

1. Query and Analysis of XBRL-based Digital Financial Reports

The purpose of this section is to provide examples of and issues with querying information from and analysis of that information extracted from an XBRL-based digital financial report.

This section covers the basics of querying and analysis of XBRL-based digital financial reports. In this section we will use a free tool for making use of all that XBRL-based public company financial information submitted to the SEC. We will cover only the basics to give the reader a sense of how to do this.

1.1. Importance of Data Analytics

Many things go into the successful operation of a business. This notion is not new to professional accountants; they have been managing financial and nonfinancial information of organizations. There are intricate reasons behind the successes and failures of companies. It is important to dig into the subtleties and nuances of information looking for correlations and causal relationships, patterns, trends which contribute to success or failure. Data analysis tools are increasing in functionality and sophistication. The volume of information available has never been greater and the amount continues to grow each year.

1.2. Financial analysis use cases

These are the general use cases for making use of information reported in XBRL-based public company financial reports provided to the SEC or elsewhere:

- **Analysis of a single report.** Analysis of one financial report from one reporting entity.
- **Time series analysis for a reporting entity.** Two or more financial reports from the same reporting entity.
- **Comparative analysis across reporting entities.** Two or more financial reports from different reporting entities using different subsets of information.
- **Ratio analysis.** An analysis of a single report, a time series analysis, or a comparative analysis using ratios.

1.3. Repository of machine-readable facts (fact database)

The purpose of this section is to set your perspective and expectations. Imagine a machine-readable repository of information. Imagine that you want to query that repository and get the value of two concepts for every economic entity in that repository: *Assets* and *Liabilities and Equity*. In order to extract that information from any XBRL-based financial report using a machine-based process the following process needs to be followed:

1. Software MUST locate each report you want to query. You want to be sure you have the correct report. For example, if a report is amended, you need the most current report.

2. The report MUST be valid XBRL technical syntax. If the technical syntax is invalid, you may or may not get the correct results.
3. Software MUST locate the appropriate reporting units (currency). In the case of public company financial reports, 99% of entities report using US Dollars. However, 1% use other currencies as the reporting units.
4. Software MUST appropriately identify the root reporting entity in the report, we don't want business segment information. Generally, this is the consolidated entity but it could be a parent holding company or some other accounting entity.
5. Software MUST appropriately locate the current balance sheet date. Generally you want information about the current balance sheet data and not the prior balance sheet, both are provided in the same report.
6. Software MUST find the appropriate US GAAP concept used to express *Assets* which is us-gaap:Assets.
7. Software MUST find appropriate US GAAP concept for *Liabilities and Equity*. This is a little harder because there are multiple possible concepts: us-gaap:LiabilitiesAndStockholdersEquity or us-gaap:LiabilitiesAndPartnersCapital.
8. Software MUST check the returned information to assure that it is consistent with what is expected, the business domain rule that "Assets = Liabilities and Equity".

That is an overview of the workflow/process to obtain a basic set of information from the repository of XBRL-based public company financial filings. And here are the results of that query for every financial report from the SEC EDGAR system of XBRL-based public company financial reports:

xbrl:Entity	Legal Entity	Fiscal Period	Fiscal Year	Assets	Liabilities and Equity	Units	Difference in Value
All CIK numbers	Root economic entity	FY	2001	280	280	iso4217:USD	0
All CIK numbers	Root economic entity	FY	2009	31,586,555,000	31,586,555,000	iso4217:USD	0
All CIK numbers	Root economic entity	FY	2010	23,061,516,000	23,061,516,000	iso4217:CAD	0
All CIK numbers	Root economic entity	FY	2010	8,833,200,000	8,833,200,000	iso4217:GBP	0
All CIK numbers	Root economic entity	FY	2010	33,205,444,569,755	33,235,543,477,631	iso4217:USD	30,098,907,876
All CIK numbers	Root economic entity	FY	2011	45,216,467	45,216,467	iso4217:AUD	0
All CIK numbers	Root economic entity	FY	2011	110,885,000	110,885,000	iso4217:BRL	0
All CIK numbers	Root economic entity	FY	2011	28,708,716,218	28,708,716,218	iso4217:CAD	0
All CIK numbers	Root economic entity	FY	2011	1,226,733,000	1,226,733,000	iso4217:EUR	0
All CIK numbers	Root economic entity	FY	2011	7,938,800,000	7,938,800,000	iso4217:GBP	0
All CIK numbers	Root economic entity	FY	2011	1,565,000	1,565,000	iso4217:ILS	0
All CIK numbers	Root economic entity	FY	2011	46,395,324,314,234	46,165,763,878,111	iso4217:USD	(229,560,436,123)
All CIK numbers	Root economic entity	FY	2012	49,066,850	49,066,850	iso4217:AUD	0
All CIK numbers	Root economic entity	FY	2012	32,470,161,238	32,470,161,238	iso4217:CAD	0
All CIK numbers	Root economic entity	FY	2012	1,303,349,000	1,303,349,000	iso4217:EUR	0
All CIK numbers	Root economic entity	FY	2012	10,504,300,000	10,504,300,000	iso4217:GBP	0
All CIK numbers	Root economic entity	FY	2012	47,493,211,088,244	47,307,285,874,940	iso4217:USD	(185,925,213,304)
All CIK numbers	Root economic entity	FY	2013	54,642,443	54,642,443	iso4217:AUD	0
All CIK numbers	Root economic entity	FY	2013	39,919,462,935	39,919,385,738	iso4217:CAD	(77,197)
All CIK numbers	Root economic entity	FY	2013	13,120,000	13,120,000	iso4217:EUR	0
All CIK numbers	Root economic entity	FY	2013	48,909,115,040,682	48,735,740,980,605	iso4217:USD	(173,374,060,077)
All CIK numbers	Root economic entity	FY	2014	342,493,649,881	342,493,649,881	iso4217:USD	0
				176,531,415,952,227	175,972,655,073,402		(558,760,878,825)
							-0.3%

The results¹ show that most of the balance sheets balance, *Assets = Liabilities and Equity*. Some are inconsistent with what you would expect. The total inconsistency is .3% which is not too bad. However, the information needs to be 100% consistent in order to not get humans involved to figure out exactly what is causing the inconsistencies.

What needs to be considered when querying other facts from a repository works in exactly the same way as this basic query.

1.4. Extracting Information Using Excel

Excel can be used to both understand how to extract information from an XBRL-based report or to build models that utilize XBRL-based information from reports. Here are some examples that will help you learn to extract information from XBRL-based reports.

This ZIP file contains three Excel spreadsheets². We will walk you through extracting information from each of these three spreadsheets. Note that all the spreadsheets are pre-populated but if you run the provided macro, the spreadsheet will repopulate.

