The ongoing migration from paper to electronic paper to structured machine readable disclosures – and the implications and opportunities for filers and analysts

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INSIGHTS FROM STANDARDS ADOPTION AT THE SEC

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Discussion Topics

- Why Standards Enhance Process Capabilities
- Quality matters
- Insights from Inline
- Other SEC uses of structured disclosures
- Potential Research Considerations

What do you see?

Why Use Structured Data

Amazon 10-K (As Reported)

	2018
Net product sales	$141,915
Net service sales	90,972
Total net sales	232,887
Operating expenses:	
Cost of sales	139,156
Fulfillment	34,027
Marketing	13,814
Technology and content	28,837
General and administrative	4,336
Other operating expense, net	296
Total operating expenses	220,466
Operating income	12,421
Interest income	440
Interest expense	(1,417)
Other income (expense), net	(183)
Total non-operating income (expense)	(1,160)
Income before income taxes	11,261
Provision for income taxes	(1,197)
Equity-method investment activity, net of tax	9
Net income	$ 10,073

Amazon per Data Aggregator A

Revenue	12/31/2018
Total Revenue	232,887,000
Cost of Revenue	139,156,000
Gross Profit	**93,731,000**
Operating Expenses	
Research Development	28,837,000
Selling General and Administrative	52,177,000
Non Recurring	-
Others	296,000
Total Operating Expenses	220,466,000
Operating Income or Loss	**12,421,000**
Income from Continuing Operations	
Total Other Income/Expenses Net	-1,151,000
Earnings Before Interest and Taxes	12,421,000
Interest Expense	-1,417,000
Income Before Tax	11,270,000
Income Tax Expense	1,197,000
Minority Interest	-
Net Income From Continuing Ops	**10,073,000**
Net Income	**10,073,000**

Why Use Structured Data?

General Electric 10-K (As Reported)

Revenues		
Sales of goods	$	74,855
Sales of services		38,689
GE Capital revenues from services		8,072
Total revenues (Note 9)		121,615
Costs and expenses		
Cost of goods sold		63,116
Cost of services sold		29,555
Selling, general and administrative expenses		18,111
Interest and other financial charges		5,059
Investment contracts, insurance losses and insurance annuity benefits		2,790
Goodwill impairments (Note 8)		22,136
Non-operating benefit costs		2,777
Other costs and expenses		464
Total costs and expenses		144,008
Other income (Note 18)		2,259
GE Capital earnings (loss) from continuing operations		—
Earnings (loss) from continuing operations before income taxes		(20,134)
Benefit (provision) for income taxes (Note 14)		(583)
Earnings (loss) from continuing operations		(20,717)
Earnings (loss) from discontinued operations, net of taxes (Note 2)		(1,726)
Net earnings (loss)		(22,443)
Less net earnings (loss) attributable to noncontrolling interests		(89)
Net earnings (loss) attributable to the Company		(22,355)
Preferred stock dividends		(447)
Net earnings (loss) attributable to GE common shareowners	$	(22,802)
Amounts attributable to GE common shareowners		
Earnings (loss) from continuing operations	$	(20,717)
Less net earnings (loss) attributable to noncontrolling interests, continuing operations		(89)
Earnings (loss) from continuing operations attributable to the Company		(20,629)
Preferred stock dividends		(447)
Earnings (loss) from continuing operations attributable to GE common shareowners		(21,076)
Earnings (loss) from discontinued operations, net of taxes		(1,726)
Less net earnings (loss) attributable to noncontrolling interests, discontinued operations		—
Net earnings (loss) attributable to GE common shareowners	$	(22,802)

General Electric 10-K per Data Aggregator A

Revenue	12/31/2018
Total Revenue	121,615,000
Cost of Revenue	98,396,000
Gross Profit	**23,219,000**
Operating Expenses	
Research Development	-
Selling General and Administrative	15,134,000
Non Recurring	-
Others	-
Total Operating Expenses	113,530,000
Operating Income or Loss	**8,085,000**
Income from Continuing Operations	
Total Other Income/Expenses Net	-28,220,000
Earnings Before Interest and Taxes	8,085,000
Interest Expense	-2,708,000
Income Before Tax	-20,135,000
Income Tax Expense	583,000
Minority Interest	20,882,000
Net Income From Continuing Ops	**-20,718,000**
Non-recurring Events	
Discontinued Operations	-1,726,000
Extraordinary Items	-
Effect Of Accounting Changes	-
Other Items	-
Net Income	
Net Income	**-22,355,000**
Preferred Stock And Other Adjustments	-
Net Income Applicable To Common Shares	**-22,805,000**

Why Use Structured Disclosures?

