

Wielding the double-edged sword of data



An introduction to data
integrity with Kensei

NChain

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*“Where there is data smoke,
there is a business fire.”*

Thomas Redman

The unspoken truth is that nearly every enterprise, including yours, relies on data that is provably unreliable. Blind faith in questionable data has become standard business practice.

Like data itself, the consequences are growing at an incredible rate.

Drowning in data

For enterprises in every sector, the value of data is unquestionable. However, the rate at which they are capturing it and stockpiling has made unlocking that value untenable. Most of the those vast oceans of enterprise data are unstructured, making it almost impossible and certainly very costly to adequately process and manage it.

Poor quality data is not only a financial risk, it can also severely impact the productivity of an organisation. Forrester reported that 1/3 of analysts spends 40% of their time vetting and validating data before it can be used.¹ On the flip side, insights derived from consistent data become the backbone of value-creating business decisions.

The conclusions we draw from data can only be as good as our confidence that the data we are using has not been compromised through human error, accidental mismanagement, or malicious activity.

While amassing data is trivial, trusting that data is anything but trivial. The problem is escalating much faster than purported solutions. Each year, enterprises become more entrenched in their existing, albeit inadequate, data systems. So it is no surprise that 95% of businesses cite unstructured data as one of their key challenges.²

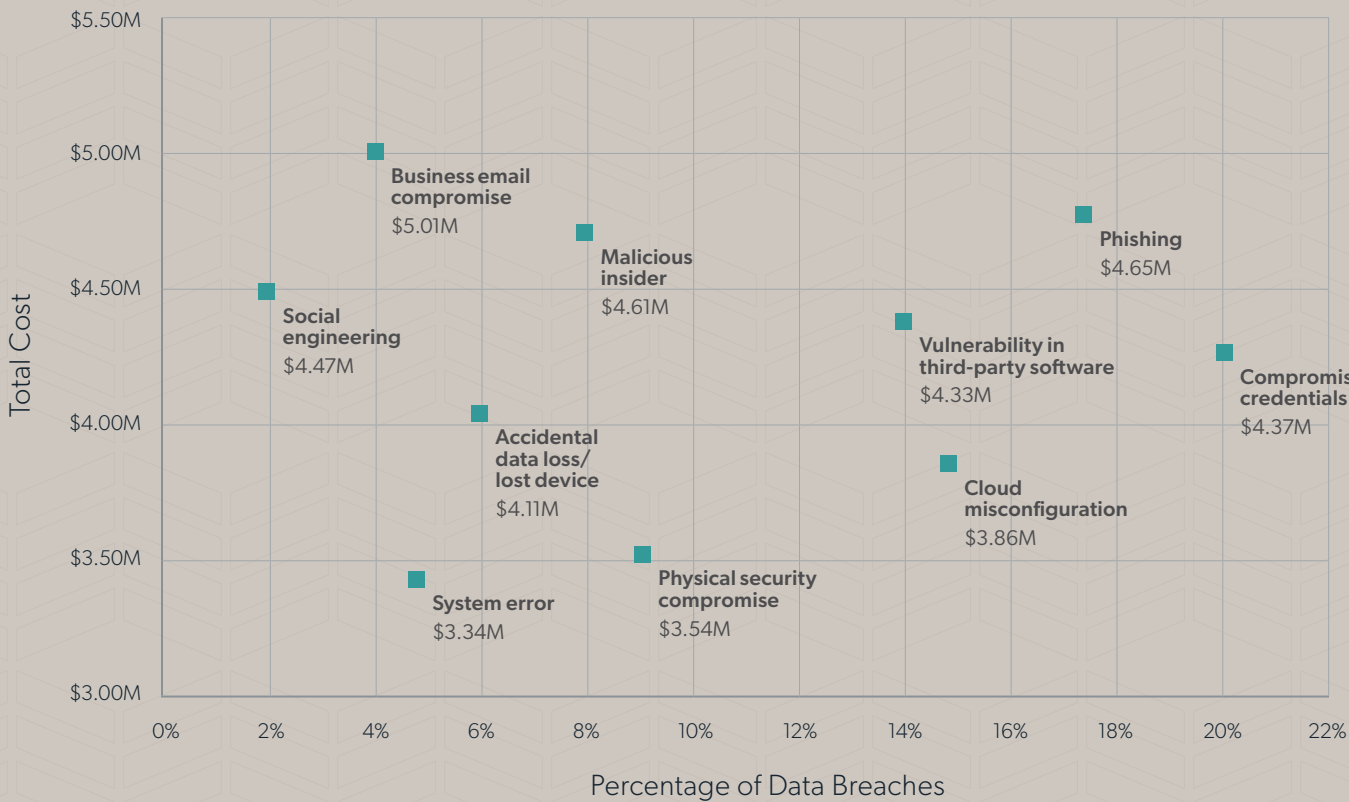
With every major headline of fraud, data breach, and costly human error, pressure grows to solve these challenges. This includes public pressure, but also regulatory and compliance pressure that is certainly not going away. Today’s tools solve neither. Enterprises already know the value of data, but now we are all learning just how invaluable data integrity is. See this depicted in the chart on the opposite page.

