1. Introduction

> "The difficulty lies not so much in developing new ideas as in escaping from old ones." (John Maynard Keynes)

This resource is written by a professional accountant for professional accountants that need to or choose to master XBRL-based digital financial reporting creation using the ***Seattle Method***[1]. While there are many different approaches to leveraging the global standard XBRL technical syntax, this resource focuses on XBRL's use in financial reporting such as US GAAP and IFRS where the extensibility features of XBRL are employed.

This resource strives to be as nontechnical as is possible. The reader will find that if they understand accounting, they will understand the information conveyed by this resource. One factor that determines whether this discussion can be about the logic of accounting or the XBRL technology is the extent to which software applications have implemented their software to bury the technical aspects of XBRL deep within their applications. This resource is also quite useful to software engineers building software as it helps them understand how accountants think about financial reporting.

There are two specific layers of XBRL-based financial reporting: the machine-readable layer and the human-readable layer. This resource focuses on the representation of the machine-readable layer (i.e. XBRL taxonomy, XBRL instance). This resource does cover the human-readable layer (i.e. Inline XBRL). It does not cover the arbitrary presentation of information within that human-readable layer.

The old industrial economy and the new information economy will not work the same. We all need to grasp the dynamics of information. *New Rules for the New Economy*[2], by Kevin Kelly, explains many of these new dynamics and this new information economy. What many accountants are doing is trying to understand XBRL based on the old rules of the old industrial economy. Don't make that mistake. This resource will help you avoid that fundamental mistake.

A best practice is a method or technique that has been generally accepted as superior to any other known alternatives because it produces results that are superior to those achieved by other means or because it has become a standard way of doing things. Best practices (or good practices) are methods that have produced outstanding results in other situations, inside or outside of a particular organization and which can be validated, codified, and shared with others and recommended as models to follow. This resource will help you understand best practices and good practices related to the creation of XBRL-based digital financial reports.

1.1. Getting the 50,000-foot view

This introduction provides an overview of XBRL-based accounting, reporting, auditing, and analysis in a digital environment from 50,000 feet. Other sections of this document provide more detailed perspectives. But here, we start with the big picture.

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[1] Seattle Method, http://xbrlsite.com/seattlemethod/seattlemethod.pdf

[2] New Rules for a New Economy, http://xbrl.squarespace.com/journal/2021/4/5/new-rules-for-the-new-economy.html

Accounting, reporting, auditing, and analysis are in the midst of what has been called a great upheaval[3]. The world is transforming from an analog, industrial economy to a digital, knowledge economy. This type of transformation has not seen in 500 years in accounting, reporting, auditing, and analysis.

I refer to this as *The Great Transmutation*[4] of financial accounting, reporting, auditing, and analysis which is explained in the next chapter.

No one really knows where all this will end up. But what is for certain is that we will not be where we are now much longer. Will the institution of accountancy be renovated or replaced? Will the institution of accountancy adapt or be disrupted? The answer will reveal itself in due course.

But the transformation is inevitable and is imminent.

A financial report is a knowledge graph[5]. Contemporary general purpose financial reports were readable only by humans. XBRL-based financial report knowledge graphs are readable by both humans and by machines such as software applications.

Automation is about removing friction, driving down costs, speeding processes up, and generally improving efficiency. Automation is about delivering cheaper and better goods and services for less cost.

XBRL-based digital financial reports are about automating accounting, reporting, auditing, and analysis tasks and processes within enterprises large and small. XBRL is not about a regulatory mandate. XBRL is about using the tools that are available to you in the information age.

This resource is not about doing the minimal amount to meet a regulator mandate; this document is about effectively employing XBRL and other technologies to automate tasks and processes related to accounting, reporting, auditing, and analysis effectively within the enterprise. Think less about XBRL and more about the impact of XBRL[6].

