



ERICSSON

KEEPING THE INTERNET OPEN FOR INNOVATION

Our perspective on the
net neutrality debate

June 2015

INTRODUCTION

Keeping the internet open for innovation is critical to ensuring continued investment in all parts of the internet broadband value chain. At Ericsson, we believe that broadband providers, device manufacturers, consumers, enterprises and content providers will benefit when the internet is open to experimentation, differentiation and innovation.

With that in mind, we offer the following thoughts, backed up by real-world scenarios and technological realities. This report aims to help guide policy makers as they grapple with the often competing demands of various players in the internet value chain.

Authors

Jared Carlson

Director, Ericsson Government and Industry Relations

Walter van der Weiden

Director of European Affairs, Ericsson Government and Industry Relations

Executive summary

Ericsson's views regarding net neutrality and the open internet.

An open internet

We support the open internet and consumers' right to access legal content – that is, an internet which allows and encourages innovation, investment, and customization

An informed choice

Consumers should have access to the information needed to make an informed choice on their level of service

Quality of Service

We support operators employing Quality of Service (QoS) and robust network management tools



Allow innovation

A realistic, effective and efficient way to handle the open internet is to apply principled and reasonable rules to mass market broadband internet access, leaving other forms of communication largely unregulated. Instead of trying to define rules that will not be future-proof and will eventually be detrimental to innovation and the user, allow for experimentation and innovation that will create many societal benefits

All bits are not equal

Treating all bits equally – the definition of net neutrality – is not a desired outcome. Consumers, content and service providers, and network providers all benefit from the possibilities created by differentiation and customization

Meeting customer concerns

When competition alone does not achieve the level of openness that consumers demand, policy makers must determine whether they should intervene. It is their role to ensure that mass market consumers' access is protected

Ericsson's position

We support the availability of an open, unrestricted, and accessible internet experience for all users.



CONNECTIVITY

The key ingredient for building the Networked Society

An environment where consumers can decide what levels of access best suit their needs is superior to government-dictated requirements, which may prohibit offers of anything other than best-effort internet access.



MANAGING NETWORKS FLEXIBLY

In order to serve their customers, operators must find economically viable options for deploying broadband infrastructure and providing social value, all while maintaining their competitiveness. This requires the most efficient possible use of their resources, as well as maximizing the value they provide to customers, and maintaining the rewards of service innovation.

Finally, we support an environment in which providers of broadband content, services and applications benefit from the ability to offer differentiated user experiences.

Here at Ericsson, we believe that the internet should allow and encourage:



INNOVATION



INVESTMENT



CUSTOMIZATION



CHOICE

In short, Ericsson supports an open internet.

WHAT'S THE PROBLEM?

There is a consensus, particularly in the US and Europe, that consumers demand an open internet. A competitive marketplace virtually ensures openness: consumers can 'vote with their feet' if one provider's policies restrict or degrade access to the content, services or applications that they want.

A few short-lived and commercially unsuccessful attempts in the US and Europe to thwart access to certain services have failed, not because of government intervention, but due to a well-functioning market. Under pressure from consumers, competitive providers have no choice but to offer an open internet.