Rather than trying to retrofit existing tools with new data integrity solutions, as many in the space are, the enterprises that will capitalise most on new realities will be those who seek novel solutions built for the world ahead.

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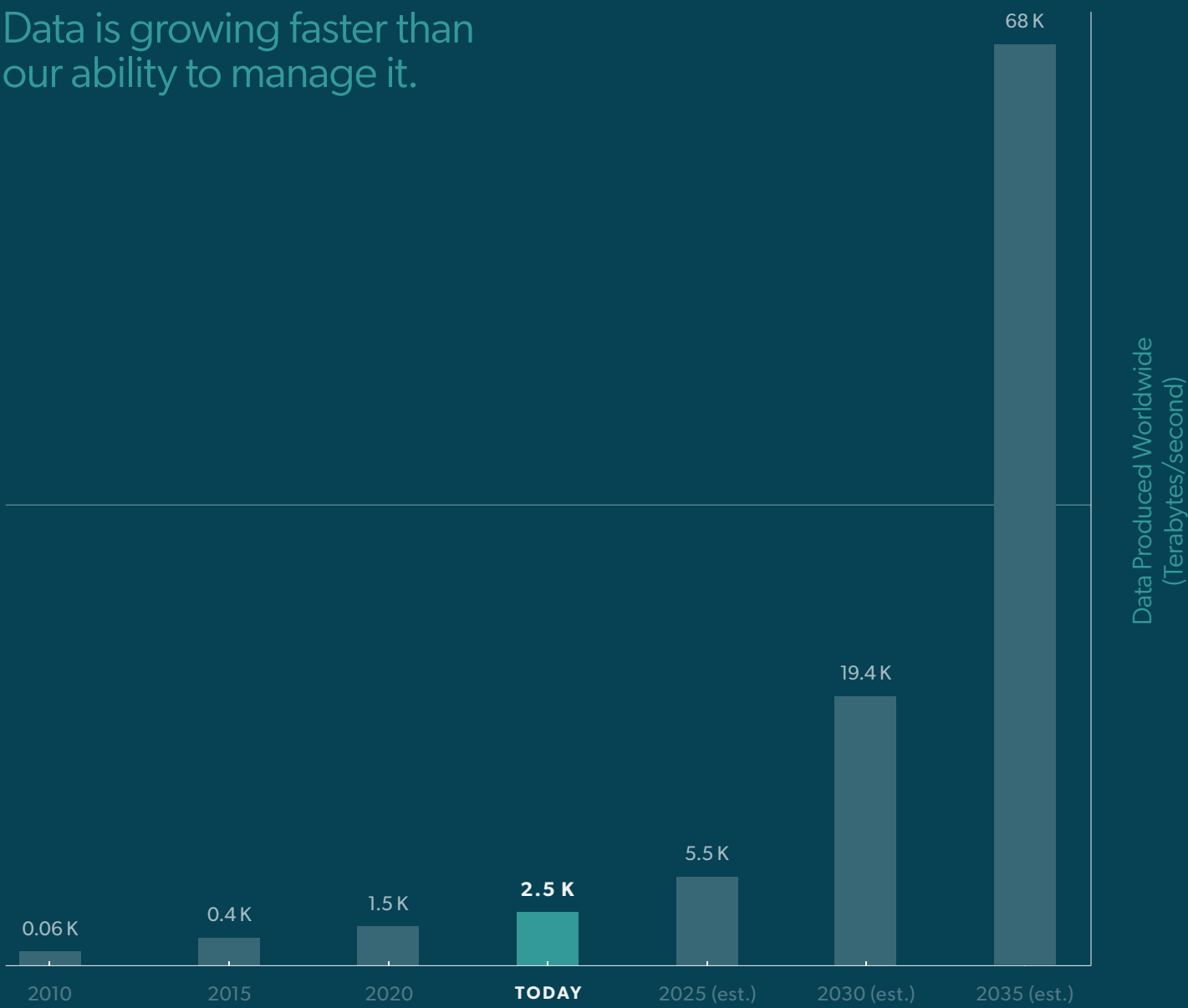
1. Forrester - Data Performance Management is Essential, 2018
2. Forbes - Big Data Goes Big, 2019

