Consolidation: Country Experiences and Lessons Learned
The Use of AI for Consolidation

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PULSAR

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EY
Building a better
working world

Business and government leaders, amid economic uncertainties, find optimism in AI as a vital tool for future growth and empowerment

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AI will empower and improve every business, every government organization, every philanthropy

Jeff Bezos
CEO, Amazon

Introduction - What is Artificial Intelligence?

Artificial Intelligence

AI, or artificial intelligence, is a field of computer science that focuses on creating intelligent machines capable of tasks requiring human intelligence.

Machine Learning

Machine learning is a subfield of artificial intelligence, which is broadly defined as the capability of a machine to imitate intelligent human behaviour.

Deep Learning

Deep learning is a subset of machine learning, which is essentially a neural network with three or more layers.

Generative AI

Generative AI is a type of artificial intelligence that can create new content such as images, text, audio, or video based on the data it has been trained on, using techniques like large language models, transformer neural networks, and generative adversarial networks.

Artificial Intelligence
1943

Machine Learning
1959

Deep Learning
2006

Generative AI
2017
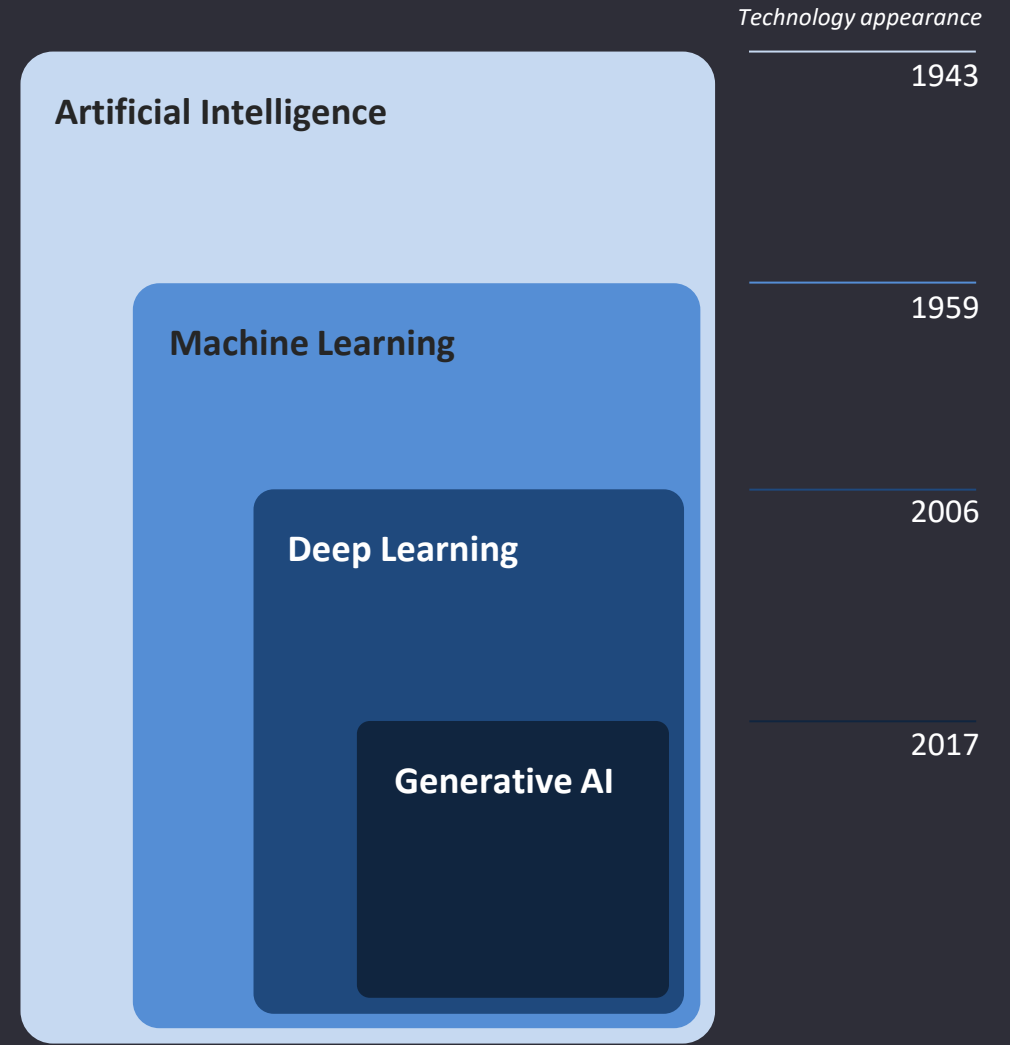
Process Mining as an AI Tool Used in Accounting and Auditing

Overview

Purpose

Smart use of big data technology that leverages the data generated by the organization and provides a fact-based and fully transparent analysis of end-to-end processes through visual process maps and interactive dashboards for deriving insight in real time and creating a transformation engine for the business.

