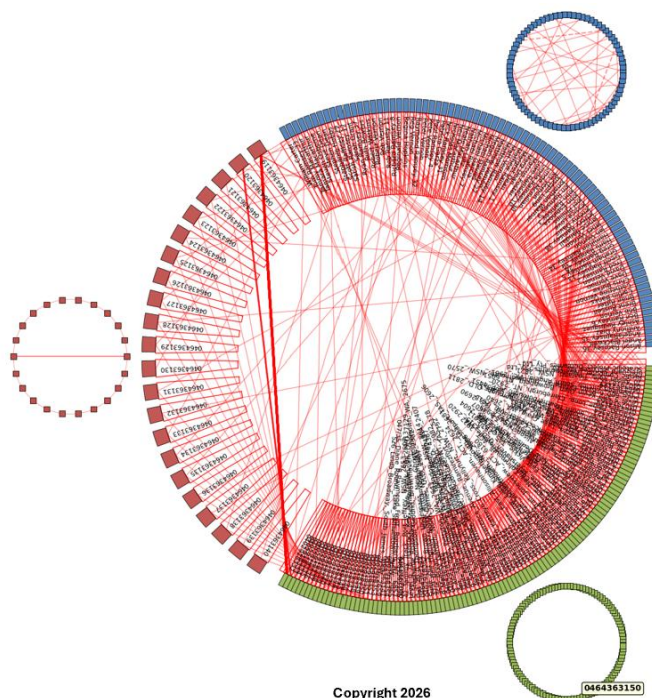




Intelligence Work Bench

**Artificial Intelligence Platform for
Identifying and Understanding
Complex Relationships**



Contents

1. Executive Summary	3
2. Understanding Complex Entity Relationships	4
3. Artificial Intelligence Enhanced Analysis	5
3.1 Relationship Summaries	5
3.2 Hypothesis Generation	5
3.3 Investigation Recommendations	5
3.4 AI Pattern Identification	5
4. Advanced Network Analysis Features	9
4.1 Unlimited Large Data Analysis	9
4.2 Fuzzy Relationship Detection	9
4.3 Step Link Analysis.....	9
4.4 Cluster (Anomalies) Detection.....	10
4.5 Predictive Network Impact Analysis	10
4.6 Rich Entity Profiling.....	10
4.7 Data Normalisation Techniques.....	10
5. Investigation Case Management.....	11
6. DNA Genealogy Analysis	12
7. Geospatial Intelligence and Mapping	13
8. Document and Internet Analysis.....	14
8.1 Document Search.....	14
8.2 Pattern Matching	14
8.3 Internet Search Intelligence	14
9. Call Data Record Analysis and Telco Intelligence.....	15
10. Business and Government Applications	16
10.2 National Security	16
10.3 Banking and Insurance.....	16
10.4 Corporate Security.....	16
10.5 Regulatory Agencies	16
10.6 Commercial Organizations	16
10.7 Medical Research	16
10.8 Telecommunications	16
11. Conclusion	17
12. Contact Details	18

1. Executive Summary

The Intelligence Work Bench is an advanced intelligence and investigative analysis platform designed to assist data analyst's and investigators in identifying complex relationships within large and diverse datasets.

Understanding the relationships between entities is frequently the key to identifying fraud, criminal activity, security threats, operational risks, compliance breaches, or business opportunities.

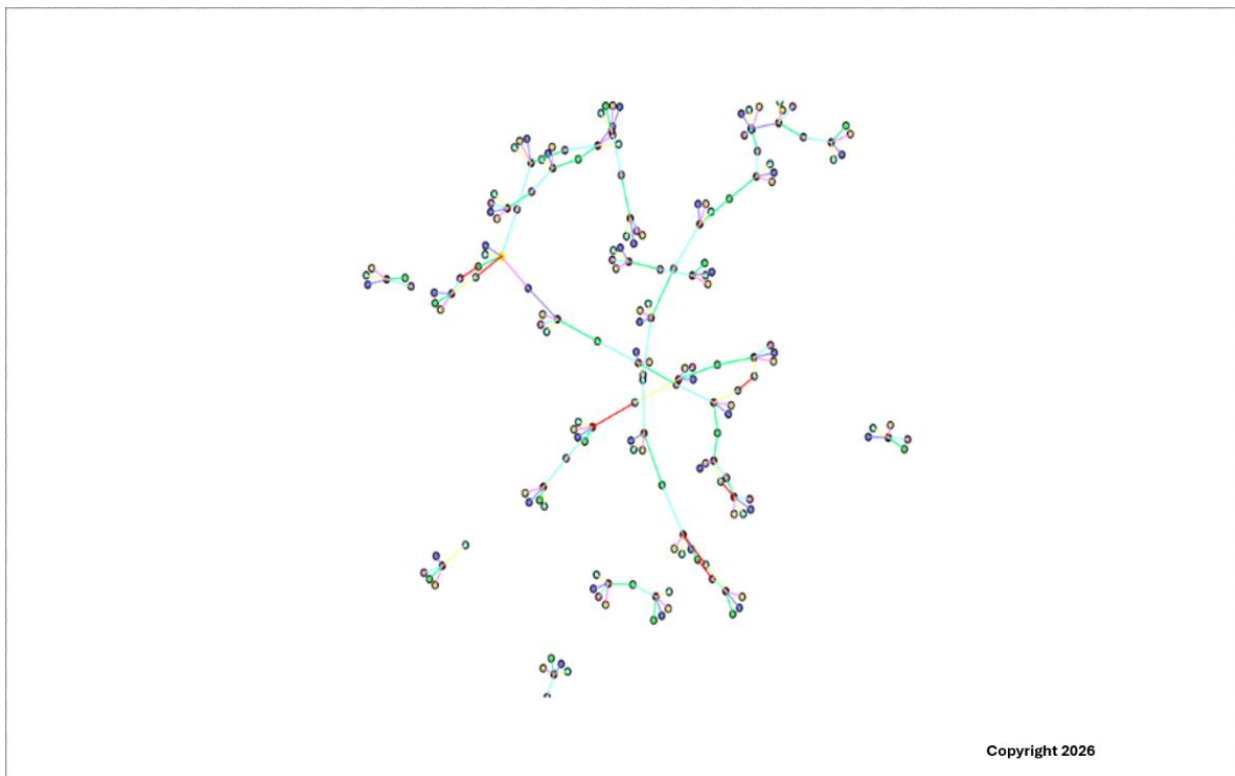
Work Bench combines artificial intelligence with a unique graphical user interface for data analysts to identify and visualise anomalies in data that may otherwise remain hidden using traditional analysis techniques.

