

# MOLECULA: The Tax, Economic and Financial Investigation of Transnational Organised Crime in European Union

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## Abstract

In a European environment marked by the growing influence of transnational criminal organizations, boosted by the globalisation of markets and accelerated developments in information, knowledge and, specially, communication technology, it is recognised that the detection, immobilisation and recovery of illicit proceeds and instruments generated represent the key to its neutralisation. In this context, the MOLECULA PT Project materializes the use of the same technology, with the strict respect for the rights, freedoms and guarantees of European citizens, in order to highlight all the unjustified assets hidden from the authorities in the EU territory. At the same time, the MOLECULA PT Project represents the opportunity to adjust the interaction environment between the actors involved on tax, economic and financial investigations to a unified European architecture, enabling synergies, that renders transnational criminal organisations dysfunctional and their illicit assets exposed to the authorities' action.

**Keywords:** Transnational Organised Crime, Tax, Financial and Economic Investigation, MOLECULA.

## Introduction

In the gradual legal and political *Judiciary and Police Cooperation in Criminal Matters* framework, within the scope of the *Area of Freedom, Security and Justice*, the tax, economic and financial investigation of transnational organised crime<sup>2</sup> needs to become a global, coordinated, innovative and, eventually, a unified response of EU.

As a way of feeding this differentiated response, understood as a pressing need to neutralize this growing threat, the present article presents the MOLECULA PT Project as a platform that, automatic and intelligently, exposes sufficient evidence on tax, economic and financial crime practices by individuals and companies in Portugal and potentially on EU territory, by confronting two global data groups:

- the assets declared as licit for each natural person or company during a given time period;
- the assets actual and effectively held by the same person or company in that same time period.

We will conclude by exploring the potential future development in European Law framework, based on the

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<sup>2</sup> Threats materialised in "(...) risks and dangers, some of them news, some old, which have only risen in the hierarchy of Member States concerns" (Garcia, 2006, p. 1), which severely restrict the exercise of rights, freedoms and guarantees by its citizens.

texts approved by the Lisbon Treaty on 2009, of the legal and institutional architecture in which MOLECU-LA PT Project could grow, in parallel with its projected functioning in Portuguese institutional and legal framework.

### Transnational Organised Crime

We start from a conceptual reference of organised crime, which is substantially different from *criminal association*. We rely instead on the definition formulated by the United Nations Assembly in 2000: *"a structured group of three or more persons, existing for a period of time and acting in concert with the aim of committing one or more serious crimes<sup>3</sup> or offences established in accordance with this Convention, in order to obtain, directly or indirectly, a financial or other material benefit"* (UN, 2000). This definition has been supplemented by Sousa et al (2014): *"(...) a complex phenomenon, always ready in the name of easy and unlawful profit, tending to jeopardize the rule of law and corrupting societies"*. These transnational and organised criminal groups are fostered by recent social phenomena<sup>4</sup> (Alves, 2013), obtaining then *"organizational rationality"* Bravo, 2013, p. 14), *polymorphism<sup>5</sup>* and a global action capacity through national legislations (Natarrajan, 2011)<sup>6</sup>.

Having defined the concept of a criminal organisation, it is necessary to apply it to the tax, economic, financial and transnational or cross-border approach involved in the international financial transactions linked to trafficking, drugs and arms smuggling, corruption and fraud financial market<sup>7</sup>. (...) *They are all linked by the mother crime – Money laundering. Without it, the crime economy wouldn't be global neither highly profitable.*" (Hassemer, 1998: 313f)<sup>8</sup>.

In this sequence, the 11<sup>th</sup> United Nations Congress on Crime Prevention and Criminal Justice established that *"(...) all forms of non-violent crime that results in a financial loss (...) a wide range of illegal activities, such as fraud, tax evasion and money laundering"*<sup>9</sup> (UNODC, 2005: 1) and, simultaneously, *"(...) violate, directly or indirectly, the norms that regulate the economic order and the financial or economic assets or interests of the State"* (Hassemer, 1998).

In order to systematise and operationalise the concept of transnational organised crime, we present the following Figure 1:

3 That means a "conduct constituting an offence punishable by a maximum deprivation of liberty of at least four years or a more serious penalty."