- Immediate access to 100% of financial statement disclosures (numeric and narrative)
- Immediately reusable
- Freely available
- Includes all of the meta-data
  - Dimensional insights (e.g. sectors, geography, products)
  - Company specific disclosures
  - Explicit definitions
  - Relationships (e.g. calculations, references, etc.)
- Enables incremental process capabilities

Standards Enabled Capability Enhancements

- Inline Viewer
  - Navigation
  - Data Quality Filters (extensions, negative values, etc.)
  - Red Lining of changes
  - Disclosure Checklist
  - Time Series Charting
  - Time Series Benchmarking
- Validation, Quality, Risk, Compliance rules
- Aggregation
- Many Others

Potential Process Enhancements

- All filings; All financial statement disclosures
- Early adoption a particular accounting standard
- Combination of disclosures that may reveal a risk pattern
- Compare disclosure and specific sector risk profiles across targeted filers
- Identification of existence or absence of required disclosures
- Aggregate specific disclosure for a target period/year
- Narrative sentiment alignment with numeric results
- Statistics or trends on a specific financial disclosure such as net deferred tax assets (liabilities) or income tax expense
- Data quality assessment and searching for issues such as incorrect tagging, use of inappropriate extensions, and scaling errors

Consumers and Investors?

What is ‘structured disclosure’?

- Data about data
  - Human readable: Revenue 110,360
  - Machine readable:
    - <<us-gaap:RevenueFromContractWithCustomerExcludingAssessedTax id="F_000023" contextRef="C_0000789019_20170701_20180630" decimals="-6" unitRef="U_iso4217USD">110360000000</us-gaap:RevenueFromContractWithCustomerExcludingAssessedTax>

