CEPOL Digitalisation Strategy Project

Work Package 2
Deliverable 02.04 - Management report:

FUTURE LEARNING AND DEVELOPMENT FRAMEWORK FOR CEPOL

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Executive Summary

This report on the Future Learning and Development Framework for CEPOL presents a comprehensive and practical solution to support the Agency in achieving its strategic objective of delivering impactful and best-in-class quality training to close the performance gaps in the EU law enforcement. CEPOL's increased role in the law enforcement training coordination as outlined in the extended legal mandate poses new opportunities for even greater scaling the training impact through digital, innovative learning solutions encompassed in a structure of a blended learning path model.

The report is based on the analysis of the digitalization trends in the training sector, extensive study of CEPOL's context and research on the continuous learning models for adult learners. In addition, the portrait of the 'modern learner' persona and analysis of CEPOL's target audience provided insights into learners' expectations. Although CEPOL's learners are dispersed geographically, speak various languages and may be performing non-identical jobs, they face similar challenges related to the EU knowledge and skills. Therefore, the proposed model for the blended learning paths is fit for the purpose of addressing the needs of this large audience. The learning path model for CEPOL consists of sequences of courses with an increasing level of difficulty and complexity, allowing the learners to gradually build the knowledge, practice their skills in safe environment and apply it every day work. Courses within the learning paths correspond to levels of awareness, knowledge building, try-out and practical application. Learning paths combine all elements on a specific topic within CEPOL's identified thematic areas. Learners are guided and supported throughout their learning journey with the help of a mix of learning solutions, selected appropriately to the level of training.

Six most important digital trends in learning have been identified for CEPOL's training audience: immersive learning experience, social and mobile learning, microlearning, gamification, informal learning opportunities, supported by thorough learning analytics. The aforementioned trends have a practical application for the Agency when it comes to the (1) design of the new training platform LEEd, (2) design and implementation of the training content and (3) selection of the best-fit delivery format for courses. The training platform LEEd should be positioned as the go-to site for training initiatives for EU law enforcement community, when it comes to both the available content but also the user experience throughout the learning paths. The report proposes ten digital learning solutions: video formats, eLearning modules, virtual and augmented reality, podcasts, newsflashes, webinars and virtual classrooms, facilitated project spaces and digital manuals. Each digital delivery format is described in terms of practical implementation aspects (tools, cost ranges and examples of vendors) together with proposed use cases relevant for CEPOL's context. In addition, a comparison matrix has been built for CEPOL to assess digital delivery formats and select those most appropriate to deliver the training content. The matrix takes into consideration not only the desired impact that the training should have in terms of quality and volume, but also the practical, organizational aspects relevant for the Agency, such as the budget and necessary skills to implement the selected delivery format.

Moreover, the report provides details on the processes necessary to identify and build the learning paths as a first step for the transition. Building on a strong foundation of CEPOL's experience and existing processes and structures, the proposed process leverages the training needs analyses EU-STNA and OTNA as a source of information for defining the desired learning outcomes of learning paths. The overall learning path outcomes are then broken down into sizeable and manageable courses, in which content is delivered with help of the best-fit learning solution. In addition, the report outlines the process for maintaining the high quality and relevancy of the paths through periodic assessments and reviews. As any training organisation, CEPOL needs to manage ad-hoc, unforeseen training requests. The report proposes a structured approach, in which thorough capability and feasibility assessments guide the decisions of implementing the requested training courses. The Future Learning and Development Framework for CEPOL, foresees the necessary roles and capabilities for CEPOL's staff to implement the learning path model. It is expected that the transformation into the new way of working will require significant effort and resources for CEPOL, as it involves (1) training of the staff and trainers on the processes, (2) piloting the learning path model, (3) development of the learning assets in digital formats. Therefore, it is recommended that sufficient time, budget and human resources are foreseen across the time period of next year to accommodate the additional workload. A high-level roadmap for transition closes this report to provide an actionable guidance and next steps.

1. Introduction

a) Objective of the learning path framework

The objective of this report is to present the future learning and development framework for CEPOL, leveraging the blended learning path model. This framework will support CEPOL in realising their mission of "making Europe a safer place through law enforcement training and learning." In practice, the proposed solution will contribute to (1) increasing CEPOL's impact in terms of reach to more learners through engaging and diverse training activities and (2) elevating the quality of learning through in-depth learning paths.

b) Approach to the establishment of the framework

This document should be regarded as the final deliverable, comprising findings from deliverables 2.02 (*Guidelines for adaptive learner-centric learning*) and 2.03 (*Identification of best-fit technology learning solutions*) and additional elements on the practical implementation of the framework as described in Part 3.

Fig. 1 - Overview of deliverables within Work Package 2

In order to define the best-fit model for CEPOL's learning path framework, the Agency's current state of play and the characteristics of its target audiences were studied in the first phase of the project. In addition, we considered the reality of a 'modern learner' and principles of adult learning which served as a compass to define the learner-centric guidelines for the learning path model. Secondly, the current EU digital trends in the training industry were scanned in order to establish a comprehensive list of high-quality, innovative, technology supported learning solutions for CEPOL. Each solution is presented with (1) the use cases to support CEPOL in choosing the most applicable formats for content in the learning paths, (2) the practical aspects of required equipment, tools, etc., and (3) the cost ranges to give guidance from the perspective of training implementation and administration. Finally, the processes related to the implementation and maintenance of high-quality and impactful learning paths are presented together with recommended roles and competencies for CEPOL's internal resources. This report closes with a high-level roadmap for transition, in which the relevant next steps and actions are indicated together with a proposed timeline for implementation. This comprehensive learning and development framework, comprising of acknowledged research and its practical application in CEPOL's specific context will contribute to CEPOL's strategic objective of closing the EU law enforcement performance gaps by means of impactful training.

Part I – Leveraging modern learning theories to increase CEPOL's impact

Part I of the report provides an overview of CEPOL's current state of play and builds a solid foundation to the construction of the learning path framework. Agency's business priorities, drivers and challenges together with an analysis of the learning audiences are thoroughly described to define the preferred scenario for learning path definition. In addition, modern learning theories and principles of leaner centricity are presented together with their practical application in the future training platform LEEd.

1. CEPOL's context and state of play

CEPOL is now finding itself in a unique moment to define the new framework for learning and development in the digital age. At the same time, Agency's specific organisational context and present business reality are taken into consideration in order to draw up an effective and efficient future framework. For this reason, the next section will summarise the business priorities, challenges and drivers of CEPOL together with the visualisation of the current state training structure.

Business priorities:

- CEPOL's goal is to provide quality training to the customer, the LE officials in Europe. The Agency strives to align its training services to quality assurance systems and become certified based on internationally approved standards, such as ISO 9001:2015 and ISO 29993: 2019.
- Flexibility and promptness in delivery of activities constitutes a priority and a challenge at the same time, as CEPOL needs to be ready to provide regular training and at the same time respond to ad-hoc requests if a new training need is identified.
- CEPOL seeks to innovate with respect to education and learning. This applies to various dimensions of Agency's training operations, starting with the learning management system and its technological aspects, through learning assets and solutions, to internal upskilling of CEPOL staff.

Drivers and challenges:

- CEPOL needs to manage the growth of the target audience, as per its extended mandate with the ambition of reaching out to as many LE officers as possible with the final aim of closing existing performance gaps. This audience is not only more diverse when it comes to functions but also will have different locations and levels of professional and language competencies.
- CEPOL needs to adapt to the evolving political environment, new legislative proposals and digital transformation. The Agency needs to be equipped with the right skills and capacities to address present security challenges and the opportunities of technological advances.
- Digital platforms and tools for training development, management and implementation need to be integrated in the working practices, that supports high quality training and varied delivery method that provide fast, consistent training solutions in an engaging manner.
- CEPOL would like to approach the learning implementation in a renewed way, leveraging thematic areas, focusing on user-centricity and by creating a solid framework.
- CEPOL considers to leverage the potential of social media to disseminate the 'safe-to-share' learning material and ensure a high outreach to stakeholders.
- CEPOL regards the lack of resources, both financial and staff, as a potential risk and a challenge for an effective implementation of the new learning framework.

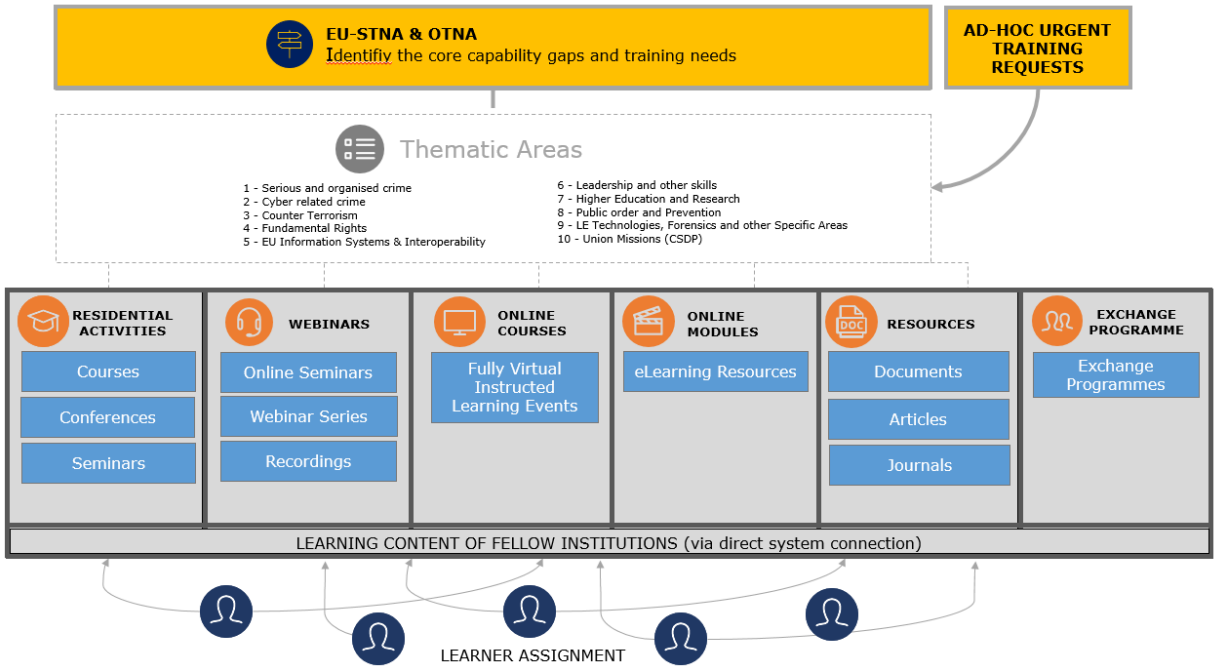


Fig. 2 - CEPOL's current training structure

The current training structure at CEPOL is visualised in Fig. 2. As a part of regular and planned activities organised in yearly cycles, the results of the Strategic and Operational Training Needs Analyses (OTNA and EU-STNA) are translated into the thematic areas for training development. For each specific thematic area, several training topics are identified and a further analysis of learning objectives is conducted. The target audience is identified and training format is assigned based on the budget and resource availability and input from the Member States (collected during the OTNA). The training activities are then promoted through the network, the eNet platform, social media or other means. In addition to these regular and planned activities, ad hoc and urgent training requests need to be tackled based on the resource availability at CEPOL as well. Momentarily, there is little to no formal link between the different training activities, which hinders the learner from continuing their learning journey in the training platform – this issue will be tackled by creating learning paths and providing continuity in learning.

c) Understanding CEPOL's learner landscape and analysis of learning audiences

The next section of this document will provide an overview CEPOL's learning audiences and their characteristics. Learning audience analysis is crucial for an effective application of learner centricity principles in the learning paths and personalisation of the learning experience in the platform. CEPOL's target audience has been defined in the regulation 2015/2219 of the European Parliament and of the Council as:

> *" 'law enforcement officials' (, which) means staff of police, customs and other relevant services, as defined by individual Member States, that are responsible for, and staff of Union bodies that have tasks relating to, the following:*
>
> *(a) the prevention of and fight against serious crime affecting two or more Member States, terrorism and forms of crime that affect a common interest covered by a Union policy; or*
>
> *(b) crisis management and public order, in particular international policing of major events".*

Although the range of learner types is large and rather complex to group, there are five domains that can be distinguished: police, border guards, customs officials, tax officials and judiciary. In addition to law enforcement practitioners, CEPOL also engages in train-the-trainer activities and as such, law enforcement trainers should also be considered as a separate learning audience. Nevertheless, a number of individual audiences remains unassigned to any of the above-mentioned LE (Law Enforcement) domains or trainer audience. A list of the target audiences can be found in the Annex of this document.

In addition to the above analysis, it is also important to take into consideration the general characteristics of the law enforcement sector, i.e. public sector, and specifically:

- Relatively high levels of bureaucracy,

- Relatively hierarchical structures and fixed request and approval processes,
- Overall a rather conservative mind-set,
- Relatively restricted environment (confidential, restricted, secret, intelligence, etc.),
- Limitations with regard to technological equipment and varying levels of quality of internet access across Europe.

CEPOL's learners are dependent on those characteristics and the reality of the sector – therefore, the proposed learning path model and supporting technologies should become enablers in accessing LE related knowledge and skills.

Having analysed the reality of CEPOL's learners, in the next chapter we will recommend the approach towards learning paths.

d) CEPOL's preferred scenario for learning path definition

The current context of CEPOL's learning audiences is strongly correlated with and dependent on the Member States' existing structures. Law enforcement officials' roles (from both range of responsibilities and role title perspectives) and associated competencies differ from one Member States to another. Moreover, learner appointment to specific learning events takes place on national level, which is beyond CEPOL's mandate. Based on the discussions with Agency's representatives it was identified learners' professional experience in specified relevant thematic areas and their corresponding levels of knowledge should become the drivers for the design and assignment of learning paths and content to learners.

CEPOL defines the thematic areas through the EU-STNA (EU Strategic Training Needs Analysis) and has created eight categories[1]:

1 - Serious and Organised Crime
- EU Policy Cycle in general
- Trafficking of Human Beings
- Drug Crimes
- Facilitation of Illegal Immigration
- Trafficking and Illicit Use of Firearms and Explosives
- Document Fraud
- Criminal Finances and Money Laundering
- Excise and MTIC (Missing Trader Intra-Community) Fraud
- Environmental Crime
- Organised Property Crime (OPC)

2 - Cyber related Crime
3 - Counter Terrorism
4 - Fundamental Rights
5 - EU Information Systems & Interoperability
6 - Leadership and other skills
7 - Higher Education and Research
8 - Public order and Prevention
9 - LE Technologies, Forensics and other Specific Areas
10 - Union Missions (CSDP)

Above listed categorisation of learning content based on results of EU-STNA could form the bases in the new training platform to define and describe learner needs and courses within learning paths. The categorisation of content needs to reflect the landscape of criminal areas at any time and should be updated by CEPOL as changes arise. Specifically, the training platform will need to enable learners to indicate their areas of professional experience, which will correspond to CEPOL's thematic areas, and collect information on the level of knowledge (through ongoing completion of courses or separate assessments). We will go deeper into the aspects of the learner centric approach to learning paths in the next section of this document.

2. Modern learning theories and their application at CEPOL

In section two of this report, the modern learning theories, namely the portrait of a "modern learner", the principles of adult learning and the definition of learner centricity will be elaborated upon. The future facing research serves as the basis for outlining of the technical features of the training platform to empower CEPOL's learners and optimise the training impact.

[1] Thematic areas 1 and 6 contain multiple sub-categories of topics.

a) The "modern learner" and principles of adult learning

Future oriented research conducted by Bersin by Deloitte[2] shows a change in expectations from the "modern learner" towards personal and professional development. The research has been conducted with a future perspective and is extremely valid in today's world to describe the situation of the professional learning audience. The reality of today's working environment and fast-paced digitalisation increasingly impact the way that people learn. The speed at which information needs to be accessed has increased significantly and more than ever people expect easy access and user-friendly presentation of the learning content. On average, an employee will be able to devote about 1% of their working time for learning and development. This poses new challenges for training organisations and the way they will need to approach training development and implementation. In the section below, we will present some key research findings in order to describe the "modern learner" and connect those features to CEPOL's context.

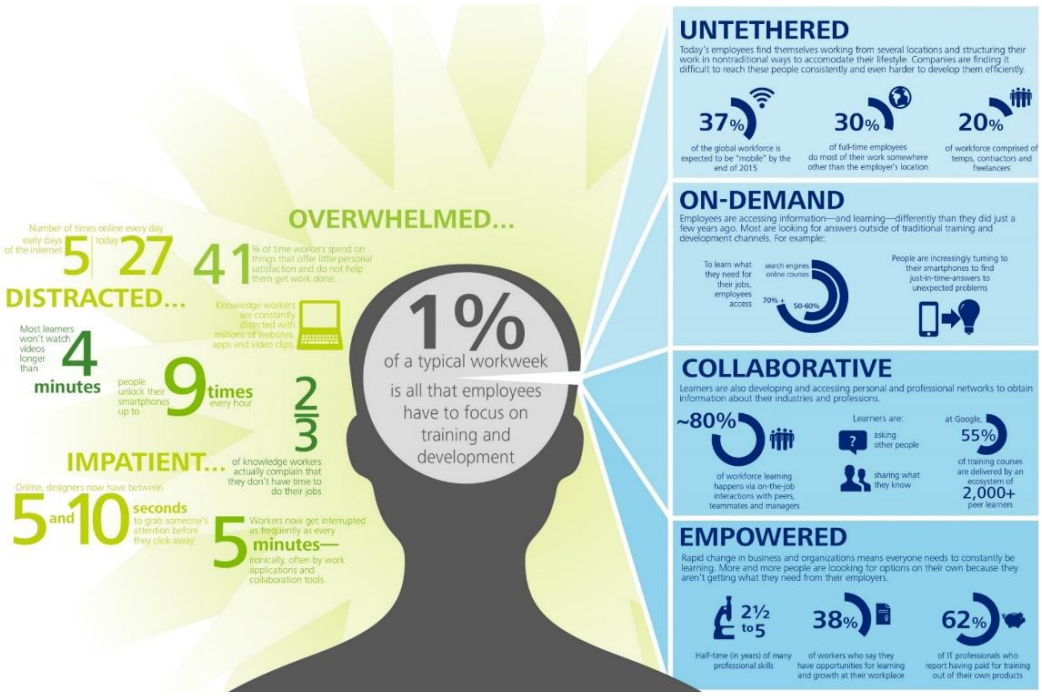


Fig. 3 - Modern Learner; Source: Bersin by Deloitte

Untethered audience

Today's employees find themselves working from several locations and structuring their work in non-traditional ways to accommodate their work- and lifestyles. Organisations are finding it difficult to reach these people and even harder to develop them efficiently. As discussed with CEPOL representatives, this finding also applies to the learning audiences of the Agency. CEPOL's learners are located in different EU countries; many will be travelling or are posted to various alternating work locations. In this reality, learning opportunities need to cover various geographies and/or should be accessible for learners 'on-the-go' where possible.