Work Bench converts disparate information into an intuitive, relationship-based environment that enables data analysts to explore, test hypotheses, visualise, and understand networks of people, organisations, locations, assets, communications, and events.

Data analysts can analyse information from multiple sources, such as databases and documents, and present it clearly to reveal insights that would otherwise require significant manual effort.

Figure 1 – Identifying Networks

- Work Bench can identify, interpret and display network structures into meaningful graphs. Figure 1 shows the interrelationships between persons, organisations and phone numbers. There is one large network and four isolated networks in the diagram that can be further broken down and analysed.



2. Understanding Complex Entity Relationships

Work Bench visualises data as interconnected networks, allowing users to view information graphically as entities and relationships rather than as rows and columns.

Examples include:

- People connected through communications
- Organizations linked through directors, employees, suppliers, or financial transactions
- Addresses associated with multiple individuals
- Telephone numbers shared across entities
- Vehicles connected to incidents or persons of interest
- DNA matches revealing genealogical relationships
- Internet content linked to investigation targets

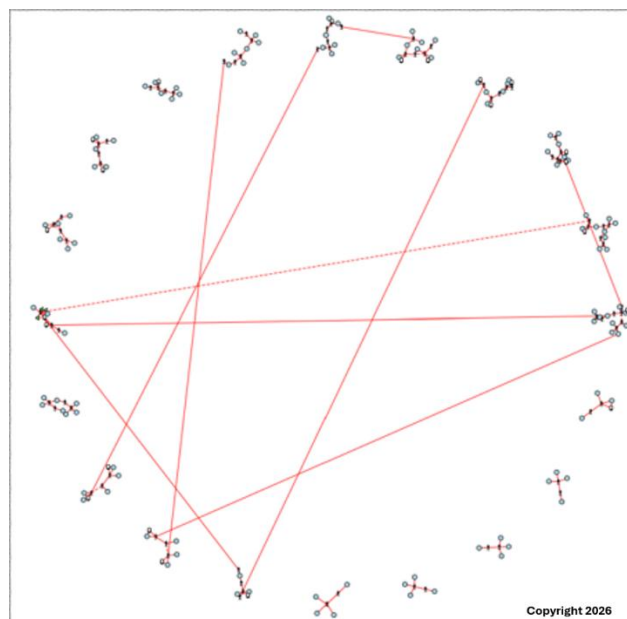
Work Bench supports very large data volumes through its graph and SQL-based architecture while maintaining interactive performance. It also provides consistent visual representations of entities and relationships, enabling data analysts to quickly identify:

- Central individuals within networks
- Key influencers and facilitators
- Hidden associations
- Network clusters
- Bridging entities
- Emerging groups of interest
- Isolated entities requiring further investigation

Visual network exploration significantly reduces the time required to understand complex investigations and business relationships.

Figure 2 – Understanding Complex Relationships & Identifying Anomalies

- Work Bench can identify unusual patterns / networks in data through direct and in-direct linkages between entities. Figure 2 is an example of interrelationships between groups involved in criminal activity identified through their mobile phone calls patterns.



3. Artificial Intelligence Enhanced Analysis

Work Bench integrates artificial intelligence directly into the analytical workflow, helping data analysts turn complex graph structures into clear, actionable intelligence products.

Examples include:

3.1 Relationship Summaries

Work Bench can automatically review displayed network relationships and produce written summaries describing:

- Key entities
- Significant relationships
- Network structures
- Potential areas of concern
- Important observations

This capability allows data analysts to rapidly generate intelligence notes and briefing material from complex visual displays.

