

[Redacted]

(b)(3)

From: Allen David J NRO USA GOV
Sent: Friday, June 8, 2018 11:13 AM
To: [Redacted]
Subject: FW: Datawalk and Enveil --- UNCLASSIFIED//~~FOUO~~
Attachments: DataWalk Data Sheet[1].pdf; enveil-federal-datasheet Update.pdf

(b)(3)

Classification: UNCLASSIFIED//~~FOUO~~
=====

FYI.....no action. Dave.

From: Barber Randy C NRO USA GOV
Sent: Friday, June 08, 2018 9:29 AM

[Redacted] Allen David J NRO USA GOV; [Redacted]

(b)(3)

(b)(3)

Subject: FW: Datawalk and Enveil --- UNCLASSIFIED//~~FOUO~~

Classification: UNCLASSIFIED//~~FOUO~~
=====

[Redacted] . . Mary Corrado (former NRO D/ROM a.k.a. BPO) sent me the attached info sheets from a couple of vendors for which she serves as a consultant. She thought these capabilities might be of value to the NRO. Please take a look. If you are interested, please work thru Ken Whitson/MID. He can get your POC in touch with Mary and the vendors. . . Randy

(b)(3)

Enveil provides the first certified solution for performing searches from classified/trusted domains against sources on untrusted or lower classification domains. **Enveil's ZeroReveal™ solutions** ensure selectors stay encrypted and nothing is ever revealed during the entire processing lifecycle.

DataWalk is a commercial grade Big Data software platform for connecting numerous large data sets, both external and internal, into a single repository for fast visual analysis.

Classification: UNCLASSIFIED
=====

Classification: UNCLASSIFIED//~~FOUO~~
=====

Classification: UNCLASSIFIED//~~FOUO~~



Make Better, Faster Decisions Using All Your Data

Key Benefits

Encode Knowledge

- Save and re-use analyses across all users
- Fast multi-dimensional scoring to prioritize any entity
- Easily and securely collaborate among users
- Analyze data via link charts, maps, histograms, visual queries, and temporal analysis

See All Your Data

- Securely access all your data, integrated in one place
- Harmonize and search dozens/hundreds of data sources
- Fast analysis of millions/billions of records
- Mix and match Enterprise and local data

A Practical Solution

- COTS software solution
- Realistically priced
- Runs on commodity hardware
- Results in hours/days
- No forward deployed engineers required
- Single, out-of-the-box integrated system
- Intuitive visualizations and graphical displays
- Fixed maintenance costs and great ROI

The Problem

Large organizations in law enforcement, intelligence, insurance, and other sectors often face challenges analyzing large volumes of data across multiple silos with various data structures and security permissions. Accessing, normalizing, combining, and analyzing this data can be highly problematic, impacting the organization's ability to fulfill their mission.

In addition, these organizations are often challenged to produce better, faster results, but may be limited by financial constraints and/or availability of experienced analytics experts.

The Solution

DataWalk is a commercial grade Big Data software platform for connecting numerous large data sets, both external and internal, into a single repository for fast visual analysis.

Interactive analyses are performed instantly, without IT assistance, and without requiring SQL expertise. Unlike traditional data analysis systems that are heavily services-based, DataWalk typically delivers first results with Enterprise-level data in just a few days.

Encode Knowledge

With DataWalk Instant Analyses, you can save workflows and easily generate risk scores. This enables your organization to encode knowledge - including complex analyses generated by your best experts - and with the click of a button re-run or edit the same analyses, without having to reinvest the time or remember all the steps.

With this capability, even non-technical users can take advantage of the powerful capabilities of DataWalk - and leverage the knowledge of domain experts and your best analysts - simply by pushing a button to instantly execute what may be a very complex analysis.

Analyses include custom filtering of data sets and connections, identifying connected entities across many sources, and exposing networks of hidden linkages.

Identify Data Of Interest With Just a Few Clicks

DataWalk reduces billions of records to the specific data of interest in just a few clicks, via the Universe Viewer (UV) graphical interface.

