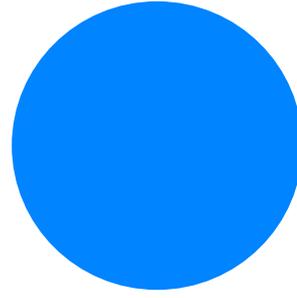




Transforming the gas industry through blockchain technology

RSK Case Studies series
Gasnet: From a Digital Transformation PoC
to a National Implementation
September 2020





Our key objective for 2019 was to add 17.000 new customers. An objective that we surpassed and that would not have been possible without a digital, remote and certified process such as the one we implemented together with Grupo Sabra, on the Gasnet platform based on blockchain technology.”

Carlos Amin, CIO Gasnor

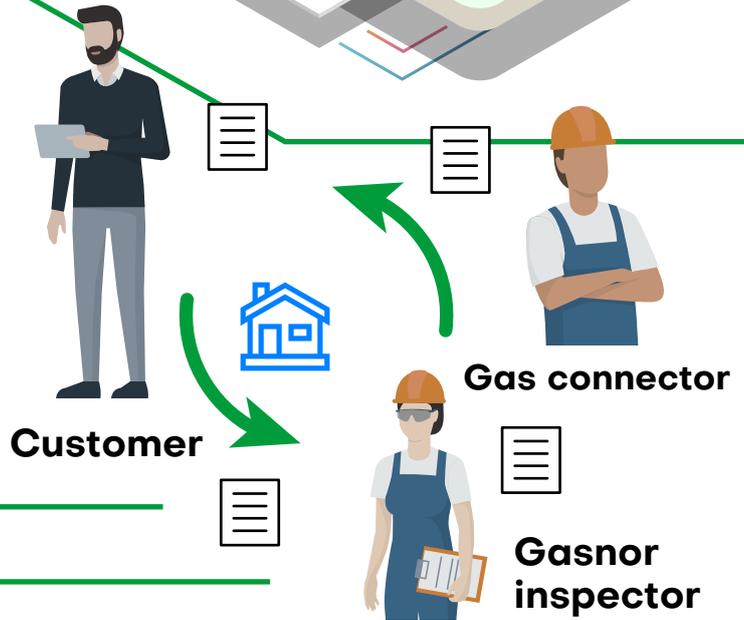
1.Strategic objective

To reduce customer onboarding timecycle.



2.Problem statement

“Customer onboarding Process Improvement”.



3.Project

✓ Goal

Reduce customer onboarding timecycle.

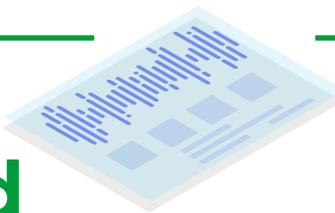
✓ Needs

Streamline and simplify the process.
Ensure robustness and traceability of the operation.

✓ Solutions

Digitize the process (paperless).
Reduce time in transit.
Improve customer information.

4.Proposed solution



Convert end to end process to a digital format.

Technical challenges:

- Electronic or digital signature.
- Secure database.
- Digital identity.



5.Results

- 30% turnaround time reduction during the first phase aiming at 50% going forward.
- Customer satisfaction increase.
- Growth in new customer acquisition.



Context

Natural gas contributes to 54% of the energy consumed in Argentina. Gasnor, the regional distributor serving the Northwest of Argentina, had continued aggressive growth with 190,000 clients in 1992 to over 500,000 clients in 2015, and yet serving only about a fifth of the region's inhabitants.

Problem Statement

Gasnor's continued aggressive growth meant that it would soon have to connect 17,000 new customers per year while experiencing persistent pressure on operating revenues due to gas price freezes for the last 15 years.

Its costly customer on-boarding process required 8 different paper-based transactions between gas installers and its own inspectors and could take up to 3 months.

Solution

The Gasnet network built on the RSK blockchain stores all transactions that are processed in the certification of a new installation or reconnection of gas service between the future or current customer, the registered gas installer, and Gasnor. It digitized and registered on the blockchain all transactions between customers, the gas installers and the inspectors, leveraging a 2018 decree officializing paperless transactions to allow a complete digital transformation of the customer on-boarding process.

