1. Reconciliation of Logical Theory Describing Financial Report to Real World Domain Semantics

The purpose of this section is to provide a reconciliation between the Logical Theory Describing Financial Report and the real world of financial reporting.

Financial report semantics are identified and articulated within the *Financial Report Semantics and Dynamics Theory*[1]. This section covers those same financial report semantics, dynamics, logic, mechanical, and mathematical relations. This section provides a succinct summary of that same information. If you desire further details, please refer to the theory document itself.

1.1. Difference between business report level conceptual model and financial report level conceptual model

The business report conceptual model level describes the report itself and uses terms such as network, table, axis, member, line items, concept, fact, and parenthetical explanation. Also at the business report level are concept arrangement patterns and member arrangement patterns. This level, the level of a business report describes the things common to any business report. Given that a financial report is a type of business report; all the things that exist at the business report conceptual model level also exist at the financial report conceptual model level.

The financial report conceptual model level describes the things that are specifically contained within a financial report. Not all of financial reporting is described, in fact only the beginnings of the financial reporting semantics are described. What is described here is only the tip of the iceberg but it helps accountants understand what financial reporting semantics are and it articulates base or core financial reporting semantics which are impossible to dispute.

This base or foundation will undoubtedly be built upon. It is with these financial report conceptual model level semantics where the real value of digital financial reports becomes clear. If software understands financial reports, then problem-specific software that is easier for business professionals to use can be constructed. The software will work at the conceptual model level rather than at the XBRL technical syntax level.

In this section the example used will be for US GAAP financial reporting by public companies to the U.S. Securities and Exchange Commission (SEC). This example is used for the following reasons:

- There are lots of publically available digital financial reports which can be worked with to prove or disprove these semantics. Far fewer IFRS based financial reports are available today.
- Trying to explain both US GAAP and IFRS semantics would become confusing as they are not totally aligned yet. The financial reporting semantics at the level which we are working at here are fairly consistent, but not identical.

[1] *Financial Report Semantics and Dynamics Theory*, http://xbrl.squarespace.com/fin-report-sem-dyn-theory/

- IFRS semantics can be explained as a variation of US GAAP financial reporting semantics at some later time.

1.2. Financial reporting conceptual framework

US GAAP based financial reporting has a conceptual framework. The FASB outlines this conceptual framework in CON 1 – 7.

Per the FASB, the conceptual framework for financial reporting has two primary purposes. First, it serves as a foundation upon which the FASB constructs financial reporting standards that are internally sound and consistent. Second, the conceptual framework is intended to be used by the business community reporting or consuming financial information to help them better understand and apply financial reporting standards.

The conceptual framework does this by (per the FASB Special Report, *The Framework of Financial Accounting Concepts and Standards (1998)*:

- Providing a set of common premises as a basis for discussion
- Provide precise terminology
- Helping to ask the right questions
- Limiting areas of judgment and discretion and excluding from consideration potential solutions that are in conflict with it
- Imposing intellectual discipline on what traditionally has been a subjective and ad hoc reasoning process

As we shall see, the financial reporting conceptual framework breaks financial reporting into elements and financial statement components.

> NOTE: At one point the FASB and IASB were creating a common framework[2] for financial reporting. However, that common framework seems to have been abandoned, which is unfortunate.

1.3. Financial report elements

The financial report elements articulated by the FASB include:

- Assets
- Liabilities
- Equity
- Investments by owners
- Distributions to owners
- Revenues
- Expenses
- Gains
- Losses

[2] *Financial Reporting Conceptual Framework is basis for Financial Report Schema*, http://xbrl.squarespace.com/journal/2011/4/19/financial-reporting-conceptual-framework-is-basis-for-financ.html

- Comprehensive income

While this is not a complete set of financial report elements, it is useful for identifying and organizing concepts which characterize a financial fact. It the set of FASB report elements also helps one understand the notion of creating a list of report elements.