Benefits

- No reliance on outdated or biased process descriptions and interviews
- Full 100% transparency
- Identification of previously unknown weaknesses and risks
- Real time monitoring of compliance and performance with potential to prevent issues before they occur
- Non-invasive approach for the business
- Reduced extent of documentation

Process discovery

Process discovery of as-is business process of all historic permutations of events without human bias.

Logging

Activities are reflected in the IT systems in their log-data, data can be enriched through analytic means.
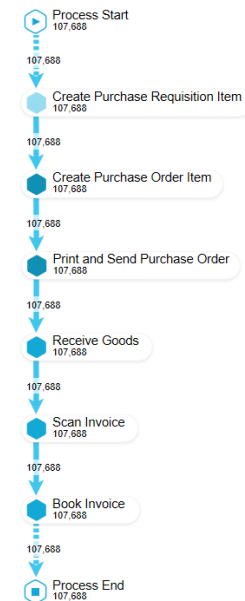
Process tracking

Employees executing processes generate information through the activities they perform.

Standard Process
How it should be according to the process description

20% data coverage

The **most common** and simplified process **variant**. Can be used as a benchmark.

Process Start
107,688
107,688
Create Purchase Requisition Item
107,688
107,688
Create Purchase Order Item
107,688
107,688
Print and Send Purchase Order
107,688
107,688
Receive Goods
107,688
107,688
Scan Invoice
107,688
107,688
Book Invoice
107,688
107,688
Process End
107,688

The Reality
The full complexity of the process including all exceptions

100% data coverage

Actual complexity that would be unknown and unmanageable without process mining. No activity escapes the eye! Can be zoomed in to **detect unusual process paths** or defects that would otherwise remain hidden.

EY Artificial Intelligence
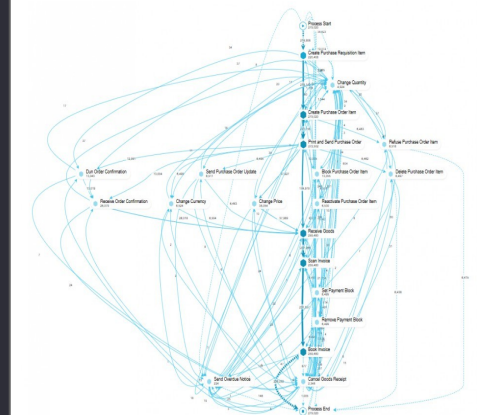
Accounting Network Analytics
The uncompromisable view on bookkeeping

Any instrument used in managing an organization relies on information from bookkeeping. When business or government leaders articulate that managerial instruments are not effective, one of the root causes lies in non-transparent accounting practices. **A lack of traceability of transaction flows** does not only make it more difficult for organizations to manage risks, but also **leads to decisions that are based on assumed, but in fact non-existent transaction flows.** The general ledger presentation of an entity's bookkeeping is appropriate for IT processing in daily operations. But it's structure as a list is a nightmare for supervision and decision making.

With the accounting network analysis, for the first time an instrument is available that **directly analyses and visualizes the actual booking behavior**. Presenting the transaction movements between the financial statement accounts as a network enables obtaining a complete overview even of complex accounting practices in a short period of time.

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Since the 15th century, we have been looking at accounting as a list. Now we have invented a different perspective on bookkeeping that opens new horizons for auditing and management.