Disclosure Tagging Levels

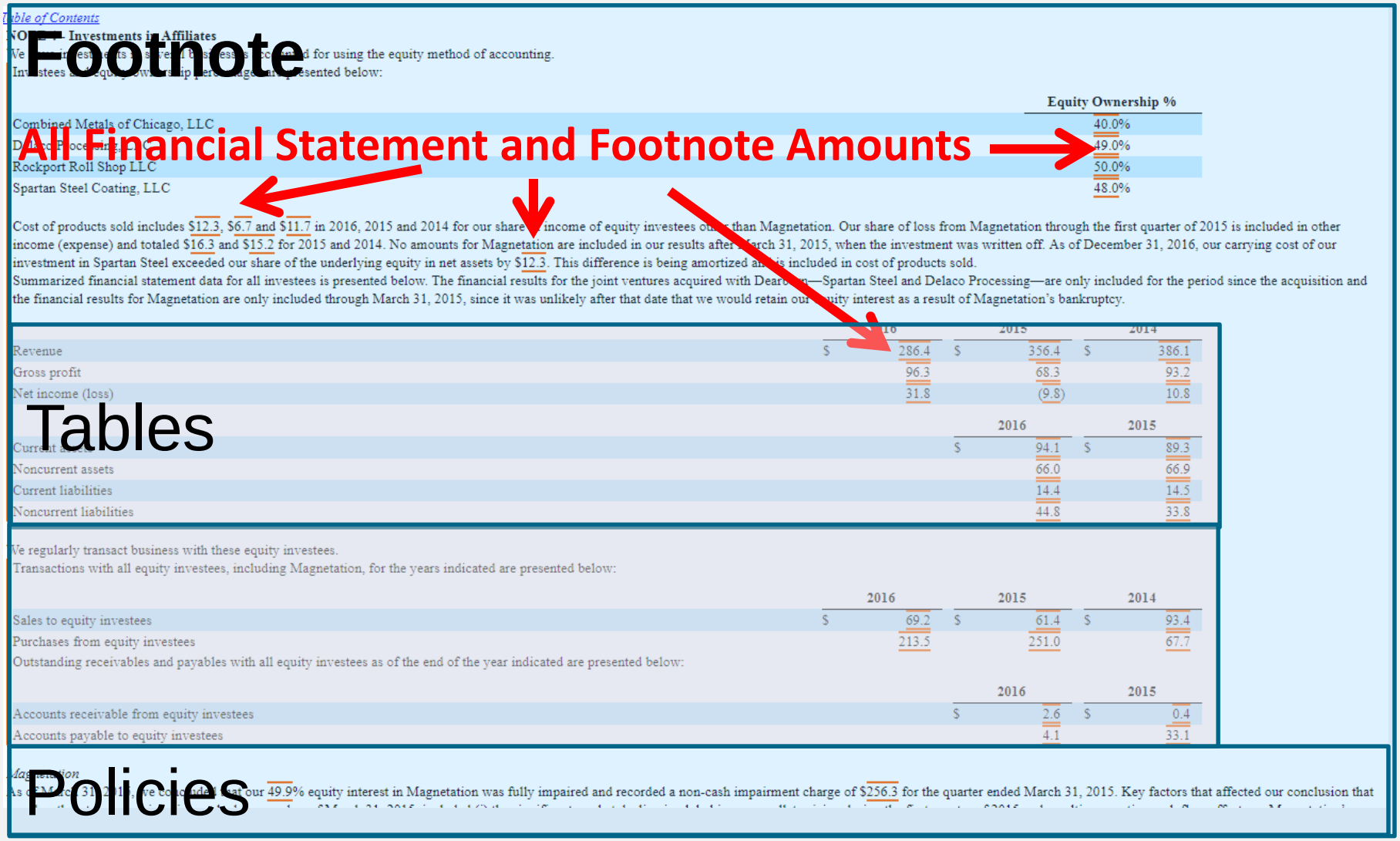


Table of Contents

NOTE 1 - Investments in Affiliates

We [illegible] investments in several businesses accounted for using the equity method of accounting.

Investees and equity ownership percentages are presented below:

Footnote

	Equity Ownership %
Combined Metals of Chicago, LLC	40.0%
Delaco Processing, LLC	49.0%
Rockport Roll Shop LLC	50.0%
Spartan Steel Coating, LLC	48.0%

All Financial Statement and Footnote Amounts

Cost of products sold includes $12.3, $6.7 and $11.7 in 2016, 2015 and 2014 for our share of income of equity investees other than Magnetation. Our share of loss from Magnetation through the first quarter of 2015 is included in other income (expense) and totaled $16.3 and $15.2 for 2015 and 2014. No amounts for Magnetation are included in our results after March 31, 2015, when the investment was written off. As of December 31, 2016, our carrying cost of our investment in Spartan Steel exceeded our share of the underlying equity in net assets by $12.3. This difference is being amortized and is included in cost of products sold.

Summarized financial statement data for all investees is presented below. The financial results for the joint ventures acquired with Dearborn—Spartan Steel and Delaco Processing—are only included for the period since the acquisition and the financial results for Magnetation are only included through March 31, 2015, since it was unlikely after that date that we would retain our equity interest as a result of Magnetation's bankruptcy.

Tables

	2016	2015	2014
Revenue	$ 286.4	$ 356.4	$ 386.1
Gross profit	96.3	68.3	93.2
Net income (loss)	31.8	(9.8)	10.8

	2016	2015
Current assets	$ 94.1	$ 89.3
Noncurrent assets	66.0	66.9
Current liabilities	14.4	14.5
Noncurrent liabilities	44.8	33.8

We regularly transact business with these equity investees.

Transactions with all equity investees, including Magnetation, for the years indicated are presented below:

	2016	2015	2014
Sales to equity investees	$ 69.2	$ 61.4	$ 93.4
Purchases from equity investees	213.5	251.0	67.7

Outstanding receivables and payables with all equity investees as of the end of the year indicated are presented below:

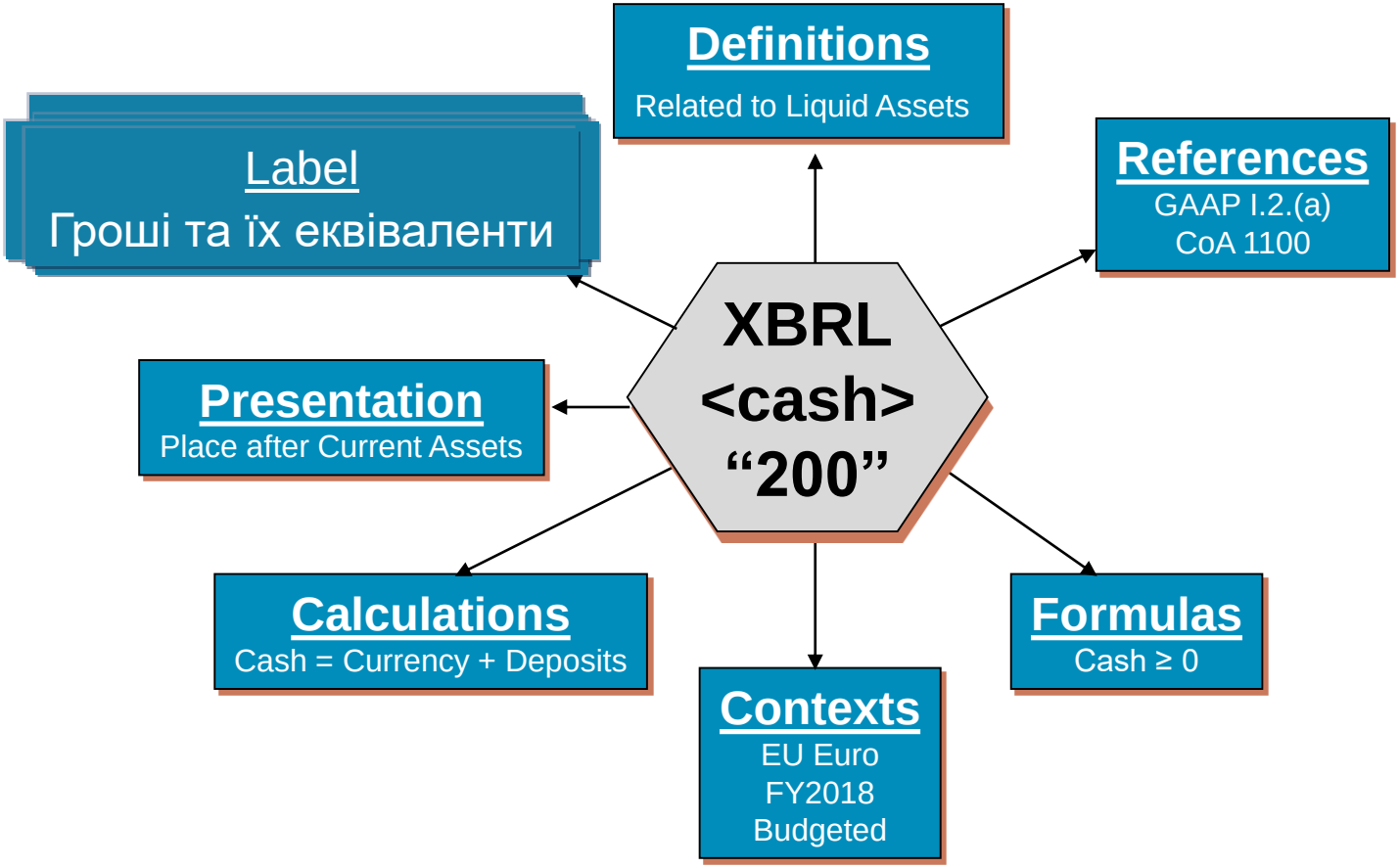
	2016	2015
Accounts receivable from equity investees	$ 2.6	$ 0.4
Accounts payable to equity investees	4.1	33.1

Policies

Magnetation

As of March 31, 2015, we concluded that our 49.9% equity interest in Magnetation was fully impaired and recorded a non-cash impairment charge of $256.3 for the quarter ended March 31, 2015. Key factors that affected our conclusion that [illegible]

What is XBRL?



Relationships that matter

Report Quality Matters

- Context Dates – DEI (6 months ended June 30) v Document Period End date (March 31)
- Scaling - Unremitted Foreign Earnings $B vs. $M
- Inappropriate extensions - for 'Total Revenues' and 'Other Income'
- Negative values - for a 'Contingent Liability'
- Incorrect tagging - Tagging Gross Revenue with 'Discount Rate' tag
- Duplicate tagging - same data with different tags
- Disclosures not tagged

- Staff Observations and Guidance here

Report Quality - Analysis

Quality Example

Aggregated Element: “Defined Benefit Plan, Assumptions Used Calculating Benefit Obligation, Discount Rate”