XBRL is a global phenomenon[7]. XBRL-based structured information will impact millions of public and private companies in pretty much every country around the world. XBRL is a set of technical standards for representing information in machine readable form. XBRL is an information exchange medium[8]. XBRL is a new technology that is available to professional accountants. Fundamentally, XBRL is (can be when used correctly) a super-safe and very powerful and appropriately

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[3] The Great Upheaval of Accounting, Reporting, Auditing, and Analysis, http://xbrl.squarespace.com/journal/2021/12/17/the-great-upheaval-of-accounting-reporting-auditing-and-anal.html

[4] Charles Hoffman, CPA, *The Great Transmutation*, http://www.xbrlsite.com/mastering/Part00_Chapter01.1_TheGreatTransmutation.pdf

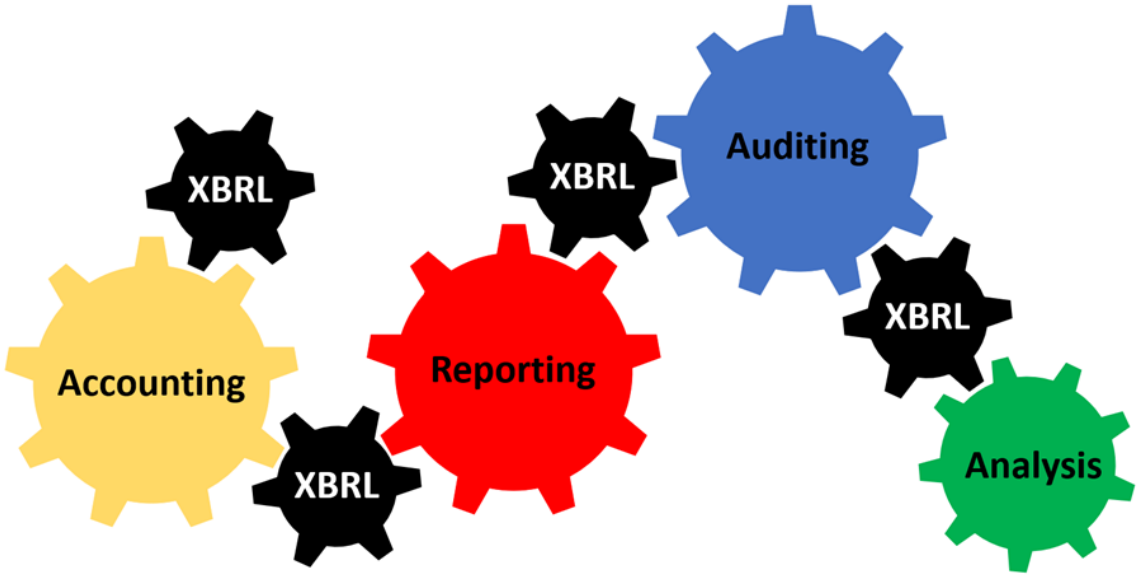
[5] Charles Hoffman, CPA, *Financial Report Knowledge Graphs*, http://xbrlsite.azurewebsites.net/2021/Library/FinancialReportKnowledgeGraphs.pdf

[6] *The Economics of Digital for CPAs*, http://xbrl.squarespace.com/journal/2021/3/22/the-economics-of-digital-for-cpas.html

[7] YouTube.com, *XBRL Overview*, https://youtu.be/ibfQwRTP4_c

[8] Understanding that XBRL is a Knowledge Media, http://xbrl.squarespace.com/journal/2017/1/16/understanding-that-xbrl-is-a-knowledge-media.html

flexible knowledge graph[9] which can be used to represent a general purpose financial report in both human-readable form and machine-readable form[10].



Technology enables change. Today, technology is impacting society at a pace never experienced before which results in rapid change. The institution of accountancy must adapt[11] to remain relevant.

Artificial intelligence, structured information such as XBRL, digital distributed ledgers, machine-readable workflow model standards, machine-readable business decision model standards, and Lean Six Sigma philosophies/techniques are a match made in heaven and will have a significant impact on accounting, reporting, auditing, and analysis experienced in a digital environment that will prevail during the Fourth Industrial Revolution[12].

The Fourth Industrial Revolution (the information age) is not something that will soon be here, we are here now. Accountants are notoriously resistant to change. Not embracing change has risks and consequences. Both overstating and understating the impact of change can have detrimental effects. Understanding the moving pieces of this puzzle can help professional accountants strike the appropriate balance between optimism and pessimism.

This resource helps you understand the moving pieces and then strike the right balance.

