

# National Data Analytics Solution

Submission to the WMP Ethics Committee Sep 2020

## Contents

1. Modern Slavery	1
2. Most Serious Violence	4
3. Organised Exploitation	4
4. Firearms	5
5. Annex A – Firearms Briefing Note	6

## Modern Slavery

### Ethics Committee feedback and response

We note the committee has continued to vote in favour of option ‘B’ under the Terms of Reference, meaning “It advises approving the project with minor amendments”.

In relation to the specific recommendations, we can report the following:

- *In giving this advice, the Committee notes and expects that the draft visualisation tool will be presented to the next meeting of the Committee [...]*

The tool was presented at an informal session of the Ethics Committee on 26<sup>th</sup> Aug. As a result of feedback from that session, some important changes have been made to the model. Firstly, it will be made clear to users that the model is itself an *intelligence document*. This is important for a number of reasons:

- users will be reminded of the *handling instructions* according to the Authorised Professional Practice from the College of Policing
- users will also be reminded of the requirement to confirm the reliability of any intelligence from the source system before taking action
- investigators will be reminded of the need to *retain* material relating to an investigation, including the content of this model, in order to fulfil their obligations under the Criminal Procedure and Investigations Act 1996

There was also discussion over the *deletion* of data from the model that proves to be false – for example the model identifies an event as potentially a modern slavery event, but a subject matter expert using the model determines that it is not. It should be noted that the model itself does not store police data for any more than a few days. When the data on the NDAS platform is updated it is a complete replica of the source systems – i.e. fresh data is added and any data that has been deleted from the source systems will be removed. Therefore if a false positive is identified by a user it would not be a question of deleting the data as it should rightly still appear on the source system. It will however be possible for the user to flag this event as “not-MS”, so that the event does not appear as a potential MS event in the future, and the NDAS team can build up a library of these events which will help improve the future performance of the model.

- *[...] and the evaluation of the effect of the tool on policing activity, including a comparison between previous way of doing things and doing things with the model, with (sic) be presented to a subsequent Committee meeting.*

The evaluation of the model, with feedback from the Ethics Committee as well as police and partner practitioners, will continue through operationalisation and beyond.

We have held a number of sessions with police practitioners, including a workshop using recent, real data on 15<sup>th</sup> Sep. Early feedback from this session indicates that practitioners in WYP believe the model will:

- Provide an understanding and analysis of modern slavery including identifying “missing links” and monitoring the effectiveness of disruption activity
- Support processes around flagging and managing individuals
- Be a useful investigative tool to identify lines of enquiry
- Help WYP to more readily understand specific issues, e.g. exploitation type, geographical area
- Provide a richer intelligence picture including the ability to identify new individuals linked to modern slavery and be more proactive in tackling these emerging issues

We will continue through operationalisation to evaluate the effectiveness of the model in relation to live case studies, and a qualitative assessment of how the model supports the response to modern slavery will be conducted. The NDAS team will then be able to develop the model’s effectiveness in line with this evaluation. We will continue to report on this to the Committee and seek the Committee’s recommendations on this development.

- *In addition to the comments already made, the Committee advises that a far more thorough programme of engagement with key partners is developed to help ensure the model will be used to support victims and vulnerable people identified as a result, including a comprehensive and credible plan over the complex dividing line between perpetrators and victims.*

The project team have engaged with the West Midlands and West Yorkshire Anti-Slavery Networks (WMASN and WYASN), the team met with WMASN on 6<sup>th</sup> Aug and WYASN on 24<sup>th</sup> Sep. We are collating feedback from these sessions to help shape future sessions in order to support the development of the model through the voice of these partners, in line with this recommendation. Early indications from these sessions is that the model is very technical for stakeholders to understand it, and some partners state they will need more information before they can draw any conclusions about the model. The project team believe it will only really “come alive” to partners once they see the case studies that emerge from the use of the model.

Some early survey results from both police and partners indicate that they believe the modern slavery model will:

- Support policy and intervention decision making
- Help form trend analysis of modern slavery

- Provide crimes intelligence and nominal networks in the same tool
- Support the safeguarding of victims and vulnerable people
- Benefit the partnership response
- Improve the understanding of the relationships between victims and perpetrators

Other engagement with bodies and individuals with a national responsibility has taken place, each given a detailed demonstration of the model and given the opportunity to consider the use of the model to improve the effectiveness of our ability to tackle modern slavery and safeguard victims. The details are in the text box below.

The project team believe that the best way to continue to explore these issues is to operationalise the model in West Yorkshire and then the West Midlands. This limited, phased deployment is a good opportunity to start to realise the benefits of the model in a controlled way – including the ability of both forces to improve their understanding of the risk posed to victims that may well lead to victims being safeguarded who will otherwise continue to be exploited – so that the above issues can continue to be explored and the model and its use developed.

#### **Modern Slavery Use Case – National Engagement**

Caroline Haughey QC OBE – Ms Haughey has prosecuted a number of high profile cases of modern slavery, was commissioned by the Home Secretary to conduct a review of the implementation of the Modern Slavery Act 2015 and advised Prime Minister Theresa May’s Modern Slavery Threat Group. The modern slavery model was demonstrated to her and she saw a huge amount of value in it, describing it as *‘the most exciting thing I’ve seen since the Modern Slavery Act’*.

