Data driven (AML) Supervision

5 September 2022

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Risk based supervision principles

1. As a supervisor DNB wishes to put its capacity to work on mitigating risks where they are largest

2. To determine the size of those risks, first we determine the impact that failure of an institution may have on the trust in the financial sector: the impact class

3. Next we determine, per institution, per year, the level of the AML/TF risk they are exposed to and the level of their mitigating measures: the risk score

4. The combination of impact class and risk score determines what supervisory actions DNB will take

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Risk based supervision – Impact class

Sector/type	Impact score financial economic crime
Large Bank (SI)	4
Medium bank	3
Small bank	3
Electronic Money Institution	3
Trust offices	3
Life insurers	2
Cryptocurrency service providers	2
PSP's	1-3
Pension funds	1
Non-life insurers	1
Reinsurers	1

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Questionnaire: Risk level

	Risk factor	subfactor
Risk level	Geography	Branches within EU (excl NL)
		Branches outside EU
	Customers	Foreign customers
		High risk sectors ->
		Characteristics
		Clientacceptation
	Products, services and transactions	Payment transactions
		Payment volume
		Payment countries
		Number of cash transactions
		Volume cash transactions
		Private banking clients
		Trade finance number of customers
		Trade finance volume ->
		Trade finance high risk country customers
		RMA exchange
		Trade finance risk countries volume
		Cryptos and tokens
		Volume cryptos and tokens
		Safety deposit boxes

Specify the number of customers to which your institution provides services that are active in the sectors listed below (reference date: 31 December 2021).
This concerns the sector regarding your customer's main activity.

	Number of customers
Raw materials, minerals, mining	
Oil, natural gas, energy	
Military goods, defence industry	
Precious metals traders	
Loose diamonds traders	
Jewellers	

Does your institution provide trade finance services to customers with international importing or exporting activities?
If yes, from which countries

	Volume (EUR) of incoming transactions	Volume (EUR) of outgoing transactions
Andorra (AD)		
United Arab Emirates (AE)		
Afghanistan (AF)		
Antigua and Barbuda (AG)		
Anguilla (AI)		
Albania (AL)		
Armenia (AM)		

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Questionnaire: Risk control

	Risk factor	subfactor
Risk control	**Systematic integrity risk analysis (SIRA)**	process
		components and scenarios
		risk appetite
	Policies, Procedures & Measures	general policies and procedures
		customer research
		transaction monitoring
		sanction screening
		outsourcing
	Education & training	education & training
	Compliance & Audit	compliance
		audit
	Governance	governance
		social responsibility

How many business rules were active in your institution's transaction monitoring system in the past calendar year?

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Outcome

	Risicobeheersingsscore			
	1	2	3	4
Risiconiveauscore 1	1	1	2	2
2	1	2	3	3
3	2	3	4	4
4	3	4	4	4