Average cost and attack vector frequency of 537 major enterprise data breaches in 2021



(IBM Security – Cost of a Data Breach Report, 2021)

Data is growing faster than our ability to manage it.



Data is double-edged.
It can create value or become your greatest risk.

(Raconteur – A Day in Data)

What is data integrity?

Data integrity means records are not corrupted in any way throughout their entire existence. For a system to have data integrity, it needs incorruptible transparency into how data is created, changed, transferred and deleted, and by whom.

That transparency must be available to key users and third-party verifiable to ensure systems remain trusted over time.

Historically, every system has required trust between human parties, e.g., private databases, permissioned servers and admin accounts. These trust-based systems are corruptible on both a human and technological level, and are therefore nearly impossible to effectively audit.



Every threat to data integrity creates the same uncertainty

*How can I know that
the data I'm retrieving
is the data that was
originally stored?*

Overcoming data integrity threats with Kensei

Kensei represents a powerful way to provide clarity and confidence with provable data integrity.

The Kensei platform is an infinitely scalable, independently auditable data verification tool that integrates existing data streams to provide insight, analysis and computation.

Data integrity is mission critical and one of the most fundamental challenges of our time. That is why Kensei has been designed as a foundational solution to the key challenges of data mismanagement.

Business data that is underpinned by Kensei becomes more valuable. Its source is irrefutably recorded, it cannot be tampered with and it can be independently verified, all of which give it true integrity.

Whether threats come from accidental human error, illegal activity, hardware failure, digital viruses, file corruption in transfer or any other source, the result is the same; distrust in data.

Kensei is a solution for all of those threats. As a blockchain product, it offers the unquestionable benefit of being a fundamentally immutable system. It provides cryptographic proof that any data retrieved is identical to the data originally stored.



Built on the only limitless blockchain

Kensei is built on the BSV Blockchain, the open blockchain protocol. It has no cap on transactions and requires no additional protocol development to enable limitless scaling. Both of these features are critical for enterprise businesses.

It is crucial to note that the cost of using Kensei services will never grow as network demand grows. This is due to how the BSV Blockchain scales the block size itself. Each new block requires the same amount of Proof of Work hashpower, whether it contains a billion

transactions or just one, making it a more sustainable protocol than others. The BSV Blockchain has achieved massive scaling, and yet there has never been, nor will there ever be any network downtime for maintenance or upgrade.

In short, Kensei is built on the only protocol that offers enterprises the benefits of open blockchain with no threats to future scalability. It operates at the scale of your ambition today and scales alongside your ambition tomorrow.



