



Govt. of Karnataka

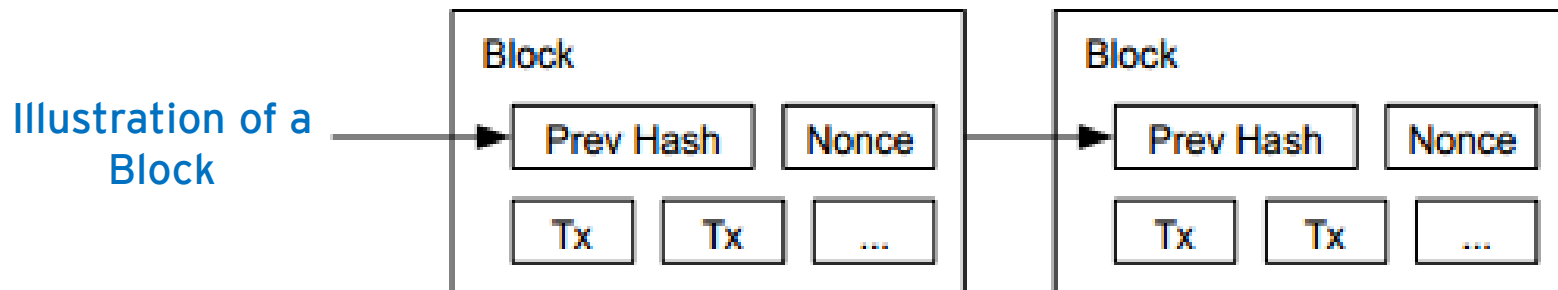
Roadmap for Use of Blockchain in Karnataka Government - DRAFT

Blockchain Conclave - February 15, 2018

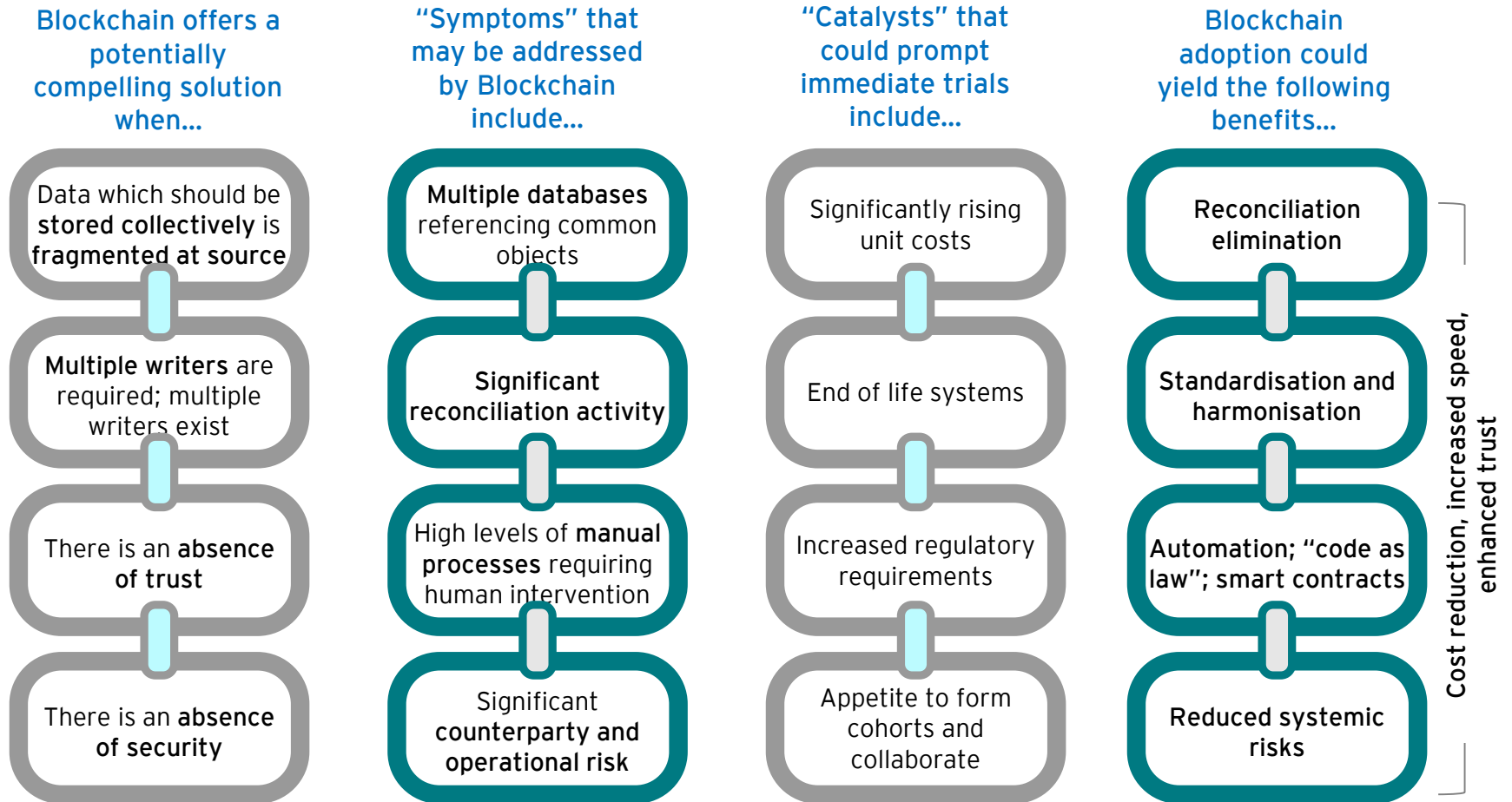
What is blockchain technology?