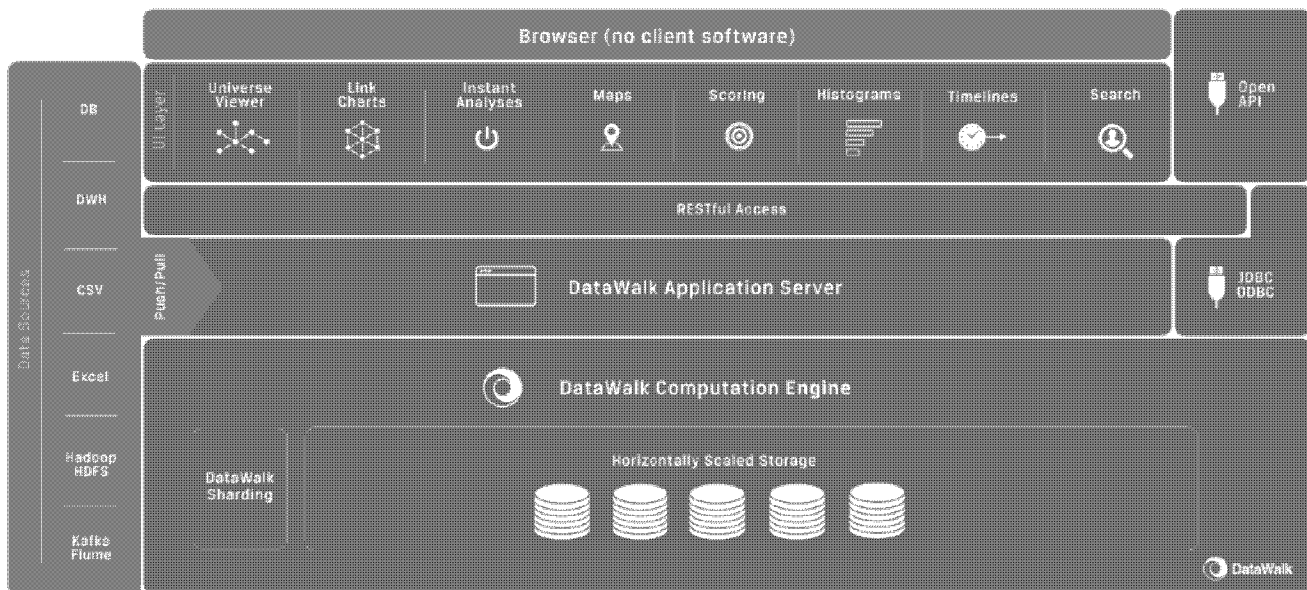


Figure 1: DataWalk System Diagram

The UV enables you to visualize and instantly filter data and connections across all data sets, to visually understand other behavioral trends. There's no need to know SQL or any programming language.

Fast Multi-Dimensional Scoring

Scores are quickly generated or modified, across any number of sophisticated analyses, and you can score any object (e.g., people, properties, activities, locations, etc.)

You can quickly generate risk-scores to expose potential fraudsters (or insider threats) based on their related transactions, risk profiles of their connections, patterns of use of identification numbers (or devices), and many other factors. You can instantly do any analysis across any or all of your data, without creating a new data mart or a new analytical environment.

Easily, Securely Collaborate

DataWalk is a shared multi-user system built to facilitate collaboration across colleagues and agencies.

Designed with a highly granular permissions scheme, DataWalk ensures users only see data and related analyses for which they are authorized.

Manage Your Work In The Investigation Workspace

The Investigation Workspace makes it easy to create and manage investigation activities in DataWalk. Create a folder for a new investigation; attach analyses, link charts, notes, and any related documents; save them all in a folder; and select colleagues with whom you'd like to privately share the folder.

Powerful Analytic Tools

DataWalk is a suite of fully integrated analytic capabilities designed to deliver better results and deeper insights across all of your data.

One of the unique DataWalk tools is the Universe Viewer, which offers you a visual representation to easily and interactively structure both basic and complex queries.

In addition, DataWalk includes:

- Histograms
- Link charts
- Maps
- Timelines
- Pivot tables
- Interactive charts

Easily Harmonize And Search Across Many Data Sources

DataWalk integrates multiple sources into a universal model to deliver a big-picture view on all activities and connections to support tactical and strategic analyses. DataWalk is architected specifically for environments with many sources and large volumes of data, even if the data is structured or described in different ways. DataWalk identifies and stores connections between your data sets to deliver fast interactive analysis, even for billions of records.

