Welcome to the 1st issue of the PEN-CP Magazine!

The Pan-European Network of Customs Practitioners, PEN-CP, is a 5-year Horizon 2020 funded EU-project, with the overarching goal to create a sustainable and innovative networking and collaboration system to connect customs across Europe. A total of 13 European administrations - Albania, Austria, Belgium, Estonia, Latvia, Lithuania, Hungary, Ireland, Macedonia, the Netherlands, Norway, Slovakia and UK (Home Office) – are beneficiaries of the 5-year H2020 networking grant.

Instead of addressing a single customs security challenge or problem, PEN-CP carries out a broad range of small-scale innovation related activities - including in customs risk management, detection technologies, laboratory equipment, border performance measurement, customs-police-border guard, and customs-business partnership disciplines – as a proof-of-concept regarding the overarching goal to construct a sustainable collaboration system for all European Customs administrations. We wish to work closely with interested Customs2020 Expert Groups, throughout the 5-year project!

PEN-CP held a kick-off meeting in Thun, Switzerland, during 24-26.10.2018. All the 17 consortium partner institutions – the 13 customs plus TU Delft, University of Lausanne, ARTTIC and Cross-border Research Association – topped with experts from the European Commission DG HOME and DG TAXUD, WCO Regional Intelligence Offices Western Europe and Central & Eastern Europe, and Warsaw School of Economics, participated in the highly productive 2.5-day meeting. Several tangible follow-up actions were discussed and agreed between the partners – and now, some one month later, action has started, under the project slogan “PEN-CP - Connecting Knowledgeable People in Customs and Border Security”!

We hope you will enjoy reading the PEN-CP Magazine, which will be published every 3 months. Please send us feedback on topics you would like to be covered in the future issues!

In Brussels / Budapest / Dublin / London / Thun, 1.12.2018

PEN-CP Management Team:
- Jonathan Migeotte, Belgian Customs;
- Zsolt Dezső, Hungarian National Tax and Customs Administration;
- Kevin Humphreys, Irish Tax and Customs;
- Trevor Francis, UK Border Force;
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PEN-CP security themes

Risks and big data

Laboratory equipment

Security performance

Customs-business partnerships

Detection technologies

Customs-customs and other-government-agency cooperation

PEN-CP Magazine Editorial Team

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PEN-CP activities in a nutshell

01

PEN-CP monitors and categorizes security innovations and innovators — projects, products, prototypes, patents, companies, research institutions, university labs etc — in the broad context of six customs security technologies and management approaches; seeking innovation ideas even outside of customs domain (e.g. police or forensics). The outcomes of the continuous online and offline monitoring are shared on the PEN-CP platform, in an easy-to-use-and-search format (e.g. “show me all available products, patents and research papers on narcotics detection and verification equipment”). Regarding existing tools and technologies, customs partners can share user experiences between each other, ultimately across Europe. **PEN-CP spreads news from the security innovation sector!**

02

PEN-CP collects and analyses customs security user need ideas, across the six PEN-CP customs security themes. Ideas can vary from preliminary, not-yet-well-defined versions to more mature, well-articulated ones, for example in the context of detection technology performance, laboratory device accuracy etc. All ideas are stored on the PEN-CP platform, where they can be revisited, details added, ideas promoted and/or challenged at any time during the project. Close cooperation with key stakeholders — including Customs2020 CDTPG, CELBET and CLEN — is crucial. **PEN-CP sheds light on emerging customs security user needs!**

03

PEN-CP generates matches and analyses gaps between the security innovations and innovators versus, security user need ideas, again in the context of six customs security themes. This process takes place in the **PEN-CP Innovation Funnel** (see picture on the next page), where the prioritisation of processed items also happens. In case there is a match between a user need idea and an existing security innovation, related PEN-CP partners are informed about the match. **PEN-CP facilitates matchmaking between user needs and existing solutions!**

04

When it comes to high priority user need ideas, without direct matches with existing products and projects, PEN-CP can opt to develop **tailored content for following purposes:** (i) User Requirement specifications; (ii) Prototype Grant specifications; (iii) Standardisation Roadmap; and, (iv) Stakeholder Briefings - including DG TAXUD, Customs2020 expert groups, DG HOME and H2020 briefings. **PEN-CP contributes to the future of customs security innovation!**
PEN-CP innovation funnel

