

**YOUR BESPOKE  
BLOCKCHAIN SOLUTION  
FOR DATA AND ASSET  
SECURITY**



**BYZ | GEN**

# THE BYZANTINE GENERALS PROBLEM

The Byzantine Generals' Problem is the story of a group of army generals who need to agree on a common decision in battle - at exactly the same time and without enemy interception - so that a coordinated, critical and accurate response can take place.

The problem laid out by this story is not just theoretical - it is the same problem posed to anyone concerned with business communications and storage of physical or data assets.

You may be a bank leader needing to support secure transport of customer data, a healthcare provider whose clinicians need to communicate a surgery scheduled for an at-risk patient, a shipping company needing to vouch for the arrivals of your goods or, yes, a military organisation facing security complications and a compromised command chain.

The challenge of agreeing a protocol in order to achieve a secure and recorded outcome is thorny.

But that problem has now finally been solved.

Thanks to blockchain technology, Byzantine generals have a bright future. That is why we called our company ByzGen.



“ **BYZGEN'S SOLUTION IS ABLE TO ADAPT TO THE NEEDS OF YOUR BUSINESS TO DELIVER CRITICAL INFORMATION MANAGEMENT AND ASSURANCE.** ”

## WHAT IS BYZGEN?

Built by one of the leading authorities on developing large-scale blockchain systems, and founded by military professionals with a heritage in the defence and technology industries, ByzGen's solution is able to adapt to the needs of your business to solve a wide range of challenges. It will transform the way you think about data security, critical assets, document storage and processes.

ByzGen's purpose-built blockchain technology creates bespoke solutions that ensure business data is trackable, secure and always available when it's needed.

Our experts operate as collaborative partners that will work with you and your team, from trial to completion, to ensure maximum performance and minimum risk for integration with your existing systems.



**MATT BIRKS,**  
HEAD OF DELIVERY



**MARCUS RALPHS,**  
CEO



**TERRY LEONARD,**  
CTO



# SOLUTION

## THE MODERN INFRASTRUCTURE CHALLENGE

In a data-rich world, securely storing, distributing and assuring data has taken on paramount importance. No greater example of the need for data compliance is the implementation of GDPR.

Organisations with thousands of moving assets demand instant, holistic status awareness. And they need to confidently store their records for authorised eyes only. But security breaches have hit the headlines, exposing lax practices at the heart of conventional digital infrastructure.

Companies and agencies now have more opportunities - and more challenges to think about - than ever before.

## BLOCKCHAIN: MORE THAN JUST CRYPTO

Blockchain can transform more than just currency. The same underlying technology - employing distributed machines to solve mathematical problems in order to record and verify information - also brings two broad benefits:

### Asset storage:

Blockchain supports bullet-proof recording of information about organisational assets, whether physical or digital.

Storage in a distributed, cryptographically-secure system eliminates single points of failure, increasing resilience from data destruction.

#### Examples:

- Storing qualifications and identity documents for instant remote access
- Processing financial data required for KnowYour Customer compliance
- Keeping barcodes for field assets in a secure environment

### Immutable ledger:

Financial purchases are only one kind of transaction.

A blockchain creates a tamper-resistant log in which every single action concerning an asset in any system can be recorded, with time stamps, permission control and access reporting, leading to increased trust through in-built auditing.

#### Examples:

- Recording all file system transactions like file opens, edits, downloads and permission changes
- Monitoring a supply chain log for latest modifications
- Know the last location of a vital component

ByzGen is able to create a bespoke offering for organisations that require either or both of these solutions. As a stand-alone platform solution or integrated into your existing systems or network.

## BUSINESS BENEFITS OF BLOCKCHAIN

Any industry that deals with data or transactions of any kind can be revolutionised by blockchain technology:



**Banking & Finance:**  
Speed up and store every kind of transaction, from financial movements to customer data



**Legal:**  
Protect against evidence tampering by tracking every interaction with key assets



**Government:**  
Store and track identification records for access anywhere in the world



**Healthcare:**  
Control sensitive medical data in a way that gives patients access



**Logistics:**  
Assure the provenance of items in a supply chain



**Property:**  
Track, verify ownership, ensure accuracy and transfer of property deeds

Organisations must rise to the opportunity to embrace these innovations, and safeguard their own operation for GDPR. Blockchain can be a force-multiplier, but the landscape for new technologies is fraught with risk. ByzGen de-risks adoption by introducing new approaches and a proven approach with a credible lineage.

