



# PEN-CP

Pan-European Network  
of Customs Practitioners

# MAGAZINE

November 2022, Issue 15



**New calls for submissions in PEN-CP:  
Innovation Award, Innovation Prize and three  
Expert Reports!**

## Editorial

Dear Readers,

PEN-CP has had the privilege to join multiple interesting and important events this fall, in particular the WCO Technology Conference and Exhibition in Maastricht (18-20 October) and High-level Seminar on Strengthening Customs Risk Management of Non-fiscal Risks in Prague (25-26 October). Warm thanks to the key enablers & invitees, i.e. Dutch and Czech Customs Administrations, as well as PEN-CP main contributors, which include PEMAT-members and colleagues from Ireland, UK, and Hungary. Also, thanks to all the eight administrations joining the PET technical workshop in Maastricht, the day before the Technology Conference. Very productive sessions indeed, with lots of follow-up actions in the pipeline.

This Magazine 15 is dedicated to the recent and currently open calls in PEN-CP, including two calls for submissions with PEN-CP Innovation Awards and Prizes, as well as three calls for proposals in Expert Reports. We hope that you find these calls as relevant and interesting for your organizations – please feel free to advertise and circulate them further in your networks, in social media channels etc. And, of course, as Customs administrations, please join the GCIA-2022/23 call, by the February 2023 deadline!

Lastly, PEN-CP Year-4 Annual Event will be kindly hosted by the PEN-CP partner Albanian Customs Administration, event to take place in Tirana around March-April 2023. Thanks to Albanian colleagues for agreeing to this!

Juha Hintsa

Official text on all PEN-CP open calls can be found here: <https://cmt.sym.place/groups/profile/302707/pen-cp-innovation-instruments-and-innovation-events>



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### The PEN-CP Magazine:

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# **PEN-CP Innovation Awards and Prizes - overview**

The purpose of the PEN-CP Innovation Awards and Prizes is to bring in limelight the most innovative solutions and solution ideas, in the context of a broad variety of challenges contemporary Customs administrations are facing. During years 2019 to 2022, we have executed three rounds of Customs Innovation Award calls, all with somewhat different scopes, submission formats, and scoring criteria.

First, in 2019, we introduced a broad innovation award scope, named as “Improvements in existing solutions and technologies, and introduction of new solutions and technologies; improvements in existing processes, as well as introduction of new processes (PCIA-2019)”, attracting seven submissions by different PEN-CP partner administrations. Then, following the voting performed during PEN-CP Year-1 event in Budapest, the submission by UK Border Force on “Using a human security radar screening passengers on the move” was selected as the winner (all PCIA-2019 submissions can be checked in PEN-CP Magazine 11, pages 19-29). Since then, interest has been indicated by a handful of Customs administrations to follow-up with some of the PCIA-2019 submissions; this all in the frame of PEN-CP’s Innovation upscaling and Resource pooling ambitions.

Second, in 2020, based on the PET-1 and PET-3 work with the actual Customs User Needs and Challenges, i.e. the PUNIs, we published the following two innovation award calls, both

receiving multiple submissions by PEN-CP partner administrations: (i) “Novel approaches to cope with the growing international e-commerce traffic (PCIA-2020-PET-1)”; and (ii) “Future opportunities with mobile laboratory capabilities (PCIA-2020-PET-3)”. The winning submission of the PET-1 topic was titled as “e-commerce in an integrated data approach” (by Dutch Customs); and the winning submission of the PET-3 topic was titled as “New applications for mobile FTIR-instruments in the field – from the detection of gasoil fraud to screening of cannabis” (by Belgian Customs).

Third, in 2021, we invited the global Customs community to join our Customs Innovation Award (GCIA-2021) action under the following thematic: “Actions and ideas from customs that demonstrate innovative approaches to data quality; with two tracks: one for tested solutions and other for novel ideas”. The two winners and submission topics were the following: (i) Australian Border Force: “Authorized Economic Operator (AEO) bulk upload function”; and (ii) UK Border Force: “Designed and embedded carrier connectivity dashboards, to identify carriers importing freight into Great Britain that are not submitting mandated pre-arrival safety and security declarations”.

Now, in fall 2022, the time has come to announce two new rounds of PEN-CP Innovation Award and Prize calls – please read in Magazine 15 about GCIA-2022/23 and PIP-2022/2023 calls and participate in the one suitable for your institution!

# The second PEN-CP Global Customs Innovation Award (GCIA-2022/23)



*PEN-CP invites Customs Administrations from all over the world to share information on their innovations for tackling any and all types of customs challenges and problems. The most impressive solutions and most promising ideas will win the trophy Global Customs Innovation Award (GCIA-2022/23):*

- *GCIA-2022/23 Track #1 – Innovative solutions that have already demonstrated their value for customs*
- *GCIA-2022/23 Track #2 – Innovation ideas that have potential to improve customs operations*

*GCIA-2022/23 is the 4th one in the series of PEN-CP Innovation Awards, starting from the year 2019. The two winners of our previous Global Customs Innovation Award (GCIA-2021/22) are Australian Border Force & UK Border Force. Join the line of GCIA winners via submitting your innovations to PEN-CP by 17 February 2023.*

## **Background and Context**

Innovation is the driving force of progress that propels organizations towards higher performance and achievements. Customs administrations are no different from any modern organization in the way they strive to bring innovation activities into the core of their activities. In the customs world, innovative solutions can be basically any new technology, way of using existing technologies,

process improvements etc., which make customs operations more effective and efficient. These solutions can take a shape, for example, of an enhanced or totally new data analytics tool, detection technology, laboratory equipment, or a concept of operation.