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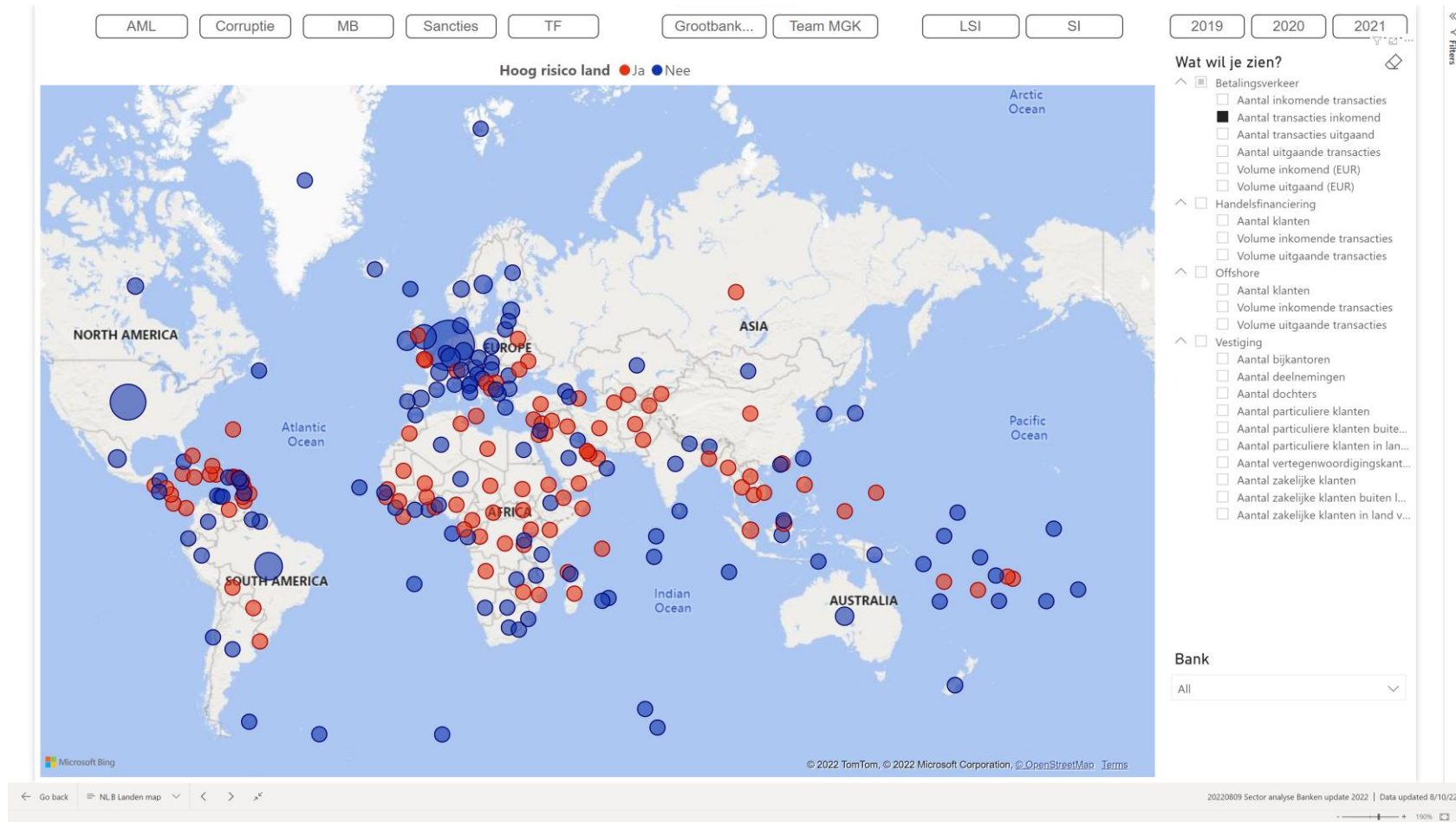
Sector analysis

Sector analysis

Volume inkomend (EUR)

Sector	2019	2020
Dinero	168M	84M
Biscuits	10M	21M
Franklins	15M	
Blue_cheddar	7M	19M
Knots	10M	
Frog		1M
Turkey	2M	
Quid	0M	
Bones		1M
Guineas	2M	
Fetti	0M	
1Grand	0M	
Dough	0M	
Thesaurie	0M	
Hundies	0M	
Smackers	0M	
Payola	0M	
Buckaroos	0M	
Big_bucks	0M	
Bookoo_bucks	0M	
Dime	0M	

