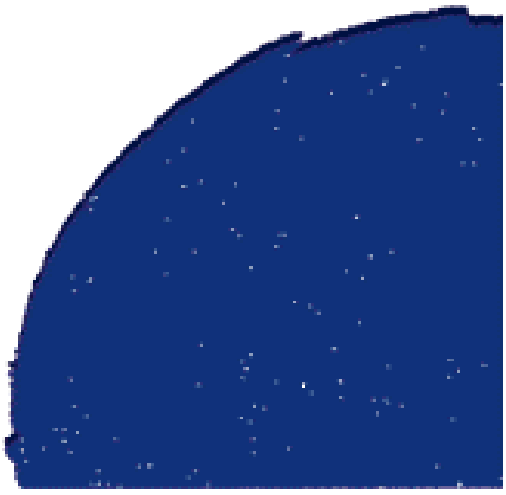
PUBLIC CONSULTATION

**February 2006**

# *Relevant market analysis*

***Public consultation***
***on the wholesale market***
***for SMS call termination***
***on public mobile telephone networks***

***(October 24th 2005 – December 2nd 2005)***



ARCEP
www.arcep.fr
AUTORITÉ DE RÉGULATION
des Communications électroniques
et des Postes

# Notice on the consultation

The *Autorité de Régulation des Communications Electroniques et des Postes* (ARCEP) submitted this document for comments for a period of six weeks, from October 24th 2005 to December 2nd 2005.

As it was noticed in the consultation, ARCEP published on its website, www.arcep.fr, all comments it receives, except for sections covered by business confidentiality.

ARCEP submitted on January 23rd 2006 an amended version of the document to France's Competition Authority, the *Conseil de la concurrence*, for an opinion. This authority will give its opinion on the market definition and the designation of operators with significant market power.

After considering the comments made by the Competition Authority, ARCEP will submit its final version of the document to the European Commission and to the NRAs, in accordance with article L. 37-3 of the *Post and Electronic Communications Code* (hereafter Code des Postes et Communications Electroniques, CPCE).

This document is a translation of the first public consultation. It contains ARCEP's overview of the wholesale market for SMS call termination on public mobile networks.

# Contents

# Chapter 1 Summary

This document analyses the wholesale market for SMS call termination on mobile networks for the years 2006-2008. It is based on the information ARCEP received between July 2004 and July 2005 concerning the definition (Chapter 3) and the analysis of significant market power on the wholesale market for SMS call termination on mobile networks (Chapter 4). The third part of the analysis lists the competition problems encountered and describes the obligations that ARCEP plans to impose (Chapter 5).

The analysis of supply-side and demand-side substitution leads ARCEP to conclude, that, except for so-called Push SMS offers, no product can be substituted for SMS call termination on each individual mobile network.

Since this market is not included in the list of relevant markets drawn up by the European Commission in its recommendation of 11 February 2003, and in accordance with the Guidelines of 11 July 2002 on the market analysis and the evaluation of market power, ARCEP verified the three criteria initially used by the Commission to establish the list of relevant markets whose characteristics may justify to impose regulatory obligations.

*For Metropolitan France*, therefore, in accordance with article 7 of the Framework directive and article L 37-1 of the Posts and Electronic Communications Code (hereafter called the CPCE), ARCEP proposes defining as relevant markets the SMS call termination on each Metropolitan individual mobile network.

Each Metropolitan MNO controls 100% of market share on its SMS call termination market, and it seems unlikely that a new entrant will arrive on these markets. Further, since SMS interoperability agreements were signed in December 1999 for Metropolitan France and the subsequent very strong growth in volumes, the mobile SMS termination rates of the three MNOs (5.336 and then 4.3 euro cents per SMS since November 2005) remained unchanged until November 2005 and appear high compared to costs. Finally, the MNOs are not subject to a countervailing buying power, which would prevent them from acting independently of other market players.

Therefore, ARCEP considers that each Metropolitan MNO has significant influence on the wholesale SMS call termination market on its network, which has allowed these operators to set high mobile SMS termination rates with regard to costs. These high wholesale tariffs hinder the interoperability of SMS services on and out of mobile networks and, as a result, impede the competitive play of SMS on the retail market, in particular for establishing prices.

In order to limit the impact of the mobile operators' market power, it appears necessary to require them to provide access and interconnection, to respect the principles of non-discrimination and transparency (in particular, by publishing major wholesale tariffs), and to impose price controls on wholesale mobile SMS termination rates, accompanied by an obligation of cost accounting and accounting separation. ARCEP proposes implementing this control by establishing an initial price cap of about 2.50 €c per SMS which would be applicable upon enforcement of the decisions regarding the market analysis.

*For the Overseas départements and territories*, because of the more recent signatures of interoperability agreements, by the end of the year 2002 in Réunion, and the end of the

year 2003 in the Antilles-Guyana region, and the more recent development and diffusion of SMS, ARCEP considers that it is too early to go closer into the market analysis of these territories. ARCEP could however re-examine the usefulness of extending the analysis to Overseas *départements*, depending on the change in the situation of the markets in question and based on the experience it has acquired on the Metropolitan market.

# Chapter 2 Introduction

## 2.1. The market analysis process

### *2.1.1. Overview*

In accordance with articles L. 37-1 *et seq.* of the Posts and Electronic Communications Code (CPCE), the market analysis process involves:

- drafting a list of markets whose characteristics, as concerns the development of competition, justify the imposition of ex ante regulation;
- designating those operators having significant power on these markets;
- establishing specific obligations, which are suitable and proportionate to the state of competition observed.

Article 15 of the Framework Directive states that the Commission establishes a recommendation on the "*relevant markets*", that is, "*product and service markets within the electronic communications sector, the characteristics of which may be such as to justify the imposition of regulatory obligations set out in the Specific Directives*", and that it publishes "*guidelines for market analysis and the assessment of significant market power which shall be in accordance with the principles of competition law*". These two documents have been published under the following references: Commission guidelines on market analysis and the assessment of significant market power dated 11 July 2002[1], and Commission Recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation[2].

The analysis developed in Chapter 3 aims, by application of article L. 37-1 of the CPCE, at determining whether the markets are effectively competitive and deducing from this the consequent regulatory obligations that should be imposed. Therefore, if ARCEP's analysis concludes that the market is effectively competitive, ARCEP must remove any obligations that had applied to date. If it is not, ARCEP identifies the firm or firms detaining market power, that is to say whose situation is equivalent to a dominant position under competition law, and imposes on them specific and appropriate regulatory obligations.

Upon completion of this internal process, if adopted, and after having consulted the Competition Authority and taken its' opinion into account, ARCEP will submit its draft decisions to the Commission and the NRAs of the other Member States, in accordance with article L. 37-3 of the CPCE. The NRA and the Commission will then have at least one month to make their observations. ARCEP will take into account all observations made by the Commission and the other NRA in drafting the decision it will then adopt.

Furthermore, in accordance with article 7§4 of the Framework Directive, if the aim of the draft decisions is to either define a relevant market different from those listed in the recommendation, or to designate an operator with significant market power, and if the

[1] OJEC number C165 dated 11 July 2002
[2] OJEC number L114/45 dated 8 May 2003

planned measure would have an impact on trade between Member States, the aforementioned deadline may be extended by an additional two months if the Commission considers that the measure would obstruct a single market or would be incompatible with Community law and, in particular with the general objectives of the directive. The Commission may also ask the NRA to withdraw its draft measure.

### *2.1.2. Analysis of the wholesale market for SMS call termination*

ARCEP conducts a public consultation on its analysis of the wholesale market for SMS call termination on mobile networks for the period 2006-2008. This market is not included in the list of relevant markets of the Commission's recommendation. In accordance with article 7 of the Framework Directive and article L 37-1 of the CPCE, ARCEP initiated an analysis process on this market. Between July 2004 and July 2005, it collected information in two successive phases, which allowed it to refine its overall understanding of the market.

Thanks to the information provided by market players, ARCEP was able to identify competition problems and obstacles existing on this market (cf. 5.1.1). In accordance with the abovementioned recommendation, ARCEP is required to examine that the three criteria defined by the Commission are met in order to identify the relevant markets, that is, those whose characteristics may justify to impose regulatory obligations (cf. 5.1.2).

Following the public consultation, this document will be submitted to the *Conseil de la concurrence* which will have six weeks to return its opinion on ARCEP's definition of the relevant markets and on its designation of significant market power (SMP) operators. ARCEP will carefully examine the *Conseil's* opinion, before submitting its draft decision to the European Commission and the NRAs. At the same time, it will also submit its draft decision for a new public consultation.

The purpose of this analysis is therefore to delineate the market for SMS call termination on mobile networks, to identify competition problems and obstacles, and where appropriate, designate the operator or operators having a significant influence on the market in order to impose on them proportionate obligations to remedy the competition problems analysed.

## 2.2. Time and space restrictions of the study

### *2.2.1. Timetable of the analysis*

In keeping with the provisions of the CPCE, and more specifically with articles D. 201 to D. 303, the Authority must set the time interval of this analysis, which cannot exceed three years.

This analysis covers the period from January 1st 2006 to December 31st 2008. ARCEP considers itself able to conduct a forward-looking analysis of the market for this period of time. Nevertheless, should the market structure or available technologies evolve to a significant degree, ARCEP may be required to conduct a new analysis of this market before the period ends.

### *2.2.2. Geographic perimeter of the study*

France's territory is composed of four major types of administrative areas: Metropolitan France, Overseas Departments, Territorial Regions and Overseas Territories.

The CPCE is applicable in Metropolitan France, the Overseas Departments, Mayotte, and Saint-Pierre et Miquelon.

European law is applicable in Metropolitan France and in the Overseas Departments.

Appendix A explains these elements.

This document analyses SMS call termination services to mobile networks in Metropolitan France, in the Overseas *départements*, Mayotte and Saint-Pierre and Miquelon.

## 2.3. French Mobile network operators (MNOs)

### *2.3.1. Coverage areas*

Under the former regulatory framework, a decree from the Minister of Telecommunications was required to authorise the establishment of public mobile telephony networks.

In Metropolitan France, three MNOs operate a GSM networks.

| Firm | Authorisation | Awarded | Duration | Coverage |
|---|---|---|---|---|
| Orange France[3] | GSM F1 | 1991 | 15 years | Metropolitan France |
| SFR[4] | GSM F2 | 1991 | 15 years | Metropolitan France |
| Bouygues Telecom[5] | DCS F3 | 1994 | 15 years | Metropolitan France |

All three mobile operators now have equivalent frequency resources in the 900 MHz and 1800 MHz bands.

[3] Decree dated 17 August 2000 modified authorising Orange France to establish a public mobile network in order to provide pan-European GSM F1 digital service in the 900 MHz band
[4] Decree dated 25 March 1991 modified for an extension authorisation, in the 900 MHz band, for a public mobile network in order to provide pan-European GSM F2 digital service
[5] Decree dated 8 December 1994 authorising the establishment of a public mobile network in order to provide DCS F3 personal communication service

These three operators have also received an authorisation to operate a UMTS network.

| Firm | Authorisation | Awarded | Duration | Coverage |
|---|---|---|---|---|
| Orange France[6] | UMTS | 2001 | 20 years | Metropolitan France |
| SFR[7] | UMTS | 2001 | 20 years | Metropolitan France |
| Bouygues Telecom[8] | UMTS | 2002 | 20 years | Metropolitan France |

The situation overseas is more complex because the operators' authorisations do not cover the same geographic areas. Also, some operators do not use GSM or UMTS standards. And, finally, not all have launched their service commercially.

Ten operators have an authorisation operate a mobile network.

[6] Decree dated 18 July 2001 authorising Orange France to establish and operate a third-generation public mobile network and to provide public telephone service
[7] Decree dated 18 July 2001 authorising Compagnie française du radiotéléphone (SFR) to establish and operate a third-generation public mobile network and to provide public telephone service
[8] Decree dated 3 December 2002 authorising Bouygues Telecom to establish and operate a third-generation public mobile network and to provide public telephone service

| Firm | Authorisation | Awarded | Term | Coverage |
|---|---|---|---|---|
| SRR[9] | GSM DOM 1 | 1995 | 2010 | Réunion |
| Orange Caraïbe[10] | GSM DOM 2 | 1996 | 2011 | Guadeloupe, Martinique, Guyana |
| Orange Réunion[11] | GSM DOM 4 | 2001 | 2006 | Réunion |
| Bouygues Telecom Caraïbe[12] | GSM DOM 5 | 2001 | 2009 | Guadeloupe, Martinique, Guyana |
| Dauphin Télécom[13] | GSM DOM 8 | 2002 | 2017 | Saint Martin, Saint Barthélemy |
| SRR | GSM CT 1 | 2001 | 2016 | Mayotte |
| SPM Télécom[14] | (GSM) | 2000 | 2015 | Saint-Pierre and Miquelon |
| Saint Martin Mobile[15] | (AMPS) | 2001 | 2006 | Saint Martin, Saint Barthélemy |
| Outremer Télécom [16] | GSM DOM 3 | 2000 | 2015 | Antilles, Guyana, Réunion |
| Saint-Martin & Saint-Barthélemy TelCell | GSM DOM 6 | 2001 | 2016 | St Martin and St Barthélémy |

Before it operated a GSM network, Dauphin Télécom used the DECT standard. Migration to GSM is now complete.

Saint-Martin Mobile's authorisation, which was renewed in 2001, states:

"*This authorisation is issued for a duration of five years, beginning 1st October 2001. Two years at the latest prior to the expiration of this authorisation, its holder must inform the Autorité de régulation des télécommunications of its intention to continue its activities according to technical specifications using the frequencies which have been allocated to the Autorité de régulation des télécommunications, or to terminate its activities. The conditions of renewal of the authorisation are defined in article L. 33-1 of the Post and Telecommunications Code*."

[9] Decree dated 23 February 1995 authorising the establishment of a public mobile network in Réunion in order to provide pan-European GSM DOM 1 digital service

[10] Decree dated 14 June 1996 authorising the establishment of a public mobile network in Antilles in order to provide pan-European GSM DOM 2 digital service ; Decree dated 22 September 1998 modifying the decree dated 14 June 1996 authorising the establishment of a public mobile network in Antilles in order to provide pan-European GSM DOM 2 digital service and extending this authorisation to Guyana; Decree dated 23 January 2002 modifying the decree dated 14 June 1996 modified authorising France Caraïbe Mobiles to establish a public mobile network aux Antilles in order to provide pan-European GSM DOM 2 digital service

[11] Decree dated 24 April 2001 authorising France Telecom Mobiles Réunion ITS to establish a public mobile network in order to provide pan-European GSM DOM 4 digital service operating in the 900 MHz and 1 800 MHz bands in Réunion

[12] Decree dated 19 July 2001 authorising Bouygues Telecom Caraïbe to establish a public mobile network in order to provide pan-European GSM DOM 5 digital service operating in the 900 MHz and 1 800 MHz bands

[13] Decree dated 12 December 2002 authorising Dauphin Télécom to establish a public mobile network in order to provide a GSM DOM 8 personal communication service operating in the 900 MHz and 1 800 MHz bands

[14] Decree dated 21 June 2000 authorising SAS SPM Télécom to establish and operate a publc telecommunications network and to provide public telephone service

[15] Decree dated 30 September 2001 authorising Saint Martin Mobiles to establish a public mobile network in order to operate a mobile service operating in the 800 MHz band

[16] Decree dated 30 November 2000 authorising Outremer Télécom to establish a public mobile network in order to operate a GSM DOM 3 digital service operating in the 1 800 MHz band

To this day, Saint Martin Mobile hasn't proceeded to a formal demand for a frequency authorisation.