1.4.1. Extracting from one report at a time (Extract_ONE_REPORT.xlsm)

This Excel spreadsheet allows you to extract information from one XBRL-based report at a time and verify that the information is consistent with your expectation. All you need to do is open the spreadsheet, press the button “Extract Information and Validate”, and the spreadsheet will populate with the information for the report you selected:

¹ Query and results provided by SECXBRL.info which is a commercial software application, see <http://app.secxbri.info/>

² Extract.zip, <http://xbrlsite.azurewebsites.net/2017/IntelligentDigitalFinancialReporting/Extract.zip>

Link to XBRL instance: (Paste URL to XBRL instance or full path and file name of local file)	
https://www.sec.gov/Archives/edgar/data/789019/000156459019037549/msft-10q_20190930.htm.xml	
Fact Concept	Value
Entity Registrant Name	MICROSOFT CORPORATION
CIK	0000789019
Entity Filer Category	Large Accelerated Filer
Trading symbol	MSFT
Fiscal Year End	--06-30
Fiscal Year Focus	2020
Fiscal Period Focus	Q1
Document Type	10-Q
Balance Sheet Date	ERROR
Income Statement Start Period (Year to Date)	2019-07-01
Balance sheet:	
Assets	278,955,000,000
Current Assets	165,896,000,000
Noncurrent Assets	113,059,000,000
Liabilities	172,894,000,000
Current Liabilities	58,118,000,000
Noncurrent Liabilities	114,776,000,000
Commitments and Contingencies	0
Temporary Equity	0
Equity Attributable to Parent	106,061,000,000
Equity Attributable to Noncontrolling Interest	0
Equity	106,061,000,000
Liabilities and Equity	278,955,000,000
Income Statement:	
Revenues	33,055,000,000
Cost of Revenues	10,406,000,000
Gross Profit	22,649,000,000
Operating Expenses	9,963,000,000
Other Operating Income	0

If you go to the workbook "Sample XBRL Instances to Use" you can pick any one of 1642 XBRL instances to extract information from. All should work because they are all of the same reporting style. Notice the validation results section of the spreadsheet:

Key Financial Ratios	
Return on Equity (ROE)	0.101
Return on Assets (ROA)	0.038
Return on Sales (ROS)	0.323
Sustainable Growth Rate (SGR)	0.112
Validation Errors (All these should be ZERO):	
BS1	0
BS2	0
BS3	0
BS4	0
BS5	0
IS1	0
IS2	0
IS3	0
IS4	0
IS5	0
IS6	0
IS7	0
IS8	0
IS9	0
IS10	0
CF1	0
CF2	0
CF3	0
CF4	0
CF5	0
CF6	0
Other Information:	
Link to XBRL instance:	https://www.sec.gov/Archives/edgar/data/789019/000156459019037549/msft-10q_20190930.htm.xml
Link to XBRL Cloud Viewer:	https://edgardashboard.xbrlcloud.com/f/789019/000156459019037549/msft-10q_20190930.htm.xml

When you extract information and validate it, the application also creates a text file called "LineOfReasoning.txt" and puts it as the same subdirectory as the Excel workbook. That text file shows you the line of reasoning used to get information from the report.

**1.4.2.Extracting information from all reports for one entity
 (Extract_ALL_REPORTS_Comparison.xlsm)**

This spreadsheet extracts information from all 41 reports submitted to the SEC by Microsoft. A fragment of the results looks as follows:

