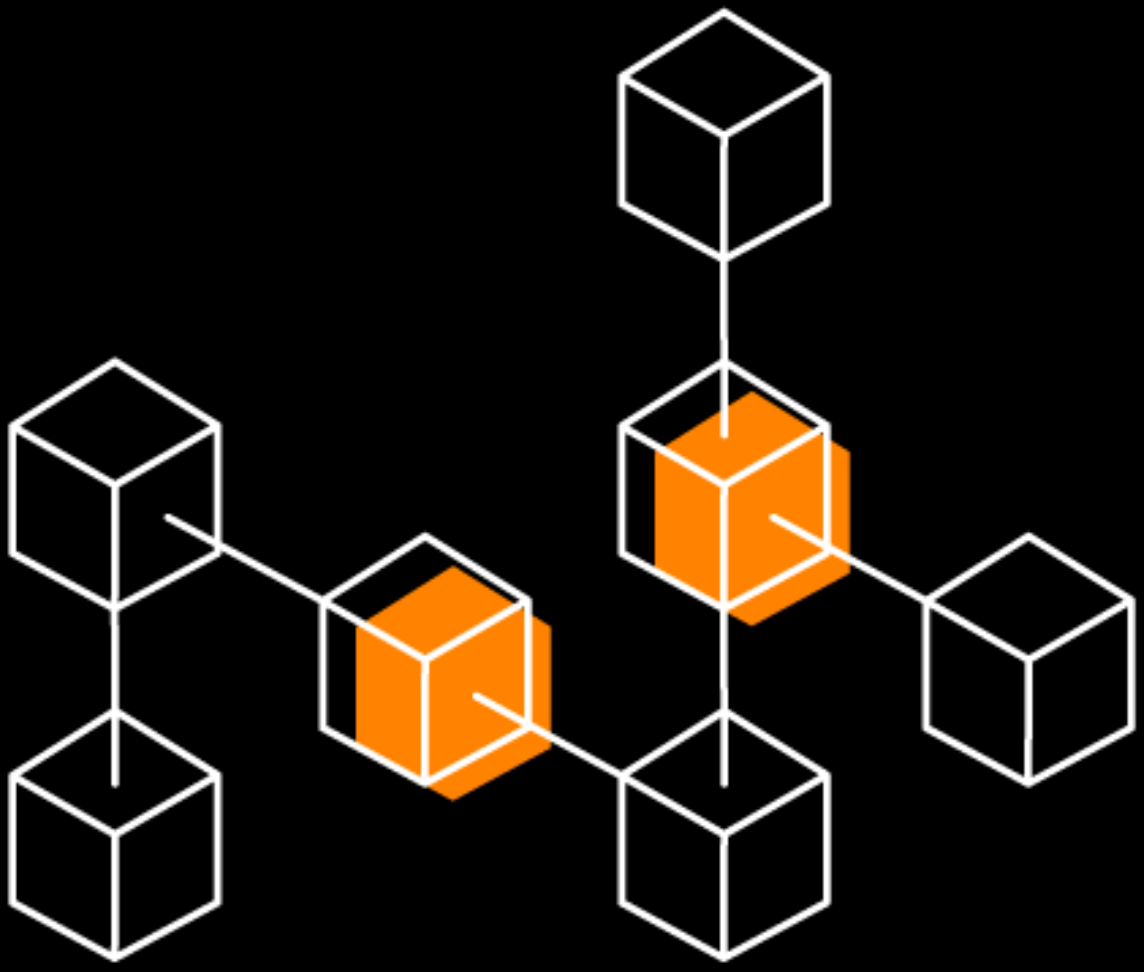

5 steps to a blockchain proof of concept (POC)

A lean developer's guide to building your company's first blockchain application — in as little as 4 weeks

