European Commission

Assessment of the cost of providing mobile telecom services in the EU/EEA countries

EXECUTIVE SUMMARY

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by:

Digital Single Market

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Axon Partners Group Consulting

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DISCLAIMER

By the European Commission, Directorate-General of Communications Networks, Content & Technology.

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Abstract

Axon Consulting assesses in this study the costs of mobile telecommunication networks in each of the 31 EU/EEA countries[1]. The assessment is based on Axon's Bottom-up Long-Run Incremental Cost (BULRIC) model, developed thanks to the collaboration from National Regulatory Authorities and telecom operators across EU/EEA.

This initiative was commissioned to Axon Consulting by the European Commission (EC) in the context of the following regulations:

- The Regulation (EU) 2017/920[2] (the Wholesale Roaming Regulation - WRR) which defined, in the context of the Roaming Like at Home (RLaH) policy, the wholesale roaming caps until 2022 and mandated the Commission to biannually assess the need to amend them.
- The Directive (EU) 2018/1972[3] (the European Electronic Communications Code - EECC) from December 2018, required the Commission to establish a single maximum voice termination rate that apply Union-wide.

The results of our assessment will be one of the main inputs the European Commission will use to fulfil its obligations for the revision and potential update of the wholesale roaming caps as well as to define mobile termination Euro-rate for all the EU/EEA Member States.

All the public materials produced under this cost study are available in the Commission's website.

[1] The 31 states that are members of the EU (European Union) and/or EEA (European Economic Area) are: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.
[2] Regulation (EU) 2017/920 of the European Parliament and of the Council of 17 May 2017 amending Regulation (EU) 531/2012 as regards rules for wholesale roaming markets, available here.
[3] Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code, available here.

Executive Summary

This executive summary provides an overview of the context, methodological framework and outputs of the study performed by the EC/Axon team to quantify the costs of providing mobile roaming (including voice, data and SMS) and voice termination services in the 31 EU/EEA countries. This executive summary is structured as follows:

- Context
- Methodological framework
- Scenarios modelled
- Final results

1. Context

The cost study kicked-off on 14 March 2018. On 10 April 2018, the Commission and Axon hosted the Workshop 1 in the EC's headquarters to present the main principles to be adopted in the development of the Bottom-Up cost model to the industry (including National Regulatory Agencies – NRAs – as well as Mobile (Virtual) Network Operators – M(V)NOs –). Stakeholders were given the possibility to comment on the Workshop 1 materials so that their feedback could be taken into consideration in the methodological design of the model. Detailed answers to stakeholders' feedback were provided in the "*Responses to the comments to Workshop 1*" document circulated on 22 May 2018.

On the same 22 May 2018, a data gathering process was launched with the industry to collect from the NRAs and operators the relevant information required to populate the model for each Member State. A Data Request Form was circulated to the NRAs, together with a Data Request Manual providing detailed descriptions of the data gathering process and instructions on how to fill in the Form. The data collection process was closed on 2 July 2018, although additional pieces of information provided after this deadline were also taken into account when populating the model.

Based on the data provided, the Commission and Axon worked on the implementation of a first draft version of the model. This first draft, together with its associated documentation[4], was submitted to consultation on 29 October 2018. Stakeholders were given four weeks (until 23 November 2018) to provide their views on the 37 questions that were raised in the consultation document. This consultation process served to i) identify

[4] Including: methodological approach document, user manual of the model, descriptive manual of the model, consultation document.

areas of improvement in the model, ii) gather new/corrected inputs from several stakeholders and, as a result, to iii) achieve more accurate and representative results.

The feedback and data received were accounted for in a new version of the model (second draft version) which addressed the main areas of improvement identified in the first consultation round. This second draft model, together with its associated documentation, was submitted to a second consultation round on 15 February 2019. Stakeholders had 4 weeks to comment on the consultation materials (until 15 March 2019). The outcomes of this second consultation round proved that most of the main concerns identified in the first round had already been dealt with and only a few areas of discussion remained.

The main suggestions received, as well as the new pieces of information provided, were implemented in a new and final version of the cost model. The detailed outcomes of the consultation rounds as well as the final results produced by the model were presented to the stakeholders in the Workshop 2 held at the EC's headquarters on 28 May 2019.

Overall, the process counted with a relevant participation from the European industry (both NRAs and operators), having received feedback from 85 stakeholders.

2. Methodological framework

The Commission Recommendation on the regulatory treatment of fixed and mobile termination rates[5] from 2009 defined the key methodological guidelines to be observed by European NRAs in the determination of fixed and mobile termination rates. The guidelines presented in this recommendation were adopted by the EC in the development of the first cost study to assess the costs of providing mobile roaming services in the EU/EEA (SMART 2015/0006).

The methodological choices presented in the 2009 Recommendation have been reinforced in the Directive (EU) 2018/1972[6] (the European Electronic Communications Code - EECC) from December 2018.