Salient Features of Blockchain (or Distributed Ledger) Technology

- ✓ A distributed, secure, peer-to-peer ledger
- ✓ Shared across the network
- ✓ Contains *viable* (proven, authenticated) transactions
- ✓ Cryptographic proof is used to validate transactions
- ✓ Transactions are grouped into blocks
- ✓ Hashes link the blocks, creating a chain
 - ❑ (The chain cannot be modified or the hashes will no longer be valid)



Blockchain technology provides exceptional benefits when applied for solutions that exhibit the following...



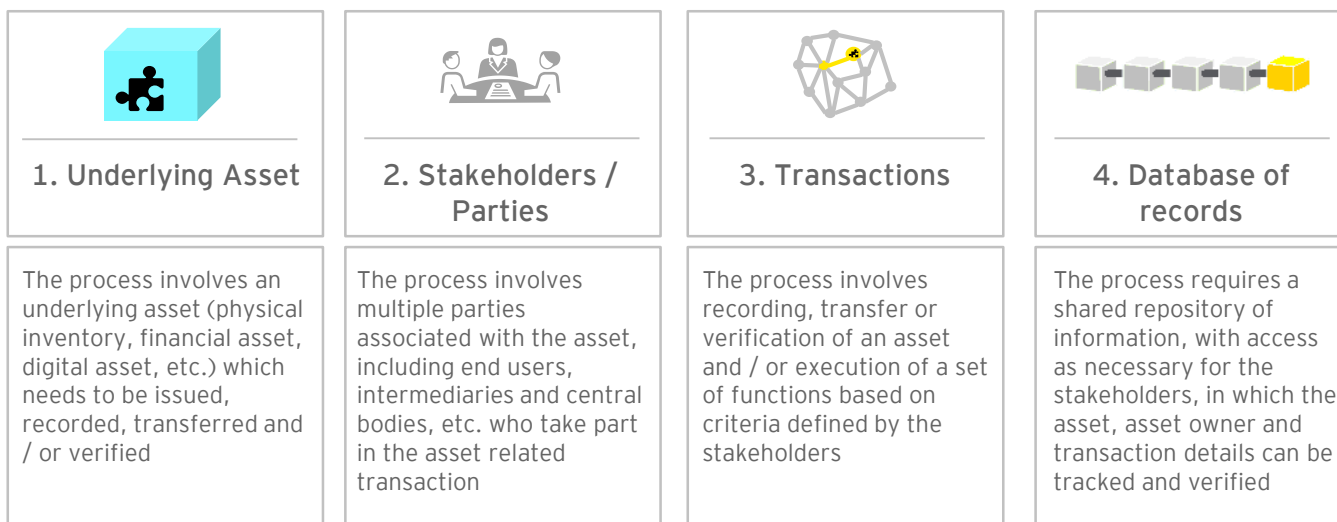
Is blockchain technology the answer for every problem?

“I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail.”

