Applying XBRL to US State and Local Government Audited Financial Reports

Marc Joffe and Jacqueline Reck

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Abstract

Ten years after the Securities and Exchange Commission mandated the conversion of corporate financial statements to machine-readable formats, there is still no analogous mandate for state and local government Comprehensive Annual Financial Reports (CAFRs). We explore the challenges and benefits of migrating from PDF CAFRs to machine-readable filings using eXtensible Business Reporting Language (XBRL). After explaining the benefits of machine-readable audited municipal financial data, we consider the challenges of creating and implementing an XBRL taxonomy for this sector and the impact a filing mandate would have on state and local governments. To better assess the challenges, we update a CAFR taxonomy previously published by Neal M. Snow and Jacqueline L. Reck and apply it to a city in Florida. While corporate XBRL filers generally use third-party filing firms, they can also use open-source software, low-cost licensed software, or both to produce the filings. Providing a variety of low-cost alternatives to state and local governments helps mitigate the challenge of providing affordable filings.

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Author Affiliation and Contact Information

Marc Joffe
Senior Policy Analyst
Reason Foundation
marc.joffe@reason.org

Jacqueline Reck
James E. and C. Ellis Rooks Distinguished Professor in Accountancy
Associate Dean of Financial Management and Academic Affairs
Muma College of Business
University of South Florida
jreck@usf.edu

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Introduction

Despite the importance of state and local financial policy to both the US economy and citizens' quality of life, standardized, audited financial data for this sector are difficult to obtain. More timely and accurate state and local government financial data collection can be advanced by migrating audited financial statements from PDFs to a self-describing text format. Doing so enables policymakers and analysts to evaluate and monitor the sector as a whole and the status of individual entities.

The most recent census of governments enumerated 90,106 state and local governments in the United States,[1] and the Bureau of Economic Analysis estimates that spending by these entities accounts for almost 11 percent of GDP.[2] In the first quarter of 2018, the Federal Reserve reported more than $3.8 trillion in municipal securities outstanding.[3] Given the size, diversity, and indebtedness of this sector, more comprehensive monitoring of its finances is essential.

While all state and most large local governments produce audited financial statements annually, these statements are usually published as PDF documents. As a result, the financial data included in these documents cannot be readily harvested and consolidated via an automated process. On the other hand, structured text files, such as those in eXtensible Business Reporting Language (XBRL), can be readily imported into spreadsheets and databases.

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[1] Carma Hogue, *Government Organization Summary Report: 2012* (Washington, DC: US Census Bureau, 2013).
[2] Bureau of Economic Analysis, "Gross Domestic Product: First Quarter 2018 (Second Estimate); Corporate Profits: First Quarter 2018 (Preliminary Estimate)," news release no. 18-24, May 30, 2018, https://www.bea.gov/system/files/2018-05/gdp1q18_2nd_0.pdf.
[3] Board of Governors of the Federal Reserve System, "Financial Accounts of the United States - Z.1," June 7, 2018, https://www.federalreserve.gov/releases/z1/20180607/html/l212.htm.

Currently, state and local government financial information in a format other than PDF is limited. The Census Bureau collects limited financial information but publishes the data only after a long lag. For example, the 2015 data were published on September 7, 2017.[4] The Census Bureau conducts a full survey every fifth year (those ending in "2" and "7"), relying on samples in other years. Finally, a local government's census responses do not necessarily reconcile with its audited financial statements because the Census Bureau's data collection instrument includes concepts that vary from those in audited financial statements, and filers are told that they may use either the cash or accrual basis method of accounting.[5]

Another source of limited state and local government financial information is the Government Finance Officers Association's (GFOA) Financial Indicators Database.[6] As with the Census Bureau data, this proprietary data source is extremely dated, with the most recent available data harvested from the 2013 CAFR reports submitted for the GFOA's Certificate of Achievement for Excellence in Financial Reporting program. The advantage of the GFOA dataset over the Census Bureau data is that it is derived from audited financial reports.

