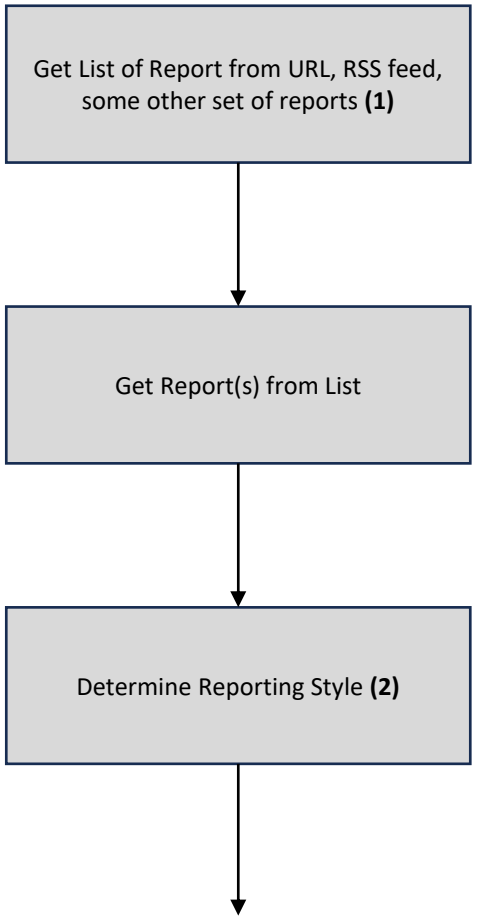
Extracting Information from Reports

This focuses on XBRL-based reports submitted to the SEC as an example.

Extraction 1 – Report File



(1) This is an example of one type of list, an RSS feed:
http://accounting.auditchain.finance/reporting-scheme/proof/repository/rss.xml

This is another simple list, a text file:
http://accounting.auditchain.finance/2022/kg/ListReports.txt

The SEC uses RSS feeds.

Alternatively, the ATOM syndication format could be used, https://datatracker.ietf.org/doc/html/rfc4287

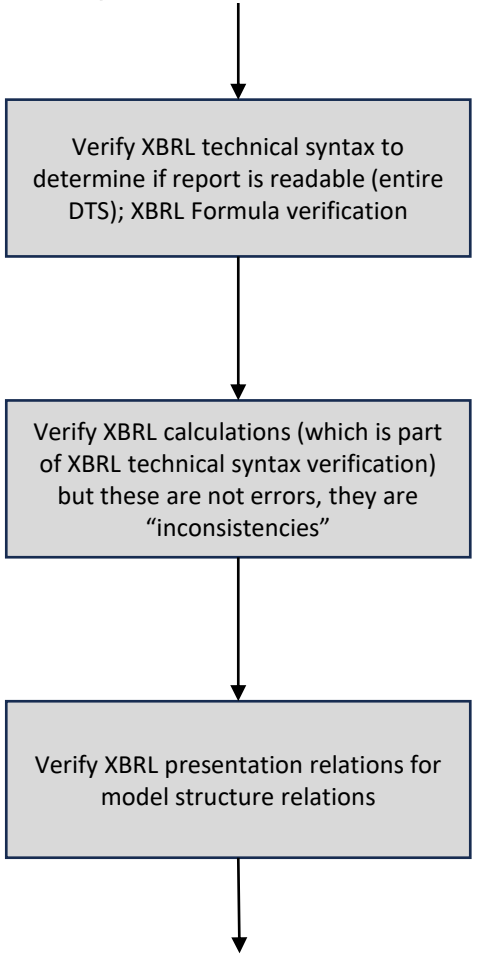
(2) This is a web service that provides the reporting style for reports submitted to the SEC.
https://xbrlsite-app.azurewebsites.net/ReportFrameCodeService/GetReportFrameCodeForCIK.aspx?CIK=0001084869

More information, https://xbrlsite-app.azurewebsites.net/ReportFrameCodeService/ListCIKToReportFrameCodeMapping.aspx

It is better to detect the reporting style based on the logical signature of the report itself. Reporting styles can change, but changing a reporting style is rare.

The **CIK number** is provided in each report (required) in the element “dei:EntityCentralIndexKey”.