Wielding the double-edged sword of data

 **Bitcoin^{SV}**

***The BSV Blockchain
processes 2M+
transactions per day***

Putting Kensei to work for your business

Kensei enables you to ensure the consistency of data by leveraging two core attributes of blockchain: immutability and transparency.

Referencing data to and from the blockchain is not typically a simple process. However, Kensei removes the complexity and offers simple-to-use APIs that integrate into your products and workflows.

They offer you the strengths and advantages of blockchain without needing in-house blockchain developers.

The result is unquestionable data integrity that gives you confidence in your business and complete compliance for third party auditability.

Your business grows with Kensei

Not only does Kensei help reduce costs and manage risk, but it also enables you to open new revenue opportunities through tamper-proof data and computation. Best of all, it is simple to integrate today.



Explore our suite of products

The Kensei platform is defined as three distinct, but interrelated products. Each delivers data consistency, but for different workflows and complexities of data.

Customers of all three products receive extensive product documentation, onboarding, hands-on implementation and customer service.

Additionally, our account management portal gives you access to your products, real-time documentation, and activity logs, ensuring you are always in complete control of your data services.





Kensei Certify helps you reduce risk by ensuring the authenticity of business-critical data

The functionality is straightforward with the Kensei Certify Application Programming Interface. You simply select any piece of business data that you want to create a certifiable record of. This can be as simple as a single data point or as complex as entire documents, entire folders, or even, if needed, entire hard drives. Connected through the API, Kensei then creates a cryptographic hash of that data which gets written to the blockchain.

The hash contains no revealing information about the data or who it belongs to, ensuring privacy. However, it cryptographically guarantees that no other piece of data could possibly generate the same hash. So, in the future, if you want to verify the data as originally certified on chain, Kensei can use the same hashing algorithm to confirm the data is identical. Any change, no matter how small, would result in a completely different hash, alerting you immediately to any discrepancy.

Verification can be completed by the direct user, or can be completed by a third party, such as an auditing firm. They would be able to verify the data without revealing any of the contents of the data publicly.

Use cases



Document Notarisation

Kensei Certify allows you to create tamper-proof, trustworthy certificates that guarantee the integrity of your data. Certify can be used to transform existing databases into certified, verifiable portfolios.

Certificate Issuance

Official certificates, licenses, and other critical documents can be issued in a more reliable manner using Kensei Certify. Sensitive documents can be safely notarized and time-stamped, enabling low-friction and trustworthy downstream verification of official certificates by third-parties.





Use Kensei Connect to ensure the integrity of sequential documents and data by creating secure, unbreakable, tamper-proof logs.

It does this by understanding the sequence of when they were hashed on the blockchain, which can reveal very important insight and context. For instance, the version history of a document can be verified using Kensei Connect, by connecting multiple on-chain records. It would therefore be impossible for someone to suggest a fraudulent version at any point in the version history, as no on-chain record for it exists. Kensei Connect can function in one of two ways:

1. It can encode more casual connections, such as when the data was certified, giving clarity to what came before and immediately after the data. This can be useful for general record keeping and chronology.
2. It can also encode specific parent/child relationships in the data, so that new pieces of data hashed on the blockchain “point to” specific instances of prior data on chain. This has a myriad of applications, from banking and supply chain to payments.

Use cases



IoT Audit

With Kensei Connect, you can verify the integrity of IoT data and make data-driven decisions with the confidence that critical logs have been properly and correctly maintained. For larger IoT systems, this gives immediate clarity into system downtime, error and other complications.

Supply Chain Tracking

Integrating supply chains with Kensei Connect helps guarantee tamper-proof evidence trails and increases transparency among different stakeholders.

The API can aggregate data from multiple sources and give consumers full visibility of the life cycle of their purchases.



Banking

As Kensei Connect allows multiple events to be recorded simultaneously, it allows critical business functions, such as banking, to be completed without sequencing delay. This enables powerful workflows that benefit from greater data certainty while minimising processing errors.