Collaborative learning

Learners are also developing and accessing personal and professional networks to obtain information about their industries and professions. Learning through and with peers, and having direct access to the 'collective intelligence' have become a natural way for people to learn. This means that learning organisations will ideally need to create learning opportunities of this kind in their learning portfolio. CEPOL has already identified collaboration aspects as a key driver for training development and would like to further foster the development of a network of law enforcement specialists as well as inter-Member State and inter-agency information exchange. Training activities that promote collaboration and exchange of knowledge should play an important role in CEPOL's learning paths.

[2] *Modern Learner*, Bersin by Deloitte (2014)

On demand learning

Employees are accessing information - and learning - differently than they did just a few years ago. Most are looking for answers outside of traditional training and development channels. Overall, technological progress and the abundance of (mobile) devices allows the user to access the information quickly and easily from wherever they are located. Learners will no longer wait to attend a face-to-face course to gain knowledge or skills - rather they will search through available content libraries (e.g. LinkedIn Learning), or simply search the internet to find a suitable course or an immediate answer to their question. As CEPOL's learners will not differ in this respect from a typical 'modern learner', in addition to providing a robust and structured Learning Management System, the Agency will need to be able to implement training activities in a format that is also short, appealing, quickly and easily accessible from mobile devices, still supporting the exchange within the professional networks.

Empowered learner

Continuous self-development triggered by rapid changes in business, regulations and organisations is becoming indispensable in today's organisations. Although learners have intrinsic interest and motivation to access the courses, more and more people are looking for options on their own because they are not getting what they need or not in a format they prefer from their employers. At the same time, learners like to decide and choose preferred learning activities and take control of their learning. This characteristic of a modern learner will resonate well in CEPOL's context as provided training opportunities are not mandatory – learners have high interest, motivation and a need to educate themselves. In this regard, training options will need to (1) be partially pre-selected or assigned to learners but leaving flexibility to access other options as well, (2) easily accessible, through an optimised search engine on the training platform, (3) well promoted to the learners, and (4) provided in a variety of formats to appeal to a greater audience.

Principles of adult learning

Taking into consideration the reality of a modern learner, we can draw some valuable conclusions, building up to five guiding principles for designing and implementing of training for adult learners.

Principle	Application in training
Build on learner's experience and establish rapport of professional networks	CEPOL's learners will access the training platform with a lifetime of experiences and measure what they are told against what they believe to be true. It needs to be recognised that learners will come with significant expertise and associated professional opinions. As such, facilitators should be encouraged to draw on learners' experiences for maximal learning impact. This can be achieved by, for example, capturing learners' expectations in the beginning of face-to-face sessions and addressing them throughout the course, or by making use of facilitation methods to encourage discussions and knowledge exchanges between learners.
Make it relevant, where possible use a hands-on approach	The key to an effective learning program is making the content relevant and acknowledging that people learn best by doing. Effective learning should follow a model in which (1) learners acquire new information, skills or insights into best practices (2) learn how these skills or knowledge can be applied from practical point of view and (3) the learner consequently is provided with the opportunity to apply it in a professional context. In CEPOL's specific context, the implementation of learning paths will allow the Agency to guide the learners through the learning process. A more comprehensive and impactful training will be enabled through the learning path model. In addition, by defining various entry levels of knowledge and pre-requisites for enrolment, the Agency will ensure that all learners are aligned in terms of knowledge and experience to effectively work together during the training activities.

Principle	Application in training
Strive for adoption, not just awareness	Training is a one-time event, while learning is an ongoing process. If the goal is for learners to adopt specific behaviours, then providing a one-time training event is insufficient; an ongoing learning programme is required, supported by various types of learning interventions appealing to a variety of different learning styles. Incorporating the learning path model will engage the learners for a longer time and boost their commitment to training. CEPOL will be able to support the learners in building on their knowledge, from awareness to proficiency levels and provide opportunities to practice in a safe learning environment.
Blend delivery methods	Each delivery method has features that make it more or less suitable for achieving particular objectives. Blended solutions in learning paths will address different competence levels and enable access to just-in-time information. Using the blended delivery approach will allow CEPOL to tailor the training content to its varied learning audiences. In addition, by using multiple delivery formats, especially the online formats, CEPOL will be able to reach more learners and increase its training impact as well as re-use and re-purpose the existing learning material.
Reinforce key messages	As information provided once in a one-shot type of way is difficult to retain, it is key to repeat key learning points to learners and increase knowledge retention and impact of the training. CEPOL should strive to keep newly introduced concepts and knowledge fresh in learner's minds, by e.g. providing post-training activities in a format of microlearning (articles, "Did you know…" learning snacks) or facilitating a learner's forum to continue discussions on a specific topic.

These five guiding principles of adult learning will be taken into consideration in the next sections of this document, and in more detail when deciding on the best-fit learning path model for CEPOL. Specifically, when choosing between types of learning paths and deciding on the most appropriate training delivery formats used for specific learning activities within these learning paths.

b) Embedding a learner centric approach through the new training platform LEEd

Learner centricity in training can be defined as an approach that acknowledges learners, their needs, interests and style of learning. Learner centricity in training design and implementation has been evolving over years and follows the technology UX (user experience) trends to customise the learning experience as much as possible to achieve the best possible learning impact. Nevertheless, such training approach needs to always be aligned with and contribute to the wider organisational objectives.

CEPOL aims to eliminate the performance gaps in EU law enforcement through training of relevant officials, who will in turn spread the best practices and the knowledge gained during the learning interventions in their home organisations. In this respect, the generic learner centric approach needs to be adapted to CEPOL's business objectives. Firstly, in order to achieve the above-mentioned goal, learners need to be offered suitable learning opportunities at the right levels of expertise and receive tools for cascading the information within Member States. Secondly, learners need to be guided in the training to ensure that they receive all necessary information throughout a learning path - it is however CEPOL's mandate to define the learning content for the learners and ensure that all learning objectives are covered by the learning activities. Last but not least, the training platform should focus on user experience and become an enabler for learners to efficiently access the training content and drive the impactful change. Hence, learner centricity at CEPOL should also be viewed as user centricity in the LEEd platform.

i. Benefits and principles of learner centricity

Benefits and principles of learner centricity will be presented from the perspective of learning paths to ensure optimal fit for CEPOL and a practical usability. Learner centricity is intertwined in all aspects of learning paths: from creation of courses and activities by trainers or training coordinators and to managing and configuring training platforms where they are provided. Principles for learner centric paths are interlinked and support each other to build a holistic approach to learning. Implementing the below-listed principles will allow CEPOL to even further

increase the quality of the training and reach the strategic objective of creating and impactful change in the law enforcement community.

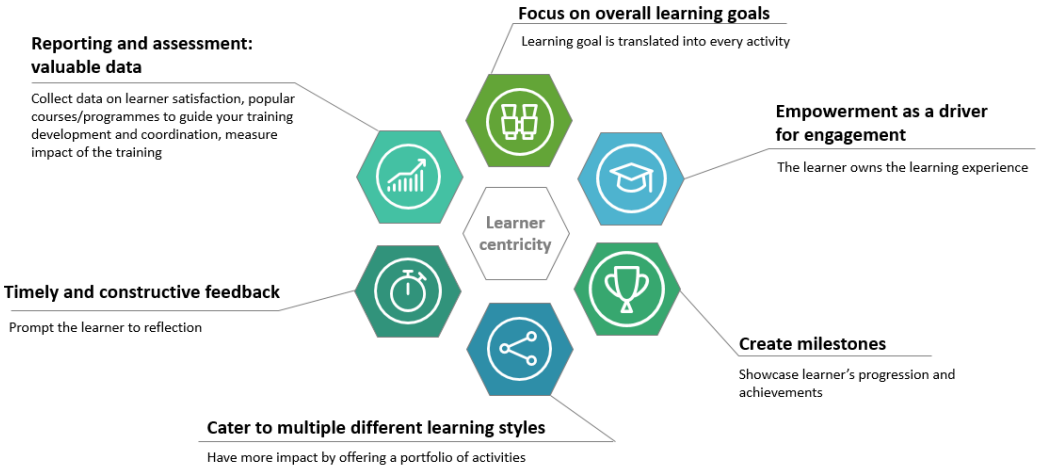


Fig. 4 – Principles of learner centricity

Focus on overall learning goals

The overall learning goals that are identified during a systematic assessment of capability gaps (that CEPOL is already undertaking in the EU-STNA and OTNA) should then be translated into the learning path activities with the goal of guiding learners in processing and acquiring the required new knowledge and skills. Part of this assessment includes an analysis on whether or not the capability gap should effectively be addressed by a learning activity or by any other means. To achieve this structure in learning paths, CEPOL needs to conduct a thorough learning outcomes analysis for a full learning path. Only then, the general learning objectives can be broken down into relevant training courses with activities in a best-fit format. In this process, it is key not to lose the overall learning goal of a learning path and crosscheck that all learning assets will contribute to this goal and not distract the learner.

Empowerment as a driver for engagement

The learners should be guided in the content of a learning path and complete learning activities in a sequence defined by CEPOL. If training content with the same objectives is available in multiple formats, learners (or their organisations) could be allowed to choose the activity formats (e.g. residential activities, online activities such as webinars, etc.) they would like to follow. CEPOL should allow flexibility in the training platform so that the learner can enrol to those activity formats independently, wherever possible. This way the Agency will reach a larger audience and increase the impact through its training activities.

Create milestones

Other engagement triggers that support the learner-centric approach are gamification elements. Badges, certificates of completion, and leader boards can highlight progression and learner's achievements. In the new training platform, CEPOL's learners will see their own progress when completing courses and get a sense of recognition among peers. At the same time valuable data on learners' knowledge levels will be fed into CEPOL to use for further training offer development.

Cater to multiple learning styles

People learn at different paces and may prefer different types of learning activities. By offering a diverse portfolio of activities, the training organisation can target more learners, transfer knowledge and skills in a better way and therefore have a greater impact. The digital delivery formats proposed in Part III will allow CEPOL to apply this benefit of learner centricity.

Timely and constructive feedback

Include assessment (formative or summative) in all activities in a learning course/programme to keep the engagement and prompt the learner to reflect on their progress and acquired knowledge or experience. This must effect in a timely manner, when the recollection of the training is still fresh and must be guided by the trainer/training organisation so that most important aspect of an activity are reflected upon. CEPOL can leverage its new training platform for the purpose of feedback, e.g. through the survey functionality.

ii. CEPOL's learning platform LEEd as enabler for adaptive, learner centric training

The new training platform LEEd will become the central point to access all learning paths offered by CEPOL. To effectively support an adaptive, learner centric approach, the platform will need to translate the above-mentioned principles into technical features and keep the user at the centre of all processes. In this respect, LEEd will use the data collected at the levels of learners and courses/programmes to optimise the personalisation of the learning paths.[3]

Data collection and associated functionalities of the training platform

Ideally learners should be able to create, manage and keep-up-to date a professional profile page on (or linked to) the platform. Such user profile page, should contain information and data that can then be leveraged upon to propose user-tailored learning activities on the platform's homepage. Core data elements that should describe user's profile are their function, job title, location and professional experience in terms of topics and thematic areas. In addition to this static type of data, dynamic data should be collected through users rating various courses, course completions, clicks and views of platform pages.

In the training platform, courses can be defined as learning entities that include specific activities (of different formats, and minimum one activity in a course). Courses should be clustered together based on criteria of thematic areas and increasing level of difficulty to build learning paths. Data collected on the level of courses would ideally include:

- Type of course (online, offline, blended, and self-paced or scheduled),
- Thematic area a course belongs to (derived from the course category in the platform),
- Topical tags (which can be deducted from the title of the training),
- Level of difficulty (defined by CEPOL),
- Description with learning objectives (defined by CEPOL), and
- Rating of a course (based on user rating and taking into consideration the versions of a course).

Having outlined the data necessary to support adaptive, learner-centric learning on the LEEd platform, the next section will provide guidelines on how to use it in practice and give insights into other functionalities that can support personalisation of learning experience.

Personalising the learning experience

Accessing learning paths: Pre-selection and recommendations

Based on professional experience in the thematic areas indicated by a learner, a set of pre-defined relevant learning paths as well as individual learning activities should be assigned or proposed to the learner. The training platform should allow easy access to the learning content captured in these learning paths through automatic and evolving assignments. The pre-selected learning paths should be organised in line with the thematic areas and visualised as e.g. 'top picks' for a learner. Such automatic assignment model will cater only for learning paths that are normally relevant for a profile. On the other hand, the user's behaviour in the system will provide insights and valuable data to the learning management system to recommend additional courses or easily accessible learning content. Based on course completions, clicks, views, and users' course ratings, recommendation of courses should appear on learner's profile/dashboard. This way a learner will have most relevant learning opportunities at hand after logging in.

Search options

Learners should also be able to explore the content available in the platform independently. Search options are necessary to empower the learner and provide easy, on-demand access to learning activities. Search engine on the platform needs to be optimised and include well-defined filters to help learners find the right (1) content and (2) format of the training. The following search filters are recommended: learning activity types, thematic areas, level of difficulty. In addition to the filters, learners should be able to search and retrieve courses through typing of key words to receive a list of matching activities.

Combining the pre-selection of learning paths and search options functionalities in the LEEd platform will support, guide and empower the learner to complete the learning paths.

[3] Note: this document does not provide exhaustive technical specifications or requirements for the platform but rather guidelines on how to approach adaptive and personalised learning in a training platform. Based on the discussions with CEPOL's representatives, LEEd platform will be gradually developed and upgraded to accommodate the below listed technical aspects.

Choosing training formats

Moreover, the new training platform needs to support multiple delivery formats for learning activities[4]: videos, webinars, eLearning modules, registration for face-to-face events, simulation exercises, virtual classroom events, fora, written resources, quizzes, examinations, etc. – there is a long list of training formats that a learning path can include. CEPOL needs to ensure that the formats are included in a course description and learners are able to select the courses within learning paths based on this criterion. It might not be possible to offer the same content in multiple formats in one learning path but it is advisable to mix learning formats within a learning path. Having the content provided in various delivery formats will also support the Agency in keeping the balance between activities for which nomination is required and those options available for self-paced learning. This way, CEPOL will be able to reach out to wider user groups. Information on how to increase the impact through learning formats will be covered in the last section of this document.

Recognising learning progress and fostering collaboration

After completion of exercises, activities or courses within a learning path, learners could be acknowledged for making progress on the platform, e.g. after completion of a learning activity with a level of complexity defined by CEPOL, learners could be awarded with a badge. Gamification elements on the platform can be taken to the next level, by creating leader boards that show the best performing or engaged users. Those users can become champions or experts and could e.g. lead a forum on a specific topic. Such peer collaboration within the platform would help CEPOL achieve the goal of building and strengthening networks between law enforcement across Europe.[5]

Informal learning opportunities

In a long-term vision for the Agency, it would be beneficial if the platform could also be able to recommend additional informal development activities outside of the learning activities offered within learning paths. Such informal learning opportunities could include coaching, mentoring, job shadowing or project assignments. This way learning experience would extend beyond the learning interventions and become incorporated in the flow of work and therefore support the personal development plans of learners. It is however important to note that building such recommendation system will require in-depth expertise of the subject matter and a good understanding of the current developments in the law enforcement field. CEPOL should envisage additional resources to cater for the informal learning opportunities, such as coaching and mentoring.

Communication and feedback

The training platform's notification functionality can support the communication with the learner and the trainer and provide them with valuable feedback. Notifications upon enrolment or completion of a course or learning path can be customised to describe the learning activity, explaining the learner what to expect in terms of learning objectives, course duration or next activities to explore. In addition, feedback notifications can be sent either by the system or by the activity managers/trainers with specific information on their performance in a course. In addition to learner-specific communication, the Agency could explore notification options for line managers of the learners, in order to inform them about the registrations of their subordinates. This platform feature would however involve the import of the profiles of the line managers or would require a profile creation by themselves.

As a result of relying on data to personalise training experience, many manual tasks could be automated through the LEEd platform, which will allow CEPOL staff to dedicate the valuable time to training development and quality assessments. The LEEd training platform should have pre-defined reports that will visualise the data on learner satisfaction, popular learning activities and guide CEPOL's training development and coordination (e.g. successful or overbooked learning activities should be flagged to CEPOL for repetition, popular delivery formats can be highlighted for further content development). In addition, platform administrators should be able to create ad-hoc reports, e.g. for a particular timeframe, type of activities, learner type, geography, etc.

[4] Delivery format is the medium in which a learning activity is offered (video, face-to-face, etc.). Learning activity is a learning event in which learners participate.

[5] Note: leader board and expert badge functionalities need to be evaluated with respect to personal data protection.

Part II – Recent trends in learning technology relevant for CEPOL

The objective of this part of the report is to present the results of the scan of the current EU digital trends in the learning industry. This will form the basis for establishing a comprehensive list of high-quality, innovative, technology supported learning solutions for CEPOL in the next part of the document. Understanding the digital learning trends and selecting the right delivery formats will support CEPOL's strategic objective of increasing the training impact for law enforcement professionals across Europe.

1. Introduction to technology trends in the learning industry relevant for CEPOL's context

Learning technologies have been evolving over the last 15 years[6] creating a large variety in learning tools and systems and enhancing the learning experience. In addition to newly developed applications, existing ones that are used in industries are being adapted for learning purposes. Technological developments follow the evolving approaches to professional learning and development, which matured from one-time, ad-hoc training events through continuous learning to learning in the flow of work. A study conducted by Bersin by Deloitte undertook an industry scan and analysis of available technologies, tools and software to create a "Continuous learning technology stack"[7] (Fig. 5), providing an overview of all available categories (both created specifically for learning purposes or adapted to them). Those are mapped into the "4E" continuous model of learning, comprising of contexts in which people learn:

- Education – formal training or learning;
- Exposure – professional networks and exchanges;
- Environment – on-demand learning delivered through work environment;
- Experience – on-the-job experiences through special projects or assignments.

In CEPOL's specific context it is important to look at technology trends across the four contexts, as the learning opportunities provided by the Agency will spread across formal and informal settings. Marked by a star sign on the graphic below are the categories that are already used by the Agency or are recommended to be used in the short- and long-term to provide exhaustive learning opportunities in line with learner centric guidelines. In addition, Fig. 5 provides information on the importance in general usage of the categories (shown with the size of the circles).