Several states also collect local government financial statistics, but, at least in some cases, these compilations also suffer from timeliness issues as well as lack of consistency with audited financial statements.[7]

[4] US Census Bureau, "2015 State and Local Government Datasets," October 12, 2017, https://www.census.gov/data/datasets/2015/econ/apes/annual-apes.html.
[5] US Census Bureau, "Form F-28: 2016 Annual Survey of Local Government Finances," September 25, 2016, https://www2.census.gov/govs/forms/2016/f28_2016_blank.pdf.
[6] Government Finance Officers Association, "Financial Indicators Database," accessed December 13, 2018, http://www.gfoa.org/financial-indicators-database.
[7] For a discussion of these issues in California, see Marc Joffe and Max Neiman, "Modernizing California City Financial Reporting," *Fox & Hounds*, October 2, 2013.

An advantage of a self-describing XBRL document is that it encloses data within delimiters that tell a human reader or computer parser what the data mean. For example, this XML fragment

<TOTAL REVENUES>900</TOTAL REVENUES>

<TOTAL EXPENDITURES>800</TOTAL EXPENDITURES>

clearly informs us that the government took in 100 (presumably dollars) more than it spent.

XBRL is an implementation of XML for financial reporting. XBRL taxonomies enumerate acceptable financial statement elements and enforce relationships among them. The taxonomy also includes metadata that further describe each element. For example, if an XBRL parser read the above fragment in conjunction with an XBRL taxonomy, it would know that the amounts are supposed to be in US dollars.

Further, an XBRL document can be validated by the financial statement filer before submission to ensure that all required elements are present, that they have expected relationships with each other, and that no spurious elements are included.

Although XBRL has been applied to US corporate financial filings as well as private and public financial disclosures in many foreign markets, little progress has been made toward implementing XBRL for US state and local government financial filings.

In this paper, we survey local government XBRL implementations in Spain, Italy, and Brazil. We also review US XBRL implementations for banking and corporate reporting. Then we consider barriers to implementation of XBRL for US state and local governments. Next, we describe our own efforts to apply XBRL to the CAFR produced by the City of St. Petersburg, Florida. We conclude with a discussion of future prospects and recommendations regarding the use of the XBRL.US working group on “State and Local Government Disclosure Modernization.”

Foreign Government XBRL Implementations

Since its inception in 1998, XBRL has enjoyed widespread adoption, especially for corporate reporting. According to XBRL International, 29 securities regulators and stock exchanges have implemented XBRL for corporate financial filings worldwide.[8] Application of XBRL to public-sector reporting is less common, but there are implementations in Spain, Italy, and Brazil.

The Spanish Ministerio de Hacienda commissioned the development of its first municipal XBRL taxonomy, known as LENLOC, in 2006 and began collecting XBRL disclosures from municipalities in 2007. The LENLOC taxonomy governs "budget settlements," which are a local government's actual revenues and expenditures. Later, the ministry also implemented additional taxonomies for budgets (PENLOC) and quarterly financial updates (TRIMLOC).[9] Spain has over 8,000 municipal governments, all of which are subject to the filing mandate.

According to Ignacio Boixo of XBRL España, the ministry enjoys a high compliance rate for municipal XBRL filings because it has the power to withhold intergovernmental assistance until it receives a local government's filing. He also told us that the cost of developing the initial LENLOC taxonomy was €200,000 and noted that the transition to XBRL was greatly eased by the fact that multiple accounting system vendors supported the taxonomy before mandatory filings started.[10]

[8] XBRL International, "XBRL for Securities Regulators and Stock Exchanges," accessed December 13, 2018, https://www.xbrl.org/the-standard/why/xbrl-for-securities-filing/. For more details on other applications of XBRL to corporate filing, see Marc Joffe, *Open Data for Financial Reporting: Costs, Benefits, and Future* (Washington, DC: Data Foundation, 2017).