The Pan-European Network of Customs Practitioners (PEN-CP) is a customs security practitioner project funded under the EU Horizon 2020 programme. PEN-CP acts as a customs innovation boosting network that provides comprehensive innovation intermediary services for its 13 customs partners. Among many other activities, the project scans and keeps track of innovative solutions that have potential to overcome the challenges that customs face today amid the growing international trade, changing security landscape, increased responsibilities, and louder calls for trade facilitation. The Global Customs Innovation Award (GCIA) is one of the key innovation instruments that PEN-CP employs to discover promising solutions for customs. The award puts a spotlight on innovative solutions from around the world that hold significant potential for improving customs operations or that have already demonstrated their value for customs.

GCIA-2022/23 was officially launched during the WCO Technology Conference and Exhibition lunch event, in Maastricht, the Netherlands, on Tuesday

18 October 2022 (<https://na.eventscloud.com/website/35016/>). The primary PEN-CP Online Platform web-link to announce and administer the call for submissions is the following: <https://cmt.sym.place/groups/profile/302707/pen-cp-innovation-instruments-and-innovation-events>

## Two Submission Tracks

The Global Customs Innovation Award GCIA-2022/23 consists of two submission tracks:

### Track #1 – Innovative solutions that have demonstrated their value for customs

The first track of the Innovation Award is about any solution, technology or service, which has already demonstrated its usefulness for customs operations in terms of effectiveness, cost-efficiency, practicality, or other factors. As part of the application, the contestants would outline their innovative solution and summarize the benefits of these innovations for customs operations.

### Track #2 – Innovation ideas that have potential to improve customs operations

The second track is about innovation ideas which your administration have not yet implemented but which hold significant improvement potential. Applicants on the second track are asked to describe their innovation idea and explain how it would add value to customs operations.

*Note: there are no limits in the number of your submissions per track!*

## Goals and Benefits

In the frame of: “From Innovation Observers to Innovation Drivers - PEN-CP serves as Customs innovation boosting network, powered by an innovation-centric online platform, and tailored innovation intermediary services”, the GCIA-2022/23 has following four goals and benefits:

- To identify, share and learn from promising innovations and solution ideas in the broad context of problems and challenges in Customs.
- To create new types of ‘innovation pipelines’ or ‘upscaling of innovations’, where raw ideas born with Innovation Award submissions are taken further with other types of instruments, in a step-by-step manner, towards operational solutions.
- To introduce and promote new thinking and

novel approaches for increasingly innovative Customs administrations in the future.

- And, during this process, to have a bit of fun, too.

## Facts and Guidance

- **Who can participate?** Customs administrations and customs officers across the globe. You are free to choose if the submissions are in the name of an individual officer, team/ unit, or full administration (please comply with the rules of your administration, thanks).
- **Schedule:** GCIA-2022/23 submissions can be made between 18 October 2022 and 17 February 2023 (= call is open for 4 months)
- **How to participate?** As the first step, send an “GCIA-2022/23 – Expression of Interest” email to [pen-cp@cross-border.org](mailto:pen-cp@cross-border.org) and [pen-cp-arttic@eurtd.com](mailto:pen-cp-arttic@eurtd.com) (please include both email addresses). Detailed instructions on the submission protocol, including web link to the submission page, will be sent back to you.
- **Format for describing the innovations:** For both Track #1 and Track #2, please aim for a 1-2 page summary document (maximum length is 3 pages). Technical details, illustrative diagrams etc. can be added as annexes (no page limit on annexes)
- **Submission language:** English preferred; French is also possible
- **Evaluation process:** The submissions will be evaluated and ranked by a team of PEN-CP customs practitioners as well as external experts
- **Scoring criteria - Track #1:** Innovation originality & realized value for customs operations
- **Scoring criteria - Track #2:** Innovation originality & potential value in customs context
- **Winners of both tracks will receive:** a PEN-CP trophy; and three PEN-CP coffee break kits; and, broad visibility and publicity among European and global customs communities; and invitation to influence the follow-up innovation upscaling activities.

*For additional information: please feel free to contact the activity leader Ron Roelofs of the Customs Administration of The Netherlands: [rkw.roelofs@douane.nl](mailto:rkw.roelofs@douane.nl)*



## The first PEN-CP Innovation Prize (PIP-2022/23)

*Customs authorities face challenges each day! Not only to prevent smuggling, but also not to hold up a passenger or the numerous amounts of the goods for inspection. What are the goods? What is in the container, box, car or train? Do we need to inspect this container or these goods? How good is the information and how fast can we make a decision? And many more questions. Therefore, customs is in constant search of innovative ways to face these challenges. Participate in the 1st PEN-CP Innovation Prize -call for submissions and help customs administrations to work more efficiently and effectively in the future!*

### **Overview on the 1st PEN-CP Innovation Prize**

The PEN-CP Innovation Prize welcomes innovators of security and other customs-relevant technologies, solutions and services to share their leading-edge innovations with the European customs community. Joining the Innovation Prize contest gives the participants an opportunity to promote their customs-relevant technologies and to get a better understanding of the challenges that customs administrations face today, amid the growing international trade, changing security landscape, increased responsibilities, and louder calls for trade facilitation.