From the blockchain developers at

ARCTOUCH

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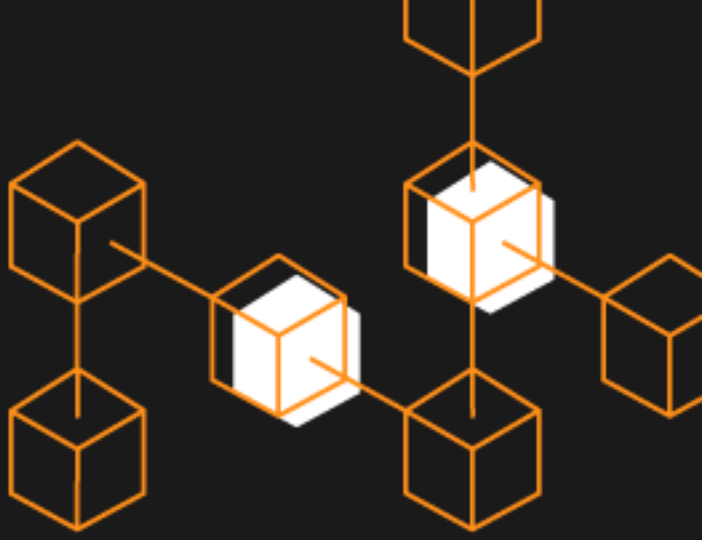


INTRODUCTION

Building your first blockchain application

> 66% of CIOs and IT leaders believe blockchain will create business disruption, and have established budgets to experiment with the technology.
>
> — GARTNER

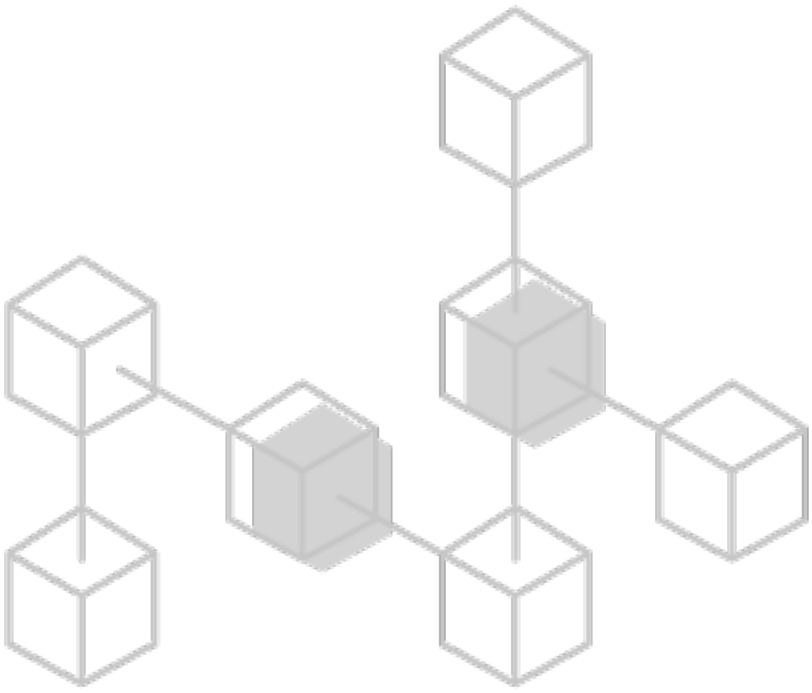
Chances are, if you've taken the time to download this ebook, you've read all about the merits of blockchain and you believe that it has the potential to disrupt your industry. You're not alone. A recent Gartner survey revealed that 66% of CIOs and IT leaders believe blockchain will create business disruption, and have established budgets to experiment with the technology.

