



BLOCKCHAIN EMPOWERING WHOLESALE EFFICIENCY

BECOME EFFICIENT OR DIE

International telecoms is a global business transacted essentially between thousands of retail service providers who all need the services of each other (to connect a voice call or a message, or to provision circuits or transport data for instance), but who do not necessarily know or trust each other. Contracts, price sheets and regular settlements between all combinations of these diverse entities have been considered to be impractical. Consequently, a tier of intermediaries has been established over the years to act as the “middlemen” handling routing, rating, settlement, fraud and quality management on behalf of the operators.

The innate ability of the blockchain design to create trusted information between many independent parties gives the industry an opportunity to make some significant changes in this area.

Using these capabilities, the technology could be used to massively improve the efficiency of the processes, hence reducing the cost and complexity of services and significantly diminishing any potential benefits of a full redesign of the global telecoms environment.

With some elements of international wholesale traffic declining in recent years and margins under constant pressure, the need for efficiency in the wholesale business has never been greater. Efficiency gains, when it comes to networks and their management, have been discussed for many years now and most carriers have embarked on long term network virtualization programs, with SDN and NFV well engrained in most roadmaps.

Nevertheless, when it comes to improving wholesale operational efficiency, no sophisticated solution has been implemented to date.

In most cases, pricing details and order forms are still exchanged using spreadsheets in a non-standardized way, circuit provisioning still involves much human interaction, detailed transaction records to resolve disputes are shared manually with multiple weeks' delay, and payments are transacted using complex multi-currency agreements. All of which requires teams of people to deliver end-to-end, with a price tag in the millions.

Not only is this process completely inefficient, it is also time consuming and brings in the possibility of human error and fraud.

In a commodity business such as ours, where minute changes in the profit resulting from a transaction could make or break a business, operational efficiency is vital. We believe that blockchain could be a solution to this challenge and make the difference between coming out on the other side of the current wholesale transformation storm alive and kicking or dying a slow and painful death.

WHAT IS SO UNIQUE ABOUT BLOCKCHAIN?

Stories about Bitcoin are all around us - whether the price is rising (or falling) you have surely seen articles expounding the benefits of this crypto-currency. While we will leave the value of Bitcoin to others, what it did usher into the world is a business-changing technology known as blockchain - a technology that we think could be used to smooth out the inefficiencies that still hamper many of the processes underpinning global telecoms.

What is so unique about a blockchain you may ask? After all, databases have existed for many years and are reliable, secure and multi-purpose. The key innovation in the blockchain design is the cryptographic way each entry in the database is securely and immutably linked to all previous and future entries in such a way that it is impossible to retrospectively change that entry.

So, the recording of an agreed payment between two parties is locked for all time - unlike current database designs, where the database owner can change any entry in the database at will, at any time.

This is invaluable, as it provides trust between the parties and significantly reduces the likelihood of disputes and fraud, which costs



the industry billions every year. It also forces the standardization and empowers the automation of operational transactions between carriers, bringing massive savings and improvements to those end-to-end processes.

THE COMPLEXITY OF EFFICIENCY

Even after millions of dollars of investments in systems and automation, the provision of end-to-end international services remains one with handovers and mostly manual processes between the chain of operators.

In almost all cases, each operator in the chain naturally requires a payment for the value they add, and those payments can change regularly, and in complex ways, as the options for routing services evolve or as new capabilities are provided.

International carriers, in addition, are heavily invested in managing currency conversions and payments and so the regularly shifting exchange rates all play into the price for a particular service.

Some of the main inefficiencies that blockchain could address cover the whole spectrum of wholesalers' activity, from contract to payment, with all that comes in-between. And this does not only apply to voice, as multiple inefficiencies can be found in interconnecting services to the cloud, facilitating remittance or facilitating mobile roaming for example.

The table below outlines some of the most obvious wholesale inefficiencies that blockchain could address.

HERE COMES THE CARRIER BLOCKCHAIN

As a result, a significant opportunity exists for carrier-grade blockchain implementations, where a large global carrier or a federation of like-minded entities, design and operate a high quality, resilient and carrier-grade blockchain system or platform, over which other operators and service providers (and major enterprises) can in turn develop and implement their own solutions.

