

The past, present and future of technology in PSP: Preliminary results

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Introduction

Technology is one of the critical resources for policing. The technology involves innovation to enable security in a new and effective way. Technology in Police Institutions – TechPol – is linked to mission-oriented security objectives.

In this context, the primary inquiries of this study revolve around questions. What are the technologies in place in Public Security Police (PSP)? How many projects are under implementation or have been implemented? What is the level of knowledge about TechPol in PSP?

“Perhaps the biggest area of change for international policing will be seen in the greater use and expansion of more and more sophisticated technology on a global stage” (Rogers & Frevel, 2018, p. 3). Technology in Police Institutions is a recurrent topic of discussion. Nogala (1995) stated that technology impacts police activity in the structure, performance, and value before society.

The police commitment to technology has different approaches, and in this sense, it can be overviewed involving information and communication technologies, crime analysis, and crime mapping (Manning, 2016).

The development of technologies is the driving force of police change in the approach to crime prevention and crime control strategies (Chan, 2001; Egbert & Leese, 2021; Harris, 2007; Nogala, 1995; Reichert, 2001). Whether it is “a hard technology (hardware or materials)” or “soft technology (computer software, information systems)” (Byrne & Marx, 2011, p. 19), they are effective tools for policing.

Within the hard and soft technology, Koper et al. (2015) “identified five categories”: i) “information technologies for the collection, management, and sharing of data”; ii) “analytic technologies”; iii) “communications technologies”; iv) “surveillance and sensory technologies”; and v) “identification technologies” (p. 33). As stated by Ariel (2019), “technology can revolutionise law enforcement”, especially in the collection, management, synthesises and sharing of information (p. 485). Criminal methods are also improving in a globalised world without cultural, social, economic, or criminal boundaries (Morgado, 2013; Morgado et al., 2023). It is up to the police to be prepared to follow the path of technological policing because it “is the leverage to crime fighting” (Morgado & Felgueiras, 2022, p. 149), and converges into a more efficient, cost-effective police (Manning, 2021).

Police respond excellently to technologies (Chan et al., 2001) because they are tools for solving problems (Manning, 1992), with proactive or reactive producers. The completion that information and Big Data need a technological system for profiling, establishing patterns, and thinking out of the box (Morgado & Felgueiras, 2021), is relevant to the analysis of the PSP’s context.

Considering the strategic axis of Information and Communication Technologies (ICT), the objectives focus on Strategic Information Systems (SEI), mobility, interoperability, geotagging, and information tools (documental, logistic, financial, and human resources). PSP to face the challenges purposed, a Strategic Information Systems Plan (PESI) was developed along with the regulatory framework and rules of permanent implementation (NEP) for i) articulation in the area of information technology between units and sub-units of the PSP and the DN/GINFOR; ii) SEI; iii) automation of information; iv) procedures in the operation of information systems; and, v) use of portable storage equipment and personal computer equipment in the processing and archiving of classified material; among others.

The world has become technological, and in the face of this irreversibility, there is an interdependence between society and its use. The circulation of information, and the new ways of leveraging criminal deviant behaviours,

instil security forces the need to incorporate technologies that can speed up processes and cope with crime and provide the community with quality services with effectiveness and efficiency. This approach drives PSP, and the ability to map the technologies and projects in PSP over the years is essential to understand the process.

Method

— Sample

For this study, the sampling used was all the database of institutional e-mail from PSP. From a total of 25.762 e-mail addresses, only 19.500 (undeliverable, Command, pre-retirement and retirement addresses) are considered valid.

The following inputs were used to calculate the minimum sample size required for this study: error of 3%, universe of 19.500 recipients, and 95% of confidence level. The results suggested a sample representing 1.012 respondents.

This sample obtained a response rate of 84%, revealing the interest in the topic within the organisation.

In this study, 850 participants were contemplated, 92 women (10,9%) and 754 men (89,1%). The minimum age of the participants is 20 against 64 years old ($M = 43$; $SD = 10,02$). The average number of years working in PSP is 11,47 years ($SD = 10,26$). The most active Command responding to the questionnaire was 30%; COMETLIS; 15% COMETPOR; 7% (DN), and minor participants from Guarda, Évora, Castelo Branco and Vila Real (0,8%; 0,7%).

