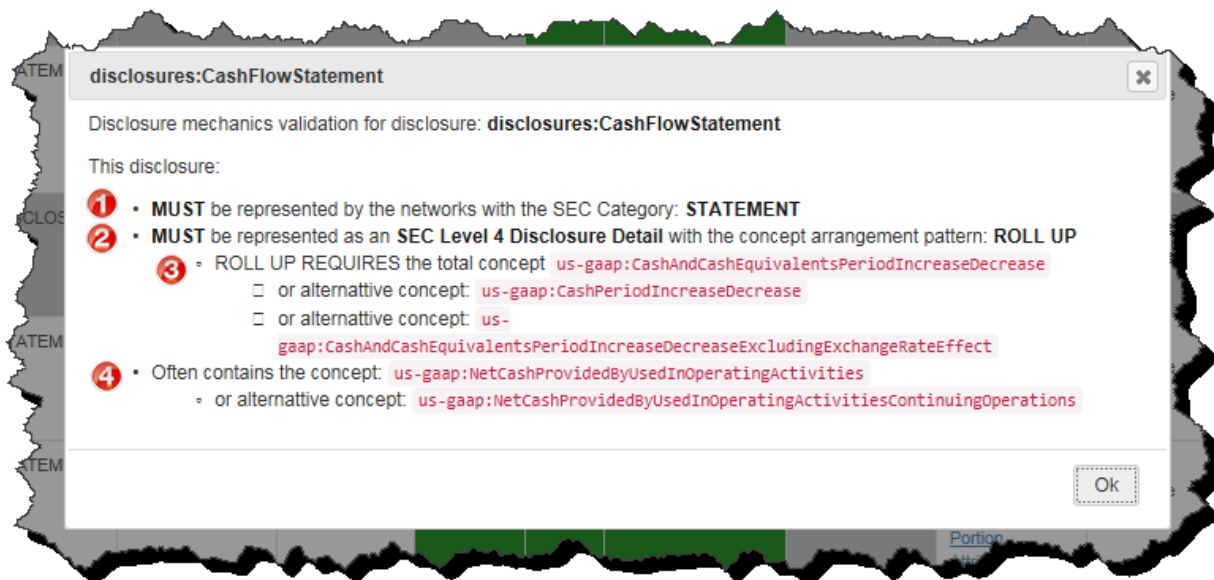


## Supply Chain Agreeing on Disclosure Business Rules

This document explains the process for agreeing on the business rules for how XBRL-based financial reports work. It uses the example of checking rules for one disclosure for one filing agent/software vendor.

### Business Rule for Disclosure

The disclosure used to explain how this process works is **CashFlowStatement**, the cash flow statement. In human readable terms, these are the business rules used to evaluate this disclosure:



Information is read from the XBRL definition relations<sup>1</sup> and then converted into the above format. Rules are represented as relations in the XBRL definition linkbase with arcroles explaining the relationship. Software uses the XBRL definition relations to process the rules and evaluate an XBRL-instance against the rules. The rules say the following:

**#1:** The disclosure “disclosures:CashFlowStatement” **MUST** be found within a Network that is described as being a “STATEMENT” per the SEC Categories that are allowed.

**#2:** The representation of the disclosure **MUST** be within a disclosure containing the pattern of [Line Items] concepts that are that of a ROLL UP. Software can easily determine if a disclosure has been represented as a ROLL UP by looking for XBRL calculation relations. All ROLL UPS have XBRL calculation relations.

**#3:** By definition, every ROLL UP has a total. This is **ALWAYS** true. Per the rule above, that ROLL UP total concept **MUST** be the concept “us-gaap:CashAndCashEquivalentsPeriodIncreaseDecrease”. Or,

<sup>1</sup> These are the rules in XBRL format, <http://xbrlsite.azurewebsites.net/2016/conceptual-model/reporting-scheme/us-gaap/disclosure-mechanics/12-rules-def.xml>

