



Whitepaper

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How Can Smart Companies Mitigate Losses And Increase Productivity By Tapping Into Under-Used Data

July, 2020

Authtrail.com



This whitepaper presents the way to mitigate common negative consequences of bad data management in companies with digitized operations. By organizing and optimizing the in-house data and its management, organizations can reduce unnecessary operational drawbacks while improving on process quality, without the need to heavily invest into more digitization, new software or data experts.

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1. Introduction

Digitized companies currently utilize multiple data management systems, such as ERP, CRM, MES, among others. However, when lacking complete data oversight across all segments, they are losing on productivity, even revenue and profits. Data is scattered across multiple systems and silos, which makes it hard to locate specific information. Sales teams in particular have a difficult time gathering, organizing, and sharing data with clients and partners. Proving compliance could be a daunting and time-consuming task which could cost businesses some important deals but also incur avoidable penalties.

2. Bad data management impedes productivity and growth

In daily operations, smart companies, manufacturers, factories, and other digital-first organizations gather a massive amount of data. From the production line to the sales team, employees deal with sensitive information regarding their products, orders, compliance, and certificates.

” Unreliable data and its inefficient management could cost companies up to 15-25% of yearly revenue.

- Research by MIT Sloan

The sheer amount of data carries inherent issues. These can manifest as either a quantitative or qualitative impediment to a healthy flow of operations. When an organization finds itself dealing with one of the following scenarios, it could be that its data is not managed well.

Signs of bad data management

- Difficulty locating missing information and moving it from one department to another or outside the organization
- Too much time spent on administrative tasks and/or inability to react to a demand on time, which creates costly delays, even avoidable penalties
- Lack of actionable insights and analyzable data
- Data scattered across multiple servers in various formats, local drives, and other data silos
- Inconsistency of the same data entry across different sources which requires a manual check for inaccuracies and errors
- Missed sales and partnership opportunities due to inconsistent reports, delays, and lack of transparency

Structural organization of data across departments is but a starting point. For data to provide the highest value for a company, it should also be strong on quality and integrity.

What is data integrity?

Data integrity refers to the accuracy and consistency or validity of data throughout its lifecycle.

It is essential that digitized companies, production lines, departments, and all stakeholders establish and maintain the integrity of their data, for several reasons:

- Data can be sourced and traced to its origin easily
- Data can be recovered and inspected at any moment
- Data can be linked to its source, product, issuer, date, location, and other metadata
- Data, from its raw format to more structured form, can be trusted enough to drive enterprise decision-making

- Data can be shared in a controlled way with customers, partners or regulators

Various systems can be put in place to protect the existence and validity of data. However, its integrity may still be jeopardized through transfer errors and human negligence, bugs, viruses, malware, or compromised hardware.

It is therefore crucial that data validity relies on an integrity-by-design system that takes all those threats into account and implements robust mechanisms against hacks and unauthorized edits before they could occur.

3. Trusted data is beneficial for all industries

Transparency of data and traceability of orders have moved from being an advantage to becoming a norm. The ability to provide shareable and trusted data has thus become a cornerstone of solid business relationships. But data verification and proving data integrity is a challenge.

This is especially the case in technologically highly advanced sectors, such as the aerospace and aeronautical industry, automotive and robotics, production of electrical and electronic equipment, high-value products, in fintech, energy, and others. These fields are dealing with advanced materials, state-of-the-art technologies and invaluable IP, where all processes, components, as well as the final product, must be tested against various factors.

Despite advanced technology fueling these sectors, too often, their data is managed in a time-consuming, even paper-based manner, unlinked from the complete supply and production chain.

This makes it difficult for companies to exchange information at every stage of the process. It prolongs backtracking of data authenticity to days or even weeks and limits the possibilities of fast yet effective quality and safety inspection across the supply chain.

By optimizing data management and leveraging built-in data integrity, businesses can enhance their processes and mitigate unnecessary losses. Following are some of the prevalent advantages of well-organized data in both B2B and B2C companies.

Business to business (B2B)

- Straightforward and reliable track&trace of components and products
- Easy verification of data, documents, processes, components and products
- Increased productivity through faster and interconnected value chain
- Organized and shareable data and documentation on a single location
- Lower risk of penalties due to easy verification of regulatory compliance

Business to customer (B2C)

- Increased trust in brand's offer
- Faster response to customer demands
- Increased productivity due to connected and reliable data
- Prevention of brand counterfeits and protection of its authenticity
- Product verification through digital footprint
- Customer oversight of complete process
- Prevention of unauthorized data edits

In summary, the main benefits of optimized data management within a digitized organization are:

1. Increased **transparency** and clearer oversight across complete process
2. Higher overall **productivity** and efficiency of teams efforts
3. Better foundation for solid business partnerships and higher **competitiveness**

4. Authtrail smart data management

Authtrail is a smart data management platform that responds to the common challenges of digitized organizations: siloed data, inefficient practices, and hard-to-prove authenticity of the information.