[9] The Spanish taxonomies are posted at http://www.minhafp.gob.es/es-ES/Areas%20Tematicas/Administracion%20Electronica/OVEELL/Paginas/LENLOC.aspx.

[10] Ignacio Boixo (XBRL España), in discussion with the authors, October 10, 2017.

Municipal XBRL filings assist the ministry in providing Spanish citizens with greater levels of municipal financial transparency. The ministry posts all filings on its website, displaying the data in a user-friendly format rather than in raw XBRL format.[11]

More recently, Italy has implemented a similar reform. In 2016, the nation's State General Accounting Department began requiring the more than 8,000 regional, provincial, and municipal governments to file their financial reports in XBRL.[12] Uploaded data is aggregated by the Accounting Department and published on its open-data web site at http://www.bdap.tesoro.it /sites/openbdap/cittadini/Pagine/default.aspx.

A third nation that has adopted XBRL-based local government reporting is Brazil, where the implementation was part of a larger initiative to improve the nation's public-sector accounting. In 2009, Brazil's Tesouro Nacional (Treasury) published a standard chart of accounts for use by all governmental entities. In 2014, Treasury replaced its legacy data collection system with Project SICONFI, which relies on an XBRL taxonomy based on the standard chart of accounts. The nation's 5,500 local governments can now file XBRL financial reports either by completing an online form or by submitting validated XBRL-formatted files.[13] Financial data extracted from the XBRL filings are freely available on the SICONFI website.[14]

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[11] The site can be found at http://www.minhafp.gob.es/es-ES/Areas%20Tematicas/Administracion%20Electronica /OVEELL/Paginas/PublicacionPresupuestosEELL.aspx.

[12] Michela Soverchia and Andrea Fradeani, "The eXtensible Business Reporting Language: A Digital Tool to Enhance Public Sector Accountability," in *Innovative Perspectives on Public Administration in the Digital Age*, ed. Aroon P. Manoharan and James McQuinston (Hershey, PA: IGI Global, 2018), 106–120.

[13] Gianluca Gabellotto, Bruno De Sousa Simões, and Leonardo Silveira Do Nascimento, *Driving Efficiency and Transparency in Government Reporting with XBRL Global Ledger: The Experience of the National Treasury in Brazil* (Clark, NJ: XBRL International, 2015). Brazil's public-sector XBRL taxonomy is published at https://siconfi .tesouro.gov.br/siconfi/pages/public/taxonomia/taxonomia_list.jsf.

[14] The SICONFI website can be found at https://siconfi.tesouro.gov.br/siconfi/pages/public/pesquisa/pesquisa _list.jsf.

XBRL in the United States

US regulators have mandated the use of XBRL for several financial reporting requirements but have yet to apply the standard to state and local government reports.

In 2005, the Federal Financial Institutions Examination Council began requiring more than 6,000 banks to file their Reports of Condition and Income in XBRL format. These reports are used by the Federal Deposit Insurance Corporation (FDIC) and other federal oversight agencies to monitor bank financial condition.[15]

Then, in 2008, the Securities and Exchange Commission (SEC) began phasing in the use of XBRL for public company 10-K (annual) and 10-Q (quarterly) financial disclosures. This implementation proved controversial, with critics expressing concern over the cost of producing XBRL filings and limited public use of these disclosures.

A recent study found some of these criticisms to be warranted but ascribed the problems to implementation errors rather than any issue with the underlying XBRL technology. Among the problems identified were the complexity of the SEC taxonomy; a lack of validations in the taxonomy, triggering the production of incomplete and inconsistent filings; and the failure to withdraw legacy reporting requirements (i.e., rather than replace text 10-K and 10-Q filings with XBRL, the SEC instructed filers to produce both).[16]

In June 2018, the SEC adopted Inline XBRL filing requirements that will be implemented over a phased period.[17] The intent is to decrease costs and increase efficiency and effectiveness

[15] XBRL.US, "FDIC Reporting," accessed December 13, 2018, https://xbrl.us/home/filers/fdic-reporting/.
[16] Joffe, *Open Data for Financial Reporting*.
[17] Securities and Exchange Commission, "SEC Adopts Inline XBRL for Tagged Data," news release no. 2018-117, June 28, 2018.

of financial report information while improving the usability of the data provided. As discussed later, we use the Inline XBRL technology in the development of our prototype.

