

Network Neutrality: Challenges and Responses in the EU and the US

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The opinions expressed are solely my own.



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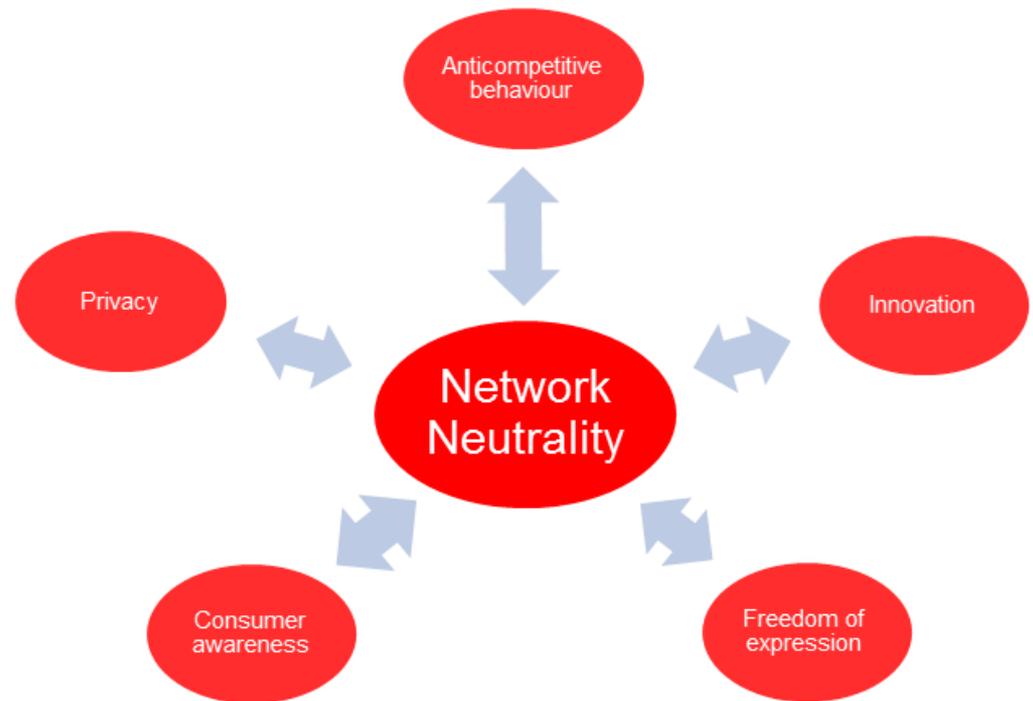
How should we define network neutrality?

- Network neutrality has taken on various meanings:
 - The ability of all Internet end-users ‘... to access and distribute information or run applications and services of their choice.’
 - Traffic ‘... should be treated equally, without discrimination, restriction or interference, independent of the sender, receiver, type, content, device, service or application.’
 - Absence of unreasonable discrimination on the part of network operators in transmitting Internet traffic.
- These definitions are not exactly equivalent, and their implications for public policy are not exactly equivalent.



Net neutrality is at the heart of a web of concerns

- Direct linkages to anticompetitive behaviour, innovation and investment, privacy and data protection, consumer awareness, empowerment, and protection, and freedom of expression.
- Indirect linkages to network and information security, broadband policy, Internet governance, and more.



