Interledger

Interoperable, Streaming Payments

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Agenda

1. The Need for Interoperability
2. Background: How Interledger Works
3. Demos: Streaming Payments

The biggest problem in payments is the **lack of interoperability**

The Payment Space is Highly Fragmented

PROBLEM

To pay someone, you need to use the same payment network

PROBLEM

To accept payments, you need to support many different networks

Accepting Payments Online

Payment Methods Accepted By Prineta.com

Payment Handler API

W3C Working Draft 08 January 2018

This version:
https://www.w3.org/TR/2018/WD-payment-handler-20180108/

Latest published version:
https://www.w3.org/TR/payment-handler/

Latest editor's draft:
https://w3c.github.io/payment-handler/

Test suite:
https://w3c-test.org/payment-handler/

Previous version:
https://www.w3.org/TR/2017/WD-payment-handler-20171203/

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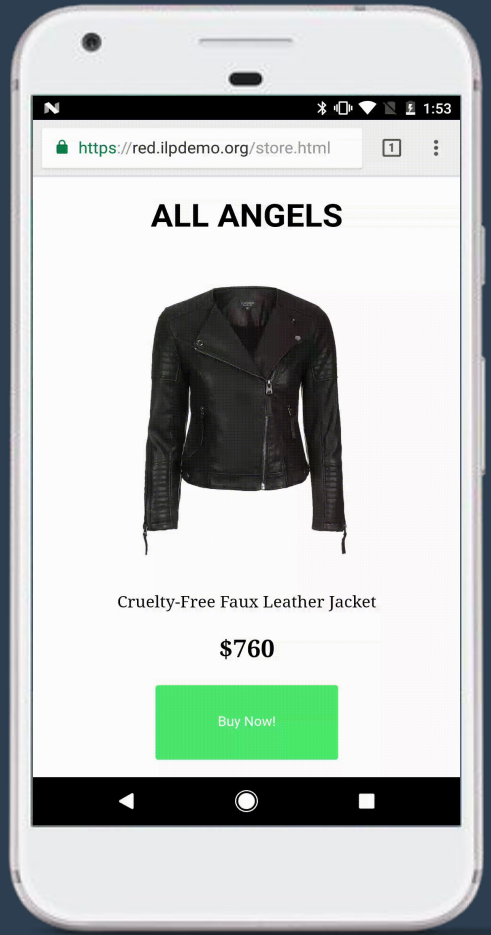
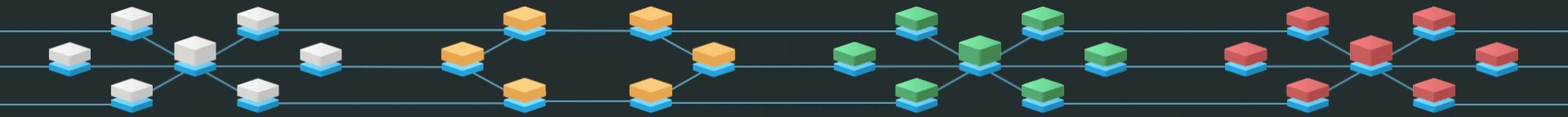
Participate:
GitHub w3c/payment-handler
File a bug
Commit history