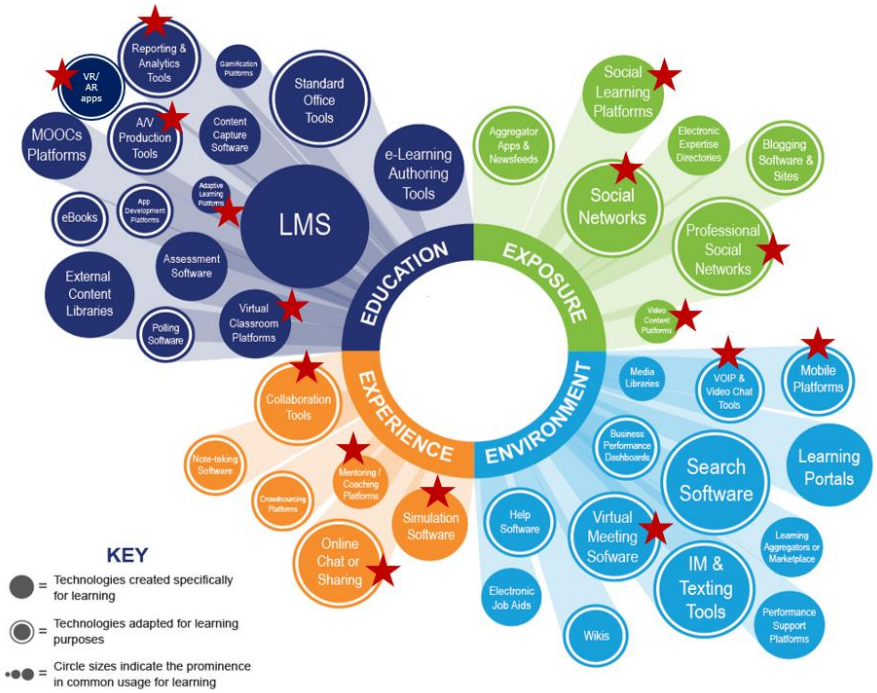


Fig. 5 - The Continuous Learning Technology Stack

[6] *The Continuous Learning Technology Stack*, *Thinking outside the LMS,* Dani Johnson, Bersin by Deloitte, Deloitte Consulting LLP 2015

[7] Bersin by Deloitte defines a technology stack as "a set of software or technology that works together to deliver a solution."

The above overview of learning technology stack has provided guidance in prioritising the technology trends applicable and relevant for CEPOL's learning audiences and Agency's business objectives. It is important to note that the Technology Stack was created with a future perspective encompassing the relevant technologies relevant for training organisations. Another technology that has been added to the stack are the augmented and virtual reality apps, which have been adapted for learning purposes. This stack provides a robust overview for the organisations to select the appropriate tools and monitor the trends – at the moment almost no organisations have explored all of them. Therefore, this overview should be used as guidance for the selection and monitoring of the trends.

Following, in this chapter we will look closer at the following developments in the training industry:

- Immersive learning experience;
- Social learning;
- Microlearning;
- Mobile learning;
- Informal learning opportunities;
- Big data and learning analytics.

Each trend will be presented with a short description, listing available technologies to support it and provide key benefits from using such approach in the training portfolio relevant for CEPOL. Moreover, in chapter two we will look at the delivery formats that support the selected technology trends and could potentially be considered for implementation by CEPOL.

a) Immersive learning experience

Immersive learning experience can be defined as an experience that deeply engages the learner and provides a stimulus for multiple senses. The learners are transported to an environment that resembles the natural setting as much as possible. Learners are 'immersed' in the training, experiencing the designed scenarios, and can engage with them in real-time, both psychologically and physically. As we have seen in the persona of a 'modern learner'[8], an average person is extremely distracted by the multitude of devices and tools, e.g. checking the mobile phone up to 9 times every hour. Therefore, it becomes difficult for trainers and facilitators to keep high levels of engagement in longer courses and achieve high impact out of a traditional course.

Currently, there are several technologies that are used to provide immersive learning experiences, from Virtual reality, Augmented Reality and eLearning modules (most significantly the scenario-based modules and serious games) or interactive videos. There are several key benefits of using immersive learning technologies:

- **Retention of knowledge and skill acquisition is increased through repetitions** – learners can repeat an exercise or 'relive' the scenario multiple times. As mentioned, learners use multiple senses and create motoric memory, which additionally increases the learning impact.
- **Learners can easily see different perspectives** of various situations and learn how to consider multiple factors when assessing situations. For CEPOL's learners, this aspect would become beneficial in exercises concerning, e.g. investigative methods.
- **Learning by doing improves the understanding and prompts immediate reactions and reflections**. Learners at CEPOL can e.g. respond to situations within scenarios, make decisions and directly see their consequences.

b) Social learning

Social learning is regarded as the oldest form of learning and implies that people learn from each other, or in social contexts. People observe each other's behaviours and actions and imitate them. In recent years, the concept of social learning has also found application in professional and workplace education – organisations started to acknowledge the time needed for colleagues to learn from each other through collaboration, exchanges, or simply asking questions in everyday job – the concept of a continuously learning organisation evolved. In line with those developments, the technology sector started to develop tools and platforms to facilitate such learning opportunities, and formalise and track those interventions in learning management systems.

There are several technologies to support social learning within training organisations: news and knowledge exchange fora, chat options, webinars, virtual classrooms, and videos. In order to best capitalise on this trend and

[8] *Modern Learner*; Source: Bersin by Deloitte

achieve the objective of increasing the training impact and strengthening the network of LE across Europe, CEPOL should take into consideration the following benefits of social learning:

- It **increases overall motivation among learners** - participants feel part of a bigger initiative and want to receive recognition for their efforts. In CEPOL's context, motivational aspect of social learning can be leveraged through badges on the LEEd platform, expert fora and online assignments on common project spaces.
- Tools such as chats and fora **provide information to the learner just-in-time.** Learners get relevant feedback or get answers to their questions without interrupting the daily work - CEPOL's learning platform will become a 'to-go' source of information on topics of the latest international developments and trends in the law enforcement field.
- Finally yet importantly, **expert circles or communities of practice will support continuous learning and enforce collaboration among LE officials**. CEPOL's learners will be able to promote the training offered by the Agency and cascade the information gained during learning interventions at their home organisations. An example where CEPOL is already promoting social learning is the Exchange Programme – it is recommended to further explore the exchange format and include it in the learning paths (as an element of or a recommendation after completing the learning).

c) Microlearning[9]

Microlearning can be defined as training assets that are designed to deliver short, visually attractive, impactful and targeted content. As modern learners have on average 1% of their workweek[10] available for professional learning and development, microlearning solutions can be used to implement focused training with specific, usually actionable, learning objectives. This training approach can consist of scheduled and ad-hoc learning interventions or can combine multiple assets into larger and designed interventions. Therefore, a microlearning approach could be considered by CEPOL (1) for both urgent training requests and within learning paths, (2) to deliver summarised information or raise awareness and (3) to provide updates on latest developments within the EU law enforcement sector. It is important to note that the content provided by CEPOL consists of complex law enforcement topics and the length of the microlearning assets needs to be adjusted to cater for this aspect. The modules are expected to be longer than a typical microlearning asset, however all interactive features should remain.

Digital training formats such as podcasts, newsflashes, videos (of different kinds), short eLearning modules, pulse surveys or knowledge checks are commonly used to deliver microlearning solutions. The key benefits of this technological trend are described below:

- **Microlearning assets can be designed, developed and implemented quickly** and, in addition, to a large audience through various devices. CEPOL would be able to contribute to their strategic objective and inform a large number of LE officials. The Agency can therefore develop good quality learning material in an easy-to-digest format with a high return on investment and experience.
- **Microlearning is also characterised by impactful design.** The goal of microlearning assets is to create excitement around a specific topic, explain in a short and concise way the main concepts and if necessary signpost to a source of information with more details. Therefore, the specific content is visually appealing as well as delivered in a user-friendly format.
- **Microlearning can be used to reinforce key messages from a training course and therefore increases retention of knowledge**. In CEPOL's specific context, microlearning can also be leveraged in post-training learner engagement, e.g. (1) through 'learning nuggets', such as 'did you know..?' or 'did you remember..?', (2) topical newsflashes, podcasts, infographics that are linked to a training topic or CEPOL's thematic area.

d) Gamification

Gamification in learning can be defined as the usage of game-like elements and design in the training content development and delivery. The aim of gamification is to enhance the training experience for learners, boost engagement, motivation and increase the retention of knowledge. In addition, learners are more prone to take initiative and lead in competitive settings to reach the set out and meaningful learning objectives. In such setting

[9] In 2017, Grovo, an American micro-learning training company, has registered the name microlearning as trademark with the U.S. Patent and Trademark Office. The trademark is placed on the Supplemental Register, which means that within 5 years Grovo has to prove the exclusive use of the term for its services. Until then the term can be used by training organisations as long as it does not refer to Grovo's services.

[10] *Modern Learner*; Source: Bersin by Deloitte

learners are also able to 'fail safely' without any negative consequences. On the contrary, learners are able to see the effects their decisions might have, take the time to analyse them and reach conclusions.

- Gamification elements can be used in the traditional classroom setting to diversify exercises and increase participation – when designing classroom content CEPOL should explore activities such as group and individual competitions, narration and storytelling for problem solving (which can be done by the trainers themselves or by the means of videos).
- CEPOL could explore incorporating competition and leader boards elements in the LEEd platform. Learners could be awarded badges based on completed challenges or courses. This will help the Agency identify most active learners and communicate their achievements to the global learning community. At the same time most used or completed learning products will be self-promoted as well.

In CEPOL's context, gamification can be embedded (1) on the level of the learning platform and (2) on the level of digital learning assets.

(1) It is recommended to use leader boards and competition elements on the platform level: learners could receive badges for the completion of individual courses (cf. Guidelines for adaptive learner-centric learning; Learning path model visualisation). The reporting feature on course completion level in Moodle will provide easy access to an overview of all learners completing courses and can form the basis for a dashboard plug-in (leader board). If relevant and sufficient resources are available, most active users could additionally be featured in newsletters or podcasts as 'role models'.
(2) Gamification can be leveraged within digital learning assets such as eLearning modules, webinars, virtual classrooms, and facilitated fora. eLearning modules based on 'serious games' (see Part III section 3b) can include a feature of collecting points for well-solved cases or problems portrayed in the training content. Following this logic, should the learner struggle to solve the issue, they could be presented with additional questions to check their knowledge or be referred to a theory layer for support. In webinars, virtual classrooms and facilitated fora, top contributors can be awarded a special status or, similarly to the first point, be featured in communication – this however requires attention and quality checks by trainers, webinar and forum facilitators.

e) Mobile learning

Another example of technology adapted to the learning sector is the use of portable devices for learning purposes. Mobile learning uses the available tools and devices, such as mobile phones or iPads to engage the learners in various activities without disrupting their daily tasks. Mobile learning can also take place whenever learner has some time available, usually unplanned and can devote it to self-development. Mobile learning can (1) make use of microlearning assets, which are usually designed for mobile delivery formats or (2) use assets specifically designed in fully responsive formats (adapting the format, size, and resolution of the page depending on the device they are shown on). Mobile learning makes use of various delivery formats, such as videos, eLearning modules, podcasts, digitalised reading material, etc. and can deliver content to the learner at the point of need. Mobile learning has potentially four key advantages for CEPOL:

- **Mobile learning drives learner empowerment and gives the flexibility in accessing the learning content** – at any point in time and regardless of location. Learning becomes part of daily habits, gives opportunity to adjust the pace of the training (that is defined and designed by CEPOL) depending on the individual schedule. CEPOL would be able to see an increase in completion rates of courses and therefore increase the impact of the training.
- **Mobile learning can include various content formats and be used within or outside of a traditional classroom training**. For example, mobiles can be used as voting devices to gather feedback on a specific topic within a classroom setting; mobile chat apps can be leveraged as a forum format and used to welcome learners to a classroom training, inform them about any pre-requisites, pre-course reading material or as prolongation of classroom discussions.
- As CEPOL's learners are dispersed across various geographies and may not always have internet connection, **mobile learning content can serve as an 'offline' training option**. Learners can be invited to download e.g. presentations, videos, reading materials or podcasts to access them at a later stage when they have time for professional development. It is also important to note that mobile learning assets used offline can offer and option of 'logging' the completion records and results after re-connecting to the internet. This way learners will receive acknowledgement for the progress they have made upon their own initiative and CEPOL will be able to track and analyse the learning data.
- **Fully responsive design** of the eLearning content and **fully configured mobile application for the LMS** are key when it comes to providing the option of mobile learning. This way CEPOL's learner can access the content on their portable devices without any technical obstacles and at the same time the Agency can track the usage and completion data.

f) Informal learning opportunities

As learning is becoming more acknowledged as an integral part of any profession, informal learning opportunities are increasingly promoted within organisations as well. Continuously evolving regulations, digital transformations and implementations of new IT tools require LE officials throughout Europe to look into additional options of professional development to be able to up- or reskill quickly and effectively. There are several solutions that CEPOL's learners can leverage within their home organisations or within the law enforcement network across Member States like for example: Coaching, mentoring, job shadowing or project assignments. LE officials can build learning communities, in which counterparts would (1) provide guidance or 'coach' others and exchange on specific topics, or (2) in which experienced experts would mentor the relatively less knowledgeable colleagues and provide support in tasks or assignments. Job shadowing options and collaboration on projects can take place in the flow of work and can be combined with previously described coaching or mentoring sessions. Although this trend is not a technology trend per se, there are is an increasing number of tools available to support the informal development opportunities, such as online meeting rooms or webinar tools, online project spaces and communication apps. There are several key benefits for CEPOL to consider the use of those learning solutions and promote and strengthen the knowledge and skills within the European LE scene:

- **CEPOL will be able to disseminate the knowledge more effectively through the strong professional network**. Therefore, a significant training impact will close the gaps in law enforcement performance.
- Learners would feel more empowered to access the training if they receive recognition for the additional, semi- or informal learning activities in the LEEd platform. The LMS should enable logging of such informal training opportunities, by, e.g. creating special courses or areas on the platform, designated for learner's pro-active efforts. CEPOL would need to however design the activity guidelines (describing requirements and processes) and supporting documentation for such activities (e.g. templates for uploads, guidelines for trainer evaluation, etc.).
- **CEPOL could gather additional, valuable data for analysis of their training activities, audience and eventually measure the impact of training.** As this type of training activities is not captured at all by many training organisations, CEPOL could explore the possibilities of collecting and analysing the data uploaded by the users in the LEEd platform to analyse the volume of such activities. Possibly, these data inputs can be used in the training impact assessment in the long-term perspective to evaluate whether informal learning opportunities have any impact on strengthening the knowledge transfer, application of knowledge and development of desired attitude.

g) Big data and learning analytics

Big data is usually defined as big volumes of information that are analysed to produce detailed insights on e.g. trends and tendencies to support decision-making processes. Learners generate data in the learning management system and any other learning applications linked to it or used in parallel. Such data can include (1) quantitative data on, e.g. completion and attendance records, hits and views of learning content and webpages, dropout rates, and (2) qualitative data regarding feedback and satisfaction with learning opportunities. Technologies such as artificial intelligence and algorithms are commonly used to personalise the learning experience by recommendations of courses and programmes and predicting user behaviour and therefore boost the overall user experience on training platforms. This technology trend cannot be mapped against any delivery formats on one-to-one basis as it is connected to all learning activities and behaviour in the learning platform undertaken by the learner. The goal of using data is to assess the gathered data, reach meaningful conclusions and design improvements for the learning paths, activities or the platform. Specifically, there are three key benefits for CEPOL to consider when leveraging big data for analytics:

- **CEPOL will take data-driven and informed decisions** based on insights from the analysis of training activity usage, completion status and pace. This way, the Agency will be able to (1) plan internal resources and budgets easily, (2) plan development, launches of training activities, and (3) promote training events in a targeted way. CEPOL can explore business intelligence dashboard tools, such as Tableau[11] or Microsoft Power BI[12] to visualise the collected data. Such tools are used to collect the data in one centralised place, categorise them and build dashboards for visualisation of relevant information to use in Agency's operational work.
- **CEPOL can optimise the learning path models with artificial intelligence and algorithms**. By using such methods, learning will become more personalised, e.g. 'smart learning paths' could be introduced, whereby the learning content created and defined by CEPOL is combined by an algorithm and proposed in

[11] Tableau is an interactive data visualization software. https://www.tableau.com/
[12] Microsoft Power BI is a business analytics service providing interactive visualizations for end users to create their own reports and dashboards. https://powerbi.microsoft.com/en-us/

a format of a learning path to a learner automatically (based on their previous learning records and usage of the training applications) on their dashboards.[13] Not only is this process extremely user and learner centric, but also reduces the required administration and maintenance of a platform.[14]

- **Chatbots providing first line support and guidance to learners on learning management systems** would also decrease the administration time. Such solutions are already widely used across various sectors to reduce the time of email and support-related tasks – and instead devote it to quality control and content development. Chatbots can easily be incorporated into the LEEd platform through available plugins. Solutions such as Dialogflow[15] have been used with Moodle and could be leveraged by CEPOL for FAQs, to start with and for user support.

[13] Data protection laws need to be observed when collecting the training data of learners. In the Learning Management System, learners need to actively give their consent to store and use their data for clearly defined purposes. This can be achieved by inserting the Terms of Use statement in the LMS, to which learners can agree. Alternative dashboards without the use of algorithms should be available to learners if they have not agreed to the use of learning history data.

[14] This technological trend should be considered by the Agency in the mid-term, once the learning path framework has been implemented and sufficient data generated for a targeted analysis.

[15] Dialogflow is a Google-owned developer of human–computer interaction technologies based on natural language conversations. https://dialogflow.com/

Part III – Learning path framework for CEPOL

Part III of the report will focus on the description of the learning path model, its elements and key process to incorporate it in CEPOL's way of working. Feedback gathered during the touchpoints with CEPOL's project team served as a compass to create an actionable and workable model fit for implementation. First, the learning path model will be elaborated upon and followed by the description of processes for identifying and maintaining high-quality and relevant paths. In addition, through a detailed evaluation of a vast list of delivery formats, the increased impact of blended learning paths will be considered. Moreover, this part will provide practical guidance and a comparison matrix on how to select best-fit formats for various types of content. In the last sections of Part III the roles required for CEPOL to implement the learning path framework will be discussed. The report will be concluded with a high-level roadmap for transition.

1. Introduction and characteristics of the learning path model for CEPOL

This section of the report will consider types of learning paths and present a best-fit model for CEPOL. In addition, it will provide the definitions of the elements of a learning path and use the consistent terminology throughout this part.

A learning path can be defined as a sequence of courses on a specified theme with defined learning outcomes. The objective to implement the learning path is to support the in-role development from the new-comer to the expert level across the years by offering linked learning interventions within the given thematic area. It comprises of courses organized in a logical order with an increasing level of difficulty or expert knowledge. Each learning path should be defined depending on the content complexity and the target audience. Courses are the elements of a learning path tackling a specified topic with a defined learning outcome. They consist of learning assets that deliver the content in an attractive, learner-centric way. Learning assets are the smallest elements of a learning path and can be described as activities of a course. Activities of a course can have an online or offline delivery format and their purpose is to convey the content of the course.