The Innovation Prize is awarded to the contestant with the most useful, original innovation that has already demonstrated its value to customs operations (Track #1) or that has the largest potential to benefit customs administrations in the future (Track #2). The Innovation Prize is managed by the Pan-European Network of Customs Practitioners (PEN-CP), and the winners are chosen by a team of PEN-CP customs practitioners as well as external experts.

The 1st PEN-CP Innovation Prize, PIP-2022/23, is officially launched during the WCO Technology Conference and Exhibition lunch event, in Maastricht, the Netherlands, on Tuesday 18 October 2022 (<https://na.eventscloud.com/website/35016/>). PEN-CP has also a pleasure to cooperate closely with the European Start-up Network, particularly when it comes to reaching out to innovator communities in Europe and beyond (<https://europeanstartupnetwork.eu/>). The primary PEN-CP Online Platform web-link to announce and administer the call for submissions is the following: <https://cmt.sym.place/groups/profile/302707/pen-cp-innovation-instruments-and-innovation-events>

## Scope for Submissions

The scope of the Innovation Prize is broad by design because the freedom of scope gives the contestants opportunity to propose solutions that can surprise customs by their originality and creativity. Following three topics of high customs interest can be mentioned for inspiration.

- One topic of interest is data analytics that can help customs to manage large volumes of information and unlock data-driven decision-making for more effective coordination of customs operations.
- Next, advancements in detection technologies are interesting for customs administrations that are always looking for better ways to control goods without slowing down the pace of cross-border traffic.
- A third key topic of high interest concerns new pieces of laboratory equipment that allow faster and more reliable identification of goods or that come with more portable, robust or user-friendly designs.

In any case, the contestants are encouraged to present solutions for addressing any and all customs challenges, also outside these three illustrative topics.

## Two Submission Tracks

### Track #1 – Products & services already in use by customs

The first track of the Innovation Prize is about any product or service, which has already demonstrated its value for customs operations, in terms of effectiveness, cost-efficiency, practicality, or other advantages. As part of the application, the contestants should provide a brief description of their product and/or service, state the benefits of their innovation for customs operations, and describe how their innovation is currently used by customs.

### Track #2 – Products & services not (yet) in use by customs

The second track is about any product or service, which is not yet used by customs but which could be adopted by customs in the near future (for example, a product or service currently sold to / used by other governmental or private sector actors). Applicants should describe their product and/or service and explain how their innovation could add value to customs operations.

*Please note each applicant can make only one submission per track!*

## Facts and Guidance

- **Who can participate?** Start-ups, scale-ups, SMEs, large and any other type of companies with innovative products and services of any size and sector (no geographical restrictions apply).
- **Schedule:** The PIP-2022/23 submissions can be made between 18th October 2022 and 17th January 2023 (= the call is open for 3 months)
- **How to participate?** As the first step, send an “PEN-CP Innovation Prize – Expression of Interest” email to [pen-cp@cross-border.org](mailto:pen-cp@cross-border.org) and [pen-cp-arttic@eurtd.com](mailto:pen-cp-arttic@eurtd.com) (please include both email addresses). Detailed instructions on the submission protocol, including web link to the submission page, will be sent back to you.
- **Format for describing the innovations:** For both Track #1 and Track #2, please aim for a 1-2 page summary document (maximum length is 3 pages). Technical details, illustrative diagrams etc. can be added as annexes (no page limit on annexes)
- **Submission language:** English
- **Evaluation process:** The submissions will be evaluated and ranked by a team of PEN-CP customs practitioners as well as external experts
- **Scoring criteria - Track #1:** Innovation originality & realized value for customs operations
- **Scoring criteria - Track #2:** Innovation originality & potential value in customs context
- **Winners of both tracks will receive:** a PEN-CP trophy; and, small financial contribution (amount will be announced on our online portal by 30.10.2022); and, broad visibility and publicity among European and global customs communities.
- **Limitations:** each applicant can make only one submission per track!

**For more information:** please feel free to contact the activity leader Ron Roelofs of the Customs Administration of the Netherlands: [rkw.roelofs@douane.nl](mailto:rkw.roelofs@douane.nl)

# PEN-CP Expert Reports – overview

The purpose of **PEN-CP Expert Reports** is to fill knowledge gaps among our Customs practitioner network, either (i) per stand-alone information needs or (ii) as step-1 action in an (anticipated) longer chain of knowledge creation and innovation boosting actions. Calls for new Expert Reports, ERs, can be triggered either by needs of individual Customs partners, or, by the PET-teams. Following a simple call procedure, the most suitable expert is chosen to carry out the work, and to deliver a report to answer the information needs, in a relatively short timeframe. The available grant amount typically enables some 15 person days of work, carried out over a 2-3 month timeline. Monthly supervision by a small team of PEN-CP experts has proven to be a good approach. Next to the written report, the experts are invited to present their findings either during a Pendency event, or, at the next Annual Event.

