Concept Paper on GST Chain

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NIC

1. BACKGROUND

The government has brought the biggest reforms in the taxation system from 1st of July 2017 throughout the Country. The various indirect taxation systems were merged and new 'Goods and Service Tax' System has replaced all of them. This system has brought the uniform taxation system throughout the nation so that tax rates are moderated and whole nation becomes a single market.

This system has been implemented with IT backbone from 'GST Network'. But the stake holders were facing some challenges in streamlining the system because of the tax evasion by the tax payers. Some of the challenges are the settlement of Input Tax Credit (ITC) claims of the tax payers, fly-by-operators and fake invoices. To overcome these challenges, the policy makers are improving the system by implementing the new policies and IT solutions.

To handle these challenges, NIC has come up with the blockchain powered solution. This solution is an add-on to the existing systems and will integrate with these systems and try to handle the challenges of the stake holders. The following paras explain in detail the challenges and solution using the blockchain, called as '**GST Chain**'.

2. GST SYSTEM

GST is a consumption tax, based on the credit invoice method where only the value addition at each stage is taxed, with seamless flow of credit along the supply chain. It subsumed in its ambit a large number of consumption taxes that previously existed in India, administered separately by the Centre and the States, resulting in a greatly rationalized taxation structure. The umbrella system of GST inter alia integrated the tax administrations of the Federal and State Governments, making it a single interface for the taxpayers, eliminating the cascading effect of taxes thereby making the country's exports more competitive in the global market and finally removing once and for all the age-old system of check posts for inter-state movement of goods.

The introduction of the Goods and Services Tax (GST) is a very significant step in the field of indirect tax reforms in India. By amalgamating a large number of Central and State taxes into a single tax, GST has mitigated ill effects of cascading or double taxation in a major way and pave the way for a common national market. From the consumer's point of view, the biggest advantage would be in terms of reduction in the overall tax burden on goods. It would also imply that the actual burden of indirect taxes on goods and services would be much more transparent to the consumer. Introduction of GST would also have made Indian products competitive in the domestic and international markets owing to the full neutralization of input taxes across the value chain of production and distribution. Studies show that this has a boosting impact on economic growth. Last but not the least, this tax, because of its transparent and self-policing character, is easier to administer. It also encouraged a shift from the informal to formal economy.

3.   GST IT SYSTEM

India aimed at achieving with GST, not merely a simplification of the tax structure, but also a systemic reform with transparency, efficiency and speed in implementation and administration of taxes. Technology was undoubtedly a major component of the solution devised to fulfil these objectives. Besides, GST being a destination based tax, inter-State Trade of goods and services (IGST) would need a robust settlement mechanism amongst the States and the Centre. This could have been possible only when there was a strong IT Infrastructure and Service backbone which enabled capture, processing and exchange of information amongst the stakeholders (including tax payers, Federal and States Governments, Accounting Offices, Banks and RBI). Additionally, in view of the sensitivity of the information that would be available with the agency which will put in place the IT Infrastructure, the Government needed to have strategic control over the agency. Thus was born the Goods and Services Tax Network (GSTN), a Special Purpose Vehicle, created by the Government of India and State Governments as a non-government, not-for-profit Company, which brings flexibility of the private sector with strategic control of the Government. The GSTN System Project is a unique and complex IT initiative - unique as it seeks, for the first time to establish a uniform interface for the tax payer and a common and shared IT infrastructure between the Centre and States; and complex in that it works towards

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integrating the varied and disparate systems of the Centre and the States, at different levels of maturity. The GST Common Portal developed by GSTN functions as the front-end of the overall GST IT eco-system where taxpayers register, prepare documents for payment through banks and will file returns. The IT systems of the Federal Government - Central Board of Excise & Customs (CBEC) and State Tax Departments function as back-end that handle tax administration functions such as registration approval, assessment, audit, adjudication, etc.

All the services to the tax payers are made online. Registration, payment and returns are made online along with the workflow based system for processing these requests. Most of these services are delivered within the stipulated time period by the officers. Otherwise, the system auto-approves the requests. The refund processes are made completely online with faceless system. The input tax credits of the tax payers are processed based on the transactions of the suppliers and displayed to the users. This has resulted in self-policing by the taxpayers for availing the input tax credits.

Another new online system is introduced which is user friendly and avoids the taxpayers from visiting the offices for taking permit for movement of goods. The check posts were abolished thereby reducing the transportation time by the vehicles. There is an improvement in the efficiency of the officers of the tax department as there was no more monotonous work. The system gave rise to self-policing in the trading community thereby making everyone to account the transactions. This led to the improvement in the tax collection by the department. Thus, this digital transformation has created a WIN-WIN-WIN situation for the taxpayers, transporters, government and all other stake holders in the system. The benefits to all the stake holders have guaranteed the sustainability of the system.