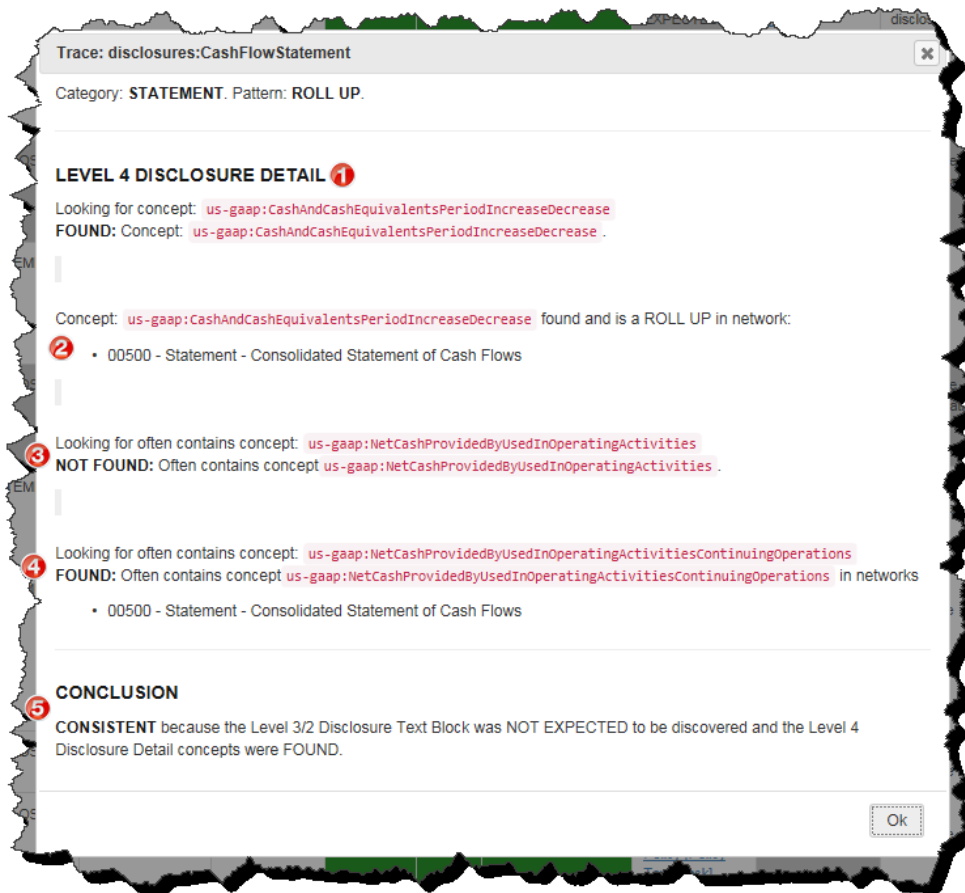
alternatively, the concept “us-gaap:CashPeriodIncreaseDecrease” or “us-gaap:CashAndCashEquivalentsPeriodIncreaseDecreaseExcludingExchangeRateEffect” could be used to represent the total concept within the disclosure’s roll up.

#4: To help software find the correct disclosure if multiple candidates exist, additional information is provided. Since cash flow statements typically always report net cash flow from continuing operations, the software is told that a CashFlowStatement disclosure often contains the concept “us-gaap:NetCashProvidedByUsedInOperatingActivities” in its representation. Alternatively, the concept “us-gaap:NetCashProvidedByUsedInOperatingActivitiesContinuingOperations” might exist instead.

The same type of information is provide for each disclosure of a financial report. Currently there are 65 disclosures provided for.

### Line of Reasoning to Determine Consistency with Business Rule

To evaluate an XBRL-based report against the specified business rule, a line of reasoning is undertaken. This also helps the business professional understand the line of reasoning used by the software. Here is a screen shot of the line of reasoning determining the state of the disclosure in a report:



**#1:** The software looks in Networks that have the pattern of a ROLL UP within its [Line Items]. It looks for the TOTAL concept of the net cash flow ROLL UP.

**#2:** It FOUND the first concept in a Network that is an SEC Category “STATEMENT” that is a ROLL UP, “00500 – Statement – Consolidated Statement of Cash Flow”.

**#3:** To be sure the disclosure found is in fact a cash flow statement, it looks for the OFTEN-CONTAINS concepts. It looks for the first concept which it did not find in the network with the TOTAL and other traits that it is looking for.

**#4:** But the software does find the second concept.

**#5:** And therefore the software reaches the CONCLUSION that the disclosure is consistent with expectation because the Level 4 Disclosure Detail concepts were found and it did not expect to find a Level 3 Disclosure Text Block.

### **Changing Disclosure Business Rules**

The business rules for the disclosures as they currently exist were created by empirical observation of XBRL-based financial reports submitted to the SEC by public companies. So, all rules are supported by empirical evidence. But not 100% of all such reports have been observed currently. Additional evidence will become available. As that evidence becomes available, disclosure business rules are adjusted.

