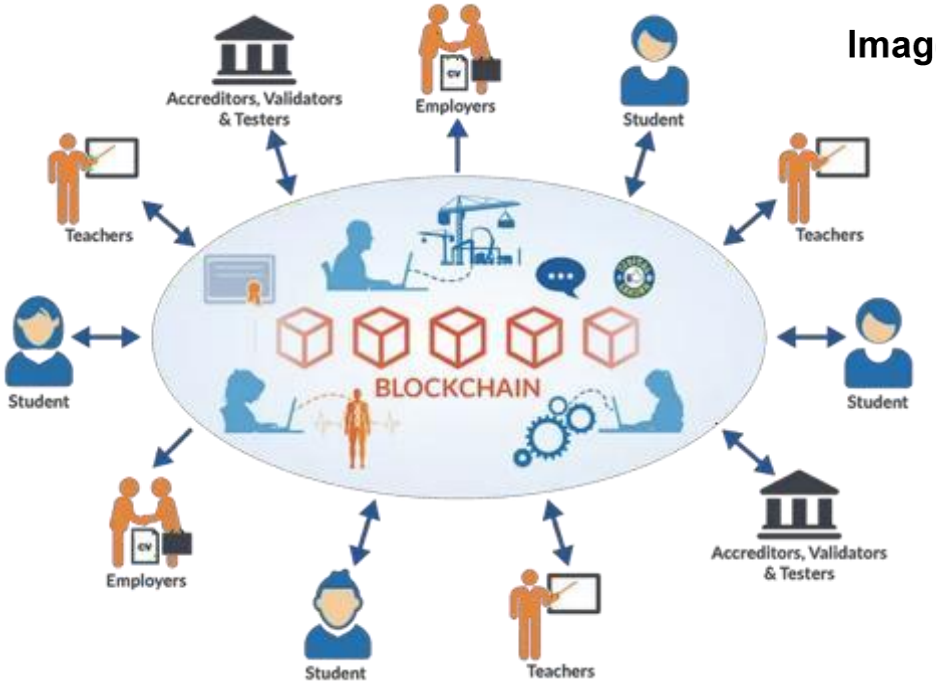


Image Source: http://blockchain.open.ac.uk/

Blockchain in Government - IV

Lecture outline

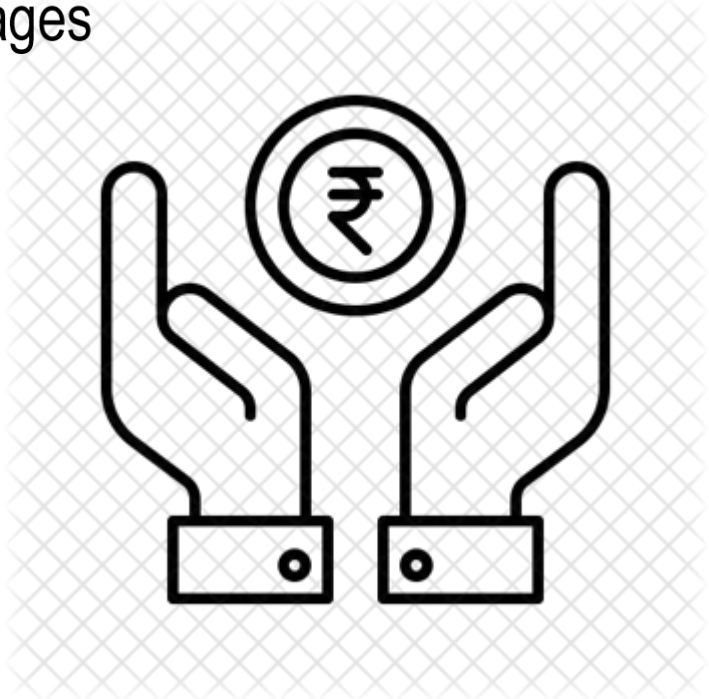
- In this lecture, we will take two more examples or use cases where the Govt can get benefitted by the utilization of Blockchain Technology.
- First, we will consider **taxation** case where BCT can be used to utilize the tax management in a simplified way.
- Second, we will see how the BCT can be utilized for **digital land record management.**

Case Study-Processing Tax Payments

- Goods and Services Tax (GST) - indirect tax covering various goods and services during the production and service stages
  - SGST
  - CGST