Year
2019
2020
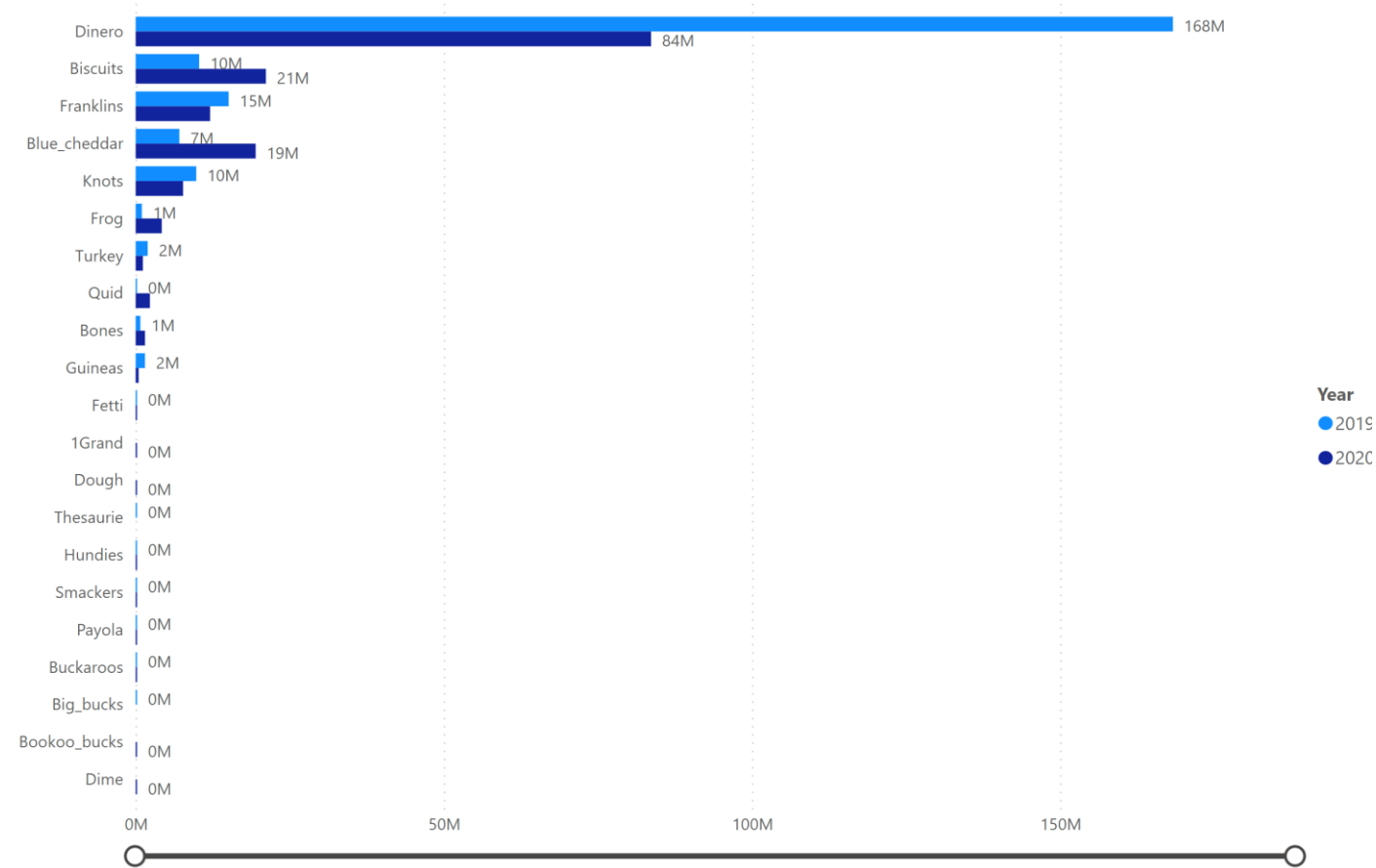
Sector analysis

Different types of analytics
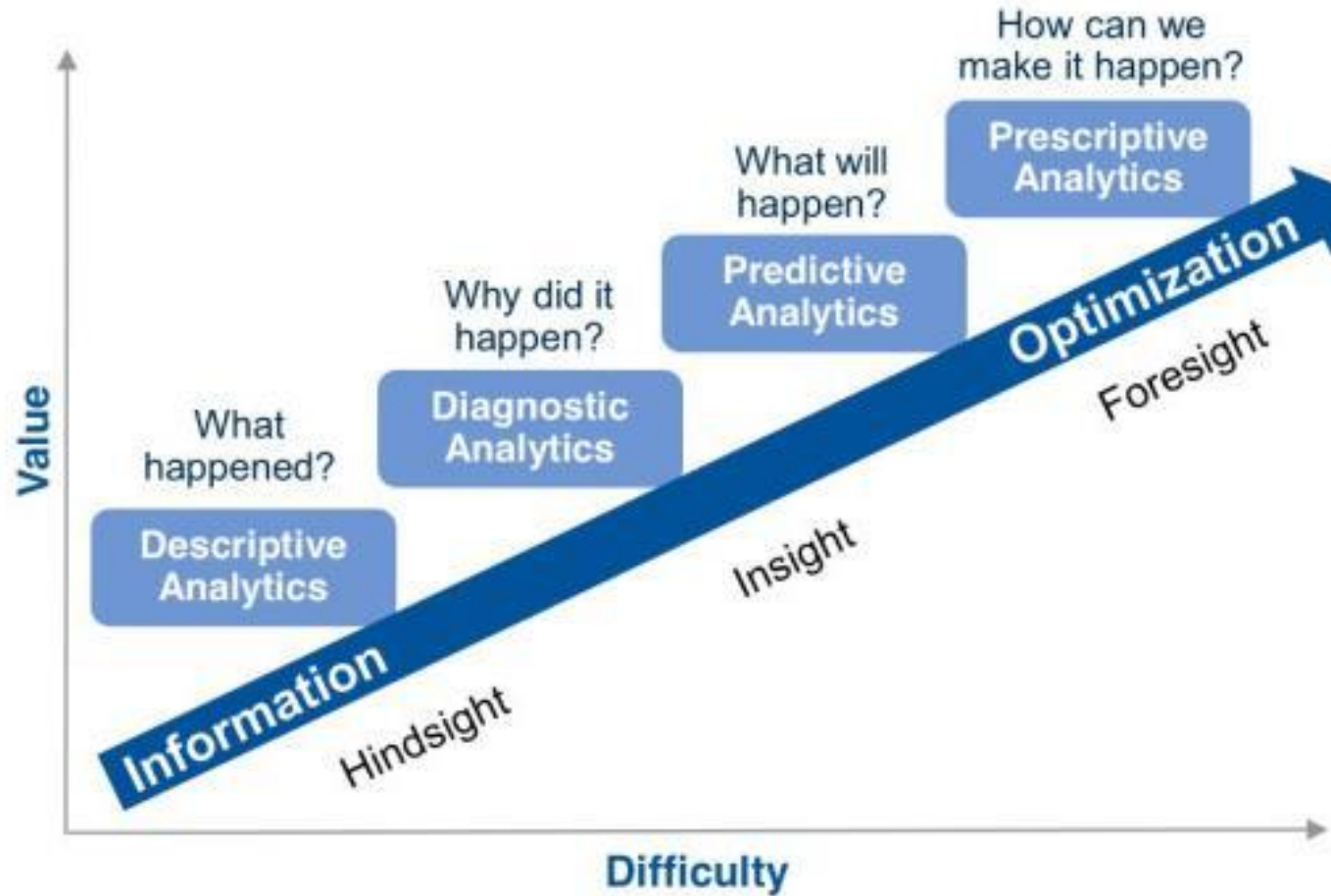
Predictive analytics

Data driven AML Supervision

AML Supervision

- KYC

    ■ Low

    ■ Medium

    ■ High

    ■ Unacceptable

- Transaction Monitoring alerts

- FIU reporting

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AML Supervision

- Originally:
    - Request specific files to investigate
    - Based highly on domain knowledge