Payment Networks Are Still Disconnected

Banks Blockchain Mobile Money Online Wallets

Internetworking For Payment Networks



Banks Blockchain Mobile Money Online Wallets

Interledger

Internetworking for Money

Interledger Project

Invented at Ripple, Developed as a Standalone Open Project

Banks

Central banks

Payments companies

Tech giants

Consulting companies

Blockchain companies

Open Protocol

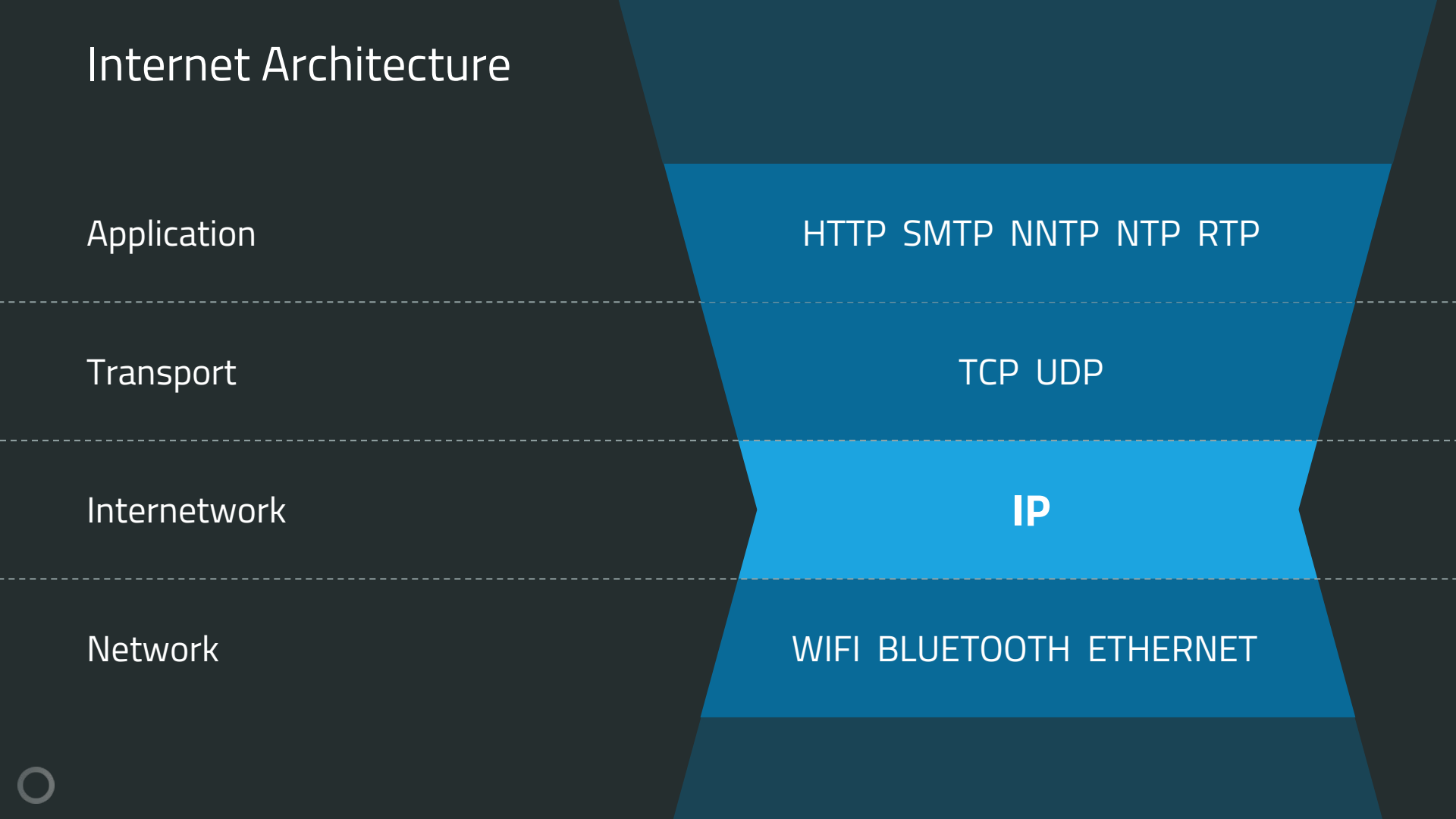
Community Group @ W3C

390+ Contributors

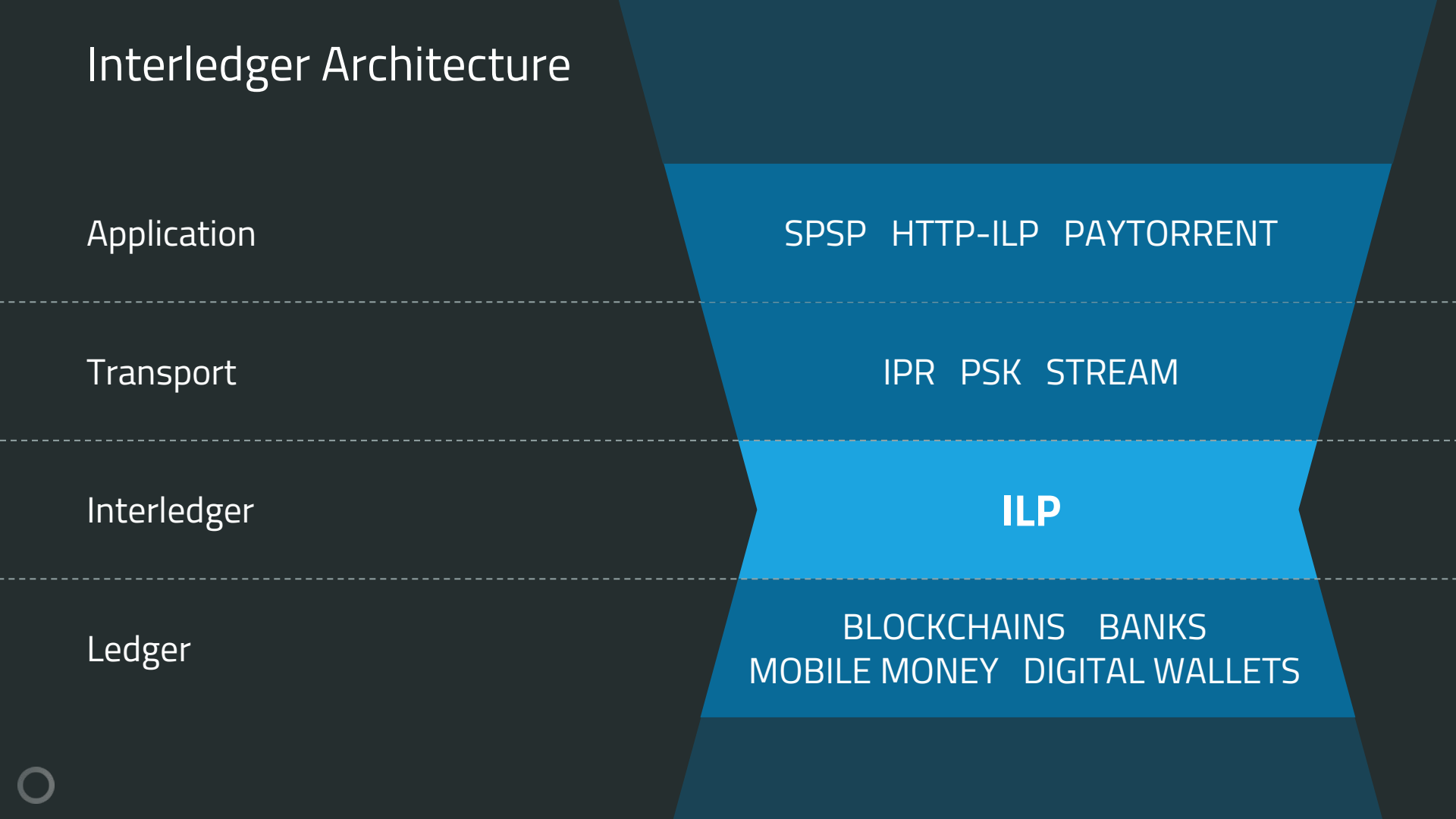
OUR INSPIRATION

The History & Architecture of the Internet

Internet Architecture



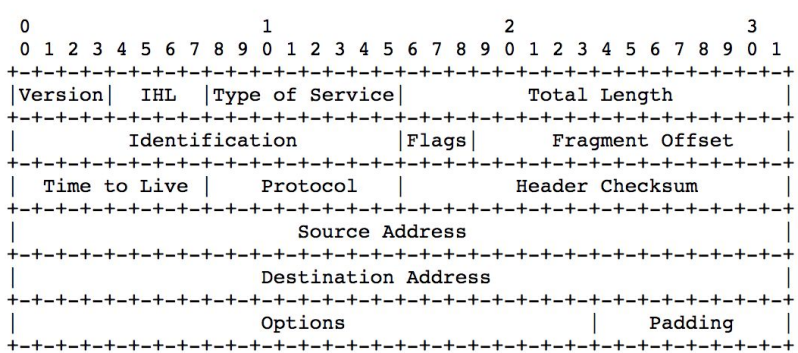
Interledger Architecture



The Core is the Packet and Address Format

3.1. Internet Header Format

A summary of the contents of the internet header follows:

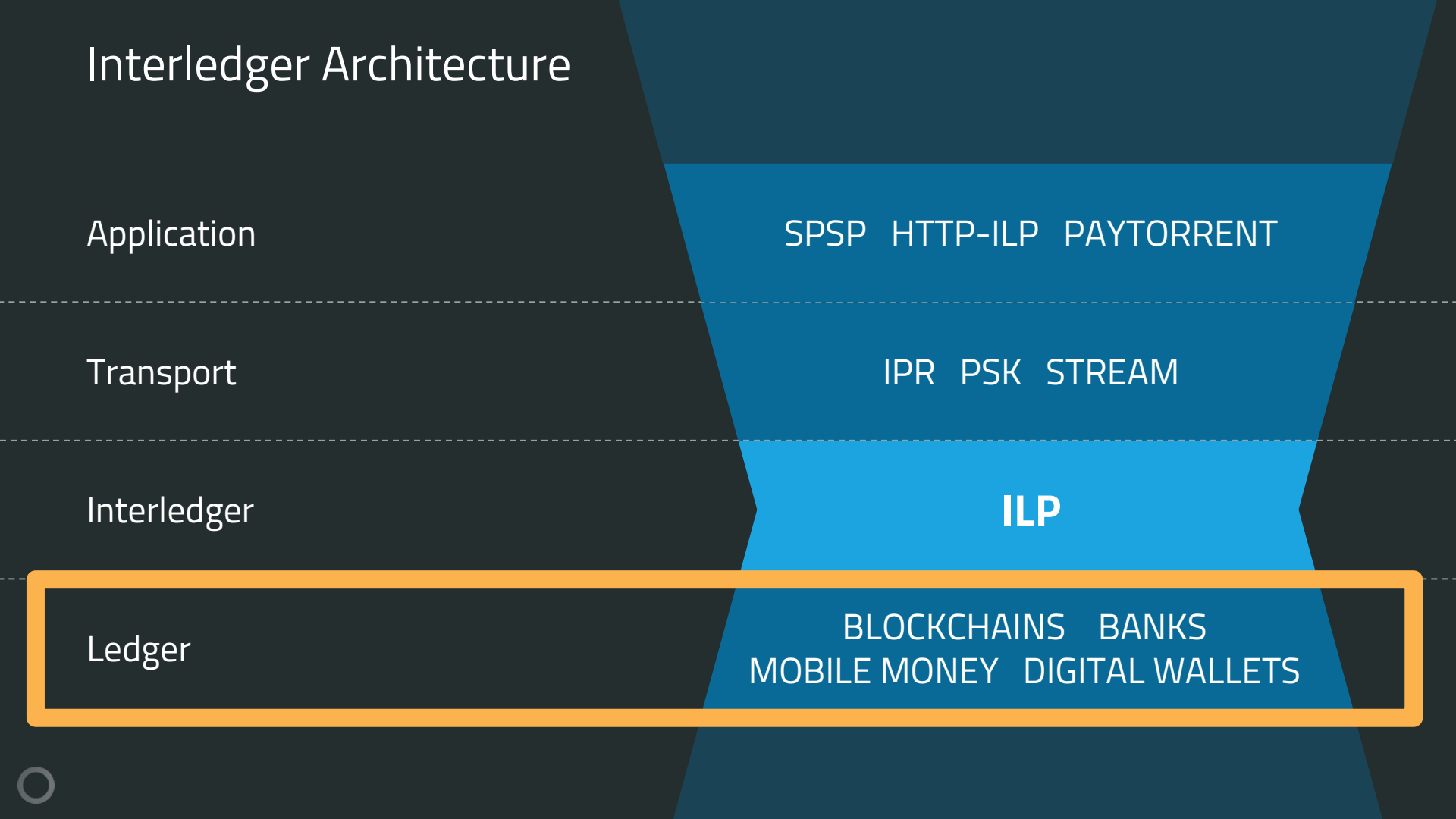


IP Packet

```
InterledgerPrepare ::= SEQUENCE {
    -- Local amount (changes at each hop)
    amount UInt64,

    -- Expiry date
    expiresAt Timestamp,

    -- Execution condition
    executionCondition UInt256,

    -- Destination ILP Address
    destination Address,

    -- Information for recipient (transport layer information)
    data OCTET STRING (SIZE (0..32767))
}
```