PEN-CP Information Observatory (PIO)
24/7 monitoring on-line and off-line

User Need Ideas (PUNI)
Security Innovation Monitoring (PSIM)
- Annual studies
  - Expert reports

PEN-CP Innovation Funnel (PIF)
Gap analysis
Matching
Prioritization

If you want to know more about the PEN-CP project, please subscribe to PEN-CP Magazine, published every three months, by sending email to: pen-cp@cross-border.org, and, follow us in Twitter @PENCP_NET. Website will be opened in January 2019, www.pen-cp.net. You can also watch the long-version of the PEN-CP animation: https://www.youtube.com/watch?v=wq9y36J4ET8
The overarching goal of PEN-CP is to construct a sustainable collaboration system for all European customs administrations, in the broad context of security innovation monitoring and boosting. A broad range of small-scale innovation related activities - including in customs risk management, detection technologies, laboratory equipment, border performance measurement, customs-police-border guard cooperation, and customs-business partnership disciplines - will be carried out throughout the 5-year project. Close cooperation with key Customs2020 Expert Groups is crucial in order to achieve the ambitious goal of constructing a robust innovation collaboration platform and mechanism across Europe. Below we share a couple of ideas how the practical cooperation between Customs2020 Expert Groups and PEN-CP could look like – emphasising that the intention of PEN-CP is to help the Expert Groups to fill resource related gaps in their on-going work; i.e. never to “reinvent the wheel”. We look forward to receiving feedback from Customs2020 Expert Groups!

1. PEN-CP monitors various on-line and off-line sources linked to customs security technologies, products, patents, R&D projects, research institutions and companies. If a Customs2020 Expert Group (C2020-EG) has ideas for security innovation topics to monitor, PEN-CP can include those in the innovation monitoring scheme, storing and sharing the monitoring outcomes on an easy-to-use knowledge management platform. The monitored items can include security innovations outside of the traditional customs domain, including from police, forensics and intelligence domains – as PEN-CP encourages “thinking-out-of-the-box” innovation spirit.

2. PEN-CP fills existing knowledge gaps in the broad field of customs security technologies, management approaches and partnership programs. If a C2020-EG identifies a gap in current knowledge, PEN-CP may be in position to produce an expert report or an annual study chapter answering such information needs. Examples of potential study topics include “user experiences with specific customs security solutions”, and “best practices in multi-agency collaboration”.

3. PEN-CP plans to organize six technology field tests – two in risk management, two in detection technologies, and two in laboratory equipment – during the 5-year project. The idea is to contract external security technology companies or research institutions to take their existing products, and to test them out in “realistic customs conditions” – for example to try out a laboratory device in a border crossing point. All C2020-EGs are welcome to suggest topics for such trials!

4. When it comes to needs for new customs security education and training materials, PEN-CP plans first to carry out a user need survey, naturally inviting all C2020-EGs to join the survey. The goal is to co-produce some 40 hours of new educational materials, during the 5-year PEN-CP project - covering high priority strategic and operational aspects of customs security technologies, management approaches and partnership programs.

5. In case a C2020-EG sees this useful, PEN-CP may be in a position to provide additional visibility for their select findings and messages. This might include specific technical or procedural items positioned in a customs security standardization roadmap; gaps in today’s technical capabilities listed in future EU R&D funding calls; or, policy recommendations made to relevant bodies across European institutions.
Summary (as presented in the publication):

**BACKGROUND**

The emergence of psychoactive designer drugs has significantly increased over the last few years. Customs officials are responsible for the control of products entering the European Union market. This control applies to chemicals in general, pharmaceutical products and medicines. Numerous products imported from non-EU countries, often declared as ‘bath salts’ or ‘fertilizers’, contain new psychoactive substances (NPS).