4 In January 2013, the EU recognised that the Internet "(...) is opening up new possibilities at a remarkable pace and at a low cost (...)" (Pereira, 2013, page 13) and allows the distribution of new psychoactive substances, not controlled by international drug law (European Commission, 2013, p. 13).

5 According to Wright (2006:192) "currently, countries that detain offenders or extradite them from places where they have sought refuge, must apply criminal proceedings against organized crime groups to which they belong, according to their own jurisdictions".

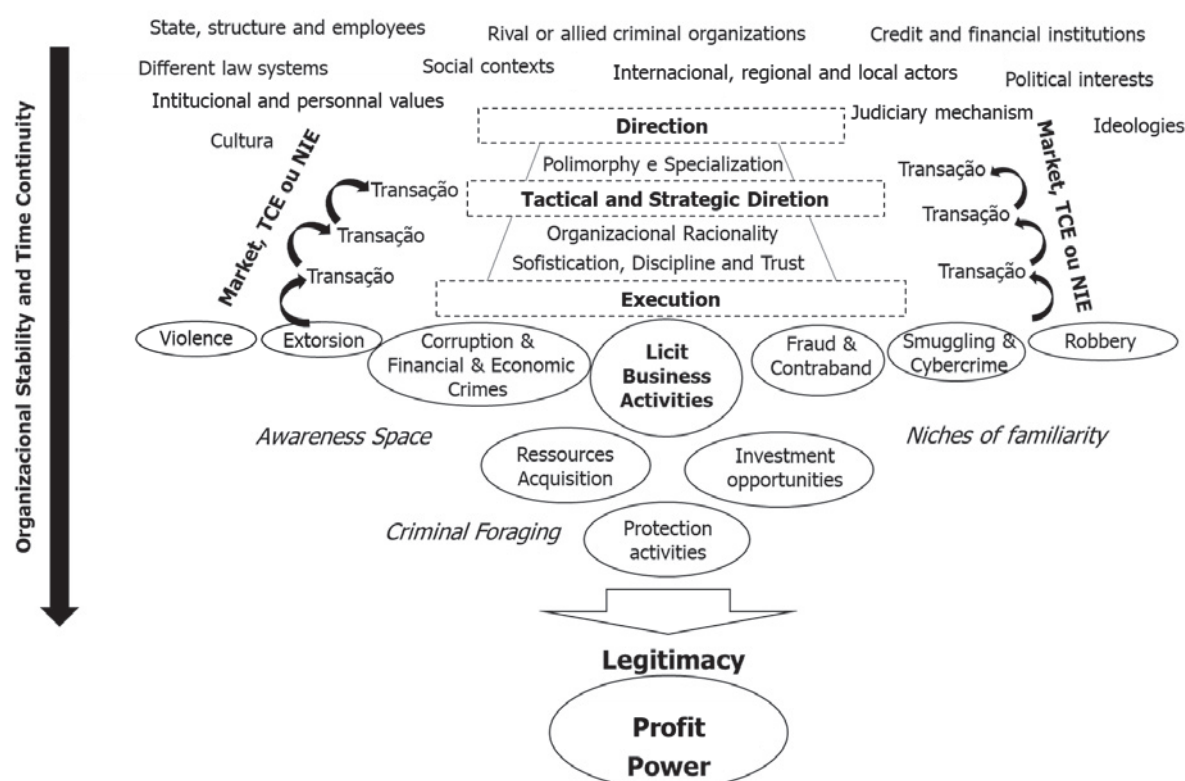
6 As it stays on the Council of Europe's 1998 Communication, which argued that each Member State had a key role to play in preventing and combating organised crime. On the other hand, Silva (2001) emphasises the European legal problems with regard to the liability of legal persons, authorship, establishment of causal link and to the intent and negligence evidences that encroach the capacity to punish the enumerated criminal conducts.

7 According to Bravo (2013: 10): "(...) the impregnation by organized and economic crime of extensive sectors of activity, attractive as a means of recycling and washing the enormous revenues produced by criminal activities such as trafficking in persons, arms, drugs, metals and precious stones, corruption and fraud".

8 Following W. Hassemer (1998: 313f) "(...) all types of trafficking are practiced by this" shadow system "whose power is extended throughout the world: weapons, technology, radioactive materials, art, human beings, human organs, murderers on the pay and smuggling of the most diverse products to and from any part of the world (...)".