Technical and economic perspectives



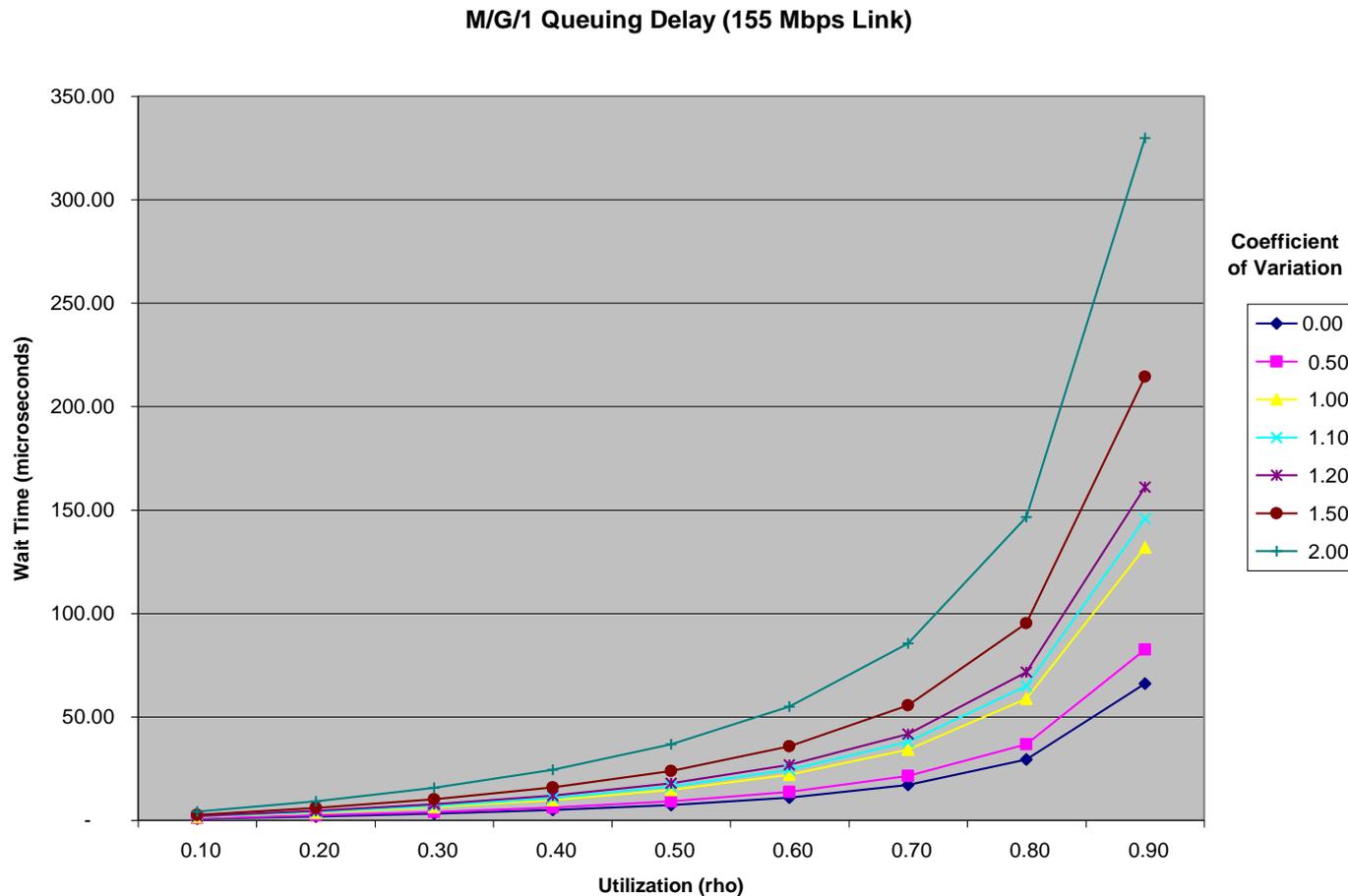
Technical Aspects: Quality of Experience (QoE)

- *Quality of Service (QoS)* parameters and mechanisms are important to enable network operators to design, build and manage their networks, but they are not directly visible to end-users.
- Crucial for end-users, however, is the quality that they personally experience during their use of a service.
- These *Quality of Experience (QoE)* requirements are strongly dependent on the application. Some are sensitive to delay.
 - E-Mail has little sensitivity to packet loss and delay.
 - Real-time two-way Voice over Internet Protocol (VoIP) tends to be highly sensitive – delays greater than some 150 msec cause problems.
 - Real-time two-way videoconferencing is similarly sensitive, and with greater bandwidth consumption.
 - One-way video may or may not be sensitive, depending on user expectations for how quickly the stream starts (zapping time).

➤ *Delay-sensitive applications and mission critical services (police, fire, health, and transport) can benefit from managed Quality of Service (QoS).*



Technical Aspects: Quality of Experience (QoE)



M/G/1 queuing analysis of the performance of a single link

(with clocking delay of 50 μ secs (284 byte packets) and a 155 Mbps link)

Source: Based on Marcus, Designing Wide Area Networks and Internetworks (1999)

CEPS, Brussels, 05 May 2015



Economic background of network neutrality

- At least three distinct strands of economic reasoning relates to differentiated quality of service in the Internet.
 - Quality and price differentiation
 - Economic foreclosure
 - Two-sided (or multi-sided) markets
- These interpretations are not necessarily incompatible, but they have different and possibly conflicting implications for public policy.