**REVIEW**

These are not necessarily controlled under international law, but may be subject to monitoring in agreement with EU legislation. This situation imposes substantial challenges, for example, for the maintenance of spectral libraries used for their detection by designated laboratories. The chemical identification of new substances, with the use of powerful instrumentation, and the time needed for detailed analysis and interpretation of the results, demands considerable commitment. The EU Joint Research Centre endeavors to provide scientific support to EU Customs laboratories to facilitate rapid identification and characterisation of seized samples. In addition to analysing known NPS, several new chemical entities have also been identified. Frequently, these belong to NPS classes already notified to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) by the European EarlyWarning System (EWS).

**CONCLUSION**

The aim of this paper is to discuss the implementation of workflow mechanisms that are in place in order to facilitate the monitoring, communication and management of analytical data. The rapid dissemination of this information between control authorities strives to help protect EU citizens against the health risks posed by harmful substances.
In the past decade, Customs authorities reported an increasing number of NPS being imported from non-European Union countries, often mislabelled as ‘bath salts’, ‘fertilizers’ or ‘research chemicals’ that represent analogues or precursors of known psychoactive substances, licit (medical) or illicit drugs.

The time lag potentially arising from updating spectral libraries may hinder the fast detection of new substances recently identified elsewhere. Moreover, the validation, notification and possibly the publication of scientific data on the identification of a new molecule, may also cause delays.

An agreement was established between JRC and DG TAXUD to provide scientific support for the characterisation and identification of the unknown substances that Customs laboratories may not be able to identify with routine analytical techniques.

Of the ca. 250 samples analysed by JRC, several were already known NPS (mostly Synthetic Cannabinoids and Cathinones) but the data were not easily accessible to the Customs laboratory in question, which illustrated the need for fast access to data.

The analytical reports produced by the JRC on newly identified substances provide the elements for a possible check of the chemical interpretation by peer experts in the field.

Another goal of the JRC is to propose methods and approaches and support their adoption as guidelines.

Apart from NPS, Customs laboratories are also facing the problem of identification of other type of chemicals sold on the “illicit market”.

Note: the key points above are direct copies from the article, with just minor edits.
Abstract

Customs administrations continue to use a wide range of technology in protecting against terrorism and the movement of illicit trade and prohibited imports. The throughput of scanned vehicles and cargo increases and just keeps on growing. Therefore, the need of automated algorithms to help screening officers in inspection, examination or surveillance of vehicles and containers is crucial. In this context, the successful collaboration between manufacturers and customs offices is of key importance. Facing this topic, within the seventh framework program of the European Commission, the project ACXIS Automated Comparison of X-ray Images for cargo Scanning arose. The main objective of this project is to develop a manufacturer independent reference database for X-ray images of illicit and licit cargo. Historic images of real detections, images of illegal cargo mock-ups as well as images of legitimate cargo will be integrated into the reference database. For this, procedures and algorithms to uniform X-ray images of different cargo scanners were developed, as well as an automated identification method of potentially illicit cargo. Finally, these developments were incorporated in creating a training simulator and a toolbox for inspector officers’ enhanced X-ray screening competence.

Key points for the #

ACXIS develops automated target recognition (ATR) functions to analyse X-ray images of cargo screened at border crossing points (land, air or sea). These functions can continuously self-improve through a central reference database. This database contains X-ray images of illicit and licit cargo, and is designed to be manufacturer independent. All these database images, particularly the ones containing threats, constitute a significant tool for the training of screening officers and also for machine learning methods in automated detection algorithms.

One of ACXIS key goal is the creation of a reference database of realistic X-ray images of both licit and illicit cargo. Such a database is essential for teaching screeners and for providing assisted detection techniques of threats with the use of dedicated algorithms. To construct this database, one highly relies on historic images provided by custom officers.

The main objective of the mock-up scans was to enlarge the variety of threat images. For the same purpose, simulation tools were also used in order to generate X-ray images from 3D models of various types of threat items (e.g. weapons). The strength of the simulation approach is to easily create a large set of images of an object from different viewpoints.