Finally, one operator has an authorisation but had not yet launched his service by 1st December 2005.

| Firm | Authorisation | Awarded | Term | Coverage |
|---|---|---|---|---|
| Oceanic Digital FWI | GSM DOM 7 | 2002 | 2017 | Antilles |

### *2.3.2. Number of customers*

*Table 1: Customers[17] of MNOs at 31 December 2004*

| Customers | Déc. 2002 | Déc. 2003 | Déc. 2004 |
|---|---|---|---|
| **Metropolitan France** | | | |
| Orange France | 18 529 900 | 19 592 500 | 20 478 500 |
| SFR | 13 174 600 | 14 282 300 | 15 323 700 |
| Bouygues Telecom | 5 638 400 | 6 513 900 | 7 337 500 |
| **Total Metropolitan France** | **37 342 900** | **40 388 700** | **43 139 700** |
| **Antilles-Guyane** | | | |
| Orange Caraïbe | 546 300 | 574 800 | 593 400 |
| Bouygues Telecom Caraïbe | 184 400 | 116 100 | 130 900 |
| Outremer Télécom | - | - | 6 800 |
| Dauphin Télécom | - | - | 5 000 |
| **Total Antilles-Guyane** | **730 700** | **690 900** | **736 100** |
| **Réunion** | | | |
| SRR | 350 500 | 406 100 | 444 200 |
| Orange Réunion | 139 300 | 158 800 | 177 000 |
| **Total Réunion** | **489 800** | **564 900** | **621 200** |
| **Mayotte** | | | |
| SRR Mayotte | 21 700 | 36 000 | 51 900 |
| **Total Mayotte** | **21 700** | **36 000** | **51 900** |
| **St Pierre et Miquelon** | | | |
| SAS SPM | - | 2 300 | 2 600 |
| **Total St Pierre et Miquelon** | **-** | **2 300** | **2 600** |
| **Total customers** | **38 585 100** | **41 682 800** | **44 551 500** |

Source : ARCEP, Mobile Market Survey

[17] A customer is any user of a mobile service provided by an operator (network operator or MVNO) and holder of a mobile line registered with the Home Location Register (HLR) of an operator at the date under examination.

### *2.3.3. Ownership links*

Orange France is a 100%-owned subsidiary of Orange SA, in itself a 100% subsidiary of the France Telecom Group, a publicly traded company owned in part by the French government. Orange Réunion is a 100%-owned subsidiary of Orange France and Orange Caraïbe is a 100%-owned subsidiary of Orange SA. SAS SPM Télécom is a subsidiary of Orange Caraïbe.

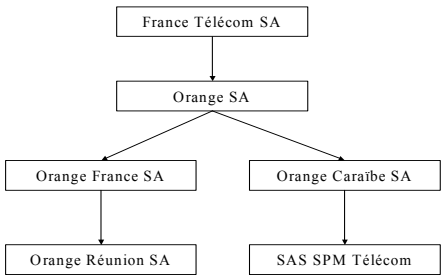



*Figure 1: Ownership relationships of France Telecom's mobile subsidiaries*

SFR is a 100%-owned subsidiary of the group SFR Cegetel, of which 56% is owned by Vivendi Universal and 44% by Vodafone. SRR is a 100%-owned subsidiary of SFR. Vivendi Universal and Vodafone are publicly traded companies.

Bouygues Telecom is an 83%-owned subsidiary of the Bouygues Group, a publicly traded company. Bouygues Telecom Caraïbe owned by Bouygues Telecom by over 80%.

Dauphin Telecom is not publicly traded.

Saint Martin Mobile is a subsidiary of the American firm Innovative Communication Corporation (ICC), which owns other subsidiaries in the Caribbean.

Outremer Telecom is a subsidiary of Apax Partners, an American investment fund specialised in telecommunications.

## 2.4. SMS call termination on mobile networks

### *2.4.1. Overview*

An "SMS" (Short Message Service) is a text message, composed of a maximum of 160 characters, each coded on 7 bits. This service is available on all mobile phones in circulation on the market and works on all types of networks (GSM, GPRS, UMTS). In accordance with the GSM standard, SMS use signalling capacities and are transmitted via the signalling link number 7 (SS7). Originally, it was considered natural to use the signalling network to deliver SMS, because of the "packet" nature of the messages.

In addition to end-to-end SMS, the GSM standard distinguishes between SMS MO (Mobile Originated), and SMS MT (Mobile Terminated). SMS MO designates the transfer of an SMS

from a mobile phone to an SMSC (SMS Center), whereas SMS MT designates the transfer of an SMS from an SMSC to a mobile phone.

Technically, SMS service requires one or more specific servers on the network. The Short Message Server Center (SMSC) stores SMS in databases, distributes them to the destination mobile phones (when they are available on the GSM network to which they belong) and processes the validity dates of SMS. The MSC (Mobile Services Switching Center), a switching element on the mobile network shared with other types of traffic, is the transmitting network of SMS MO and the receiving network of SMS MT.

### *2.4.2. Sending an SMS on a mobile network*

#### *2.4.2.1 Sending SMS from one MNO to another (M2M)*

An SMS interoperability contract (which is generally reciprocal) regulates the transmission of an interpersonal SMS from one French or foreign MNO to the network of a third-party MNO. From now on, we will use the term "SMS call termination" (or SMS CT) for the SMS MT service provided in this framework.

The SMS CT from an operator A to the mobile network of an operator B designates the routing by the destination MNO (operator B) of an SMS transmitted to its mobile service subscribers as an SMS MT.

Technically, termination is done directly from the SMSC of the caller's MNO on the MSC to which the recipient is connected, via the international network and France Telecom's SS7 platform. SMS termination does not require the SMSC of the network of the called party's MNO. The decision to connect via the SS7 network is related to certain characteristics of the GSM standard.

More precisely, there are three steps to routing an SMS from one operator to another. First, the SMS is stored in the SMSC of the calling party's MNO. Then, the SMSC of the calling party' network queries the HLR (Home Location Register) of the called party's network, in order to locate the MSC to which SMS is to be delivered. In Metropolitan France, this query is done via France Telecom's SS7 international network. A filtering function on France Telecom's platform guarantees the destination MNO that SMS will be delivered only from operators that signed an interoperability agreement. Once the request has been made and authorisation received, SMS is routed onto the MSC of the called party's network.

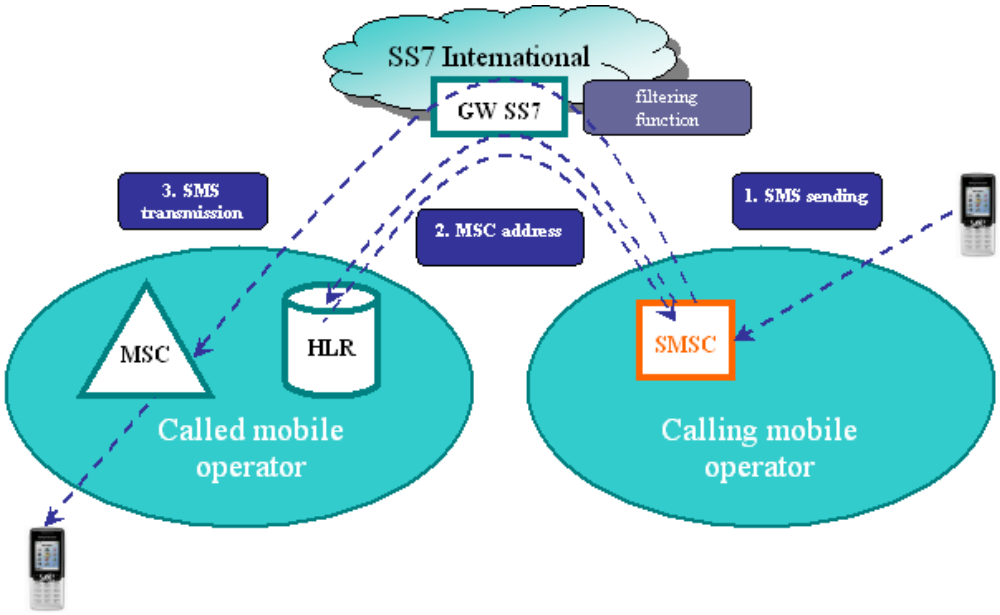



*Figure 2: One mobile operator sends an SMS to another mobile operator (M2M)*

#### 2.4.2.2 Other ways of sending an SMS to an MNO

In addition to MNOs, other players may also request an SMS MT service from the destination operator. In this framework, SMS MT is sent off line, and is called "Push SMS".

From a technical viewpoint, the SMS is sent from a service platform, travels via a secure virtual private network (VPN) to a service integration infrastructure of the destination operator[18] which checks that the identifier originating the call is listed in the authorised users' base (spam control). When the called party's mobile phone is located, the network notifies the SMSC that it can deliver the message to its recipient and the SMS is routed to the MSC of the called party's MNO.

[18] This service integration platform is generally used as an interface to the MNO's network for all data services (SMS, MMS, i-mode, etc.).

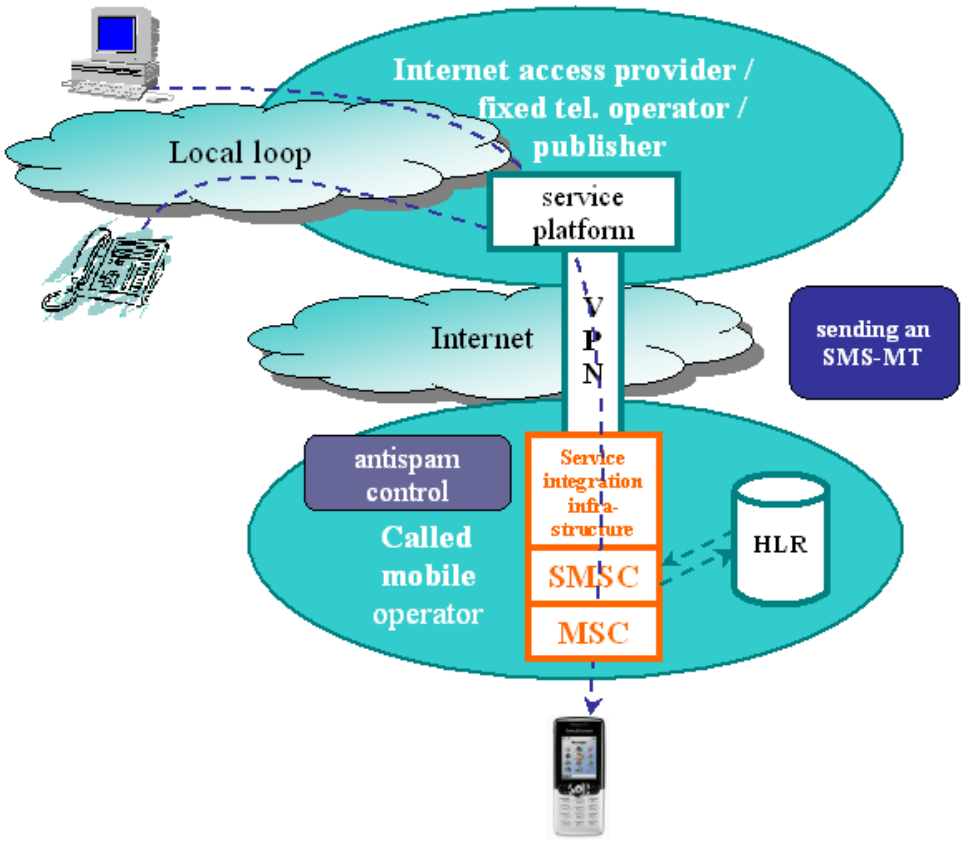



*Figure 3: An SMS is sent using the Push SMS offer of the called party's mobile operator*

#### *2.4.2.2.1. SMS aggregators*

However, while the technique described above is correct for any player wishing to send an SMS to a mobile subscriber, this is not the solution that is generally used. Indeed, players prefer to use the services of an aggregator, rather than pass through several interfaces (one per destination operator) having different characteristics[19] and requiring certain technical developments.

An SMS aggregator, also called a facilitator, is an operator that handles the technical connection between networks for sending and receiving SMS. It provides a single interface between Push SMS buyers on the one hand, and all MNOs (Metropolitan and foreign) on the other. Their role is explained in section 2.5.2.

[19] cf. Part 2.4.3.2.

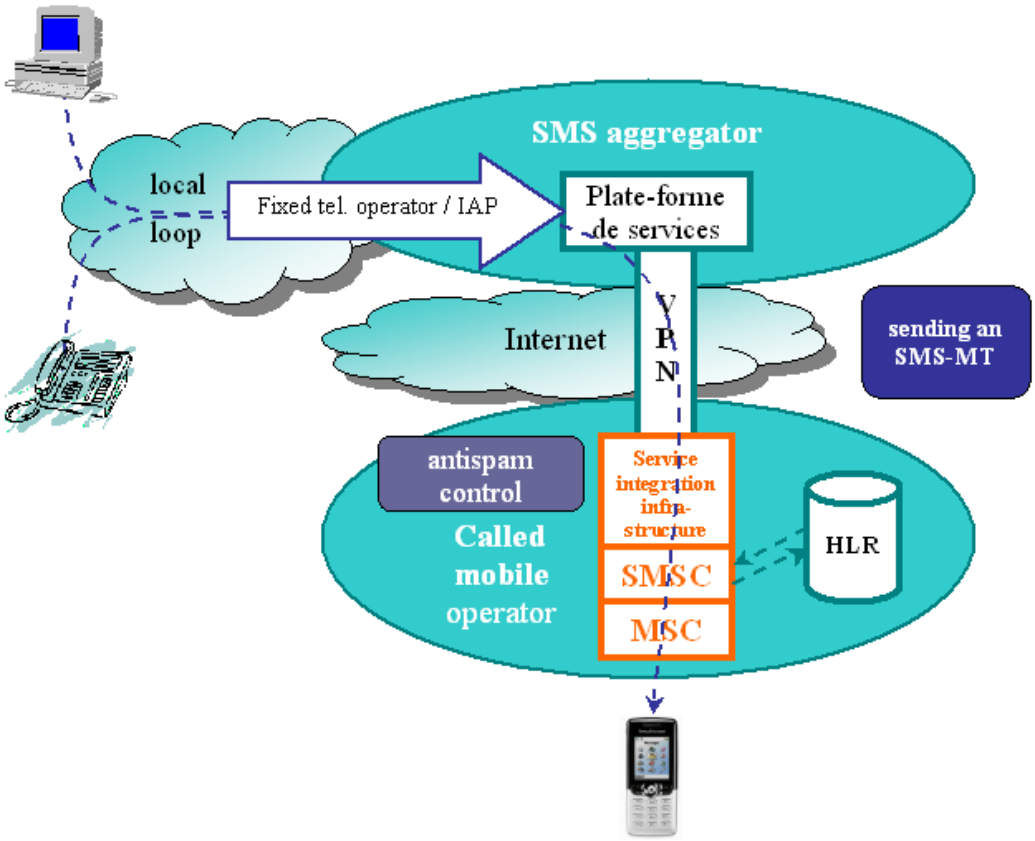



*Figure 4: Sending an SMS via an SMS aggregator's Push SMS offer*

*2.4.2.2.2. Fixed operators and Internet access providers (IAPs)*

With the growing convergence of networks and services, SMS can be sent from a mobile phone, a fixed phone or an Internet messaging service (Web SMS). Despite the emergence of these new services in 2003, mobile-to-mobile traffic (M2M) continues to predominate, representing almost 100% of all interpersonal SMS traffic.

Unlike mobile network interconnection, the interoperability of SMS services between mobile and fixed networks or Internet is not standardised to date. According to the MNOs, the technical interoperability as it exists between mobile networks cannot be implemented for three reasons.

First, this type of interoperability requires access to the operator's HLR to make some enquiries. Given the importance of this equipment for network integrity, MNOs do not offer this type of unilateral interconnection. For mobile-to-mobile interconnection, the symmetrical character of the architecture offers a guarantee of proper use and formatting of enquiries made reciprocally on the HLR.

Second, since few anti-spam controls can be put in place, it is particularly important for the MNO to be certain of the integrity of the identifier originating the call. The transmitted identifier must unambiguously and securely identify the sender of the SMS.

Finally, because calls transit via the SS7 international network, this identifier should be public in order to allow the called party to reply.

So, to date, Push SMS has been used (via the service integration platform and not via the SS7 network), to terminate SMS from fixed telephony operators or Internet access providers either directly with MNOs, or indirectly through an SMS aggregator.

#### *2.4.2.2.3. The special case of SMS from France Telecom to Orange France's mobile network*

It should be noted that there is a specific connection contract between France Telecom and Orange France for the exchange of SMS. SMS are exchanged according to a mode that is similar to Push SMS offers. This point is discussed in section 2.4.3.3.

### *2.4.3. SMS MT offers of mobile network operators (MNOs) and aggregators*

#### *2.4.3.1 Interconnection offer for MNOs (SMS call termination)*

MNOs signed SMS interoperability agreements in December 1999 for Metropolitan France, by the end of 2002 in Réunion and by the end of 2003 in the Antilles-Guyana region.

To allow SMS routing on their networks, the MNOs offer third-party MNOs interconnection, the technical and pricing conditions of which are covered by contracts for "point-to-point interoperation for the transmission and reception of short messages". These contracts list the SMSC of both parties and define the technical and financial means for efficiently routing SMS.