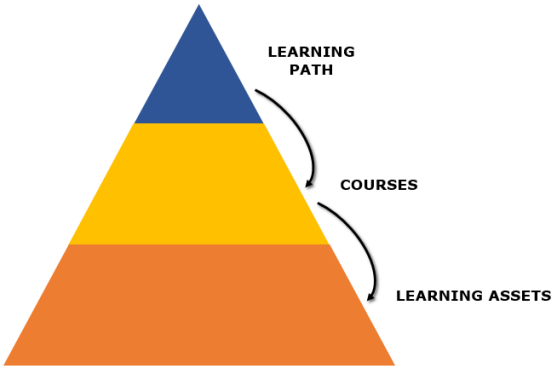


Fig. 6 – Elements of a learning path – hierarchy

There are three types of learning paths that can be created in most Learning Management Systems (LMS):

- Sets of courses – collection of courses on a specific thematic area that are not bound together by any restrictions. Learners can freely choose which courses they would like to access and decide on the order of course completion themselves.
- Sequenced courses – collection of courses arranged in a 'chain'. Every course is bound to the previous and the following course by sets of restrictions. Learners are guided on which courses need to be completed in the beginning before they can access content that is more complex.
- Branched learning paths – collections of courses that are in the beginning sequenced and order of completion is pre-defined with an additional set of courses offering more advanced or specialised topics. Learners need to complete the sequenced courses before they are allowed access to the next level of courses, where the order of completion is free.

In addition to this classification, a distinction can be made between:

- Mandatory courses, which contain activities that are crucial for achieving the desired learning outcomes,
- Optional[16] courses, which provide content that is supplementary to the objectives of a learning path, or may go deeper into a certain learning goal.

[16] Optional courses are sometimes used to provide same content in a different activity format, e.g. to reach a greater audience, provide an alternative training opportunity to a face-to-face training which normally would have a limited number of seats.

Considering CEPOL's context, Agency's varied learning audience and their different levels of maturity or knowledge will require a more guided and supported approach to learning pathway. Therefore, a sequenced learning path type with restrictions is recommended in order to create a clear framework for learners to complete the activities and increase their knowledge level from fundamentals to expert. As mentioned in previous sections of this document, courses will need to have a defined level of difficulty, so that when creating the learning path, the sequencing of the courses can be easily completed. After completing a course, learners should be given the opportunity to assess their knowledge and check if they have the necessary knowledge and skills to advance to the next level. Such restriction will allow learners to interact with peers of approximately similar level of knowledge within a course, which will boost engagement and training impact.

At the same time, a certain level of flexibility in the way courses within a learning path can be accessed is required – upon the launch of a learning path, learners need to be able to check their level of knowledge and find out about what is the most appropriate level/course for them to start at. This can be achieved by a creating a short quiz at the beginning of a learning path to assess learners' knowledge. Depending on the quiz score, learners will receive a recommendation of the level at which they should start their learning with indication of relevant courses. E.g. if a learner's score corresponds to the intermediate level of proficiency, they should start their education at this point of the relevant learning path. Preceding courses should still be available as resources and be accessible at any point in time. Instead of pushing the full content to the learner (all levels, from fundamentals to expert), they will be guided through the learning process and will not get discouraged by simpler, mandatory courses that that would not teach them anything new but that would nevertheless still require some time to complete.

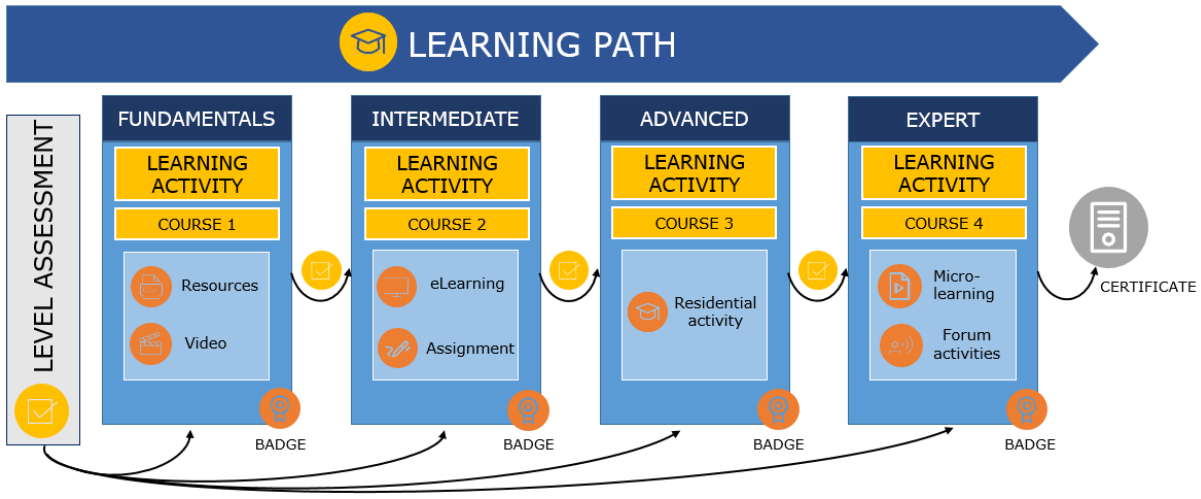


Fig. 7 - Learning path model - Example

By opting for a sequenced learning path model, CEPOL will also have more the flexibility in developing the content, as courses can be added to learning paths at any stage. Upon launch, learning paths can be short in terms of course number and increase the length with time as the content is delivered in additional training formats. It is important to note that learning paths should not be overloaded with content or activities. Based on discussions with CEPOL's representatives, it is foreseen that a learning path can take from a few weeks to several months to complete.

It is recommended that highest possible consistency for the sequenced learning path model be kept, although it is possible that in certain, exceptional circumstances other learning paths models will need to be used. Considering the current context of CEPOL, it is possible that ad-hoc training requests stemming from emerging training needs will need to be tackled (see Section 2c). In such circumstances, a new learning path can be created or, if the training request is urgent, single learning activities or events can be organised separately from the learning paths. Should the content of a training request be aligned with an already existing learning path, the designed solution can be included as a course within this path. The nature of the request will determine which of the above option(s) will be most appropriate.

2. Identifying and maintaining relevant learning paths

Implementation of the learning path model and maintaining it operational will involve several key processes: (1) defining the learning paths through identification of the learning outcomes, (2) breaking down the learning outcomes into sizeable content to create learning courses (3) categorisation of courses depending on the level of content complexity and once the model is in place, (4) maintenance of the existing learning paths. In addition to the planned activities, the process for the ad-hoc training requests will be presented to complement the model and ensure its completeness for operational implementation.

a) Defining learning outcomes for learning paths

CEPOL's robust efforts in identifying the training needs through the EU-STNA and the OTNA (Operational Training Needs Analysis) should become the basis for identification of the learning paths within the thematic areas. The EU-STNA report provides sufficient information per thematic area on the challenges of the law enforcement officials related to knowledge, skills and competencies. This strategic document comprises the list of main topics for the training, which have been prioritised and can serve as a compass for the identification of the learning paths. While EU-STNA defines the themes and the crime areas to focus on, the OTNA dives deeper into the sub-topics of the identified themes. The OTNA is conducted on annual basis and involves input from stakeholders (Member States and EU Agencies) to collect information on the needs, learning outcomes and the target audience of the training where possible.

CEPOL takes two approaches for conducting the OTNA: (1) through expert groups that meet in person and define the training needs and (2) through a survey to all stakeholders asking relevant questions on identified training needs together with topics, mode of delivery, learning outcomes, etc. Those sources provide sufficient input to define the courses to be launched in a given year. Fig. 8 below presents the funnel approach to the identification of the learning outcomes per learning path and its elements.

Fig. 8 – Approach for defining the learning objectives for learning paths and courses.

Learning outcomes are statements that define the expected goal of a curriculum or a path in terms of demonstrable skills or knowledge that will be acquired by the learner. The definition of learning outcomes should be the foundation of the design of any path and its courses.

In CEPOL's specific context, the list of identified needs from the training needs analysis will need to be further elaborated upon and rephrased in order to capture the knowledge and skills to be acquired by the learner. Fig. 9 below, outlines the key steps in defining the learning outcomes and creating learning paths.

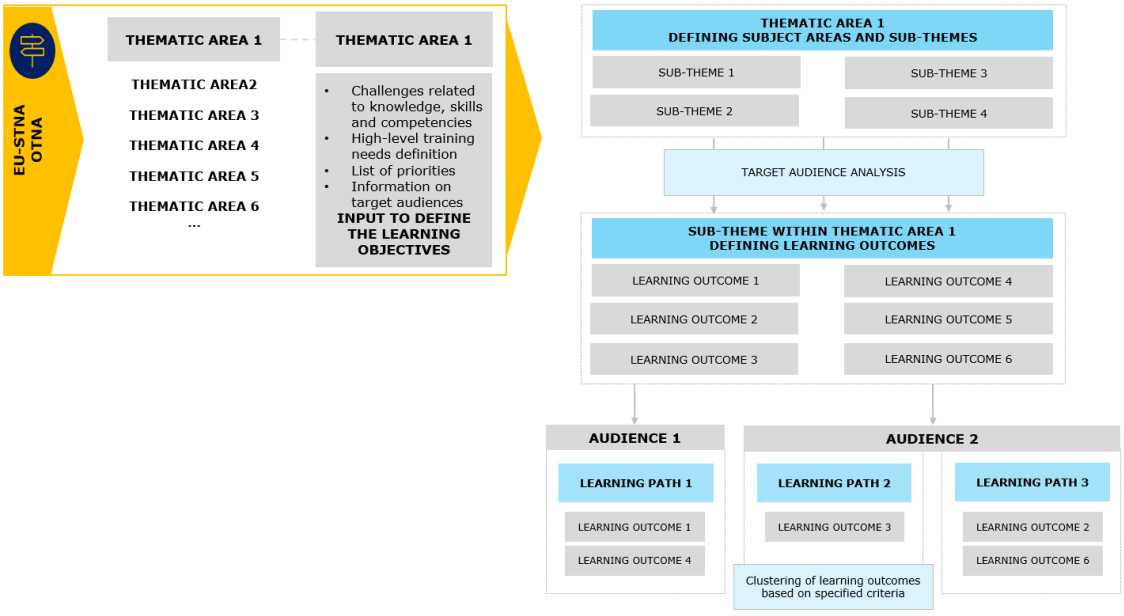


Fig. 9 – Approach for defining the learning outcomes for learning paths.

Each of the thematic areas and their sub-themes (where applicable) should be investigated separately in this process. After capturing the list of all needs for all law enforcement officials, it is recommended that the well-acknowledged Bloom's taxonomy be used for defining the outcomes. Action verbs should be leveraged to phrase the learning outcomes from the generic statements of the needs. The verbs correspond to the levels of knowing/awareness, comprehension, application, analysis, synthesis and evaluation and should be used in each learning outcome definition. This exercise will define the specific content and topics within a thematic area. In addition to this, the OTNA will provide inputs on the target audiences. It should be noted that the definition of audiences should be dependent on the level of proficiency required from the law enforcement profiles to perform their roles effectively and therefore, the names of the functions among the officials may naturally vary between the national administrations of the Member States. It is recommended to determine the target audience with the help of general descriptions, e.g. LE official that needs to be aware, or knowledgeable, or proficient in a specific topic. Having compiled this information, CEPOL will gain a good understanding on the content ('what') and the learner characteristics ('who'). The next step is to compile the learning objectives for each of the defined audiences – the outcome of this grouping will be the learning paths. At this point in time, the content definition is high-level, without details on the delivery format or 'how' it should be transmitted to the learning audience. Nevertheless, the defined learning outcomes provide sufficient information to categorise them according to the level of complexity: 1 – raising awareness, 2 – building knowledge, 3 – try-out, and 4 – application (see Fig. 14). In the next section, we will look at what information is necessary to build the course content of the learning paths.

b) Learning objective breakdown: courses in a learning path

The learning outcomes defined within a learning path for a specified audience will be further assessed to create the courses. At this point, close involvement of subject matter experts, didactic experts and trainers is necessary – they will be the source of information necessary to create the course description with more detailed learning outcomes and provide content for learning activities.

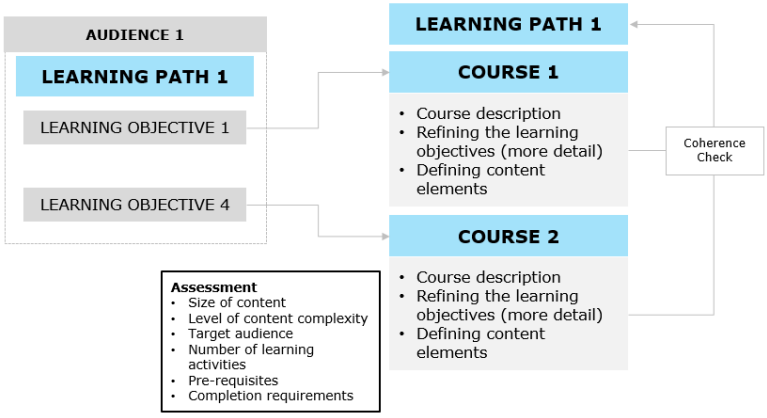


Fig. 10 – Approach for defining the learning outcomes for courses.

In order to create the courses within a learning path, an assessment on the following aspects needs to take place:

- Size of content – is the topic sizeable or does it need further breakdown into multiple courses?
- Level of content complexity – is the training topic theoretical or practical? Will it involve low or high interaction levels?
- Target audience – what are the characteristics of the audience? Are there specific requirements that need to be observed, e.g. lack of time to attend the residential courses or preference for online learning options?
- Number of learning activities – will the course involve one or multiple activities?
- Pre-requisites – should the learners be able to demonstrate certain level of knowledge on the topic before accessing the learning course?
- Completion requirements – which activities are required for the learner to complete the course (e.g. only selected or all activities)?

Ideally, majority of the assessment points can be covered at this stage - the more information is available, the faster and more efficient the content creation phase will be. Such assessment should be performed for each defined learning outcome and will result in a list of courses of a learning path. Having the list of courses, the definition of the sequence will need to take place. Courses with lower complexity level should be placed at the beginning of a learning path, as they will be raising the awareness or building the theoretical knowledge of a subject. Courses, which require practical application of knowledge should follow only towards the end of a path. This way the learners

will be guided through the material in a logical and coordinated way. In section 3.a we will look at the delivery formats for the content and how to best assign them to create an engaging and varied learning path.

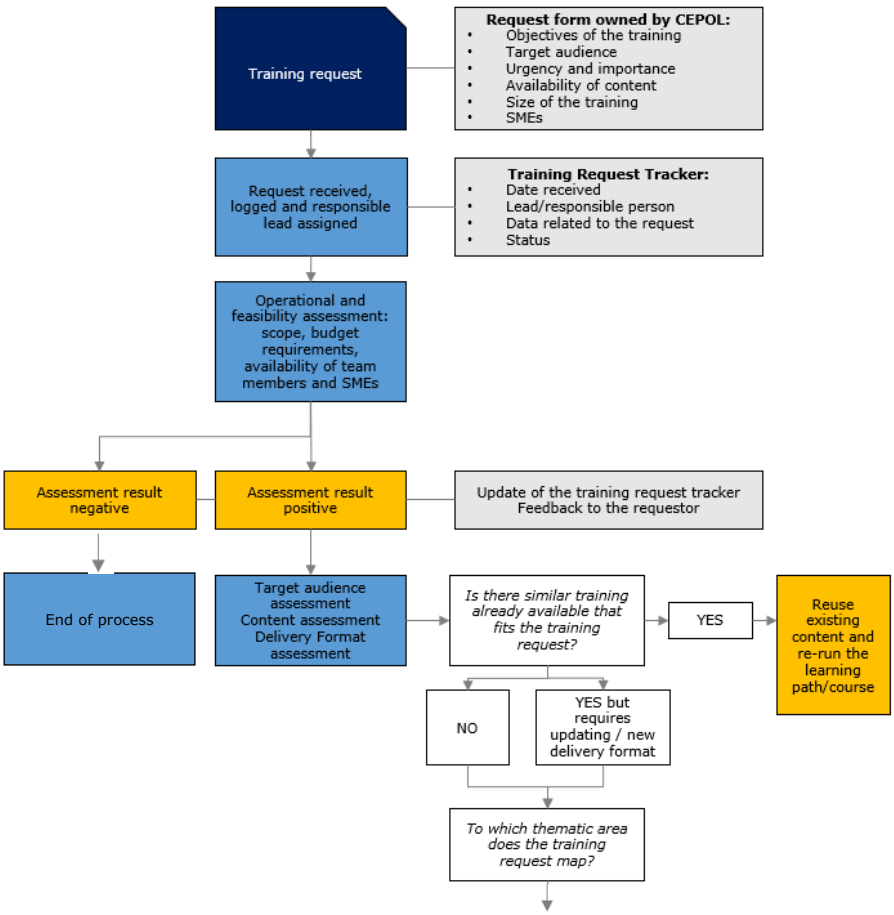
It is important to note that a quality check should be performed for each course to see if the content is aligned with and will contribute to the desired learning outcomes of a learning path.

c) Ad-hoc training requests

Ad hoc training requests are those training requests that are not covered in the training catalogue or the Single Programming Document but nevertheless need to be considered, assessed and if relevant catered for by CEPOL. The requests received by CEPOL are requests for a proactive communication and training for stakeholders and/or to cover emerging trends or new developments. The delivery format can be indicated in the ad-hoc training request itself, however CEPOL will define and select the most relevant training format. In general, about 20 ad-hoc webinars per year are specifically requested by CEPOL's stakeholders.

The graph below describes the crucial steps in the process of handling the ad-hoc training requests. It is recommended that a standard form for such requests be used to collect all necessary information. CEPOL would own the form and collect all necessary information from the requestor. This way, the following assessments will be conducted in a consistent and standardised way. It is also recommended that a centralised tracker of all requests is kept to map all incoming information. This way CEPOL will be able to monitor the trends and interest in the thematic areas. Ideally, this tracker will be owned by one person who will coordinate all actions of the process and feed back to the requestor. This person would not be responsible for conducting all activities but rather making sure that the right stakeholders are involved in the process and that timelines are respected.

Any ad hoc training request should be considered in a long-term perspective and prepared as any other course within an existing learning path with a detailed description of learning outcomes, target audience, etc. It is important to point out that as all learning paths should be reviewed on an annual basis, integration of the ad hoc requests into the learning paths should be assessed at that moment as well (see next section – Maintenance of learning paths).



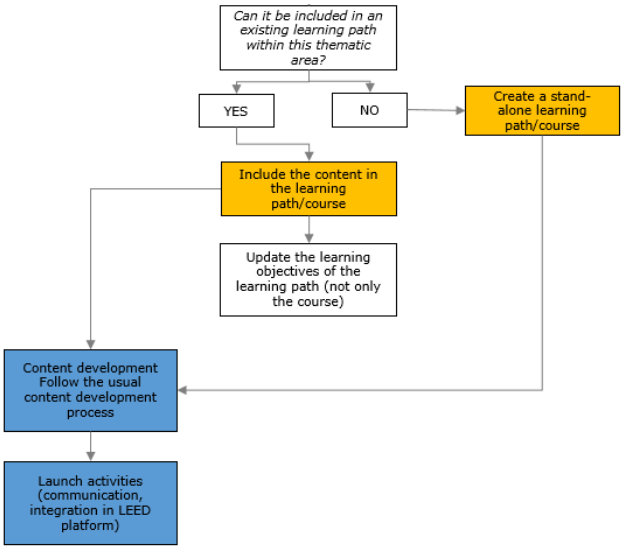


Fig. 11 Workflow of managing the ad-hoc training requests within the learning path model.

d) Maintenance of learning paths

The objective of maintenance of learning paths is to ensure the high impact and quality of the training and keep the training offer relevant to its learners. It consists of activities related to conducting assessments or reviews and updating the existing base, creating new offers and archiving the irrelevant courses.