ILP Packet

Interledger Architecture

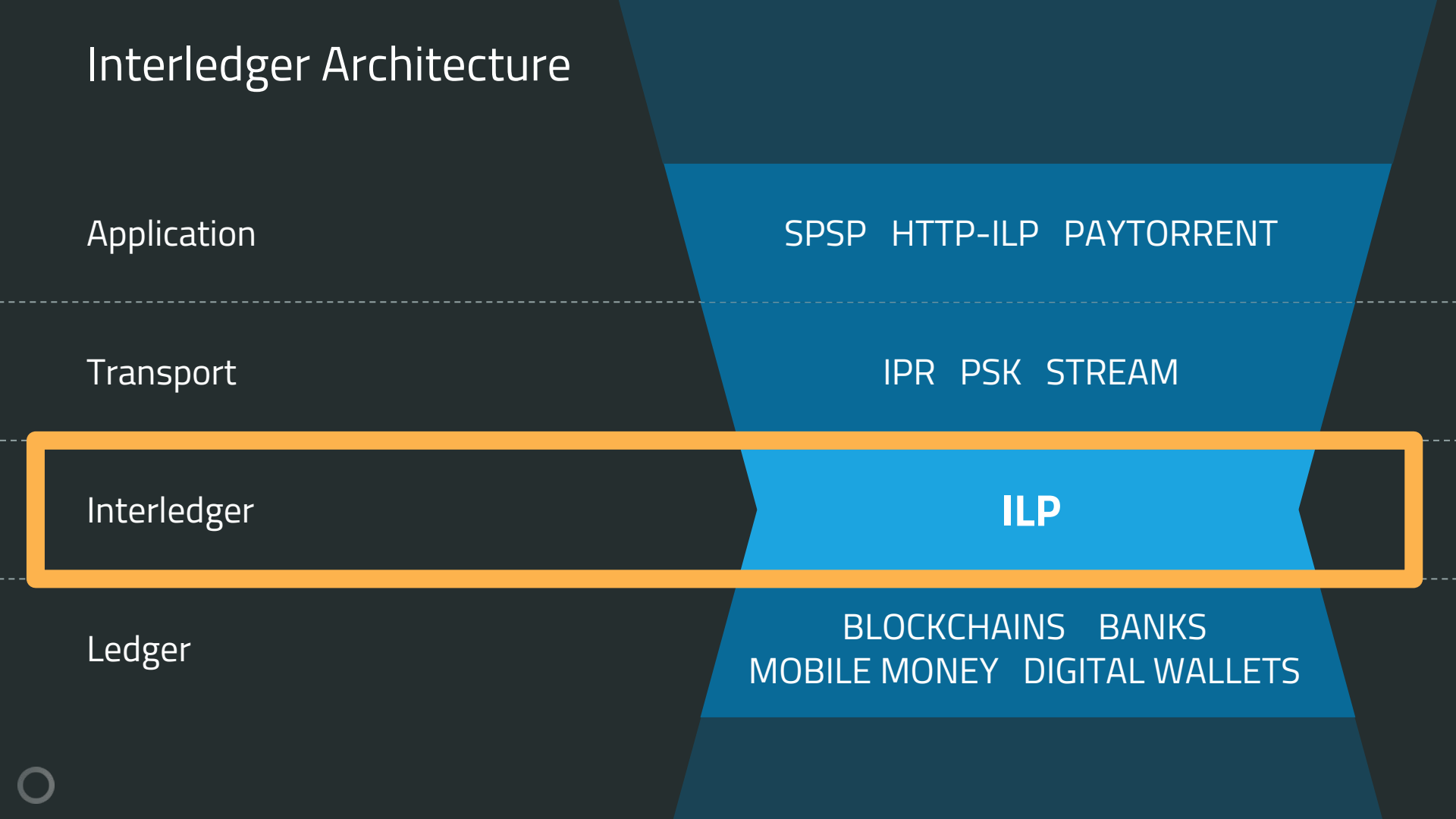


A “Ledger” Is Any System That Transfers Value

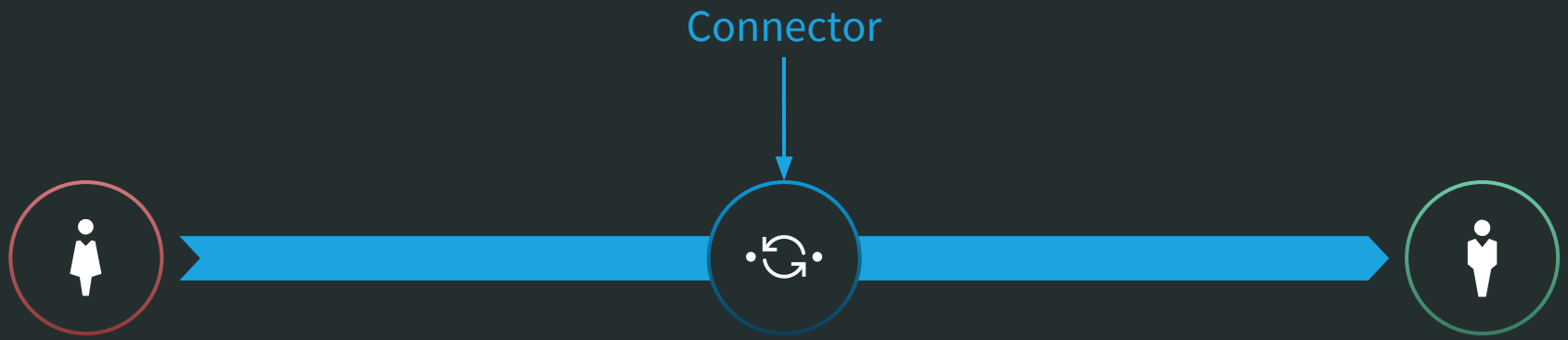
Bitcoin / BTC

ACH / USD

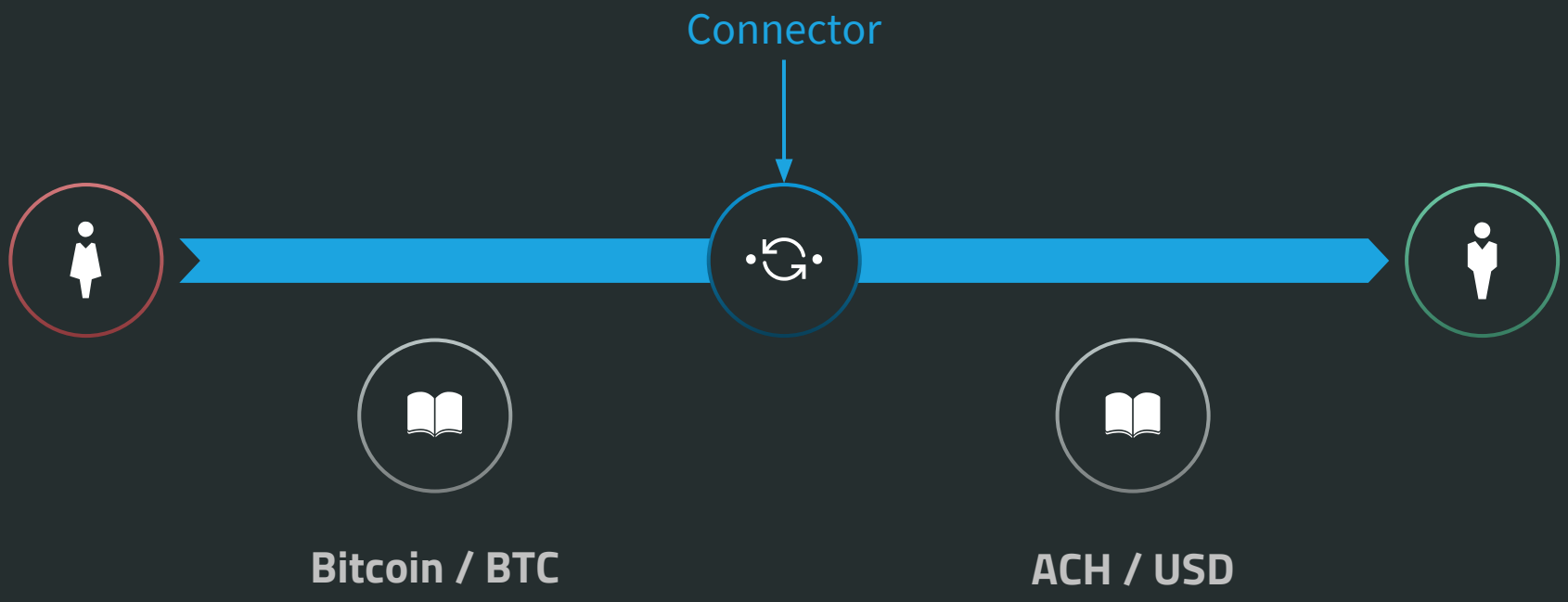
Interledger Architecture