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[9] The Knowledge Graph Cookbook: Recipes that Work, http://xbrl.squarespace.com/journal/2021/6/27/the-knowledge-graph-cookbook-recipes-that-work.html

[10] Understanding the Role of XBRL (Brainstorming), http://xbrl.squarespace.com/journal/2021/3/14/understanding-the-role-of-xbrl-brainstorming.html

[11] *Accounting and Auditing in the Digital Age*, http://xbrl.squarespace.com/journal/2017/6/28/accounting-and-auditing-in-the-digital-age.html

[12] *Adapting to Changes Caused by the Fourth Industrial Revolution*, http://xbrl.squarespace.com/journal/2019/8/4/adapting-to-changes-caused-by-the-fourth-industrial-revoluti.html

There are three specific technology trends[13] that can be leveraged to significantly improve accounting, reporting, auditing and analysis. Those technologies will transition into the mainstream, modernizing accounting, reporting, auditing and analysis over the coming years. Those three technologies are:

- Structured information such as XBRL-based structured digital financial reports
- Knowledge-based systems and other applications of artificial intelligence
- Blockchain-based digital distributed ledgers

In this resource we cover XBRL-based structured digital financial reports and artificial intelligence and other applications of knowledge-based systems which will enable new approaches to creating financial reports. We leave blockchain-based distributed ledgers for others to explore.

The future of financial reporting is digital financial reporting[14].

The general-purpose financial statement (or financial report) has existed for over two millennium. Formats for general purpose financial statements have included clay, papyrus, paper, word processor documents such as Microsoft Word, PDF, and HTML. The common thread that all these reports have is that a machine cannot read these reports because the reports are unstructured.

An alternative to paper or e-paper financial reports is needed. The institution of accountancy needs to create a digital, or structured, version of the general purpose financial statement which is readable by both humans but is also machine-readable[15].

The general purpose financial report is getting a face lift, being updated for the 21st century[16]. Accounting is transitioning from physical objects to digital[17]. It is hard to say exactly when this process began. In the early 1900's financial disclosures became more standardized with the creation of what became US GAAP. In the 1970's efforts began to create a set of international financial reporting standards, IFRS. In the last part of the 20th century the XBRL technical specification was created, establishing a global standard technical syntax usable for business and financial reporting.

In the early 21st century the US Securities and Exchange Commission funded the creation of the US GAAP XBRL Taxonomy and mandated that public companies report to the SEC using the XBRL technical syntax. The ESMA did the same about 10 years later.

But public companies who report to the SEC amount to only about 10,000 entities that are regulated by the SEC. ESMA has a similar number of listed companies reporting to them. There are still approximately:

- 18,500 private companies with 500 or more employees in the US

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[13] AICPA, *AICPA News Update*, July 7, 2017, http://xbrl.squarespace.com/journal/2017/7/7/aicpa-news-update-technologies-are-poised-to-reshape-the-acc.html

[14] *Digital Financial Reporting Manifesto*, http://xbrl.squarespace.com/digital-financial-reporting-ma/

[15] *Case for XBRL-based General Purpose Financial Reporting on One Slide*, http://xbrl.squarespace.com/journal/2019/2/10/case-for-xbrl-based-general-purpose-financial-reporting-on-o.html

[16] Web 3.0 Manifesto, http://project10x.com/bio_downloads/web3_manifesto_2009.pdf

[17] Accounting Evolved from Physical Objects to Digital, http://xbrl.squarespace.com/journal/2021/3/12/accounting-evolved-from-physical-objects-to-digital.html

- 27.5 million private companies in the US
- 800,000 employee benefit plans that create financial reports in the US
- 90,000 state and local governmental entities in the US
- 360,000 not-for-profit entities in the US

Similar numbers of state and local governmental entities, not-for-profits, and private companies likewise exist in other parts of the world.

On December 23, 2022, President Joe Biden signed into law H.R. 7776, the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023 which includes TITLE LVIII, the Financial Data Transparency Act.

The Financial Data Transparency Act[18] calls for the use of data standards by member agencies of the U.S. Financial Stability Oversight Council, including U.S. Treasury, the Securities and Exchange Commission (SEC), the Federal Deposit Insurance Corporation (FDIC), the Office of the Comptroller of the Currency, the Bureau of Consumer Financial Protection, the Federal Reserve System, the National Credit Union Administration, and the Federal Housing Finance Agency. The Financial Data Transparency Act also includes a requirement for standardized data related to municipal securities to be implemented by the SEC. Data standards to be established under the final rules shall include common identifiers, be open and nonproprietary, and render data searchable and machine-readable, leverage taxonomies and ontologies to represent metadata, and calls for quality reporting.

All these companies and their regulators could benefit from the digital financial report. What exactly are the benefits of a digital financial report as contrast to current paper-based or e-paper electronic financial reports?

Think about something. Today, how much does the tool that you are using to create your financial reports understand those reports that you are creating? Generally, those software applications know nothing about what a financial report is. Two primary tools are used to create most financial reports: Microsoft Excel and Microsoft Word. What do those applications understand about financial reports or the process of financial reporting? They understand nothing.

