International roaming in the EU: Current overview, challenges, opportunities and solutions

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A R T I C L E   I N F O

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A B S T R A C T

As technology evolves and globalization continues, the need for reasonably priced roaming services has never been higher. In 2007, the European Commission (EC) introduced a first set of regulatory decisions to cap the maximal roaming fee end users have to pay for voice services. In the years after, additional price caps have been introduced for SMS and data, initially only for end users, in a later stage also for the wholesale tariff. The final step, Roaming Like at Home (RLAH), will start to take effect in June 2017; from then on end users will pay the same price (for voice, SMS and data) when roaming like in their domestic country.

The effect of RLAH on the business case of each mobile operator is hard to predict, as the different national markets are extremely heterogeneous and operators face large discrepancies in terms of roaming usage and network costs due to different travelling patterns and various other reasons that cannot be harmonized (geography, economics, working force, usage history, etc.). Furthermore, competition in the telecom market will no longer be a purely national matter, as the decision to abolish roaming tariffs will fully open up cross-border competition.

This paper aims at providing insights in the effect of RLAH for both the end user as well as the mobile operators. Following a literature survey approach, including an overview of the roaming regulation process from 2007 up to now, the paper discusses possible effects the RLAH initiative might trigger, going from lower wholesale prices for mobile operators to higher retail prices for end users. Additionally, as the European Commission strives for a digital single market, this paper presents a number of technical solutions (carrier portability, software-based SIMs, cross-border IMSI, Roaming like a Local, Wi-Fi offloading) that may pose a - partial or full - alternative for roaming and explains how these may impact cross-border competition both positively and negatively. The solutions are assessed against two axes: (1) generating the best possible outcome for the end customers (in all countries) and (2) ensuring the best level playing field for (virtual) mobile operators in Europe, which will of course involve trade-offs on different levels.

1. Introduction and motivation

The globalization of the world is changing the way we live. The increased integration between European countries as well as the
increasing prosperity of the EU citizens has led to an increase in intra-European travel (Eurostat, n.d.). People have always had an interest in using mobile services while travelling internationally, and the smartphone revolution – always being connected – has only increased this trend.

When using mobile services in a foreign country, your local provider – the Domestic Service Provider (DSP) – cannot rely on its own network for voice or data transmissions (unless it is a cross-country operator such as Vodafone or Deutsche Telekom, owning networks in multiple countries). Because of this, users have no other choice than to rely on the network of an operator in the visited country – a Foreign Service Provider (FSP). When a user is connected on an FSP’s network, using a process referred to as international mobile roaming (IMR), the DSP will be charged a fee (the wholesale roaming fee) by the FSP, as the FSP is offering connectivity to the end user on behalf of the DSP. The DSP of course will recuperate this cost on the retail level by charging the end user a retail roaming charge.

In the past, retail pricing for roaming services was significantly higher than retail pricing for local services, resulting in travelers being reluctant to use IMR. Users were afraid of receiving high bills (causing “bill shocks”) when using (data) roaming services. This resulted in most of the travelers deciding to switch off their mobile handset during the whole trip, switch off the data roaming capabilities of their mobile phone or smartphone, or only connect to the Internet using public or private Wi-Fi access points (European Commission, 2014a). This impacted both DSPs and FSPs, as additional revenues were hampered due to a more limited usage of mobile services when roaming. Furthermore, as Neelie Kroes (European Commissioner for the Digital Agenda) indicated: “It’s not just a fight between holiday-makers and telecoms companies. Millions of businesses face extra costs because of roaming, (…) Roaming makes no sense in a (European) single market – it’s economic madness” (European Commission, 2014b). In other words, the European roaming problem not only affects people who travel for pleasure but also businesses whose employees travel around Europe, which translates into significant roaming bills.

To counter these problems caused by high mobile retail roaming prices, the European Commission (EC) started to regulate the international wholesale and retail roaming markets within the European Economic Area (EEA). Their purpose was, and still is, to reduce retail roaming charges to zero (i.e. lowering roaming pricing to the same level as local retail pricing) in other words, roam like at home (RLAH). This means that every citizen of a country in the EEA will be able use their mobile services in every other country of the EEA at the same price as in their own domestic country. At first, this approach seems to yield nothing but benefits for the customer; however, there are a number of threats and consequences that may arise as a direct result of RLAH: Will pricing differences arise between countries where a lot of travelers travel to in comparison to countries where a lot of travelers travel from? Will virtual operators (MVNOs – Mobile Virtual Network Operators) face a competitive disadvantage in the national market as they only have an outflow of roaming wholesale cost, which can no longer be recuperated? Are the benefits for international providers significant or rather disruptive to good market functioning? In this paper, we discuss a number of these (unwanted) effects and how these may affect the end users.

This paper starts by giving a short overview of the evolution of roaming in the EU, focusing on the events that led to the introduction of RLAH. In Section 3, we link the evolution of wholesale caps to the actually paid wholesale rates. Section 4 discusses the economic and business impact for customers and telecom operators. Based on both the technological possibilities and economic implications, a number of possible strategies and solutions for the future are discussed in Section 5. Finally, Section 6 concludes the paper.

At the beginning of this publication, we would like to stress that the goal of this writing is to provide a high level overview of both the past and upcoming roaming legislative steps, supported by actual figures, and the effects on the business case of different mobile (virtual) network operators. This also implies that a quantitative cost-benefit analysis is not within the scope of this publication, due to the fact that this type of data is kept highly confidential by mobile operators. Furthermore, as the evolution towards RLAH is an ongoing process, new effects may arise quickly as the market adapts to the new ruleset. We would therefore ask the reader to acknowledge the timestamp of this paper, being beginning of January 2017.

2. The evolution of roaming in the EU

This chapter will give a rather brief overview of the major developments and EU initiatives on international roaming. For a detailed and historic overview of how the EU increasingly regulated the international roaming market, we refer to Infante and Vallejo (2012). For a larger view on the recent developments in other regions outside the EU, we refer to the OECD (Bourassa, Paltridge, Weber, Yokomori, & Ypsilanti, 2016) and ITU (ITU, n.d.); both institutions describe the progress made in reducing roaming prices in various regions throughout the world and give an overview of the work done by wireless industry associations and regional bodies. Sutherland (2012) and Marcus (n.d.) have also published articles describing the evolution of international roaming in different regions, including amongst others the EU, USA, and Asia.

In 1999, the international telecommunications users’ association (INTUG) analyzed the price difference between international calls (a call from the home country to another country) and roaming calls (making a call when roaming internationally), indicating that the price range between the two type of calls is unjustified and could not be convincingly motivated by underlying technical explanation (European Commission, 2000; Sutherland, 1999). INTUG furthermore pointed out that the underlying wholesale...
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