests or implies that a computer will ever be able to determine the overall appropriateness of a working paper. Such determination involves professional judgment and is subjective in nature. While professional accountants are concerned with what quantitative and qualitative working papers should be provided in order to make a true and fair representation; they have no control over the mechanics of the working paper itself. The mechanics of a working paper are governed by the rules of logic alone. It is always the case that a determination can be made as to the correctness or incorrectness of the mechanics of a working paper.

To be clear, decidability must only be reachable as to the mechanical correctness or incorrectness, the consistency, with the things and relations between things which make up the structure of a working paper.

4.8. A finite set of known classes and relation patterns ensures decidablity.

As earlier stated, a set of logical axioms and theorems are used to articulate the semantics and dynamics of a working paper. These stated axioms and theorems are first-order logic.

First-order logic can be used to express a theory which fully and categorically describes structures of a finite domain (problem domain). This is achieved by specifying the things of the problem domain and the

relations between those things. These logical rules form a conceptual model of the problem domain. This theory describes that logic.

However, no first-order theory has the strength to describe an infinite domain. Essentially what this means is that the things and the relations between things which make up a problem domain must have distinct boundaries.

This is not to say that such a system cannot be flexible. For example, a form is not flexible. A working paper is not a form. This is not to say, however, that a working paper cannot be finite.

5. General Ethics/Worldview

Effective communication is important and using the same terminology and understanding one's perspective are key to effective communication.

5.1. Accidental complexity can be removed from a system.

A kludge is an engineering/computer science term that defines what is best described as a workaround or quick-and-dirty solution that is typically clumsy, inelegant, inefficient, difficult to extend and hard to maintain; but it gets the job done. The nautical term for a kludge is jury rig. By contrast, elegance is beauty that shows unusual effectiveness, grace, and simplicity.

There is a difference between a "complex system" and a "simple system that is complicated". Most software applications tend to be simple systems that may be complicated. Fred Brooks *No Silver Bullet* points out that complexity comes in two forms: essential complexity and accidental complexity. Essential complexity is what is irreducible. Irreducible complexity = essential complexity.

The challenge when constructing a problem-solving system is making sure you avoid or eliminate the accidental complexity. Accidental complexity refers to challenges someone unintentionally make for themselves as a result of trying to solve a problem.

5.2. Principles help you think about something thoroughly and consistently.

Principles help you think about something thoroughly and consistently. Overcoming disagreements between stakeholders and even within groups of stakeholders is important. Agreement between stakeholder groups and within stakeholder groups contributes to harmony. Lack of

agreement contributes to dissonance. Principles help in the communications process.

A first step, if not the first step, of arriving at harmony is outlining the interests, perceptions, positions, and risks of each constituency/stakeholder group.

A "stakeholder" is anyone that has a vested interest. Another term for stakeholder is "constituent". A "constituent" is a component part of something.

Foundational to arriving at harmony is having a common conceptual framework including a set of consistent principles or assumptions or world view for thinking about the system. For example, accounting and financial reporting have such a conceptual framework including principles/assumptions such as "materiality" and "going concern" and "conservatism".

This "framework for agreeing" helps the communications process which increases harmony and decreases dissonance. This is about bringing the system into balance, consciously creating the appropriate equilibrium/balance.

5.3. Shared goals and objectives to achieve a specific purpose.

Agreed upon standard interpretations are critical to making a system work safely, reliably, predictably, and in a manner which can be repeated over and over without error. Philosophical or theoretical debates, trying to satisfy all arbitrary options, trying to meet every unimportant negligible situation, confusing what is objective and what is subjective, confusing policies with requirements and with choices only make something which could be sophisticated but simple into something which is complex, confusing, and can never be made to work.

Some people might believe that there is one absolute reality and that reality is their reality and that everything about their reality is important and they can compromise on nothing. Some people insist that everything involves judgment and that nothing is in any way subjective. But this is to miss the point.

The point being: a shared view of reality which is clearly interpretable and understood to achieve the purpose of meaningfully exchanging information so that time is reduced, costs are reduced, and information quality improves provides a benefit. The goal is to reach agreement so that the benefits can be realized.

