DATAVLT – the forefront of Data Analytics Leveraging on Blockchain

Influencing Future Businesses with Secure Data Analytics

(supported by Artificial Intelligence and Predictive Learning)

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Content:

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The Reality We Live In

The world churns out more than 2.5 quintillion bytes of data (as on Apr, 2015) every day, and less than 1% (2015) of all data is analysed and used. Considering this staggering statistic, imagine the potential for big data analytics and the new heights that businesses and organisations could reach, if meaningful insights were available on-demand.

IDC has projected that global revenues for big data analytics will grow from $130.1 billion in 2016 to more than $203 billion by 2020, with a CAGR of 11.7%. This growth is also clearly reflected in the job market, with increasing demand for skilled data science talent across almost all industry sectors.

Today, the demand for analysed data far surpluses availability. The amount of data generated continues to increase at a rate so fast that businesses and organisations must adapt quickly, or risk becoming obsolete. Consequently, the surge in consumer-driven technologies directly corresponds to the increase in consumer demand for more sophisticated Omni-channel experiences. Therefore, it is imperative to leverage on performance and consumer-based analytics to thrive in this digital age to stay ahead of competition.

How is data analytics involved in this consumption evolution? Consumption patterns have evolved rapidly with technological disruption, and this means that relying on traditional consumer habit tracking parameters is no longer sufficient to facilitate important decision making. In this, data analytics can prove useful in helping businesses and organisations keep track of shifts in consumer behaviour that can serve as vital performance markers such as efficiency, saliency, resonance, effectiveness, and productivity.

Therefore, the crux of the matter is no longer just about demand for basic data tracking and analysis, but the inclusions of behaviours and correlations delivered through self-served analytical tools that can empower users with insights to make more informed decisions, faster.

Indeed, development in the field of data analytics has begun to yield early signs of leading-edge tools that serve this concept with the inclusion of artificial intelligence and machine learning. Following this trajectory, predictive analytics will become mainstream in the future, delivered by secure user-driven smart automation.

Introducing DATAVLT

The Future of Behavioural Analytics for Evolving Businesses

Regardless of the type of economy, consumers drive the demand for goods and services globally. With the exacting demands of today's marketplace, it is vital to be able to interpret, analyse, integrate and correlate data to track meaningful trends, patterns and behaviours.

Introducing DATAVLT – the on-demand, self-service, behavioural analytics platform that tracks, analyses, integrates and correlates data, enabling users to make more informed business decisions. DATAVLT aims to empower businesses by providing democratised data to those who are looking to grow internal capabilities cost efficiently. Essentially, DATAVLT is an end-to-end data/information management platform.

DATAVLT primary focus is on consumer behaviour that draws basic data using parameters derived from fields such as economics, sociology, and anthropology. Correlating the data with behavioural inputs like profiling, tonality, and sentiment, allows for deeper and more meaningful analysis of the data, because these parameters have the potential to create an infinite number of analytical scenarios that goes beyond primary utility tracking.

Below are just few examples of real-world applications that can benefit from the insights drawn from behavioural analytics:

- tailored consumer experiences
- highly targeted communications
- focused and efficient resolution of customer service issues
- risk management: threat and potential challenge detection
- intimate understanding of customers/consumers for segmentation
- insights into consumer preferences for different types of products and services