Other financial report elements which are not outlined by the FASB and which could exist within a financial report might include:

- Policy
- Disclosure
- Document information
- Reporting entity information

1.4. Financial statement components

Financial statement components are defined by the FASB as:

- Balance sheet
- Income statement
- Comprehensive income
- Statement of changes in equity
- Cash flow statement
- Related disclosures

Because the "related disclosures" category can be quite large, we further break that one line item down into more detailed useful categories. These categorizations are used by the FASB Accounting Standards Codification (ASC). For more information see: https://asc.fasb.org (note that a free basic subscription is available):

- Organization related disclosures
- Consolidation related disclosures
- Basis of reporting and presentation of financial statements related disclosures
- Significant accounting policies
- Financial statement accounts related disclosures
- Broad transactions categories disclosures

1.5. Industries and accounting activities

Economic entities that belong to different industries and that have different accounting activities may have different financial reporting practices. However, all economic entities and all types of accounting activities fit within the financial reporting conceptual framework under which they report.

For example, a corporation reports "Stockholders' equity" and partnerships report "Partner capital" and that sole proprietors report "Owner's equity"; however, all three are "Equity" as defined by the financial reporting conceptual framework.

In practice a financial institution creates an unclassified balance sheet and commercial and industrial companies create a classified balance sheet; but both types of reporting entities provide balance sheets.

While different industries and accounting activities use components of the financial reporting framework differently, that does not change the financial reporting framework or change the fact that a financial reporting conceptual framework exists. Said another way, financial reporting is not random.

1.6. Common characteristics of financial facts exist

The following is the definition of a characteristic:

> "A characteristic describes a fact. A characteristic or distinguishing aspect provides information necessary to describe a fact or distinguish one fact from another fact. A fact may have one or many distinguishing characteristics. For example, line item concept Cash and cash equivalents is a characteristic and the calendar period December 31, 2014 are characteristics which describe a fact."

Some common characteristics or aspects that describe financial facts include:

- **Reporting entity** (which entity issued the reported fact; for example Microsoft or Google)
- **Fiscal period** (to which fiscal period does the fact relate; for example, quarter 1, quarter 2, quarter 3, fiscal year)
- **Fiscal year** (to which fiscal year does the fact relate; for example 2011, 2012, 2013)
- **Calendar period** (to which period does the fact relate; for example which year or, current period, prior period, etc.)
- **Concept** or line item (what financial reporting concept describes the reported fact; for example Cash and cash equivalents, Assets, Net Income, etc.)
- **Legal entity** (to which legal entity does the reported fact relate; for example consolidated entity or parent holding company)
- **Report date** (what is the date on which the report was issued which contains the reported fact; for example the audit report date or the filing date)
- **Reporting scenario** (under which scenario was a fact reported; for example actual, budgeted, etc.)
- **Business segment** (to which business segment, if any, does the fact relate; for example the consolidated entity, consolidation eliminations, subsidiaries or other business components)
- **Geographic area** (to which geographic area, if any, 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 also exist. Not all economic entities which report financial information use these precise labels to describe these characteristics, however they use some preferred label which basically means essentially the same thing as the characteristics or aspects described above or that exist in the US GAAP XBRL Taxonomy. Not all characteristics or aspects are relevant to all reported facts.

1.7. Fundamental accounting concept relations

Reporting styles have high-level fundamental accounting concept relations which never change. At the highest level is the accounting equation: Assets = Liabilities and Equity. These fundamental concepts can be thought of as "key stones" or "corner stones" which hold a financial report together or provide somewhat of a "skeleton" for a financial report. Note that this is not to say that all accounting entities report each of these accounting concepts; if a concept is not reported it can be logically derived leveraging information that was reported and known business rules which describe relations between these key concepts.

The following is the set of fundamental accounting concept relations for the most common reporting style, used by about 2,000 public companies:

BS1	Equity = Equity Attributable to Parent + Equity Attributable to Noncontrolling Interest
BS2	Assets = Liabilities and Equity
BS3	Assets = Current Assets + Noncurrent Assets
BS4	Liabilities = Current Liabilities + Noncurrent Liabilities
BS5	Liabilities and Equity = Liabilities + Commitments and Contingencies + Temporary Equity + Redeemable Noncontrolling Interest + Equity
IS1	Gross Profit = Revenues - Cost Of Revenue
IS2	Operating Income (Loss) = Gross Profit - Operating Expenses + Other Operating Income
IS4	Income (Loss) from Continuing Operations Before Tax = Operating Income (Loss) - Interest And Debt Expense + Nonoperating Income (Loss)
IS5	Income (Loss) from Continuing Operations after Tax = Income (Loss) from Continuing Operations Before Tax - Income Tax Expense (Benefit)
IS6	Net Income (Loss) = Income (Loss) from Continuing Operations After Tax + Income (Loss) from Discontinued Operations, Net of Tax + Extraordinary Items, Gain (Loss)
IS7	Net Income (Loss) = Net Income (Loss) Attributable to Parent + Net Income (Loss) Attributable to Noncontrolling Interest
IS8	Net Income (Loss) Available to Common Stockholders, Basic = Net Income (Loss) Attributable to Parent - Preferred Stock Dividends and Other Adjustments
IS9	Comprehensive Income (Loss) = Comprehensive Income (Loss) Attributable to Parent + Comprehensive Income (Loss) Attributable to Noncontrolling Interest
IS10	Comprehensive Income (Loss) = Net Income (Loss) + Other Comprehensive Income (Loss)
CF1	Net Cash Flow = Net Cash Flows, Operating + Net Cash Flows, Investing + Net Cash Flows, Financing + Exchange Gains (Losses)
CF2	Net Cash Flows, Continuing = Net Cash Flows, Operating, Continuing + Net Cash Flows, Investing, Continuing + Net Cash Flows, Financing, Continuing
CF3	Net Cash Flows, Discontinued = Net Cash Flows, Operating, Discontinued + Net Cash Flows, Investing, Discontinued + Net Cash Flows, Financing, Discontinued
CF4	Net Cash Flows, Operating = Net Cash Flows, Operating, Continuing + Net Cash Flows, Operating, Discontinued
CF5	Net Cash Flows, Investing = Net Cash Flows, Investing, Continuing + Net Cash Flows, Investing, Discontinued
CF6	Net Cash Flows, Financing = Net Cash Flows, Financing, Continuing + Net Cash Flows, Financing, Discontinued

1.8. Reporting styles

Reporting styles are determined by the preferences and policies of public companies, the different reporting practices of different industry sectors or accounting activities of an entity, and common practices.

Of the approximately 7,000 public companies which report to the SEC; 80% of those companies use one of about 12 different reporting styles. 90% of public companies use one of about 23 reporting styles. All public companies fit into approximately between 100 and 250 different reporting styles[3]. Accounting entities can have a unique reporting style.

[3] Note that currently public companies that are funds or trusts are excluded. I am considering whether to include or exclude two other accounting activities: REITs and securities based revenues.

1.9. Other fundamental logical, mechanical, and mathematical relations

Other things are logically, mechanically, structurally, and/or mathematically true about the primary financial statements:

- Balance sheets always report the line items "Assets", "Liabilities and Equity" and "Equity"
- On the balance sheet, assets foots
- On the balance sheet, liabilities and equity foots
- On the balance sheet, equity foots
- Balance sheets balance
- Income statements always report net income (loss)
- On the income statement, net income (loss) foots
- Cash flow statements report net cash flow
- On the cash flow statement, net cash flow foots
- Net cash flow per the cash flow statement reconciles beginning and ending cash and cash equivalents
- Cash and cash equivalents per the cash flow statement and cash and cash equivalents per the balance sheet are the same fact (US GAAP)
- Beginning and ending balances of equity per the statement of changes in equity agree with equity balances per the balance sheet

There could be other core report fragments and relations, but the above are certainly true, if someone reports the statements. It is possible for a reporting entity not to have a cash flow statement or income statement. It is less likely for a company to not have a balance sheet.

1.10. List of industries and accounting activities

Industries and activities have unique financial reporting and accounting practices. The following is a summary of some reporting industries and the activities which a reporting entity may have:

- Commercial and Industrial (general, not classified into some other industry or activity)
- Agriculture
- Airlines
- Banking and Thrift
- Broadcasting
- Broker and Dealers of Securities
- Cable Television
- Casinos
- Contractors
- Extractive Activities
- Financial Services Title Plant
- Franchisor
- Health Care

- Insurance
- Investment Companies
- Motion Pictures
- Mortgage Banking
- Not for Profit
- Real Estate
- Records and Music
- Regulated Entities
- Retailers
- Software

Other industries and accounting activities exist.

