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ORGANIZATION OF AMERICAN STATES (OAS)

LV (HYBRID) MEETING OF THE GROUP OF EXPERTS

FOR THE CONTROL OF MONEY LAUNDERING

October 30 to November 1, 2023

Washington, D.C., United States of America

FINAL REPORT

FIU Subgroup and Criminal Investigation Agencies

Task No. 2

2023

“STUDY ON THE TECHNICAL GUIDE AND METHODOLOGY USED BY MEMBER COUNTRIES IN GENERATING STRATEGIC ANALYSIS FOR STRENGTHENING ADVANCED ANALYTICAL CAPABILITIES AND THE USE OF NEW TECHNOLOGICAL SYSTEMS AND SOLUTIONS”

Based on the relevant mandate, the meeting of the Working Subgroup on Financial Intelligence Units and Criminal Investigation Agencies (FIUs/CIAs) – designated through the plenary of the Group of Experts for the Control of Money Laundering (GELAVEX), of the Department Against Transnational Organized Crime (DTOC) of the Secretariat for Multidimensional Security (SMS) – proceeded as follows:

1. 2022–2023 Work Plan

Under the 2021-2023 Work Plan follow-up and execution, a decision was taken to produce this document, titled *Study on the Technical Guide and Methodology Used by Member Countries in Generating Strategic Analysis for Strengthening Advanced Analytical Capabilities and the Use of New Technological Systems and Solutions,* which is part of the strategic planning proposed in the 2022-2023 work plan, at the hybrid (virtual and onsite) meeting held in Washington, DC, on May 23 and 24, 2023 and entrusted to the Working Subgroup on Financial Intelligence Units (FIUs) and Criminal Investigation Agencies (CIAs) (GELAVEX, 2023).

In keeping with the objectives, scope, and other methodological aspects approved at the Washington meeting referenced above, the following can be reported:

2. Proceedings

Mandate No. 2, which refers to this study with which the FIU/OIC Working Subgroup was tasked, was divided into two phases:

a. The first half of 2023 focused on gathering information provided by countries interested in taking part in the study; and also on the review of international organizations' bibliography and studies on the specific subject.
b. Phase 2 was conducted over the second half of 2023 and was geared towards reporting the findings of the analysis.

2.1. Participation in the Study

During Phase 1, which was in the first half of 2023, the delegations of Guatemala, Peru, Dominican Republic, Paraguay, and Chile stated their willingness to participate. They also provided background information.

When the Progress Report was delivered at the May 23-24, 2023 meeting, the other delegations that had been present at the Fifty-Fifth Meeting of GELAVEX were invited to participate in the study – an invitation that was cordially renewed on August 3, 2023, via an e-mail sent by the DTOC technical secretariat.

As a result of the process outlined above, things proceeded as follows:

3. Introduction

The mandate set by GELAVEX called for the preparation of a *technical guide and methodologies* used by member countries in generating strategic analysis for strengthening advanced analytical capabilities and the use of new technological systems and solutions.

In terms of the framework and scope of the report, the countries on the FIU/OIC working group agreed to limit it to the FATF Standards, specifically the provisions of the Interpretative Note to Recommendation 29, paragraph 3, section B, on Functions, which refers to two types of analyses by FIUs – the aim being to bring added value to the information received and held by them, for the purposes of the analysis.

All FIUs must therefore perform two types of analysis of the information in their possession – an operational analysis and a strategic analysis, as recommended by the Financial Action Task Force (FATF).

3.1. Financial Action Task Force (FATF)

This task force requires Financial Intelligence Units (FIUs) to analyze information they receive and have in their possession.

FATF Recommendation 29 ([GAFILAT], Update, July 2023) states:

> *"Countries should establish a financial intelligence unit (FIU) that serves as a national centre for the receipt and analysis of: (a) suspicious transaction reports; and (b) other information relevant to money laundering, associated predicate offences and terrorist financing, and for the dissemination of the results of that analysis. The FIU should be able to obtain additional information from reporting entities, and should have access on a timely basis to the financial, administrative, and law enforcement information that it requires to undertake its functions properly."*

Concerning information gathering and analysis, the Interpretative Note to Recommendation 29 establishes the following:

> *"The FIU serves as the central agency for the receipt of disclosures filed by reporting entities. At a minimum, this information should include suspicious transaction reports, (…) and it should include other information as required by national legislation (such as cash transaction reports, wire transfers reports and other threshold-based declarations/disclosures)."*

> *"FIU analysis should add value to the information received. While all the information should be considered, the analysis may focus either on each single disclosure received or on appropriate selected information, depending on the type and volume of the disclosures received, and on the expected use after dissemination. FIUs should be encouraged to use analytical software to process information more efficiently and assist in establishing relevant links."*

However, along with the information provided by the participants, a review of existing bibliographic references on the subject was also done, notable among them the GAFILAT document entitled *"Strategic Analysis of the Use of Artificial Intelligence, Data Mining and Big Data Analysis in ML/FT Prevention and Detection (FIU/MP)."* This document was prepared by consultants and involved 14 countries (GAFILAT, 2021, p. 12).

The referenced document, on which the summary of certain aspects of this report was based, was drawn up using the methodology described below (GAFILAT, 2021, págs. 9-10):

> *"(...) the consultants' experience in financial, strategic, and operational intelligence analysis, and in designing and implementing systems that use large volumes of data to identify situations of interest. Technical and academic sources of information were consulted for the presentation of technology tools for information storage and data analysis methodologies, and a tool was designed and applied among FIUs and public prosecutor offices in the Americas to document the level of information they have, as*

well as the technologies implemented and the status of progress implementing this type of analysis."

"In addition, it was proposed that agencies (FIUs-MPs) be interviewed for them to share their experience with using big data, artificial intelligence, machine learning, or data and text mining."