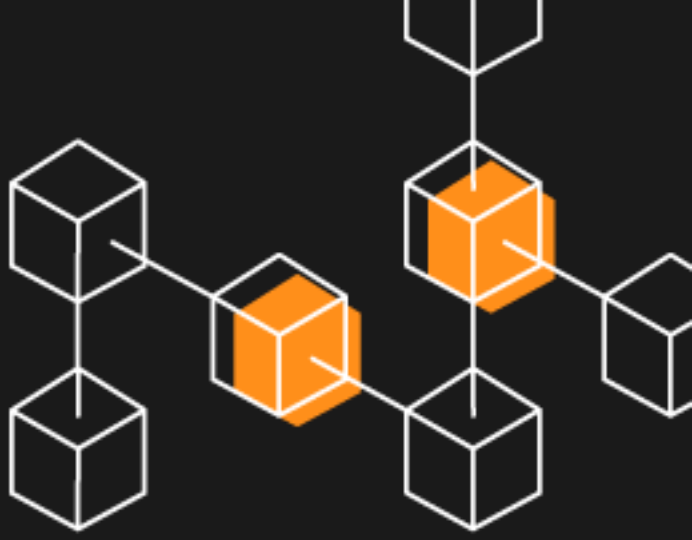
You may also have an idea for a blockchain application you'd like to build for your business — but you're not sure where to start. And you probably don't have an unlimited budget (because who does?). Nor do you want to commit to a long, drawn-out project.

So, start small. The goal of this ebook is to offer a high-level, step-by-step guide for building a blockchain proof of concept (PoC). We use this process for our clients. The business goals of each project vary, but the outcome always involves testing whether blockchain is a good fit for a specific business need or problem. Without spending a fortune.

The truth is, you probably won't really know whether it's right for your company until you build a blockchain PoC. So, follow industry best practices and take a lean approach to building it. In **Step 1**, we start with your idea and analyze it from all angles to flesh out the opportunity. From there, we define your blockchain PoC feature set.

Editor's note: For this guide, we provide the duration it ***typically*** takes to complete each step during a blockchain PoC project. Depending upon the complexity of projects, that time varies. A basic PoC could take as little as four weeks. This guidance, based on our experiences at ArcTouch, hopefully offers a useful benchmark.





STEP 1

Define the opportunity

DURATION: 1-2 days

> The global blockchain market will reach $60 billion by 2024, up from $708 million in 2017.
>
> — WINTERGREEN RESEARCH

Think of your blockchain PoC just as you would any other product. You need to have a sound strategy, and alignment from all stakeholders, before launching into any development effort. So, where do you start? A product-planning workshop.

The blockchain PoC product-planning workshop

In our blockchain product-planning workshops, we gather all stakeholders for a 1-2 day meeting. In this meeting, we use a series of exercises to deconstruct the blockchain PoC idea down to its very core value proposition. From there, we build it back up into a defined product, with a clear project roadmap. There are three main outcomes:

1. PoC feature requirements. Every digital product starts with understanding of the user — a consumer or a business user. Once we understand the user problem, and the intersecting business opportunity, we create a user journey map to help us define the minimum PoC feature set.

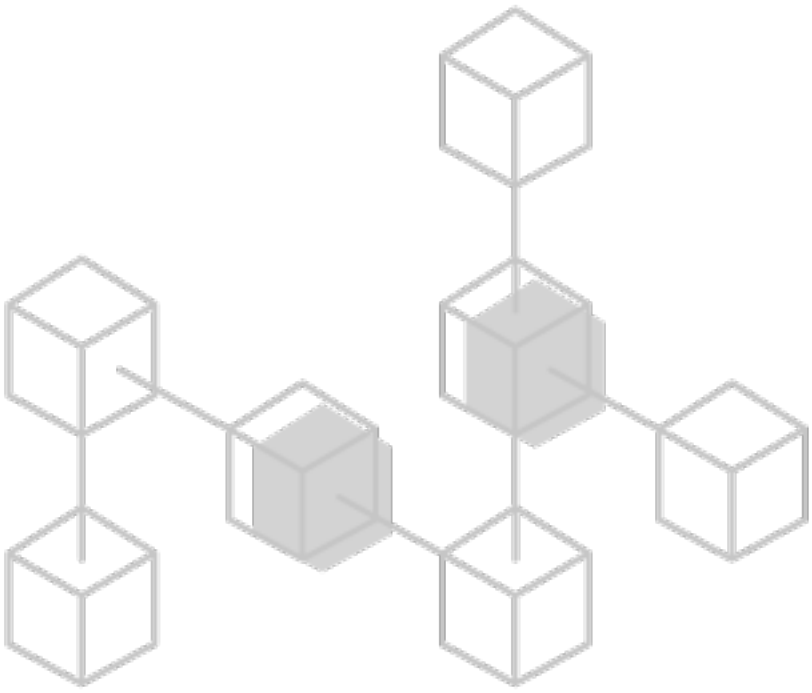
2. Measurable key metrics. Defining the project's key metrics, particularly the one metric that matters (OMTM), are crucial for two reasons. For one, the metrics become the guideposts for the

