United States Space Dollar (USSD): Pioneering a Cislunar Translunar Monetary Framework by Lee Holmes

The **United States Space Dollar (USSD)** is a proposed dedicated monetary unit and economic framework for cislunar translunar economies, conceived and developed by American innovator **Lee Holmes [1]**.

Rooted in historical inspirations from the Knights Templar banking system and blockchain technology for celestial resource governance, the USSD represents an evolution toward a stable, U.S. anchored currency system designed to facilitate ethical, transparent resources trade:

- **Propellant Trading and Refueling:** USSD could facilitate payments for in-space propellant (e.g., hydrogen/oxygen from lunar water ice), enabling refueling depots for satellites or missions. This supports cost-effective operations, like CisLunar Industries' debris-to-fuel concepts or Shackleton Energy's lunar water propellant.

- **Helium-3 Acquisition and Sales:** As a rare isotope for fusion energy, quantum computing cooling, or nuclear detection, USSD could standardize transactions for helium-3 mining rights, extraction, and export—potentially valued at $20 million per kilogram, as per recent analyses.

- **Data and Telemetry Exchange:** Vendors could use USSD for buying/selling mission data, satellite telemetry, or Earth-Moon communications bandwidth, supporting networks like Rhea Space Activity's cislunar dashboards or general data markets in orbit.

- **Resource Manifests and Duties:** As per OPAL manifests, USSD handles smart contracts for recording/trading resources like water ice, silica, rare earth metals (scandium, yttrium), or minerals—imposing duties allocated as Universal Basic Income (UBI) for equitable “[…] common heritage" distribution.

- **Land Deeds and Permissions:** Secure cislunar translunar land claims, permissions, or stewardship chains of custody via manifests, preventing disputes and enabling leasing/trading for bases or mining sites.

- **Payload and Transportation Services:** Payments for lunar deliveries, like vendor manifests, including milestones, insurance, and secondary conditions for protection.

- **Vendor Stock, Fundraising, and Loans:** USSD enables fundraising for space ventures, or low-interest loans for lunar operations—traded on world markets, akin to a “[…] petrodollar for outward expansion”.

- **Environmental Monitoring and Impact Fees:** Track human impacts (e.g., mining pollution) and impose duties on production of essentials like water/hydrogen/oxygen, funding sustainability or UBI via Space Tradex bridge to Worldcoin.

- **Public Engagement and Investments:** Crowdfund lunar projects or allow public investment in vendors, with USSD ensuring transparent chains of custody and returns.

- **Intellectual Property Protection and Royalties:** License space tech/IP (e.g., mining tools) with built-in royalties, providing stability for investors under District 13 oversight.

- **Universal Basic Income Distribution:** Duties from all mined resources funneled as UBI to Earth citizens via Worldcoin, embodying Moon Treaty equity.

- **Cross-Border (Earth-Space) Settlements:** Bridge to terrestrial systems for seamless payments, like Templar-inspired safe exchanges beyond Earth's borders.

Historical Inspiration and Conceptual Foundations

In the 12th century, the Knights Templar established a banking system where pilgrims in their homeland would deposit valuables with the Templars before setting out on journeys to the Holy Lands. The Templars issued coded letters listing these valuables, allowing pilgrims to present them at destinations for withdrawal—ensuring safer passage. These were the world's first cross-border payments.

Cross-border payments are a common part of modern society, and with the chaos of the frontier this could be avoided by establishing foundational standards with stability, using a distributed database shared among computer network nodes.

Origins and Development Timeline

Holmes' vision began in the early 2000s with the founding of the **Lunar Land Management Society** (2004–2010) at the Mojave Air & Spaceport. Here, the concept focused on conserving lunar natural resources through stewardship and ethical development. This laid the groundwork for the white paper titled, ***NODIUS: A Case for Ethereum Node Servers on the Moon, For Archiving Land Claims to the Blockchain*** **[2]**.

The 2015 paper addressed the impending "smart silicon invasion" of the Moon by private companies, robots, and governments, predicting challenges in land rights, resource exploitation, and global accounting. It proposed deploying Ethereum-based node servers on the lunar surface via the Pilgrim Program.

The **Pilgrim Program** would use cubesats to create immutable, publicly accessible smart contracts for mission data, land claims, and activities. This would serve as an impartial, decentralized registry—bypassing slow governmental structures—while ensuring transparency and equity honoring the 1979 Moon Agreement, and the Moon's resources as the “[…] common heritage of mankind.”

By 2021, the ***SPACE TRADEX: Solutions for the Collective*** **(STX Black Paper) [3]** expanded on practical solutions for collective lunar development.

Then, in 2023, Holmes submitted concepts to **DARPA's LunA-10 [4]** study, and presented ***NODIUS: A Framework for a Space Economy*** **[5]** to DARPA in February 2024.

This presentation introduced the **NODIUS [6]** network, the **OPAL (Off-World Payment / Payload Ledger)** blockchain, and the **USSD**.

NODIUS and the OPAL Blockchain

NODIUS (Network of Digital Intelligent Unified Servers) is a network of cubesat node servers hosting the **OPAL Blockchain** (Off-World Payment/Payload Ledger). OPAL is a hybrid blockchain with both public and private nodes.

Public nodes allow anyone to participate, providing decentralization and transparency to prevent control by any single entity.

