

Financial Stability Institute



Suptech applications for anti-money laundering

Workshop on "Big data & Machine Learning Applications for Central Banks"

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The views expressed in this presentation are those of the presenter and do not necessarily reflect those of the FSI or BIS or UIF.

Outline

- Introduction
- AML authorities and mandates
- Data analytics tools used by AML authorities
- Challenges
- Key messages

Introduction

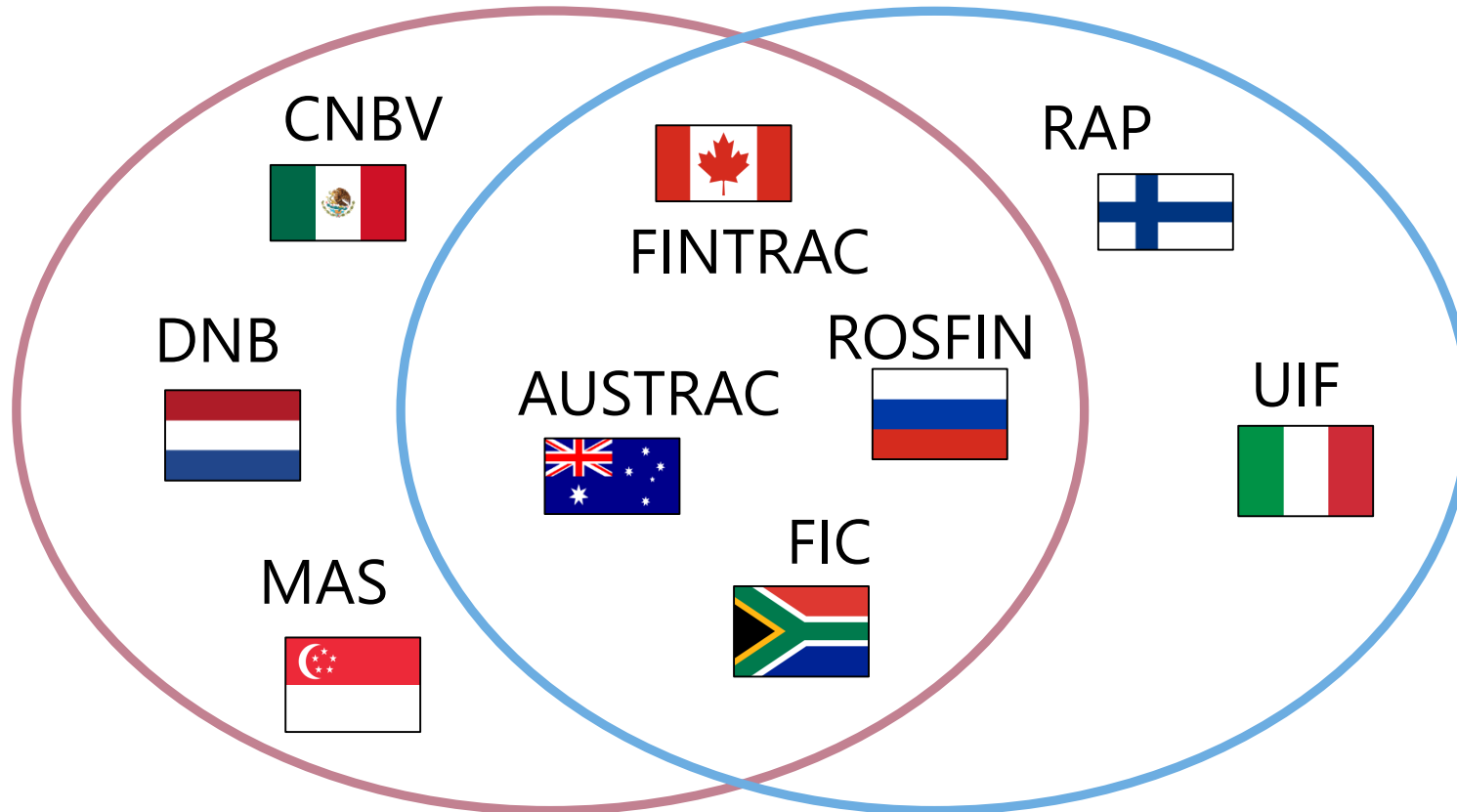
- AML authorities conduct data analysis in order to identify, assess and understand the money laundering and terrorist financing risks in their jurisdictions
- In conducting data analysis, AML authorities rely on large volumes of data
- The need to analyse large volumes of data results in certain challenges (collection, quality, completeness)
- Automation of data collection and validation processes addresses some of these challenges
- AML authorities need to develop data analytics tools in order to more efficiently and effectively analyse information from disparate sources and come up with a complete and coherent picture of AML/CFT risk, either for compliance assessment or detection purposes