French MNOs negotiate SMS interoperability agreements with foreign MNOs as part of roaming agreements and in accordance with the recommendation of the GSM Association. Under these agreements, the foreign operators are billed for SMS effectively terminated on the French MNO's network.

On the pricing level, an SMS call termination charge is set by the called party's operator and is paid by the calling party's operator. Unlike the wholesale market for voice call termination on mobile networks, there was no bill-and-keep system on French wholesale mobile SMS call termination market; the MNOs began billing each other for SMS call termination as soon as SMS interoperability was implemented.

The amount of this charge, initially set at FRF 0.35, has never changed and is currently 5.336 euro cents (c€). It is applied in the same way in Metropolitan France and in the DOM.

It is also important to explain that there is currently no reference offer for SMS call termination.

### 2.4.3.2 Commercial offers for other players (Push SMS)

#### 2.4.3.2.1. MNOs' Push SMS offers

MNOs (in Metropolitan France and in the Antilles-Guyana region) propose Push SMS offers for other players (fixed operators, aggregators, IAPs, service publishers, etc.). The characteristics of these offers differ from a mobile operator to another one. These offers cover the wholesale sale of SMS MT. They are commercial services offered to any player requesting them. They are different from SMS call termination, which are currently reserved for mobile network operators (MNOs).

These offers are generally based on a monthly subscription including an SMS MT flat rate and a pricing grid with a sliding scale of prices of SMS MT beyond the base flat rate. They let the publisher subscribe to numbers from which it can send SMS to all of the MNO's customers (dependent on the prior agreement of users) and receive replies. These offers make it possible to implement various types of applications on individual numbers:

- Direct marketing: for advertising (applications generally dedicated to advertisers or distributors)
- Content delivery: to deliver on-line content (news, sports, bank statements, logos, ring tones, music, games, videos, etc.)
- Message services: for messaging applications linked with IAP, Minitel, etc. platforms
- Closed user groups (CUG): for a set group of mobiles within a firm

The table below shows the price thresholds of the three Metropolitan MNOs.

**SMS Push pricing grids of the three Metropolitan MNOs**

| Bouygues Telecom | | Orange France | | S.F.R. | |
|---|---|---|---|---|---|
| Volumes of SMS-MT | Price (€) | Volumes of SMS-MT | Price (€) | Volumes of SMS-MT | Price (€) |
| 0 - 10 000 | 0,059 | 0 - 10 000 | 0,066 | 0 - 10 000 | 0,058 |
| 10 001 - 50 000 | 0,059 | 10 001 - 50 000 | 0,064 | 10 001 - 50 000 | 0,058 |
| 50 001 - 100 000 | 0,058 | 50 001 - 100 000 | 0,062 | 50 001 - 100 000 | 0,058 |
| 100 001 - 200 000 | 0,057 | 100 001 - 200 000 | 0,062 | 100 001 - 200 000 | 0,058 |
| 200 001 - 500 000 | 0,056 | 200 001 - 500 000 | 0,060 | 200 001 - 500 000 | 0,057 |
| 500 001 - 1 000 000 | 0,055 | 500 001 - 1 000 000 | 0,058 | 500 001 - 1 000 000 | 0,056 |
| 1 000 001 - 2 000 000 | 0,054 | 1 000 001 - 2 000 000 | 0,056 | 1 000 001 - 2 000 000 | 0,053 |
| 2 000 001 - | 0,054 | 2 000 001 - | 0,056 | 2 000 001 - | 0,053 |

Source : Operators, Septembrer 2005

For some mobile operators, access to these price grids includes the obligation to sign technical connection contracts specific to the operator's platforms.

*2.4.3.2.2. SMS aggregator Push SMS Offers*

The principles of the Push SMS offers proposed by players, such as 123 Multimedia, Atos Worldline, Avedya, Empreinte.com, ITG, Jet Multimedia Hosting, Phonevalley, Prosodie, Netsize, and Utel can be compared to those described above. These players propose a number of offers depending on the specific needs of their customers (IAPs, service publishers, etc.). They include a fixed price, but also a variable part depending on the volume of SMS sent. Unlike MNOs, SMS aggregators offer their customers a single interface providing access to all the mobile service subscribers (French and foreign) of operators with which the aggregator has contracts.

*2.4.3.3 Special case of Orange France's supply to France Telecom*

Exchanges of SMS between France Telecom and Orange France are regulated by a "Message server center connection contract", which defines the technical and pricing means for sending and receiving SMS by the two companies.

As for a standard Push SMS offer, France Telecom and Orange France bill each other for SMS reception according to the volume of efficient short messages sent per month and per connection address registered in the Message Server Center (equivalent of the SMSC).

## 2.5. SMS MT buyers

SMS MT buyers (SMS CT or Push SMS) are all players (network or public electronic communications service providers or not) that wish to terminate an SMS on a mobile network. There are five categories of players that buy SMS termination, directly or indirectly:

- mobile network operators (MNOs)
- SMS aggregators
- fixed network operators
- Internet access providers
- other players (service publishers)

Today, only MNOs that signed SMS interoperability agreements provide SMS CT services. Other players buy wholesale SMS MT in the form of Push SMS.

### 2.5.1. MNOs

When routing an SMS to the end user, MNOs do not pay any interconnection charge for an on-net SMS and pay for SMS call termination for off-net SMS. In this case, the SMS mobile termination charge is the only part paid by the calling party's MNO.

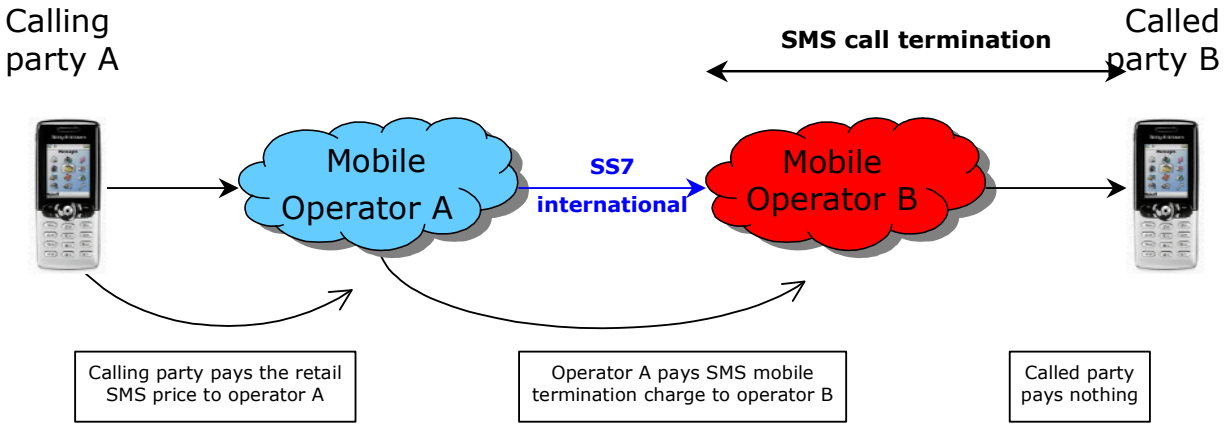



*Figure 5: MNO pays mobile SMS termination rate when sending an off-net SMS to a third-party MNO*

### 2.5.2. SMS aggregators

As already explained (cf. 2.4.2.2), aggregators buy Push SMS from MNOs in order to resell it to electronic communications service providers (fixed operators or IAPs) or to service publishers (banks, weather, horoscopes, etc.). Their role is to ease the flow of the market by offering a single interface between all the MNOs (Metropolitan and foreign) and end users. Given the important amount of SMS they route, they enjoy major economies of scale, which let them offer an average wholesale price per SMS which is close to the mobile SMS termination rate. Players often prefer to use their services rather than pass through a number of interfaces (one per destination operator) having different characteristics and requiring certain technical developments.

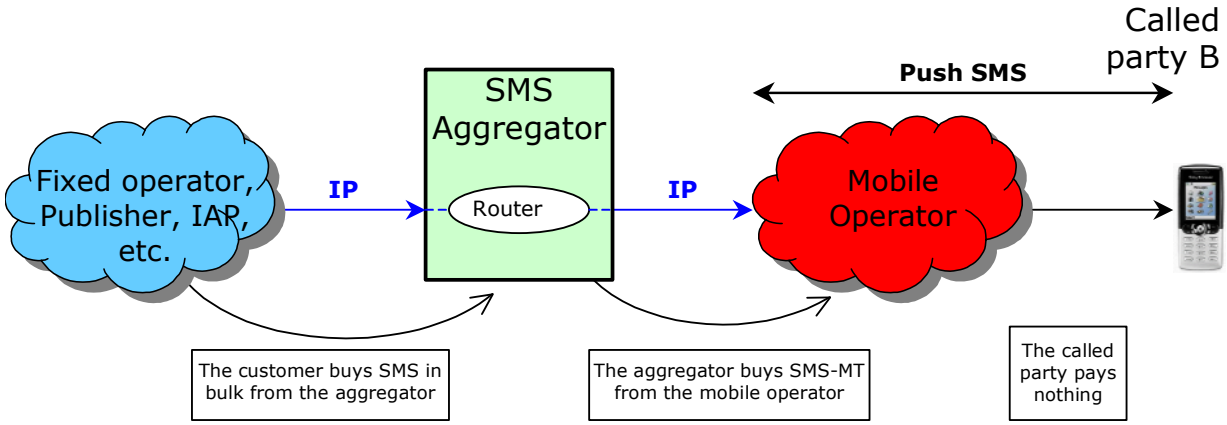



*Figure 6: Aggregator offers Push SMS to fixed operators or IAPs to send an SMS to a mobile operator, to which they are not linked by a technical connection contract*

### *2.5.3. Fixed telephony operators and IAPs*

As part of their message services, fixed operators and IAPs buy Push SMS, either directly from MNOs, or from an aggregator.

#### *2.5.3.1 Fixed operator sends an SMS to an MNO (F2M)*

To date, France Telecom is the only fixed operator to offer its customers SMS from a fixed phone line[20].

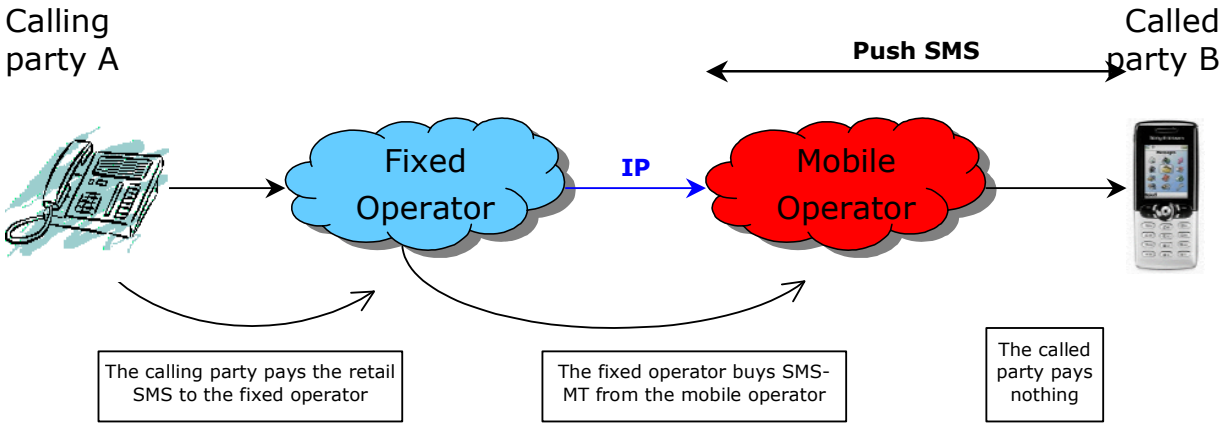



*Figure 7: Push SMS paid when France Telecom sends an SMS to Orange France*

[20] To get this service, the customer must have an SMS compatible telephone or box and subscribe specific options. For a more detailed description of the service, see section 3.3.3.1.1.

To date, SMS from the incumbent are not sent directly to Bouygues Telecom and SFR's mobile networks, unlike Orange France. The incumbent buys bulk SMS from an SMS aggregator which then delivers them to Bouygues Telecom and SFR's mobile networks.

#### *2.5.3.2 IAP sends an SMS to an MNO (IAP2M)*

IAPs also offer message services on their web portals with the option of sending messages (SMS) to mobile service subscribers, generally in limited quantities.

It is difficult to implement interoperability between the mobile telephony and Internet environments because of the incompatibility of their underlying economic models. The "telecom" economic model is based on calling party pays principles: *i.e.* the user making the call—whether for voice or data—bears the full cost, while the source operator pays the destination operator for its termination service.

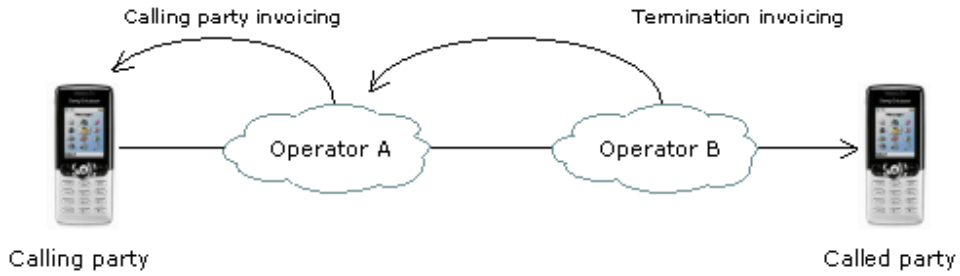



*Figure 8: Calling party pays "Telecom" model*

On the other hand, in the receiving party pays "Internet" economic model, the user is billed a flat fee—depending on the connection time or capacity—independently of the content, destination or direction of transmission. So here, the user is billed for both sending and receiving. Service providers bill each other based on total volumes exchanged and, when the volumes are more or less equal, do not bill each other.

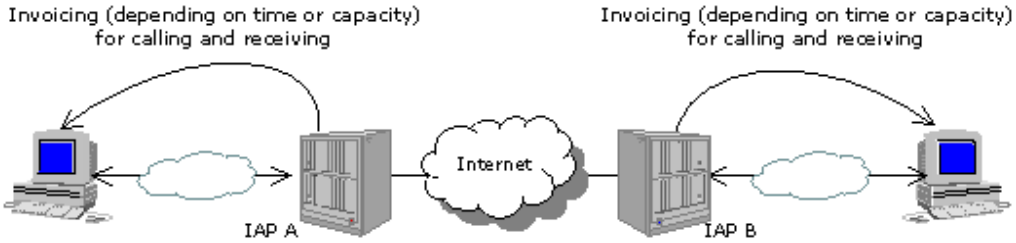



*Figure 9: Receiving party pays "Internet" model*

Therefore, in order to implement interoperability with the Internet world, Internet access providers first need to put in place specific prices for the transmission of SMS so that they can pay the MNO for SMS termination.

However, there is currently no simple solution for integrating pay-as-you-go payment mechanism in mail services, in addition to the access charge, when the message is being

sent to a mobile phone. So, the SMS service is a separate service in IAPs' portals, difficult to integrate in a mail service, which can limit its use.

Furthermore, Internet access providers wishing to let their customers send SMS from their e-mail mailboxes, can only propose an expensive service, since they pay at least 5.3 c€ per message. The service is all the less attractive since it faces competition from webSMS services developed by MNOs on their own Internet portals[21].

As in the case of a fixed operator having no technical connection contract with an MNO, the Internet access provider buys bulk SMS from an aggregator. IAPs pay Push SMS prices, based on the total volume of SMS sent, plus the aggregator's margin.

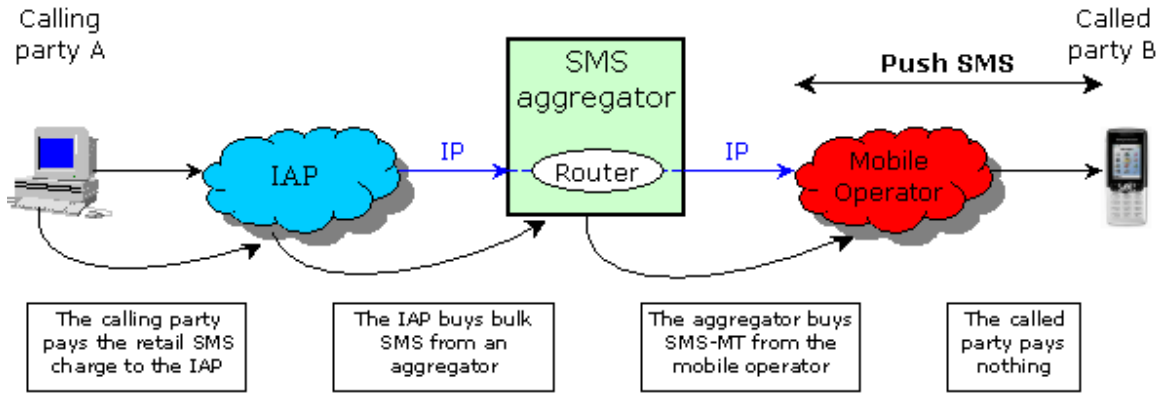



*Figure 10: An IAP sends an SMS to an MNO (IAP2M)*

### *2.5.4. Other buyers (service publishers)*

Service publishers (banks, weather, horoscopes, sport, etc.) also wish to send SMS on mobile networks. In this case, SMS no longer meet the need for interpersonal communication, but support a service that can be solicited by the publisher (such as for a direct marketing campaign) or by the caller (e.g.: to subscribe to an SMS alert service)[22].

