



# Anti-FinTer

Versatile artificial intelligence investigative technologies for revealing online cross-border financing activities of terrorism

## D4.1 Training methodology and plan

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## Consortium Partners

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The Anti-FinTer Consortium consists of the following partners:

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2	IDRYMA TECHNOLOGIAS KAI EREVNAS	FORTH	Greece
3	FUNDACION CENTRO DE TECNOLOGIAS DE INTERACCION VISUALY COMUNICACIONES VICOMTECH	VICOM	Spain
4	IANUS CONSULTING LTD	IANUS	Cyprus
5	CFLW CYBER STRATEGIES BV	CFLW	Netherlands
6	UNIVERSITY OF LIMERICK	ULIM	Ireland
7	FINANSINIU NUSIKALTIMU TYRIMO TARNYBA PRIE VIDAUS REIKALU MINISTERIJOS	FCIS	Lithuania
8	AGENCIA ESTATAL DE ADMINISTRACION TRIBUTARIA	AEAT	Spain
9	Ministério da Justiça	MJPJ	Portugal
10	GLAVNA DIREKTSIA BORBA SORGANIZIRANATA PRESTUPNOST	GDCOC	Bulgaria

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## Definitions, Acronyms and Abbreviations

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<b>Acronyms/ Abbreviations</b>	<b>Description</b>
<b>AFT</b>	<b>Anti-FinTer</b>
<b>CTF</b>	<b>Capture the Flag</b>
<b>EACTDA</b>	<b>European Anti-Cybercrime Technology Development Association</b>
<b>HCI</b>	<b>Human Computer Interaction</b>
<b>LEA</b>	<b>Law Enforcement Agency</b>
<b>LMS</b>	<b>Learning Management System</b>
<b>OCG</b>	<b>Organised Criminal Group</b>
<b>VLE</b>	<b>Virtual Learning Environment</b>

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# 1 Executive Summary

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## 1.1 Purpose of the Document

The document is designed to provide a template and an orientation for the creation of Anti-FinTer (AFT) training material and events. The document also informs the development of the AFT virtual learning environment.

## 1.2 Scope and Intended Audience

This document is written for AFT partners and key stakeholders and the funding agency – in this case the European Commission. The scope of this report is on the curricula and type of training methods to be adopted by AFT.

## 1.3 Structure of the Document

This document is structured along the following lines: Section 1 sets out the overall architecture of this report; Section 2 situates AFT in the wider context of LEA training in this area and outlines the project's general orientation towards training and the curricula development. This includes our preliminary vision on the AFT project and its outputs. Section 3 describes the logic behind the design of the VLE and our andragogy/pedagogy that will inform the AFT training. This is followed by a Conclusion, which will speak to the longer-term ambitions of the project and will explicitly link Work Package 4 output to the wider ambition of dissemination (Work Package 5).

## 1.4 Referenced Documents

We have provided a set of references at the end of this report. We have utilised previous EC-funded projects in this area as a reference point for this document, including ASGARD and TITANIUM.<sup>1</sup>

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<sup>1</sup> See <https://www.asgard-project.eu/> & <https://titanium-project.eu/>



## 2 Introduction, Context and Objectives

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### 2.1 Introduction

The Anti-FinTer (AFT) consortium is charged with creating curricula and assembling a training regime for key stakeholders engaged in preventing the use of financial instruments for terrorist financing. The focus of AFT is on the use of *dark web* and crypto assets by terrorist groups to resource their activities. The wider context is important here with the regulatory and supervisory regimes constituting an important ‘push factor’ for both terrorist groups and organised crime to use both the *dark web* and cryptocurrencies to hide movements of money and other assets. The work of fiscal authorities in tracking traditional financial movements also works as motivation for the use of such strategies.

The problem space is this large network of payment methods/currencies within instantaneous unregulated exchanges. The whole network can easily be used to obfuscate transaction history. The crypto-asset ecosystem is complex and is made up of structures and practices that are refractory to both financial regulator and law enforcement agencies. Indeed, many of these practices are designed precisely to hide the identity of market participants. As a transactional space it offers a higher degree of privacy than traditional financial services. Strategies anchored in know your customer (KYC) protocols used by financial services companies are difficult to operationalise around crypto-assets and, indeed, many such assets are designed precisely to make transactions and the agents behind transactions difficult to detect.<sup>2</sup>

Law enforcement agencies (LEAs) are the primary target group for AFT. That said, a number of other stakeholders have a keen interest in this domain. These include tax authorities, Central Banks, the regulatory community, and financial services institutions.<sup>3</sup> AFT will design a set of curricula that will be scalable and will provide a high level of utility for all these groups. In terms of preventing the migration of terrorist and organised criminal groups (OCGs), financial services stakeholders are often the first line of defence and so, in terms of achieving the maximum impact, outputs from WP4 should be designed for these end users as well as those of LEAs.

Part of the challenge around creating curricula and training in this domain resides in both the complexity and fast-moving nature of practices and technologies around Crypto-Assets. It is a highly dynamic and fast-growing area of financial services. The report by the Financial Stability Board in 2022 provides a comprehensive analysis of the current state of the market. The report makes some important observations on the lack of data that exists around these markets that often exist outside the oversight of regulatory authorities.