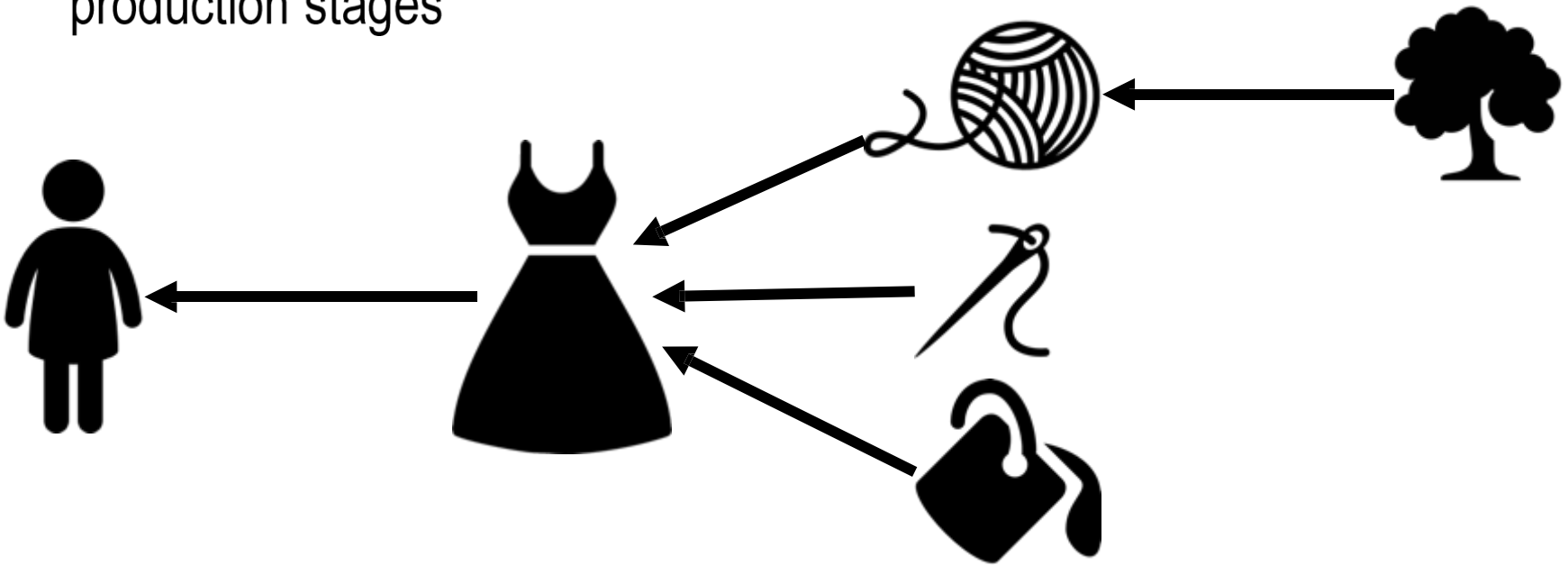
Two components of GST

- The entire workflow is pretty complex - Let's see how Blockchain can help!



Case Study I – GST Without Blockchain

- Say, you want to purchase a dress - it has multiple workflows at the production stages



<u>Stages:</u> Initially, farmers need to produce the cotton, then this produced cotton comes to vendor and then you require other material to produce the dress like colors, needles, etc. Then, the dresses goes to shopping malls from where you purchase the dress.