The document in question refers to the use of a detailed questionnaire for FIUs and MPs in order to get a deeper understanding, and consideration was given to: *"a) An opinion survey to explore the level of awareness and use of technologies. b) A questionnaire for FIUs of the region. c) A questionnaire for certain tax authorities of the region."*

This report contained overall findings on a number of topics. As regards information security, for example, background information was requested on how information sources are consulted, in terms of accessibility, and it was noted that "*According to the answers given in the questionnaires, 43% of the FIUs' operations area and 57% of the strategic areas have extensive access to the information in the databases."*

Regarding feedback to FIUs about intelligence reports delivered to the Public Prosecutor's Office (MP), it states *"(...) based on the answers given in the questionnaires, 50% of the FIUs receive feedback at the investigation stage, 29% at the prosecution stage, 36% at sentencing or conviction, while 29% get no feedback from MPs."* (GAFILAT, 2021, págs. 12-14)

The document also identifies the types of reports accessible to FIUs of the Americas [(GAFILAT, 2021, págs. 15-18) see tables]. Regarding the databases used by FIUs, *"(...) 86% of the entities say they use the relational model, while 14% of the remainders say they use a non-relational model."* Further on, as regards Hardware, they said *"(...) 60% use independent servers, 20% use local servers through Hadoop, 12% use specialized infrastructure such as IBM Netezza and Teradata, 7% access data services in the cloud, and*

26% use others such as Flash system or local server clouds through Oracle Storage." (GAFILAT, 2021, págs. 14-19)

In this regard, as evidenced by the various quotes drawn from the document *Strategic Analysis on the Use of Artificial Intelligence, Data Mining and Big Data Analysis in ML/FT Prevention and Detection (FIU/MP),* it contains a general overview of the situation in the region, with aggregated information on the use of new technologies for strategic analysis purposes.

The approach taken for this report is to illustrate the experiences of the countries participating in the report in terms of their use of new technologies and application of same to strategic intelligence.

Outlined below are a number of basic concepts related to strategic intelligence and immediately thereafter a description of the models that the participating countries have used.

3.2. Conceptual Framework

3.2.1. *Strategic Analysis*

A process that is critical to decision making, strategic analysis is based on analysis of the information available to an institution – according to the resources that have been acquired, basically information technology and new technologies for advanced analytics – and thus enhance the capabilities already developed or being developed on an ongoing basis to meet new objectives. (Miranda, 2023).

As part of international standards to combat money laundering, terrorism financing, and financing for the proliferation of weapons of mass destruction, the main functions are

mentioned in the interpretative note to Recommendation 29, which deals with the Financial Intelligence Units [FIUs], among them the "Analysis" that the FIUs referred to should perform on two levels – an operational analysis and a strategic analysis ([GAFILAT], Update, July 2023).

That is why a distinction must be made between operational analysis and strategic analysis – the former identified as analysis based on available information that may be obtained in order to identify specific targets such as individuals, assets, networks, or criminal associations. The aim is to follow the trail of customers requesting services or products from reporting individuals or entities that generate the relevant reports, when appropriate, based on prevention measures they undertake after monitoring or tracking particular activities or transactions and determining any connection between those targets and possible proceeds from money laundering, predicate offenses, or terrorism financing.

The second type of analysis to be carried out by the FIU, according to the corresponding interpretative note, strategic analysis may be understood as those procedures carried out using available and accessible information, including data that may be provided by other competent authorities, to identify trends and patterns related to money laundering and terrorism financing ([GAFILAT], Update, July 2023). FIUs or other state entities use this information to determine money laundering- and terrorism financing-related risks, threats, and vulnerabilities.

Strategic analysis can also help define policies and goals for FIUs or, more broadly, for other entities within the anti-money laundering and anti-terrorism financing regime. This is also referenced in the methodology for evaluating technical performance and effectiveness based on international standards ([GAFILAT], Update, July 2023).

The understanding here could be that additional information may be gathered on top of what is received from individuals or reporting entities through periodic reporting on

instructions from the FIU, whereby it must be able to get and properly use additional information for its analysis, and must have access to financial, administrative, and law enforcement information, including as well information from open or public sources, such as relevant information collected from other agencies, which it will store and analyze.

Strategic analysis is a process of which the outcome can be highly valuable for decision making, but this will depend on what financial, human, and technological resources are available for that purpose, based on:

a) Analysis of an entity's internal or information environment
b) Analysis of the external information environment

3.2.2. Internal analysis

The purpose is to identify what resources and capabilities an agency has, so as to determine what information it holds, how it can operate and work with it, and, most importantly, to find out whether it suffers from shortcomings that prevent this information from being put into operation. To do this, all the procedures must be understood internally, by identifying positive and negative factors affecting analysis of the information, and an evaluation must be done periodically to be able to project into the future (Ruiz, 2022).

This internal analysis is also intended to assess the capacity for growth and to address any weaknesses, thereby strengthening information management procedures and serving as a basis for conducting a quantitative or qualitative analysis, while planning in order to mitigate these weaknesses over the short-, medium-, and long terms.

3.2.3. *External Analysis*

This involves using the information that can be gathered from the operating environment, whether its origin is economic, commercial, political, social, technological, cultural, etc. This environment provides an opportunity to get more information, an issue subject to constant review to determine what additional information should be available to efficiently improve analysis capabilities.

A protocol for drafting the strategic analysis should be borne in mind. It can be used to identify needs by generating a likely scenario to find the best strategies to implement. (UNAM, 2023).