Here is an example of how information is gathered. In processing XBRL-based public company filings to the SEC, this report was validated and was found to be INCONSISTENT with the business rules specified for the cash flow statement disclosure:

ASB Bancorp Inc

<http://www.sec.gov/Archives/edgar/data/1520300/000114036117011995/0001140361-17-011995-index.htm>

<http://www.sec.gov/Archives/edgar/data/1520300/000114036117011995/asbb-20161231.xml>

What was going on in the report is that rather than using one of the TOTAL concepts of the business rule that were specified, the concept “us-gaap:NetCashProvidedByUsedInContinuingOperations” was used instead.

<b>Financing Activities</b>			
Net increase in deposits	16,719,000	27,525,000	30,593,000
Net proceeds from (repayments of) repurchase agreements	65,000	(333,000)	(127,000)
Proceeds from the exercise of stock options	104,000	722,000	25,000
Stock-based deferral plan shares purchased	(35,000)	0	0
Excess tax benefits from equity awards	135,000	58,000	45,000
Common stock repurchased	(5,037,000)	(11,575,000)	(12,902,000)
Net cash provided by (used in) financing activities	11,951,000	16,397,000	17,634,000
Net increase (decrease) in cash and cash equivalents	13,323,000	(23,457,000)	4,067,000
<b>Cash and cash equivalents:</b>			
Beginning of period	33,401,000	56,858,000	52,791,000
End of period	46,724,000	33,401,000	56,858,000

us-gaap:NetCashProvidedByUsedInContinuingOperations

That concept was not added to the business rule for this disclosure because personally, I do not believe that the concept should ever be used to represent what amounts to “Net Cash Flow”. That concept is used to represent the total of net cash provided by operating, investing, and financing activities as is indicated by the US GAAP XBRL Taxonomy<sup>2</sup>:

<b>Calculations</b>	
<b>160000 - Statement - Statement of Cash Flows, Deposit Based Operations</b>	
	Net Cash Provided by (Used in) Operating Activities, Continuing Operations
+	Net Cash Provided by (Used in) Investing Activities, Continuing Operations <i>Dr</i>
+	Net Cash Provided by (Used in) Financing Activities, Continuing Operations <i>Dr</i>
	<u>Net Cash Provided by (Used in) Continuing Operations</u>

Further reasoning is that the concept “us-gaap:NetCashProvidedByUsedInContinuingOperations” is not appropriate if the line item “us-gaap:EffectOfExchangeRateOnCashAndCashEquivalents” is reported. So, if the filer would ever report exchange gains, then the net cash flow concept would need to be changed.

Continuing the analysis of reports revealed that numerous public companies use that same concept to report net cash flow. These included:

<b>EntityRegistrantName</b>	<b>Commentary</b>
ASB Bancorp Inc	us-gaap:NetCashProvidedByUsedInContinuingOperations
COMMUNITY BANK SYSTEM, INC.	us-gaap:NetCashProvidedByUsedInContinuingOperations
COMMUNITY WEST BANCSHARES /	us-gaap:NetCashProvidedByUsedInContinuingOperations
CRACKER BARREL OLD COUNTRY STORE, INC	us-gaap:NetCashProvidedByUsedInContinuingOperations
FARMERS & MERCHANTS BANCORP	us-gaap:NetCashProvidedByUsedInContinuingOperations
FIRST NORTHERN COMMUNITY BANCORP	us-gaap:NetCashProvidedByUsedInContinuingOperations

<sup>2</sup> See US GAAP XBRL Taxonomy, [http://xbrlview.fasb.org/yeti/resources/yeti-gwt/Yeti.jsp#tax~\(id~161\\*v~5016\)!con~\(id~3555223\)!net~\(a~3190\\*~772\)!lang~\(code~en-us\)!path~\(wc\)!rg~\(rg~32\\*p~12\)](http://xbrlview.fasb.org/yeti/resources/yeti-gwt/Yeti.jsp#tax~(id~161*v~5016)!con~(id~3555223)!net~(a~3190*~772)!lang~(code~en-us)!path~(wc)!rg~(rg~32*p~12))

EntityRegistrantName	Commentary
GREENE COUNTY BANCORP INC	us-gaap:NetCashProvidedByUsedInContinuingOperations
IONIS PHARMACEUTICALS INC	us-gaap:NetCashProvidedByUsedInContinuingOperations
MACATAWA BANK CORP	us-gaap:NetCashProvidedByUsedInContinuingOperations
NBT BANCORP INC	us-gaap:NetCashProvidedByUsedInContinuingOperations
Oritani Financial Corp	us-gaap:NetCashProvidedByUsedInContinuingOperations
Sound Financial Bancorp, Inc.	us-gaap:NetCashProvidedByUsedInContinuingOperations
VirnetX Holding Corp	us-gaap:NetCashProvidedByUsedInContinuingOperations
VISHAY INTERTECHNOLOGY INC	us-gaap:NetCashProvidedByUsedInContinuingOperations