Following a number of detailed sessions with Justice and Care, their report *It Still Happens Here: Fighting Slavery in the 2020s* (<https://www.centreforsocialjustice.org.uk/library/it-still-happens-here-fighting-uk-slavery-in-the-2020s>) states:

*We welcome NDAS’ forward-thinking approach to the use of the data and intelligence held by police forces. We believe that analysis of police data similar to that conducted by NDAS has the potential to lift the stone on modern slavery and reveal its true scale and nature across the country*

The model has been demonstrated to the Independent Anti-Slavery Commissioner, Dame Sara Thornton DBE QPM who commented on the innovative use of technology to systematically target networks and help protect victims.

Her Majesty’s Chief Inspector of Constabularies and Fire & Rescue Services, Sir Thomas Winsor, has been briefed on NDAS including the Modern Slavery and Organised Exploitation models. The inspectorate is more concerned with the strategic application than the tactical, but he noted the benefits of NDAS in supporting Chief Constables to produce Force Management Statements (a key tool in the inspection regime for police forces, designed to allow a Chief Constable to assess future demand, how they will use resources to meet that demand, improve efficiency and effectiveness and observe their police and crime plan

## Next steps

The project team are currently working with fresh (but not live) data from West Yorkshire Police (WYP) to continue the process of user acceptance testing and validation, which allows us to identify and solve any issues that result from processing data from a new data model being ingested onto the platform, and identifying case studies to better understand how the model will change current working practices and what interventions will be put in place as a result. This process will lead to a decision point where the WYP Executive Team decide based on different factors including the advice from this Committee, whether or not this model should be operationalised in West Yorkshire.

It is requested that the Ethics Committee consider the recommendation that the Modern Slavery model is operationalised, on a limited basis as outlined above, and the project continue to update the Committee with details of the development of the model.

## Most Serious Violence

It is clear that the Most Serious Violence (MSV) model in its current form does not provide the level of accuracy necessary to satisfy the Committee that it could be used to support interventions. It is recognised that the use of data science techniques is often viewed with mistrust and that public confidence in what we deliver is extremely important. On the other hand, serious violence especially involving firearms and knives is an issue that can have a devastating effect on communities and blight the lives of particularly young people, whether victim or offender. If we can use our data better to help understand the threat of violence better and improve the efficiency and effectiveness of the police and partner response to this violence, then it is arguably our duty to do so. A number of the data science tools developed for this use case are not what could be described as 'predictive' and may still prove useful to understand this and indeed other threat types.

## Next Steps

The MSV model in its current form is withdrawn from consideration of the Committee. The project team will engage with stakeholders and subject matter experts to establish an appropriate use of data analytics to tackle this crime type, and will return if a potentially suitable use case can be developed.

## Organised Exploitation

### Ethics Committee feedback and response

We are grateful to the Committee member who challenged the use of language in our model, referring to victims of exploitation as "workforce". In consultation with colleagues developing the national response to the threat of organised exploitation, we have settled on the use of the terms "victim" and "perpetrator" instead of "workforce" and "management".

The Committee unanimously voted in favour of option 'C' under the Terms of Reference, meaning "It advises approving the project with major amendments".

- *The Committee advise in particular that significantly more information is provided around how this tool will be used in practice, including how it will be used to support vulnerable young people and also recognise that some will have been forced into criminality. This may involve significant detail around how partners are involved in preventing crime and supporting vulnerable people.*

We are continuing to develop this model to ensure that the insights are as accurate as they can be, in particular to ensure the most vulnerable people, including young people, are identified and prioritised for interventions that will protect them from the threat of harm and criminalisation that organised exploitation often brings. We are refining the rules that classify individuals and extending the “victim to perpetrator” scale to ensure that users achieve a better understanding of the threat and the individuals involved.

It will, of course, be made clear to the practitioners who use the model, that the model is designed to augment not replace human decision making.

We are working with police and partner subject matter experts, both to continue to develop the model and to fully understand how its insights will be used. This work will consist of a series of workshops and other events where the model is demonstrated, where the rules that feed the model and lead to the insights can be considered as well as the interventions that would result from those insights. Feedback will be both in person at the events and via questionnaire.

In relation to the point about the recognition that some young people will have been forced into criminality, it should be noted that this is one of the very essences of the model. A young person may appear as an “offender” in police systems, for example if they have been charged with a drugs offence, but as per the original submission to July’s Committee meeting, if certain rules are met then that young person will appear as a “victim” for the purposes of the model. The model was built on the recognition that the status of “victim” and “offender” is not binary, and it is of vital importance that we identify victims of this type of exploitation as such, in order to ensure any intervention is appropriate to the and prevent further harm. We will use the process described above to ensure that the model is able to support this identification effectively, from a broad spectrum of police and partners who tackle this issue.

- *The Committee encourages consistent communication between the WMP data Lab and NDAS to ensure both teams are learning from each other as they design these models.*

We have held a session with the WMP Data Lab and continue to be in close contact. They are developing a model to better understand and prioritise county lines networks and we have agreed that we will continue to monitor the progress and effectiveness of both of these models to ensure that the most effective model is available to forces to manage the threat of organised exploitation.

### Next steps

We will continue to develop the model and will report back to the Committee in line with the above recommendations and will bring this model back before the Committee when we believe it is ready for operationalisation. In the meantime, we would be grateful if the Committee would consider if there are any further recommendations that would support the model’s development.

### Firearms

This is a new use case which we believe is approaching readiness for operationalisation. Please see Annex A for a detailed briefing note.

**Ethics Committee Briefing Note**

**Project Reference: National Data Analytics Solution – Firearms**

**Purpose of data analysis:**

The strategy document ‘Policing Vision 2025’ outlines the need for technology to be central to how law enforcement operates, calling on forces to embrace innovation so that policing can adapt to new threats and opportunities posed by the 21st century.

