

BLOCKCHAIN APPLICATIONS AND INTEROPERABILITY

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Why do we need Blockchain?

Blockchain

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Distributed
Append Only
Ledger

Hash Storage

Chronological
Ordering

<https://blockchaindemo.io>

Applicability of Blockchains

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- ❑ Tamper Resistant / Data Verifiability
 - ▣ Storage of information where data integrity is at most important
 - Certificates, votes, land records ...
- ❑ Chronological Ordering
 - Land records
- ❑ Double Spending
 - ▣ Assets – singular
- ❑ Distributed
 - ▣ Availability, Data integrity

Applications

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Document
Verification

E-Voting

Supply Chain
Management

Land Records

Consent
Management

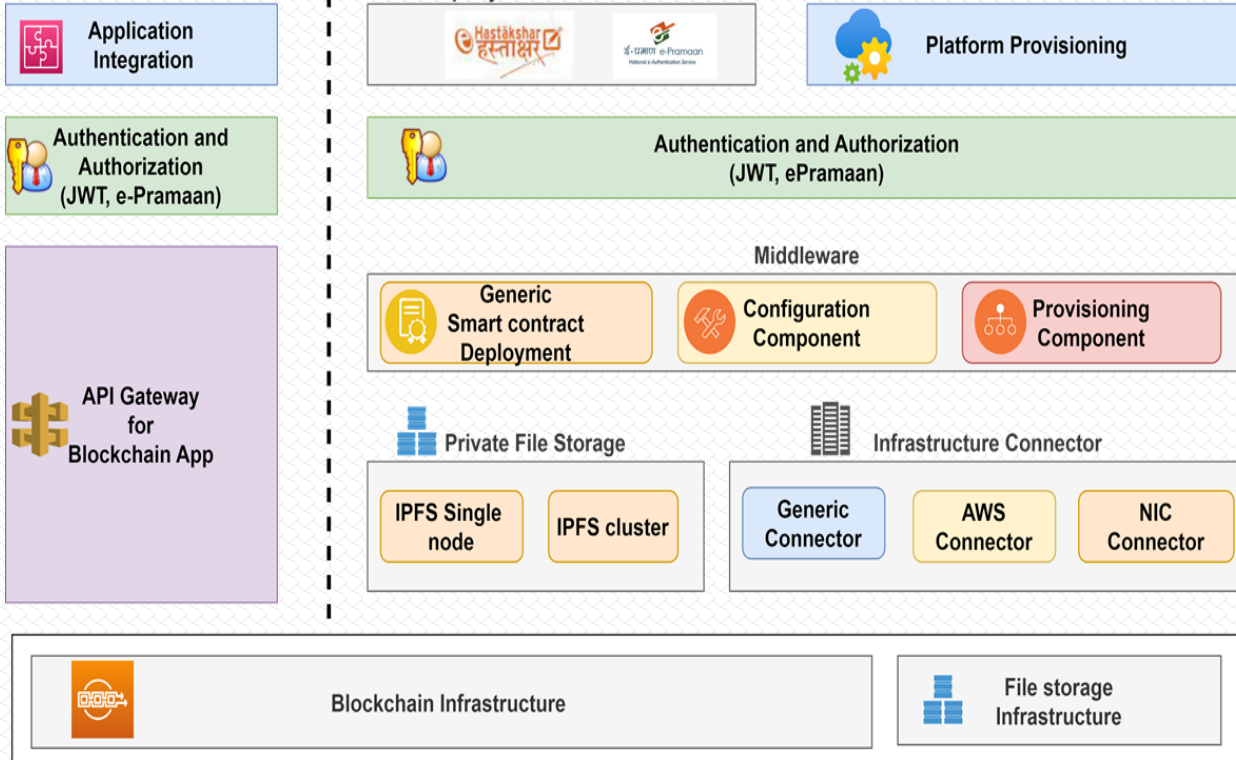
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NBF - BaaS Top-Level Architecture



Blockchain
Application
Integration

NBF BaaS Provisioning



Value addition of NBF Components

Multiple Level Security Assurance



- Hardened Blockchain Platforms
- Smart Contract Security
- Secure API to access Blockchain
- Blockchain Specific Security Audit

Skillful Human Resource

Requirements Across the Layers

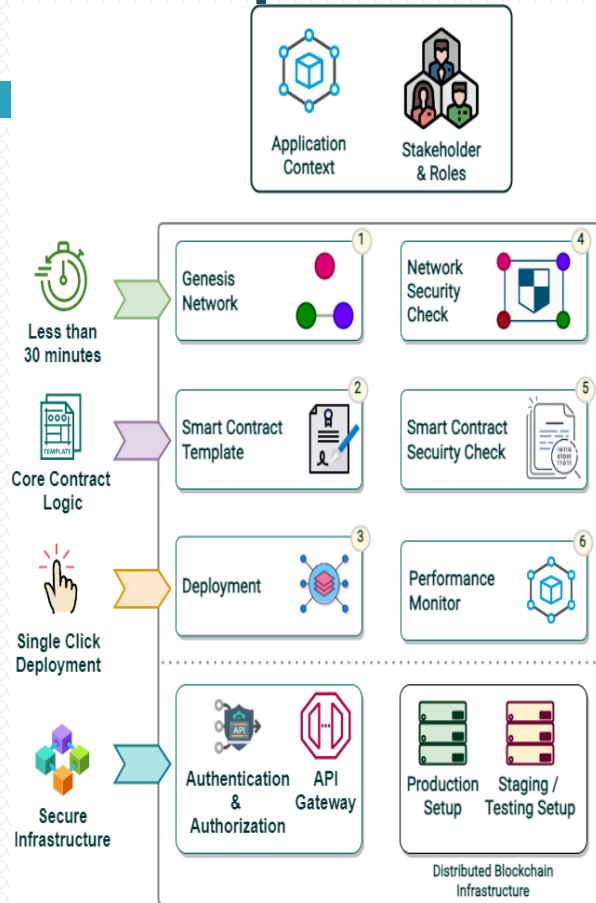


- Network Setup (Distributed Nodes)
- Smart Contract Programming
- Blockchain Platform Specifics
- Blockchain <=> Web / Mobile

Lack of Technological Support



- Government Depts. keen to Adopt
- Quick demonstration of Value Addition
- Faster Implementation of Applications
- Domain Experts <=> Technology Experts



Why Interoperability?

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- ❑ BCT Apps working in Silos
- ❑ Scalability
- ❑ Communication for normal legacy applications with BC Application

Mechanisms to Achieve Interoperability

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- Notary
- Oracles
- Bridges
- Cross Chains
- API

Existing Platforms

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COSMOS

POLKADOT

CACTUS

...

Research Opportunities

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- ❑ Simplified mechanisms for interoperability
- ❑ Scalability
- ❑ Performance
- ❑ Security & Privacy



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THANK YOU