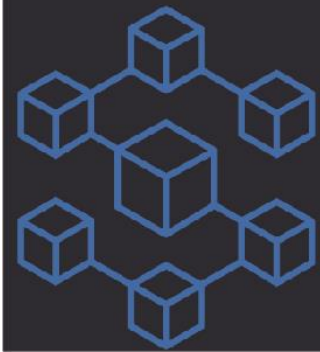
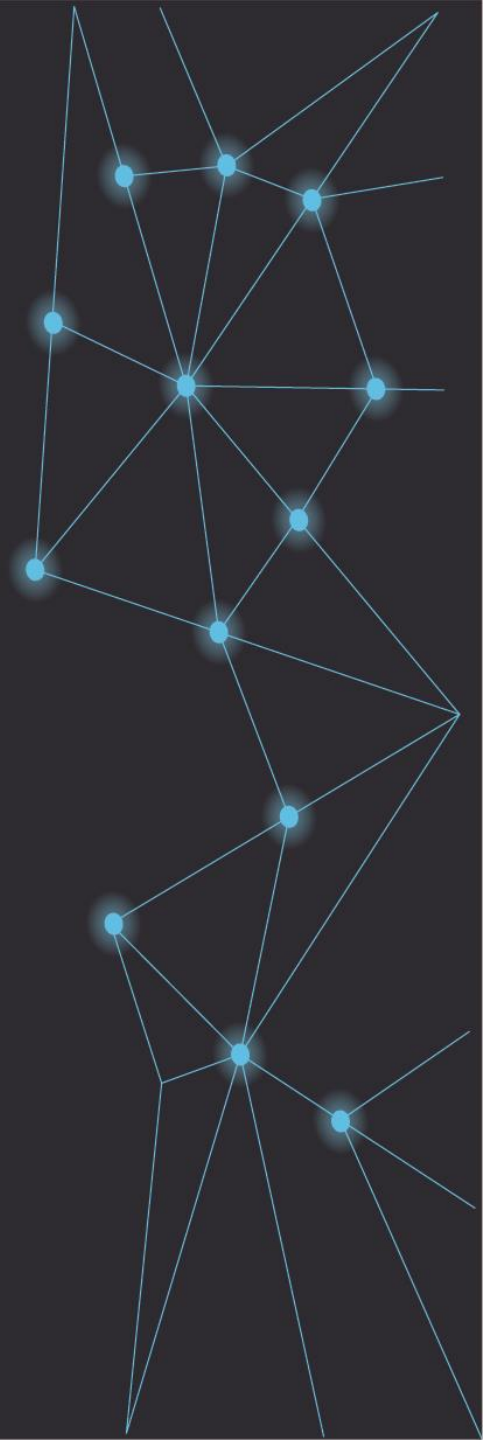


Blockchain Basics and Beyond

Dr. Suresh Rajput



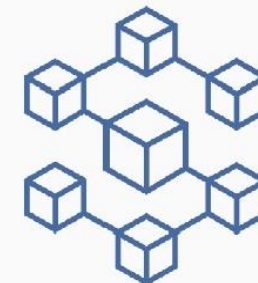
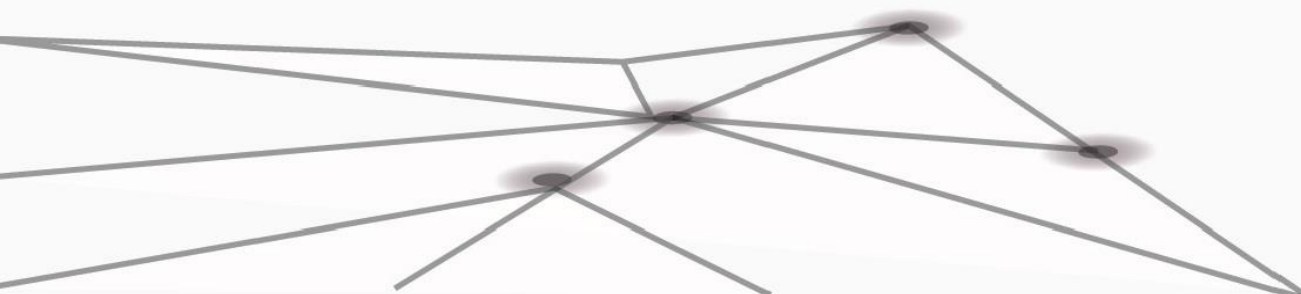
SIBAU
BLOCKCHAIN
INNOVATION
CENTER



Blockchain Technology

Imagination is more important than knowledge. For knowledge is limited to all we know and understand, while imagination embraces the entire world.

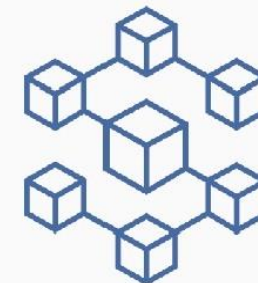
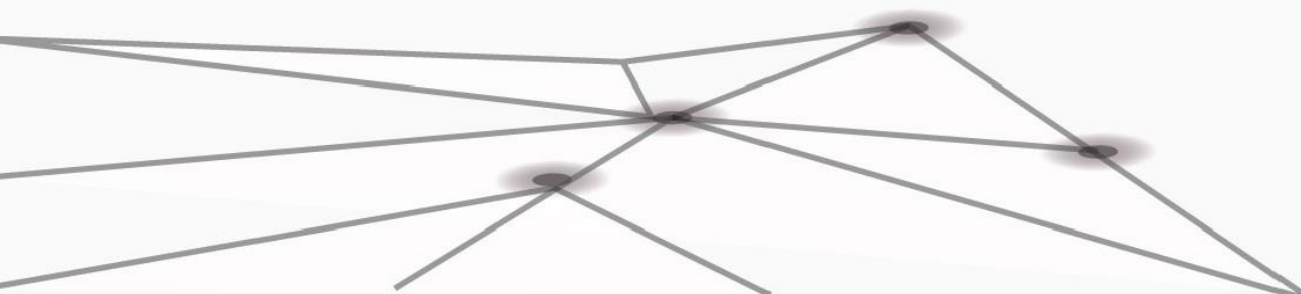
- ALBERT EINSTEIN



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Blockchain Fame

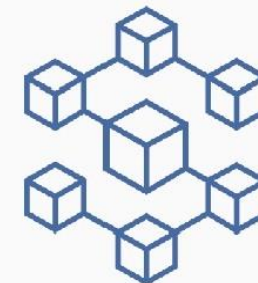
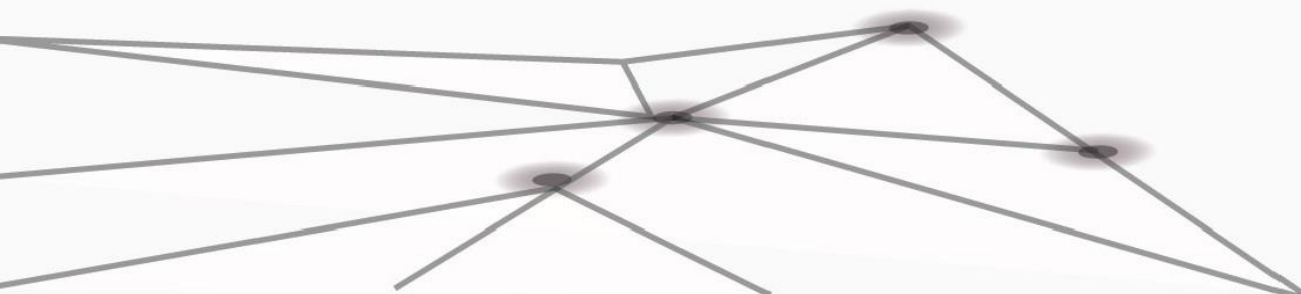
- *Blockchain allows multiple parties to view same information at the same time and trust that it is valid—you don't need to maintain your own copies and you don't need to reconcile the same piece of information—it is going to de-duplicate work and remove the need to reconcile duplicated work—financial industry, healthcare industry, government, and logistical industry are poster child for it.*
 - Caitlin Long, Chairman and President of Symbiont
- *I love this stuff—bitcoin, blockchain technology—and what the future holds...huge new markets and products will be built on these platforms.*
 - Abby Johnson, CEO of Fidelity
- *The world is changing fast. Blockchain is like electricity. Some are stuck making candles and refuse to change; only those that embrace change will prevail.*
 - — George Kikvadze, Bitfury vice chairman



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Problem with existing internet design?

- Not good for doing business—without an economic layer to the Net.
- We cannot establish each other's identity or trust each other to make transactions without validation from a third party like a bank or a government.
- Internet allows people to commit fraud, collect our data, and invade our privacy.
- It excludes 2.5 billion people from the global financial system.
- It channels power and prosperity to those who already have it, even if they are no longer earning it.



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

What is Blockchain?

What is Blockchain?

A database or a ledger that maintains a continuously growing list of data records or transactions.

So, it's a spreadsheet, like Excel?

In a way yes, but it has special qualities that make it better than traditional databases.



SHARED PUBLICLY

Servers, or nodes, maintain the entries (known as blocks) and every node sees the transaction data stored in the blocks when created.



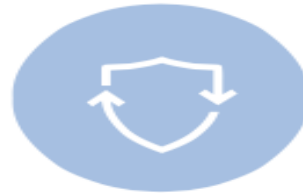
DECENTRALIZED

There is no central authority required to approve transactions and set rules.



SECURE

The database is an immutable and irreversible record. Posts to the ledger cannot be revised or tampered with – not even by the operators of the database.