A		B		C		D		E		F		G		H		I		J		K		L		M		N		O		P		Q		R		S		T		U		V	
		Compare All in List Spreadsheet																																									
				General Information																																							
5	6	Entity/Report Name	CIK	Entity File Category	Trading Symbol	Fiscal Year	Fiscal Period	Document Type	Balance Sheet Date	Income Statement Date	Assets	Current Assets	Noncurrent Assets	Liabilities	Current Liabilities	Noncurrent Liabilities	Commitments and Contingencies	Temporary Equity	Equity Attributable to Noncontrolling Interest	Equity																							
1	1	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	278,955,000,000	95,884,000,000	103,059,000,000	172,894,000,000	68,180,000,000	134,714,000,000	14,775,000,000	0	0	0	0	130,041,000,000																							
2	2	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	288,955,000,000	101,822,000,000	101,004,000,000	184,246,000,000	68,463,000,000	115,783,000,000	15,763,000,000	0	0	0	0	132,332,000,000																							
3	3	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	293,225,000,000	105,587,000,000	103,324,000,000	186,417,000,000	69,417,000,000	117,000,000,000	17,000,000,000	0	0	0	0	134,864,000,000																							
4	4	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	298,955,000,000	109,574,000,000	101,365,000,000	190,141,000,000	70,318,000,000	119,823,000,000	19,323,000,000	0	0	0	0	137,539,000,000																							
5	5	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	303,225,000,000	113,569,000,000	103,424,000,000	194,652,000,000	71,262,000,000	123,390,000,000	21,390,000,000	0	0	0	0	140,267,000,000																							
6	6	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	308,955,000,000	117,564,000,000	103,483,000,000	199,165,000,000	72,107,000,000	126,058,000,000	23,051,000,000	0	0	0	0	142,718,000,000																							
7	7	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	313,225,000,000	121,559,000,000	103,543,000,000	203,678,000,000	73,052,000,000	128,626,000,000	24,576,000,000	0	0	0	0	145,169,000,000																							
8	8	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	318,955,000,000	125,554,000,000	103,603,000,000	208,191,000,000	73,897,000,000	131,294,000,000	26,101,000,000	0	0	0	0	147,620,000,000																							
9	9	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	323,225,000,000	129,549,000,000	103,663,000,000	212,704,000,000	74,742,000,000	133,962,000,000	27,626,000,000	0	0	0	0	150,071,000,000																							
10	10	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	328,955,000,000	133,544,000,000	103,723,000,000	217,217,000,000	75,587,000,000	136,630,000,000	29,151,000,000	0	0	0	0	152,522,000,000																							
11	11	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	333,225,000,000	137,539,000,000	103,783,000,000	221,730,000,000	76,432,000,000	139,298,000,000	30,676,000,000	0	0	0	0	154,973,000,000																							
12	12	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	338,955,000,000	141,534,000,000	103,843,000,000	226,243,000,000	77,277,000,000	141,966,000,000	32,201,000,000	0	0	0	0	157,424,000,000																							
13	13	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	343,225,000,000	145,529,000,000	103,903,000,000	230,756,000,000	78,122,000,000	144,634,000,000	33,726,000,000	0	0	0	0	159,875,000,000																							
14	14	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	348,955,000,000	149,524,000,000	103,963,000,000	235,269,000,000	78,967,000,000	147,302,000,000	35,251,000,000	0	0	0	0	162,326,000,000																							
15	15	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	353,225,000,000	153,519,000,000	104,023,000,000	239,782,000,000	79,812,000,000	149,971,000,000	36,776,000,000	0	0	0	0	164,777,000,000																							
16	16	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	358,955,000,000	157,514,000,000	104,083,000,000	244,295,000,000	80,657,000,000	152,640,000,000	38,301,000,000	0	0	0	0	167,228,000,000																							
17	17	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	363,225,000,000	161,509,000,000	104,143,000,000	248,808,000,000	81,502,000,000	155,309,000,000	39,826,000,000	0	0	0	0	169,679,000,000																							
18	18	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	368,955,000,000	165,504,000,000	104,203,000,000	253,321,000,000	82,347,000,000	157,978,000,000	41,351,000,000	0	0	0	0	172,130,000,000																							
19	19	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	373,225,000,000	169,499,000,000	104,263,000,000	257,834,000,000	83,192,000,000	160,647,000,000	42,876,000,000	0	0	0	0	174,581,000,000																							
20	20	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	378,955,000,000	173,494,000,000	104,323,000,000	262,347,000,000	84,037,000,000	163,316,000,000	44,401,000,000	0	0	0	0	177,032,000,000																							
21	21	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	383,225,000,000	177,489,000,000	104,383,000,000	266,860,000,000	84,882,000,000	165,990,000,000	45,926,000,000	0	0	0	0	179,483,000,000																							
22	22	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	388,955,000,000	181,484,000,000	104,443,000,000	271,373,000,000	85,727,000,000	168,664,000,000	47,451,000,000	0	0	0	0	181,934,000,000																							
23	23	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	393,225,000,000	185,479,000,000	104,503,000,000	275,886,000,000	86,572,000,000	171,338,000,000	48,976,000,000	0	0	0	0	184,385,000,000																							
24	24	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	398,955,000,000	189,474,000,000	104,563,000,000	280,399,000,000	87,417,000,000	173,702,000,000	50,501,000,000	0	0	0	0	186,836,000,000																							
25	25	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	403,225,000,000	193,469,000,000	104,623,000,000	284,912,000,000	88,262,000,000	176,066,000,000	52,026,000,000	0	0	0	0	189,287,000,000																							
26	26	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	408,955,000,000	197,464,000,000	104,683,000,000	289,425,000,000	89,113,000,000	178,430,000,000	53,551,000,000	0	0	0	0	191,738,000,000																							
27	27	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	413,225,000,000	201,459,000,000	104,743,000,000	293,938,000,000	90,000,000,000	180,794,000,000	55,076,000,000	0	0	0	0	194,189,000,000																							
28	28	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	418,955,000,000	205,454,000,000	104,803,000,000	298,451,000,000	90,841,000,000	183,158,000,000	56,601,000,000	0	0	0	0	196,640,000,000																							
29	29	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	423,225,000,000	209,449,000,000	104,863,000,000	302,964,000,000	91,682,000,000	185,522,000,000	58,126,000,000	0	0	0	0	199,091,000,000																							
30	30	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	428,955,000,000	213,444,000,000	104,923,000,000	307,477,000,000	92,523,000,000	187,886,000,000	59,651,000,000	0	0	0	0	201,542,000,000																							
31	31	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	433,225,000,000	217,439,000,000	104,983,000,000	311,990,000,000	93,364,000,000	190,250,000,000	61,176,000,000	0	0	0	0	203,993,000,000																							
32	32	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	438,955,000,000	221,434,000,000	105,043,000,000	316,503,000,000	94,205,000,000	192,614,000,000	62,701,000,000	0	0	0	0	206,444,000,000																							
33	33	MICROSOFT CORPORATION	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	443,225,000,000	225,429,000,000	105,103,000,000	321,016,000,000	95,046,000,000	194,978,000,000	64,226,000,000	0	0	0	0	208,895,000,000																							
34	34	MICROSOFT CORP	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	448,955,000,000	229,424,000,000	105,163,000,000	325,529,000,000	95,887,000,000	197,342,000,000	65,751,000,000	0	0	0	0	211,346,000,000																							
35	35	MICROSOFT CORP	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	453,225,000,000	233,419,000,000	105,223,000,000	330,042,000,000	96,728,000,000	199,706,000,000	67,276,000,000	0	0	0	0	213,797,000,000																							
36	36	MICROSOFT CORP	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	458,955,000,000	237,414,000,000	105,283,000,000	334,555,000,000	97,569,000,000	202,070,000,000	68,801,000,000	0	0	0	0	216,248,000,000																							
37	37	MICROSOFT CORP	0000789328	Large Accelerated Fil	MSFT	2009-09-30	Q3	1019-09-21	463,225,000,000	241,409,000,000	105,343,000,000	339,068,000,000	98,410,000,000	204,434,000,000	70,326,000,000	0	0	0	0	218,699,000,000																							
38	38	MICROSOFT CORP	0000789328	Large Accelerated Fil	MSFT	2009-09-30																																					

MASTERING XBRL-BASED DIGITAL FINANCIAL REPORTING – PART 3: WORKING WITH DIGITAL FINANCIAL REPORTS – QUERY AND ANALYSIS OF XBRL-BASED DIGITAL FINANCIAL REPORTS – CHARLES HOFFMAN, CPA