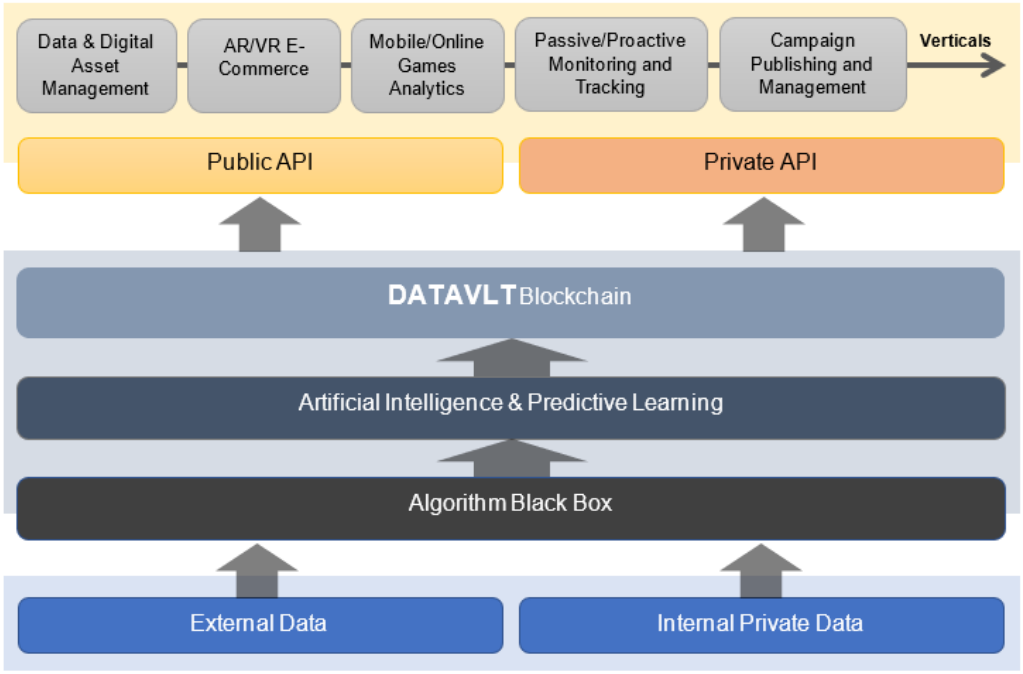
Explaining DATAVLT

DATAVLT acknowledges the potential polymorphic capabilities of the Blockchain technology and will be leveraging its decentralised framework mainly on data exchanges to ensure auditable and accountable processing trails. The utility of this approach is scalable and can support volumes from small to large businesses and organisations.

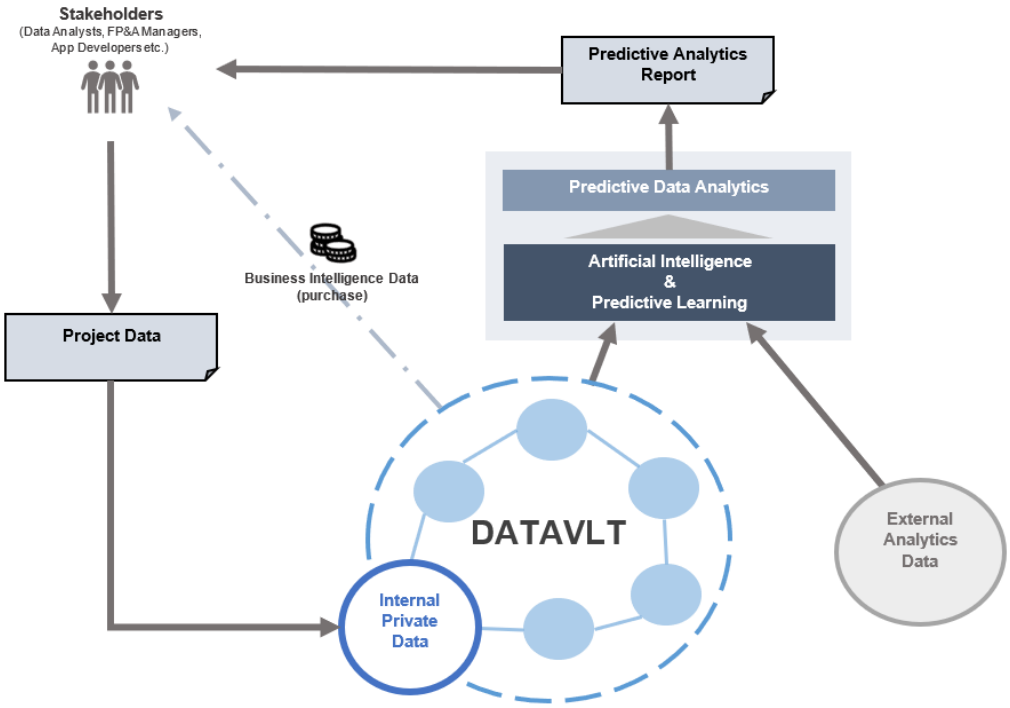
Essentially, the DATAVLT platform aims to drive cost efficiency by providing affordable data analytics services. In turn, businesses and organisations, especially SMEs, do not need to be incapacitated by heavy investments into backend technical infrastructures and data science talents.

