



HYPERLEDGER
FOUNDATION

Case Study

**taXchain provides a
faster, better, cheaper
way to complete
EU tax forms using
Hyperledger Fabric**

taXchain

- A blockchain network to exchange digitized tax forms
- Sponsored by Henkel and Siemens
- Developed by KrypC using Hyperledger Fabric 2.2
- One tax form is now in production, with more being implemented

Goals

- Prove that digitized tax forms save time and money
- Build an open, flexible platform that can support many partners
- Showcase the network to companies across the EU

Approach

1. Identify a nagging business problem
2. Build a working Proof of Concept with blockchain
3. Complete a production-ready network
4. Create an association to promote the network
5. Extend the network with more partners and further forms

Results

- Cost to complete one tax form slashed by 75% (from €120 to €30)
- Time to fill out one tax form cut from days to minutes
- Further gains to come from exploiting all free trade agreements

A breakthrough in handling paper forms

Better, faster, cheaper: Most experts say any new process can only achieve two out of three of these goals.

Now a new system to handle tax forms in the EU promises to deliver all three benefits:

- Faster completion of required forms
- Better safeguards against error and fraud
- Huge cost savings over paper forms

This new blockchain-based network can help any company that must deal with EU paperwork. And it can also help companies stop missing out on the benefits of free trade agreements with other countries.

Sponsored by Siemens and Henkel and developed by KrypC, the award-winning taXchain network is based on the Hyperledger Fabric framework for enterprise blockchains.

Identifying a nagging business problem

Everyone agrees that doing business in the EU creates a mountain of paperwork. Many forms deal with customs, duties, and taxes among the 27 EU members and with trading partners in other countries.

Filling out all these forms demands a lot of resources. And missed opportunities pile up when overloaded staff don't claim the exemptions they're entitled to under various trade treaties.

"Administration of tax matters is expensive," says André Rubbert, Head of Digital Tax Transformation at Siemens AG in Munich. "This was really a huge problem for us."

For example, he points to one of the simpler EU tax forms, the Long Term Supplier Declaration (LTSD). This form certifies the materials and country of origin for any product or material. Every form must be updated by every supplier every 24 months.

More than 80% of these forms are still handled on paper, creating a huge risk of honest mistakes and deliberate fraud.

Rubbert estimates that completing one LTSD form on paper costs €120 to €150. And every year Siemens exchanges about 10,000 of these forms with suppliers.

That means handling a single EU customs form on paper costs Siemens more than a million Euros a year.

Around 2018, Rubbert and his team started wondering about blockchain.

"We wanted to find out if blockchain technology could make these processes smoother, faster, more secure, and more transparent," he says.



When they floated the idea to other companies, tax specialists, and universities, their colleagues at Henkel jumped in. The two companies agreed to work together and split the development costs.



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Building a working Proof of Concept with blockchain

Teams from Henkel and Siemens drew up a list of 15 possible use cases for blockchain in tax and customs. Then they selected the Long Term Supplier Declaration (LTSD) for a Proof of Concept.

“It’s not the sexiest use case, not something everyone was crying for,” notes Rubbert. “We picked this form because the process is very simple. The only purpose was to prove the technology.”

The next decision was which blockchain platform would fit the project best.

“Deciding on which blockchain framework to use was quite easy,” says Proshanta Sarkar, blockchain engineer and technical lead for the project at Henkel. “We thought about Quorum and Ethereum, but for a permissioned blockchain, we found Hyperledger Fabric is the best.”

Everyone agreed on that choice.

“Hyperledger Fabric provides a modular architecture with many use cases,” agrees Dr. Olga Chatelain, Blockchain Program Lead @ IT Financial Platforms and Services, Siemens AG.



“Hyperledger Fabric provides modular architecture with many use cases, built for permissioned networks, with good security and privacy, and strong community support.”

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Microsoft developers in Europe quickly built a working prototype using Hyperledger Fabric. Within three days of coding, the new system could handle an LTSD form on-screen instead of on paper.

The benefits were obvious. Before, the complicated paper-bound process took days, if not weeks.

Now, thanks to pull-down lists and tax codes, the LTSD forms never need to be printed. If both buyer and seller use the new system, a whole form can be done in minutes, with far less risk of errors or fraud.

And in case a print is needed, a PDF for each LTSD is generated and stored on the platform. In some cases, the authorities still require it during their audits.

Completing a production-ready network

To build out the full blockchain network, Microsoft recommended KrypC, an experienced solution provider that was already operating several other networks built with Hyperledger Fabric.

The two sponsors asked for maximum flexibility to accommodate any company in Europe, whatever its size, industry, IT environment, or technical skills.

So KrypC built a very flexible network, where any member can run their own node or use a managed node; write their own APIs or have those written for them; and process a small, medium, or large number of tax forms.