General Information														
#	Entity Registrant Name	CIK	Entity Filer Category	Trading Symbol	Fiscal Year End	Fiscal Year Focus	Fiscal Period Focus	Document Type	Balance Sheet Date	Income Statement Start Period (Year to Date)	Assets	Current Assets	Noncurrent Assets	Liabilities
1	3D SYSTEMS CORP	0000910638	Large Accelerated Filer	ddd	-12-31	2018	Q1	10-Q	2018-01-01	2018-01-01	897,858,000	439,221,000	458,637,000	279,548,000
2	AADN INC	0000824142	Large Accelerated Filer	Not provided	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	306,945,000	154,887,000	152,258,000	87,334,000
3	Alliance MMA, Inc.	0001674227	Smaller Reporting Company	AMMA	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	6,787,270	486,534	6,300,736	1,094,204
4	ALLIED HEALTH CARE PRODUCTS INC	0000647103	Smaller Reporting Company	APPI	-03-31	2018	Q1	10-Q	2018-03-31	2018-01-01	92,717,000	12,678,761	9,599,249	4,137,614
5	ALLIED MOTION TECHNOLOGIES INC	0000046129	Accelerated Filer	Not provided	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	214,773,000	100,123,000	114,644,000	183,662,000
6	AMERICAN OUTDOOR BRANDS CORP	0001032736	Large Accelerated Filer	AODC	-04-30	2018	FY	10-K	2018-03-31	2018-05-01	745,060,000	270,364,000	474,696,000	322,312,000
7	American Heliac Industries, Inc.	0001244536	Accelerated Filer	Not provided	-12-31	2018	Q1	10-Q	2018-04-30	2018-01-01	1,494,680,000	243,868,000	1,234,792,000	876,585,000
8	AMERICAN SHARED HOSPITAL SERVICES	0000174425	Smaller Reporting Company	AMS	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	59,031,000	9,347,000	49,684,000	27,411,000
9	AMERICAN SOFTWARE INC	0000713425	Accelerated Filer	AMSWA	-04-30	2018	Q3	10-Q	2018-03-31	2017-05-01	93,323,000	106,647,000	57,276,000	51,487,000
10	AMERICAN SUPERCONDUCTOR CORP (DEF)	0000880807	Accelerated Filer	AMSC	-03-31	2017	FY	10-K	2018-01-31	2017-04-01	88,175,000	67,176,000	20,939,000	35,346,000
11	AMERICAN WOODMARK CORP	0000734619	Large Accelerated Filer	amwd	-04-30	2018	Q3	10-Q	2018-03-31	2017-05-01	1,701,989,000	416,066,000	1,286,321,000	1,133,343,000
12	AMERSON CHEMBERG CORP	0001040259	Large Accelerated Filer	ake	-03-31	2018	Q2	10-QA	2018-03-31	2017-07-01	38,336,200	26,397,210,000	11,939,531,000	35,032,138,000
13	Amerityx Corp	0000945828	Smaller Reporting Company	Not provided	-06-30	2018	Q3	10-Q	2018-03-31	2017-07-01	1,897,456	1,132,425	595,031	627,513
14	AMICUS THERAPEUTICS INC	0001788875	Large Accelerated Filer	Not provided	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	870,000,000	532,033,000	277,972,000	348,388,000
15	AMN HEALTHCARE SERVICES INC	000142750	Large Accelerated Filer	Not provided	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	1,272,582,000	489,370,000	783,182,000	673,336,000
16	Amphastan Pharmaceuticals, Inc.	0001231884	Accelerated Filer	amph	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	443,782,000	114,946,000	275,736,000	122,678,000
17	AMPHENOL CORP (DEF)	0000820313	Large Accelerated Filer	Not provided	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	9,403,700,000	3,337,100,000	5,466,600,000	5,435,800,000
18	AmplifTech Group, Inc.	000158461	Smaller Reporting Company	Not provided	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	853,078	797,244	55,834	293,637
19	AMTECH SYSTEMS INC	0000720500	Accelerated Filer	Not provided	-09-30	2018	Q2	10-Q	2018-03-31	2017-10-01	171,017,000	136,237,000	34,780,000	68,195,000
20	APEX RESOURCES INC (NY)	0001653710	Smaller Reporting Company	Not provided	-06-30	2018	Q2	10-QA	2018-03-31	2017-07-01	8,172	239	7,934	510
21	APOLLO ENDOSURGERY, INC.	0001251083	Smaller Reporting Company	Not provided	-12-31	2018	Q1	10-Q	2017-12-31	2018-01-01	100,619,000	50,839,000	49,720,000	58,800,000
22	APPIAN CORP	0001416883	Non-accelerated Filer	APPI	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	145,736,000	129,730,000	16,063,000	107,170,000
23	APPIPHANY TECHNOLOGIES HOLDINGS	0001490054	Smaller Reporting Company	aphd	-04-30	2018	Q3	10-Q	2018-03-31	2017-05-01	42,514	42,514	0	1,008,000
24	APPLE INC	0000320193	Large Accelerated Filer	APPL	-09-30	2018	Q2	10-Q	2018-01-31	2017-10-01	367,500,000,000	130,053,000,000	237,447,000,000	240,624,000,000
25	APPLIED DNA SCIENCES INC	0001146262	Smaller Reporting Company	apdn	-09-30	2018	Q2	10-Q	2018-03-31	2017-10-01	7,933,543	8,104,369	1,823,174	2,228,000
26	APPLIED INDUSTRIAL TECHNOLOGIES INC	0000195683	Large Accelerated Filer	Not provided	-06-30	2018	Q3	10-Q	2018-03-31	2017-07-01	2,272,323,000	1,051,240,000	1,221,083,000	1,466,295,000
27	APPLIED MATERIALS INC (DE)	0000006351	Large Accelerated Filer	Not provided	-12-28	2018	Q2	10-Q	2018-03-31	2017-10-30	18,438,000,000	11,831,000,000	6,607,000,000	11,456,000,000
28	APPLIED OPTO ELECTRONICS, INC.	0001755814	Large Accelerated Filer	Not provided	-12-31	2018	Q1	10-Q	2018-04-29	2018-01-01	475,617,000	241,825,000	233,792,000	121,323,000
29	Apptio Inc	0001419269	Large Accelerated Filer	APTI	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	405,340,000	321,174,000	84,772,000	264,070,000
30	AGUANTA CORP	0001736016	Non-accelerated Filer	AQ	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	107,416,000	93,080,000	14,336,000	17,070,000
31	AquaVenture Holdings Ltd	0001422841	Accelerated Filer	Not provided	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	548,396,000	149,481,000	397,434,000	205,362,000
32	Baycom International Corp	0001889538	Smaller Reporting Company	Bcom	-12-31	2018	Q1	10-Q	2018-03-31	2018-01-01	16,646	16,646	0	122,423
33	BEACON ROOFING SUPPLY INC	0001124481	Large Accelerated Filer	BECA	-03-31	2018	Q2	10-Q	2018-03-31	2018-01-01	6,182,370,000	2,094,775,000	4,087,655,000	3,393,654,000
34	BELD BATH & BEYOND INC	0000886158	Large Accelerated Filer	bbby	-03-03	2017	FY	10-K	2018-03-31	2017-02-26	7,040,806,000	3,371,078,000	3,669,726,000	4,182,718,000
35	BELDEN INC.	0000313142	Large Accelerated Filer	BDC	-12-31	2018	Q1	10-Q	2018-03-03	2018-01-01	3,766,549,000	1,183,482,000	2,583,067,000	2,474,403,000
36	BENCHMARK ELECTRONICS INC	0000863436	Large Accelerated Filer	BHE	-12-31	2018	Q1	10-Q	2018-04-01	2018-01-01	2,058,006,000	1,595,432,000	492,574,000	810,675,000

1.5. Extracting Information from 68% of Reports Using Excel

I did an information extraction experiment³. For the experiment, I created 13 Excel spreadsheets similar to the last extraction example above. Those 13 Excel spreadsheets cover reports that use 13 different reporting styles where 100% of the rules were satisfied (i.e. there are no inconsistencies). That added up to 4,060 company XBRL-based reports, about 68% of all reports.

The Excel spreadsheets all look similar to and work similar to the three prior examples in the previous section.

This is what they look like:

Again, all the spreadsheets can be re-run and you will get the same results that I got when I ran the VBA macros for extracting information.

If you understand VBA, you can reverse-engineer the Excel spreadsheet and understand how it works. The starting point can be found by right clicking on the button, going to the "Assign Macro" property, and then clicking on "Edit". This is the starting point of the Excel VBA algorithms.