Publishers buy from MNOs or SMS aggregators a service, which generally includes a technical connection, the transmission of SMS and, sometimes, the rental of a base of subscribers who have agreed to receive advertising.

It is important to distinguish between the purchase of Push SMS by a service publisher, and the commercial relationship that can be established between a publisher and an MNO for on-line downloads (logos, ring tones, music, games, videos, etc.). In this case, the customer pays its MNO the price of sending an SMS, plus the price of the service whose revenue is shared by the service publisher, the aggregator and the MNO. Therefore, strictly speaking, the publisher doesn't buy an SMS MT service.

[21] In order to promote this service, Bouygues Telecom, Orange France and SFR let their subscribers send one free on-net SMS per day until 31 December 2005.
[22] For a more detailed description of the use of SMS in on-line services, see part 3.2.2.

### 2.5.5. Summary diagrams

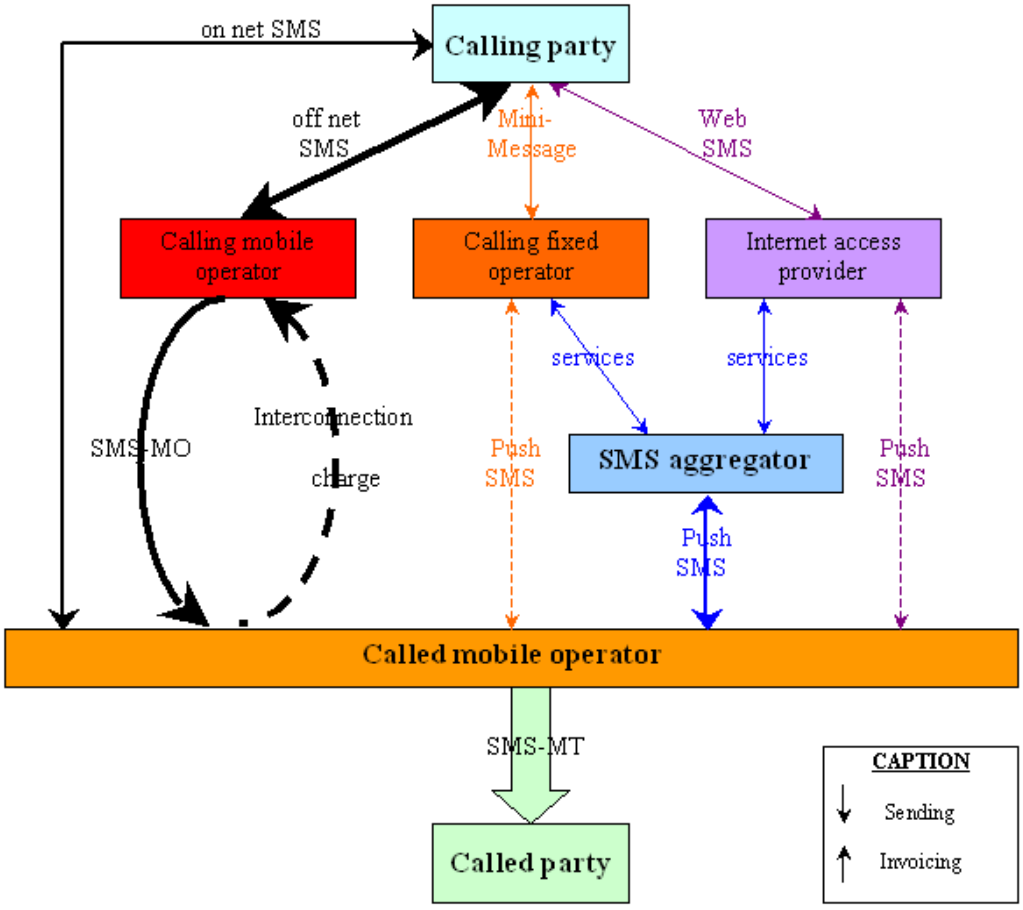



*Figure 11: Sending an interpersonal SMS*

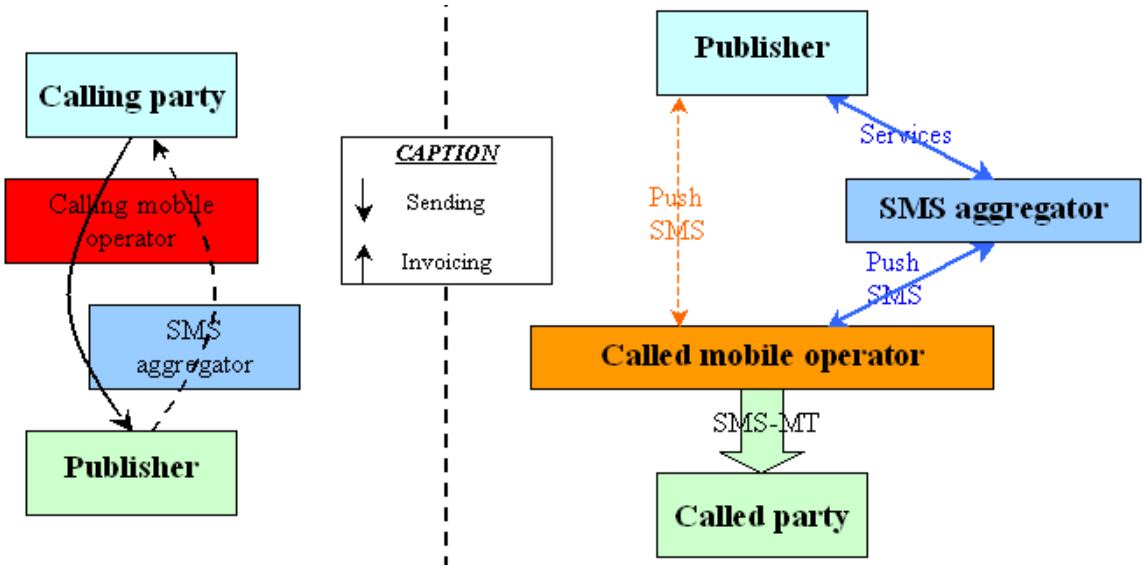



*Figure 12: Sending an SMS via on-line services (to download content or direct marketing)*

## 2.6. Legal qualification of players and SMS CT service

### *2.6.1. Legal status of players*

Just like MNOs, fixed operators providing message services are considered as public network operators. The same is true for SMS aggregators and certain IAPs.

*2.6.1.1 SMS aggregators and certain IAPs are considered as public network operators*

*2.6.1.1.1. SMS aggregators*

Under Article L. 32 15° of the CPCE, an operator is, "*any physical or legal person operating a public electronic communications network or providing an electronic communications service to the public*".

Firstly, an aggregator does indeed operate an electronic communications network.

In accordance with Article L. 32 2° of the CPCE, an electronic communications network is composed of "*any transport or broadcasting installation or set of installations as well as, where appropriate, other means for routing electronic communications, in particular switching and routing resources*".

Since aggregators are responsible for technically connecting networks and routing calls between the publisher and the MNO for the transmission and reception of SMS, they have an electronic communications network, which may, further, be composed of a single installation.

Second, aggregators' networks are considered as public networks.

Article L. 32 3° of the CPCE states that a public electronic communications network is one which is "e*stablished or used to provide electronic communications services or public communications services to the public via electronic means*". Given this definition, it appears that the legal definition of a network depends on the purpose of its establishment or use.

As a result, since an aggregator's network is used to provide electronic communications services or public communications services to the public via electronic means, its qualification is covered by Article L. 32 3°.

Therefore, SMS aggregators are considered as operators, and more particularly as public network operators.

*2.6.1.1.2. Internet access providers (IAPs)*

An electronic communications operator is also any physical or legal person that provides an electronic communications service to the public.

Article L. 32 6° of the CPCE states that electronic communications services are those "*services which consist entirely or primarily in providing electronic communications (…)"*. Electronic communications are defined by Article L. 32 1° of the code as "*the broadcasting, transmission or reception of signs, signals, text, images or sounds via electromagnetic means*".

Under these conditions, IAPs are covered by the legal system for electronic communications operators since they provide to the public services pertaining to the broadcasting, transmission and reception of signals.

Further, in accordance with Article L. 32 2° of the CPCE, if it can be shown that IAPs have an installation for the routing of electronic communications, they can also be qualified as public network operators.

*2.6.1.2 Service publishers are end users under the Framework Directive*

Article L. 32 6° states that "(…) *services involving the publication or distribution of public communications services via electronic means*" are excluded from the category of electronic communications services.

Therefore, service publishers wishing to terminate SMS on a mobile network (banks, insurance companies, supermarket distribution, etc.) are not covered by the framework of the abovementioned definitions. In fact, they do not provide an electronic communications service, but rather a commercial service allowing a mobile service subscriber to receive a content service, which cannot be qualified as electronic communications (horoscopes, weather, sport, stock market quotes, etc.).

From the viewpoint of SMS aggregators or MNOs, these players are end users since this concept covers both physical (mobile service subscribers) and legal persons.

Indeed, as defined in article 2 n) of the Framework directive 2002/21/EC, this concept designates "*a user not providing public communications networks or publicly available electronic communications service*".

### *2.6.2. Legal qualification of SMS CT services*

*2.6.2.1 SMS call termination is covered by the interconnection regime*

SMS transmission and reception services allow the users of the networks operated by MNOs to communicate. Thus, SMS call termination describes an interconnection relation.

Article L. 32 9° of the CPCE states that interconnection designates *"the physical and logical connection of public networks operated by the same operator or different operators, in order to allow an operator's users to communicate with other users of the same operator or of another operator, or to receive services provided by another operator. (…)"* So, the interconnection regime must be applied whenever there is a *"physical and logical"* relationship between *"public networks"* operated by *"operators"*.

Regarding the first element of the definition, it is clear that interpersonal communication between end users is based the transmission of messages using equipment which, when put in contact, reveal the existence of a physical and logical link between the networks of the operators in question.

Concerning the second characteristic, SMS services are qualified as electronic communications since, in accordance with Article L. 32 1° of the CPCE, they involve the *"broadcasting, transmission, or reception of signs, signals, text, images, or sounds via electromagnetic means"*. The services, provided by the firm in question to allow end users to exchange electronic communications, are covered by the definition of *"electronic communications services"* under Article L. 32 6° of the CPCE. Under these conditions, in accordance with Article L. 32 3° of the CPCE, the network used to provide electronic communications services to the public is legally qualified as a *"public network"*. Therefore, the infrastructures used to transport SMS to the subscriber are necessarily covered by this definition.

As for the last element describing interconnection, there is no doubt that when a firm operates a public network, it can be recognised as an electronic communications operator. Indeed, Article L. 32 15° of the CPCE states that *"any physical or legal person operating a public electronic communications network or providing electronic communications service to the public"* must be considered as an operator.

Thus, in view of the examination of the three criteria required by Article L. 32 9° of the CPCE, since SMS call termination is a manifestation of the physical and logical link between public networks operated by a single operator or by different operators, it is covered by the interconnection regime.

*2.6.2.2 Players eligible for interconnection*

Even though, to ARCEP's knowledge, there has not yet been any request for this from operators other than mobile operators, any public electronic communications network operator (including fixed operators, aggregators and IAPs) is eligible for SMS CT. Indeed, in accordance with Article L. 34-8 of the CPCE, any MNO must "*satisfy requests* for *interconnection from other public network operators*".

In other words, the fact that fixed operators, aggregators and IAPs use Push SMS offers, that is wholesale sale of SMS MT offered by MNOs to any player wishing to route SMS to a

called party's mobile phone (SMS aggregators, third-party MNOs, fixed operators, IAPs, service publishers, etc.), does not mean that these players could not legitimately buy SMS CT. This could take a different technical form from SMS CT offered to third-party MNOs in order to take into account the specifics of the networks.

On the other hand, service publishers, which provide public communications services via electronic means (weather forecasts, sporting news, stock market quotes, etc.) or distribute electronic communications services (bank statements, insurance contract status, order delivery dates, etc.), are end users, and as such cannot buy SMS CT.

## 2.7. SMS CT Overseas *départements* and territories

ARCEP considers that it is too early to extend the analysis of wholesale SMS CT markets to overseas *département*s and territories for the reasons explained below. ARCEP will monitor the development of the markets in question and might re-examine the appropriateness of expanding its analysis to Overseas *département*s, depending on the change in the situation of the markets in question and based on the experience it has acquired on the Metropolitan market.

#### *2.7.1.1 Higher costs*

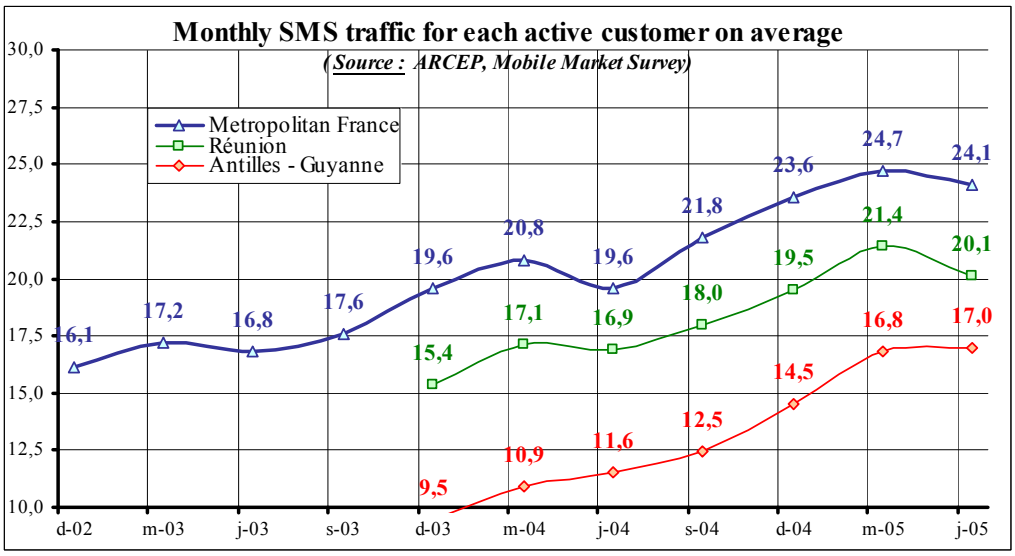
As in Metropolitan France, the SMS interconnection charge in overseas *département*s and territories is 5.336 c€. However, ARCEP has observed that the costs for voice call termination are higher in the overseas *département*s and territories than in Metropolitan France due to the size and the geographic configuration of networks in the overseas *département*s and territories, what create special problems for developing mobile services. One cause of these factors of high costs is geography (high costs of equipment and maintenance; the scattered nature of the Antilles-Guyana region generates connection costs and makes it complicated to share equipment).

Among other things, these elements justified the imposition of price regulation for voice call termination at different levels in Metropolitan France and in the overseas *département*s and territories.

So, maintaining a mobile SMS termination rate of 5.336 c€ for the overseas *département*s and territories is relatively coherent with the costs elements available for Metropolitan France (cf. Appendix D).

#### *2.7.1.2 More limited SMS diffusion*

Moreover, the use of SMS is less developed in the Overseas *département*s and territories. This is particularly visible in the Antilles-Guyana region where, unlike voice, there is a significant difference from Metropolitan France (cf. graph below) in SMS traffic.




### *2.7.1.3 SMS interoperability launched later*

In Réunion, SMS interoperability agreements were signed by SRR and Orange Réunion in December 2002, three years after Metropolitan France.

Agreements were then signed in July 2003 between the major operators of overseas *départements* and territories and the Metropolitan operators.