The methodological framework adopted in this cost study is consistent with the approach adopted in the SMART 2015/0006 cost study as well as with the 2009 Recommendation and the related provisions in the EECC.

[5] Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU, available here.
[6] Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code, available here.

The table below provides a summary of the key methodological approaches adopted in the development of the cost model:

Methodological aspect	Approach Adopted
Cost standard	▶ Pure LRIC (termination) and LRIC+ (rest of the services).
Cost categories considered	▶ Network CapEx. ▶ Network OpEx. ▶ General and administration costs (G&A). ▶ Wholesale specific costs
Modelled operator	▶ Hypothetical Efficient operator, with a market share equal to 1/#MNOs (subject to a minimum of 20%).
Depreciation methodology	▶ Economic depreciation. ▶ Two economic depreciation scenarios are included based on (i) demand or (ii) revenues as the relevant production factors.
Modelled period	▶ 2015-2025
Volume forecasts	▶ Projections are based on an assessment of historical traffic patterns and data provided by the stakeholders. ▶ A total of three scenarios are included to assess alternative volume forecasts (conservative, base case and aggressive).
Allocation of joint and common costs	▶ Two cost allocation modules are available in the model: • *Network module*: Joint and common costs are allocated to services based on their network usage, by using a routing factors matrix. • *Regulatory policy module*: The allocations performed in the network module are adjusted to take into account regulatory policy decisions (e.g. re-allocation of the joint and common costs initially allocated to the voice/SMS termination service to voice/SMS origination). Please refer to the descriptive manual for further indications on how this is implemented.
Treatment of seasonality	▶ The impact of seasonality on all domestic and roaming services was assessed (when data was provided) based on the monthly evolution of traffic. A total of 11 Member States provided the required information to assess the impact of seasonality in their networks. ▶ Three alternative seasonality scenarios are included in the model depending on the minimum threshold required between monthly fluctuations and the yearly average to consider that seasonality exists.

Exhibit 1: Key methodological approaches adopted in the cost model [Source: Axon]

3. Scenarios modelled

The determination of mobile services' costs in a Bottom-Up model heavily relies on the inputs considered. At the same time, as the two consultation rounds have shown, in some cases, there may be debate on what are the most suitable inputs that shall be taken into consideration. In order to address such situations, the model includes the following scenarios for the eight elements described below:

Scenario	Alternatives	Description
VoLTE Scenario	4G Operator	▶ All traffic goes through the 4G network
	Terminal Adoption	▶ Percentage of VoLTE traffic based on the adoption of VoLTE ready handsets
Annualisation criteria	Economic depreciation based on ARPU	▶ Revenues act as the modulation factor in economic depreciation
	Economic depreciation based on demand	▶ Demand acts as the modulation factor in economic depreciation
Roaming increment	Specific roaming increment	▶ Roaming traffic is grouped in a single increment
	Joint roaming and domestic increment	▶ Roaming and domestic traffic are assessed within the same increment
Allocation of wholesale specific costs	Allocation based on GB	▶ Wholesale specific costs allocated to services based on equivalent GB
	Allocation based on drivers	▶ Wholesale specific costs allocated to services based on equivalent GB/TAPs
Traffic split per technology forecasts	Same percentages across EEA from 2020	▶ The traffic split per technology forecasts from 2020 are the same for all countries
	Country-specific projections	▶ Traffic split per technology forecasts from 2020 are set at country level
Cell Radii	Mix EEA Average-Country specific figures	▶ Cell radii based on EEA averages except when deviations from EEA average were justified due to country-specific conditions
	Country specific figures only	▶ Cell radii always set based on data reported by NRAs for each country
Threshold to identify seasonal patterns	10%	▶ Areas are considered as seasonal when the traffic in the peak month (net of structural growth) is above the traffic in the average month by 10%

Scenario	Alternatives	Description
	30%	▶ …The threshold is set at 30%
	50%	▶ …The threshold is set at 50%
Demand	Conservative	▶ Domestic data traffic forecast based on the historic growth rate with a 30% YoY reduction in the annual growth rate
	Base-case	▶ …Considering a 20% YoY reduction in the annual growth rate
	Aggressive	▶ …Considering a 10% YoY reduction in the annual growth rate

Exhibit 2: Description of the modelled scenarios [Source: Axon]

The results produced under each combination of scenarios are going to be taken into consideration by the Commission in its decision-making process as long as they duly reflect the national characteristics of each Member State (i.e. they reconcile with the operational and financial realities of the MNOs operating in the Member State).

4. Final results

As outlined in the previous section, the model produces results under multiple combinations of scenarios. A 'Summary of results' file (EC - Presentation of results - Data Public) has been published in the Commission's website that shows the results produced for mobile roaming (including data, voice and SMS) and voice termination services in each Member State from 2015 until 2025 under 72 different combinations of scenarios.

The results produced by the model include network, G&A and wholesale specific costs only. This means that, in the decision-making process, on top of the unit costs produced by the model, the Commission is going to take into consideration:

- Transit costs for the mobile data roaming service.
- Transit costs and the applicable EEA average termination rate for the mobile voice roaming service.