TRUSTED

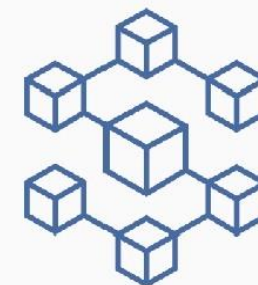
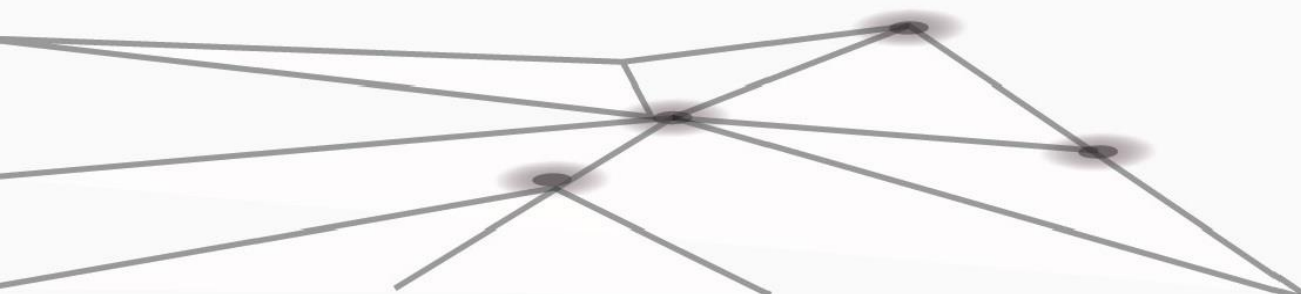
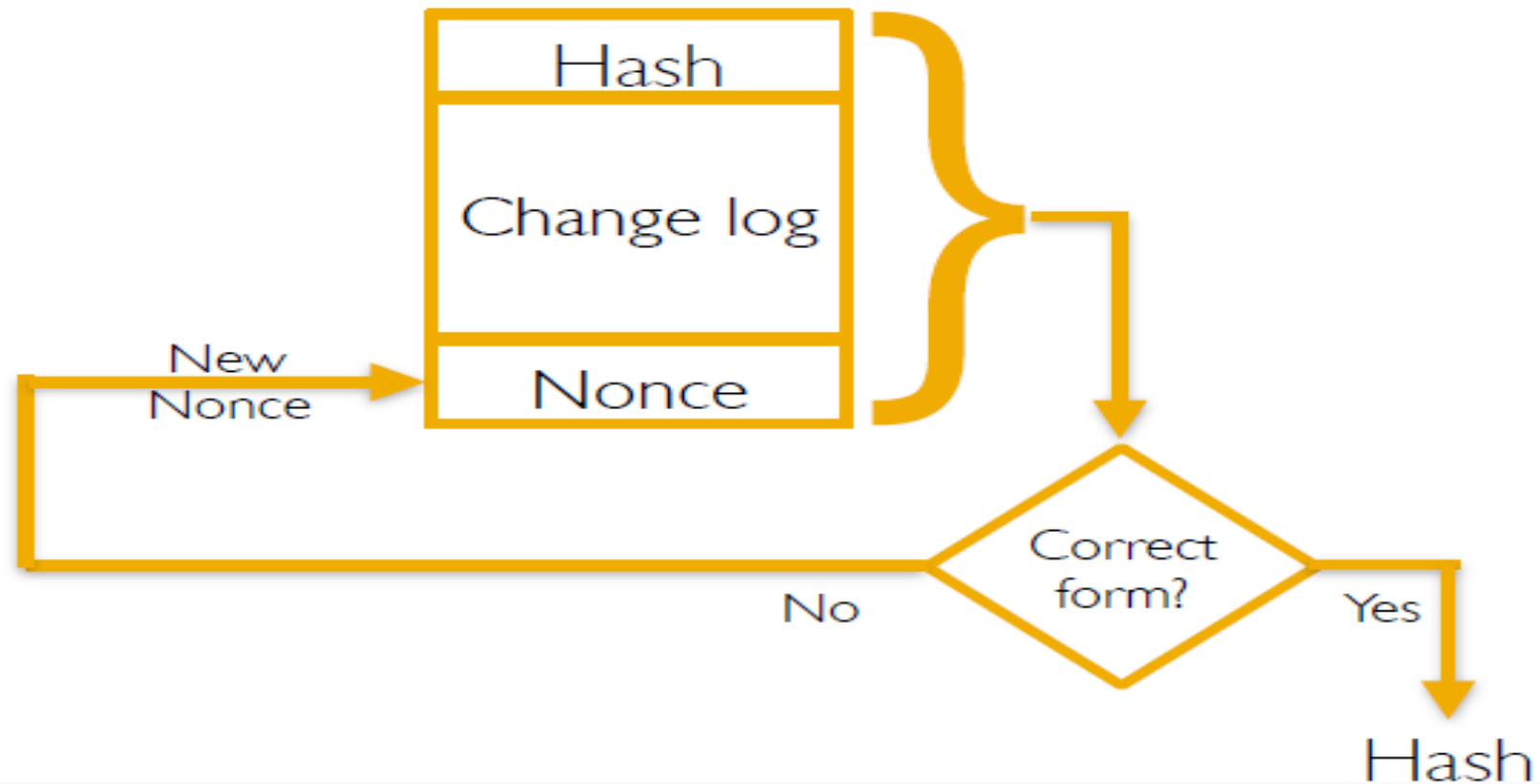
Distributed nature of the network requires computer servers to reach a consensus, which allows for transactions to occur between unknown parties.



AUTOMATED

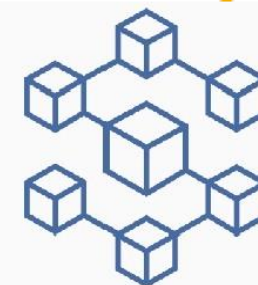
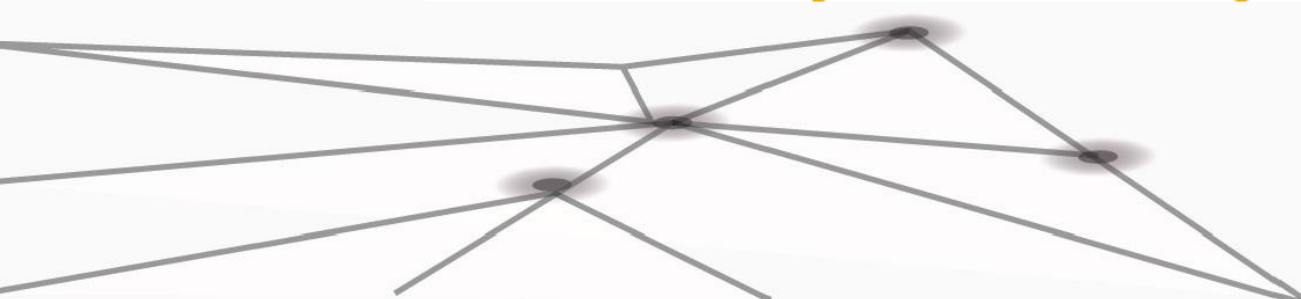
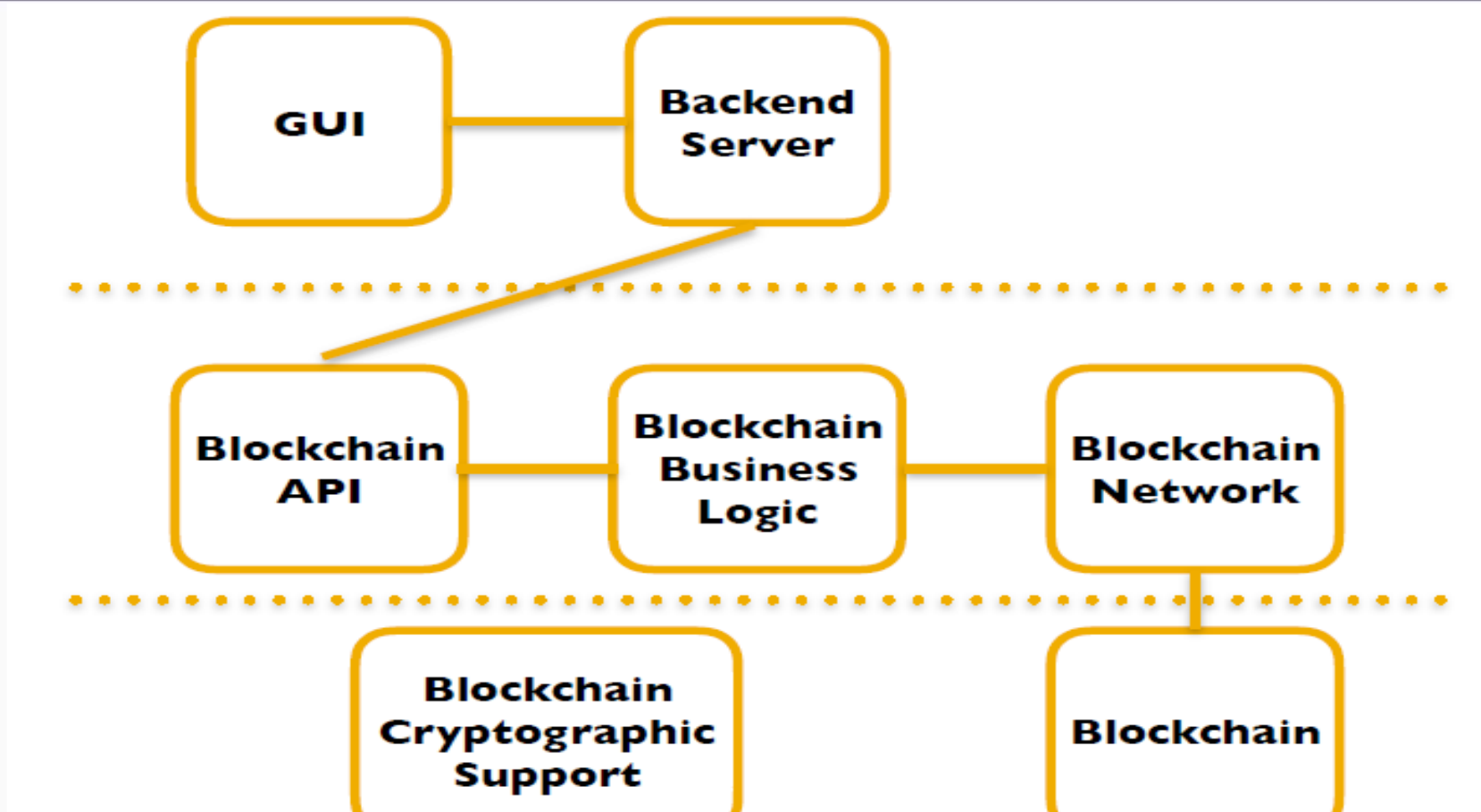
The software is written so that conflicting or double transactions do not become written in the data set and transactions occur automatically.