The National Data Analytics Solution (NDAS) aims to become a centralised advanced analytics capability for UK policing. UK police forces have access to a vast amount of digital data, but arguably lack the technological capability to use it effectively.<sup>1</sup> By proving that advanced analytical methods can be applied to existing law enforcement datasets, it is hoped that actionable insights grounded in data could be used to guide local intervention efforts and support the cross-cutting outcomes that evolved from the reform strands within the Policing Vision 2025. Putting information at the heart of decision-making in policing by connecting existing datasets for new insights should inform risk assessment and resource prioritisation.

The founding partners of the NDAS are: West Midlands Police; Warwickshire Police; West Mercia Police; West Yorkshire Police; Greater Manchester Police; Merseyside Police, the Metropolitan Police Service; Staffordshire Police, and the National Crime Agency.

NDAS demonstrated the capability to use advanced data analytics to provide actionable insights during its Foundation Phase, which ran from September to April 2019. Three high-priority use cases were run as a proof of concept: Most Serious Violence, Workforce Wellbeing and Modern Slavery. Both Most Serious Violence, Modern Slavery and Organised Exploitation use cases have since been considered by the Committee.

The development of advanced data analytics for policing implies the need not only to prove the concept of individual use cases and bring them to operationalisation where appropriate, but also to prove the concept of a constant process to develop new use cases aimed to deliver insights to help solve different problems.

This submission to the WMP Ethics Committee concerns the Firearms use case, which looks to identify firearms trends through exploring networks of people, objects, locations, and events.

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<sup>1</sup> A Babuta, *Big Data & Policing* [URL: [https://rusi.org/sites/default/files/201709\\_rusi\\_big\\_data\\_and\\_policing\\_babuta\\_web.pdf](https://rusi.org/sites/default/files/201709_rusi_big_data_and_policing_babuta_web.pdf)]

**Source of analytical question / hypotheses to be examined:**

Through the development of this use case, NDAS worked with a range of subject matter experts (SMEs) involved in tackling the threat of firearms to identify a key operational challenge in managing the complexity of, and effectively identifying cases, particularly in relation to understanding the networks of harm surrounding trends of firearm-related activity. Due to a number of factors it was decided that NDAS would progress with an exploratory Proof of Concept to assess how advanced analytics could develop actionable insights into firearms. These factors include (inter alia):

- As steady increase in firearms offences since they reached a low point in 2004, leading to 33 firearms-enabled homicides in 2018/19<sup>2</sup>
- These offences disproportionately affect younger people and populations in urban areas.
- There is a national drive to improve the capability to tackle serious and organised crime, including firearms-enabled organised crime<sup>3</sup>
- There are limitations in the ability of police forces to analyse the complex network of events and people linked to firearms trends
- NDAS provides an opportunity for the formation of informative networks that assist relevant teams to better understand and tackle the threat

The joint effort between the SMEs and NDAS team resulted in the development of the Firearms capability, which is being refined and intended to be operationalised in the future.

**Data to be used:**

- Crimes information – 2000 onwards for trends
- People information across Crimes, Custody & Intelligence – 2013 onwards for network creation
- Information relating to the involvement of individuals in organised crime groups (OCGs)

**Level of analysis**

Analysis of the problem from a force perspective that is aggregated from the data relating to individuals linked to firearms events, enabling analysis at a network and an individual level.

The initial intention will be that this is operationalised in West Yorkshire and the West Midlands, with the intention of rolling the use case out across partner forces. When forming the PoC, discussions were held with the National Ballistic Intelligence Service (NABIS) and future involvement would be desired to further enhance the national understanding of this crime type. Any development using NABIS data would be resubmitted to the ethics committee for their consideration.

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<sup>2</sup> ONS (2020), *Offences Involving the Use of Firearms: Year Ending March 2019* [URL: <https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/articles/offencesinvolvingtheuseoffirearms/yearendingmarch2019>]

<sup>3</sup> Home Office (2020), *Factsheet: Police Funding Settlement 2002-21* [URL: <https://homeofficemedia.blog.gov.uk/2020/01/22/factsheet-police-funding-settlement-2020-21/>]

**Reliability of data:**

The data is sourced from core systems used daily by police forces. Once extracted the data is reviewed and verified by the NDAS team and any obvious data quality issues are addressed with the guidance of data subject matter experts (SMEs).

Systems that support the analysis are used by the forces on a day-to-day basis. NDAS has previously brought use cases to the Committee using data sourced from crimes, intelligence and custody systems, as well as the organised crime group data set.

Whilst WMP received data from NABIS, it was not reviewed or incorporated due to limited team capacity to load the data into the NDAS environment within the Proof of Concept timelines.