But what if software *did understand* the financial reports with which they are interacting?

Technologies such as structured machine-readable information (such as XBRL), digital distributed ledgers, knowledge-based systems, and artificial intelligence offers an unprecedented opportunity to create what I am calling **Computational Professional Services**[19].

Some people call this "smart regulation[20]". Others call it "algorithmic regulation[21]". Some use the term "robo cop". Others say "Rules as Code". Deloitte seems to use the term "finance factory". The SEC has a vision. But whatever you call it; many of

[18] The Story of Our New Language, https://digitalfinancialreporting.blogspot.com/2022/12/the-story-of-our-new-language.html

[19] *Computational Professional Services*, http://xbrlsite.azurewebsites.net/2020/library/ComputationalProfessionalServices.pdf

[20] *Smart Regulation*, http://xbrl.squarespace.com/journal/2012/11/12/smart-regulation-graphic-shows-the-big-picture.html

[21] *Algorithmic Regulation*, https://beyondtransparency.org/chapters/part-5/open-data-and-algorithmic-regulation/

the repetitive, monotonous, routine, mechanical, boring tasks and processes can be performed by machines which will free up humans to do more interesting work.

You can understand what I mean about a software application understanding the information that it is working with if you think about another type of document that has already made the transition from human-readable only unstructured documents to human-readable and machine-readable structured digital information.

Think of the blueprint.

1.2. Understanding digital by looking at the blueprint

Digital financial reporting can be understood by contrasting that process to the process of creating blueprints using Computer-aided Design/Computer-aided Manufacturing (CAD/CAM) software[22]. Just as CAD/CAM software is knowledgeable of blueprints; properly created digital financial reporting software is knowledgeable of financial reports. CAD/CAM software understands what a door is, what a window is, what a wall is, and that a window goes into a wall.

Similarly, digital financial reporting software understands what a balance sheet is, what an income statement is, what a disclosure is, that assets goes into the balance sheet disclosure and that assets equals liabilities and equity, per the accounting equation[23].

CAD/CAM software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing. CAD/CAM output is often in the form of machine-readable information which can be printed; provide instructions for machining directly to a numerically controlled machine, or used in other ways for other manufacturing operations.

BIM[24] (Building Information Modeling) pushes digital blueprints to the next level, improving on CAD/CAM.

Similarly[25], a digital financial report will travel through the entire supply chain which is connected via the Internet and information never needs to be rekeyed and different business systems will have the same understanding of the reported financial facts and the associations between the reported facts. XBRL-based structured information is the physical means of exchanging information and the capabilities to be sure the information exchanged is understandable by both parties of the exchange and that the information is of high quality, even higher quality than today's financial reports.

1.3. Expert system for creating financial reports

This resource will give you all the information that you need to understand XBRL-based digital financial reports. Basically, a digital financial report creation tool is an expert system for creating financial reports. It uses artificial intelligence technology such as machine-readable rules, a rules engine, and intelligent software agents to

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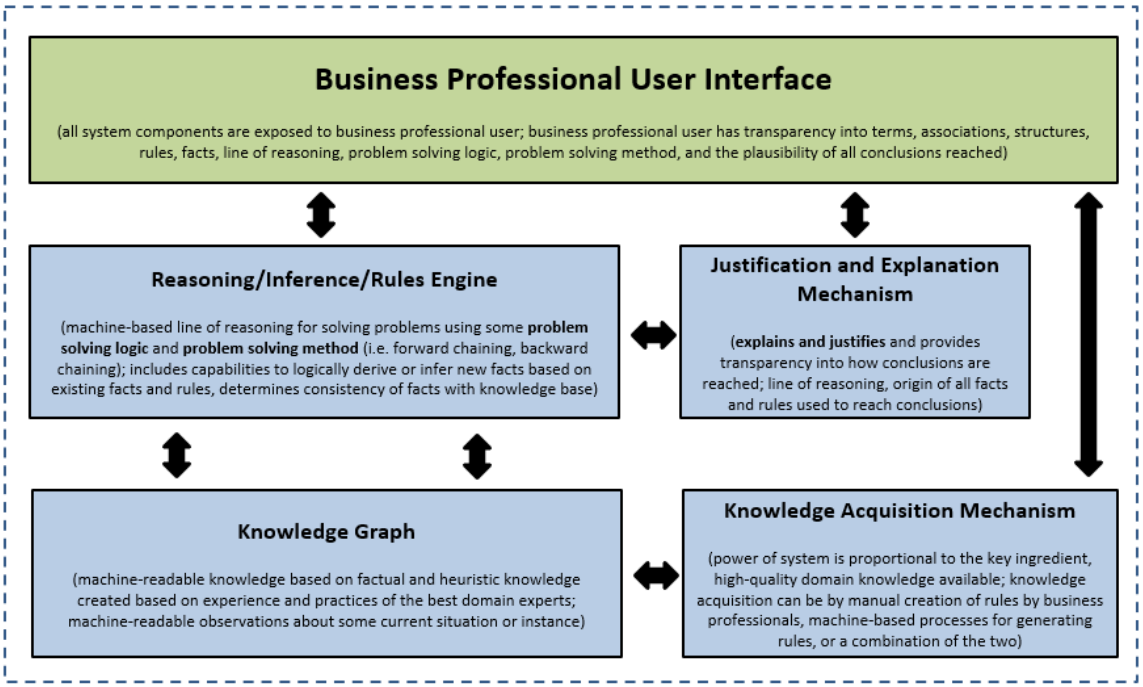
[22] Computer-aided Design, https://en.wikipedia.org/wiki/Computer-aided_manufacturing