Great For All Analysts...

Powerful DataWalk capabilities such as Instant Analyses, search, link charts, and the Investigation Workspace can all typically be used by non-technical analysts after only a couple hours of online training.

...Including Your Power Users

Power users can take full advantage of DataWalk's advanced capabilities for powerful visual querying, creating advanced connections, and saving complex analyses for use by others.

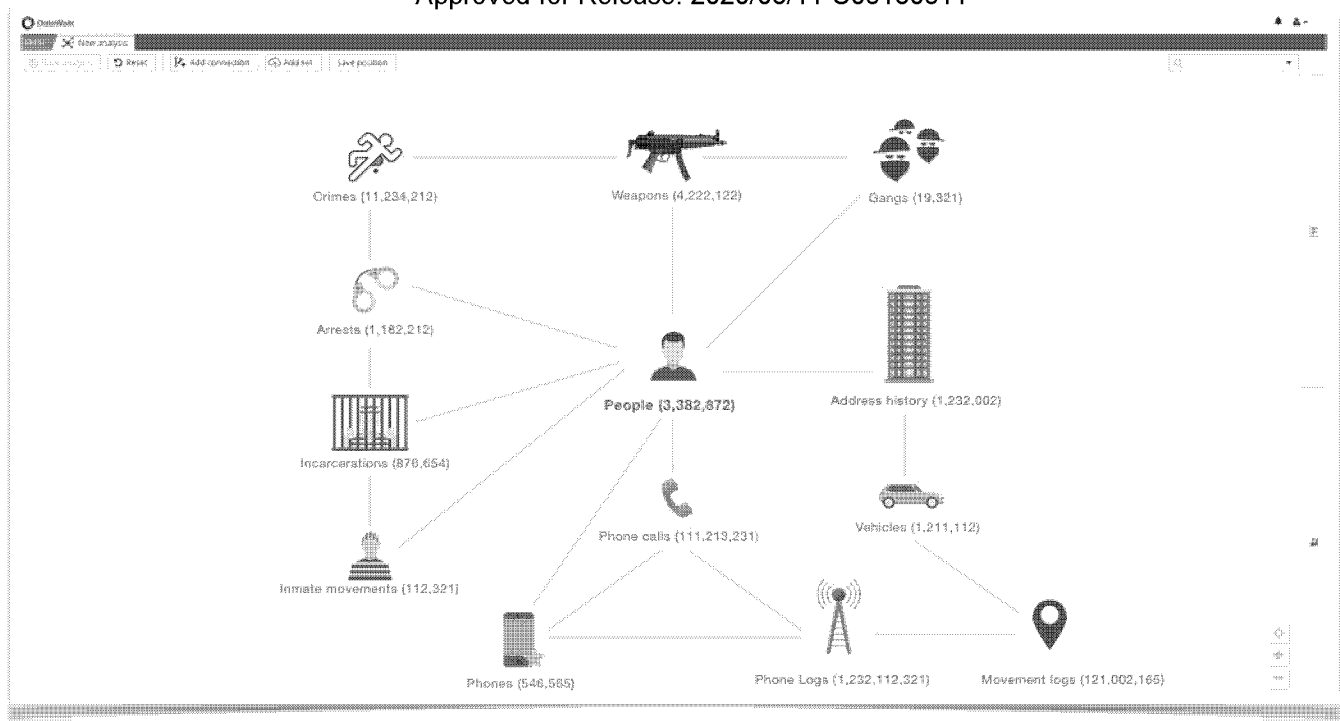


Fig. 2: Universe Viewer Provides A Highly Visual Analytics Environment

Mix And Match Data From Internal Silos, External Sources, And Your Desktop

Data from internal database “silos”, external databases or XML feeds are easily combined.

You can also import and integrate your own Microsoft Excel spreadsheets into this environment, and analyze the data in a private “sandbox”. This is particularly valuable when linking case-specific data to other existing data sources. Sharing the results with approved users is a simple click-of-the-mouse.

A Practical Software Solution

DataWalk is a scale-out Commercial Off-The-Shelf (COTS) software platform running on commodity servers, ensuring affordable economics relative to other scalable Enterprise class systems.