The following drivers for the maintenance of CEPOL's learning paths have been identified:

- Periodic assessment of the content relevancy
  - Training needs analysis undertaken by CEPOL
  - Monitoring of the EU Policy changes
- Periodic assessment of the satisfaction and popularity of courses
  - Satisfaction survey results
  - Monitoring of completion records

It is recommended that CEPOL undertakes the periodic assessments in a structured way across the learning paths and thematic areas at a defined time of the year. Ideally, an annual review of content relevance should be implemented in parallel with the annual Operational Training Needs Analysis (OTNA). It is also recommended that satisfaction surveys are launched through the learning platform LEEd on annual basis prior to the OTNA. This way, all information required to assess the current state training offers will be available before the training catalogue of learning paths is completed.

The satisfaction surveys will provide valuable insights and feedback from the learners. Such surveys should evaluate the following elements:

- Content relevancy of an activity as perceived by the training audience;
- The means in which the content was transmitted (for residential activities, the trainer performance will be evaluated, for online activities it will be the delivery format);
- Learners' perceived knowledge transfer (learner rating of knowledge before and after training)
- Learners' rating on the applicability of the training (e.g. How likely are you to use the knowledge from the training in your day-to-day work?).

An additional input with respect to the popularity of the available courses can be retrieved through the tracking of the course completion records – this data will give information on the number of learners who have started and/or completed a course. This can be used to rank the courses and prompt investigation into why certain activities are less 'popular'. As pointed out, all above-mentioned reviews should take place before the annual training offer is decided upon.

Fig. 12 – Approach for maintenance of the learning paths.

The above-described activities may result in the following actions that will need to be undertaken to maintain the high quality of the training offer:

- Revision of content – content within an existing activity requires an update;
- Update of the delivery format – content within an existing activity is relevant but the delivery format requires updating (e.g. based on feedback from learners, increase of a learning audience volume, etc.);
- Deletion from the training offer – the content of the training is outdated and the activity needs to be removed from the offer;
- Addition to the training offer – a new training need has been identified and deemed relevant to implement a new training course. The processes for defining the learning outcomes for learning path and its courses need to be launched.

Fig. 13 – Approach for maintenance of the learning paths.

In terms of structure, it is recommended that the roles responsible for the training offer in a certain thematic area lead and coordinate the revision within their domains (with support of additional staff, depending on the size of the area). Fig. 13 summarises the high-level steps of the maintenance process. As mentioned above, the periodic assessment of training popularity/satisfaction and content relevancy will result in decisions on the maintenance of the offer. It is important to note that all results from the revision are communicated among the owners of all thematic area to ensure alignment and consistency across the organisation. This can be achieved by organising regular meetings and workshops, in which the roles responsible for the thematic areas will present the results of the assessments and their decisions, followed by mapping of the topics that affect other thematic areas. This is aligned with the CKC approach. Such comprehensive overview can be further worked on in breakout sessions between the owners of the thematic areas to reach conclusions and decide on next steps. The outcomes of the alignment meetings and sessions should be published to all thematic area owners. Such structured approach to the maintenance of the learning paths will result in a comprehensive and relevant training offer by CEPOL.

3. Developing the learning activities within learning paths

This section will elaborate on the selection criteria and guidelines for delivery formats that can be used within learning paths. Having identified the learning outcomes and content for the training, the next step is to identify the format in which it will be best delivered. First, we will look at the generic criteria for delivery format selection and provide a high-level overview for the delivery formats. Next, we will zoom in on the best-fit technology learning solutions for CEPOL and provide an assessment of each of them. For the purpose of a consistent assessment of the delivery formats, we will look at the level of content complexity, which will be defined by the required levels of interaction (high to low) and the levels of theoretical vs practical knowledge.

a) Selecting delivery format for training content

In addition to structuring the learning experience for learners, learning paths aim as well to increase the training impact and increase the retention of knowledge. Learning paths prolong the experience by additional activities and help reinforce messages of the training. It is recommended that a blended learning path model be used to deliver on the above-mentioned objectives.

Blended learning can be defined as learning that involves a mix of activities in various delivery formats – each format is carefully chosen depending on the learning objective of an activity and available content. Blended learning will combine face-to-face, digital training formats, and learner collaboration through e.g. online fora or communities of practice. This approach to learning paths has multiple benefits for CEPOL – amongst others, such learning journeys will cater to the needs of various learners and provide a flexible experience tailored to their learning style and pace (versus one-size-fits-all approach). In addition, CEPOL will be able to target a larger audience through online training formats, at the same time increasing the value of residential activities that will be used to focus on in-depth topical discussions, exercises and network building.

Multiple delivery formats can be used within a blended learning path. The table below described generic delivery formats that can be used by CEPOL. Following sections 2.a.ii will elaborate on the detail of the digital learning solutions.

Delivery Format	Use Cases
Resources	Set or individual documents for viewing or download for the learner; can be used as pre-course reading material, quick reference cards, explaining concepts or signposting to additional resources.
Videos	Visual activities that can be viewed by the learner within a learning path to e.g. explain concepts, deliver a message from leadership (create buy-in), provide instructions or demonstrations (on how to use tools or software).
Microlearning assets	Short (max. 2-3 minute long) videos, quizzes, articles to reinforce a concept already introduced, introduce background to a discussion point in a forum, etc.
eLearning modules	Usually longer in duration (from 20 to 60 minutes) visual and interactive modules, which provide an in-depth explanation of a topic with exercises and short quizzes but with limited to no collaboration element with trainer or peers.
Webinars	Online seminars with trainers or subject matter experts used to introduce concepts, share best practices, and describe case studies. Webinars normally include a short interaction with learners through a 'Question and Answer' session at the end.
Virtual Classrooms	Translation of a course into a digital classroom. Learners connect from their location to a trainer who can interact with the learner throughout the full session, ask questions and allow peer interaction or facilitate discussions. By applying group of trainers, the number of trained participants can be increased.
Assignments	Assignments can include writing, speaking or interaction assignments for learners to upload to the platform to be reviewed by peers or trainers.
Quizzes	Knowledge assessments normally used to check the understanding before an activity or after an activity.
Face-to-face courses	Seminars, conferences or exchanges where trainers and learners meet in person to deep-dive into already introduced topics, share best practices or experiences and work on problem solving exercises.
Online forum	Collaborative online space where learners, trainers and training administrators can facilitate discussions on selected themes. Typically, an online forum will be included within a course. In addition, fora can be used to support collaboration on project assignments and to facilitate professional exchanges between experts on a specific thematic area.

It is important to note that not all training formats need to be used within each single learning path – the format should be chosen based on the overall learning objectives and other criteria that we will cover in the final section

of this report. In addition, in CEPOL's specific context, not all training activities will be open to all learners, as participation will depend on nomination by the CEPOL National Unit and the number of available seats. Nevertheless, where possible learners should be offered alternative learning activities to access the knowledge.

i. Guidelines for activity formats to increase knowledge retention

In order to achieve the best possible training impact and increase knowledge retention, it is essential to choose the training formats in a coordinated and structured way. Below, we will describe guidance on how to best consider the activity formats based on criteria for (1) training content and its desired learning outcomes and (2) practical training coordination aspects. It is crucial to note that the formats for activities can be chosen only after defining the learning objectives of a learning path and its courses.

In terms of content, level of difficulty (practical vs theoretical) and interaction level (low to high) should be assessed to arrive at the best possible training format. The table below provides guidance on the levels of difficulty and interaction combined:

	Training Category	Example of delivery format
1	Understanding of theoretical concepts (basic factual knowledge) with no to limited practical application required. No interaction with peers is required.	▪ Resources (documents, quick reference cards, infographics, etc.) ▪ Videos
2	Understanding of theoretical concepts is required. Interaction with peers and/or trainers is necessary to check the understanding, discuss the concepts or their hypothetical application.	▪ Webinars ▪ Online Forum
3	Practical application of concepts and knowledge is required in a simulated environment that reflects the reality as much as possible. Limited to no interaction with peers and/or trainers.	▪ Micro-learning ▪ eLearning modules
4	Practical application of concepts and knowledge is required in an environment that reflects the reality as much as possible. High level of interaction among peers and/or trainers is expected.	▪ Face-to-face courses ▪ Online courses ▪ VR and AR exercises

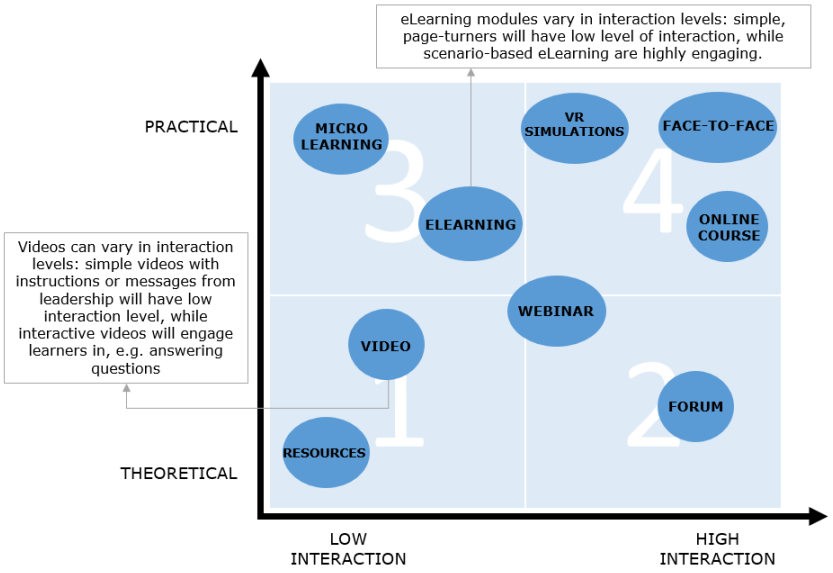


Fig. 14 - Delivery formats matrix

Additional assessment should be done in terms of the practical aspects of training coordination and management, namely the frequency with which an activity is to be delivered and the budgets that an activity requires. Development of training activities usually requires some investment, therefore understanding the frequency or the level of usage of this activity will help to run a final check within this assessment. It is useful to regularly review the completion data of activities in the learning management system to make informed decisions. Each training format should be assigned a budgetary or cost level – those indications need to be performed through an analysis

of the training delivered so far (for CEPOL this will apply to face-to-face activities, webinars and online/eLearning modules). The comparison matrix in section 3.a.ii provides the parallel overview for digital learning solutions selected for CEPOL.

ii. Shortlist of best-fit technology supported learning solutions for CEPOL

Having presented the general guidelines for the selection of delivery formats, this section will zoom in onto the digital learning solutions. The trends in the learning industry described in Part II have served as a guiding compass in the selection of the learning formats. The table below provides a matrix structure to map the trends against the digital learning solutions recommended for CEPOL. In addition, when describing each of the learning solutions, we will tag it to the relevant technology trends.

	Video	eLearning	Webinar & Virtual Classroom	Virtual Reality	Augmented Reality	Digital Manuals	Podcast & Newsflash	Online Forum & Project Space
Immersive learning experience	x	x		x	x			
Social learning			x	x				x
Microlearning	x	x				x	x	
Gamification		x	x					x
Mobile learning	x	x			x	x	x	
Informal learning opportunitites								x
Big data and learning analytics	←							→

Fig. 15 – Digital learning solutions and technology trends

Each digital learning solution supports at least one of the trends relevant to CEPOL's learners and will be elaborated upon to cover the following aspects:

- Solution description and characteristics
- Use cases (recommendations)
- Technical aspects (equipment, output formats)
- Cost range indication[17]
- Examples of vendors, where applicable

While the use cases will support CEPOL in choosing the most applicable formats for content in the learning paths, the practical aspects of required equipment and cost ranges will give guidance from the perspective of training organisation and administration.

Video formats

#immersive_learning #microlearning #mobile_learning

Videos are widely used in everyday life, streamed on social media, news sites, and many others becoming an additional resource and competing with traditional written text. Video formats are applied at various stages within learning paths, creating an engaging and diverse learning experience for learners at various knowledge levels. Usage of video training formats supports the trends of immersive learning, microlearning and mobile learning. This delivery format is regarded as an impactful means to deliver messages or reinforce concepts. Generally, the following categories are used within modern learning paths:

[17] Costs or cost ranges included in the descriptions are indicative – development costs can be defined only on real examples.

Video category	Description
Interactive video	Video of real-life surrounding with elements of interaction, engaging the learner through e.g. questions, on-screen clicks, or exercises
Leader message	Filming format with a recorded message from a leader, usually short in duration to deliver news, updates or introduce changes.
Instructional video	Animation with no interaction, explaining a concept or a key message in a visual manner with images and text that are animated using basic transitions (fade, fly-in,...). Can be supported by music, sound and/or voice-over.
Whiteboard animation	A creative story and storyboard with pictures that is drawn on a whiteboard by artists who record themselves in the process of their artwork. It can be supported by music, sound and/or voice-over.
2D animation	Video of two-dimensional, animated images (which can be photographs, drawings) that contribute to a game-like effect in learning.
3D animation	Three-dimensional depiction of reality generating a convincing simulation and a safe learning environment in which learner can try and fail.
Live session recording	Video filmed during a live, face-to-face training and containing an example of a role-play exercise. Such learning asset can be used in on- and offline courses as a material for analysis and discussion.

For CEPOL specific context, videos can be used for the following purposes:

- **Introduction of fundamental concepts or content at foundational level of knowledge.** A short, visual video activity can become part of the first elements of a learning path or be used before face-to-face activities to 'offload' the theory. This way, learners will have more valuable time to interact with peers. It is important not to overload the video with detailed content but rather present high-level perspective through an interesting story.
- **Instructional videos can be used as tutorials** – providing guidance on how to use online/offline tools, websites or describe processes.
- Any **video format can be used as a variation during in person training**. By using videos with exercises, examples, role-plays, etc. learners will receive more visual inputs and be more likely to remember the content of training.
- Videos are often use for **microlearning modules in the post face-to-face training elements** of a learning path. They can be used by CEPOL to share the main takeaways form the training or provide follow-up content.
- CEPOL can also invite learners to **complete parts of their project assignments in the form of videos**. Such assignment videos can be recorded with a smartphone and shared on the platform with others and become basis for a discussion on a forum.

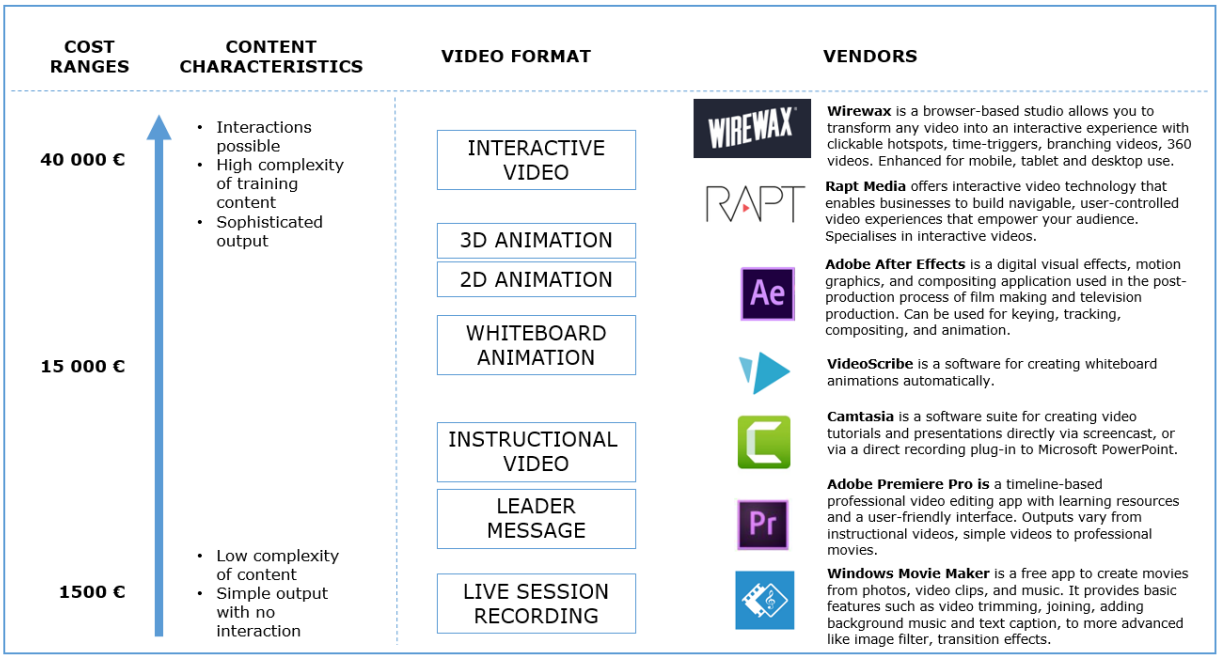
In order to create a video for learning purposes that is high quality and professionally developed, the training organisation will require software for editing and publishing of the videos and creating animations. There are multiple software packages available on the market. A list of requirements will support CEPOL in selecting the right applications. Filming equipment (camera, lightning, microphones, and green screen) is necessary for creating live videos or recording people and scenarios. It is also important to note that companies specialized in video development can be contracted by the Agency to create video learning assets.

Most common output format is MP4 and it is widely accepted on most learning management systems. Length of a video influences the file size and learners who do not have access to high-speed internet might not be able to view it. Therefore, it is important to take into consideration the download or streaming options for video formats on the LMS.

Cost of video creation varies depending on the category of a video, its length and number of interactive elements. Simple recordings of 1-3 minutes can be created within a budget of 1 500 Euro and more elaborated videos with animations and engagement elements can cost up to 50 000 Euro. In the table below a further breakdown of costs is presented together with indication of examples of vendors. It should be noted that there are multiple tools

available on the market and the examples below have been chosen to fit CEPOL's needs in terms of cost, high quality outputs and user friendliness.