Other SEC applications of XBRL in the United States include Mutual Fund Risk/Return Summaries and Credit Rating Agency Rating Histories.[18] The US Department of Energy has supported the development of an XBRL taxonomy for solar financings,[19] and industry groups have created a taxonomy for contractor work-in-process reports needed to underwrite surety bonds.[20]

Unrealized Plans to Apply XBRL to US State and Local Government CAFRs

As the SEC considered mandating XBRL for corporate financial reporting, industry participants discussed applying the technology to public-sector entities. In 2008, the Association of Government Accountants (AGA) published a research report entitled *XBRL and Public Sector Financial Reporting*.[21] The report discussed an effort to convert portions of the State of Oregon's CAFR to an XBRL instance document.

Also, around this time, the Municipal Securities Rulemaking Board (MSRB) floated the possibility of including XBRL disclosures in its Electronic Municipal Market Access (EMMA) system. In a 2009 release, MSRB said the following:

> The MSRB may in the future designate additional computerized formats as acceptable electronic formats for submission or preparation of documents under Revised Rule G-32 by means of a filing with the Commission. The MSRB supports the SEC's Interactive Data and XBRL Initiatives for registered offerings and would consider designating XBRL as a designated electronic format for purposes of submissions to the EMMA primary market disclosure service at such time in the future as appropriate taxonomies for

[18] Securities and Exchange Commission, "Taxonomies," November 30, 2018, https://www.sec.gov/structureddata/dera_taxonomies.
[19] XBRL.US, "Solar," accessed December 13, 2018, https://xbrl.us/home/industries/solar/.
[20] Surety Automation, "XBRL," May 23, 2017, http://suretyautomation.org/xbrl/.
[21] Chon Abraham and Joseph Kull, *XBRL and Public Sector Financial Reporting: Standardized Business Reporting: The Oregon CAFR Project* (Salem, OR: Association of Government Accountants, 2008).

> the municipal marketplace have been developed and as issuers begin the process of producing primary market disclosure documents using XBRL.[22]

The Government Finance Officers Association (GFOA) issued a best-practices document recommending that its members "monitor developments in standardized electronic financial reporting (e.g., extensible business reporting language [XBRL]) and apply that language to their electronic document process when appropriate."[23]

Finally, the Governmental Accounting Standards Board (GASB) initiated an Electronic Financial Reporting project in April 2008 to "monitor the effect of the electronic media on information delivery and user needs." GASB stated that "extensive research into the evolving state of the art in electronic financial reporting by state and local governments will provide the Board with a basis for evaluating the need to develop standards for financial reports intended for this medium."[24]

Despite these pronouncements, there was no follow-up to the 2008 AGA report, and the momentum for developing and implementing a CAFR taxonomy ebbed. The failure to advance may be attributable to the Great Recession, which sapped public finance resources potentially available to an ambitious new technology initiative. Further, in contrast to the SEC and corporate financial reporting, there is no single regulatory or self-regulatory authority that has the right and responsibility to implement a nationwide public-sector reporting mandate. Finally, problems with the rollout of US corporate XBRL reporting appear to have soured some regulators on applying XBRL to public-sector reporting.

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[22] Municipal Securities Rulemaking Board, "MSRB Notice 2009-07," March 23, 2009, http://www.msrb.org/Rules-and-Interpretations/Regulatory-Notices/2009/2009-07.aspx.
[23] Government Finance Officers Association, "Website Posting of Financial Documents," September 2018, http://www.gfoa.org/website-posting-financial-documents.
[24] Government Accounting Standards Board, "Project Pages: Electronic Financial Reporting," accessed December 14, 2018, https://gasb.org/jsp/GASB/GASBContent_C/ProjectPage&cid=1176156646173.