Authorities and mandates

Supervisors

to supervise or monitor, and ensure compliance by, financial institutions with requirements to combat money laundering and terrorist financing

tools that contribute to the compliance assessment of financial institution



Financial intelligence Units

the receipt and analysis of:
(a) suspicious transaction reports;
and (b) other relevant information, and for the dissemination of the results of that analysis

tools that contribute to the detection of suspicious activities

Data analytics tools used by AML authorities – AML supervisors

AML supervisors – compliance assessment

- Tools contribute to the compliance assessment of financial institution in different ways
 - Identification of networks to which financial institutions are exposed
 - Evaluation of self assessment by financial institution
 - Risk scoring of supervised entities
 - Assessment of adherence of financial institutions to reporting requirements

Data analytics tools used by AML authorities – AML supervisors

Identification of networks: MAS application of NLP and network analysis to STRs

Narrative portion of STRs

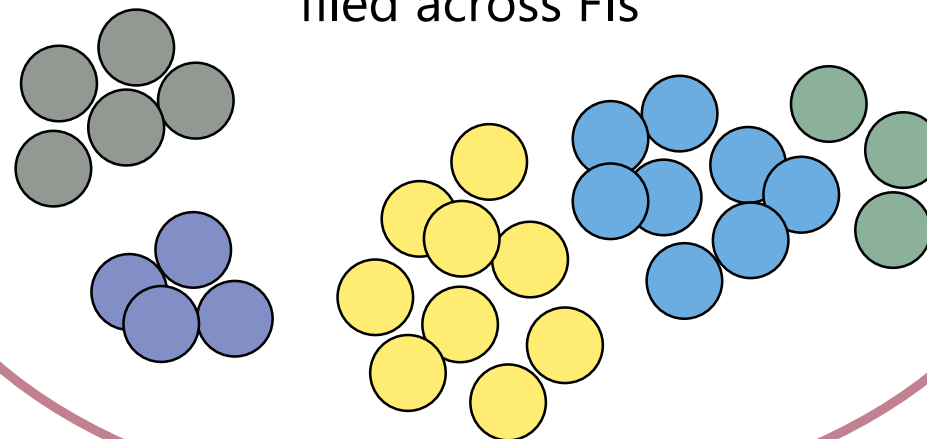
Arma virumque cano, Troiae qui primus ab oris Italiae, fato profugus, aviniaque venit litora, multum ille et terribis iactatus et alto vi superum, saevae memorem Iunonis ob iram, multa quoque et bello passus, dum conderet urbem, inferretque deos Latio, genus unde Latinum, Albanique patres, atque altae moenia Romae. Musa, mihi causas memora, quo numine laeso, quidve dolens, regina deum tot volvere casus insignem pietate virum, tot adire labores impulerit. Tantaene animis caelestibus irae? delendacartago

Karthago, Italiae contra Tiberinaeque longe ostia, dives opum studiisque asperima belli, quam Iuno fertur terris magis omnibus unam posthabita coluisse Samo. hic illius arma, hic currus fuit; hoc regnum dea gentibus esse, si qua fata sinant, iam tum tenditque fovetque. progeniem sed enim Troiano a sanguine duci audierat Tyrias olim quae verteret arces