Connectors Forward Packets



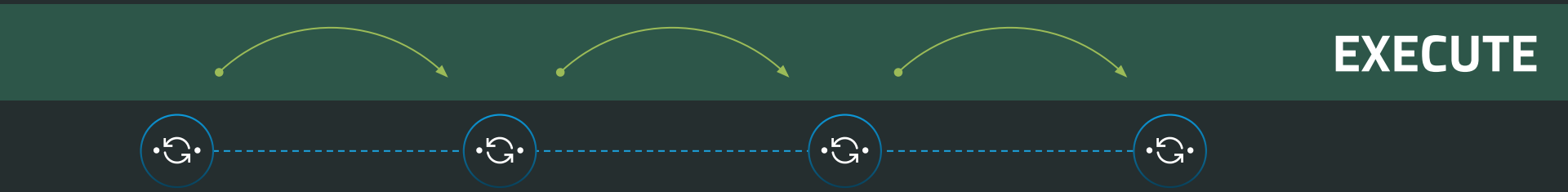
Connectors Settle on Ledgers



Interledger packets can be settled on any ledger or even with cash.

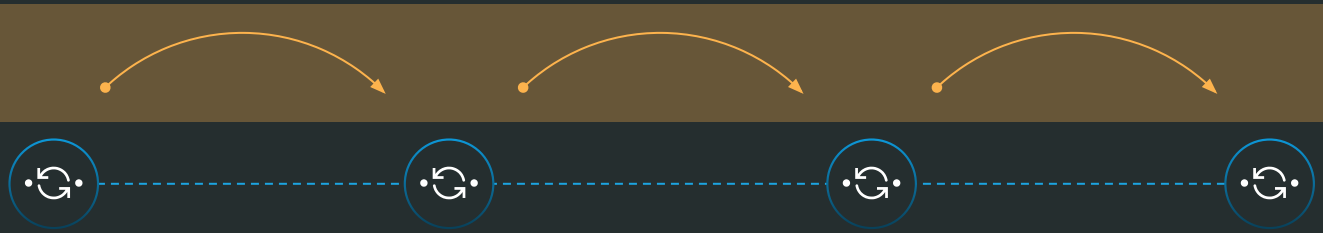
Packets Can Be Sent Across Any Number of Hops