DataWalk software can be deployed either on-premise or in the cloud, and is operated via a simple web browser. There are no client-side installs or risk of data loss while deploying to large numbers of remote users.

No Forward-Deployed Engineers And Minimal IT Investment

With DataWalk there is no need for long-term professional consulting services, which again helps to provide a dramatic cost advantage relative to alternative systems.

Once deployed, DataWalk typically requires minimal IT support. Users can instantly access all data they are authorized to see. Unlike alternative systems, administrative power-users can modify the analytic data structure on their own using simple, graphical interfaces, without requiring professional services.

First Results In Hours Or Days

Unlike alternative approaches that may take months or years before tangible results are generated, with DataWalk you can see results in days, and sometimes within hours, for complex, multi-source, multi-user Enterprise environments. In addition, you don't need to be a technical expert to configure DataWalk – it's all point-and-click menus.

Single, Fully Integrated Out-Of-The-Box Software Platform

DataWalk is a fully integrated COTS software platform, so there is no need to cobble together multiple product components or separate modules to have a complete system. DataWalk comes complete with all specified analytics and the necessary infrastructure software for data storage.

Easily Access Data And Analyses

DataWalk is an open system with defined APIs that make it easy for you to access data and analyses from other systems. For example, the popular statistical analysis program R can pull data and analyses from DataWalk, perform various statistical analyses, and then insert the results back into DataWalk.

Intuitive Visualizations And Graphical Displays

DataWalk is a visual analytics platform and does not require you to have expertise in SQL or any programming or scripting language. Even complex queries are created via an intuitive, interactive, and visual interface.

DATAWALK CUSTOMER CASE – SAMPLE RESULTS				
6 SOURCES	4B RECORDS	4TB DATA	40B LINKS	1 NODE
TYPE OF OPERATION	TRADITIONAL SOLUTIONS	WITH DATAWALK		
Implementation	many months, years	weeks		
Changing logical data model	1-2 weeks	minutes - hours		
Adding new data source	1 week - 1 month	1-2 days, even hours		
Creating new alert rule	few days	minutes - hours		
New complex analysis with new source	hours, days	minutes - hours		
Complex queries, computation time	many hours	60x faster		
Programming required?	Yes - many hours	none		
SQL/ Scripting language required?	Yes - many hours	none		

- ### Sample Applications
- Anti-Money Laundering
 - Contraband movement
 - Counter-drug
 - Counter-intelligence
 - Counter-terrorism
 - Counterfeiting
 - Espionage
 - External fraud
 - Illegal immigration
 - Internal fraud
 - Low intensity conflict
 - Management of assets
 - Message pattern tracking
 - Organized crime
 - Process monitoring
 - Process exploration
 - Targeting optimization

Table 1: Customer Case – Sample Results

Link Charts Made Easy

Link charts provide a powerful tool for analysts to identify hidden relationships. DataWalk link charts include various Social Network Analysis facilities, and also enable you to easily undo/redo any steps taken in your link analysis.

Our Experts Help You Succeed

Our goal is to help make your team successful. Our dedicated engineers bring a wealth of technical depth and industry knowledge to each deployment. This maximizes your results solving the many challenges associated with complex investigations and deep data exploration.

Agile System Easily Adaptable To Your Needs

Many traditional systems are notoriously inflexible, requiring months of professional services to do things like add a new data source, or change the data structure of the analytic environment.

DataWalk is different. Adding and integrating a new source can often be done in minutes or hours, and the data structure can be modified either by your experts, or DataWalk, with a few clicks.

Get Results, Even With Dirty Data

Traditional tools don't operate well on dirty, inconsistent, or incomplete data and often require long, expensive data cleanup projects.

With DataWalk you can quickly profile your data, extract unique records from duplicates, and do on-the-fly transformations, all without requiring any action from data owners or IT. Note that your data won't be affected by any transformations, and you will be able to easily track objects back to the source systems after these transformations.

Unique DataWalk Technology

DataWalk is powered by a powerful set of proprietary, patented and patent-pending technologies.