For the Antilles-Guyana region, it wasn't until December 2003 that SMS interoperability agreements were signed by Bouygues Telecom Caraïbe and Orange Caraïbe, which could explain the differences observed.

Finally, because of the monopolistic situation on the Mayotte and Saint Pierre et Miquelon markets, ARCEP does not foresee any significant competition problems which might be related to SMS CT.

# Chapter 3 Market definition

## 3.1. Introduction

The delineation of the markets aims at defining the scope, in product and geographic terms, of markets that might fall under *ex ante* regulation. In accordance with the European Commission's aforementioned guidelines, which the Authority must apply as stringently as possible (article D. 301 of the CPCE), this market delineation is carried out in keeping with the provisions of the Framework Directive and in compliance with competition law principles.

### *3.1.1. Delineating market boundaries in terms of products and services*

In delineating market boundaries in terms of products/services, must be analysed:

- Demand-side substitutability: two products belong to the same market if they are sufficiently interchangeable for their users, in terms of the use made of them, of their characteristics, their price, their conditions of distribution, the cost of "migrating" from one product to the other, etc. Case law shows that, independently of public regulations, three factors are generally accepted as differentiating the markets for products having identical or similar technical characteristics: the product characteristics, its conditions of use and its mode of sale.

- Supply-side substitutability: there is supply-side substitutability if an operator which is not currently present on a given market could enter it in the near future in response to an increase in the prices of the products sold on it, without exposing itself to excessively high costs. If it is easy for firms to move from one market to another with only minor entry barriers (few differences requiring adaptations to technical production or equipment, reasonable times and investments to modify production facilities), it would be impossible for the suppliers present on either of these markets to avoid competition, so it would be appropriate to treat these markets as a single market. If, however, potential competition is weak, the two markets would have to be treated as different markets to reflect the real market power of the firms present.

- A third criterion, which can be analysed, is related to the existence of shared competitive constraints, and especially prices, in addition to the first two criteria. Certain products are mutually unsubstitutable on the markets we analyse, primarily because of how they are used, so they are sold or consumed together: such as ranges of services offered in bundles. It might be relevant, then, to include the services in the same market.

One possible way of assessing the existence of demand or supply-side substitution is to apply the "hypothetical monopolist test", as suggested by the Commission guidelines. On the demand side, this involves asking what consumers' reactions would be to a small but significant and permanent increase in the price of a given product or service (5 to 10%), in order to determine whether substitutable services do exist. As the guidelines explain, this test's importance lies primarily in its use as a conceptual tool; so it does not require any systematic extensive econometric study.

### *3.1.2. Delineating market boundaries in geographical terms*

According to point 56 of the aforementioned guidelines, from a geographic viewpoint, a relevant market is a "*territory on which the firms concerned involved in providing or demanding products or services are exposed to similar or sufficiently homogeneous competition conditions and which is different from neighbouring countries on for which the competition conditions are significantly different*".

Under the Commission guidelines, two main criteria are used to delineate the geographic boundaries of electronic communications markets: on one side the territory effectively covered by the networks, and the existence of legal instruments which distinguish between geographic areas or, on the contrary, which show that the market is of a national scale.

## 3.2. Overview of the retail market

Here, the retail market is mentioned as a market associated with the wholesale market. However, this examination has no impact on the delineation of a relevant market, or more generally in terms of any legal qualification.

In France, the popularity of SMS (Short Message Service) has grown very strongly since interoperability agreements were signed in December 1999. In 2004, close to 11 billion SMS were sent on Metropolitan mobile networks (compared with 1.5 billion in 2000), for a sevenfold increase in five years, and generating over €1 billion in turnover (compared with €151 million in 2000)[23]. Far from decreasing, consumers' appetite for SMS appears to be growing with the arrival of new added-value services (SMS +, MMS, etc.).

Depending on the uses it supports, SMS can be related to several retail activities:

- mobile interpersonal data
- on-line services which include payable on-line services (content) and on-line distribution (direct marketing)

In the first case, SMS are most often the vector of a conversation between two physical persons. Still, in the case of SMS for professional use, they can be used for a man to machine conversation (e.g. between a meter reader and the database), or machine-to-machine dialogue (e.g. to update a display panel). This activity represents over 85% of SMS sent in volume and allows discrete, asynchronous communication between two or more people of which at least one is on the move.

In the second case, on-line services on mobile phones represent less than 15% of SMS sent in volume and include services for service or on-line content distribution via a medium of electronic communications.

- For paid on-line services (content), SMS are the vector of an exchange between a service publisher and a customer. As a general rule, users received content on their mobile phone that they have paid for—whether for a surcharge or not. This market (representing less than 5% in volume) involves more players, from the service publisher to the end user via many intermediaries (operators, aggregators, IAPs, etc.)

[23] Source: ARCEP, Services Market Observatory quarterly surveys.

- For direct marketing (5 to 10% in volume), SMS is the vector of an advertising message sent by an advertiser (operators, aggregators, publishers, etc.) to commercial targets having given their consent (opt-in base)

The purpose of this next section, which is both descriptive and forward-looking, is to better understand these three retail activities.

### *3.2.1. Mobile interpersonal non-voice communications*

The explosion of interpersonal communications initially carried by voice has been sustained over the past five years by the development of data services. At the retail level, a first segment for interpersonal data communications including SMS, MMS and mobile Internet (e-mail, Instant Messaging, etc.) can be identified. Although these media belong to different networks, all provide written, asynchronous communication between several users on the move and illustrate the phenomenon of network convergence.

#### *3.2.1.1 The development of interpersonal SMS*

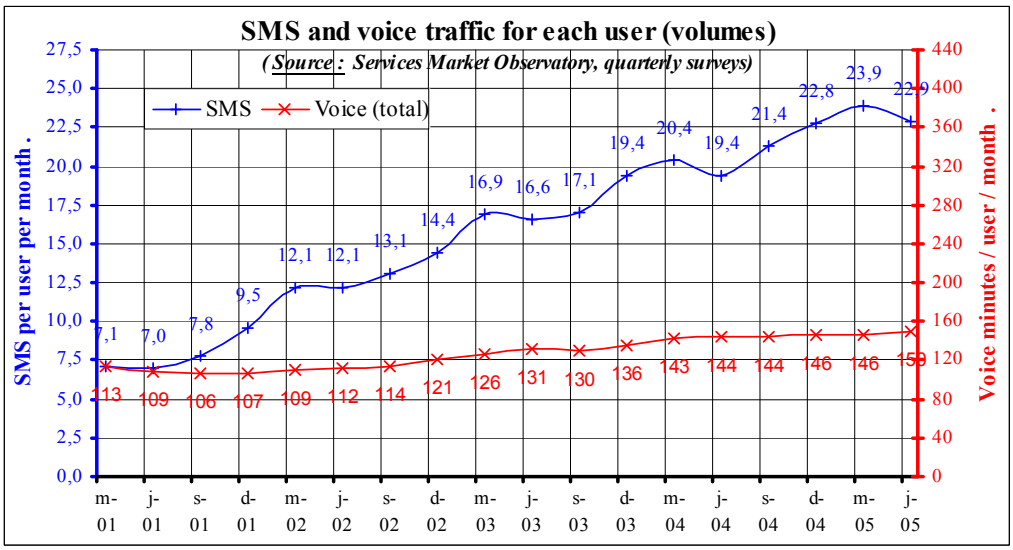
##### *3.2.1.1.1. A success story since the signatures of interoperability agreements in Metropolitan France (1999), and in the Overseas départements and territories (2003)*

Between January 1st 2000 and March 31st 2005, the number of SMS annually sent grew sevenfold, rising from 1.47 billion to over 11 billion.

In the same way, the number of average monthly SMS sent per subscriber on the French market tripled, growing from 7 to 23 between 2001 and 2004. In comparison, one should note that over the same period, voice traffic, measured by the average monthly volume per subscriber, grew from 113 minutes (1 hour and 53 minutes) to 146 minutes (2 hours and 26 minutes), for 30% growth in four years.

The graph below compares the growth of SMS and voice traffic in volume adjusted for number effects[24] between 1st January 2001 and 31 March 2005. We also see that during the past four years, uses for SMS grew two-and-a-half times faster than those for voice.

[24] Average SMS and voice traffic per active customer per month are calculated by dividing the total volume of SMS or voice traffic by the number of active customers. This lets isolate the share concerning the development of uses from the share of traffic due to the increase in the number of customers ("park effect").




### *3.2.1.1.2. More than a simple medium: SMS have become a true social phenomenon in just a few years*

The ever-increasing use of SMS cannot be understood without mentioning their sociological and cultural aspects.

As all players emphasised in their responses to ARCEP's questionnaire on SMS mobile communications services, SMS have become a new, convenient and discrete medium, but also a new way of communicating for a certain population category, in particular those under the age of 25.

According to CREDOC, 58% of people owning a mobile telephone send SMS. More precisely *"97% of those aged 12-17 years having a cell phone and 93% of those aged 18-24 years regularly send SMS, compared with just 15% of those over 60"*[25]. While this practice is slowly spreading to the whole French population, SMS communication remains the privilege of the Youngest. As the following table shows, those under 25 owning a cellular telephone send about 18 SMS a week, compared with just 3 for those over 60 years.

**Number of sent SMS per week on average**

| | 12-17 years old | 18-24 yo | 25-39 yo | 40-59 yo | 60-69 yo | >70 yo |
|---|---|---|---|---|---|---|
| **2003** | 19 | 13 | 9 | 5 | 2 | 4 |
| **2004** | 17 | 19 | 9 | 6 | 4 | 2 |

Source : CREDOC [2004]

So, in just a few years, SMS have become a true social phenomenon, creating new social standards, and sometimes causing intergenerational conflicts.

[25] cf. *La diffusion des technologies de l'information dans la société française*, Survey "Conditions de vie et aspirations des Français", CREDOC, December 2004, p. 27.

### *3.2.1.1.3. Interpersonal SMS: now a mature medium*

While four or five years ago the service could still be considered as emerging, this is no longer the case.

After voice, SMS is now the oldest mobile service. The first SMS was sent in 1992 by the operator Vodafone, whereas the first interoperability agreements in France were signed in December 1999, an event which allowed the service to explode in Metropolitan France.

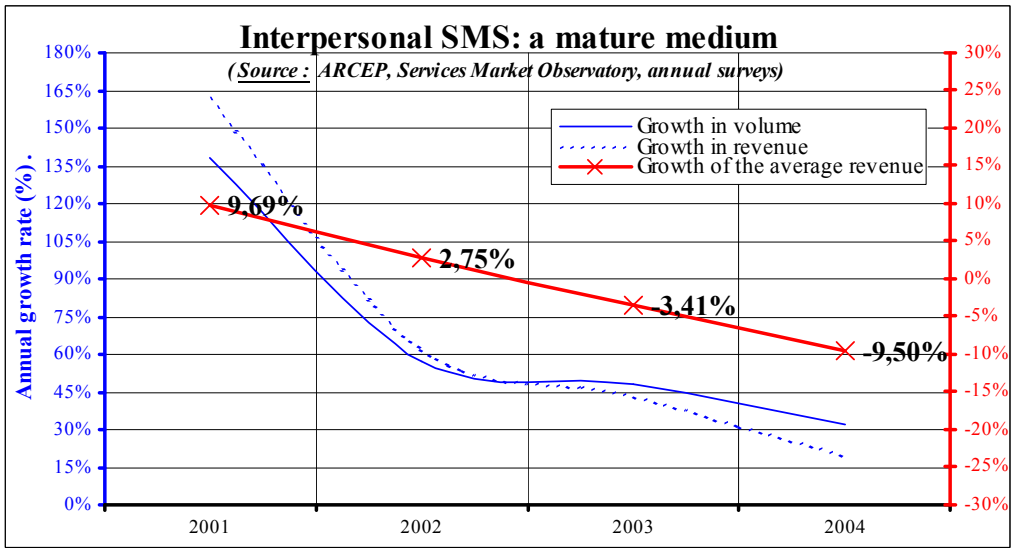
Moreover, while interpersonal SMS grew by about 150% between 2000 and 2001 (cf. table and graph below), growth slowed significantly in the following years and stabilised in 2004 at around 25% (32.1% in volume, 19.6% in value).

**SMS Growth from 2000 to 2004**

| | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| Volumes (million SMS) | 1 471 | 3 508 | 5 523 | 8 188 | 10 818 |
| Growth in volume | - | 138,48% | 57,44% | 48,25% | 32,12% |
| Revenues (million euros) | 151 | 395 | 639 | 915 | 1 094 |
| Growth in revenue | - | 161,59% | 61,77% | 43,19% | 19,56% |
| Average revenue (euro cents per SMS) | 10,27 | 11,26 | 11,57 | 11,17 | 10,11 |
| Growth of the average revenue | - | 9,69% | 2,75% | -3,41% | -9,50% |

Source : ARCEP, Services Market Observatory, annual surveys

Despite the attraction of new added-value services such as MMS (Multimedia Message Service), it is interesting to note that SMS continue to grow and are spreading to the whole French population.




### *3.2.1.2 The recent explosion of new mobile message services*

In the past few years, the success of SMS has borne up the growth of new message services, in particular MMS (Multimedia Message Service) and Mobile Internet that let users

send instant messages or multimedia content (text, sounds, photos, videos, etc.). Technically, MMS can be sent only on GPRS, EDGE and UMTS networks, whereas mobile Internet services (e-mail, Instant Messaging, etc.) are also available via the Wap protocol.

An MMS interoperability agreement between the Metropolitan MNOs was signed in June 2003. These new services allow a more elaborate communication, with the possibility of sending photographs taken with telephones having a built-in camera, for example. However, in the short term, these new message services remain limited.

2003, just 8% of mobile telephone owners had ever sent an MMS, but this percentage rose to 11% in 2004[26]. While this growth is not spectacular, it does reflect a degree of dynamism. Growing sales of cellular telephones with integrated digital cameras are contributing to the growth of MMS to a great degree. At June 30th 2005, there were 10.7 million active multimedia phones[27], representing about 25% of total active customers.

**Mobile multimedia base and total active customers in Metropolitan France**

| | j-04 | s-04 | d-04 | m-05 | **j-05** |
|---|---|---|---|---|---|
| Total active customers (TAC) | 40 344 200 | 40 965 000 | 42 478 500 | 42 814 600 | **43 207 800** |
| Mobile multimedia base (MMB) | 7 548 600 | 8 062 500 | 10 306 800 | 10 377 600 | **10 708 500** |
| (MMB / TAC) | 18,71% | 19,68% | 24,26% | 24,24% | **24,78%** |

Source : ARCEP, Mobile Market Survey

One of the services integrated in multimedia mobile phones is Internet and e-mail services. According to the CREDOC study mentioned above, these services are being used more and more often by consumers, especially by young people. In 2004, 8% of customers used their mobile telephone to surf on the Internet, up by three points in one year. At the same time, the percentage of those who read e-mails on their mobile phone grew from 4 to 6%. Overall, one still cannot say that the French have massively adopted this means of accessing Internet. Certainly, in absolute value, the number of surfers on mobile phones in France is far from negligible—with over two million people—but the annual increase in the number of users remains limited.

### *3.2.2. On-line services from mobiles*

The second retail activity, which can be linked to SMS, is on-line services, which include service distribution or on-line content services via an electronic communications medium, all media combined (Minitel, Wap, i-mode, Internet, etc.).

This activity requires a prior connection (therefore a compatible mobile phone) and puts the end user in contact with a service publisher. As a general rule, users received content they have paid for—whether for a surcharge or not—on their mobile phone. This market (representing less than 5% in volume) involves more players, from the service publisher to the end user via many intermediaries (operators, aggregators, IAPs, etc.).

According to the ACSEL (*Association pour le Commerce et les Services En Ligne*)[28], these services represented sales of about €1.65 billion in 2004 all media combined—of which

[26] Source: *La diffusion des technologies de l'information dans la société française*, Enquête "Conditions de vie et aspirations des Français", CREDOC, December 2004, p. 32.
[27] That is, all subscribing or pre-paid customers who used a multimedia service at least once in the past month (Wap, i-mode, MMS, e-mail). Sending SMS does not count in this definition. For e-mail and MMS, active customers are only those who sent at least one e-mail or MMS in the past month.
[28] cf. *Services en ligne : Modèles Economiques et Systèmes de paiement*, ACSEL white paper, February 2004.

about €200 million for mobiles—again in growth. This should reach €2.5 to €5 billion by 2006-2007. The transmission of SMS content (with SMS + as just one of many offers) represents about 5% of SMS sent in volume, or 500 million SMS.