– Abraham Maslow

- ▶ Clearly, not every problem is suited to Blockchain
- ▶ Blockchain is best suited to problems that exhibit the following characteristics:

Key elements of a DLT enabled process



Use case assessment

<DLT use case under consideration>

✔ ▶ XX

✔ ▶ XX

✔ ▶ XX

✔ ▶ XX

Blockchain is an exciting technology with substantial potential but it's a nascent technology. Departments need to identify and qualify the problems where Blockchain can be used



Governments can achieve positive impact on multiple dimensions by using blockchain

Operational costs



- ▶ Cost and complexity reduction
- ▶ Increased transaction procession speed
- ▶ Reduced administrative burden and transaction costs
- ▶ Improved audit quality

Contract execution



- ▶ Autonomous execution
- ▶ Proven and authenticated transactions
- ▶ Reduced litigation
- ▶ Real-time transactions

Customer service and experience



- ▶ Reliable and irreversible transfers of digital goods
- ▶ Inclusive participation of citizens
- ▶ Supporting Internet-of Things (IoT) ecosystems

Risk management



- ▶ Data protection and data integrity assurance
- ▶ Crypto-certified data
- ▶ Trusted record-keeping
- ▶ Reliable and resistant to outages

Transparency and fraud



- ▶ Transparency and traceability of transactions
- ▶ Tax fraud reduction
- ▶ Reduction in money laundering
- ▶ Ensuring the correct use of funds



Global governments are buoyant about launching multi-sectoral POCs using blockchain technology



Source: EY Research



India has started spearheading blockchain initiatives across multiple sectors including Government & BFSI

Key Initiatives in the Government sector



Government of Maharashtra in association with FICCI organized the Maharashtra Tech Summit to enable Digital Transformation through Blockchain. Topics covered- Reimagining Financial Inclusion with Blockchain, Blockchain - Enhancing skill and talent landscape of India, Moving beyond Financial Services - Improving Supply Chain & Manufacturing with IoT - Driven Blockchains, and Blockchain and Governance

Government of Andhra Pradesh hosted the first ever **Agriculture based hackathon** in liaison with CII, and Bill and Melinda Gates Foundation to open up the dimensions of technology in agricultural sector and value chain

West Bengal Land Records is in the process of testing a distributed ledger based blockchain solution POC to enable **land registration, transfers and mutations, duty payments, record modifications, verifications and reporting** functionalities

Telangana is also exploring using Blockchain for Land Records through an RFP for an System Integrator
Andhra Pradesh has started working on a POC for Land Records using blockchain in Dec ' 17.

NITI Aayog along with Proffer organized a blockchain summit and hackathon to drive efficiency, transparency, privacy and cost across multiple sectors

Government of Rajasthan organized a hackathon on technology themes including blockchain to explore new age technology based problem solving for the state

Key Initiatives in the BFSI sector



ICICI Bank implemented an **international trade finance transaction** with Emirates NBD, enabling all parties of the transaction to access real time data

ICICI Bank led a **real-time remittance transaction**, enabling instant money transfer an ICICI bank Mumbai, India branch, to an Emirates NBD branch in Dubai

Axis Bank has launched a service for its retail customers in India to **receive payments** from RakBank in UAE and for its corporate customers in India to receive payments from Standard Chartered Bank in Singapore

Bajaj Allianz General Insurance has hastened the process of claims settlement in the travel and motor segments by leveraging on blockchain technology

YES Bank is using a smart contract on a blockchain in order to allow Bajaj Electricals to process disbursement of funds and discounting to its vendors.

State Bank of India, is in the process of deploying a smart contract for KYC solution over BankChain, a community of Indian and foreign banks which are developing blockchain solutions

HDFC Life insurtech hackathon generated a first of a kind buzz in life insurance sector for use of blockchain and other new age technology use like IOT and AI to come up with solutions for use cases

