

# Cognizanti

## From Vision to Reality

How MetLife  
Applied Blockchain  
to Solve a Difficult  
Health Insurance  
Challenge

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# How MetLife Applied Blockchain to Solve a Difficult Health Insurance Challenge

By Zia Zaman

Working with well-placed partners, the global insurer launched the world's first automated insurance solution for gestational diabetes in Singapore, taking enterprise blockchain technology from the highly aspirational to the incredibly practical and meaningful. Along the way, it uncovered the potential, and limitations, of distributed ledger technology's uplifting impact on both underserved communities and society as a whole.

In September 2016, a colleague in our innovation center LumenLab walked into my office with a bold idea. At LumenLab, we're accustomed to this; based in Singapore, we were established to build disruptive businesses for MetLife. "Lumen," a measure of light, symbolizes our commitment to illuminating new paths for solving problems faced by people in Asia today.

Still, I underestimated just how pivotal this moment would be. He enthusiastically pitched a

new insurance idea based on a smart contract (contracts that verify and carry out credible transactions without third parties), to which I responded, "Wouldn't it be great if we could make an insurance payout as effortless as getting a soft drink from a vending machine?"

This ambitious idea took advantage of the technology underlying Bitcoin: blockchain, or more precisely, distributed ledger technology (DLT).

# Validating opportunities

Back then, Bitcoin had yet to reach its peak valuation, and while there was a lot of talk about use cases in the enterprise, nobody, in any industry, had gone and done it. LumenLab thrives on challenges like this.

Over the course of our four-year existence, we've developed and refined our own "test & learn" process for building new ventures (see Figure 1). We measure success in terms of knowledge gained through small experiments, which can subsequently turn into commercial impact. Test &

learn is an exceptionally fast and inexpensive way to challenge assumptions, eliminate risk and transform uncertainty into valuable insights – be it consumer pain points (what we call "jobs-to-be-done"), product-market fit or technology readiness.

The process runs in two stages: exploration and experimentation. During the exploration stage, we frame the problem and define what success looks like. We then refine the true job-to-be-done for the customer and generate ideas for how to build solutions. At the end of this stage, we have "fallen in love with the problem" and may have found new ways of solving it.

## The test & learn framework

	PHASES	TOOLS	BEHAVIORS
EXPLORATION	<b>1</b> <b>FRAME</b> Define and align on scope and success	<ul style="list-style-type: none"> <li>Goals and bounds</li> <li>Context capturer</li> </ul>	 <b>INNOVATION</b>
	<b>2</b> <b>EXPLORE</b> Understand our consumers and unlock great insights	<ul style="list-style-type: none"> <li>Into-the-wild interviews</li> <li>Persona builder</li> <li>Jobs-to-be-done finder</li> </ul>	 <b>CURIOSITY</b>
	<b>3</b> <b>CREATE</b> Generate a range of ideas, and align on the best	<ul style="list-style-type: none"> <li>Solution developer</li> <li>Ideation sprint</li> <li>Rule breaker</li> </ul>	 <b>EXPANSIVITY</b>
EXPERIMENTATION	<b>4</b> <b>BLUEPRINT</b> Develop and refine our solution to setup for success	<ul style="list-style-type: none"> <li>Value proposition</li> <li>Competitor mapper</li> <li>What-if financials</li> </ul>	 <b>EXPERIMENTALITY</b>
	<b>5</b> <b>EXPERIMENT</b> Set-up and run "pretotypes" to test and learn efficiently	<ul style="list-style-type: none"> <li>Assumption mapper</li> <li>Adaptive planning</li> <li>Experiment designer</li> </ul>	 <b>VELOCITY</b>
	<b>6</b> <b>PILOT</b> Launch our pilot to build and move toward scale	<ul style="list-style-type: none"> <li>Minimum viable product</li> <li>Elevator pitch</li> </ul>	 <b>BRAVERY</b>

Figure 1

During the experimentation stage, we formulate a value proposition, run small-scale experiments to test our assumptions, and iterate until we're confident with building a pilot. The result is real-world validation that can be used to build commercial products – without the risk and uncertainty that typically accompanies new ventures.

## Using blockchain to serve the underserved

When we set out to build the world's first blockchain-powered health insurance application, we needed to make sure it offered real benefits. Do the benefits of blockchain line up with real customer needs? Is the technology ready for actual insurance customers? Can we align the right group of partners to build a system on blockchain? These are just some of the questions we had when we started, and we would methodically answer every one of them as we moved forward.

Our first challenge was to find a proper product scope. We needed to cover a risk that was relatively

low in cost but still represented a latent coverage gap for customers. It needed to be a niche market so we could keep it small enough to experiment. And we needed a short claim period, with a high enough incidence rate to ensure we could learn enough about the end-to-end customer experience in a short time span. After much deliberation, a team member's pregnant wife suggested a solution: gestational diabetes mellitus, or simply GDM.