Blockchain: Computational Power



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Blockchain Application Ecosystem



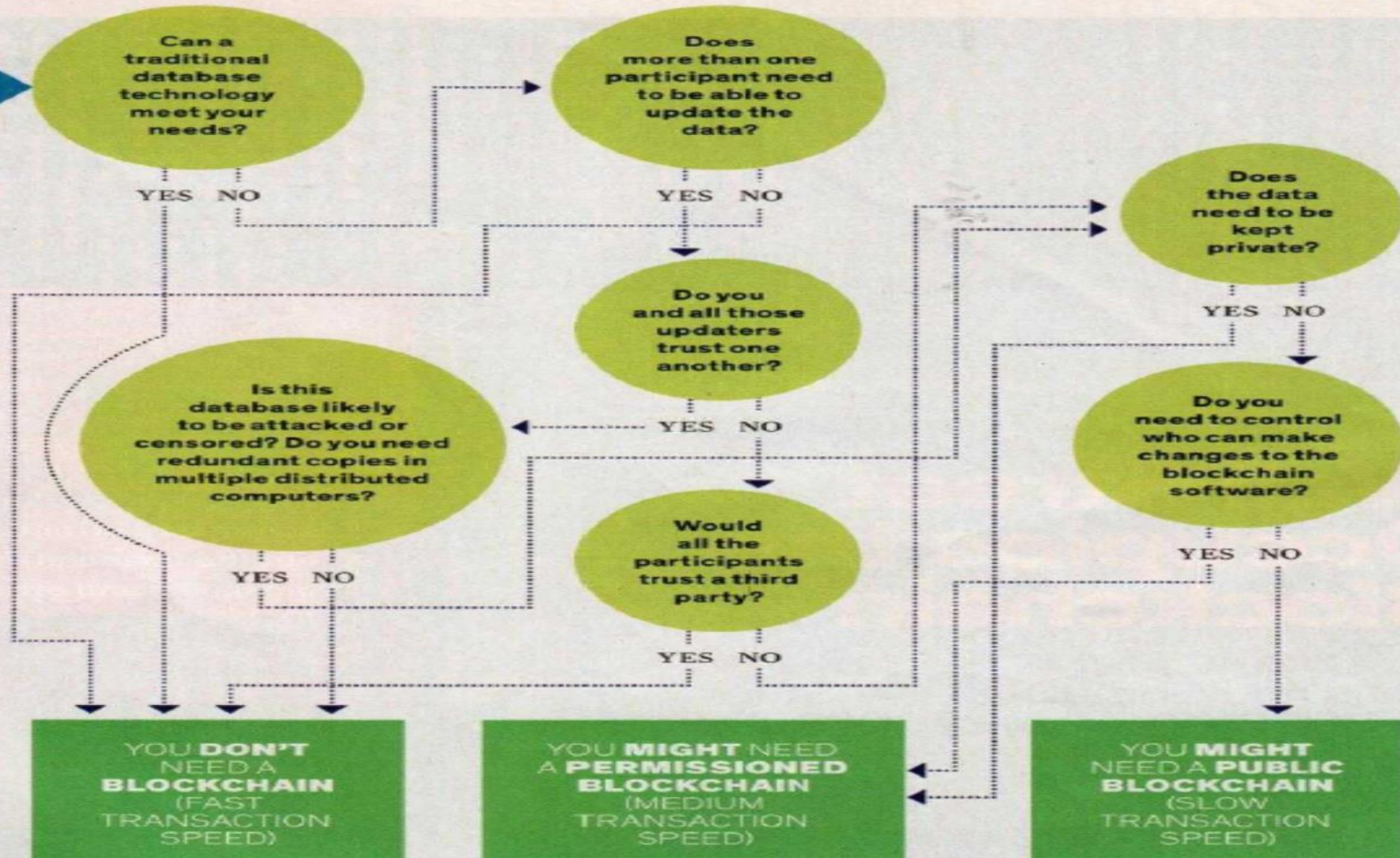
SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Do You Really Need Blockchain?

I Want a Blockchain!

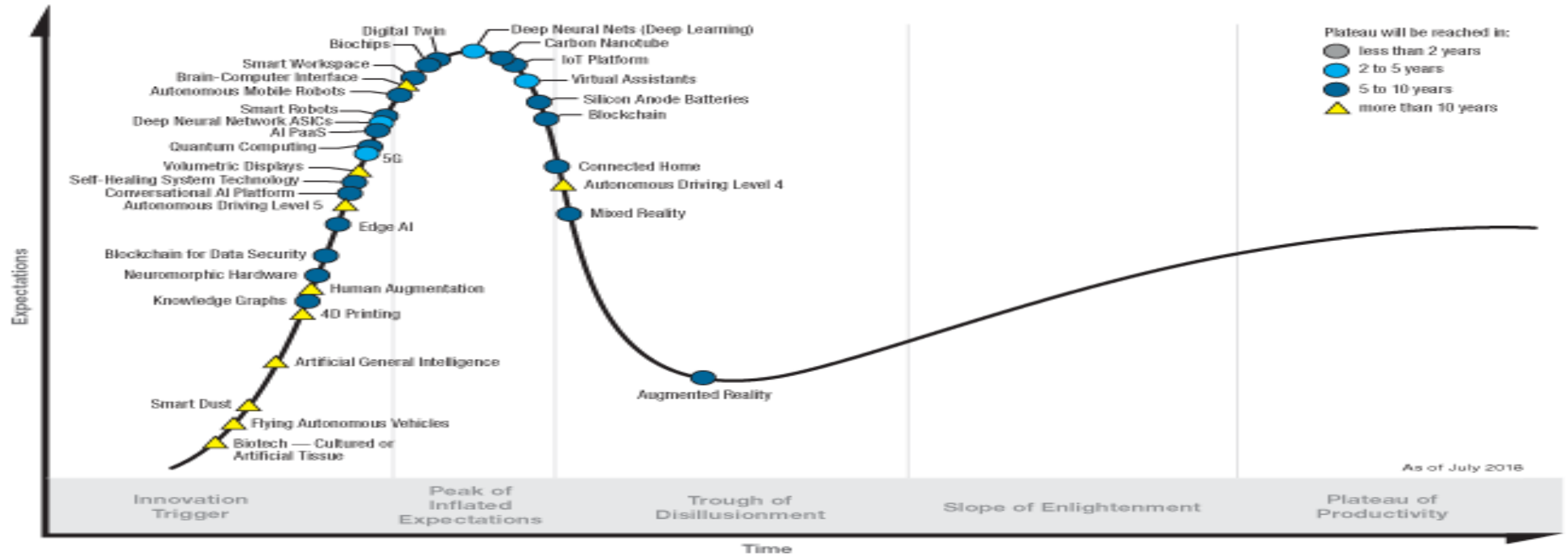
DO YOU REALLY NEED a blockchain?

They can do some amazing things, but they are definitely not the solution to every problem. Asking yourself a handful of the questions on this chart can set you on the right path to an answer. You'll note that there are more reasons not to use a blockchain than there are reasons to do so. And if you do choose a blockchain, be ready for slower transaction speeds.



Blockchain Hype

Hype Cycle for Emerging Technologies, 2018



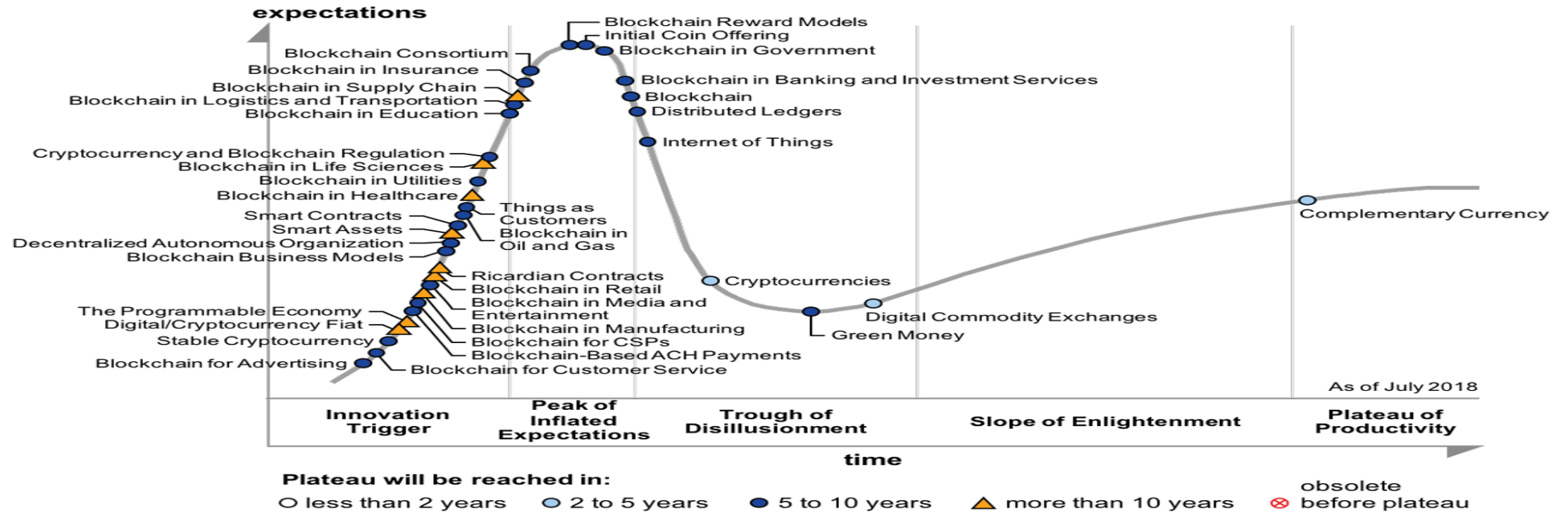
gartner.com/SmarterWithGartner

Source: Gartner (August 2018)
© 2018 Gartner, Inc. and/or its affiliates. All rights reserved.

Gartner.