Instead of complex JOINS, DataWalk uses links to connect and analyze data, maintaining linear performance as computational complexity increases. Links (data relationships) are generated only once and complex queries/analyses are divided into smaller, linear operations which increases the computational efficiency of advanced analytical queries.

To explore distant data with many degrees of separation, data denormalization is not required. This enables analysis of large environments – with many billions of records – to be done on commodity hardware without enormous amounts of expensive in-memory computational power.

Key Specifications

System Architecture	<ul style="list-style-type: none"> • Shared multi-user system • Scalable, shared, single-instance data repository • Two layers: UI and Computation Engine
Universe Viewer and Histograms	<ul style="list-style-type: none"> • Provides a simple, unified, visual environment for importing, connecting and analyzing data across many large data sets • Administrative users can easily modify the structure of the analytic environment with just a few clicks. • Users can instantly drop a Microsoft Excel file into the Universe Viewer and connect to other data sets, providing a private sandbox. • Each user can instantly generate histograms of any desired data sets. • Histograms can be used to profile and/or filter data. • Dynamic Breadcrumbs enable easy visualization, modification, and re-use of analyses. • Users can do ad-hoc querying and data discovery via traversing their data. • Non-technical users can easily execute complex queries via a visual interface by filtering and connecting various data sets and the paths between them. • Connections between data sets can be based on any combination of numeric comparisons, fuzzy/direct matching of text, time, date, geographical distance or related similarity. • Data sets can be connected both with and without a common key.
Push-Button Analytics	<ul style="list-style-type: none"> • Instant Analyses enable you to encode organizational knowledge by easily generating and re-using searches and analysis paths on the Universe Viewer.
Link Analysis	<ul style="list-style-type: none"> • Enables network analysis, geo-spatial, and temporal analysis (timelines) • Multiple layouts, including structural, radial, and hierarchical • Social network analysis including betweenness, closeness, page rank, shortest path, and Eigenvector • Undo/redo analysis steps on link charts as needed • Easily visualize flows of any objects (e.g., money, material, etc.)
Maps	<ul style="list-style-type: none"> • Link charts and flows can be presented on maps • Maps can be integrated with GoogleStreetView • Geolocation translation is available via LocationIQ or an offline service • DataWalk supports: <ul style="list-style-type: none"> ✓ OpenStreetMap Server (such that no request is sent off premise) ✓ MapQuest ✓ GoogleMaps
Other Visualization and Analysis Capabilities	<ul style="list-style-type: none"> • Object search facility • Drill-down charts • Pivot tables – Universal OLAP • Text mining • Multi-dimensional scoring • Ability to create custom calculated columns on tabular data • Basic statistics on tabular data (min, max, sum, avg) • Customizable dossiers show all desired data about an object, on a single screen.
Investigation Workspace	<ul style="list-style-type: none"> • Easily create Investigation Folders for all DataWalk analyses and link charts associated with an investigation • Add ad-hoc notes • Attach any other files to an Investigation Folder • Specify colleagues with whom a Folder is to be privately shared
Scalability	<ul style="list-style-type: none"> • Easily link dozens/hundreds of data sources. • Interactive analysis of many millions/billions of records • Scale-out architecture: scale system capacity by adding commodity servers
Data Sources	<ul style="list-style-type: none"> • Any relational Database • Microsoft Excel files • CSV files • XML files • Hadoop HDFS