- New goal:
    - Use data science methods to analyse all clients
    - Make initial selection data-driven
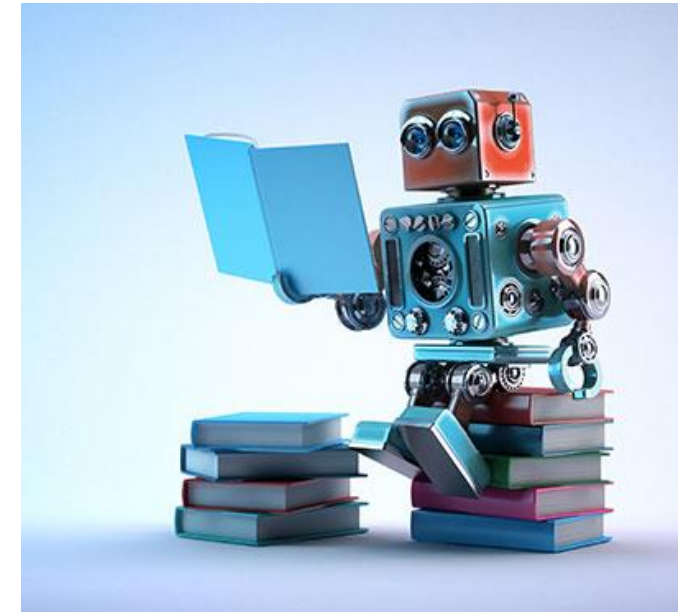
Can we make an automated selection of files?

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Data

Methods

Data checks

Client profiles

Outlier detection

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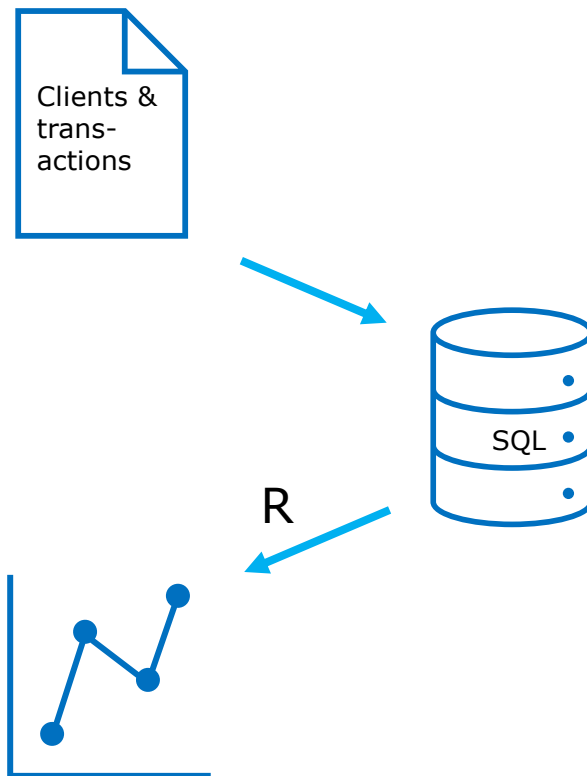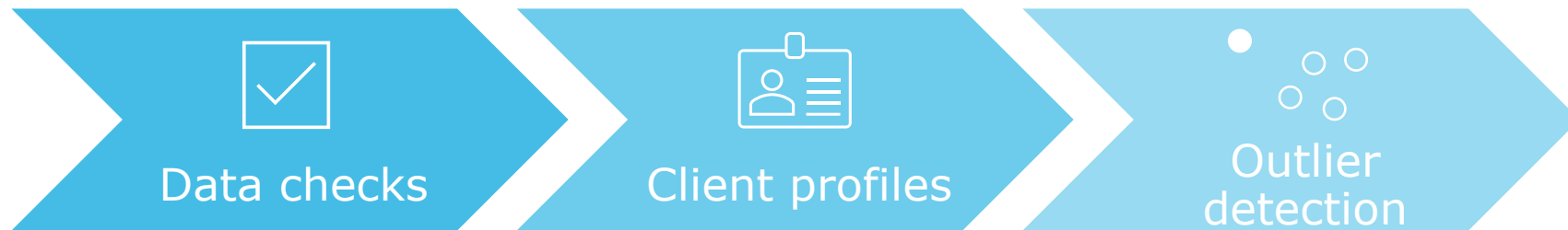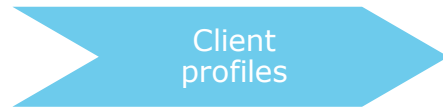
Data quality:
- Missing fields
- Accurate relations
- Duplicate transactions
- Unclear denomination
- Etc.