Optimistic Execution



Optimistic Execution

Interledger: Two-Phase Execution Secures Multi-Hop Transfers



REFERENCES

J. Poon and T. Drya, *The Bitcoin Lightning Network: Scalable Off-Chain Instant Payments*, 2015

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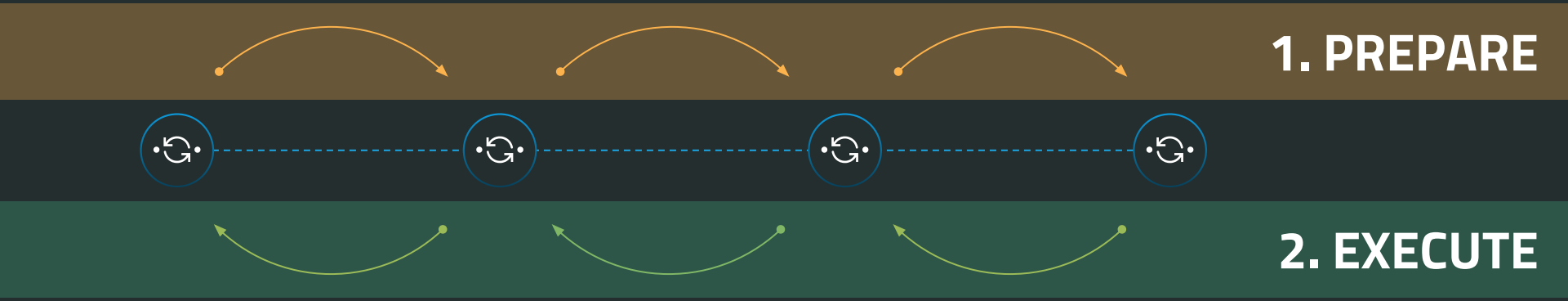
Interledger: Two-Phase Execution Secures Multi-Hop Transfers



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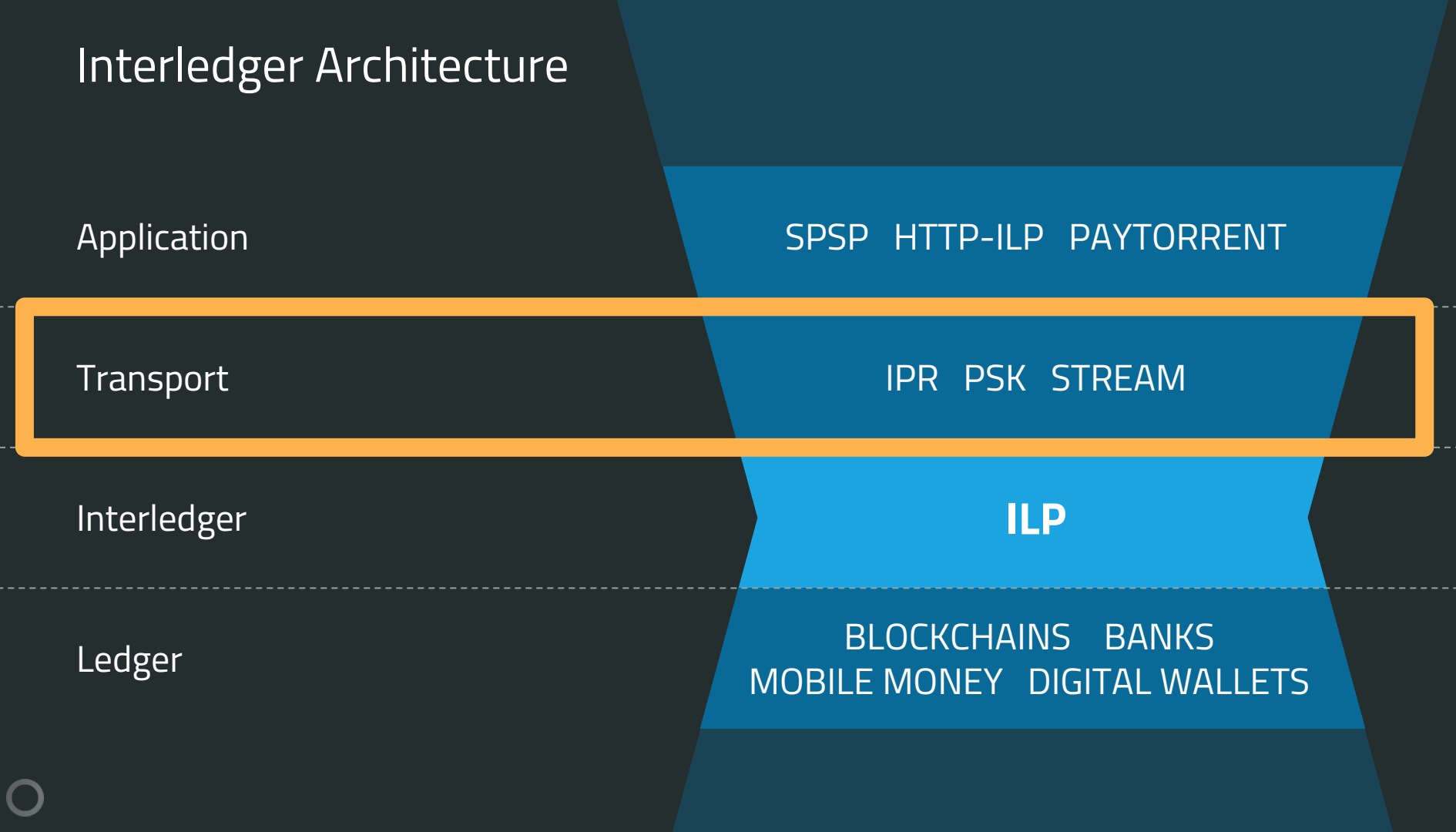
Interledger Architecture



Streaming Payments

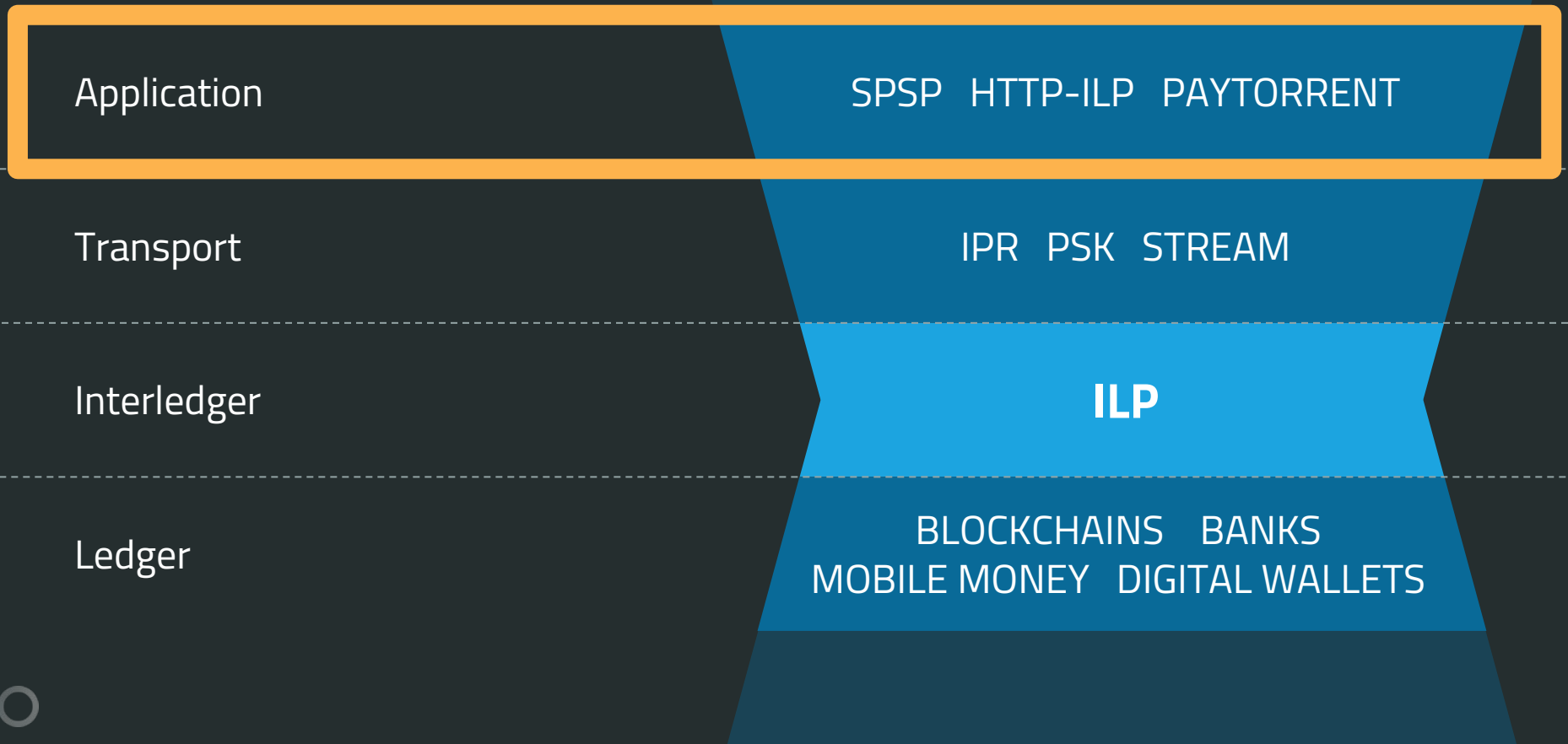
STREAM can stream data + money over Interledger.

