The Post Bandwidth Era: A Label for Internet Goodness

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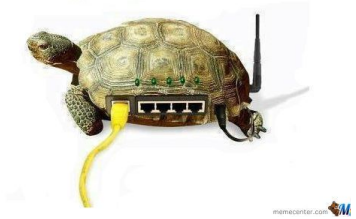
Inspired by an “Inventory of Aspirations” (2015)

*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

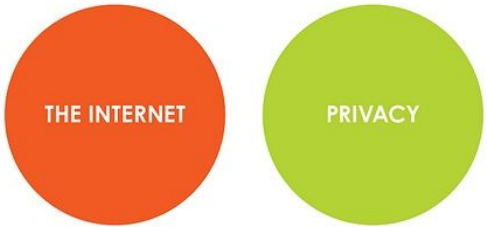
ISP Accountability

- To consumers
- To policymakers & funders

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

Economic Competitiveness

Reclaim Privacy - perhaps move to GDRP in US



Scoring “Goodness”

Weighted score based on several factors:

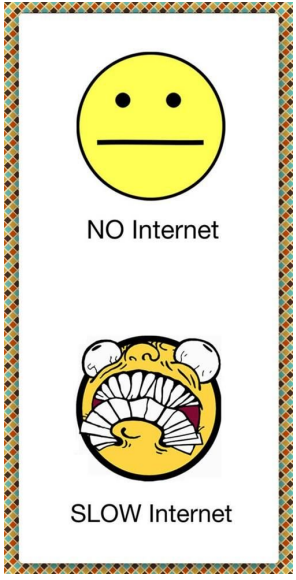
-Speed - Must be verified by independent auditors, not ISPs nor willing participants with software. Are consumers actually getting speeds reported by the carrier?

-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

OOKLA®

RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Sam Knows

MLAB

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

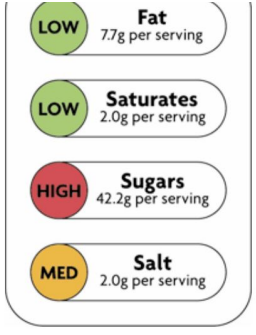
Mozilla - 2011 - icons: 3rd party use of your data for intended purposes only vs selling to data brokers

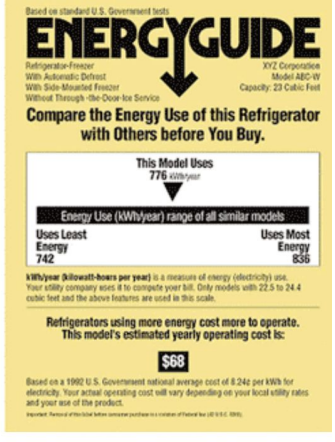
Bell Group

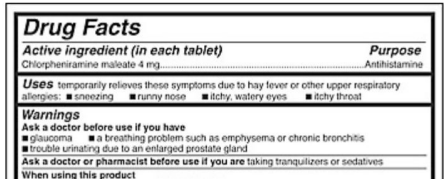
information we collect	ways we use your information				information sharing	
	to provide service and maintain site	marketing	telemarketing	profiling	other companies	public forums
contact information	■	opt in		■	opt out	
cookies	■			■		
demographic information	■	opt in		■	opt out	
financial information						
health information						
preferences	■					
purchasing information	■	opt in		■	opt out	

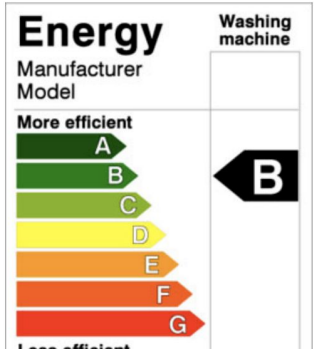
CMU/CyLab prototype 2009
Goal: Intentionally designed, common format
See: "*Standardizing Privacy Notices: An Online Study of the Nutrition Label Approach*", Kelley and Cranor

How Would We Make an Internet Nutrition Label?







