



## Should next generation access networks fall within the scope of universal service? A European union perspective <sup>☆</sup>



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### ABSTRACT

In 2010 the European Commission (EC) undertook a review of its current Universal Service Obligation (USO) to discuss whether or not broadband should be included in it. In fact, convergence of telephony, internet and media, further market liberalization and rapid technological development in the broadband market challenge the traditional definition of USO and increasingly question its notion of a “basic set of communication services”, which does not include broadband. In this context, the paper looks at the origins, the theoretical arguments for, and the empirical basis of the USO in light of the ongoing debate in the EU, and links these arguments to technological developments and changing demand conditions in European broadband markets. The authors propose that the European Commission should include in its future USO regulation provisions for a wider set of services based on Next Generation Access (NGA) networks rooted in the EC’s new regulatory approach. Even if these provisions have not been included in the new USO framework in November 2011 further discussions are needed to account for the new realities of broadband markets in the European Union.

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### 1. Introduction

Universal Service Obligation (USO) has been at the center of an ongoing debate about the degree of public involvement in the telecommunication sector and the possible commitment in broadband<sup>1</sup> investment. The European Commission (EC) has recently delivered a new Communication (COM (2011) 795 Final) on the third periodic review of the scope of universal service (i.e. Directives 2002/22/EC and 2009/22/EC) in which it did not recognize the “need to change the basic concept and principles of universal service as an instrument for preventing social exclusion”. In the outcome of the 2011 public consultation on the future of universal service, the EC considers it as “inappropriate to include mobility or mandate broadband at a specific data rate at EU level”. However, the EC builds upon the 2009 Broadband Guidelines and the so-called 2010 Broadband Package by drawing up policy statements to help achieve the goals of the Digital Agenda for Europe (DAE) (i.e. COM (2010) 245 final/2). Specifically, by pointing out the way forward for a consistent implementation of USO, the Commission wishes a coherent approach for the definition of “functional internet access” in all

EU members and a careful analysis of conditions warranting the extension of USO to broadband. This paper aims to contribute to this ongoing policy debate<sup>2</sup> by arguing in favor of the addition of broadband to USO. We analyze the theoretical foundations of universal service and the latest EC policy documents and propose that Next Generation Access (NGA) networks<sup>3</sup> should be within the scope of USO in the European Union (EU).

The paper is divided in four sections. **Section 1** analyzes literature on universal service and looks at its development in the EU (Section 1.1). **Section 2** introduces the main characteristics of the Information Society as developed in the EU area over the past twenty years. It highlights the changing determinants of information access by characterizing ongoing processes of convergence leading to a disappearance of the dividing lines between telephony, internet and media, on the one hand, and

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<sup>1</sup> Despite a continuous discussion on the EU level on broadband technologies, the traditional definition of broadband still refers to Internet technologies enabling a connection speed of higher than 144 Kbit/s (download speed) as reported in the EU Communications Committee document (COCOM10–29) of November 2010 (EC, 2010a).

<sup>2</sup> This debate follows a discussion started in 2009 about the potential inclusion of mobile communications into the scope of universal service. It needs to be considered that the current definition focuses on various services that are defined as universal service whereas next generation access deals with a more encompassing term of the relevant infrastructure allowing a new range of services.

<sup>3</sup> In this paper we refer to broadband access as to every technology enabling functional internet access and we refer to broadband connection as the connection of end-users to a public communications network. By Next Generation Access (NGA) networks the EC referred to “wired access networks which consist wholly or in part of optical elements and which are capable of delivering broadband access services with enhanced characteristics (such as higher throughput) as compared to those provided over already existing copper networks” (see Article 11, Recommendation 2010/572/EU of 20 September 2010) (see EC, 2010b). In this paper, we extend this definition considering not only the qualitative aspects of NGA but also the quantitative ones. Accordingly, we refer to NGA as to networks enabling internet connection speed at least faster than 2 Mbit/s.

discussing the rapid technological changes in broadband infrastructure technologies leading to the emergence of Next Generation Access (NGA) networks, on the other hand. Section 2 also looks at how the USO concept has developed within the EU by identifying its main economic perspectives and the trade-off inherent in USO obligations. Section 3 outlines three pillars for the future development of broadband in the EU while Section 4 examines the arguments in favor of an extension of the USO definition to include NGA in the Commission's forthcoming policy documents on universal service.

## 2. The theoretical discussion of Universal Service Obligations in Europe

### 2.1. The origins of the concept of universal service

The origin of the universal service goes back to Theodor Vail's second period as a chairman of AT&T (1907–1919) when he coined the term universal service and promoted it to President Woodrow Wilson. According to Vail, the concept of “one policy, one system, universal service” was necessary to make basic telecommunication services (i.e. telephony) accessible to the widest number of consumers possible.<sup>4</sup> By the end of the 1930s, market consolidation provided the basis for AT&T's monopoly and the provision of “universal service” using basic telecommunication services and relying on strict conditions with respect to geographic coverage, continuity in service provisioning and fixed charges. In different European countries, legally justified public monopolies developed along similar lines, providing analogue telephony and facsimile services at fixed rates, to guarantee equality of treatment and transparency (Noam, 1992). With further market liberalization in telecommunication markets in the 1990s, justifications had to be developed which allowed governments to intervene in cases where market outcomes were considered as insufficient.

