

***Blockchain in Government –  
Future Synergy***

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# *Agenda*

**1** Introduction

**2** Pain Points

**3** Can Blockchain be the Game Changer?

**4** Blockchain Essentials

**5** Blockchain adoption Worldwide and Used Cases

**6** Pitfalls

***1***

## ***Prologue***

### ***Businesses and Services don't exist in Isolation***

*Government is the largest service provider in any country*

***Then why is the Government behind in Blockchain technology adoption?***



- 1. May be in wait-and-watch mode*
- 2. The story of the Blockchain success not told*
- 3. Not aware of the Credentials*
- 4. Don't know where to use*

*They connect departments, stakeholders, suppliers etc.*

*Which Necessitates*

*A Trust based System that requires*

- 1. Integrity*
- 2. Protection*
- 3. Security*

*“Coincidentally.....?”*

***“A Framework of Blockchain Technology”***

***In this session, I will walk you through the potential that Blockchain holds with it***

2

# “Data manipulation is the latest technique in the 'art of war in digital space.’”

## The Big 4



Asset misappropriation



Procurement fraud



Accounting fraud



Human resources fraud

**31%**

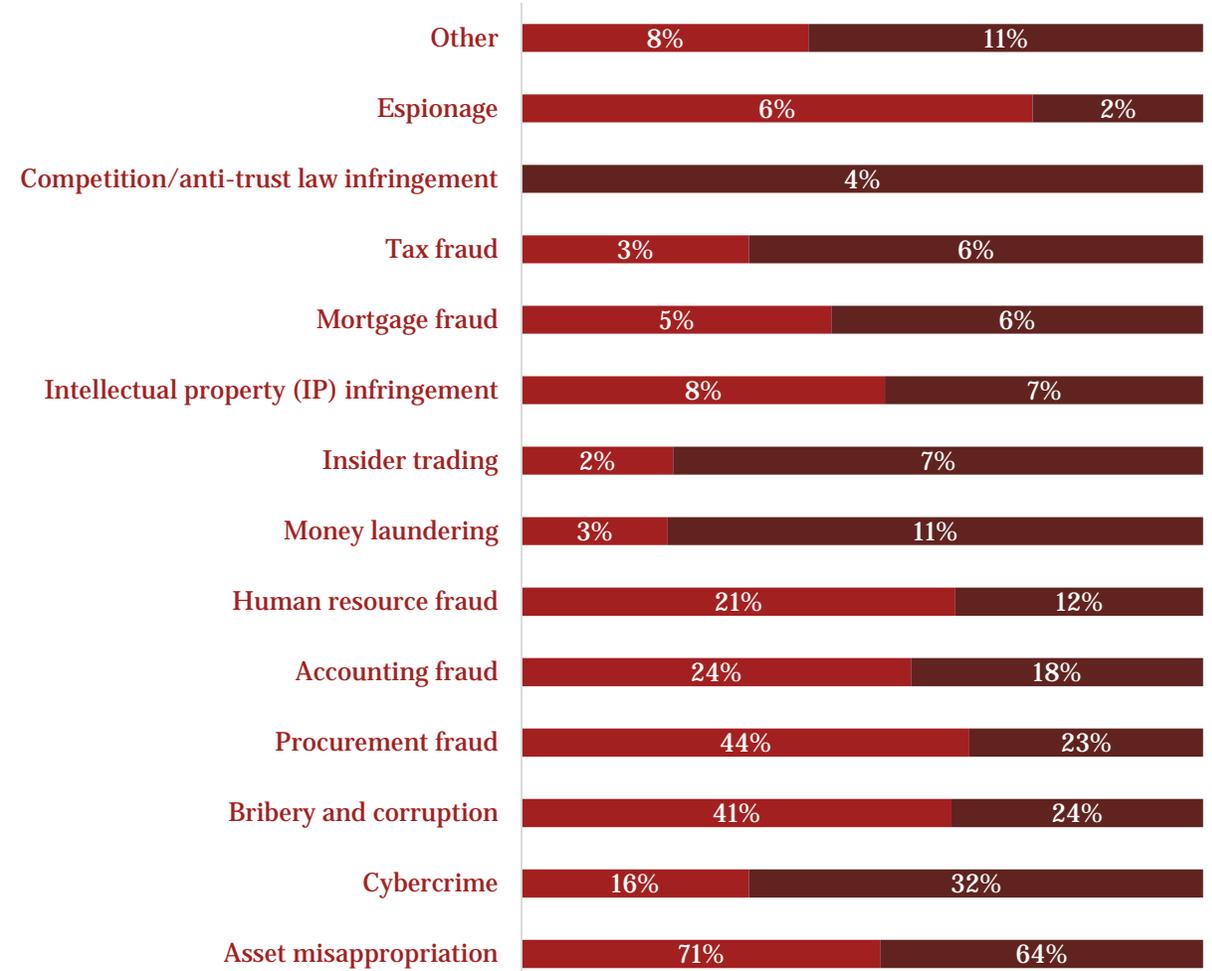
of the respondents in India have experienced economic crime in the last two years