[23] Accounting equation, https://en.wikipedia.org/wiki/Accounting_equation

[24] The Evolution of Drafting, https://youtu.be/_ULPY3B2BoQ

[25] Intelligent XBRL-based Digital Financial Reports, http://xbrl.squarespace.com/journal/2017/1/1/intelligent-xbrl-based-digital-financial-reports.html

help the professional accountant using the software to create the financial report. The expert system functionality augments the accountant's skills similar to how a calculator augments an accountant's ability to do math.



1.4. Impact on professional accountants

Forbes published an article, *3 Important Ways Artificial Intelligence Will Transform Your Business and Turbocharge Success*[26], which explains that organizations are already leveraging AI in three common ways:

- Creating more intelligent products;
- Offering a more intelligent service;
- Improving internal business processes

To remain relevant, CPAs and other professional accountants need to adjust their thinking about how to appropriately modify accounting, reporting, auditing, and analysis to keep up with the digital revolution. These and other business professionals need to figure out the best ways to employ this new digital medium, where, and they must understand the ramifications of any change.

Even with good tools, a tool in the hands of someone with inadequate knowledge can produce substandard results. Poor tools can make this situation even worse. But give a knowledgeable, skilled craftsman the right tools and they can produce high-quality and even beautiful and elegant results.

This resource is for professionals who choose to be masters at their craft. It will help CPAs, external financial reporting managers, internal and external auditors, other

[26] Bernard Marr, Forbes, *3 Important Ways Artificial Intelligence Will Transform Your Business and Turbocharge Success*, https://www.forbes.com/sites/bernardmarr/2020/08/03/3-important-ways-artificial-intelligence-will-transform-your-business-and-turbocharge-success/#d6dea16620fa

accountants, financial analysts, regulators, and other business professionals understand the moving pieces of the new digital financial reporting paradigm and create high-quality digital financial reports.

This resource can also be useful to software engineers working with accountants to create the tools which accountants will be using for financial reporting in the future.

1.5. About this document

It takes hard work to create a framework, master a model, or create a theory. A creator of a theory or model is attempting to discover the seemingly invisible principles that hide behind appearances. Theories don't simplify. Theories describe the principles by which the world operates. A theory or model is characterized by its intent: the discovery of essence[27].

Frameworks, theories, principles, and models make things easier to understand. Frameworks, theories, principles, and models articulate rules that anyone can then follow.

The U.S. Securities and Exchange Commission (SEC) mandated XBRL-based digital financial reporting beginning in about 2009. I participated in the team to create the initial US GAAP XBRL Taxonomy. Since that time thousands and thousands of XBRL-based digital financial reports have been made publicly available. Poking and prodding[28] those XBRL-based digital financial reports helps one understand digital financial reporting. I have published most of my analysis on my blog[29].

My blog is basically my lab notebook. I have taken what I have learned and condensed, organized and synthesized it into this resource. As Henry David Thoreau says: "Simplify, Simplify". The essence that I have discovered is documented within the *Seattle Method*[30].

This resource helps accounting professionals and other business professionals cut through all the noise and misunderstandings which surrounds this new technology, XBRL. This resource allows business professionals to focus on what is truly important and not be distracted by the underlying technology which there is no need for business professionals to ever really deal with.