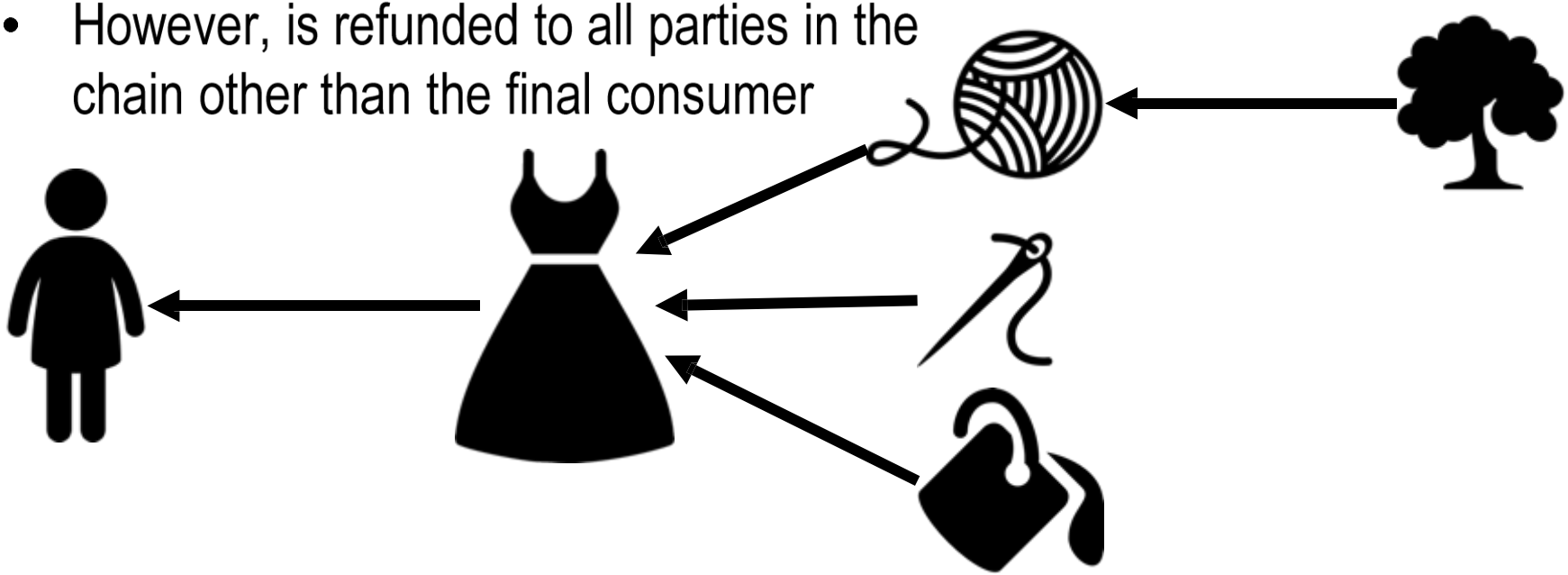
- But how the Govt apply taxes on these different stages of production
- Although GST makes this taxation process more governed but the entire stages bit complicated. E.g) When the farmer is selling the raw cottons they are providing certain tax to the Govt
- Then, the production house, which converting the raw cottons to the cotton balls give certain taxes the Govt and same is the case with all other companies involved in different stages (Like company producing needles)
- All these taxes added to the price of the dress and at the time of final purchase of the dress, then also customer has to pay tax.

- As per the GST, entire tax is paid by the customer at the time of final purchase and the intermediary paid tax will be refunded to the corresponding production companies.

- For example, whenever company producing cottons then selling the cottons to some dress stitching companies
- then the tax which is already paid by cotton producing company that will be refunded back to them
- because the entire tax is on the customer side who will purchase the dress.