3.2 Hypothesis Generation

Work Bench can analyze relationships and suggest potential investigative hypotheses.

Examples include:

- Identifying possible undiscovered associates
- Highlighting suspicious communication patterns
- Suggesting shared resources or common ownership
- Identifying potential collusive behaviour

Rather than replacing the data analyst, Artificial Intelligence acts as a force multiplier by highlighting possibilities that warrant further examination.

3.3 Investigation Recommendations

The platform can recommend potential next investigative steps including:

- Additional entities requiring examination
- Missing relationship information
- Further searches or data sources
- Potential network vulnerabilities
- Additional link analysis opportunities

This functionality helps ensure investigations remain systematic and intelligence led.

3.4 AI Pattern Identification

Artificial intelligence can identify unusual structures and anomalies within networks including:

- Unexpected connections

- Hidden intermediaries
- Communication bottlenecks
- Unusual clustering behaviour
- Entities occupying critical positions within networks

These capabilities assist data analysts in prioritizing effort and focusing resources on areas of highest significance.

Figure 3 – Result of Deep AI Search of Graph Database

- Work Bench can group information by entity type e.g. persons, phone numbers and colour entities and links by their attributes e.g. sex, age group etc. Information can be highlighted by thickness of line to convey number calls, number of transactions etc.

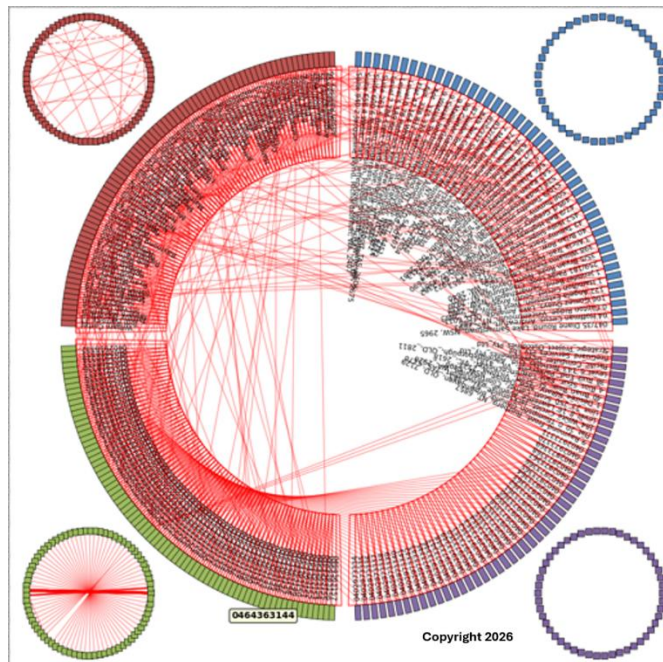
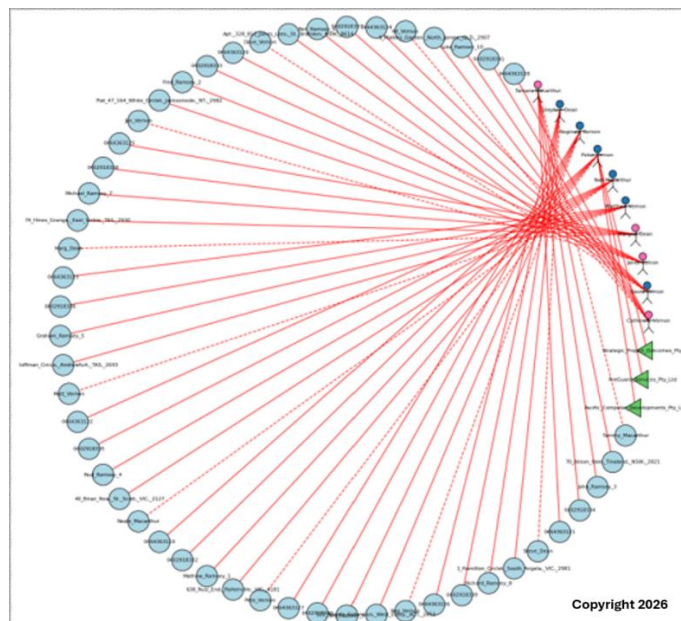
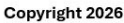


Figure 4 – Many Display Techniques for Quick Understanding of Complex Relationships

- Entity names and link names can be turned on / off. Entities can be shown as icons and images within the display.



- Artificial Intelligence features of Work Bench will identify groups / patterns in data for display within the graphical user interface. Multiple links between entities can be shown by thickness of line.



- Each group can be examined in detail and a case file created within the case management module that includes all entities and their attributes identified in the group.



