STANDARDISATION OF FINANCIAL AND NON-FINANCIAL REPORTING AND ITS ROLE IN USING BLOCKCHAIN TECHNOLOGY FOR AUTOMATING REGULATION AND COMPLIANCE

BLOCKCHAIN TECHNOLOGY FOR ALGORITHMIC REGULATION AND COMPLIANCE (BARAC)

LONDON MARCH 25, 2019

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nder, XBRL
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Coordinator, United Nations CEFACT Accounting and Audit Domain
Fellow, Rutgers Continuous Audit and Reporting Lab (CAR Lab)

STANDARDIZATION OF DETAILED AND AGGREGATED DATA

- Detailed accounting and audit data and process standards
  - XBRL Global Ledger
  - UN/CEFACT EDI and XML artefacts
  - OECD SAF-T/SAF-P
  - ISO/PC 295
  - UBL
  - OMG GL Facility, AR/AP Facility
  - OAGIS Platform
  - Swedish SIE, Dutch XAFs

Aggregated report data in conformance with reporting requirements (primarily XBRL)

- FRC Taxonomies
- IFRS Taxonomy
- ESMA ESEF Taxonomy
- US GAAP Taxonomy
- HMRC Taxonomies
- GRI Taxonomy

PROCESS OVERVIEW

1. Back-end systems

. Enterprise Blockchain to Public-facing Blockchain

2. Sub-Ledger to ERP

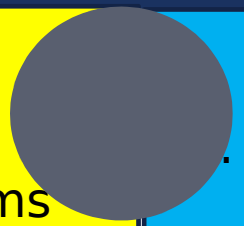
5. External Audit Process

3. Evidentiary Data Sources to Enterprise Blockchain

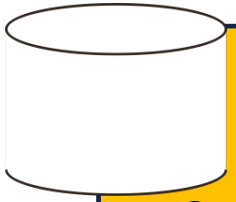
6. Reporting

PROCESS OVERVIEW

1. Back-end systems

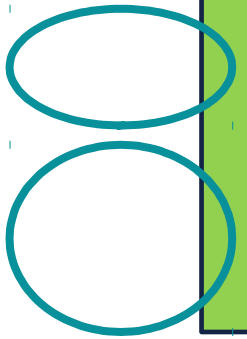


. Enterprise Blockchain to Public-facing Blockchain



2. Sub-Ledger to ERP

5. External Audit Process



3. Evidentiary Data Sources to Enterprise Blockchain

6. Reporting

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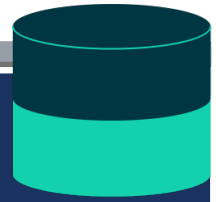
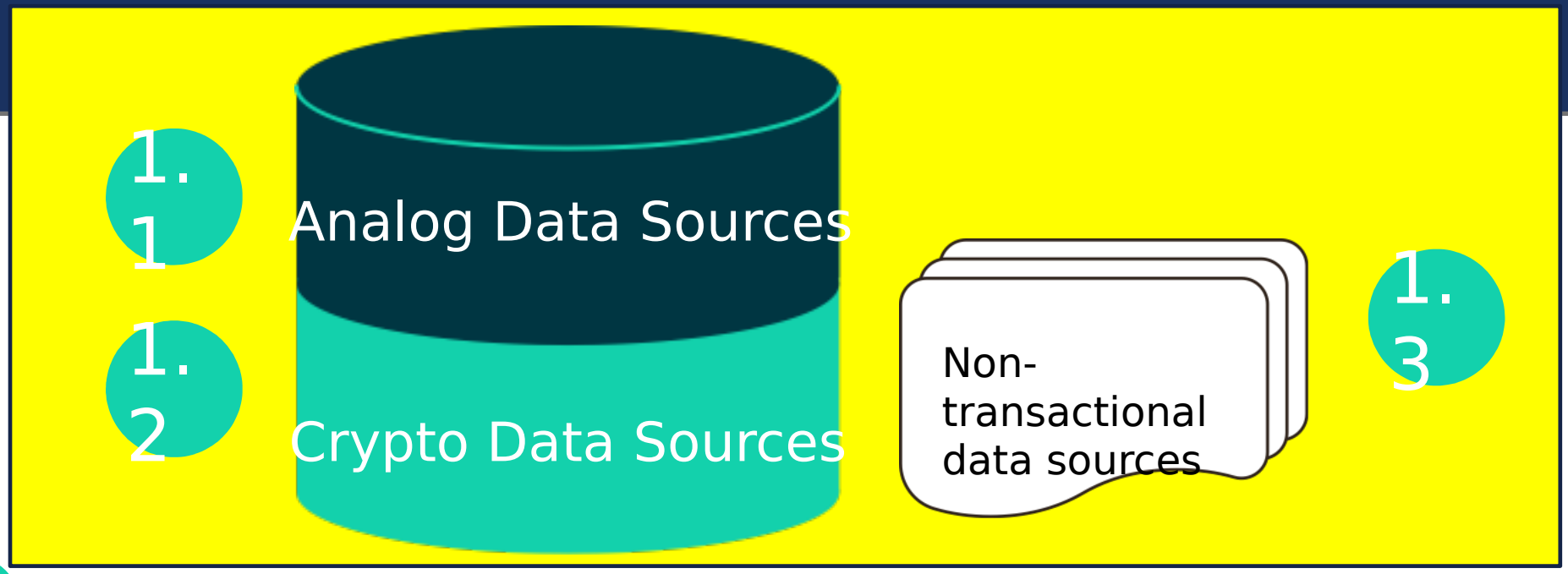
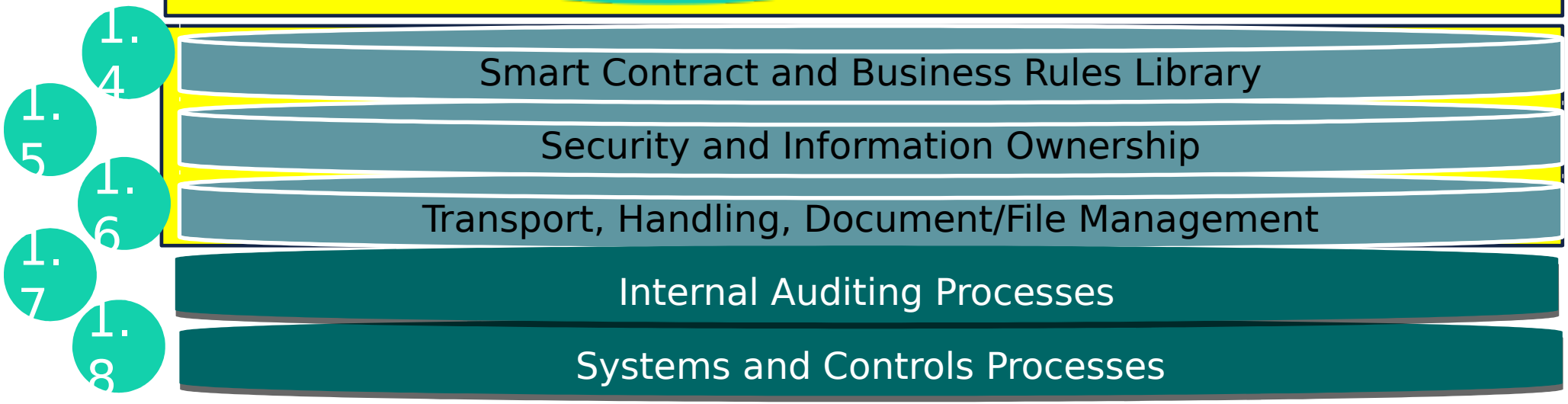
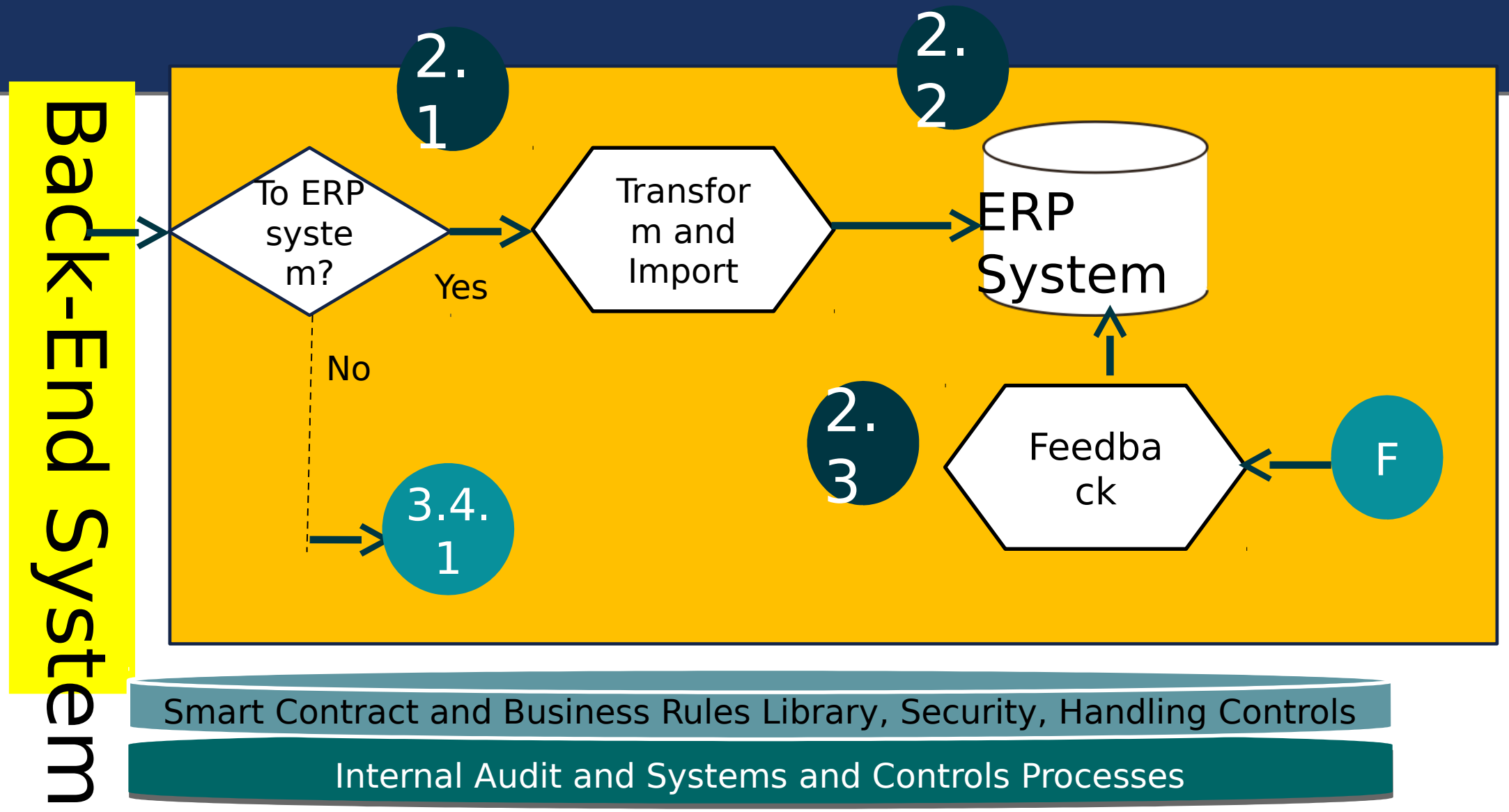