**Sample or entirety:**

Entirety

**If sample:**

N/A

**Method of sampling:**

N/A

**Method of choosing sample size:**

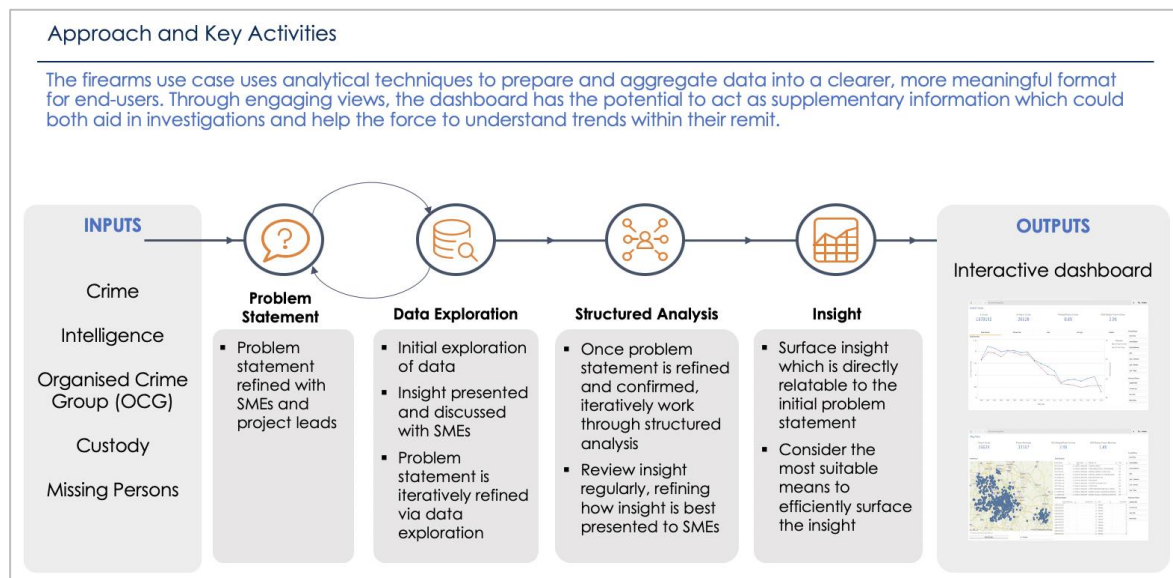
N/A

**Sample size:**

N/A

**Type of analysis: Exploratory**

**Methodology:**

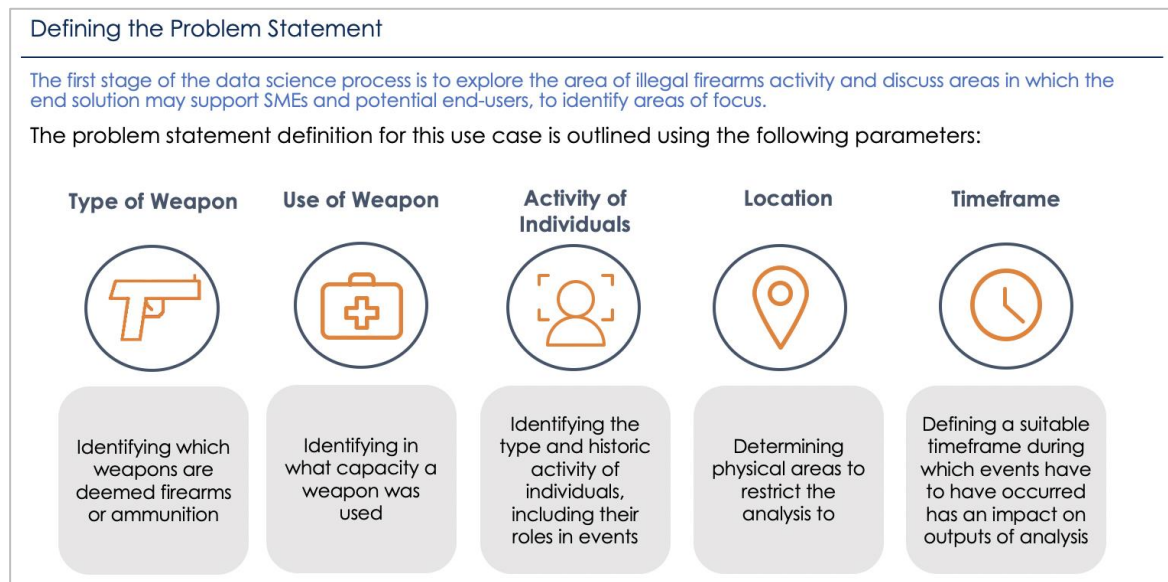


**1. Problem Statement**



The first stage of this process is defining the problem statement. The problem statement takes the initial guidance from the Partner Forces engaged with NDAS to assess how advanced analytics could develop actionable insights into Firearms offences, aiding the process of identifying events, understanding the types of weapons used, in what capacity the weapon was used, individuals and networks both in terms of the threat posed by people within networks and the geographical area in which firearms offences have been committed. It has been decided that an exploratory analytical approach would be the most suitable for this use case.

To define the problem statement for this use case, time has been spent with several Firearms Subject Matter Experts (SMEs), spanning both operational and strategic roles and individuals from NABIS. Using a combination of the in-depth knowledge and experience from the SMEs, with the NDAS team’s understanding of possible analytical approaches to assisting with current challenges, the most appropriate problem statement has been defined.



**The problem statement:**

Identify firearms trends through exploring networks of people, objects, locations, and events, aligned to the following themes:

- Movement of firearms across force boundaries  
*(contingent on NABIS data being accessible data sharing agreement between forces)*
- Linking events and firearms to organised criminality

It should be noted that although the first bullet-pointed element of this problem statement is contingent on other data being available and therefore not ready to operationalise, there is a minimum viable product available which will support users in exploring networks of people linked to firearms events, including links to organised criminality. It is proposed that this should be operationalised, with further updates to the Ethics Committee as developments become available.

## 2. Data Exploration

Data exploration happens iteratively along with defining the problem statement. This involves investigating hundreds of tables across the key data sources to find data fields that help to turn the problem statement from a business problem into a technical solution.