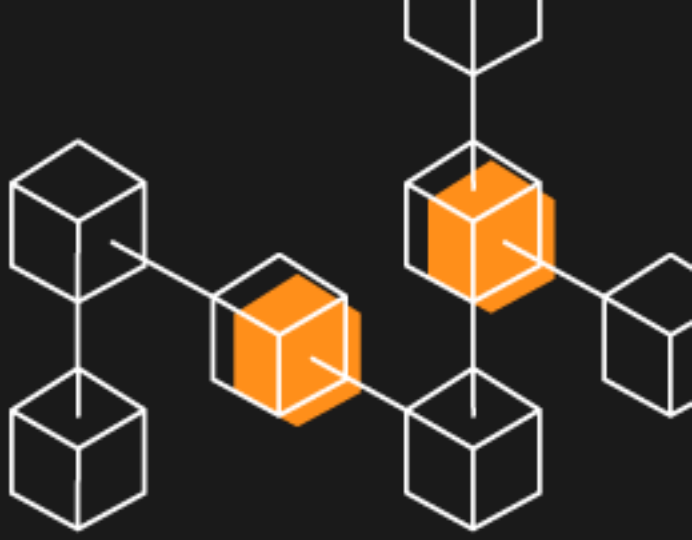
project team during development. All efforts should ultimately have a relationship to these metrics. Second, you need to define how you'll measure the return your business will get from your blockchain PoC investment. Because it's a proof of concept, these metrics should include:

- **Determining whether your blockchain PoC is commercially viable.** After the PoC is complete, you'll want to be able to make the decision about whether it's viable to go into production — and understand the potential return on investment you can expect if going to the next level.

- **Your team's technical understanding of blockchain.** Even if you decide that your industry or company isn't ready to deploy a production blockchain, you'll want your team to gain experience from the project. That way, when blockchain becomes ripe for disruption in your industry, you'll be ready to move quickly.

3. Stakeholder alignment. A crucial component to the success of any development project is to establish alignment among all stakeholders. During the product planning workshop, the feature set and the process for how the project will move forward will be defined collectively — and alignment is established.





STEP 2

Investigate the technology

DURATION: 2-5 days

> 78% of executives believe they will lose a competitive advantage if they do not implement blockchain.
>
> — DELOITTE

Next, you'll hand off the blockchain PoC feature requirements to the engineering team. They'll research and define the key blockchain and additional technologies to be used during development. This includes:

Identifying the blockchain protocol

There are many commercial-quality blockchain protocols, such as Ethereum, Hyperledger, Corda, and Quorum. The choice of which to use for your PoC depends on the user problem we're addressing and the feature set. Specifically, we'll look at the performance of each compared to the relative priority of factors, including transaction rate, consensus model, privacy, scalability, and infrastructure requirements for mining.