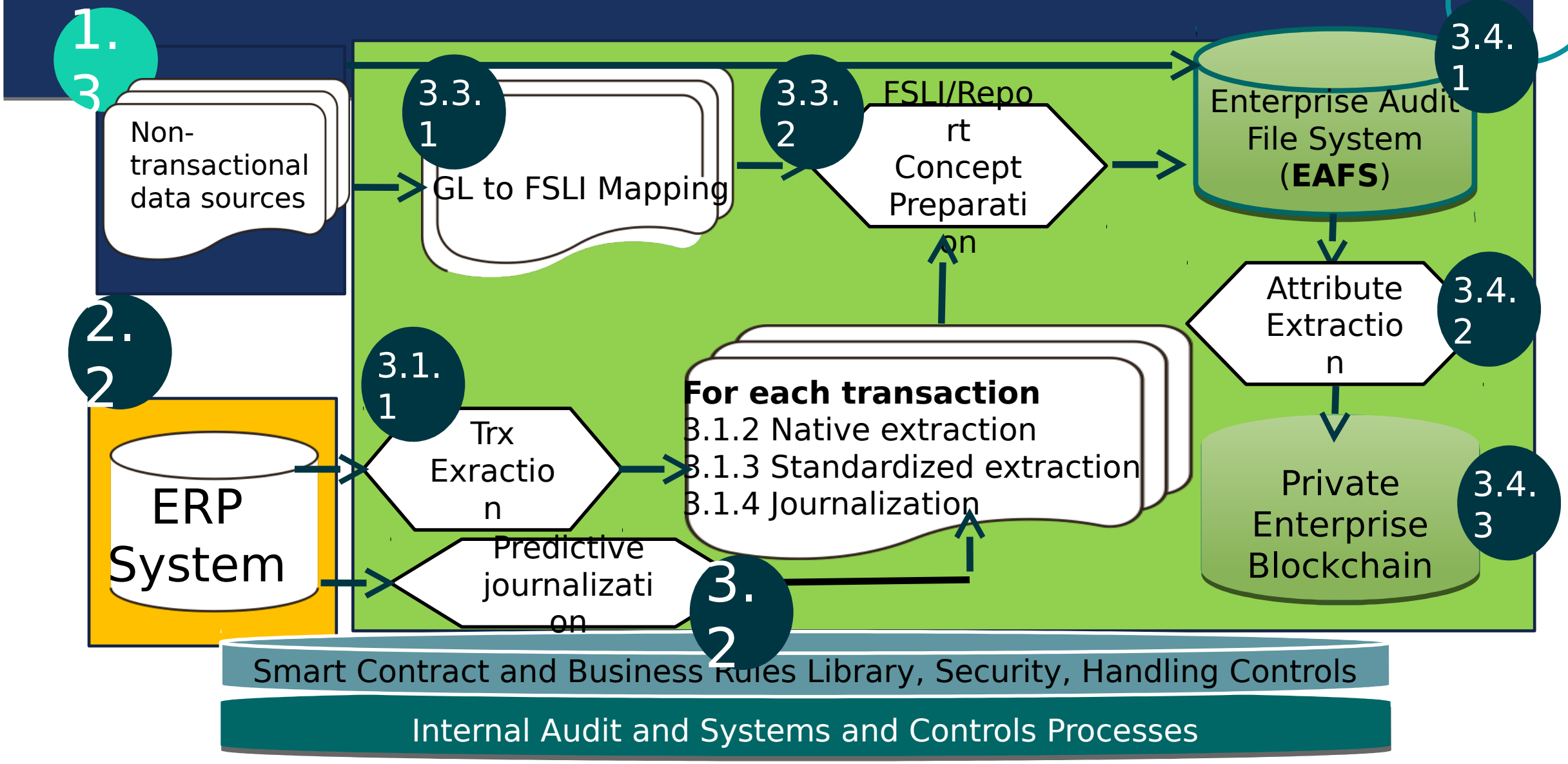




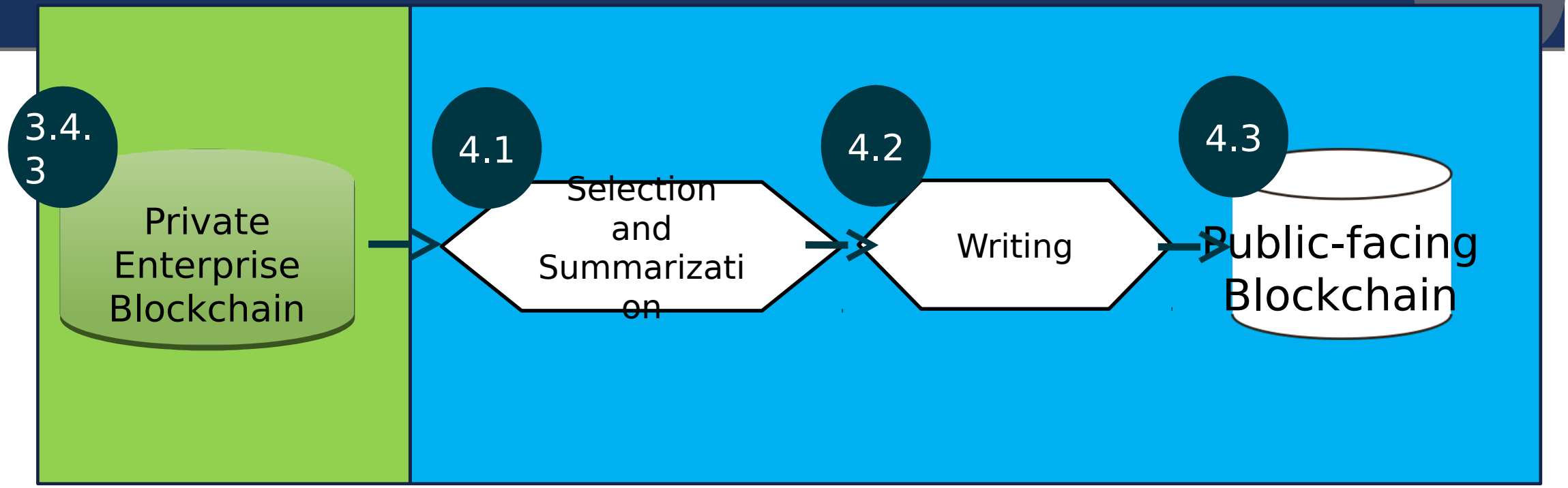
2. SUB-LEDGER TO ERP



3. EVIDENTIARY DATA SOURCES TO ENTERPRISE BLOCKCHAIN

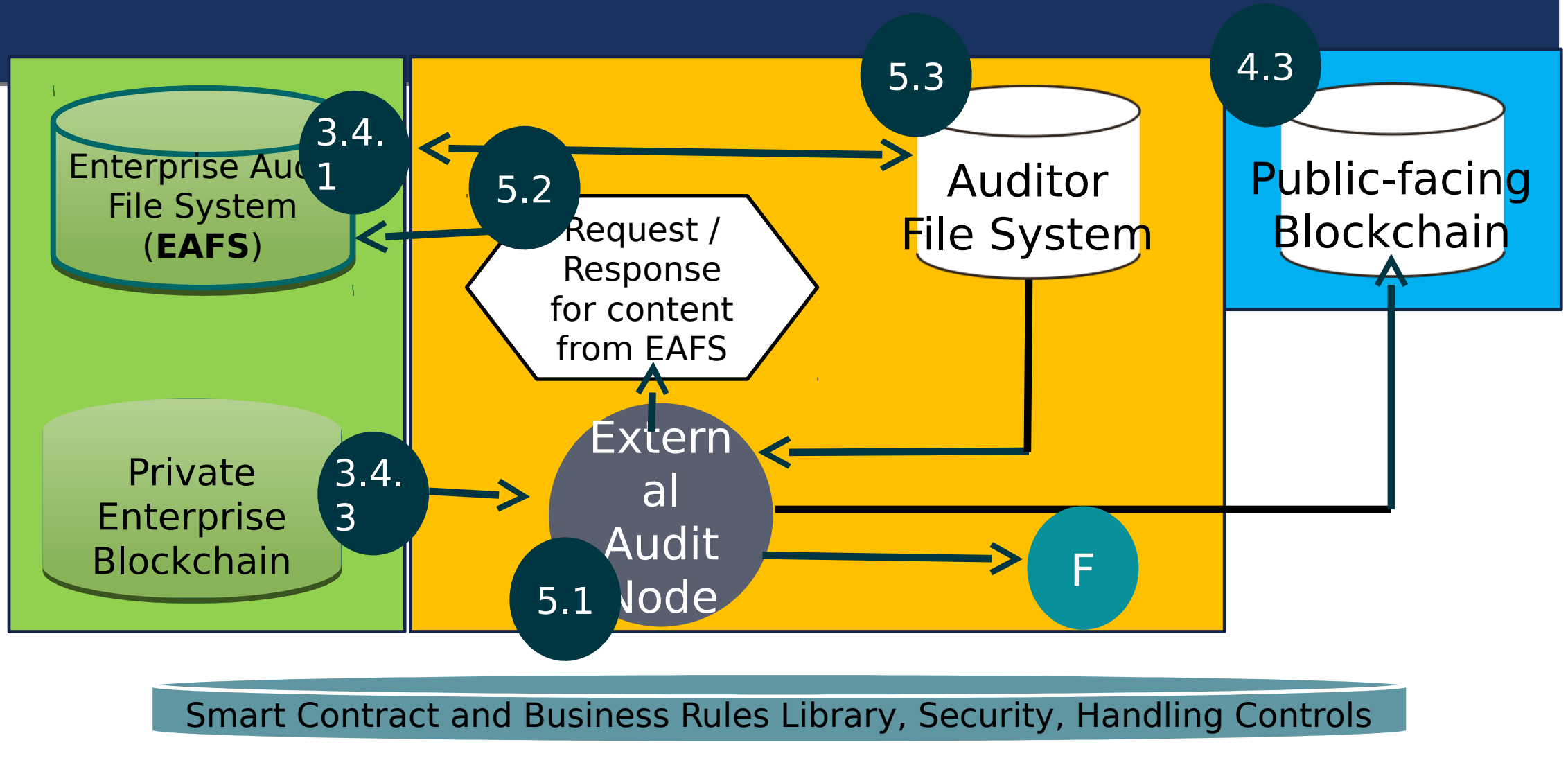


4. ENTERPRISE BLOCKCHAIN TO PUBLIC FACING BLOCKCHAIN

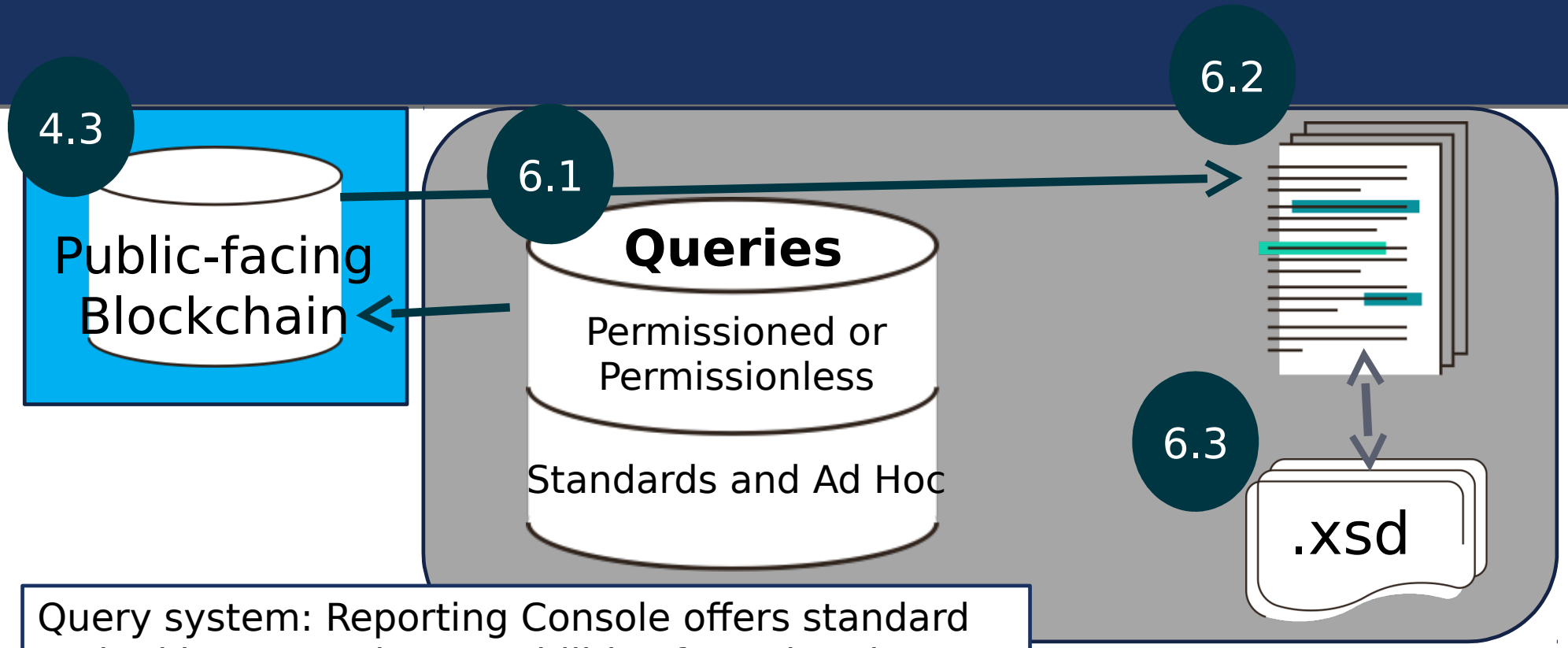


Smart Contract and Business Rules Library, Security, Handling Controls

5. EXTERNAL AUDIT PROCESS



6. REPORTING



Query system: Reporting Console offers standard and ad hoc reporting capabilities from data in Public-facing Blockchain. Leverages XBRL Financial Reporting Taxonomies to ensure quality of data and create standard views of the data

Reporting console: Tool for accessing report content from Public-facing Blockchain

PROVIDE THE DETAIL – THE SUMMARY CAN BE A SIMPLE BY-PRODUCT (50 YEAR OLD IDEA)

To aggregate, or not to aggregate … that is the question:
Whether 'tis more transparent in the mind to provide "Events" of underlying detail
for stockholders to make outrageous Fortunes
Or to summarize a Sea of Troubles
And by the "Value" report them.

An "Events" Approach to Basic Accounting Theory

George H. Sorter

IN 1966, after two years work, a committee of the American Accounting Association issued *A Statement of Basic Accounting Theory*.