This activity can be divided into two segments: paid on-line services, which primarily target consumers, and on-line distribution (direct marketing), which primarily concerns service publishers.

### *3.2.2.1 Services to end users: paid on-line services*

#### *3.2.2.1.1. Description*

Paid on-line services for residential and non-residential customers put the consumers of services (banking service, hotline, etc.) or content (news, weather, etc.) in contact with the publisher of the service or content.

There can be many types of publisher (media, banks, etc.). According to the ACSEL, barely one hundred of them create and use this type of service, representing 80% of the market in value.

Publishers use different media and different distribution modes (cf. ***Figure 13*** below) in proposing their on-line content:

- direct sales (model which has developed significantly with Internet),
- indirect distribution via a kiosk or a portal, two methods that have developed particularly well in the mobile telephony world.

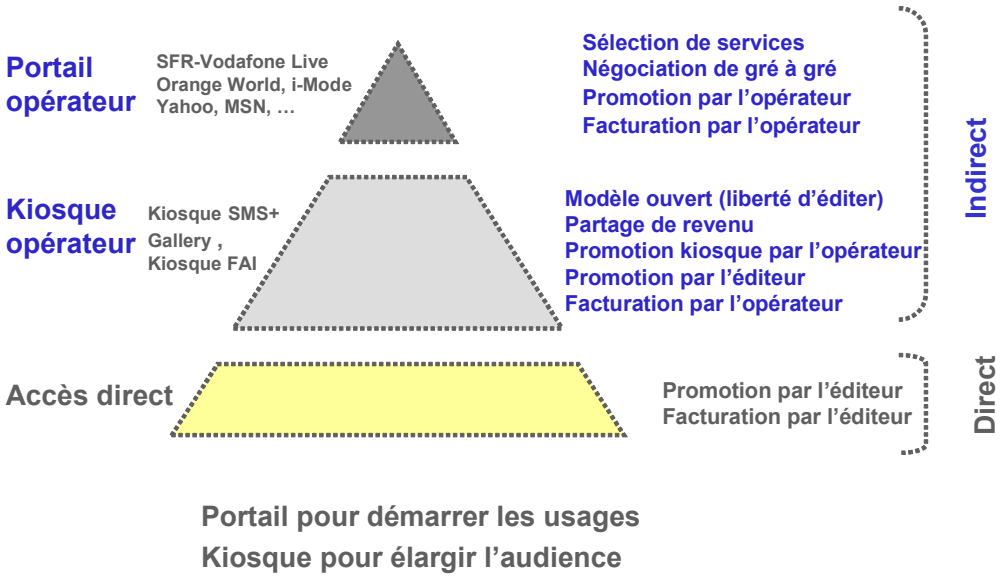



*Figure 13: Portal to initiate uses, kiosk to expand the audience* [29]

[29] Source: *Services en ligne : Modèles Economiques et Systèmes de paiement*, ACSEL white paper, February 2004.

### *3.2.2.1.2. Operators' kiosk offers*

***The SMS + offer***

The first kiosk offer proposed by the three Metropolitan MNOs is an SMS Premium offer, called "SMS +". Since 2002, it has allowed publishers to operate their own SMS services, independently of the operators' service portals. Relations between publishers and operators are regulated by the *Association SMS* + composed of Bouygues Telecom, Orange France and SFR. At July 1st 2004, 300 SMS + services had been activated with these three operators.

The two main principles of SMS + are a five-digit short number shared by Bouygues Telecom, Orange France and SFR, and a single price for the customer regardless of the operator, organised along eight price thresholds (cf. table below). The customer pays the operator the retail price of an SMS to transport the SMS MO, plus a surcharge for the price of the service. Revenue from the surcharge is shared by the service publisher and the MNO.

**Price grids for SMS Premium**

| Prefix number | N° type | Maximum price (VAT) | Intermediate price (VAT) |
|---|---|---|---|
| 3 | 3XXXX | 0,00 € | - |
| 4 | 4XXXX | 0,05 € | - |
| 5 | 5XXXX | 0,20 € | 0,10 € |
| 6 | 6XXXX | 0,35 € | - |
| 7 | 7XXXX | 0,50 € | - |
| 8 | 8XXXX | 1,50 € | 1,00 € |

Source : SMS + association (http://www.smsplus.org/), September 2005

SMS + services can be broken into four major types:

- Chat services: about 40% of services
- Leisure services: about 25% of services (games, contests, surveys, etc.)
- Phone personalisation services: about one-third of services (logos, ring tones, backgrounds, etc.)
- Practical services: less than 5% of services (weather, stock market quotes, news, bank statements, etc.)

***Other kiosk offers (Gallery, VOX +, MMS +)***

Gallery is a surcharged mobile service kiosk shared by the three operators, which contains a number of brands, accessible via their code or a topical and alphabetical index.

Customers access the services (information, weather, content downloading, etc.) by paying for a WAP or HTML call. Use can be paid on a pay-as-you-go basis, per day or per month. The purchase appears on the invoice from the MNO for subscribers, or is withdrawn directly for customers using pre-paid cards.

VOX + and MMS + are kiosk offers in a pre-launch or study phase. These new kiosks should help develop mobile content services for both customers and publishers:

- VOX + will offer voice services with an SMS + short number for the three MNOs' customers. This service is in a pre-launch phase;
- The MMS + kiosk is in a study phase. Its principle is similar to the SMS + offer.

#### *3.2.2.2 Services for publishers: the on-line distribution and direct marketing market*

The second retail activity in paid services is on-line distribution for publishers. It puts a service publisher in contact with an operator that "distributes" these services to its customers (direct marketing).

In indirect distribution, mobile network operators are a major distribution channel of contents and offer various services:

- Distribution of the content proposed by service publishers to end-users. This can be for regular services to which the customer has subscribed with a publisher (banking alarm systems, sporting news, weather forecasts, horoscopes, etc.), or can meet a one-time need. Generally speaking, customers, who give their consent to be solicited for a specific subject, receive an SMS from a publisher proposing a service that matches their interests (concert tickets, downloading of a specific ring tone, chat with other people, etc.). According to publishers, the response rate to these types of campaigns varies from 0 to 40%, depending on how well targeted the campaign is.
- Invoicing. The operators or SMS aggregators invoice not only transport, but can also invoice content. The amount is withdrawn by the host operator for the publisher and then paid to the publisher (minus a commission). In this case, the mobile operators adapt or develop their in-house invoicing systems, so that these small amounts can be included on the telephone bills of their own customers[30].
- Advertising campaigns. SMS and MMS are being used more and more by large firms as a means for promoting their names or brands[31]. Given the positive media impact in terms of image, some firms belonging to sectors as different as supermarket distribution, automobile or banking, willingly assign funds from their communication budgets to launch new products to technophile customers. Unlike the distribution of on-line content, which creates an immediate need towards the end user, these advertising campaigns do not necessarily require any response.
- In addition to the SMS + offer, MNOs are offering more and more distribution channels. MNOs are developing both shared kiosks (SMS +, MMS +, Gallery, etc.), as well as their own portals (i-mode, 6ème Sens, Orange World, Vodafone Live). Any publisher wishing to be present on these channels must generally pay slotting fees.

On this segment of activity, the relationship between the end user and the publisher generally leads to the conclusion of a contract between the service publishers on the one hand and the MNOs or the aggregators on the other hand.

### *3.2.3. Review of SMS uses based on call origination*

2004, close to 11 billion SMS were sent from mobile phones. In comparison, fixed-mobile traffic represented a total volume of 6.5 million SMS. Traffic originating on mobiles represents over 99% of all SMS sent from fixed or mobile phones.

Interpersonal SMS represent over 85% of SMS sent. The SMS + and Vote + offers (SMS voting systems) represent less than 5% of SMS sent in volume.

[30] In on-line purchases, it is important to note that SMS are also being used to support m-commerce and e-commerce. Customers having reserved train or plane tickets on Internet, for example, can be sent an SMS providing them not only with the amount of the purchase, but also of useful information for the trip (file number, time and place of departure/arrival, etc.).

[31] The first MMS campaign ("*Parrainez votre conjoint à la BNP*"-Sponsor your spouse at BNP) was launched in February 2005 for Valentine's Day. MNOs themselves use this type of sales pitch for their own subscriber base.

**SMS use**

| | |
|---|---|
| Interpersonnal (except Web SMS)<br>fixed telephony to mobiles | **over 85%**<br>less than 1% |
| Direct Marketing and Web SMS | **5 to 10%** |
| SMS Premium & Vote + | **less than 5%** |

Source : ARCEP (2005)

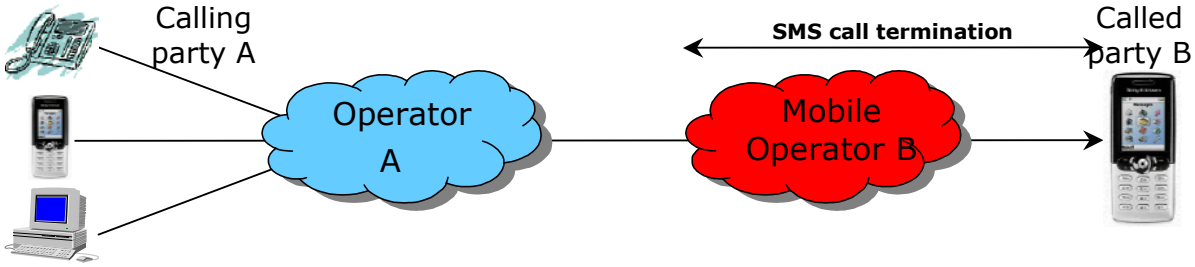
## 3.3. Substitutability analysis

### *3.3.1. Substitution modes*

#### *3.3.1.1 Starting point of the analysis*

This document analyses the SMS call termination market on French public mobile telephone networks, for SMS sent to the customers of these networks.

To delineate a relevant market, the analysis starts from the smallest possible market; that is SMS call termination on the mobile network of Operator B, from the network of Operator A. From a forward-looking viewpoint, Operator A, which operates a public network, can be an MNO, a fixed operator, an IAP or an aggregator. One then needs to examine demand- and supply-side substitutability in order to determine which products are substitutable.




#### *3.3.1.2 Two levels of demand-side substitutability*

There can be two levels of substitutability on a wholesale market:

- **Substitution by another wholesale service:** one needs to examine all the wholesale services available to an operator to provide a single retail service and determine whether the services can be substituted for each other.

- **Substitution on the retail market of the service linked to the wholesale product in question**. The behaviour of the end user on the retail market can have an indirect impact on the wholesale market being analysed: on its definition or functioning.

The analysis begins with a study of the substitutability on the wholesale market, since, following a substantial and non-transitory increase in the mobile SMS termination rate, substitution can first be made on the wholesale market.

### *3.3.2. Demand-side substitutability on the wholesale market*

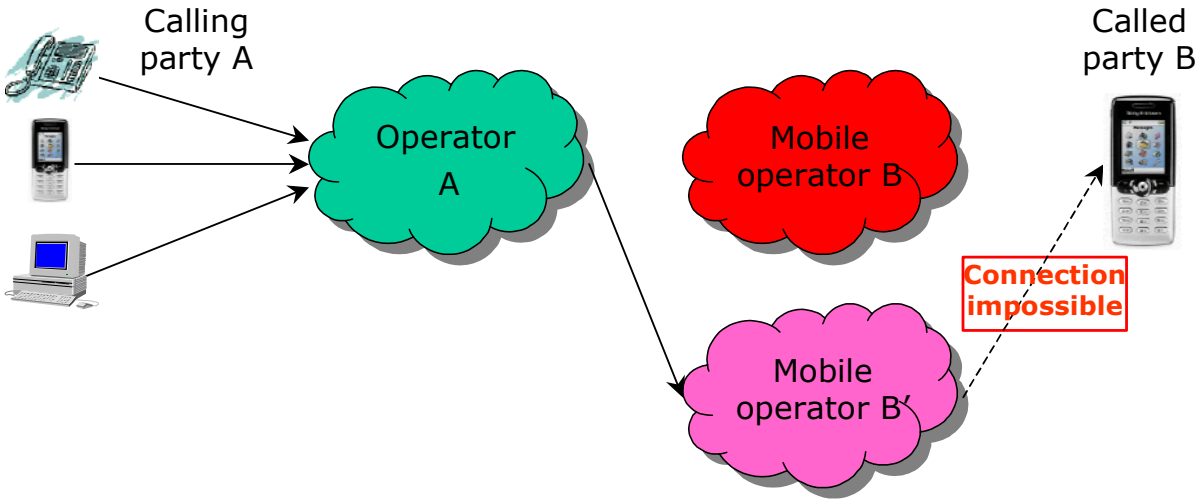
In the event of an appreciable and durable increase in the mobile SMS termination rate, a third-party operator having to terminate an SMS for a GSM MNO's subscriber, could use different wholesale products:

- interconnection from another MNO (SMS call termination)
- Push SMS offers from the destination MNO
- Push offers from an aggregator buying Push SMS on the wholesale market from the MNO in question and reselling it on the same wholesale market
- international rerouting
- interconnection from the MNO using networks other than the GSM network, when such offers exist

The delineation of the wholesale market requires an analysis of the substitutability of these different products, assuming that the market contains at least the interconnection offer (SMS call termination).

#### *3.3.2.1 Non substitutability of SMS call termination on another mobile network*

SMS call termination on another Mobile Network B' cannot be substituted for B. Since Called Party B has to be reached on Network B, the only way for Operator B' to provide an access to the called party's Operator B, is to buy SMS call termination on B's network. Therefore, there is no interest for Operator A to use B', except for transit.




There cannot be substitutability either if there is a Mobile Virtual Network Operator B'', because like Operator B', Mobile Virtual Network Operator B'' would have to buy SMS call termination from B.

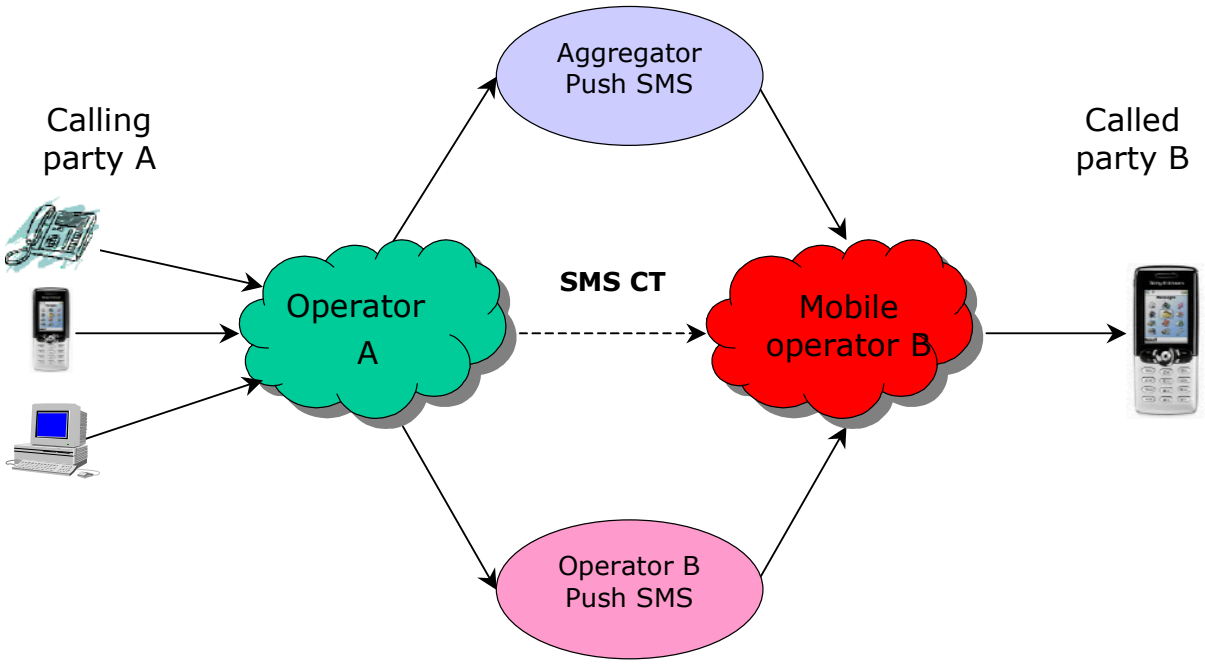
### 3.3.2.2 Substitutability of Push SMS offers

From a strictly technical viewpoint, SMS CT and Push SMS services are relatively equivalent. If the charge for SMS call termination from the destination MNO were to increase, a third-party operator wishing to route an SMS to Called Party B could use a Push SMS offer[32].