Logical checks:
- Distribution of variables (e.g. Legal entity, currency)
- Checking risk levels
- Other manual inspections
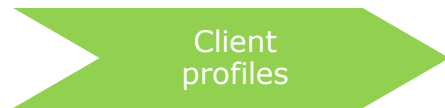
ID	Account balance	Cash deposited	Cash withdrawn	Foreign transactions	Number of transactions
423154481	42,312	250	2,300	0	14
662475645	1,522	320,100	0	45,396	67

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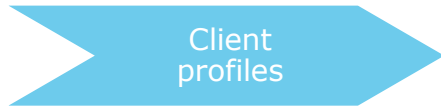
Isolation Forest
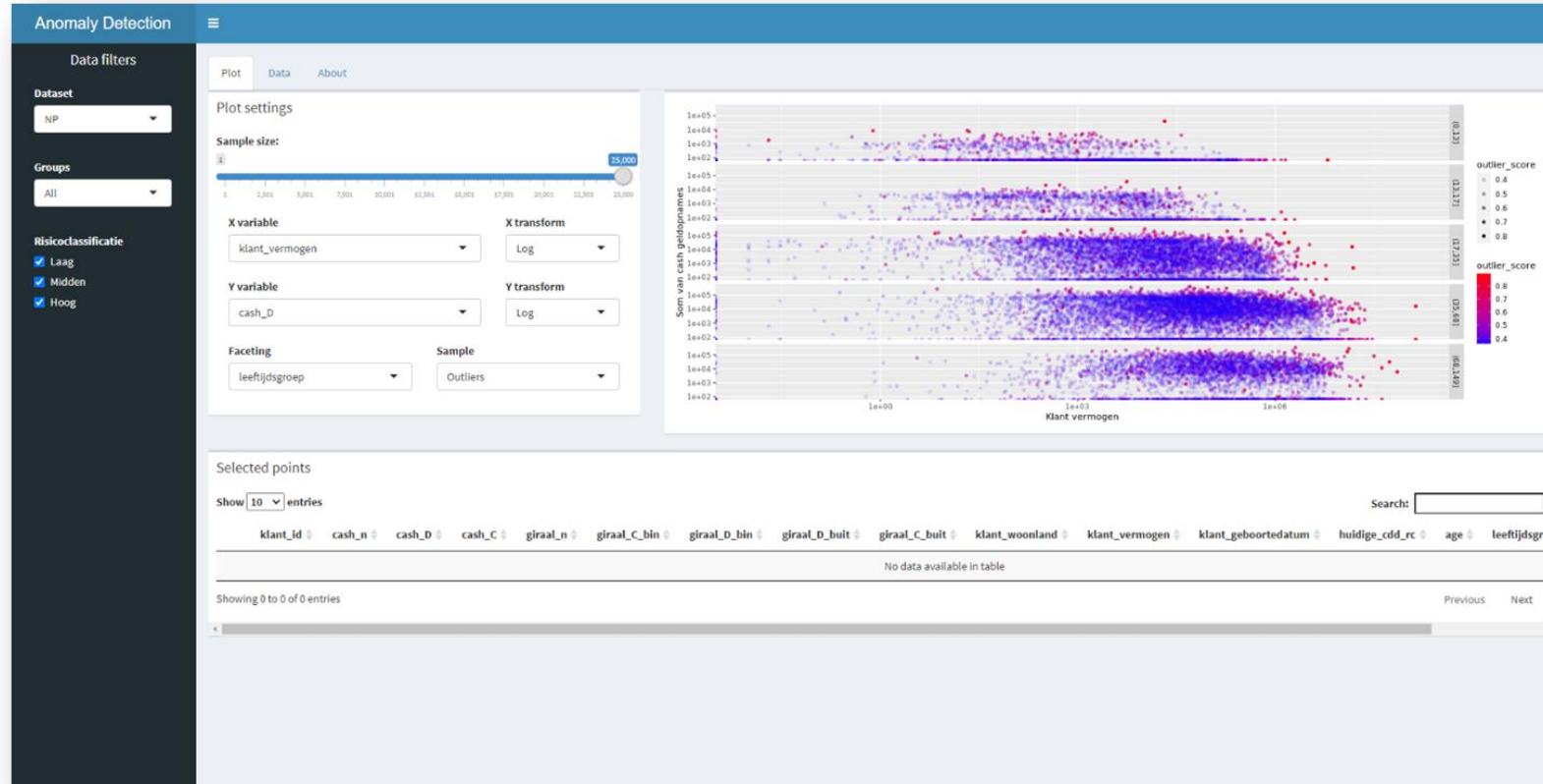
Results