Between years 2019 and 2021, the following five Expert Reports were triggered by PEN-CP partners and completed by the selected external experts; all reports listed below with a variety of follow-up actions either implemented or outlined:

- **“Mapping of European start-up/scale-up landscape (ER1)”**; today (spring 2022), the lead author of this report, from the European Start-up Network, Belgium, sits in the PEN-CP Advisory Board, and has started to supervise us about exploiting the ER1 outcomes, some 90 innovators inserted in the POP database, for our upcoming Open Innovation and other calls.

- **“Future of Customs communication toolboxes: useful features and user experiences (as two reports, ER2&ER3)”**; today, we are already benefiting the outcomes of these two reports, when considering various upgrading options for the future PEN-CP communication tools and platforms.
- **“Review of databases on laboratory techniques and methods for the analysis of new materials or products (ER4)”**; today, this report is in the hands of PET-3 team members, who are considering how to best make it available for a broader Customs laboratory expert community.
- **“Mapping national innovation calls in three EU Countries: Sweden, Germany and Spain (ER5)”**; this latest PEN-CP Expert Report was presented to the full PEN-CP consortium, during Pendency-March-2022, by the authors from German Aerospace Center (DLR), and the follow-up actions, including entering the national innovation project data into POP platform (as PSIMs), started to take place during spring 2022.

All in all, PEN-CP budget allows the delivery of **another ten Expert Reports**. In this Magazine we share the call text for three new ER-announcements: ER6, ER7 and ER8. Check them out and send us proposal(s) how you would execute these interesting and important pieces of work!



# Call for an Expert Report: EU Artificial Intelligence (AI) Act & what Customs can and cannot do with AI (PEN-CP-2022-ER6)

## Background and context

Customs administrations today are increasingly dependent on data and data analytics to manage operations at the border. As part of digitalisation efforts, customs are deploying data analytics solutions that feature elements of Artificial Intelligence (AI). Examples include X-ray image interpretation for automatic threat detection and natural language processing for analyzing free-text goods descriptions in customs declarations.

AI solutions hold large potential when it comes on one hand to automating time-consuming and labor-intensive customs processes and on the other hand to reaching beyond human capabilities in identifying suspicious materials, packages, containers, transport movements and operators in the context of cross-border logistics and global supply chain operations. However, like with any powerful technology, using AI calls for careful considerations of ethical, legal and technical matters to avoid the misuse or critical malfunctioning of AI-powered systems. After all, AI technologies tend to be complex, opaque and sometimes unpredictable from the human perspective.

To mitigate undesired effects of AI, the European Union is preparing a legal framework to regulate AI. The centerpiece of this framework is the upcoming “AI Act”, which lays down rules for the design and use of AI technologies.

## Scope and goals

This Expert Report will analyze requirements of the proposed regulation COM(2021)206 final “Laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts”. This proposal for a regulation is commonly known as the “AI Act”, and it is available for download here:

- <https://digital-strategy.ec.europa.eu/en/library/proposal-regulation-laying-down-harmonised-rules-artificial-intelligence>

The goal of this expert report is to review the proposed AI Act and highlight its elements that may have implications to how Customs administrations employ AI in (i) their research, development, and innovation activities and (ii) in day-to-day operations. In particular, PEN-CP Customs partners are most interested in learning what Customs can and cannot do with AI, today and in the future.

Examples of areas where Customs administrations may benefit from AI technologies & solutions are shared in Annex 1.

## Project tasks

The main tasks to be carried out are the following ones:

- Kick-off workshop with 3-4 customs experts (PEN-CP Data & risks team (= PET-1), contacts are readily available)
- Review the proposal for a regulation COM(2021) 206 final = “AI Act”
  - COM(2021)206: “Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL LAYING DOWN HARMONISED RULES ON ARTIFICIAL INTELLIGENCE (ARTIFICIAL INTELLIGENCE ACT) AND AMENDING CERTAIN UNION LEGISLATIVE ACTS”
    - <https://eur-lex.europa.eu/legal-content/EN/HIS/?uri=COM:2021:206:FIN>
- Highlight the potential implication of AI Act in the context of AI-related (i) Customs Research and Innovation projects, and (ii) Customs operations
- Write the full report
- Present your work to PEN-CP Customs partners, during our monthly online meeting (= Punday)

## Report structure

- Chapter 1. Upcoming AI Act in a nutshell
- Chapter 2. AI Act & requirements, limitations and constraints with Customs-relevant AI technologies and what Customs can and

cannot do with AI

- Chapter 3. Conclusions and recommendations

### Report length and language

Target 12-16 pages (no page limit with annexes);  
in English

### Applicants and application process

- You can apply either as a natural person or as a legal entity (registered company with a VAT ID). In case you are a team of two natural persons, please identify clearly who is the main contact person for contractual purposes. It is also important to note that the call is announced in public and is open for anyone knowledgeable on the topic to apply. We may also approach potential experts by email.

The application process consists of following three steps:

- Step 1: Applicant expresses his/her interest by sending an email to [pen-cp-arttic@eurtd.com](mailto:pen-cp-arttic@eurtd.com)
- Step 2: Applicant receives credentials by email (from PEN-CP) enabling the proposal submission directly on the project portal
- Step 3: Applicant submits the proposal (both technical and CV -sections)

### Documents to submit

Submit the following documents as part of your proposal here:

1. Technical proposal (max 2 pages)
  - Describe the methodology you will use to achieve the goal for the assignment
  - List the activities you plan to conduct during this assignment
  - Detail the main risks and limitations you foresee with the assignment, including a brief risk mitigation plan
2. CVs of 1-2 experts who will carry out the work, highlighting their past experiences on similar topics.