Kensei Compute expands our Certify and Connect products by including the ability to verify computational consistency as well as data integrity.

This computational integrity not only guarantees that software inputs and outputs haven't been tampered with, but also that every operation performed by the programme is also tamper-free.

What that means is independent, third-party, trustless software running without interference or control by any centralised authority. Think of it as a modern cloud-native application runtime environment. Nearly any software application or function can be decentralised and run on chain with Kensei Compute.

Typically, software developers maintain direct or backdoor control to their products. This means that end users have no choice but to trust that the software provider is honest and that their products are running as advertised. Using Kensei Compute, that layer of centralisation can be removed. Enterprises, end users and third-party auditors can all have complete confidence that a programme is operating as coded, designed and advertised.

Use cases



Verifiable Gaming

Trustworthy gaming platforms built on top of Kensei Compute allow gaming logic and rules to be executed in a dependable way. Any uncertainties or disputes over gaming events, or fairness, can easily be resolved by replaying Kensei's on-chain computational audit log. Kensei also provides gaming platforms auditable ways to prove to regulators that their businesses are operating compliantly.

Secure Asset Transfer

Kensei Compute enables reliable, tamper-evident processes for secure asset transfer. This can take the form of any business contract with stipulations.

Using Kensei Compute, each party can be assured that other parties have met the specified stipulations, without the need for a third-party authority or intermediary.





Complex capabilities, simple implementation

The new realities enabled by Kensei are truly set to redefine the relationships organisations have with their data, and in some cases even reshape industries. The technology that underpins the platform is indeed complex and represents a new field of applied cryptography. However, accessing the benefits it promises is not complicated at all.

In fact, ease of implementation and use has been the core mission of our team for years. The underlying technology of Kensei has been ready for nearly a decade. What was missing was a compliant and user-friendly way of integrating it with enterprise clients. The Kensei suite of products and their convenient APIs are the true innovation.

Without a doubt, enterprise data contains immense unrealised value. But without data integrity, that value and more will be lost in the pursuit of it. Kensei is an opportunity to capture the full value of enterprise data, and we stand ready to help you better understand Kensei, our complete product offering and the impact it can make on your business.

“ For our clients in online gambling, Kensei isn't just a powerful tool for regulatory compliance; it is a tool to improve player experiences for healthier, happier gaming. ”

Paul Foster, Crucial Compliance CEO



Case study

The right solution when compliance is crucial

Crucial Compliance offers consultancy and software solutions for online gaming firms to help them adhere to Europe's strict gambling regulations. Their mission is to protect gaming businesses and players with data analysis that can identify Advanced Markers of Harm in order to determine whether a player is deemed at risk of suffering Gambling Related Harm.

Recently, Crucial Compliance has begun integrating Kensei to decentralise their player behaviour logs and give international regulators a trustless, fully auditable way to ensure gaming firms are giving the appropriate attention and care to players.

“We investigated a number of proposed blockchain-based solutions”, said Paul Foster, Crucial Compliance CEO, “but we quickly realised that scalability was the most critical bottleneck. Collectively, our customers have more than a million active users, which represents a daily transaction volume that is greater than most protocols can handle in a month. Kensei was the only solution that could operate at our scale. For responsible gaming, Kensei is the only responsible choice.”

For Crucial Compliance, Kensei Connect is used to generate tamper-proof audit logs of timestamped data, which highlight for regulators user behaviour, deviations from standard play and other key metrics. All of this is done cryptographically and provably without revealing the personal data of any user.



Kensei, powered by nChain

nChain was founded in 2015 and is a provider of enterprise-grade data integrity and blockchain solutions. By simplifying access to the blockchain, nChain provides the means for anyone to leverage data to its fullest.