Most of the responses come from the ones who have completed 12^o grade (63,3%), followed by the graduates (19,1%). Concerning the category, agents contribute the most (63,3%), Officials (18%), chiefs (15,2%), and others (Senior Technicians, IT specialists, Aspirants, Cadet-student).

— Procedures

The current study design was transversal, and an online questionnaire using the Google Forms platform was created and later shared by e-mail. The purposes of this study were described to all probable participants, and signed informed consent was obtained individually by checking the consent box. The mean time to complete questionnaires was around 15 min. Data collection took place between 10 October and 22 December 2022.

— Instruments

The questionnaire survey was prepared on Google forms and made available through institutional e-mail to the entire organisation. The questionnaire was used to evaluate the projects and technological initiatives in PSP and what kind of technological tools the participants use and know.

Alongside this metric, some questions were performed to characterise the participants (age, years of function, academic qualifications, sex, Command, etc.).

— Analysis

We can divide the analysis into two parts. The first part introduces us to the quantitative analysis by generating descriptive statistics (frequencies, means = M and standard deviations = SD). Software IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA) was used.

The second part concerning the open questions the analysis is generated by applying a comprehensive method that allows encountering the recurring ideas from the answers (Braun & Clarke, 2012, 2019; Vaismoradi et al., 2013) in an interactive process of interpretation that allows building a thematic structure as an outcome (Kimberly & Neuendorf, 2018). So, the study is done with a thematic analysis.

Results

— Quantitative Analysis

Our results show that the respondents, when asked to “Identify every technological initiative, project or implementation in PSP that you have known and/or participated in, even if it is no longer in operation”, 57,41% of the answers are of unawareness about initiatives, projects or implementation of technology in PSP. Some interviewees added:

“In the areas mentioned, the command where it provides service does not have such functionalities active, nor does it have any forecast for their activation” (TIC0512).

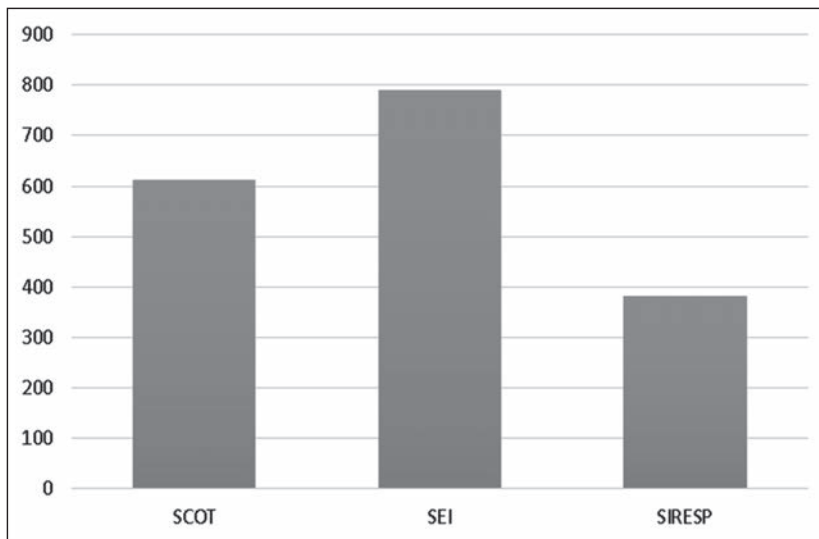
Those who identified some initiatives pointed out the CDLRA (14,35%), the 21st Century Squad – COMETLIS (9,29%), the communications network (7,76%), the SEI (5,06%), Portugal Integrated System of Emergency and Security Networks (SIRESP) (2,94%), and Automatic Police- Automatic License Plate Detection (PAGIS) (5,06%).

From an extensive list of potential initiatives, at this point of the inquiry, a few technologies were pointed out, and are presented in the software spectrum (license plate reader/ automated license plate recognition or automatic plate recognition systems. For example, PAGIS), GPS tracking Systems (CDLRA), Radio communications Systems (SIRESP), Management systems (SEI, 21st Century squad).

As technology has increasingly been the support role in policing nowadays, the participants were asked about the technological tools that they encountered in their operational, strategic and tactic actions (“Identify the tools/information systems / technological solutions that you know and that are currently in use at PSP”).