Private nodes are governed by specific individuals or organizations, offering greater privacy and security. OPAL acts as the trusted agent between parties on NODIUS.

In a cislunar translunar economy, data is stored on OPAL as transactions: A transaction is requested, a block created, sent to nodes, validated (with rewards for validators), added to the chain, and distributed—completing the process.

Transactions can be payments or manifests. The OPAL Wallet serve as the interface, establishing verifiable chains of custody, assigned based on human verification. **xOPLs** are the tokens on OPAL; payments exchange xOPLs between vendors or the public.

A **manifest** is a smart contract and accounting tool containing data, including payments. Types include payloads, cislunar translunar permissions, land deeds, resource records, vendor stock/fundraising, chain of custody for stewardship/ownership, and general archives for cislunar translunar endeavors and outward expansion.

Use Cases for Manifests

A use case is a vendor creates a manifest with another vendor for moon transportation (V2V). Terms are negotiated and recorded. The manifest is submitted via a wallet to the private OPAL nodes, where it is confirmed, then validated, and archived.

Next, payment milestones lead up to the launch; and upon agreement, payments are released. Missed milestones activate pre-negotiated secondary conditions for protection, and upon completion, the manifest locks but remains active for ongoing terms. Additional vendors (e.g., insurance) can access active manifests.

Other use cases are public engagement/investment in vendors; monitoring human environmental impact on the moon and resources; duties on mining/production of water, hydrogen, oxygen, and all moon resources—then allocated as Universal Basic Income (UBI).

Earth Integration and Moon Treaty Alignment

Capital seeks markets, profits, rule of law, IP protection, stable currency, sound banking, limited state intervention, and political stability. The OPAL blockchain provides as an ecosystem akin to the Swift banking system.

Back on Earth, OPAL transactions bridge to into the **Space Tradex [7]**, a crypto exchange for processing duties from manifests and distributing a percentage as UBI through Worldcoin's Orb human verification system platform.

This then aligns with the **Moon Treaty** (Treaty Governing the Activities of States on the Moon and Other Celestial Bodies) **[8]**, invoking the Common Heritage of Mankind Principle—that outer space natural resources are held in common by nations and should be distributed equitably for humankind's benefit.

Evolution to USSD and Governance Framework

The **United States Space Dollar (USSD)** is the end unit on the NODIUS network and the OPAL blockchain.

The USSD is proposed as a stable, U.S. led unit of account for cislunar translunar trade, interoperable with the United States Dollar (USD) and backed by tangible lunar In-Situ Resource Utilization (ISRU) assets (e.g., propellant equivalents, gases, stones, metals, etc.) via wrapped xOPLs.

The USSD is pegged to 1 USD, and pending current earthly market economics, a varying number of ISRU backed xOPLS are wrapped to create 1 USSD.

The USSD addresses gaps in emerging cislunar translunar infrastructure (e.g., LunA-10-identified needs for monetizable services) by providing ethical, non-speculative exchange.

A distinctive oversight element is proposed via a **Federal Reserve District 13**—a neutral, U.S.-administered district involving interagency coordination.

Holmes envisions the new Federal Reserve District 13 using the hybrid decentralized-central structure of the OPAL blockchain as its backbone for impartiality, and central anchoring for stability. Oversight ensures equitable access, peaceful purposes, and sustainability.

With the USSD as the foundational currency for space endeavors and resources, the USSD is a new incarnation of the petrodollar for outward expansion and the U.S. Treasury would then control issuance, thus managing outward expansion costs.

Significance and Legacy

Holmes' work predates much current discourse on cislunar translunar economics and blockchain for space governance. While convergent projects (e.g., Open Lunar Foundation's Lunar Ledger, and orbital nodes like Cryptosat) have emerged, the **USSD** remains unique in proposing a dedicated U.S. space currency with federal district oversight as the gateway for black sky expansion.

This economic framework invites further exploration by policymakers, space agencies, and international partners to shape a sustainable cislunar translunar future.

References & Links:

[1] Lee Holmes, ACME X LLC, https://acmex.llc/x/index.html, 2026.

[2] Lee Holmes, “NODIUS: A Case For Ethereum Node Servers On The Moon, For Archiving Land Claims To The Blockchain”, https://github.com/no-di-us/moon/wiki, 2015.

[3] Lee Holmes, SPACE TRADEX: Solutions for the Collective (STX Black Paper), ” https://acmex.llc/x/stx/docs/SpaceTradEX-2021-v2.pdf, 2021.

[4] DARPA, Exploration Announcement 10-Year Lunar Architecture (LunA-10) Capability Study Strategic Technology Office, ”https://acmex.llc/x/stx/docs/DARPA-EA-23-02.pdf, 2023.

[5] Lee Holmes, "NODIUS: A Framework for a Space Economy," https://acmex.llc/x/stx/docs/nodius.pdf, DARPA 2024.

[6] Lee Holmes, NODIUS, https://acmex.llc/x/nodius/index.html, 2026.

[7] Lee Holmes, Space Tradex, https://acmex.llc/x/stx/index.html, 2026.

[8] United Nations Office of Outer Space Affairs, "Agreement Governing the Activities of States on the Moon and Other Celestial Bodies”, http://www.unoosa.org/oosa/SpaceLaw/moon.html, 2015.