Data available on public blockchains is pseudonymous by design. This means that even if insights can be gained in terms of volumes and values of transactions, it is difficult to determine the identity of the users engaging in crypto-asset activity, which is important

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<sup>2</sup> See Irwin, A.S. and Turner, A.B., 2018. Illicit Bitcoin transactions: challenges in getting to the who, what, when and where. *Journal of money laundering control*

<sup>3</sup> Interesting in regard to the response of the regulatory community to the challenges posed by crypto-asset is Buttigieg, C.P., Efthymiopoulos, C., Attard, A. and Cuyle, S., 2019. Anti-money laundering regulation of crypto assets in Europe’s smallest member state. *Law and Financial Markets Review*, 13(4), pp.211-227.

information for assessing the interconnectedness within the crypto-asset ecosystem and with the broader financial system.<sup>4</sup>

Understanding and tracking such transactions presents a difficult technical challenge and demands a very specific set of skills. The training provided by AFT will afford participants the requisite skill sets to operate successfully in this environment.

AFT training will also include material on image detection as a forensic tool for investigators. This will allow LEAs and others access to methods and afford them the ability to investigate the digital realm at scale. The AFT educational offering will be supplemented by ‘Hackathon’, where technical/professional staff will *learn by doing* using tools in a sandbox environment. (See appendix 1 for more detail). AFT combines web scrapers to scan dark web markets, and social media images, text, audio, and video to create relation topologies of suspected users. This is combined with graphing software to create a visual aid to transaction relation and history.

Applied ethics and good governance are important features of the AFT project. Within the project, WP1 addresses the goal of having robust ethical and governance protocols in place for both project participants and for those stakeholders making use of the AFT tool set. There is a strong literature set of the ethics of surveillance and investigation and AFT will leverage this content to populate both synchronous and asynchronous educational content.

### 2.1.1 Overall Project Objectives and Training Goals

As stated in our original proposal, AFT will improve law enforcement capabilities, increase capacity and develop expertise in the area of terrorist financing associated with activities in the Dark Web, crypto-assets, new payment systems and darknet marketplaces. The training element of AFT is core and will operate in a context where digital investigative techniques are increasingly important. As stated by Sunde and Dror (2019):

“With the extensive and growing use of technology in everyday life (both by law enforcement and by criminals), the importance of digital forensics and the reliance on digital evidence will continue to grow. Therefore, it is important to consider how this forensic discipline can be made as robust and reliable as possible.”<sup>5</sup>

AFT will adopt a hybrid approach to training and curricula development, which will include elements of traditional instruction such as formal lectures and expert-led workshop events, as well as sharing expertise among and between participants. Thus, the AFT offering will include the facilitation of knowledge exchange among stakeholders and the documentation of best practices, risk analysis and policy recommendations. All of this will take place in four workshops and multiple virtual meetings, which will be supplemented by a VLE to allow for a moderated learning environment where participants can exchange insight and ideas.

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<sup>4</sup> Financial Stability Board, Assessment of Risks to Financial Stability from Crypto-assets, Feb2022.

<sup>5</sup> Sunde, N. and Dror, I.E., 2019. Cognitive and human factors in digital forensics: Problems, challenges, and the way forward. Digital investigation, 29, pp.101-108.

For the AFT outputs to be scalable and maximise impact, two “train the trainer” events, which will ensure a wider impact for the curricula, will be made available subsequently through organizations such as Europol, CEPOL and FRONTEX. It is expected that the knowledge possessed by these trainers will allow for the creation of bespoke curricula for their respective organisations.

### **General objectives**

- Developing expertise in emerging terrorist financing risks related to crypto-assets, new payments systems, social media and/or crowdfunding
- Developing innovative investigative techniques in Member State law enforcement authorities responsible for counter-terrorism financial investigations, including for conducting parallel investigations, exploiting associated “non-financial” information, examining terrorist links to other criminal activity and on use of Artificial Intelligence, machine learning or robotics for investigations
- Using hybrid approaches that includes image detection and transactional data that allow for “follow the actor” as well as “follow the money” practices.

AFT is designed for optimal distribution of European participants. The consortium represents a good balance between operational stakeholders and partners from different European jurisdictions, with partners from five European countries.

AFT outputs will be disseminated in such a way as to maximise the impact of our work whilst keeping in mind ethical and reputational limits to such dissemination.<sup>6</sup>, The project’s bundled tools (the Toolkit), training environment and training materials will be developed primarily for Europe and, after the project, will be curated and sustained via the European Anti-Cybercrime Technology Development Association (EACTDA), a non-profit organization whose goal is the development of technological solutions for European LEAs and Forensic Laboratories to use them in their fight against crime. Moreover, curricula will be made available afterwards through international organizations such as Europol, CEPOL, FRONTEX and the United Nations.

An important element of AFT will be the development of an environment for joint exercises and organisation of Hackathons that allow stakeholders to use and evaluate the AFT Toolkit. These exercises will be designed as a Capture-the-Flag information security competition that challenges users to solve a variety of tasks related to terrorist financing investigations. Alongside the hackathon element, AFT will utilize the capture the flag (CTF) methodology. The CTF set of practices is increasingly popular for testing skills and presenting challenges to training event participants in the security domain. Karagiannis et al (2020) make the case that as a training approach it affords participants opportunities to acquire practical experience to supplement academic content. The self directed learning component of CTF makes it an ideal fit for the target group for AFT and can assist in creating a community of practice.