Goals Achieved

The regional blockchain digital transformation project of Gasnor has led to two significant results:

- The time to service has been reduced by a third and the customers now receive quality information about the status of their connection thanks to the migration of 80% of the new transactions to digital except for the necessary site visits by the gas installers and the Gasnor inspectors.
- The project has led to the creation of a national gas consortium, Gasnet, composed of the companies involved in the regional distribution and the national gas regulator, with the aim to reduce Enargas oversight costs thanks to compliance by design.

Gasnor's Origins

As part of a broad privatization program of Argentina's public companies, the state-owned Gas del Estado (GdE) which had a national monopoly for natural gas transmission and distribution, was broken up and privatized in 1992. In June 1992 the congress passed a law to create a new regulatory entity responsible, among others, for gas price regulation and for the prevention of monopolistic and anticompetitive practices. Enargas presently regulates nine regional gas distribution companies, including Gasnor, serving the Northwest of Argentina.

Gasnor's persistent dynamic growth meant that it would have to connect an increasing number of new customers each year to its network even though it experienced constant pressure on revenues. With gas prices frozen for the past 15 years, Gasnor was under pressure to reduce its operating costs while expanding its distribution network to serve a larger share of the population. In addition to these challenges, the customer on-boarding process was taking up to 40 days and required complex documentation to ensure compliance.



Digital Transformation through Blockchain Technology.

In search for operational efficiency that could sustain growth in a heavily regulated industry, Gasnor decided to concurrently pursue the dual goals of expanding its distribution network while streamlining the customer on-boarding process through digital transformation.

The lengthy legacy on-boarding process of connecting new customers involved a network of over 10,000 gas installers and Gasnor's own inspectors to validate the installations. This process relied on 8 various signed transactions and inevitably created varying levels of quality in the customer experience. Finally, the looming end of the government program financing the costs of connecting to the Gasnor network was leading customers to search for alternate sources of financing which could create additional delays.





“The Gasnet network built on rsk will lead the Argentinian national gas industry to a more efficient, transparent and compliant future.”

Guillermo Villanueva,
Grupo Sabra's CEO





Gasnor selected Grupo Sabra as the preferred partner

For its digital transformation, Gasnor engaged in 2017 Grupo Sabra, an Argentina-based software development company with experience in digital transformation and in distributed ledgers, which proposed an architecture relying on multiple front-end applications and a blockchain backend. This architecture was based on the digitalization of paper transactions and Gasnor approached the regulator Enargas, which welcomed the idea, validated the proposed architecture, and helped officialize paperless transactions in 2018.

Initially, blockchain was only going to be used to store daily hashes to limit operation costs. However, reliance on blockchain was increased after the **architecture** was migrated to the RSK Enterprise Cloud permissioned chain which enabled to save all transaction information to the blockchain at a low cost and provided additional key services such as digital naming and signing.

The **Gasnor solution** is based on four front end applications and two backend environments:

Front-end applications:

- A customer-facing application that enables digital document signing and provides notifications;
- A website that lets gas installers upload and check digital technical documents;
- A commercial system that lets Gasnor establish contracts with the various constituents;
- A tablet-based application that enables Gasnor inspectors to validate installations.

Two backend environments:

- Gasnor incumbent backend environment which is integrated to the new front-end applications;
- A Gasnor blockchain node on the RSK Enterprise Cloud network which stores all the transaction information and a master node administered by Enargas.



The Gasnor digital transformation project drastically reduces the operating costs and provides a measurement against onboarding compliance. At launch, the Gasnor digital transformation project already reduces the time to onboard new customers by around 30% and provides a consistent consumer experience with process-based notifications. These gains are based on only 80% of the new transactions for Gasnor being initially digitalized and are consistent with the goal of digital transformation necessary for Gasnor to meet its growth objectives. The onboarding process limits physical interactions to the necessary site visits by the gas installers and the installation inspection by Gasnor inspectors.

Overall, 10,000 digital identities were registered into the network using RIF Name Services – an architecture which enables the identification of blockchain resources by human-readable names. Additionally, new gas service providers can now complete the entire registration process remotely through RIF Name Services within a few days, thereby increasing efficiency.