Extraction 2 – Verify XBRL syntax, XBRL Calculations, XBRL Formula, Verify Model Structure Relations

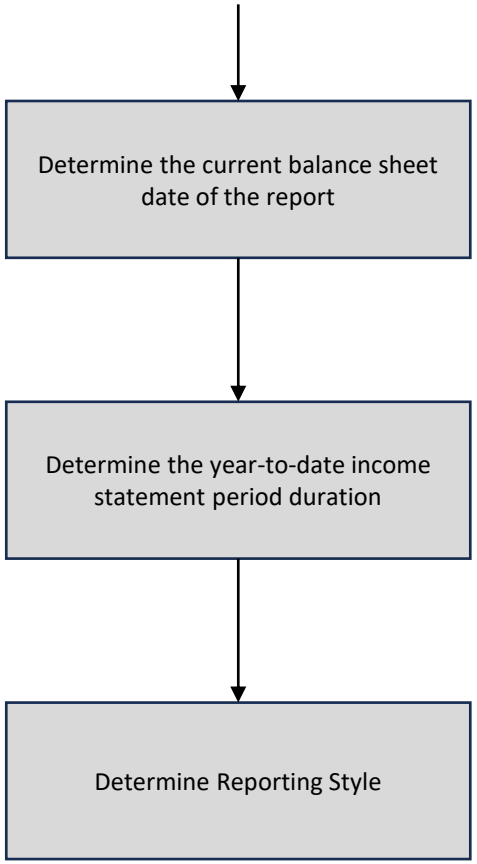


XBRL-based reports submitted to the SEC are verified to be, and generally are (99.9%) valid XBRL. Sometimes the XHTML contained in text blocks has issues, that sometimes causes XBRL verification issues. The SEC does not allow XBRL Formulas to be submitted with XBRL-based reports; but XBRL Formula verification is part of XBRL verification.

There are issues with XBRL calculation relations generally. We need to discuss this.

Verify the XBRL presentation relations to be sure they are consistent with the model structure rules specified, http://xbrlsite.com/seattlemethod/cm/model-structure-rules-strict-def.xml

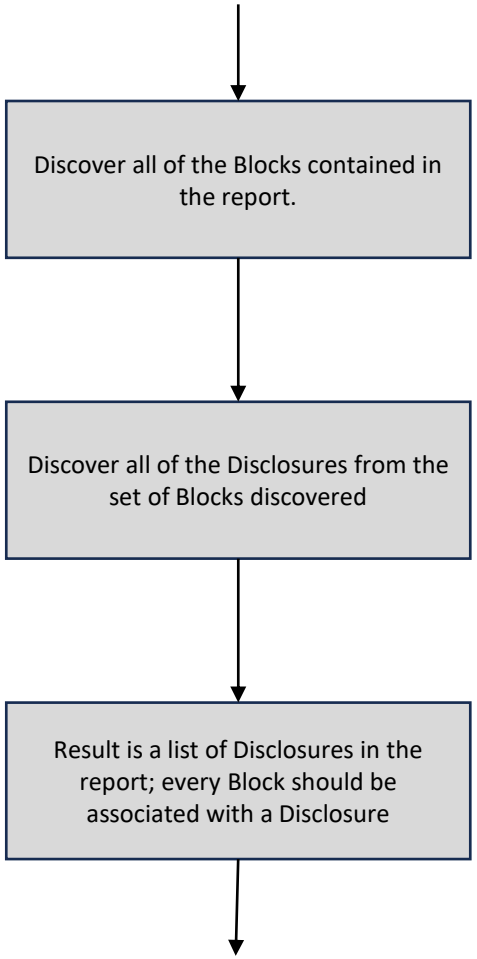
Extraction 3 – Balance Sheet Date, Income Statement Year to Date Period



The fact in the report with the concept “dei:DocumentPeriodEndDate” contains the current balance sheet date. In addition, the context of that concept, which is a DURATION; the duration end date (xbrli:period/xbrli:endDate) MUST be the same as the value of the fact “dei:DocumentPeriodEndDate”. The end date is also the ending of the income statement period. The start date of the income statement period is the start date of the fact “dei:DocumentPeriodEndDate” period start date (xbrli:period/xbrli:startDate).

The end date (above) is also the ending of the year-to-date income statement period. The start date of the income statement period is the start date of the fact “dei:DocumentPeriodEndDate” period start date (xbrli:period/xbrli:startDate).

Extraction 4 – Block Discovery, Disclosure Discovery



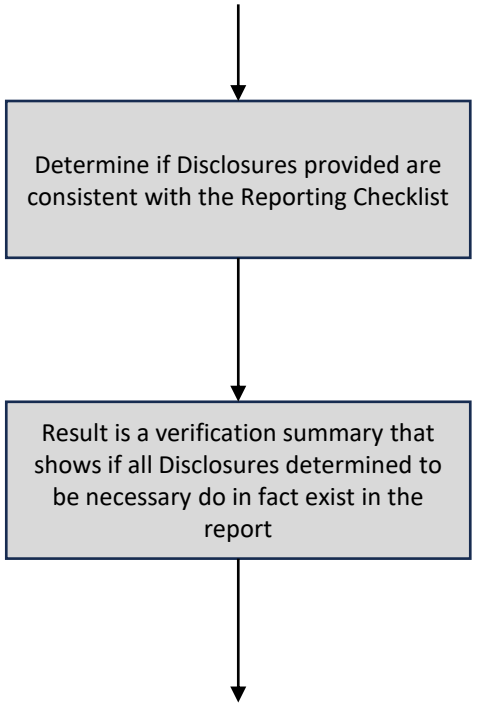
Read the XBRL presentation relations (and you might also need to use the facts) to discover the Blocks that make up the report.