Blockchain Hype

Hype Cycle for Blockchain Business, 2018

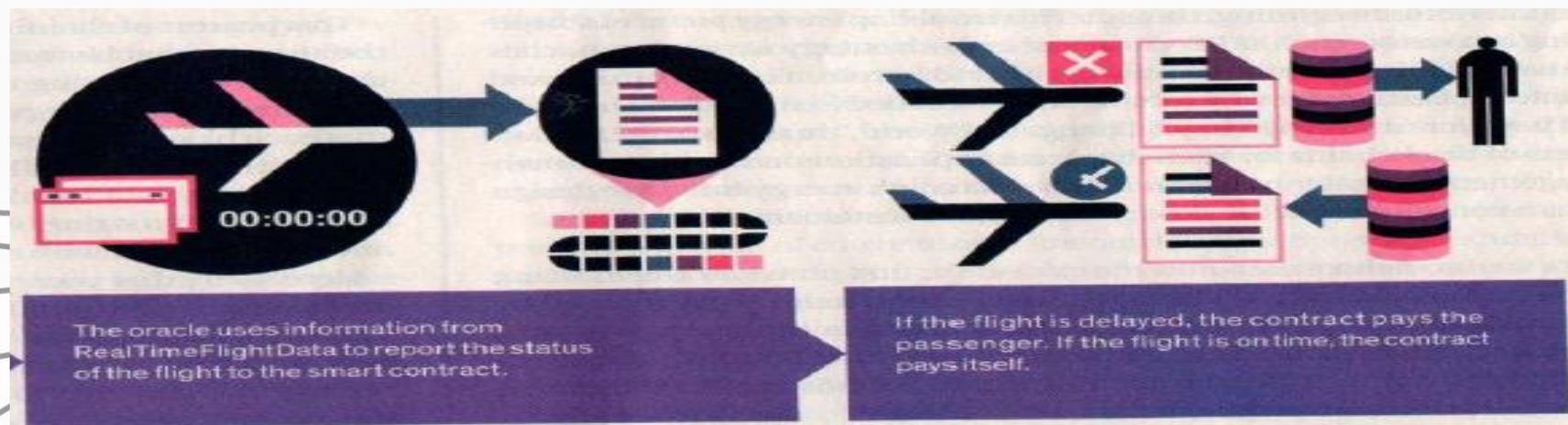
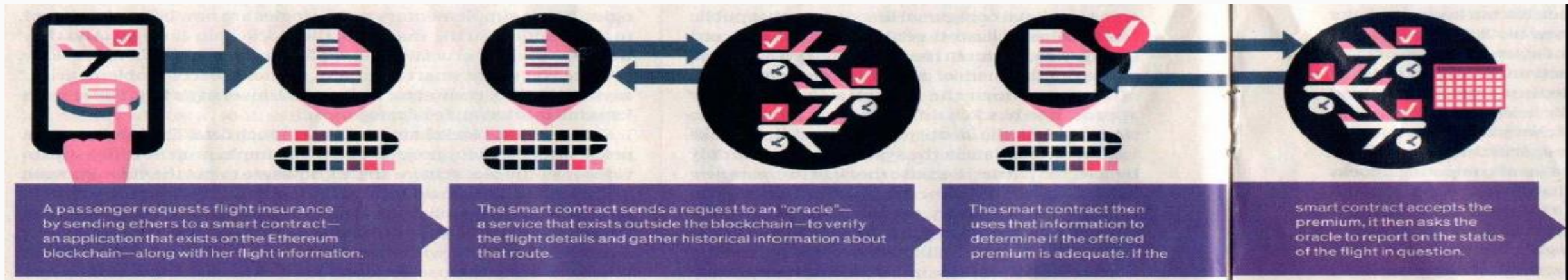


gartner.com/SmarterWithGartner

Examples of Blockchains:

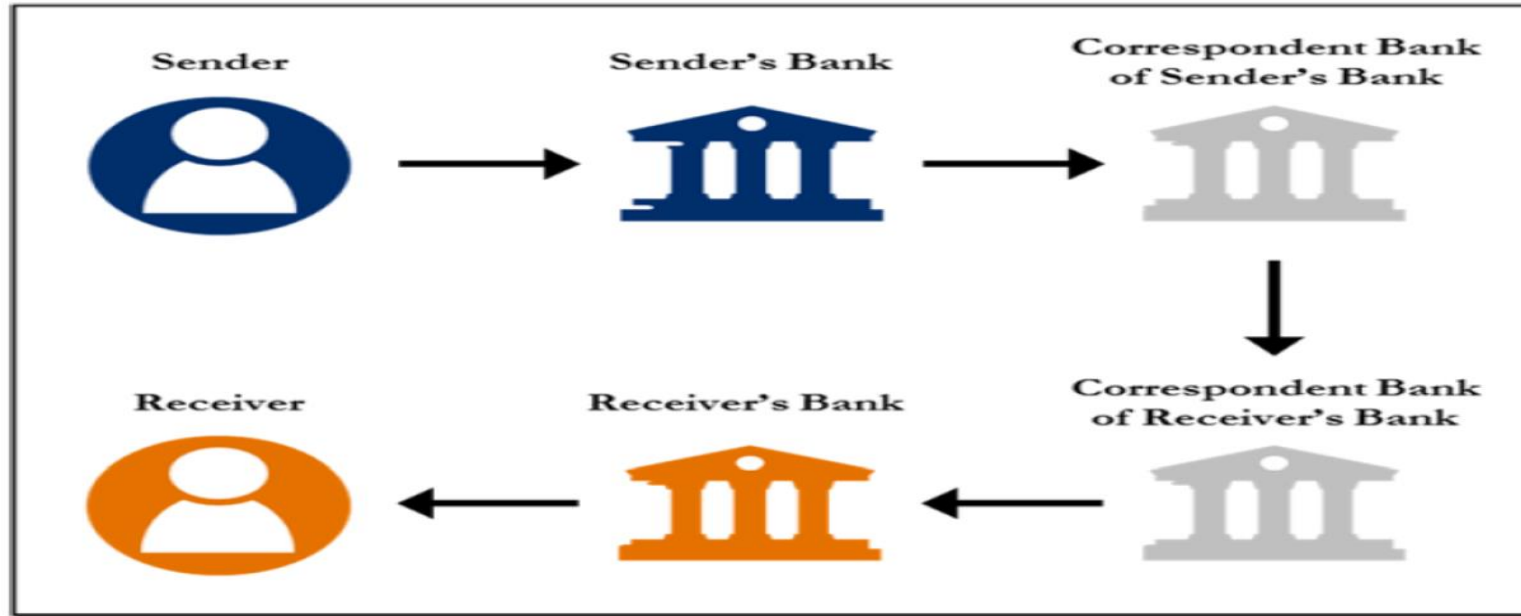
- **Smart contracts:**

- Smart contracts are a type of blockchain transaction that can be thought of as event-triggered automated pieces of computer code.
- They can be as simple as “ship the product when we receive the payment” or “distribute dividends to shareholders upon their declaration.”
- All smart contract transactions are stored on a blockchain, which provides both an audit trail of events and assurance of fulfillment of contract terms.

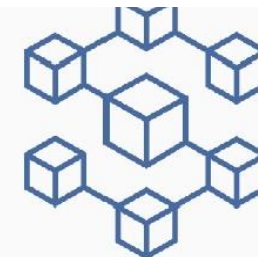
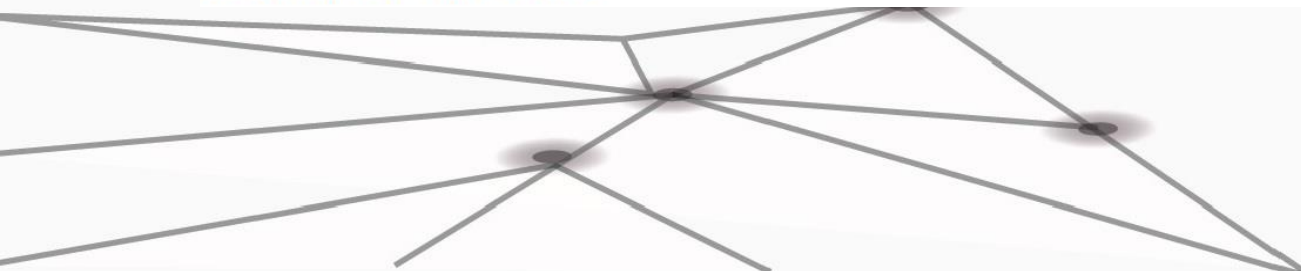


Examples of Blockchains:

Current Example of a Simple Cross Border Payment



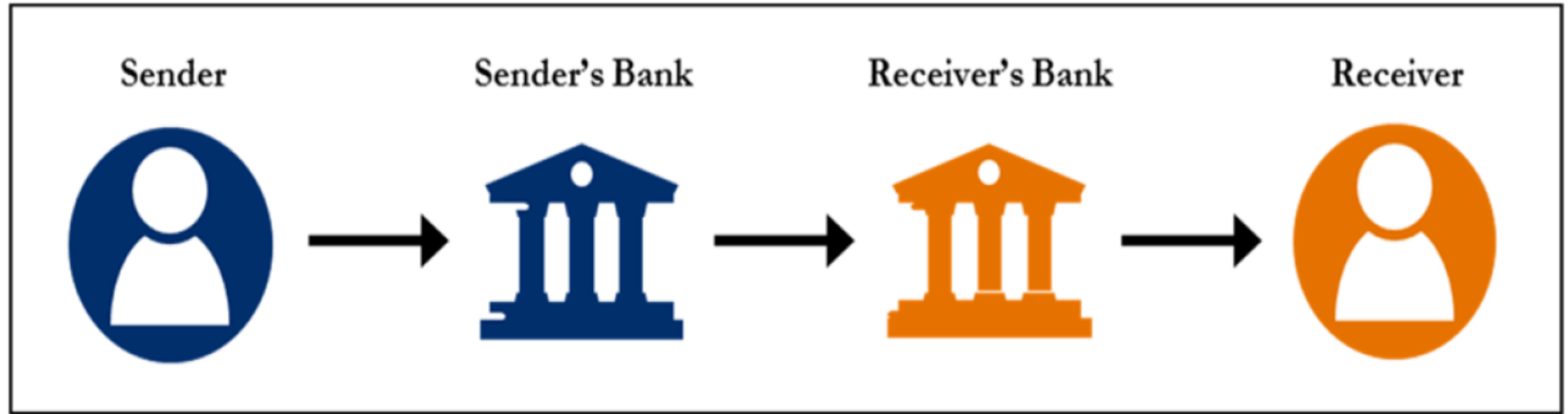
A sender in the United States needs to send money to a receiver in another country in another currency. Sender requests its bank in the United States, sender's bank, send a payment to receiver. Sender's bank requests its correspondent bank facilitate the transfer. Correspondent bank of sender's bank sends the funds to correspondent bank of recipient's bank, which then sends the funds to recipient's bank. At each step, fees and time accumulate. The sender and receiver only know the total amount of fees and the incremental exchange rates once the funds are in receiver's account.