3.3. New Technologies

The Financial Action Task Force(GAFIC, 2022) defines new technologies as:

> "*Innovative skills, methods, and processes that are used to achieve goals relating to the effective implementation of AML/CFT requirements; or,*
>
> *Innovative ways to use established technology-based processes to comply with AML/CFT obligations."*

FATF points to advantages of new technologies (GAFIC, 2022), including that:

a) they can improve the speed, quality, and efficiency of AML/CFT measures. Examples cited: that by means of correlation or some other method, the accuracy of customer analysis, identification, and authentication can be enhanced and increased;
b) the costs of applying AML/CFT frameworks are reduced to some extent, compared to traditional or blended application methods;
c) they provide partially- or fully-automated means of analyzing volumes of data.

d) they help regulators and supervisors to assess sectors and entities in a more timely, accurate, and suitable manner through data collection and analysis tools that are aligned with the risk-based approach. Supervisors must become innovative and embrace new technologies.

e) they promote the risk-based approach to AML/CFT, in particular customer due diligence requirements, aiming to facilitate accurate and up-to-date customer evaluations and enhance the customer experience by cutting down on paperwork needed to conduct transactions.

New technologies offer those advantages to improve risk management, cost savings, accuracy of results, and fast and flexible measurement of efficiency, as well as better governance. The handling of new technologies also enhances oversight of more agencies; helps to identify and better understand the risks associated with different sectors; and can also help in sharing information with other relevant institutions.

It can be concluded that new technology has been developing since the 1980s and has been constantly evolving, to the point where large-scale information, such as Big Data, is taken into consideration, with information based on structured and unstructured data, as follows:

3.3.1. *Data Types:*

i. **Structured data.** Structured data are a type of information organized and stored in such a way that they can be accessed and processed systematically and efficiently. Such data are organized in a specific format that follows a predefined schema, which facilitates their management and analysis. (Miranda, 2023)

Examples of these include Microsoft Excel tables, relational databases – such as Structured Query Language (SQL) – that have well-defined columns with the name and value of the fields, which can have alphanumeric information or whole numbers, with decimals or with other characteristics, and the fields must be clearly identified. SQL is a domain-specific language, designed to manage and handle information on a retrieval basis, with the main feature being the application of formulas (handling of algebra and calculus). (EGMONT, 2012)

This type of structured data follows a specific database format, and can be generated directly by a skilled person, or through algorithmic solutions designed for a certain purpose.

SQL is used to communicate or extract information from a database, and can include the following formats: *Oracle, MySQL, Microsoft SQL Server, Access, Ingres*, etc. (Miranda, 2023).

ii. **Unstructured data** These are a type of data that lack a coherent organization or a predefined format. These data are usually diverse in nature and may include free text, images, videos, audio files, e-mails, social media posts, and other types of content that do not conform to a specific structure.

These may include JSon or other types, where the data are not SQL type. Information is entered and stored as it comes in, until it is to be used for a certain purpose because, despite the fact that it has an internal structure, it is not predefined by any data model, with qualitative information included in this data type; and the data do not stick to any specific format, but are data to be used and reused for different purposes, according to

the function or objectives proposed, depending on what they are to be used for. (Miranda, 2023)

Unstructured data can be assigned value by ensuring a specific platform is available to store them; and they can be used for specific information analysis that is quick and accurate, and may include repetitive or nested manual processes, thereby cutting down on human error or on the need to use more man-hours than this mechanism needs.

Processing these data calls for automated data collection and handling techniques, which can be converted into forms for efficient actions by means of well-defined and automated processes. (EGMONT, 2012)

iii. **Semi-structured data** These data can consist of both unstructured and structured data. They usually have identifiable formats, but are not easy for the user to understand, hence some amount of work needs to be done before the information can be analyzed. These data can be stored and reused in two ways, i.e., via:

a. Optical character recognition (OCR) or text digitization process. It is automatically identified from an image, symbols, or characters of an alphabet, and then stored in the form of data.
b. Natural language processing (NLP), which relates to the field of artificial intelligence (AI) that analyzes and interprets written or verbal content.

The document *Strategic analysis on the use of artificial intelligence, data mining and big data analysis in ML/FT prevention and detection (FIU/PPO)* provides a catalog of technologies for execution of all these tasks, and mentions new technologies, hardware,

and databases, as well as specialized hardware such as IBM Netezza, Teradata, Oracle Exadata; Flash system or local server clouds through Oracle Storage, or Hadoop; servers such as Microsoft, Google, Amazon; data analysis software IBM I2 Analysis Notebook, R, Phyton and others like SAS, IBM Modeler, IBM SPSS, Tableau, Microstrategy Visual Insight - Data Discovery, SingleStore DB, WEKA, and SICORE, among others. (GAFILAT, 2021)

3.3.2. *Types of Information Reports*

The countries within the jurisdiction can, and do, draw on a wide range of sources of information for strategic analysis – sources that include public records or information provided by users or clients who engage the services of the persons or reporting entities required to do so by law, as identified in the research conducted by GAFILAT for the strategic analysis, which revealed the different types of reports and sources of information:

a) Suspicious Activity Report;
b) Cash transactions;
c) Foreign exchange transactions
d) Criminal background records
e) Immigration information
f) Customs information
g) Cross-border cash transportation
h) Cross-border transportation of negotiable instruments
i) Tax returns or other fiscal information
j) Transactions with virtual assets
k) Business or company registry
l) Real estate ownership records
m) Political campaign account management records

n) Final beneficiary records
o) Registration of natural persons
p) Registration of legal persons
q) Registration of domestic PEPs
r) Registration of foreign PEPs
s) Assets declarations of public officials
t) Registration of notary document
u) Registration of vehicle ownership
v) Buying and selling of precious metals (GAFILAT, 2021, págs. 15-16)

Regarding this cluster of records, it is important to add to – or even enhance – the mechanisms used to determine the risk analysis of money laundering or financing of terrorism, such as public records, including the Registry of Secured Transactions or Economic Guarantees, the Registry of Mines and Quarries, and the Registry of Protected Areas, among others.

