

CONNEXIONS Newsletter

InterCONnected NEXt-Generation Immersive IoT Platform of Crime and Terrorism

DetectiON, PredictiON, InvestigatiON, and PreventiON Services

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EDITORIAL

The CONNEXIONS project is coming to an end after forty-two months of successful implementation. Forty-two months full of research, development, results, pilot demonstrations, innovation, synergies with EU projects, knowledge transfer, and feedback reception are just some of the project's work implemented and disseminated. The project wrapped up its activities in a hybrid final event which took place during February 23-24, 2022, in Lisbon, Portugal. Presentations, demonstrations and panel discussions were organised to engage with the audience, maximising the project's impact. Although the CONNEXIONS project is coming to an end, its research and impact will be there for the future. On behalf of the CONNEXIONS consortium, we would like to thank each member of our audience and hope to meet again in the future.

PROJECT PROGRESS & KEY MILESTONES

The CONNEXIONS project was completed on February 2022 and the outcomes of our 42-month work will be presented in detail in the final review that will be conducted by the EC in April 2022.

The final iterations of the pilots were completed in February, with promising results fulfilling all key milestones, including the identified user requirements for providing a set of next generation, user friendly services for the prevention, investigation, and mitigation of crime and terrorism (see pages 2-3 of this newsletter).

During the last month of the project, the project's results were presented in the Final Conference of CONNEXIONS in Lisbon, Portugal, at the premises of Polícia Judiciária (PJ) in a hybrid (physical/online) event. This Conference was the final dissemination event of the project prepared and hosted by CONNEXIONS and provided interested stakeholders and LEA(s) with an opportunity to get more familiar with the final outcomes of the project by presenting those services to interested end-users and stakeholders (see page 5).

Moreover, during its last few months, the CONNEXIONS project has also focused on the dissemination and exploitation of the developed services and solutions —another key milestone for our Consortium— with the hope that those impact creation activities will raise awareness for our proposed tools in the fight against crime and terrorism. Unfortunately, CONNEXIONS did not have the opportunity to present its achievements at the Security Research Event (SRE) scheduled for March in Paris, which was cancelled due to Force Majeure.

Last but not least, it is important to note that these tools and services were developed by adhering to the relevant applicable national, EU & international law, research ethics standards, and codes of scientific conduct, as CONNEXIONS put a special emphasis on the legal and ethical compliance of its provided services during the whole duration of the project (see page 4).



CONNEXIONS Pilot Use Cases

CONNEXIONS Pilot Use Case 2 “Human trafficking investigations and mitigation”

When new Human Trafficking Legislation came into force in Northern Ireland in 2015, the PSNI (Police Service Northern Ireland) formed a dedicated unit investigating Human Trafficking and related offences, while actively raising awareness within both the private and public sectors. As a result, convictions for Human Trafficking offences have almost doubled in the last 10 years due to our ability to vastly improving our data collection methods. There have been challenges along the way, as leaving the European Union changed the way the PSNI works with its international partners. There are various European Union instruments that we no longer have access to and, whilst capability still exists, the investigation process has become longer.

In spite of the affect COVID-19 had on the ability for people to travel or meet socially, 2021 saw an increase in the amount of screening assessments, safeguarding visits and referrals in comparison with 2020, as due to financial restraints some victims may have been forced back into the world of trafficking. Officers from the Modern Slavery and Human Trafficking Unit (MSHT) asked the CONNEXIONS project to produce a number of technical solutions to assist in their daily work to improve efficiency and effectiveness by:

- developing AI and machine learning techniques to identify possible victims within the world of Adult services websites;
- improving services for near real time translation for non- English speaking victims ; and
- providing the ability to recreate a 3D crime scene in virtual reality to be used as a briefing tool for investigators and the judiciary.

During the final iteration of the pilot demonstration for Pilot User Case 2 (PUC2), we successfully demonstrated the above features to members of the consortium and the MSHT team who were very impressed with the results. There was a genuine belief that the CONNEXIONS solution could provide an accurate assessment of vulnerability in victims and that detection could be achieved in a much faster time and with less resources than current methods. This would ultimately lead to improvements in safeguarding and removing victims from harm.