Quality and price differentiation

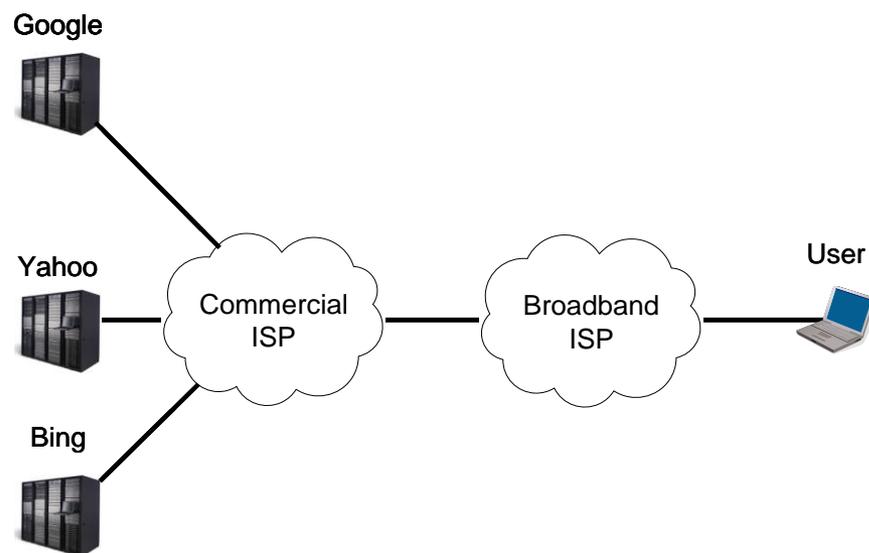
- Quality differentiation and price differentiation are well understood practices (cf. Hotelling (1929)).
- In the absence of anticompetitive discrimination, *differentiation generally benefits both producers and consumers.*
- **BENIGN:** We typically do not consider it problematic if an airline or rail service offers us a choice between first class and second class seats.



Two-sided markets

The Internet can be thought of as a two-sided market, with the network operators collectively serving as a platform connecting providers of content (e.g. web sites) with consumers (cf. Tirole and Rochet (2004), and also Laffont, Marcus, Rey and Tirole (2003)).

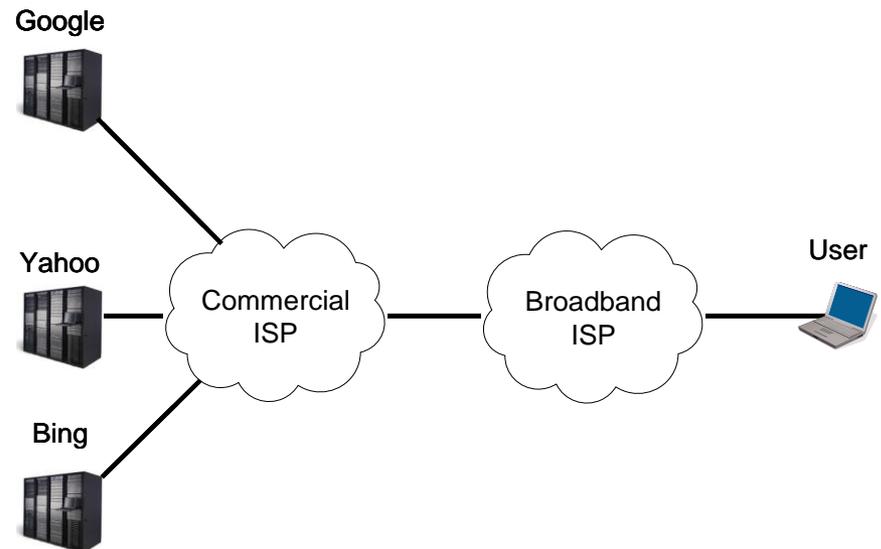
RELATIVELY BENIGN: Under this view, some disputes are simply about how costs and profits should be divided between the network operators and the two (or more) sides of the market.



