

Challenges regarding network neutrality for commercial deployment of 5G networks

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1. Research motivation

There is a discussion between net neutrality and 5G standard

► TOPICS / NET NEUTRALITY

Ericsson CEO: Net Neutrality Threatens 5G

BARCELONA -- MWC 2018 -- Ericsson CEO Börje Ekholm has urged European regulators to relax rules on net neutrality when it comes to 5G services, arguing that legislation could hinder the rollout of mission-critical applications.



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throttling or prioritisation. At the same time, the EU net neutrality rules allow reasonable traffic management and, with the necessary safeguards, "specialised services"; those are services which assure a specific quality level, required for instance for connected cars or certain 5G applications.





2. What is the problem?

European Union legislation on the thorny topic of net neutrality could undermine one of the business cases for investing in 5G [1]

- *"The principle of net neutrality is not to discriminate, throttle or degrade based on content but not all traffic is created equally, and **we don't believe this will work in the 5G future** [1]." ~ Ericsson*
- *"With the possibility of using network slicing **there is a need to clarify if there are challenges in relation to the EU rules on network neutrality** [2]." ~ Danish Energy Agency*
- *"Everyone is looking into being able to do this network slicing - If regulation doesn't allow you to do that then **you forego an opportunity** [3]." ~ Telenor*

[1] Ericsson CEO: Net Neutrality Threatens 5G, Lightreading 2018

[2] 5G Action Plan for Denmark, DEA, 2018

[3] Net Neutrality Rules Threaten 5G, NFV – Telenor, Lightreading, 2016

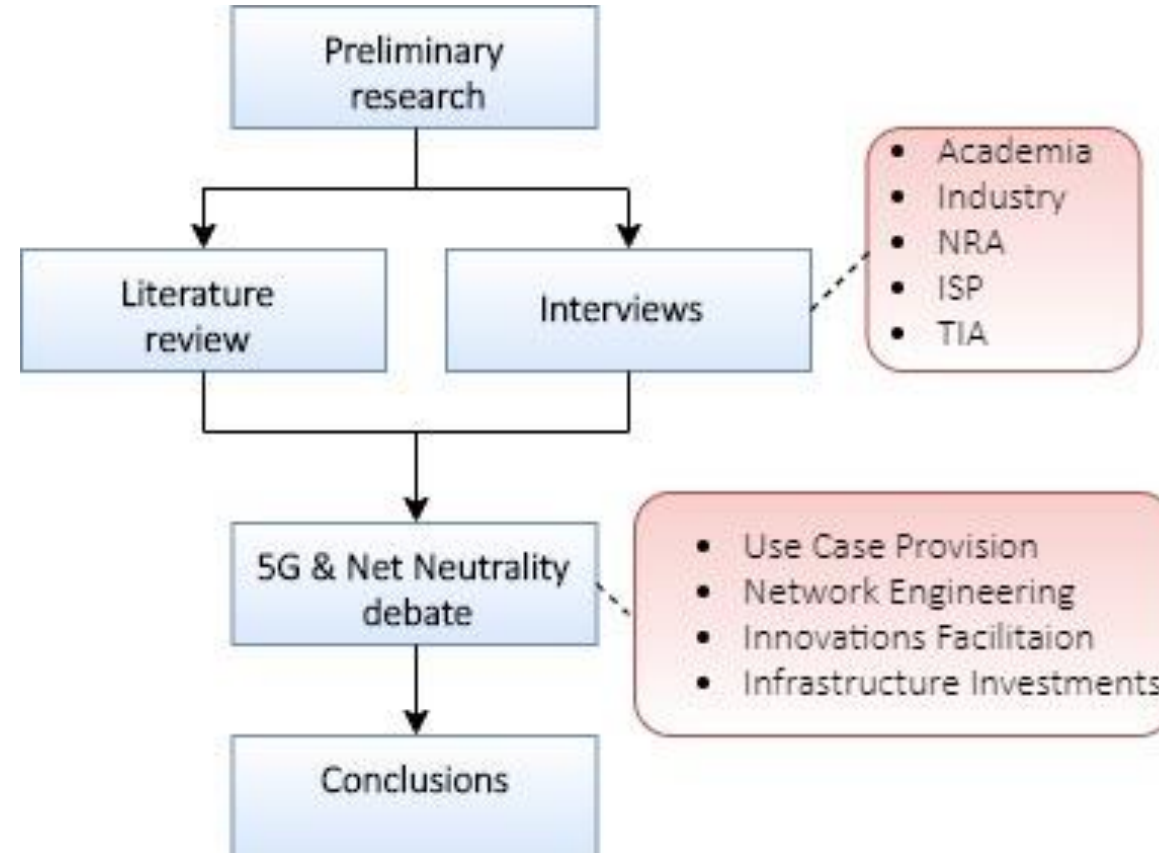


3. Objectives:

- The project aimed at analyzing the impact of net neutrality regulations on commercial deployment of the 5G standard.
- The main scope was put on **network slicing** which is considered as one of the essential components of the 5G network and researched in the context of net neutrality, as this part is perceived to be influenced by the regulations.