Note: the key points above are direct copies from the article, with just minor edits.
Conclusions

Project ACXIS develops a reference database for X-ray images of illicit and licit cargo, procedures and algorithms to uniform X-ray images of different cargo scanners, and an automated identification of potentially illicit cargo. The created integrated reference database is also used for customs officers training and evaluation. The developed software incorporates ATR functions, which together with the impact of the systematic computer-based training is currently assessed through a validation study. It is expected that the study results confirm that ATR and training improve the effectiveness of border controls and reduce the amount of time necessary to successfully inspect cargo.

pencp consortium:

Upon visual inspection of X-ray images, the human brain can easily adapt to different systems, regardless the different parameter variations such as geometric deformations, textures, and levels of contrast or noise. This is not equally the case for automatic algorithms.

Standardisation enables the comparison between scans originating from different X-ray imaging systems. The database consists of set of approximately 30,000 scans as reference material, and new scans can continuously be integrated.

In the framework of the ACXIS project, two prominent ATR tools have been developed and trained on projected images: the Automatic Firearm Detection and Reefer Unit Analysis algorithms.
INTERVIEW

The PEN-CP Magazine attended the well-visited Kick-off meeting in beautiful Swiss Thun the 24 – 26 October this year and had the chance to speak to a few of the participating partners. We were curious to know what the motivation behind their participation was, and what they expected from the project. This is what Ramutė Neniškienė from the Lithuanian Customs Laboratory and Trevor Francis from the UK Home Office told us.

PEN-CP Magazine: What organisation you come from and what role you have in that organisation?

Ramutė: My my name is Ramutė Neniškienė and I come from the Lithuanian Customs Laboratory. I worked for the custom laboratory for 24 years in different positions. For the last six years, I am the director of the customs laboratory, and for this kick-off meeting I am replacing my colleague who will be our expert joining the project, since he was not able to come. He is quite an experienced person and he spent even longer time than me at the customs laboratory so he will be an asset for this project.

PEN-CP Mag: How did the customs laboratory first get to know about the PEN-CP-project?

R: Our international division informed us. They got some information and they asked us if we would like to join this project. They got some information from the organisers in Switzerland - and they asked my colleague and he said yes.

PEN-CP Mag: And what are your expectations - what do you want to get out of the project, by participating?

R: In general, not speaking only about laboratory, I think that we will share our expertise in different fields between different countries. We are strong in different fields and this project will help us to share this expertise. Another thing is that we will find some gaps, some possibilities for improvement in the activities of customs. We will be able to learn something or to teach someone and to create something good for everyone who is participating in this project, just to improve our activities.

PEN-CP Mag: The project is very much about innovations and new technique. Are there things that you use today that you did not have access to, say 5 years ago? That are now new innovations that you actually use in customs?

R: Yes of course, everything is changing, you know. Our laboratory was created 27 years ago, so of course we started with very simple instruments. Then we were improving our technical basis and the newest instrument, that we got 2 years ago was the Gas Chromatography Mass Spectrometry, GC/MS, that we are using for the analysis of psychotropic materials, narcotics, now. What we are calling designer drugs - with the new chemicals that are used as a replacement for classical narcotics. So it is a new one, the newest instrument now, that falls in the latest 5 year period.

PEN-CP Mag: So what would be your wish-list for products coming out as a result of this project?

R: Maybe not for the customs laboratory, but for the Lithuanian customs as an organisation, we see the role for the customs laboratory in this project, to help the customs officers find new detection technologies. The use of these instruments require some chemical background and the role of the customs laboratory would be to help our customs officers use these instruments. We can help them understand what they are doing and how to interpret the results, which they will be getting with these new instruments. That will be the main role for us.

PEN-CP Mag: So you see rather a development of your organisation...

R: Yes!

PEN-CP Mag: ... and division of tasks thanks to new technology. That your task will be moved from actually doing the analysis to helping with interpretation and supporting the officers in the field?

R: Yes - we are thinking not only about our laboratory but of our whole organisation and on our customs officers when we are thinking of purchasing this detection technology, these new instruments for operating in the field. And of course another task for us will be to help them implement this method.

PEN-CP Mag. OK, thank you very much

R: You are welcome.
T: Yes, I had a contribution to it, but it is a collection of ideas from different people.

PEN-CP Mag: And what is your role in the project now?

