



Le-Space

SPIN-OFF B · CONCEPT

WebRTC Public Data Map

Where direct connections hold — and where a relay
has to step in

Every connection is a measurement. Millions of measurements
tell you where you need a relay.

[Demo](#)[Source](#)[npm](#)

The problem

Direct connections are faster, cheaper and more private than any detour — but nobody knows in advance where they hold up.

- **Every network is capable of something else**

One Wi-Fi lets everything through, the next only port 443; on mobile the carrier-grade NAT decides. The same app is directly connected in one place and needs a detour in the next.

- **Browsers are not equal**

Chromium, Firefox and WebKit differ in WebRTC details; on iOS whatever Safari allows is the whole story.

- **IPv6 saves the day — sometimes**

Without a TURN server, peers behind restrictive NATs fail over IPv4, while the same connection over IPv6 is reliable.

- **Nobody measures this at scale**

There are speed tests for bandwidth. There is no map for the question every P2P application has to ask: is direct enough here, or do I need a relay?

The insight

When two devices connect out-of-band via QR code — no relay, no signaling server — the connection attempt measures exactly what the network is capable of.

- **The instrument already exists**

`libp2p-webrtc-qr` exchanges signed SDP payloads via QR code or link. The demo already reports which IP families both sides have.

- **One attempt, one data point**

Success or failure, candidate types (host/srflx/relay), IPv4 vs IPv6, setup time, browser, network type, provider (ASN), coarse location.

- **The measurement costs nothing extra**

It falls out of something the user wants to do anyway: connect two devices. No separate test, no extra app.

How it works

Four steps, all on our own stack — from the measurement in the browser to the public map.

1 · Measure

- During the QR handshake, opt-in
- Signed locally with the user's WebAuthn DID
- No SSIDs, no MAC addresses, no GPS point

2 · Collect

- Measurements land in an OrbitDB
- The relay pins and archives (spin-off A)
- The user keeps a copy of their own data

3 · Aggregate

- Summary per network, cell and provider
- Three levels: direct works · mixed · relay needed
- Only above enough independent measurements

4 · Use

- Map and raw data free for everyone
- A concrete recommendation: direct is enough here, a relay there
- Anyone can commission a re-measurement and fund it with a budget
- The budget goes to the devices that measure, a share to us

Step one is what today's client already does — it reports the IP families of both sides. Everything from step two is design, not code.

What a measurement actually says

One connection yields four findings. None may colour the others.

- **Four axes, not one traffic light**

Place × browser × IP family × candidate type. If Chrome fails at IPv6, that is a mark against Chrome — not against the Wi-Fi serving IPv4 fine.

- **The causes separate on their own**

A fault with one browser across many places belongs to the browser; one in a place across many browsers to the network. A place red only with Chrome is not red.

- **The network is observed, not claimed**

The far end sees the public IP, and with its provider and ASN. To measure a hotel Wi-Fi green you have to sit in it — no GPS needed anywhere.

- **Success needs a witness**

The far end is assigned, not chosen, and confirms independently. Claiming failure is cheap — but nobody wants to talk their own network down.

Identity only at the till: measurements stay pseudonymous, a credential such as the EUDI wallet appears only at payout and audit. Measuring falsely there is not prevented — but it is attributable.

Who pays for the measurements

The data is free for everyone. What is paid for is not access but the commission: whoever needs an answer for a particular network puts up a budget.

Platforms & apps

- Games, messengers, video and P2P providers
- “Why do our users stall at provider X?” — a campaign per network, region or browser
- The answer: where direct is enough and where relay capacity must be budgeted

Operators — from carriers to cafés

- Carriers, ISPs, hotels, municipalities, coworking, cafés
- Want to know whether their own network carries direct connections
- A re-measurement after the fix, evidencing “direct works here”

Research & regulation

- Net neutrality is unverifiable without measurements
- Universities, NGOs, regulators
- Commission targeted campaigns — the data itself is open anyway

The lever is unchanged: where the map says “relay needed”, a relay from spin-off A sells itself. The commission earns once, the relay keeps earning.

Why us

The dataset is a by-product of technology we build and operate anyway.

- **We own the instrument**

`@le-space/libp2p-webrtc-qr` is published, in beta and running as a demo — including signed payloads and a copy/paste fallback.

- **We already have the answer too**

Where the map says "relay needed", the relay from spin-off A is one click away. No other measurement service can cover the demand it measures in the same breath.

- **No data trade, no conflict of interest**

We do not sell the data — it is open. So there is no incentive to flatter a measurement, and no reason to collect more than necessary.

Status & next steps

The client exists, the map does not. The next steps are small and individually verifiable.

- **Client in beta** TODAY

QR and link connections between browsers, signed SDPs, file transfer via Helia, live demo online.

- **Measurement schema & opt-in** IN PROGRESS

Define which fields are collected, and a consent dialog you can understand in one sentence.

- **First map with a recommendation** IN PROGRESS

Aggregation, a public map and the conclusion it produces per place: is direct enough, or budget a relay? Starting with our own tests and conferences.

- **First paid commission** PLANNED

One funded budget, one executed campaign, payout to the measuring devices — the whole loop once, end to end.

Open questions

Deliberately on their own slide: these four points decide whether the model holds.

- **Privacy**

How coarse must the location be so "this network" never becomes "this flat" — and how does a credential at the till stay unlinkable, so no movement profile appears? GDPR assessment before the first measurement.

- **Legal side of rating**

Public network ratings are lawful as long as they are evidenced and presented as a measurement rather than a verdict. A fee may only ever pay for a fresh measurement, never for an entry to disappear.

- **The starting pool**

The protection scales with the number of independent vantage points — early on that number is small and an attacker's share is large. Above how many crossing points do we rate a network at all?

- **Chicken and egg**

Commissions only come once the map says something about your own case — and the map only grows through measurements. Where do the first hundred thousand come from?

WEBRTC PUBLIC DATA MAP

Let's talk

Wanted: partners with networks to measure — conferences, campuses, municipalities — and first customers who today have to guess whether a connection will succeed.

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Demo

Source

npm