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Unlocking ESG Value: Leveraging Blockchain for Sustainability and Accountability

Erin Murphy

PIDX Webinar

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Erin Murphy, Chief Growth Officer

- 2.5 years at Topl, started as PM for supply chain traceability product
- MBA & MA; BA Journalism, Public Health

Wharton University of Pennsylvania

The University of North Carolina at Chapel Hill

- 3x impact founder; 10 years in economic development finance

Fulbright

Dignity Collective

UNDP

Credit Suisse

Khusi Hona

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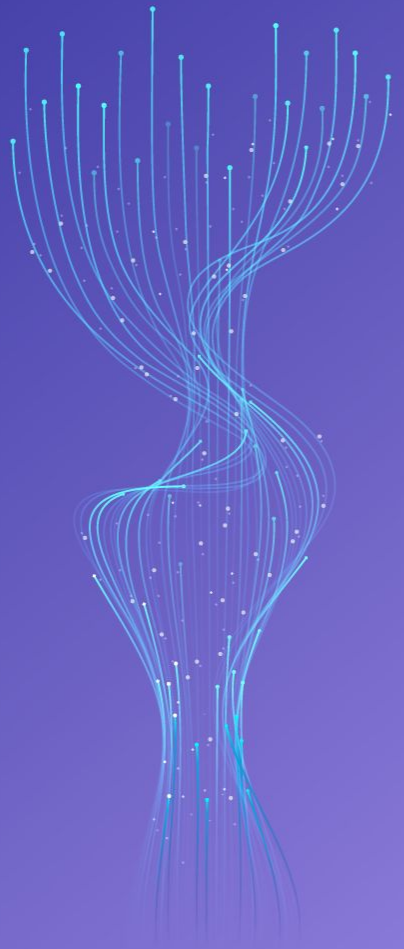
Our Agenda Today

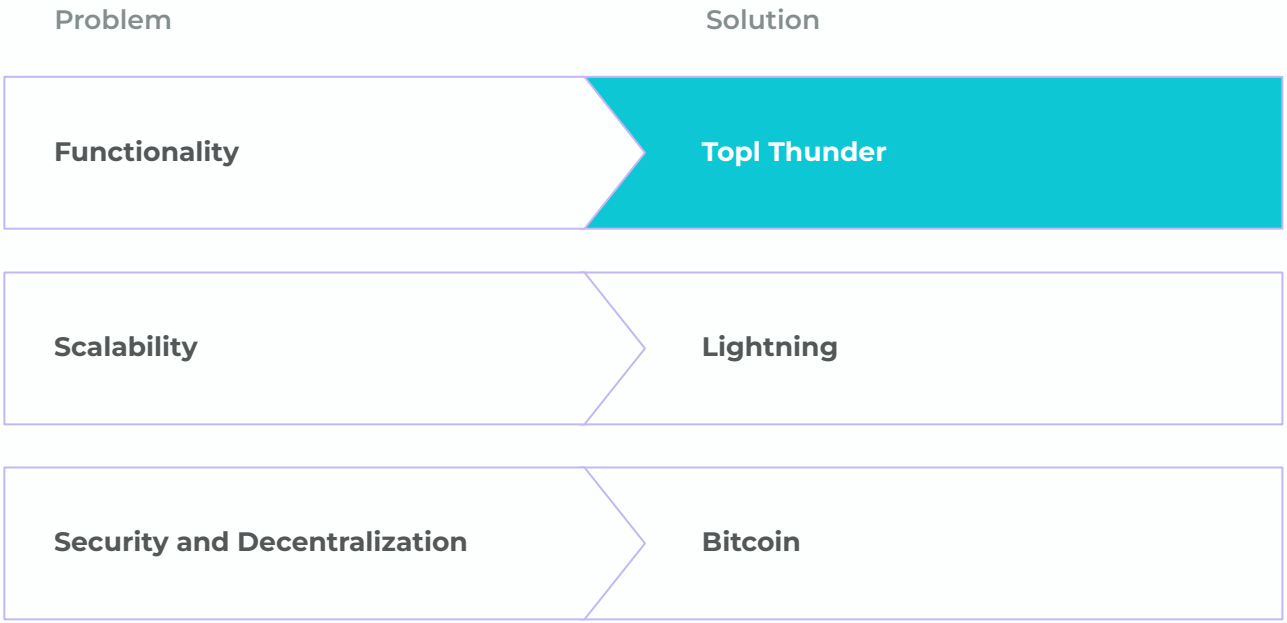
1. Brief background on Topl
2. Blockchain basics and mythbusting
3. Key areas for ESG value capture
4. Discussion



Unleashing Bitcoin for economic growth in emerging markets

Topl aims to transform the global digital economy with **Thunder**, unlocking functionality for Bitcoin and enabling financial stability and growth in emerging markets where it’s needed most.

