



HYPERLEDGER
BLOCKCHAIN TECHNOLOGIES FOR BUSINESS

Case Study: openIDL streamlines regulatory reporting for U.S. insurance industry with Hyperledger Fabric

openIDL Network

- The first blockchain platform to enable efficient, secure data collection and sharing within the insurance industry
- In production since 2018
- Sponsored by the American Association of Insurance Services (AAIS) based in Chicago
- Built with Hyperledger Fabric

Goals

- To streamline regulatory reporting for insurers
- To ensure timely and accurate reports for regulators
- To provide business value with new insights derived from these reports

Approach

1. Face the need for better reporting
2. Engage stakeholders in design thinking
3. Seek an affordable blockchain framework
4. Choose a proven framework and development partner
5. Add value for everyone on the network

Results

- Prototype created and 5 million records tested in less than 90 days
- Mechanism for regulators to see more timely market information
- Efficient, real-time automated data uploads replace rigid, batch data-sharing
- Large insurers can save millions of dollars on annual regulatory reporting costs



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— Brian Hoffman, *Travelers*

Fires, floods, earthquakes, hurricanes...and pandemics: Any of these can devastate property and trigger insurance claims.

And since 1980, the United States has suffered more than 250 extreme weather disasters causing more than \$1 billion damage each.¹

Every time a natural catastrophe strikes, state regulators quickly ask insurance carriers to send them data about the affected properties. This data helps regulators model risk, monitor market activity, protect consumers, and plan for future emergencies.

But these ad-hoc reports come on top of routine quarterly and annual statistics that insurance carriers must provide to regulators. And with 50 state regulators requesting data in various formats—often with short deadlines—insurers could barely keep up.

“The process was basically broken,” says Joan Zerkovich, Senior VP of Operations with the industry association AAIS. “We needed a better way to get data from insurance carriers to government regulators more efficiently, in a way that added value for everyone involved.”

When AAIS invited carriers and regulators to brainstorm a solution using design thinking,² the group came up with a blockchain network.

Since 2018, AAIS has operated the first blockchain system—built around Hyperledger Fabric—used to gather data from across the U.S. insurance industry.

Facing the need for better reporting

Chicago-based AAIS is a national, not-for-profit member association established as a statistical agent, rating bureau, and advisor to the property and casualty (P&C) insurance industry.

As a statistical agent, AAIS gathers data from member insurers, anonymizes, aggregates, and passes it along to regulators to inform legislative policy. State regulators need this information to help maintain a healthy industry by ensuring that consumers are not overcharged or discriminated against, and that carriers earn enough to stay solvent.

Antitrust laws prevent insurers from sharing premium and loss data. So AAIS serves as a trusted third-party to ensure that insurance products evolve with the changing market and reflect the real-world industry experience.



As Zerkovich dug into the issue of regulatory reporting, she discovered that a rising demand for data was overwhelming insurance carriers. Although these firms are required by law to provide the data, they gained little value for preparing it.

Carriers were spending huge amounts of time and resources to stay on top of these chores. In fact, larger carriers employed up to 60 people simply to handle regulatory reporting.

Even so, the carriers could only submit the bare minimum of data requested, and it was often outdated by the time it was reported. So the data that regulators were gathering wasn't robust enough to help them create good policies for extreme events like floods or hurricanes.

"A problem emerged where regulators were developing policies based on unreliable data," says Truman Esmond, VP of Solutions and Partnerships with AAIS. "We needed to do a better job of collecting data and streamlining the process for the future. And we needed to create value for all stakeholders: carriers, regulators and AAIS."

Everyone in the industry saw the need for a more resilient and efficient resource: a system that would yield data to inform policymakers and also help carriers operate efficiently and the platform to compete and innovate in the marketplace.



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Engaging stakeholders in design thinking

From the beginning, AAIS invited stakeholders to take part in "design thinking" sessions to help develop a solution for their data problem.

Design thinking is a powerful tool to spark innovation, with roots that trace back to the 1950s. The process can help solve problems and build relationships by getting different stakeholders in the same room to share different perspectives. As stakeholders become invested in the process, they are more likely to buy into a proposed solution.

"The design process united the carriers and the regulators, and the end product—openIDL—has really resonated with both groups. Reception has been overwhelmingly positive," says Zerkovich.



Early in the design thinking process, it became clear that AAIS couldn't solve the data problem with its current technology.

The reporting issue was a fierce storm buffeting the whole industry. In fact, regulators were shocked when they learned how much time and money carriers were spending to answer their queries.

