

National Data Analytics Solution

February 2021



Introductions & Agenda

1	Overview NDAS	Matt Tite	10'
2	Modern Slavery Use Case	Mandeep Dhensa	10'
3	Questions	All	10'

An Overview Of NDAS Across Phases

Strategic Phase Dec 2016 → Mar 2017

9 NDAS founding partners with 4 forces sharing data

Wider Public Sector engaged throughout

PTF Business Case Submitted & Permission granted to kick start NDAS

Phase 1 Aug 2018 → Mar 2019

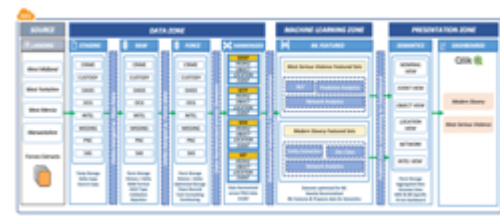
Set up platform & prove value of data & analytics in law enforcement through proof-of-concept use cases

USE CASE 1: MOST SERIOUS VIOLENCE
Predicting nominals most likely to commit a violence offence enabling early interventions

USE CASE 2 – WORKFORCE WELLBEING
Predicting employees most at risk of taking long term sick leave, enabling interventions and workforce planning

Phase 2 Jul 2019 → Mar 2020

Create reusable & scalable Harmonised Layer, enhance platform for operationalisation & develop POCs



Phase 3 Apr 2020 → Mar 2021

Operationalise Modern Slavery, expand data sharing, onboard more Forces & develop POCs

USE CASE 6: DOMESTIC ABUSE
Assess risk of harm in domestic abuse relationships more effectively to help reduce harm

USE CASE 7: VIOLENT CRIME
Assess violent crime hotspots to understand factors contributing to harm

Phase 4 Apr 2021 → Mar 2022

Operationalise Modern Slavery (for WMP), Violent Crime & Organised Exploitation.

Onboard more Forces

Enhance Modern Slavery solution through continual development



ON-GOING ENGAGEMENT

USE CASE 3 – MODERN SLAVERY
Descriptive analytics and Natural Language Processing (NLP) to build a network view of Modern Slavery related nominals

USE CASE 4: ORGANISED EXPLOITATION
Identify networks of nominals linked to county lines activity, enabling a better understanding of the exploitation of vulnerable people

USE CASE 5 – FIREARMS
Understand the movement of firearms by identifying Firearms trends through exploring networks of POLE

OPERATIONALISATION OF MODERN SLAVERY USE CASE
Refine the MS POC use case with end users to fit for operationalisation.