Completing the blockchain puzzle, unlocking real world functionality



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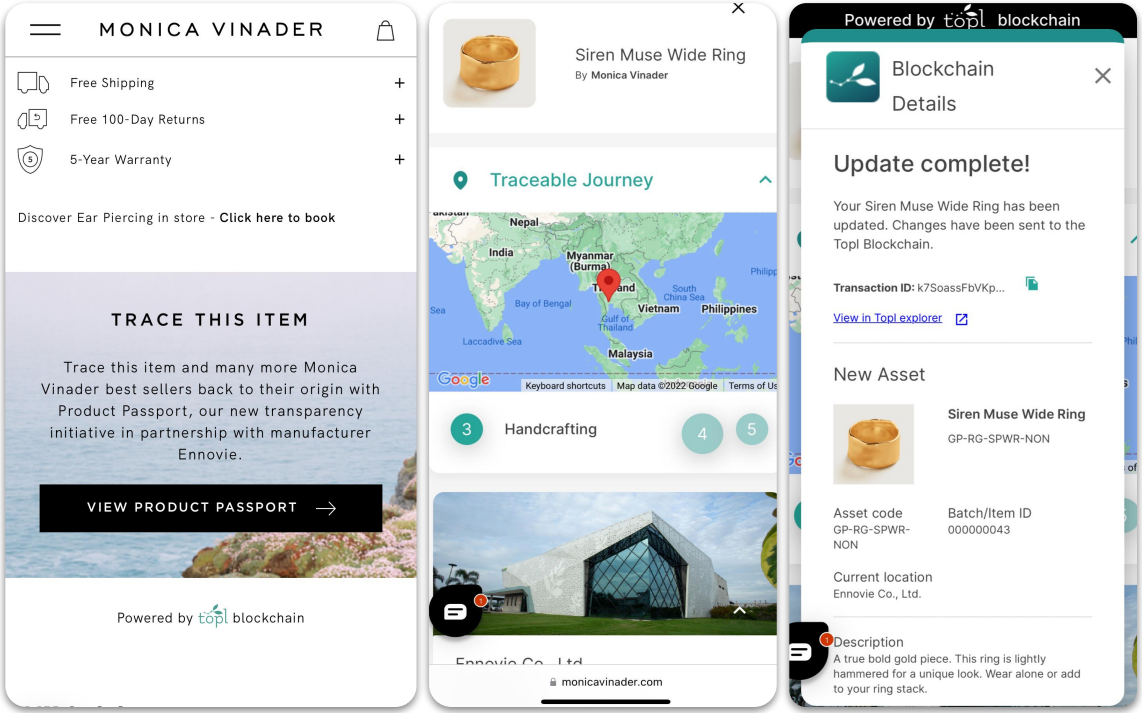
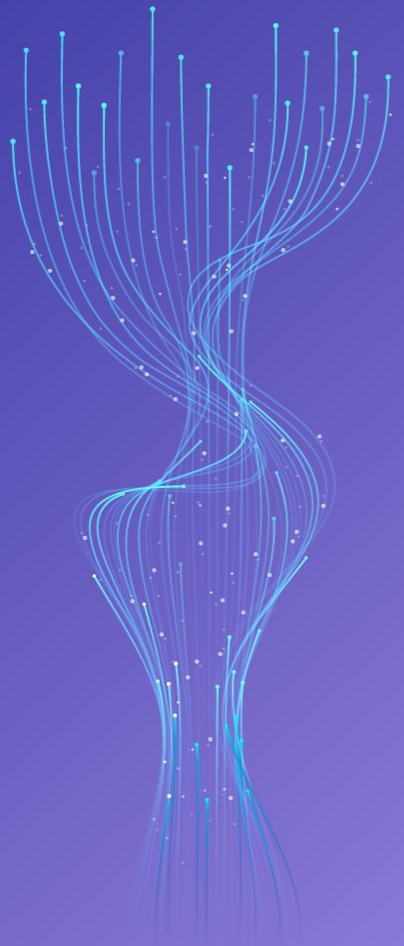
Topl entered the market driving utility in the real economy, with a focus on powering traceability products for Global South value chains

Supply Chain Traceability

The Topl Blockchain can deliver powerful track-and-trace capabilities, allowing **cost-effective and tamper-proof verification of data and ESG claims** and empowering businesses and consumers to make responsible decisions for a sustainable future.