### Evaluation criteria and points (max 100 points)

- Criterion 1: The quality of the methodology, project work and risk plan = max 60 points
- Criterion 2: The relevant past experience of the 1-2 experts included in the proposal = max 40 points
- Minimum threshold to be considered for selection: Criterion 1 = min 35 points; Criterion

2 = min 25 points

### Evaluation and contract signing process

- Step 1: Evaluation of all applications by scoring and ranking them.
- Step 2: Selection of the applicant with the highest score and initiation of the contractual process.
- Step 3: Communication with the non-selected applications of the evaluation results.
- Step 4: Contracting with the selected applicant.
- Step 5: Possibility to contact the unsuccessful applicant (if the contract cannot be closed with the selected applicant for a reason), to suggest contract negotiation (then follow with Step 4)

### Dates, contacts and consulting fee

- Call publication date: 5 October 2022
- Deadline for proposal submission: 16 November 2022
- Call results available (expected): 25 November 2022
- Project start date: Latest by 2 January 2023
- Project duration: 2-3 months (to be agreed at the time of contract signature)
- Administrative contact person: Ms. Valerie Mellier, ARTTIC; [pen-cp-arttic@eurtd.com](mailto:pen-cp-arttic@eurtd.com)
- Consulting fee: 5.900 EUR

*Note-1: The official version of this ER6 call text is available at the PEN-CP online platform page: <https://cmt.sym.place/groups/profile/302707/pen-cp-innovation-instruments-and-innovation-events>*

*Note-2: PEN-CP reserves rights to make updates on the dates listed above, in case no proposal reaches the minimum threshold; also, we may cancel the action, in case no competent service provider is found*

### Annex: Examples of Customs-relevant AI areas

Computer Vision and Object Identification. Customs are interested in developing automatic threat detection algorithms that can find drugs, weapons, and other contraband in X-ray images. AI-based solutions can learn to distinguish shapes, sizes, and responses to ionizing radiation to find concealed goods inside cargo containers and vehicles of transport

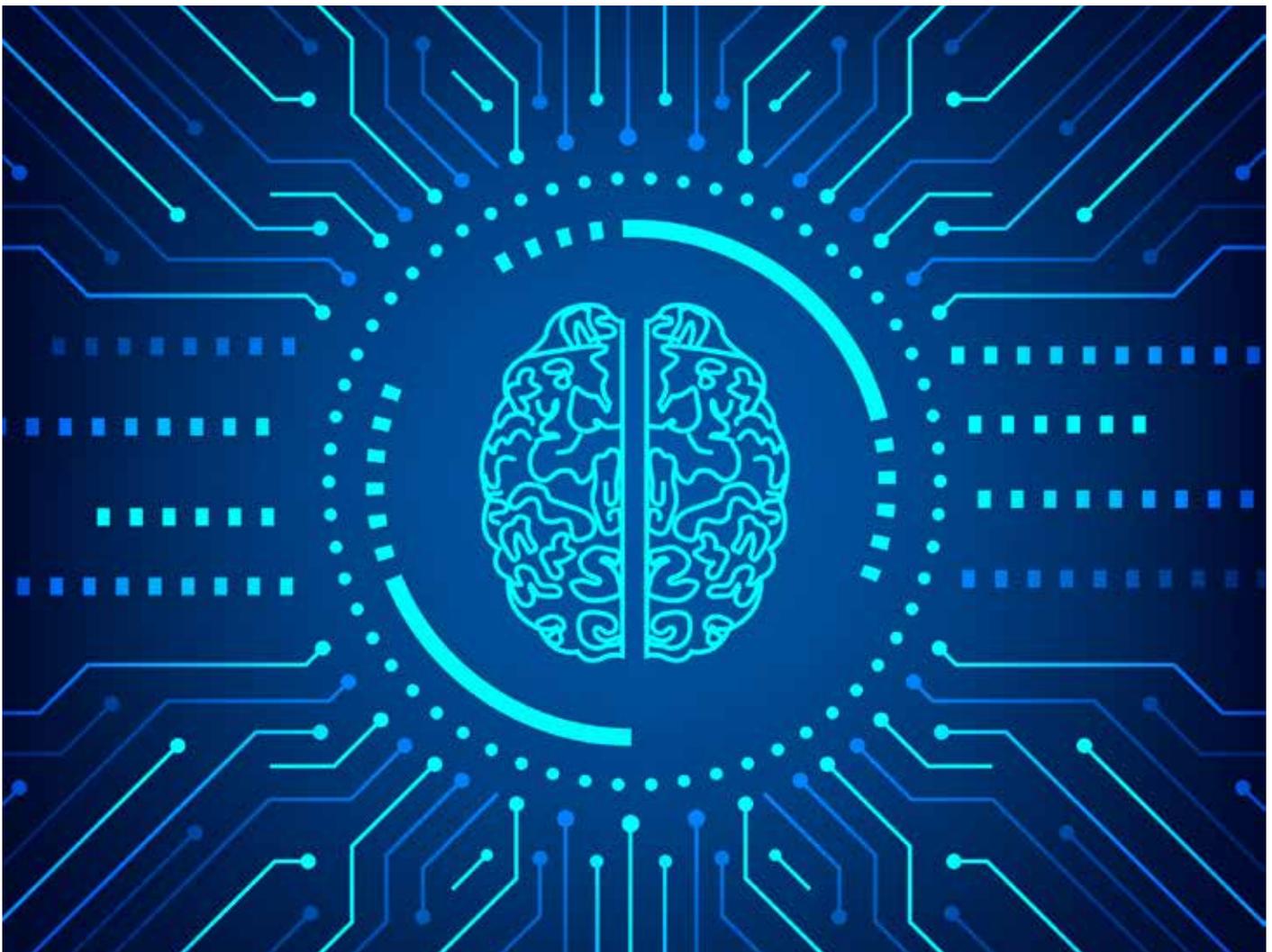
Machine Learning, including Deep Learning. Modern customs follow a risk-based approach