ZeroReveal™ for Intelligence

Enabling trusted compute in untrusted locations

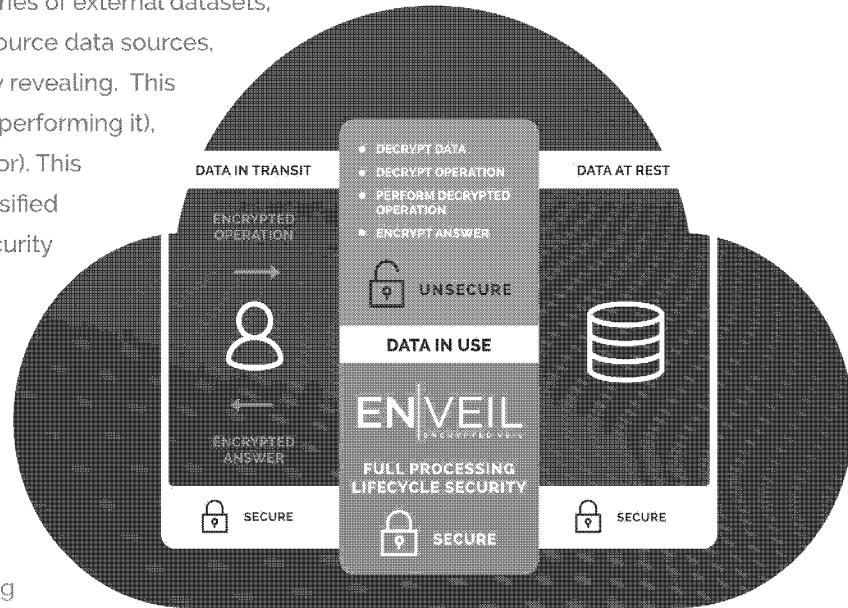


Enveil provides the first certified solution for performing searches from classified/trusted domains against sources on untrusted or lower classification domains. Enveil's ZeroReveal™ solutions ensure that selectors stay encrypted and nothing is ever revealed during the entire processing lifecycle.

Traditional intelligence collection methods involving searches of external datasets, including social media datasets, publicly available / open source data sources, and low side government curated data repositories, are very revealing. This exposure not only includes attribution of the search (who is performing it), but also the content of the search (what you are searching for). This search content may include sensitive indicators and/or classified selectors that would be extremely damaging to national security if exposed.

Currently, there are two main options to avoid this exposure:

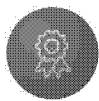
- **Searches with sensitive content** are not performed in external datasets, limiting the intelligence value and usage of the data source.
- **Sensitive indicators / classified selectors** must go through the selector release process before being used in external searches which is both time consuming and risk inducing.



Enveil *completely* changes the security paradigm by never decrypting anything, enabling trusted compute in untrusted locations.

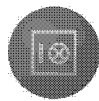
UNPRECEDENTED MISSION IMPACT — PUTTING ENVEIL TO USE FOR YOU

Enveil fundamentally changes the paradigm of secure data usage, reduces attack services, and can be used for multiple applications with the potential for high mission impact.



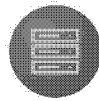
Trusted Compute in Untrusted Locations

Never reveal classified selectors or sensitive indicators when searching third-party or government held data sources.



Secure Open Source Intelligence

Leverage open source datasets to derive intelligence (OSINT) without ever revealing interests or intentions.



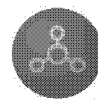
Counterintelligence, Compliance, and Insider Threat

Securely perform CI vetting, compliance checks, or insider threat monitoring without revealing key indicators.



Enable Secure Cloud Processing

Confidently migrate your most sensitive workloads and data to the Cloud with Enveil's Never Decrypt security posture.



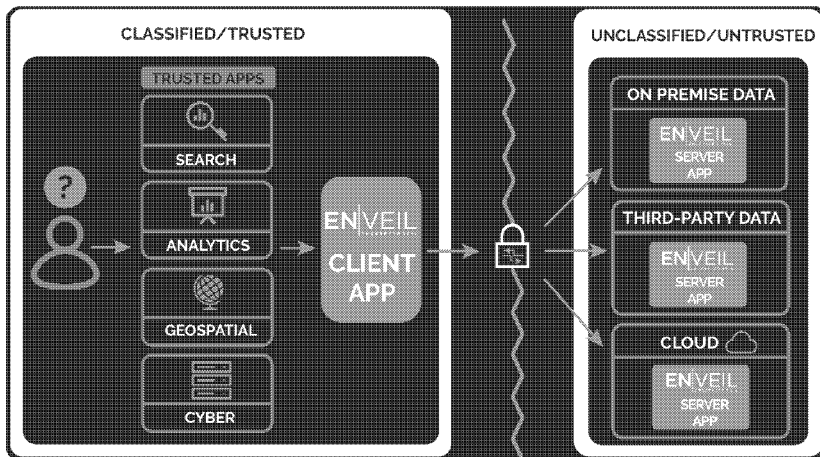
Cross Domain and Interagency Data Usage

Securely utilize datasets in cross domain and interagency environments with selectors of a higher classification, increasing the dataset's intelligence value.