Penny Switching

Larger amounts are split

into smaller packets.

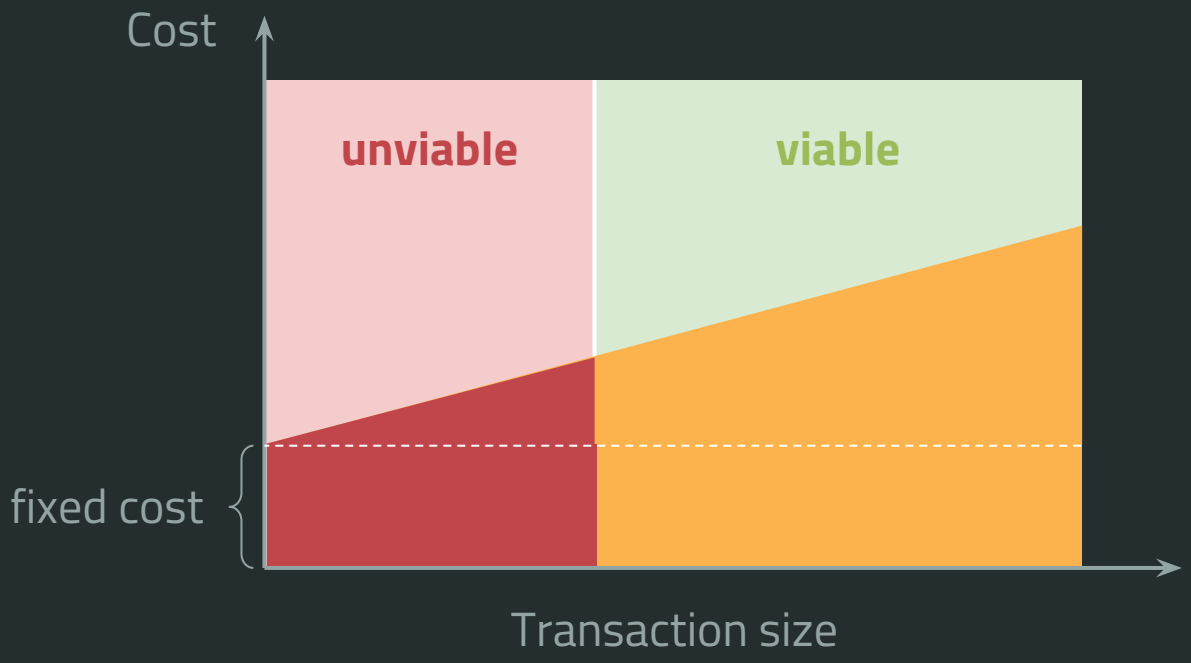
Interledger Architecture



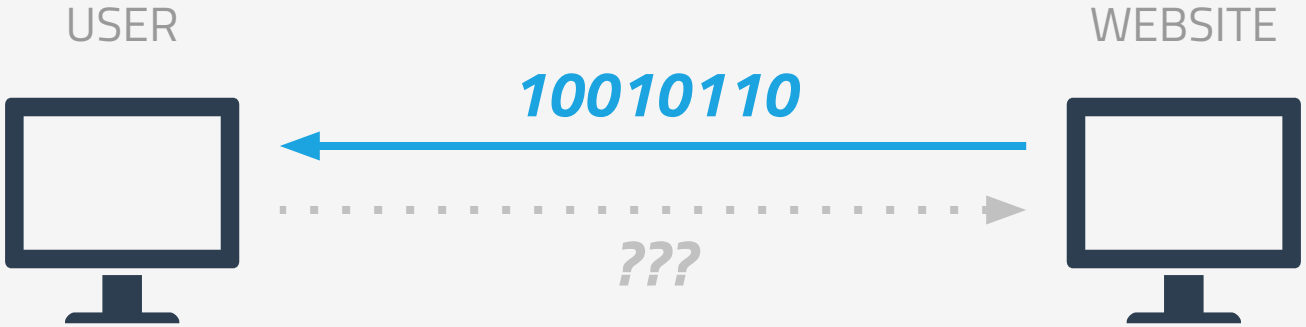
DEMO

Merchant Checkout With Chunked Payments

Fixed Costs Make Micropayments Unviable



The Internet Economy is Incomplete



Today: The Web is a **Barter Economy**

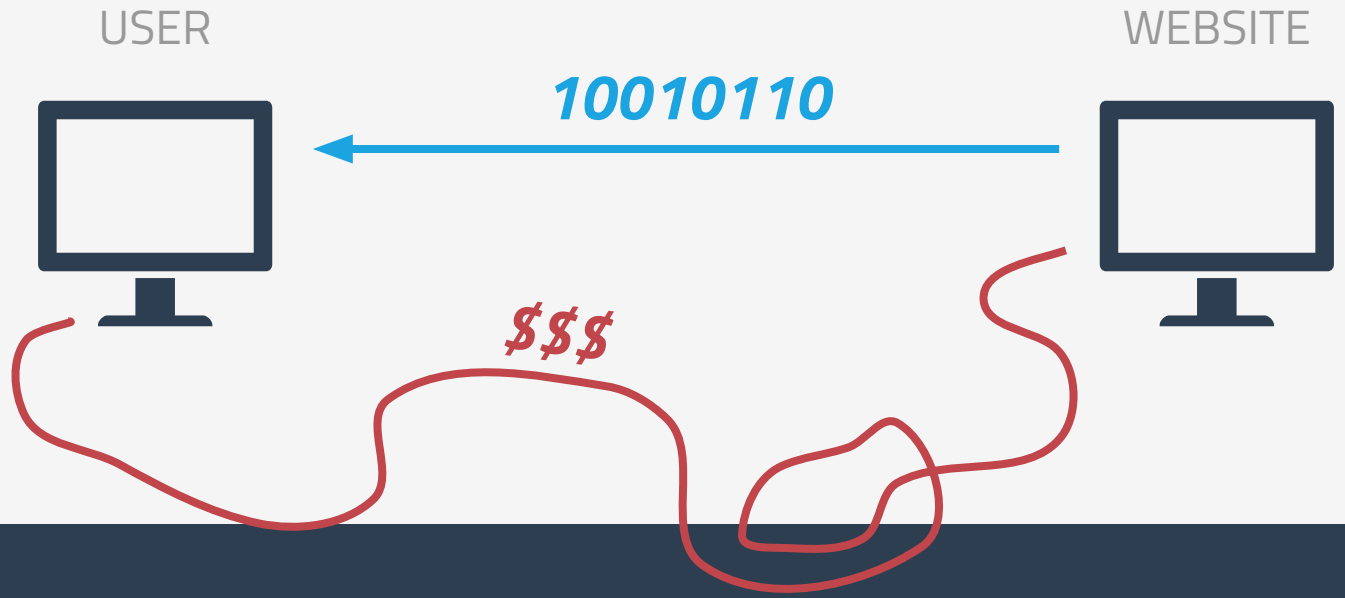
Barter is Extremely Inefficient

“

There may be many people wanting, and many possessing those things wanted; but to allow of an act of barter, there must be a **double coincidence**, which will rarely happen.

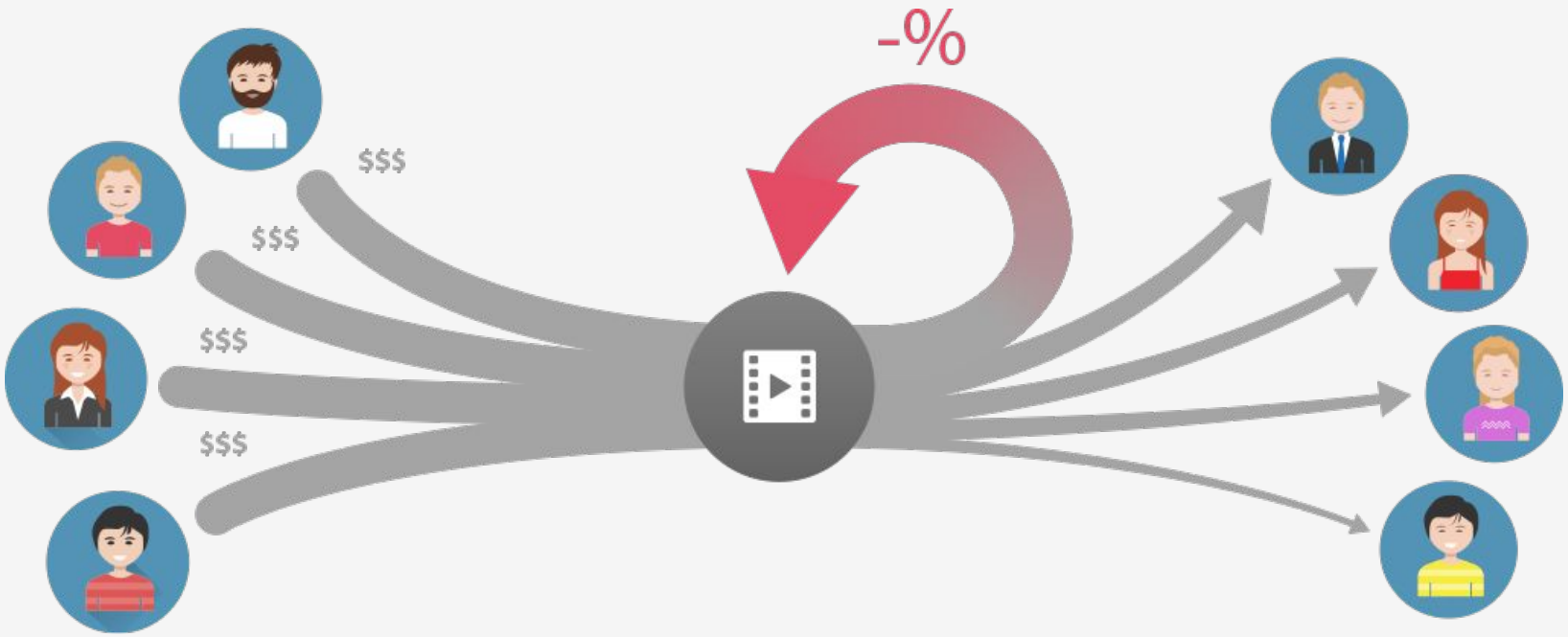
- William S. Jevons, 1875

So We Use Hacks to Get Around the Problem



Hacks: Ads, Surveys, Bundling, ...