Dr. Michael Wiese
Partner, Assurance Research & Development Leader

EY
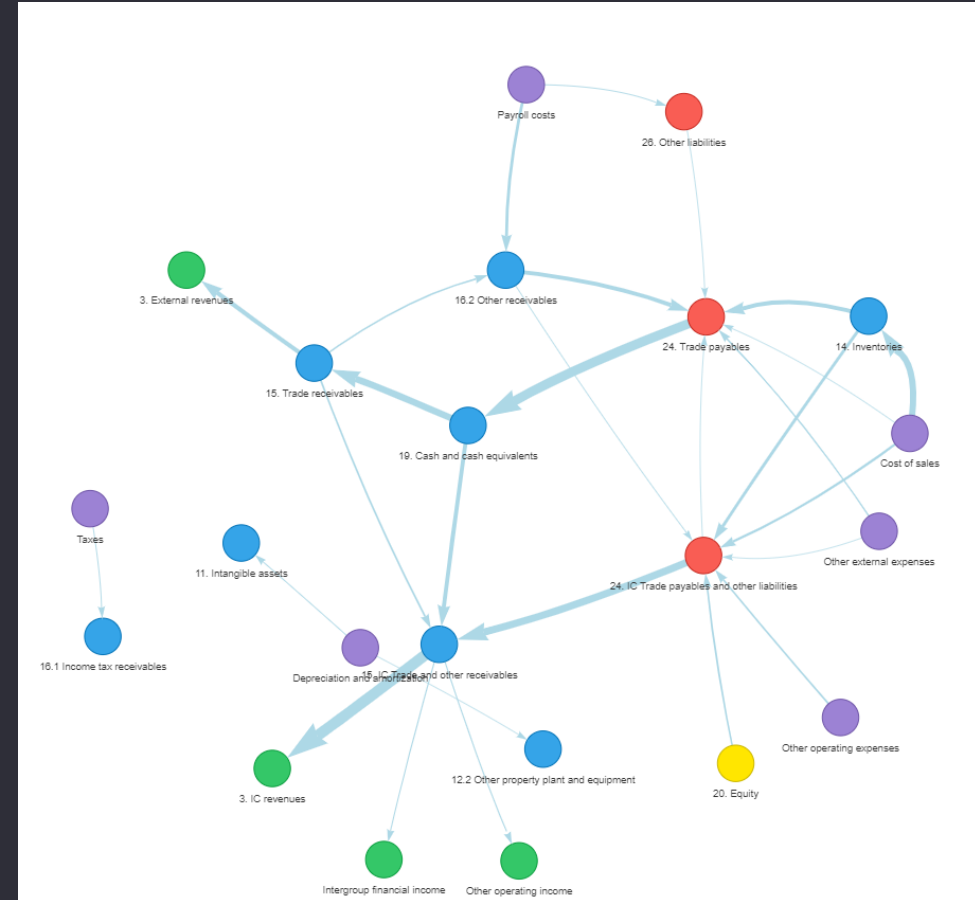
Network visualization of bookkeeping

The EY Accounting Network Analysis is a data-driven approach that provides a holistic view on organizations' bookkeeping.

▶ The accounting network fully visualizes the value flows between account classes

▶ The direction follows the bookkeeping systematic (debit to credit)

▶ The size of the connections represents the transaction volume

▶ Drill-down to specific (combinations of) accounts and transaction streams is supported wherever required

▶ Ambiguous journal entries (multiple debit and credit accounts within one journal entry) are matched by comprehensive algorithms

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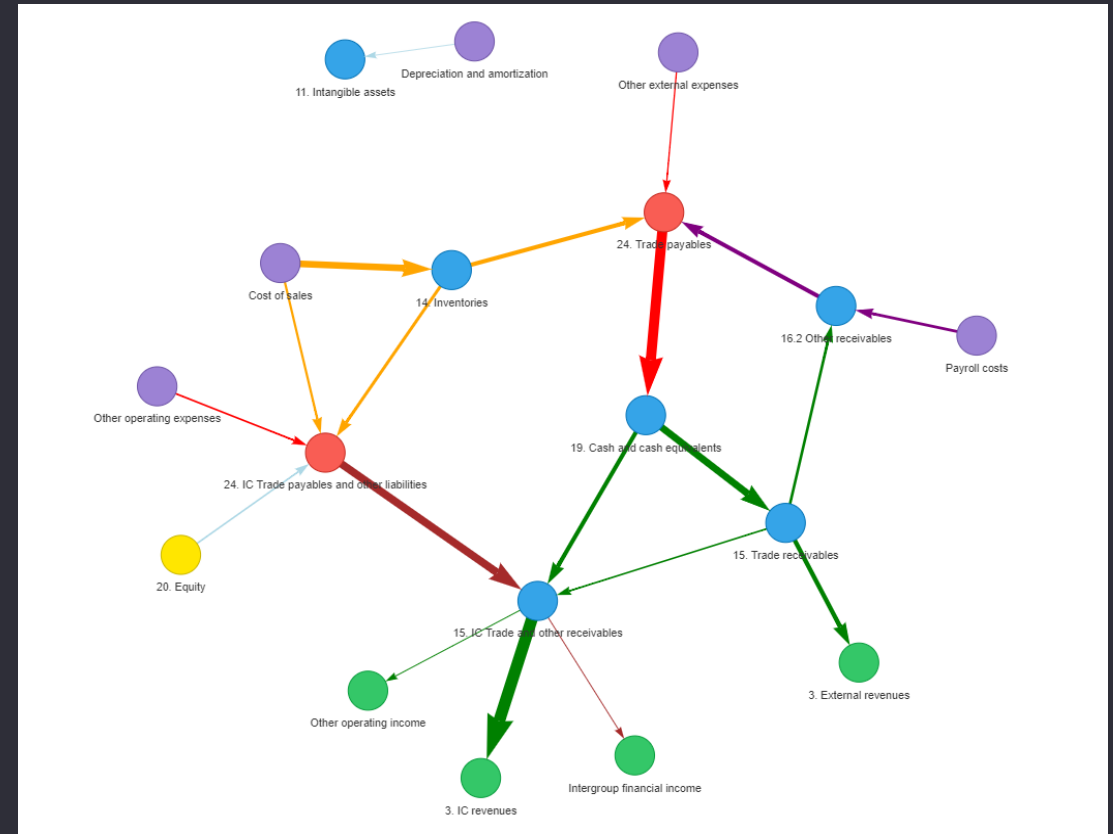
The accounting networks have proven value at EY's core audit clients to understand the flow of transactions as a fundament for any further audit procedures. As auditors face the same issue as decision makers – procedures and strategic decisions fail when based on assumed but non-existent accounting relationships.