The goal is to arrive at some equilibrium, to balance the duality, to recognize that there is no singular objective reality but in spite of that, if we create a common enough shared reality to achieve some specific and agreed upon working purpose machines can be made to do useful work.

To make reality of the working paper area of knowledge appear to be objective and stable in certain specific and agreed upon ways in order to fulfil some higher purpose. The purpose is to enable a machine to read and interpret certain basic information such that manual human work can be effectively eliminated and that higher-level interpretations are then possible.

To get a distributed system to work, conscious cooperation and collaboration is necessary. It is with and through this cooperation and collaboration that the control mechanisms can be established. None of this happens by accident. It takes intension, conscious effort, discipline, rigor, skillful execution, resolve, and persistence. The result does not need to be complex; the system can be sophisticated and also simple and elegant.

5.4. There is a difference between a fact, the interpretation of a fact, knowledge, and an opinion.

There is a difference between a fact, the interpretation of a fact, knowledge, and an opinion. The following are informal descriptions of these terms to help understand the differences:

- **Fact**: a thing that is indisputably the case or situation
- **Interpretation**: the action of explaining the meaning of some fact or set of facts
- **Knowledge**: believe in some fact or facts which can be justified using evidence, justified true belief
- **Opinion**: an arbitrary view or judgment formed about something, not necessarily based on fact or knowledge

When attorneys argue a case one of the first things they do is try and agree on the facts, the items about the case which are not in dispute. When an interpretation is agreed to by both attorneys, that interpretation becomes a fact. If both parties in a case agree on some set of facts it can be said that both attorneys have knowledge of the facts, generally both parties agree when there is evidence which can be used to justify that knowledge. Everything else which cannot be agreed becomes an opinion which is then argued in the case. Evidence is provided but the parties don't agree on the evidence or they can dispute evidence with different interpretations of facts.

5.5. There is power in agreement.

It is only through deliberate, methodical, rigorous and conscious collaboration, cooperation and coordination by the participants of stakeholders that working papers will work safely, reliably, predictably, repeatedly, effectively, and efficiently. This objective will not be achieved by accident.

Sometimes it is a useful thing to create a shared reality to achieve a specific purpose: To arrive at a shared common enough view such that most of our working purposes, so that reality does appear to be objective and stable.

- **Arbitrary**: based on random choice or personal whim, rather than any reason or system; depending on individual discretion (as of a judge) and not fixed by law; not standard
- **Standard**: used or accepted as normal; something established by authority, custom, convention, law, regulation, or general consent as a model or an example

Computers are dumb machines. Computers only appear smart when humans create standards and agree to do things in a similar manner in order to achieve some higher purpose.

5.6. There is a difference between an important nuance and an unimportant negligible distinction. Professionals understand the difference.

In the process of agreeing, it is important to understand the difference between what is important and what is unimportant:

- **Nuance**: a subtle difference in or shade of meaning, expression, or sound; a subtle distinction or variation
- **Subtle**: so delicate or precise as to be difficult to analyze or describe; hard to notice or see; not obvious
- **Negligible**: so small or unimportant as to be not worth considering; insignificant; so small or unimportant or of so little consequence as to warrant little or no attention

Nuances and subtle differences are important things that matter. Negligible things are unimportant and do not matter. The difference between what is a nuance or a subtle difference and what is negligible many times takes professional judgment.

5.7. There is a difference between objective and subjective.

There is a difference between something that is objective and something that is subjective.

- **Objective**: not influenced by personal feelings or opinions in considering and representing facts; based on facts rather than feelings or opinions: not influenced by feelings
- **Subjective**: based on or influenced by personal feelings, tastes, or opinions; based on feelings or opinions rather than facts; relating to the way a person experiences things in his or her own mind
- **Judgment**: the ability to make considered decisions or come to sensible conclusions; an opinion or decision that is based on careful thought

Again, computers are machines. Computers have no intelligence until they are instructed by humans. Computers only appear smart when humans create standards and agree to do things in a similar manner in order to achieve some higher purpose. It is easy to agree on things that tend to be objective. It is harder to agree where there is subjectivity. It is impossible to get a machine to exercise judgment. A machine such as a computer can only mimic what humans tell the machine to do via machine-readable information.