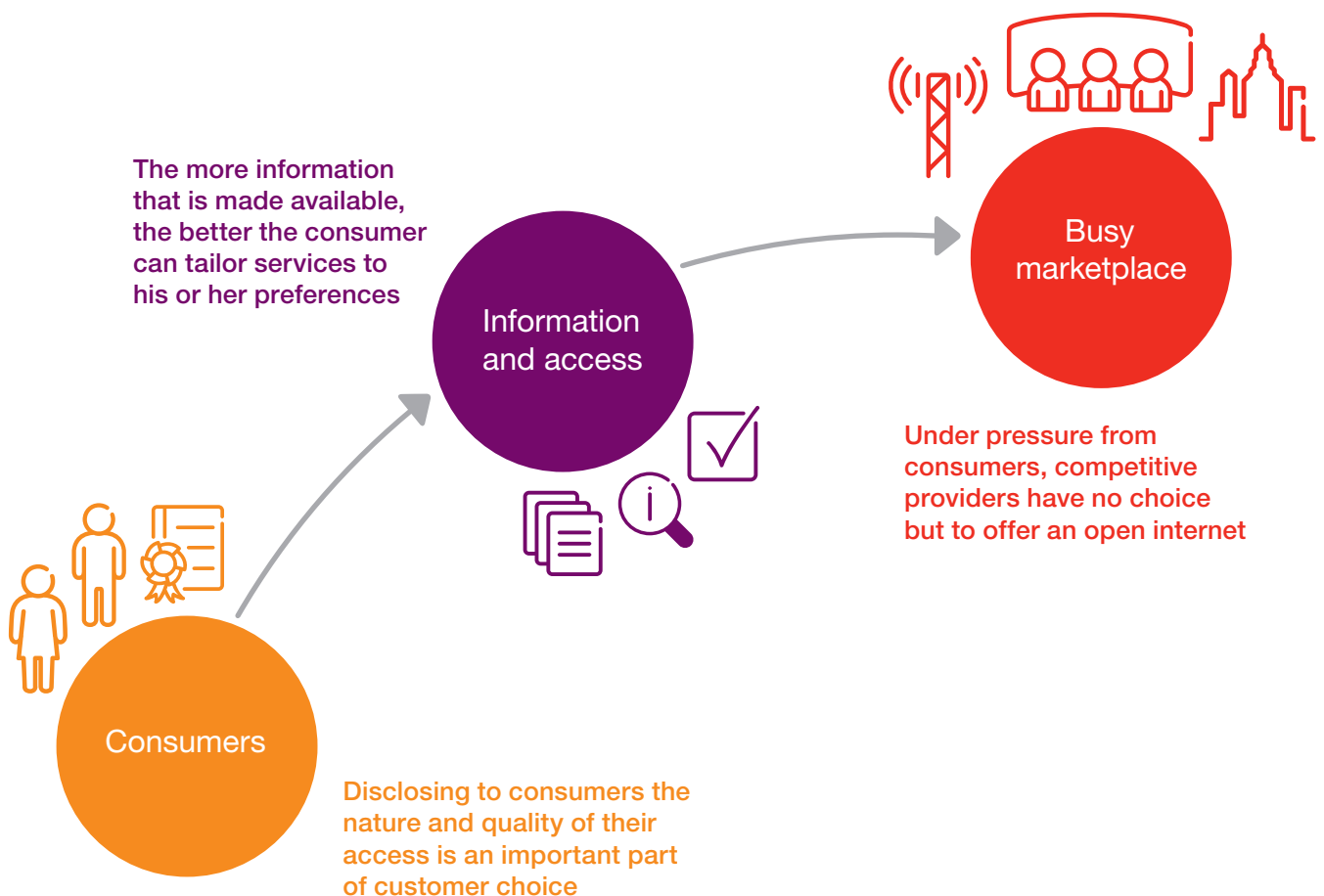
We believe that policies supporting increased competition – and, if needed, measures aimed at ensuring fair competition practices – should be the chief means of guaranteeing an open internet.