Economic foreclosure

When a producer with market power in one market segment attempts to project that market power into upstream or downstream segments that would otherwise be competitive, that constitutes economic foreclosure.

PROBLEMATIC: Foreclosure harms consumers, and imposes an overall socio-economic deadweight loss on society. Foreclosure could be a concern in markets where effective market power (SMP) is given free rein.



European stakeholder views



The public consultation (2012-2013)

- The Commission conducted a public consultation on network neutrality at the end of 2012, with an eye to a legislative initiative in 2013.
- A one page summary of the consultation appears in the Impact Assessment for TSM, but the Commission never published a comprehensive analysis of the results.
- The 131 non-confidential textual stakeholder responses were publicly available, and generally thoughtful and of high quality, thus enabling me to complete the public consultation in abbreviated form based on a sample of responses.
- We gratefully acknowledge the Commission's assistance in tabulating more than 400 multiple choice (citizen) responses to the public consultation.



The public consultation (2012-2013): Organisational stakeholder views

- Most NRAs, ISPs, content providers, and consumer advocates considered traffic management to be appropriate under suitable preconditions.
- Consumer advocates and other civil society organisations appear deeply troubled by limitations on Voice over IP (VoIP); network operators view this differently.
- There was widespread agreement that for a network operator to prioritise its own traffic ahead of traffic for applications that compete with its own services is problematic.
- Many stakeholders felt that for the Member States to implement divergent approaches would carry substantial risk.



The public consultation (2012-2013)

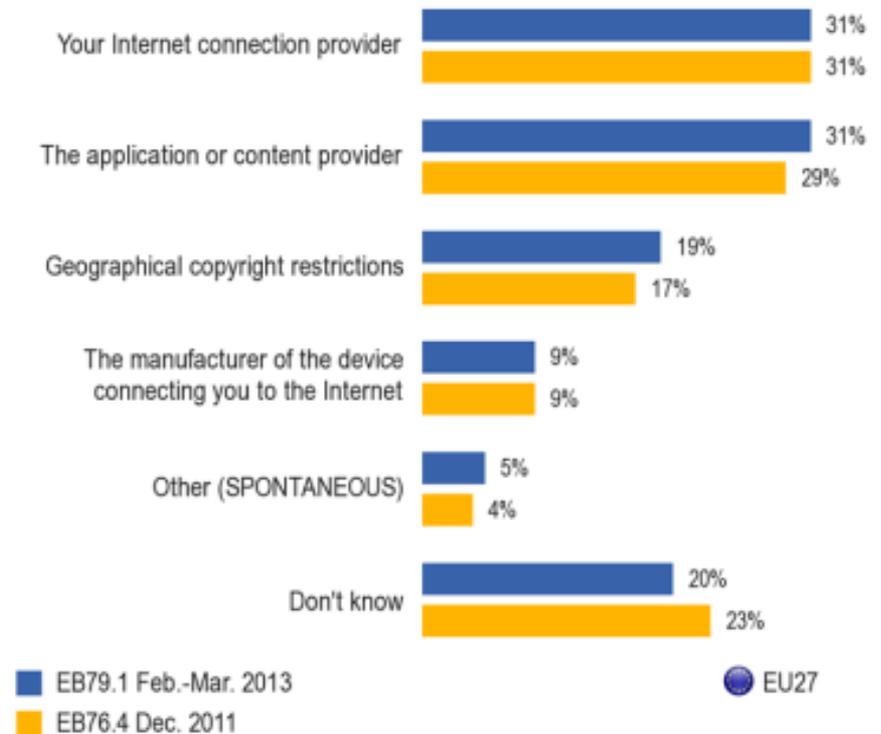
- In the consultation, citizens were troubled by most forms of traffic management, but more by some forms than by others.
- As much as 80% of citizens who responded opposed most forms of traffic management.
- CAUTION: The citizens who responded were *self-selected*.
 - Many studies suggest that the average consumer has only a limited understanding of net neutrality issues.
 - A new study of consumer attitudes by WIK, Deloitte, and You.Gov based on a random sample will provide an important cross-check on these consultation results.
 - The results have been presented within BEREC, but are not yet public.



European consumer views are complex

- 29% of EU fixed broadband consumers think that they have been blocked at least once (Eurostat, 2013).
- Not all blockages, however, appear to reflect classic net neutrality issues.