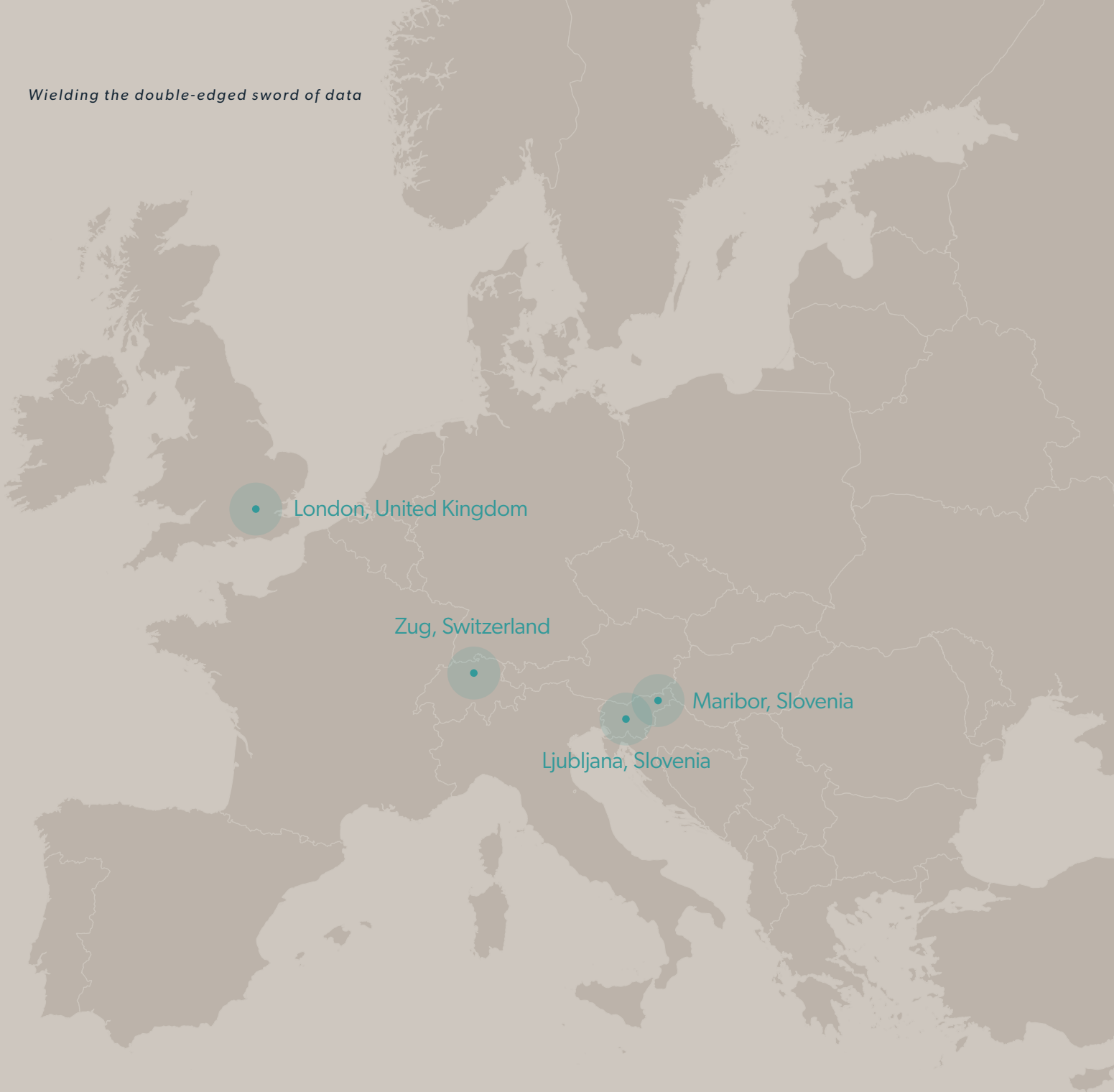


200+
Engineers

1000+
Research Papers

270+
Employees

Wielding the double-edged sword of data



To learn more about Kensei and unlocking the true value of data integrity, contact us today.

contact@nchain.com



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