for controlling cross-border cargo flows: high-risk goods get inspected while most low-risk traffic can pass customs without intervention. The risk-based approach to targeting relies heavily on data analytics that allow customs to find anomalies in declaration and other available data, for example suspicious routings, unusual trade transactions, and inconsistent information (e.g., declared weight does not correspond to the reported type and amount of goods).

Machine learning solutions have the potential to discover more sophisticated high-risk patterns, correlations, and trends in large datasets than conventional analytics or human reasoning. Machine learning could improve progressively from customs control feedback (results of cargo inspections) and continuously uncover new insights without having to be explicitly re-programmed. Over time, the machine would learn how to generate more accurate risk indicators and profiles and discard inefficient old ones that yield high rates of false positives.

Natural Language Processing (NLP). Customs could use NLP to collect unstructured and semi-structured data from various sources, including e-commerce sites, company websites, customs declarations, and trade documents like shipping instructions. Features of Natural Language Processing like translation, transliteration, and semantic analysis will turn unstructured information into analyzable data. NLP could be used also to predict commodity codes based on free-text goods descriptions that traders provide, this way helping customs to estimate the risk of misclassification of goods and duty fraud.

Other AI-related areas. Smart data visualizations would help customs officers to understand outcomes of risk analysis: why was a shipment selected for control? They could also use the visual analytics to cluster, sort, and connect data elements and this way get a better understanding of the overall dataset and derive new risk indicators and profiles. Algorithms with predictive powers could help customs to find faster suspicious movements of ships and cargo containers.



# Background:

## How Customs see the use of e-seals

**General:** Seals are in widespread use with Customs administrations and licensed commercial actors. They protect the integrity of the goods and reveal potential loss of integrity. The main features of the seal are their mechanical strength and their ability to reveal tampering. In order for a seal to be allowed to be used, it has to perform in line with ISO 17712:2013. This ISO standard pertains to physical characteristics and uniqueness of seals.

Placing and removing a seal, including a smart seal, requires manual intervention. Next, any loss of integrity can only be documented in hindsight, with a classical seal. The question arises whether a more efficient way of working can be identified, and how this alternative can be proven to be of value as much as classical ISO 17712:2013 approved seals in revealing loss of integrity. Currently, there is no standard for e-seals or sensor systems without a physical sealing aspect.

Typically, if a seal is removed without agreement or is tampered with, a fine is issued and in extreme cases a criminal investigation is started. The information value of the classical seal thus is as high and the information gathering as robust as required to start these legal activities. A key requirement for any novel concept will be its information value and its robustness. In addition, a reduction in manual interventions is required. A thorough validation of a novel concept against approved seals will be required to underpin future acceptance.

**Smart seals/ e-seals:** Smart seals or e-seals generally consist of a classical physical seal like a cable or bolt in which a selection of sensors (e.g. for temperature, light, acceleration, sound,

humidity, pressure, magnetic field, geo-location, etc.) along with a facility to process the sensor data (microprocessors) derive actionable information and a facility to communicate (2-5G, LTE-M, LoRa, narrow band, etc.) the resulting information to the outside world. Next to this first type of e-seals, another type of seals is developed that permanently monitors a shipment using sensors, sensor data processing and communication as mentioned above but lacks the physical sealing characteristics. This latter type is developed from the idea that if the derived information shows that a transport is tampered with, the information value is the same as that of a tampered with physical seal.

Smart seals of both types are already in use in logistical chains, mainly with commercial actors out of the need for careful environmentally controlled transport or because of insurance requirements. An e-seal with a purposefully chosen set of sensors, microprocessors and communication tools may also prove its value in protecting the integrity of goods transported under Customs supervision. Real-time alarms on detected tampering can reduce the need for human effort to place and verify seals. This last type of e-seals is the most innovative and exhibits the greatest potential for landmark changes in the field of seals: smarter sealing.

**Call for two new Expert Reports:** in this Magazine 15 we share details on the calls for two e-seals related Experts Reports – if these fall into your professional scope and interest, please send us your proposal(s), and become selected to do important work for PEN-CP!