Obviously, some players not having the legal status of public network operators (banks, content providers) could not replace Push SMS with an SMS CT service because they are not authorised for interconnection (cf. section 2.6).

Still, most often, the users of Push SMS are public network operators (aggregators, IAPs or fixed telephony operators). So, like any player wishing to route an SMS to Customer B, Operator A can use a Push SMS offer, either offered directly by Destination MNO B, or through an SMS aggregator. If SMS call termination becomes more expensive that the Push SMS offers available on the wholesale market, the calling party's operator will choose the offer whose tariff is the most advantageous for it, given its constraints and its traffic volumes.

In this sense, for the calling party's operator, there is substitutability between SMS call termination and all Push SMS offers proposed by both the called party's MNO and by SMS aggregators.




[32] While this case may seem a bit theoretical, the solution does indeed exist. The tariffs of Push SMS offers appear to be more or less linked to the mobile SMS termination rate (cf. 2.4.3.2). The reason is likely to be related to the fact that the MNOs want to prevent any form of opportunity such as those described in this section. Still, nothing prevents an MNO from proposing a pricing grid which does not take into account the current mobile SMS termination rate.

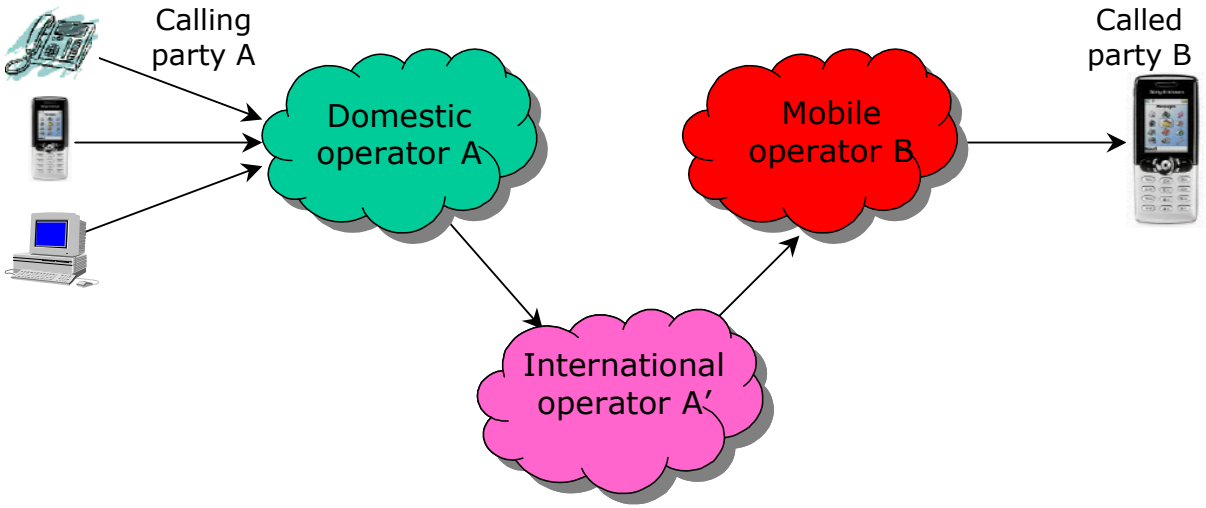
At this point, one can say that there is a certain degree of substitutability between Push SMS offers and SMS CT. This analysis is completed further in part 3.3.4 (substitutability on supply-side).

*3.3.2.3 Substitutability of SMS call termination from a national and international network*

If SMS call termination from a domestic network becomes more expensive than SMS call termination from an international network, the calling party's operator can reroute its traffic to the foreign operator in order to take advantage of the best tariff.

Conversely, if SMS call termination on an international network becomes more expensive than SMS call termination on a national network, the foreign called party's operator will reroute its traffic using a French operator in order to receive the best tariff.

Therefore, there is substitutability between SMS call termination from a national network and SMS call termination internationally rerouted.




*3.3.2.4 Substitutability of SMS call termination using the GSM or UMTS standard*

All operators in France currently having a UMTS license, also have a GSM license (cf. section 2.3.1).

However, none of them has expressed the desire to establish different mobile SMS termination rates depending on whether they use the GSM standard or the UMTS standard. This can be explained by the fact that depending on where the called party is located, an SMS can be sent on GSM and received on UMTS, for example. Further, the service (i.e. allowing a text call to be made in deferred time) is the same regardless of the standard used.

So, for the calling party's operator, there is a total substitutability between GSM and UMTS terminations since both provide the same service at the same price, and the calling party's operator cannot even tell whether GSM or UMTS termination has been used.

### *3.3.3. Demand-side substitutability on retail markets: calling party's behaviour with regard to SMS price increases*

The increase of mobile SMS termination rates may lead to a similar increase in the retail SMS prices (mobile to third-party mobile, fixed to mobile and Internet to mobile). Indeed, the MNOs would probably pass on this increase to their retail customers in order to protect their margins.

So, one need to examine the behaviour of the calling party if the MNO's SMS termination rate (and therefore, by repercussion, retail SMS prices) were to increase to an appreciable and durable extent. This section analyses the behaviour of the calling party with respect to an increase in the retail price for SMS sent to mobile phones, regardless of their origin (mobile, fixed or Internet). Different types of substitution on the retail markets can be expected:

- substitution by an SMS to a fixed telephone or Internet
- substitution by a voice call
- substitution by another mobile messaging service (MMS, mobile e-mail, Instant Messaging, etc.)

#### *3.3.3.1 Non-substitutability of an SMS to a mobile by an SMS to a fixed telephone or Internet*

If SMS retail prices rose (mobile to mobile, fixed to mobile and Internet to mobile), customers would have six possibilities for substitution: mobile-fixed, mobile-Internet, fixed-fixed, fixed-Internet, Internet-fixed and Internet-Internet. Since mobile-to-mobile traffic (M2M) captures almost all interpersonal SMS traffic, only SMS originating on a mobile phone will be analysed in depth.

##### *3.3.3.1.1. Non substitutability by an SMS to an SMS-compatible fixed telephone*

Currently, in order to send an SMS to a fixed phone the called party has to have an SMS-compatible fixed telephone, has to be a France Telecom subscriber (alternative fixed operators do not offer SMS service on their network) and has to have chosen the "caller display" or "number display" option; the calling party has to know this and know the called party's telephone number, not with 10, but 11 digits[33].

Since these conditions are cumulative, they are obviously not all met in most cases. Since no agreement has been reached between the various concerned parties, it is important to note that the use of vocalisation has developed (a synthetic voice reads the SMS), for all SMS from the Bouygues Telecom and SFR networks terminating on the incumbent's fixed network. About 30% of fixed subscribers—those who have switched to an alternative operator—cannot send or receive SMS because this service is currently offered only by France Telecom.

Even if all these contingencies were to be solved within the timeframe of this analysis, in particular in a forward-looking perspective where the offer would be more common, it is important to note that SMS are useful because they let users communicate in places other

[33] In France Telecom's system, to send an SMS to a fixed phone, the sender adds an 11th digit to the 10-digit telephone number, which designates the message recipient.

than where customers have their fixed line. Indeed, to receive an SMS on a fixed phone, the recipient has to stay put, whereas mobility is an integral part of the SMS service. Plus, more and more people no longer have fixed lines (about 15% in 2004) and this trend does not seem likely to reverse by the end of the period in question. Finally, the use of vocalisation, for over 53% of SMS sent to fixed telephones, changes the very nature of the service, which consists in sending a written message. This point will be addressed in more detail in section 3.3.3.2.3.

#### *3.3.3.1.2. Non substitutability by an SMS to an Internet message service mailbox*

Similarly, in order to send an SMS to an Internet message service mailbox, the recipient has to be in a place where an Internet connection is available, it has to have a virtual message service address, the calling party has to know this and know the identifier for this message service mailbox. In addition to the fact that a non-negligible number of people never use Internet, either because they do not have access, or because they don't know how, an SMS can be sent to a virtual message service address only if the calling party first connects to Internet using a multimedia mobile phone which only 25% of mobile service subscribers have. It is currently impossible to send an SMS to a message service mailbox without an Internet connection.

In conclusion, whatever their origin (mobile, fixed or Internet), SMS sent to fixed phones and Internet are not substitutable for SMS sent to mobiles.

### *3.3.3.2 Non substitutability of an SMS by a voice call*

The question is whether, following an appreciable and durable increase in the cost of SMS termination rate on a mobile network, and therefore in the retail prices of SMS on this same network, calling parties might be tempted to make a voice call. Rather than send an SMS, they might prefer to call their correspondents directly from a fixed or mobile network, or leave a message on a voice mail.

The purpose of this section is to analyse the possible substitutability between SMS and voice. ARCEP's analysis is based on both quantitative and qualitative elements. First, a global quantitative analysis identifies the differences in behaviour between SMS users and voice users. Then, qualitative arguments are developed, some of which have already been discussed in the analysis of the wholesale market for voice call termination on mobile networks[34], in order to support our analysis.

#### *3.3.3.2.1. Quantitative analysis*

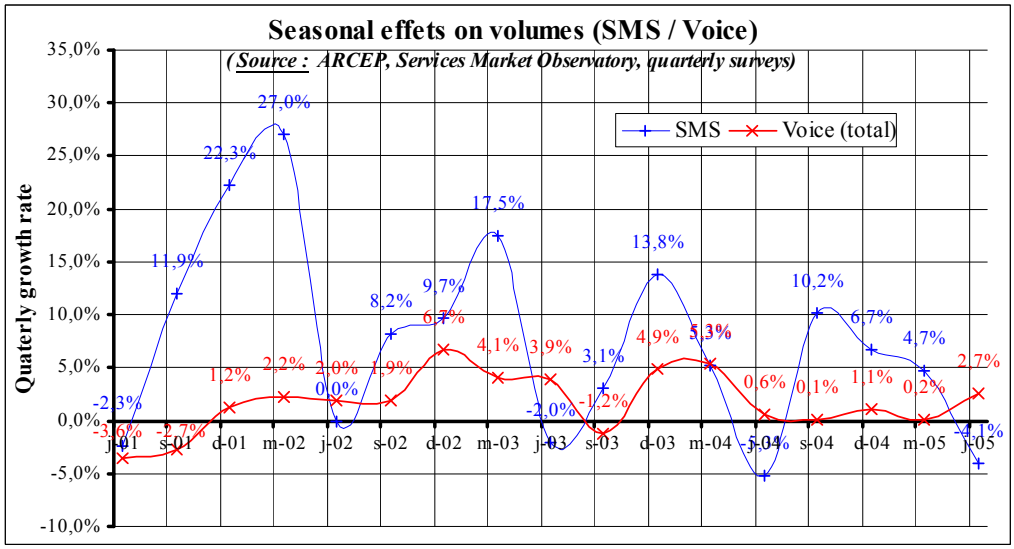
This analysis is presented in Appendix E of this consultation. Only the results of the analysis are presented here. The effects identified in this study are macroeconomic behaviours.

By comparing voice and SMS French traffic data, ARCEP notes that between 2000 and 2004, SMS traffic grew 3.5 times faster than voice, what suggests a specific behaviour to SMS users, with regard to voice users. At the same time, it is interesting to note that SMS revenues are becoming more and more important in the income structure of Metropolitan

[34] cf. Decision no. 2004-936 dated 9 December 2004 on determining relevant markets for voice call termination on mobile networks in Metropolitan France.

MNOs. The share of SMS in the turnover of Metropolitan MNOs has more than doubled in four years, growing from 3.3% in the first quarter 2001 to 8.8% in the first quarter 2005.

According to traffic data, ARCEP observes more marked asynchronous seasonal effects for SMS than for voice. The graph[35] and table below show that growth of SMS traffic is marked by much more pronounced seasonal effects than is voice. First, peaks in SMS traffic have an average amplitude of 20.5% compared with just 7.2% for voice (M2M) between 2001 and 2004. And, the periods in which these seasonal effects are seen are generally different, indicating a lack of correlation between SMS and voice traffic on mobile networks.




| Maximum length between SMS and voice quaterly growth series in volume | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Period** | June 01-March 02 | March 02-June 02 | June 02-March 03 | March 03-June 03 | June 03-Déc 03 | Dec 03-June 04 | June 04-Sept 04 | **Average** |
| **SMS** | 29,3% | 27,0% | 17,5% | 19,5% | 15,8% | 19,1% | 15,5% | **20,5%** |
| **Period** | Sept 01-March 02 | March 02-Sept 02 | Sept 02-Déc 02 | Dec 02-Sept 03 | Sept 03-March 04 | March 04 -Sept 04 | Sept 04 -March 05 | **Average** |
| **Voice (total)** | 5,9% | 0,3% | 4,8% | 8,0% | 6,6% | 5,2% | 0,9% | **4,5%** |
| **Voice (M2M)** | 8,3% | 5,9% | 9,9% | 10,2% | 7,8% | 6,3% | 2,0% | **7,2%** |

Source : ARCEP, Services Market Observatory, quarterly surveys

When calculating the correlation coefficients between the quarterly growth series for SMS and voice, adjusted for number effects on the period 2001-2005 (0.113 for mobile-to-mobile traffic), ARCEP observes that the two series of data are very imperfectly correlated, and that the situation of SMS with regard to voice is closer to non-substitutability than to substitutability.

Thus, the figures based on volume data lead ARCEP to consider that interpersonal SMS have uses that are fundamentally different to voice. The strong growth of SMS traffic and the existence of asynchronous seasonal effects of greater amplitude than those of voice, clearly show that interpersonal SMS and voice calls are two distinct communication modes, which are only very imperfectly substitutable. This analysis is also supported by a number of qualitative considerations that show the specific nature of SMS with respect to voice.

[35] To isolate the part related to consumer behaviours in the analysis, one needs to use SMS traffic data (or voice) adjusted for *"park effects"*; this is done by dividing the number of SMS sent (or the minutes consumed) by the total number of phones. For more details on the methodology used, see section E.2.1.

*3.3.3.2.2. SMS and voice correspond to different services and uses*

First of all, one should remember that an SMS is composed of a maximum of 160 characters and that it is not transmitted in real time like voice. The average duration of calls made to a mobile network is close to 100 seconds. Calls lasting less than 30 seconds represent about 45% of calls. While a telephone call can be a dialogue or a quasi-monologue by the calling party, in general, a voice call (mobile-mobile or fixed-mobile) cannot be substituted for an SMS. Unlike voice, SMS establish a discrete communication in deferred time between the sender and the recipient. In this sense, SMS and voice calls correspond to different services and uses.

Whereas, by definition, voice establishes real-time communication between the calling party and the called party, there is no set queuing time between two short messages, which depends on the occupation of the signalling channels. Thus, communication in deferred time is a characteristic specific to SMS that fundamentally distinguishes it from voice. Even in the case of very short dialogues, or quasi monologues[36], SMS differ from voice because the sender does not know if the recipient has effectively received the message (its mobile phone can be off or on) and, if it has been received, when it was read[37]. Therefore, there can be substitution, in the very special case where the calling party does not need the called party to be informed immediately, or that the called party has actually received the message, such as for a message left on voice mail. But, even in this case, it is not certain that a voice call would be a substitute for SMS, as is discussed in the following section.

Second, the written character of SMS makes it a medium of unobtrusive communication. Since it is rare that the mobile called party can easily move to a private spot, other people in the immediate vicinity are often disturbed[38], as can be the called party who does not necessarily want other people to hear the conversation. Unlike voice calls where the calling and called party make noise when speaking, SMS do not disturb anyone and give their users an extremely convenient way of communicating discretely.

Finally, as already mentioned (cf. section 3.2.1.1.2), SMS have become more than a simple medium; in just a few years they have become a veritable social phenomenon, sometimes the source of intergenerational conflicts. For a certain age group (under 17 year old), it is the medium of a shared identity, a sign of recognition and the symbol of a culture that is different from previous generations. The many debates on the state of the French language (grammar, spelling, etc.) generated by this medium are a perfect example of the way in which SMS are viewed. By using codes, which are specific to them (smileys, phonetic spelling, etc.), SMS have become a unique communication mode that is different from the spoken language in just a few years.

[36] The calling party could simply state *"I'm leaving"*, *"I'll be late"*, *"I've arrived", etc.* The case of a message left directly on a voice mail is examined in the following section.

[37] If they wish, senders of SMS can receive a confirmation message letting them know when the message was received on the called party's mobile phone. But, this feature is not available on all mobile phones and requires the activation of a specific function when sending the SMS. Moreover, even if the message has been received by the recipient, the sender still does not know when it was actually read. So, an undetermined time can pass between the moment when the sender receives the confirmation message and when the recipient actually opens the message.