If the United States were to adopt XBRL for state and local governments, it would be one of only a few nations to do so. Adoption of XBRL has proven more of a challenge for state and local governments than for corporate financial statement filings. This difference may be explained by varying consumption patterns and legal provisions. Unlike corporate entities, governments do not issue equities that are traded in active markets. Although the municipal bond market is large in size, the bonds themselves are infrequently traded. Additionally, corporate entities desiring to trade on US exchanges fall under the jurisdiction of the SEC, which has the authority to mandate the filing of financial report information using XBRL. Owing to the Securities Act of 1933, the SEC does not have the authority to mandate financial report filings by state and local governments.

The US municipal bond market is different from that of other countries in that sub-sovereign bond issuance is relatively uncommon outside the United States (except in Canada and Germany), and much of the debt that is issued outside the United States carries an implicit or explicit sovereign guarantee. The United States, however, has many state and local governments tapping the municipal bond market without the benefit of a federal guarantee.

In addition to bond market consumers, other consumers of US state and local financial disclosures include state governments that conduct oversight and sometimes intervene during instances of local government fiscal distress, federal agencies that provide grant funding to lower levels of government and are thus obliged to conduct oversight, banks and other financial institutions, and citizens. Given the diversity of information consumers, an open standard like XBRL is an even better fit for state and local financial reporting than in other countries where there is one primary data recipient: the sovereign government.

Although the United States might have logically pioneered municipal XBRL, it failed to do so. As a result, we can now benefit by learning from the experience of early adopters, such as Spain, Italy, and Brazil, as we consider applying the technology domestically.

Overcoming Barriers to Adoption

As noted above, applying XBRL to US state and local government financials is a challenge because of the absence of a single regulatory authority to impose a mandate as the SEC did for corporate financial statement filers. That said, individual states could impose such a mandate, and the federal Office of Management and Budget could also apply a machine-readable data standard to all single audits the federal government collects under Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. Although this federal mandate would exclude entities that expend less than $750,000 in federal funds annually, it would nonetheless affect over 10,000 filers across all 50 states, the District of Columbia, and multiple territories.[25]

As indicated earlier, after the Great Recession, interest in XBRL within the government accounting community diminished. GASB did not update its Electronic Financial Reporting page between 2013 and early 2018. A February 2016 AGA report on technology, transparency, and government financial reporting made no mention of XBRL.[26] Neither GFOA nor MSRB made any further public pronouncements regarding XBRL.

[25] This assertion is based on a review of single audits warehoused in the Census Bureau's Federal Audit Clearinghouse at https://harvester.census.gov/facdissem/SearchA133.aspx.
[26] Association of Government Accountants, *Bringing Financial Reporting into the Age of Open Data and Open Government—Three Approaches* (Alexandria, VA: Association of Government Accountants, 2016).

Concerns with the SEC XBRL implementation also played a role in the diminished interest.[27] These concerns included cost and complexity of generating XBRL instance documents and the lack of direct consumption of these documents. Although some of the objections are incorrect, overstated, or no longer applicable, they have nonetheless cast a pall over the extension of XBRL to other sectors, including state and local government.

Advocates of XBRL application to the state and local sector will have to overcome these concerns by learning lessons from previous implementations in the United States and elsewhere. We believe the following best practices should be implemented:

1) Lowering costs by tagging only the portions of CAFRs that are most important to financial statement users, rather than attempting to tag the whole document.
2) Providing low-cost or free filing tools that are easy to use to smaller governments.
3) Involving multiple vendors in the taxonomy development and implementation process so that government financial statement filers have a choice of experienced filing firms from the outset.
4) Replacing PDFs with Inline XBRL, thereby avoiding the need for multiple filings.
5) Incorporating a high degree of checking and validation within the taxonomy to minimize data errors.
6) Involving states in the process in an effort to increase collaboration and development of a uniform taxonomy that can be adopted across states. Providing a standardized taxonomy will ensure consistent and comparable tagging and reporting by all state and local governments.