“KrypC’s - KrypCore played a crucial role in the deployment of the taXChain platform on the Hyperledger Fabric protocol, ensuring that the platform is sustainable and scalable. With the solution in place, the platform is ready to onboard more participants and support new use cases. The configurable feature of KrypCore allows the platform to adapt to the specific needs of different enterprises, including infrastructure options, enterprise identity authentication. This versatility makes it a robust and secure solution for a wide range of enterprise needs.”

— Mohit Sethi, Senior Vice President - Research & Development, *KrypC*

The LTSD form is now running on the network, linked to a database of 7,000 possible materials. APIs link the network to an SAP pilot system at Siemens.

The blockchain stands ready to record and certify precise data based on each LTSD, in a tamper-proof format that government authorities and trading partners can trust.

“KrypC has been really successful,” says Rubbert, noting that the development team worked at a brisk speed, met their requirements, and delivered a crisp, clear UI.

“We talked to our top suppliers and several other companies and showed them the UI.

And the feedback was great. Everybody found it well designed and simple to use.”

Creating an association to promote the network

The next challenge is to persuade more companies to join the network. But when you’ve done something the same way for many years, change is never easy.

“To be honest, the tax and customs authorities didn’t invest much in digitalization over the last few decades. They still work mostly with paper forms or PDFs in the best case,” says Rubbert. “So to close the gap, huge investments in networks and qualified people will be necessary.”

To help tax administrators and executives with the transition to digital forms, Siemens co-founded the Institute for Digitalization of Tax Matters (IDSt) under the umbrella of a large trade association in Germany, the BDI (Bund der Deutschen Industrie).

The IDSt now includes 150 well-known companies and eight technical committees. One committee is devoted to distributed ledgers, animated by experts like Dr. Matthias Gries, Syndikus Tax Advisor (VAT/Tax Technology) from Siemens.

“It’s never easy to start a new solution such as blockchain,” says Gries. “Even if you can save so much money, it takes time to persuade other companies. In the end, if you have a better process, it will always win... but it takes time.”



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Extending the network with new partners and further forms

In a huge vote of confidence for its innovative design, taXchain recently won the prestigious Taxcellence award from Handelsblatt, a renowned financial newspaper in Germany. This gave the network a big boost in visibility.

And the taXchain sponsors continue to share their vision with colleagues, suppliers, and other companies.

“The whole idea was to build one platform where different companies can have different use cases related to tax and customs, available to members through some sort of app store,” says Chatelain. “That’s why we chose the name taXchain, a combination of ‘tax data exchange’ and ‘blockchain.’”

Since all businesses in the EU use the same forms, every member will benefit from a better, faster, and cheaper way to handle each new form added to the network.

The next few goals for the taXchain network include:

- Implementing more tax and customs forms
- Engaging suppliers to use the network
- Signing up 10 or so large companies



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Once lots of transactions are running through the system, everyone will see that it’s secure and cost-effective. Since the platform license fees are based on cost-sharing, more users on the platform will shrink the costs for each participant.

At that point, a network effect should bring in more and more members.

“I think in a few years we can have a huge taXchain community with lots of different use cases from tax and customs, and members not only from Europe but worldwide,” says Chatelain.

What’s even more, the traditional chore of processing B2B taxes may be transformed from a cost center to a profit center.



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With companies free from the burden of paper-based forms, smart contracts can help them automatically benefit from every possible deduction under trade agreements with any other country.

And that mountain of paperwork may finally be leveled, thanks in part to Hyperledger Fabric.

About Hyperledger

Hyperledger Foundation was founded in 2015 to bring transparency and efficiency to the enterprise market by fostering a thriving ecosystem around open source blockchain software technologies.

As a project of the Linux Foundation, Hyperledger Foundation coordinates a community of member and non-member organizations, individual contributors, and software developers building enterprise-grade platforms, libraries, tools, and solutions for multi-party systems using blockchain, distributed ledger, and related technologies. To learn more, visit: <https://www.hyperledger.org/>



About taXchain

taXchain is a blockchain-based tax and customs solution that allows companies to collaborate and exchange data with each other in a secured, transparent, and compliant environment.

The system-independent platform taXchain, based on the futureproof blockchain technology, eliminates paper-based processes while enabling cost savings, compliance, and transparency in your tax and customs processes. On top of all these benefits, you can securely exchange data between companies with assurance of its originality. To learn more, visit taxchain.org

About KrypC

Founded in 2016, KrypC is a global technology solutions company, with offices in the U.S., the Netherlands, and India, delivering secure, enterprise-grade blockchain solutions to the private and public sectors. We build solutions using blockchain, IoT, and AI technologies to solve hitherto unsolvable problems. We provide low-code, ready-to-use platforms for enterprises and start-up innovators to deploy and manage solutions with minimal effort, cost, and risk. To learn more, visit krypc.com



About Siemens

Siemens AG is a German multinational conglomerate corporation and the largest industrial manufacturing company in Europe headquartered in Munich with branch offices abroad. To learn more, visit www.siemens.com

About Henkel

Henkel is a German multinational chemical and consumer goods company headquartered in Düsseldorf, Germany and active in both the consumer and industrial sectors. To learn more, visit, www.henkel.com