4. Methodology



TIA – Telecom Industry Association
NRA – National Regulatory Authority
ISP – Internet Service Provider





5. Net Neutrality in the European Union

Regulation 2015/2120 of 25 November 2015 by the European Parliament and the Council. According to Article 3, paragraph 3:

“Providers of internet access services shall treat all traffic equally, when providing internet access services, without discrimination, restriction or interference, and irrespective of the sender and receiver, the content accessed or distributed, the applications or services used or provided, or the terminal equipment used.”





6. *Internet Access Service* definition

Regulation 2015/2120 of 25 November 2015 by the European Parliament and the Council. According to Article 2, paragraph 2:

“Internet access service means a publicly available electronic communications service that provides access to the internet, and thereby connectivity to virtually all endpoints of the internet, irrespective of the network technology and terminal equipment used.”





7. *Specialised Service* definition

BEREC Guidelines on the Implementation by National Regulators of European Net

Neutrality Rules. According to Article 3, paragraph 5:

“ These providers are free to offer services referred to in Article 3(5), which BEREC refers to as specialised services, only when various requirements are met. Article 3(5) provides the safeguards for the provisioning of specialised services which are characterised by the following features in Article 3 (5) the first subparagraph:

- they are services other than IAS services;*
- they are optimised for specific content, applications or services, or a combination thereof;*
- the optimisation is objectively necessary in order to meet requirements for a specific level of quality.”*



8. Literature review

- ▶ The assessment of the alignment of 5G with net neutrality rules depends not only on the 5G technologies, but also on the specific combination of services, applications and network architecture. It is not possible to come to an overall assessment with a single outcome on the alignment of 5G technology with net neutrality rules [1]. ***Use case provision***
- ▶ The issue is no longer whether imposing ‘neutrality’ will prevent the creation of fast and slow lanes on the Internet, but rather whether technology breakthrough can meet an increasingly heterogeneous demand in ever more efficient and transparent ways [2]. ***Innovations***
- ▶ Operators mitigate the worst effects of congestion by deploying more spectrum when possible, installing more cell sites, using more efficient technology, and offloading some traffic onto other networks such as Wi-Fi. But eliminating congestion entirely is impossible. Network investment can ensure a high quality of experience on average but cannot guarantee it for all users at all times [3]. ***Network investments***

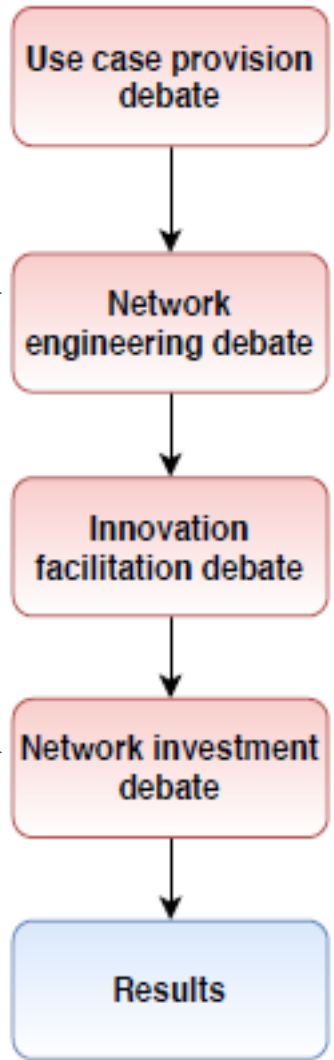
[1] 5G and Net Neutrality: a functional analysis to feed the policy discussion, TMO, 2018

[2] Frias Z, Martínez J., 5G networks: Will technology and policy collide?, 2018

[3] How “Title II” Net Neutrality Undermines 5G,” Rysavy Research, 2017.



9. Organization of the analysis



- The importance of the parameters

- Can against-net neutrality regulations help building a better network?

- Why do we have net neutrality?
- Can we regulate 5G with net neutrality regulations?
- What is the perception of FCC's regulations in the EU?
- Scenario I: Accident scenario because of data Throttling
- Unclear regulations inquiry
- What is the role the innovations in the 5G?
- How important is 5G for start-up environment?
- Would start-ups be throttle by ISP in 5G regard?

10. Research findings:

- Net neutrality was imposed in the EU to protect content/service providers from being throttled if their services were in competition with MNOs' services (Skype example). This is not valid for every use case (f.e. car-to-car communication). **Currently MNO are cooperating with start-ups to bring their innovations on the market.** As telecom market in the EU is competitive, even if the product would be in competition to MNO, start-up can use network of the different provider.
- While net neutrality was imposed there were no network slicing or NFV enablers, consequently, currently the EU regulates new telecommunication standard, with the regulations created in the different technological regime. While the **5G technology is broader** and will accommodate more use cases (including life-critical ones) and **part of regulations may be adjusted to cope with new developments.**





11. Research findings:

- The most recent update of net neutrality was done by FCC, which dismantled equal data treatment in the US and proposed more transparent and clearer structure on how to manage the network traffic. In contrast, **the EU's rules are not as transparent as the rules in the US.** It might **increase the uncertainty aspect** and, in the end, **decrease the amount of investors.**
- The second argument regarding the uncertainty is the fact that there were **non-harmonious answers provided** in essential aspects like the **importance of parameters** and the **responsibility in the asked scenario.** As the 5G will include life-threatening use cases, the full and sharp alignment should have been found, while **discrepancies in the opinions** were identified.



Thank you for your attention