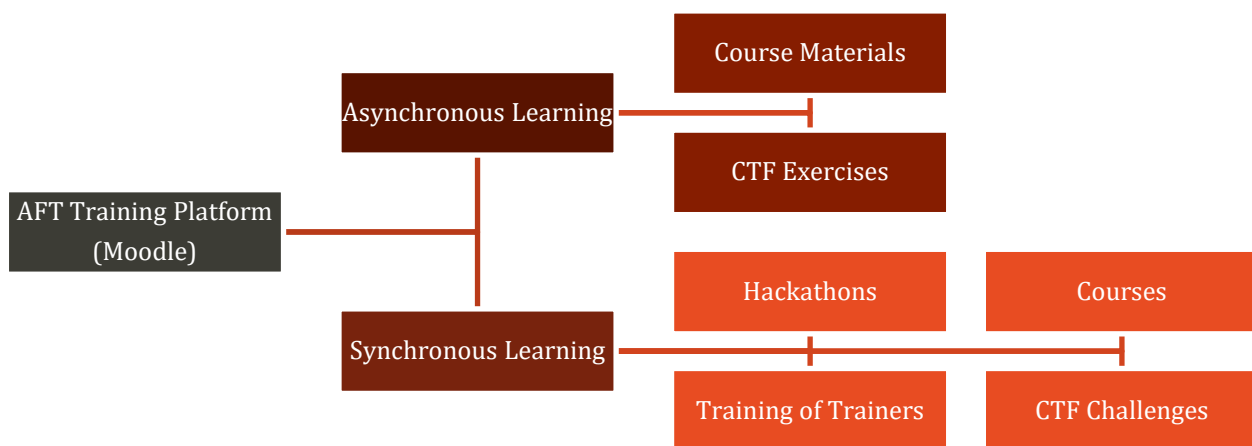
Thus, ULIM will undertake training and joint exercises planning. In this activity, the plan for the training and the joint exercises will be defined, including tools, data modules and innovations from WP3 and the modus operandi and investigative techniques defined in activity. Among other details,

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<sup>6</sup> This is also captured in item 6 of the Anti-FinTer risk register.

the training and exercises plan will be defined including the training and the methodology, the timeline of the activities, responsibilities for hosting, the role of trainer and trainees, test scenarios, and the evaluation criteria (metrics) under which both training and exercises will be assessed and evaluated within activity 4.4 (D4.1).

Overall, this deliverable will provide a basis for the training modules development and execution (ULIM) Based on 4.1 results, two (2) training modules will be developed, covering first level (operational concepts and investigation techniques) (D4.3 and O4.2) and second level (experts' level) related to actual investigation and analysis tools (D4.4 and O4.3). The training will be based on well-established knowledge of past training activities within other EU founded actions. The training environment will be deployed, including tools, data modules and innovations from WP3. The Project Coordinator will ensure that the final version of this material (D4.4) is translated into four additional languages (French, German, Spanish, Italian) for increased impact. Figure 1 below captures the overall configuration of the AFT training outputs.



To maximise the impact of this activity and bring training to the maximum possible number of practitioners, we will conduct both on-site and online training sessions. To this end, an online training platform will be developed by IANUS and offered to all interested parties during and after the project. A feedback loop will follow each training event and will serve as an input to next planned training iterations.

### 2.1.2 Training and Teaching orientation: Generating learning outcomes

#### 1. Gathering Data – Needs analysis

In advance of the training event and the roll-out of D4.2, AFT partners will engage with stakeholder and end-users in order to ascertain their needs. This phase of the project will involve engaging with both internal (AFT partners) and external stakeholders. The requirements of end-users will be collated, organised, and documented in an internal report according to timelines of the AFT project as well as the position of stakeholders as core and non-core end-users.

2. Seeking Feedback – key stakeholders should be given the needs analysis findings and allowed comment. Will determine resources awarded

The needs analysis will be an iterative process and key end-users such as Interpol, Europol and the European Anti-Cybercrime Technology Development Association (EACTDA) will be consulted before the initial data on needs analysis is converted into curricula for 4.2 and for material destined for longer term dissemination in WP5. The target group for WP5 will include a wider group of stakeholders including revenue authorities, financial regulation, judicial systems and public policy networks.

3. Setting Learning Outcomes –

Learning needs must be translated into explicit learning outcomes. They clarify the goals, tell the learner what to expect, and create the foundation for which evaluation is built on. Normally, these will be made up of components such as knowledge, skill and attitudes. Learning outcomes in a project such as AFT will be heterogenous. Distinct stakeholders will require different sets of outcomes. For example, those engaged with the operation of tools sets produced by AFT will need the requisite technical skill sets. At the same time, LEA managers and leaders will require a more strategic view of the capabilities of such tool sets.

Literature on training suggests the following sequencing of tasks.<sup>7</sup>

1. Developing Content – can be material, text, images, audio, interaction
2. Identifying a Learning Strategy
3. Choosing the Facilitator
4. Structuring and Sequencing
5. Setting the Practicalities

Training literature also posits the different type of engagement and learning outcomes. In all cases the configuration of approaches will need to match the requirements of the end-users. In general, learners will experience elements of all the knowledge/skill types listed below. The task of ULIM within WP4 is to deliver an optimum combination. In terms of understanding knowledge gaps in this specific domain, the AFT approach is informed in part by the European Union Agency for Law Enforcement Training CEPOL 2019 report “Operational Training Needs Analysis Cybercrime – Attacks against Information Systems”. The report represents an important context piece in the *training needs* analysis to be performed by AFT. The report identified a number of knowledge gaps in the law enforcement communities across Europe and points to a high need for training among “criminal investigators” for example. Also instructive in this area is the CEPOL 2020 report on training needs in LEAs around money criminal finance and Money laundering which pointed to an urgent set of training need in this space. There was also an acceptance of the need for the more cooperation with the private (financial) sector.