This resource also helps information technology professionals and software developers to understand what business professionals truly need from software applications in support of XBRL-based digital financial reporting.

While this resource uses XBRL to explain digital financial reporting, XBRL is really only one of many technical tools which will be employed for digital financial reporting. While XBRL is a widely employed technical tool, it is not the only tool and there is more to digital financial reporting than the XBRL technical tools. XBRL is simply one of many enabling technologies.

Information in this document was accumulated over a period of about twenty years. It represents, arguably, the best resource available today for understanding XBRL-

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[27] Charles Hoffman, CPA, *Essence of Accounting*, http://xbrlsite.azurewebsites.net/2020/Library/EssenceOfAccounting.pdf

[28] Understanding that XBRL-based Digital Financial Reports are made up of Distinct Identifiable Pieces, http://xbrl.squarespace.com/journal/2015/5/3/understanding-that-xbrl-based-digital-financial-reports-are.html

[29] See, http://xbrl.squarespace.com/blog-archive/

[30] Charles Hoffman, CPA, *Seattle Method*, http://xbrlsite.com/seattlemethod/SeattleMethod.pdf

based digital financial reporting. The information and knowledge have been accumulated, synthesized, organized, and explained as best as possible given the current point in time of the evolution of XBRL, XBRL-based digital financial reporting, artificial intelligence, software available to business professionals, etc.

But keep in the back of your mind that XBRL-based reporting is bigger than just financial reporting. The techniques used to create XBRL-based financial reporting are also applicable to general business reporting. Think semantic spreadsheet[31].

1.6. Assumptions about reader

We make the following assumptions about the reader of this resource:

- We assume that you are not the average professional accountant or business professional but rather motivated and somewhat of an early adopter or someone who will be helping the average accounting professional understand digital financial reports. As software improves, the complexity of digital financial reports will be absorbed by software. However, at this stage of the evolution of digital financial reports we have not reached the ease of use required for the average accountant to make use of digital financial reports.
- We assume that you understand the basics of the XBRL technical syntax. If this is not the case we would encourage the reader to become familiar with the XBRL technical syntax to get the most from this document. A good resource for the general understanding of the XBRL technical syntax which the reader needs is chapter 4 An XBRL Primer in the book *XBRL for Dummies*[32]. We also provide an XBRL primer that is helpful in understanding XBRL. For a more complete understanding of XBRL we would suggest *The XBRL Book: Simple, Technical Precise*[33].
- We assume that you understand financial reporting and will not explain fundamental financial reporting concepts and terminology. (If you are a technical professional, *Essence of Accounting*[34] and *Financial Report Knowledge Graphs*[35] will provide information you need about accounting.)
- We assume that you will dig into the details of examples provided using good software. This will help you grasp important details. This is not a resource for understanding how to use any specific software application for the purpose of XBRL-based digital financial reporting.
- We assume that you are a hard worker. While we have accumulated a great deal of information, this resource is not perfect. Understanding digital financial reporting will take work. It will take time. The more work you put in, the more you will get out of this resource. This resource will improve over time but we recognize that it is not where it really needs to be for the average professional accountant. Please bear with us.

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[31] Charles Hoffman, CPA, *Understanding Semantic Spreadsheets*, http://xbrlsite.azurewebsites.net/2020/Library/UnderstandingSemanticSpreadsheets.pdf

[32] *XBRL for Dummies*, http://xbrl.squarespace.com/xbrl-for-dummies/

[33] Ghislain Fourny, The XBRL Book: Technical, Simple, Precise, http://ghislainfourny.github.io/the-xbrl-book/

[34] Charles Hoffman, CPA, *Essence of Accounting*, http://xbrlsite.azurewebsites.net/2020/Library/EssenceOfAccounting.pdf

[35] Charles Hoffman, CPA, *Financial Report Knowledge Graphs*, http://xbrlsite.azurewebsites.net/2021/Library/FinancialReportKnowledgeGraphs.pdf

- We are not saying that we have all of the answers. We do have a lot of very good questions, we have many interesting and enlightening observations, and we have figured many things out. We are working toward a world-class global standard solution for XBRL-based digital financial reporting.

Figuring out how to leverage technologies such as artificial intelligence, structured machine-readable information such as XBRL, other machine-readable standards, and digital distributed ledgers will be a journey, a process.