3.3.3. *Types of Intelligence*

a. **Prescriptive analytical intelligence.** This kind of analysis illustrates why a certain action should be taken. This kind of analysis streamlines the resources that are being analyzed, in order to then be able to execute a possible decision modeling and thus be able to decide on what action to take, drawing on the information yielded by the data analyzed using various technological means. (IBM, 2023)

b. **Descriptive analytical intelligence.** The information is managed via a historical record, the analysis of which provides information according to the samples to be analyzed and can be observed through dashboards or scorecards that can be used to generate sound

management and identify and solve problems through the description that can be derived from the analysis done.

c. **Descriptive analytical intelligence.** Advanced analytics apply data mining, predictive modeling, and machine learning to predict events and calculate the likelihood of them happening. The use of technology in data collection suggests potential actions based on algorithms. Predictive analytics tools are one way to proactively measure data to understand through the use of technology, results that need to be understood in order to guide or redirect future actions, generating new ideas for change or renewal. (IBM, 2023)

As part of predictive analytics intelligence, it uses automatic learning or "machine learning."

Machine learning is the use of artificial intelligence based on information to identify patterns and make decisions with limited human intervention, by specifically training the data. Machine learning is a discipline within the field of artificial intelligence that uses algorithms to identify patterns in big data and make predictions. Learning to perform specific tasks in an automated way and using machine learning techniques is a fundamental part of big data. (Miranda, 2023)

Machine learning algorithms can be observed through the following:

Supervised learning. The algorithms feature prior learning based on a system of labels associated with data used for decision-making or for making forecasts.

Unsupervised learning. Algorithms do not rely on prior learning. Instead, they wrestle with the jumble of data looking for patterns around which to organize them in some fashion.

Reinforcement learning. The aim here is to get an algorithm to learn from its own experience, which leads to different situations being decided on based on trial and error.

This type of strategic analysis using predictive intelligence aims to determine trends and habits, improve target audience segmentation, cut costs, etc. Machine learning is one of the pillars upon which digital transformation rests. Search engines can be used in this analysis to measure effectiveness or to produce other results. (IBM, 2023)

d. Artificial intelligence. This is the discipline that is devoted to creating computer programs that perform operations comparable to those performed by the human mind, such as learning or logical reasoning. It uses advanced computational techniques to gather knowledge from different types, sources, and quality of information derived from structured and unstructured data. (GAFIC, 2022)

Artificial intelligence offers benefits such as the ability to learn from existing systems and guide them towards the information to be collected and analyzed, thereby cutting down on the need for manual data entry in monitoring or other forms of analysis, reducing false positives, identifying complex cases, and facilitating risk management with automatic management tools that enable traditional functions to be carried out quickly, accurately, and efficiently. (GAFIC, 2022)

This type of intelligence is fueled by data from which algorithms are developed for analysis and channeled to gather information on their environment, behavior, and trends, optimizing processes and speeding up assessment times.

e. Data intelligence. The branch of computer science that deals with big data, which is the set of data that requires special processing techniques due to its large volume.

3.3.4. *Other Elements Used in Strategic Analysis*

A. ***Big data.*** The term refers to the use and management of large amounts of information. Big data contain massive amounts of information and require specialized software for processing data. The important features of big data are: volume; speed; variety of information or data; accuracy of data; feasibility; display of data; value of data. (IIC, 2023)

Additional information can be derived from unstructured or semi-structured data, including metadata, which provide better operational efficiency, early identification of risk to products or services, where applicable.

i. **Volume.** The amount of data to be handled is important because large volumes of low-density unstructured data are processed. Big data may consist of *petabytes*, the main unit of information in higher-volume server centers.

ii. **Speed.** This is the rate at which data are received and processed. The highest rate of data flowing directly operates in real time.

iii. **Variety.** This refers to the different types of data that are available, thereby enabling a relational database to be created.

iv. **Accuracy.** This refers to the uncertainty of the data, where its management must maintain the degree of reliability of the information received. This involves investing time to collect quality data by applying solutions and methods that can reduce uncertainty.

v. **Viability.** This is the capacity of the entities to generate an efficient use of the large volume of data to be handled. This requires filtering by handling

the information and carefully selecting the attributes and factors needed to predict the results that are of greatest interest. The key is to find the relationships among variables that are not visible to the naked eye.

vi. **Data visualization.** This is the mode in which the analyzed data will be presented. Once the data are processed, be it by tables or spreadsheets, they are converted into a readable and accessible format, in order to find patterns and clues that are of interest as part of the information management. For them to be easily understood, they are converted by means of visualization tools for a graphical and insightful understanding of the context necessary for decision making.

vii. **Data value.** A piece of data is not a value, but rather the process of collecting a large amount of information and processing it, hence those data become valuable information, which can cause an action or a decision.

B. **Hardware.** In data storage, the first thing to consider is the server, a machine that requires state-of-the-art configurations, fast processors capable of executing several tasks at once, with a good graphics engine, and ample memory to handle large flows of information. Having in place a server where the data will be located. This could also be a cluster of servers. It may be noted that there must be high availability to perform the programmed operations, speed management, load balancing, and if the hardware is not sufficient for big data, consideration should be given to increasing the processing capacity in a staggered manner to ensure the effectiveness of the system. (IBM, 2023)

C. **Data cleansing.** This is the activity performed using tools that prepare sets of data to be analyzed, by removing duplicate, incorrect, false, or obsolete data points. Within the field of data science, data are critical to ensuring the quality of the data to be analyzed

and structured. Data cleansing is an essential process in data science and machine learning; and encompasses several processes that are used to correct or remove inaccurate records from a database or dataset. Generally speaking, this means identifying and replacing incomplete, inaccurate, or irrelevant data or records. Data cleansing is not the same as data transformation, as it involves converting data from one format to another, whereas data transformation involves converting raw data into a suitable format for analysis. Data cleansing serves as a vital resource for critical decision making in a variety of industries. (DataScientest, 2023)

D. **Fuzzy logic.** A logics technique used in NLP. It takes raw or approximate data and processes them using multiple values, thereby yielding a usable output.