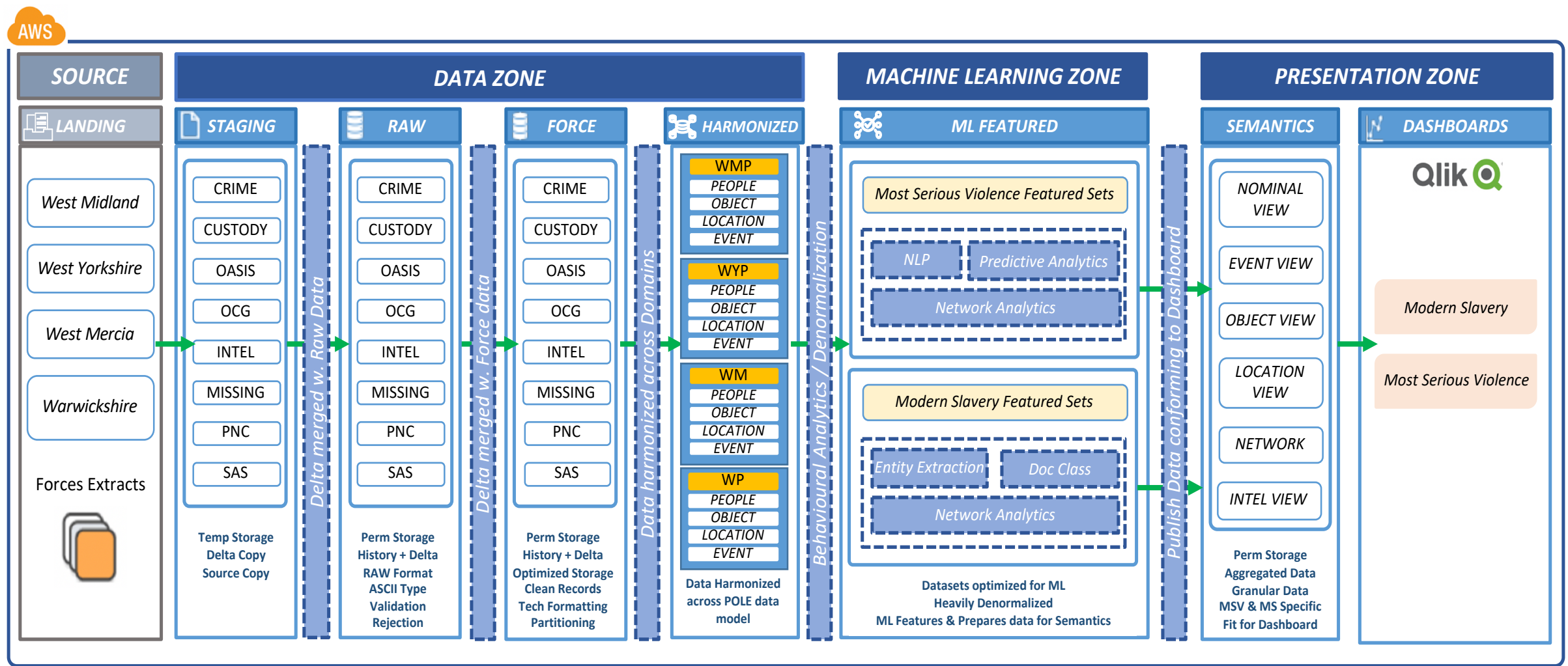
TRAIN 8+ USERS **GO LIVE FOR WYP OPERATIONAL USE**

Creating a network-driven insights platform, that aids the identification of events and people related to Modern Slavery, utilising advanced analytics

Pending formal Grant Agreement from Home Office

NDAS Logical Data Model

The NDAS logical data model has been refined over the different phases on NDAS. This follows a POLE data model which is built in the harmonised data zone



NDAS Acceleration Phase Use Cases: Operationalising MS & Building POC for Domestic Abuse & Violent Crime

Use Case Being Operationalised	Use Case Proof of Concepts				Use Case Paused	
Modern Slavery	Organised Exploitation	Firearms	Domestic Abuse	Violent Crime	Workforce Wellbeing	Most Serious Violence
An exploratory use case, with the objective of uncovering previously unknown insight related to the Modern Slavery offence	Identify networks of nominals linked to <i>county lines</i> activity using the typology county lines connections to identify hidden networks and the exploitation of vulnerable people across force boundaries	Identify firearms trends through exploring networks of people, objects, locations and events, aligned to firearms movement and linked events	Help domestic abuse users make decisions to assess the risk of harm within relationships more efficiently and effectively, through insights that provide a holistic view of nominals' characteristics.	Explore the typologies and nominal involvement within violent crime hotspots to assist both a strategic and operational users on key factors, nominals and networks contributing to harm in these hotspots.	Aimed to predict which employees (officers and staff) are likely to take <i>long terms sick leave</i> (defined as 30 days or more) in the next 12 months	Aims to predict which nominals, already known to the police, are likely to commit their first most serious violence offence in the next 24 months

NDAS Iterative Data Science Techniques & Visualisation

Data Viz	Data Viz	Data Viz	Data Viz	Data Viz	Data Viz	Data Viz
NLP Pre-processing	NLP Pre-processing	NLP Pre-processing	NLP Pre-processing			NLP Pre-processing
	NLP Similarity Scoring					NLP Similarity Scoring
Network Analytics	Network Analytics	Network Analytics		Network Analytics		Network Analytics
Behavioural Analysis	Behavioural Analysis	Behavioural Analysis	Behavioural Analysis	Behavioural Analysis	Behavioural Analysis	Behavioural Analysis
					Predictive Modelling	Predictive Modelling
				Geospatial Analysis		

Data Science Techniques Developed & Reused Across Use Cases

Modern Slavery Problem Statement

An exploratory use case, with the objective of uncovering previously unknown insight related to the Modern Slavery offence.

Use Case Intent:

- Consolidate source system information to provide an interconnected view of People, Objects, Locations, Events (POLE)
- Optimise the use of the POLE data model to show a network view for those nominals related to MS activity.
- To utilise this Network information as a foundation to discover previously unidentifiable MS patterns and trends