# Call for an Expert Report: Electronic seals for curtain sided transport – State-of-play & market review (PEN-CP-2022-ER7)

## Background and context

Seals are commonly used by customs and commercial operators to secure cargo from theft and reveal tampering. There are many types of mechanical, conventional seals on the market that have been used for decades to protect the integrity of the goods and reveal potential loss of integrity. Today, many seals not only provide physical protection and evidence against tampering but also feature advanced capabilities, such as automatic alarms as well as geolocation, tracking and identification of cargo units (e-seals or smart seals).

Of all types of transport, smart seals are most common in containerized transport and less common in curtain-sided trailers (tautliners). Ironically, a lot of transport takes place in these curtain-sided trailers, which are relatively time-consuming to seal for commercial operators as well as for customs. The use of e-seals is as desirable for curtain-sided transport as for containerized transport and using them holds great potential for customs and commercial operators. In particular, e-seals may offer an avenue to improve efficiency of customs and commercial operations in curtain-sided trailer transport in the times of growing trade volumes and constrained customs resources (see Annex 1 for more information on “how customs see the use of e-seals”)

## Scope and goals

This Expert Report 7 will analyze the state-of-play of e-seals and sensor systems primarily for curtain-sided trailers from the customs perspective by reviewing existing e-seal products

and sensor systems and their suppliers. The scope of the reported information should cover:

- Features and specifications of e-seal products on the market today
- Procedures for setting-up, verifying, deactivating and re-using e-seals in practice
- Comparison of strengths and limitations of different e-seal products

## Project tasks

The main tasks to be carried out are the following ones:

- Participate in a kick-off workshop with 3-4 Customs experts to get the first understanding of the role and legal context of e-seals in customs operations (PEN-CP organizes the workshop)
- Review public material on e-seal products and developments (mainly online)
- Contact at least three e-seals providers to collect complementary information on their products
- Write the full report
- Present your work to PEN-CP Customs partners in our monthly online meeting (= Pendency)

## Report structure

- Chapter 1. Study overview and methodology
- Chapter 2. Description of e-seal products on the market
- Chapter 3. Comparison of strengths and weaknesses of e-seal products on the market



# Call for an Expert Report: Sensor systems as e-seals for curtain-sided transport –customs requirements and future priorities (PEN-CP-2022-ER8)

## Background and context

Seals are commonly used by customs and commercial operators to secure cargo from theft and reveal tampering. There are many types of mechanical, conventional seals on the market that have been used for decades to protect the integrity of the goods and reveal potential loss of integrity. Today, many seals not only provide physical protection and evidence against tampering but also feature advanced capabilities, such as automatic alarms as well as geolocation, tracking and identification of cargo units (e-seals or smart seals).

Of all types of transport, smart seals are most common in containerized transport and less common in curtain-sided trailers (tautliners). Ironically, a lot of transport takes place in these curtain-sided trailers, which are relatively time-consuming to seal for commercial operators as well as customs.

Recent developments have seen the implementation of advanced capabilities in sensors embedded in the truck, container and even attached to the cargo. As with e-seals, integrity or tracking is of relevance but increasingly, additional sensors are used to accommodate for specific needs of the commercial operators involved. The use of embedded sensors in combination with or, as a matter of perspective, even in place of classical (e-)seals, holds great potential for customs and commercial operators. In particular, they may offer an avenue to improve efficiency of customs and commercial operations in curtain-sided trailer transport in the times of growing trade volumes and constrained customs resources (see Annex 1 for more information on “how customs see the use of e-seals”)

## Scope and goals

The study should summarize the key needs and requirements customs practitioners have for sensor systems as e-seals on the market or close to the market (TRL 8 and higher). The analysis

should also list development priorities for next-generation e-seals from the customs standpoint. To collect this information, PEN-CP will organize kick-off interviews and a mid-term workshop with customs experts.

*Note: Technology Readiness Level 8 (TRL) is defined as “system complete and qualified”.*

## Project tasks

The main tasks to be carried out are the following ones:

- Interview 2-3 Customs experts to get the first understanding of the role and legal context of sensor systems as e-seals in customs operations (PEN-CP organizes the contacts)
- Exchange information with Expert Report 7 (= Electronic seals for curtain sided transport – State-of-play & market review)
- Organise a mid-term technical workshop with customs practitioners to finalize and validate the user requirements on sensor systems (PEN-CP arranges the workshop participants)
- Write your findings in a report
- Present your work to PEN-CP Customs partners in our monthly online meeting (= Pendency)

## Report structure

- Chapter 1. Study overview and methodology
- Chapter 2. Customs needs, requirements, constraints and problems regarding e-seals on the market or close to the market (TRL 8 and higher)
- Chapter 3. Development priorities for next-generation e-seals from the customs standpoint

# Common sections for the ER7 and ER8 calls

## Report length and language

Target 12-16 pages (no page limit with annexes);  
in English

## Applicants and application process

You can apply either as a natural person or as a legal entity (registered company with a VAT ID). In case you are a team of two natural persons, please identify clearly who is the main contact person for contractual purposes. It is also important to note that the call is announced in public and is open for anyone knowledgeable on the topic to apply. We may also approach potential experts by email. The application process consists of following three steps:

- Step 1: Applicant expresses his/her interest by sending an email to [pen-cp-arttic@eurtd.com](mailto:pen-cp-arttic@eurtd.com)
- Step 2: Applicant receives credentials by email (from PEN-CP) enabling the proposal submission directly on the project portal
- Step 3: Applicant submits the proposal (both technical and CV -sections)

## Documents to submit

Submit the following documents as part of your proposal here:

1. Technical proposal (max 2 pages)
  - Describe the methodology you will use to achieve the goal for the assignment
  - List the activities you plan to conduct during the assignment
  - Detail the main risks and limitations you foresee with the assignment, including a brief risk mitigation plan
2. CVs of 1-2 experts who will carry out the work, highlighting their past experiences on similar topics.