## 2.2 AFT Training Timelines and Organisation

Once the Training methodology and plan/report has been completed and accepted, the next major task of in terms of training infrastructure is the creation of the AFT e-learning platform/web-tool for

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<sup>7</sup>For example, Carbery, R. and Cross, C. eds., 2018. Human resource management. Macmillan International Higher Education. .

Month 6 of the project. This is referred to in this report as the VLE. Work on the VLE began in Month 1 of the project and will be populated by the initial version of the training and curricula in Month 7 of the project. Thus, the VLE will have to be scalable and able to host further material as the AFT project progresses. The VLE will host conventional materials such as asynchronous lectures and power point presentations. At the same time, the VLE managers will have the more complex task of hosting tools that allow participants to *learn by doing*. These tools will originate from WPs 2 and 3 and include Dark Web Monitor platform (CFLW) and GraphSense, which is an open-source forensics platform that enables the analysis of virtual currency transactions in multiple ledgers.<sup>8</sup> Furthermore, material relating to the Hackathon exercises (to be hosted by Vicomtech) will also be hosted on the VLE. One of the important aspects of AFT in terms of broad educational remit is that the final version of training material and curricula will be available in five languages: English, French, German, Spanish and Italian.

Table 1 WP 4 timelines.

Date	Output	Location
M3	Training methodology and plan/ report	N/A
M6	Anti-FinTer e-learning platform/ web-tool	N/A
M7	Initial version of Training curricula and materials/slides	N/A
M8	Hackathon 1 and tools training 1 (M8)	Spain
M11	Train the trainers (TTT) session 1	Ireland
M13	First period evaluation results/ report	N/A
M14	On-line training session 1	N/A
M16	Hackathon 2 and tools training	Netherlands
M18	Train the trainers (TTT) session 2	Austria
M20	On-line training session 2	N/A
M23	Hackathon 3 and tools training	Lithuania
M24	Second period evaluation results/ report	N/A

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<sup>8</sup> This may include tool such as OrdainSare created by Vicomtech.

## 2.3 AFT Training Provider Profiles

- FORTH is the largest RTO in Greece, with significant experience in European secure society calls. Their Human Computer Interaction (HCI) laboratory brings key expertise in Big Data and Artificial Intelligence analytics to the forensic applications in the project.
- Vicomtech has a similar position in Spain, working closely with national and international LEA stakeholders and participating in multiple secure societies projects (e.g., GRACE, AIDA, CAPER and ASGARD as coordinator). VICOM is also the founder and the first President of the European Anti Cybercrime Technology Development Association (EACTDA).
- CFLW is the newly established curator and developer of the Dark Web Monitor tool and, through its founder Mark van Staaldunin, brings years of experience and collaboration with LEAs in darknet investigations.
- ULIM provides expertise in financial markets, data ethics as well as the experience and infrastructure for LEA training through their long-standing collaboration with the Irish National Centre for Taxation Studies.
- IANUS is a Cypriot SME that brings years of experience of their staff in international security-related programs, together with a wide network of European contacts. IANUS also brings successful experience with ISFP projects and related communication and dissemination activities. AIT is the largest RTO in Austria and its Center for Digital Safety & Security (DSS) has extensive experience in the research and development of ICT technologies for cybersecurity, forensics and law enforcement applications, in particular through the development of the open-source crypto-asset forensics platform GraphSense. Furthermore, DSS has a long track record in the coordination and management of national and international projects in this area (e.g., TITANIUM) and is thus suited for the coordinator role.

## 2.4 AFT Training Structure and Content

Table 2 Course Content

	Short Course	Course Leader	Content Type	Assessment Type
1	Induction	ULIM		Needs Assessment
2	Financial Cryptofinance	ULIM		Quiz
3	Legal & Data Governance	ULIM		Quiz
4	Interpol Material	Various		Basic Competence
5	Dark Web Monitor	CFLW		Basic Competence
6	GraphSense	AIT		Basic Competence
7	Hackathon/ OrdainSare	Vicomtech		Task Completion
8	Reflection & Feedback	AIT		Short Reflective written piece

Training media will be different according to content design, material, and provider. A component of learning material will be made up of short video pieces. These video pieces will in the range of 10-15 minutes in duration. These asynchronous elements will be accompanied by live moderated seminars (in chat rooms), in which participants will share insights on the short lectures. Thus, a core of AFT output will be scalable and usable into the future. The VLE will have the capability to track the progress of the participants and provide reports where appropriate.

## **2.5 Learning Pathways for Participants**

The AFT project lies at the confluence of several distinct areas of knowledge. These include political science, as it pertains to terrorist organisation; financial services and regulation around the use of crypto-currency; technical knowledge on dark-web surveillance; policing and financial/digital forensics. The expectation is that most participants will proceed in a linear fashion through the course modules. However, the AFT training will make provision for different learning pathways that align with the needs of stakeholders both within the project and external to it. These learning pathways will be co-created with participants as they register for the courses on the AFT portal. Within the more technical discipline, it is expected that participants will have distinct capabilities. Again, these will be captured by the registration process and factored into the design of both overall curricula and learning pathways.