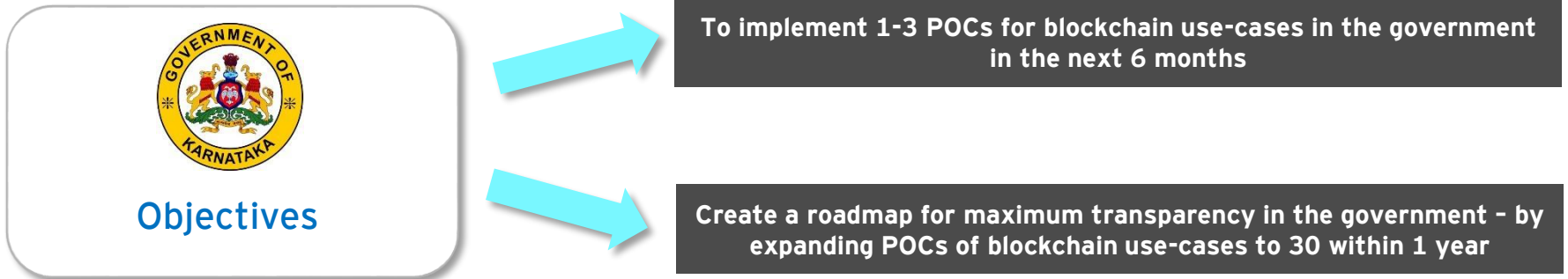
Source: EY Research



Government of Karnataka has a vision to accelerate blockchain Proofs-of-Concept in government



Blockchain Technology Implementation Vision



With these goals, Government of Karnataka proposes to create guidelines to enable



Accelerated problem identification



Accelerated POC development and deployment



Accelerated use-case elaboration and design



Accelerated POC adoption

For a wide audience including:



Government Departments



Startups



Technology Companies



Infrastructure/
Cloud Service
Providers



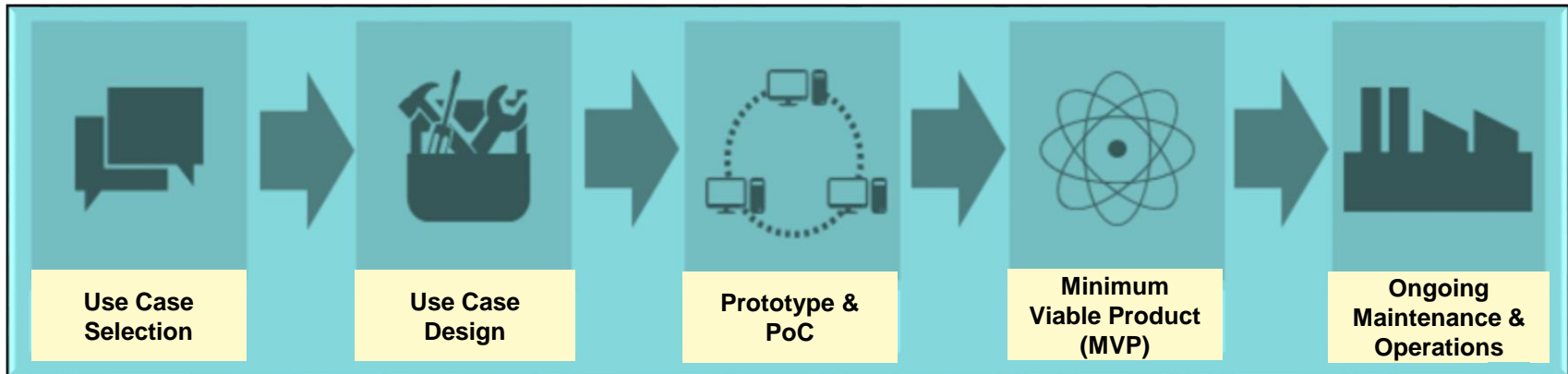
GoK proposes to release a Blockchain implementation roadmap

- ▶ Guidance to the government on what may be the good uses of blockchain technology in the government
- ▶ Approaches to accelerate blockchain use-case Proof of Concept Implementation
- ▶ The Roadmap may include:
 - ▶ Approach for selecting and designing blockchain use cases
 - ▶ Roles of departments involved
 - ▶ Elaboration of the use-cases
 - ▶ Infrastructure: Hardware / Software
 - ▶ Vendors: On-boarding and roles
 - ▶ Standards
 - ▶ Stakeholder on-boarding processes
 - ▶ Maintenance and operations
- ▶ Additionally, the Roadmap may also leverage other GoK and GoI policies and guidelines
- ▶ The Roadmap would be owned and managed by a interdepartmental Blockchain Governance Committee



A standardized GoK-wide implementation approach can quickly get stakeholders aligned

GoK Standardised Blockchain Implementation Approach



- ▶ Identify challenges and inefficiencies in the existing process
- ▶ Examine appropriateness of blockchain to the problem
- ▶ Identify end-users, inputs, outputs and transactions
- ▶ Identify NODAL and STAKEHOLDER departments and establish alignment on roles