Defining the blockchain governance architecture

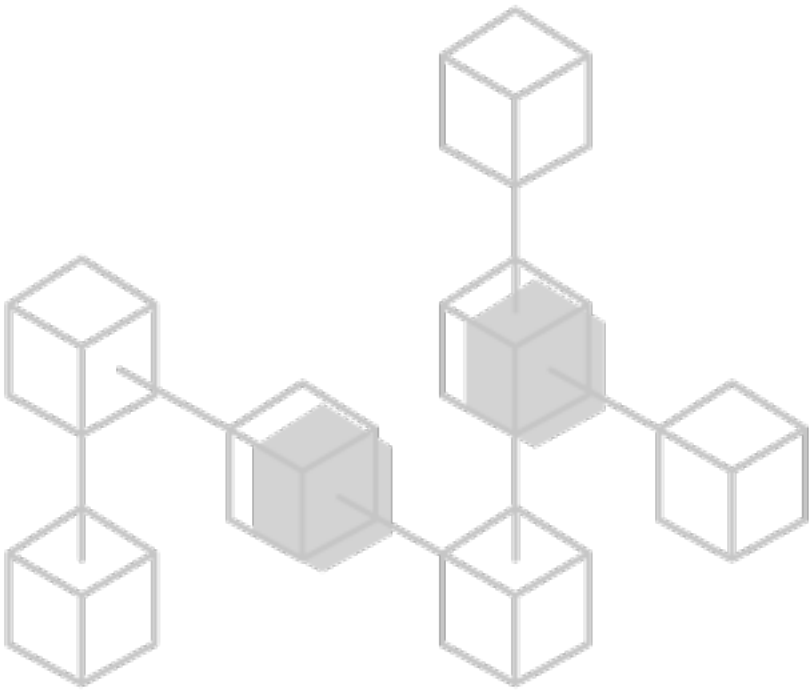
A fundamental question to answer is whether or not the blockchain should be public, private or a consortium — which essentially comes down to who will validate transactions and smart contracts as they are executed.

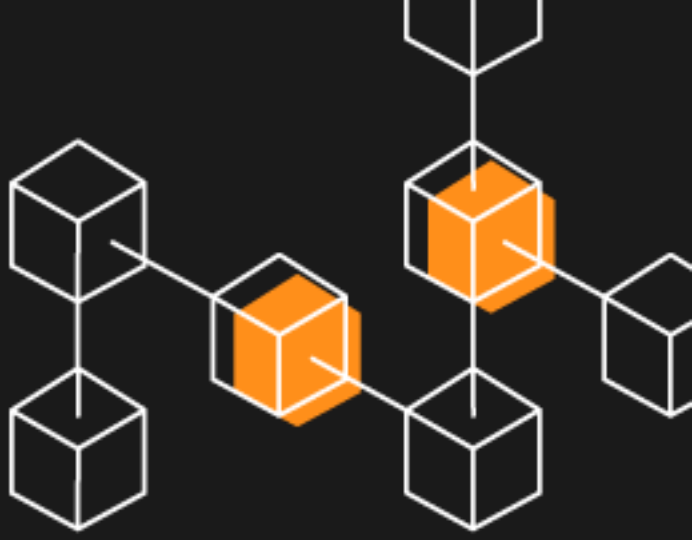
- **A public blockchain** completely decentralizes a network, allowing all transactions to be fully transparent on the open Internet, though the

identities of individual parties can remain anonymous.

- **A private blockchain** usually is hosted by a company or government entity. The entity controls who can access and has permissions to complete transactions. Validation must also be performed by the company. Often, a private blockchain is used for a PoC — and then that PoC is moved to a public blockchain or consortium when the production version is deployed.

- **A consortium blockchain** is more like a private blockchain, but can be accessed by a group of users with permission. For example, a supply chain that involves multiple partners might leverage a consortium blockchain — and as each participant involved completes transactions, they can be validated by all partners.





