Blockchain and Cryptocurrency Training Executive Training

South African National Blockchain Alliance (SANBA) 2020



Introduction to ConsenSys

The Leading Blockchain Development Studio in the World

Our Vision: We are assembling the tools needed to build and scale a world where **distributed applications to** enable a new class of **frictionless, global commerce** with **inclusion for all**.



OUR SERVICES					
Infrastructure	Products	Education	Solutions	Capital	
Help grow the ecosystem by building and maintaining core developer tools and clients	Incubate new companies developing decentralized applications on the Ethereum blockchain (current 50+)	Educate developers and entrepreneurs about Ethereum through training programs	Consult and deliver production ready blockchain solutions for organizations and governments	Provides token services, crypto asset management and venture capital	
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Introduction to ConsenSys

Our Clients and Partners

We partner and work for some of the biggest names in industry and government



Understanding Blockchain



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Understanding Blockchain

Blockchain Combines Four Key Technological Elements

Blockchain is a technology protocol that allows a network of computers to store data, execute transactions and maintain a distributed ledger of all the trans





Understanding Blockchain

So What's the Advantage of Blockchain?

Blockchain's unique characteristics provide a number of benefits to a wide variety of individuals, governments, and firms



Reduce Transaction Costs: Blockchain could dramatically reduce the cost of of transactions (e.g., money, securities, property, data access)



Increase Transparency and Accountability: Create a transparent and accountable record of all transactions



Provide Supply Chain Tracking: Create a transparent and accountable supply chains



Bonuses and Incentives: Create a bonuses and incentives to encourage positive behavior



Security: Create secure data transfer (unhackable data)

Who's Using Blockchain in Government and the Public Sector?



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Blockchain and the Public Sector

Governments and the Public Sector are using Blockchain Now

West Virginia is Using Blockchain to Secure Military Personnel Absentee Voting

West Virginia used a blockchain-based mobile app to allow absentee voting for overseas residents (in particular military residents deployed overseas) in the 2018 midterm elections by smart phone. The state ran a pilot program for the new voting option in two counties in May 2018 along with four independent audits and, based on the success of the experiment, expanded the system to all 24 counties.



Use case	Client	Description and impact	Key learning
Banking	South African Reserve Bank	 The cost is high for providing high levels of reliability, availability, and resilience in the banking industry. ConsenSys built and delivered a blockchain solution to process the typical daily volume of payments for the SARB with full confidentiality and finality with the required throughput on the Ethereum blockchain. 	Blockchain allows for interbank payments at a reduced cost without a single point of failure.
Financial Services	UNIONBANK	 35% of Filipinos remain unbanked in rural communities with banks disconnected from electronic banking services. ConsenSys partnered with Unionbank and 7 rural banks to build a decentralized, cost-efficient, real-time inter-rural bank payment platform to increase inclusion. 	This effectively brings rural banks into the domestic financial system.
Supply chain	WWF	 It's exceedingly difficult to keep illegal, unreported, and unregulated (IUU) fish or seafood produce out of the supply chain. ConsenSys created a transparent and traceable solution for the WWF leveraging blockchain technology for the tuna supply chain. 	Beyond supply chain transparency, this solution increased consumer trust, and better IUU regulatory compliance
Real estate	DUBAI PROPERTIES	 The Property development approval process is long and paper-intensive. ConsenSys partnered with Dubai Properties to build a blockchain platform for tracking the provenance of real-estate for processing all documents amongst network participants. 	End users benefit by a transparent and auditable provenance of their title deeds queryable via the blockchain.

Blockchain and the Public Sector

Governments and the Public Sector are using Blockchain Now

The U.S. Federal Government has launched numerous initiatives to explore the potential of blockchain



The General Services Administration has acted as a convener and point of contact for blockchain activities in the government and developed blockchain pilots



U.S. Treasury has explored the use of blockchain to track and manage government equipment



The U.S. Department of Energy has announced federal funding of up to \$4.8 million for universities working on R&D projects, including those related to blockchain



U.S. Department of Health and Human Services (HHS) Division of Acquisition has developed a system that used blockchain, machine learning and artificial intelligence to streamline acquisition



Section 1646 of the 2018 National Defense Authorization Act (NDAA) requires that blockchain be assessed for military employment



The Naval Air Systems Command (NAVAIR) is investigating whether blockchain could trace parts through their life-cycle more efficiently and costeffectively than with current method



The Food and Drug Administration's Office of Translational is testing how blockchain technology could be implemented to facilitate the secure sharing of information among the FDA, health care providers and hospitals in the case of public health emergencies



The Department of Homeland Security (DHS) has issued several small grants to explore how blockchain can be used in identity management and related issues



U.S. Air Force is exploring using a cloud-based blockchain-as-a-service platform to improve its logistics and supply chain capabilities using blockchain technology





The World Wildlife Fund for Nature participated in the Beta program to translate their Yellowfin tuna idea into a solution on Viant.