1.11. List of key financial ratios

The following is a summary of some common key ratios used:

- Return on Investment
- Return on Equity
- Return on Total Assets
- Operating Profit
- Sales to Accounts Receivable
- Sales to Inventories
- Sales to Fixed Assets
- Inventory Days
- Debtor Days
- Corporate Liquidity
- Working Capital
- Current Ratio
- Quick Ratio
- Working Capital to Sales
- Interest Cover
- Debt to Equity
- Market Capitalization
- Dividends Per Share
- Dividends Cover Payout Ratio
- Earnings Yield
- Dividends Yield
- Price to Earnings Ratio
- Market to Book Ratio
- Capital Employed
- Working Capital Days
- Assets Employed
- Profit Margin
- Asset Turn
- Sales Margin
- Sales Turn

Other common key ratios exist.

1.12. Financial reports are a true and fair representation of the reporting entity's financial information

Stating this in the opposite makes the statement above clear, "Financial reports are untrue and unfair representations of a reporting entity's financial information." Of course that statement is incorrect.

A financial report can be said to be a verifiably true and fair representation of the reporting accounting entity's financial information if it possesses certain traits which can be defined in general terms and for clarity are listed below:

- **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.

While these four notions which relate to the "trueness" and "fairness" must exist for every fact reported by a financial report, they also need to exist when considering the financial report in its entirety.

Two other notions help bring the notion of trueness and fairness of information at the fact and at the report level into focus:

- **Fidelity**: Fidelity relates to the loyal adherence to fact or detail; exactness. The faithful representation of the facts and circumstances represented within a financial report properly reflect, without distortion, reality. High fidelity is when the reproduction (a financial report) with little distortion, provides a result very similar to the original (reality of economic entity and environment in which company operates).
- **Integrity**: Integrity is holistic fidelity. Integrity relates to the fidelity of the report in its entirety, of all parts of a financial report, from all points of view. Integrity is holistic accuracy, accurate as a whole. Integrity is the quality or condition of being whole or undivided; completeness, entireness, unbroken state, uncorrupt. Integrity means that not only is each component of a financial report is correct but all the pieces of the financial report fit together correctly, all things considered.

1.13. Financial reports have traits which impact their quality

The following list expresses the traits of a quality financial report.

- **All financial report formats convey the same meaning**: A financial statement can be articulated using paper and pencil, Microsoft Word, PDF, HTML, XBRL, or other format. But while the format may change, the meaning communicated, the story you tell, should not change. Each format should communicate the same meaning, regardless of the medium used to convey that meaning.

- **Information fidelity and integrity**: A financial report is internally consistent, a faithful representation. A financial statement foots, cross casts, and otherwise "ticks and ties". The accountant community understands this and many times this fact disappears into unconsciousness because it is so ingrained. Of course things foot and cross cast; of course the pieces tie together. Said another way, a financial statement must be correct, complete, consistent, and accurate. Only trained accounting professionals who understand how the XBRL medium works can tell if all financial statement facts and computations are properly articulated, verified to be correct, and otherwise convey the same meaning of the human readable representation.
- **Justifiable/defensible report characteristics**: Facts reported and the characteristics which describe those reported facts should be both justifiable and defensible by an accounting entity reporting 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 financial report. Changes between report elements which existed in both periods should be justifiable/defensible as opposed to arbitrary and random.
- **Consistency with peer group**: If your company chooses one approach and a peer 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, be justifiable and defensible. Generally financial 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; parenthetical explanations 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 business meaning**: A financial report should be unambiguous to an informed reader. The business meaning of a financial report should be clear to the creator of the financial report and likewise clear to the users of that financial report. Both the creator and users should walk away with the same message or story. A financial report should be usable by regulators, financial institutions, analysts, investors, economists, researchers, and others to desire to make use of the information the report contains as they see fit.

1.14. Financial reports are used individually, compared across periods, and compared across reporting entities

Financial reports are used in different ways by users including:

- **Analysis of a single financial report**: Analysis of one financial report of one reporting entity.

- **Time series analysis of reporting entity**: Two or more financial reports of the same reporting entity are compared.
- **Comparative analysis across reporting entities**: Two or more financial reports of different reporting entities are used.
- **Ratio analysis**: An analysis of a single financial report, a time series analysis, or a comparative analysis using ratios computed from facts within a report.