Prima quod ad Troiam procaris gesserat Argis - necdum etiam causae irarum saevique dolores exciderant animo; manet alta mente repostum iudicium Paridis spretaeque iniuria formae et genus invisum et rapti Ganymedis honores: his accensa super iactatos aequore toto Troas, reliquias Danaum atque immitis Achilli, arcebat longe Latio, multosque per annos errabant acti fati maria omnia circum

NLP to extract info

NA: groups of related STRs filed across FIs



- Focus supervisory attention on financial institutions affected by networks of higher-risk accounts, entities or behaviour

Data analytics tools used by AML authorities – AML supervisors

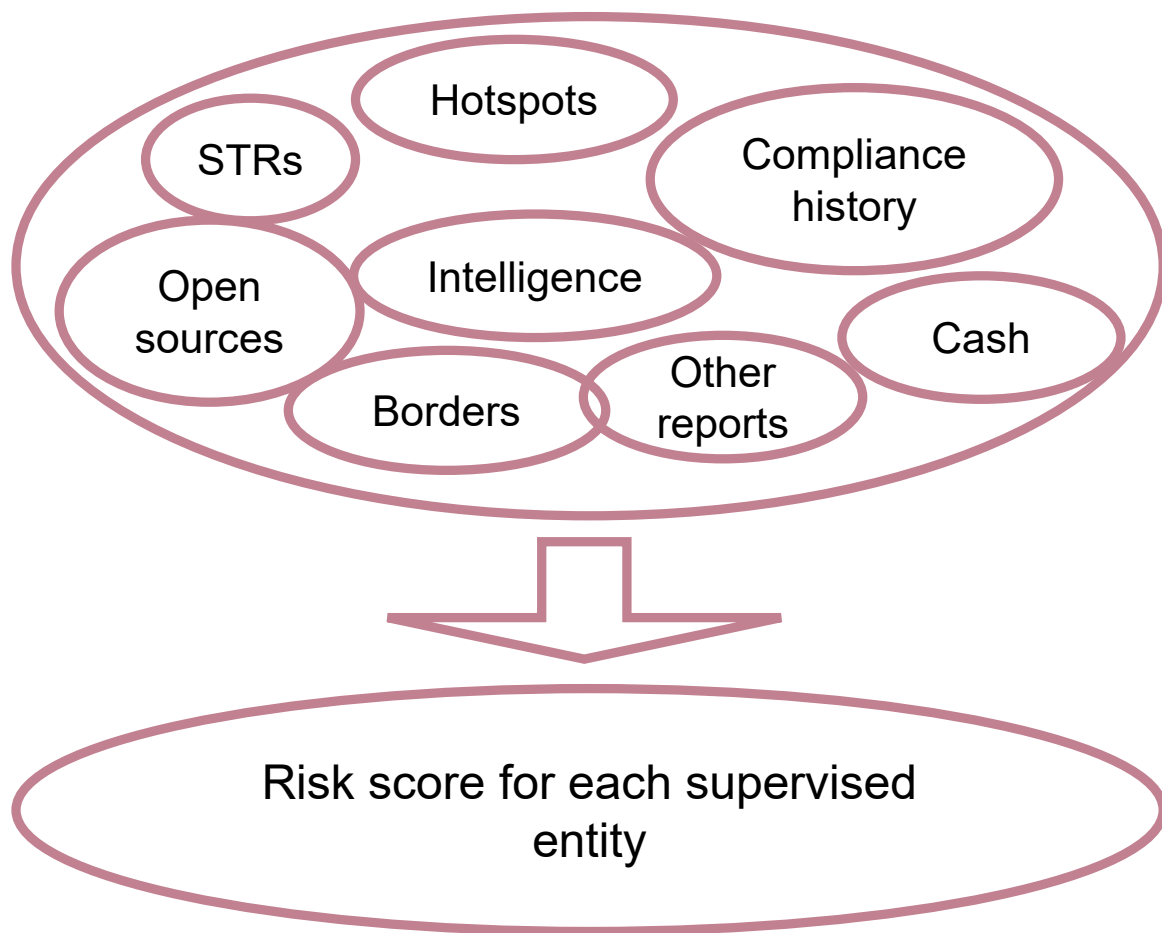
Evaluation of self assessment: DNB application of machine learning and NLP to SIRA reports