## **2.6 AFT Training and Avoiding Negative Externalities**

The context in which the AFT training offering exists is complex. Recent geopolitical events have highlighted the importance of stakeholders in taking a nuanced view of cross-border financial transactions facilitated by the crypto ecosystem. There are then ethical and governance issues that are relevant to our training activities. Elements of the training will be derived from deliverable 1.3 on the Code of Conduct. Moreover, the ongoing work within the project on public policy will inform curricula development.

## **2.7 Crypto-Currencies in the Financial System and transactions on the dark web.**

For many global citizens exclusion from the mainstream financial system is a real problem with far-reaching consequences. It may be that digital currency offers a set of solutions to such population cohorts.

“Approximately 1.7 billion adults are unbanked. The problem of higher relative costs is also, in part, a function of AML policy, which enforces high fixed costs of compliance on money service businesses (MSBs) along with the fear of criminal and monetary penalties for noncompliance – “low value” customers just aren’t worth the risk. Consider global remittances to low-and middle-income countries, which reached a record high \$529 billion in 2018, far outpacing the global aid contribution of \$153 billion. The current average cost



of sending \$200 is an expensive 7 percent, with some countries suffering rates of over 10 percent.”<sup>9</sup>

There is some evidence that crypto currency had an important role in providing an alternative to conventional financial services and that many of these functions would need to be safeguarded. This issue is less acute in dark web activity where in excess of 95% of activity is said to be illicit. If we combine this with the speed of transactions in these vectors, this represents a considerable challenge to State bodies. CFLW is a key partner in AFT and has a deep understanding of the operation of the dark web, with over 1.2 million addresses under surveillance and the ability to find some 30-40 new domains on a daily basis. This knowledge set extends to an appreciation of the “levels of maturity” of various dark web markets.

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<sup>9</sup> From Weber, M., Domeniconi, G., Chen, J., Weidele, D.K.I., Bellei, C., Robinson, T. and Leiserson, C.E., 2019. Anti-money laundering in bitcoin: Experimenting with graph convolutional networks for financial forensics. arXiv preprint arXiv:1908.02591.

## 3 The AFT Training System

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### 3.1 Learning Management System - Moodle

The AFT training output will be hosted on a Moodle Learning Management System (LMS). Moodle delivers a powerful set of learner-centric tools and collaborative learning environments that empower both teaching and learning. A simple interface, drag-and-drop features, and well-documented resources along with many usability features, make Moodle easy to learn and use. This is a responsive learning platform that can be accessed 24/7 via PC, tablet or other mobile devices via a web-browser or through a free mobile app for a phone that will give participants structured access to learning environment.

The LMS will structure learning process and monitor progress and assessment. The LMS provides a variety of resources and learning activities and supports a range of media to allow for multiple means of engagement, expression, and representation for both teachers and participants. Moodle provides many communication features that makes collaboration both synchronously and asynchronously seamless and easy to use. It also provides a personal space for participants to reflect on their learning journey. It has an intuitive dashboard that participants can customise to tailor information, track their progress, and include links to suit their individual needs.

Moodle has over 100 language packs available to install depending on the nationalities of participants and stakeholders on the course.

### 3.2 Methodology

There are several principles and established pedagogical approaches, appropriate both to the discipline and to the level of the award, are employed in the design and delivery of this course. An asynchronous active online learning approach underlies the conception of teaching and provides a strategic filter through which this course is shaped and supported. Participants are post-experience, in full time employment and they are viewed as not just participants but thinkers with their own emerging theories about the world. This view also supports the principal tenets of adult learning in that they desire and enact a tendency toward self-directedness. This relative informality is not without structure, and clear expectations are set regarding both performance and rules of engagement as this learning journey is one embarked on together.

Participants own experiences are an important resource for learning. This is an important driver of the AFT project. Given their rich and diverse backgrounds, they bring unique perspectives and insights to the course which creates a fertile ground for exploring various concepts. Considering their own experiences as a valuable input, the course design and delivery promotes a process of interaction between what is known and what is to be learned, as reflection on experiences and understanding is the foundation upon which something new is built. By seeking participant's points of view and using this to establish their current conceptions, the objective is then knowledge construction (and sometimes reconstruction) rather than knowledge reproduction.

Pre-requisites for effective teaching in this regard are interaction, dialogue, and reflection. A considered level of meaningful interactivity is designed into the course to encourage participants to critically engage and enhance the process of cognitive development that result in greater evidence

of the achievement of learning outcomes, as this allows for deeper engagement with concepts as multiple perspectives challenge existing assumptions.

The design underpinning the course firmly embraces this philosophy, and follows a model of best practice, which sees sense making activities at its core. They are designed to elicit ‘double-loop’ meaningful interactions between content, peers and moderators. They help pace and participants through the course at the same time and enhance both the learning experience and course completion rates.

### 3.3 Course Structure and Learning Pathway

Participants will need to complete a series of eight sequential short courses to successfully complete the course. Each short courses will run over a period of 5 days and will be consistent in design and delivery. Each will have a specific learning path design offering flexibility of access to materials, video/audio recordings and discussions. Engagement will be articulated at the start of each course and participants will be expected to engage with the content and activities within each course over that period. Participant engagement over the five-day period will be approximately 2 to 3 hours per course.