	2017
Average Discount Rate – As reported	7.7549%

Report Quality - Aggregation

Example: Research & Development Expense disclosures

	2017	2018
ALPHABET INC.	16625000000	21419000000
INTEL CORP	13098000000	13543000000
MICROSOFT CORP	13037000000	14726000000
APPLE INC	11581000000	14236000000
MERCK & CO., INC.	10208000000	9752000000
FORD MOTOR CO	8000000000	8200000000
FACEBOOK INC	7754000000	10273000000
BRISTOL MYERS SQUIBB CO	6474000000	6345000000
CISCO SYSTEMS, INC.	6059000000	6332000000
INTERNATIONAL BUSINESS MACHINES CORP	5787000000	5379000000
QUALCOMM INC/DE	5485000000	5625000000
LILLY ELI & CO	5281800000	5307100000
DELL TECHNOLOGIES INC	4384000000	4604000000
GILEAD SCIENCES INC	3734000000	5018000000
BOEING CO	3179000000	3269000000
UNITED TECHNOLOGIES CORP /DE/	2387000000	2549000000
DOWDUPONT INC.	2110000000	3060000000

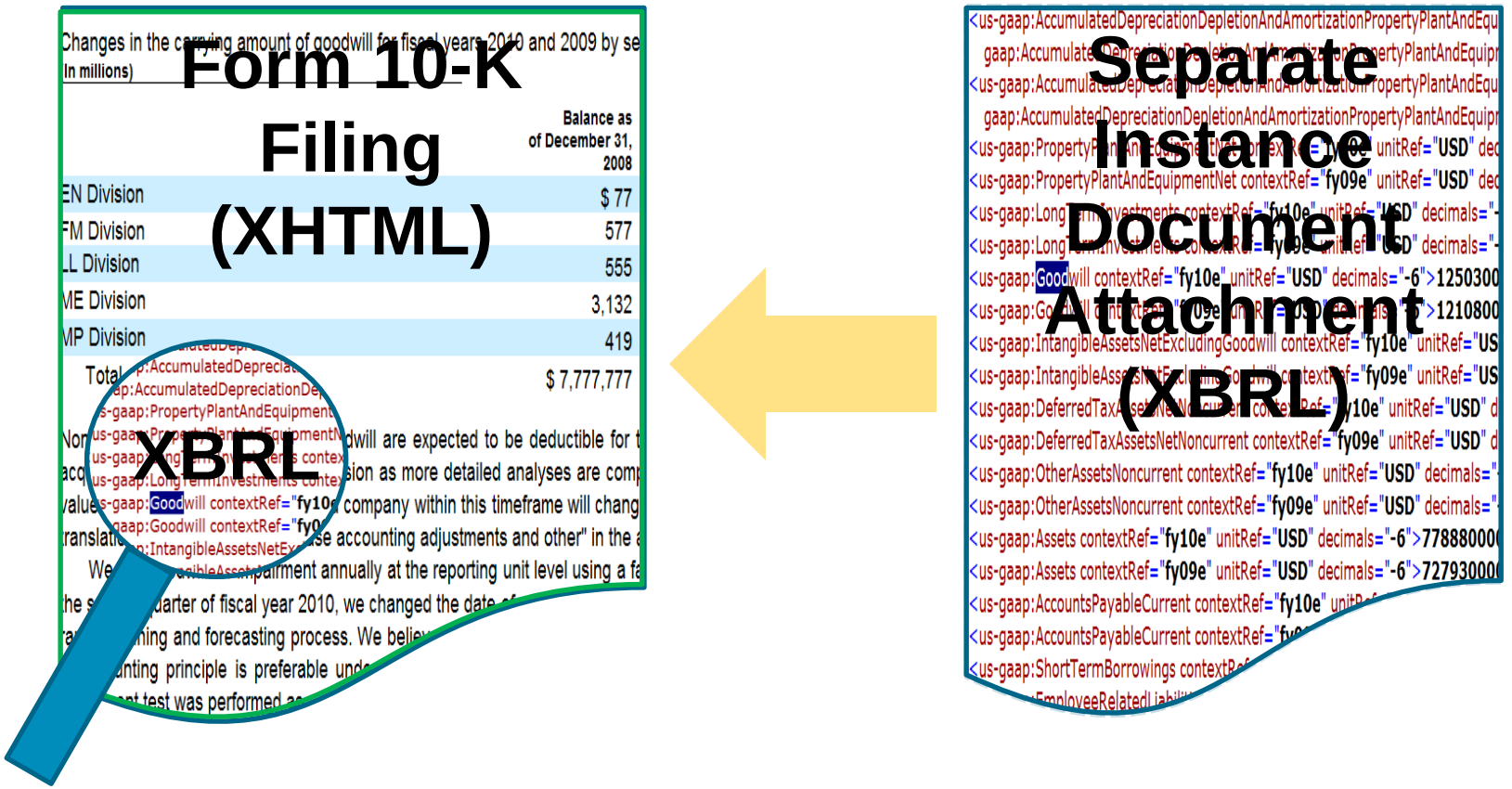
Report Quality - Extensions

- Company A element extension
  - Tradeaccountsreceivablenet – with no definition provided
- US GAAP Taxonomy element alternative