ConsenSys Codefi has global expertise in blockchain solutions for Land Registry

We have worked with leading governments and private enterprises around the world to provide strategic advisory, develop proof of concepts and deploy live solutions for land registry and real assets.



Strategic Advisor for <u>Smart Dubai City</u> on the use of blockchain for managing asset records and building a shared smart city infrastructure.



Delivered Proof of Concept for Singapore Land Authority on using blockchain for land registry and end-to-end conveyancing process.



Demonstrated the use of blockchain to create a new system to manage land records for <u>Niti Aayog</u>.



Built a digital assets platform for a <u>real estate fund in France</u> to issue \$300M worth of assets on the public ethereum blockchain.



Collaborated with <u>Her Majesty's Land Registry</u> in the UK, delivering technical advisory and built a prototype using blockchain for digitizing land titles and linking land titles to real estate assets to track their movement across their lifespan.



Partnered with a leading global real estate firm in <u>Brooklyn, NY</u> to digitize and tokenize property on blockchain.

A land registry system on the blockchain

ConsenSys has partnered with Dubai and governments around the world to understand the benefits of migrating land registries to a blockchain-based system. Our solution in Dubai facilitated all real estate transactions and interactions amongst government authorities, property developers, banks, and other businesses, making the buying, selling, and rental transactions seamless and paperless for customers.

TRANSPARENT TITLE REGISTRY

All transactions and registry changes are broadcast to the network, eliminating fraud and ensuring all interested parties remain in sync. The land authority and utilities provider have a single source of truth when discussing turning on power and water, without needing to build a direct integration between the two organizations.

AUTOMATED PROPERTY CYCLE

Smart contracts allow for integrated legal covenant, KYC/AML, financing and payments to provide digitally-native services on the platform. Buyers and renters can walk into a property, make an offer, get approved, and receive the title or lease, all on-site, leading to new efficiencies that were never achievable before.

DIGITAL ASSET MANAGEMENT

Land registry on the blockchain could provide the end of paper-based land title. Digital property is transparent and programmable giving appropriate government entities real-time, granular insights into housing markets and the ability to immediately institute new policies and regulations.

Potential Blockchain Use Cases

Understanding Blockchain in Government

Why Blockchain Works for Government: Reduces Labor Intensive Bureaucratic Systems

Due to the need for oversight and control, public sector administrative systems are based on high-cost, labor intensive management systems - Smart contracts and blockchain's ability to store all transactions in an open, accountable way means that government can become more open and flexible

LEGACY GOVERNMENT SYSTEMS



Legacy government systems are based on 19th Century bureaucratic oversight and hierarchical division of labor models, This means that multiple parties must oversee and approve decisions creating numerous opportunities for waste and inefficiency. Digital government has reduced these costs but the model still implicitly inflated costs. Legacy Government Systems



Using smart contracts and secure data wallets, automated processes, high securing, and a self-generating accountable and transparent record, blockchain eliminates the need for multiple levels of oversight and control thus reducing costs.

Understanding Blockchain in Government

Why Blockchain Works for Government: Reduces Opportunities for Corruption, Abuse, and Unequal Access to Government

The opaque and bureaucratic nature of many government programs leads to real or perceived corruption, abuse of power, and felt unequal access to power and government benefits/programs

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BLOCKCHAIN GOVERNMENT SYSTEMS



The openness and accountability of blockchain and smart contracts dramatically reduces the potential for corruption and abuse



South African government entities can use our Codefi Assets platform to build land and asset registries that connect the value chain of participants

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Land authority issues a unique asset token to represent the Title. Title registered on government's registry database Blockchain enabled platform that connects participants across the value chain, including marketplace for exchange of assets and links to the government registry database. It can be used to update asset status.



As asset exchange occurs, the new asset owner is issued a unique credential or ownership token.

Platform Benefits:

- Increases transparency, reduces risk of fraud
- Provides optimisation across value chain shared processes. (e.g. verification of owner ID)
- Smart contracts around data access contracts provide rules for data access and sharing

Authorised ecosystem participants consult the platform to verify asset and ownership credentials.



The Title Token and Ownership Token are linked on the blockchain so that land authorities or other agencies can monitor trading activity.



Social and political implications

Disintermediate non value added activities to strengthen the participant's participation in the economy and their ability to capture value.

Social enterprise



The ability to trace transactions and set up organizations and voting mechanisms linked to reputation and identity will provide for the ability to recognize and report corruption. Immutable reputation will also incentivize best behavior.



New governance models

Ability for blockchain to organize and help in the delivery of projects through real time voting, which will have greater consequences when applied to liquid democracies, and prediction markets.

Self-sovereign identity



Individuals will control their identity which will greatly impact ability to gain access to credit, potential fluidity between geographies, and trade.



Accessible financial services

Bringing financial services to the billions of unbanked through near zero transaction fees and east of micropayments.

Thank you Monica.singer@consensys.net