9 The existence or mere speculation about the existence of this type of crime undermines the legitimacy of government and the sustained development of any state. Specifically, money laundering represents the guarantee of liquidity and reinvestment of criminal organisations and causes international financial and credit institutions and capital markets manipulations, as well as, discourages foreign direct investment (UNODC, 2005).

Figure 1 – Transnational Organised Crime



### Tax, Economic and Financial Investigation

In this European framework, in order to find the illicit profits of transnational organised crime we need to focus investigation on the detection and evidence gathering for tax, economic and financial crimes - "Given the increasing risk of penetration of the licit economy by serious and organised crime, financial investigation is an essential tool of a modern and effective response to criminal threats including terrorism financing." (UE, 2016). This approach is set out in FATF (2012: 5), as "(...) an enquiry into the financial affairs related to criminal conduct (...) identify and document the movement of money during the course of criminal activity (...) link between the origins of the money, beneficiaries, when the money is received and where it is stored or deposited (...) identifying the extent of criminal networks, the scale of criminality, by tracing proceeds of crime, terrorist funds (...)".

The EU's capacity to effectively investigate and prosecute organised criminals about their tax, economic and financial crimes requires a process of institutional and legal change (Trauner & Servent, 2015), or, according to Boer (2016), an evolutionary process. Given that EU actors act in accordance with a procedures framework (treaties and other legislation that forms the EU Law) and a specific problem definition (in this case the

economic-financial and tax fight against organised crime)<sup>10</sup>, there is a need for institutional change <sup>11</sup> understood as "(...) a change in the structural environment in which actors interact." (Trauner & Servent, 2015: 19), which fundamentally comprises as an interface the EU institutions.

A process of institutional change in the Area of Freedom, Security and Justice should ideally involve agencies and institutions, whether national or European, with a central role in the tax, economic and financial fight against organised crime. These include police and law enforcement magistrates, tax and customs admin-

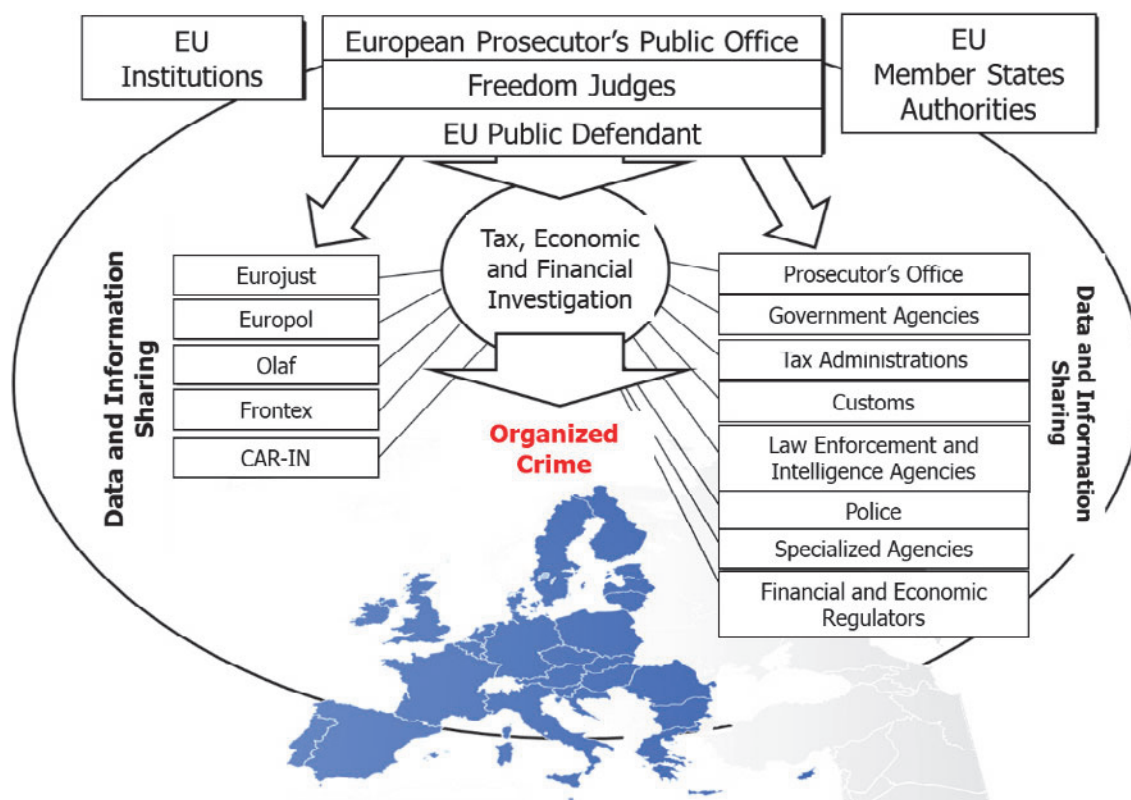
<sup>10</sup> Its impact on the EU is evidenced in the 2003 European Security Strategy by recognizing that its space is the primary target of organised crime, and that "Revenues from drugs have fuelled the weakening of state structures in several drug-producing countries. Revenues from trade in gemstones, timber and small arms, fuel conflict in other parts of the world", and in the 2008 Report on the Implementation of the European Security Strategy, "organized crime continues to threaten our societies by the practice of trafficking in drugs, human beings and weapons, as well as international fraud and money laundering" (UE, 2008: 4).