In GST regime, the fake invoices were in circulation and used by the tax payers to make false ITC claims. Also the tax payers were suppressing the sales by not accounting in the tax returns and evading the tax payment. e-invoicing system has been introduced to handle these challenges.

4. CHALLENGES IN THE EXISTING SYSTEM

i. Settlement of Input Tax Credit Claims

One of the main challenges faced by the tax payers is the settlement of Input Tax credit for the supplies received by them. Currently, it is dependent on the suppliers. If the suppliers upload their Sales Statements (GSTR1) after completion of the month, then the recipients will get the credit. Most of the time, some of the suppliers will not upload the sales statements. This is resulting in GST officers are not accepting the ITC claimed by the recipients in the returns (GSTR3B) and making the recipients to pay this liability in cash.

ii. No running ledger for tax liabilities

Presently, the tax liabilities or payable of the tax payers are calculated based on the summary of sales and purchases during the subsequent month and. There is no mechanism to know the present liability or payable or balance in the tax ledger for the tax payer. Hence, one has to wait for the next month to know the tax liabilities or payable.

iii. Handling the fly-by-operators

It has been observed by the GST departments that the new tax payers are getting registered with GST system and doing the business for few months and disappearing with from the system without discharging the tax liabilities. This is creating the problem for both the GST departments and recipients of the supplies from these fly-by-operators.

iv. Fake Invoices

There are some fake invoices in the business and tax payers taking the ITC credit based on these invoices. It is becoming difficult to the GST departments to identify these fake invoices and take appropriate action.

v. Delay in verification

Ascertaining the authenticity of invoices issued by various tax payers have become a major cause of concern these days due to prevalence of malpractices like fraud and misrepresentation of records.

vi.   Hacking of Data

With data being stored in a centralized location with one agency in GST system, there are chances of the data being tampered with and also chances of single point of failure.

vii.   Need for producing original invoices to authenticate ITC
The tax payers need to produce the original documents for authenticity whenever the GST department does audit or inspection. Loss or damage to these documents during travel is a cause for concern.

viii.   Delay in processing of Refund requests

GST officer needs to verify the input tax credit claims with the Sales Statements and returns of the corresponding suppliers before approving the refund request of the tax payers. This takes lot of time and effort as the suppliers may belong to different states. The refund is also not approved even though the supplier is genuine, but the corresponding statements are not forthcoming.

5. GST CHAIN – THE SOLUTION

GST Chain is a conceptualised, designed and developed by 'Centre of Excellence in Block Chain Technology, National Informatics Centre', to record and store the tax related documents in secured manner using the Blockchain Technology. GST Chain has been established using the Blockchain Technology to record the GST transactions of various stake holders involved in GST management, by linking them like a chain. GST Chain records the GST transactions in distributed manner in multiple locations. Attempt to tamper the data is not possible as all the distributed locations need to be updated as per the agreement to synchronise the data between them.

GST Chain will store all transactions of the tax payers and maintain the running tax liability of tax payers. These tax liabilities will be arrived based on the invoice/debit/credit notes/tax payments. The running tax liability of the tax payer will

be updated based on these transactions. Invoice/debit/credit note will update the running tax liability of supplier and recipient according to the transaction type.

6. FEATURES OF GST CHAIN

GST Chain records the GST transactions in the shared/distributed manner with all the participating stakeholders. The GST transactions are recorded in the chain based on the consensus with the stakeholders. This eliminates the need for dependency on the third party or intermediary to approve the transactions. The GST transactions are linked and stored with cryptographic security so that they are immutable and traceable. The linking of the blocks (group of transactions) in the Blockchain ensures that they cannot be tampered with. The GST transactions are trustable as they can be verified across the participating stakeholders, resulting in a system that is -

- Secured
- Trusted
- Immutable
- Traceable
- Verifiable

7. BENEFITS OF GST CHAIN

GST Chain provides the trustable, immutable and traceable GST transactions. It can be used by the various organizations like Financial Institutions, Government, Suppliers, recipients, GST Officers involved in GST Management to verify GST documents. The tax payers can monitor their tax liabilities. Recipients can ascertain their GST ITC claims, supplier documents, without hassles. The financial institutions can use this system for sanctioning/providing of loans. GST officers can authenticate the sales and purchases while carrying out the assessment, audit, inspection, refund, etc. Added to this it has the following qualities: -

- Transparent
- Tamper Proof
- Paperless

- No dependency on third party

As GST Chain maintains the running tax liability of the tax payers, it helps to know the tax liability of any tax payers at any point of time. As the tax liability is updated with the purchase details in running tax liability, the ITC settlement is instant and take care of the tax payers. As all the transactions are supposed to be recorded on the chain get the ITC claims, the fake invoices will not have any significance as they are not in chain and credit is not available. Abnormal transactions of the new registered tax payers can be watched and alerted to the officers wherever they cross the threshold. So the department can watch and act on the fly-by-operators before they try to vanish. The GST officers need to not have to bother for the ITC claims/settlements, while carrying out the audit, inspection, assessment and refund, as it has been verified and accounted accordingly. Delay in verification, need of the original documents and possibility of hacking are taken care by the blockchain features.