Issues such as security of access, availability and response time are all "business as usual" capabilities of a carrier, and the use of high quality and secure transmission paths only enhances the offering. With such a platform in place, international carriers can turn their attention to the major efficiency gains that will propel the business into the next decade.

Blockchain use cases around international voice efficiency are the most obvious ones. But many others abound for international carriers. Of course, much of the heavy lifting comes from the effort to standardize inputs such that the blockchain can authoritatively record agreed events, but even at a first glance, the opportunities are substantial.

Obviously, the use of blockchain to make messaging more efficient, in the same way as it would for voice, is one such opportunity. Likewise, efficiency gains in roaming also comes to mind as an ideal blockchain use case, considering it is an area of the industry where many of the same issues exist.

Although blockchain came from a "financial" background with Bitcoin, its use in the telecom space does not have to require a financial



Wholesale inefficiencies addressed by blockchain

Processes	Process Inefficiencies	Blockchain efficiencies
Contracts	<ul style="list-style-type: none"> Non-standardized Manual process 	<ul style="list-style-type: none"> Standardized Automated process
Pricing	<ul style="list-style-type: none"> Non-standardized Manual process and prone to human errors 	<ul style="list-style-type: none"> Standardized Pricing recorded securely
Provisioning	<ul style="list-style-type: none"> Manually exchanged asset availability and pricing Manual ordering and circuit provisioning 	<ul style="list-style-type: none"> Asset availability and price in the blockchain Assignment confirmed with new ownership Provisioning driven from new records
Quality management	<ul style="list-style-type: none"> Performance events are separately known to carrier and customer Each party calculates performance and customer requests compensation 	<ul style="list-style-type: none"> SLA terms in blockchain Performance events recorded as they occur Smart contract calculates SLA results and compensation
Invoicing	<ul style="list-style-type: none"> Non-automated lengthy process Prone to discrepancies and disputes Manual process in many cases, so inefficient and at risk to human error or fraud 	<ul style="list-style-type: none"> Automated process Settlement implemented in real-time at session level Invoicing becomes reporting Minimizes the possibility of bad debt and similar frauds
Settlement	<ul style="list-style-type: none"> Non-automated Prone to discrepancies and disputes Manual process in many cases, so inefficient and at risk to human error or fraud 	<ul style="list-style-type: none"> Automated process Transparent and immutable Can be done in real-time as sessions are routed Minimizes the possibility of bad debt and similar frauds
Currency	<ul style="list-style-type: none"> Complex currency ecosystem, at risk of losses from exchange rate fluctuation 	<ul style="list-style-type: none"> Could enable a telecom crypto-currency, which would simplify the whole international settlement process



transaction for each event. For example, quality management and Service Level Agreement (SLAs) depend on the recording of facts about a service - availability, packet loss, jitter etc. - and a contractual agreement on what the service level should be.

Rather than the operator and the customer separately monitoring and measuring this service, a blockchain driven record of each service event could be checked/confirmed by the customer as it happens, and then an automated report against the SLA would be available as required. If financial penalties are due, they could easily be automated as part of the same process.

From here, a multitude of blockchain applications

could also be considered from number portability, remittance and real-time capacity provisioning and settlement. A fuller picture of at least some of the possible blockchain enabled efficiencies and services is shown in the picture below.

Some even stipulate that the cloud could be empowered by the blockchain technology, with everything that happens to data, whether transport, processing or storage being entered into the blockchain. Such a system would give complete traceability for the cloud, with everyone involved in transactions over that cloud able to verify what happened and when.

A powerful concept!

Potential wholesale blockchain use cases



ABOUT THE AUTHOR

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Steve has a lifetime of experience in designing, engineering and operating networks, both domestic and international. With leadership experience in small technology start-ups through to global service providers, he has deep experience in a wide range of products, technologies and geographies.

He has the rare skill of being able to explain complex technical issues in easily understood concepts and uses that extensively in his consulting work with HOT TELECOM.

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