E. **Natural Language Processing (NLP).** A subset of artificial intelligence, this allows computers to understand, interpret, and manipulate human language. This procedure is used to extract useful information from data that cannot be analyzed using binary or classical logic. It produces useful results from incomplete, ambiguous, corrupted, or inaccurate data and is similar to human decision making, using technology. (ORACLE, 2023)

3.3.5. *Personnel Profile*

Personnel performing strategic analysis using the different analytical skills can be viewed as systems engineers or industrial or electronics engineers, on top of which they should be familiar with the social sciences, such as management or business administration, or be economists, accountants, or even mathematicians, physicists, or statisticians. (Miranda, 2023)

3.3.6. *Need for Information Security*

The new technologies used for strategic analysis with internal and external information also involve the need to manage information security. User authorization codes and information technology system access blocks must be managed according to access levels for authorized professionals, depending on what is to be achieved; in addition, the conversion of hard copy information into dematerialized information in electronic or digitized form, the records for which must be physically as well as electronically managed, keeping a log by means of a user code and a personalized password that allows access to the information. (Miranda, 2023)

Information management must take into account, among other things, identification of the operation performed, the user who handled it, the place where it was handled, the transactions, the work center, transaction date and time, and the transaction source and destination. (Rovira, 2021)

3.3.7. *Types of Reasoning*

The following types of reasoning can be identified: (EGMONT, 2012, pp. 5-6)

a. **Deductive reasoning.** Reasoning that starts with premises, from which logical conclusions are deduced – that is to say, from a general idea and through a logical process a specific conclusion is drawn.

b. **Inductive reasoning.** This is the type of reasoning is based on specific or particular observations that are limited in scope, and a general conclusion is induced in the light of the evidence gathered.

What this means is that inductive reasoning moves from the specific to the general. That way, evidence can be gathered, patterns can be looked for, and hypotheses can be created to explain what has been observed or studied using the mass of information.

c. **Abductive reasoning.** Based on a fact or incident, this type of reasoning seeks to establish hypotheses, that is, a more likely explanation of the phenomenon being studied, by means of a conclusion.

Experiences

This guide provides an opportunity to share experiences of the countries in the jurisdiction, as follows:

4. Peru

Peru's Financial Intelligence Unit conducts strategic analysis by way of its oversight, management, and use of all FIU databases, constantly coordinating updates of information coming from other FIU departments, as well as information periodically submitted by reporting parties, competent authorities, supervisors, and public and private sector institutions in general.

Data management begins with receiving the information, which is called base models, and specialized models are then generated from this information – specialized models that are the input for developing analytical products (descriptive and predictive analytics) that enable strategic analysis.

Quality indicators to provide reporting entities (REs) with feedback on the information received.

4.1. **Information sources used**

a. Internal sources: - Financial System Operations Record (RO SF) - Cooperatives Operations Record (RO Coopac) – Notaries Operations Record (RO Notario) Suspicious Transactions Report (STR).

b. External sources – Information requested from public and private institutions. - Open governmental data from public institutions.

4.2. **Delivery mode for processed information**

a. SUCAVE (Capture and External Validation Subsystem) is a software that lets financial system, insurance system, and private pension system companies and ancillary service companies validate and send the information requested by the SBS/FIU via electronic forms, known as formats, comprised of the various Annexes and Reports governed by said oversight body.

b. PLAFT (Portal for the Prevention of Money Laundering and Financing of Terrorism) is an application for the exclusive use of the compliance officer of the reporting entity, to send confidential information to the FIU-Peru.

4.3. **Processing stages to generate strategic products**

a. Processing. A stage of work for data cleansing, conversion, integration, and aggregation, as well as for variables and indicators to be calculated according to strict company rules. An output from this stage is a specialized model.

b. Specialized Models. These are models intended to be input for the main strategic products for understanding behaviors, patterns, and trends (linkages, statistics, reports), as well as those designed for decision making (Machine learning models).

c. Data Quality. Indicators to evaluate the quality of the information received by the reporting entities (REs). The aim is to notify REs about issues with the information received.

4.4. **Products created with strategic analysis**

a. FIU Statistical Bulletin, which includes the main statistics on matters relevant to the effectiveness and efficiency of AML/CFT systems, including statistics on STRs received, financial intelligence communications, money laundering and terrorist financing prosecutions and convictions, and frozen, seized, and confiscated assets, among others.

b. National Risk Assessments (ENRs) and Sectoral Risk Assessments (ESRs) on Money Laundering, Financing of Terrorism and Financing of the Proliferation of Weapons of Mass Destruction (ML/TF/FPWMD), these studies seeking to identify, analyze, and assess ML/TF/FPWMD risks to which the country, an economic sector, or a product or service, is exposed. They also serve as a basis for developing policies and action plans to mitigate the risks identified.

c. Strategic analysis reports and statistical reports that assist in decision making and guide action to detect, prevent, and sound the alarm on adverse events, patterns, trends, evolutions, or any other issue that the country, a region, a sector of the economy, a group of activities, or entities face or may face as a consequence of money laundering and financing of terrorism.

d. Analytical Dashboards Platform, which comprises a menu of different strategic Dashboards. Developed by the FIU-Peru Strategic Analysis Department using Qlik Sense software. This platform is grouped into:

(1) List Analysis Dashboards, which presents a descriptive analysis of lists of interest, which are checked against the information derived from databases

in the financial system operations register and the suspicious transactions report in order to identify ML patterns, trends, and typologies.

(2) Statistical Dashboards, refer to statistical information on major FIU-Peru operational activities and databases.

(3) Operations Record Monitoring Dashboards display statistics and indicators to ensure transactions records are properly submitted by reporting entities, and that the data sent in are analyzed for quality.