[1] Undoubtedly, the most startling recommendations were the sanctioning of current costs and the advocacy of two columns (historical and current) reports. To this member of the committee, however, even more startling was that the near unanimous agreement on the recommendations was arrived at by following two very divergent paths originating from two very dissimilar basic concepts about accounting. This split is not confined to committee members but rather seems representative of a more widespread and pervasive difference in the world outside. The majority view of the committee and the predominant faction outside believes in what I here define as the "value" approach to accounting. The minority view, of which I am sometimes the only member, I describe as the "events" approach. This view although implied by some in the past[2] has never to my knowledge been explicitly stated but might have far-reaching implications. This paper seeks to describe and contrast the two schools, present arguments for and illustrate the consequences of an "events" approach to accounting theory; and examine the logic leading to the conclusions embodied in the *Statement of Basic Accounting Theory*. Hopefully, this will provide not only insights and help for the analysis and evaluation of the committee's monograph but perhaps also stimulate discussion and criticism of a new approach and suggest new avenues of research and experimentation to make accounting more responsive to present day conditions.

TWO VIEWS—VALUE AND EVENTS

The Value Theory

The "Value" school within the committee, or as they would probably prefer to be termed the "User need" school, assumed that users' needs are known and sufficiently well specified so that accounting theory can deductively arrive at and produce optimal input values for used and useful decision models. Most of the value theorists visualize accounting's purpose as producing optimum income and capital value or values.[3] This leads to the popular tenet of proper matching of costs and

[1] American Accounting Association, *A Statement of Basic Accounting Theory*, A Report Prepared by the Committee on Basic Accounting Theory (American Accounting Association, 1966).

[2] This idea, like so many others had its origin primarily in the writings and thought of Professor William J. Vatter who I hasten to absolve from any of its shortcomings.

[3] Note all value theorists are income oriented. Chambers for example can be considered a "value" but certainly not an "income" theorist.

George H. Sorter is Arthur Young Visiting Professor of Accounting at the University of Kansas.

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The Accounting Review, January 1969

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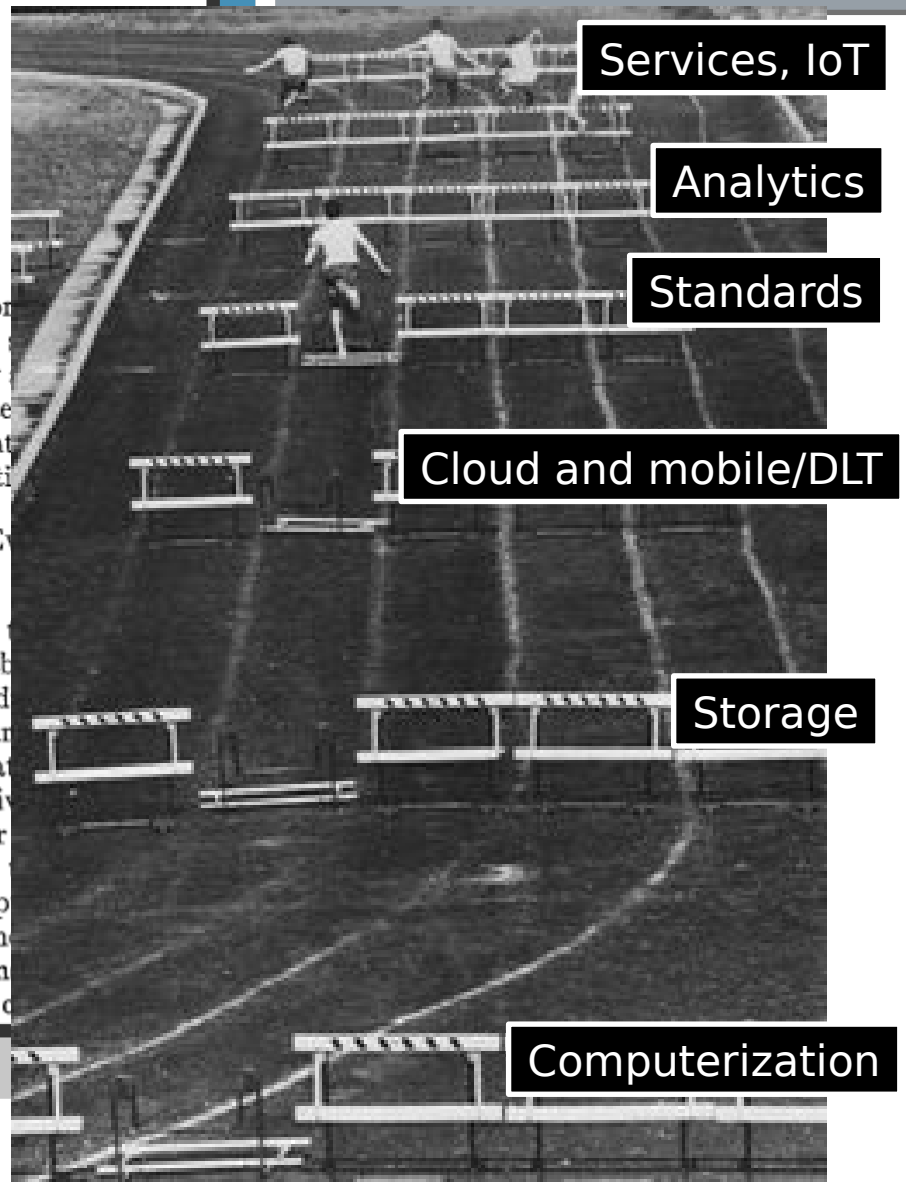