**56%**

of the Indian respondents perceived an increased risk of cybercrime over the past two years

**61%**

of economic crimes in India are committed by employees within an organization



■ India ■ Global

## *A glimpse of what is being reported*

Times of India

**Fire at Mumbai Mantralaya chars vital files**

Times of India

**In March 2018, the UP mining department lodged an FIR claiming that unauthorized people manipulated its database to facilitate illegal activities**

scroll.in

**In April 2011, it was reported that 44,000 files had gone missing from various branches of the Trade Mark Registry**

Network Intelligence

**Accused gained unauthorized access to the Joint Academic Network (JANET) and deleted, added files and changed the passwords to deny access to the authorized users**

PwC

Indianexpress

**How National Register of Citizens is being updated to check illegal immigration in Assam**

On one hand, the authorities are working to ensure only legal Indian citizens are enrolled in the NRC and not even a single illegal immigrant is listed, citizens are also reportedly having a difficult time proving their legal citizenship status

NDTV

**In UP Again, 49 Children Die In Hospital Allegedly Due To Oxygen Shortage**

scroll.in

**Why do government files go missing so often, and what can be done about it?**

cnbc.com

**It is estimated that \$700 million is being paid in bribes at land registrars across India**

## *Problems in a Nutshell*

**Data exposed to unauthorized modification**

**Data Available in one single place**

**Need of an agency/middleman to endorse – Bribery**

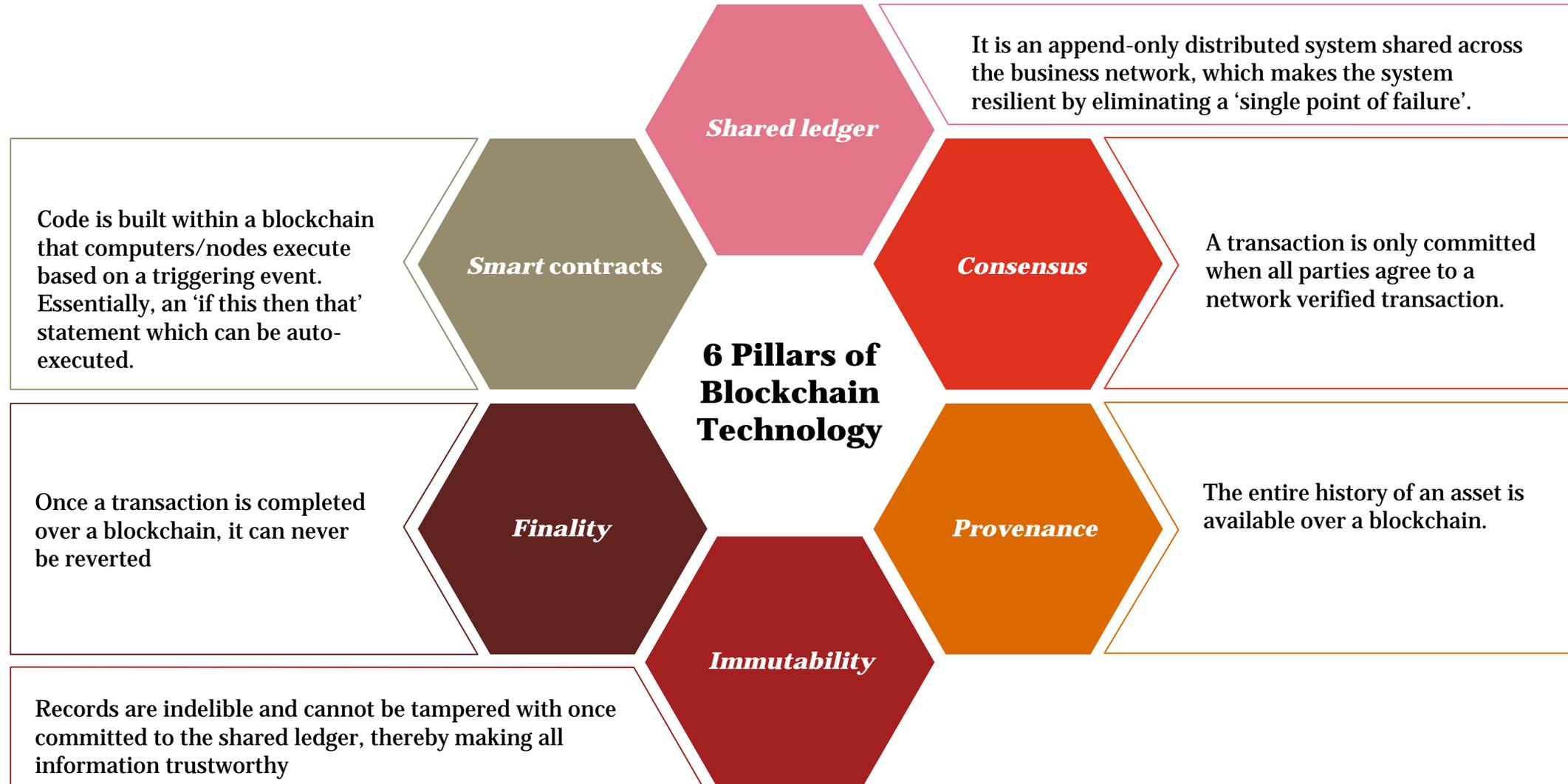
**Lack of audit trail**

**Manual intervention in contract execution**

3

Can Blockchain be the game changer?

# Blockchain Advantage



## Value of Blockchain technology

1

*Reduction of costs and complexity*



Blockchain can reduce or eliminate the need for certain intermediaries and can be used to automate manual tasks

2

*Shared trusted transactions*



A distributed ledger stores the entire ownership history of an asset.

3

*Reduction of fraud*



It is possible to store the complete transaction history on a Blockchain. One can generate unique (hash) code from documents and store them on the Blockchain. Because such a digital ledger cannot be manipulated, fraud becomes almost impossible.

4

*Audit Trail & transparency*



Validate a transaction in no time. The solution provides a quick snapshot of the asset from creation to last transaction. Immutable, time stamped and digitally signed & protected solution for tracking audits to act upon.

5

*Secure & Immutable*



Interfering with transactions on the Blockchain is extremely difficult due to the complex cryptography employed and also the distributed nature of the ledger – every participant in the Blockchain can view any changes