T: I am fortunate to be on the management team of this project. So we get to steer a little bit and also I am Work Package leader for the Detection Technology side. So when we do horizon scanning, when we are looking for new innovations that we can utilise or make use of, that would be the sort of role that I would be helping to steer.

PEN-CP Mag: If you look at what you are using today - what is new compared to five years ago - do you have technologies that you have actually have seen coming over these last 5 years?

T: There has been little change, because there has been little innovation for the customs needs. So for example 5 years ago, we were using trace x-ray and not much else. Now we are using spectroscopy to analyse powders rather than send them to labs. That saves a lot of time. It is a very useful tool. But the benefit of getting involved here is because from concept to market there is such a long period time, so I think there need to be groups like this to stimulate that action. That is similar to what the Customs Detection Group has done within Customs2020 program, again here some of the member states and partners are the same, some are different, and I think that between these groups and the others we can significantly influence where some of that research and innovation funding goes, to meet the challenges that we are all facing.

PEN-CP Mag: What is on your wish list, what are the gaps you really feel need to be filled?

T: Well, learning from the other groups there are so many benefits from collaborating well together and some of them you cannot put down in writing because they just happen, but I think learning from other people’s ideas. In this group we are thirteen different administrations involved. They are probably all doing something that will be of interest to other people, so lets’ map that out, let’s learn from what other people are doing and collectively come to see how we can do things better. Are there any areas that we can focus on? Personally, I love the idea of being able to, if we can, influence new innovations in any way, but there are benefits to be had from the things that we use already, by communicating with each other, and having that platform where ...

PEN-CP Mag: … a chance for benchmarking and spreading best practice?

T: I would say yes. Yes absolutely!

PEN-CP Mag: So don’t you have a specific thing, a specific problem that you really would like to have a technical solution for in the next five years?

T: Sometimes the technologies will not be done within five years. It’s a slow process. What we need to do, is just to make manufacturers and academia aware of what our needs are, so that they can react to them or be ready for any opportunities, if any of us, independently or collectively, are putting out funding calls or competitions. I think if we all can get the message out of what our requirements are, and to do that we need to understand ourselves what we want in order to be able to tell somebody else, we might be having some good ideas coming out.

PEN-CP Mag: Thank you very much.
ILLEGAL SHIPMENTS of heroin bound to Europe increasingly make use of maritime trade routes along the seafront of East and Southern Africa. That is reported by ENACT, the EU funded project Enhancing Africa’s capacity to respond more effectively to transnational organised crime, at a side event of a conference in Vienna, Austria, arranged by the United Nations Convention against Transnational Organized Crime.

According to a research paper soon to be published by ENACT, Sub-Saharan Africa also faces an unprecedented rise in users of illicit drugs partly due to urbanisation and a large youth population. Certain parts of Africa have also become transit points for the illicit trade mostly going to Europe. In the path of this trade, entire societies are bound up in an illicit economy that threatens the achievement of the UN development goals.

Mark Shaw, Director of the Global Initiative Against Transnational Organised Crime highlighted the need of further knowledge of the links between illicit trade, organised crime, politics and the development of societies. ENACT’s home page provides further information on these trade routes and the effect of illicit trade on African societies.


**WCO and OSCE strengthen cooperation helping states with security threats**

**16.10. 2018**

COMBATING TRANSNATIONAL organised crime, securing and facilitating legitimate trade, preventing illicit trade in cultural objects and strengthening systems for security at the border are among the key points in a Working Arrangement document signed by the Secretary Generals for the World Customs Organization (WCO) and the Organization for Security and Co-operation in Europe (OSCE) on the 16th of October.

Advanced passenger Information (API) and measures against corruption are also among the common measures. The aim of the Working Arrangement is to revise the existing collaboration and make it more structured and comprehensive.

27.9.2018

WCO SECRETARY GENERAL Kunio Mikuriya highlighted a number of areas where cooperation between Customs and Police will be a priority for the future, at a Europol meeting in the Hague on 26 September 2018.

Cross-border e-commerce, security on controlling goods, passengers and money, and illicit financial flows were mentioned among the areas that would benefit from closer collaboration.