5.8. There is a difference between explicit and implicit.

In the process of agreeing, it is important to understand the difference between what is important and what is unimportant in the process of agreeing. It is likewise important to understand the difference between telling a machine something and requiring the machine to figure something out:

- **Explicit**: stated clearly and in detail, leaving no room for confusion or doubt; very clear and complete; leaving no doubt about the meaning
- **Implicit**: implied though not plainly expressed; understood though not clearly or directly stated
- **Ambiguous**: open to more than one interpretation; having a double meaning; able to be understood in more than one way; having more than one possible meaning; not expressed or understood clearly
- **Impute**: assign (a value) to something by inference from the value of the products or processes to which it contributes

Machines do well with information which is explicitly provided. When information is not explicitly provided, software developers either make a choice or have to figure out ways to allow a business professional making use of the software to make a choice. Every choice a business professional is required to make adds complexity to the system. Having too many choices makes a system difficult to use. "Flexibility" independently is neither a feature nor a bug. Flexibility is a feature when the business user needs the flexibility. Flexibility is a bug if it requires a choice the business professional does not need to be making.

Complexity can never be removed from a system. However, complexity can be moved; it can be absorbed by software and hidden from business professionals making use of software. It is easy to build something that is complex. It is harder and takes work to build something that is simple. Simple and simplistic are not the same thing. Simple and elegant is the ultimate form of sophistication.

5.9. There is a difference a requirement and a policy.

Sometimes things are required, other times things are a choice. Yet in other times setting some policy eliminates certain options which could have been previously considered.

- **Policy**: a course or principle of action adopted or proposed by a government, party, business, or individual; definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions
- **Requirement**: a thing that is needed or wanted; something that is essential or that must be done
- **Choice**: an act of selecting or making a decision when faced with two or more possibilities; the act of choosing: the act of picking or deciding between two or more possibilities
- **Option**: a thing that is or may be chosen; the opportunity or ability to choose something or to choose between two or more things

6. Resources

The following are resources that are helpful in terms of understanding digitizing accounting and audit working papers using the global open industry standard XBRL:

- XBRL Global Ledger Taxonomy Framework 2017[9]
- Internal Reporting Using XBRL Global Ledger[10]
- XBRL GL[11]
- Introducing the XBRL GL Taxonomy Framework: Tuple and Dimension Models for Granular Accounting Data[12]
- Accounting Semantics Arcroles 1.0[13]
- GAAP Meta Model Relationships Taxonomy[14]
- ISO/IEC 15944 - Accounting and Economic Ontology Implementation[15]
- Accounting, the Language of Business[16]
- Data Centric Accounting[17]

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[9] XBRL International, *XBRL Global Ledger Taxonomy Framework 2017*, https://www.xbrl.org/int/gl/2016-12-01/gl-framework-2017-PWD-2016-12-01.html

[10] Strategic Finance, *Internal Reporting Using XBRL Global Ledger*, https://www.sfmagazine.com/articles/2015/october/internal-reporting-with-xbrl-global-ledger/

[11] Scholarly Community Encyclopedia, *XBRL GL*, https://encyclopedia.pub/entry/31551

[12] Nobuyuki SAMBUICHI, *Introducing the XBRL GL Taxonomy Framework: Tuple and Dimension Models for Granular Accounting Data*, https://www.sambuichi.jp/?p=15487&lang=en

[13] XBRL International, *Accounting Semantics Arcroles 1.0*, https://www.xbrl.org/REQ/accounting-semantics-req/REQ-2023-01-04/accounting-semantics-req-2023-01-04.html

[14] FASB, *GAAP Meta Model Relationships Taxonomy*, https://www.fasb.org/page/detail?pageId=/projects/FASB-Taxonomies/gaap-meta-model-relationships-taxonomy.html

[15] Digital Financial Reporting, *ISO/IEC 15944 - Accounting and Economic Ontology Implementation*, https://digitalfinancialreporting.blogspot.com/2025/09/isoiec-16944-accounting-and-economic.html

[16] Digital Financial Reporting, *Accounting, the Language of Business*, https://digitalfinancialreporting.blogspot.com/2025/09/accounting-language-of-business.html

[17] Semantic Arts, *Data Centric*, https://www.semanticarts.com/data-centric/