A pioneering data security company protecting Data in Use

Enveil provides the first scalable commercial products to protect data when it's most valuable – when it is being used or processed. Whether performing searches or analytics on data you own or seeking information from a third-party data provider, Enveil's **ZeroReveal™ solutions** ensure nothing is ever revealed during the entire processing lifecycle.



AT A GLANCE ZEROREVEAL™ FOR INTELLIGENCE

CLOSING THE LAST GAP IN DATA SECURITY

Extracting value from data by performing actions such as search and analytics requires decryption, creating critical points of exposure. It's far too easy to assume current security practices already have this covered. They don't. Enveil's ZeroReveal™ compute capabilities close this gap in data security by protecting data while it is being used.

ENVEIL COMPLETELY CHANGES THE SECURITY PARADIGM.



Founded by U.S. Intelligence Community alumni, Enveil provides the first and only scalable commercial solutions to **enable full lifecycle security at scale** – allowing organizations to achieve previously impossible levels of data security by ensuring that the content of the interaction, the results, and the data itself are always protected. Enveil's products are **proven in both government and commercial applications** and the company is backed by investors and strategic partners such as In-Q-Tel, Thomson Reuters, Bloomberg Beta, and USAA.

Powered by homomorphic encryption, Enveil's core technology was developed, deployed, and operationalized inside of the National Security Agency to **extend the boundaries of trusted compute** (typically high-side environments or secure enclaves) into untrusted spaces such as cloud environments, open source data repositories, and third-party data services. It has been **implemented at scale in sensitive environments** where analysts work under the assumption the system has been compromised.

ABOUT ENVEIL Founded by a seasoned team of PhD mathematicians and computer scientists from the U.S. Intelligence Community, Enveil is revolutionizing data security by eliminating the Data in Use vulnerability that people have been chasing for more than 20 years. Enveil provides the first and only scalable commercial solutions to enable full lifecycle security at scale. This allows organizations to achieve previously impossible levels of data security – ensuring that the content of the interaction, the results, and the data itself are always protected.



ZeroReveal™ Compute Fabric

Full Lifecycle Security at Scale – First and only scalable commercial solution to enable a ZeroReveal™ security posture, ensuring the content of the interaction, the results, and the data itself are always protected.

Not Intrusive – The capability does not require any changes to a system architecture, data storage format or technology, or application code.

ZeroReveal™ Search

Trusted Compute in Untrusted Locations – Military-grade encrypted search extends the boundary of trusted compute into untrusted locations.

Keep Your Keys – Keys never need to leave the owner's custody even when processing data outside your walls.

Never Decrypt – Data remains encrypted during processing whether within the enterprise, in a third-party data source, or in the public cloud.

Collaboration	<ul style="list-style-type: none"> • Single data instance shared by all users of the system • Document “stories” by capturing screen shots and associated comments. • Easily share views/analyses. • Export results to Microsoft Excel. • Share data and analyses with other tools via RESTful access, JDBC, and ODBC.
Security	<ul style="list-style-type: none"> • Highly granular (cell-level) rule-based permissions using predicates • Full audit trail
Compliance	<ul style="list-style-type: none"> • 28-CFR Part 23 Compliance, i.e., data in DataWalk can be deleted on any desired schedule
Alerts	<ul style="list-style-type: none"> • DataWalk can import alerts from an external alerting system, or alerts can be generated via the DataWalk alerting facility.
Reporting	<ul style="list-style-type: none"> • Automatic report generation • Reports can be exported to PDF or Microsoft Excel • Can be automatically distributed on a pre-set schedule
Platform	<ul style="list-style-type: none"> • DataWalk runs on commodity servers in a scale-out configuration • Supported operating system platforms are RedHat7 and CentOS7
Supported Browsers	<ul style="list-style-type: none"> • DataWalk is browser-based and there are no client-side software installs required • Chrome C38+ (highly recommended; enables highest DataWalk performance) • Firefox 33+ and higher • Microsoft IE11 • Other browsers supported as required
Deployment	<ul style="list-style-type: none"> • Software-only solution runs on commodity hardware • One-click deployment of base DataWalk software • Can be deployed on-premise, or in cloud