

# Dynamic Rules

By Charles Hoffman, CPA

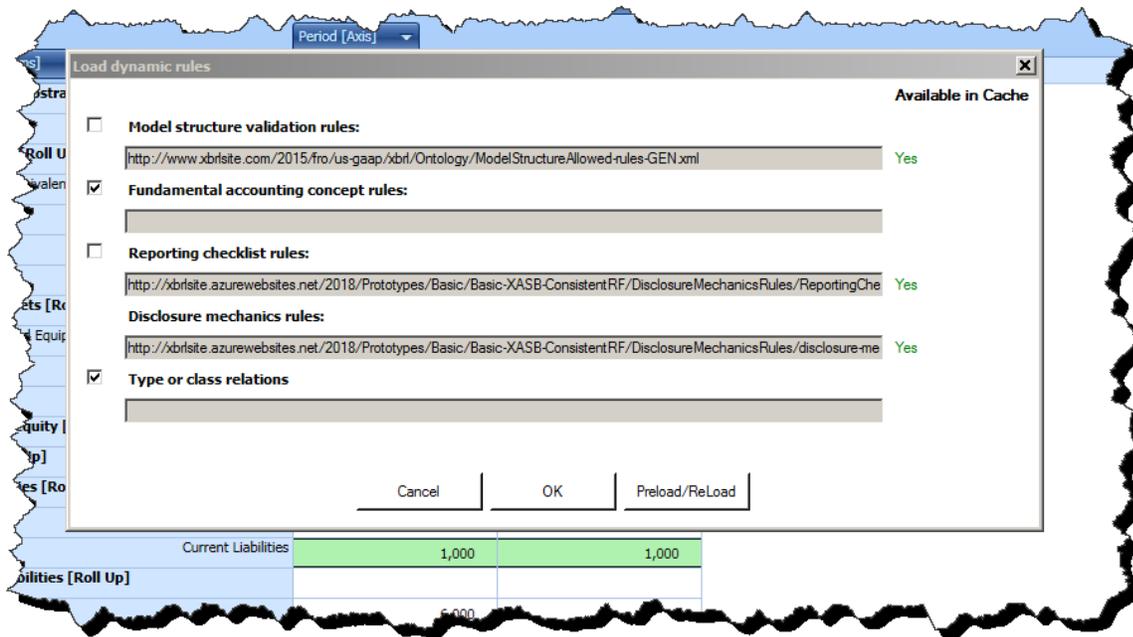
This document walks you through the use of dynamic sets of rules that can be specific for one document. This is as contrast to the “fundamental accounting concept relations” rules, the “Disclosure Mechanics” rules and the “Reporting Checklist” rules that are applicable to every XBRL-based report within some report profile.

## STEP 1: Start Pesseract, Open XBRL instance.

Open the Pesseract application and the main form is displayed and the “Home” tab of the menu ribbon is displayed. Press the “Open” icon and then “Open XBRL instance”. Press the browse button (with the three dots) and open the file:

\\DemonstrationScripts\DynamicRules\basic-SampleInstance-EmbeddedModelStructureReportingChecklistDisclosureMechanics.xml

The XBRL instance is loaded and the following form appears:



There are FOUR special categories of validation that Pesseract can process because the application understands the arcroles that are used to create the validation rules;

- **Model structure validation rules** which checks the relations between taxonomy report elements such as [Table]s and [Axis].
- **Fundamental accounting concept rules** which check the continuity between reported fact such as the relation between “Assets”, “Current assets” and “Noncurrent assets”.
- **Reporting checklist rules** which check the existence of disclosures.

- **Type or class relations** rules which check the continuity between reported facts relative to other reported facts such as using the concept “Operating expenses” within the calculation hierarchy “Cost of Revenues” which is an invalid relationship.

And so, anyone can create their own model structure relations rules, fundamental accounting concept relations rules, reporting checklist rules, or type or class relations rules. All of these rules follow the XBRL technical specification and can be created using any off-the-shelf software that supports the XBRL technical specification.

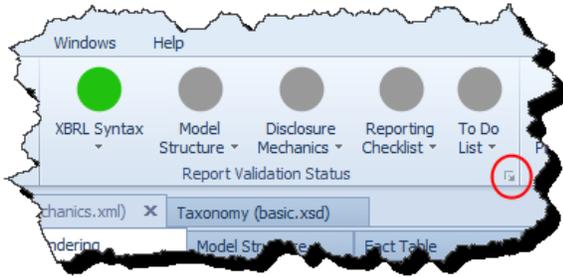
Rules can be made available anywhere on the internet, within a private intranet which you have access to, or locally. If the rules are not available within the software’s local cache which is indicated by seeing a red “NO” next to the text box which shows the location of the rules; you simply press the “Preload/Reload” button and the rules will be cached locally.

