Mongolian National Chamber of Commerce and Industry

Digital Ledger Technology for Certificates of Origin

Enerel Altanzagas, Head of Project and Program Department,
May 29, 2024
CONTENT

1. MONGOLIAN ECONOMIC SITUATION

2. TRADE, INVESTMENT ENVIRONMENT

3. DIGITAL TRANSFORMATION, LEDGER TECHNOLOGY FOR ELECTRONIC CERTIFICATES OF ORIGIN
1. MONGOLIAN ECONOMIC SITUATION

Real GDP Growth of Mongolia (2017 to 2023), annual growth

The average inflation rate was **7.9%** in 2023. The inflation peaked at **13.8%** in 2021 because of the pandemic and has since gradually decreased.
1. MONGOLIAN ECONOMIC SITUATION

FOREIGN DIRECT INVESTMENT, ECONOMIC GROWTH

FOREIGN DIRECT INVESTMENT STOCK (2023)

30.5 Billion USD

TOP 3 SECTORS
1. Mining 79.2%
2. Trade 8.7%
3. Finance 3.4%

TOP 5 COUNTRIES
1. Netherland 46%
2. China 15%
3. Singapore 8%
4. Hong-Kong 5%
5. Luxemburg 8%
In 2023, MONGOLIA EXPORTED A TOTAL OF 15.2 billion USD

The structure of Mongolia's exports in 2023, mining sector accounted for 91%, non-mining sector for 9%, including livestock sector for 4%.
2. TRADE AND INVESTMENT

In 2023, MONGOLIA IMPORTED A TOTAL OF 9.2 billion USD

MAIN IMPORT PARTNERS (2023)

- **China**: 48%
- **Russia**: 5%
- **Japan**: 9%
- **Korea, Republic of**: 4%
- **USA**: 31%
- **Germany**: 3%

MAIN IMPORT PRODUCTS (2023)

- **Mineral products (petroleum, oil, ores etc)**: 23%
- **Machinery and mechanical appliances; electrical equipments, parts thereof**: 13%
- **Vehicles, aircraft, vessels and parts thereof**: 18%
- **Base metals and articles thereof**: 19%
- **Food products**: 19%
- **Chemical and chemical industry products**: 18%
- **Plastic & rubber**: 9%
- **Others**: 6%
In Vision - 2050, the Government has set the aim to become a “Digital Nation” where technology and digital innovations are integrated into all sectors of the economy and society, to boost efficiency and production.

**Government Resolutions**

Vision - 2050 aims to integrate digital and technology into all economic and social sectors to boost production levels

Digital Nation Policy Directive set out the implementation plans for digital transformation

**Legal Framework**

Concerning digital development, the Government of Mongolia enacted the following laws in 2021, coming into effect in 2022, to protect individuals from the ever-increasing dangers in the digital world:

- Cybersecurity Law
- Transparency of Public Information Law
- Personal Data Protection Law
- E-Signature Law

**Digital Government Services**

- **E-Mongolia, 2020**
  https://e-mongolia.mn
- **E-Business – 2023**
  https://e-business.mn
- **License MN portal**
  https://license.mn
- **Invest in Mongolia**
  https://www.e-invest.mn
3. DIGITAL LEDGER TECHNOLOGY FOR COOs

INSTITUTIONNAL

- Mongolian National Chamber of Commerce and Industry
- Mongolian Customs General Administration (CGAM)

Funded by the

and coordinated with the East Asia Department (EARD)

PROJECT HISTORY: Avril – Nov. 2023

1. Preliminary technical assessment and discussions result in experimenting the innovative solution based on Distributed Ledger Technology (DLT) / Blockchain for
   - Authenticity, Security, Tamper-proofing, & Immutability
   - Transparency
   - Enhance operational costs and digital transformation

2. Scope of work: Development of a Minimum Viable Product (MVP) for Certificates of Origins

3. A MVP based on the existing COO system and aligned with legal guidelines and procedures.

4. Larger scope of work of the MVP: a multi-purpose “Portable” MVP: e.g. Food Safety Health Certificates, Customs/CGAM certificates (ref. ADB / RIBS & Single Window), etc.
3. OVERVIEW MVP

SYSTEM MNCCI FOR COOs (EXISTING)

API

PAPER-BASED COOs

DIGITAL FOOTPRINT COOs (MVP)

TRUST POWERED BY BLOCKCHAIN
3. TECHNICAL OVERVIEW MVP

- MVP experimented on the public blockchain “Polygon”

- Encryption on the blockchain of COOs content (SHA256): confidentiality

- Main features:
  - API: real-time data exchange MNCCI system <> Blockchain solution (MVP)
  - Search and verify COOs
  - Digital Footprint COOs
  - Back-end admin/logs (traceability)

- Authenticity and Immutability by comparing encrypted hash (SHA 256) between MNCCI system <> Blockchain

- Development methodology: Agile

- Main technologies: PostgreSQL / React, Redis, node.js / Solidity / Hardhat, SHA256
3. TECHNICAL OVERVIEW MVP / SEARCH & VERIFY