The MSHT unit had shared a threat matrix based on current indicators, such as risk behaviours, phraseology or pricing index that the investigator would reference when analysing online material. The enhanced analytics tools embedded this information into their design to trigger an alert along with a scoring system on a suspect profile. During the demonstrations, synthetic vulnerable profiles were implanted into the large collected dataset and these were located easily, even when different search parameters were employed. The developers used visual analytics/infographics to display the results giving the reader a quick overview of all the analysis completed. Moreover, the 3D crime scene proved a useful addition for pre-operation briefings and to inform the prosecutor pre-trial.

Although the advantages for employing the CONNEXIONS platform for Law Enforcement Agencies is high, this type of technology faces some resistance from legal and ethical experts. The UK has been hesitant about the use of AI for investigative purposes and all police services must ensure that individual’s rights and freedoms are fully respected in the collection and use of personal data. The Consortium partners worked hard throughout the project to ensure that these principles were at the centre of our research and respected during the preparation and testing phases.



CONNEXIONS Pilot Use Cases

CONNEXIONS Pilot Use Case 1 “Counter-terrorism security in large scale public events”

The final iteration of PUC1 pilot test on “Counter-terrorism security in large scale public events” was organised by Protection and Guard Service Romania (SPP) and took place in Bucharest, Romania, on February 3, 2022. The organiser considered a mixed event, including outdoor and indoor environments, to determine how CONNEXIONS can be used in both environments. Participants from different specialties participated at the demonstration to determine how the platform can help them in their daily activities. Due to the COVID-19 pandemic, technical partners participated remotely and were available online to offer their guidance and assistance in case of need.

During the demonstration, participants had the opportunity to see how an event can be planned, executed, and debriefed. All three stages were covered by the demonstration to have a comprehensive evaluation of the platform and have a near to real-life experience. Participants had the opportunity to train in advance to the demonstration under the coordination of technical partners, to get accommodated with the latest versions of the tools, and have the appropriate knowledge during the demonstration. As a result, the demonstration ran smoothly and results were promising. The final iteration of PUC1 was successfully completed and a session of lessons learned was held at the end to extract the feedback from participants and determine what can be further improved beyond the lifetime of the project and what functionalities can be added in the future.

CONNEXIONS Pilot Use Case 3 “Crime investigation and training through 3D scene reconstruction”

On January 21, 2022, the second pilot demonstration of PUC3 was held at the premises of the University of Applied Sciences for Public Services in Bavaria – Department of Policing (BHP). Besides in-house experts of BHP, the participants also included experienced crime scene investigators of the Munich Police Department (MPD). The pilot demonstration was preceded by a training session which took place on January 18, 2022. Due to the Covid-19 pandemic participants could join the pilot demonstration, which was partly held in person, remotely. Thanks to that option further LEA experts could follow the demonstration and help evaluate the tools. Moreover, consortium partners could also be fully kept in the loop as they could watch the pilot demonstration online too.

The pilot proceedings included the evaluation of a 3D scan, the Virtual Reality (VR) application, and the Investigative Hypothesis Tool. More specifically, BHP had worked out a crime scene scenario aimed at testing the three above-mentioned tools. Accordingly, a crime scene was set up and scanned (in 3D) by FORTH.

The crime scene scan was re-visited in 3D through the VR application provided by NURO that was used to analyse the crime scene and to test the training dimension of the tool. Eventually, different assumptions about possible developments at the crime scene were tested with the help of the Investigative Hypothesis Tool that had been conceptualised by ENG. Feedback on the part of the LEA experts was overwhelmingly positive.

CONNEXIONS PILOT USE CASES



Ethical and Legal compliance during the lifespan of the CONNEXIONS project

The CONNEXIONS project has given explicit attention to the legal and ethical compliance, adhering in that way to the highest standards of research integrity and ethics principles, that represent the shared values upon which the EU is founded, with a focus on respect for human dignity and integrity.