The DATAVLT data processes are driven by artificial intelligence and machine learning. This symbiosis between big data, analytics and the users provide a secured and structured approach to analysing to data.

Overall Data Processing Framework



An example of a User Interfacing Scenario



With the DATAVLT service ecosystem, users can independently access the platform and procure additional consumer behavioural related intelligence, if desired. This aspect of data mining will be facilitated by AI, with data sourced and correlated for from relevant external parties (example: Google Analytics, App Annie, etc.) and regulated internal data.

DATAVLT *on Blockchain*

Blockchain Platform - Ethereum

Blockchain technology allows for disintermediation, enhanced security, efficiency and scalability because;

- ✓ Immutability – A third party cannot make any changes to data.
- ✓ Corruption & tamper proof – Apps are based on a network formed around the principle of consensus, making censorship impossible.
- ✓ Secure – With no central point of failure and secured with cryptography, applications are well protected against hacks, attacks and fraudulent activities.
- ✓ Zero downtime – Apps never go down and can never be switched off.
- ✓ Smart contracts – Smart contracts is a phrase used to describe computer code that can facilitate the exchange of content, property, shares, money, or anything of value. When running on Blockchain, smart contract is a self-operating computer programme that automatically executes when specific conditions are met and it runs exactly as programmed without any possibility of censorship, downtime, fraud or third party interference.
- ✓ Decentralized App (DApps), Storage (IPFS), Communication Platforms, Spatial Database and non-relationship database

• Advantages of the Distributed Ledger

Blockchain will be leveraged upon to provide enhanced security for any sensitive information, for example enterprise data. The DATAVLT digital ledger will ensure data integrity which minimizes the probability of data manipulation from external sources. These types of sensitive data will be stored in the Blockchain within their unique specific vertical keys without compromising trust.

Similarly, generic data will be stored in the public Blockchain to specific vertical keys to differentiate them from the private ones. Examples of generic data includes information available from the internet, social media networks, forums, studies, reports, statistics - economic performance trends, demographics reports, etc.
Overall, this approach will enhance security and ensure data trust in any scenario. Additionally, DATAVLT will be processing AI and PL within the Ethereum Blockchain system.

• Reasons for Utilising Ethereum

Ethereum has the capability of processing more than 25 transactions per second. It uses Ether to motivate a network of peers to validate transactions, secure the network and achieve consensus about what exists and what has occurred – thus enabling a smart contract to run in Ethereum. The “Ethereum Virtual Machine” (EVM) is where the smart contracts run in. It provides a more

expressive and complete coding language for scripting and Turing – meaning that it can encode any computation that can be conceivably carried out.

What is Ether? *Ether is a necessary element — a fuel — for operating the distributed application platform Ethereum. It is a form of payment made by the clients of the platform to the machines executing the requested operations. To put it another way, ether is the incentive ensuring that developers write quality applications (wasteful code costs more), and that the network remains healthy (people are compensated for their contributed resources). Source: https://ethereum.org*

- Systemised Security

One of the main benefits of using Ethereum is the way it works - where every participant is a client and a server at the same time. Compared to other networks (where the entire network is handled by a single server entity), the Ethereum network is far more resilient because its decentralized architecture reduces its vulnerability to potential hacks and attacks that can exploit single points of weaknesses.

The Ethereum decentralised network currently resists such challenges with potentially zero downtime, even if parts of the network were to go down. The transaction log becomes robust as the integrity of the data is verified, stored and protected. Records, that can be accessed by anyone on the network, are easily traceable and virtually unalterable. Inbuilt checks and balances also ensure that transactions are near 100% accurate.

With the inner transactions executing and verifying output/s, and distributing the values between participants by itself, there is no need for separate Blockchains for each application or have costly central administrative processes for monitoring and execution these transactions.

- Smart Contracts as a Service (SCaaS)

One of the advantages of SCaaS, due to Blockchain, is the non-requirement for intermediaries (middlemen) because of the decentralised system between all permitted parties. This saves time and prevents conflict. Blockchains are rated, faster, more secure and cost efficient as compared to traditional methods.