Annalouise Maas
Senior Manager, Assurance Research & Development

EY

Bookkeeping re-invented: EY Accounting Network Analytics

Purpose

Executives and Auditors alike face the same issue – procedures and strategic decisions fail when they are based on assumed but in fact non-existent accounting relationships.

The accounting network **transforms the general ledger into a graph,** enabling finance professionals to obtain a complete overview of complex accounting practices quickly and intuitively.

Benefits

Uncompromisable view on bookkeeping

The list format of the general ledger is appropriate for daily IT processing but a nightmare for supervision and management. The holistic view provided by the network representation supports effective decision making at any time of the fiscal year.

Advanced statistical calculations

May transform the network into a direct cashflow statement. In the future, the network may be trained for one entity using the collective information from the accounting practice of comparable entities.
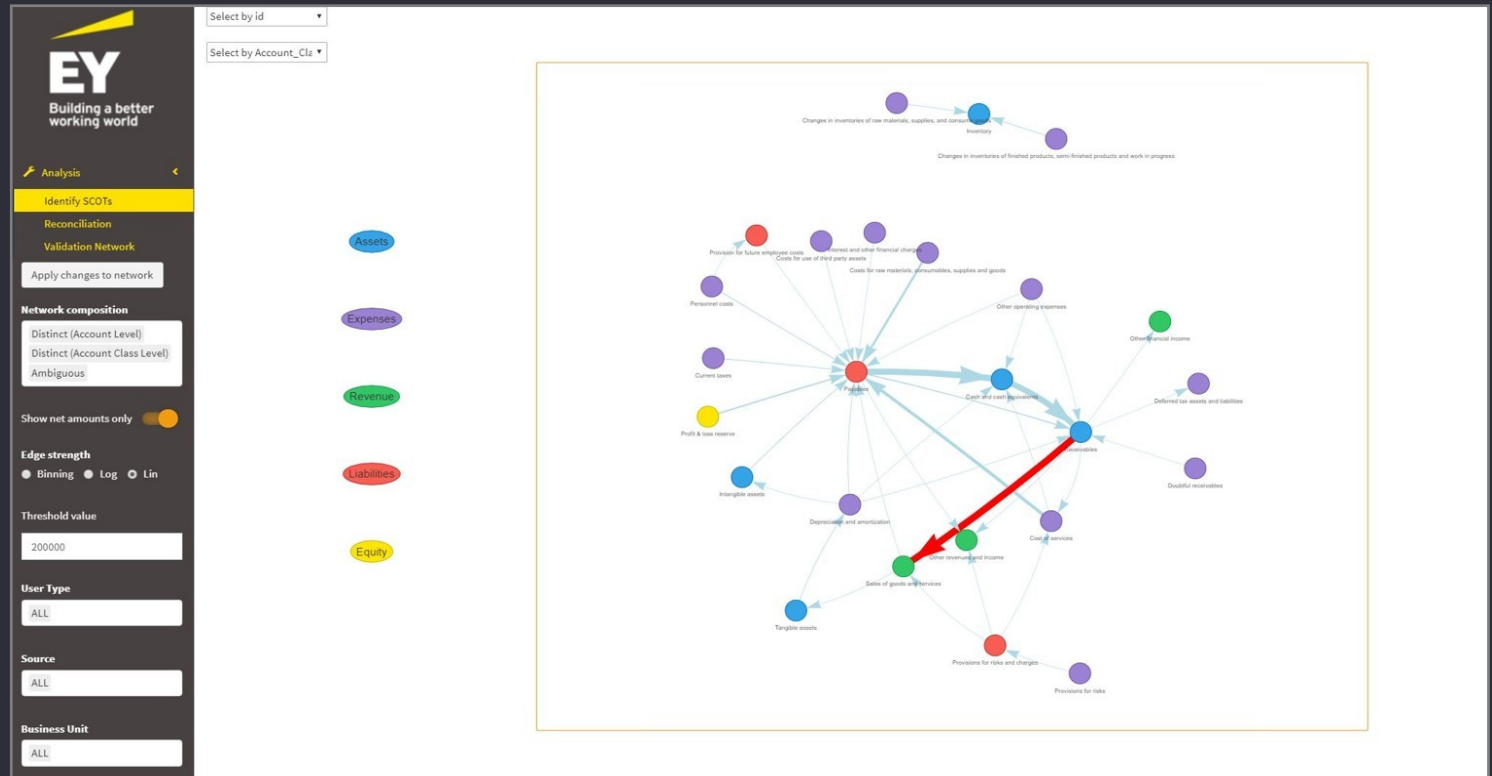
Visualization

The nodes represent the account classes summarizing the financial statement accounts. The edges visualize the total transaction volume posted.