8. STAKEHOLDERS OF GST CHAIN

GST Chain provides the mechanism for all the stake holders involved in the system to verify online the details of the GST documents and the creation/updations on the transactions carried out and in pipeline. It also helps in processing the GST transaction, by integrating the systems with plug-in interfaces. The GST chain eliminates the need to depend upon the third party to carry out the verification and authentication.

The GST Chain contains the digitally signed details of the GST related transactions. GST Documents are issued by Suppliers, Recipients, GST Officers. As and when the new GST documents are created or updated, they will send the signed GST documents to the GST Chain and GST Chain will link these signed GST documents and build the chain and will store securely in the GST Chain.

The stakeholders in the GST chain include

- Suppliers
- Recipients

- GST Officers

- Financial Institutions

- Government
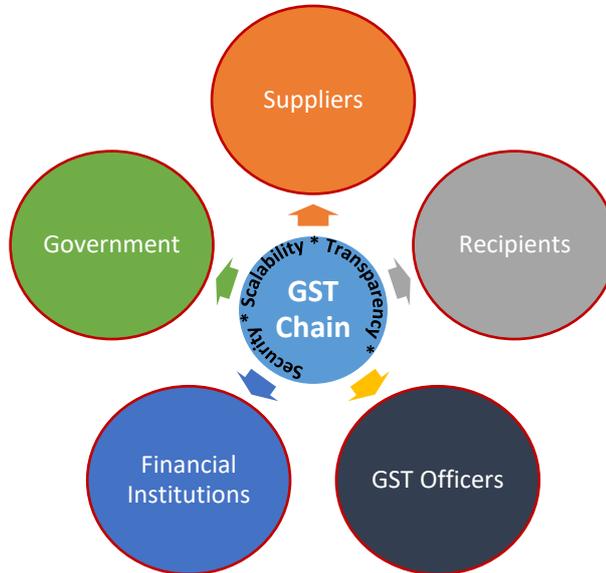
9.   CONTENTS IN GST CHAIN

As indicated above, the GST Chain contains the GST details such tax payments, demand, liabilities based on the invoice, notice and bank payments. As and when the new transaction is inserted the balance will change and updated. These transactions will   be digitally signed and sent to the GST Chain. GST Chain will link these transactions to the tax payers account and build the chain and   store it securely. This will help any stakeholder to view the complete history of changes and establish the provenance.

The following document types of GST are stored in the GST chain

- Supply transactions, namely, Tax Invoices, Debit/Credit Notes.
- Tax payments
- Refund Orders
- Demand Orders/Notices

10. APPROACH FOR STORAGE OF GST DOCUMENTS

The process of storing documents in Blockchain will be supplementary to the existing process followed by the stakeholders. As and when the GST details are updated in the GST Common Portal or e-invoicing system, the same can be digitally signed and submitted to the Blockchain system. It is suggested that the submission can be done in an asynchronous manner to enable the existing processes to function as before.

Initially GSTIN master details need to be populated in Block chain. Subsequently, as and when transactions like supplies, tax payments are done by the tax payers, these transactions will be recorded in the Blockchain against the GSTIN details. Though the transactions will be recorded in the Blockchain the tax liability of tax payers will be changed as per the type of transaction.

## 11. FORMAT / SCHEMA OF THE DOCUMENTS STORED IN THE BLOCKCHAIN

It is proposed to store the cryptographically hash value of the GST document in the Blockchain, while the actual document (PDF / XML / JSON) can be stored in the 'offchain' database such as a relational database system in present GST systems with Blockchain reference number. The hash is irreversible and would enable the system to verify if the document has been altered.

the GST chain platform will enable the stakeholders the standard schema for each type of the document while on-boarding and integrating the process. Thus the platform is very generic to all stakeholders and it will be integrated with the GST Common and GST e-invoicing portals. The access to the data to the stake holders will be provided based on their roles.