(4) Monitoring Dashboards of the various databases accessed by the FIU, to identify atypical cases and possible suspicious transactions.

e. The information incident feedback report sent in by reporting entities are feedback reports in HTML format (using R software) to notify reporting entities about the quality of the information provided to the FIU, taking into consideration submission compliance indicators and information quality indicators.

f. People networks or connections model, using software I2, analyze the entities-people networks and/or connections, with financial transactions regarded as a link. This helps to identify potentially suspicious behaviors among groups or networks of people.

g. Artificial intelligence model designed to structure data on dismissals and appointments of public officials, using neural networks for text analysis, different data are captured on a daily basis regarding (digital PDF-format) publications of appointments or dismissals of public officials reported via Peru's Official Gazette. This extracted information is consolidated and stored in a database for the various analytical models of FIU-Peru's Strategic Analysis Department to enter later on.

h. Artificial intelligence model for structuring the descriptive section of suspicious transaction reports (STRs), using neural networks to process unstructured data contained in STRs, which are automatically converted into structured data. That way, they can be made available in a timely manner and can be used as material for other processes, such as dealing with STRs and for preparation of risk, statistical, and strategic analyses.

i. Preparation of Analytical Models using machine learning algorithms that are designed to identify atypical cases and possible suspicious transactions. The databases administered by FIU-Peru's Strategic Analysis Department are used for that purpose, among them: the Financial System Transactions Record, the Notary Operations Register, and information provided by Peruvian public institutions.

5. Dominican Republic

Pursuant to Article 91.3 of Law No. 155-17 (2017) and further supported by FATF Recommendation 29, the Financial Analysis Unit (FAU) of the Dominican Republic must perform strategic analysis to identify trends and patterns in money laundering and terrorism financing. That kind of analysis falls to the Directorate of Analysis, which comprises two (2) departments: (operational analysis and strategic analysis). The products of the Department of Strategic Analysis are the subject of this report and are covered under the following subsections.

5.1. Automatic Classification of Suspicious Transaction Reports (STRs)

In terms of STRs, the Strategic Analysis department is responsible for classifying them – during which process they are assigned a risk level (A, B, or C) based on a number of factors, such as: indicators in the report, the number of previous STRs and CTRs, economic activity

of the entity reported on, type of transaction, type of RE preparing the report, geographic location, amount involved in the report, nationality, etc.

Initially, although it took the variables described above into consideration, the STR classification process required a technician to manually record them using a template that calculated a suggested classification which, in turn, the analyst could accept or decline based on the description provided in the report or other information drawn from such sources as the Public Prosecutor Office's Criminal Investigation System (SIC), the National Chamber of Commerce, credit information, etc.

The very act of classifying hundreds of reports this way allowed us to have a detailed database of sufficient quality to start building a model based on machine learning algorithms – specifically Random Forests – and thus to automate the classification process and from there move to a supervised process. Generally speaking, the model "learns" the characteristics of reports already classified and this "knowledge" is subsequently applied in classifying new reports.

The software used for this process was developed using the statistical program R, supplemented by information extracted from goAML and other sources of information.

5.2. **Text Mining and Neural Language Processing**

Initially, natural language processing (NLP) was viewed exclusively as part of the automatic classification model described above, given that the model needed to include a process that would take into account the text of the report description field. Nevertheless, after the necessary programming of this process was exhausted, it became evident that products other than those intended in the classification process could be delivered.

NLP processes provide end users with analytical tools such as word clouds to plot the frequency of words used in reports or to conduct sentiment analysis to be able to more

quickly and more accurately understand the reasons for the most common reports, by type of reporting entity; and to give feedback or take any necessary action, in a more timely manner.

5.3. **Target identification reports**

The Strategic Analysis Department prepares periodic reports on identification of possible targets to be investigated. These are then forwarded to the Operational Analysis area to possibly prepare a spontaneous intelligence report. To produce the aforementioned report, various sources of information are drawn on, notably the analysis of records containing Suspicious Transaction Reports (STR) and Cash Transaction Reports (CTR).

A sentiment analysis is currently in progress. Cross-border cash declarations (provided by the DGA), such as those obtained through SICORE5, reports of settled transactions in the securities sector, as well as any other source from which input is provided. Once all the tables used are structured in a way that allows the necessary queries, from a technical standpoint, preparing the report becomes a relatively simple undertaking.

Furthermore, configuring the database containing all of the tables can be considered an initial cost of this process since it does not have to be changed every time a target identification report is prepared, but can be updated if necessary.

5.4. **Statistical Reports**

The Department of Strategic Analysis prepares a variety of statistical reports, primarily an Annual Statistical Report, which contains all of the information on reports received (STRs, SARs and CTRs), intelligence reports prepared spontaneously or upon request for technical assistance received, international cooperation requests received and handled by other intelligence units, as well as those requested and handled by the FAU, and statistics on

cross-border cash declarations are also compiled. Descriptive in nature, this report includes a year-on-year comparative analysis featuring the most relevant aspects.

6. Paraguay

Through the collection and analysis of data – from STRs, TRs and other databases held by other DW-linked institutions, and open-source databases – information is generated in order to understand the behavior of reported actors as well as the reporting entities (REs), which may be used to prompt and guide an institution's decision-making process. These include generating cases and amendments to laws, resolutions, etc.

6.1. Tools used

Tools used are part of the SAS (Statistical Analysis Software) platform. These SAS tools provide different functionalities and capabilities for data analysis, modeling, viewing, and management in different areas and sectors, from regulatory compliance research to data analysis and data science.

a. *SAS Visual Investigator*. This is an analytics and case management tool that investigative analysts and security and compliance teams can use to detect, investigate, and resolve fraud, money laundering, corruption, and other financial crime issues.
b. *SAS Visual Analytics.* A data analysis and display tool that enables users to explore large data sets, identify patterns and trends, and create interactive displays and dashboards.
c. *SAS Studio*. An online programming environment that allows users to access SAS data analysis and display tools from anywhere, at any time. SAS Studio provides an

integrated development environment (IDE) for writing and running SAS codes; and provides, as well, a code editor, file explorer, and a results console.

d. SAS Model Studio is a modeling and predictive analytics tool that enables analysts and data scientists to develop, validate, and deploy machine learning and predictive analytics models. SAS Model Studio provides a graphic user interface for creating predictive and analytical models, as well as a wide range of modeling algorithms and techniques, including regression, classification, clustering, neural networks, and so on.