Anomaly evaluation

Hidden bookkeeping through transit accounts, incorrect or ambiguous journal entry posting, unnecessary transactions – the network provides a holistic overview of existing accounting practices.

Conclusion making

The traceability of transaction flows enables effective and efficient audit planning and robust decision making.

EY

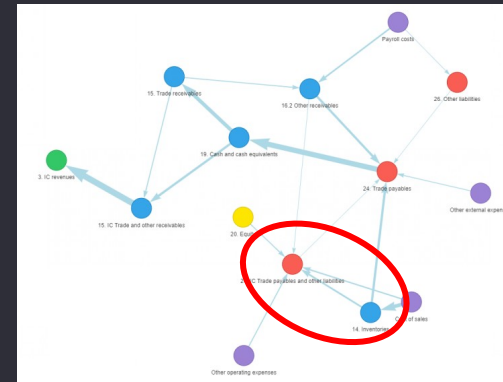# EY Accounting Network Analysis – visualization of the usage for consolidation

Consolidation

▶ With the consolidation based on the booking network analysis, we implement the unity (or entity) theory at the accounts level and not just at the total financial statements level.

▶ The advantage is obvious: **the internal delivery or service connections become transparent and coordinated**. Interrelationships in performance that have to be painstakingly determined or queried retrograde are automatically recognizable: "What goes in somewhere must go out somewhere else."

▶ On this basis, monitoring instruments for all value flows in the group can be easily defined and optimizations initiated.

BU 1 **+ BU 2** **= group accumulation**
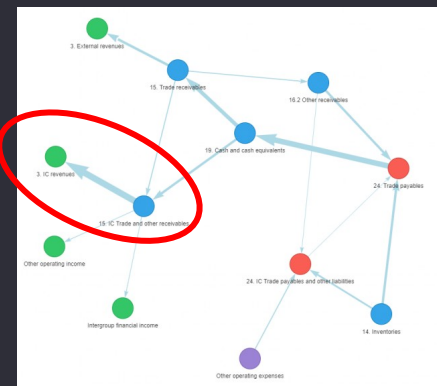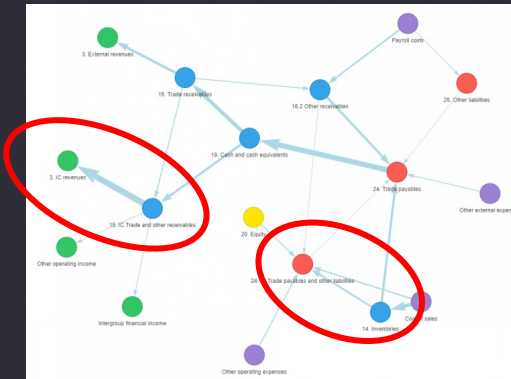
+ consolidation of debts
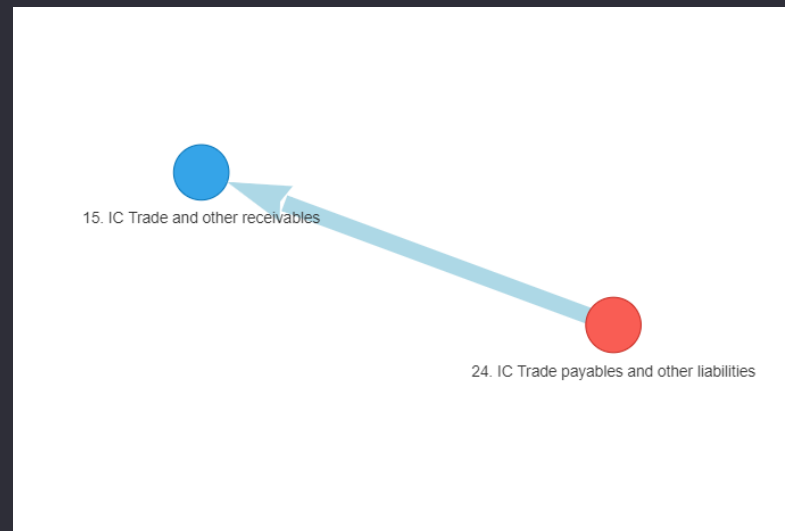
= consolidated financial statement

EY
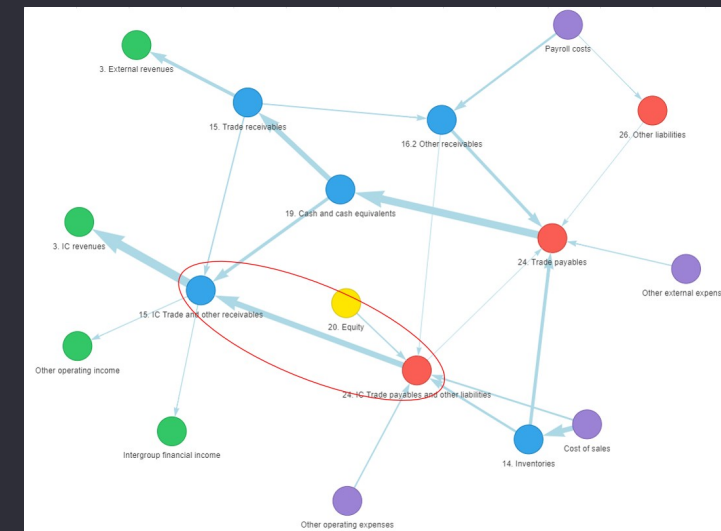
EY Accounting Network Analysis – the link between the numbers and the graph