<sup>11</sup> The shift or change can occur in a formal or informal way. The formal change involves the reform of treaties or the legal production by competent institutions of European bodies. On the other hand, the informal shift involves the process of exchange and sharing between the Member States, leading to new interinstitutional practices and a renewed understanding of the existing rules.

istrations, financial regulators, sources of operational and strategic information, as well as the European Parliament, the European Council, the Council of the EU, the European Commission, the European Commission, and the Court of Justice. There is also an enhanced role for the Area of Freedom, Security and Justice, the EU Court of Auditors, the European Central Bank and the Consultative Bodies.

In order to demonstrate the legal and institutional architecture, as Bayer (2010) says "(...) a giant blue spider-web across the world, full of intricate entanglements and fine embroidery", where MOLECULA PT should ideally work, we present the Figure 2:

**Figure 2 – The EU Legal and Institutional Architecture for Tax, Economic and Financial Investigation**



## MOLECULA PT Project

The MOLECULA PT Project was inspired by the 6<sup>th</sup> 1999 Tampere Conclusions:

*"- people have the right to expect the Union to address the threat to their freedom and legal rights posed by serious crime. To counter these threats a common effort is needed to prevent and fight crime and criminal organisations throughout the Union. The joint mobilisation of police and judicial resources is needed to guarantee that there is no*

*hiding place for criminals or the proceeds of crime within the Union"*<sup>12</sup>.

Within a Portuguese and EU society that increasingly realizes that its rights, freedoms and guarantees are restricted by criminal activities, propelled by the latest revolutions in the field of information, communication and knowledge technologies, as well as the globalisation of markets, it remains essential to provide to the State and regulatory authorities the effective capacity,

<sup>12</sup> In a contrasting sense, Boer considers that "The European Commission has been a strong propagator of public-private partnerships in the field of security, and the technology industry definitely has a foot in the door when it concerns the development of technology for police information and surveillance purposes." (Boer, 2016: 129).

competence and power to apply the law, to verify its compliance and to punish conduct that jeopardizes its survival and the complete fulfillment of its mission. MOLECULA, in the 21st century, allows the Portuguese State and EU to bring together isolated and poorly exploited data held and managed by several legally competent public authorities<sup>13</sup> in order to tackle effective, efficient and economically organised crime with transnational relations.

Organised, group or even individually committed criminality is likely to produce a gain which is inconsistent with the funds legally declared to the tax authorities. Profit is the main aim of the great majority of committed crimes. Therefore, it is considered that the best way to neutralize and repress these illegal capital flows is based on the detection, immobilisation and recovery of the illicit revenues generated by the crime directly to State and EU Finances. Thus economic, financial and tax investigation assumes a central role.

In this context, MOLECULA PT Project, through automated and intelligent processing based on a permanently self-learning algorithm, aims at the clear and accurate detection of individuals or companies that have unjustified assets associated with suspicion of committed crimes. The Disproportions Report (DR), the final product of MOLECULA, represents a disclosure report, attached with a link chart<sup>14</sup>, which is transmitted directly, in an encrypted and secure way, to the competent Portuguese Prosecutor's Office. In this point of view, MOLECULA provides to the economic, financial and tax investigation advanced intelligence, effectiveness, efficiency and economy<sup>15</sup>.