# ADVANTAGES

## AN UNIQUE SOLUTION

### Our pioneering partners

ByzGen's technology has been developed with the world-renowned blockchain software experts at the École Polytechnique Fédérale de Lausanne (EPFL), regarded as Europe's answer to MIT.

Taking advantage of methods pioneered by EPFL's Decentralized/Distributed Systems Lab (DEDIS) and its head, Professor Bryan Ford, one of the leading authorities on developing large-scale systems that distribute trust among a number of independent parties, ByzGen's roadmap benefits from an ongoing partnership with DEDIS, including software development cooperation and embedding the institution's research capability within the company.

## OUR TECHNOLOGY

Most blockchain infrastructure struggles to scale to the demands and security required of non-currency applications. But ByzGen's custom-built technology puts permissions, verification and security in to the hands of customers.

### Consensus validation:

ByzGen does not verify on-chain activities by rewarding unknown public nodes for competing to solve cryptographic puzzles. Instead, ByzGen employs a smaller network of pre-trusted nodes called a "consensus group", which cooperatively generates signatures that are unique to each deployment, adding up to enhanced security.

### On-chain secrets:

An additional cryptographic blockchain layer on top of your organisation's existing processes provides enhanced provenance for logins, access and assets such as documents, whilst keeping the user-facing process unchanged.

### Built-in permissions:

Permissions awareness is built into the blockchain itself, so as well as storing keys required for accessing assets, it can release them as needed, if the request is valid and the requester has permissions for it.

### Offline innovation:

Most blockchain solutions require online access, which poses a significant challenge for travelling professionals, rural businesses or people working in crisis regions. ByzGen uses skipchain technology, which lets users store, access and modify the chain, using peer-to-peer confirmation.

## HELPING UNIQUE ORGANISATIONS DEPLOY

ByzGen is not just a technology, it's a service.

Introducing new systems into a business' existing processes can place undue strain on operational resources, if not deployed sympathetically. For unique organisations, a one-size-fits-all approach does not work.

That is why ByzGen works hand-in-hand with customers to design, build and roll out a solution that works specifically for them, limiting disruption. Customers can follow two journeys with us:

### Embedded design

We integrate our team with customers' own, from start to finish, to understand problems, and to jointly design, implement and support a specific solution.

### Systems integration

For clients that want all the benefits of ByzGen's blockchain, but to implement under their own steam, we assist to make our infrastructure available via API.

Built around our belief of thinking big, starting small, and scaling quickly, our tried and tested methodology is to test, assure and implement. At each stage of the process we prioritise risk identification, risk reduction and measuring the benefits delivered.

## ROAD TO ROLL-OUT

### STAGE 1: TEST AND ASSURE

#### Proof of concept:

We'll work with you to build a prototype that fits your business needs, and test using non-live data.

#### Pilot:

Our tried and tested prototype is launched in a discrete, bounded part of your network to minimise disruption and prove functionality and benefit.

### STAGE 2: IMPLEMENT

#### Scaling the system:

We scale your system and test using real data sources to prepare for the transition to blockchain.

#### Transition:

A dedicated implementation team will finalise the transition plan and train users. The system is fully integrated and scalable.

## WHAT HAPPENS NEXT?

Our team will work closely with you to ensure your bespoke blockchain system continues to meet your business needs.

## OUR SOLUTION IN BRIEF

### Credibility:

Our methods were pioneered by the head of EPFL's Decentralized/Distributed Systems Lab (DEDIS), one of the leading authorities on developing large-scale blockchain systems

### Bespoke:

ByzGen systems are designed, built and continually tested to deliver the most relevant benefits to your business and ensure maximum results.

### Security:

An additional blockchain layer on top of your organisation's normal processes provides enhanced security for logins, access and assets such as documents

### Scalability:

The ByzGen system addresses scalability by requiring a collective signature to validate

transactions, supported by fully encrypted, distributed 'off-chain' data storage.

### Permissions:

ByzGen systems are configured to allow agility and access rights to be applied to data and transactions - only users with the right permission can decrypt and see information. This enables our clients to be truly GDPR compliant.

### Validation:

Leveraging the power of the collective signature, the data and block validation criteria are coded as rules into the system, which removes the risk of users manipulating your data.

### Support:

Our team will work with you from creation, to delivery and beyond.