## **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-EmbededModelStructureReportingChecklistDisclosureMechanics.xml

The XBRL instance is loaded and the following form appears:

Load dy	namic rules			×
а				Available in Cache
	Model structure validation rule	S:		
'	http://www.xbrlsite.com/2015/fro/us	s-gaap/xbrl/Ontology/ModelStruct	ureAllowed-rules-GEN xml	Yes
en 🔽	Fundamental accounting conce	ept rules:		
	Reporting checklist rules:			
	http://xbrlsite.azurewebsites.net/201	portingChe Yes		
Re	Disclosure mechanics rules:			
1, I	http://xbrlsite.azurewebsites.net/201	8/Prototypes/Basic/Basic-XASB-	ConsistentRF/DisclosureMechanicsRules/disc	closure-me Yes
	Type or class relations			
, I				
0				
		Cancel (	DK Preload/ReLoad	
	Current Liabilities	1 000	1 000	
		1,000	1,000	

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:

t Started New Open Print Save XBRL-based general business reports	× XBRL Syntax	Model Disclosure	Reporting Checklist *	To Do	Report Re Properties * Ta	ferenced	© Viewer
File 🕞 Report Profile		Report Validation Status	Checkber	G.	Propertie	s	Application Mode
Instance (basic-SampleInstance-EmbededModelStructureReportingChecklistDisclosu	ureMechanics.xml) ×	Taxonomy (basic.xsd)					
Components (12)	Rendering	Model Structure	Fact Table		Business Rules Str	ucture	Business Rules Validation R
C Network View C Component View C Block View	Component: (Netwo Network	1110 - Statement - Bala	ance Sheet		-		
Filter Type 🔹 Filter Level 🔹 Filter Status 💌	Table	Implied [Table]					
	Reporting Entity [Axis	3]		308101	.37d58f76b84afd ht	tp://standa	ards.iso.org/iso/17442
Enter text to filter	Unit [Axis]			USD			
1110 - Statement - Balance Sheet   Implied [Table]				Period	[Axis] 👻		
⊞ 1120 - Statement - Income Statement ◆ Implied [Table]	Implied [Line Items]		_		2018-12-31		2017-12-31
⊞ 1130 - Statement - Cash Flow Statement ◆ Implied [Table]	Balance Sheet [Abstract]						
I210 - Disclosure - Cash and Cash Equivalents Roll Forward ◆ Implied [Table]     Interface and the second	Assets [Roll Up]						
I 1220 - Disclosure - Receivables Roll Forward ◆ Implied [Lable] I 1230 - Disclosure - Inventories ◆ Implied [Table]	Current Assets [Roll Up]						
<ul> <li>I 1240 - Disclosure - Property, Plant, and Equipment ◆ Implied [Table]</li> </ul>	Cash and Cash Equiva	lents		4 000		3.000	
⊞ 1250 - Disclosure - Accounts Payable ◆ Implied [Table]	Receivables			3,000		0	1,000
	Inventories				2,00	0	1,000
⊞ 1270 - Disclosure - Retained Earnings ◆ Implied [Table]			Surrent Asset		1,00	00	1,000
2101 - Disclosure - Inventories Detail ◆ Implied [Table]			Jurrent Asset		7,00	00	5,000
± 3101 - Disclosure - Finished Goods Detail ◆ Implied [Table]	Noncurrent Assets	[Roll Up]					
	Property, Plant and Ed	quipment			6,00	00	1,000
		None	current Asset	5	6,00	00	1,000
			Asset		13,00	00	6,000
	Liabilities and Equi	ty [Roll Up]					
	Liabilities [Roll Up]						
	Current Liabilities [	Roll Up]					
	Accounts Payable				1.00	00	1.000
		Cun	rent Liabilitie		-1.00	10	1,000
	Noncurrent Liabiliti	ies [Roll Up]			1,00	~	1,000
	Long-term Debt				6.00	00	1.000
<u>   </u>					0,00	-	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]
1	0	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
1	1	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]
1	2	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, <u>http://xbrlsite.azurewebsites.net/2018/Pesseract/DynamicRules\_AllFilesLocal.zip</u>)

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":

Ja	me *	Date modified	Туре	Size
- <sup>2</sup>	Knowledgebase	10/19/2018 4:21 PM	File folder	- R
کر 🖻	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
<b>X</b>	company-formula.xml	4/29/2017 7:29 AM	XML Document	16 KB
50	company-instance.xml	5/31/2018 9:10 AM	XML Document	190 KB
<u>}</u>	company-label.xml	4/29/2017 7:43 AM	XML Document	24 KB
2	company-presentation.xml	4/29/2017 7:43 AM	XML Document	67 KB
	And the second s	AND		- كىبىنىشى

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:



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.

Load d	lynamic rules	×
		Available in Cache
V	Model structure validation rules:	
	$D: \label{eq:projects} \end{tabular} D: \end{tabular} Projects \end{tabular} All Files \end{tabular} Local + 2018 + 10 + 19 \end{tabular} Knowledge \end{tabular} base \end{tabular} Model \end{tabular} Structure \end{tabular} have a structure \end{tabular} base \end{tabular} and \end{tabular} base \end{tabular} have a structure \end{tabular} base $	No
V	Fundamental accounting concept rules:	
	Reporting checklist rules:	
	D:\Projects\XASB-DynamicRulesLoading-AllFilesLocal-2018-10-19\Knowledgebase/ReportingChecklistRules/ReportingCheck	No
	Disclosure mechanics rules:	
	$D: \label{eq:projects} XASB-DynamicRulesLoading-AllFilesLocal-2018-10-19 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	No
V	Type or class relations	
	D:\Projects\XASB-DynamicRulesLoading-AllFilesLocal-2018-10-19\Knowledgebase\TypeOrClassRules\TypeOrClassRelations	No
	Cancel OK Preload/ReLoad	

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.