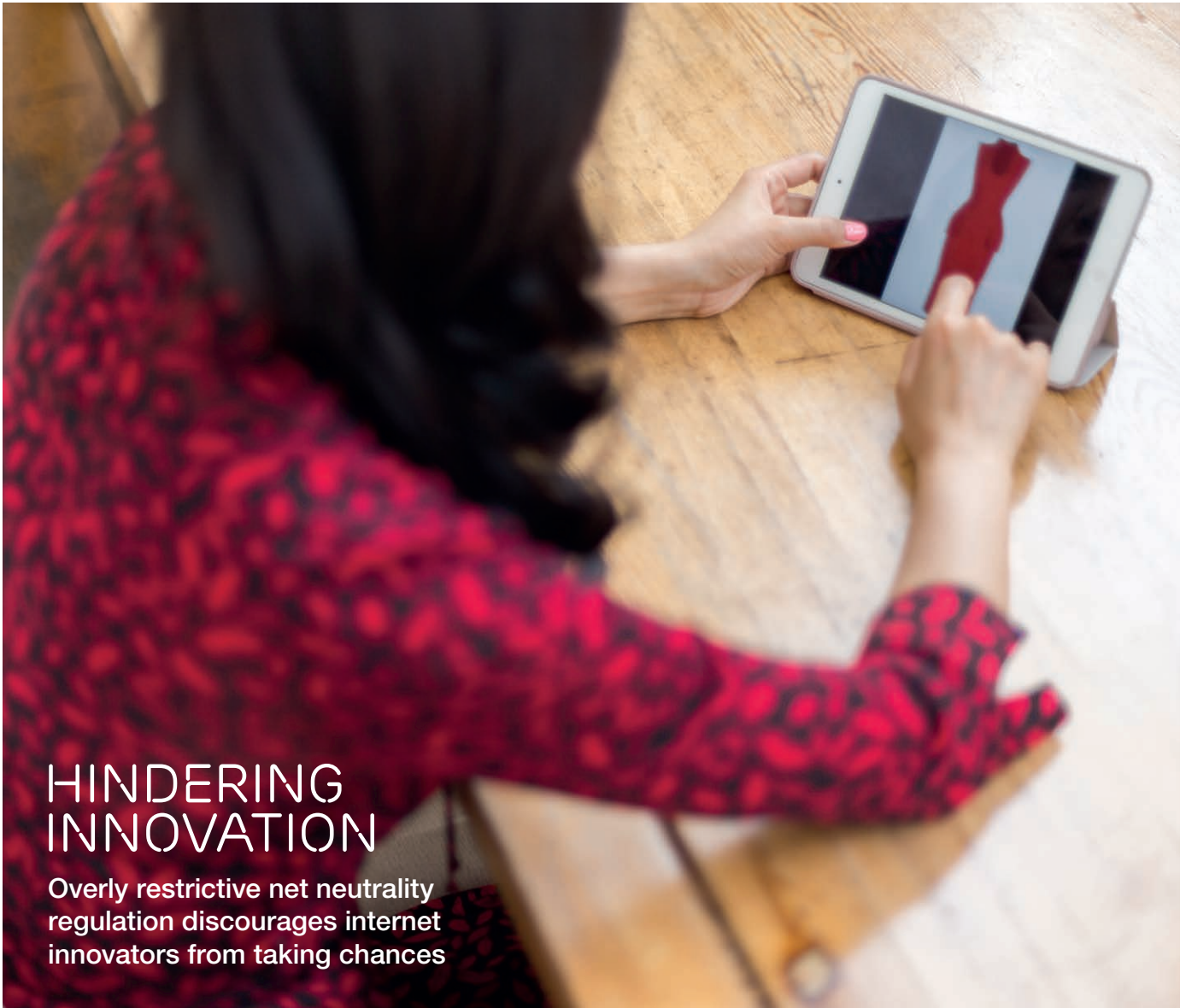


OPEN INTERNET

Policies supporting increased competition should be the chief means of guaranteeing an open internet

We agree that customers should get what they pay for. Disclosures to consumers about the nature and quality of their access are an important part of customer choice. The more information that is made available, the better the consumer can tailor services to his or her preferences.





HINDERING INNOVATION

Overly restrictive net neutrality regulation discourages internet innovators from taking chances

In markets with less competition, governments may need to exercise regulatory pressure to enforce requirements that will guarantee open internet access. However, the notion that all data bits must be treated equally – a concept that underpins net neutrality regulation – is a heavy-handed and misguided response to concerns about openness.

Not only does overly restrictive net neutrality regulation add costs to doing business, it also discourages

internet innovators from taking chances, and reduces much needed network investments.

Rather than risk time or money developing bold new services – that may be determined to have crossed the line by treating one bit as higher or lower priority than another bit – innovators may simply choose to keep their inventions in the garage. Additionally, the tools that operators use today to manage networks for the benefit of all users are called into question by strict net neutrality regulations.



MISGUIDED RESPONSE

The notion that all data bits must be treated equally is a heavy-handed and misguided reaction to concerns about openness

POLICY MAKERS AND NETWORK MANAGEMENT

An open internet must permit operators to offer differentiated QoS to customers and content and application providers. That is, it must support offerings outside of the public internet, such as IPTV and operator-provided IP voice services, including VoLTE and VoIP, and the emerging world of connected devices – all commonly referred to as specialized services.¹

An open internet regime must be capable of delivering guaranteed QoS to sectors including health, public safety, enterprise and utilities.²



User demands and the related need for network investment increasingly necessitates offering managed services. Building, maintaining and updating wireless, cable and fiber networks to keep up with consumer demand is a massive capital endeavor. In addition, network management is crucial to ensuring that all customers are given an acceptable internet experience in cases where there is competition for limited network resources. This is particularly important for wireless broadband data, where dynamically changing conditions (for example, a subway train full of passengers all moving from one cell to another) and limited resources (radio spectrum) demand the active management of networks.

We ask that policy makers focus on the problem needing to be solved, and stress that treating every bit equally is not necessary, or even desirable, to ensure an open internet.