Figure 2 Modules as Represented on Iteration of VLE (Moodle)



The inclusion of completion tracking features will enable participants to demonstrate achievement of course learning outcomes. On achievement of proficiency levels, the next course will become available. Module leaders and moderators can see an overview of progress in the system completion, activity, and participation reports. Completion reporting can also be used to award badges as they complete each course in attainment of a course completion certification.

### 3.4 Andragogy and Pedagogy in Anti-FinTer Training

Online participatory environments or a VLE will be created and will be followed by face-to-face sessions across Europe and interspersed with three live Hackathons). Training participants are, in general, experienced practitioners in professions/industries that are exposed to terrorism financing, and all arrive with a preconceived concept of Terrorism Financing. In line with the expected learning outcomes of the AFT project, we must incorporate a central objective of understanding foundational and prevailing knowledge associated with terrorism financing and adjacent issues, while providing participants with the autonomy to engage with learning materials they feel best suits their needs. The andragogical response to this training structure must leverage the learning opportunities provided by these activities, while also appreciating the diverse skillsets that the project participants possess. The objectives of the training structure are summarised in Table 3.

Table 3 Training Objectives

<b>Training Structure Objectives</b>
<ol style="list-style-type: none"> <li>1. Appreciate the requirements of the adult participants</li> <li>2. Provide alternative routes of learning within the materials</li> <li>3. Generate a learning environment rooted in experiential learning</li> <li>4. Provide knowledge that can be perceived as immediately applicable or useful</li> <li>5. Create a learning environment that can leverage the insights of training participants</li> </ol>

#### 3.4.1 Applicable Theories of Learning

Given the limited time available to disseminate the learning materials, an instructor-led approach on its own may not be conducive to achieving satisfactory training outcomes. Terrorism Financing and its associated issues is a complex and ever-evolving topic that requires intricate insight and knowledge across a broad range of subjects. An instructor-led approach for this environment would necessitate the use of behaviouristic learning materials, where instructors condition learners to reach a preconceived standard of competency through reinforcement, repetition, and variation (Carlile and Jordan, 2005). Achieving the behaviouristic learning outcomes while adhering to the training structure objectives may be impractical.

Instead, it is important to leverage the prior knowledge and the subject area interest expressed by the participants and use this as the central focus of the teaching environment to produce deeper insights over the short engagement period. This involves removing the instructor as the sole purveyor of knowledge and transferring an extent of control and responsibility into the hands of the learners. The instructor's primary focus in this approach is to facilitate learning and promote engagement amongst participants, rather than act as the sole source of knowledge. This shift from an instructor-centred to learner-centred teaching requires a learning environment that encourages autonomy in the construction of knowledge, active participation and knowledge sharing amongst the participants, and a learning environment that instils a desire for further learning (Evans *et al.*,

2015). A number of learning theories are compatible with this type of learning environment, while still adhering to the objectives stated in Table 1. These are outlined in Table 2.<sup>10</sup>

Certain elements of the humanist approach will be incorporated into the training structure. The humanist approach to learning emphasises the importance of reflecting on, and personally empathising with, the learning materials. Autonomy is provided to participants to learn on their own accord and without the burden of stress typically associated with assessment structures. The intention behind this approach is to instil a deep sense of personal appreciation for the subject matter, such that the participants will desire further learning following the cessation of the training (Western Governors University, 2020). Given the project participants' indirect relationship to Terrorism Financing issues, incorporating certain elements of the humanist approach is appropriate. Existentialism and progressivism are similar concepts to the humanist approach; however, they are not considered appropriate for this project as their learning ideals are rooted in a latent transfer of knowledge. In existentialism, learners have complete freedom to choose the learning materials, which may preclude using Terrorism Financing as a focal point for learning. In progressivism, learners are required to complete tasks without the use of explicit instructions, expected outcomes, or in some cases a motivating rationale – it is a form of curiosity-based learning without central focus.

Constructivism will also be emphasised as an appropriate way forward in the training structure. This approach hinges on the belief that learners construct their own meaning by building on their previous knowledge and experience. New ideas and experiences are matched against existing knowledge, and the learner constructs new or adapted rules to make sense of the world (Carlile and Jordan, 2005). A constructivist instructor places importance on the incorporation of the learning material into each learner's personally constructed worldview, in line with the unique experiences that are lived by each learner. As such, this approach can provide much room for debate in terms of understanding terrorism financing actions and developing diverse responses to counteract terrorism financing.

However, in addition to the requirements outlined in Table 1, there is a need to account for the limited contact hours that instructors will have with the participants. A lack of consistent contact hours can lead to a disjointed base of learning for participants, limited engagement with the learning materials, and suboptimal learning outcomes. Therefore, the creation of an empathetic and shared social environment is paramount to achieving the expected learning outcomes. The 'social constructivist' learning environment leverages the diverse array of knowledge and experiences offered by each learner to develop social discussions within the learning environment. As such, in addition to constructing their own view on the knowledge being provided by the instruction materials, participants can reach a higher plane of understanding by simultaneously sharing their experiences, perspectives and concerns with peers on the subject matter being addressed (Topping, 1998). Developing an interaction-based environment has been heavily-linked with student learning and satisfaction (Sher, 2009). Furthermore, instructor and peer dialogue has been shown to develop trust and social interactions in learning settings (McLean, 2018).