13 With the main purpose of detecting and investigating economic, financial and tax crimes on a efficient, parsimonious and efficient way, we consider as essential the rethinking, exploring and enhancing of the set of isolated or poorly related data which actually are managed by several competent authorities on Portugal.

14 The links chart, developed by *Analyst's Notebook* tools, represent a mirror of the criminal organisations elements connections, their influence on the territory and the localisation of their activities, composed by both predicated crimes and tax, economic and financial crimes.

15 If we think in all Portuguese authority work that would be necessary to obtain a Disproportion Report (DR), the quantity of information requests sent to other national or international authorities, the time lost on the data obtaining and analysis, we can safely say that MOLECULA PT Project brings the mentioned characteristics.

MOLECULA PT scans, in a continuous, systematic and consistent way, the official databases of each of the Member State authorities<sup>16</sup> for every portuguese or european citizen<sup>17</sup>, targeting previously selected data categories, coding them in coefficients, and then carrying them through an encryption process.

The last procedure is performed by *Fully Homomorphic Encryption* (FHE)<sup>18</sup>, allowing computations over encrypted data, without the need of decryption (Zhang et al. 2016). Moreover, there is a warranty that neither the blocks nor the function result are exposed throughout the process<sup>19</sup>.

The codified data that is extracted by the algorithm is in three main groups: the revenues, transactions and other fiscally relevant transactions legally declared in the last 5 years<sup>20</sup>, the actual and effective taxable income, transactions and other transactions obtained in the same last 5 years<sup>21</sup>, as well as judicial and police information for each of the same citizens or companies<sup>22</sup>. Disclosable events are detected by comparing the first two categories, complemented by the third category.

The three categories will be continuously processed by a predefined algorithm. The criminals' identification (and creation of the consequent Disproportion Report)

16 The data come from the civil registry, kinship relations, relations with individuals and legal persons, police and judicial precedents, information on assets, financial data or even use of telecommunications and internet.

17 Each citizen will see their identity coded based on their respective tax ID number, or, in case of non-existence, of civil identification.

18 As expected, Fully (FHE) is the most complete, having no limits about the type of operations (Partial) or the number of times that the operations can be applied (Somewhat).

19 In 2009, Gentry (Gentry 2009) provided the first FHE scheme as well as a generic method that was used as a basis for future encryption systems.

20 These data segments provide the legality reference and the basis for any inconsistency with the remaining data categories. In this category, there are the global registers held by the tax and customs authorities and the social system authorities, namely, among others, the registration information, declared income, transactions and sales of declared goods and services, declared assets additions, records of intracommunity transactions, or inheritances transmitted to the citizen or society in question.

21 This category includes information dispersed by a wide range of sources of information that englobes information from the national central bank, financial and credit institutions, registries and notaries, casinos, security forces and services (databases operations) or judicial databases.

22 The latter category includes information collected by police and security services, intelligence agencies, judiciary authorities and criminal records.



depends on a disproportion alarm value<sup>23</sup>. These *legality line* is then associated to each category and globally. That procedure is guaranteed by *Secure Multi-Party Computation* (MPC), based on *Boolean circuit evaluation*<sup>24</sup> and *arithmetic circuit evaluation*<sup>25</sup> protocols<sup>26</sup>.

Whenever the preset criteria are met, The MOLECULA PT platform issues a Disproportion Report (DR) and associated links chart, which are anchored in disproportion coefficients resulting from comparison of the Declared Assets, Possessed Assets and Crime-Evidences categories. The DR is structured to identify behaviour which would amount to a tax, financial or economic crime, punishable by imprisonment, within the Portuguese legal system.

The DR and charts will be presented exclusively to the prosecutor's office which is competent to direct and conduct the investigation<sup>27</sup>, in compliance with the

rules and procedures of the criminal law<sup>28</sup>. The DR and Links Chart presented will result, after the prosecutor has assessed whether there is sufficient evidence of one or more criminal offences, in a direction to the investigative agencies<sup>29</sup> to obtain further evidence with the intention to secure the prosecution of the criminal organisation. In other hand, if the prosecutor determines that may be a lawful explanation for the DR or Links Chart or there are reasonable doubts about the evidence brought to light, both will be filled on MOLECULA PT archive or monitored by the platform<sup>30</sup>.