- The tool analyses the SIRA reports by answering specific questions
- The tool is trained with the intervention of supervisors who check the answers of the tool
- The objective of the tool is to increase the efficiency in the analysis of numerous and sometimes lengthy documents

Data analytics tools used by AML authorities – AML supervisors

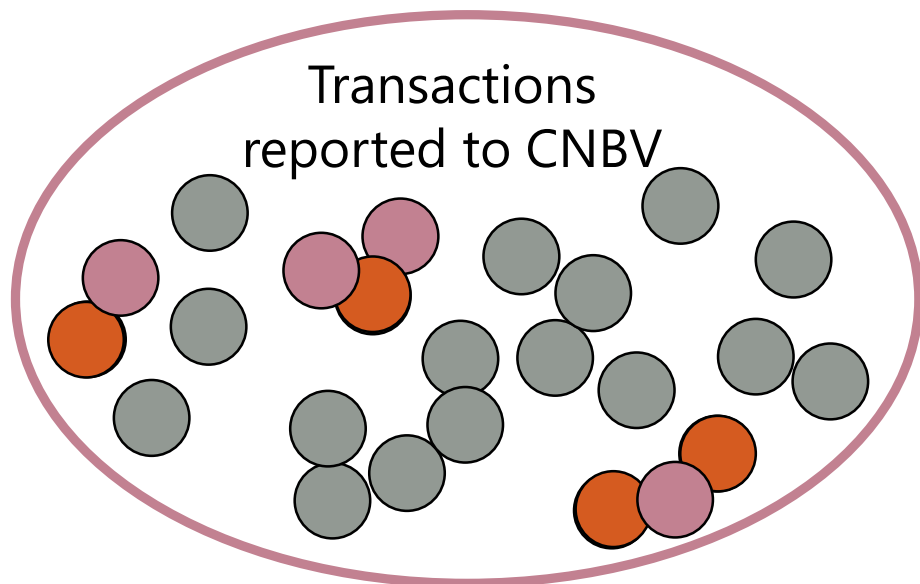
Risk scoring: FINTRAC heuristic model for overall money laundering risk assessment



- The tool applies a heuristic model that uses several **risk factors** determined by subjecting a significant amount of **data** to different analyses
- The objective of the tool is to assess the risk profile of each reporting entity in order to help to prioritise onsite supervision examinations
- The output of the model is compared with that of a supervised learning one

Data analytics tools used by AML authorities – AML supervisors

Assessment of adherence to reporting requirements:
CNBV application of machine learning to transactional data



- Reported unusual transactions are used to train the machine
- The tool then scans the whole dataset
- The aim is to uncover other transactions with similar patterns

The number of unreported unusual transactions detected will contribute to the assessment of the regulatory compliance of banks and support the prioritisation of onsite inspections