For the analysis, a specific categorisation was in place: i) communication; ii) information and communication technologies (ICT); iii) ICT specifically for policing – ICTs; iv) social media; and v) weapons, equipment, and wearable technology.

Figure 1 – Communication tools



Note: This figure illustrates the elements recognised within the communication tools.

Concerning communication, the tools considered for this category are Traffic Offense System (SCoT), Integrated System for Private Security Management (SIGESP), SEI and SIRESP. In this sense, this particular element

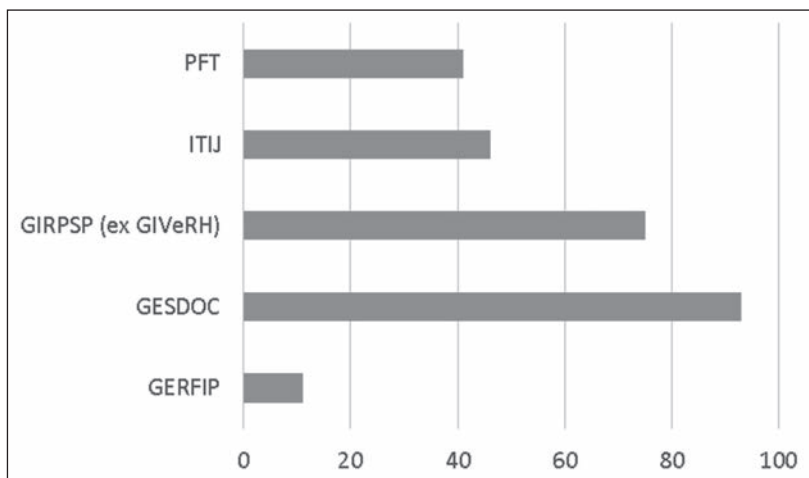
is frequently mentioned this element, 41,13% (20.149 answers). At the top of the recognisance is SEI (15,8%), followed by SCoT (12,3%), and SIRESP (7,7%) (Figure 1).

The world of ICT is increasingly mounting at the same pace as the technological needs, hardware, and complexity of tasks. Faster and more efficient are the main assumptions for their development. The 1.919 (38,2%) responses show that communications are scattered mainly to office tools (Word = 10%; e-mail = 9,7% and excel = 3,8%). The intranet is also a perfect example of its intensive use of it, with 9,7% of the respondents mentioning it.

The outcome for ICTs is revealed by only 19,47% (970 answers). SIGESP (6,4%) and GESDOC (1,87%) are within these tools (Figure 2).

A foremost concern is perceived in the answers regarding weapons, equipment, and wearable technology. Only six (0,12%) were aware of technology such as bodycams, Tasers or drones. All the paraphernalia of dashcams, mobile data terminals, non-lethal crowd control devices (e.g., tear gas and pepper spray), Kevlar vests, electronic control devices (e.g. stun guns), breathalysers, biometric technology (fingerprint scanners and voice recognition software), handheld drug testing devices (e.g. swab tests and spectroscopy for drug detection), are some of the examples briefly mentioned, or not mentioned at all. Social media is acknowledged by 0,76% of the retorts and among them, Facebook, Instagram, social media of PSP and Twitter.

Figure 2 – ICTs



Note: This figure demonstrates which ICTs the police know.

Aside from what is identified by the respondents and the examples already presented, many technologies were not considered and are in use as a common frame of police work, such as i) facial recognition; ii) predictive policing software; iii) gunshot detection systems; iv) crime mapping software (Risk model terrain – RMT); v) mobile data terminals; vi) identification technology (advanced forensics technology: DNA analysis and ballistics testing); vii) cybercrime investigation tools (e.g. computer forensics software and network security systems); viii) social media monitoring software (e.g. Mentionlytics, Synthesio); ix) data analytics and machine learning tools; x) virtual and augmented reality training simulators; xi) in-car breathalysers; xii) thermal imaging cameras; xiii) X-ray and metal detection scanners for screening individuals and packages; xiv) mobile crime labs; xv) gunshot residue analysis kits; xvi) advanced video surveillance systems with facial recognition and behaviour detection capabilities.

Try to provide quality to the reports given in quantitative data; the following section provides the intangible effects of the answers with qualitative analysis.

— Qualitative analysis

We conduct thematic analysis on our data set using a framework with the dimensions of accessibility and software, hardware, management and weapons, equipment and wearable technology.