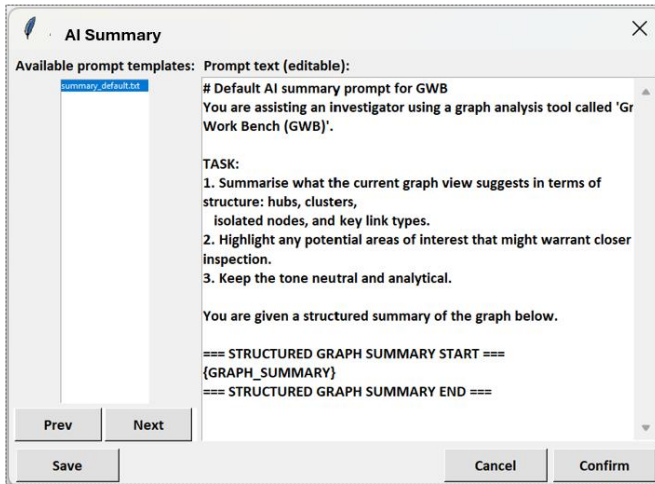


Figure 7 - Use AI to Discover Data Anomalies

Data analyst will select from

unlimited user created

AI enquiries (Copyright)

Figure 8 – Analyse results

Analyse results

produced from AI

enquiry (Copyright)

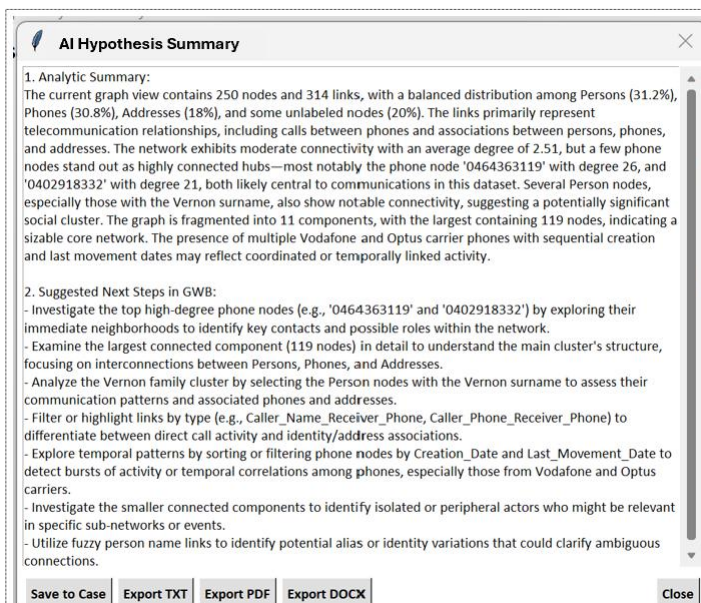
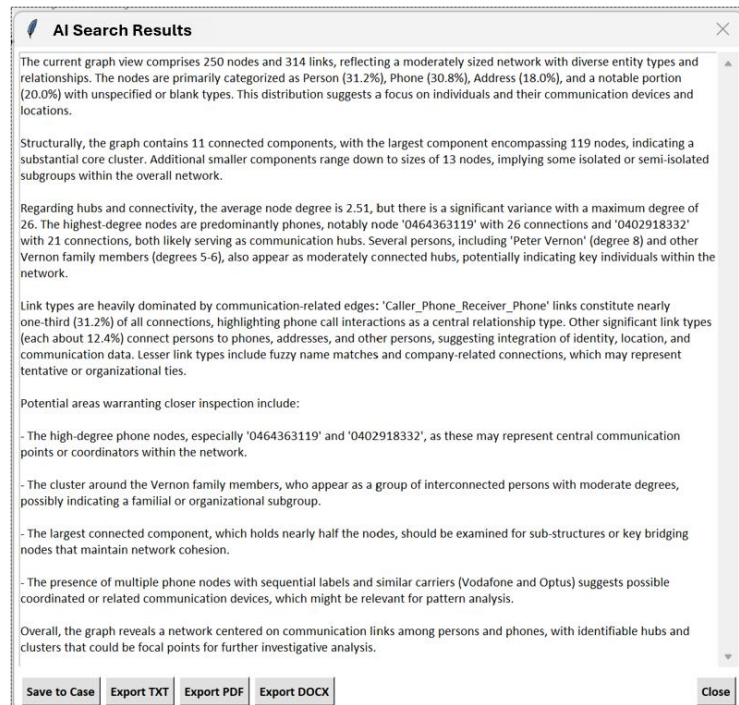


Figure 9 – Ask AI to produce hypothesis

Let AI hypothesis and produce

next steps for data analyst's

consideration (Copyright)

4. Advanced Network Analysis Features

Work Bench incorporates numerous analytical tools designed specifically for intelligence and investigative environments.

4.1 Unlimited Large Data Analysis

The platform is designed to process and visualize extremely large datasets. Organizations will be able to combine multiple data sources and analyze:

- Millions of relationships
- Large communication datasets
- Financial records
- Customer networks
- Government intelligence datasets
- Historical investigative information

4.2 Fuzzy Relationship Detection

Traditional systems typically identify only exact matches.

Work Bench uses fuzzy matching to identify likely relationships when exact matches are unavailable or unreliable.

Examples include:

- Similar names
- Alternative spellings
- Partial addresses
- Abbreviated street types (Street, Str, St)
- Typographical variations
- Similar organisation names

This capability will uncover hidden connections that may otherwise go undetected.

4.3 Step Link Analysis

The Step Link capability allows data analysts to progressively reveal direct and indirect relationships from selected entities.