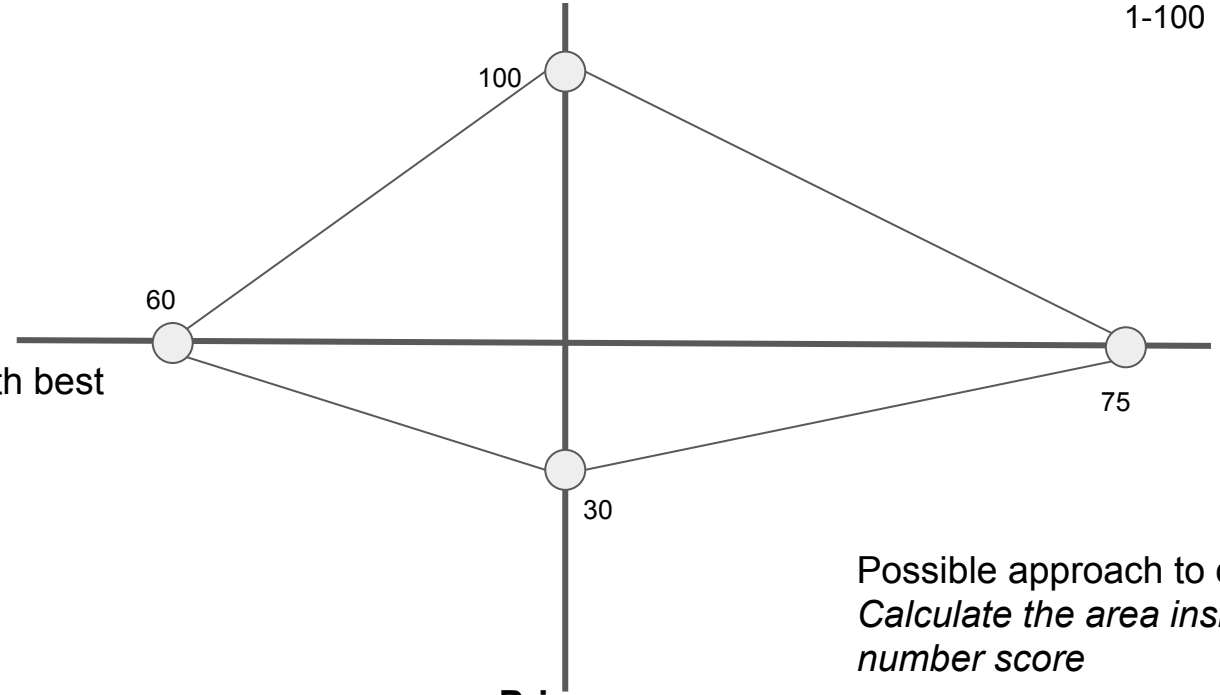


Internet Nutrition Label

Scale 0-100

Speed
Score of 100 = Gig

These factors will vary based on the focus of the metric. Scale is 1-100



Safety
Compliance with best practices

Latency
to consumer

Possible approach to creating a score…
Calculate the area inside the lines for a single number score

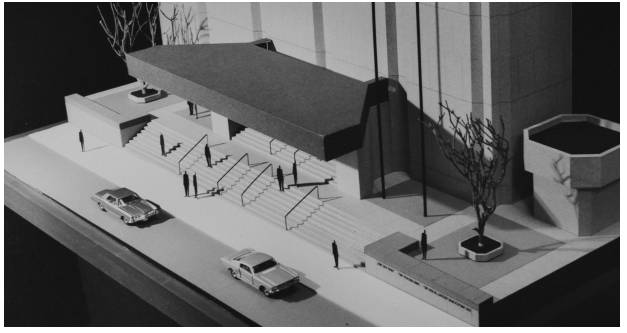
Privacy
Compliance with best practices
Score of 0 results from a lack of consumer privacy protections

Scoring: Privacy Example

Don’t sell consumer Data	100
Opt Out from Data Collection at No Additional Cost	100
Transparent cooperation with Federal data collection	100
No throttling of VPN	50
Easy to understand privacy policy telling users where data is kept and how its used	10

Weighted Score (1-100)

AT&T - NSA TITANPOINTE site in NYC <?>



Scoring: Physical Infrastructure Example

Accurate Mapping Data given to FCC	
Easy access to UNEs	
Building out accurately if in receipt of Federal funds	
Truthfully advertise infrastructure to consumers	

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

BROADBAND CATALYSTS

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.

hackerone

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?