Basically, smart contracts are account holding objects. They contain code functions that allows interaction with other contracts, make decisions, store data, and send Ether to others. Contracts are defined by their creators, but their execution, and by extension the services they offer, is provided by the Ethereum network itself. Therefore, Blockchain is perfect for producers of sophisticated autonomous systems as this provides users opportunities and accountability that did not exist before, as all actions are registered in algorithmic language. If an incident should arise, smart-contracts, together with the indications of sensors will help to determine who—an automated system or a person—is culpable.

Sources, Processing and Outputs

Some of the basic kinds of data that DATAVLT works with include:

- Enterprise/static data (information held by companies and organisations)
- External data (available from the web and/or any other 3rd-party sources)
- Data that tracks user consumption, communication and behaviour pattern

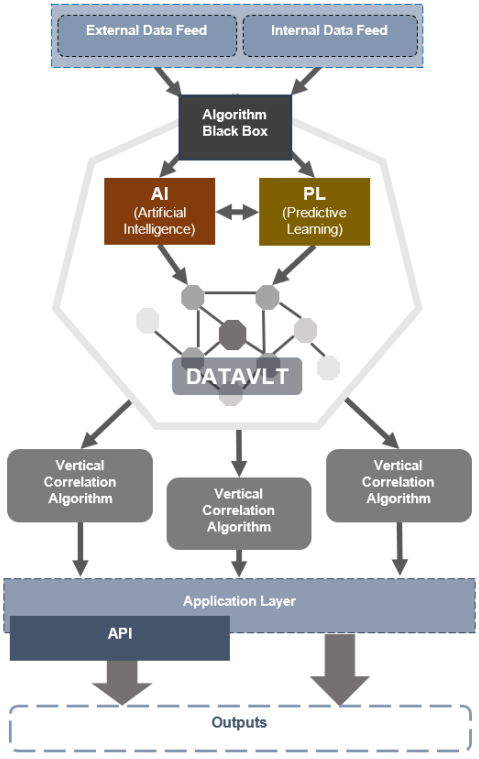
Data will be parsed through the DATAVLT Algorithm Black Box and AI will sort, unclutter and reject duplicitous and dubious data. To ensure that the data is unaltered by external influences, the data is securely ledgered and distributed into the DATAVLT Blockchain. The Learning module will analyse the data trends, patterns, behaviours and compare them against current and historical data.

From this comparison, the system will predict and/or forecast, recommend remedial actions or alert the user based on their preferences and requirements. With auditable trails, structured big data allows for AI processing to build and provide more accurate and trustworthy analytical assessment of information.

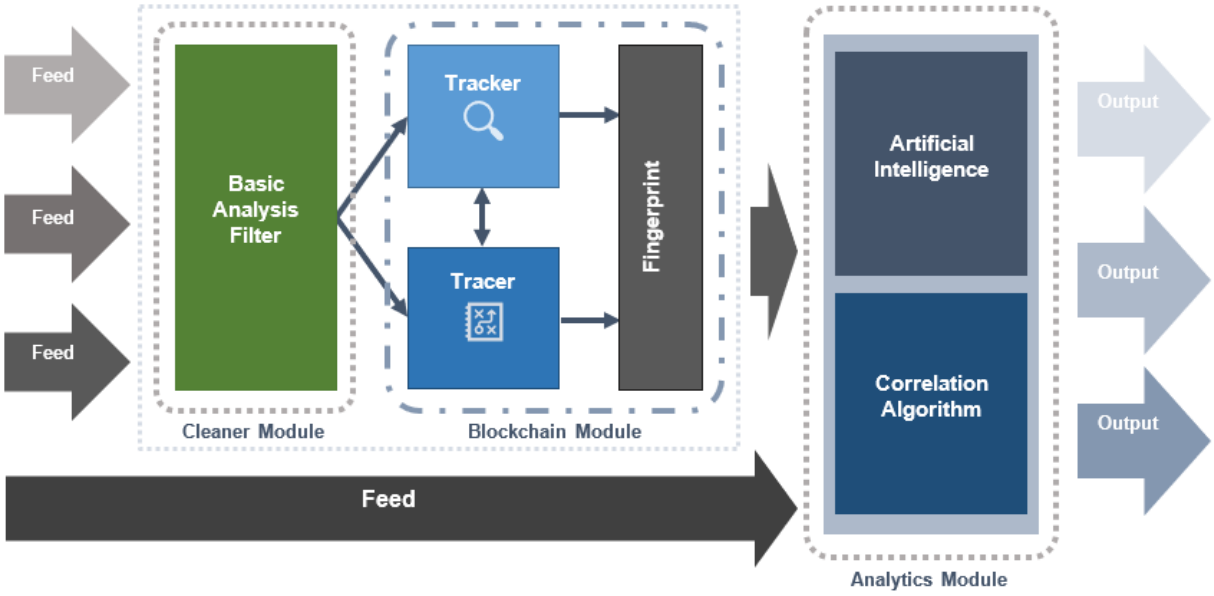
Over time and with improvements to artificial learning, quality of analysed data will improve and this facilitates for more informed strategic decision making. In contrast, an AI built on limited resources and unstructured data will not reap the same benefits.