³ Further Updated and Expanded XBRL-based Financial Report Extraction Tools, <http://xbrl.squarespace.com/journal/2018/1/11/further-updated-and-expanded-xbrl-based-financial-report-ext.html>

```
Private strNetCashFlowsContinuing
Private strNetCashFlowsDiscontinued
Private strExchangeGainsLosses

Sub RunComparison()
    Worksheets("Compare").Activate

    'Delete existing information (but NOT the first row which has the names)
    Rows("7:6000").Select
    Selection.Delete Shift:=xlUp

    InitializeSpreadsheetInformation

    Dim intListRow As Integer
    Dim intCompareRow As Integer

    intListRow = 2
    intCompareRow = 6
```

Remember, this is not intended to be an example of excellent programming techniques, it is simply to point out the steps. Also, note that the business rules are hard-coded into Excel. That is clearly not the way to go, rather machine readable rules should be used⁴.

1.6. Query language

As you use the example queries provided in this section, have a look at the syntax of the URLs that are used to execute the queries⁵.

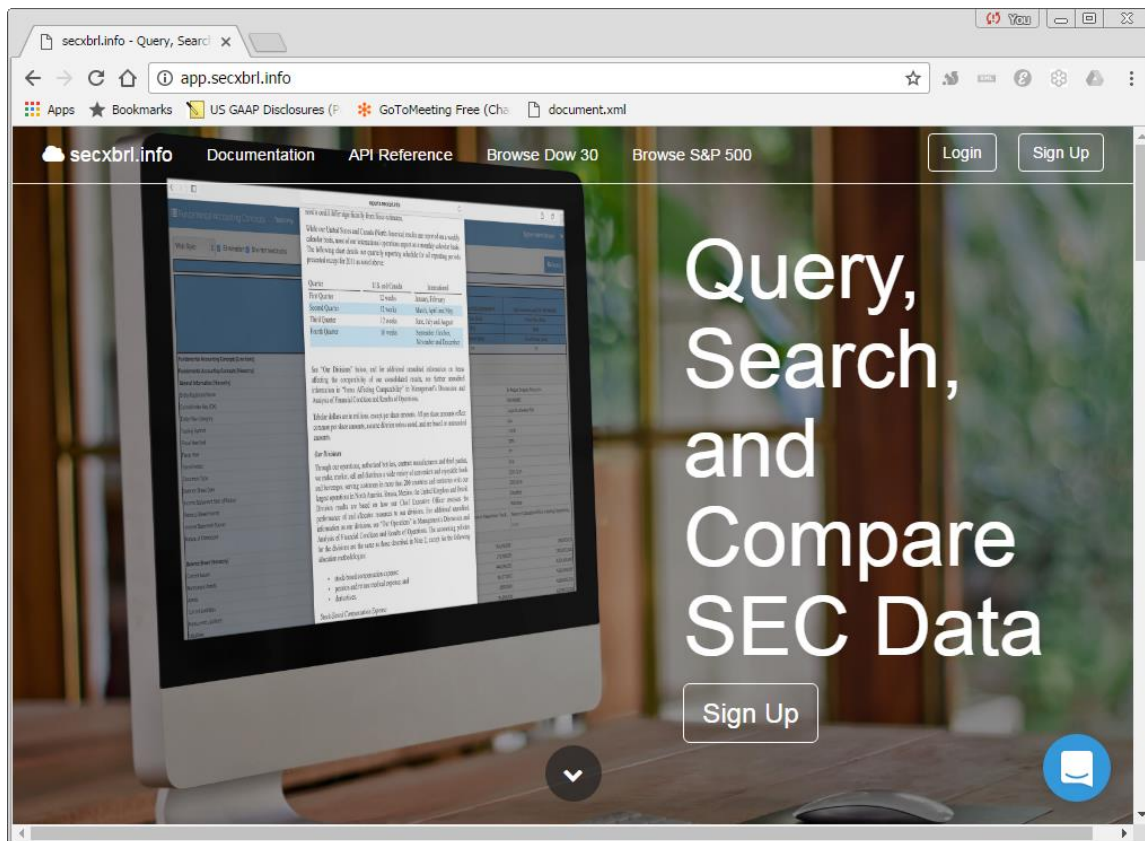
1.7. SECXBRL.info (Note that this is no longer available)

28msec created and made available a free database of public company financial information. You can find that database at the following URL:

<http://app.secxbri.info/>

⁴ Here are the machine readable rules for the US GAAP reporting styles, <http://xbrlsite.azurewebsites.net/2020/reporting-scheme/us-gaap/documentation/ReportingStyles.html>

⁵ API reference, <http://28msec.github.io/cellstore-pro/api-ref-queries.html>



There is no need to sign up or sign in. Also, realize that while I will be walking you through examples provided as HTML pages on this information repository web site, the same information that I am showing you can also be retrieved as a web service that returns XML, JSON, CSV, or Excel formatted information.

This ZIP archive contains an Excel workbook application that has a bunch of sample queries which populate Excel spreadsheets:

http://www.xbrlsite.azurewebsites.net/2016/Library/SECXBRL-2016-12-31_BasicExamples.zip

This reference material is helpful in creating queries:

<http://28msec.github.io/cellstore-pro/api-ref-queries.html>

1.7.1. List of entities

If you simply click on the “Browse DOW 30” button on the top of the screen above or if you paste the URL below into your browser, you will get a list of the companies that make up the DOW 30:

http://secxbrl.28.io/v1/_queries/public/api/entities.jq?token=c3049752-4d35-43da-82a2-f89f1b06f7a4&format=html&tag=DOW30

MASTERING XBRL-BASED DIGITAL FINANCIAL REPORTING – PART 3: WORKING WITH DIGITAL FINANCIAL REPORTS –
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Archives	EIDs	CompanyName	CompanyType	CIK	IsTrust	SIC	SICDescription	SI
Link	http://www.sec.gov/CIK/0000066740	3M CO	Corporation	0000066740	false	3841	SURGICAL & MEDICAL INSTRUMENTS & APPARATUS	10
Link	http://www.sec.gov/CIK/000004962	AMERICAN EXPRESS CO	Corporation	000004962	false	6199	FINANCE SERVICES	7
Link	http://www.sec.gov/CIK/0000732717	AT&T INC.	Corporation	0000732717	false	4813	TELEPHONE COMMUNICATIONS (NO RADIOTELEPHONE)	11
Link	http://www.sec.gov/CIK/0000012927	BOEING CO	Corporation	0000012927	false	3721	AIRCRAFT	5
Link	http://www.sec.gov/CIK/0000018230	CATERPILLAR INC	Corporation	0000018230	false	3531	CONSTRUCTION MACHINERY & EQUIP	10
Link	http://www.sec.gov/CIK/0000069410	CHEVRON CORP	Corporation	0000069410	false	2911	PETROLEUM REFINING	4
Link	http://www.sec.gov/CIK/0000858877	CISCO SYSTEMS, INC.	Corporation	0000858877	false	3576	COMPUTER COMMUNICATIONS EQUIPMENT	3
Link	http://www.sec.gov/CIK/0000021344	COCA COLA CO	Corporation	0000021344	false	2080	BEVERAGES	9
Link	http://www.sec.gov/CIK/0000030554	DUPONT E I DE NEMOURS & CO	Corporation	0000030554	false	2820	PLASTIC MATERIAL, SYNTH RESIN/RUBBER, CELLULOS (NO GLASS)	6
Link	http://www.sec.gov/CIK/0000034088	EXXON MOBIL CORP	Corporation	0000034088	false	2911	PETROLEUM REFINING	4