[27] Joffe, *Open Data for Financial Reporting*.

7) Aligning the elements of the standardized taxonomy with the underlying accounting standards and disclosure requirements, i.e., grounding them in what state and local government financial managers already know. (However, because the Government Accounting Standards Codification[28] does not address all line items in CAFRs, there are limitations to this approach. Taxonomy elements must be gleaned from both the codification and a review of PDF CAFRs.)
8) Designing the taxonomy to make the data easier to analyze by those providing financial oversight.

Recent research can also be used to help drive the move to implement Inline XBRL. For example, one recent article has shown that the cost to prepare filings and reports diminishes with XBRL.[29] Other research indicates that the timeliness of reporting improves with XBRL reporting,[30] providing information of greater value and potentially greater comparability.[31,32] These research results help mitigate concerns associated with the SEC XBRL implementation.

[28] This codification is available at https://gars.gasb.org/.
[29] John Stantial, "ROI on XBRL," *Journal of Accountancy* 203, no. 6 (2007): 32–35.
[30] Shannon N. Sohl, Tammy R. Waymire, and Thomas Z. Webb, "Determinants of Bifurcated Local Government Reporting Lag: The Potential for XBRL to Improve Timeliness," *Journal of Emerging Technologies in Accounting* 15, no. 1 (2018): 121–40.
[31] Devrimi Kaya and Paul Pronobis, "The Benefits of Structured Data across the Information Supply Chain: Initial Evidence on XBRL Adoption and Loan Contracting of Private Firms," *Journal of Accounting and Public Policy* 35, no. 4 (2016): 417–36.
[32] Steve Yang, Fang-Chun Liu, and Xiaodi Zhu, "The Impact of XBRL in Financial Statement Structural Comparability," in *Network, Smart and Open: Three Keywords for Information Systems Innovation*, ed. Rita Lamboglia et al. (Cham, Switzerland: Springer International Publishing, 2018), 193–206.

Developing the Prototype

To develop our XBRL prototype we looked for a willing collaborator and found that the finance officials for the City of St. Petersburg, Florida, were interested in partnering with us. Our goal was to convert the city's published 2017 CAFR into an Inline XBRL instance document that could be viewed online. In addition, we wanted to provide a user-friendly tool that could be used to generate the XBRL instance document. Such a tool would allow finance staff to produce iXBRL CAFRs in future years.

St. Petersburg's 2017 CAFR is a 298-page document containing numerous data schedules, extensive text, and graphics. Tagging the entire document would have been extremely costly. Further, some information in the CAFR was deemed more relevant to the municipal bond market and other consumers of municipal financial information. After discussing selection criteria with the St. Petersburg finance officials, we decided to limit our scope to the following portions of the city's CAFR:

1) Statement of Net Position (page 50)
2) Statement of Activities (page 51)
3) Balance Sheet, Governmental Funds (pages 52–53)
4) Statement of Revenues, Expenditures and Changes in Fund Balances, Governmental Funds (pages 56–57)
5) Statement of Net Position, Proprietary Funds (pages 64–67)
6) Statement of Revenues, Expenditures and Changes in Fund Balances, Proprietary Funds (pages 68–69)
7) Statement of Cash Flows, Proprietary Funds (pages 70–71)
8) Long Term Obligations (note 12)