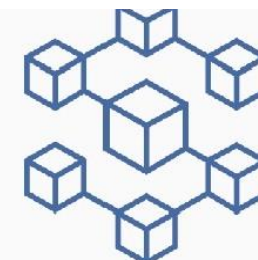
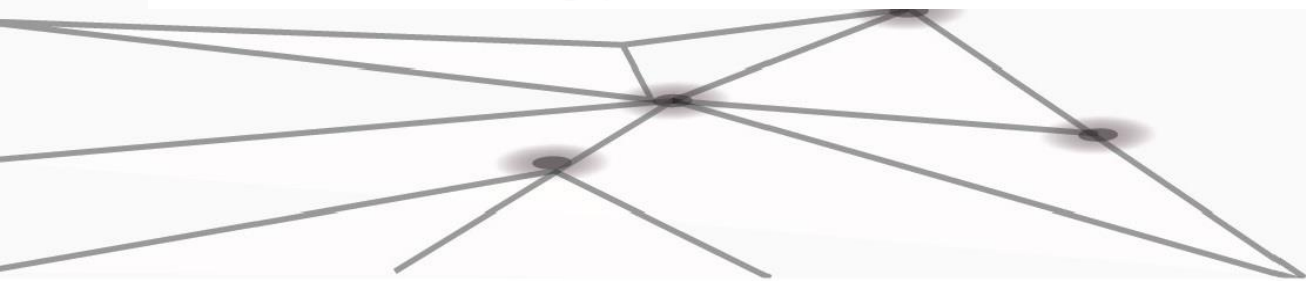
SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Examples of Blockchains:

Example of a Simple Cross Border Payment Using an Enterprise Blockchain



Sender in the United States needs to send money to receiver in another country in another currency. Sender requests its bank in the United States to send a payment to receiver. Sender's bank transfers the funds to receiver's bank.



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Examples of Blockchains:

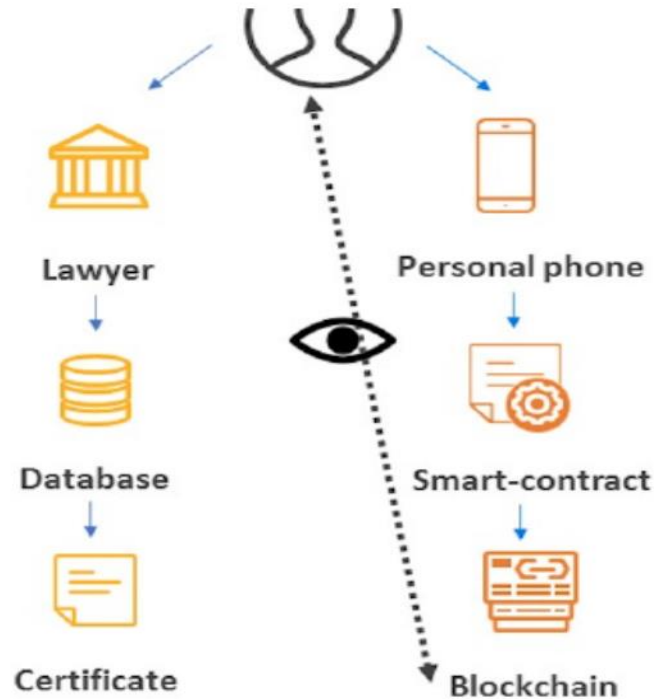
Land Titling in Georgia

Previous System – 1 day

Citizen
Terms of registration,
commissions, risks of data loss

Government
Alternation of power increase
the risk of fraud

Investor
Operating expenses of purchase
and sale (\$3000)

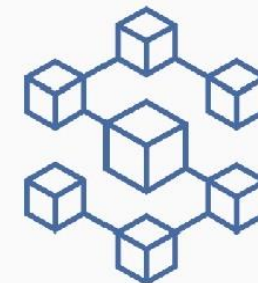


Blockchain System – 10 minutes

Citizen
Operations are carried out instantly
from the phone using modern
identification schemes

Government
Built-in transparency increases level
of trust to the current government

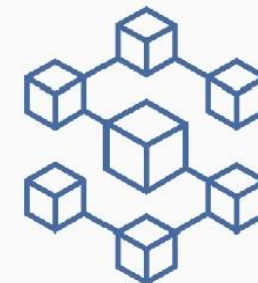
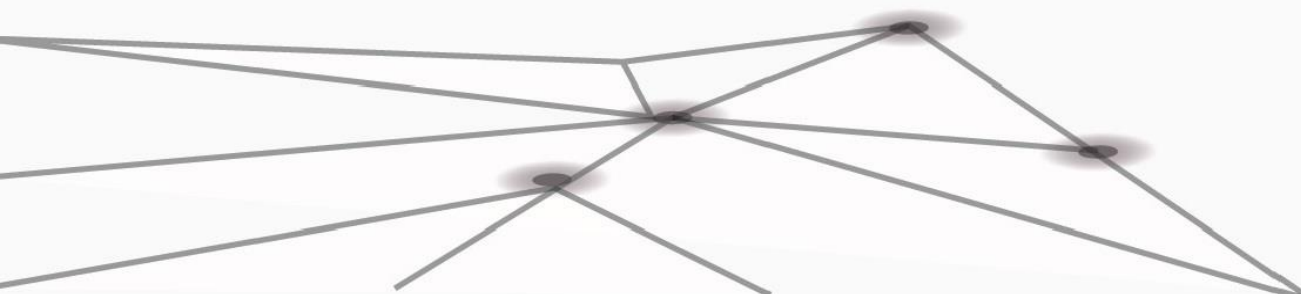
Investor
Reliable cadastre reduces investing
risks



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

How Utilities are using blockchain to modernize the grid?

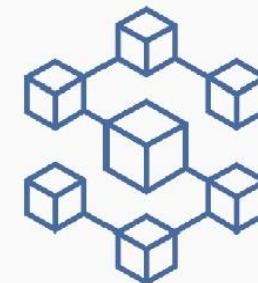
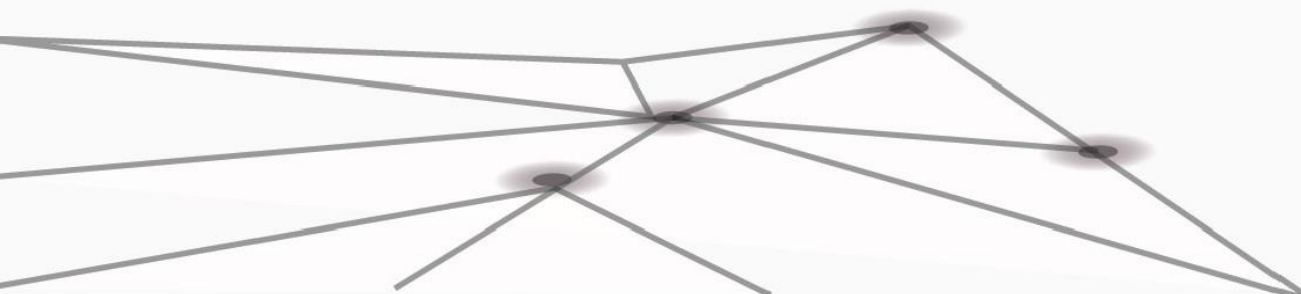
- Ability to sell solar energy to neighbours using blockchain technology (network)
- Wien Energie (Austria) alongwith other companies experimenting energy trading via blockchain
- Innogy (German Power Company) testing whether Blockchain can authenticate and manage the billing process for autonomous electric-vehicle charging stations
- Blockchain could offer a reliable, low cost way for financial or operational transactions to be recorded and validated across a distributed network with no central point of authority.
- Blockchain microgrid project in Brooklyn, NY:
 - Each seller home become blockchain “node”
 - Blockchain manages and records transactions
 - Nodes validate and share information to minimize the possibility of downtime or interference with the data.
- An integrated trading system e.g., factory selling power in downtime
- British start-up Electron is developing a blockchain platform to switch power suppliers reliably with in a day



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

7 Common Mistakes in Enterprise Blockchain Projects

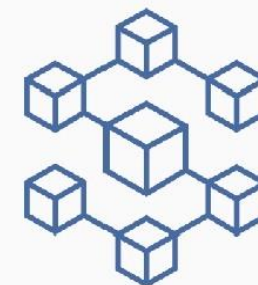
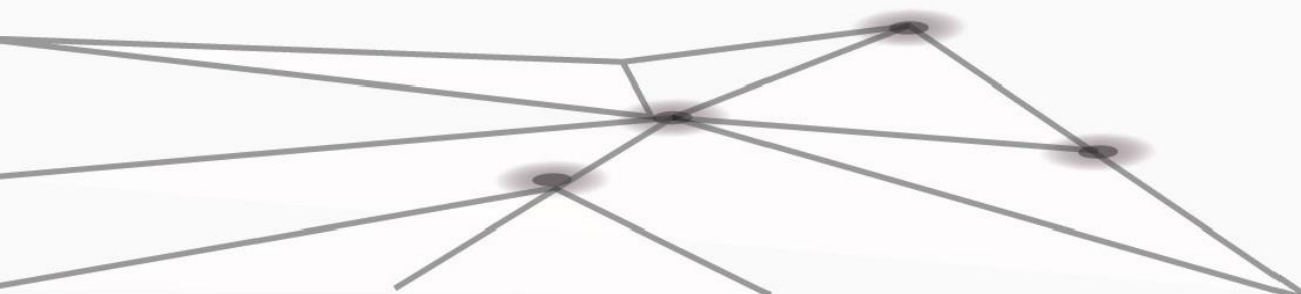
1. Misunderstanding or misusing blockchain technology
2. Assuming that current technology is ready for production use
3. Confusing a limited, foundation-level protocol with a complete business solution
4. Viewing blockchain technology purely as a database or storage mechanism
5. Assuming interoperability among platforms that don't exist yet
6. Assuming that smart contract technology is a solved problem
7. Ignoring governance issues for a peer-to-peer distributed network



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

How Governments Can Unlock Blockchain's Potential?