If you simply change “format=html” to “format=xml”, XML is returned by the database rather than a formatted HTML page:

```
<?xml version="1.0" encoding="UTF-8"?>
<!--Generated by 28.io, for more information see http://www.28.io/xbrl (2017-01-03T20:37:47.233827Z)-->
<!--http://secxbrl.28.io/v1/_queries/public/api/entities.jq?token=c3049752-4d35-43da-82a2-f89f1b06f7a4&format=xml&profile-
name=sec&language=en-US&archiveFiscalYear=ALL&archiveFiscalPeriod=ALL-->
<!--Statistics: NumEntities: 30, TotalNumEntities: 13040-->
<Entities>
  <Entity>
    <Archives>http://secxbrl.28.io/v1/_queries/public/api/archives?token=c3049752-4d35-43da-82a2-
f89f1b06f7a4&eid=http%3A%2F%2Fwww.sec.gov%2FCIK%20000066740&format=xml&profile-
name=sec&language=en-US&archiveFiscalYear=ALL&archiveFiscalPeriod=ALL</Archives>
    <EIDs>
      <EID>http://www.sec.gov/CIK/0000066740</EID>
    </EIDs>
    <Source>Feed</Source>
    <Profile name=SEC>
      <CompanyName>3M CO</CompanyName>
      <CompanyType>Corporation</CompanyType>
      <CIK>0000066740</CIK>
      <IsTrust>false</IsTrust>
      <SIC>3841</SIC>
      <SICDescription>SURGICAL & MEDICAL INSTRUMENTS & APPARATUS</SICDescription>
      <SICGroup>10</SICGroup>
      <Taxonomy>cis</Taxonomy>
      <Sector>Measuring/Analyzing/Photographic/Control/Medical Instruments</Sector>
    </Profile>
    <Tickers>
      <Ticker>mmm</Ticker>
    </Tickers>
    <Tags>
      <Tag>FORTUNE100</Tag>
      <Tag>DOW30</Tag>
      <Tag>RUSSELL1000</Tag>
      <Tag>SP500</Tag>
    </Tags>
    <EntityName>3M CO</EntityName>
    <EntityRegistrantName>3M CO</EntityRegistrantName>
  </Entity>
  <Entity>
    <Archives>http://secxbrl.28.io/v1/_queries/public/api/archives?token=c3049752-4d35-43da-82a2-
f89f1b06f7a4&eid=http%3A%2F%2Fwww.sec.gov%2FCIK%20000004962&format=xml&profile-
name=sec&language=en-US&archiveFiscalYear=ALL&archiveFiscalPeriod=ALL</Archives>
```

1.7.2. List of reports for an entity

If you click on the “Archives” column on the far left “Link” or use the URL below, you can get a list of reports that were submitted to the SEC by the entity:

http://secxbrl.28.io/v1/_queries/public/api/archives?token=c3049752-4d35-43da-82a2-f89f1b06f7a4&eid=http%3A%2F%2Fwww.sec.gov%2FCIK%200000066740&format=html&profile-name=sec&language=en-US&archiveFiscalYear=ALL&archiveFiscalPeriod=ALL

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AID	Entity	Components	Sections	NumSections	NumFacts	NumFootnotes	NumReportElements	NumHypercubes	NumDimensions	NumMembers	NumLinItems
0001558370-18-007105	http://www.sec.gov/CIK/0000066740	Link	Link	74	1282	0	883	23	28	115	24
0001558370-18-008059	http://www.sec.gov/CIK/0000066740	Link	Link	111	2713	0	1160	31	39	228	32
0001558370-18-005213	http://www.sec.gov/CIK/0000066740	Link	Link	74	940	0	849	23	28	118	23
0001558370-18-003182	http://www.sec.gov/CIK/0000066740	Link	Link	111	2711	0	1159	31	39	228	32
0001558370-15-002024	http://www.sec.gov/CIK/0000066740	Link	Link	70	1344	0	855	22	28	137	22
0001104859-15-054810	http://www.sec.gov/CIK/0000066740	Link	Link	105	1497	0	1285	29	37	300	30
0001104859-15-032226	http://www.sec.gov/CIK/0000066740	Link	Link	105	1104	0	1279	29	37	298	30
0001104859-15-009580	http://www.sec.gov/CIK/0000066740	Link	Link	105	3393	0	1270	29	37	294	30
0001104859-14-075312	http://www.sec.gov/CIK/0000066740	Link	Link	105	1582	0	1237	29	35	283	30
0001104859-14-055558	http://www.sec.gov/CIK/0000066740	Link	Link	104	1527	0	1211	29	35	281	29
0001104859-14-039325	http://www.sec.gov/CIK/0000066740	Link	Link	104	3508	0	1193	29	35	275	29
0001104859-14-033499	http://www.sec.gov/CIK/0000066740	Link	Link	104	1097	0	1195	29	35	275	29
0001104859-14-009773	http://www.sec.gov/CIK/0000066740	Link	Link	104	3508	0	1193	29	35	275	29
0001104859-13-079583	http://www.sec.gov/CIK/0000066740	Link	Link	71	1499	0	820	25	27	185	25
0001104859-13-058981	http://www.sec.gov/CIK/0000066740	Link	Link	71	1478	0	838	25	28	188	25
0001104859-13-042408	http://www.sec.gov/CIK/0000066740	Link	Link	104	3595	0	1316	30	34	300	29
0001104859-13-038580	http://www.sec.gov/CIK/0000066740	Link	Link	89	1099	0	829	24	28	180	24

1.7.3. List of reports for an entity

If you click on the “Components” column the “Link” will provide you with a list of components within the report, or you can use the URL below:

http://secxbrl.28.io/v1/_queries/public/api/components?token=c3049752-4d35-43da-82a2-f89f1b06f7a4&aid=0001558370-16-007105&format=html&profile-name=sec&validate=true&language=en-US