This is an example of the BLOCKS from the PROOF, https://auditchain.infura-ipfs.io/ipfs/QmVdn6akCxSxB7yKb94qTFkG46UY4sNQPVRyQ9eyVC5eLK/blocks.html

Read the Blocks and using the Disclosure Mechanics Rules; discover the Disclosures within the report.
http://accounting.auditchain.finance/2022/kg/us-gaap/disclosure-mechanics/disclosure-mechanics.xsd

Example list of disclosures from PROOF, https://auditchain.infura-ipfs.io/ipfs/QmVdn6akCxSxB7yKb94qTFkG46UY4sNQPVRyQ9eyVC5eLK/disclosures.html

Extraction 5 – Reporting Checklist Verification

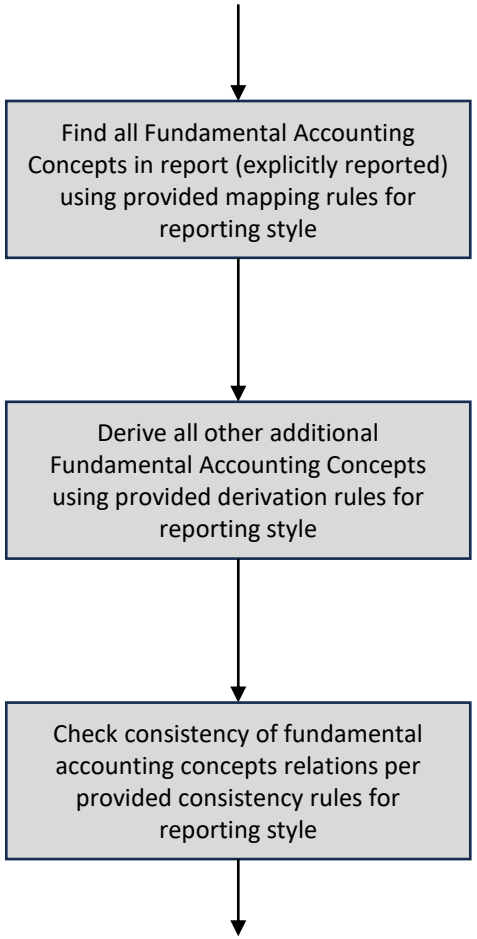


Using the reporting checklist, determine if the set of disclosures provided matches what is specified per the reporting checklist rules,
http://accounting.auditchain.finance/2022/kg/us-gaap/reporting-checklist/reporting-checklist2-rules-def.xml

A verification summary report is provided to let the user of the report understand if all the required disclosures are provided by the report.

Example reporting checklist results from PROOF, https://auditchain.infura-ipfs.io/ipfs/QmVdn6akCxSxB7yKb94qTFkG46UY4sNQPVRyQ9eyVC5eLK/disclosureChecks.html

Extraction 6 – Fundamental Accounting Concepts Verification

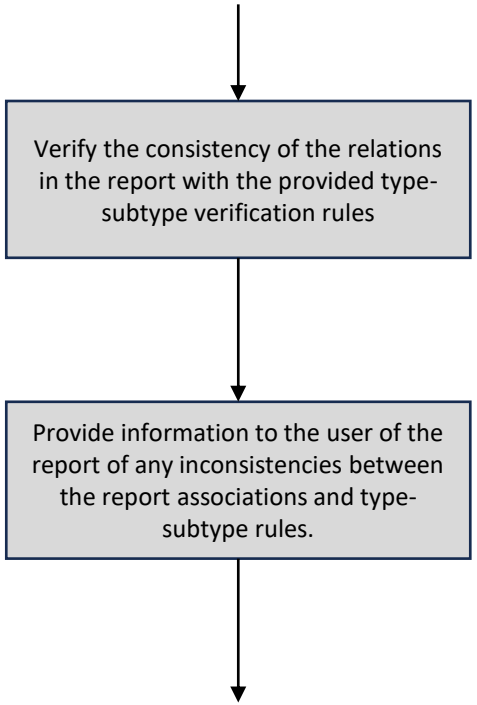


Using the schema for the reporting style of the report, (a) get the values of explicitly reported fundamental concepts, (b) derive the remaining fundamental concepts, (c) verify the consistency of the fundamental concepts relations, and (d) provide a summary of this information to the user of the report.
http://www.xbrlsite.com/2021/kg/us-gaap/fac/ReportingStyles/COMID-BSC-CF1-ISM-IEMIB-OILY-SPEC6_schema.xsd

Every fundamental accounting concept has either an explicitly reported value, a derived value, or a value of ZERO; there are no NULL values ever.