Press the “OK” button on the “Load dynamic rules” form and the XBRL instance, XBRL taxonomy, and XBRL-based rules that are linked to the XBRL instance are loaded:

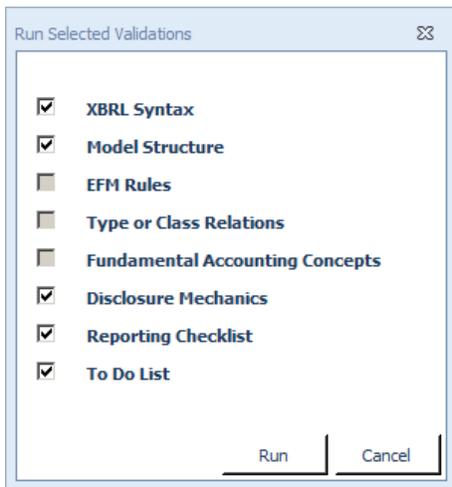
The screenshot displays the XBRL software interface. The main window shows a balance sheet table for the reporting entity 30810137d58f76b84afd. The table is structured as follows:

Reporting Entity [Axis]	30810137d58f76b84afd <a href="http://standards.iso.org/iso/17442">http://standards.iso.org/iso/17442</a>	
Unit [Axis]	USD	
Implied [Line Items]	2018-12-31	2017-12-31
<b>Balance Sheet [Abstract]</b>		
<b>Assets [Roll Up]</b>		
<b>Current Assets [Roll Up]</b>		
Cash and Cash Equivalents	4,000	3,000
Receivables	2,000	1,000
Inventories	1,000	1,000
<b>Current Assets</b>	<b>7,000</b>	<b>5,000</b>
<b>Noncurrent Assets [Roll Up]</b>		
Property, Plant and Equipment	6,000	1,000
<b>Noncurrent Assets</b>	<b>6,000</b>	<b>1,000</b>
<b>Assets</b>	<b>13,000</b>	<b>6,000</b>
<b>Liabilities and Equity [Roll Up]</b>		
<b>Liabilities [Roll Up]</b>		
<b>Current Liabilities [Roll Up]</b>		
Accounts Payable	1,000	1,000
<b>Current Liabilities</b>	<b>1,000</b>	<b>1,000</b>
<b>Noncurrent Liabilities [Roll Up]</b>		
Long-term Debt	6,000	1,000

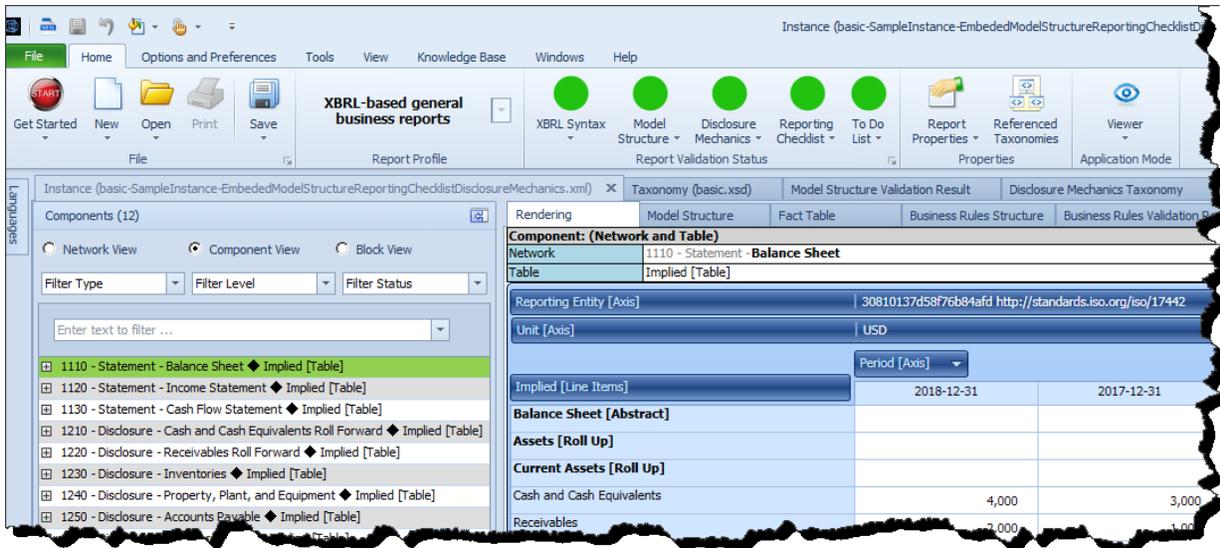
Next, press the icon in the lower-right corner of the “Report Validation Status” to open up the “Run Selected Validations” form:



Press the “Run” button and the validation will begin.