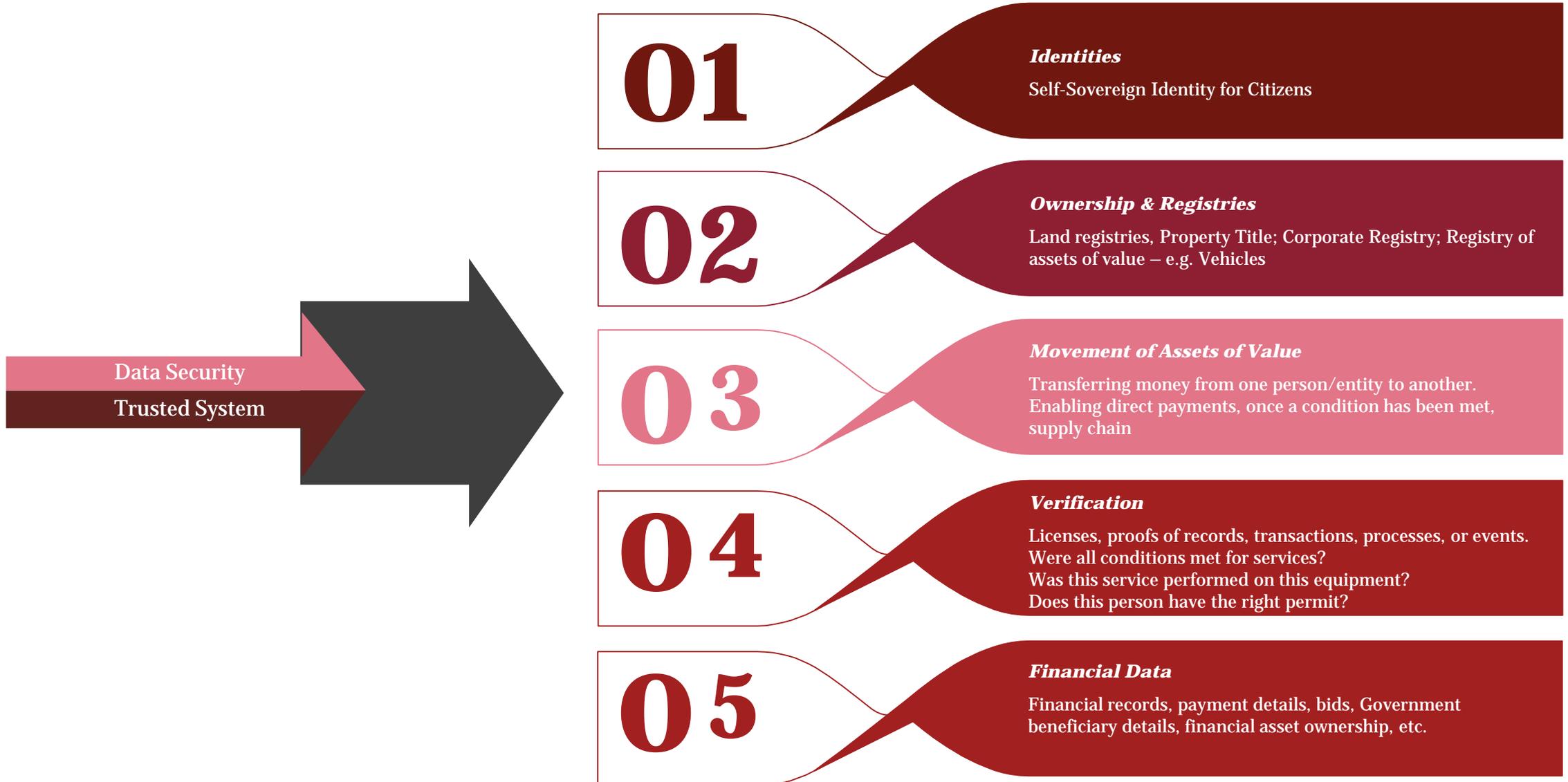
6

*Resilient  
“no single point of failure”*



Blockchain doesn't have a so called “single point of failure” because there is no single point of control. The Blockchain doesn't have a single gatekeeper that alone can make modification to the system.

# Potential applications of Blockchain in Governments



**4**

## ***Key Considerations.....***

### ***Permissioned or Permissionless***

*With the pre-defined protocols and workflows, Government sector finds permissioned befitting for open membership. In the permissionless, the algorithm decides who would be the next block creator*

### ***Consensus Algorithm***

*The consensus algorithm, technology's immutability feature, must be robust, scalable - by simply plugging functions in the workflow. Plugging and operating would prevent asset double spending*

### ***Replicated Shared Ledger***

*Flexibility in assigning roles and privileges to the nodes involved in the business network and the workflow strengthens security, questions to be answered are who participates as nodes and who can publish blocks?*

### ***Smart Contracts Support***

*Tailor-made solution i.e., problem centric approach is the key, considering Indian Government space*