Data analyst's will:

- View first-level associations
- Expand second and third-level connections
- Examine network growth patterns
- Identify hidden intermediary relationships

This capability is particularly useful when investigating large and complex relationship networks.

4.3 Application Road Map

- Work Bench is undergoing continuous development and improvement. The integration of the application with other databases and applications such as facial recognition systems is ongoing.

4.4 Cluster (Anomalies) Detection

The platform automatically identifies clusters and groups within networks, which may represent:

- Criminal groups
- Fraud rings
- Organised activity
- Business ecosystems
- Family structures
- Operational teams

Cluster analysis helps data analysts understand the broader structure of relationships, rather than focusing only on individual entities.

4.5 Predictive Network Impact Analysis

Work Bench enables data analysts to assess the potential impact of removing entities or linkages from view.

This provides insight into:

- Key network influencers
- Critical communication pathways
- Network resilience
- Single points of failure
- Potential disruption strategies

Understanding these impacts assists both investigative and strategic decision-making.

4.6 Rich Entity Profiling

Entities within Work Bench are far more than simple nodes on a diagram.

Each entity can contain:

- Images and photographs
- Documents
- Intelligence notes
- Contact details and addresses
- Historical information
- Investigation references
- External links

This creates a rich intelligence environment where all relevant information can be accessed directly from the visual network. Data analysts can move seamlessly between high-level network views and detailed entity profiles without losing investigative context.

4.7 Data Normalisation Techniques

Work Bench has a number of tools to normalise name and address information before information is loaded into the Graph database. This allows name and address information to be cross matched with greater accuracy within a data set and across multiple data sets.

5. Investigation Case Management

Work Bench includes integrated case management functionality, enabling investigations to be managed directly within the analytical environment.

Capabilities include:

- Case creation and management
- Person management
- Organisation management
- Vehicle management
- Phone management
- Crime and incident management
- Entity relationship tracking
- Evidence recording
- Investigation notes
- Timeline analysis
- Case report generator

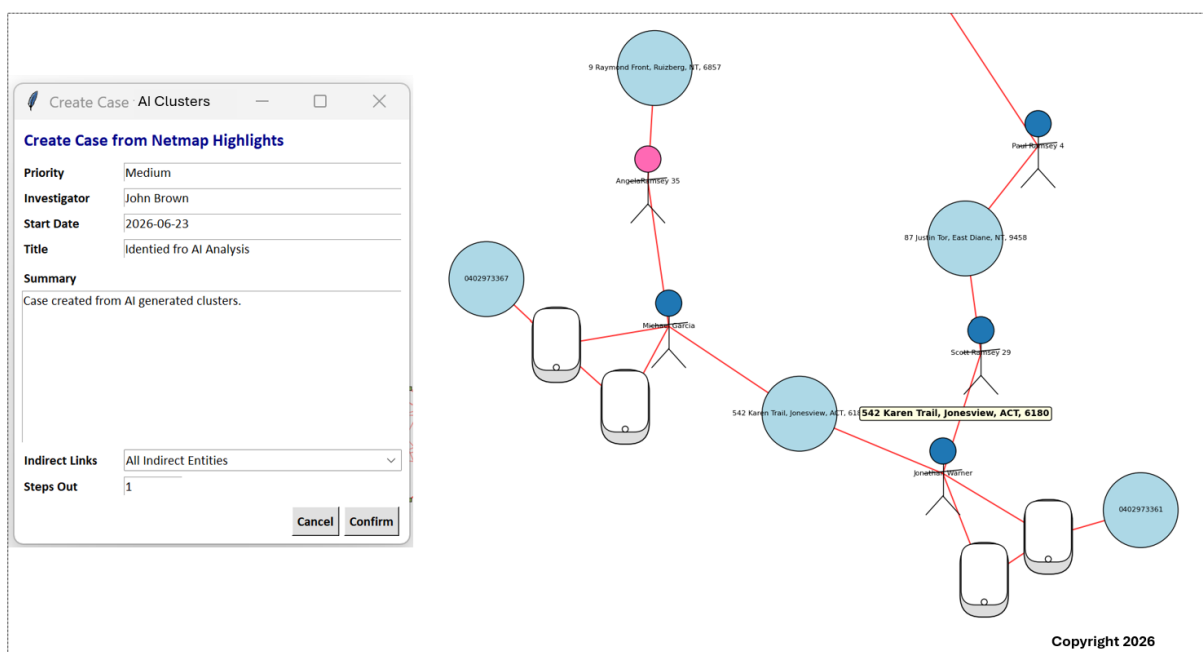
Integrating case management with network analysis keeps intelligence and evidence connected throughout the investigative process.

Work Bench also supports:

- Integrating AI-generated summaries and hypotheses into case files, reducing duplicate data entry.
- Creating new cases and entities, such as persons and organisations, from unusual or significant networks identified by AI or observed by data analyst in graph displays.

Figure 10 - AI Cluster Being Created in Case Management Module

- Unusual clusters of entities can be used in the creation of case files records such as person, organisations, vehicles, telephone numbers, documents etc. Entity attributes such as sex, age, dob etc. can also be taken automatically into the case file.