Video formats: estimations based on a 10-minute-long video



eLearning formats

#immersive_learning #microlearning #mobile_learning

In line with the trend of immersive learning experiences, the usage of eLearning modules is increasing and categories that are more engaging are being created (see descriptions in the table below). eLearning modules vary in length, i.e. can deliver larger content in an interactive way or small amounts of content through microlearning modules. eLearning modules are adapting to learners new ways of learning and are more often delivered in mobile or mobile-friendly formats.

eLearning category	Description
Page turner	It is the most traditional and simplest form of an eLearning module with no interaction elements, based on a slide/page format. The eLearning module will follow a linear concept. The learner is free to navigate throughout the course and can choose the order in which he/she wants to see the content, return to previous topics, browse to the menu, look through the glossary and whenever possible click links to external resources. This type of eLearning can be used to provide orientation and basic concepts before going into more practical and complex stages. It can be used for both microlearning modules to deliver succinct messages and more elaborate learning modules.
Interactive eLearning	In addition to the theory included on pages of an eLearning module, various types of interactions and questions are included to engage learners. Knowledge checks, feedback elements, exercises (e.g. drag and drop, writing exercises) are commonly included in the modules to diversify the learning content and increase knowledge retention.

eLearning category	Description
Scenario-based eLearning	eLearning modules designed to allow learners experience professional situations in a safe environment. The eLearning module follows a branched structure (non-linear) and the flow depends on learners' actions or decisions taken within a scenario. Scenarios usually confront learners with problematic situations, where they need to collect as much information as possible, reflect on it, and finally take decisions. Learners immediately see the consequences and can evaluate if their approach to a problem was correct or if there are better ways of working. This eLearning category allows learners to fail in a safe environment and learn from the feedback of the training organisation.
Serious games	Serious games are designed for the purpose of solving a problem. Although they can be entertaining, the main purpose is to train, investigate or advertise. They are used to present procedures, simulations etc. to a wide audience. Serious games provide a perfectly safe practice environment usable for a wide range of situations and help achieve very high interactivity level. Gamification (e.g. collecting points, leader boards) is a powerful tool to transfer information, change behaviours, decision taking, motivate and employee training.

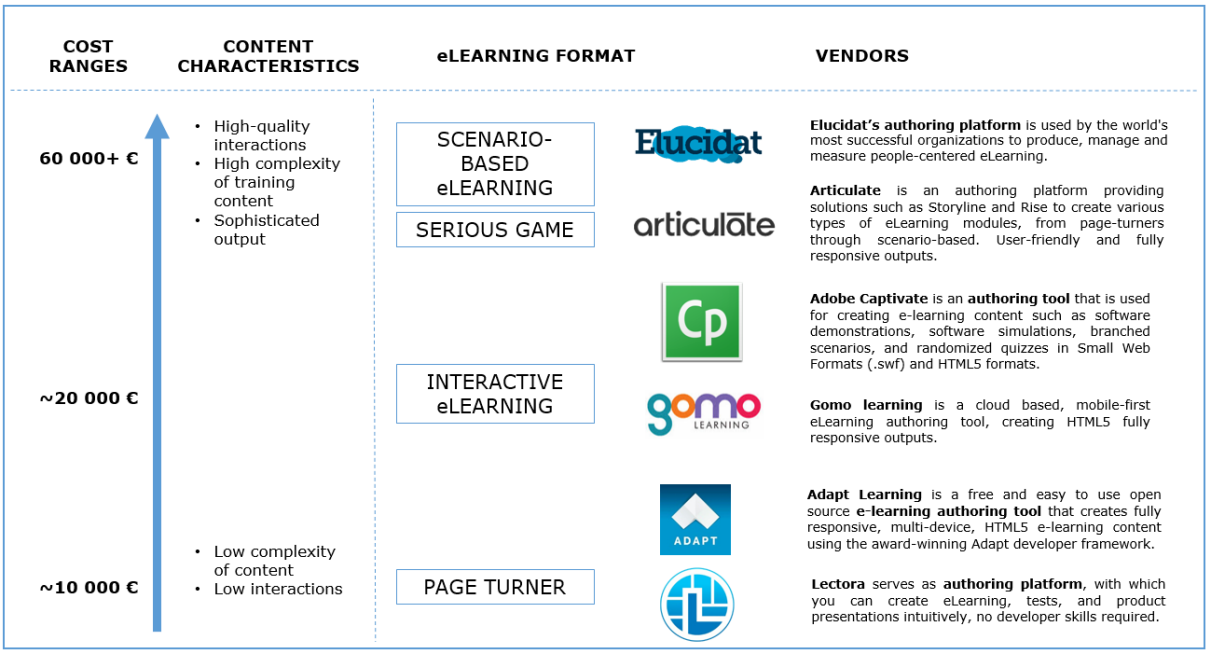
For CEPOL specific context, eLearning modules can be used for the following purposes:

- **Replacing theory sections of face-to-face training** – similarly to videos, content that does not involve interactions with other learners can be transformed to a low-cost and easy to create page turner eLearning module.
- **CEPOL can enhance pre- and post-training experience** by using interactive or scenario-based eLearning modules. As learners need to try and apply the knowledge gained in online or face-to-face training, such activities can help them test their knowledge (through quizzes and knowledge checks or decision making in a scenario).
- eLearning modules can also be used by the Agency when a face-to-face training cannot be organised but the content difficult to explain in writing. **Content that requires a change in behaviour or attitude** can be taught through scenario-based or serious games eLearning modules.

In order to create eLearning modules, the Agency will need to either have an instructional designer in house with an access to authoring tools or work with contractors/companies specialised in eLearning development. eLearning modules are created based on a storyboard, which breaks down the content into elements such as text on screen, audio narration, visuals and designed exercises. First, or alpha release of a module is reviewed by the learning expert, who can provide comments and feedback on the module. This is then implemented and a beta release is completed, in which minimal changes to the module are foreseen. Finally, the eLearning is published. The most common output format of an eLearning module is a SCORM package, which is uploaded to the learning management system. It is important to note that the completion and reporting settings need to be defined on a SCORM package level so that the data is collected in a structured and consistent way. The cost and development time of eLearning modules depends on their duration, level of sophistication and interactivity and can range from 5 000 to 60 000 Euros. Translation costs usually amount to 50-60% of the original language version. There is no specific maintenance applicable to eLearning modules – once the final SCORM packages are delivered they can be used multiple times by multiple users. It should be noted that CEPOL should always store all original source files and SCORM files (in all language versions). This is required for a cost efficient and faster update of the eLearning modules (branding and content updates).

Similarly as for the video formats, in the table below is a further breakdown of costs (indicative) and examples of vendor available on the market.

eLearning formats: estimations based on a 30-minute-long module



Webinars and virtual classrooms

#social_learning

Webinars are online seminars where trainers or subject matter experts conduct a live session on a specific topic. They can include several interaction types with learners, e.g. through:

- A 'Question and Answer' session during the webinar or at the end, where learners can e.g. ask for more details, ask for further explanation, etc.;
- Screen sharing and/or using webcams to support the audio with visual inputs and therefore enhancing the learning experience;
- Using polls to launch mini-surveys to better understand the audience, their expectations and gather feedback and monitor the knowledge transfer.

Webinars can be conducted as a stand-alone or can be combined in a series on a specific topic. Tools for hosting webinars allow inviting large numbers of learners and can usually recorded and shared with even broader audience as a resource within learning paths. In terms of duration, webinars can last from 30 to 120 minutes - it is however important to take into consideration that the attention span of learners decreases quickly if no interaction elements are required. Shorter webinars with less content usually have a better learning impact when it comes to knowledge retention.

Similarly to webinars, virtual classrooms are online spaces for trainers and learners to collaborate in real time as if they were meeting in person. Learners normally register to this training activity, log onto the virtual classroom and meet the trainer and other learners live. Trainer, who is based at the training centre, is in control of the session, sharing of the content, moderating discussions and launching exercises. This learning format allows the learners to receive immediate feedback and interact with each – it support the social learning in a new immersive format. The main difference to a webinar is that the trainer or the facilitator will actually see the learners through the cameras of their own computers.

For CEPOL specific context, there are several use cases for leveraging webinars and virtual classrooms as a learning solution:

- As webinars do not require any technical preparation (or digital content creation), **CEPOL can use this training format to deliver ad-hoc and urgent training requests**.
- Webinars can also be used as a short **topic or concept introduction** before a face-to-face training or project assignment and give the trainer and the trainees the opportunity to get to know each other and the expectations towards training.
- In webinars and virtual classroom, trainers and learners can conduct **best practices sharing sessions**. In addition and as a follow up after training, learners can connect with each other to describe their experiences.

- Virtual classrooms allow learners to work collaboratively on exercises or case studies **when completing a project assignment**.
- Online classrooms can also be leveraged in a format of longer (3-8 weeks) online courses, containing synchronous sessions, within which learners can complete the activities at their own pace. Timelines and deadlines are assigned to the sessions and need to be respected in order for the learner to receive a certificate of completion. Trainers monitor learner's progress, facilitate discussions and provide feedback.
- Last but not least, **CEPOL can organise online informative sessions for promotion of training** to encourage learners to enrol to learning paths or specific training activities.

In terms of equipment, webinars are low-cost and do not require special tools in addition to a computer with a camera, microphone and connection to high-speed internet. There are multiple software tools that can be used, functioning mostly on subscription basis – i.e. the cost will depend on the maximum number of seats that the Agency would like to offer to the learners. Before selecting a subscription, it is recommended that an analysis of the number of learners is conducted in order to understand the necessary sizes of such online classroom. Below are examples of widely acknowledged and used software for webinars and virtual sessions.

GoToMeeting is a web-hosted service created and marketed by LogMeIn. It is an online meeting, desktop sharing, and video conferencing software package that enables the user to meet with other computer users, customers, clients or colleagues via the Internet in real time.

Adobe Connect is a software suite used to create information and general presentations, online training materials, web conferencing, learning modules, and user desktop sharing. It contains 3 applications: Adobe Connect Events, Adobe Connect Training and Adobe Presenter.

Virtual classrooms of the future can use the above-mentioned software which will enable the trainer to connect with, see and interact with many learners at the same time. They will require professional competence and experience from the trainers. Such virtual sessions usually take place in a training room equipped with multiple screens and a main computer for trainer to navigate the classroom. Hence, the initial investment will amount to the cost of technical equipment, buying or subscribing to a suitable software and setting up the classroom. Once the virtual classroom is set up, only running and/or subscription cost will remain and CEPOL will be able to organise multiple session. The output of the virtual sessions and webinars can be recordings in MP4 format, easy to upload to the learning management system and shared as additional resources.

Virtual Reality (VR)

#social_learning #immersive_learning

Virtual reality is one of the latest and most dominant technology solutions in the training sector and follows the immersive learning experience trend. Virtual reality transports the learner to a real life scenario and provides a safe environment for exercises that might be too cost intense or too dangerous to perform otherwise. Learners are fully present during the exercises and give their complete attention to the training. VR simulations can vary from immersive rooms, 360-degree images, 3D videos to sophisticated gamified scenarios and at any level of can include interactive elements such as quizzes, scoring boards and narration. First step to a successful VR training creation is analysing the content and its intended learning outcomes to ensure that the appropriate VR type is selected. Further, based on the training requirements and a storyboard, a VR platform is developed (desktop app, mobile app, or both), in which the virtual experience and the story are created. It is also important to define the number of learners that will be able to take part in a simulation (the more users, the higher the development cost). Last but not least, trainers providing classes with the use of VR need to be professionally competent and familiar with the technologies and tools.

Significant progress has been achieved within the technology, reducing the costs of equipment and tools and therefore allowing a wide application across sectors. VR is already widely used for police and military training and can be leveraged at CEPOL for:

- Leveraging on Agency's extensive experience and access to subject matter experts, real life case studies can be gathered and brought to life in **simulation exercises**. Such exercises could focus on developing decision making skills and investigation skills. The exercises can be re-used multiple times to train a great number of people throughout the time – hence, the content of the scenarios needs to be well selected and applicable to many regions.
- In addition, CEPOL can help learners **'visit' remote locations and explore various spaces through virtual tours**. Learners will get a 360-degree video tour of a relevant location, e.g. crime scene, an office of a counterpart or a border crossing. Such virtual tours can be attended by many learners and reduce the logistics costs and exclude travel time. In addition, learners can immediately debrief and share feedback on the tour with each other and the trainer.

- CEPOL can use VR for **soft skill training** through scenarios, in which learners need to interact with people, e.g. training on fundamental rights, interviews, or cross-border communication.

In terms of equipment necessary to implement VR training, there are two main options relevant to CEPOL's context:

- Social VR (smaller VR exercises) – trainer organises the headset equipment for learners and moderates the VR exercises as an additional training aid. Learners can collaborate within the exercises to work on strategies, e.g. during a terrorist situation, public order and security, etc. After participation in the experience, learners share their reflection and lessons learnt and discuss with the rest of the virtual classroom.
- In-classroom VR (full VR class) – training organisation has a dedicated training room, fully equipped with headsets, additional remotes with sensors and connection to the VR platform. The learners can move in the available space of a classroom and explore the scenario. This option is best used for sophisticated, scenario-based VR games and is a more costly.

When it comes to the cost of developing VR apps, it depends significantly on the type of the training and can vary from 15 000 Euro (for a 3 min, 360-degree tour with limited interactions and using a simple cardboard headset) up to 400 000 Euro (for a high quality 3D experience with a full headset). Similarly, development time can vary from several weeks up to a year. It is recommended to pilot such learning solutions with smaller and carefully selected content.

Augmented Reality (AR)

#immersive_learning #mobile_learning

Next to VR, augmented reality is becoming widely applied in training sector. Similarly, it provides and immersive and interactive learning experience by overlaying a digital image on a real-world environment. Learners comprehend and connect to the training content better.
From a practical point of view, learners and the trainer need to be equipped with a mobile device with a camera (can be a smartphone or a tablet). This device will scan the surrounding, recognise the objects and show the associated additional, augmented content such as 3D view, video or text on objects. By adding this interaction, learners better connect to the content through the experience with the technology.

For CEPOL specific context, augmented reality can be used for the following purposes:

- **Providing additional information by overlaying explanation over documents or surrounding**. Learners would place a device over a picture or written text, scan a QR code and then see an interactive 3D image or interaction points on their device's screen. Learner can interact with such points or images to receive additional information on the screen, get links to videos, etc.
- AR can be leveraged for **exercises on document investigation skills or spotting threats.** Trainer can use AR in classroom training for exercises on e.g. identifying false documentation (passenger, traveller, customs), bring up attention points during investigation of a crime scene or a managing a major events.

The cost of AR supported training will depend on the complexity in the build-up of an AR app, interaction elements, and therefore length of an exercise, and can range between 3 500 Euro to 200 000 Euro. Similarly to VR, trainers need to have experience with the technology and be professionally competent.

The market of VR and AR solutions can be still described as an emerging one. Many companies are integrating such solutions into their portfolios and as the technology further develops, the cost of such solutions decreases. VR and AR are becoming more accessible to many organisations and also individual users. For CEPOL specific context, the following phased approach is recommended:

- Analysis of thematic areas and identification of 2-3 topics that can be leveraged for VR/AR training
  - Consider the priority of the topics (EU-STNA, OTNA)
  - Choose topics that are applicable to multiple Member States
  - Choose topics whose content will be relevant for a minimum 2 years with no to very limited changes afterwards
  - Collaborate with vendors (see below) throughout this phase to leverage their expertise
- Scenarios building for 1-2 topics, request for and evaluation of proposals
  - Scenarios for various complexity of learning courses with various VR/AR solutions with the focus on small exercises to be included in the residential activities
    - 360-degree video tours (location focused) or guides (situation focused)
    - 360-degree video tours with AR interaction
    - Simulation exercise (interactive scenario)

Based on this first steps, a clear picture of the possible costs and topics will emerge and create the basis for selecting the first topics.

Diverse Interactive specialises in Augmented Reality (AR) development and Virtual Reality (VR) experience creation, 3D simulations and visualisations, mobile apps and high impact digital activations. Provide cloud-based content management platform. The applications are built for purpose to work across multiple devices (headset and mobile) to ensure maximum impact.

Specialising in VR Warp Studios is a hub for creating, distributing and analysing real and immersive training scenarios. Works in a subscription model, ranging from pioneer through enterprise option, the customer takes the lead in the development process and is supported by the vendor. Specialising in 360-degree interactive videos. Provide a platform for creating the scenario, uploading the videos, defining the interaction elements and testing.

Digital Manuals

#microlearning #mobile_learning

Specific content or learning aids, such as manuals or process descriptions are sometimes still best delivered in a written format. This way learners can access the content quickly on the learning management system or have it downloaded to their work devices. This on-demand learning format supports the trend of mobile learning as the content can 'travel' with the learner to their work locations and can be used offline. It is important to note that although the modern learners will welcome the text formats, they will still expect the training content to be structured in a digitally interactive way. This can be achieved through:

- Including search options in the document – so that the learner can find the relevant information quickly without scrolling through an entire file,
- Embedding links in the document to connect the text items or chapters, or
- Using infographics to visualize the content to summarise or synthesise main ideas of a document.

Digital manuals or reference documents are low cost, can be developed with standard tools and computer applications. In addition, they can be launched to a large audience at the same time. Nevertheless, it is crucial to structure the documents correctly and ensure that files are not lengthy or large for download. Digital manuals can also be used for microlearning purposes, to deliver bite-sized learning. Certain level of professional competence and experience is required from trainers who will develop the training material with the use of this technology.

For CEPOL specific context, digital manuals can be used for the following purposes:

- CEPOL can use them as **reference documents** for pre- or post- training assets in a learning path or as additional resources for learners to use on the job (job aids) or share with colleagues in the home organisations.
- Trainers can also use digital manuals as a **learning aid in classroom training**, e.g. for group exercises.
- As the cost and time needed to develop manuals is small, Agency can use digital manuals to deliver **content with a short life cycle and requiring multiple updates**. In addition, manuals can be used for ad-hoc and urgent training requests.

Podcast and newsflash formats

#microlearning #mobile_learning

Podcasts are a popular digital learning format through which content can be shared with a dispersed audience. They are audio files that are (1) either broadcasted through a web application or a learning platform or (2) can be downloaded to learner's personal devices, such as computers, tablets or mobile phones. Such audio recordings are easily created on the basis of a script or can be recordings of a live expert interview or discussion.

Newsflashes or newsletters are commonly used for promotion and marketing but can be adapted to learning purposes to deliver succinct written content. Multiple applications and tools support creation of newsflashes and allow usage of images, text and embedding small videos. Content included in newsflashes needs to be attractive and short to easily gauge learner's attention. Should further learning activities or reading materials be available in the learning path, it is recommended to include hyperlinks and signpost the audience to relevant content.

Those digital learning solutions are following the trends of microlearning and mobile learning as they can be accessed 'on-the-go', on- or offline and usually deliver bite-sized content. It is important to note that the learning content in those delivery formats can be only 'pushed' to the learners and interaction level is very limited. Moreover, trainers developing content in these delivery formats need to have experience and good understanding of the tools and technologies.

For CEPOL specific context, podcasts and newsflash formats can be used for:

- Content that is audio-oriented, such as **learning a language and law enforcement specific terminology.** CEPOL can prepare podcast-based learning paths or use this as a learning asset within a path.
- **Sharing stories and best practices by trainers or experts in various thematic areas** – CEPOL can record discussions or interviews with experts and disseminate in a format of a podcast and/or summarise the key messages from them in a newsflash.
- Newsflashes can provide **latest updates and news highlights** from the law enforcement sector with links to more information within articles, journals or other resources. This way CEPOL will be able to gauge the attention of the learners and encourage them to explore the available learning paths.
- Newsflash promotion can help CEPOL **provide highlights from the training** that was delivered successfully or advertise the upcoming activities.