Archive	Section	Hypercut
0001558370-16-007105	00000 - Document - Document and Entity Information	Implied Table [Table]
0001558370-16-007105	00100 - Statement - Consolidated Statement of Income	Implied Table [Table]
0001558370-16-007105	00200 - Statement - Consolidated Statement of Comprehensive Income	Implied Table [Table]
0001558370-16-007105	00300 - Statement - Consolidated Balance Sheet	Implied Table [Table]
0001558370-16-007105	00305 - Statement - Consolidated Balance Sheet (Parenthetical)	Implied Table [Table]
0001558370-16-007105	00500 - Statement - Consolidated Statement of Cash Flows	Implied Table [Table]
0001558370-16-007105	10101 - Disclosure - Significant Accounting Policies	Implied Table [Table]
0001558370-16-007105	10201 - Disclosure - Acquisitions and Divestitures	Implied Table [Table]
0001558370-16-007105	10301 - Disclosure - Goodwill and Intangible Assets	Implied Table [Table]
0001558370-16-007105	10401 - Disclosure - Restructuring Actions	Implied Table [Table]
0001558370-16-007105	10801 - Disclosure - Supplemental Equity and Comprehensive Income Information	Implied Table [Table]
0001558370-16-007105	10801 - Disclosure - Income Taxes	Implied Table [Table]
0001558370-16-007105	10901 - Disclosure - Marketable Securities	Implied Table [Table]
0001558370-16-007105	11001 - Disclosure - Long-Term Debt and Short-Term Borrowings	Implied Table [Table]
0001558370-16-007105	11101 - Disclosure - Pension and Postretirement Benefit Plans	Implied Table [Table]
0001558370-16-007105	11201 - Disclosure - Derivatives	Implied Table [Table]
0001558370-16-007105	11301 - Disclosure - Fair Value Measurements	Implied Table [Table]

1.7.4. Rendering of a component

If you click on the “Spreadsheet” column the “Link” will provide you a rendering of the report component which you selected, or again you can use the URL below:

http://secxbrl.28.io/v1/_queries/public/api/spreadsheet-for-component?token=c3049752-4d35-43da-82a2-f89f1b06f7a4&aid=0001558370-16-007105&format=html§ion=http%3A%2F%2Fwww.mmm.com%2Frole%2FStatementConsolidatedStatementOfIncome&hypercube=xbrl28%3AImpliedTable&profile-name=sec&eliminate=true&validate=true&language=en-US

Consolidated Statement of Income	Period [Axis]			
	From January 1, 2015 to June 30, 2015	From April 1, 2015 to June 30, 2015	From January 1, 2016 to June 30, 2016	From April 1, 2016 to June 30, 2016
Net sales	15,264,000,000	7,686,000,000	15,071,000,000	7,662,000,000
Operating expenses				
Cost of sales	7,679,000,000	3,858,000,000	7,477,000,000	3,799,000,000
Selling, general and administrative expenses	3,114,000,000	1,550,000,000	3,053,000,000	1,560,000,000
Research, development and related expenses	901,000,000	438,000,000	887,000,000	437,000,000
Total operating expenses	11,694,000,000	5,846,000,000	11,417,000,000	5,796,000,000
Operating income	3,570,000,000	1,840,000,000	3,654,000,000	1,866,000,000
Interest expense and income				
Interest expense	66,000,000	35,000,000	85,000,000	38,000,000
Interest income	11,000,000	7,000,000	12,000,000	7,000,000
Total interest expense - net	-55,000,000	-28,000,000	-73,000,000	-31,000,000
Income before income taxes	3,515,000,000	1,812,000,000	3,581,000,000	1,835,000,000
Provision for income taxes	1,011,000,000	509,000,000	1,010,000,000	542,000,000
Net income including noncontrolling interest	2,504,000,000	1,303,000,000	2,571,000,000	1,293,000,000
Less: Net income attributable to noncontrolling interest	5,000,000	3,000,000	5,000,000	2,000,000
Net income attributable to 3M	2,499,000,000	1,300,000,000	2,566,000,000	1,291,000,000
Weighted average 3M common shares outstanding - basic (in shares)	633,800,000	631,300,000	607,200,000	606,900,000
Earnings per share attributable to 3M common shareholders - basic (in dollars per share)	3.94	2.06	4.23	2.13
Weighted average 3M common shares outstanding - diluted (in shares)	646,100,000	643,000,000	621,100,000	620,900,000
Earnings per share attributable to 3M common shareholders - diluted (in dollars per share)	3.87	2.02	4.13	2.08
Cash dividends paid per 3M common share (in dollars per share)	2.05	1.025	2.22	1.11

1.7.5. Normalized comparison of information for entity across periods

Using the query string below you can do a normalized comparison of information for an entity across multiple periods:

http://secxbrl.28.io/v1/_queries/public/api/spreadsheet-for-report.iq?token=c3049752-4d35-43da-82a2-f89f1b06f7a4&report=IncomeStatementSingleStep_Special2&fiscalYear=2015&fiscalYear=2014&fiscalYear=2013&fiscalYear=2012&fiscalYear=2011&fiscalPeriod=FY&validate=true&format-indent=yes&labels=false&format=html&cik=0000066740

The screenshot shows a web browser window with the CellStore Manager interface. The main content is an income statement table for the company 201.6-Income Statement, Single Step, With Operating Income, Special 2 (Costs and Expenses). The table is presented in a normalized format, comparing five fiscal years (2011-2015) across various line items. The data is organized into columns for each fiscal year, with sub-columns for 'Fiscal Period' and 'Reporting Entity'. The 'Reporting Entity' column is consistently labeled '3M CO (66740)'. The table includes line items such as Revenues, Costs and Expenses, Operating Income (Loss), Nonoperating Income (Loss) Plus Interest and Debt Expense Plus Income (Loss) from Equity Method Investments, Income Tax Expense (Benefit), and Net Income (Loss). The values are presented in thousands of dollars, with some cells highlighted in green.

Income Statement [Line Items]	Fiscal Year [Axis]				
	2011	2012	2013	2014	2015
	Fiscal Period [Axis]	Fiscal Period [Axis]	Fiscal Period [Axis]	Fiscal Period [Axis]	Fiscal Period [Axis]
	FY	FY	FY	FY	FY
Reporting Entity [Axis]	Reporting Entity [Axis]	Reporting Entity [Axis]	Reporting Entity [Axis]	Reporting Entity [Axis]	Reporting Entity [Axis]
3M CO (66740)	3M CO (66740)	3M CO (66740)	3M CO (66740)	3M CO (66740)	3M CO (66740)
Net Income (Loss) [Roll Up]					
Income (Loss) from Continuing Operations After Tax [Roll Up]					
Income (Loss) from Continuing Operations Before Tax [Roll Up]					
Operating Income (Loss) [Roll Up]					
Revenues	29,611,000,000	29,904,000,000	30,871,000,000	31,821,000,000	30,274,000,000
Costs and Expenses	23,433,000,000	23,421,000,000	24,205,000,000	24,686,000,000	23,328,000,000
Operating Income (Loss)	6,178,000,000	6,483,000,000	6,666,000,000	7,135,000,000	6,946,000,000
Nonoperating Income (Loss) Plus Interest and Debt Expense Plus Income (Loss) from Equity Method Investments	-147,000,000	-132,000,000	-104,000,000	-109,000,000	-123,000,000
Income (Loss) from Continuing Operations Before Tax	6,031,000,000	6,351,000,000	6,562,000,000	7,026,000,000	6,823,000,000
Income Tax Expense (Benefit)	1,674,000,000	1,840,000,000	1,841,000,000	2,028,000,000	1,982,000,000
Income (Loss) from Continuing Operations After Tax	4,357,000,000	4,511,000,000	4,721,000,000	4,998,000,000	4,841,000,000
Income (Loss) from Discontinued Operations, Net of Tax	0	0	0	0	0
Extraordinary Items of Income (Expense), Net of Tax	0	0	0	0	0
Net Income (Loss)	4,357,000,000	4,511,000,000	4,721,000,000	4,998,000,000	4,841,000,000