  - AccountsReceivableNetCurrent – defined as “Amount due from customers or clients, within one year of the balance sheet date (or the normal operating cycle, whichever is longer), for goods or services (including trade receivables) that have been delivered or sold in the normal course of business, reduced to the estimated net realizable fair value by an allowance established by the entity of the amount it deems uncertain of collection.”

Why Inline XBRL?

- Single document - structure actual filing rather than a separate exhibit to the filing
- Familiar View – within financial statement browser view to review structured data
- Enhance Review - search and filter filing by keyword or concept (e.g., FASB references)
- Navigate - use Table of Contents to quickly jump to financial statements and footnotes
- Improve Data Quality
  - Assist staff reviews (e.g., identify mislabeled or untagged information)
  - Eliminate the need to reconcile 2 different documents (HTML and XBRL)

What is Inline XBRL?



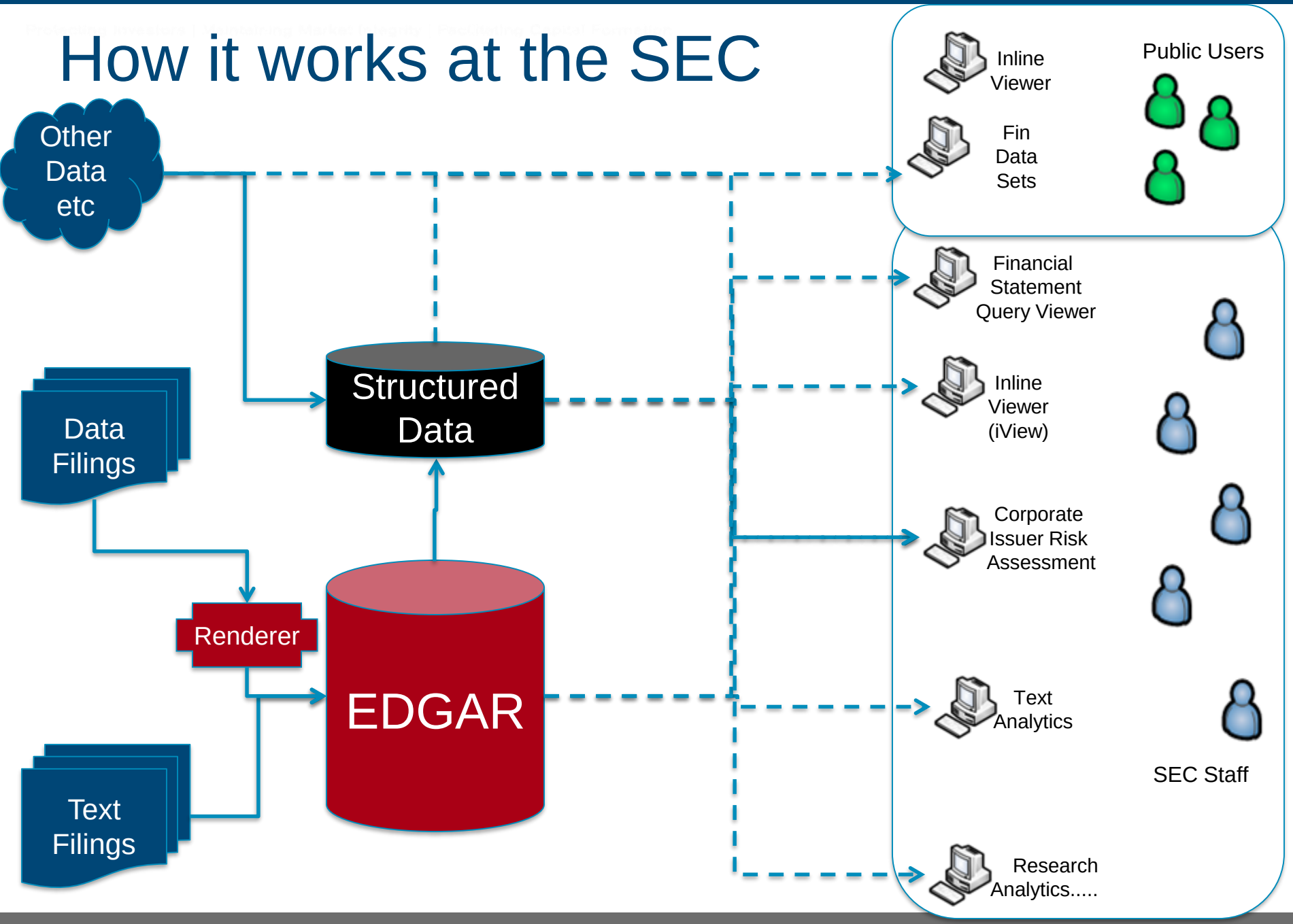
When is Inline XBRL Reporting?