¹ Connected devices may use parts of or the full internet Protocol stack for their functionality, traveling wholly on networks logically separated from the public internet. A logical separation does not mean that it does not touch the public internet, as the same physical resources may be used.

² Note that these and other examples could be offered with a higher QoS than other content on the public internet, or offered as specialized services.

If the market for internet access is failing, perhaps due to a lack of competition, we make the following recommendations:



Establish general requirements for broadband providers to give their customers access to lawful internet content, applications and services



Permit QoS distinctions for specialized services: for connected devices and enterprise services (for example, internet access for public safety, business and other non-mass market customers), or where requested by the customer



QoS differentiation should therefore be permitted in two different ways: as a result of providing a specialized service, or as a user-requested feature in the provision of a public internet access service³



Allow for robust traffic management tools. As long as traffic management is applied in a manner that does not harm consumers or competition, it should be permitted

Specialized services

In addition to best effort or broadband internet access services, providers should be able to make use of network capacity to deliver content, applications and services that require an enhanced QoS, but are distinct from the internet access service.

We ask that policy makers permit different QoS for traffic that might cover the same facilities as broadband internet services. As long as customers get what they pay for in terms of broadband internet access, operators should generally be free to offer specialized services as well.

IPTV provided by the operator, for example, may use IP as the communications protocol, but the service is distinct from broadband internet access. A higher QoS for IPTV is critical, as consumers demand low latency and will not tolerate jitters or freezing when watching television.

Similarly, voice provided over a mobile network is also treated as a specialized service. Consumers demand that voice services – the foundation of mobile networks from their inception – do not have delays or cut-outs. Therefore, mobile networks are engineered to treat voice with a higher QoS than other forms of traffic.



DIFFERENT QOS

Policy makers should permit different QoS for traffic that covers the same facilities as broadband internet services

³ A user request for QoS could take multiple forms. In an environment with numerous competitors, the request might be signing up with a provider that offers the quality enhancements desired by a consumer. Customers could also elect QoS by paying the operator to prioritize some traffic over others. If a customer desires a higher QoS for content that they visit every day, and is willing to pay for that content, we believe the operator should be free to offer it.

The vastly different needs of sensors and machines characterize machine communication.

HIGH PRIORITY

Communications among vehicles for crash avoidance or navigation



LOW PRIORITY

A 30 minute update on residential electricity usage



Ensuring Quality of Service

Notions of fair access and unhampered freedom of expression are part of the net neutrality debate when discussing people, but have no place when dealing with connected devices and machine communications. Rather, it is the vastly different needs of sensors and machines, and the networks and applications to support those needs, that characterize machine communication.

In a scenario where all bits are treated equally and there is a negligible penalty for inefficient delivery, a service or application provider could, for example, use repetitive codes, i.e. sending the same message several times, to ensure QoS. The theory here

is that by being persistent you get better service. This uses a large amount of bandwidth and network resources, hampering the experience of others sharing the same network. It is an unfortunate behavior that has come about as a direct result of all bits being treated equally. Alternatively, the use of innovative compression, coding and QoS mechanisms would help to ensure both reasonable and fair network and bandwidth allocation.

A question of priority

Communications among vehicles for crash avoidance or navigation are more urgent than a 30 minute update on residential electricity usage. The notion that every data bit sent between connected cars should be treated with the same degree of priority as those

transmitted from a smart electric meter back to the electricity supply company ignores the difference in requirements of the machines that will increasingly connect to the wireless internet.

This example illustrates the futility of attempting to apply a regime in which prioritization, or even de-prioritization of data is prohibited, and we know that future services will only become more complex over time.

Rules treating all data equally would either over-provision resources for devices that do not require real-time communications or could endanger critical uses, like self-driving automobiles, by failing to prioritize their communications over others.

ROBUST NETWORK MANAGEMENT TOOLS

Traffic management ensures that the day-to-day delivery of broadband internet access can be maintained. Regulation should make it clear that non-discrimination does not prevent operators from treating different types of traffic differently in accordance with their technical requirements.

Operators need to be able to employ network management tools. For example, in a purely technical way, consider the differences in signal strength based on users' locations from a mobile network base station. As users move further away from the base station and closer to the cell edge, they may experience as much as a 60 dB (1,000,000 times) difference in signal strength. This vast difference in signal strength makes the achievable speeds vary wildly for different users.