In summary, MOLECULA PT project is not intended to be a centralised database but rather a platform that in a systematic, continuous and intelligent way is able to interrelate the data of the ATOMs<sup>31</sup> involved, and guarantee the following basic principles<sup>32</sup>:

23 Defined value based on the amount of 15,000.00 Euros of tax due, that, in the Portuguese criminal fiscal system separates a conduct classified as a misdemeanor and, therefore, punished with a fine, or a crime punished by imprisonment (Cfr. Art.os 92, 96 e 103, of Portuguese Tax Infractions General Law.

24 The mentioned protocol are also called "*garbled circuits*" and started with Yao work (Yao 1982).

25 The later protocol are normally "*secret sharing*" based (Shamir 1979) and often use the pattern Sharing - Computation - Output.

26 In these protocols, besides the parties we can also consider adversaries and according to the adversary type (active, passive or covert) we also have different types of security. Bogdanov (2007) describes the arithmetic circuit evaluation in a passive security scenario and Damgård et al. (2013) proposed the SPDZ protocol for an active configuration.

27 It will be firsts and final entity that will have the possibility of consult the DR and Links Chart, as well as, the decision-maker about their destination (investigation, filling or special supervision). On EU application of MOLECULA PT Project, we consider that the Portuguese prosecutor's office will be replaced by the Eurojust. According to article 86, n.º 1, TFEU, the Eurojust have the power to assure the initiation of criminal investigations, as well as proposing the initiation of prosecutions, particularly those relating to offences against the financial interests of the Union, the coordination of investigations and prosecutions before referred and strengthening the judicial cooperation. The ideal conditions will be reached with the accomplishment of the possibility laid down by the same article above mentioned: the establishment by the Council, through means of regulations adopted in accordance with a special legislative procedure, of a European Public Prosecutor's Office from Eurojust. This same structure would be the leader and unique user of MOLECULA, exercising the functions of prosecutor in the competent courts of the Member States in relation to such offences. The European Prosecutor's Office could become the starting point for the creation of a European body, composed by the national authorities of the Member States with the tasks of investigating, prosecuting and bringing to judgement offences against the Union's financial interests and serious crime having a cross-border dimension.

28 In order to applicate MOLECULA PT Project in EU, it will be crucial the European Criminal Law strengthening. In the procedure domain, as it stays on art.º 82, n.º 2, a) and d), TFEU, it is fundamental to harmonize the mutual admissibility of evidences, the rights of individuals in criminal procedure, the rights of victims of crime and others aspects of criminal procedure. Regarding the substantive domain and according to article 83, n.º 1 and 2, of TFEU, the key remains on the complete establishment of minimum rules concerning the definition of criminal offences and sanctions in the áreas of particularly serious crime with a cross-border dimension resulting from the nature or impact of such offences or from a special need to combat them on a common basis – namely: terrorism, trafficking in human beings and sexual exploitation of women and children, illicit drug trafficking, money laundering, corruption, counterfeiting of means of payment, computer crime and organised crime.

29 In the case of transnational links detection, the prosecutor will consult Eurojust in order to potentially constitute a Joint Investigation Team (JIT). In any case and to apply MOLECULA PT Project on EU, it would be importante to create conditions for a common tax, economic and financial investigation by all EU Member States authorities. Appointed to this goal and attending to article 87, n.º 1 and 2, a) and c), of TFEU, it assumes a great importance to enhance the collection, storage, processing, analysis and exchange of relevant information, and to implement common investigative techniques in relation to the detection of serious forms of organised crime.

30 If the prosecutor foresees reasonable doubts about the DR facts, he have the possibility to order the priority supervision on MOLECULA PT Platform of the individual or companies signalised in order to facilitate a future alarm based on updated or additional data.