Blockchain basics and mythbusting

Few technologies have caused as much polarization as blockchain

Naysayers

Should we use blockchain for this?

No.

But what if–

NO!!!

Advocates

"[Blockchain] could [support] an entire new world of technology that drives the middleman and leaves us free to exchange goods and services all over the world without going through corporate intermediaries. It could radically decentralize society itself, getting rid of the need for banks, governments, even companies and politicians."

Matt Ridley, *The Evolution of Everything: How New Ideas Emerge*

Addressing misunderstandings about blockchain

Myth: Blockchains are slow.

Busted: Different components and layers can be combined to improve a blockchain's scalability

Potential solutions:

1. Regularized proof-of-stake
2. More scalable off-chain smart contracts
3. Lightweight nodes

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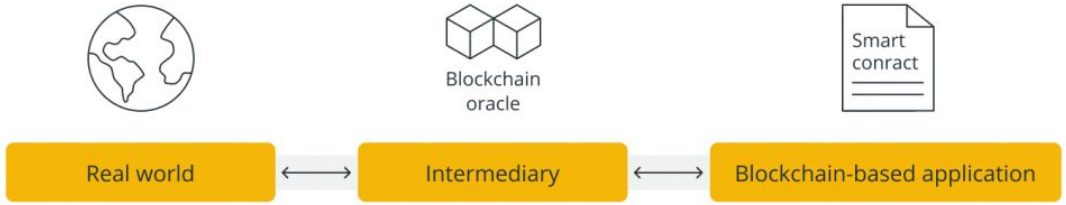
Addressing misunderstandings about blockchain

Myth: Traceability is hard or impossible.
Oracle Problem: Blockchains have no secure and meaningful means to interact with external sources of data

Busted: Better data collection & incentivization, decentralized storage through trusted intermediaries can enable efficient traceability.

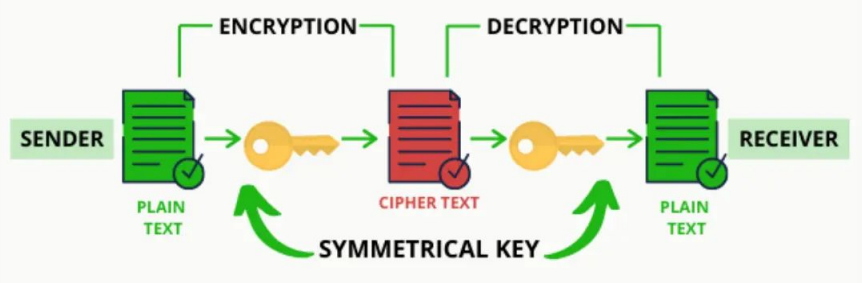
Potential solution:
Combine off-chain smart contracts that can work more closely with external data



Addressing misunderstandings about blockchain

Myth: Blockchains are insecure

Busted: How people interact with blockchains can be insecure, but strong cryptography can eliminate hacks or scams



Potential Solutions: Using a more intuitive approach to create and secure assets using better “locks on boxes”

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Blockchains are not magic, but critical features such a decentralization and immutability render them ideal for solving key data verification problems

Blockchains are NOT

- ✗ Error proof
- ✗ Just cryptocurrencies or Bitcoin
- ✗ Truth-making machine
- ✗ Inherently efficient
- ✗ Inherently energy intensive

Blockchains ARE

- ✓ Distributed ledger
- ✓ Append only
- ✓ Cryptographically secure
- ✓ Verifiable to the network
- ✓ Timestamped database

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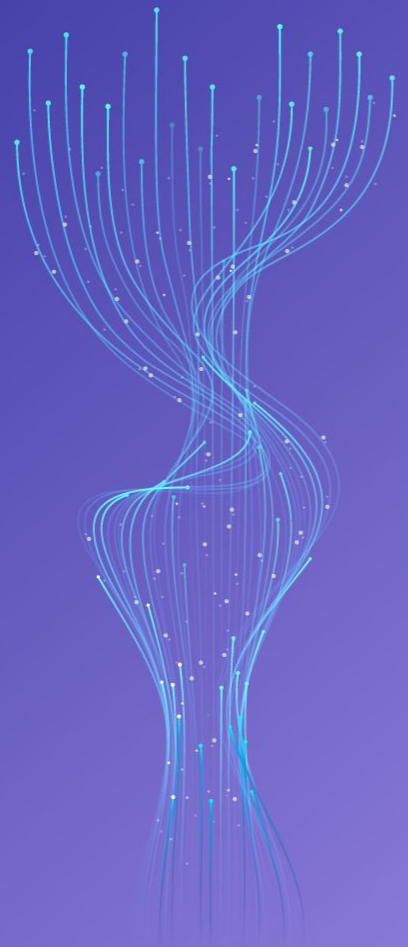


Blockchains break down silos and connect systems in ways that we've never attempted before.