Some hurdles to making Events Approach practicable; role of Blockchain and Events recording

Moving Accounting & Audit to B/DLT

What if there was an ecosystem that uses distributed ledger technology, standardized data and an open source library of accounting smart contracts and business rules sufficient to capture, process, audit and report enterprise data and performance data on a real time continuous basis under a continuous independent audit exceeding current accounting, audit and control standards?

One with the capacity to meet and exceed the reliability of existing reporting and audit standards but laying down a foundation for the potential token economy?

The objective of the auditor is to **plan** and **perform** the audit to obtain appropriate **audit evidence** that is sufficient to support the **opinion** expressed in the auditor's report.[1]

IAASB

INTERNATIONAL STANDARD ON AUDITING 500

AUDIT EVIDENCE

(Effective for audits of financial statements for periods beginning on or after December 15, 2009)

PCAOB

AS 1105: Audit Evidence

Effective Date: For audits of fiscal years beginning on or after Dec. 15, 2010

Final Rule: PCAOB Release No. 2010-004

Guidance on AS 1105: Staff Audit Practice Alerts No. 8 and No. 12

AICPA

AU-C Section 500

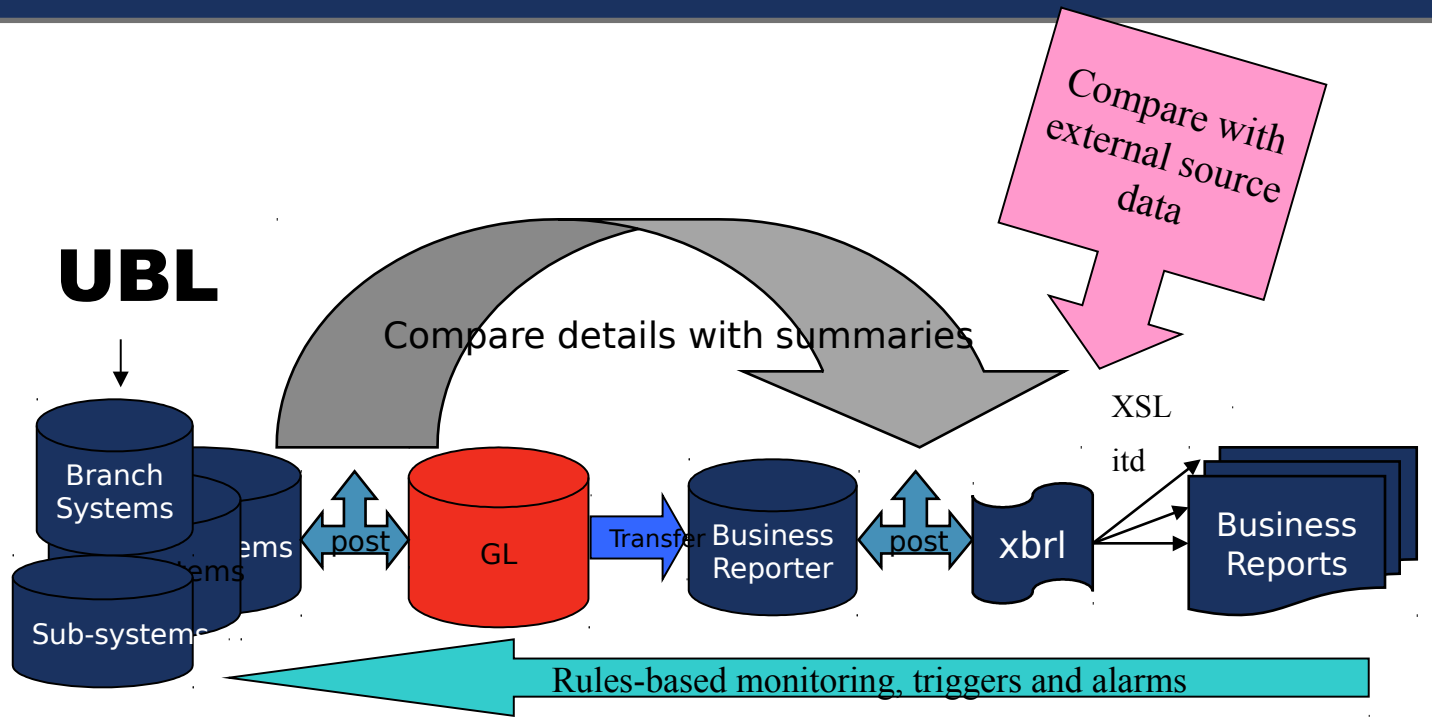
Audit Evidence

Source: SAS No. 122; SAS No. 128.

See section 9500 for interpretations of this section.

Effective for audits of financial statements for periods ending on or after December 15, 2012.