All of the “Report Validation Status” icons should turn GREEN and several new document tabs appear related to validation as is shown below:



Try exploring the “Reporting Checklist Validation Results”:

#	Disclosure	Checklist Category	Reason Disclosure Must Exist	Discovered	Expectation Met	Link to Disclosure Mechanics
0	Reporting Checklist					
1	Balance Sheet	Required disclosure	Disclosure always required, satisfied by Assets [Roll Up] and Liabilities and Equi...	True	CONSISTENT	Balance Sheet
2	Assets [Roll Up]	Part of disclosure	Satisfies Balance Sheet disclosure	True	CONSISTENT	Assets [Roll Up]
3	Liabilities and Equity [Roll Up]	Part of disclosure	Satisfies Balance Sheet disclosure	True	CONSISTENT	Liabilities and Equity [Roll Up]
4	Income Statement	Required disclosure	Disclosure always required	True	CONSISTENT	Income Statement
5	Cash Flow Statement, Direct Method	Required disclosure	Disclosure always required	True	CONSISTENT	Cash Flow Statement, Direct Method
6	Receivables [Roll Forward]	Line item exists, then disclosure requi...	Required because line item basic:Receivables was reported	True	CONSISTENT	Receivables [Roll Forward]
7	Cash and Cash Equivalents [Roll Forward]	Line item exists, then disclosure requi...	Required because line item basic:CashAndCashEquivalents was reported	True	CONSISTENT	Cash and Cash Equivalents [Roll Forward]
8	Inventories [Roll Forward]	Line item exists, then disclosure requi...	Required because line item basic:Inventories was reported	True	CONSISTENT	Inventories [Roll Forward]
9	Accounts Payable [Roll Forward]	Line item exists, then disclosure requi...	Required because line item basic:AccountsPayable was reported	True	CONSISTENT	Accounts Payable [Roll Forward]
10	Property, Plant, and Equipment Roll Forward	Line item exists, then disclosure requi...	Required because line item basic:PropertyPlantAndEquipment was reported	True	CONSISTENT	Property, Plant, and Equipment Roll Forward
11	Long-Term Debt [Roll Forward]	Line item exists, then disclosure requi...	Required because line item basic:LongTermDebt was reported	True	CONSISTENT	Long-Term Debt [Roll Forward]
12	Retained Earnings [Roll Forward]	Line item exists, then disclosure requi...	Required because line item basic:RetainedEarnings was reported	True	CONSISTENT	Retained Earnings [Roll Forward]

## STEP 2: *Dynamic rules that are all local.*

Close the current document. Press the “Open” icon and then “Open XBRL instance”. Press the browse button (with the three dots) and open the file:

\\DemonstrationScripts\DynamicRules\_AllFilesLocal\company-instance.xml

(You can download a ZIP file with these files here,

[http://xbrlsite.azurewebsites.net/2018/Pesseraact/DynamicRules\\_AllFilesLocal.zip](http://xbrlsite.azurewebsites.net/2018/Pesseraact/DynamicRules_AllFilesLocal.zip))

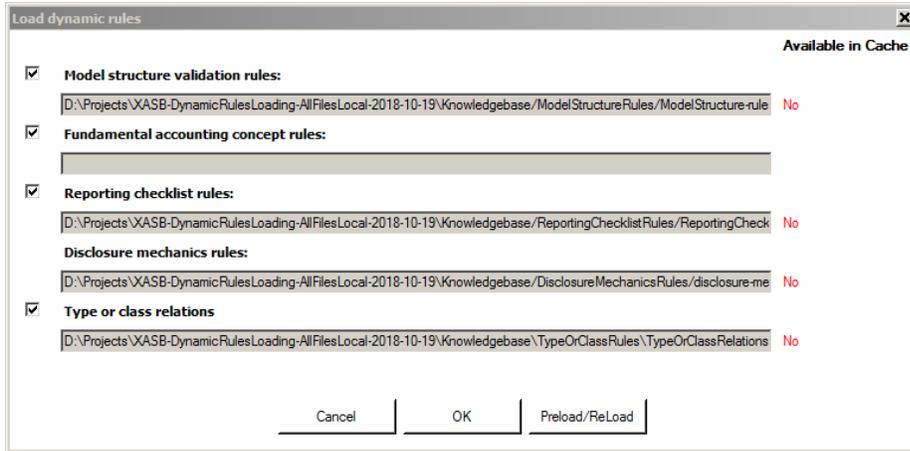
As you navigate to find the file, note the “Knowledgebase” subdirectory. We will return to that in a moment. But, load the file “company-instance”:

Name	Date modified	Type	Size
Knowledgebase	10/19/2018 4:21 PM	File folder	
company-calculation.xml	4/29/2017 7:42 AM	XML Document	2 KB
company-definition.xml	4/29/2017 7:42 AM	XML Document	106 KB
company-formula.xml	4/29/2017 7:29 AM	XML Document	16 KB
company-instance.xml	5/31/2018 9:10 AM	XML Document	190 KB
company-label.xml	4/29/2017 7:43 AM	XML Document	24 KB
company-presentation.xml	4/29/2017 7:43 AM	XML Document	67 KB

What is going on is that all of the validation rules that you will be using are local. If you go into the “Knowledgebase” subdirectory, you see:

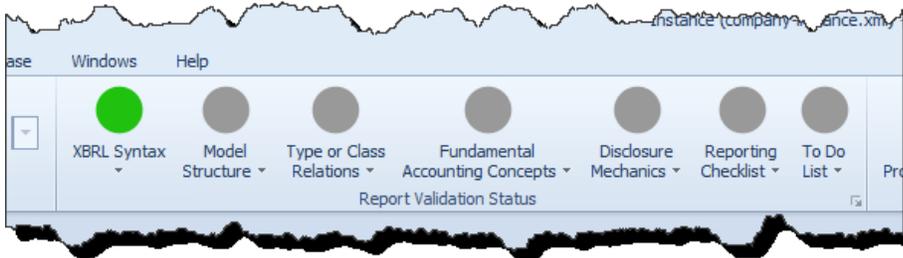
Name
ContinuityRules
DisclosureMechanicsRules
gaap
ModelStructureRules
ReportingChecklistRules
ReportingSchemeMetadata
TypeOrClassRules

That subdirectory contains all the rules and other metadata necessary to validate the XBRL instance document you are loading. Upon loading the document, the same “Load dynamic rules” form appears. Press the “Preload/Reload” button because the files have not been cached.

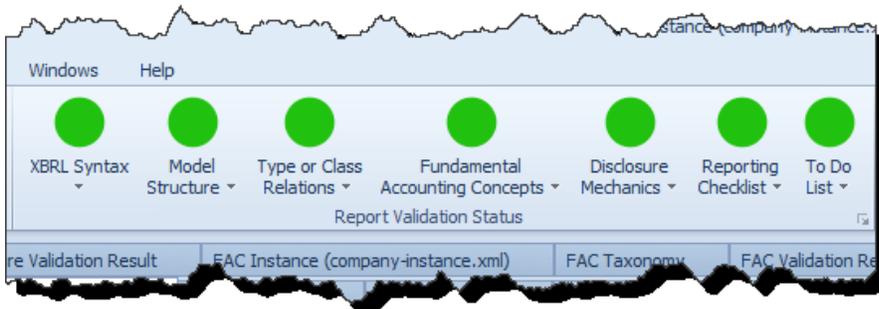


Press OK to close the form.

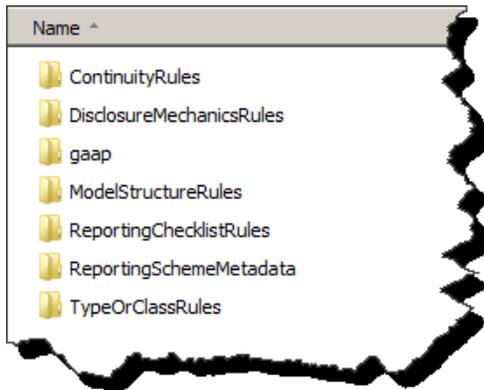
You will notice that the Report Validation Status is dynamically configured with all of the categories of rules which were loaded locally via the Load dynamic rules form above: [CSH: Note that there is currently a bug and the Fundamental Accounting Concepts rule set is not being located; that is being fixed.]



Now, press the icon in the lower left hand corner to bring up the “Run Selected Validation” and then press “Run”. All the icons will turn GREEN.



If you want to understand more, go through each of these subdirectories and you will see all of the XBRL definition linkbases, XBRL taxonomy schemas, XBRL Formula linkbases that drive the validation.



So, the rules you use for validation are sometimes dynamically loaded by the application because the application can figure out the profile and other information about the report; sometimes you can directly link business rules from a web site to the report; or you can supply your own copy of all the business rules that you want to use to verify that a report is created correctly. Further, 100% of the rules are XBRL. A normal XBRL Formula processor or XBRL processor cannot process the rules because they don't understand the arcroles used to create the rules and for other reasons the typical XBRL Formula processor is limited. Pesseract performs this rule processing however. XBRL Cloud can process these rules also.