Because I am not 100% certain that my view is correct, because there has not been good discussion about this issue as of this point, and because I can see some rational for using this concept to represent net cash flow particularly since there were so many public companies using that concept; it could be the case that the supply chain as a whole might reach the conclusion that this concept was, in fact, appropriate for this disclosure. Ultimately, this is a supply chain decision because that is the only way XBRL-based digital financial reporting will work...agreement.

And so, I simply changed the rule to add that concept as an alternative:



Then, the initial validation results were compared with the new validation results to see what the impact of the rule change. Note that in the results that you see below there were THREE disclosure business rules changes, not just the one I am providing as an example.

To test the results of the rules changes, all rules were run against the S&P 500 companies, rather than all 6,023 public companies, because it takes less time and the 500 companies would likely give a good indication of the results of the changes.

The results were as follows:

Initial results: (before the rule changes)

#	Name	Filing Count	Disclosures Consistent	Disclosures Inconsistent	Not Reported	Disclosures Total	Consistent %	Inconsistent %
1	<a href="#">Certent</a>	13	386	128	318	832	85%	15%
2	<a href="#">Donnelley Financial Solutions</a>	10	330	95	215	640	85%	15%
3	<a href="#">EDGARfilings PROfile</a>	2	63	25	40	128	80%	20%
4	<a href="#">Fujiitsu</a>	1	23	15	26	64	77%	23%
5	<a href="#">IBM Cognos CDM</a>	19	575	276	365	1216	77%	23%
6	<a href="#">IBM Cognos FSR</a>	2	64	28	36	128	78%	22%
7	<a href="#">Merrill Bridge</a>	13	409	135	288	832	84%	16%
8	<a href="#">Merrill Corporation</a>	15	470	177	313	960	82%	18%
9	<a href="#">RR Donnelley</a>	52	1608	654	1066	3328	80%	20%
10	<a href="#">S2 Filings</a>	1	29	7	28	64	89%	11%
11	<a href="#">SAP Disclosure Management</a>	1	20	19	25	64	70%	30%
12	<a href="#">Thunderdome</a>	4	95	43	118	256	83%	17%
13	<a href="#">Workiva</a>	367	11460	4605	7423	23488	80%	20%
	<b>Total</b>	<b>500</b>	<b>15532</b>	<b>6207</b>	<b>10261</b>	<b>32000</b>	<b>81%</b>	<b>19%</b>

Subsequent results: (after the rule changes)