For this use case, this process is driven by initially understanding what key data points are important to those who are responsible for the threat, both operationally and strategically, and then identifying the data sources for these data points and building the logic to create them. In some instances, these data points could be taken directly from source tables and in other cases some derivation is required to transform the raw data into logic-driven “Risk Factors”, as identified by Firearms SMEs e.g. ‘ever firearm’. The NDAS team also investigates all tables across the key data sources to find other information that could be useful for the use case. Once data exploration is complete, the raw data is transformed to create analytical tables in preparation for presentation of insight through the interactive dashboard.

The process of data exploration assisted in identifying the initial source systems that would deliver the most value at the stage of operationalisation, and those that could be incorporated at a later stage. For example, the **National Ballistic Intelligence Service (NABIS)** providing data to WMP machines containing information from NABIS forensic laboratories relating to the analysis of specific firearms and ballistic material recovered by the police force at scenes of incidents. **National Firearms Licencing Management System (NFLMS)** which stores a record of all UK firearms licences, expired licences and records of lost and stolen firearms.

Whilst information from NABIS and NFLMS was not implemented within the PoC, it is expected this data could supplement force data, particularly in adding context to events and networks or firearms and ammunition origin; NDAS will continue to explore the possibility of augmenting the information with the current data set.

## 3. Approach & Network Build

### Approach

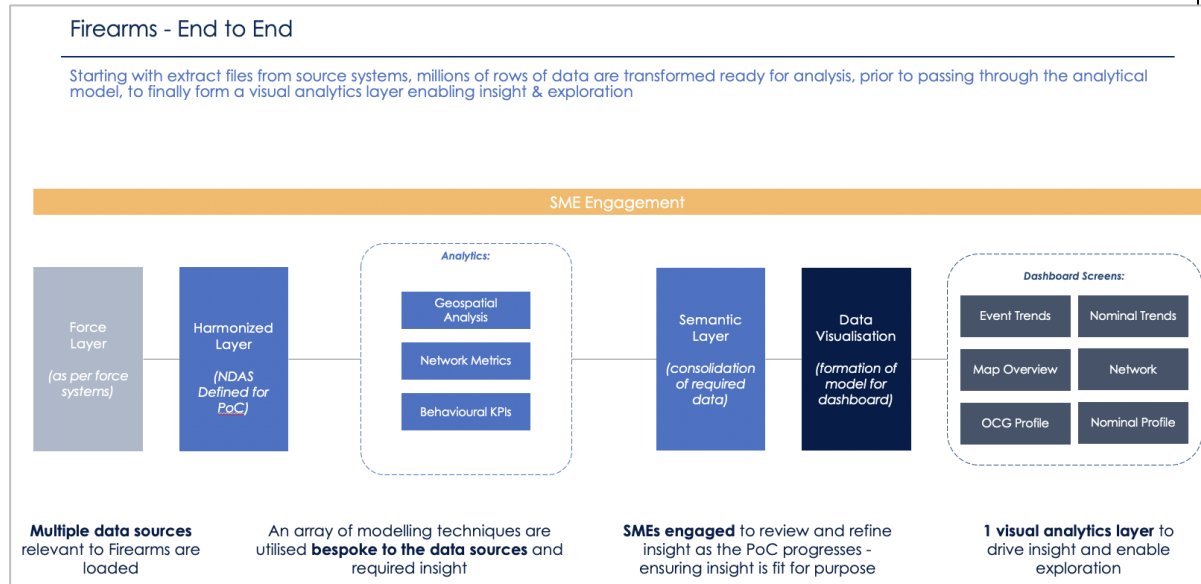
The firearms use case concentrates on bringing together information from across Crimes, Custody, Intelligence and OCG data sets, to enable insight at an aggregated level through trends analysis, a geospatial view, the incorporation of nominal networks, and ability to understand the links between firearms trends and OCGs.

The firearms PoC brings together a number of core functions:

- OCG – utilising organised crime data coupled with Crime data, to provide a more informed view of OCG activity within firearm events
- Geospatial – utilising the longitude / latitude of police recorded Crime events, to plot events on a map and provide insight into firearm activity within an area
- Network Metrics – creation of metrics such as ‘distance to firearms’

- Risk Factors – Summarising data points, to easily understandable factors filterable within dashboard e.g. ever firearm, ever ammunition, ever OCG

Below is a summary of how the data flows from the force data sets through to the interactive dashboards:



The process formed is a replication of approaches used in many parts of the country, where key information is used to identify events and people of interest when dealing with trends relating to the threat of firearms. The difference is that these events are often identified in a manual fashion as they occur, for example when incidents of firearms discharges occur. This then leads to a manual analytical approach to seek to identify the individuals involved and assess the threat, which then determines the action taken, i.e. the tactics used to suppress the activity, to investigate and target the suspects and safeguard those who might be at risk.

The anticipated benefit of the approach proposed is that rather than dealing with firearms incidents on a case-by-case basis, the system will give a force a fuller understanding of the networks involved and therefore be able to deal with the threat of firearms in a more systematic manner. To use the “4P” methodology<sup>4</sup> the use case will help more efficiently and effectively to identify and Pursue suspects and offenders, Prevent harm through suppression of any violent activity as well as work with partners on diverting young people from violence and Protect victims or potential victims from harm. Police and partners will be better Prepared to de-escalate any policing response and move back to normality more quickly.

