Since its advent, Artificial Intelligence has been adopted in financial and governmental solutions in order to implement surveillance systems against corruption and money laundering.

Nowadays, the global use of cryptocurrencies seems to increase the potential risks such that both governments and banks feel to stay a step ahead of money launderers. It should not be so since cryptocurrencies publicly disclose the full creation and transaction history, but, unfortunately, the relative anonymity does not facilitate recognition and proper attribution of responsibility.

In this context the role of public administration and regulatory authorities is evident, so it is, first of all, necessary reconstructing and interpreting the national, supranational and European regulatory framework of reference; devising and adopting innovative strategies in the context of public functions, to support the best practices of the Public Administration in compliance with the principles of effectiveness, inexpensiveness and efficiency of public action.

The research has the task to support the institutional planning also through the experimentation of innovative instruments in order to track and limit the misuse of cryptocurrencies by adequately account of the opportunities offered by the new technologies information and Communication (ICT).

In fact, Artificial Intelligence is useful for knowledge discovery in the cryptocurrency transactions using data mining techniques, for instance, transaction tracings and blockchain address linking, the analyses of both collective user behaviours and individual user behaviours. However,
### Objectives

Knowledge discovery systems for cryptocurrency transactions should advance in methodology and some research themes arise as:

1. Network Representation Learning
2. Tracing Across Ledgers
3. New Tokens Standards
4. Primary Market Activities
5. Decentralized Financing
6. Extension to Digital Fiat Money

Let's comment a bit on the last point. The year 2020 saw the pilot tests and promotions of digital fiat money, such as Sweden’s E-Krona and China’s digital currency electronic payment (DC/EP). Not necessarily adopting blockchain systems, the transaction records of these electronic versions of fiat money are fully archived in a central database. Our opinion is that the AI techniques adopted for cryptocurrency transaction network can be borrowed by the electronic fiat money system as well to help governments fight against bribery, money laundering, and terrorism financing.

The importance of Artificial Intelligence is demonstrated with the use of supervised machine learning in sanctions screening. Every bank transaction must be screened to see if the entities involved are on a list of known criminals or terrorists. Humans can train the model to deal with new alerts using previously dispositioned sanctions alerts. Subject matter experts then test the model using new alerts to see how it performs.

In our opinion, Machine Learning techniques for financial surveillance should not rely too much over Deep learning techniques (Convolutional Neural Networks) since we need to discover statistical rules explicitly readable by humans in order to go even into possible trial events. That's why we expect to heavily adopt Probabilistic Logic Approaches (Probabilistic Learning methods) to the analysis of the transactions.

If that is the case, it becomes clear, from a legal point of view, that the functioning of Artificial Intelligence involving legal effects must be controlled to ensure that they produce outcomes compatible with our legal system. This control must take place through the interpretation of the act generated by the application of Artificial Intelligence. It cannot be sufficient, even if indispensable, to rely on the right to access to the code, or to implement measures to safeguard.

The achievement of the objectives of the research requires the conduct of research in companies, research centers or Public Administrations by a minimum of six (6) months to a maximum of twelve (12) months. It is also necessary to carry out study and research activities abroad from a minimum of six (6) months to a maximum of (18) eighteen months.

### Skills and competencies for the development of the activity

The perfect candidate should have significant legal or artificial intelligence skills. In any case, the candidate must have followed or be available to follow a course on "Artificial Intelligence" or "Data Science".