The DATAVLT goal is to continuously evolve the possible combinations of data sources and parameters of intelligence into domain specific correlation algorithms, transforming them into validated information for different vertical outputs.

Overview of Data Refinement Processing



Overview of the DATAVLT Black Box Process



- Length and Depth of Data

DATAVLT utilizes a multi-tier analytics architecture designed to integrate and enrich information across disparate sources. It can analyse a broad range of data sources – both structured and unstructured.

Upon receiving data, DATAVLT will perform a core analysis in the basic filter to discover issues such as defaulted data, missing values or duplicated feeds. These filtered data are then parsed into our Tracker and Trace Modules to further refine the accuracy and completeness.

> Tracker Module – Measures the "length" of the data such as discrete and categorical data, like frequency, utility, sales, location and pattern-based information- data that is more likely to be structured.
>
> Tracer Module – Measures the "depth" of continuous qualitative data, which include data such as preferences, sentiments, tonality, and feedback - data that is more likely to be unstructured data.

To ensure quality and consistency of the data, metadata of the cleansed data is fingerprinted and distributed across the blockchain repository.

- Output - More Intuitive, Smarter Analytics Experience

The complexity of DATAVLT provides customisable parameters to meet the needs of different users, industries and applications. Data can be collected from various internal and externals streams and presented in a timely and meaningful way. This is because the user's requirements can be learned and determined by usage patterns and data consumption behaviours.

The DATAVLT *Token* (DVT)

DATAVLT will launch a utility-token (DVT) that allows for both traditional fiat currency and cryptocurrency enabled purchases of services. The valuation growth for the DATAVLT token is highly reliant on the data transactions that will occur during analytics processes and delivery. Based on the increasing demand for enterprise quality information and insights, the data analytics industry is set for exponential growth.

There are the main ways to purchase DVT tokens:

a) from major exchanges that DVT will be listed on, and
b) direct purchase from DATAVLT

Regardless of method of purchase, DATAVLT tokens will all have the same usage parameters on our service platform for services rendered.

Verticals (Plug-Ins) and Use Case Scenarios

1. Augmented (AR) / Virtual Reality (VR) Tool

- Commercial application of AR/VR

  Commercial entities such as Dior, MacDonald's, Alibaba have taken the lead with their digital experiential efforts through VR. It garnered immerse interest and established footprints in VR shopping. Besides VR, Swedish furniture giant IKEA also ventured into AR and piloted a product catalogue with related features. As the complexities of VR/AR application increase and grow in content creation, thus, new challenges such as management of digital assets and collection of consumer behaviour analytics will arise.

  Aim: The DATAVLT Predictive Learning layer to chart insights based on consumer behaviour and preferences while using the VR/AR application.

Use Case Scenario

VR/AR App with DATAVLT as an Analytics Tool

For example, in a use-case scenario of a Real-Estate VR application, property developers can develop a virtual tour for prospective buyers. In this virtual tour, buyers are encouraged to walk-through different spatial designs with customized fittings to gather intelligence into preference and sentiment.

By making such a platform available to property developers, meaningful insights can be gained from potential buyers on their wants, needs and preferences. Progressively, DATAVLT can benchmark historical data against new ones and chart a predictive analysis of local market behaviour.