There are no short cuts. If you already have good exposure to XBRL, you are strongly encouraged to work through the four documents (about 161 pages) that make up the *XBRL-based Digital Financial Reporting Jumpstart*[36]. This gives you critically important background and a solid foundation for understanding XBRL-based digital financial reporting correctly.

1.7. Organization of this document

We have organized this resource into sections and chapters. Each part and section serves a specific purpose and fulfills a specific need for any business professional or information technology professional endeavoring to understand XBRL-based digital financial reporting.

As part of this **Introduction** we provide an overview of the changes into which digital financial reporting fits. **The Great Transmutation** provides a conceptual overview of the changes that will occur and explains why those changes will occur. **Accounting, Reporting, Auditing, and Analysis in a Digital Environment** provides a conceptual overview and explains the over-arching paradigm into which XBRL-based digital financial reporting will fit and the three primary enabling technologies that are driving paradigm change, we state the obvious when we point out that professional accountants need to adapt, and we provide an overview of what you need to do in order to adapt. We provide a very basic XBRL technical syntax primer in the chapter **Very Basic XBRL Technical Primer**. **Computational Professional Services** provides you with important background knowledge that you need to understand the true puzzle and the new paradigm. Essentially, this section provides you with a new mental map. In **Computational Thinking** we help you understand important details relating to what it takes to get computers to actually perform useful work. In the chapter **Essence of Accounting**, we provide a logical description of the key aspects of accounting, trying to separate what is achieved by accounting tasks and processes and separating out how those tasks and processes are performed.

In order to understand XBRL-based digital financial reporting appropriately, we need to fill a few gaps in your current training most likely. We do that in ***PART 1: Important Background Information*** which provides business professionals with important background and foundational information that they did not get in their accounting information systems or other computer science classes that they may have taken in college. This provides an important framework, theory, and principles for properly understanding XBRL-based digital financial reporting.

This sets the foundation to be able to effectively build upon in the next sections. We start off with a **Conceptual Overview of XBRL-based Digital Financial Reporting**. Next, we take the information in this resource and condense it down to

[36] *XBRL-based Digital Financial Reporting Jumpstart*, http://xbrl.squarespace.com/journal/2020/8/6/xbrl-based-digital-financial-reporting-jump-start.html

15 principles, **Principles**. Those 15 general principles frame the big picture. The next sections **Artificial Intelligence and Knowledge Engineering in a Nutshell**, **Digital Distributed Ledgers**, and **Lean Six Sigma** fills in additional missing background information. We finish up with a little more background knowledge you need for this journey.

Digitizing Financial Reports provides an overview of how we get from paper-based financial reports to digital financial reports. It also provides necessary background for understanding the differences between paper-based or electronic financial reports and digital financial reports. Understanding these differences is important because how you interact with digital financial reports will be different. The bottom line is that the workflow of professional accountants will change.

Professional Accountant's Interests, Perspective, Position, and Risks helps bring into focus things accountants should be thinking about as they endeavor to understand digital financial reporting. This section helps you understand the interests, perspective, position, and risks of professional accountants.

We finish off the first part with **Other Moving Parts of Digital** which summarizes other odds and ends you should be aware of.

In ***PART 2: Logical Conceptualization of Financial Report***, we provided a logical conceptualization of an XBRL-based digital financial report. In the first section, Introduction to the **Logical Theory Describing Financial Report**, we provide a high-level overview of the conceptual model. We provide specific section then on **Hypercubes**, **Fact Sets**, that drill further into details.

Financial Report Knowledge Graphs helps you understand that a financial report is really a knowledge graph and that knowledge graph can be read by a machine-based process.

Exchanging Complex Financial Information, we go over issues related to the exchange of information using automated machine-based processes. **Logical Systems** explains the notion of a logical system. **Logic and Knowledge Graphs** explains the formalisms used to specify financial reports digitally. **Logical Theory Describing Financial Report** provides a logical overview of a digital financial report. In the next chapters; **Terms**, **Associations**, **Structures**, **Rules**, and **Facts**; we provide more details about those logical report parts. **Representing Structures Using Hypercubes**, **Concept Arrangement Patterns**, **Member Arrangement Patterns**, **Structure Arrangement Patterns**, **Fundamental Accounting Concepts and Reporting Styles**, **Disclosure Mechanics**, and **Disclosure Rules** we discuss patterns related to the dynamics of those logical report pieces.

We then put all these pieces together and explain a proven, best practices based **Method** for working with XBRL-based reports.