In addition to the benefits brought to Gasnor, the solution designed led to the creation of the **Gasnet consortium** which is composed of the regional gas distribution companies and the national regulator. The Gasnet consortium governs the Gasnet blockchain network which today includes three nodes on the RSK Enterprise Cloud network. In 2019, Enargas greenlit the expansion of the project into a national ecosystem blockchain to include all nine distribution companies which will ease compliance oversight by ensuring a common data format across all regional distributing companies.

The **Gasnet network** allows the registration of all transactions that are processed in the certification of a new installation or reconnection of gas service between the future or current customer, the registered gas installer, and Gasnor. The Gasnet network is storing digital documents provided by applications used by customers, gas installers and Gasnor inspectors to access and sign digital transactions and which enables a consistent customer experience for Gasnor and a reliable transaction digital bookkeeping for Enargas.

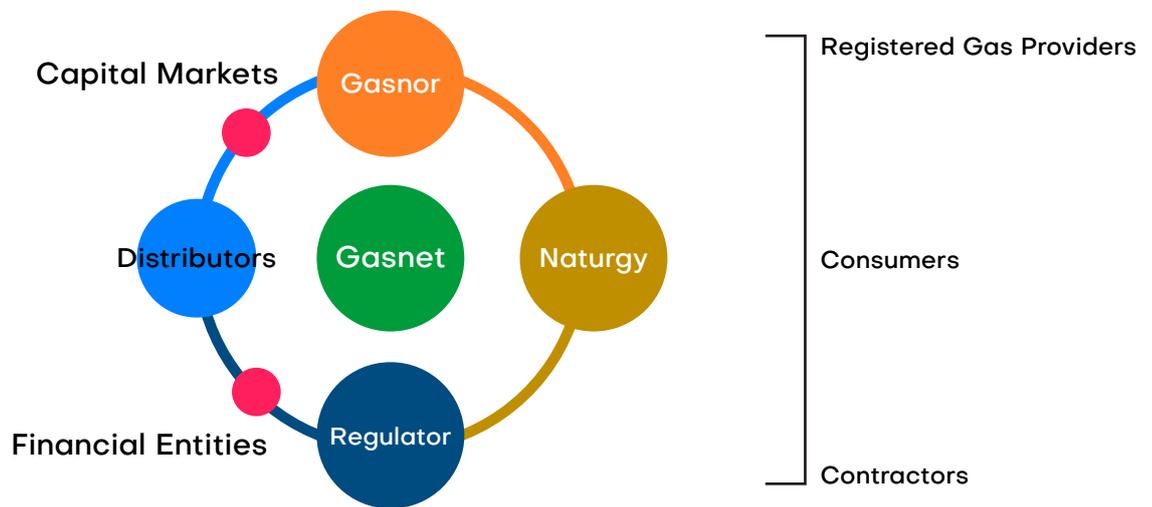




The deployment of additional similar nodes for each of the other regional distribution companies will enable Enargas direct access to all transaction information and consistent consumer notifications and user experience. This will also lead to reduced auditing costs for both the regional companies and Enargas and possibly reduced operating customer onboarding costs for each of the regional distribution companies should they decide to also leverage a paperless onboarding process. Enargas will improve compliance oversight by embedding approved industry regulations into processes within the Gasnet network. Compliance information can be stored on the network in a safe, immutable and transparent manner for all the actors along the distribution chain.

This implementation will allow Gasnet affiliates such as Gasnor to achieve greater traceability and security to the complete process of new facilities certifications, to measure the quality of the gas installers and to identify problems and solve them as fast as possible.

Financial Entities and Gas Vertical: The Vision



The Gasnet network uses IOV Labs-powered RSK smart contracts and its RIF second-layer solutions to increase efficiency, transparency, and information management in the industry.