9) Employee Defined Benefit Pension Plans (note 18)
10) Other Post-Employment Benefits (note 20)
11) Tax Abatements (note 21)
12) Statement of Revenues, Expenditures and Changes in Fund Balance—Budget and Actual (pages 59–62)
13) Schedule of Changes in Net Pension Liability (pages 167–69)
14) Schedule of (Retirement System) Contributions (page 171)
15) Net Position by Component (page 243)
16) Changes in Net Position Last Ten Fiscal Years (page 244)
17) Fund Balances, Governmental Funds (page 246)
18) Changes in Fund Balances—Governmental Funds (page 247)
19) Ratio of Outstanding Debt by Type (page 256)
20) Ratio of Net General Bonded Debt Outstanding (page 257)
21) Direct and Overlapping Governmental Activities Debt (page 258)
22) Legal Debt Margin Information (page 259)
23) Pledged-Revenue Coverage (page 260)

These sections include the key fiscal stability measures referenced in academic and practitioner literature and should thus serve as a sufficient starting point for municipal financial analysts.[33] The iXBRL CAFR we published includes the entire 298-page PDF document, but only the above sections were tagged.

[33] Evgenia Gorina, Marc Joffe, and Craig Maher, "Using Fiscal Ratios to Predict Local Fiscal Distress" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, 2018).

XBRL and iXBRL documents typically reference a taxonomy posted on the internet. This eliminates the need for financial statement users to download the taxonomy to their local hard drive. To make this prototype as realistic as possible (given limited time and resources) we have posted the taxonomy at http://www.govwiki.info/xbrl/2018-04-30/us-cafr-2018-04-30.xsd.

Taxonomy development and instance document creation tasks were contracted to offshore developers. The primary contractor identified for this project was Microvista Technologies based in Ahmedabad, India. Microvista has developed XBRL taxonomies and XBRL filing tools for Indian companies, and thus it possessed the relevant technical expertise, although its team lacked domain expertise in US municipal finance. The use of an American contractor would not have necessarily remedied this limitation, since knowledge of state and local government finance is not common among US-based developers.

In addition to St. Petersburg's CAFR, we gave Microvista the taxonomy proposed by Snow and Reck.[34] Microvista added elements to capture concepts not in the Snow and Reck taxonomy and repurposed an Excel-based instance document creator it developed for Indian corporate filers. We have posted the results of Microvista's work in a Github taxonomy at https://github.com/xbrlus/us_municipal_cafr_taxonomy. This taxonomy is maintained under the auspices of XBRL.US, the local affiliate of XBRL International responsible for developing and maintaining XBRL taxonomies in the US market. During our project, and partially because of it, XBRL.US agreed to form a State and Local Disclosure Modernization working group, which is currently working to refine our prototype.

One major technical challenge of the project involved our choice to generate an iXBRL instance document. The iXBRL standard is relatively new, and Microvista had little experience

[34] Neal M. Snow and Jacqueline L. Reck, "Developing a Government Reporting Taxonomy," *Journal of Information Systems* 30, no. 2 (2016): 49–81.

with it. Also, we learned that a well-formed iXBRL document must be in XHTML (eXtensible HTML) format. Many PDF-to-HTML converters produce web pages that can be viewed in a web browser but do not meet XHTML standards and thus cannot be processed by an XHTML parser.[35]

A related challenge arose from the sheer size and complexity of St. Petersburg's CAFR. This challenge is one of which we are mindful given that the St. Petersburg CAFR is comparable in size and complexity to most municipal CAFRs. The initial iXBRL file we received took 47 seconds to load into Internet Explorer and could not be loaded into Chrome at all. We contracted with additional freelancers to resolve these issues and eventually obtained a full iXBRL CAFR that could be loaded into Chrome with a somewhat shorter but still unacceptably long load time. We were also able to produce a CAFR fragment that could be loaded into a commercial XBRL reader—CoreFiling Magnify.[36] The full iXBRL CAFR could not be successfully loaded into this tool. Further improvements to the St. Petersburg iXBRL CAFR prototype will become a task for the new XBRL.US working group discussed in the next section.