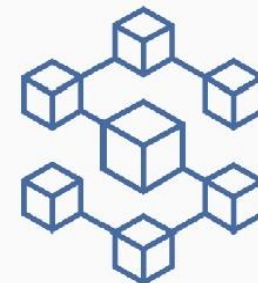
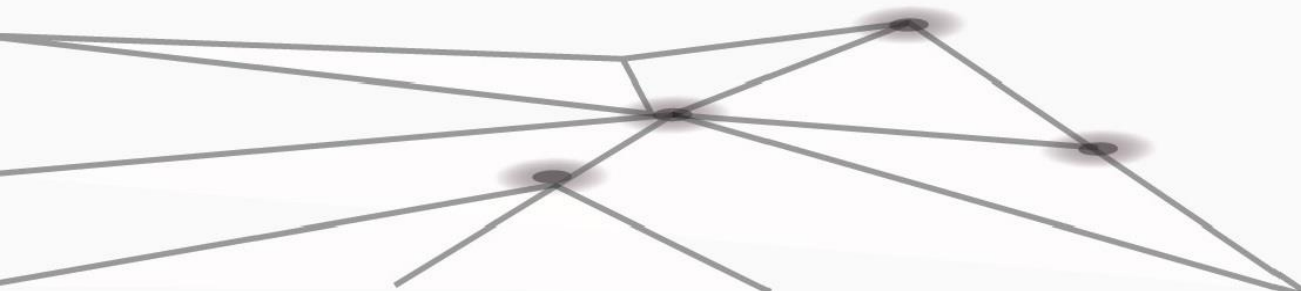
- Voting
- Digital asset markets
- Humanitarian and social services
- Efficiency plays
- Cross-entity transactions
- Recordkeeping
- Self-sovereign records
- Complex data



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

SBIC Projects

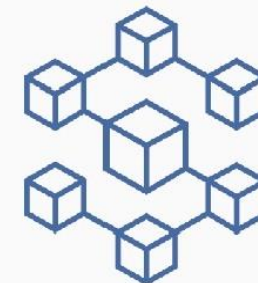
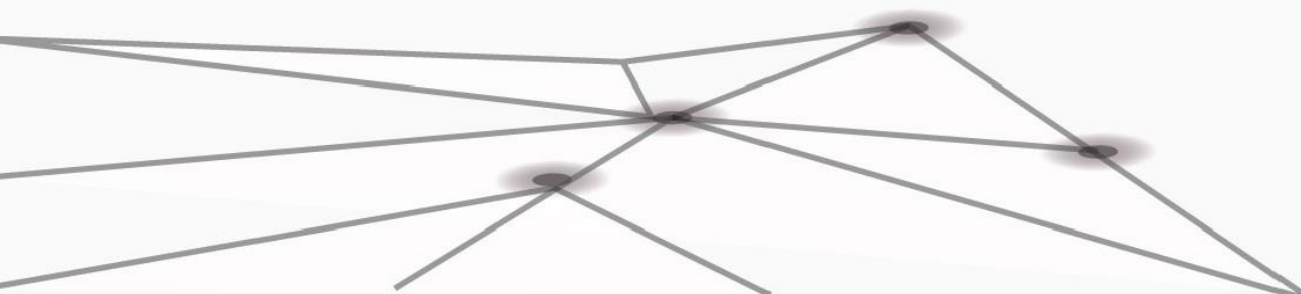
- Farms Operations Management System
- Digital Agro-financing Blockchain
- Land Transferring System
- Degree Verification System



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Farms Operations Management System(FOMS)

- FOMS is blockchain Based System
- The Requirement of FOMS:
 - Dynamic assets definition is supported and internally managed by Blockchain.
 - Blockchain is versioned storage system by default.
 - Smart contracts of Blockchain can significantly simplify automated reports generation.
 - Blockchain offers PKI security infrastructure for user credentials complemented will role-based access.
 - Blockchain data is secure and Immutable by default.



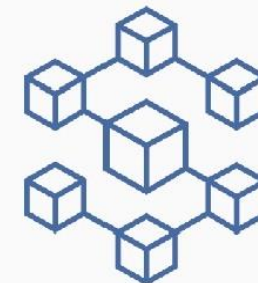
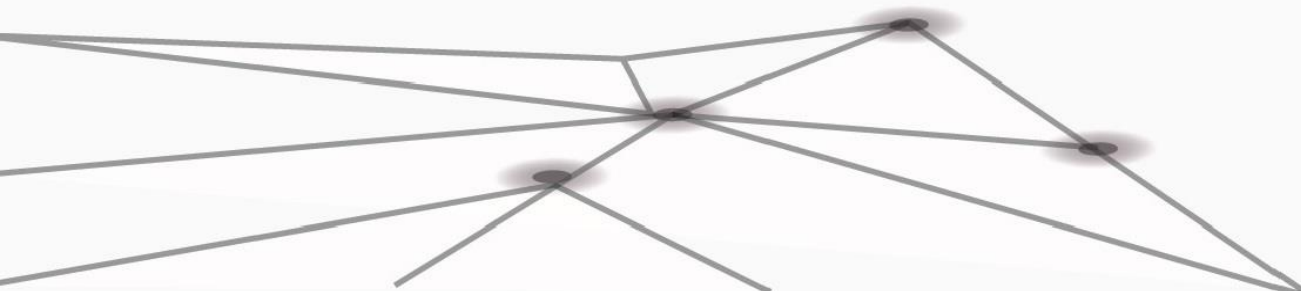
SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Digital Agro-financing Introduction

Design, develop and deploy blockchain based digital platform for microlending that caters the needs of borrowers and lenders from loan origination to loan settlement and beyond.

The digital platform will enhance the prevailing credit system:

- To enable higher coverage of farmers by developing socio-psychometric models to generate entrepreneurial scores

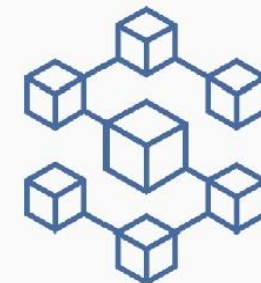
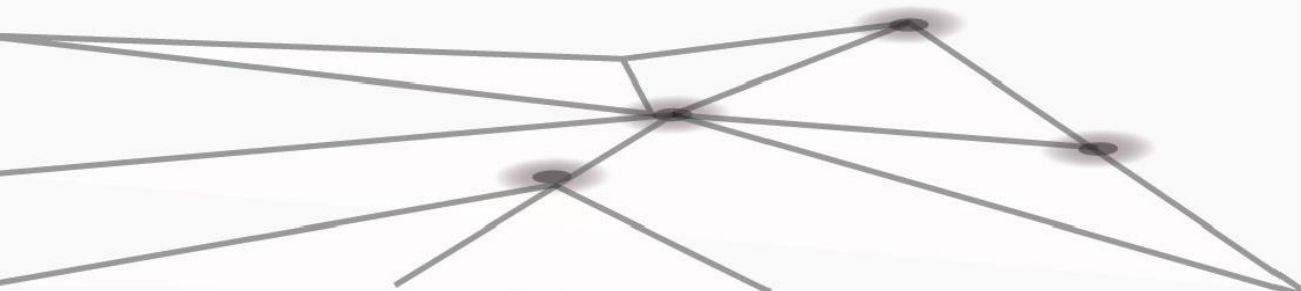


SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Digital Agro-financing Introduction

Reducing cost of funding by expediting the credit process by:

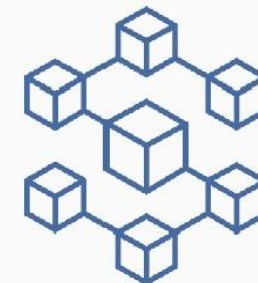
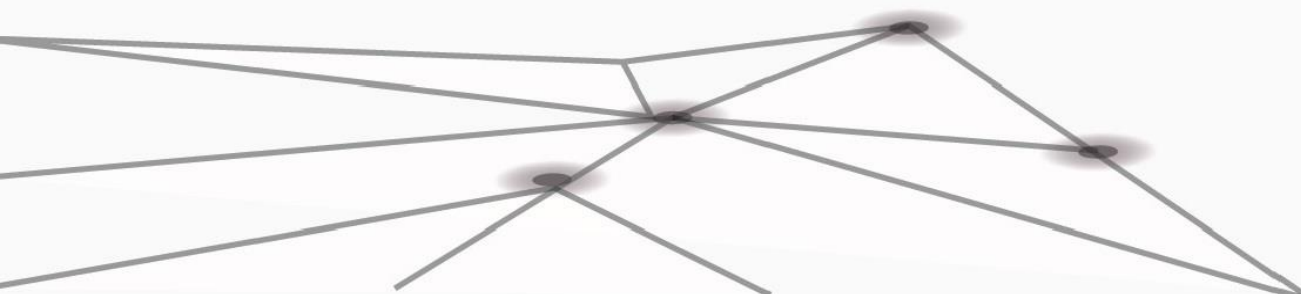
- Enhancing efficiency and transparency in borrower's validation and their credit history analysis
- To enable instant paperless and immutable Digital Identities generation of the Organizations, Borrowers, and /or consumers
- Expedite any borrower/farmer/ the consumer registration with KYC