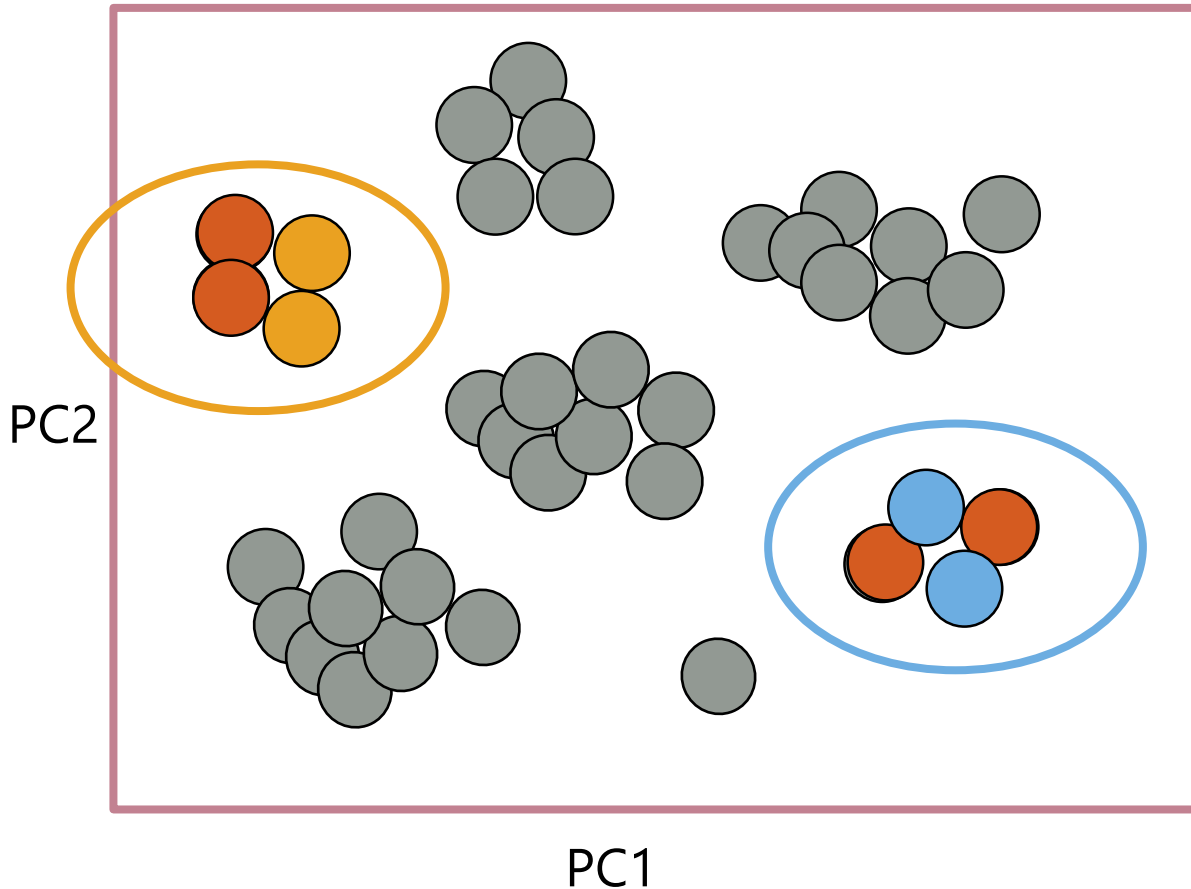
Data analytics tools used by AML authorities – FIUs

FIUs – detection of suspicious activity

- Tools contribute to the detection of suspicious activities in different ways
 - Detection of networks of entities involved in suspicious activities
 - Assessment of the likelihood of money laundering activity
 - Identification of patterns and trends in criminal activities

Data analytics tools used by AML authorities – FIUs

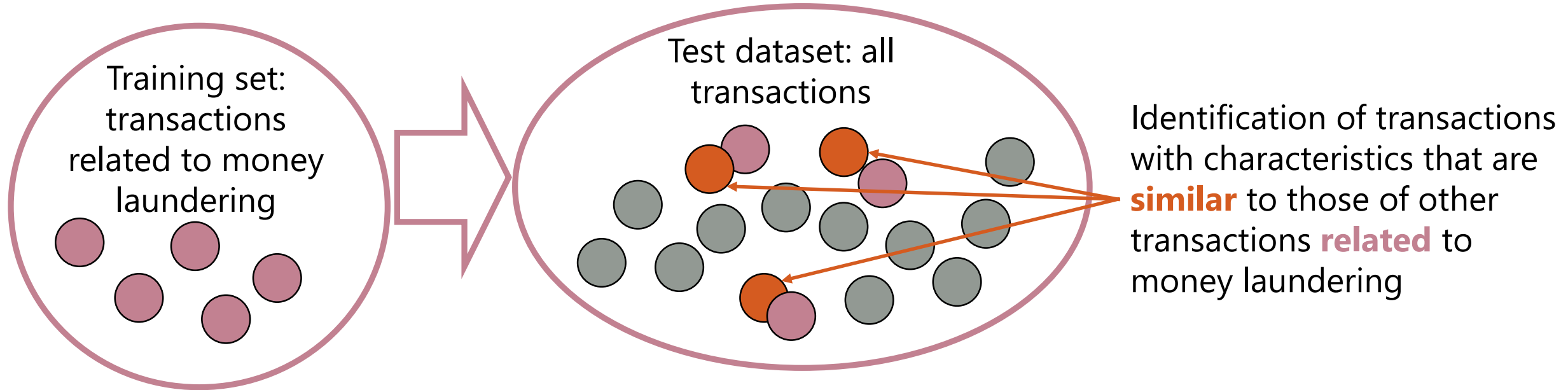
Detection of networks: UIF application of network analysis and self-organising maps to the Gold database