Let's dig into relevant supply chain touchpoints:

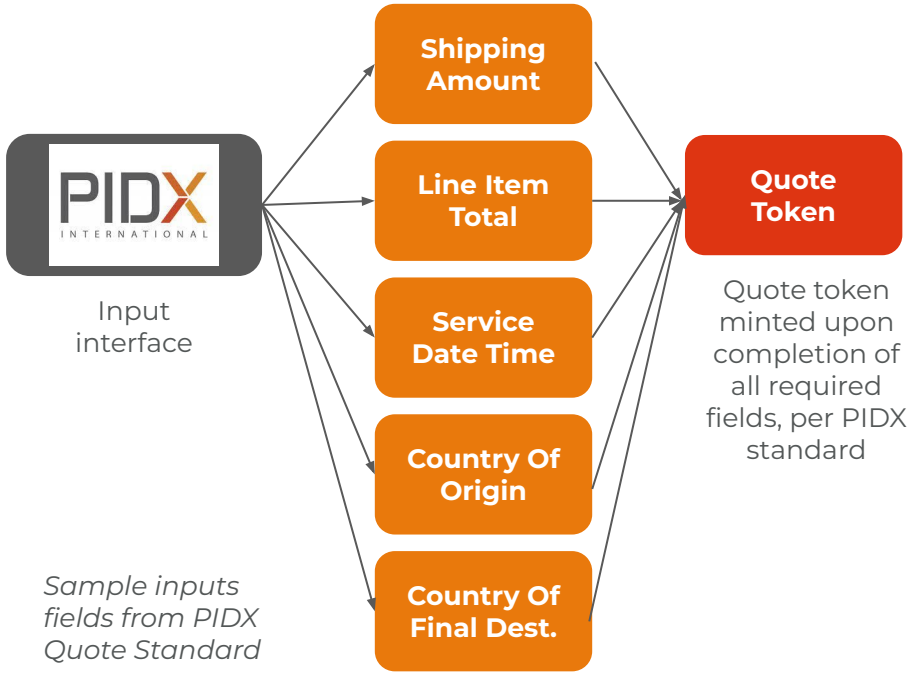
1. **Tokenization**
2. **Traceability**
3. **CO2 Tracking**
4. **Reporting & compliance**

The process of tokenization allows for real world standards to be mapped into digital asset standards

Tokenization: the process of standardizing and securing data to generate digital assets.

Token standards are the set of rules, conditions, and functions that dictate how a token works on chain. PIDX, for example, can define standard token criteria.

Composability: Tokenization enables the division of assets into smaller units of data, allowing for a more comprehensive picture



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Transparency builds trust with all stakeholders; supply chain traceability is critical to garnering that trust

Visibility to relevant parties: Each step in the supply chain process, from raw materials to manufacturing to transportation, can be recorded on the blockchain.

Tracking: Information on the origin, processing, and transportation of goods is available in real-time, making it easy to trace the entire lifecycle of a product.

Increased participation: Leveraging satellite imagery, chemical analysis, labor and product data, or even mobile photos, can be collected and validated across the entire value chain from the remotest upstream producers, without security risks or concerns over data ownership.

Product authentication: Tokenization makes it more difficult for counterfeit or illicit products to infiltrate the supply chain, as authenticity can be verified at each stage.