12. SOLUTION ARCHITECTURE

The tax payers and GST officers will necessarily be the owners of the system who participate in the block creation process. The other stakeholders - policy makers and financial institutes - will be able to retrieve GST records based on the authorization provided by the system. The on-boarding of these agencies who wish to verify GST

record or use the API for verification will be done by using GST portal. The architecture diagram for facilitating these activities is as given below
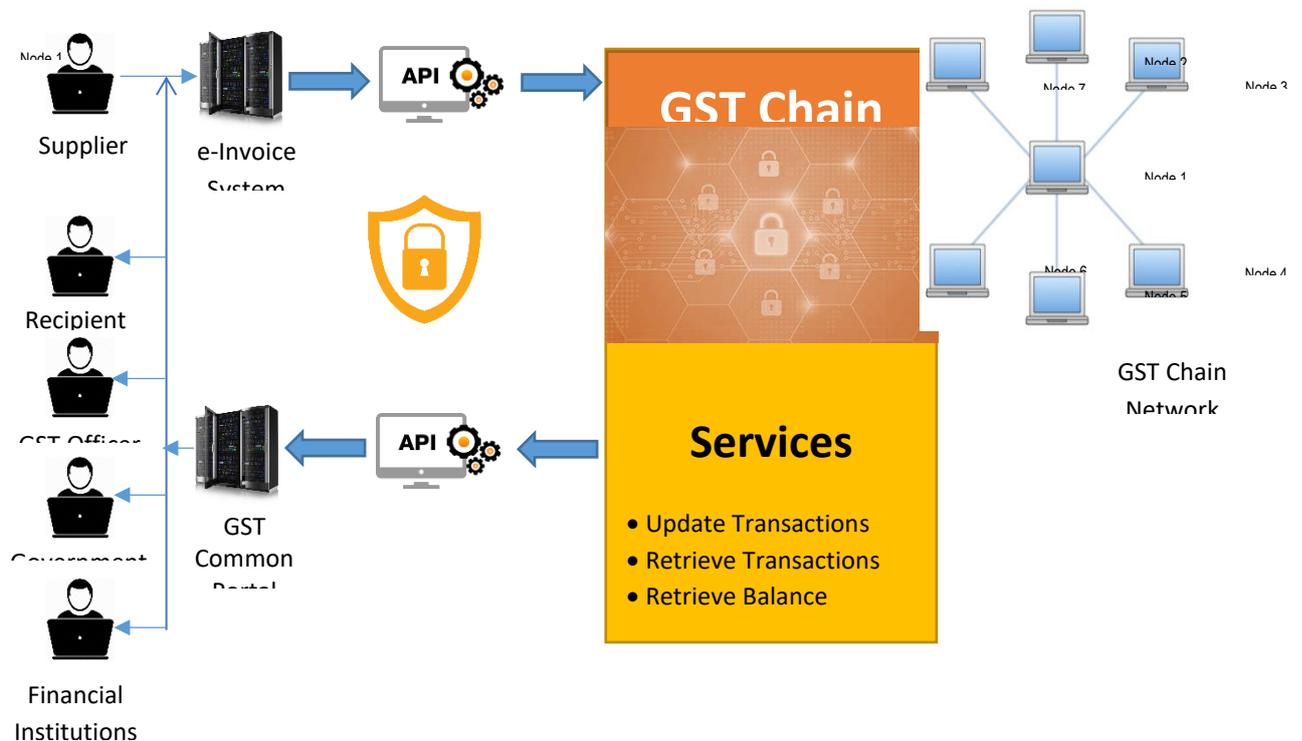
13. PORTAL & API FOR VERIFICATION

Retrieval of GST documents from the Blockchain can be enabled through portal for verification for any verifying parties or Government Departments, who would be retrieving details of GSTIN. The verifying authority will be able to view the GST details on the portal without depending on a third party for verification. The history of transactions to the GSTIN can also be viewed.

The test 'GST Chain' portal has been designed and developed by linking with the 'sandbox/staging e-invoicing system'. This can be used by the stakeholders can authenticate and verify the transactions and view the current tax liability.

Alternatively, API can be used to fetch the GSTIN data and integrate with their applications to build the logic for automatic verification or use them for preparing statements.

14. CONCLUSION

GST Chain is going to be game changer in the GST system. Blockchain is a technology enables the authenticated and verifiable ITC claims. Seamless integration with the e-invoicing system will ensure that all ITC claimable documents are updated in GST Chain. This will overcome the biggest challenge of the authenticated ITC settlement of the tax payers. And also it helps to control the fake invoices and tax evasion to maximum extent.

BCT is evolving technology and continuous upgrading in the BCT will help to address the other challenges of the GST in coming years. Accordingly, GST Chain is going to be huge system, which will have more than crore transactions in a day and building and implementing such system takes a time. Hence, it is right time to start working on this system

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