Based on the outliers and manual selection a final sample is made by the supervisors.

The outlier analysis results in the identification of new risks, combined with extra efficiency gains.

The complete model and outcomes have been shared with the participating bank(s).

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What's next?

- Process mining

- RPA

- Text mining

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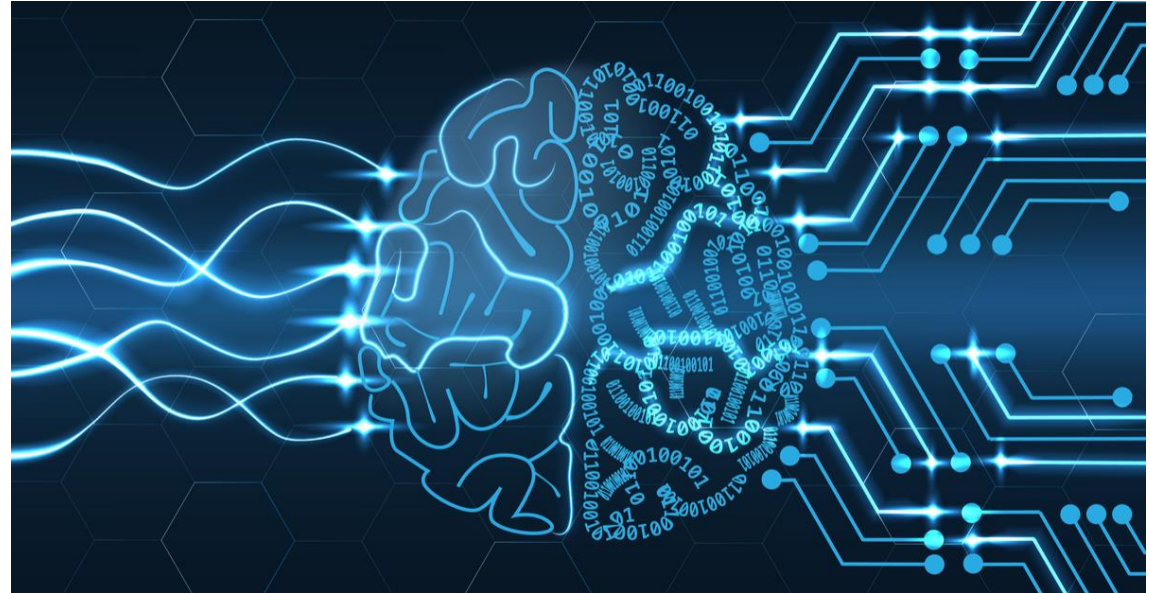
Process mining
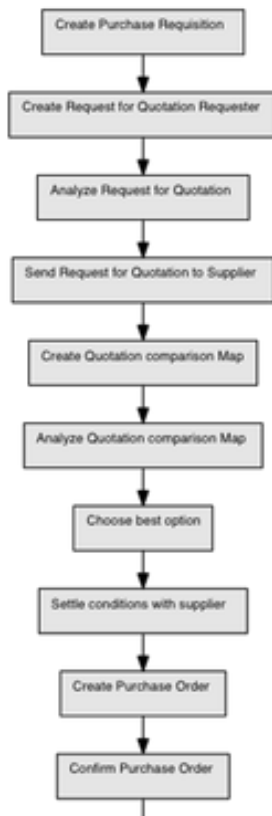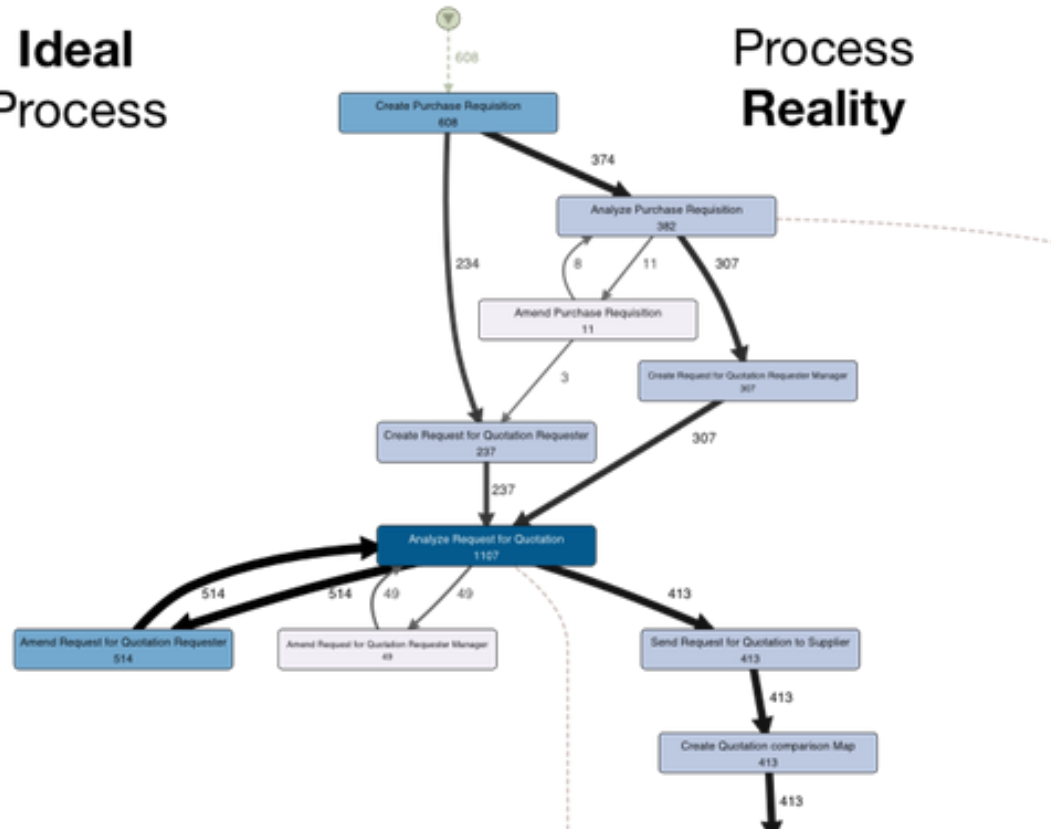
Robotic process automation

Text mining (nlp)

Text

Video

Audio

NLP

Raw Language Processing

Entity Extraction

Relationship Extraction

Topic Classification

Sentiment Analysis

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Thank you