STEP 3

Build the blockchain

DURATION: 5-20 days

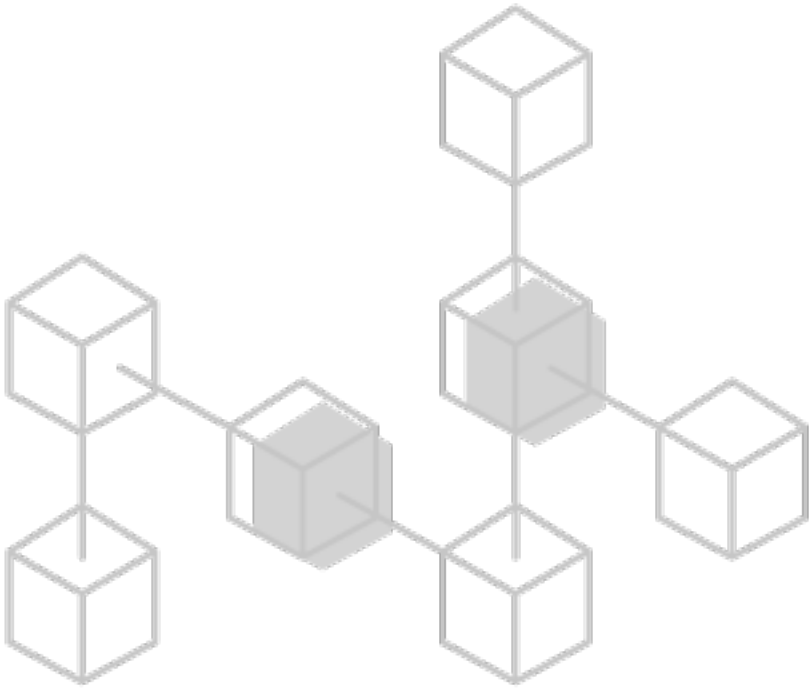
> Blockchain-related job posts in August 2018 were 300% higher than the same period in 2017.
>
> — GLASSDOOR

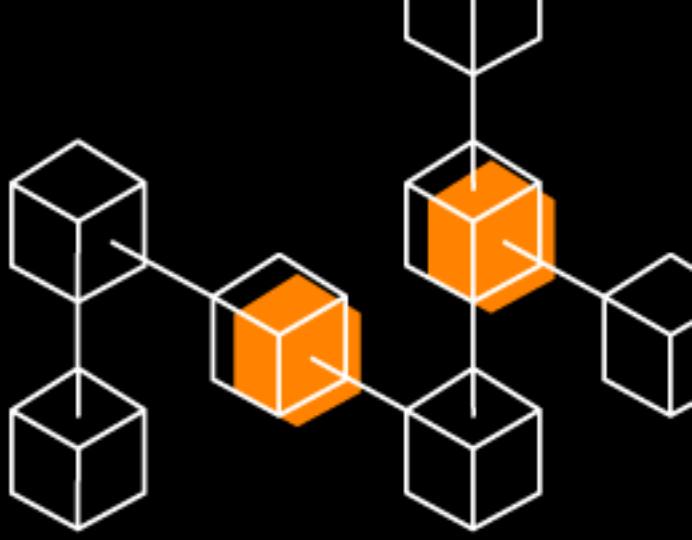
With the technology investigation complete — and stakeholders aligned with the engineering team's decisions — now it's time for developers to do what they do best: build. This includes:

- **Create the architecture.** After choosing the platform and establishing the proper governance, the first piece of the blockchain to be created is the genesis block. Also known as Block 0, this genesis block is the ancestor to which every other block that's added can be traced back. The genesis block will usually be hard-coded (later) into any applications designed to interact with the blockchain.

- **Write the smart contracts.** A smart contract is essentially a software program that analyzes a transaction — whether it's digital currency or an information exchange — and then determines how to process that transaction. That could mean delivering payment to the intended target or notifying a member of the network that information has been updated. The smart contract also stores and replicates the information, giving it security and immutability.