As an illustrative summary of the results, the exhibits below show the costs produced by the model under a sample combination of scenarios. Be reminded that these results do not include transit or voice termination charges.

This illustrative combination of scenarios takes into consideration the following configurations: VoLTE scenario (Terminal Adoption), Annualisation criteria (Economic depreciation based on demand), Roaming increment (Specific roaming increment), Allocation of wholesale specific costs (Allocation based on drivers), Traffic split per technology forecasts (Country-specific projections), Cell Radii (Mix EEA Average-Country specific figures), Threshold to identify seasonal patterns (50%), Demand (Conservative).

This illustrative combination of scenarios considers stakeholders' preferred option for each of the 8 scenarios defined. Therefore, it does not necessarily reflect the EC's preferences and does not need to represent the combination of scenarios that reconciles the best with MNOs' financial and operational realities.

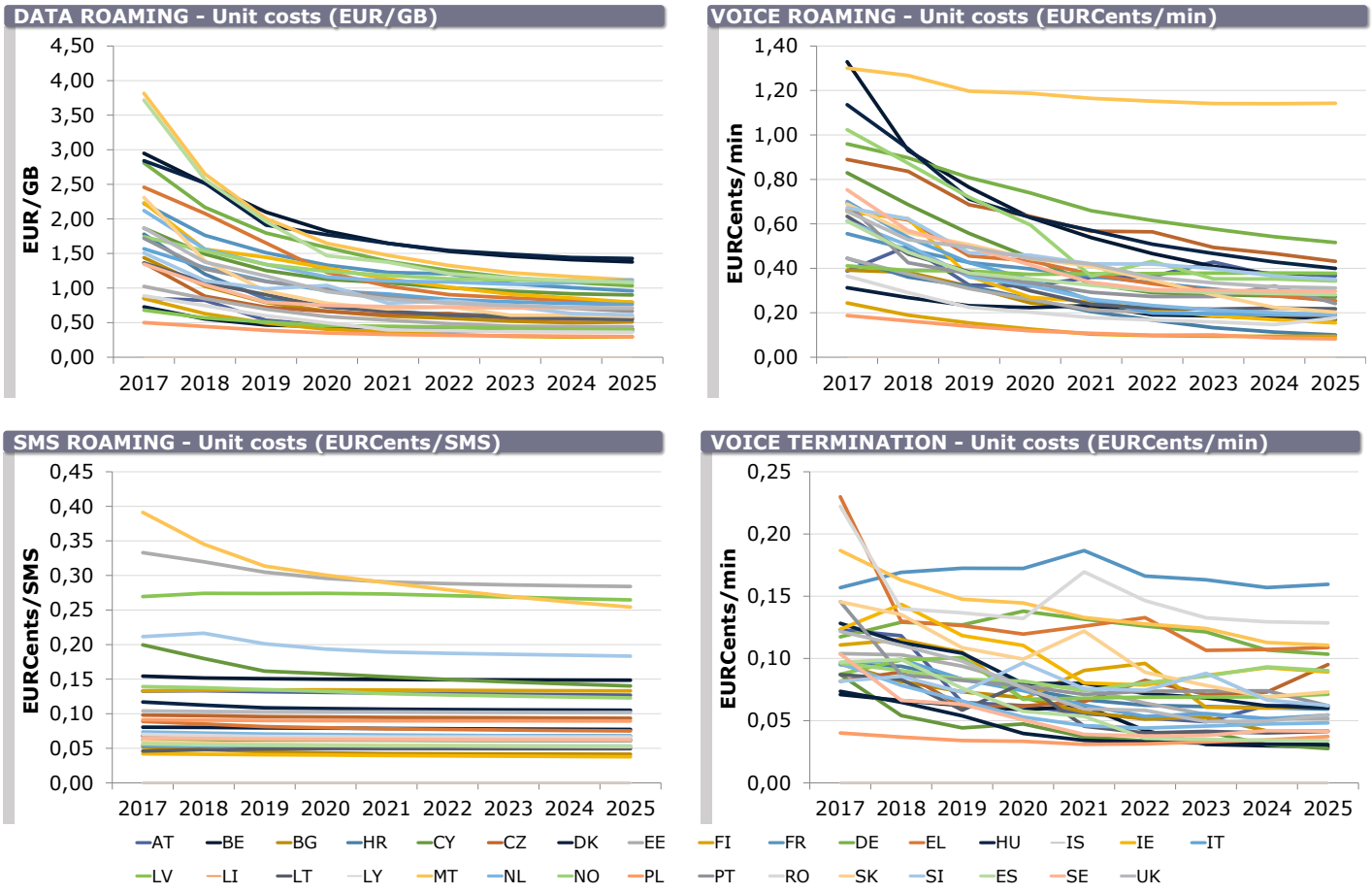

Exhibit 3: Illustrative results for the four key services [Source: Axon]

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