The choice of the RSK Enterprise Cloud permissioned blockchain provides inherent benefits:

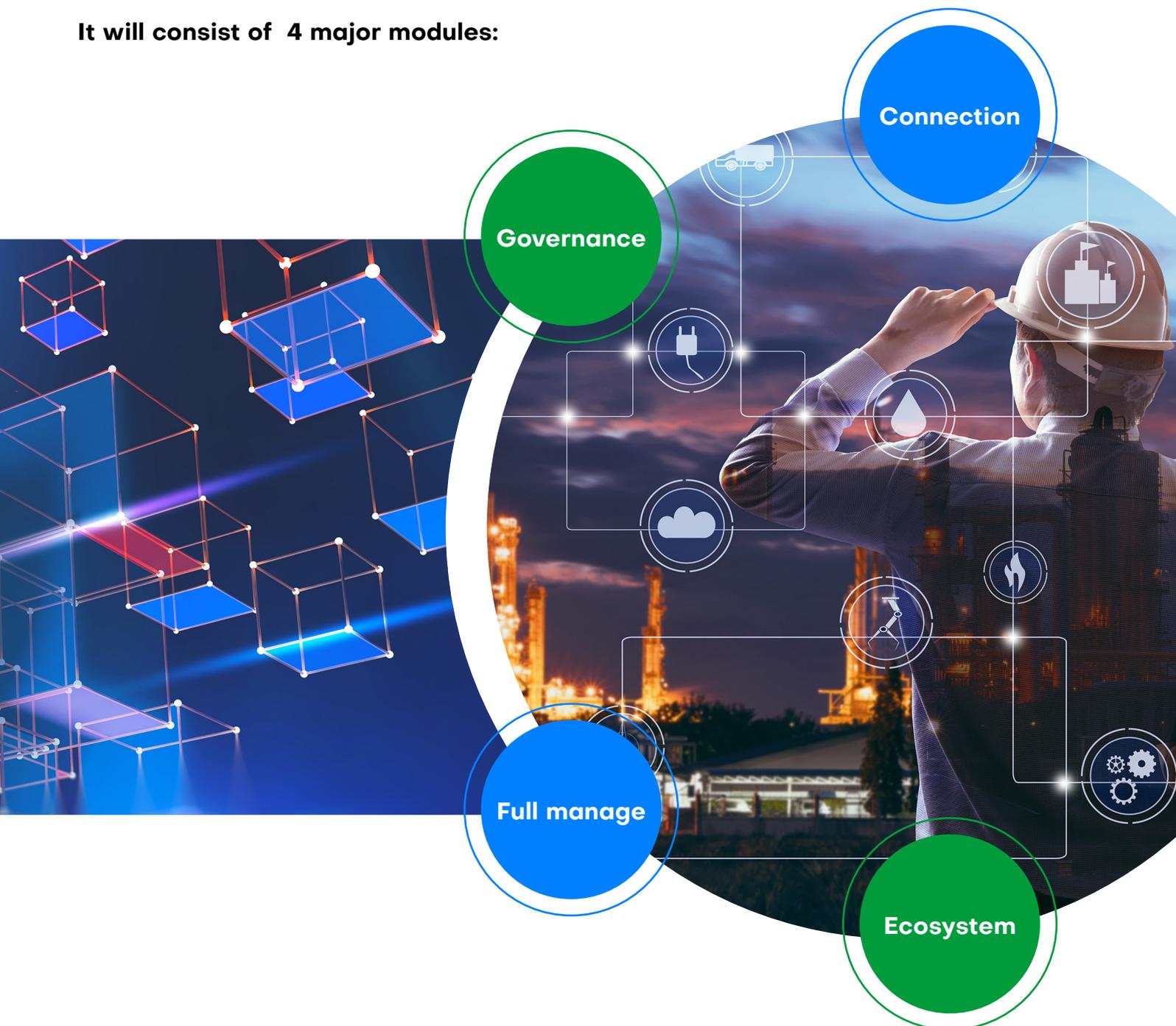
- Capability to interact with mayor blockchain infra providers and tech providers and it is important of the use cases included or to be included into Gasnet required to share data with other ecosystems.
- High level of security for all transactions as it is based on Bitcoin nodes, the strongest and most reliable decentralized network.
- Immutability that are central to the transparency and data validation.

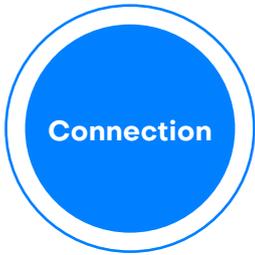
Ecosystems

With Gasnet part of the RSK Enterprise Cloud network of permission-based blockchains, it is possible to foresee new and exciting future services such as integrations with ERPs and other applications that will link the various domain blockchains such as banking and gas distribution.