- **Develop the APIs.** Similar to any back end, a blockchain is essentially a platform that stores data. To access and push data to that back end, a blockchain solution needs companion APIs so that applications can interact with it. Once the APIs are in place, the front end of your blockchain PoC can be created.





STEP 4

Design and build the DApp

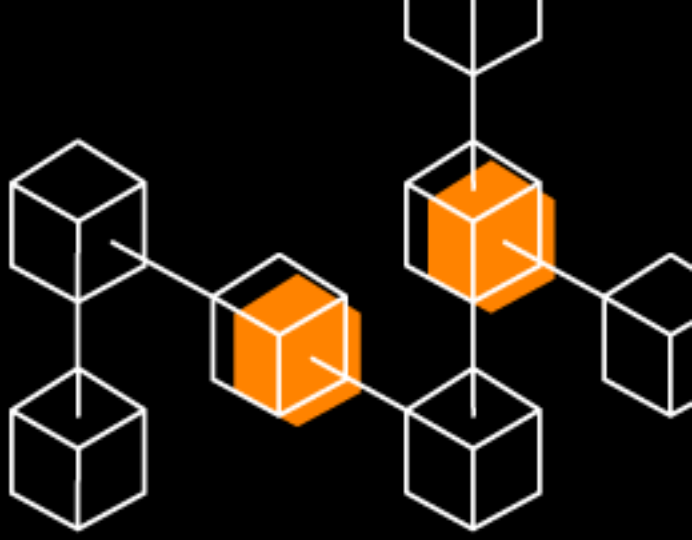
DURATION: 10-30 days

> Global spending on blockchain solutions is expected to reach $2.1 billion by the end of 2018.
>
> — IDC

With the blockchain back-end in place, it's time to build the digital touchpoints for users to engage with the blockchain. These front-end touchpoints are referred to as DApps (decentralized applications) and could be a mobile app, a web site, or a chatbot.

The key factors of a DApp to consider are:

- User authentication. This is how identity is established and verified for blockchain transactions.
- Information transmission. For the purposes of the PoC, focus on the simplest way to send information (of any type) and establish smart contracts on the blockchain.



STEP 5

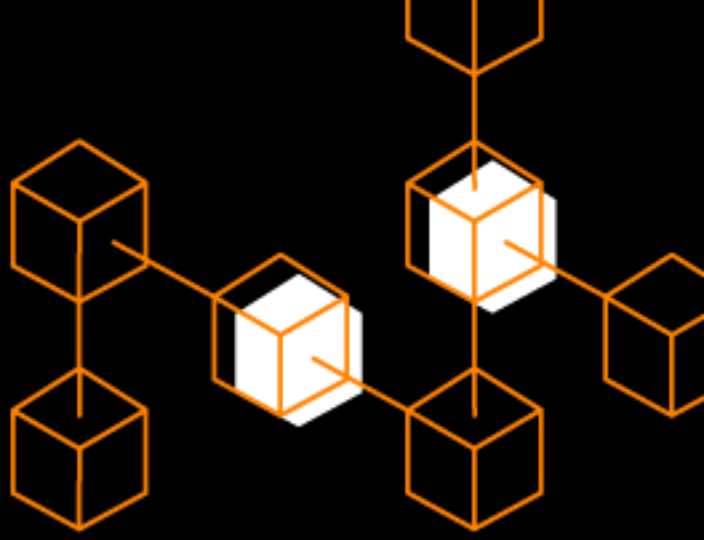
Validate and measure

DURATION: 5-15 days

> 41 percent of executives say they expect their companies to bring blockchain into production within the next year.
>
> — DELOITTE

Now that you have a functioning blockchain PoC, the focus shifts to testing, optimization and measuring the success of your project. Typically, this phase concludes with a business discussion about the next step when you'll answer this all-important question: Are you ready to put more resources into this blockchain solution and build a production-level blockchain application?