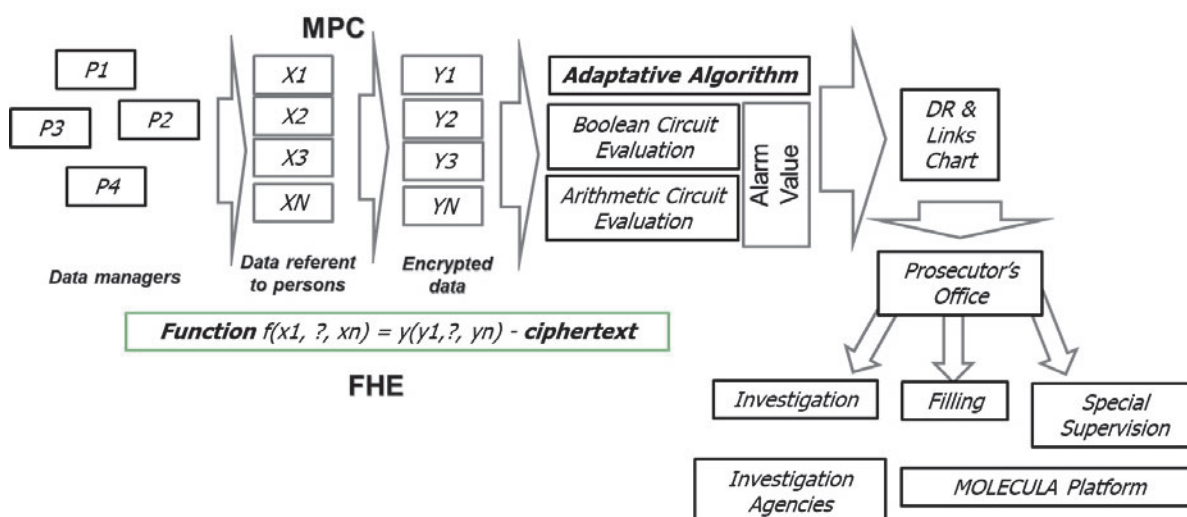
31 Concept used to name the range of entities, bodies and services in the national territory and EU that manage the data used by MOLECULA PT Platform for calculation.

32 Besides the following structural principles: security - only the ATOMs will have access to the platform; privacy - the data of each ATOM will be used only for the calculation and will not be accessible in any other way; equality - each ATOM will be treated equally; integrity - data is not vulnerable to tampering or accidental modification; and no repudiation - participation in a calculation by an ATOM can not be denied later.

- legal and legitimate collection requirement<sup>33</sup>;
- accuracy, update and quality requirement;
- objective and proportionality requirement;
- treatment legality and legitimacy requirement;
- storage time requirement;
- data security principle;
- advertising and accessibility requirement;
- participation requirement;
- control, supervision and appeal requirement.

Figure 3 describes the Project architecture for MOLECULA PT:

Figure 3 – MOLECULA PT Project Architecture



## Conclusions

In conclusion, MOLECULA PT Project is based on the recognition that the success on the tax, economic and financial crime depends on the automatic and intelligent interrelation of the vast data amount spreaded by several different national authorities and data managers, in order to detect, investigate, prosecute and bring to trial the highly owners of illegal assets and members of transnational criminal organisations, as well as trace, freeze and confiscate these illicit profits and instruments.

The overall MOLECULA aim is to enable the creation of "(...) a giant blue spider-web across the world, full of intri-

cate entanglements and fine embroidery" (Bayer, 2010), composed by EU agencies as Europol, OLAF, Frontex or CAR-IN, with national Member States authorities such as prosecutors, judges, and the vast range of authorities before referred, headed by Eurojust or even European Public Prosecutor's Office, to commonly conduct tax, economic and financial investigations and make transnational organised crime a easy prey before this new european architecture, oiled by MOLECULA, instead the nowadays serious threat to european citizens freedoms, rights and guarantees.

33 That congregates the following principles: Collection Limitation Principle (Guidelines for the Protection of Privacy and Cross-border Flows of Personal Data from the OECD – 1980); Principle of fair and lawful origin (art.º 5, a), of CPDPC, art.º 5, of 95/46/CE Directive and art.º 26, of 2008/615/JAI Decision); Principle of Data Collection (Recomendation n.º R (87) 15 of Ministers Committee, 17th de September 1987); Principle of Collection for Certain, Explicit and Legitimate Purposes (art.º 4 of n.º 45/2001 European Parliament and Council Regulation n.º 45/2001).

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