From the thematic analysis of the results, some aspects are referenced as essential for the non-technological evolution or the slower path in the PSP's technologicalization process.

One area that can be defined as an agglutinating element of the issues listed by different respondents is functionality/accessibility.

Even though some considered that the databases are appropriate

“The databases are excellent” (TIC0310)

Users face problems accessing some fields and therefore exploring them in all dimensions.

“It's so much that we can't access” (TIC0216)

“Very limited access fields” (TIC0023)

The technology aims to provide more work efficiency. However, some constraints about their functionality are present in the answers.

“None work decently” (TIC0712)

“With none working properly” (TIC0713)

Being an artefact, the implicit of having malfunction or misfunction can be associated with manufacturing problems (hardware problems), lack of technical and professional maintenance, normal wear-and-tear (Floridi et al., 2015), and lack of knowledge of the users.

Enduring our results, we have come across the hardware category. Every technology possesses an inherent operational lifespan, which undergoes reduction with continuous development. This development enables the enhancement of capabilities, leading to increased efficiency over time. For that reason, the equipment needs to be updated, emulated, simulated, or rebuilt to be capable of offering the intended solutions.

The responses sustain this logic and are a perfect example of the need for change because:

“Tools very very degraded” (TIC 0310)

“Obsolete computers, need to renew computers” (TIC0310)

“Normal computers” (TIC0399)

“The databases are excellent (...) BUT AFTER THE PCS BLOCK OR DO NOT CONNECT(Dual Core).....” (TIC0310)

“No printers for years” (TIC0265)

Managing the application of technologies in police is not an easy task, even if it plays a role in the development of the activity. Sometimes “bringing in more sophisticated technology into policing (...) could be impractical” (Nogala, 1995, p. 206). The statement given by some responders illustrates this approach:

“major lack of internal harmonisation of communication policy in this field, applicable to all communication formats (press releases, police documentation, internal documents)” (TIC0077)

“There are things that are not understood in management” (TIC0310)

“More technology, less paperwork” (TIC0119)

“Increasingly we use more paper” (TIC0714)

At a micro-level is recognised the need for more equipment and wearable technology in terms of communications technologies for supporting dispatch (Kopper et al., 2015), such as:

“Every police officer should have a mobile phone with access to all police systems” (TIC0821)

“Have a small printer to be able to pass all the misdemeanour notices at the time it is viewed (emel type)” (TIC0821)

From the 4.982 logs for tools/information systems / technological solutions in use, hard technologies were not the baseline of responses. Soft technologies, such as SEI e SCoT are prevalent. Nonetheless, soft and hard technology improves police effectiveness, public safety, the community’s relationship and citizens’ engagement with law enforcement agencies. Its employment must be responsible under laws, regulations, and ethical considerations that cannot be above individual rights and freedoms, to minimise the intended and unintended results.

Conclusion

In this study, we investigate the present and future antecedents of technology in PSP. Following the results, some shreds of evidence arise from this preliminary study.

Without a doubt, the technological developments of the last decades show the importance of technology in daily life as a tool for decision support.

PSP and policing are attached to technology, and performing the mission is almost impossible. Technology is essential and is recognised as an element of police action/activity.

Though this is a fact, from the results, we conclude that the technological illiteracy of police officers is a fact. The continuous changes in technologies, which have become more demanding, are not sustained by the same level of knowledge within PSP, whether for the lack of capacities or simply resistance to the change, at this time of the project has yet to be discovered.

Although the technology for end-users is supposed to improve agility and flexibility in a complex and big institution/organisation, PSP faces, in some cases, its obsolescence. Due to some constraints, they cannot improve their speed and accessibility to more efficient technology.

Another concern raised by the results is the need for procedure harmonisation and implementing an action plan for the massive use of technology. This certainly will contribute to a more progressive and integrative process of technology change, acceptance, and awareness of it inside the PSP,

because it improves the environment-users, systems, tasks and ultimately, the performance of the PSP.

When adaptation to change is a hard process, a stressful and unproductive association subsidy, old organisations with new technologies transform into an old costly organisation.

Nevertheless, the future is here. Technology has come to stay, therefore is necessary to change the perspective and embrace this challenge, overcoming resistance, lack of coordination and standardisation.

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Conflicts of interest

There are no conflicts of interest because all the information provided is public.

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