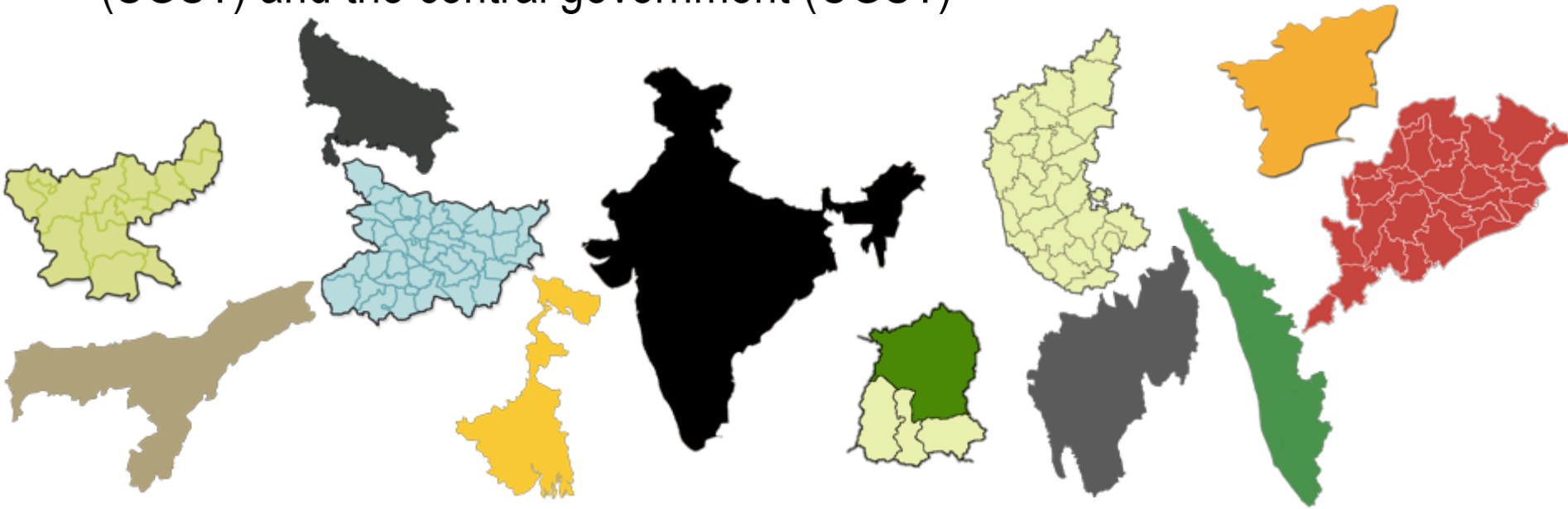
GST Without Blockchain

- GST is levied at every step in the production process
- However, is refunded to all parties in the chain other than the final consumer



GST Without Blockchain

- The collected GST is also distributed among the state government (SGST) and the central government (CGST)



GST Without Blockchain

A GST Invoice is issued by the seller

Buyer pays the bill with GST

Information of the payment is recorded at GST Portal

Seller pays to the suppliers

Final Tax goes to the government

Additional payment is adjusted

Now the task of the Govt is to make a huge calculation that which part of the GST refunded back to the intermediaries of this production chain and which final collected part is to be distributed among central Govt and State Govt.
This entire exercise is done by the Govt employees of the associated Department

GST With Blockchain

A GST Invoice is issued by the seller

Buyer pays the bill with GST

Seller pays to the suppliers

Smart Contract adjusts the tax calculation during the payment

Final Tax goes to the government

SC automatically calculates the tax based on the set of codes. Tax engineer can help to frame-out the smart contract. No need to involve Govt in every step rather in the production chain, the things are getting adjusted at each individual steps based on SC

GST With Blockchain

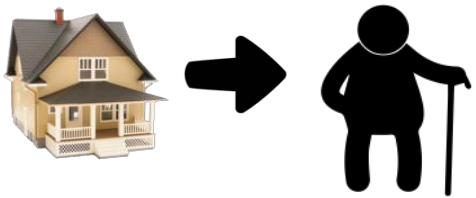
- During the payment for a good or a service
  - Blockchain smart contracts can calculate the invoice based on the tax amount that is already levied during the production process
  - Smart contract directly transfers the tax amount to tax authority (CGST or SGST)
  - The refund, if any, is directly paid to the customer's account

Advantage with a Blockchain

- The administrative burden for accounting services is drastically reduced
- All the transactions are done in real time, no “return filing” is required, or “return filing” can be avoided
- All the transactions are transparent and tamper-proof.
  - Reduces risk of fraud and mistakes
  - Immediate auditing from the transaction log

Case Study: Blockchain for Land Registry Records

- Three units for land registers
  - **Object:** The spatial unit Means land or house that you have
  - **Right**: Right associated with a property (*rem right*) or right associated with a specific person (*personam right*)
  - **Subject:** The person or the title holder



The rem right is observable and true for the work and you don't have any personal relationship but in personam right, you have a personal relationship with the person based on which the right is being levied.

If you have your own house and no one can claim the ownership on that house (rem right example).
If you have given your house on rent to another person and have the right to get the monthly rent from that person (Example of personam right)

Land Registry Records

- Property gets changed from one hand to another hand
- *Bundle of rights* - complexity of property ownership - more than one claim possession or control of an asset
  - *Legal records can always get tampered*



Real Estate Transaction Today

Mrs. Holmes wants to sell her property

Contacts a real estate agent

The agent checks the land registry office that Mrs. Holmes is the legal owner of the property

Real Estate Transaction Today

The agent announces that the house is for sale

Mr. Watson wants to buy the house

Watson approaches the bank for a house loan

Real Estate Transaction Today

Bank checks the land registry record for the ownership of Mrs. Holmes

Loan in approved for Watson

Watson transfers the money to the agent

Real Estate Transaction Today

A legal contract is made between Watson and Holmes to transfer the house ownership

The agent transfer the money to Holmes after deducting his fees

Property Transaction over Blockchain

- The land registry is in blockchain - the property owner can automatically check their ownership and whether they are eligible to sell the property
- The buyer and seller can get connected over the blockchain platform
- The bank can also check the status of the ownership over the blockchain platform