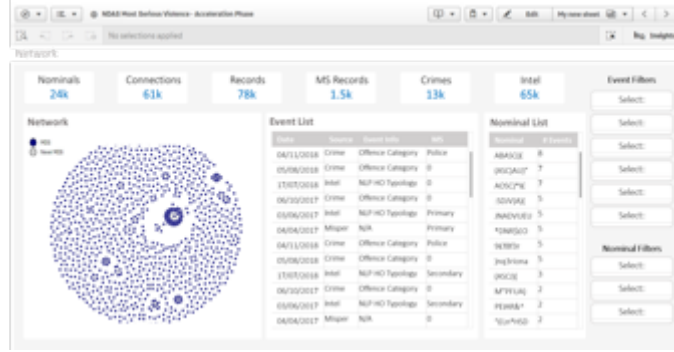
Modern Slavery Dashboard User Journey

Modern Slavery Problem Statement

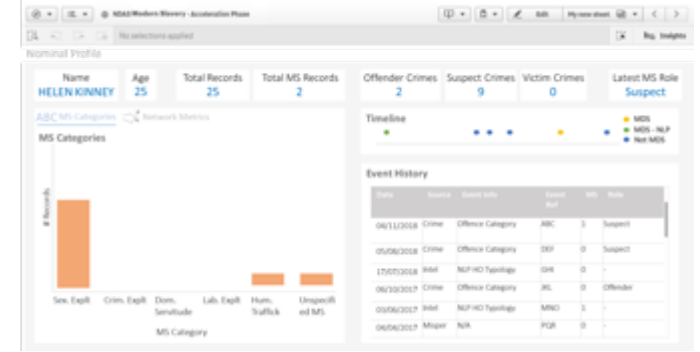
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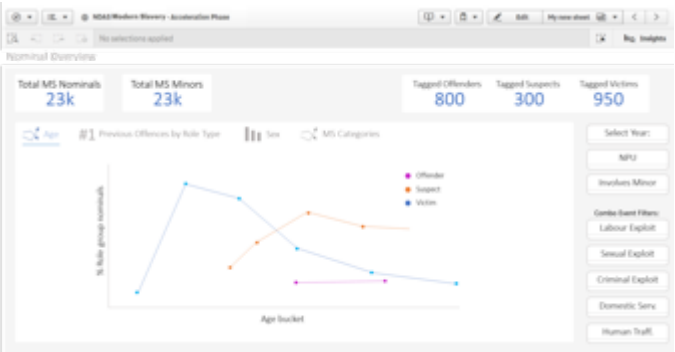
Overview Trends: Events



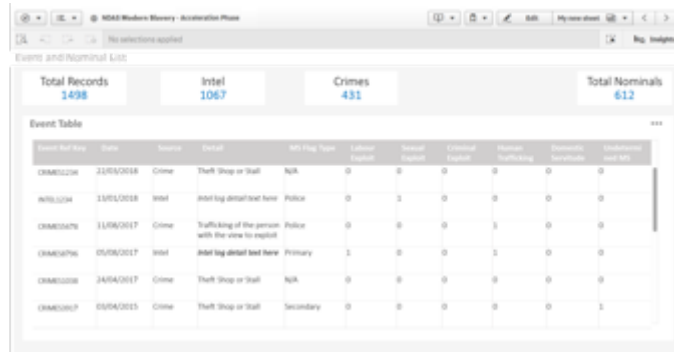
Network



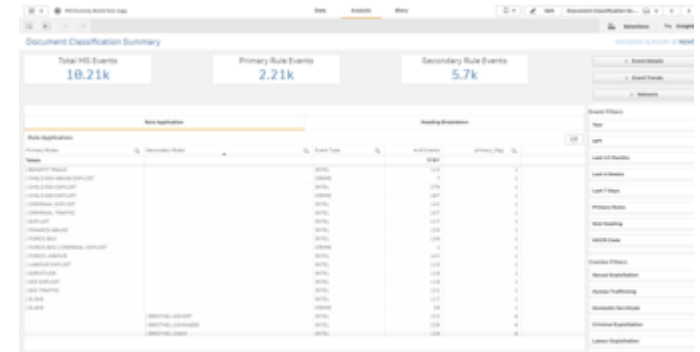
Nominal Profile



Overview Trends: Nominals



Detail Export



Document Classification

Modern Slavery Next Steps & Benefits

Progress

- Controlled Go Live with WYP planning for Feb – Mar 2021
- Technical build for WMP to commence March 2021

Benefits & Insights

- Use of primary & secondary key word searches to identify unknown MS events
- Identification of additional incidents
- Identification of networks
- Usable format to extract insights and information for further discussion

54 Network analytics demonstrated that on average 1 MS nominals is connected to 54 other nominals

15K Using NLP 15,000* intelligence logs were identified as relating to MS that were previously untagged

17K The 15,000 intelligence logs identified as MS through NLP identified an additional 17,000 nominals as associated with an MS event

200 The 6 data sources have been consolidated into 3 key data tables taking **insight generations for MS analysts from 200** hours to a few minutes**