- The tool uses network analysis to build the networks of actors behaviours
- The tool searches the gold transactions database looking for behaviours that are “**similar**” to **fraud schemes** that are subject of **recent major investigations**
- Similarities are identified based on the structure of the network

Data analytics tools used by AML authorities – FIUs

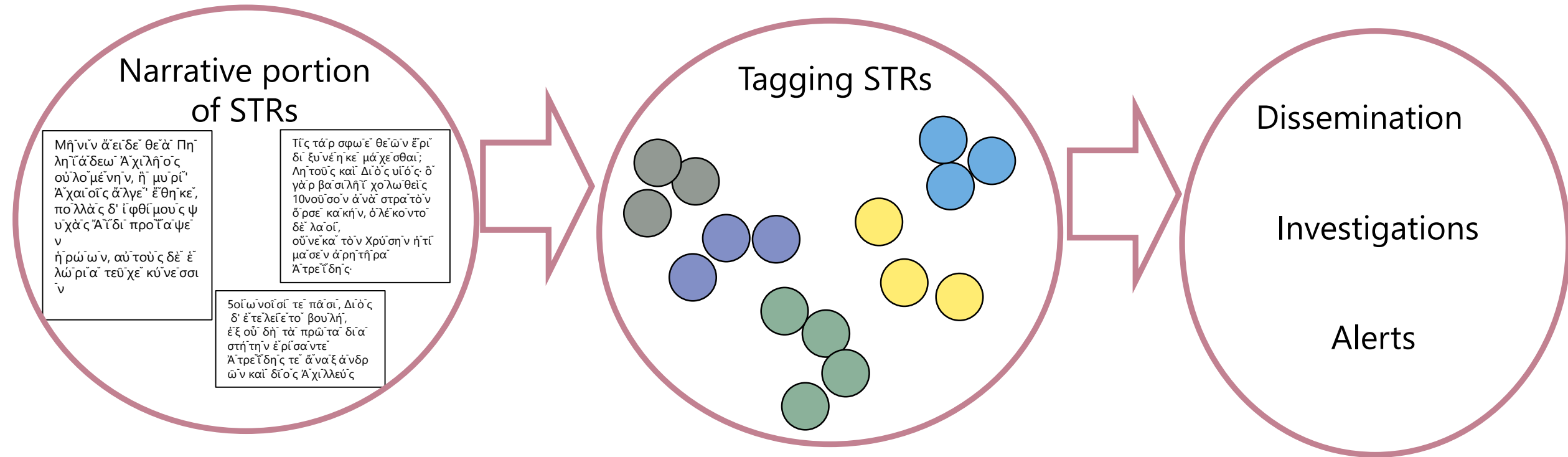
Assessment of the likelihood of money laundering: ROSFIN application of machine learning



Other application: detection of potentially fictitious companies based on a sample of known shell companies

Data analytics tools used by AML authorities – FIUs

Identification of patterns and trends: FINTRAC application of text mining to STRs



- Similar STRs are aggregated so that trends and patterns can be identified
- Increases in a certain typology may lead to further investigation and also to the development of alerts to reporting entities

Challenges

- Computational capacity
- Data privacy and confidentiality
- Resources (internal or external development, skills)
- Assessment of effectiveness

Key messages

- Important for AML authorities to harness the potential of innovative technology for data analytics
- Exploration or development of advanced data analytics tools could be organised in different ways
- Efficiency gains seem to be the number one benefit of these tools, which could help capacity-constrained authorities
- More international dialogue on this topic would foster peer learning