- Adoption of amendments requiring Inline XBRL (https://www.sec.gov/rules/final/2018/33-10514.pdf)
- U.S. GAAP filers: 3 year phase-in compliance with requirements as follows, beginning with fiscal periods ending on or after:
  - June 15, 2019 for large accelerated filers
  - June 15, 2020 for accelerated filers
  - June 15, 2021 for all other filers
- Filers no longer required to post their XBRL formatted reports on their individual company web sites as of September 17, 2018.
- Updated FAQs (https://www.sec.gov/structureddata/osd-inline-xbrl.html)
- Inline Instructional Video (https://www.sec.gov/structureddata/osd-inline-xbrl.html#XBRL_Video)
- RSS Feed (https://www.sec.gov/Archives/edgar/xbrl-inline.rss.xml)

Inline XBRL Viewer Video

- https://www.sec.gov/structureddata/osd-inline-xbrl.html

How it works at the SEC



Corporate Issuer Risk Assessment (CIRA)

- **Analytical tool:** provides detailed information on various aspects of a company's business activities and financial reporting environment
- **Dashboard:** enables the user to search, compare and analyze a variety of information about companies through a single intuitive visual interface
- **Identify patterns:** Helps users assess the risks associated with financial reporting with more than 200 variables for thousands of SEC registrants across multiple years
- **Approach:** Based on database approaches used by academic financial accountants and large sample evidence documented in academic literature
- **Data sources:** Uses a variety of structured data.

Financial Statement Query Viewer (FSQV)

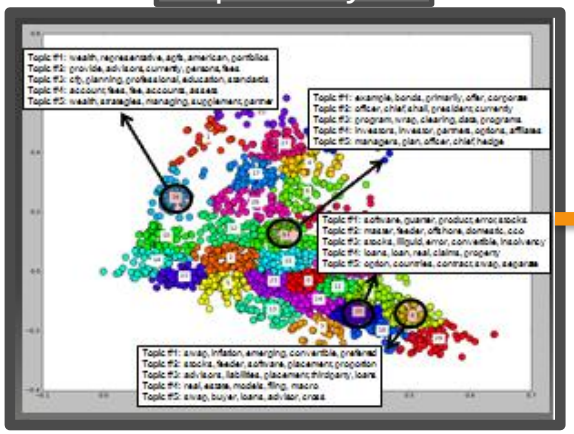
- Intuitive, quick and easy-to-use web browser interface.
- Search and review filings and **all** facts across **all** filers in ways not previously possible.
- Potential staff uses include:
  - Search using various criteria (e.g., CIK, ticker, industry, filer status, country).
  - Search by Fact (e.g. specific disclosure type and/or specific taxonomy element)
  - Search by Text (e.g. any text within a narrative disclosure)
  - Compare footnote narrative text differences between periods (e.g. ‘red-line’ changes).
  - Save all results and searches locally for further analysis and reuse.