CREATE AN ELECTRONIC REPORTING PLATFORM AND STANDARDIZED AUDIT TRAIL – "BLACK BOX AUDIT TRAIL"

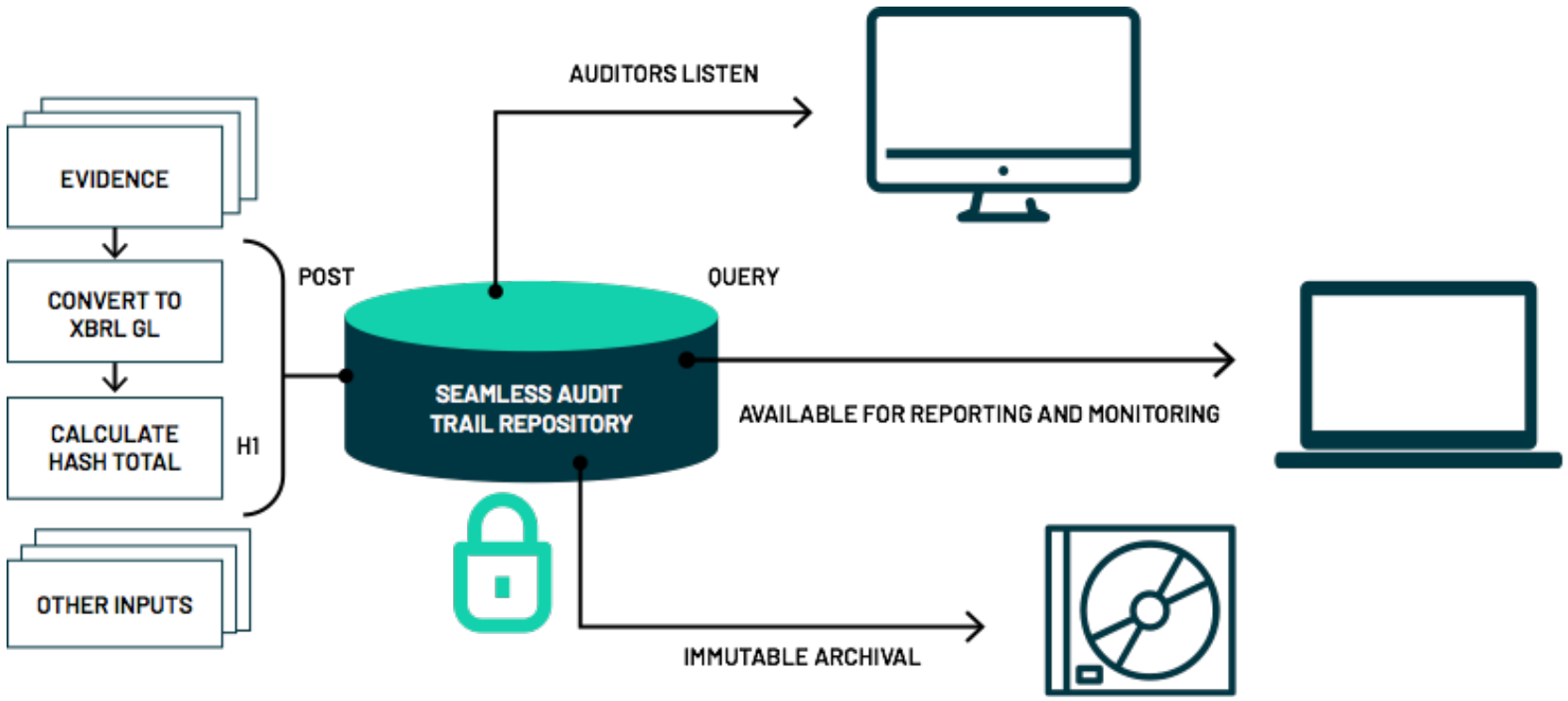


Standardized source documents can be stored in databases and retrieved and reported upon as needed.

XBRL GL-based universal audit trail can represent transactions AND processes; archive and query anytime.

XBRL GL-based universal audit trail provides drill-down detail from standardized business reports.

XML data can be from a file, a data stream, or a web service.