### 2.2. The theoretical justifications of Universal Service Obligation (USO)

According to Cremer, Gasmí, Grimaud, and Laffont (2001), the main economic justifications for universal services<sup>5</sup> are: 1) the correction of market failure due to the existence of network externalities<sup>6</sup>; 2) their contribution to the provision of a public good,<sup>7,8</sup>; 3) their effects on wealth redistribution (i.e. as a policy instrument to reduce inequalities among the population); 4) the existence of regional development goals leading to a transfer of resources; and, 5) the maximization of welfare through the implementation of political actions easily evaluated by the public (Cremer et al., 2001). In this context, universal service has been defined as “the obligation of an operator to provide all users with a range of basic services of good quality at affordable prices” (Cremer et al., 2001). To understand which services should be included in this definition, four criteria have been used: i) being essential to education, public health or public safety; ii) being subscribed to by a substantial majority of residential customers; iii) being deployed in public telecommunication networks by telecommunication carriers; and iv) being consistent with public interest, convenience and necessity. These criteria have been increasingly used in the liberalized market environment to define a set of essential services within the concept of universal service (Cremer et al., 2001).

<sup>4</sup> For a critical discussion on the foundation and development of the notion of universal service, see Mueller (1993, 1996).

<sup>5</sup> See for example Cremer et al. (2001), Mueller (1999), Bohlin and Teppayayon (2009) and Alleman, Rappoport, and Banerjee (2010).

<sup>6</sup> See Lehr, Sirbu, and Gillett (2006) for the discussion on market failure and basic infrastructures rationales justifying government intervention in the broadband sector.

<sup>7</sup> We use the definition of public good as defined by Gómez-Barroso and Pérez-Martínez (2005).

<sup>8</sup> See Picot and Wernick (2007) for a detailed discussion of government activities with regard to broadband as a public good.

A number of studies have looked at the features of universal service and have investigated the concept from both a normative and a positive perspective.<sup>9</sup> From a normative point of view, justification for universal service stems from the existence of substantial network externalities, the need to impose redistributive pricing, their contribution to the provision of a public good, and the conduct of regional policies. The positive perspective considers USO as the result of political and economic processes influenced by public opinion and various lobbying activities in favor or against incumbent operators (Cremer et al., 2001). In this context, governments have traditionally justified the creation of public monopoly structures on the basis of concerns over national security, the protection of natural monopoly structures and cost subadditivity.<sup>10</sup> Interestingly, a number of these traditional justifications have been further developed to justify the inclusion of broadband in USO.

Two alternative perspectives have been used in the discussion on the inclusion of broadband into USO: a public-good perspective (addressing the public interest of broadband) and a competition-related perspective (arguing in favor of higher incentives for investment and innovation) (Picot & Wernick, 2007). According to the public good perspective, governments have to define the public interest in NGA technologies in relation to issues such as the threat of digital exclusion of certain user groups (e.g. Matzat & Sadowski, 2012; Van Winden, 2001) or the emergence of a digital divide (Schleife, 2010). From this perspective, the focus shifts to the extent to which users can generate sufficient willingness to pay, their degree of digital literacy, etc.<sup>11</sup> According to the competition-related perspective, governments have to identify market failures in emerging markets for Next Generation Access (NGA) technologies which may arise due to a) the presence of scale effects and limited extent of competition increasing the chances of a return to natural monopoly (de Bijl, 2011; Janssen & Mendys-Kamphorst, 2008; Jay, Neumann, & Plückerbaum, 2011), b) substantial investment costs providing insufficient incentives for companies to invest in NGA technologies (Bourreau, Cambini, & Hoernig, 2012; Sadowski, Nucciarelli, & de Rooij, 2009) and c) lack in demand for complementary services in areas such as e-health or e-education (Firth & Mellor, 2005). In the theoretical discussion on the inclusion of broadband in USO, these alternative arguments become apparent.

### 2.3. The theoretical discussion of Universal Service Obligations in the EU

In the theoretical discussion on USO in the European Union, it has been shown that the drivers of information access in the European Union have shifted in the 1990s from a monopolistic to a competitive environment in which problems of convergence have to be addressed. For example, Bauer (1999) showed that emerging competition in infrastructures and services requires a reconsideration of these obligations. In his work, he criticized the narrow approach of European institutions in defining the borders of universal service, arguing that the definition of universal service in the late 1990s has been limited in addressing only a “minimum set of safeguards for basic services and constrained the ability of member states to fund such programs” (Bauer, 1999). In relating the policy framework of the EU to ongoing processes of technological convergence, Michalis (2002) argued in favor of a greater focus on USO with regard to content and information rather than communication links and high-speed internet. Accordingly, her arguments centered on the necessity to include “aspects traditionally associated with universal service in broadcasting” (Michalis, 2002). From a public policy perspective, this literature pointed at the shifts in information access which required a broader set of services to be included in USO.

<sup>9</sup> According to Cremer et al. (2001), the normative perspective deals with the understanding of the “whether” and the “why” universal service as a public policy can be justified on welfare grounds. The positive perspective explains why the universal service is implemented.

<sup>10</sup> For a detailed analysis of natural monopoly justifications and economics see Sharkey (1982).

<sup>11</sup> This section has greatly benefited from the comments of one reviewer.

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