How does Authtrail work?

Authtrail respects the SOP (standard operating procedures) of an organization and works with what is already in use for handling the data. This way, the company does not have to worry about replacing or upgrading the existing systems.

There are three core steps in the process of Authtrail implementation into any existing system:

1. Data aggregation & organization

Authtrail connects to various data systems of an organization, including ERP, CRM, DMS, machine data repositories, etc. From there, it gathers all data and related documentation and links it all to a single, centralized, manageable location.

Authtrail works with all kinds of information: business data, machine data, production line data, either structured or unstructured data in a variety of formats.

All data and documentation remains where it is as it doesn't leave its original location during the process. What Authtrail gathers instead are data relations and record indexes, created from original data and documentation, especially for this purpose.

2. Adding metadata & sealing of data entries

Once data is indexed, Authtrail adds metadata to every data entry. The record of time,

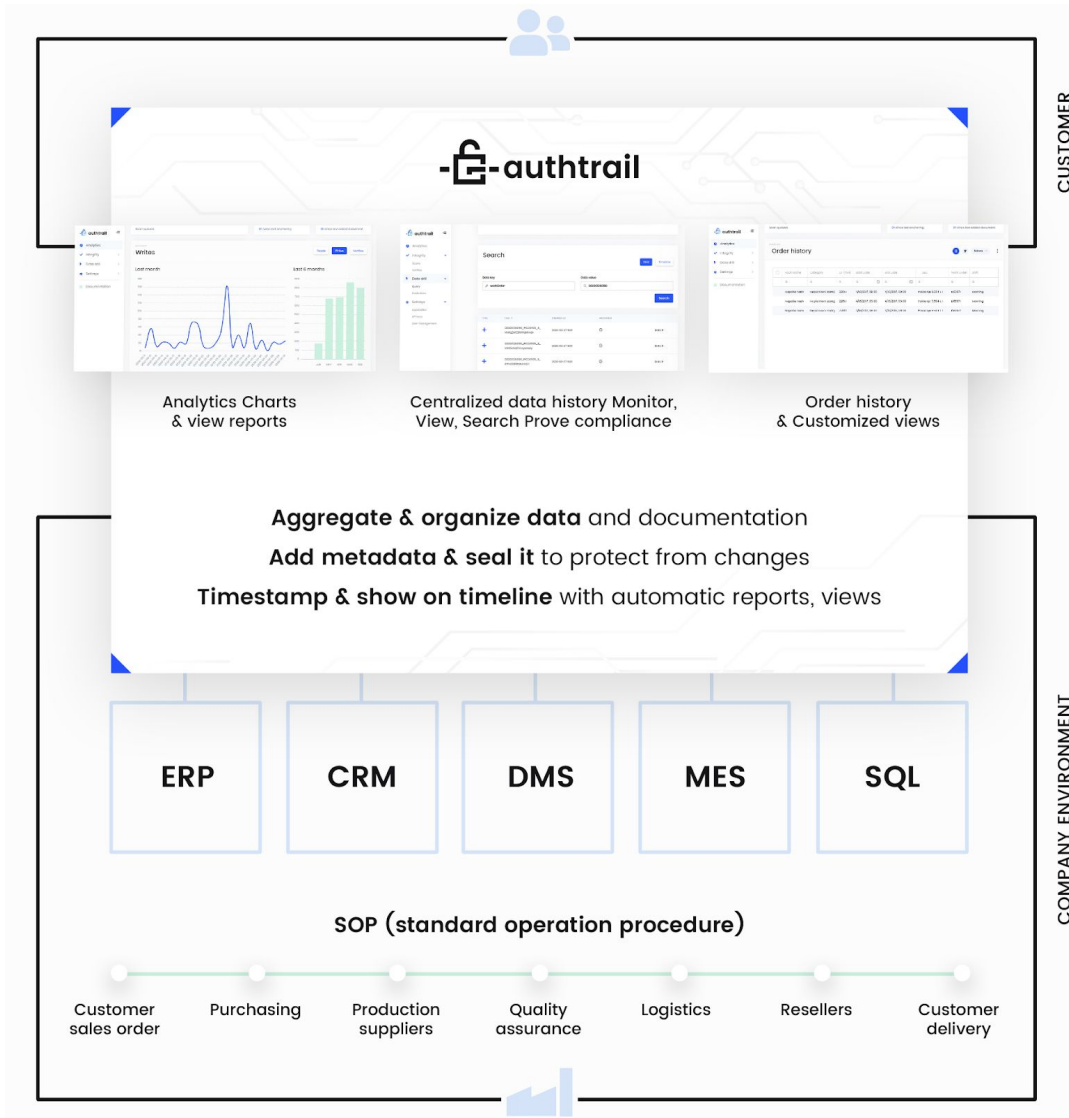
location, and source of each data value is especially useful for future inspection and verification.