GDM is a form of diabetes that develops during pregnancy, occurring either when an expectant mother can't produce enough insulin, or the insulin is not working well enough to act on the sugars in her body. This leads to excess glucose in the bloodstream, which can be passed on to the baby. Associated complications during pregnancy and labor include excess birth weight, premature birth and, in some serious cases, stillbirth. GDM affects one in five pregnant women in Singapore<sup>1</sup> and, crucially, is typically not fully covered by general health insurance. In other

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Hence, Vitana was born. But we couldn't do it alone.

## Assembling the right partners

A key benefit of blockchain is that it eliminates many of the processes that add to the cost of insurance for customers – including underwriting, onboarding and claims processing. Our vision for Vitana was to shortcut the process to provide a frictionless experience for customers. We wanted customers to sign up in just a few minutes and our policies to be issued completely hassle-free. To top it off, we wanted to completely eliminate the claims process for customers afflicted with GDM. This meant payouts would automatically appear in patients' bank accounts upon diagnosis – zero paperwork.

To realize this vision, we had to connect disparate data from many

different systems. We needed clinics to help us distribute Vitana, electronic medical records (EMR) providers to record customer data, and a technology provider with deep expertise with DLT to help us implement our ambitious plans.

Because MetLife doesn't have a traditional insurance business in Singapore, we also partnered with Swiss Re to reinsure the risk and offer valuable insight on product design and delivery in the Singapore market. Additionally, the Monetary Authority of Singapore (MAS) provided the regulatory sandbox that made the whole experiment possible.

Our team of collaborators also consisted of Singapore's largest clinic group, Singapore Medical Group (SMG), EMR start-up Vault Dragon, and business services provider Cognizant. Together – over the course of six months – we developed a customer journey, reengineered clinical processes and built the technology that turned Vitana into reality.

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## Vitana in practice

Vitana has two elements: a mobile app for customers and a blockchain back-end to act as the source of truth for all involved parties. But for all the technology involved in Vitana, our focus was on the customer journey.

Early in her pregnancy, after being informed about the risks of GDM and being told about the innovative new coverage, the expectant mother is encouraged to sign up by simply downloading the app and entering her government-issued ID number. The app automatically connects to the customer’s electronic medical records and populates personal information. All that remains is for the customer to answer three simple underwriting questions and enter payment information. This takes about two minutes – and she is instantly covered.

A smart contract is automatically created, encrypted and deployed to an Ethereum blockchain. This creates a policy document, which is emailed to the customer

virtually simultaneously. All parties – clinics, insurers, reinsurers and regulators – now have visibility of new policies in real time. It doesn’t just strengthen communications; it eliminates much of the transaction costs for the parties interacting with one another.

The truly transformational moment happens at the “claim” stage. From a customer’s perspective, it’s all invisible and completely frictionless. Around Week 25, the expectant mother is tested for GDM by her clinic, which updates her EMR with the results. Should the customer test positive for GDM, the EMR automatically writes the result onto the blockchain. The smart contract then executes, and a payout is automatically triggered to the customer’s bank account.

Again, all parties are instantly notified, and the insurers – in this case, us – can process the “claim” and make the payment, without the customer ever contacting MetLife.

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## Triggering the smart contract

When downloaded, the Vitana app automatically connects to the patient's electronic medical record and deploys a smart contract to the blockchain. All parties now have visibility into new policies in real time. If the patient tests positive for GDM, the EMR automatically writes the result onto the blockchain, which executes the smart contract and triggers the payout to her bank account.

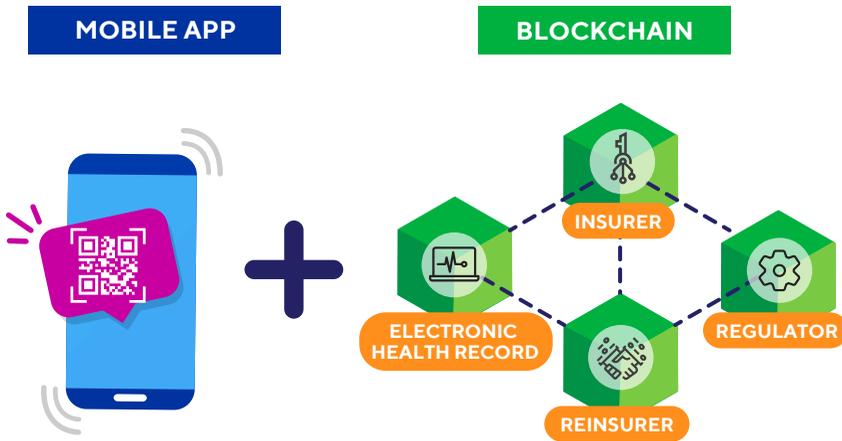


Figure 2

## Takeaways to date

Vitana was designed as a time-bound experiment in the sandbox of MAS. As a progressive regulator, MAS delivered on the spirit of a public-private

partnership and was pivotal in the cocreation of this initiative. At the time of writing, many conclusions are still to be drawn; however, some lessons stand out already:

1

**We found a real customer need in GDM, and blockchain helped us put together a seamless, frictionless experience for customers afflicted by the condition.**

Offering real value to expectant mothers in a time of need has been a rewarding and gratifying experience. We are serving the underserved; the potential for us to insure future risk pools will increase access to and inclusion with insurance. This is arguably Vitana's greatest potential legacy.

2

**Real-time shared data across all parties using blockchain is invaluable.**

It is our firm belief that as the technology matures and new platforms emerge, the future of data will be decentralized. One added benefit is increased data protection for customers, whose data can be shared in encrypted fashion only.

Using blockchain, we can imagine a world where we can offer new services and products more simply

and at a fraction of the cost of traditional systems, meaning we will be better equipped to serve customers' micro-protection needs.

3

**Getting data prepared to go onto blockchain might be more difficult than setting up and executing the distributed ledger technology.**

When we designed the process flow in partnership with the clinic, we needed to rewire existing processes, which was an incredible change management effort, and even then we weren't able to eliminate all manual steps.

A word of caution: Operating on blockchain increases the required trust in the integrity of the data and the reliability of the processes that other parties use to feed to the ledger. You can't just go back and change a record when it is immutable. This is not what you typically hear at Consensus conferences,<sup>2</sup> but it is a lesson we will remember for our future solutions.

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The beauty of blockchain is that it makes it clear to first-time insurance buyers that if “this” happens, then “this” is what you get, automatically. Effectively, it increases trust between insurer and customer, which is the basis for fulfilling relationships going forward.

## The future of blockchain in insurance

As we continue to gather insights from the early success of Vitana, many insights and lessons emerge for potential future blockchain-based experiments. These key insights stand out:

- **Parametric insurance:** This is a type of insurance that does not indemnify the pure loss, but *ex ante* agrees to make a payment upon the occurrence of a triggered event.<sup>3</sup> Its key benefit is around simplicity and targeted accessibility to create low-cost, niche products.
- **Frictionless experience:** We expect sign-up for the product to be simple (minimal underwriting) and claim payments to be automatically triggered based on an objective, quantitative result for the customer. This reduces risk of fraud and eliminates the need for the traditional claims process.

- **Fully automated back-end:**

Our back-end processes will eliminate all manual steps to ensure the smooth servicing of future products. This will enable faster, cheaper and more efficient processing.

At a meta level, this is a peek into the future of our industry and possibly a way to include the next two billion people in the world of insurance, driving greater financial inclusion of our four identified underrepresented segments: women, middle-class farmers, octogenarians and people of faith.<sup>4</sup>

It works because of two factors: simplicity and trust. The beauty of blockchain is that it makes it clear to first-time insurance buyers that if “this” happens, then “this” is what you get, automatically. Effectively, it increases trust between insurer and customer, which is the basis for fulfilling relationships going forward.

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## Endnotes

- 1 Salma Khalik, "Diabetes Fight Focuses on Pregnant Women," *The Straits Times*, March 29, 2016, <https://www.straitstimes.com/singapore/health/diabetes-fight-focuses-on-pregnant-women>.
- 2 Consensus is the annual gathering of the cryptocurrency and blockchain technology world. For more information, see <https://www.coindesk.com/events/consensus-2019>.
- 3 This means the agreement takes place before the event occurs.
- 4 LumenLab Annual Report 2018: <http://lumenlab.sg/2018/12/20/annual-report-2018/>.



### Author

*Zia Zaman joined MetLife in July 2014 as the Chief Innovation Officer for the company's Asia region and Chief Executive Officer of LumenLab, an industry-first innovation center. As a member of MetLife's Asia Leadership Group, he is responsible for steering the company's innovation agenda across the region and around the world, with a passion for finding new ways to help the underserved.*

*Much of Zia's inspiration for new thinking sprouted on the two campuses where he studied. Zia holds an MBA from Stanford's GSB. His most formative early years were spent at MIT, where he wrote about probability, traveling salesmen and hockey goalies while pursuing his undergraduate and master's degrees in electrical engineering and operations research. Zia can be reached at [Zzaman@metlife.com](mailto:Zzaman@metlife.com) | [linkedin.com/in/zia-zaman-4ba46](https://www.linkedin.com/in/zia-zaman-4ba46).*