- ▶ Elaborate Use-case : to-be processes, architectures, technologies, interactions between stakeholders and system
- ▶ Define High-level functionality to be implemented on the system
- ▶ Identify Data to be put On-chain vs. off chain
- ▶ Collate existing sample data sets and scenarios

- ▶ Create a user-interface prototype/screen-flow
- ▶ Develop and deploy PoC using blockchain and other technologies, with minimal integrations and data sets
- ▶ Demonstrate feasibility (technical) and viability (commercial) to stakeholders, based on small user group
- ▶ Determine further progress into Minimum Viable Product

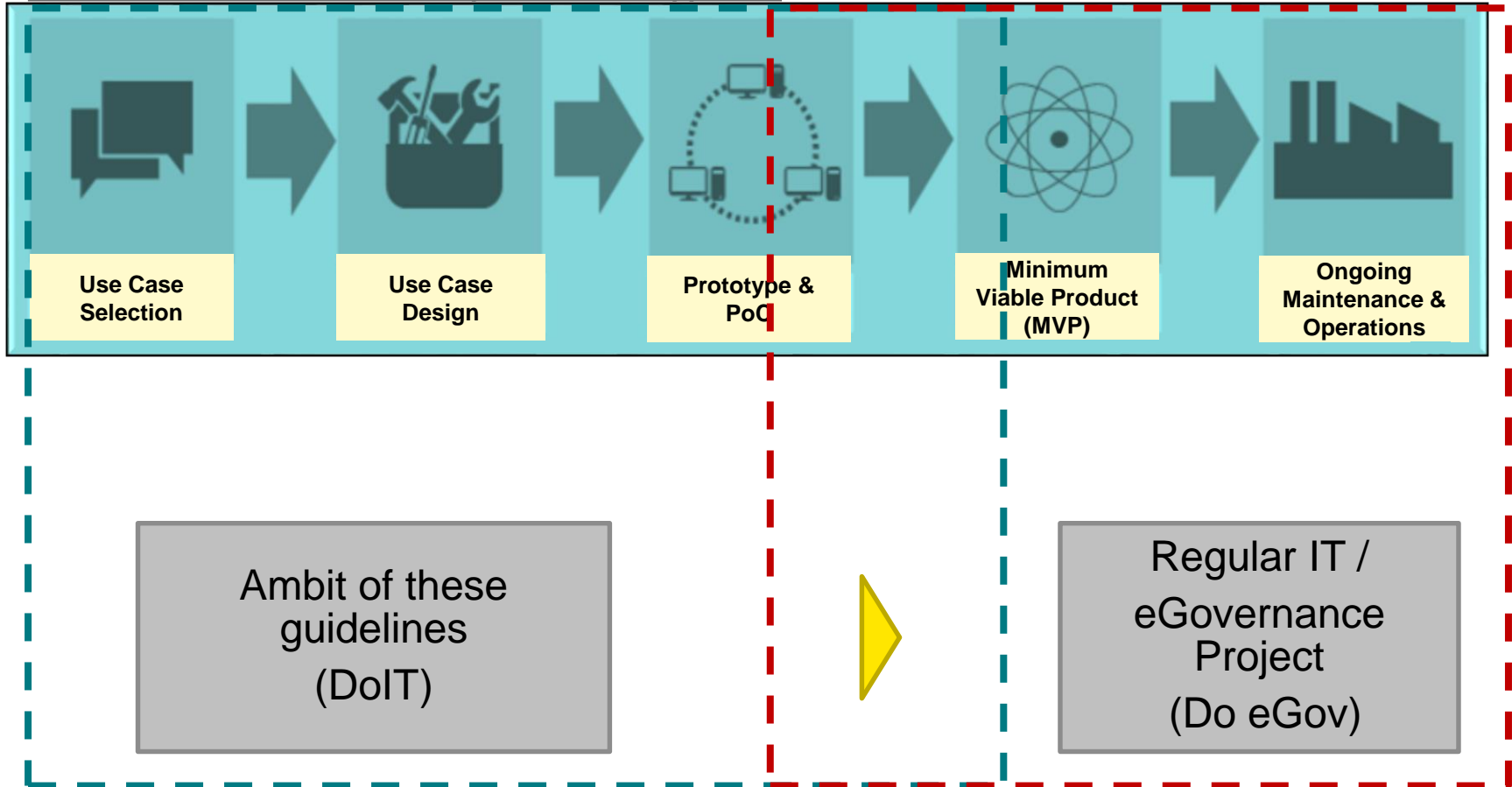
- ▶ Detail functional and technical requirements, including architecture for blockchain enabled system, based on the feedback shared by the nodal and stakeholder departments
- ▶ Estimate budgets and obtain approvals for full-scale system
- ▶ Run an RFP process for IT system procurement
- ▶ Scale solution to larger user groups
- ▶ Select vendor, build system, UAT, Pilots, etc.