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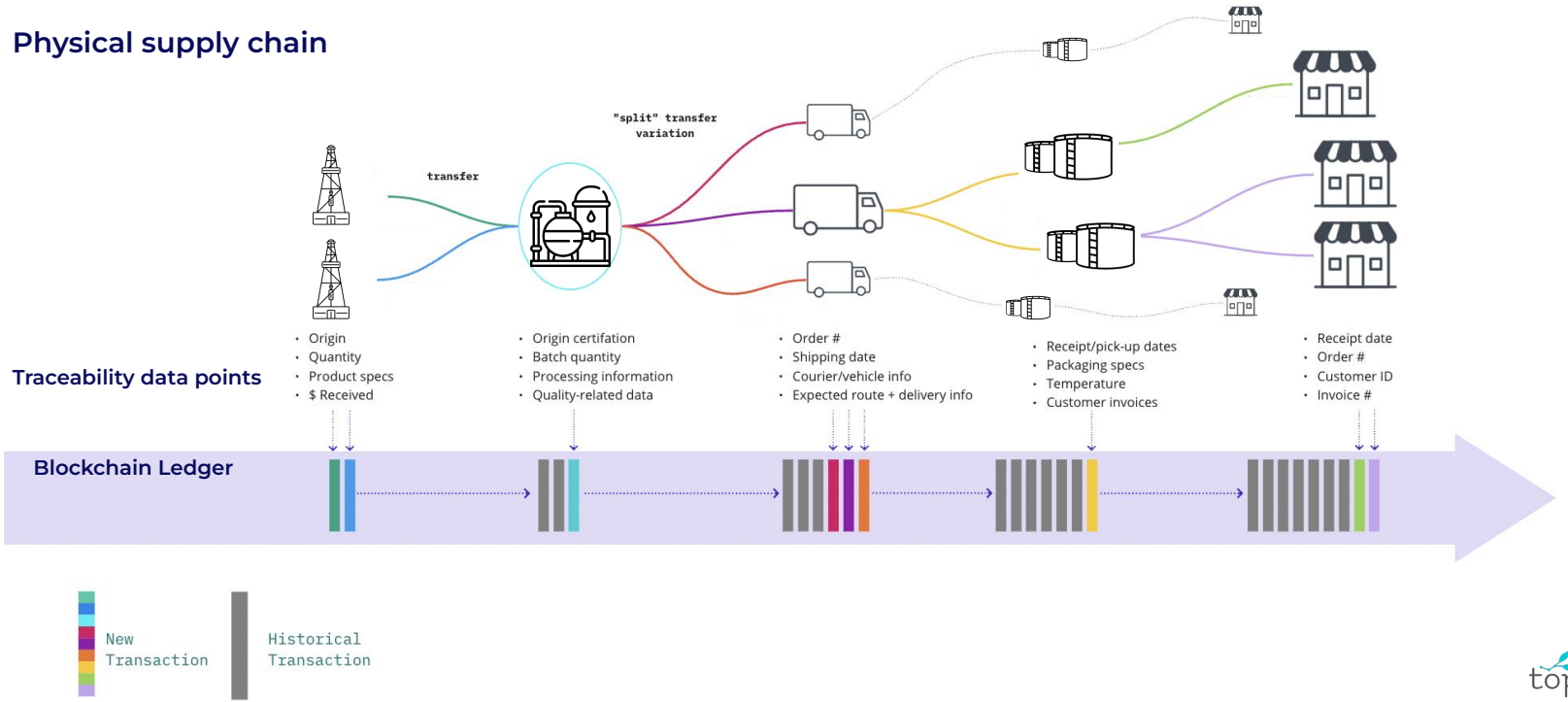
The complex nature of supply chains involve a range of actors and entities that can now be better coordinated and traced



Carbon footprint reduction

IoT integration: IoT devices and sensors can be integrated into the supply chain to collect data on energy consumption, emissions, and other environmental factors.

Real-time monitoring for compliance: This data is transmitted to the blockchain in real-time, providing an up-to-date view of carbon emissions and enabling increased scope 3 compliance. If specified thresholds are exceeded, smart contracts can trigger alerts or actions to enable compliance.

Automated verification: Smart contracts can be programmed to automatically verify and validate carbon emissions data against predefined criteria and standards.

Provenance: The origin and legitimacy of carbon credits can be verified on chain, reducing the risk of purchasing fraudulent credits.

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Auditing, reporting and verification

Simplified: Auditors can access a secure and auditable record of carbon emissions data, reducing the time and cost of audits.

Compliance Reports: Supply chain participants can generate real-time compliance reports to demonstrate adherence to transparency or carbon reduction goals.

Third-Party Verification: Data on the blockchain can be verified by third-party organizations to ensure credibility.

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Blockchains excel at connecting data, parties, and assets

Connected Data Sources

Source and technology agnostic, blockchain networks can aggregate data from multiple sites, methods, and systems

- IoT Sensors
- ERP Systems
- Mobile & field applications

Connected Ecosystems

Multiple companies can connect to the same chain infrastructure without signing over data rights or losing control of data

- Private & encrypted data
- Privacy-preserving smart contracts
- Party-specific data sharing

Connected Assets

Through tokenization, assets can more easily be embedded with different properties and seamlessly transform across the value chain

- Multi-step commodity transformation
- Energy & commodity assets with embedded ESG data

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Thank you.
Let’s discuss!