To move large blocks of data between entities, AAIS needed something more than clunky databases. Any proposed solution needed iron-clad security or no carrier would buy in. Since insurance is such a competitive industry, carriers needed to be absolutely certain that any data they shared with AAIS and regulators was completely anonymous.

As discussions progressed, the group raised the idea of using blockchain.



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Seeking an affordable blockchain framework

While blockchain would allow carriers to maintain control of their data, there was one major roadblock: Commercial software products can be terribly expensive.

Licensing costs, annual support contracts, and transaction fees added up to costs so high they would lock out more than half the carriers AAIS wanted to help. The regulators would never agree to that.

Enter open source software.

Using open source accelerates development, by enabling companies to quickly access existing and tested code—instead of having to reinvent everything from the ground up.

“Open source blockchain technology was critical to building an affordable and accessible solution that even small insurance carriers can afford. A lot of these companies can't afford \$10,000 a year to participate in a blockchain network,” says Zerkovich. “And larger carriers can save millions of dollars in annual reporting costs using openIDL.”

Using an existing open source framework meant AAIS didn't have to code a blockchain platform from scratch. The team could get on with building the higher-level components and interfaces for their system, which they named the Open Insurance Data Link (openIDL).



Zerkovich and her team wanted to create an efficient, secure and permissioned blockchain network to collect and share data. Their vision for openIDL was to streamline regulatory reporting, save costs, and provide useful insights for insurers, while gathering more timely and accurate data for regulators: a classic win-win.



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Choosing a proven framework and development partner

AAIS considered three blockchain frameworks: Corda from R3, Ethereum, and Hyperledger Fabric. They chose Hyperledger Fabric from the Linux Foundation.

“Hyperledger was the only one that was truly open source and transparent,” says Zerkovich. “It makes solutions available as a baseline infrastructure, so that others add value on top of that.”

AAIS understood that leveraging the power of the open source community would let them focus their energy on building applications for members, not tinkering with blockchain technology.

“One of the reasons Hyperledger was so important to us was that the development community could anticipate the features we needed,” says Zerkovich. “We didn’t want to develop some weird component of a blockchain network; we just wanted it to do what we needed it to do. Hyperledger’s technology met our needs every single time.”

After AAIS picked a blockchain platform, it needed a development partner with all the skills and resources to bring openIDL to life.

They decided to partner with IBM because of the organization’s track record with Hyperledger Fabric and their expert team. After all, IBM contributed the original codebase that became Hyperledger Fabric.

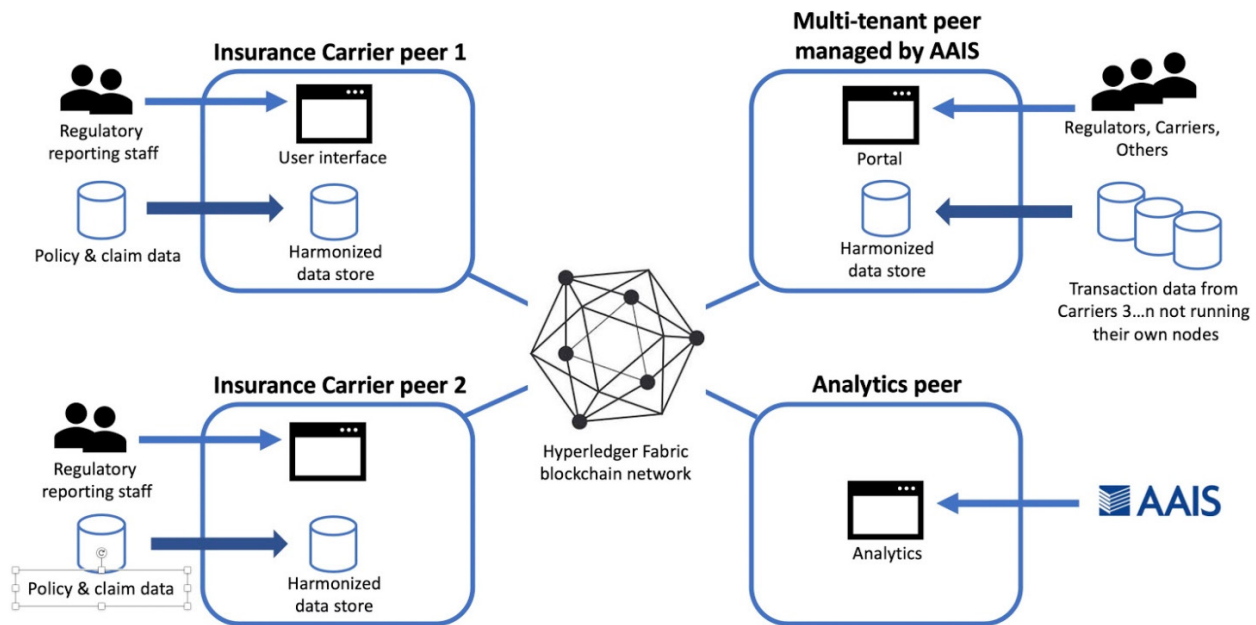
With shared philosophies that included design thinking and agile development, AAIS and IBM developed and tested a prototype in record time. In a promising start for the system, “We were able to create the first prototype and test five million records in less than 90 days,” says Zerkovich.