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<sup>10</sup> Check table numbers

### 3.4.2 Achieving Practical Learning

The teaching philosophies identified as suitable for the AFT training structure (humanism, social constructivism) can inform the appropriate learning structure to implement within the learning environment. A key aspect of this is identifying that training will take place both online and in a face-to-face environment. The andragogical aim of the face-to-face learning environment is to establish a community of inquiry; an andragogic framework where learning occurs at the intersection of social, cognitive and teaching presence (Garrison and Arbaugh, 2007), and a community of practice where knowledge is embedded in the activities, social relations and expertise of specific communities (O'Neill and McMahon, 2005). Pre-prepared learning materials (cognitive) are paired with synchronous discussions on the topics covered (social). The structure is designed to foster individual perspectives on issues related to Terrorism Financing (cognitive) and encourage interactivity and feedback amongst peers as a means of constructing new insights and perspectives (social). These will be underpinned by specific prompts that will be introduced to the learning environment to spark discussions within the participants. Moreover, the identification of a sufficiently motivating problem that serves as a platform for investigation is important in inquiry-based learning environments (Finkel, 2000). In addition, the practice-based learning environment is incorporated into the learning environment since all participants are stakeholders within anti-terrorism financing efforts. While inquiries will provide valuable insights, introducing case study examples of terrorism financing issues can lead to practical, ready-to-apply knowledge. Introducing case studies to explore is particularly effective in enhancing learning outcomes when the real-world problems remain unresolved and ill-structured (Barrows, 2002). Once this problem is introduced, the subsequent investigation and discussion is where the learning takes place. Participants will be highly intrinsically motivated to learn what is necessary to solve it (Auman, 2011), given that counteracting terrorism financing, and discussing the issues tangential to the prevention of terrorism financing, is a common interest shared by all participants.

### 3.4.3 The Flipped classroom

Flipped classroom has been demonstrated to improve learner engagement and learning outcomes (Gilboy *et al.*, 2015), as well as improving learner-instructor interactions (Bergmann and Sams, 2012).

1. In the literature there are many definitions of blended learning, and even strong proponents of the concept, such as Picciano (2009), do not always agree on what the term means. Garrison and Kanuka (2004) propose:

'At its simplest, blended learning is the integration of classroom face-to-face learning experiences with online learning experiences.' (p. 96)

2. Student self-understanding is supported through experiential approaches, including the use of guided critical reflection with direction to suitable tools (Grace 2011; Zajonc 2013).

3. Advance access to course materials is promoted to enable students to familiarise themselves with materials and to prepare for learning prior to taught sessions (e.g., flipping (Educause 2012)); just-

in-time approaches – (Novak 2011). Associated with pre-release of materials is the requirement for students to do something with the materials as part of active learning agendas.

It is important that the learning path for the project participants are not overly prescriptive and there is room for a 'personalised' approach to learning. The diversity of their background knowledge and involvement with anti-Terrorism Financing means that their level of engagement with the materials will be equally diverse.

The approach to Blended Learning aligns most closely with the 'multimodal model' of 'blending with learning' (Picciano, 2009). This blended learning model is based on the idea that 'blended learning' suggests that teachers design and deliver a variety of instruction material to meet the needs of a variety of learner types. Moodle will be used as the main repository for asynchronous course materials. Lessons will be partially delivered through pre-recorded YouTube videos, with PowerPoint slides available in conjunction with the videos. The slides will explain what is required from students as they traverse through the training structure. Overall, the intention of the 'flipped-classroom' approach is to improve skills and promote a higher level of understanding (Moffett, 2015).

## 4 Conclusions

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### 4.1 The Legacy of AFT in Training and Curricula

The AFT consortium is designed in such a way as to ensure a lasting impact for the deliverable of the project. The learning material will be designed in such a way that they can be used by stakeholders into the future. The course design is such that there will be multiple pathways through the asynchronous materials according to the needs of the participants' organisation. Among the communities with a strategic interest in this area are LEAs, tax authorities and financial regulators. All of these have different sets of priorities and knowledge requirements, and the structure of the training material will be such as to offer the necessary flexibility. Given that the VLE will be created on Moodle, this gives both project participants and others the ability to leverage content on an ongoing basis after the 24-month duration of the project. ULIM will work closely with WP7 (dissemination) leaders in order to create a robust and durable training regime for those professionals operating in this area.

Building upon ideas contained in Section 3, AFT has a learning philosophy that will allow participants to share ideas with one another. One of the goals of the project is to create a community of practice that will allow for improved capacity among all our stakeholder and will assist AFT in building a lasting legacy.

Overall, this is an important area, and developments in financial regulation/compliance have made conventional financial services a less welcoming environment for OCGs and terrorist groups. The risk that this will mean a migration of such actors to the use of crypto-currency and dark web - highlights the need for a project such as AFT.

The tool sets and the training regime provided by AFT will improve capacity among key stakeholders. At the same time, the AFT consortium will provide a set of ethical/governance related guidelines. These will be integrated into the training framework. Good data governance protocols are essential for the sustainability of the entire project. Thus, AFT will leverage the interdisciplinary expertise within our team to create a set of curricula/learning material that will allow our stakeholder community to mitigate risks posed by new digital environments/practices around terrorist financing.