RSK Enterprise Cloud is a full-stack ready platform that radically simplifies the deployment and operation of nodes connected to permissioned and non-permissioned networks, as well as their integration with the technological architecture of each organization.

It will consist of 4 major modules:





- Basic infrastructure management.
- Multi-Chain Management.
- Environment Management.
- Cybersecurity Operations.
- Integration Gateway.
- Logging and Monitoring.
- Block Explorer.
- Multi-cloud (Public and Private).
- Multi-platform (RSKP, RSK, ETH, Corda).
- Multi-network.
- Managed versions of public networks (LACChain, RSK, ETH).
- Fully-Managed, Partially-Managed & Un-managed networks.
- Remote management and monitoring.
- Image Library.
- Kubernetes.
- Orchestration Scripts.
- API and GUI interfaces.
- Sentry.
- Marketplace.



The model and tools are designed to address the responsibilities and critical functions required to operate and maintain a consortium-type network. Together they create an orderly system for addressing adoption, security and compliance.

- Consortium Life Cycle.
- Participant Life Cycle.
- Runtime Operations.
- Data Governance.
- Third Party management.
- Platform Management.
- Infrastructure.
- Legal/Finance.



A highly reusable and enterprise ready library of application components and services that dramatically accelerates the development of Shared Business Applications.

- Name System and Contract Directory.
- Digital Identity (DID) and Verifiable Credentials.
- Secret Management and Digital Signature.
- Token Factory.
- Credential Wallets.
- Chain of Custody and Document Certification.
- Certified Process and Document Management.
- Privacy (e.g.: Private transactions, ZKP, State Channels).
- Anchoring Services.
- Enterprise Connectors (e.g.: Salesforce, Dynamics CRM).
- RIF Services.



It allows you to register a network over an existing one without having to deploy a new one.

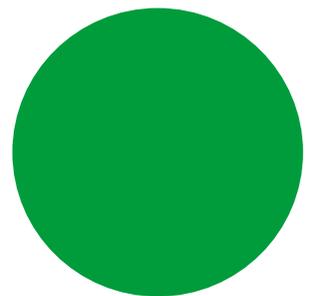
- Facilitate access.
- Fully managed cloud distribution including all the services of our offering.



“

Blockchain technology powered by RSK and RIF platforms help Gasnor in bringing more transparency and traceability to the gas industry.”

Diego Gutiérrez Zaldívar,
IOV Labs CEO



Technical Partnerships



About Gasnor

Gasnor S.A. is one of the nine natural gas distribution companies in the Argentine Republic, which emerged with the privatization of the State Gas Company.

It has been serving the Argentine Northwest and its licensed area includes the provinces of Tucumán, Salta, Jujuy and Santiago del Estero since December 28, 1992. Its shareholders are Gascart S.A., CGE Argentina, GN Holding Argentina (Grupo Naturgy).

Gasnor distributes Natural Gas to more than 550,000 residential, commercial, industrial and electricity generating customers serving approximately 2,000,000 people.



About Grupo Sabra

Grupo Sabra is a software application development company based in Argentina. The company focuses on integrating traditional technology with distributed ledger technologies and smart contracts. Grupo Sabra has an expert team of in-house software development and blockchain developers that have been building solutions for our growing customer base. The team has been building and implementing solutions for decentralized platforms during the last 5 years, integrating those capabilities with Blockchain solutions for corporate clients and governments.



About IOV Labs

IOVlabs develops the blockchain technologies needed for a new global financial ecosystem; one that fosters opportunity, transparency, and trust. The organization currently develops the **RSK Smart Contract Network**, **RIF** and **Taringa!'s platforms**.

The RSK Network is one of the more secure smart contract platforms in the world, designed to leverage Bitcoin's unparalleled hash power while extending its capabilities. RIF's suite of open and decentralized infrastructure protocols enable faster, easier and scalable development of distributed applications (dApps) within a unified environment. Taringa is Latin America's largest Spanish speaking social network with 30 million users and 1,000 active online communities.



rsk

Enterprise Cloud