### ***Security***

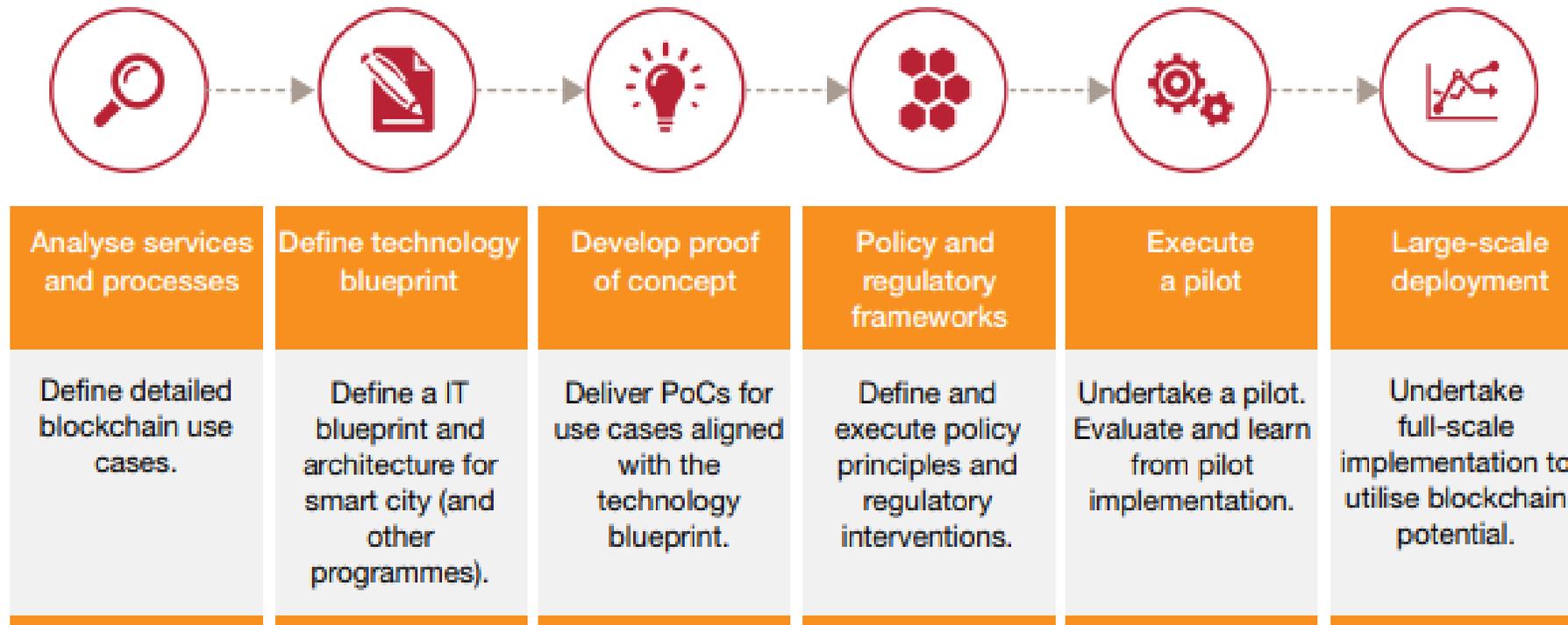
*The platform should support security properties that can guard the data from malicious attacks*

### ***Public Key Cryptography***

*Use of public key cryptography diligently to hand over data ownership and control to the actual owners*