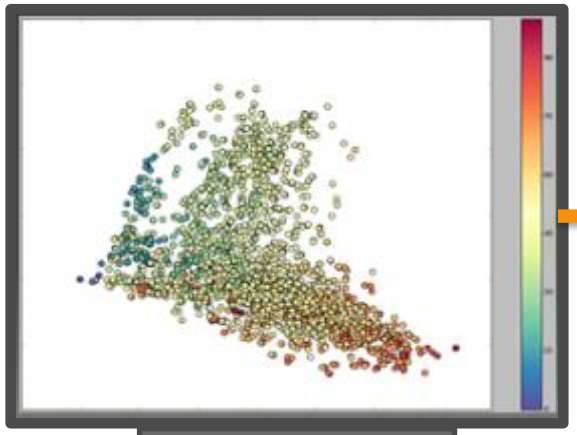
iView

- Leverages the open source freely available publicly available Inline XBRL Viewer
- Includes all public filters and query capabilities
- Offers time series charting for numeric values
- Offers benchmarking charting for numeric values
- Provides interface for contextual delivery of compliance, risk, liquidity, etc. models
- Proxy for an ‘augmented reality’ platform for report analysis.

Machine Learning Process

Topic Analysis





Tonality Analysis

Machine learning allows us to map signals in text to outcomes of interest

Machine Learning

Targets
High Risk
Medium Risk
Low Risk

Requires significant effort to train ML algorithms

Potential Research Considerations

- Data Quality (extensions, negative values, inappropriate element selection, etc.) v earnings quality
- Open Source Inline Viewer filters, references, others?
- Assurance on structured disclosures
- “Last Mile’ Process controls
- Communication implications of extension rates
- Appropriateness of Extensions
- Disclosure modeling variances across ‘comparable’ companies
- Presentation options and variances
- Presentation choices and options – best and worst practices
- Facts vs Story telling – what do investors want?
- Others?

Thank you!

Report Quality Matters

- Data Quality Reminder on Context Date
  https://www.sec.gov/structureddata/announcement/osd-announcement-context-0418

- Custom Tag Rates in IFRS XBRL Exhibits and GAAP Exhibits
  https://www.sec.gov/structureddata/trends_2018_2

- Trend Analysis on Custom Tag Rates in XBRL Exhibits Submitted from 2016 to 2018
  https://www.sec.gov/structureddata/trends_2019

Academic Research Paper

The Impact of Information Processing Costs on Firm Disclosure Choice: Evidence from the XBRL Mandate

Abstract: "This paper examines the effect of market participants' information processing costs on firms' disclosure choice. Using the recent eXtensible Business Reporting Language (XBRL) regulation, I find that firms increase their quantitative footnote disclosures upon implementation of XBRL detailed tagging requirements designed to reduce information users' processing costs. These results hold in a difference-in-difference design using matched non-adopting firms as controls, as well as two additional identification strategies. Examination of the disclosure increase by footnote type suggests that both regulatory and non-regulatory market participants play a role in monitoring firm disclosures. Overall, these findings suggest that the processing costs of market participants can be significant enough to impact firms' disclosure decisions."

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3315561

Academic Research Paper

Effects of Information Processing Costs on Price Informativeness: Evidence from XBRL Mandate

Abstract: “Using the Securities and Exchange Commission’s eXtensible Business Reporting Language (XBRL) mandate as a pseudo-natural experiment, we identify a causal link between information processing costs and stock price informativeness. We find prices have become more informative after the XBRL mandate, and such effect is upward-trending over the first three years post adoption, which indicates a learning curve for firms and investors. Examining the tagging process reveals that detailed tagging contributes to improved price informativeness, whereas block tagging has no impact. Further, firms with relatively shorter trading age have more benefit from XBRL adoption than older firms, supporting the conjecture that XBRL accelerates the information incorporation process and facilitates the market to learn about younger firms faster.”

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3324198

Resources for More Information

- Information on Structured Data: https://www.sec.gov/StructuredData
- U.S. GAAP Taxonomy: https://www.fasb.org/jsp/FASB/Page/LandingPage?cid=1176164131053
- SEC Reporting Taxonomy: https://www.fasb.org/jsp/FASB/Page/LandingPage?cid=1176164131053
- IFRS Taxonomy: http://www.ifrs.org/issued-standards/ifrs-taxonomy/
- Staff Observations, Guidance, and Trends on Interactive Data Quality: https://www.sec.gov/structureddata/staffobsandguide
- Technical Questions on Structured Data: StructuredData@sec.gov
- Questions on Interactive Data Rule and Compliance (select Office of Chief Counsel): https://tts.sec.gov/cgi-bin/corp_fin_interpretive
- Sign-up to Receive Emails from the Office of Structured Disclosure: https://www.sec.gov/structureddata/news
- SEC DERA Twitter: @SEC_DERA