Consolidation in numbers

balance sheet	BU 1		BU 2		group accumulation		consolidation of debts		consolidated financial statement	
	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit
Shares in affiliated enterprises	800				800				800	
Inventories			100		100				100	
Trade receivables			800		800				800	
IC Trade and other receivables	250				250			250	-	
Other current assets	200		100		300				300	
Equity		1.150		520		1.670				1.670
Trade payables		100		230		330				330
IC Trade payables and other Liabilities				250		250	250			-
Sum	**1.250**	**1.250**	**1.000**	**1.000**	**2.250**	**2.250**	**250**	**250**	**2.000**	**2.000**

Consolidation in a graph
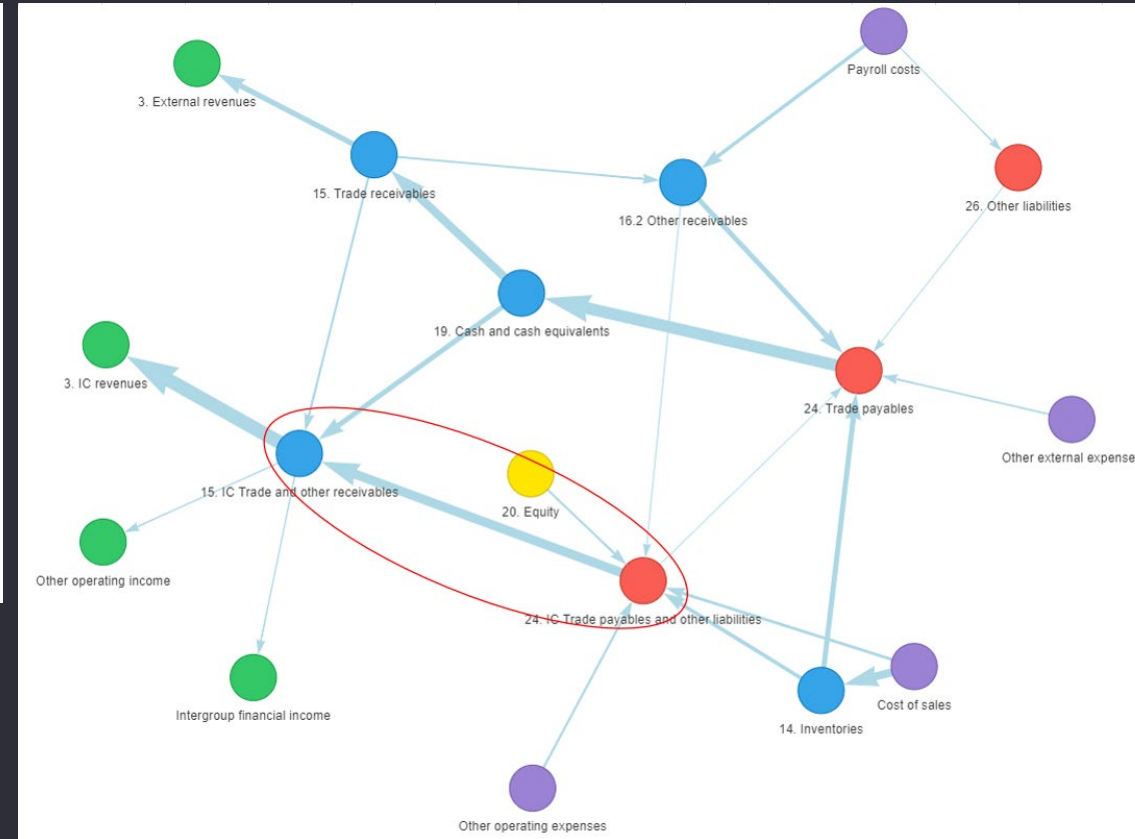
EY Accounting Network Analysis – the detailed view in the tool

Multiple Business Unit selection for sub-group visualization.

