Appendix 1: Police Scotland Explainable, Ethical, AI Challenge: Use Case

This appendix sets out the specific use case associated with a wider strategic challenge set out in the Civtech Sprint (Explainable, Ethical AI Challenge).

Respondents to this challenge should address both the specifics set out in this appendix and the wider issues highlighted in the strategic challenge document. The below mirrors the same format as the wider Strategic Challenge document and therefore this can be viewed as a challenge within a challenge.

Police Scotland ethical, explainable AI use case:

Can a technology solution assist in the processing and analysis of unstructured intelligence data sets to create operational efficiency which would help to free up resources to focus on frontline activities, whilst also providing transparency through explainability of its decision making and allow for an ethical data governance process?

1. Why is your organisation focused on this problem? (more detail on the nature of the problem, who it affects, what the impact of the current situation is)

The Joint Strategy for Policing (2020) ‘Policing for a safe, protected and resilient Scotland’ set out the future direction for policing in Scotland based on strategic outcomes to improve the lives of the people of Scotland. Our outcome to ensure threats to public safety and wellbeing are resolved by a proactive and responsive police service encompassed the challenge that crime increasingly features digital elements, and the sophisticated cyber capability of cyber criminals is beginning to outstrip our capacity to respond effectively.

Our Cyber Strategy ‘Keeping People Safe in the Digital World’ sets out our future approach to cyber investigation and effective use of intelligence. For Police Scotland to be a key partner in combating cybercrime we need to aspire to be recognised across UK and by global intelligence, law enforcement and industry partners, that we are able to not only investigate but collect, assess and disseminate high quality intelligence that will allow us to establish strategic worldwide intelligence sharing partnerships. Key partners include NCA, Interpol, Europol, NCSC and international Law Enforcement agencies.

This challenge represents an opportunity to use technology to complement our own judgement and analysis of threat, risk and harm. Automation has the potential to enable us to rapidly and precisely
address the risks of harm of offending, including when digital channels are a core element of our overall exposure.

This challenge will apply the above principles by designing and building an automated system capable of processing multiple unstructured data sources coming from logs and notes using a natural language processing algorithm, optimised for a law enforcement context. The system should be able to parse relevant data from large datasets, identify entities and link to pre-existing entities or create new ones. It should be able to draw sentiment from the data and link relationships between entities and objects such as crimes/organisations/locations. Finally, the system should be able to tag or flag important information.

By implementing an automated process, Police Scotland will be more effective at processing unstructured data, the resultant outputs will be more consistent and result in higher quality intelligence, improving service delivery. The output from this automated solution will enhance decision making and ensure that Police Scotland continues to Keep People Safe.

This will also result in specialist staff being relieved of similar, repetitive tasks, increasing their productivity and analytical capacity.

2. What Outcomes do you want to achieve? Can you identify specific measures that tell us that we solving the challenge? i.e. an increase of x% of people choosing to do a specific task online vs over the phone or in person. What is the metric that matters most?

In addition to the outcomes listed in the Overall Strategic Challenge please see below:
Outcome 1: The solution should be designed for easy integration into an ethical data governance process to assess and review the decision it supports.

Outcome 2: The solution must result in a significant reduction in the human work hours required to process and link the challenge’s data.

Outcome 3: The solution should enable novel, value-adding analyses of the data.

Outcome 4: The solution should support data quality improvements through more consistent indexing of data.

Outcome 5: Process data in a quicker manner to that of the current system.

Outcome 6: The solution must increase user confidence in the available data and any data driven decisions.
3. Who are the end users of a solution to your challenge likely to be? If there are multiple can you identify a priority group or groups? Have you engaged with any of these users and would they recognise this a problem?

As the challenge sponsor and first ‘use case’ for any solution, Police Scotland officers and staff will be the end users. However if the general concept can be proven, a much wider user group could include other Scottish Government agencies, local authorities and public sector organisations.

Following successful implementation of the solution, policing will be able to enhance the services offered to the public and communities as the system will support informed decision making which will keep people safe in the public, private and virtual worlds. Police Scotland must ensure accuracy and explainability as end users.

In addition, those involved in the creation and review of ethical frameworks and information governance policies will benefit from this challenge and resultant solution. The lessons learned in developing, testing and deploying will help inform future policing activity and policy as well as that of the wider public sector.

Specific to the use case examined in this challenge, the resultant solution could potentially be applied to other Police Forces. The problem being examined is felt across all police forces, in the UK and further afield.

4. Has your organisation (or others you are aware of) attempted to procure a solution for this challenge or identified existing solutions in the market place? If yes, why were the solutions scoped/tested not fit for purpose?

No solutions have been identified in the market place however please see policies, strategies and regulatory context for further information.

The desired solution focusses on explainability and ethics in the use of AI in the public sector. Whilst there are widely available AI products in the marketplace, none of them adequately address these issues. The desired solution will be based around these requirements from the outset. Policing in Scotland is based on legitimacy and consent, developing this solution collaboratively will ensure Police Scotland can be assured that human rights and ethics are at the centre of the project.

5. Are you aware of any particular interdependecies, blockers or conflicts to the implementation of a solution which respondents would need to be aware of?

In our Joint Strategy for Policing, we set out our approach to embed the ethical and privacy considerations that are integral to policing and protection into every aspect of our service. This
ensures that we are committed to strong and consistent ethical oversight that is open to scrutiny and maintains trust.