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

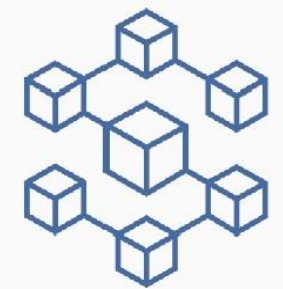
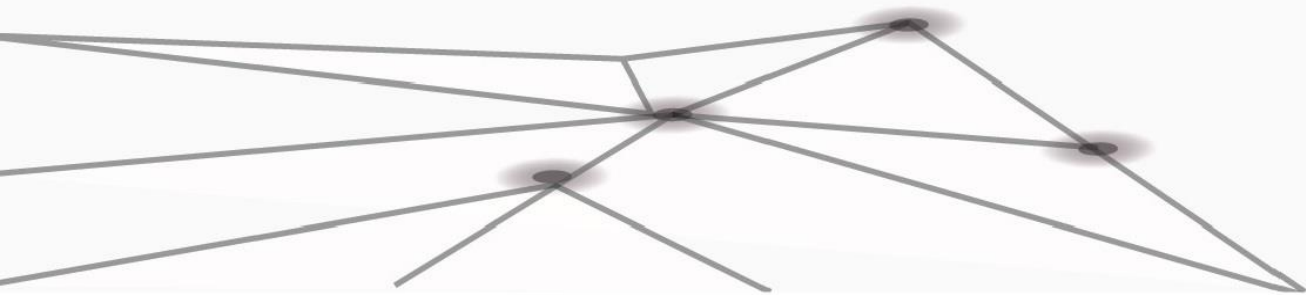
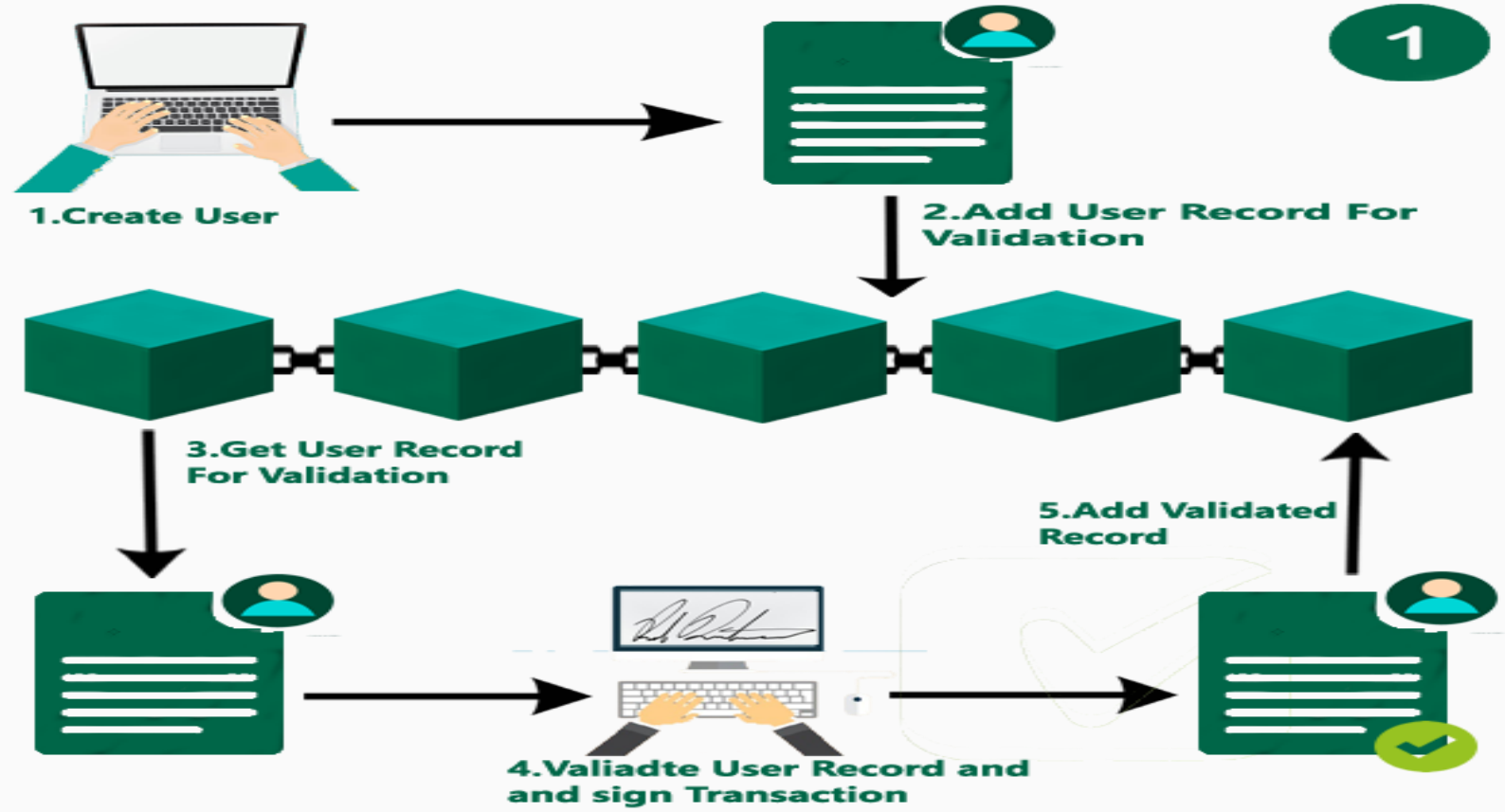
LTS Introduction

- Lands Transferring System (LTS) is the system which will help the government to automate and maintain the records of the lands.
- In the current system, the mostly work-done is paper-based.
- Moreover, this type of system contains sensitive data of one's property rights, it should be enough secure that no one can hack or temper the data.
- The blockchain technology gives a value addition to the data security. So, we aimed to transform the current system into the blockchain based system



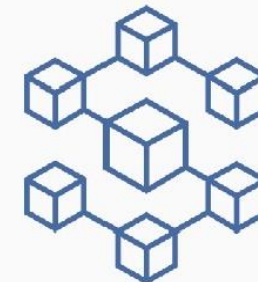
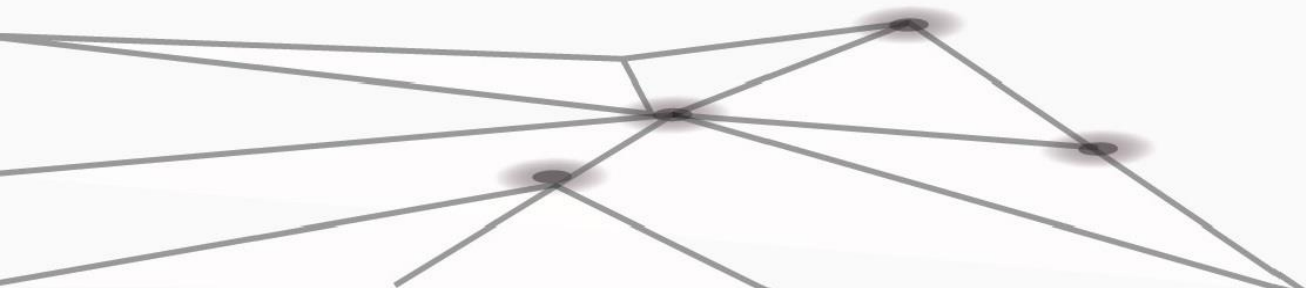
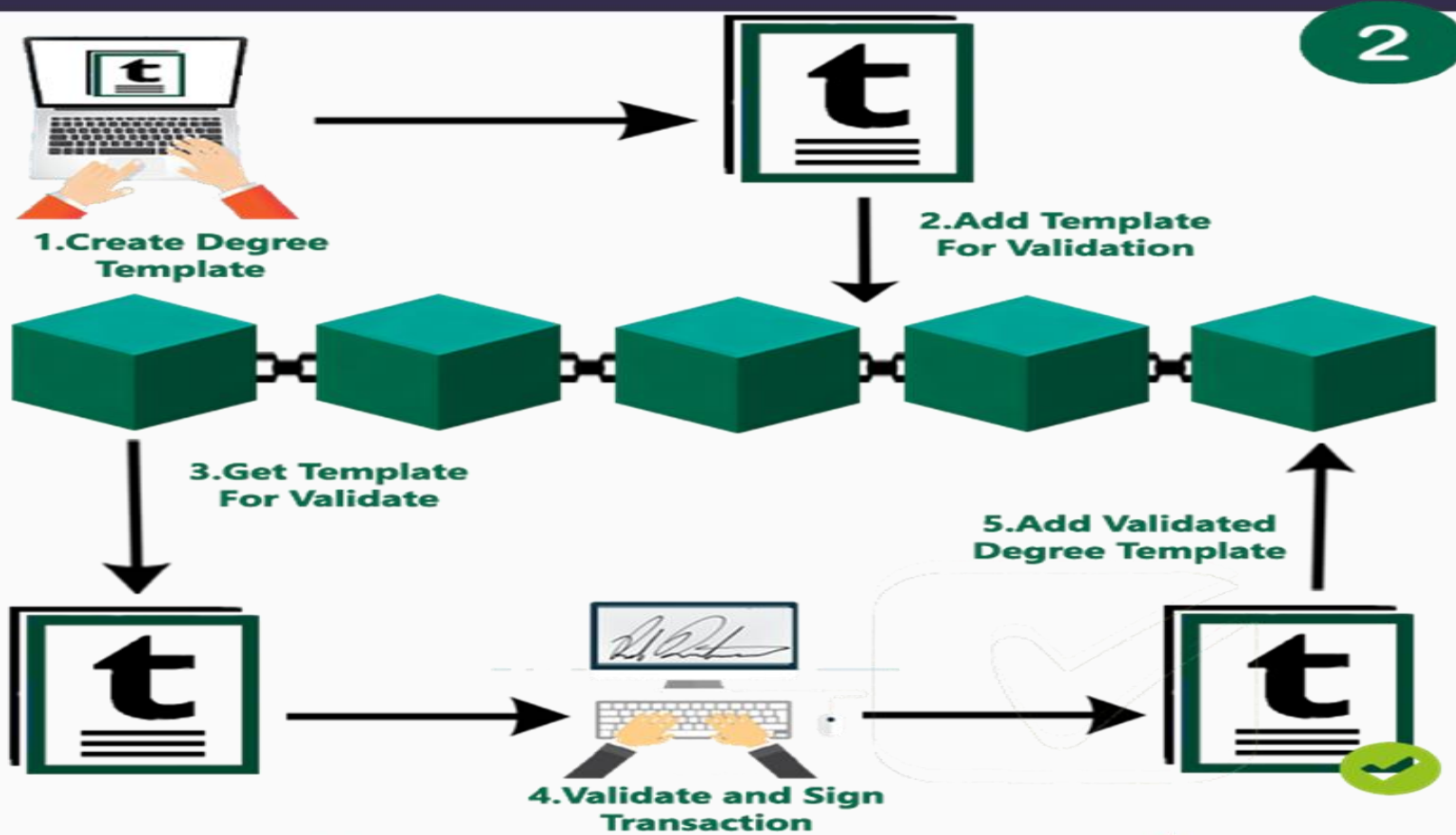
SIBAU
BLOCKCHAIN
INNOVATION
CENTER