6. DNA Genealogy Analysis

Work Bench includes dedicated DNA genealogy capabilities. DNA analysis functions assist investigators in:

- Visualizing family trees
- Exploring DNA matches
- Identifying relationship clusters
- Understanding genealogical structures using shared DNA Centimorgan (cM) mappings
- Investigating unknown individuals
- DNA test kit management

The visual representation of DNA relationships provides a powerful tool for use in complex forensic genetic genealogy investigations.

Figure 11 – Family Trees

- Genetic genealogist data analyst can develop family trees from suspect DNA (cM) matches with possible suspects family DNA have been captured in freely available family history DNA databases e.g. GEDMATCH.

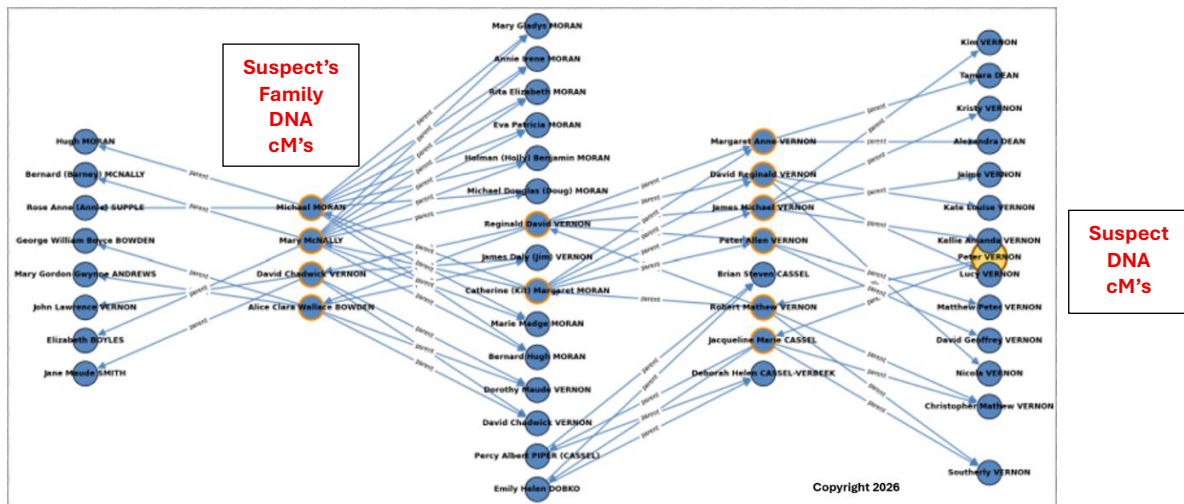
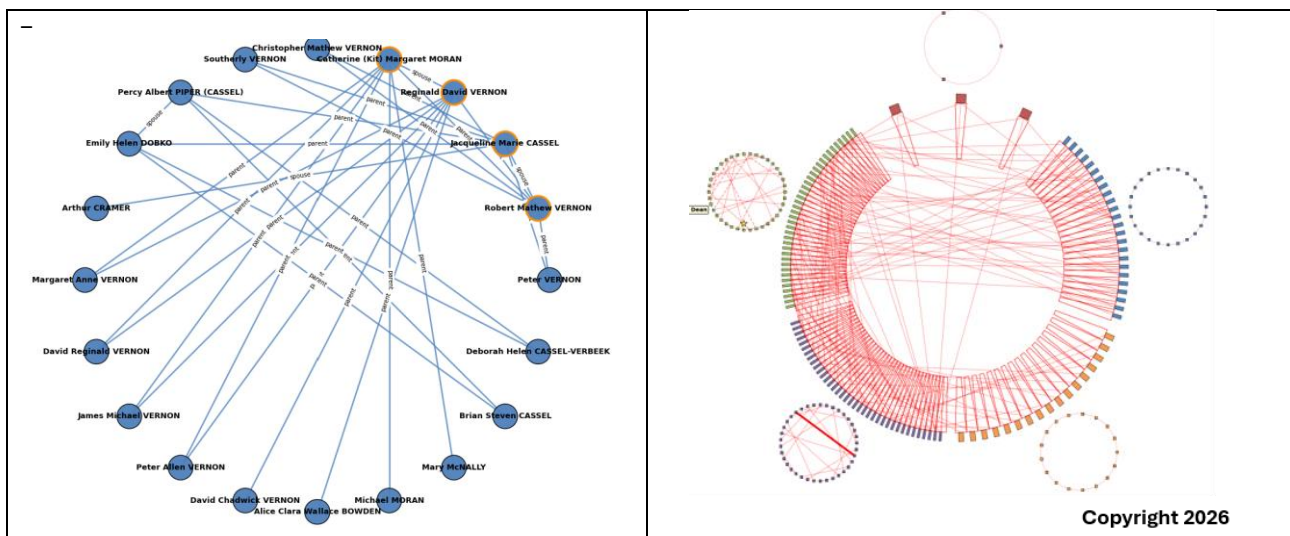


Figure 12 – Multiple View Formats

- Several display techniques are available such as thickness of link, circles, entity and link profile dialogs to provide the data analyst instantaneous understanding.