Dominance of Marketplaces

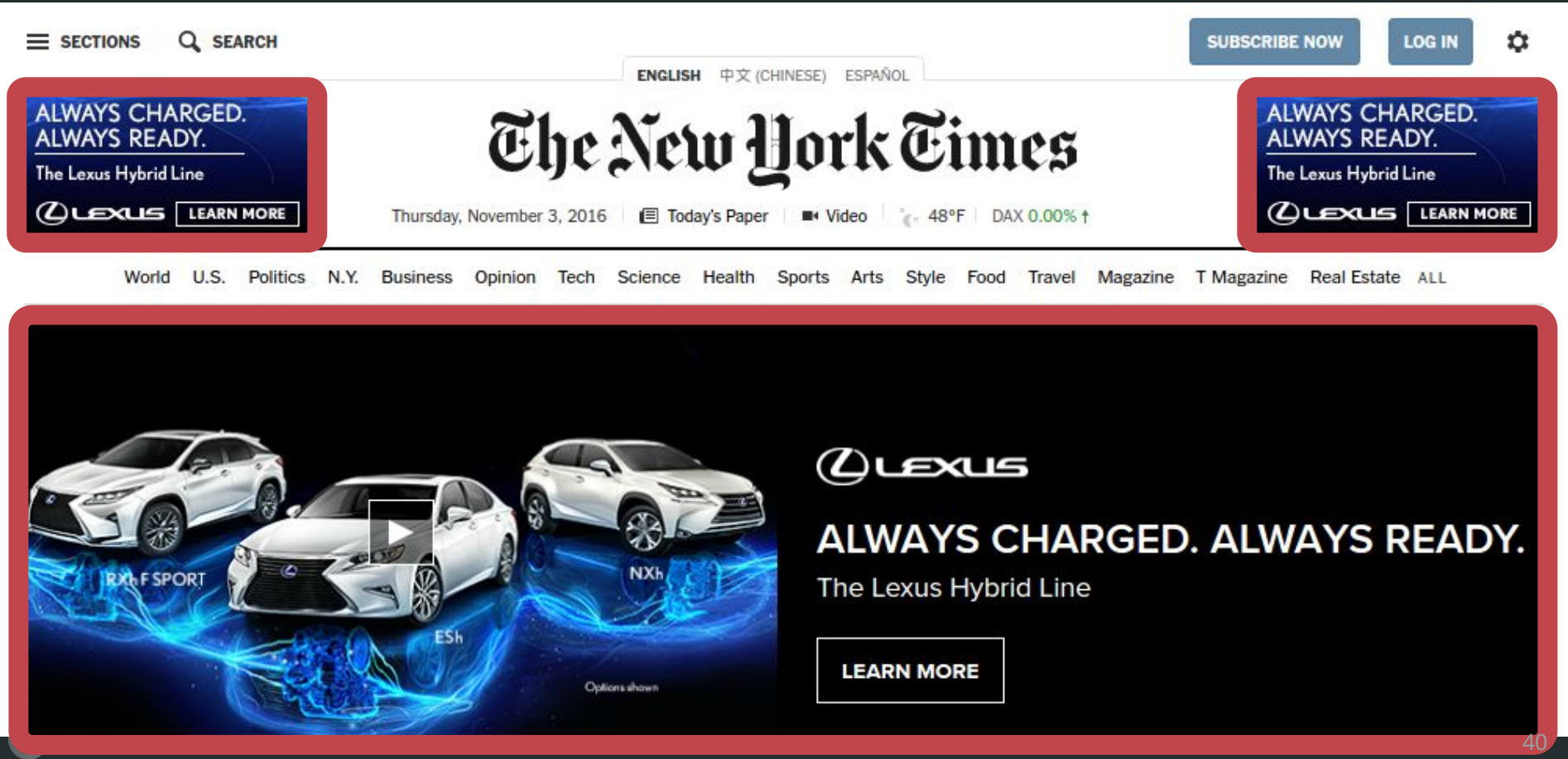


When an online service is free,
you're not the customer.

You're the product.

Tim Cook, CEO Apple

Ads Ruin the User Experience



The New York Times

ELECTION 2016

Clinton Still

WORLD SERIES

The Opinion Pages

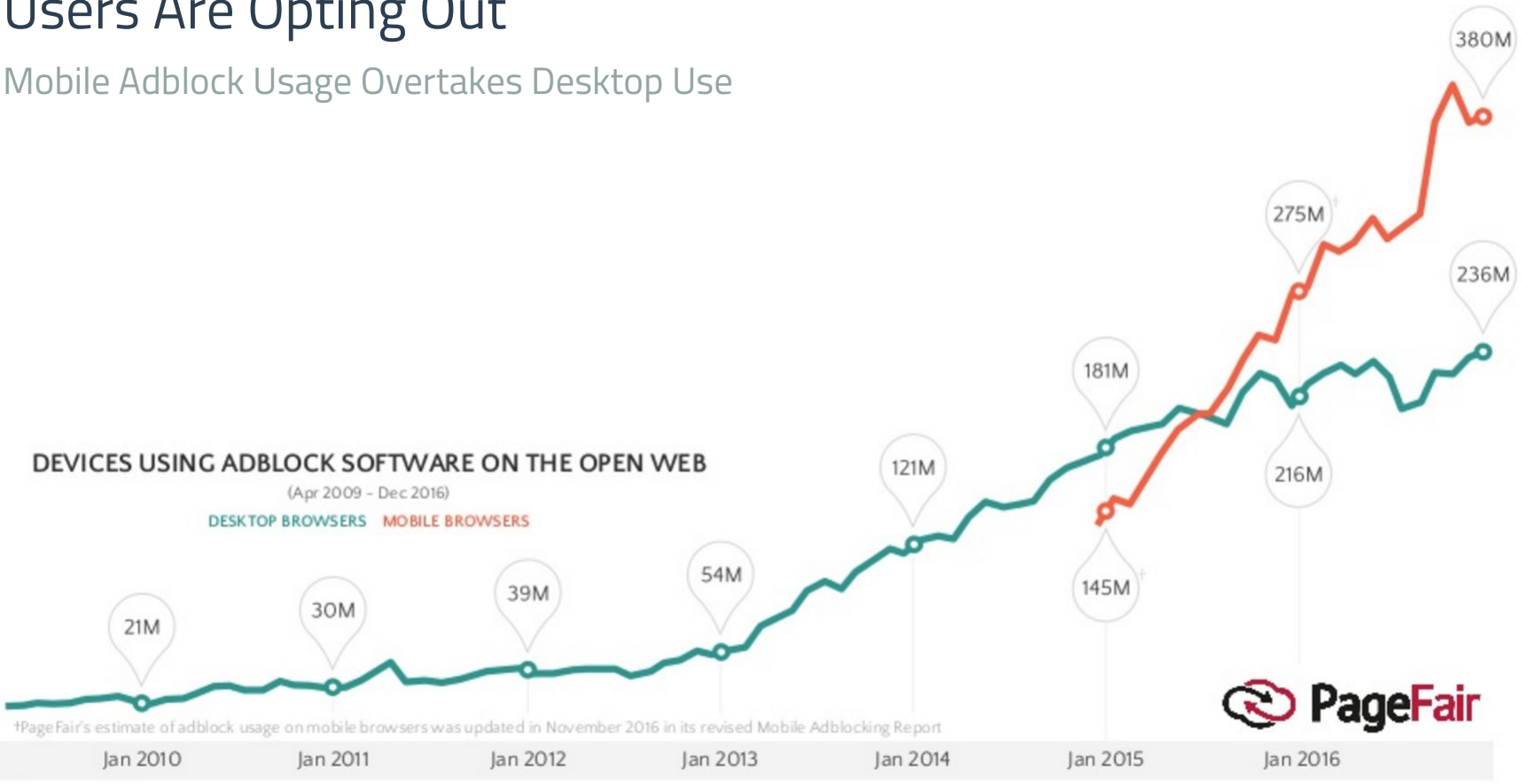
A Stronger Court for Crimes Against Humanity

ROOM FOR DEBATE

Why Are Ballot Measures

Users Are Opting Out

Mobile Adblock Usage Overtakes Desktop Use



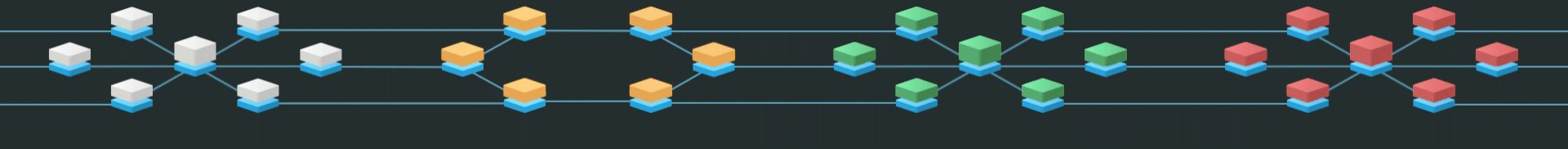
Money Solves the Barter Problem

Money: Better than Barter Since 5000 BC

DEMO

Streaming Micropayments for Content

Help build the Internet of Value!



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interledger.org @interledger