- ▶ Training, data-migration, process change management, rollouts, etc.
- ▶ Multi-year operations and maintenance contract for system

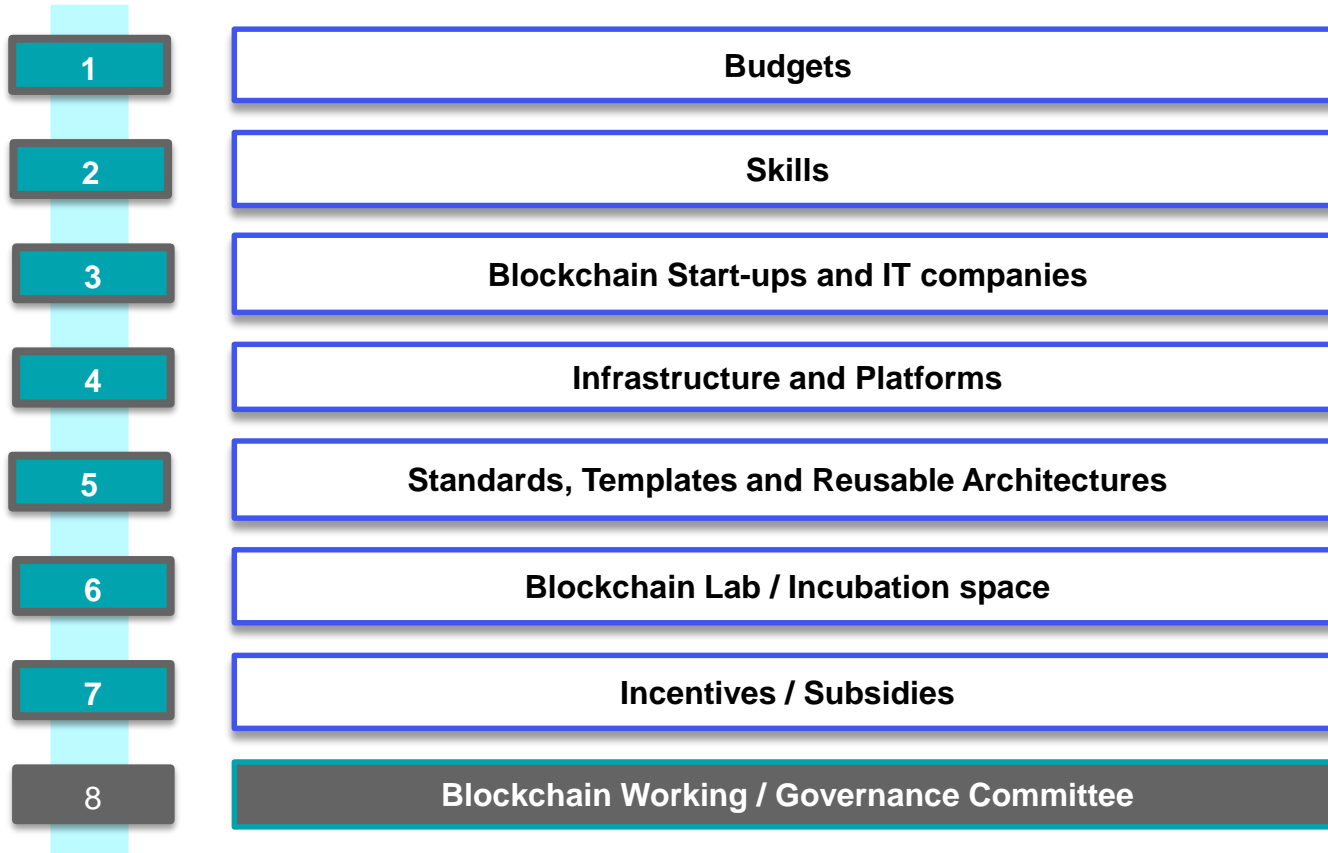


The Blockchain guidelines will aim to enhance use of the technology, and not to run eGovernance IT projects