## 5 References

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- Auman, C. (2011) 'Using simulation games to increase student and instructor engagement', *College Teaching*, 59(4), 154-161.
- Barrows, H. (2002) 'Is it truly possible to have such a thing as dPBL?', *Distance Education*, 23(1), 119-122.
- Bergmann, J. and Sams, A. (2012) *Flip your classroom: Reach every student in every class every day*, International society for technology in education.
- Carberry, R. and Cross, C. eds., 2018. Human resource management. Macmillan International Higher Education.
- Carlile, O. and Jordan, A. (2005) 'It works in practice but will it work in theory? The theoretical underpinnings of pedagogy', *Emerging issues in the practice of university learning and teaching*, 1, 11-26.
- European Union Agency for Law Enforcement Training (CEPOL) (2019), Operational Training Needs Analysis Cybercrime – Attacks against Information Systems
- European Union Agency for Law Enforcement Training (CEPOL) (2020), Operational Training Needs Analysis Criminal finance, money laundering and asset recovery
- Evans, C., Mujs, D. and Tomlinson, D. (2015) 'Engaged student learning: High impact strategies to enhance student achievement'.
- Finkel, D.L. (2000) 'Teaching with your mouth shut'.
- Financial Stability Board, Assessment of Risks to Financial Stability from Crypto-assets, Feb2022
- Garrison, D.R. and Arbaugh, J.B. (2007) 'Researching the community of inquiry framework: Review, issues, and future directions', *The Internet and higher education*, 10(3), 157-172.
- Gilboy, M.B., Heinerichs, S. and Pazzaglia, G. (2015) 'Enhancing student engagement using the flipped classroom', *Journal of nutrition education and behavior*, 47(1), 109-114.
- Irwin, A.S. and Turner, A.B., 2018. Illicit Bitcoin transactions: challenges in getting to the who, what, when and where. *Journal of money laundering control*
- Karagiannis, S., Maragos-Belmpas, E. and Magkos, E., 2020, September. An analysis and evaluation of open source capture the flag platforms as cybersecurity e-learning tools. In IFIP World Conference on Information Security Education (pp. 61-77). Springer, Cham.
- McLean, H. (2018) 'This is the way to teach: insights from academics and students about assessment that supports learning', *Assessment & Evaluation in Higher Education*, 43(8), 1228-1240.

Moffett, J. (2015) 'Twelve tips for “flipping” the classroom', *Medical teacher*, 37(4), 331-336.

O'Neill, G. and McMahon, T. (2005) 'Student-centred learning: What does it mean for students and lecturers?' in *Emerging issues in the practice of university learning and teaching*, Dublin, IE: All Ireland Society for Higher Education.

Picciano, A.G. (2009) 'Blending with purpose: The multimodal model', *Journal of asynchronous learning networks*, 13(1), 7-18.

Sher, A. (2009) 'Assessing the relationship of student-instructor and student-student interaction to student learning and satisfaction in web-based online learning environment', *Journal of Interactive Online Learning*, 8(2).

Sunde, N. and Dror, I.E., 2019. Cognitive and human factors in digital forensics: Problems, challenges, and the way forward. *Digital investigation*, 29, pp.101-108.

Topping, K. (1998) 'Peer assessment between students in colleges and universities', *Review of educational Research*, 68(3), 249-276.

Weber, M., Domeniconi, G., Chen, J., Weidele, D.K.I., Bellei, C., Robinson, T. and Leiserson, C.E., 2019. Anti-money laundering in bitcoin: Experimenting with graph convolutional networks for financial forensics. arXiv preprint arXiv:1908.02591.

Western Governors University (2020) *What is humanistic learning theory in education?*, available: <https://www.wgu.edu/blog/what-humanistic-learning-theory-education2007.html> [accessed 16th September].

## ANNEX I – Hackathon Component FAQs

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### **What are the skill prerequisites for training/hackathon participation?**

The tool (OrdainSare) is designed to be user-friendly and intuitive in order to be easily used by participants with different expertise. In this sense, for its usage, no specific technical skill or prerequisites are requested. However, it is preferable that participants have minimum knowledge about the problem domain in order to better exploit the results of the tool. In fact, as in a real investigation, the results should be contextualized to the investigation and in some cases need to be combined with output information of other tools in order to complete the investigation.

### **Will there be training on the capabilities of the tools as well as actual use (targeted towards managers)?**

In both virtual and on-site training events, the functionalities of the tool and a short presentation about its potentialities will be introduced. In this sense, from one side the whole tool's functionalities will be presented which will be then available for each participant. In this presentation, the technical aspects of the tool will be explained. In particular, the tool architecture, as well as the results obtained in the implementation stage will be presented. The usage of the tools will be explained using simple and basic analysis in order to help users to acquire confidence in using such technology.

### **How will the earlier train the trainers activity be distinct?**

The TTT event will be more *high-level* in which a general overview of the tools will be shown (no use cases nor usability). In this event, the idea is to present how the tool can enrich the traditional investigation methods in a complementary way. More specifically, the idea is to transmit knowledge of tool capability rather than their technical and concrete usage.

### **Do you envisage a moderated digital learning component to supplement face to face learning?**

A user guide and video for explaining the functionalities and the potentiality of the OrdainSare will be released during the project. The idea is that this material could support the user at an early stage in order to gain control over the tool in an asynchronous way. This material will be available during the project, and it will be updated according to changes on the tools and the received feedback.

### **Finally - will we offer (as discussed as the recent WP3/WP4 meeting) how to leverage a combination of AFT tools?**

Our objective is to integrate into OrdainSare information from GraphSense or Darkweb monitor. The idea is that an investigation can start from one AFT tool and end in another following a *flow enrichment process*. This integration will be tested by creating ad-hoc use cases for demonstrating how the information of these tools should be combined.