The use of this tool can be applied to both pre- and mid-build scenarios. With intelligence gathered, property developers can:

- Study the virtual apartment units' visitation patterns of prospective property buyers to gauge the popularity and suggest pricing categories for property developers and resellers.
- Understand client preferences and needs – better spatial planning with capabilities to customize or zoom in to details such as fixtures, lightings, paintwork, flooring etc.
- Compare historical property data and pricing to determine property value projections based on local and regional developments.
- For highly individualised custom builds, a ledger of details and specifications can be used as a reference to reduce the chances of mistakes or miscommunications.

VR/AR App with DATAVLT as a Management Tool

- Tracking Consumer Behaviour – chart consumer habits and preferences through predictive analytics assisted by the AI and Machine Learning layer.
- Digital asset tracking and management – manage and track 3D asset ownership and revisions.
- Data securitization and Intellectual Property protection - Intellectual properties such as 3D geometries, texture materials will be secured with encryption. Digital assets cannot be data mined from the application nor intercepted over the network.
- Reusability and portability of digital assets - 3D assets can be dynamically assigned and efficiently reused for multiple projects/platform the DATAVLT ecosystem. Revisions can be reflected across the board in real time without the need of re-compilation of application.

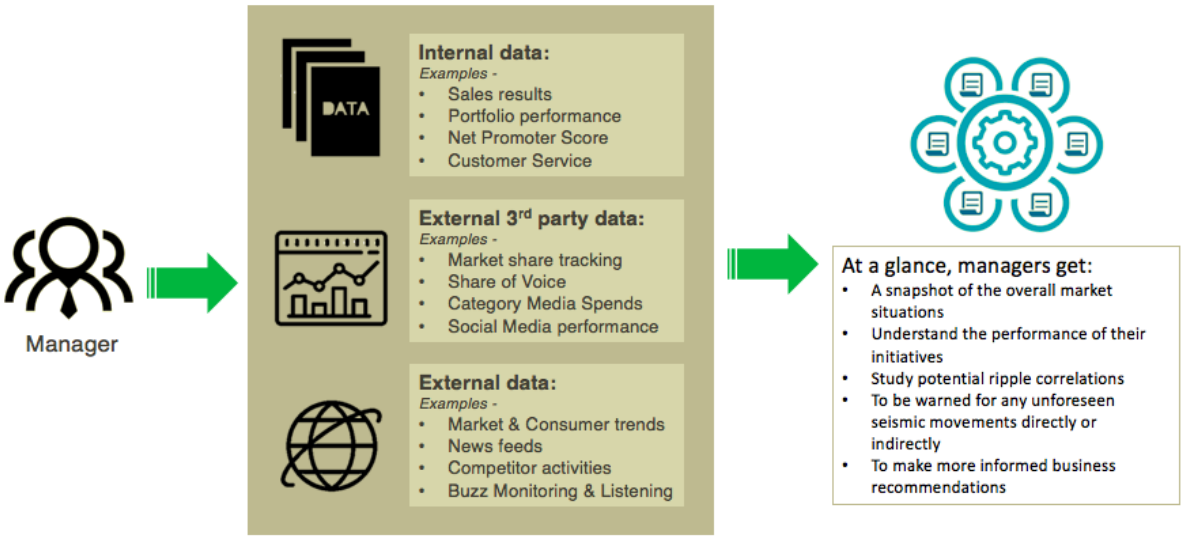
2. Brand to Business Analytics Management Tool

Like the fundamentals and approach in the previous vertical, the key propositions that the DATAVLT tool can provide for this vertical is collation, correlation and integration.

Current day data analysis tools that businesses and organisations use are not necessarily integrated. This means different non-related nor connected tools are used to produce various types of data analysis and are subsequently brought together by different teams responsible only for their pillars of information. Although such practises are common, there needs to be more efficient methodologies for such processes.

The differentiated offering that the DATAVLT platform provides is the optimization of processes by data source pulling and integrating multiple feeds into a common dashboard that has collated insights and potentially perform meaningful correlations.

Example of the DATAVLT 'Dash-boarding' Process



With time, the DATAVLT dashboard will learn to refine its data correlation searches to present the user with more pertinent information. Artificial intelligence will have learnt the user's preference of data type consumed within the parameters of time, type and frequency.