6.2. **Products Generated**

a. Intelligence Notes. These notes include descriptive feedback on the behavior of each RE sector over a given period, as well as quality, compliance, and statistical data indicators. This product is intended for the relevant supervisors of the various reporting sectors.

b. Generation of alerts by implementing predictive models using the "machine learning" technique, combining information from the different databases included in the DW, for operational analysis and subsequent generation of cases.

c. Specific descriptive feedback to the RE, on the latter's behavior over a given period, as well as quality, compliance, and statistical data indicators.

d. SAS Visual Investigator can help identify patterns and associations connecting suspicious incidents using networks. A network is a graphic representation of the associations connecting different elements, such as people, places, companies, or transactions. Networks can also be interactive – meaning that users can click on network points to get detailed information about the transactions or entities involved. Filters can also be used to display different aspects of a network, such as transaction frequency or amount.

6.3. **Information sources used**

a. Internal sources:
   i. Suspicious Activity Report
   ii. Activity Reports
   iii. Supplementary Transaction Information
b. External sources:
   i. Databases of institutions connected to the DW.
   ii. Databases searchable with username and password.

7. Guatemala

As a Financial Intelligence Unit [FIU], the Special Verification Office [IVE] of the Superintendency of Banks [SIB] has a Strategic Analysis Department [AAE], whose main function is to conduct strategic analysis and information analysis applying research techniques and data science tools to the IVE's internal databases, as well as to external information sources, in order to generate financial intelligence products, studies of sectors susceptible to money laundering and financing of terrorism [ML/FT], statistics, typologies, patterns, and trends, to help in the execution of the IVE's functions.

7.1. **Strategic Analysis Area**

The SAE takes a two-pronged approach to its work:

a. The strategic component, pursued by economists; and,
b. The analytical component, pursued by data scientists, who hold engineering degrees and master's degrees in data science, statistics, and finance.

With respect to these components, the following can be said:

a. **Analytical Component**

An important aspect to performing the strategic analysis lies in the objective information reports sent by the reporting entities. This information relates to reports of funds transfers, transactions involving US$10,000.00 or more; cash in foreign and domestic currency; vehicle and real estate transactions; cross-border cash transfers; movement of securities; as well as information from suspicious transaction reports [STRs], also known as suspicious activity reports. It is important to note that objective reports have been prepared mostly by the AAE on the basis of a pre-implementation analysis, in order to meet a need for objective IVE reporting.

Within the analysis component, the aforementioned information is used to analyze and monitor variables to identify patterns, statistics, and various behaviors that occur at the level of reporting entities and individuals.

The analysis component includes investigations into sectors vulnerable to ML/FT in order to understand how those sectors operate. For that purpose, a proposed hypothesis – analysis of the socio-economic context – is designed to determine what agents pose a risk within those sectors. This is done through document research, identification of related legal frameworks, STR statistics, funds transfers, cash operations, etc. This helps to determine risk arising from economic activities and to identify possible structures.

As well, this analysis uses information from open sources like the Bank of Guatemala [BoG (Central Bank)]; World Bank [WB]; Inter-American Development Bank [IDB]; Central American Economic Integration Secretariat [SIECA]; etc., as well as information from official websites depending on the matters being examined. Moreover, depending on the country's

legal framework, the IVE may ask public and private entities for information to conduct the analysis.

The results of strategic studies are in principle captured in a technical document, which contains an analysis, as well as conclusions and recommendations. The documents are shared with the reporting entities and with FIU officials, and training activities are also carried out, given that one of the purposes of the law is to ensure ongoing training for actual prevention. The AAE also proposes action for the departments of the Superintendency to take, according to its needs.

The analysis component is underpinned by the data science component for identifying patterns, structures, and networks. The second component can be mentioned in that regard.

b. Data Science Component

Data science is an academic field characterized by the incorporation of several new technology tools, like Big Data, the Cloud, Artificial Intelligence [AI], Machine Learning, etc., the added value of data science being that these tools are used in tandem with statistical, mathematical, algorithmic, and research methodologies, whereby processes can be designed to extract meaningful information from the data generated by any phenomenon; and create knowledge and conclusions that are valuable to the owners of the information.

Accordingly, to ensure internal databases are used more efficiently, since 2020 the IVE has been hiring data scientists to implement data science. On that score, and applying machine learning models, projects have been undertaken to automate the distribution of STRs to the analysts performing the operational analysis of the IVE's Financial Transaction Analysis Department [DATF]. There are also models for predicting possible STR predicate offenses,

an STR social media model that uses Big Data technologies, an activity model, and transaction patterns of reporting persons, among others.

Programming languages used include "Python, R," with "i2 Analyst Notebook" used for schematics and graphics, while Big Data uses "Hive, Spark, PySpark," and other such tools. Likewise, the area constantly monitors new open-source packages, research in scientific publications, and new tools on the market to enhance modeling methodologies and to learn about new technological trends to generate proposals for improvements.

In principle, data science analysis programs seek to make data available to the data scientist in a specific format, which requires data extraction and transformation [ETL (Extract Transform Load)] processes. Later on, once the necessary data are available, the necessary data set is developed by planning the algorithms that are to be trained, after which they are trained, then put through trained models efficiency tests; the selection of the best one in terms of prediction (predictive analytical intelligence) or expected performance. Once the tests and validations have been performed, the models developed with the support of the Information Technology Area are put into production.

Furthermore, by means of the "Tableau" tool, the AAE generates dashboards for the authorities, providing statistical information and indicators that help with discharging the functions of the IVE's areas and departments, and with the corresponding decision-making processes.