In order to create a podcast, a quality microphone set and an audio editing tool are required. Recordings can be performed at the Agency's or at expert's premises. This format allows content creation in flexible locations. The usual outputs are MP3 files that can be uploaded to the training platform. Open-source tools and software can be used, such as Audacity or WavePad. Newsletters do not require any special equipment – they are usually sent by email to learners that have expressed their interest and subscribed to such channel of communication. There are multiple tools available on the market, mostly working in a subscription model (price depends mostly on the number of contacts) which allow an online creation of the newsletter, developing templates and creating distribution lists.

WavePad Audio is a professional audio editing software that offering multiple features. It is possible to cut, copy and paste parts of recordings, and add effects like echo, amplification and noise reduction. WavePad supports almost all audio files.

Audacity is a free, open source, cross-platform audio software for multi-track recording and editing. Audacity can not only edit audio files, but also record audio content. It can record live audio through a microphone or mixer, digitize recordings from other media, and also capture streaming audio.

Mailchimp is a marketing automation platform and an email marketing service. Allows full branding of newsletters, creation of distribution lists, inlcude social media links, videos and images. Provides analytics on the launched campaigns to gether insights on the impact.

GetResponse

GetResponse provides e-mail marketing services and allows to create well-designed email newsletters with drag-and-drop email editor, segment contacts tool, campaigns creator, and A/B testing tool.

Facilitated forum and project spaces

#informal_learning #social_learning

Fostering a collaboration within the network of law enforcement officials is a crucial aspect in learning in CEPOL's context. Digital solutions such as fora and online project spaces will promote social learning on the LEEd platform and contribute to achieving Agency's strategic objectives. Depending on what level of control over the discussion the training organisation would like to exercise, there are several models of moderating such virtual communities. Community-lead model is a format in which the facilitator intervenes only to provide corrections of facts. Such model requires limited time and resource investment. A fully facilitated model in which the trainer(s) and subject matter experts guide the discussion, ask questions and evaluate the learners, involves an active participation of the moderator and engagement in the discussions or tasks.

From a technical point of view, online fora and project spaces require an activation of those features in the learning management system of CEPOL and, on the learners' side, a connection to the internet through a mobile device. This impactful digital learning solution enables mobile learning and is an appropriate format for shaping communities of practice and connecting with experts even if the participants are located in different geographies. In addition, online fora and project spaces provide support for informal learning opportunities and

For CEPOL specific context, facilitated forum and project spaces can be used for the following purposes:

- CEPOL can create **online expert fora (professional alumni groups) on a specific topic or thematic area**. Learner with sufficient qualification and knowledge (based on records of prior learning or courses completed in the LEEd platform) would join discussion (facilitated or user-lead) and exchange experiences or seek advice. The Agency can also leverage such fora as a source of content (case studies) for other learning assets.
- **Trainers can facilitate fora to share with learners industry best practices** and conduct follow-ups after face-to-face training.

- Online project spaces should be used to help learners connect and **collaborate on special project assignments**, not necessarily with a supervision of a trainer but rather to collectively complete exercises and deliver results.
- Project spaces and online fora can also be leveraged for **informal development opportunities such as mentoring or coaching** within the law enforcement community.

i. Comparison matrix of best-fit digital learning solutions for CEPOL

In this section, two tools for CEPOL will be presented to support the Agency in the selection of delivery formats for content within learning paths. The below matrix provides an overview of the shortlisted digital learning solutions. We will look at training impact in terms of quality (if the delivery format supports interaction, collaboration, and practical application of knowledge) and outreach to learners (volume of learners or capacity, mobile and self-paced options). This matrix should support the Agency in choosing the right digital format for the learning objectives of an activity within a learning path.

	IMPACT						ORGANISATIONAL CONSIDERATIONS			
	QUALITY			VOLUME						
	INTERACTIVITY LEVEL	PRACTICAL APPLICATION OF KNOWLEDGE	SOCIAL/ COLLABORATIVE	CAPACITY	MOBILE	SELF-PACED	ONLINE/ F2F USE	COST*	DEVELOPMENT TIME (weeks)	TECHNICAL SKILLS REQUIRED
Video										
Interactive	M	L	L	∞	Y	Y	BOTH	€€	2 - 4	Y
Leader message	L	L	L	∞	Y	Y	BOTH	€€	2 - 4	N
Instructional	L	L	L	∞	Y	Y	BOTH	€€	2 - 4	N
Animations (whiteboard, 2D, 3D)	L	L	L	∞	Y	Y	BOTH	€€	2 - 4	Y
Live session recording	L	L	M	∞	Y	Y	BOTH	€	2 - 4	N
eLearning										
Page turner	L	L	L	∞	Y	Y	ONLINE	€	4 - 8	Y
Interactive	M	L	L	∞	Y	Y	ONLINE	€€	4 - 10	Y
Scenario-based	M	M	L	∞	Y	Y	ONLINE	€€€	8 - 14	Y
Serious game	M	M	L	∞	Y	Y	ONLINE	€€€	8 - 14	Y
Webinar and virtual clasroom	H	M	H	>300	N	N	ONLINE	€	1	N
Online courses	H	H	H	50 (1 trainer) 100 (2-3 trainers)	Y	Y	ONLINE	€€	15 - 20	N
Virtual Reality	H	H	L	1 - 12	N	N	F2F	€€€	12 - 52	Y
Augmented Reality	H	H	L	∞	Y	N	F2F	€€€	8 - 30	Y
Digital Manuals	L	L	L	∞	Y	Y	BOTH	€	1	N
Podcast & Newsflash	L	L	L	∞	Y	Y	ONLINE	€	2	N
Facilitated forum & project space	H	H	H	20 - 100	Y/N	N	ONLINE	€	ongoing	N

L – Low **M** – Medium **H** – High; **Y/N** – Yes/No **€** - Low development cost **€€** - Moderate development cost **€€€** - High development cost

Fig. 16 - Digital delivery formats comparison matrix

The graph below assesses the delivery formats based on the level of complexity of the content. For the purpose of this assessment learning content complexity comprises the following elements:

- theoretical knowledge vs practical applicability;
- interactivity levels;
- technical aspects of the content.

Digital delivery formats should be assigned based on the content of the training and its learning outcomes. The table below the graph provides guidance for 4 most common content categories (1 – raising awareness, 2 – building knowledge, 3 – try-out, and 4 – application).

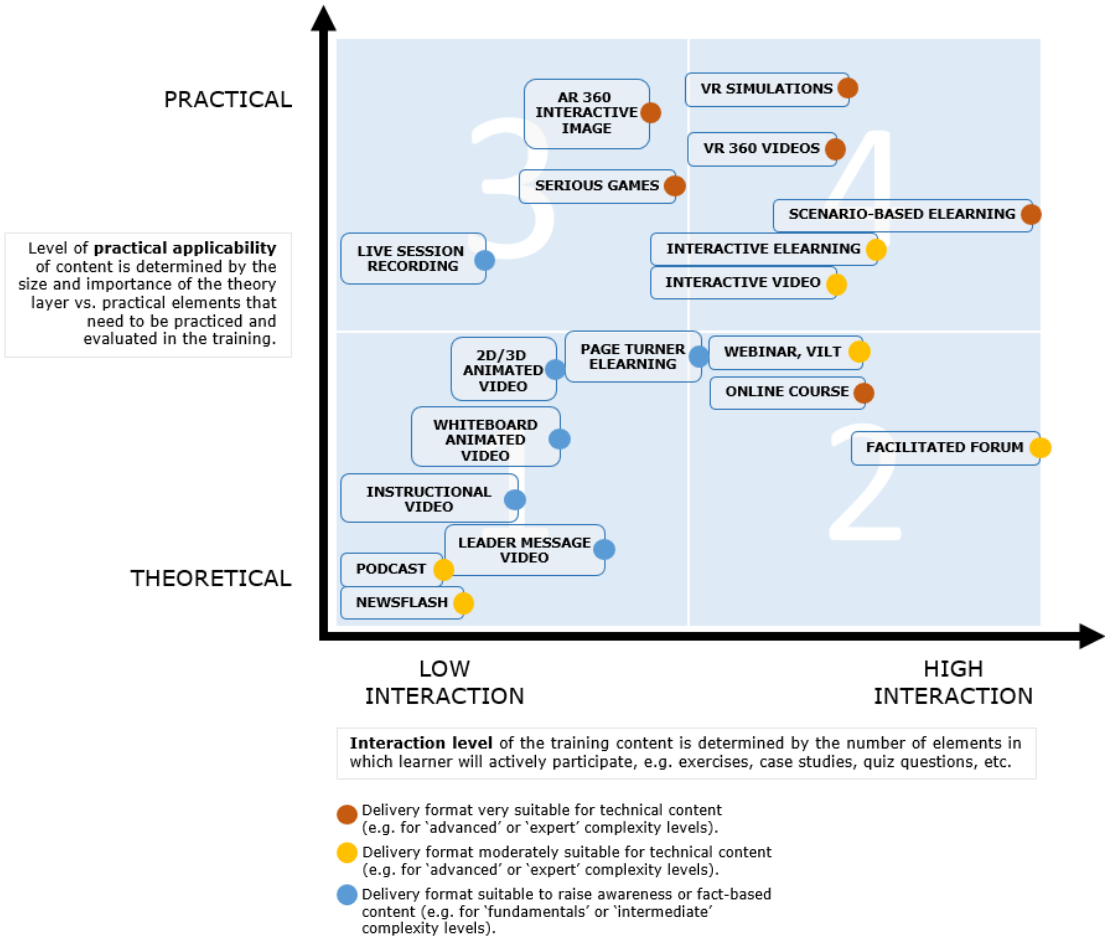


Fig. 17 - Digital delivery formats matrix

	Training Category	Digital delivery format
1	Understanding of theoretical concepts (basic factual knowledge) with no to limited practical application required. No interaction with peers is required.	▪ Podcast ▪ Newsflash ▪ Leader message video ▪ Instructional video ▪ Whiteboard animated video ▪ 2D and 3D animated video
2	Understanding of theoretical concepts is required. Interaction with peers and/or trainers is necessary to check the understanding, discuss the concepts or their hypothetical application.	▪ Webinar ▪ Facilitated forum
3	Practical application of concepts and knowledge is required in a simulated environment that reflects the reality as much as possible. Limited to no interaction with peers and/or trainers.	▪ Live session recording ▪ AR 360-degree interactive image ▪ Serious games

	Training Category	Digital delivery format
4	Practical application of concepts and knowledge is required in an environment that reflects the reality as much as possible. High level of interaction among peers and/or trainers is expected.	▪ VR simulations ▪ VR 360-degree video ▪ Scenario-based eLearning ▪ Interactive eLearning ▪ Interactive video

Integration of various delivery formats into learning paths: Example of "Cybercrime – attacks on information systems"

This section will provide recommendations on the integration of different delivery formats, with a special focus on online modules, virtual classrooms and webinars. The section below is an indicative example and provides ideas and suggestions on how to integrate the delivery formats. The actual learning path will be defined by the Portfolio Manager and the eLearning officer, based on actual context and available resources.

CEPOL have defined the learning topics and outcomes for the learning paths for "Cybercrime – attacks on information systems" during the OTNA and started building the training catalogue for the upcoming year. The majority of the topics at this point have been assigned the delivery format of residential activity. While such face-to-face activities have numerous benefits, they are limited to a certain number of learners, restricting the impact of training in terms of the reach to the learners.

The following topics have been identified in the OTNA document for the thematic area of 'Cybercrime – attacks on information systems':

- Cybercrime threats and trends
- Advanced windows file systems forensics
- Mac forensics
- Linux forensics
- OSINT
- Virtual currencies and darknet
- Cyber intelligence
- Live data forensics
- Cross-border exchange of e-evidence
- Conducting forensic searches in various IT devices
- Malware investigation
- First responders and cyber forensics

In addition to the OTNA report, the draft of the training catalogue for 2020 was shared, from which the course description were analysed. The approach to integration of digital delivery formats described below is based on the afore-mentioned high level information and might need adjustment when once information on the content becomes available.

Amongst the residential activities, there are multiple highly technical topics related to forensics on various IT devices and systems, which will focus on the descriptions and processes, and include high level of theoretical knowledge complemented with practical elements introducing tools available. Moreover, several courses (such as first responders and cyber forensics or cross-border exchange of e-evidence) cover numerous practical applications and interactions, where exchanges with the trainer and peers are recommended.

In order to integrate the digital delivery formats into the learning path, an assessment of the training content is required. The comparison matrix should become the guide to select the format. CEPOL has identified that webinars, virtual classrooms and online modules as the priority delivery formats to be integrated. These delivery formats are highly suitable for content that is relatively theoretical and requires medium level of interaction (ref. Fig. 17). Examples of how to use those formats are listed below:

- **Introduction to a residential activity through a webinar** – the trainer, who is responsible for conducting the session extracts the introductory part of the presentation and delivers it through a webinar. Such webinars should be promoted and made accessible to all learners in order to increase both reach and general awareness on the topics addressed.
- **Follow-up to a residential activity through a webinar** – the trainer, who is responsible for conducting the session extracts the best practice part of the presentation, summarises the key points from the training and delivers this information a webinar. Such webinars should be promoted and made accessible to all learners in order to increase both reach and general awareness on the topics addressed.

- **Introductory and theoretical parts of the residential activities** are removed from the presentation and transformed into online modules. Online modules can involve text, resources or eLearning modules or videos. The residential activity can be shortened or the gained time can be used for practical exercises (the residential activity's training material needs to be adjusted). The learners can access the online modules at any point but those learners that would like to attend the residential activity must complete them beforehand.
- **Technical topics from the residential activities** such as 'Conducting forensic searches in various IT devices', 'Mac forensics', etc. can be taken out and transformed into instructional videos. Any video simulations of the software can be included in an online course, which would serve as a required introduction for the residential activity.
- **Virtual classrooms** can also be considered as an **alternative to a full residential activity** on the above-mentioned technical topics. Virtual classrooms can be organised more often and reach a higher number of learners. In order to cover the full content of a residential activity, multiple virtual sessions will be necessary, organised in a series of online classes.
- **More complex theoretical concepts** from the identified Cybercrime topics can be transformed into eLearning modules or interactive videos, which can be launched to the entire training audience of the Cybercrime topics, increasing the reach of the training.
- Additionally, the **CEPOL Exchange Programme** can be leveraged to facilitate network building and exchange of best practices. Similarly as in the residential activities, **webinars** can be set up before, during and after the Exchange Programme and prolong the learning experience and maintain the professional network among participants.

After describing the use cases for the priority delivery formats within the area of Cybercrime, the following next steps are recommended:

1. Assessment of content of the training topics and identification of elements that are rather theoretical and require up to a medium level of interaction.
2. Extraction of the content and assessment of its quantity:
    a. Small content can be delivered with webinars or online modules (max 60 minutes of learning time)
    b. Larger content elements are to be considered to virtual classrooms
3. Creation of the content for the new delivery format and adaptation of the residential activity material
4. Train the trainer sessions to be organised in order to inform them about the changes in the delivery formats
5. Integration of the courses in the LMS and setting of requirements for the residential activity enrolment
6. Launch and promotion of the new digital courses to all learners

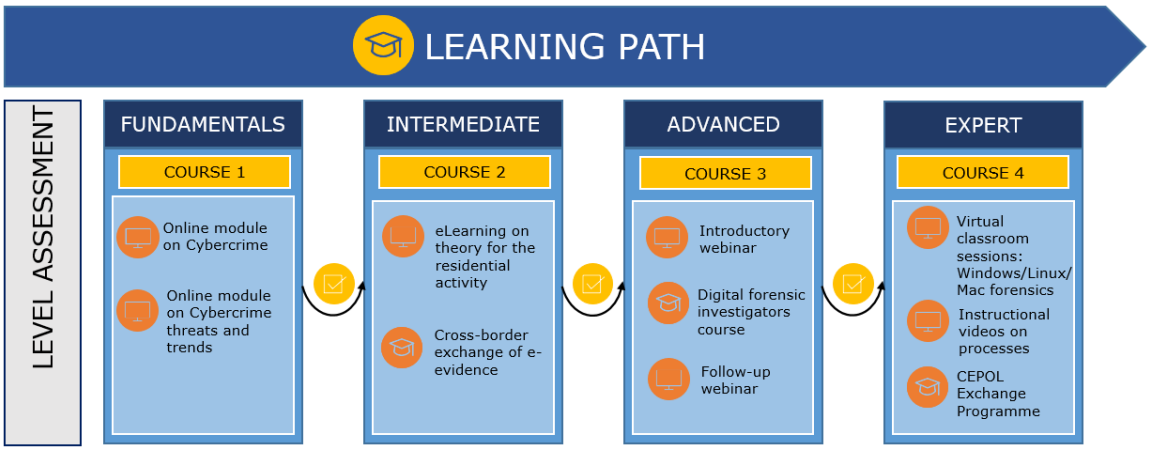


Fig. 18 – Possible delivery formats with a learning path for Cybercrime topics (example)

b) Integration into the LEEd platform

The LEEd platform will become the central repository for all learning paths. Learners will access the training courses through this platform and complete the required activities. While some activities might be coordinated by CEPOL's

partner organisation, it is recommended that all activities are promoted and if possible be hosted on the LEEd platform. This way, it will become the recognised go-to place for the European law enforcement training.

From a technical point of view, the LEEd platform should enable to create the structure for the learning path model. The system should allow creating course categories together with hierarchical structures to visualise the relationships between the elements of categories. Each of the thematic areas (and sub-areas if applicable) should become the top level categories for the courses. Such categories will encompass all courses that will build the learning paths. There may be additional levels in the structure, or sub-categories, when the courses will be broken down into additional elements. Each course will be created with the previously defined course description, the identified enrolment method for learners, and will be populated with the activities (videos, face-to-face activities, eLearning modules, quizzes, etc.). At this moment it is also important to set the completion requirements in the course settings, to ensure that correct completion tracking can be applied.

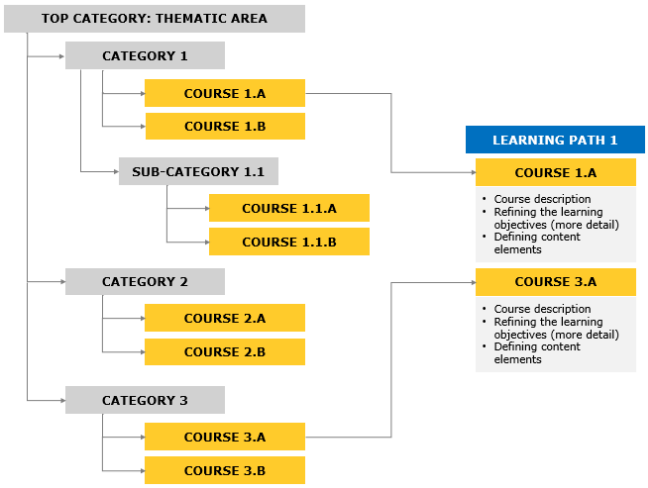


Fig. 19 – Course categorisation in the LMS

As previously described in section 2a when defining the learning paths, they should be decided upon and created for identified audiences according to the required levels of proficiency. The implementation of the learning paths in the LEEd platform should follow the structure identified at that point. While during the identification phase of the learning paths we took the top-down approach, during the integration in the LEEd platform the work will be completed in a bottom-up manner. Courses that have been created in the LEEd platform will then be assembled and interlinked (in sequence, as sets of courses or similarly) to build the learning paths for those audiences.