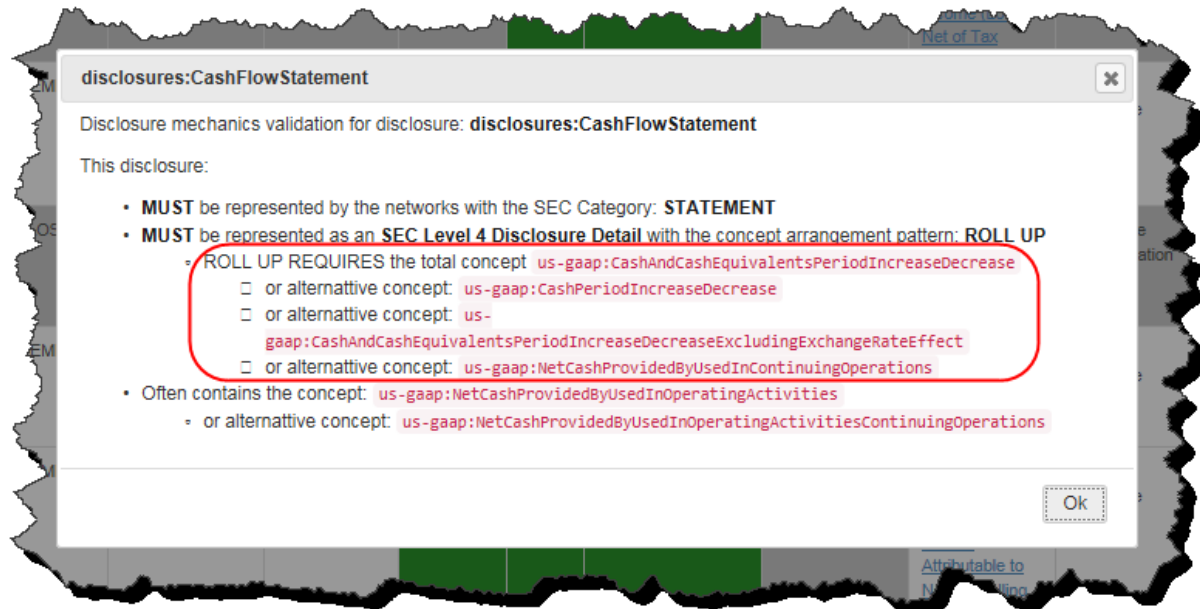
#	Name	Filing Count	Disclosures Consistent	Disclosures Inconsistent	Not Reported	Disclosures Total	Consistent %	Inconsistent %
1	<a href="#">Certent</a>	13	391	124	317	832	85%	15%
2	<a href="#">Donnelley Financial Solutions</a>	10	339	87	214	640	86%	14%
3	<a href="#">EDGARfilings PROfile</a>	2	65	23	40	128	82%	18%
4	<a href="#">Fujiitsu</a>	1	23	15	26	64	77%	23%
5	<a href="#">IBM Cognos CDM</a>	19	584	269	363	1216	78%	22%
6	<a href="#">IBM Cognos FSR</a>	2	64	28	36	128	78%	22%
7	<a href="#">Merrill Bridge</a>	13	422	122	288	832	85%	15%
8	<a href="#">Merrill Corporation</a>	15	484	164	312	960	83%	17%
9	<a href="#">RR Donnelley</a>	52	1644	619	1065	3328	81%	19%
10	<a href="#">S2 Filings</a>	1	29	7	28	64	89%	11%
11	<a href="#">SAP Disclosure Management</a>	1	20	19	25	64	70%	30%
12	<a href="#">Thunderdome</a>	4	98	41	117	256	84%	16%
13	<a href="#">Workiva</a>	367	11729	4353	7406	23488	81%	19%
	<b>Total</b>	<b>500</b>	<b>15892</b>	<b>5871</b>	<b>10237</b>	<b>32000</b>	<b>82%</b>	<b>18%</b>

So, the filings stayed the same, the only change was three rules. The change resulted in a net increase of CONSISTENT filings of 360.

This change is not necessarily good or bad. What the change does is explain exactly how public companies are creating their XBRL-based disclosures. It could be the case that ultimately the supply chain will conclude that using the concept “us-gaap:NetCashProvidedByUsedInContinuingOperations” to represent the line item “Net Cash Flow” as being appropriate or inappropriate. At that point, the business rule for the disclosure will be updated.

### Additional Benefit of Business Rules

There are additional benefits to business rules for disclosures. Again, consider the cash flow statement disclosure rules:



Notice the different concepts that are deemed appropriate for representing the line item “Net cash flow”. There are four appropriate concepts per the business rule. Ask yourself a question: “What precisely is the benefit of using both the ‘us-gaap:CashAndCashEquivalentsPeriodIncreaseDecrease’ and ‘us-gaap:CashPeriodIncreaseDecrease’? Is having two concepts better than having one? What exactly is the advantage or the disadvantage?”

Basically, business rules reveal a lot of really good information about the US GAAP XBRL Taxonomy. Theoretically, it would be beneficial to not have any “alternative concepts” at all. These alternative concepts add complexity to processing information. That additional complexity should be consciously weighted against the benefits derived in order to help determine the appropriateness or inappropriate nature of such alternative concepts. All these details will be worked out over time.

### Repeating the Process for all 65 Disclosures

This process will be repeated for all 65 or so disclosures<sup>3</sup> in my initial set of disclosure business rules that I am using for my *Campaign to Improve Disclosure Quality*. This is an excellent learning opportunity for professional accountants, filing agent professional services teams, public companies creating reports, and software vendors.

There are exactly FOUR things that cause INCONSISTENCIES:

1. Errors in public company XBRL-based financial reports.
2. Errors in the disclosure business rules.
3. Errors in the software algorithms processing the rules.
4. Errors in the US GAAP XBRL Taxonomy such as missing concepts.

<sup>3</sup> Best Practice Examples of Disclosures for Campaign to Improve Disclosure Quality, <http://www.xbrl.com/site1/2017/Prototypes/DisclosureAnalysis/All/Index.html>