MONGOLIAN NATIONAL CHAMBER OF COMMERCE AND INDUSTRY

SEARCH

Enter Reference Number...
<table>
<thead>
<tr>
<th><strong>Reference Number (Ref No)</strong></th>
<th>4 5853</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blank Number</strong></td>
<td>B 390413</td>
</tr>
<tr>
<td><strong>Validation (SHA256)</strong></td>
<td>624ad0f2e4429664d0e7b07be1e00d39</td>
</tr>
<tr>
<td><strong>Country of Origin</strong></td>
<td>Mongolia</td>
</tr>
<tr>
<td><strong>Issued by</strong></td>
<td>Mongolian National Chamber of Commerce and Industry</td>
</tr>
</tbody>
</table>

**Exporter**

<table>
<thead>
<tr>
<th><strong>Exporter Name</strong></th>
<th>Institute of Geology and Geotechnology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exporter Address</strong></td>
<td>Ulaanbaatar, Ulaanbaatar-19170, Baruul Selbe-15, 4th Khوروo, Chingelti District, Ulaanbaatar-15170, MONGOLIA</td>
</tr>
<tr>
<td><strong>Exporter Country</strong></td>
<td>Mongolia</td>
</tr>
</tbody>
</table>

**Consignee**

<table>
<thead>
<tr>
<th><strong>Consignee Name</strong></th>
<th>Meijer Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consignee Address</strong></td>
<td>Seoul, Korea University, Medical EES, 511, 145 Anam-ro, Seongbuk-gu, Seoul, Republic of Korea</td>
</tr>
<tr>
<td><strong>Consignee Country</strong></td>
<td>Republic of Korea</td>
</tr>
</tbody>
</table>

**Means of Transport**
To: Seoul (Republic of Korea)
Via: 
By: By Air

Remarks

<table>
<thead>
<tr>
<th>Contract Number</th>
<th>Contract Date</th>
<th>Invoice Number</th>
<th>Invoice Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6/26/2023</td>
<td>03</td>
<td>3/27/2024</td>
</tr>
</tbody>
</table>

Packing List

<table>
<thead>
<tr>
<th>Description of Goods</th>
<th>HS Code</th>
<th>Net Weight</th>
<th>Gross Weight</th>
<th>Quantity</th>
<th>Method of Packing</th>
<th>Total Packed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust and ash solids</td>
<td>N/A</td>
<td>0.517 Kgs</td>
<td>0.7 Kgs</td>
<td>3</td>
<td>Plastic bags</td>
<td>N/A</td>
</tr>
<tr>
<td>Rock samples</td>
<td>N/A</td>
<td>3.814 Kgs</td>
<td>4 Kgs</td>
<td>2</td>
<td>Paper bag</td>
<td>N/A</td>
</tr>
<tr>
<td>River water samples</td>
<td>N/A</td>
<td>4.5 Kgs</td>
<td>4.6 Kgs</td>
<td>2</td>
<td>Plastic bottles</td>
<td>N/A</td>
</tr>
</tbody>
</table>
USE CASE / VERIFICATION PAPER-BASED VS. BLOCKCHAIN DIGITAL FOOTPRINT

From: Country A Factory / Exporter

Border controls

Verification Paper-based COO vs. Online Verification

To: Country B Importer
3. OVERVIEW RESULTS MVP

**BENEFITS**
- Online verification with authenticity, immutability and transparency – “Trust Powered by Blockchain”
- E-Certificates of Origins – “Digital Footprints”
- It is not a complicated Blockchain development with adequate IT dev. sourcing and 3-6 months timeline!

**AREA OR IMPROVEMENT:** A blockchain framework with fixed cost per transaction (gas) vs. versatile Polygon framework

<table>
<thead>
<tr>
<th>CHAIN</th>
<th>TOTAL TRANSACTION COOs / YEAR</th>
<th>DATE</th>
<th>PRICE / TRANSACTION</th>
<th>COST / YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polygon</td>
<td>10,000</td>
<td>9 November 2023</td>
<td>$0.005 USD</td>
<td>30 USD</td>
</tr>
<tr>
<td>Polygon</td>
<td>10,000</td>
<td>19 March 2024</td>
<td>$0.06 USD</td>
<td>600 USD</td>
</tr>
<tr>
<td>Ethereum</td>
<td>10,000</td>
<td>19 March 2024</td>
<td>0.70 USD</td>
<td>7000 USD</td>
</tr>
<tr>
<td>Arbitrum</td>
<td>10,000</td>
<td>19 March 2024</td>
<td>0.073 USD</td>
<td>730 USD</td>
</tr>
</tbody>
</table>
A NATIONAL BLOCKCHAIN-BASED SOLUTION FOR CGAM GOV. CERTIFICATES
NEXT PHASE AND CAREC COUNTRIES?

Certificates of Origin

CENTRAL BLOCKCHAIN SOLUTION

Certificates Of Conformity

Food Safety / SPS Certificates

Fishery Catch certificates

SHARE EXPERIENCE TO CAREC COUNTRIES
THANK YOU FOR YOUR KIND ATTENTION

Contacts Us

+976-77277070, +976-11-327176
+976-11-324620
www.mongolchamber.mn
magnaibaatar@mongolchamber.mn

www.mongolchamber.mn