1.7.6. Normalized comparison of information across entities for a period

Using the query string below you can do a normalized comparison of information across entities for a period:

http://secxbrl.28.io/v1/_queries/public/api/spreadsheet-for-report.iq?token=c3049752-4d35-43da-82a2-f89f1b06f7a4&report=IncomeStatementSingleStep_Special2&fiscalYear=2015&fiscalPeriod=FY&validate=true&format-indent=yes&labels=false&format=html&cik=0000066740&cik=27904&cik=1048911&cik=934612&cik=100885&cik=15511&cik=70318&cik=92380&cik=230211&cik=18926

201.6-Income Statement, Single Step, With Operating Income, Special 2 (Costs and Expenses)										
Component: (Network and Table)										
Network	201.6-Income Statement, Single Step, With Operating Income, Special 2 (Costs and Expenses)									
Table	Income Statement, Single Step (Table)									
Unit (Axis)	USD									
Fiscal Period Type (Axis)	YTD, Instant									
Fiscal Year (Axis)										
2015										
Fiscal Period (Axis)										
FY										
Reporting Entity (Axis)										
	3M CO (66740)	BNSF RAILWAY CO (15511)	BURLINGTON NORTHERN SANTA FE LLC (934612)	CENTURYLINK INC (18926)	DELTA AIR LINES INC /DE/ (27904)	FEDERAL EXPRESS CORP (230211)	FEDEX CORP (1048911)	SOUTHWEST AIRLINES CO (92380)	TENET HEALTHCARE CORP (70318)	UNION PACIFIC CORP (100885)
Net Income (Loss) [Roll Up]										
Income (Loss) from Continuing Operations After Tax [Roll Up]										
Income (Loss) from Continuing Operations Before Tax [Roll Up]										
Operating Income (Loss) [Roll Up]										
Revenues	30,274,000,000	21,401,000,000	21,967,000,000	17,900,000,000	40,704,000,000	26,094,000,000	47,453,000,000	19,820,000,000	20,111,000,000	21,813,000,000
Costs and Expenses	23,328,000,000	13,654,000,000	14,243,000,000	15,295,000,000	32,902,000,000	25,775,000,000	45,586,000,000	15,704,000,000	19,055,000,000	13,761,000,000
Operating Income (Loss)	6,946,000,000	7,767,000,000	7,724,000,000	2,605,000,000	7,802,000,000	919,000,000	1,867,000,000	4,116,000,000	1,056,000,000	8,052,000,000
Nonoperating Income (Loss) Plus Interest and Debt Expense Plus Income (Loss) from Equity Method Investments	-123,000,000	76,000,000	-949,000,000	-1,289,000,000	-645,000,000	-140,000,000	-240,000,000	-657,000,000	-912,000,000	-396,000,000
Income (Loss) from Continuing Operations Before Tax	6,823,000,000	7,843,000,000	6,775,000,000	1,316,000,000	7,157,000,000	179,000,000	1,627,000,000	3,479,000,000	144,000,000	7,656,000,000
Income Tax Expense (Benefit)	1,982,000,000	2,928,000,000	2,527,000,000	438,000,000	2,631,000,000	35,000,000	577,000,000	1,298,000,000	68,000,000	2,884,000,000
Income (Loss) from Continuing Operations After Tax	4,841,000,000	4,915,000,000	4,248,000,000	878,000,000	4,526,000,000	144,000,000	1,050,000,000	2,181,000,000	76,000,000	4,772,000,000
Income (Loss) from Discontinued Operations, Net of Tax	0	0	0	0	0	0	0	0	2,000,000	0
Extraordinary Items of Income (Expense), Net of Tax	0	0	0	0	0	0	0	0	0	0
Net Income (Loss)	4,841,000,000	4,915,000,000	4,248,000,000	878,000,000	4,526,000,000	144,000,000	1,050,000,000	2,181,000,000	78,000,000	4,772,000,000

HINT: You can compare as many entities as you want this way. I have done up to about 200 entities!

1.8. Commercially available analysis products

There are many different commercial software applications which make use of XBRL-based financial information reported by public companies to the SEC and available from the EDGAR system. These software applications take different approaches and different things can be learned from different applications.

Querying an XBRL instance document and the related taxonomy is possible, but it is not recommended because the information is not structured for meaning, it is simply structured as XBRL technical syntax. This makes querying information significantly more challenging.

If you do want to explore extracting information directly from an XBRL instance, this ZIP archive contains an Excel based application that you can reverse engineer:

http://xbrlsite.azurewebsites.net/2016/Analysis/InterestBasedRevenues/Analysis_IN_TBX-BSU-CF1-ISS-IEMIX-OILN.zip

1.8.1.28msec SECXBRL.info

As mentioned, 28msec⁶ provides a free repository of public company financial information reported by public companies to the SEC via its SECXBRL.info repository⁷. Financial information is available for the DOW 30 companies with no signup at all. You can sign up for free and get access to all reported information. An API is provided. For those willing to roll up their sleeves and get their hands a little dirty, there is a lot that can be learned about where digital financial reporting and more generally digital business reporting is going.

1.8.2.XBRL Cloud

XBRL Cloud mainly focuses on validation services for public companies that provide XBRL-based financial reports to the SEC⁸. However, XBRL Cloud offers an API also. That API, the EDGAR Report Information Web Service⁹, is unfortunately not publically available. But, the API is rather inexpensive. If you are serious about learning about digital financial reporting, paying for the API is worth the price.

XBRL Cloud provides some of the best renderings of XBRL-based information.

1.8.3.FinDynamics XBRL Analyst

XBRL Analyst is described as “XBRLAnalyst delivers real-time financial data to Excel” by its creator FinDynamics¹⁰. XBRLAnalyst is an Excel plugin. A free trial is available which allows you to explore the software before you purchase it. An API is also available.

⁶ 28msec, <http://www.28.io/>

⁷ SECXBRL.info, <http://app.secxbri.info/>

⁸ XBRL Cloud EDGAR Dashboard, <https://edgardashboard.xbrlcloud.com/edgar-dashboard/>

⁹ XBRL Cloud Edgar Report Information Web Service, <https://www.xbrlcloud.com/home/edgar-report-information/eridev.html>

¹⁰ FinDynamics, <https://findynamics.com/>