SEC-type XBRL-based Digital Financial Reports and **ESEF-type XBRL-based Digital Financial Reports** drills into the specifics of public/listed company financial reports which are submitted to the SEC or ESMA. Then, **Reference of Logical Theory Terms**, we provide details of the logical conceptualization. **Reference for Logical Theory Semantics** focuses on accounting and reporting aspects of the conceptualization. We close this section by going over some advanced aspects of the logical conceptualization and by pointing you to some additional resources.

In ***PART 3: Working with Digital Financial Reports***, we help you get your hands dirty and introduce you to digital financial reports. We start off this section with

Viewing Reports which provides a good hands-on introduction to digital financial reports. After viewing, **Controlling Report Quality** shows you some basics of verifying that your digital financial reports are properly functioning logical systems so that you know your report is created correctly. One highly desirable result of expressing financial reports digitally is so the information can be more easily used by financial analysts. The section **Query Report Information** covers important aspects of using digital financial reports. **Creating Reports** will put you in the driver's seat and helps you create your own intelligent digital financial reports. We then explain **Extracting Information from Reports**. We finish of the hands-on part with **Digital Financial Report Creation Best Practices** summarizes information that will help you become a digital financial report master craftsman. We finish up this section with **Workflow and Process Control** and **Auditing Digital Financial Reports**.

In ***PART 4: Examples and Samples***, we give you lots of examples and samples to play with, explore, and learn from. We start with a **Hello World** basic example, then cover **Concept Arrangement Pattern Examples**, **Member Arrangement Pattern Examples**, **Business Use Case Examples**, **Comprehensive Example**, **Financial Disclosure Template Examples**, and **Reference Implementation of an XBRL-based SEC Financial Filing, Reference Implementation of an XBRL-based ESMA Example** sections provide a rich set of detailed examples you can use to further you understand this material. **Mastering XBRL-based Digital Financial Reports Examples** helps you tie everything together, truly honing your skills. We finish off with **Template Examples** and **Exemplar Examples**.

In ***PART 5: Technical Details***, we provide information that is probably not useful to most professional accountants, but it is very useful to software developers building software for business professionals. **XBRL Technical Syntax Details** provides more information about the XBRL technical syntax, building on the primer should you be interested in more detail. **Special or Specific Considerations** dives into a little more specific examples related to digital financial reports. **Reconciliation of Models** reconciles various models to each other which is helpful to software developers. **Financial Report Semantic Object Properties** summarizes information needed to implement the conceptual model in software applications. **Report Element Properties** provides additional implementation details. **Analysis of 6,751 XBRL-based Public Company 10-Ks Submitted to SEC** helps you see how the conceptual model was reverse-engineered from the empirical evidence of XBRL-based public company financial reports submitted to the SEC. **XBRL Technical Syntax Related Modeling Tips** provides information that did not really fit anywhere else, but is important. **Profiles** explains the notion of a profile.

1.8. Additional resources

Throughout this document sample files, examples, and other information is referenced. Each section will refer you to this additional information which is useful. All of this information is also summarized in one location which you can find here:

http://xbrl.squarespace.com/mastering-xbrl/

We will also provide additional information, updated information, and otherwise provide additional resources you might need at this blog.

The following is other resources which you will likely find helpful:

- *XBRL for Dummies* (http://xbrl.squarespace.com/xbrl-for-dummies) by Charles Hoffman and Liv Watson helps understand what XBRL is, what it is not, and provides good chapter, An XBRL Primer, which helps you understand the XBRL technical syntax should you want to delve into that. It also helps you understand how others are making use of XBRL and helps business readers understand the notion of a supply chain.
- *Arelle (http://arelle.org)* is a high quality, free, open source XBRL processor. For those who are more technical, this is a great resource. Business professionals, don't bother. Trying to make use of this will drive you nuts.

1.9. Where next

Digital financial reporting is just getting started. Many new opportunities will be created for professional accountants who learn to harness these new tools. Older tools will become less relevant.

1.10. Acknowledgements

While I did physically create the information in this resource, I could have not done so without the gracious help of a number of people, directly and indirectly, over the years. I see myself as merely a custodian of this important information, nurturing it along for the benefit of all, condensing countless discussions into something hopefully useful for the common good.

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There are others which I probably left off and for this I apologize. I acknowledge and appreciate the thinking others contributed to this endeavor.

1.11. Feedback

Please send any feedback to Charles.Hoffman@me.com. We will use feedback to improve this resource.