Each data entry is then sealed with a data fingerprint (hash) created using the blockchain technology. This protects it from unauthorized edits and allows it to be checked for authenticity when needed.

3. Timestamping & presentation on timeline

Lastly, every data entry is time-stamped and organized on a chronological data registry, a part of a more extensive Authtrail dashboard.

This layout provides a clear overview of data history and validity throughout its lifecycle. By selecting the relevant data, its owner can share it with customers, partners, or regulators, so they can easily yet effectively verify claims through facts.



Structure of Authtrail data management system

5. Technologies used in Authtrail

From the technology standpoint, the complete Authtrail system consists of three core parts:

1. Integration: Various connectors

Authtrail is highly adaptable when it comes to connectivity to data sources and silos of all formats and sizes.

Integration can be done in multiple ways: via web service or APIs, directly with database, folder, or file anywhere in the system or on the web.

Authtrail is not technically limited to the type of integration nor to the type of data that it can access, aggregate and manage.

2. Protection: Blockchain technology

To ensure authenticity and integrity of data and to protect it from unauthorized or unrecorded changes, Authtrail uses the blockchain technology (distributed ledger technology or DLT) and data hashing functions.

With Authtrail, every original data entry is converted to a hash (fingerprint), a unique string of characters, created through a mathematical function to identify particular data. Multiple hashes form a Merkle tree of linked data, and the complete set of hashed data entries is then registered onto the distributed network of nodes or blockchain. Connecting a hash to the original data entry is essential for proving data integrity.

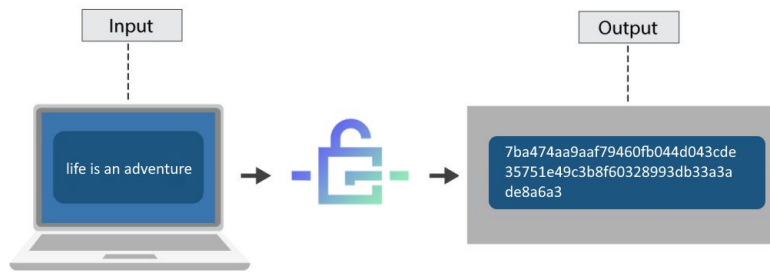


Image 2: Example of hashing a random data entry

The blockchain technology protects the data, its authenticity and immutability, in two ways:

- **Cryptographically:** Data is sealed through cryptographic data hashing functions. Authtrail uses the publicly available SHA-256 hashing algorithm.
- **Structurally:** Blockchain is immutable by design, and once data is inscribed onto a data block and confirmed by the network of ledgers, it cannot be changed or deleted and provides a permanent record of data entry.

The Authtrail platform is DLT-network-independent. Currently, it is leveraging the Ethereum public blockchain network. However, other or more DLT networks can be added to the Authtrail ecosystem.

This provides more options for clients who would prefer other networks or perhaps a private one for managing their data.

3. Organization and sharing: Web interface

To allow an accessible overview, verification, and smooth use of data to every stakeholder, all data must be shown in a straightforward and user-friendly manner.

Authtrail's advanced web interface and intuitive dashboard provide an array of functionalities for inspecting and checking data and documentation. Having all the relevant information from all segments gathered chronologically on a single point of reference means

a clearer understanding of internal and external processes, faster actions, and overall higher productivity of all departments.

The Authtrail web interface and Authtrail Public Explorer represent the core data access points for the company and its customers. The views and access rights can be adjusted depending on the role, authority and time limits.

Authtrail allows further customization based on company needs, with features such as different data views, reports, or implementation of third-party business solutions (e. g., Power BI). This way, organizations can add versatility to how they source and manage trusted data without the need to reinvent their current processes.

6. Easy integration and customized solution

Managing the vast quantities of data can be a daunting task, especially taking into account all the departments, storages, formats, and systems that, too often, only provide a niche solution without connectivity to other systems.

By organizing and adding value to what is already in place, Authtrail introduces a new concept of cutting the Gordian knot of managing data within digitized processes. It gathers data from all sources under one roof, which does not disrupt the current operations but rather incentivizes connectivity, sharing and transparency of data, both internally and externally.

Authtrail is a subscription-based solution. To set up the optimal version for every client, the Authtrail team researches their needs through workshops and meetings. Within a month, the smart data management system by Authtrail is put in place via remote integration.

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