<sup>4</sup> Home Office (2013), *Serious and Organised Crime Strategy* [URL: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/248645/Serious\\_and\\_Organised\\_Crime\\_Strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/248645/Serious_and_Organised_Crime_Strategy.pdf)]

### **Network Build**

One of the biggest factors in effectively identifying, understanding and investigating criminal activity is understanding the connections between people. A key insight from engagement with firearms operational case officers is that it is viewed as a network-based problem, where offenders and movement/use of firearms are often part of a wider network of individuals, and understanding these networks is vital to tackling the issue systematically through a 4P approach.

The network functionality is therefore an important part of the problem statement. The NDAS team have therefore developed an interactive network of connected individuals to aid the tackling of the threat.

### **4. Dashboard & Insights**

The final stage of the analytics process is to present the data in a way that informs and assists the end user in understanding firearms activity and taking the suitable action. This encompasses not only the network visualisation and metrics as discussed, but the relevant contextual information related to the events and associated people. This information is presented at both low and high levels of granularity, allowing the tool to serve two audiences. The high-level aggregated level of granularity allows for management teams to utilise the tool to inform strategic decision making, with improved understanding of firearm activity through trends & statistics. The low-level granularity enables an operational team to follow-up on identified cases (e.g. specific networks) through existing police and partner processes. Those tackling the threat can see the network from a number of perspectives.

- How the network interacts with high-level trends
- Network showing centrality of individuals
- Network showing connection to OCG relationships and activity

The visualisation tool also allows a view of individuals to summarise the police data including a view of that data over time.

### **Will the project eventually be automated?**

**Yes**

**No**

Some of the data, such as OCG data and data entered into Crimes, Custody & Intelligence, are essentially manually inputted; it is this data that is then presented within the dashboard. Any decisions made as to interventions as a result of the insights will be based on professionals' understanding of the threat and the police and partner resources available to tackle that threat.

### **Means of evaluation:**

Internal Technical Evaluation

The problem statement, methodology and Proof of Concept results were reviewed as part of an internal evaluation to provide recommendations on how to improve the validity of the analytical approach. The reviewer was not involved with the NDAS project, and internal evaluations such as this are conducted as part of general quality assurance activities by the NDAS' delivery partner. Because Data Science techniques such as Natural Language Processing, Predictive Modelling and Business Rules are not used, accuracy of the PoC is not a required metric.

#### Independent Evaluation

In addition, as part of this phase of work we are working with the College of Policing to establish independent academic evaluation of the project as a whole, from the data science behind the use case to the efficacy of the approach in improving the efficiency and effectiveness of the police response to strategic threats.

#### **ALGO-CARE considerations:**

##### **Advisory**

##### **If applicable, are the outputs from the algorithm to be used in an advisory capacity?**

The output of the Firearms use case will be used as a source of information to assist police intelligence in the understanding and identification of Firearms insights. The NDAS capability is not a tool that substitutes the professional judgment and discretion of law enforcement practitioners for automated decision-making. It is designed to assist human decision making, with added efficiencies through automated processing of the identification and visualisation of data.

##### **Does a human officer retain decision-making discretion?**

Yes. The Firearms dashboard will only be used to supplement existing processes designed to tackle firearms related threat.

It is anticipated that the interactive dashboard which encompasses outputs from this use case will support the overall process by identifying connections between information already held within police systems. There will in general be two audiences for this output: force intelligence and firearms SMEs (operational staff at a local level engaged in the police and partnership work to safeguard victims and disrupt and dismantle networks involved in these offences and strategic analysts (focused on understanding high level statistics and trends relating to the threats in the force area, and making resourcing decisions based on that assessment)).

##### **Lawful**

##### **What is the policing purpose justifying the use of the algorithm (means and ends)?**

The purpose is to better identify and understand how networks of people are connected through organised crime and events involving firearms, enabling better understanding of the scale of such networks to improve intelligence, guide investigations, and inform the delivery of interventions by the police and other statutory partners under the Crime and Disorder act 1998 for potential

victims and perpetrators. The use case demonstrates the ability to see these networks in an innovative, interactive manner at an unprecedented scale, which would provide a simplified view of an otherwise very complex crime, where it is difficult and time-consuming to identify links between multiple nominals as well as the part the nominals play within the network.

**Is the potential interference with the privacy of individuals necessary and proportionate for legitimate policing purposes?**

The use case relies on personal information which is already in police systems. The use case brings relevant data to the surface and shows insights relating to the individuals and the networks involved. This is in relation to a key strategic threat which it is widely agreed as having a devastating effect on society. Any intervention that is put in place as a result of the insights from this use case will be to protect society, disrupt and dismantle the networks that are causing this harm.

**In what way will the tool improve the current system and is this demonstrable?**

During the development of this use case it quickly became evident, from engagements with SMEs, that a lot of the data required to understand, identify, and tackle firearm related incidents already existed within police source systems. However, due to the constraints of how the information currently presents itself, it is often not possible, or it is extremely time-consuming, to gain a full understanding of the threat in order to systematically target the networks involved.

We therefore expect a qualitative improvement in a partner force's ability to tackle the threat of the possession and use of firearms, as well as a qualitative improvement, as it is estimated that the ability of NDAS to visualise a network in seconds will save hundreds of hours of an analyst's time per network, freeing up this time for forming a better understanding of how to tackle the network.

This is demonstrable as it will be monitored through the project management process (feedback through the meetings with the partners force single points of contact) and the academic evaluation of the project.

**Are the data processed by the algorithm lawfully obtained, processed and retained, according to a genuine necessity with a rational connection to a policing aim?**

All data used by the NDAS is derived from existing police systems, meaning the data was obtained and processed for criminal law enforcement purposes under Section 3 of the Data Protection Act 2018. In addition, the acquisition, processing, and retention of data by the NDAS on behalf of West Midlands Police is governed by an information sharing agreement (ISA) between partner agencies.