7. Geospatial Intelligence and Mapping

Geographic information is often critical to understanding relationships.

Work Bench incorporates mapping capabilities allowing entities and events to be visualized geographically using case file information.

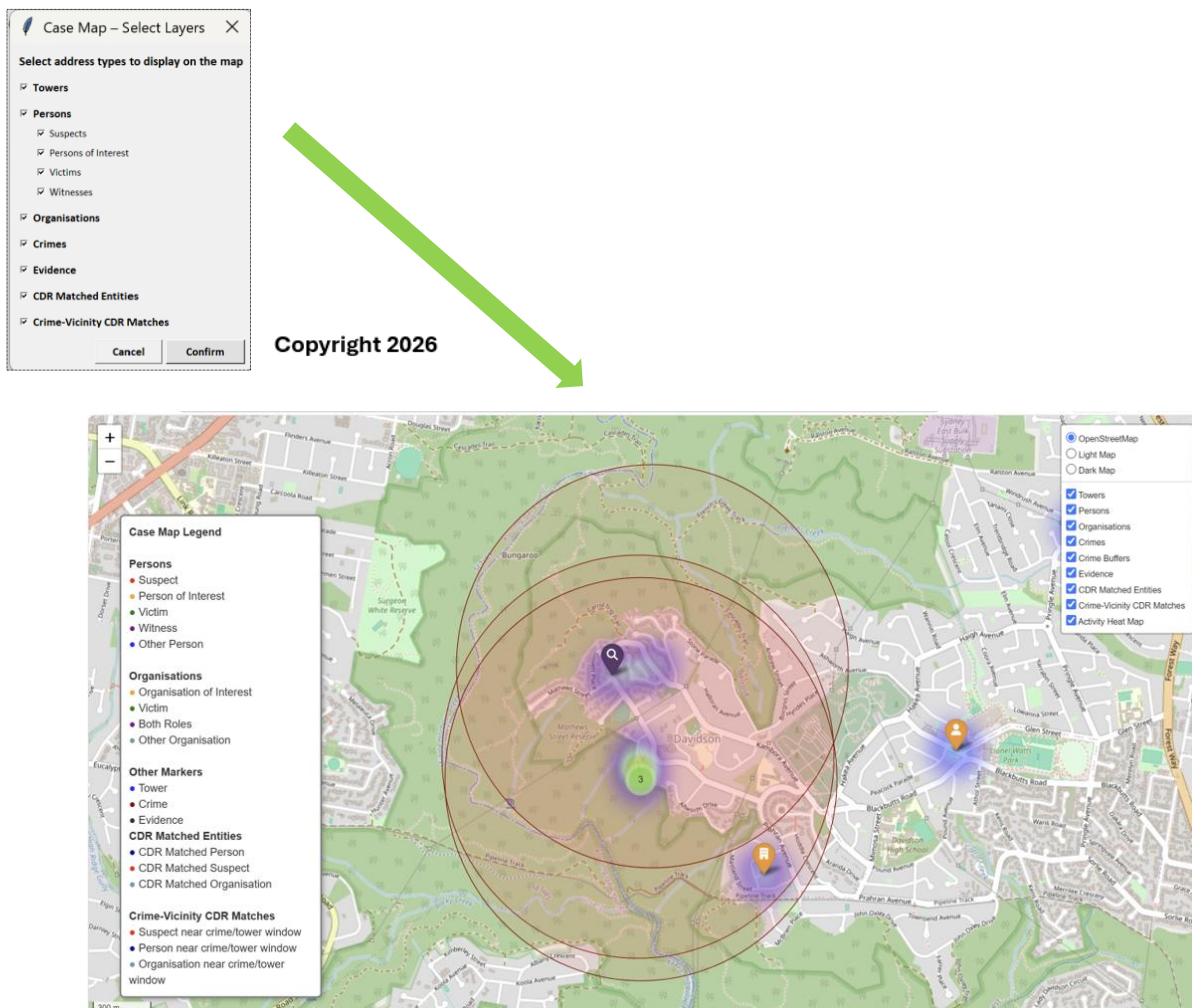
Applications include:

- Crime mapping
- Communication tower analysis
- Address analysis
- Travel pattern identification
- Geographic clustering
- Proximity analysis of persons location at time of incident to cell towers
- Vehicle tracking

Combining network relationships with geographic information frequently reveals patterns that are not visible through either analysis method alone.

Figure 13 – Geospatial Mapping – Case Management information such as a Persons

- Case Management information such as a Persons location at time of incident using mobile presence, crime location, persons / business address etc. can be overlayed onto tools such as geographical mapping applications.



8. Document and Internet Analysis

Modern investigations increasingly involve large volumes of unstructured information.

8.1 Document Search

Work Bench provides powerful document analysis capabilities capable of extracting intelligence from:

- Word documents
- PDF documents
- Email files
- Spreadsheets
- Text files
- Internet search results

8.2 Pattern Matching

The system can automatically identify and extract:

- Person names
- Addresses
- Organizations
- Telephone numbers
- Vehicle registration numbers
- Account identifiers
- Case references
- Other investigation-relevant entities
- User defined pattern matching requirements

Extracted information can then be converted directly into case management intelligence and network relationships for further analysis.

