# Factom: Solving the Bitcoin Blockchain's Speed Problem

What is the need for Factom in a world where Bitcoin and its variants already exist?

Essentially, blockchain technology can only be used with the currency associated with it - a rather cumbersome condition for users who are not interested in trading in it.

With Factom, businesses can simply pick up the immutability aspect of the Bitcoin blockchain and use it to build a wide variety of applications that can meet the need for secure, unalterable record-keeping in various industries. Essentially, Factom extends Bitcoin's utilities to record events apart from monetary transfers.

Factom has also proven to be an elegant solution for a host of other constraints that the Bitcoin blockchain presents, namely, speed, cost and bloat. Let's focus on the aspect of speed alone for now.

## Bitcoin and Variants: Transaction speed is hit

The Bitcoin blockchain maintains roughly a 10-minute confirmation time for each block. And a common requirement is to perform six confirmations. This means it can take all of an hour to process a single transaction - a figure that proves to be crippling for most industries. In cases where greater security is required, the number of confirmations needed also goes up, consuming even more time. Bitcoin and variants are limited to about 5 to 7 transactions a second.

## Enter Factom

Solving this problem, among others, is Factom - a data layer that sits on top of the Bitcoin blockchain and allows businesses to build applications for top-notch data storage. The moment we begin dealing with data storage for business, two factors immediately enter the equation:

- The need for complex data handling capabilities
- The need to handle the relationships between this data

Factom achieves these by segregating data into chains, with each chain comprising of data relating to a single document or entity.

## How Factom Organizes Complex Data

Each new 10 KB chunk of data published on the Factom Blockchain is called an entry. A number of entry blocks taken together form an entry block. Now, each entry block represents a chain of data and new entries for each chain go into their respective entry blocks. Once this is complete, entry blocks are placed within a directory block. A new directory block is created every 10 minutes within the Factom blockchain.

Of note here is the fact that that you don't need the entire chain to perform any function but only the part of the chain you are interested in. Add to this the fact that Factom is built such that it minimizes connections between chains. For instance, a chain may be validated

without reference to the information held in other, unrelated chains. This means a user has to only maintain minimal information to validate the chains that are of interest to him/her.

This is how Factom achieves a high number of transactions per second with highly complex data - an essential condition when dealing with business applications.

**A Factom Use Case: Patient Data Management**

A massive amount of data is generated every day in the form of health records. This includes prescriptions, lab reports, x-ray results, and more. This data has to then move through the complex healthcare system - from the primary care physician to the specialist and then on to insurers and so on. The Bitcoin blockchain proves insufficient to manage such high volumes of data at optimum speed. This is where Factom comes in. Capable of processing thousands of transactions per second even when handling highly complex data, Factom brings in the speed necessary to store and manage such high-volume and critical data while simultaneously preserving data integrity.

And with that, it's a wrap, folks. Yet we've only just begun. Watch this space for more on how Factom marks the end of other constraints that the Bitcoin blockchain presents.