Also worth noting, for country risk analysis, is the performance of:

7.2. **National AML/FT Risk Assessment**

The AAE is responsible for coordinating and managing Guatemala's National ML/FT Risk Assessment. This is an exercise whereby threats and vulnerabilities that the country faces

are analyzed, in order to establish the risks to which the country is exposed, with a view to allocating resources and effort towards effective mitigation of the risks identified.

To that end, this assessment is done through joint efforts of public and private institutions. Guatemala has already undergone two exercises with World Bank assistance (2015 and 2018); and in 2022, Guatemala began updating the National Risk Assessment [ENR], aiming to update Guatemala's ML/FT risks. Development of modules on virtual assets, environmental crimes, and non-profit organizations (NPOs) continued in 2023.

In fact, the Special Investigation Office of the Superintendency of Banks gave FIU-Chile and FIU-Bahamas internships, as part of the sharing of experience on issues related to strategic analysis and use of technology in financial intelligence. FIU-Chile pursued its internships in virtual format (June 8 and 9, 2023) while FIU-Bahamas took up its internships in person (June 19 and 20, 2023).

These internships were intended to strengthen inter-agency linkages among jurisdictions, based on shared regional objectives in terms of a comprehensive approach to combating money laundering and terrorism financing. These internships covered such topics as:

a. Structure of the information the IVE receives from reporting entities or reporting persons [RPs] to create the social media, infrastructure, and technology tools that are used.
b. Cybersecurity strategy, technology tools used by the IVE, and communication mechanisms used by the IVE as well as by FIU-Guatemala and RPs.
c. Receiving of Suspicious Transaction Reports [STRs] and structure of the Electronic Suspicious Transaction Report [ESTR].
d. STR distribution model.
e. Integrating technology with strategic analysis.

The strategic analysis provides information that helps with FIU-Guatemala decision making, by providing RPs with strategic products for oversight activities, operations analysis, receiving of STRs, etc. The FIU has also sought to promote international cooperation and exchange of best practices to identify ML/FT-related trends and patterns, in order to help FIUs in other jurisdictions execute projects within the framework of this analysis, all in accordance with the law and the applicable international standards.

8. Chile

The Financial Analysis Unit has a Strategic Intelligence Department responsible for creating and managing various technology tools for prevention tasks and for keeping them in operation and using them to generate products for cross-cutting use within the institution. Below is a brief description of the tools used and the products generated:

8.1. **SIMONE**

The Strategic Monitoring System (SIMONE) is a continuous, end-to-end detection and search system for ML/TF risk patterns and typologies with capacity to generate automatic alerts as part of the operational analysis process. Using a variety of algorithms, SIMONE can analyze more than 60 million records and transactions, sending alerts via interactive displays with a high probability of matching any of the predetermined typologies, and this even facilitates detection of new intelligence cases. The use of artificial intelligence-related "machine learning" technology is a central part of these processes.

8.2. **P.E.I. System**

The "Strategic Profile of the Party under Investigation" system is a platform that automatically delivers a detailed profile of individuals reported on in an STR, as well as their associates and family network.

The profile displays such details as: identification, business and financial status, net worth situation, high-risk factors, cash movements and carrier declarations, summary – cash transaction reports, summary of suspicious transactions of persons under investigation, and networks (including the aforementioned). The system provides displays that organize more than 90 (direct and calculated) attributes, which guides and focuses the theory of a case to detect signs of ML/TF.

8.3. **STR classifier**

The FAU uses a prioritization scheme as well, based on ML/FT risk, applying a scoring system whereby each STR is given a score after the individuals it reports on are evaluated. The score is given according to a combination of more than 40 variables that describe the level of risk involved in an STR. The analysis is also informed by a strategic-operational platform, which processes information in 360° displays for the different stages of the financial intelligence process. The information displayed includes risk markers and progression of the reported risks, synthesis of reporting patterns, and evolution of the reporting parties' information, among other topics. It facilitates portfolio harmonization processes, focusing on higher-risk cases, monitoring of risk parameters, etc.

It also uses a system that renders a detailed summary of the main risk attributes contained in the STR analysis portfolios. It consolidates transactional and risk information on the

persons reported on and assigned. The information is used to determine strategies to efficiently address the workload and issues of the various interrelated analysis cases reported. In summary, the STR is subjected to a prioritization-assignment process; and, where applicable, to a complete analysis process. Based on this analysis, a report may be sent to the Public Prosecutor's Office with ML/FT indices.

The STR prioritization/assignment process comprises the following stages:

i. Risk and complexity qualification (the report is automatically ranked with a risk score to prioritize high-risk cases and is also evaluated to estimate how much time the work on the case will take);
ii. Quality analysis (includes comprehensiveness, timeliness, and sufficiency components). The first two are automatic and are carried out as soon as the report is entered; sufficiency assessment - high, medium, and low; and
iii. Ranking based on risk and assignment (lower-risk STRs with fewer high-risk flags sent to the interim file and the others are selected to be analyzed and distributed to financial analysts based on their workload).

8.4. **P.E.S.O. System**

The "Reporting Entity Strategic Profile System" platform automatically delivers a full profile of the reporting entity, taking into account information from a variety of sources.

The profile gives such details as: identification, business and financial status, asset situation, risk level, cash movements and carrier declarations, summary - cash transaction reports, summary of suspicious transactions of the person under investigation, networks (including

the aforementioned), maturity level of its preventive system, past sanctions, processes already under way, etc.

The system provides displays that organize various (direct and calculated) attributes. This system is particularly important for areas that do not conduct intelligence, such as auditing, legal division, and studies, since it provides information on the reporting parties, which is very useful for deciding on an auditing plan, or for follow-up on sanctions processes.

This system is an example of the cross-cutting value that strategic intelligence products and new technologies can bring to FIUs, even beyond operational intelligence.

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