The strategy recognised the sensitivities around privacy, ethics and explainability but this is also a driving factor for undertaking this project. It will require particular attention to explain the basis for the work and engage positively with the public and communities to listen and understand their views and feedback. This is of particular relevance given the high media attention given to public decision making involving computer algorithms.

The work must comply with all relevant legislation including GDPR, as well as the Police Scotland Data Strategy, which includes the Data Ethics Governance process.

Due to the challenges associated with using live/real data, this will not be done during this challenge. Instead, synthetic data will be used to develop the solution, which will support GDPR compliance.

Successful teams will be required to be conscious of the sensitivities outlined and engage with relevant security screening processes as and where required— the sponsor team will facilitate this.

6. Are there any particular technologies or features which you would like to either explore or avoid in developing a solution? If so please give a brief explanation.

Without limiting the possible solutions, it is likely that natural language processing will feature in the final solution. Due to the large amount of the input data being in legislative terms, local dialect and carrying sentiment; to succeed this feature would likely need to be included. We would not want to limit the available approaches to semantic analysis and leave the specifics of the design open.

7. What’s in it for bright enthusiastic participants to solve this? i.e. what do you see is the commercial/procurement opportunity for a potential solution beyond a CivTech contract.

This challenge should be seen as laying the foundation for the use of automation and assistive technology in the public sector and in particular setting a future focused model for policing in Scotland and more widely across the UK. It will set the standard and be at the leading edge of this technology for public service. The use of Explainable AI is increasing worldwide and will be key in obtaining public support for such technology moving forwards. This Challenge represents a unique opportunity to the participants to shape the future of AI in public service.

Additionally, the issues of transparency and accountability at the heart of this Challenge will lead the participants to new ways of developing AI solutions. The use of AI is increasing in profile as application spreads, it is anticipated there will be new emerging opportunities for commercial
application of successful solutions to this Challenge. Governments, public bodies and police services around the world have a similar need to adopt this approach so it is open to realise potential commercial/procurement opportunities.

8. Please list the stakeholders that would be involved in this project to whom the development team/accelerator participants would require access.

Albert King - Chief Data Officer, Digital Directorate, Scottish Government
Scott Nowbaveh, Data Policy Advisor, Scottish Government

Police Scotland
Kirsty-Louise Campbell, Head of Strategy and Innovation
(Kara Stickland, Innovation Manager and Niall Borwell, Innovation Officer), Police Scotland - Product Owner

Denis Hamill – Chief Data Officer, Police Scotland

Steven Cartwright – Detective Inspector, Core Operational Solutions Project, Police Scotland

Additional resources and Subject Matter Experts can be engaged after liaison with the development team.

9. Who would be involved in the Challenge Team and resources are you providing? (please include any relevant support from relevant subject matter experts, access to data (as appropriate within GDPR), preexisting research or user research etc)

The Challenge Team will be led by a Product Owner who is based within the Strategy and Innovation Service, Police Scotland. They are best placed to engage with the development team and are uniquely placed to draw together the various internal stakeholders and resources. The wider Team will include the Chief Data Officer as well as the lead for Core Operational Solutions, where this solution would eventually sit. The Challenge Team also has Executive Officer support across a number of business areas relevant to this project.

Synthetic data will be supplied due to security, confidentiality and public access issues in using live data. It will be made available in a useable format and will reflect the structure and content of live data. This will ensure that the development team has unhindered access to the data they need and that the MVP would be relevant in an operational use without large changes. Where it is required we can supply end users to engage during a design phase as well as specifics in regards to the format/structure of data in its current form.
10. Are there any systems (software, APIs, databases) with which the challenge solution will have to be integrated? If yes, do you have the costs of system integration available and routes to support the solution provider in delivering the integration?

If the final solution was to be operationalised there would be one database with which this would need to connect. In providing a more enhanced service than that already in operation there would be an option to connect the final solution to numerous other datasets. Furthermore, in order to make this solution fully operational it would require a longer test period, where it is likely the solution would run in parallel with the current system but with access to the same live data. Access would be engineered via an API.

In regards to the support in developing the solution, we will make available synthesised data sets in whatever format is required by the development team (likely mirroring the real world data). If the development team reached a stage (during this project’s later phases) where this was to be integrated to the live system, we would be open to facilitating access to systems data/structure to allow this in a way that complies with GDPR and other privacy and security requirements.

Costs and effort for integration with the operational database are outwith the scope of this work.

11. Is there a strategy or policy priority to which the challenge is aligned or other background documentation/information relevant to the Challenge?

This challenge is fully aligned to:

- The strategic police priorities set out by the Scottish Government, in particular ‘evidence’ and ‘confidence’; and
- The agreed strategic direction for policing in Scotland. This includes our Long term Strategy for Policing (2020) ‘Policing for a safe, protected and resilient Scotland’, Cyber Strategy ‘Keeping people safe in the digital world’; and
- Police Scotland’s Data Strategy, the objective of which is to maximise the value of data across Police Scotland. A key component of this strategy is to develop the relevant Data Ethics governance process to ensure that we have ethical accountability in the use of data and new technology. This will allow the use of data and analytics in a trustworthy, and explainable, way that not only builds public confidence, but also meets our strategic policing outcome to keep people safe and to detect and prevent crime.