Despite this engineering reality, it seems that some of the most vocal supporters of applying a net neutrality regime to mobile broadband support the impractical concept that modern wireless networks – which currently adhere to the basic principle of delivering all bits as fast as the radio channel conditions allow – should instead dictate that every user's experience be equal to those experiencing poor signal propagation.

This concept is key to understanding the network management decisions an operator faces every day across its entire network. The graphic below illustrates

the impact that proximity to the cell center can have on applications, showing the bandwidths that deliver high quality video, music and text or email experiences.

Theoretically, a network could provide every device served by a particular base station with the same degraded quality experienced by those at the cell edge. Doing so would ensure that most users receive worse service, and the total capacity of the site would be significantly lowered. We see little value in using network management to guarantee only a baseline of service.

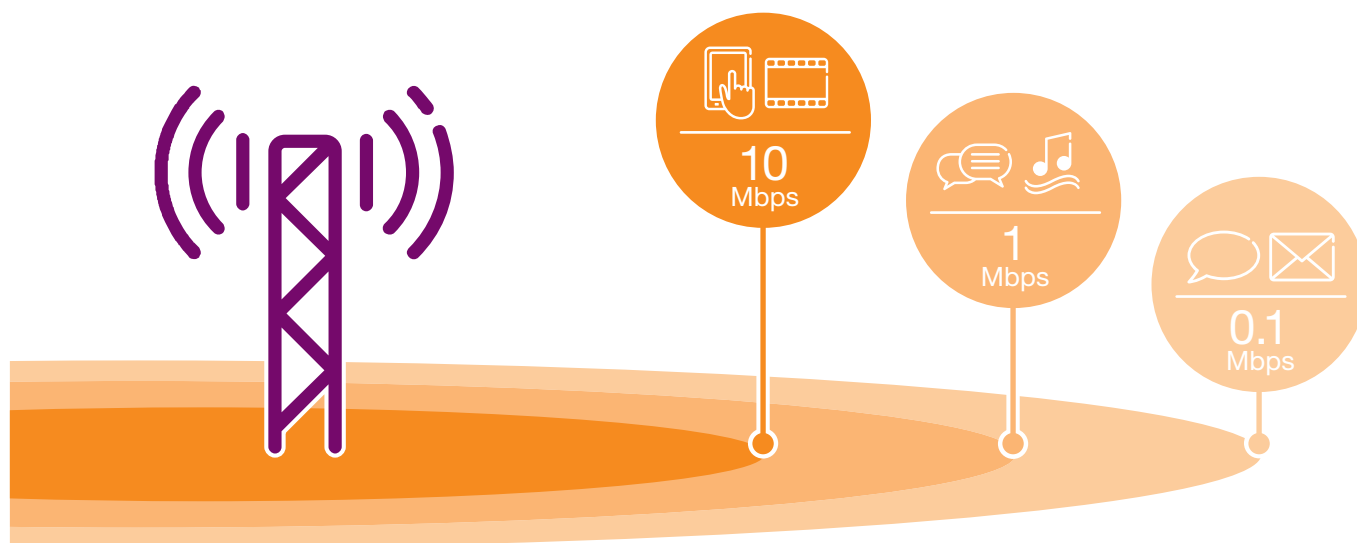


SPEED VARIATION

Vast differences in signal strength mean that service speed can vary greatly among different users

This is just one example of a network management concept in use today. Rather than prohibit certain tools and limit their use, we ask policy makers to continue allowing operators to make use of network management tools to improve everyone's broadband experience.

App coverage



Source: Ericsson 2013

INDIVIDUAL PREFERENCES

Every internet user is
unique in what they value



Ericsson is the driving force behind the Networked Society – a world leader in communications technology and services. Our long-term relationships with every major telecom operator in the world allow people, business and society to fulfill their potential and create a more sustainable future.

Our services, software and infrastructure – especially in mobility, broadband and the cloud – are enabling the telecom industry and other sectors to do better business, increase efficiency, improve the user experience and capture new opportunities.

With approximately 115,000 professionals and customers in 180 countries, we combine global scale with technology and services leadership. We support networks that connect more than 2.5 billion subscribers. Forty percent of the world's mobile traffic is carried over Ericsson networks. And our investments in research and development ensure that our solutions – and our customers – stay in front.

Founded in 1876, Ericsson has its headquarters in Stockholm, Sweden. Net sales in 2014 were SEK 228.0 billion (USD 33.1 billion). Ericsson is listed on NASDAQ OMX stock exchange in Stockholm and the NASDAQ in New York.

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