## Evaluation criteria and points (max 100 points)

- Criterion 1: The quality of the methodology, project work and risk plan = max 60 points
- Criterion 2: The relevant past experience of the 1-2 experts included in the proposal = max 40 points
- Minimum threshold to be considered for selection: Criterion 1 = min 35 points; Criterion 2 = min 25 points

## Evaluation and contract signing process

- Step 1: Evaluation of all applications by scoring and ranking them.
- Step 2: Selection of the applicant with the highest score and initiation of the contractual process.
- Step 3: Communication with the non-selected applications of the evaluation results.
- Step 4: Contracting with the selected applicant.
- Step 5: Possibility to contact the unsuccessful applicant (if the contract cannot be closed with the selected applicant for a reason), to suggest contract negotiation (then follow with Step 4)

## Dates, contacts and consulting fee

- Call publication date: 20 October 2022
- Deadline for proposal submission: 1 December 2022
- Call results available (expected): 15 December 2022
- Project start date: Latest by 16 January 2023
- Project duration: 2-3 months (to be agreed at the time of contract signature)
- Administrative contact person: Ms. Valerie Mellier, ARTTIC; [pen-cp-arttic@eurtd.com](mailto:pen-cp-arttic@eurtd.com)
- Consulting fee: 5.900 EUR

*Note-1: The official versions of the ER7 & ER8 call texts are available at the PEN-CP online platform page: <https://cmt.sym.place/groups/profile/302707/pen-cp-innovation-instruments-and-innovation-events>*

*Note-2: PEN-CP reserves rights to make updates on the dates listed above, in case no proposal reaches the minimum threshold; also, we may cancel the action, in case no competent service provider is found*

*Note-3: PEN-CP plans to feed the ER7&ER8 outcomes into a set of follow-up PEN-CP innovation instruments, tentatively the following: crowdsourcing ideas; challenge competition; and technology grant*

## **PEN-CP in a nutshell:**

PEN-CP, the Pan-European Network of Customs Practitioners – EU Horizon 2020 funded Customs security practitioner project – acts as a European Customs innovation boosting network, powered by an innovation-centric online platform, and tailored innovation intermediary services. PEN-CP focuses on accelerating innovation efforts across three core Customs technical areas: Data and risk management; Detection technologies; and Laboratory equipment. We have a broad variety of innovation and knowledge instruments in use, including Technology grants, Challenge competitions, Innovation awards, Annual studies and Expert reports. Across our activities, we aim to connect innovation-spirited Customs officers, helping them to ‘find friends in Customs innovation’. The vision is to become a robust & permanent Customs innovation boosting network, helping to accelerate both incremental and radical innovations, for the direct benefit of Customs administrations in Europe and even beyond. Our punchline is following: “PEN-CP & 13 European Customs Administrations: from Innovation Observers to Innovation Drivers”.

### **PEN-CP consortium partners (17 in total):**

- DIRECTORATE GENERAL OF CUSTOMS OF ALBANIA (ALB), Albania
- BUNDESMINISTERIUM FÜR FINANZEN (AUT), Austria
- SERVICE PUBLIC FEDERAL FINANCES (BEL), Belgium
- MAKSU- JA TOLLIAMET (EST), Estonia
- NEMZETI ADO- ES VAMHIVATAL (HUN), Hungary
- THE REVENUE COMMISSIONERS (IRL), Ireland
- VALSTS IENEMUMU DIENESTS (LVA), Latvia
- MUITINES DEPARTAMENTAS PRIE LIETUVOS RESPUBLIKOS FINANSU MINISTERIJOS (LTU), Lithuania
- CARINSKA UPRAVA NA REPUBLIKA MAKEDONIJA (MKD), North Macedonia
- MINISTERIE VAN FINANCIEN (NLD), the Netherlands
- TOLLREGION OSLO OG AKERSHUS (NOR), Norway
- FINANCIAL DIRECTORATE OF THE SLOVAK REPUBLIC (SVK), Slovakia
- HOME OFFICE (GBR), the United Kingdom
- ARTTIC (ART), France
- TECHNISCHE UNIVERSITEIT DELFT (NLD), the Netherlands
- UNIVERSITE DE LAUSANNE (UNIL), Switzerland
- CROSS-BORDER RESEARCH ASSOCIATION (CBRA), Switzerland (PEN-CP Coordinator)

### **Visit PEN-CP online:**

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- <https://pencast.podbean.com/>
- <https://youtu.be/OXwQPHHS5Ls>
- <https://www.researchgate.net/project/PEN-CP-EU-H2020>

Innovation instruments and events - calls for submissions by PEN-CP here:

- <https://cmt.sym.place/groups/profile/302707/pen-cp-innovation-instruments-and-innovation-events>