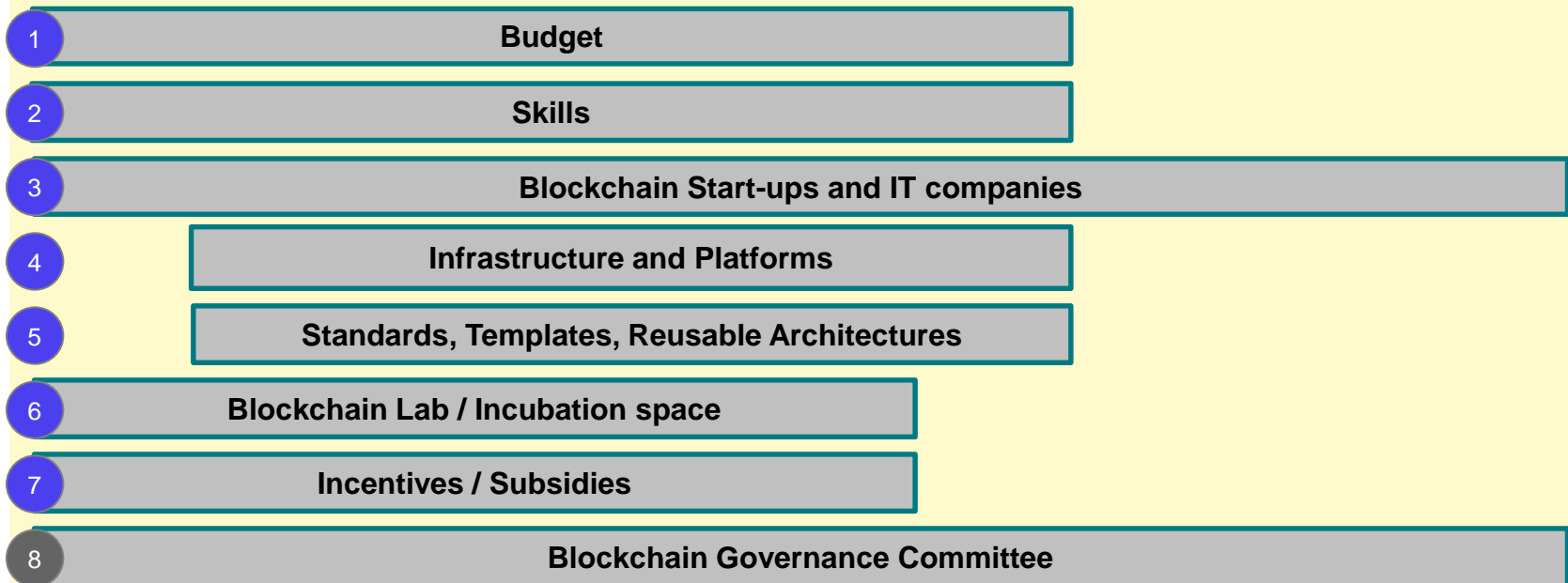
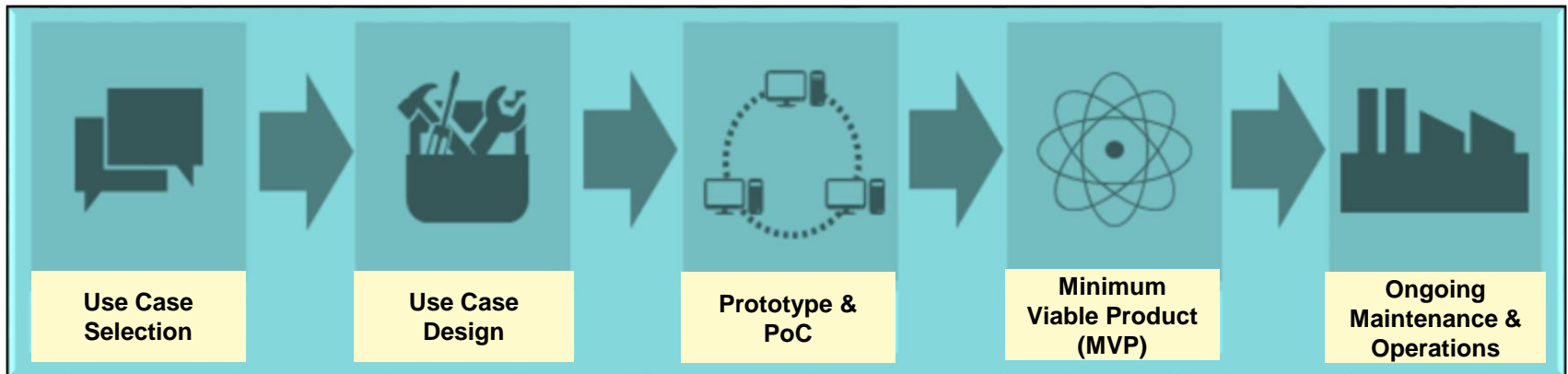
GoK Standardised Blockchain Implementation Approach