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OpenIDL Network Architecture (simplified)

Network architecture

As shown in the system graphic, the openIDL network includes three different nodes:

- Insurance carrier peers in a single-tenant environment
- A multi-tenant environment managed by AAIS that provides access to carriers who don't run their own nodes
- An analytics peer that pops up to publish extracted information, managed by AAIS

At the core of every node is the Hyperledger Fabric blockchain, along with the IBM Blockchain management tools.

One of the biggest resource challenges is harmonizing data from numerous sources both within and between carriers. Data ingested from carrier policies, claims, and transactions at any node is processed into a harmonized data store using the time-tested IBM Insurance Information Warehouse (IIW) standard to speed up the data management work.



Every company's data is kept secure through a private channel on Hyperledger Fabric that no other insurer can see. Regulators can request data from insurers in their state, and insurers can review and answer these requests.

Ironically, AAIS's previous role as the trusted intermediary to provide anonymity and quality has been eliminated by this new platform for collaboration and efficiency.

Insurers who aren't ready to manage their own node use the multi-tenant environment managed by AAIS. The portal enables carriers, regulators, and other authorized users to browse data and view reports through a secure portal.

To help insurers spin up their own nodes, IBM created openIDL in a Box: a managed service offering everything an insurer needs to join the blockchain network.

This can be deployed through cloud providers AWS, Azure, or IBM Cloud or on-premises, all through the Red Hat OpenShift platform that uses Docker containers managed by Kubernetes. The whole system runs on Red Hat Enterprise Linux, and is usually ready to go in a couple of days, as soon as the carrier signs up with their cloud provider.

Adding value for everyone on the network

In 2018, openIDL went into production as the first blockchain network connecting data across the American insurance industry. And feedback from carriers and regulators has been positive.

AAIS continues to refine the blockchain platform, engaging their stakeholders in quarterly design thinking sessions. These sessions underscore the association's role as a neutral third party that will oversee the blockchain network and make sure it continues to benefit insurance carriers and regulators for years to come.

openIDL working groups are meeting for different lines such as auto, flood, homeowners, and reinsurance. Eventually each working group may suggest a data model the network can use to streamline their reporting even more.

Zerkovich realizes that openIDL will catalyze other changes. For example, for staff who do regulatory reporting, Zerkovich sees a new world of opportunity in web analytics and refining the customer experience.

Moving forward, AAIS will let openIDL determine how the technology evolves. The organization is exploring how it might connect to other blockchain networks and how it might fuel development of new products, services, and apps to benefit their members and the insurance industry as a whole.



1. NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2020). <https://www.ncdc.noaa.gov/billions/>, DOI: 10.25921/stkw-7w73
2. “How It Works: Design Thinking”. IBM Think Academy. November 21, 2014. 0:44. Retrieved May 22, 2020 from <https://www.youtube.com/watch?v=pXtN4y3O35M>

About American Association of Insurance Services (AAIS)

Established in 1936, AAIS serves the Property & Casualty insurance industry as the only national nonprofit advisory organization governed by its member insurance carriers. AAIS delivers tailored advisory solutions including best-in-class policy forms, rating information and data management capabilities for commercial lines, inland marine, farm and agriculture, and personal lines insurers. Its consultative approach, unrivaled customer service and modern technical capabilities underscore a focused commitment to the success of its members.

AAIS also serves as the administrator of openIDL, the insurance industry’s regulatory blockchain, providing unbiased governance within existing insurance regulatory frameworks. To learn more, visit www.aaisonline.com.



About Hyperledger

Hyperledger is an open source effort created to advance cross-industry blockchain technologies. It is a global collaboration including leaders in banking, finance, Internet of Things, manufacturing, supply chains, and technology. The Linux Foundation, the nonprofit organization enabling mass innovation through open source, hosts Hyperledger. The Linux Foundation also enables a worldwide developer community to work together and share ideas, infrastructure, and code. To learn more, visit <https://www.hyperledger.org/>



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