3. Monitoring and Tracking Analytics Tool

Digital influencing and cyber threats are real-world issues and affects many businesses, organisations and individuals daily. Like the fundamentals and approach described in the previous verticals, online monitoring and tracking needs to be more robust compared to current market capabilities.

With DATAVLT, the focus does not depend solely on the concept of buzz (frequency of mentions) but also the integration of other parameters into the analysis:

- Clout via Cluster monitoring approach
- Behavioural mapping and trend monitoring
- Influencer monitoring
  - frequency over time vs topic and agenda/topic mentions
  - Clout
- Sentiments (up to 80% accuracy – proprietary algorithm)
- Trackable digital footprints

With these data collected and correlated over time, the benefit is the potential ability to foresee and resolve potential issues, challenges and even threats before it escalates to a major event. Businesses and organisations may be able to save themselves from reputation damage or costly mitigations.

This tool can be used and applied to various functions, example: marketing, customer service, real-time services (example, transportation), threat monitoring, etc.

4. Online & Mobile Games Customer Service Analytics Tool

Online and mobile games are one of the most competitive and fastest growing gaming platforms in the industry. Game developers and publishers are required to pull all the stops to keep users playing and supporting the game. Heavy investments have been made to gather game analytics, statistics and consumer behavioural patterns. This information helps the developers to plan, adjust and shape the game towards customer needs and wants.

However, the biggest challenge, to date, is to gather data on Player Satisfaction which is one of the key performance indicators for any successful game. These types of data come from a mix of moderated and unmoderated sources such as:

Moderated

- Customer Service email
- In-game customer service
- Official game forums

Unmoderated

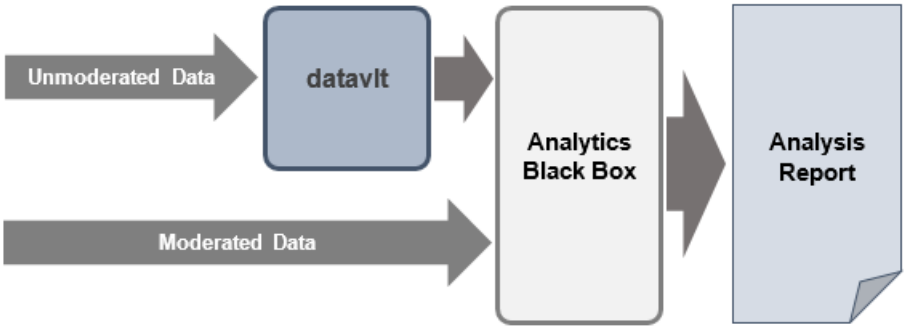
- External forums (e.g. Reddit, fan-forums)
- Game reviews (both fan-based and community driven)
- Social media (e.g. Twitter, Facebook, Discord)

Gathering unmoderated data is difficult as it is mostly fragmented and fraught with “noise” – internet chatter. Additionally, these types of data increase complexity as it is susceptible to manipulation, like acts of trolling, fake reviews, etc. Most companies rely mainly on human intervention to sift out usable data from unmoderated sources. It is a tedious and laborious manual process.

Use Case Scenario

Games Customer Service serves as a bridge between the players and the game developer/publisher. This interaction with players allows developers/publishers to build trust and rapport, and gather instant feedback on their products.

To efficiently sift out abnormal incidents, an analytic tool can be developed to sniff moderated data. However, the challenge remains for unmoderated sources. Most common analytics methodologies are unable to convert these data into a meaningful Player Satisfaction insights. In general, developers/ publishers depend on weekly reports from the customer service and/or social media teams to detect data anomalies. By the time it has taken to discover, any small issue or incidents may have evolved into an unwarranted user backlash because of late or no resolution, or attention.



The DATAVLT system is incorporated with AI and Machine Learning to handle the situation described. It can parse both moderated and unmoderated into meaningful data and fingerprint them into a distributed ledger. From this distributed ledger, AI can identify the anomalies, such as early-stage detection of unusually large amounts of similar complaints, from the game community and alert customer service and development teams for remedial actions. The DATAVLT platform can automate and simplify this manual and laborious task, and potentially refocus the efforts of immediate teams on more important matters.

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