All the activities of the project that involved human participants had been ethically approved by the Ethics Committee of the Sheffield Hallam University, prior to their realisation. Dedicated informed consents and information sheets have been prepared by the project's Ethics Advisory Board, with emphasis on the voluntary participation and on the right of all adult participants to withdraw their consent at any time without any consequences. Specific information on the data processing has been provided to the participants, with the relevant information to be differentiated across the two types of participation (tool operator and/or attendee in the demonstration). Only the minimum of the data needed for the purposes of the research has been collected being also properly pseudonymised. All the aforementioned procedures were aligned with the [General Data Protection Regulation](#) (Regulation (EU) 2016/679), as well as with specific national legislations of the PUC responsible countries.

To ensure both legal and ethical compliance when collecting data from social media (Twitter and YouTube), a dedicated guide was produced, including a risk assessment matrix, data protection and IPR issues. Only publicly available data and/or previously collected personal data have been processed for the activities of the CONNEXIONS project, with all relevant information on the processing to have been made available on the [project website](#) in line with Articles 6 (1) (e) and (f), 14 and Recital 50 of GDPR.

Specific technical and organisational safeguards have been in place to protect the rights of each data subject. Regarding the data acquired from external websites, all data were fully anonymised prior to storage to avoid stigmatisation or other negative consequences on potential victims of human trafficking. All partners involved in the data processing respected the Terms of Service of the data providers, while the Data Management Plan of the project was constantly updated, including the relevant Privacy-by-design principles and mechanisms that have been embedded to the design and architecture of the CONNEXIONS system. All potential incidental findings were managed on a case-by-case basis and supervised by the Ethics Advisory Board.

Attention has also been given to the proper development and usage of the AI services in the CONNEXIONS project, ensuring that they would respect the human dignity and autonomy, effectively prevent bias, discrimination, and stigmatisation, as well as ensure no limitations on fundamental human rights and freedoms. All the services have been built in compliance with the [AI Proposal Regulation](#) and included measures such as: (a) no automated decision making (human validation/verification before any decision-making activity), (b) provision of manual reviews for reverting possible false alarms and deletion of all associated data, (c) operator training, (d) outputs accompanied by confidence scores, and (e) mitigation measures for addressing the risk of inherent bias in data collection.

The legal and ethical compliance to the relevant rules and regulations of the CONNEXIONS project has been a long-term and continuous endeavour of the project partners, with constant discussions with experts, with bilateral meetings, as well as with intense brainstorming and contemplation during each and every activity, providing future recommendations for similar projects.

The Final conference of CONNEXIONS hosted a dedicated panel discussion on "Legal and ethical issues associated with security research projects and the emerging use of AI" took place, where legal and ethical experts from the Consortium and the Ethics Advisory board presented all the aforementioned endeavours, underlining the most challenging ethics and data protection issues, the legal and ethical risks associated with the use of AI in the CONNEXIONS project as well as in similar security related research projects.

Further information can be found at [this post](#) on the CONNEXIONS website.



CONNEXIONS Final Conference!

The CONNEXIONS Final Conference took place in hybrid (physical/online) mode during a 2-day event in Lisbon, Portugal on the 23-24th of February 2022. The consortium partner Policia Judiciaria (PJ) hosted the event at their premises and participants had the opportunity to join the event either online or physically.

During the Final Conference, the project's activities, including the results of the three Pilot Use Cases (PUCs), were demonstrated, allowing participants to engage in discussions and further understand the project's aims, scope, and achievements. Three sister projects ([AIDA](#), [CREST](#), and [APPRAISE](#)) were presented thus increasing the project's continuous synergies creation. Two invited speakers participated and gave presentations on the [EACTDA](#) activities, and on the JRC simulation tools for facilitating terrorism risk assessment and management. Finally, a panel discussion on "Legal and ethical issues associated with security research projects and the emerging use of AI" was organised.

In the second day of the event, the third project workshop on "Human Trafficking Investigations & Mitigation" took place in a dedicated slot concluding the project workshop series. After its completion consortium-only sessions followed where "Hands on training on CONNEXIONS tools and solutions" demonstration took place. The project's Final Conference took place successfully and approximately 80 people participated both virtually and physically engaging in fruitful discussions, interacting and having the opportunity to explore the CONNEXIONS project.

Along with the other two workshops organised earlier by CONNEXIONS, the Final Conference and the third workshop successfully concluded the CONNEXIONS Dissemination Events.



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