Detailed view from account class level down to the journal entry level.
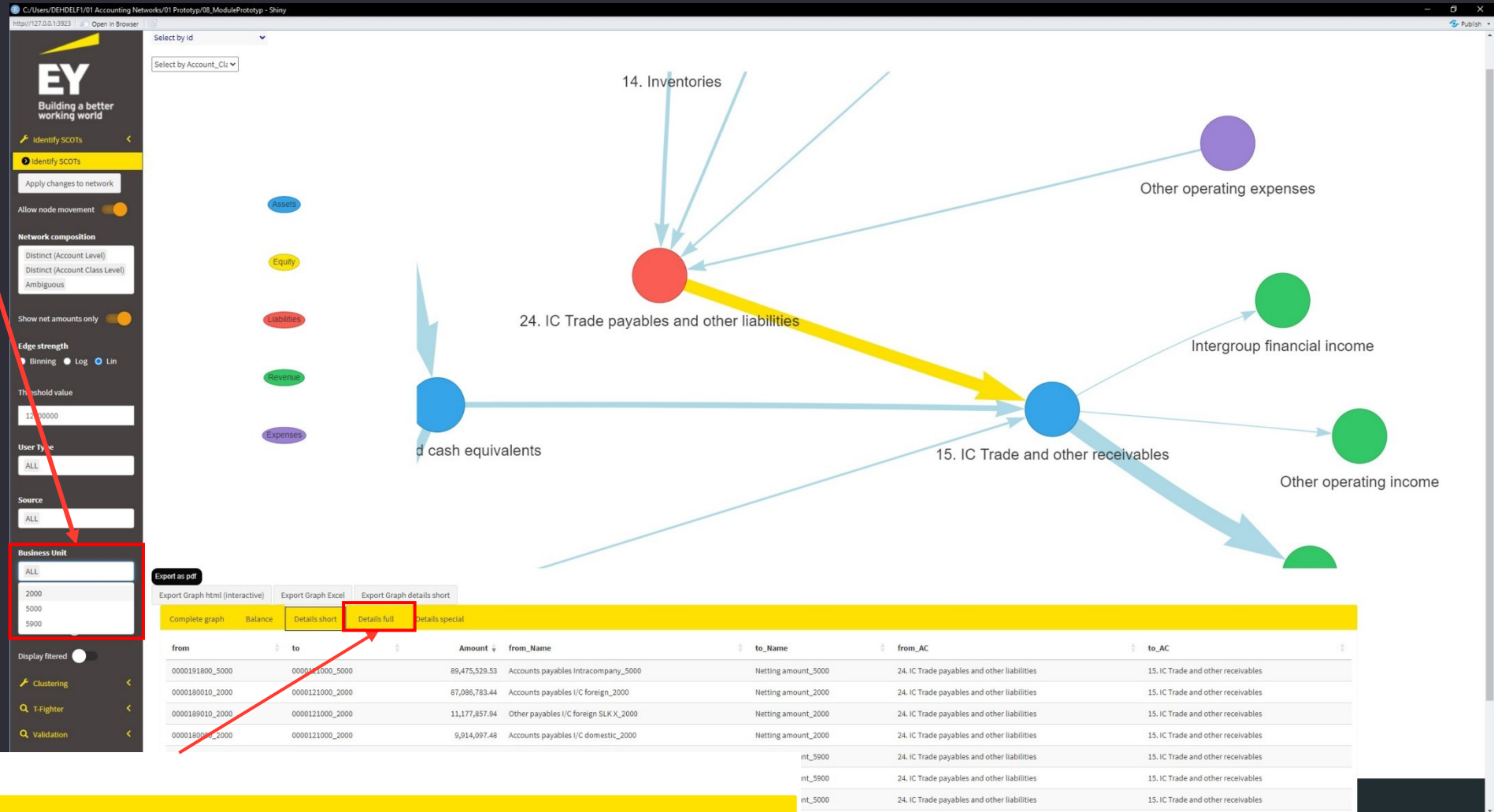
Key findings from the application of the EY Accounting Network Analysis

Hidden bookkeeping
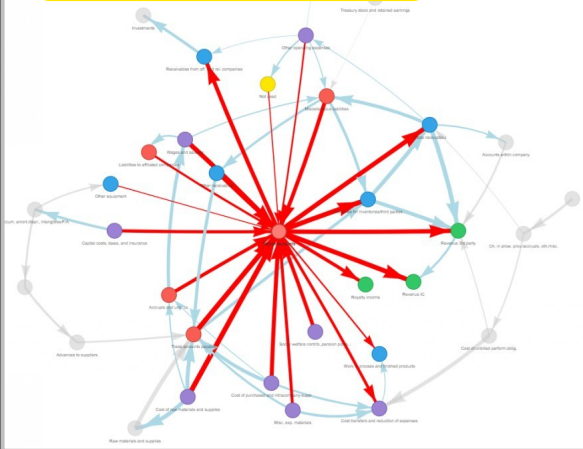
The excessive use of transit accounts opens the door for all types of undesired behavior. It undermines any chance for review and possibly violates GAAP. We undermines any chance for review and possibly violates GAAP. We call it "the black hole" in bookkeeping. Easy catch for fraudsters.