Property Transaction over Blockchain

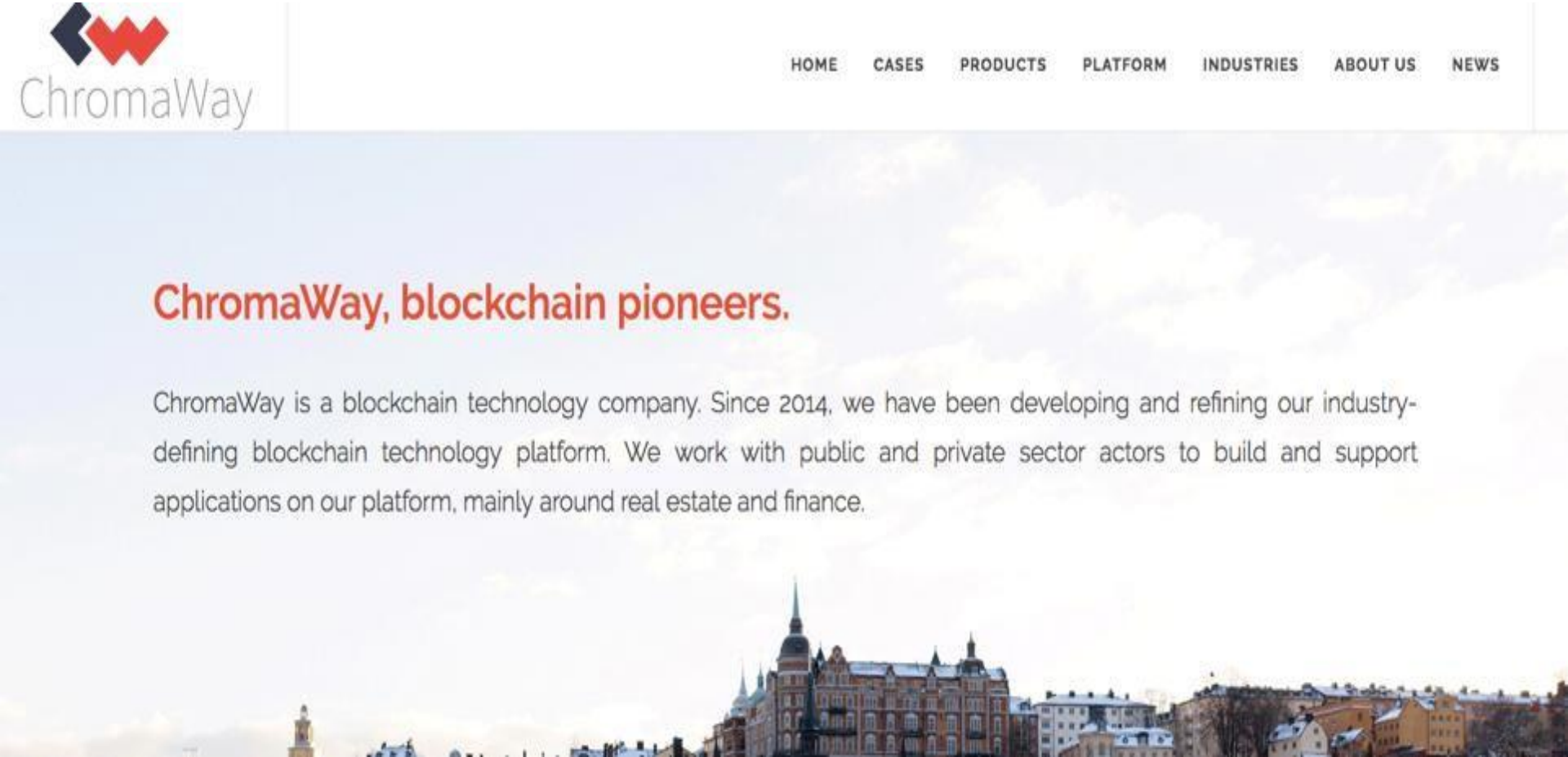
- The purchase is executed using a smart contract
  - The seller transfers the ownership to the buyer
  - Payment will be automatically transferred from buyer's bank to the seller's bank

- Everyone, buyer, seller and the bank can verify the status of the contract over the blockchain smart contract platform

Blockchain in India

- The AP Government makes a partnership with ChromaWay, a Sweden based startup, to use blockchain to maintain land registry records.

Startups in this direction..



Interesting Reads

- Whitepaper from ChromaWay - https://chromaway.com/papers/Blockchain_Landregistry_Report_2017.pdf