## Key Considerations.....

### Phased approach for blockchain adoption



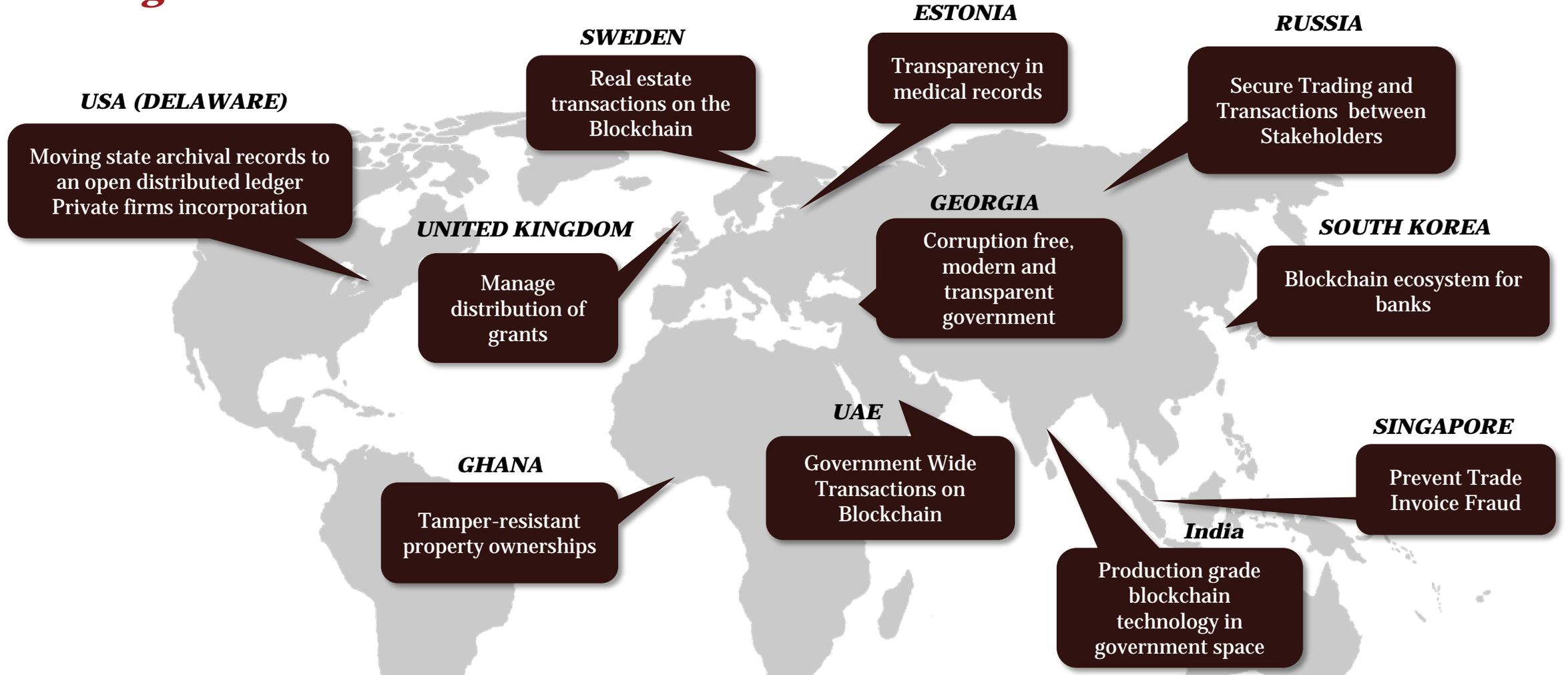
## Risks and Challenges.....



