

Streamlining Roaming-Related Processes and Settlements for Telecom Operators

Lamden applies distributed ledger technology to create previously unfeasible efficiency in business processes.

We focus on the point where distributed systems technology and business process automation intersect to deliver solutions to previously unsolvable problems. We use the LEAN philosophy to create the most minimalistic solution possible.

Our team is made up of PhD qualified experts in the fields of economics and distributed systems technology. This allows us to propose and implement the best business solutions for your specific processes and needs. To accomplish this, we utilize a state-of-the-art custom blockchain system that delivers high throughput against a rich, smart-contracting environment. Our system has a modular design that allows us to apply extensions and modifications to meet your specific needs quickly, simply, and most importantly, while maintaining cost-effectiveness.

It all starts with a discovery and analysis period where we'll evaluate your current processes and propose technology-enabled optimizations that will help to increase your bottom line. From there, we'll fully implement, support, and manage the solution.

Roaming Settlements and Their Inefficiencies – Current State

When people go abroad with their smartphones, they have to use the roaming services of foreign telecom operators that they have no contract agreement with. It might seem to be a very profitable service for telecom operators – and it generally is – but the process doesn't occur as easily as it may seem.

The greatest inefficiencies are the result of the need for each telecom operator to support hundreds of roaming agreements, large amounts of settlements with foreign operators, and a significant amount of fraud.

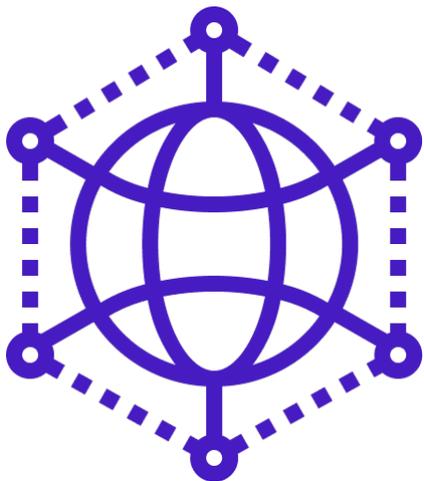
In a traditional roaming system, when a call or event occurs, the foreign network (VPMN) queries the client's home network (HPMN) about the services to which this particular user has subscribed. Then, call detail records (CDRs) are sent to the billing systems that process all of the events and generate invoices. Acting as a data clearinghouse (DCH) for both companies, intermediary companies process the necessary data. Once all of the data has been processed, the client's home telecom operator settles the account with the foreign operator in accordance with existing regulations and the roaming agreements in place between the operators. This settlement is a complex and often time-consuming process.

Unfortunately, even complex settlement processes meant to make things more secure don't eliminate the possibility of roaming fraud which currently accounts for more than 10 billion USD in revenue

losses globally. Often, the home telecom operator is unable to charge the client for services provided by the foreign telecom operator, yet they are still obligated to pay for the roaming services.

While the problem is clear, it's not easy to eliminate its cause. Since roaming

occurs when the client is using a network other than their home network, delays in data exchange between telecom operators are possible while communication services need to be provided to clients without delay. This means that services are often provided based on trust and fraud becomes possible.



Blockchain as a Natural Solution for Settlements and Trust Issues

Massive numbers of complex settlements occur daily and require verification and completion with minimal delay and cost. Blockchain offers a superior trust model through a distributed ledger. By verifying each transaction and organizing all data in separate blocks that are appended one after the other, true data consistency and immutability is achieved. The process is based on a consensus model and shared ledger technology which does not involve any clearinghouses. This technological approach eliminates the possibility of fraud or disputes between participants and makes everything less time-consuming.

Currently, all roaming transactions have to go through a data clearinghouse to be approved. Blockchain smart contracts can easily automate this process and guarantee the settlement by routing data one operator's blockchain to another. A blockchain authorization can be implemented between every pair of operators with a roaming agreement.

The agreement is implemented as a smart contract. The blockchain technology can facilitate roaming services between multiple operators by checking the client's permission to roam and access specific services on particular networks. If access rights are confirmed, the blockchain will grant access to the network and track roaming services related to the client.

When the client initiates a call or event on a foreign network, call data records are published anonymously and securely in the blockchain. When a transaction containing the CDR data is broadcast to the blockchain, the smart contract is triggered, and the terms of the agreement are executed. The smart contract not only tracks services used, but it also calculates billing amounts for specific services based on the agreement terms that have been implemented in the smart contract rules.

Finally, all resulting payments are processed automatically based on determined billing amounts. Data clearinghouses are not needed in the middle which results in additional cost savings on top of increased efficiency.

Smart contracts also improve service level agreement (SLA) monitoring. Service level metrics can be part of the smart contract along with previously agreed-upon penalties or rewards according to the SLA. Since a blockchain is immutable and records can't be tampered with, events such as poor service are automatically recorded, and penalties are automatically

The Result

Implementing blockchain-powered roaming settlements helps telecom operators in many different ways.

First, costs are reduced by eliminating third-party clearinghouses and their expensive mediation services. Smart contracts and blockchain ledger technology decrease the costs of auditing and accounting while enabling nearly instantaneous billing which ensures revenue while dramatically reducing fraud.

Second, blockchain technology dramatically streamlines operators' internal processes, providing financial departments with a single view of the data as well as reliable audit trails since the history of all transactions is available in the ledger. Dispute resolution becomes quick and simple. All of this allows operators to focus on actual revenue generation and cash flow.

processed without any manual processing needed to correct settlements. If any party is not happy, original data can easily be reviewed to find the reason behind any specific penalty and records can't be tampered, events such as poor service are automatically recorded, and penalties processed without any need to handle them manually to correct the settlements. If any party is not happy, originating data could easily be reviewed to find the reason for any specific penalty.

Third, marketing departments can also benefit from the ability to introduce new roaming offers at a faster pace, code them as smart contracts, and propose them to other telecom operators as turnkey solutions ready to install and use. Blockchain technology also makes it easier to gather and analyze service usage data which is currently difficult to gather from so many different foreign parties. Telecoms can take advantage of this analysis power to bring new offers to the market much faster as well as tune them to specific use cases.

Blockchain technology could also potentially make certain legacy systems redundant. For example, as smart contracts are protected from possible fraud by design, legacy fraud management systems will become less necessary.

We are excited to speak more with you about all of the options we can bring to the table. Please reach out to our team directly at team@lamden.io.