- **Testing:** The development team will analyze the performance of the PoC and its ability to scale by adding more users, data sources, or additional use cases.
- **Optimization:** Make any necessary optimizations to the smart contracts or the front end based on test results and user feedback.
- **Measurement:** Revisit the OMTM and other key metrics determined during the product-planning workshop. Then make that all-important decision about whether or not to pursue a commercial rollout.



CONCLUSION

Beyond the PoC

> There were 250 million Ethereum transactions in 2018, a 2.5x increase from 2017.
>
> — ETHERSCAN

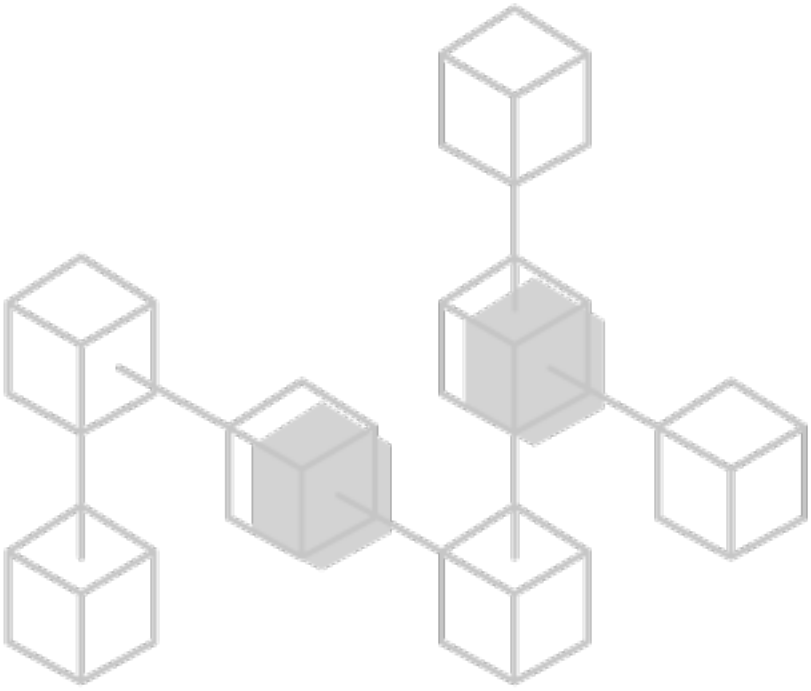
With your PoC complete, you're likely to come to one of two main outcomes:

1. You're ready to pursue a commercial blockchain deployment. This probably isn't an all-or-nothing decision. But if the PoC project gives you confidence that your business is close to being blockchain-ready, you can take the next steps by creating blockchain solutions that run in parallel with your other business processes. This is also the time, bolstered by the confidence in the PoC, that you bet bigger on your company's blockchain investment.

2. You're not ready for blockchain. We're big believers in the idea of failing fast. Whether it's simply business timing or a flawed user need, your PoC might quickly help you understand that you're not ready for a bigger blockchain investment. You save money by not betting big at the beginning. But your team gains the valuable experience in blockchain development so that if business conditions change, you'll be ready.

Regardless of the PoC outcome, the only way to truly cut through the blockchain hype and understand the relevance to your business is to build a PoC.

And if you need any help — with strategy, development or simply advice — feel free to contact us. We'd be happy to assess your needs and help you determine whether a blockchain PoC makes sense for your business.



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Our blockchain development services help companies transform their business processes through decentralized apps and blockchain ledger technology. Our team of experts helps businesses with blockchain strategy, architecture, design, and developing working proof-of-concept (PoC) decentralized applications (DApps) for leading blockchain platforms, including Ethereum, Stellar, and Hyperledger.

We have a decade of experience helping companies adopt a mobile-first approach to transforming their business through apps for phones and tablets. Now we're helping those same companies embrace the next great technological shift in software architecture – decentralized apps based on blockchain infrastructure. Today's forward-looking innovators are adopting a blockchain-first mentality, and we're here to help. To learn more about our blockchain practice, contact us today.

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