Since the intent of the St. Petersburg conversion was to provide a prototype, many of the complexities related to the development of a complete taxonomy were not addressed but were left for consideration by the XBRL.US working group. The creation of the prototype using the initially developed taxonomy allows the working group to identify issues related to a complete taxonomy development. Some of the issues that have arisen as a result of the prototype development relate to definition of terms, use of multiple bases of accounting, and number and types of disclosures.

[35] Differences between HTML and XHTML are addressed at https://www.diffen.com/difference/HTML_vs_XHTML.

[36] For information about this tool, see https://www.corefiling.com/products/magnify/.

Prospects and Recommendations

Although interest in XBRL reporting by state and local governments has been stagnant for the past 10 years, more recent events indicate that interest is again on the rise with regard to XBRL implementation. During our prototyping project, Florida Governor Rick Scott signed House Bill 1073, which appropriates $500,000 to the state's Chief Financial Officer for the creation of a local government XBRL taxonomy with the goal of applying this taxonomy to local government Annual Financial Reports beginning in 2022.[37]

There has also been some movement at the federal level. The Digital Accountability and Transparency Act of 2014 (otherwise known as DATA) sought both to standardize federal spending information and to report it in an open format.[38] Executive branch implementation of DATA included development of an information model and an XBRL schema.[39] In late 2018, the Grant Reporting Efficiency and Agreements Transparency (GREAT) Act passed the House of Representatives.[40] This measure would extend reporting standards to federal grant reporting, which, as noted earlier, affects a large proportion of state and local governments. Irrespective of whether the GREAT Act becomes law, the Office of Management and Budget is developing grant reporting standards as part of the President's Management Agenda (PMA).[41] At this stage it is unclear whether and to what degree the GREAT Act or the PMA will impact the standardization of grantee audited financial statements.

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[37] Florida Senate, "House of Representatives Final Bill Analysis: CS/CS/CS/HB 1073," March 29, 2018, https://www.flsenate.gov/Session/Bill/2018/1073/Analyses/h1073z1.IBS.PDF.
[38] Jacob Errichetti and Saeed J. Roohani, "The Merit of the DATA Act to Enhance the Governmental Reporting Process: A Corporate Governance Perspective," *Journal of Emerging Technologies in Accounting* 15, no. 1 (2018): 107–20.
[39] Bureau of the Fiscal Service, DATA Act Information Model Schema RSS v1.3 (dataset), June 29, 2018, https://fiscal.treasury.gov/files/data-transparency/daims-rss-v1.3.xlsx.
[40] Grant Reporting Efficiency and Agreements Transparency Act of 2018, H.R. 4887, 115th Cong. (2018).
[41] General Services Administration and Office of Management and Budget, "Results-Oriented Accountability for Grants," September 20, 2018, https://www.performance.gov/CAP/CAP_goal_8.html.

On June 26, 2018, XBRL.US convened a conference call to determine interest in the establishment of a "State and Local Government Disclosure Modernization Working Group." The working group was subsequently formed as a result of the interest shown on the conference call. The purpose of this working group is to develop a taxonomy that would allow for CAFR reports to be prepared and distributed using XBRL. We encourage the efforts of XBRL.US and the working group, believing that their efforts are the most promising prospects for providing more accessible state and local government financial reporting information. We also encourage the working group to collaborate with Florida's Chief Financial Officer's Department of Accounting and Auditing as it implements HB 1073.

We recommend that the working group include the many stakeholders affected by the modernization of financial reporting. Given that there is no federal mandate requiring the filing of state and local government financial report information, it is important that a collaborative effort be made to develop a single taxonomy that can be adopted and extended (for state-specific reporting requirements) by the various states and supported by standard-setting and national organizations. The ongoing support of standard-setting bodies and national organizations will be instrumental in adoption of a standardized taxonomy and electronic financial report preparation and publishing using XBRL. The Financial Accounting Standards Board is currently the steward for the US Generally Accepted Accoutig Principles Financial Reporting Taxonomy, and we see a similar role for the GASB with regard to an XBRL.US state and local government financial reporting taxonomy.