DVS: User Creator and Verifier Flow



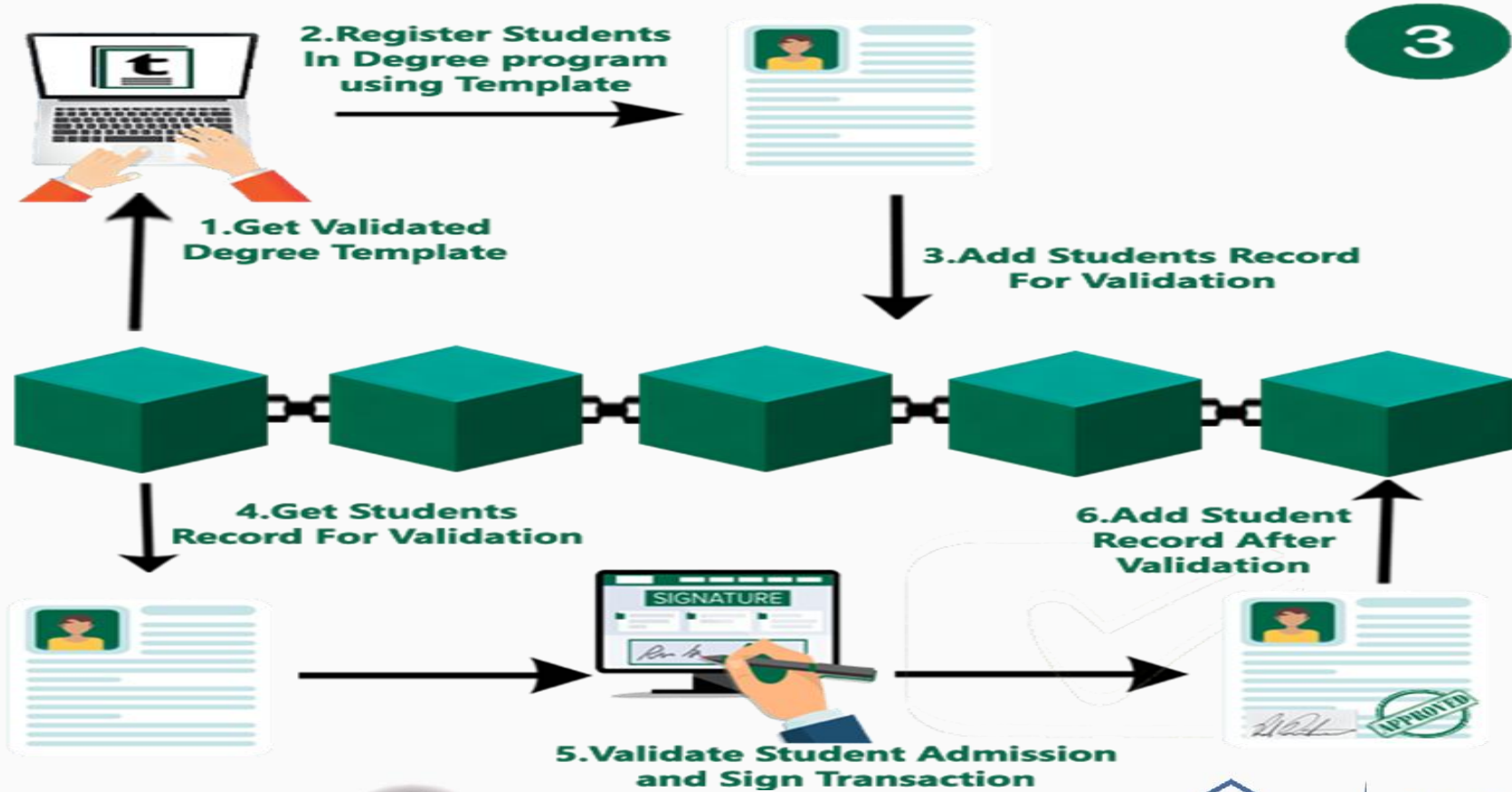
SIBAU
BLOCKCHAIN
INNOVATION
CENTER

DVS: Template Creator and Verifier Flow

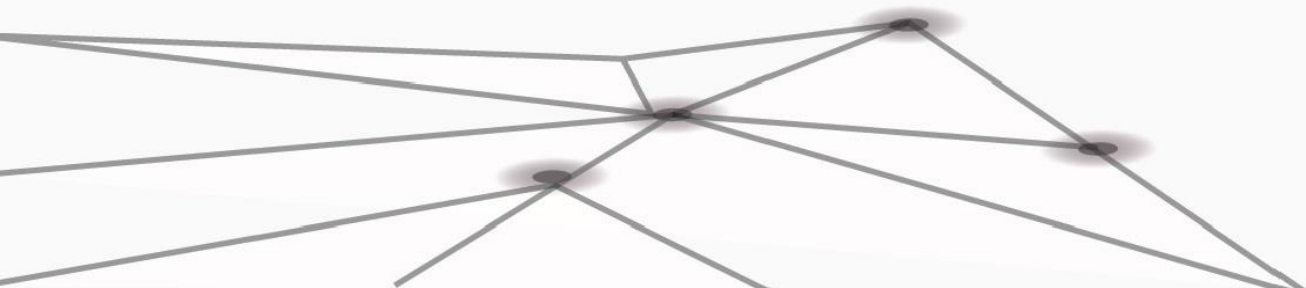
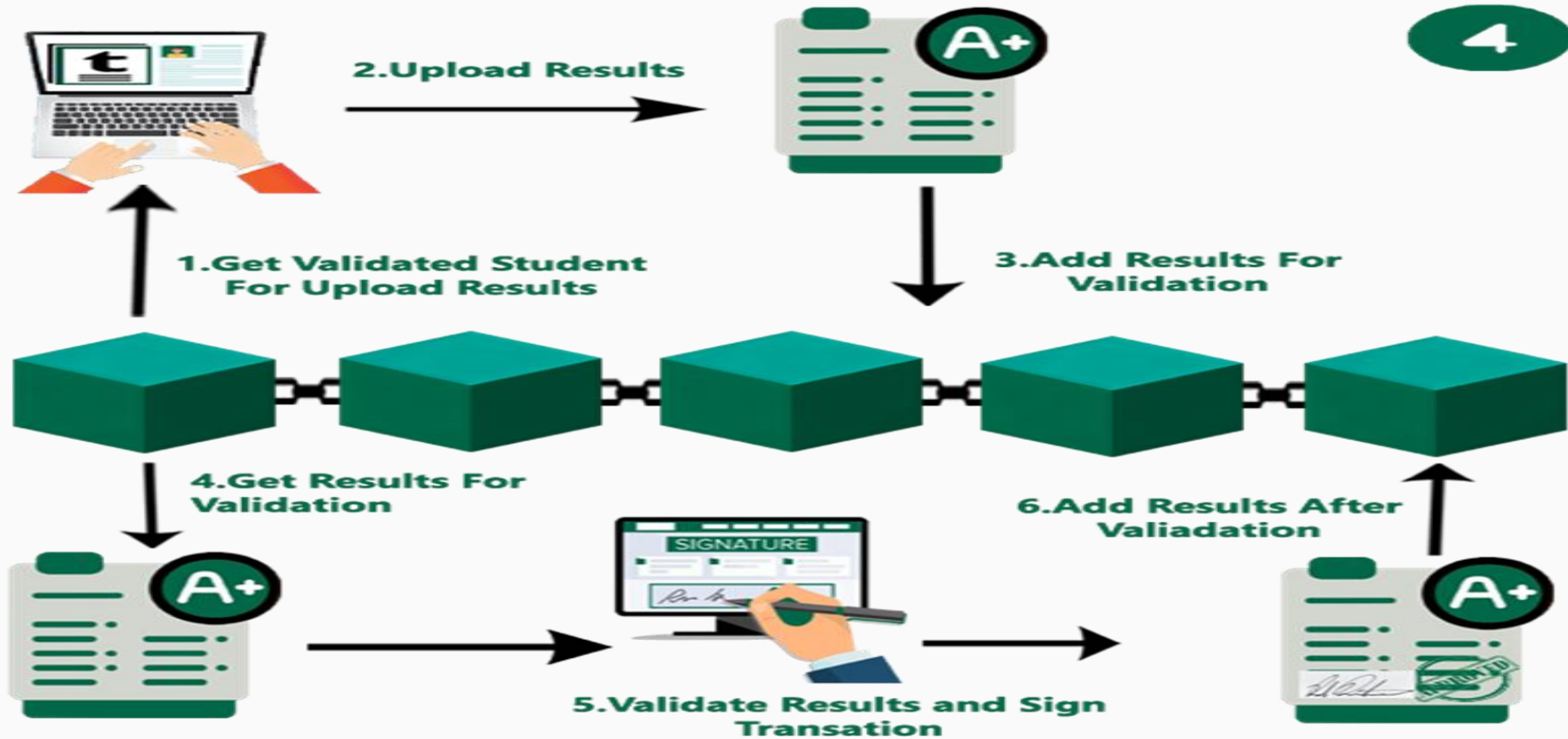


SIBAU
BLOCKCHAIN
INNOVATION
CENTER

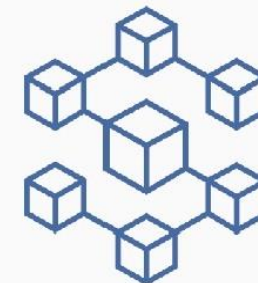
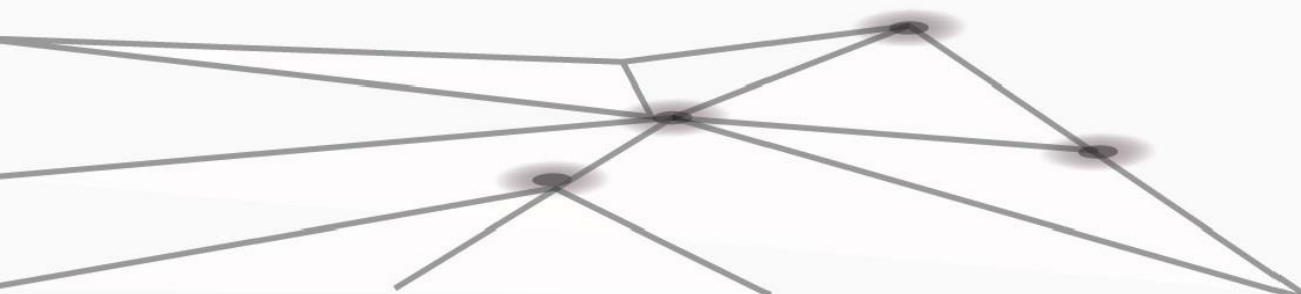
DVS: Admission and Admission Verifier Flow



DVS:Grade Uploader and Verifier Flow

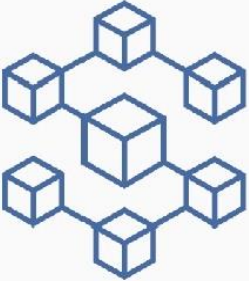
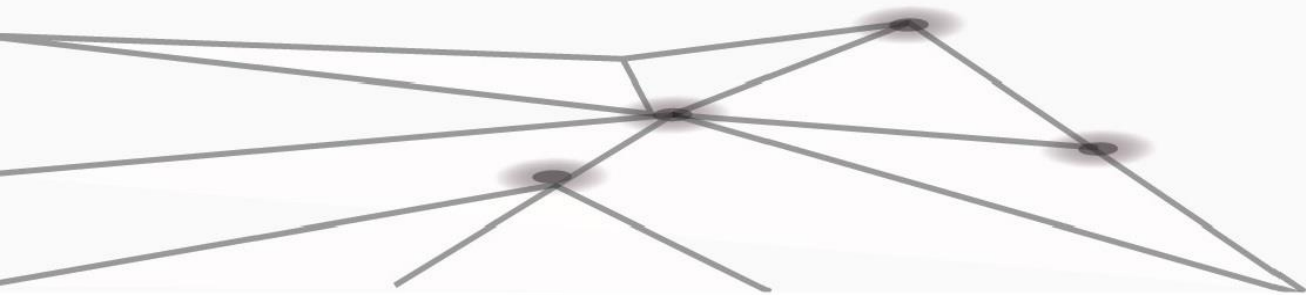


Degree Verification System (DVS)



SIBAU
BLOCKCHAIN
INNOVATION
CENTER

Thank You



SIBAU
BLOCKCHAIN
INNOVATION
CENTER