THE POST BANDWIDTH ERA: A LABEL FOR INTERNET GOODNESS

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Inspired by an “Inventory of Aspirations” (2015)

Want Internet everywhere (reach, ubiquity, uptake), safe and law abiding (trustworthiness and lawfulness), Interdisciplinary approach

Missing:

● **Sufficient capacity and speed** for online work, learning and leisure
● Activities kept **private & free of censorship**
● **Choice** and flexibility of service
● Clarity and **Transparency** in carrier/content provider metrics and advertising
The Challenge, Obstacles and A Proposal

Challenge: Researchers, operators, government and consumers at odds about what constitutes a good Internet connection, how to measure it and how to visualize it.

Obstacles:
- Last mile offered bandwidth is a proxy often used, but its existence is rarely verified.
- End user experience is relative.
- Researchers, government and ISPs have a symbiotic relationship.
- Some topics are ‘don’t ask don’t tell’ in network community - ie privacy and surveillance.

Proposal: Create a better, yet measurable definition of “Good” that encompasses interdisciplinary work of network researchers, end user point of view, social scientists and economists. Converting it to a visual representation aids consumers and government in understanding metrics.
The Purpose

ISP Accountability

To consumers

To policymakers & funders

Stimulate R&D by exposing ground truth and places where investment needed

Economic Competitiveness

Reclaim Privacy - perhaps move to GDPR in US
Scoring “Goodness”

Weighted score based on several factors:

-Speed - Must be verified by independent auditors, not ISPs nor willing participants with software. Are consumers actually getting speeds reported by the carrier?

-Availability - Infrastructure and Form 477 data should be audited and validated by a 3rd party.

-Privacy Preservation/Trustworthiness - Are consumers allowed to opt-out of data collection?

-Anti-surveillance. Does the ISP follow the legal regulations only and no more.

-Research-friendly - Is the carrier willing to provide data sets to researchers?
Scoring “Goodness” (more)

-No Bandwidth Throttling. No data caps.

-Routing Policies. Does the carrier have accurate IRR data? Are they adhering to MANRS?

-Corporate Responsibility/Trustworthiness.

-Cost - Are the tiers of service reasonable, transparent and comparable in structure to other carriers?

- Consumer Transparency in Advertising - Understand offering.

- Security - Are best practices in place?

-Economic Impact - how many jobs were created as a direct result
Oversight - Watchdog Group Needed

Researchers in academia and at carriers produce results that are acceptable, not controversial. Can’t risk funding!

FCC is not non-partisan

Alternatives to ensure more transparency and accountability:

- Empower FTC to levy penalties for false advertising
- An NTSB or NHTSA type function independently verifying measurement

**Funding for this**: Carriers and content providers should pay for it via a **special tax** levied by size of customer base.
Who’s measuring Now
Sticks not Carrots

Providers should be penalized for:

- Inaccurate last mile broadband maps
- Throttling to force unnecessarily expensive data plans
- Charging consumers to opt out of selling their data
- False advertising
Privacy Nutrition Labels Have Been Suggested Since 2001

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### CMU/CyLab prototype 2009

- Goal: Intentionally designed, common format

### Mozilla - 2011 - icons: 3rd party use of your data for intended purposes only vs selling to data brokers

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<table>
<thead>
<tr>
<th>Information we collect</th>
<th>Ways we use your information to provide service and maintain site</th>
<th>Marketing</th>
<th>Telemarketing</th>
<th>Profiling</th>
<th>Information sharing</th>
<th>Other companies</th>
<th>Public forums</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact information</td>
<td>Opt In</td>
<td></td>
<td></td>
<td></td>
<td>Opt Out</td>
<td>Other companies</td>
<td>Public forums</td>
</tr>
<tr>
<td>Cookies</td>
<td>Opt In</td>
<td></td>
<td></td>
<td></td>
<td>Opt Out</td>
<td>Other companies</td>
<td>Public forums</td>
</tr>
<tr>
<td>Demographic information</td>
<td>Opt In</td>
<td></td>
<td></td>
<td></td>
<td>Opt Out</td>
<td>Other companies</td>
<td>Public forums</td>
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<tr>
<td>Financial information</td>
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<td>Opt Out</td>
<td>Other companies</td>
<td>Public forums</td>
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<tr>
<td>Health information</td>
<td>Opt In</td>
<td></td>
<td></td>
<td></td>
<td>Opt Out</td>
<td>Other companies</td>
<td>Public forums</td>
</tr>
<tr>
<td>Preferences</td>
<td>Opt In</td>
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<td></td>
<td>Opt Out</td>
<td>Other companies</td>
<td>Public forums</td>
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<tr>
<td>Purchasing information</td>
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<td></td>
<td></td>
<td>Opt Out</td>
<td>Other companies</td>
<td>Public forums</td>
</tr>
</tbody>
</table>

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How Would We Make an Internet Nutrition Label?
These factors will vary based on the focus of the metric. Scale is 1-100.

Possible approach to creating a score...

Calculate the area inside the lines for a single number score.
Scoring: Privacy Example

<table>
<thead>
<tr>
<th>Feature</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>Don’t sell consumer Data</td>
<td>100</td>
</tr>
<tr>
<td>Opt Out from Data Collection at No Additional Cost</td>
<td>100</td>
</tr>
<tr>
<td>Transparent cooperation with Federal data collection</td>
<td>100</td>
</tr>
<tr>
<td>No throttling of VPN</td>
<td>50</td>
</tr>
<tr>
<td>Easy to understand privacy policy telling users where data is kept and how its used</td>
<td>10</td>
</tr>
</tbody>
</table>

**Weighted Score (1-100)**

AT&T - NSA TITANPOINTE site in NYC <?>
Scoring: Physical Infrastructure Example

<table>
<thead>
<tr>
<th>Accurate Mapping Data given to FCC</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy access to UNEs</td>
<td></td>
</tr>
<tr>
<td>Building out accurately if in receipt of Federal funds</td>
<td></td>
</tr>
<tr>
<td>Truthfully advertise infrastructure to consumers</td>
<td></td>
</tr>
</tbody>
</table>

Score (1-100)

Fiber “available” per Form 477. Score must be less than 50.

NY vs Spectrum/TWC (Case 450318/2017): Spectrum gets a 0 for false advertising of capabilities
Integrate Other Approaches

**Crowdsourcing** Measurement - ie Broadband Catalysts - data from FCC, open access fiber networks & citizens

**Bug bounties** Popular for discovery of security vulnerabilities. How about to those who prove carrier throttling or practices that violate those stated in carrier policy?

**Non-academic** conferences empower tech advocates and activists to make change.
Open Questions

- Label design?
- Who’d run a watchdog group?
- Should policymakers just use the overall optimal score?
- What factors should be universally at a certain level?
- What does “underserved” mean?