4. Implementing the learning paths model: practical aspects

As an Agency dedicated to developing, implementing and delivering training for law enforcement officials in the European Union, CEPOL is in a unique position to collaborate with a network of subject matter experts, other EU counterparts, international organisations and third countries to ensure the highest quality of training initiatives, best-in-class content of the learning opportunities and eventually high impact on the law enforcement community.

In this section we will summarise the information on two important and practical aspects of implementing the learning paths: (1) the evaluation of the training initiatives in the learning path model and (2) communication and promotion of the aforementioned.

a) Evaluation and reporting on the learning paths

The evaluation of the learning paths is an important element in an effective and efficient training development and delivery. In CEPOL's specific context it will be important to monitor several aspects of the learning path model:

- Effectiveness – degree to which the learning outcomes of the learning paths have been achieved (as perceived by the learners)
- Efficiency – best use of resources (both human and financial) to achieve CEPOL's strategic objectives

- Relevancy – development of consistently high-quality training
- Satisfaction – learners' feedback on the training activities
- Completion – learners' engagement in the training activities

To evaluate the above aspects, several assessments are necessary. Firstly, and most importantly, during the maintenance activities (see Part III, section 2.d) the assessments of the **content relevancy and popularity and satisfaction** will be undertaken. They will provide sufficient input to monitor the aspects of relevancy and satisfaction. For global reporting purposes, it is important that high-level information and rating of most-popular and most relevant courses is created. This information will guide CEPOL in how to prioritise the maintenance efforts and will flag any low performing courses. Linked to satisfaction evaluation is the aspect of effectiveness and/or applicability of training. As mentioned in the section 2d, the satisfaction surveys should include a question or evaluation elements linking to the effectiveness of the course and the corresponding learning path(s). A report summarising the answers to questions on the effectiveness of the learning paths will support CEPOL in evaluating the impact of training. Such a report can be shared with wider stakeholder groups to demonstrate CEPOL's extensive training efforts and their importance in closing the performance gaps in the EU law enforcement community.

Secondly, the training platform LEEd will collect vast data inputs on the completion of the courses and learning paths. Such **completion records** will provide information on the number of people that have started, completed learning activities or have outstanding ones yet to complete. This evaluation will support CEPOL in reporting on the number of participants to the training activities and number of learning paths, courses and activities provided in a given period. It will also give an opportunity of CEPOL to try to re-activate those learners who have not been active in the learning paths for the last e.g. 2-3 months and increase the reach while promoting continuous learning. Another aspect that is recommended for regular evaluation is the completion and/or participation in the newly launched digital activities. This data will help evaluate which delivery formats are well received by the training audience and can be used even further across learning paths. Delivery formats with lower completion rates need to be investigated. This aspect of the evaluation links directly to the efficiency monitoring.

Finally, as the Agency strives to reach as many participants as possible with an impactful training offer it is important to monitor the resources that are devoted to the development and delivery of learning paths. It is important to monitor both **human resources and related costs**, such as use of the tools (subscriptions, etc.), and compare them to adjust and continuously improve internal processes. The ongoing evaluation and monitoring efforts will help the Agency not only identify best practices in the way of working but also take timely preventative measures to ensure a high-quality and ambitious training offer.

b) Communication and promotion of training

In order to reach its strategic objectives, CEPOL needs to be able to communicate about its training offer within the learning path model and promote its offerings and achievements to a wider stakeholder group. CEPOL should leverage the information on the evaluated aspects as described in the section 4.a. This information will enhance the communication on the training offer to learners can be more targeted and effective. Recommended communication channels that the Agency can use for the above-mentioned purpose are listed below.

Training platform LEEd

The platform should use the space on the individual dashboards of learners to promote the learning paths. As described earlier, the paths can be recommended based on individual completion records, or 'pushed' by CEPOL. Learners should also be able to easily see the courses they have recently started and continue those that are still in progress.

Newsletters

This direct communication channel would similarly leverage the information from the LEEd platform but would reach those learners that are not necessarily regularly logging in to the training platform. Scope of information that can be communicated is similar to the information that can be included on learner's dashboard and can extend to success stories from CEPOL's training events. It is important to note that data privacy laws should be observed at all times – learners will need to actively give consent to receive such communication from CEPOL.

Social media

Social media and professional platforms such as Twitter or LinkedIn should be leveraged to communicate about the training initiatives, latest achievements, and serve as promotional tools. In addition, CEPOL can use such platforms to boost recognition for trainers or contributors who support the Agency in the developments of the learning paths. Such proactive communication will even further increase the status of the Agency as the top training organisation for the law enforcement community and will encourage more experts to collaborate and contribute to training development. Trainers themselves can promote the training they have developed or delivered through posts on social media and include pictures from CEPOL's events. For this purpose a guide and practical tools for trainers should be prepared in order to keep consistency with CEPOL's brand. Another opportunity to raise more awareness on CEPOL's activities can be learners' stories or case studies. Learners should be encouraged to provide testimonials which can then be posted by the Agency to tell hands-on and real-life examples of the ongoing efforts.

The communication and promotional activities will help CEPOL to keep its efforts on the radar of learners, subject matter experts and a wider network of EU stakeholders. It will support CEPOL in creating a community of trainers and learners who can actively exchange on the Agency's training topics and events.

5. CEPOL's internal roles and competencies to apply the learning path framework

The learning path framework at CEPOL has been designed to support CEPOL in their mission to deliver impactful training for the law enforcement officials and close any performing gaps. The implementation of the training offer will be driven by defining learning paths followed by a break down into courses and defining the delivery formats for the training activities. Fig. 20 below depicts the proposed future training structure for CEPOL. The EU-STNA and OTNA will continue to define the thematic areas of training for the law enforcement community. However, the development and implementation of the training to cover the thematic areas and the sub-themes will be driven by the definition of learning path, creation of courses within the paths and development of content in the selected delivery formats.

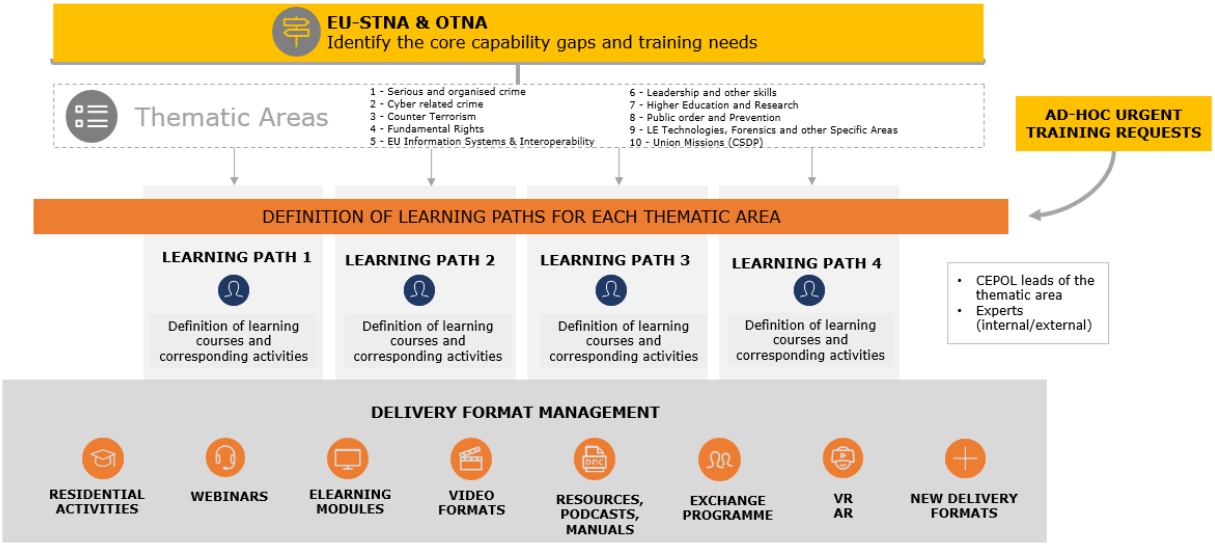


Fig. 20 – Future training structure for CEPOL

In order to implement the learning path model, roles of portfolio management, training expertise, and delivery format expertise and quality assurance are required at CEPOL. The table below presents the roles together with a list of proposed tasks for each role. The list of tasks should not be considered as an exhaustive one but as a starting point to estimate the efforts in terms of the human resources. It is important to note that the table presents the roles, which are defined as areas of work that one or more individual employees can cover. After presenting the roles necessary to implement the model, the current positions at CEPOL will be summarised and mapped against the required roles.

Role	Tasks and Capabilities

Portfolio management	• Manage and centralise all training efforts in a thematic area
	• Define learning outcomes of learning paths based on results on EU-STNA and OTNA
	• Expand the network of subject matter experts (SMEs)
	• Define courses of a learning path in collaboration with SMEs together with their:
	  ○ Level of complexity
	  ○ Learning objectives
	• Assign team members and coordinate their work on:
	  ○ Content collection (SME + Training expertise)
	  ○ Selection of delivery format (Training expertise)
	  ○ Development of training material in the selected delivery format (Delivery format expertise)
	• Coordinate development of courses:
	  ○ Monitor review cycles between training and delivery format experts when developing training content
	  ○ Oversee quality control of the training activities
	  ○ Oversee the promotion of the learning paths or individual courses
	• Coordinate activities with training organisations or individual trainers who conduct the courses:
	  ○ Set out requirements for trainers, training material development
	  ○ Review and select trainers and training suppliers
	• Oversee the maintenance of learning paths based on inputs from the Quality Assurance
	• Manage ad-hoc training requests within their thematic area
	• Report to management on the training activities within a thematic area
	
	Employees performing this role within the organisation will interact with all roles described below, as well as the communication department and will ultimately report to the management (Head of Training). They will engage with relevant stakeholders to connect the training experts with the subject matter experts.

Training expertise – pedagogical perspective	• Lead the development of courses to:
	  ○ Ensure high quality of training material
	  ○ Ensure impactful design
	• Coordinate content collection and reviews cycles with SMEs
	• Use instructional design to develop the training material and propose interaction elements of the training
	• Prepare the training material in liaison with Delivery format expert or external suppliers, amongst others to:
	  ○ Briefing of requirements
	  ○ Review of deliverables
	• Train the trainers (for activities where trainers are actively involved, e.g. virtual classrooms, webinars, residential activities, etc.)
	
	Employees performing this role within the organisation will interact with the role of delivery format expertise and report to the portfolio manager. They will also provide input to the quality assurance role as requested. They will interact with the subject matter experts (mostly external).

Role	Tasks and Capabilities
Delivery format expertise	• Technical development of a training activity in a specified delivery format • Update of the activities • Upload to the learning management systems Employees performing this role within the organisation will interact with the role of training expertise and report to the portfolio manager. They will also provide input to the quality assurance role as requested.

Quality Assurance	• Coordinate the periodic review of training offer with Portfolio managers on:
	  ○ Content relevance
	  ○ Learner satisfaction/popularity
	• Recommend the update of the learning path content
	• Ensure overall quality of training
	  ○ Observe and report to Portfolio managers
	
	Employees performing this role within the organisation will interact with and report to the portfolio manager. Roles of training and delivery format expertise will provide inputs for the quality assurance activities.

When it comes to the Subject Matter Experts (SMEs), CEPOL will work mostly with external parties. At the moment, the collaboration with the network of SMEs depends on the type of the course:

- Joint CEPOL courses, which are conducted in collaboration with another EU Agency, will be organised with the help of the SMEs working at the specified Agencies. Trainers and training material are provided by the Agency's SMEs, which results in a high-quality of content and delivery.
- Courses covering the EU Policy Cycle priorities with the involvement of EMPACT expert groups will be prepared, as much as possible, with the help of experts on the national level from all Member States and third countries. CEPOL representatives attend the in person meetings of the EMPACT groups, in which the operational aspects of the crime areas are discussed, learn about developments and trends and leverage this network to access the expertise of the participants.
- For courses on other crime areas CEPOL is invited to specific meetings to learn about the latest developments, e.g. fundamental rights topics with the help of the Fundamental Rights Agency.
- Specific topics (counter-terrorism and civilian missions) are conducted through the CEPOL Knowledge Centres – mostly national police academies, which provide the experts/trainers and the training programme (agreed upon by CEPOL) while CEPOL takes a coordinator role.

Having detailed the tasks required for a successful implementation of the learning path model, mapping of the above-mentioned roles against Agency's current positions is necessary to estimate the human resources for CEPOL.

	Portfolio Management	Training Expertise	Delivery Format Expertise	Quality Assurance
Portfolio/Activity Manager	x			x
Assitant to Portfolio Manager	x			
Residential Activity Coordinator		x		x
eLearning Coordinator		x	x	x
eLearning Officer			x	
eLearning Assistant			x	

Fig. 21 – Roles required for learning path model implementation and CEPOL's current positions

The key to a successful implementation of the learning path model is that all of the roles are covered by Agency's positions. The role does not correspond to one employee, multiple roles can be combined if necessary. Working in the learning path model will result in efficiency gains, as the roles covering the training and delivery format expertise will be able to support portfolio managers across the thematic areas. This matrix structure will allow a high level of flexibility within the organisation and support development process. Work will become project based (a project can be development of an eLearning module, material for a residential activity, etc.), where the estimation of effort and time will become more precise.

It is estimated that the implementation of the model and the reaching its full operational performance will take up to 3 years. This is taking into account an anticipated growth of 5-10% year on year, based on the assumptions of increased workload because of:

- Increased reach of the training activities and therefore more work involved in the development of the activities and administration,
- Increased quality of training and therefore more activities related to quality assurance.

Based on discussions with CEPOL's representatives and current numbers of employees, following estimation of full time employees (FTEs) for 2020 has been reached. The estimations have been performed with the current names of the positions – in the future CEPOL may decide to adjust this to reflect the roles performed by the individuals. It is important to note that the growth of the team needs to be adjusted according to the changes taking place at CEPOL and the growth of Agency's operations. The Portfolio/Activity Managers and Assistants to Portfolio Managers have been excluded from the table below, as their number will depend on the number of thematic areas covered by CEPOL. In addition, new position of eLearning Specialist with professional knowledge, skills and competencies relevant to the innovative learning formats has been added. In order for CEPOL to introduce the learning path framework, the below estimations of FTEs are required.

	Current	By 2020
Residential Activity Coordinator	1	1
eLearning Coordinator	1	1
eLearning Officer	1	5
eLearning Assistant	2	6
eLearning Specialist	0	1

Fig. 22 – Estimation of FTEs required at CEPOL.

The initial implementation of the learning path model will require a considerable effort, as each thematic area will need to be reviewed together will all already available courses. After the implementation, it is foreseen that as new delivery formats are implemented in the learning paths, the workload will increase for the roles covering the delivery format expertise and additional staff should be employed. In addition, as CEPOL is proactively looking to reach a larger audience with the training offer launched through the new online platform, the element of the anticipated growth needs to be taken into account. CEPOL is on the right path to achieve its ambitions at the moment - in the future when implementing new digital learning solutions and expanding the training offer, new resources will be required to cover the new areas of work.

6. High level roadmap for transition

The implementation of the learning path model with integration of digital learning assets will require effort from CEPOL's training team. The table below presents the main areas of work with clear actions and timeline of one year, assuming that all thematic areas can be analysed and transformed within a similar timeline. Activities listed in the tables below are the key next steps. These activities that will extend beyond the one year timeline are marked with arrow shapes. The starting point has been set out for Q2 2020, taking into consideration the time necessary to launch the new training platform LEEd and the necessary set-up of the expert groups.

Fig. 23 – High level roadmap for transition.

The following table provides the effort estimation required from the internal CEPOL team to implement the learning path model (effort is estimated in man-days). Assumptions for the estimations are listed below the table.

	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021
Learning path definition *(per thematic area or sub-theme)*					
EU-STNA and OTNA analysis summary	3				
Definition of learning outcomes	5	5			
Grouping of learning outcomes per audience		5	5		
Definition of learning paths per audience		5	5		
Internal alignment across thematic areas	1	1	1	1	
Course and content assessment *(per thematic area or sub-theme)*					
Content analysis within existing courses for identification of content for digital delivery formats *(per course)*	4	4	4	4	
Delivery format assessment and development of assets					
Selection of priority delivery formats		5			
Selection of vendors for priority delivery formats and training for staff/onboarding of suppliers		5			
Selection of digital delivery formats for content/courses *(per course)*			3	3	3
Development of courses in selected digital delivery formats *(per course)*			10	10	10
Integration into the LEEd platform and CEPOL processes					
Technical upload of courses and learning paths *(per learning path)*				3	
Communication and promotion of training *(per learning path)*				5	
Training for staff and train the trainer		5		5	

Remarks: These are indicative figures which need to be further refined when detailing the planning of the different projects.

Assumptions:

- Thematic areas and sub-themes are of similar size for the analysis and definition of learning outcomes. Approximately 5 learning paths are estimated per thematic area or sub-theme. In case of one area being significantly larger or smaller, the estimation needs to be adjusted.
- A learning path consists of 4 courses with approximately 2 learning assets per course, e.g. eLearning module and quiz, or video and digital manual or residential activity and follow-up webinar, etc.
- Definition of proficiency levels for audiences is partially conducted during OTNA and refined during the creation of learning paths.
- Development of digital delivery formats takes an average estimation of 10 man-days. This should be adapted upon selection of individual formats (see Comparison matrix for digital delivery formats).
- The time of subject matter experts is excluded from the effort estimation.
- The time required for administration, coordination and procurement are excluded from the effort estimation.

- Training for the staff should encompass topics such as digital delivery formats (overview and technical training for relevant roles, change management workshops, new ways of working).

Next steps:

- Adapt the human resources provision to incorporate the additional delivery format expertise roles.
- Adapt the budget provision to include the costs related to the additional staff.
- Hire the proposed additional resources.
- Ensure the commitment of the internal stakeholders to the implementation of learning paths.
- Ensure that professional change management programme is put in place in order to implement the learning path framework.

Annex - Overview of CEPOL's target audiences

List of all audiences detailed in the training catalogue 2019 (non-exhaustive categorisation):

LE officer	Labour inspectors	Asylum Seeker Centre Staff
LE practitioner	Tax officials	Counter-Terrorism Unit
LE expert	Customs officers	Trainers
LE analyst	Border police, border guards	Academia
Police	Financial analyst	Diplomats
Investigators	SIRENE operators	Policy makers
Forensic experts	Prison/Probation officers	Spokesperson Social Media Coordinators
Prosecutor	Military	JHA Agencies
Judge	Informant controllers	CSDP mission staff
Judiciary officer	PIU, PNR officers	Civilian
Intelligence services	Bomb Experts	Magistrate