Incorrect journal entry posting
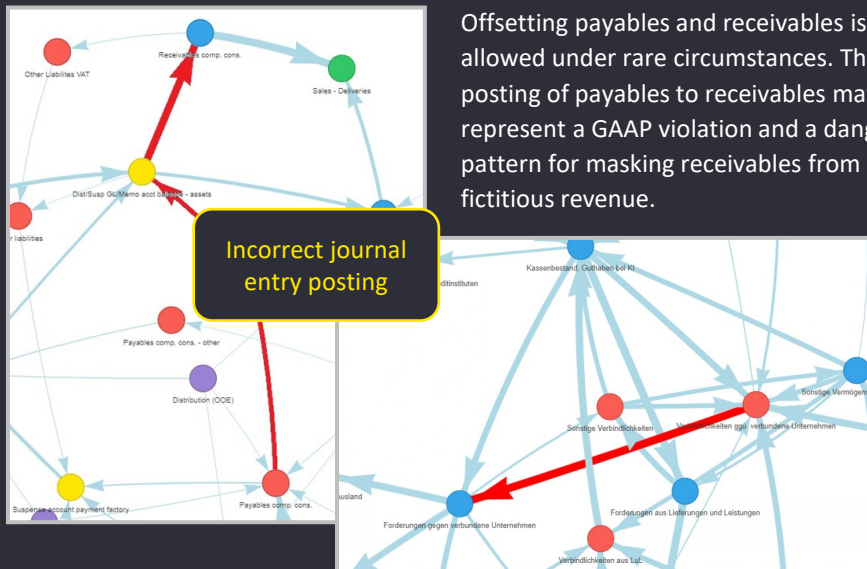
Offsetting payables and receivables is only allowed under rare circumstances. The posting of payables to receivables may represent a GAAP violation and a dangerous pattern for masking receivables from fictitious revenue.

Incomplete mapping

Ambiguous journal entries
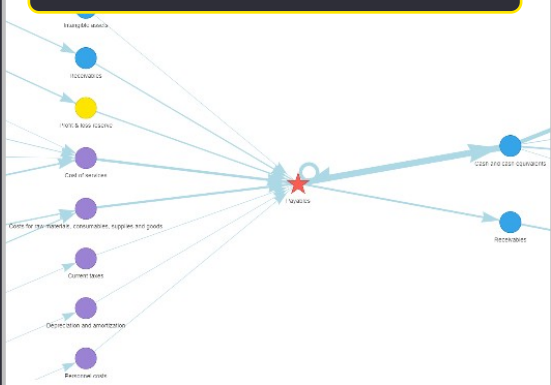
Ambiguous journal entries (with more than two debit and more than two credit accounts) add an unnecessary complexity to bookkeeping. They may result from "working backwards" from the account movements intended with a posting rather than the real economic event.

Unnecessary transactions
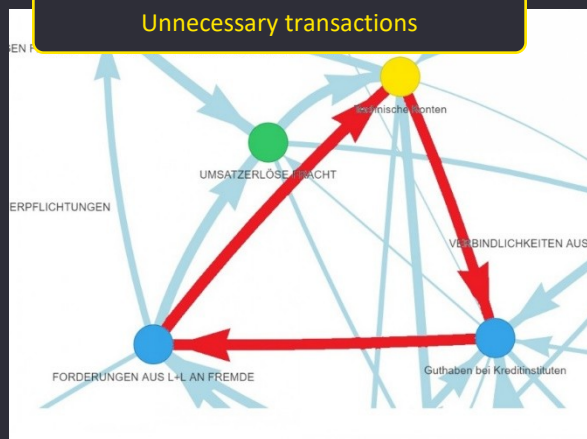
Circular transactions, transactions with zero amount and other unnecessary transactions – we have seen companies where one third of journal entries was useless.
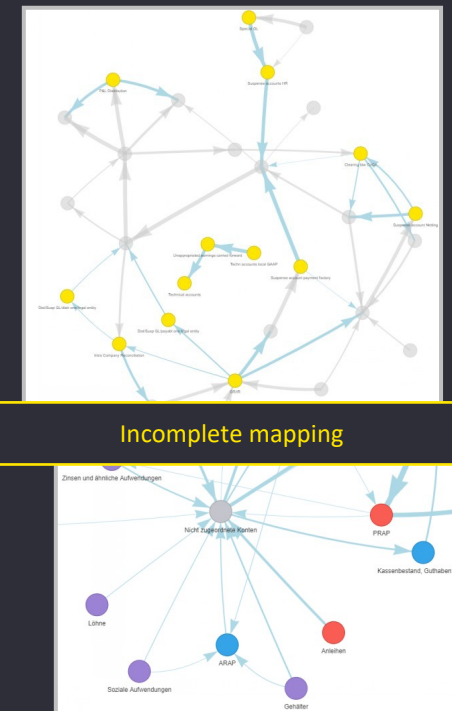
Account classes with significant transaction volume labeled "not used" or simply not mapped to any balance sheet or income account class.

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