Dr Mikuriya made reference to the Customs Police Cooperation Handbook published by WCO and Interpol in March 2018 and outlined a number of practical measures to enhance cooperation, for instance joint actions and the establishment of liaison offices.

Source:

10.10.2018

THE EUROPEAN COMMISSION called on its partner institutions, The European Parliament and the European Council, to make it a priority to finalise legislation on a number of issues connected to security, before the European elections, to be held in May 2019.

The legislative package encompasses measures on on-line security and protecting European citizens on-line, interoperability of EU information systems, fighting cross-border crime and strengthening the EU borders.

This should be achieved, for example, by permitting judicial authorities to track down electronic evidence across borders and by widening the mandate of the European Public Prosecutor’s office. Similarly, the upgrades of different EU information systems, such as the European Criminal Records Information System (ECRIS), Eurodac and the Visa Information System (VIS) need to be finalised rapidly.

Source:
Frontex already two years as the European Border and Coast Guard Agency

6.10.2018

FRONTEX CONTRIBUTES to the well-functioning of the EU borders and celebrates two years of service in the week of 6 October. The organisation now has some 600 staff, 26 ships, 6 airplanes and 4 helicopters at its disposal.

Important tasks are migration management and security-related activities, monitoring risk and information as well as developing a network of liaison officers.

Source:

UK: €2.7 billion China fraud bill leads to European Commission warning

24.9.2018

THE EU COMMISSION warns the UK to recover lost EU customs revenue of €2.7 billion after China fraud bill. The UK has two months to act or the case could be referred to the EU’s Court of Justice.

Politico reported that the European Commission warned the U.K. for the second time to recover €2.7 billion in lost EU revenue stemming from the country’s failure to stop a massive fraud network that allowed cheap Chinese goods to flood into Europe.

The Commission’s warning is the next stage in the bloc’s formal infringement procedure and follows up on findings from the EU’s anti-fraud office OLAF that British customs played a central role by repeatedly ignoring warnings to take action over Chinese textiles and footwear entering the EU at a fraction of their cost of production.

Source:
https://www.politico.eu/article/eu-warns-uk-again-to-recoup-e2-7-billion-china-fraud-bill/
US Department of Homeland Security (DHS) reaches out to the scientific and technical communities to share information for possible future Private Public Partnerships (PPP)

4.10.2018

THE DHS WANTS to promote innovation in the homeland security area and points at a long tradition of collaboration. To achieve this a range of different R&D awards are made available. The DHS hopes to identify innovations that will give an edge to the work of Homeland Security. “We are targeting unique revolutionary and maturing technologies that demonstrate the potential for significant improvement in Homeland Security missions and operations,” said William Bryan, Senior Official Performing the Duties of the Undersecretary of Science and Technology.

The DHS publishes a so called Long-Range Broad Agency Announcement (LRBAA), that should be seen as a standing invitation to industry and academia alike to share information in order to seek funding.

The DHS also says that is has listened to its critics and revised a complicated process, simplifying processes and making them more transparent. This includes a new portal for the whole LRBAA.


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UK Border Force - Detection Services is launching a £1.25 Million innovation call focussed on the challenge of detection of threats in the postal/fast parcel domain

This is a Small Business Research Initiative (SBRI) competition with funding provided by the GovTech Catalyst. The Home Office and Border Force continually promotes, invests in and deploys innovative detection technologies at the UK border. These counter the evolving threats of the modern world and protect revenue on imported goods. This is a strategic priority of the UK government.

This is phase 1 of the competition. Organisations can to apply for a share of £250,000, including VAT, to run a feasibility study to develop innovative solutions for deployment in the international postal and fast parcel border environment. The overall programme will be delivered in 2 phases. A decision to proceed with phase 2 will depend on the outcomes from phase 1. Only successful applicants from phase 1 will be able to apply to take part in phase 2.

Your application must propose adaptive and non-disruptive products that comply with our 2 main objectives:

- improve our ability to detect illicit goods passing through postal and fast parcel border facilities
- have no effect on the flow of goods

**Competition opens: Monday 3 December 2018**
**Registration closes: Wednesday 16 January 2019 12:00pm**

Further details are published at: https://apply-for-innovation-funding.service.gov.uk/competition/275/overview