The ISA stipulates:

'Each national analytics assignment commissioned through NDAS governance will look to answer a specific problem (or "use case") on behalf of the Partner Forces, in line with one or more of the following policing purposes:

- Protecting life and property
- Preserving order
- Preventing the commission of offences
- Bringing offenders to justice, or
- Any duty or responsibility of the police arising from common or statute law.’

In this way, all data sources will be shared for a common, lawful and specified purpose.

In accordance with the Information Commissioner’s guidelines, a full Data Protection Impact assessment was conducted for both the Foundation and Mobilisation phase. It is attached in the appendix to this submission. A legal review from the WMP legal team will follow in due course.

**Is the operation of the tool compliant with national guidance?**

The overall aim of NDAS is to fulfil the ambitions of the Intelligence Portfolio of the NPCC, which has articulated a national aim for a data analytics capability for UK law enforcement. In line with this aim, recommendations on national guidance establishing minimum standards on how data analytics platforms should be developed and used by law enforcement need to be produced.

In the absence of a framework regulating analytics in law enforcement, the NDAS has looked to ensure that its general operation remains aligned to the relevant existing national guidance that applies to law enforcement, particularly with regard to relevant data protection and administrative laws. We are also developing a proposed framework which brings some of the leading thinking around the development of data analytics together with the policing Code of Ethics and where applicable the ethical codes for each individual force, so that guidance on the use of data analytics is grounded the ethical principles that govern policing generally and have been built on the foundations of the Peel’s ‘founding principles on British policing’<sup>5</sup>. In the Building on our completion of a Data Privacy Impact Assessment, NDAS is engaged in the Office for the Information Commissioner’s Project DALE (Data Analytics in Law Enforcement) and is committed to continuing to ensure that all operations adhere fully with general data protection requirements for law enforcement.

**Granularity**

**Does the algorithm make suggestions at a sufficient level of detail given its purpose and the nature of the data processed?**

The use case provides detail at an individual, network level and aggregated view. This is considered sufficient to understand, identify, and support interventions based on the use case’s problem statement.

<sup>5</sup> College of Policing (2014), *Code of Ethics: A Code of Practice for the for the Principles and Standards of Professional Behaviour for the Policing Profession of England and Wales* [URL: [https://www.college.police.uk/What-we-do/Ethics/Documents/Code\\_of\\_Ethics.pdf](https://www.college.police.uk/What-we-do/Ethics/Documents/Code_of_Ethics.pdf)]

**Are data categorised to avoid broad-brush grouping and results and therefore issues of potential bias?**

The Firearms PoC presents information in a visually informative manner, resembling data within the source systems. Data is visualised to the user based on links to firearms activity that is based on the original source systems data.

**Do the potential benefits outweigh any data quality uncertainties or gaps?**

Yes. Firstly, no significant data quality issues or gaps were identified. Moreover, there is the public safety benefit of being able to identify networks having access to or using firearms within the existing data, which we expect to lead to more efficient safeguarding of victims, identification of perpetrators and movement of illegal weapons and/or ammunition.

**Is the provenance and quality of the data sufficiently sound?**

The data comes from core source systems used on a day to day basis by forces and do not show evidence of significant data quality issues.

**If applicable, how often are the data to be refreshed?**

Data will be refreshed daily, but the frequency of dashboard refresh will be confirmed in due course, in partnership with the forces' needs (in-line with existing scanning timelines).

**If the tool takes a precautionary approach in setting trade-offs, what are the justifications for the approach taken?**

Not applicable. The use case does not set accuracy trade-offs.

**Ownership**

**Who owns the algorithm and the data analysed?**

WMP owns all use cases developed as part of the National Data Analytics Solution, on behalf of the Home Office. Each partner force owns their own data being analysed and the insights derived.

**Does WMP need rights to access, use and amend the source code and data?**

No.

**Are there any contractual or other restrictions which might limit accountability or evaluation?**

No.

**How is the operation of the algorithm kept secure?**

Partner Forces' data will be transferred to the secure NDAS AWS cloud platform via Secure File Transfer protocol (SFTP). All data will be held and processed throughout the delivery of the use cases. More detail on the security specifications can be found in the Data Protection Impact Assessment. The AWS platform has passed a penetration test.

**Challengeable**

**What are the post-implementation oversight and audit mechanisms, e.g. to identify any bias?**



A range of governance mechanisms are in place to monitor the progress of the NDAS project as it moves toward, and beyond, its first operationalisation phase:

- National oversight is provided by the Home Office’s National Police Capabilities Unit (NPCU)
- Strategic oversight is provided by the NDAS Chief Officer and Stakeholder Governance Group, which includes the Chair of the West Midlands Ethics Committee
- Funding for the project is overseen by the NPCU and the West Midlands Office of the Police and Crime Commissioner
- The NDAS is engaged with the development of an ethical framework for the use of algorithmic systems in law enforcement, overseen by the CDEI
- The NDAS is engaged with the Office for the Information Commissioner on developing guidance over the use of data analytics in law enforcement

The NDAS will work with the end users — operational investigators and strategic analysts—to support the development of a decision-making oversight and audit mechanism – this will ensure the use case is effective at identifying relevant data specific to firearms trends.

**If the algorithm is to inform criminal justice disposals, how are individuals notified of its use?**

The insights generated by the firearms use case will not be used to inform criminal justice disposals, including decisions on charge or bail; or decisions as to whether to continue an investigation into allegations concerning a subject. There will, however, be a process for notification, challenge and complaint within existing police systems.

