Blockchain Innovation in Beijing Municipal Services Blue Book

(First Edition)

北京市政务服务领域区块链应用创新蓝皮书

（第一版）

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Programmatic Society, or the Fabric of Life?

Peoples Republic of China (PRC) vision for society is digital governance. A recent report named “The Blueprint” sets the stage for the new **China Value of Everything (CVoE)** governance technology.

A pathway to a “**Programmatic Society**”

The **CVoE** is an assemblage of blockchain empowered tools; including a recently publicized Digital Yuan, mandatory (all-inclusive) digital identification, secured “on-chain” Enterprise profiles and standardized secure data sharing.

These capabilities generate real-time visibility and traceability of all monetary, government and private business-related activities.

In simple terms, **“programable society”** offers real-time visibility and controls to steer both private and public life at will.

Universal digital management of society.

Massive **CVoE** projects in China and in particular, Beijing Municipality are replacing existing data storage and sharing systems.

On the other hand, a “Fabric of Societies,” is a term coined by Gerard Dasche, Executive Director for the Government Blockchain Association, that conveys an **alternative digital governance structure**. A federated and separated approach, a network designed with Democratic values and American characteristics.

Blockchain future is bright if the intention is to serve rather than to rule, to complement rather than to compete, and to empower rather than to manipulate. Ideally an ecosystem, where

every variation of blockchain is interoperable, creating a living and breathing network, built by the private industry, steered by government, and funded via public private partnerships for smart and fair society to thrive.

Whether these aspirations are true with the “Programmatic Society” or any other VOE, United States must take an active role in deciding the future of money, governance and law.

Applications

Twelve case studies are available for review in the Blueprint. Each of these case studies involves an ecosystem of organizations linked via blockchain. Here is the summary of the findings:

Cross-border trade: Beijing Municipal Bureau of Commerce Beijing-Tianjin-Hebei Customs Clearance Facilitation and Airport International Logistics blockchain **platform "uploads" or records trade data** for customs, port authorities, private business, tax authorities, other government entities. Relevant data is then shared with taxation authorities, which simplified the filing of taxes. Tax and customs authorities benefitted from enhanced monitoring and tracking of cross border trade activities. This had a considerable impact on improving trade governance which accelerates cross border trade.

Small business financing: In Haidian District, Beijing Municipal Financial Supervision Bureau's blockchain-based **digital identity authentication (perfected profile)** and financial services platform for small and medium-sized companies has **reduced the time** fill out applications and **submit data by 80%** and the time to **open bank accounts by 40%**. SMEs' accounts are made transparent and traceable, promoting greater trust from micro-financing lenders and enhancing their willingness to offer loans. SME owners can benefit from more business operational or capital loans.

Banking: Beijing Local Financial Supervision and Administration[7] partnership with multiple banks, financial institutes, and monetary authorities: more accurate verification of client's data can be performed (via eKYC). Making it easier for clients to achieve secured and approved banking transactions.

Medical billing: Beijing Municipal Bureau of Finance uses blockchain technology to pilot applications for **medical treatment reimbursement, “insurance” co-pay invoicing**. Tax authorities, schools, and hospitals quickly issue uniformed electronic receipts, featuring a compilation of relevant personal tax, education, and health data. Private insurance companies can use the data as verification for pay-outs and, at the same time, reduce loss from insurance frauds.

Real Estate: The Beijing Municipal Planning and Natural Resources Commission's blockchain-based real estate registration system has accomplished a **self-serve "end to end digital process"** for "corporate to corporate Real Estate transactions", automating a Real transaction with blockchain enabled transaction **data, ID and eSignature instantly recorded to public land registry**.

Certification and Licensing: Beijing Municipal Service Bureau's blockchain-based multi-end applications append certificates and licenses data to a public and private access distributed ledger.

Business registration and licensing are easier for aspiring business owners to register their business and obtain relevant permits.

253 business certificates or licenses

This **public services ecosystem** offers Citizens convenient access to available services, without additional identity verifications including registration of marriage or verified welfare benefits

65 personal certificates or licenses

Digitized public records become portable and remove the necessity of recertification or qualification for identity specific benefits.

Other pilots include technology skills certification, training subsidies, small business loan program and credit policy monitoring, nurse practitioner registration, medical assistant registration, and policy implementation.

Basic blockchain applications including; signature endorsement, payments receipt issuance, payments wallets and others are complimented by volumes of technical, operational, and training resources are supplied to all municipal offices for **self-paced implementation**.

Successful pilots are **repeated at the "State-County-City" level** in an orderly **"do one thing well"** approach with the aim solving for silo-like government operations to deliver factual, reliable, traceable, verifiable, and timely data.

Architecture

The underlying architecture has transparent layers and distinct boundaries. Layer technology is decoupled or weakly coupled to ensure an accommodative environment for interoperability.

Safety: The security of core algorithms such as cryptographic algorithms, consensus mechanisms, and smart contracts are controllable and secured.

Compatibility: The underlying architecture is horizontally compatible with various functional sub-modules and backward compatible with the future technical iterations;

Modular: Adopt modular design and that the modules can be designed and implemented separately, and the looseness between modules can be realized through clearly defined module interface services to achieve scalability;

Social scalability: Homogeneous blockchains interconnect and interoperate through interoperability protocols. Heterogeneous blockchains interconnect through relays.

Secured privacy: Provide transaction information to users, employing cryptography methods such as zero-knowledge proof, identification proofs, ring signatures, homomorphic encryption, and secure multi-party computing in a trusted environment.

These six principles ensure a very open, inclusive, and adaptable approach to incorporate both the future addition of hardware and software to the network.

Other Initiatives

If we examine the initiatives shown below, we can clearly see that many projects are public-private partnerships involving not only

local enterprises and startups but other foreign nations and global enterprises too.

People's Bank of China (PBoC) has been researching central bank digital currency (CBDC) since 2014 and has started the DC/EP (Digital Currency Electronic Payment, China's CBDC) pilots worldwide.

China's Blockchain-based Service Network (BSN), a joint initiative between State Information Center, China Mobile, China UnionPay, and Red Date Tech, is now officially available for global commercial use. The Cyberspace Administration of China has issued more than 730 licenses to blockchain service providers and many more promising projects which are increasing the velocity of trade and creating major efficiencies for public and private sectors. Such initiatives will continue to be announced as China has embraced digital transformation with blockchain playing a major role.