# 5

## Blockchain adoption Worldwide & Used Cases

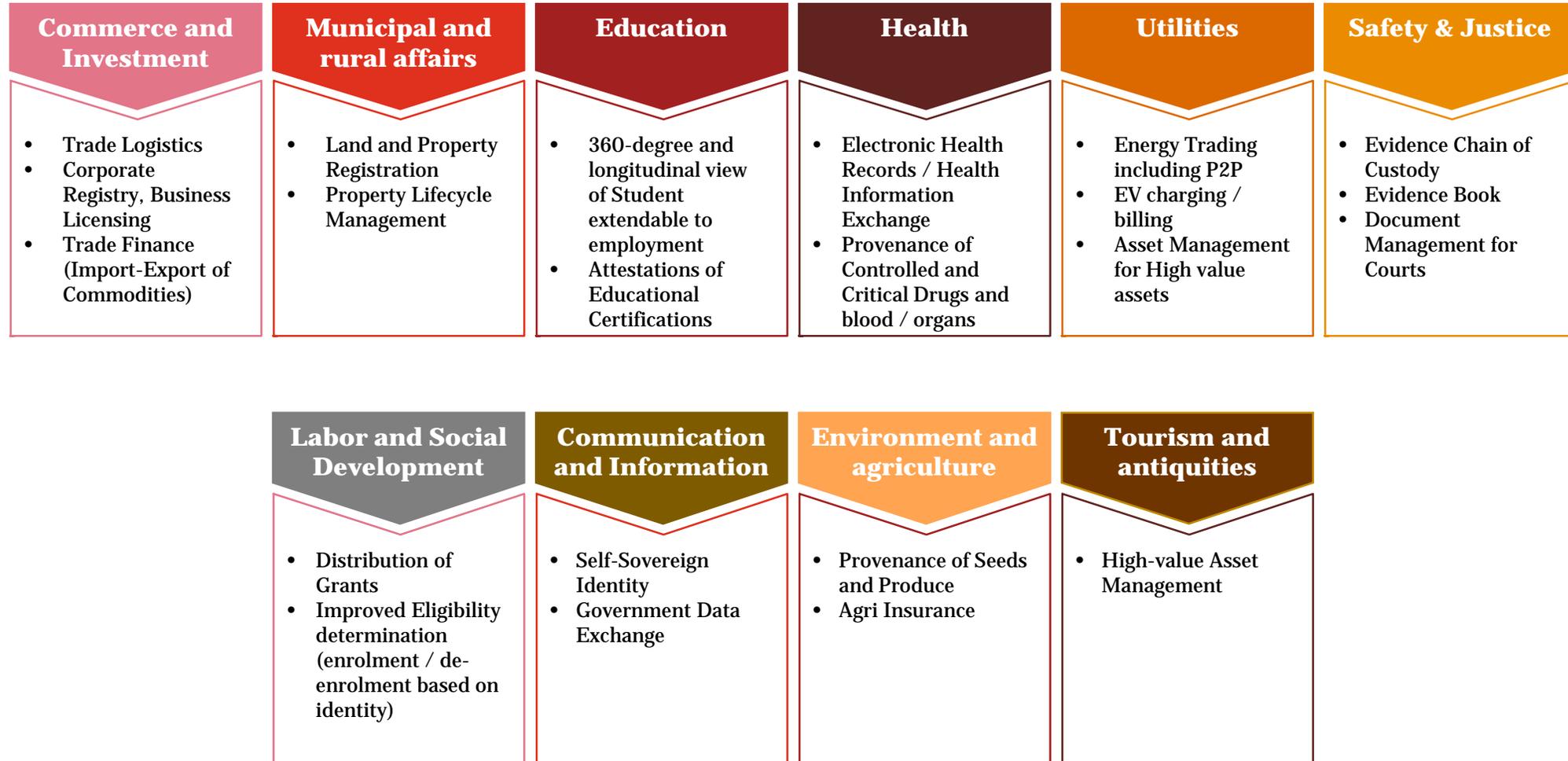
## Leading Initiatives across the world



- In India many states are talking about using Blockchain
- RBI published a white paper on Blockchain for Fintech

- Vizag and Trivandrum talking about setting up Blockchain Tech Hubs
- Education Institutes and Startups are exploring with more vigor

# Blockchain in Smart City & Government – Use Cases



6

# ***Blockchain is not for everything and we apply success factors for Blockchain***

<b><i>Multiple parties share data</i></b>	<b><i>Multiple parties update data</i></b>	<b><i>Requirement for verification</i></b>	<b><i>Intermediaries add complexity</i></b>	<b><i>Interactions are time sensitive</i></b>	<b><i>Transactions interact</i></b>
Multiple participants need views of common information	Multiple participants take actions that need to be recorded and change the data	Participants need to trust that the actions that are recorded are valid	Removal of dependency on intermediaries can reduce cost and complexity	Reducing delay has business benefit	Transactions created by different participants depend on each other
 1	 2	 3	 4	 5	 6

***If 1 is Yes and 3 out of the remaining is Yes, we consider Blockchain to be an effective solution***

# Blockchain on the Hype-curve