QA15. In your opinion, which of the following was responsible for the blocking of online content or applications?



Source: Eurobarometer 396 (2013)



European regulatory views

- BEREC (2014), 'BEREC Annual Reports – 2013': ... very few NRAs have reported specific relevant net neutrality incidents. ... [T]he prevailing approach among ... NRAs is that possible deviations from net neutrality are dealt with on a case-by-case basis. ... [T]here is wide agreement among national regulators that the existing regulatory tools enable NRAs to address competition concerns related to net neutrality for the time being.'
- BEREC (2012), consultation response: '[R]egulation should not be unnecessarily intrusive, since flexibility appears indispensable in such a fast-changing environment.'
- BEREC (2012), 'Summary of BEREC positions on net neutrality': 'BEREC is committed to the open Internet, and believes that the existing regulatory tools, when fully implemented, should enable NRAs to address net neutrality-related concerns.'



Regulatory approaches in the EU and the US



Regulation: EU

- In the European framework, market power is a key concern.
 - Regulation addresses last mile market power in the fixed network, both for the PSTN and for Internet, thus fostering competition.
 - Internet interconnection is generally unregulated to the extent that market power does not seem to be a concern.
- Revisions to the regulatory framework were enacted in 2009.
 - The ability of end users to access content, applications or services of their choice is now an explicit goal of European policy.
 - Providers of electronic communication services must inform end users of their practices in regard to traffic management, and provide end users with the right to change providers without penalty if they are dissatisfied with a change in these practices.
 - Empowerment of NRAs to impose, if necessary, minimum QoS obligations on an SMP operator.
 - Approach rests on ***informed consumer choice***.

Ongoing discussion: Telecoms Single Market legislation.



Differences between the US and the EU

- The US regulatory approach to network neutrality responds to different circumstances than those relevant to Europe.
- The overall US regulatory approach is partly a cause and partly a response to a very different marketplace.
- Real consumer choice of an alternative broadband supplier in the US is limited to the point where the threat of consumers switching is no longer felt to constrain the behaviour of network operators.
- The radical US deregulation of 2002-2005 left the US FCC with minimal ability to regulate broadband services; as a result, the US debate has been dominated by issues of legal sustainability rather than by policy goals.