Example of verification report from Microsoft generated by XBRL Cloud (this is a good example of that this should look like, https://xbrlsite.azurewebsites.net/2017/Prototypes/Microsoft2017/evidence-package/USFACRenderingSummary.html

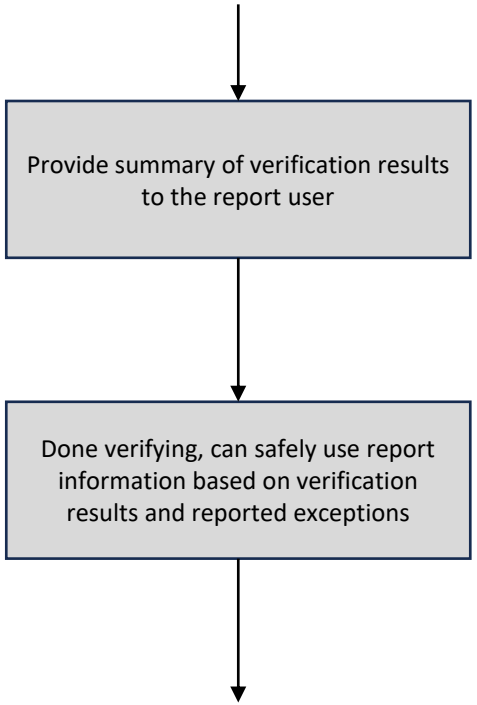
Extraction 7 – Verify the Type-subtype Associations (a.k.a. wider-narrower)



Using the provided type-subtype associations rules, verify that the associations in the report are consistent with that provided list of type-subtype rules,
http://accounting.auditchain.finance/2022/kg/us-gaap/type-subtype/type-subtype.xsd

Only the exceptions need to be reported, but documentation of the relations should be available for the user of the report to use.

Extraction 8 – Verification Results



Example of verification results from PROOF,
https://auditchain.infura-ipfs.io/ipfs/QmVdn6akCxSxB7yKb94qTFkG46UY4sNQPVRyQ9eyVC5eLK/

#	Verification Category	Result
1	XBRL Technical Syntax Verification	
2	Report Mathematical Computations Verification (XBRL Calculations)	
3	Report Mathematical Computations Verification (XBRL Formulas)	
4	Report Model Structure Verification	
5	Fundamental Accounting Concept Consistency Crosschecks Verification	
6	Type-subtype (wider-narrower) Associations Verification	
7	Disclosure Mechanics Verification	
8	Report Disclosure Checklist Verification	
9	Other	

Repository Example (results from 7 reports put into one repository of information)

Dashboard (PROOF)

This is a dashboard of reports submitted to a system (prototype). A machine readable RSS feed can be used to read this list. This Excel extraction prototype can be used to extract information from the repository of information.

The following is a summary of validation results for each report submitted to this information repository:

Entity Identifier	Economic Entity Name	View Report	XBRL Syntax Validation	Roll Up Computations	Model Structure	Type/Subtype Associations	FAC Consistency Crosschecks	Disclosure Mechanics	Reporting Checklist
GH259400TOMPUOLS65II	Report 1, basic reference implementation	Info	Success	Success	Success	Success	Success	Success	Success
GH259400TOMPUOLS65II	Report 2, basic reference implementation	Info	Success	Success	Success	Success	Success	Success	Success
GH259400TOMPUOLS65II	Report 3, basic reference implementation	Info	Success	Success	Success	Success	Success	Success	Success
GH259400TOMPUOLS65II	Report 4, Twenty year comparison)	Info	Success	Success	Success	Success	Success	Success	Success
GH259400TOMPUOLS65II	Report 5, using reporting style PROOF-BSC-IS1-CF1	Info	Success	Success	Success	Success	Success	Success	Success
GH259400TOMPUOLS65II	Report 6, using reporting style PROOF-NET-IS2-CF1	Info	Success	Success	Success	Success	Success	Success	Success
GH259400TOMPUOLS65II	Report 7, using reporting style PROOF-BSC-IS2-CF1	Info	Success	Success	Success	Success	Success	Success	Success

http://accounting.auditchain.finance/reporting-scheme/proof/repository/Dashboard.html