Various enablers from the GoK could help accelerate each of the PoC implementation stages



GoK enablers spanning across different stages facilitate the blockchain implementation up to the PoC stage



Enablers described (1/2)

1 Budget

- ▶ A budget could be set aside for taking the Blockchain Use-cases identified by departments up to the POC Stage.

2 Skills

- ▶ Winners / participants from the Hackathon invited to bid on Blockchain POC funds (to be set-aside from other funds, exclusively for Blockchain)
- ▶ Courses and certifications offered by MOOCS – (e.g, Coursera, UDEMY) could be recognized as valid certifications for individuals wanting to participate in POC builds / use the Blockchain lab

3

Blockchain Start-ups and IT companies

- ▶ Start-ups and IT companies specialising in Blockchain solutions could be empanelled as per guidelines based on various GoK policies like i4, Start-up policy

4

Infrastructure and Platforms (eg: Cloud)

- ▶ A subset of NICSI-empaneled Cloud Providers could be enabled to rapidly deploy Cloud platforms for Blockchain POCs for departments through bulk purchasing agreements
- ▶ The GoK could provide departments with cloud credits, as required for specific POCs



The enablers will accelerate the process of implementing blockchain use cases (2/2)

5

Reusable Architectures, Templates and Standards

- ▶ Use-case categorisations, and architectures created and documented could be re-used for future use cases classified in those categories
- ▶ Standardized reusable templates could be compiled and re-used for various activities like use case design, process flows, requirement gathering and finalisation
- ▶ Standards like IEEE and Gol standards for user-interfaces, and security may be co-opted

6

Blockchain Lab / Incubation space

- ▶ A Blockchain lab with PCs/internet/cloud access could be provided
- ▶ Approved individuals and/or empaneled startups/IT companies may be allowed to work on approved Blockchain POCs at this lab

7

Incentives/Subsidies

- ▶ Startup- Policy – Use of Idea to PoC funds
- ▶ Subsidies from i4 Policy, and other already approved policies could be set aside specifically for blockchain

8

Blockchain Governance Committee (BGC) [See next slide for details]

- ▶ An interdepartmental governance committee would be set-up to enable all of the above
- ▶ Targets for POCs within defined budgets and timelines would be setup for the BGC



The enablers and the use-case POCs would be managed by an inter-departmental Blockchain Governance Committee (BGC)

- ▶ The committee, chaired by PS-IT, would consist of representatives from the Departments of IT, and other Line departments, as appropriate for each use-case
- ▶ For each use-case a “Nodal” department would drive the PoC, and “User” departments (who also collaborate/use the blockchain) would also participate in the POC
- ▶ Recognized industry and startup blockchain experts and consultants, would be Advisors to the BGC, as required
- ▶ The BGC would:
 - ▶ Select use-cases, facilitate inter-departmental collaboration, approve POC projects, and allocate budgets and timelines
 - ▶ Build awareness across government, start-up and IT community
 - ▶ Manage the enablers and accelerators required through empanelment's (start-ups, individuals, bulk-procurement (eg., cloud, space)
 - ▶ Frame policies & guidelines and conducting various activities across all stages of a seamless blockchain implementation in the state
 - ▶ Monitor progress, and provide technical, functional and project assistance for rapid PoCs
- ▶ The BGC would meet regularly (say, weekly) until the initial targets are achieved.



Thank You

Presentation available on website <http://www.bengalurutechsummit.com/blockchain-conclave>