8.3 Internet Search Intelligence

Work Bench also supports large-scale internet searching and analysis.

Users can submit multiple search targets simultaneously and use AI to analyze and interpret results relating to:

- People
- Organizations
- Topics
- Locations
- Investigation targets

Relevant websites and documents can be reviewed, summarized, and incorporated directly into investigation cases files.

This capability enables data analysts to rapidly transform open-source information into actionable intelligence.

9. Call Data Record Analysis and Telco Intelligence

Work Bench incorporates advanced Call Data Record (CDR) artificial intelligence analytical capabilities designed to assist investigators and data analysts in understanding telecommunications activity and the relationships that emerge from large communication datasets.

Modern investigations may involve thousands or millions of calls, text messages, communication events, and mobile device movements. At this scale, spreadsheet-based analysis quickly becomes impractical for identifying patterns, associations, and networks of interest.

Work Bench transforms CDR data into an intuitive visual network where telephone services, subscribers, persons, organizations, locations, and communication events can be explored interactively.

Communication relationships are automatically represented as network connections, allowing data analysts to rapidly identify key communicators, communication hubs, intermediary contacts, isolated groups, and previously unknown associations between individuals and organizations.

A significant advantage of Work Bench is its integration of telecommunications intelligence directly with the Investigation Case Management environment. Telephone services identified within CDR datasets can be linked to existing Case, Person and Organisation records maintained within investigations.

This integration allows communication activity to be viewed in the broader context of an investigation rather than as isolated telephone records. Investigators can quickly determine which known subjects, organizations, addresses, vehicles, incidents, or other entities are associated with specific communication services and how those relationships evolve over time.

Work Bench supports co-location analysis through the examination of mobile telephone tower usage. By comparing tower activity across multiple services, data analysts can identify occasions where devices were present in the same geographic area at the same time. Such analysis can assist in establishing associations between subjects, identifying meetings, confirming movements, and supporting intelligence hypotheses regarding coordinated activity.

CDR information can be visualized geographically through integrated mapping functions, allowing investigators to examine communication activity alongside physical locations, addresses, crime scenes, or other events of investigative significance. Combining network analysis with geospatial intelligence provides powerful insight into both relationship structures and movement patterns.

Work Bench further enhances telecommunications analysis through Artificial Intelligence capabilities that can summarize communication networks, identify unusual calling patterns, highlight potential anomalies, suggest investigative leads, and identify entities that warrant further examination. Data analysts can quickly move from high-volume communication datasets to focused intelligence products that support operational decision making.

By integrating CDR analysis with case management, geospatial intelligence, entity relationship analysis, artificial intelligence, and document intelligence capabilities, Work Bench provides a comprehensive telecommunications intelligence environment capable of supporting complex criminal investigations, intelligence operations, fraud inquiries, regulatory investigations, and corporate security activities.

10. Business and Government Applications

Work Bench has broad applicability across both public and private sector organizations:

10.1 Law Enforcement

- Criminal investigations
- Organized crime analysis
- Intelligence operations
- Financial investigations
- Missing person investigations
- DNA - forensic genetic genealogy investigations

10.2 National Security

- Intelligence analysis and threat identification
- Network disruption planning
- Association analysis

10.3 Banking and Insurance

- Fraud detection (Insurance, Bank, Medical over servicing etc.)
- Anti-money laundering investigations
- Customer relationship analysis
- Compliance monitoring

10.4 Corporate Security

- Insider threat investigations
- Supply chain analysis
- Third-party risk assessment
- Due diligence investigations

10.5 Regulatory Agencies

- Compliance investigations
- Regulatory intelligence
- Relationship mapping
- Industry monitoring

10.6 Commercial Organizations

- Customer network analysis
- Market intelligence
- Partner ecosystem analysis
- Business relationship mapping

10.7 Medical Research

- Understanding correlations between population demographics and medical issues

10.8 Telecommunications

- Network fault finding

11. Conclusion

Work Bench provides a unified data analyst environment that supports the complete workflow, from data ingestion and AI-assisted analysis through to case management and reporting.

Work Bench is a next-generation intelligence and analysis platform that helps organisations turn large, complex structured and unstructured datasets into meaningful operational intelligence.

By combining artificial intelligence, graph analytics, document analysis, internet intelligence, geospatial analysis, DNA genealogy, and integrated case management, the platform enables analysts to understand relationships, identify anomalies, uncover hidden patterns, and make informed decisions.

Work Bench's visual interface, AI-assisted analysis, and ability to integrate diverse data sources makes it a powerful tool for government agencies, law enforcement organisations, regulatory bodies, and commercial enterprises seeking deeper insight into complex networks, relationships, and events.

12. Contact Details

For further information, please contact Deep Analytics Head Office at:

info@deepanalytics.com.au

 Deep Analytics Pty Limited

Version 1.0 - September 2026