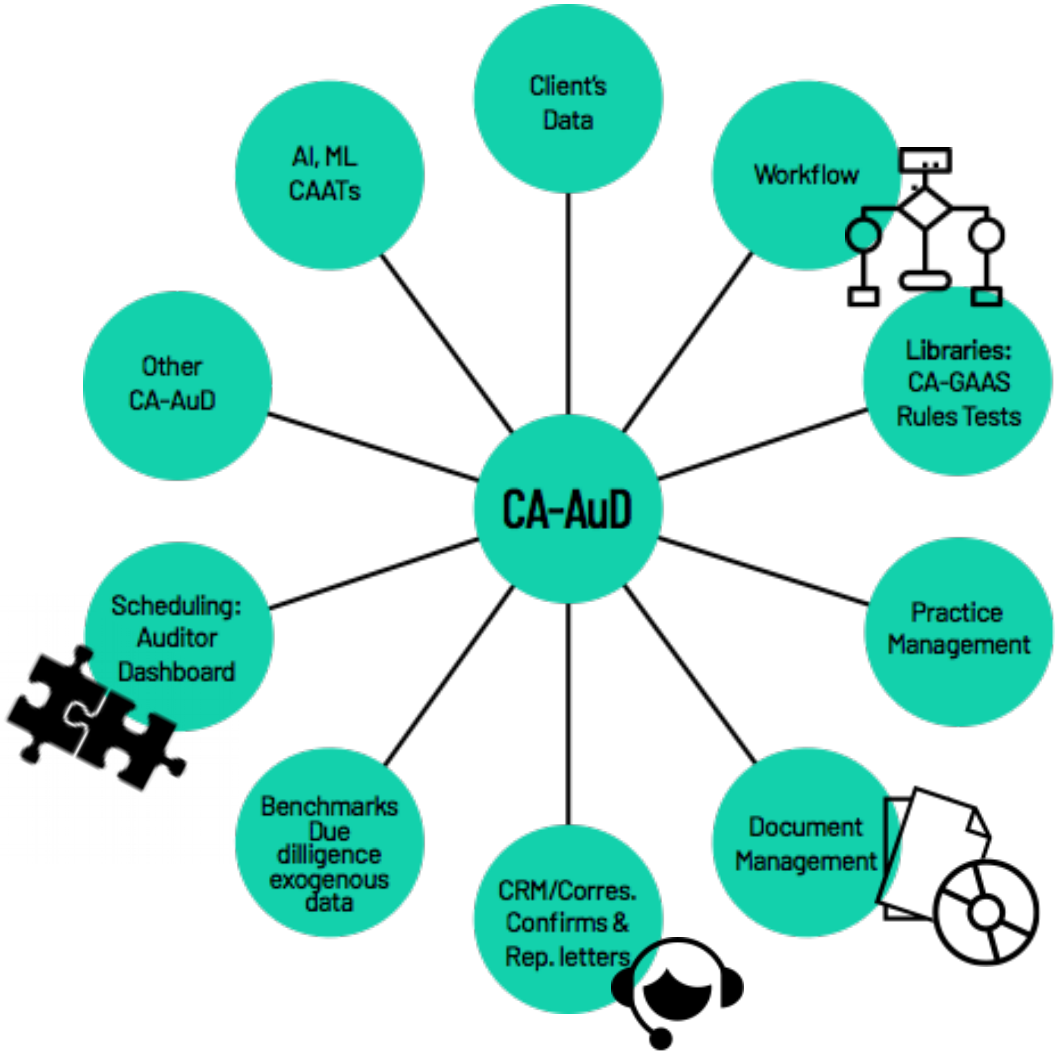

AUDITORS LISTEN
EVIDENCE
CONVERT TO XBRL GL
CALCULATE HASH TOTAL
H1
POST
OTHER INPUTS
SEAMLESS AUDIT TRAIL REPOSITORY
QUERY
AVAILABLE FOR REPORTING AND MONITORING
IMMUTABLE ARCHIVAL

Smart Contract Platform

- Commitments and contingencies
- Board Resolutions
- Audit Committee Resolutions
- Employment Agreements
- Equity Issuance Agreements
- Debt Issuance
- Equity Based Compensation
- Equipment Purchase
- Purchase Orders

- Supporting automated analytics
- Bridging the gap from periodic to real-time
- Learning and adapting
- Reducing delays from need for manual effort
- Example: Steps related to the work of management’s expert

FULLY INTEGRATED CONTINUOUS PROCESS



WCARS 2005

INTERNAL/EXTERNAL AUDIT PROCESS

Procedures to obtain audit evidence

(ISA 500 .A2, AS 1105 .15-.21, AU-C 500 .A14 - .A26)

Inspection (documentation, including vouching, tracing, scanning?)

Observation (processes or procedures)

(External) Confirmation

Recalculation

Reperformance

Analytical procedures, including scanning (AICPA)

Inquiry

Valuation
Existence
a**L**location
Occurrence
Completeness
class**I**fication
unde**R**standability
Accuracy
Presentation
cu**T**off
Obligations
Rights

AUDIT PROCEDURES AND PHASES

Procedures to obtain audit evidence
(ISA 500 .A2, AS 1105 .15-.21, AU-C 500 .A14 - .A26)

Internet of Things
Actors on the Network; sensors and "doers"

Blockchain/DLT
How do you store it

Audit & Accounting Standards
How do you represent it? (Data, Processes, and Asserted Rules)

AI/Machine Learning
How do you perform it?

Inspection (documentation, including vouching, tracing, scanning?)

Observation (processes or procedures)

(External) Confirmation

Recalculation

Reperformance

Analytical procedures, including scanning (AICPA)

Inquiry

WORKING ON THESE AREAS:

What's practical – today

What's practical – tomorrow

What's necessary or no longer necessary tomorrow (e.g., token economy)

Risk assessment procedure, Test of controls, Substantive procedures

RESOURCES - REPORTING

- XBRL
  - XBRL.org
- ESMA ESEF Taxonomy
  - https://www.esma.europa.eu/policy-activities/corporate-disclosure/european-single-electronic-format
- FRC Taxonomies
  - https://www.frc.org.uk/accountants/accounting-and-reporting-policy/xbrl-frc-taxonomies
- HMRC Taxonomies
  - https://www.gov.uk/government/publications/taxonomies-accepted-by-hm-revenue-and-customs/taxonomies-accepted-by-hmrc
- IFRS Taxonomies
  - https://www.ifrs.org/issued-standards/ifrs-taxonomy/

RESOURCES – DETAILED DATA STANDARDIZATION

- XBRL GL
  - https://specifications.xbrl.org/transactional.html
- UN/CEFACT
  - https://www.unece.org/cefact/codesfortrade/unccl/ccl_index.html
  - https://www.unece.org/cefact/edifact/welcome.html
  - http://www.unece.org/cefact/xml_schemas/index
- OECD SAF-T/SAF-P
  - http://www.oecd.org/ctp/administration/ftaguidancenotesone-auditingstandards.htm
- ISO/PC 295
  - https://www.iso.org/committee/5648297.html

ABOUT YOUR SPEAKER

Eric E. Cohen

Eric Cohen is a co-founder of **XBRL** and the chief architect of its initial standardization work in transactional and detailed data space: the *Global Ledger (XBRL GL)*. He serves as a Domain Coordinator for the **United Nations** CEFACT Accounting and Audit Domain.

As a national Expert to **ISO** standardization projects in *Audit Data Collection* and *Blockchain and Distributed Ledger Technologies*, he hopes to facilitate the development of continuous audit, the establishment of the electronic, seamless audit trail, and building the foundations for auditing in a Blockchain/Distributed Ledger environment.

His consultancy, **Cohen Computer Consulting**, began in 1992 to help organizations cope with, and benefit from, accounting and audit technology. *Cohen Computer Consulting* was one of the original 13 organizations that started XBRL. After a brief 17 year hiatus, he is now again focusing on accounting software implementations, as well as Artificial Intelligence, Audit Data Standards, Blockchain, Continuous Audit, Data Level Assurance and XBRL. As he is fond of saying, “At Cohen Computer Consulting, we turn ‘computerese’ into ‘computer-ease’”.

Mr. Cohen is a member of the American Institute of Certified Public Accountants and the New York State Society of Certified Public Accountants. He appreciates a long history of collaboration with the academic community. A selective bibliography of his publications can be found at his web site.

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