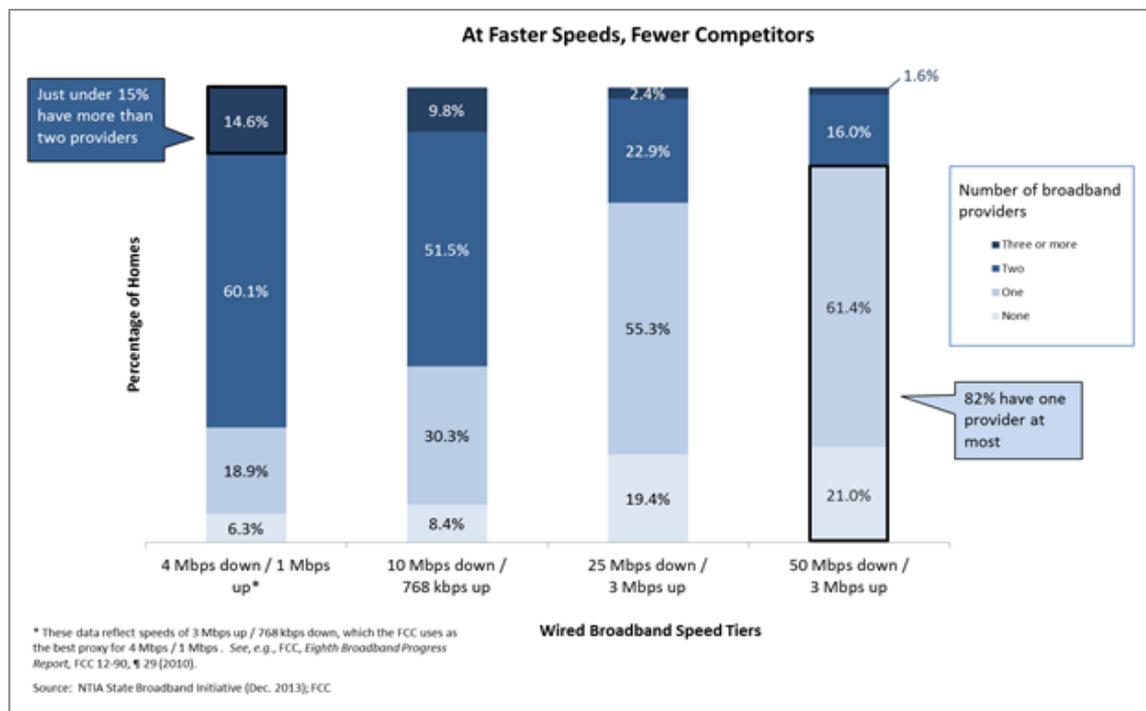
Regulation: US

- *Telecommunication services* are subject to numerous regulatory obligations; *information services* are subject to few explicit obligations. Information services were felt not to be subject to market power, so long as basic services were available on a non-discriminatory basis.
- This distinction historically enabled the FCC to avoid regulating the Internet core.
- During the George W. Bush years, the FCC classified broadband access when bundled with Internet service to be an information service (ignoring last mile market power concerns).
 - Weakened or lifted procompetitive remedies, thus reversing the growth of retail competition for DSL lines.
 - Lifted non-discrimination obligations.



Market structure: US

- Most Americans can choose *at most* between one cable company and one fixed telecommunications network.
- The effectiveness of mobile as a substitute is limited.
- Informed consumer choice cannot be effective absent choices!



Source: speech by FCC Chairman Wheeler (2014), data based on NTIA State Broadband Initiative
CEPS, Brussels, 05 May 2015

Regulation: US

- The FCC's Report and Order of 12 March 2015 goes somewhat further than the 2010 Order (which had been overturned by the courts).
 - **No Blocking:** [ISPs] shall not block lawful content, applications, services, or non-harmful devices, subject to reasonable network management.
 - **No throttling:** [ISPs] shall not impair or degrade lawful Internet traffic on the basis of Internet content, application, or service, or use of a non-harmful device, subject to reasonable network management.
 - **No paid prioritisation:** [ISPs] shall not engage in paid prioritization. "Paid prioritization" refers to the management of a broadband provider's network to directly or indirectly favor some traffic over other traffic ...

➤ Why no paid prioritisation?



Europe: The Telecoms Single Market Regulation

- A messy discussion of the Telecoms Single Market (TSM) in Europe was kicked off by a weakly conceptualised European Commission proposal in September 2013.
- A stripped down version was passed by the European Parliament in April 2014, just before elections.
- Network neutrality was a small but important part of the original legislative proposal, but together with mobile roaming is the only portion that appears to have survived the subsequent legislative process.
- Commission net neutrality concerns focused on inconsistent legislation in the Member States (Netherlands, Slovenia), not necessarily on any need for different or stricter legislation.



Europe: The Telecoms Single Market Regulation

- The Latvian Presidency statement to the Council (heads of state) of 25 February 2015 contains many sensible elements:
 - “[E]nd-users should be free to agree with providers of internet access services on tariffs with specific data volumes and speeds or on other technical or commercial characteristics of the internet access service. ... There is demand on the part of content, applications and services providers, as well as on the part of end-users, for the provision of electronic communication services based on specific quality of service levels. Agreements in this respect could also play an important role in the provision of services with a public interest. ... [S]uch agreements should allow providers of electronic communications to the public to better balance traffic and prevent network congestion. Providers of content, applications and services and end-users should therefore remain free to conclude agreements with providers of electronic communications to the public, which require specific levels of quality of service.”



Aspects to Consider



Aspect to consider

- Does the legislative or regulatory instrument used strike the right balance in preventing harmful divergence, while providing appropriate flexibility?
- Does it strike the right balance in preventing harmful differentiation, while permitting non-harmful differentiation?
- Does it enable prioritisation of services that legitimately need it, potentially including real time voice and videoconferencing over the public Internet, mission critical services (including public protection and disaster relief (PPDR), and transport), and health?
- Does it do enough to prevent continued impediments to voice over IP (and videoconferencing over IP)?



Aspects to consider

- Is the legislative or regulatory instrument used sufficiently future proof and technologically neutral?
- Does it appropriately balance costs against benefits?
- Does it appropriately balance costs and benefits among the different stakeholders?
- Are all terms defined with adequate clarity?



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