In addition to notification, external observers and data subjects shall be able to challenge the process by which an outcome was reached, to ‘ensure that such tools are being used in accordance with the requirements of the relevant data protection legislation and principles of accessibility and natural justice under the Human Rights Act 1998’.<sup>6</sup> In line with this aim, NDAS governance forums should work with partner forces to embed standards for fairness, accountability, and transparency not just in the use cases developed but also in the overall decision-making process that uses the outputs generated. For example, if a data subject wishes to challenge a decision that has been made with NDAS output (providing supplementary information to the decision-maker), a process will be established to allow the subject to scrutinise the use case outputs.

**Accuracy**

**Does the specification of the algorithm match the policing aim and decision policy?**

Yes. The use case was developed directly as a response to the problem statement which was defined in collaboration with partner forces.

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<sup>6</sup> Alexander Babuta, Marion Oswald and Christine Rinik, ‘Machine Learning Algorithms and Police Decision-Making: Legal, Ethical and Regulatory Challenges’ (2018) [https://rusi.org/sites/default/files/201809\\_whr\\_3-18\\_machine\\_learning\\_algorithms.pdf.pdf](https://rusi.org/sites/default/files/201809_whr_3-18_machine_learning_algorithms.pdf.pdf)

**Can the accuracy of the algorithm be validated periodically?**

As the product in question is a discovery tool to support the analysis of firearms threat, accuracy scores are not calculated.

**Can the percentage of false positives/negatives be justified?**

Not applicable (see previous response).

**How was the method chosen as opposed to other available methods?**

During the development of this use case, it was determined that a discovery tool, which allows users to identify incidents and networks of people linked to those incidents, quickly identifying and interrogating the necessary records, would sufficiently benefit those tackling the threat without the need for more advanced analytics such as predictive modelling or natural language processing.

**What are the (potential) consequences of inaccurate forecasts?**

The use case supports officers to identify and understand the information relevant to the firearms threat, in order to determine what action to take. The use case does not provide a forecast.

**Does this represent an acceptable risk?**

Yes. A plain-language explanation of how the output was generated and the factors that influenced the output will be produced alongside the output itself. In addition, it is intended that police end users review and interpret the use case results—to complement other sources of information in order to develop a targeted, well-informed interventions approach.

**How are the results checked for accuracy and how is historic accuracy fed back into the algorithm for the future?**

Not applicable as accuracy scores are not calculated.

**How would inaccurate or out-of-date data affect the result?**

Not applicable as accuracy scores are not calculated.

**Responsible**

**Would the operation of the algorithm be considered fair?**

This use case highlights information that is already recorded within police systems, in-line with normal policing activity. The use case does not include an algorithm that can be evaluated for fairness.

**Is the use of the algorithm transparent (taking account of the context of its use), accountable and placed under review?**

As part of our continuous engagement with SMEs, including operational and strategic decision-makers, we will support accountability in the decision-making process by helping decision-makers fully understand the output generated. We will continue to work with SMEs to define what this process and associated standards will look like.

### Public engagement for transparency and accountability

Ensuring there is public trust in policing is paramount. The risks of damaging public confidence and trust in law enforcement are manifold, and the consequences well-documented. The application of advanced analytics adds complexity to this: although such technologies have been broadly applied in the private sector, it is still relatively new within policing—however, in both cases the level of public discourse is nascent. Compounding this, the opacity of how personal data is collected and used has understandably raised surveillance and privacy concerns—in addition, the pursuit of new technological initiatives without public consultation has arguably led to diminishing public trust in technology.

Despite these challenges, there is an opportunity for the NDAS to engage citizens to influence its operation and build local accountability in developing ethical approaches to the use of analytics in law enforcement. A plan for meaningful public engagement should play a role in this. The Royal Society of the Arts (RSA)<sup>7</sup> suggests the application of ‘a process of citizen deliberation’ in the deployment of analytics across three phases:

1. Public scrutiny through consultation when such systems are being introduced
2. Technical oversight through testing predictions for accuracy or expert-led auditing; and
3. Monitoring how the system is used by humans and evaluating it for accuracy

We suggest that point 1, public scrutiny through consultation, be delivered through the Office of the Police and Crime Commissioner (at this stage, by the West Midlands OPCC). It is recognised that it takes real resource and commitment to deliver a plan for public engagement on this topic, and that consideration must be made towards being as representative of local citizens as far as possible to build local-level democratic accountability.

2 and 3 will be done through the process of the project, overseen by the stakeholders including the Home Office to ensure we are accountable to the public.

#### **Would it be considered to be used in the public interest and to be ethical?**

Yes. It is demonstrable that the use case has the potential to rapidly identify information (that already exists, but would take longer to analyse manually) to support interventions to prevent firearms related offences, it is arguably within the public interest for it to be operationalised, in a way that is proportionate to any potential impact on individual rights.

#### **Explainable**

##### **Is information available about the algorithm / decision-making rules and the impact of each feature?**

Within the dashboard, and supporting documentation, end users will be made aware on how the insight is formed and associated caveats for the end user to proactively consider.

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<sup>7</sup> RSA, ‘Artificial Intelligence: Real Public Engagement’

[https://www.thersa.org/globalassets/pdfs/reports/rsa\\_artificial-intelligence---real-public-engagement.pdf](https://www.thersa.org/globalassets/pdfs/reports/rsa_artificial-intelligence---real-public-engagement.pdf)