[38] With the development of mobile telephony, the use of cellular telephones is being increasingly restricted. It is now prohibited in certain cultural venues (theatres, cinemas, concerts, operas, etc.) and tends to be limited in public transport (TGV, commuter trains, etc.) in order to avoid disturbing other people.

#### *3.3.3.2.3. Non substitutability of an SMS by a voice mail message*

It is worth taking a better look at the case of a call directly left on a voice mail or on a telephone answering machine. If there were to be an appreciable and durable increase in the mobile SMS termination rate, and therefore of the corresponding retail prices, the calling party might prefer to leave a voice message for the called party, rather than send an SMS, since a message left on a voice mail corresponds to unobtrusive communication in deferred time.

However, three arguments nuance this last assertion. First, only recently has it been possible to directly access the called party's telephone answering machine without the party answering himself. Few people are familiar with this possibility, which limits its use.

Second, whereas voice messages cannot be stored indefinitely (they are generally erased after one week[39]), SMS can be kept for an undetermined time within the limits of the mobile phone's memory capacity. Plus, because the message is in text form, the called party can not just keep, but also reuse the calling party's information (phone number, date and time of SMS transmission), which is not possible with a voice message left on an answer phone.

Finally, it is important to note that a voice message cannot express all the complexity of a written message. In a message, the signified (the content) has to be distinguished from the signifier (the form). However, the form in which the message is transmitted is at least as important as the content. Just as written messages cannot express all the phatic signs specific to oral language (interjections, pauses, hesitations, tone of voice, etc.), a spoken message cannot express all the signs and codes specific to written language, in particular those used to write SMS.

How can an oral message reproduce a smiley[40] or the phonetic spelling specific to SMS? For example, the alphanumeric sequence *"I 1-d-r why ln & пter r l8"* which corresponds to the sentence *"I wonder why Helen and Peter are late"* contains elements which allow the calling party and the called party to share a common world in which communication takes form. These codes, which can be specific to the calling party and called party, let them exclude anyone who does not know the language from their world. So, a voice message left on a voice mail cannot express these spelling games specific to SMS which are used very broadly by those who massively use the service (especially those under the age of 17).

In this sense, a message on a voice mail is not a substitute for SMS.

#### *3.3.3.2.4. Conclusion*

Following its quantitative and qualitative analyses, ARCEP considers that a mobile-mobile or fixed-mobile voice call is not a substitute for sending an SMS from the viewpoint of demand.

[39] Voice messages can be archived, but this is a paid service.

[40] A smiley is a graphic representation of a human face (one must turn the head to the left to see the eyes, nose and mouth) created by a series of characters expressing an "emotion": a smile :-), surprise :-o, a wink ;-), disappointment :-(, etc.

### 3.3.3.3 Non substitutability of an SMS by another mobile message service

As already stated (cf. 3.2.1.2), SMS's success has supported the growth of new message services, in particular MMS (Multimedia Message Service) and Internet services (mobile e-mail, Instant Messaging, etc.). Within the timeframe of this analysis, the risk of these new message services taking over for SMS remains extremely limited given their emerging character, differences in use and price, and the small number of users potentially concerned.

#### *3.3.3.3.1. Non substitutability of an SMS by an MMS (Multimedia Messaging Service)*

MMS offer much more advanced features than SMS. Obviously they can serve the same uses as interpersonal SMS since both transmit a message, but the point of MMS is that the message can include photos, voice recordings, music or video. In this sense, there is a clear distinction between the two services, reflected in the uses and prices associated with them.

***MMS have not yet attained the level of popularity of SMS***

According to the CREDOC study[41] mentioned above, only 11% of people having a mobile telephone sent an MMS in 2004: 26% of 12-17 year olds and 23% of 18-24 year old mobile phone owners have used the service at least once, whereas 34% of those over 60 years of age don't even know what an MMS is. Thus, the uses linked to MMS remain limited. Currently, the number of mobile phones capable of sending and receiving these types of messages is also low (less than 25% of people owning a mobile).

***MMS are three times more expensive than SMS, on average***

The table below shows the price of an MMS at peak times excluding flat rates, for major Metropolitan MNOs. As we can see, an MMS can cost up to 15 times more than an SMS[42].

**SMS and MMS retail prices (VAT included)**

| | SMS(1) | MMS(1) | | | |
|---|---|---|---|---|---|
| | | Text | Photo | Video | Post card |
| **Bouygues Telecom** (2) | 0,12 € | 0,30 € | 0,30 € | 0,90 € | - |
| **Orange France** | 0,13 € | 0,20 € | 0,40 € | 0,80 € | 1,95 € |
| **S.F.R.**(3) | 0,15 € | 0,15 € | 0,45 € | 0,90 € | 1,95 € |

Source : Operators, August 2005
(1) per unit, peak time, subscription excluded, VAT included
(2) MMS retail prices depends on the capacity, the pricing threshold is beyond 50 ko
(3) per unit, peak time, subscription excluded, VAT included

[41] *La diffusion des technologies de l'information dans la société française*, Enquête "Conditions de vie et aspirations des Français", CREDOC, December 2004.
[42] There can be a pricing segmentation between peak and non-peak times, whereas the invoicing systems can depend on both the capacity and number of MMS sent.

Using the equivalency rule applied by the three major Metropolitan MNOs in their flat rate SMS that 1 MMS = 3 SMS, one can say that MMS cost three times more than SMS on average, what tends to limit the possibilities of substitution between these two services.

In other words, given current price levels, a 0 to 15% increase in SMS prices would not be sufficient to cause a substitution effect among consumers. In this sense, MMS are not a substitute for SMS.

#### *3.3.3.3.2. Non substitutability of an SMS by a mobile e-mail*

E-mails and instant messages require a connection to a message service mailbox for SMS, or to an Internet portal for Internet data services (e-mail, Instant Messaging, etc.), so they differ both in the way they are used and in the way they are invoiced.

As explained in section 2.5.3.2, the calling party pays in the "Telecom" economic model: that is the user originating the call—whether voice or data—bears the entire cost. So, the calling party pays for every SMS sent, but the called party pays nothing to receive the SMS.

On the other hand, in the "Internet" economic model, the receiving party pays: the user is billed on a flat-rate basis—depending on the connection time or capacity—independently of the content or destination or direction of transmission. Therefore, the user is billed for both sending and receiving the message, which affects both how the service is perceived and how it is used.

This is particularly clear when one analyses price levels. When calculating the price of a kilobyte or to send a mobile e-mail converted into an equivalent SMS[43], one can see that a mobile e-mail costs 15 to 150 times less than an SMS[44].

**SMS and e-mail mobile retail prices concerning i-mode**

| Use | Exceptional | Occasional | Regular | Intensive |
|---|---|---|---|---|
| Suscription "Conso" | - | 750 ko | 5 Mo | 20 Mo |
| Price per month | - | 5 € | 9 € | 19 € |
| Price for one kilo octet | 0,0100 € | 0,0067 € | 0,0018 € | 0,0009 € |
| Price for 512 bytes (=1 SMS) (1) | 0,0050 € | 0,0033 € | 0,0009 € | 0,0005 € |
| SMS retail price (2) | 0,1200 € | 0,1000 € | 0,0840 € | 0,0710 € |
| **(2) / (1)** | **24** | **30** | **96** | **153** |

Source : Bouygues Telecom, http://www.imode.fr/, September 2005

[43] A 160-character SMS is coded on 1 120 bits, or 140 bytes. In this sense, it can be interesting to calculate the price of an e-mail of the same capacity. Taking headers into account, one can reasonably estimate that a mobile e-mail of 160 characters has a capacity of 512 bytes. Remember: 1 MB = 1024 kB, 1 kB = 1024 bytes, 1 byte = 8 bits.

[44] This estimate is based on pricing elements reported by Bouygues Telecom and Orange France. SFR does not offer mobile e-mails billed by capacity. The prices paid by the end user to access the *Vodafone Live* portal is based solely on the connection time, which makes comparisons difficult.

**SMS and e-mail mobile retail prices concerning Orange World**

| Orange World | Compte mobile / mobicarte | Orange Pro / Forfait Ajustable |
|---|---|---|
| Capacity | 10 ko | 10 ko |
| Price | 0,15 € | 0,10 € |
| Price for one kilo octet / one minute | 0,0150 € | 0,0100 € |
| Price for 512 bytes (=1 SMS) (1) | 0,0075 € | 0,0050 € |
| Price for an SMS (peak time hour) (2) | 0,1300 € | 0,1300 € |
| (2) / (1) | 17 | 26 |

Source : Orange France, http://www.orange.fr/, September 2005

Besides the fact that this is an emerging service, which continues to be determined by a low equipment rate of compatible mobile phones (less than 25% of total active phones) and the differences between the "Telecom" and "Internet" economic models, given current price levels, a 10 to 15% increase in the cost of an SMS would create no substitution effect with consumers. In this sense, mobile e-mail is not a substitute for SMS.

*3.3.3.3.3. Non substitutability of an SMS by a instant message service*

Besides the low equipment rate in compatible mobile phones and the incompatibility of underlying economic models, chat instant message services establish real-time communication between several mobile service subscribers[45]. Since an essential function of SMS is to establish communication in deferred time between two people on the move, and the need for an Internet connection to send instant messages, the arguments put forward in sections 3.3.3.2.2 and 3.3.3.3.2 remain valid.

Therefore, SMS is not substitutable for instant message service.

*3.3.3.4 Conclusion on the lack of substitutability on the retail markets*

The retail market analysis shows that there are no real substitutes for someone wishing to send an SMS to a mobile customer, whether on a mobile network, fixed network or Internet.

### *3.3.4. Supply-side substitution*

At first glance, there does not appear to be any foreseeable supply-side substitution for the period covered by this document. Indeed this would suppose that, if an MNO were to increase mobile SMS termination rates, another established operator or a new entrant could offer this termination service. However, this is not possible because, in the current system, the terminating operator is the one which provides access to the mobile network and which controls the customer's mobile phone.

Nevertheless, because the market analysis is forward-looking and non contingent and because of both the rapid development of SMS and the legal qualification of the players examined in part 2.6, it appears realistic that operators other than MNOs, and in particular IAPs and SMS aggregators, should be permitted to offer their services under interconnection conditions. In other words, just because IAPs and SMS aggregators have not bought SMS

[45] Instant Messaging requires that the called party's mobile phone be powered on and that the recipient of the message be immediately available to answer.

call termination in the past, it doesn't mean that they won't do so in the future. Since they can be qualified as electronic communications public network operators under article L 32-3 of the CPCE, nothing prevents them from obtaining such conditions within the timeframe of this analysis.

Therefore, considering this hypothesis and in a forward-looking perspective, in which all public electronic communications services network operators have access not just to Push SMS offers from MNOs, but also to SMS interconnection (SMS CT), substitutability between SMS CT and Push SMS (cf. 3.3.2.2) is possible: if Push SMS offer prices from MNOs increase to an appreciable and durable degree (all other conditions remaining equal), SMS aggregators, IAPs and fixed operators will prefer to buy SMS CT service and enjoy interconnection conditions. Some players, especially SMS aggregators (because this is their core business), will be able to offer their customers (service publishers) Push offers which are cheaper than the Push offers proposed by the MNOs themselves.

Therefore, from the supply side, SMS CT is a substitute for Push SMS.

### *3.3.5. Conclusion on the substitutability analysis*

Upon completion of this analysis, ARCEP concludes that the only substitute for SMS call termination on a mobile network, examined on each individual mobile network, is the wholesale sale of SMS-MT (Push SMS). The substitutability analysis shows that mobile SMS call termination is substitutable for Push SMS on the demand side, whereas Push SMS is substitutable for SMS call termination on the supply side: in the event of an increase of mobile SMS termination rates, buyers would prefer to buy Push SMS, whereas in the event of an increase of Push SMS prices, aggregators would buy SMS CT in order to sell Push SMS at a lower price. Thus, both products would face identical competition constraints. These products cover SMS MT whether 2G, 3G, or internationally rerouted.

Other than these, there is no other foreseeable substitution product within the timeframe of this analysis.

Because it is technically impossible for an operator to terminate a call to a mobile network for which it does not own the SIM cards, there is no other demand-side substitution, not on the wholesale market, nor on the retail markets, between voice, SMS or on other mobile message services. Therefore, it is not possible to define a national SMS call termination market.

Because of the lack of demand-side substitution, it is therefore necessary to define the SMS call termination market on each mobile network operator’s network, for its customers.

## 3.4. Delineation of the Geographic Market

Next, the geographic scope of these markets has to be defined. Because they are mobile networks, the concept of geographic segmentation is probably more complex than for fixed; a customer of a French MNO can receive SMS in any country having a GSM-UMTS compatible network. Still, customers generally remain in a limited geographic area, within the operator’s coverage area. Outside the operator’s coverage area, called parties receive SMS through roaming.

The scope of the MNOs' coverage depends on the perimeters of the frequency authorisations, which follow France's administrative division. Therefore, the geographic segmentation uses a Metropolitan perimeter; this is the scope of the frequency use authorisations held by Bouygues Telecom, Orange France and SFR.

## 3.5. List of relevant markets

The relevant markets in the framework of this market analysis are as follows:

- Wholesale SMS call termination market on Orange France's network
- Wholesale SMS call termination market on SFR's network
- Wholesale SMS call termination market on Bouygues Telecom's network

As explained above, ARCEP considers that this market includes all SMS termination services (SMS CT or Push SMS) regardless of the origin of the SMS (mobile, fixed, Internet, national or international), regardless of whether the recipient is a customer of the operator or of an MVNO using the operator's network, and regardless of the technology used to provide this service (GSM or UMTS).

The obstacles to the development of effective competition listed in section 5.1.1 support ARCEP's decision to consider these markets as relevant under Article L. 37-1.

In accordance with article 7 of the Framework Directive, these markets also meet the three criteria defined by the Commission in its recommendation (cf. section 5.1.2).

## 3.6. Relation with the regulatory framework

### *3.6.1. Opinion of the* Conseil de la concurrence

[Comments of the *Conseil de la concurrence*]

### *3.6.2. Comments from national regulatory authorities and the European Commission*

[Comments from the European Commission and NRAs and, if necessary, ARCEP's response]

# Chapter 4 Market power

## 4.1. Introduction

In this chapter, the position of players on the wholesale markets identified in Chapter 3 are examined, that is, the wholesale SMS call termination markets on the individual mobile networks of Orange France, SFR and Bouygues Telecom. They are considered as relevant markets under Article L. 37-1 of the Posts and Electronic Communications Code (CPCE).

### *4.1.1. Overview*

Under article L. 37-1 of the CPCE, "*an undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers*".

As stated in the Commission guidelines, in application of the principles of case law, a firm's market share is an essential—though not sufficient—criterion for market power, i.e. of a dominant position on this market. Indeed, very large market share—in excess of 50%—makes for strong evidence of a dominant position, except under exceptional circumstances.

Furthermore, changes to the market share of the firm and its' competitors are another factor for appreciating a dominant position on this market. A market share can be determined using volumes or turnover; the characteristics of each market will determine the most relevant indicator. Furthermore, in accordance with the Commission guidelines, because the analyses are dynamic and forward-looking, the information has to cover an appropriate period of time.

Market share alone is not sufficient to establish the existence of individual dominance. In application of both national and Community case law and the Commission's market analysis guidelines, more qualitative criteria must also be taken into account:

- overall size of the firm
- control of infrastructure not easily duplicated
- technological advantages or superiority
- lack of or low countervailing buying power
- product/service diversification
- vertical integration of the firm
- a highly developed distribution and sales network
- lack of potential competition or high entry barriers on the market
- existence of price competition
- easy or privileged access to capital markets/financial resources, economies of scope or of scale

ARCEP has done its utmost to implement those criteria that appear to be most appropriate for the competition analysis of the markets concerned by this consultation.

### *4.1.2. Specific nature of ARCEP's analysis*

It is important to remember that this analysis, which is conducted in a forward-looking manner, aims at determining whether *ex ante* regulation would be appropriate on the market.

Therefore, this analysis may have different results than if *ex post* competition rules were applied, in that ARCEP does not examine past conduct, abuses of dominance or agreements. Furthermore, ARCEP's analysis is also different from an *ex ante* merger control, which consists in analysing the risk of a merger for the market's structure, as opposed to the regulator's task of qualifying the market structure and assessing the chances that this structure would be unlikely to change in the absence of intervention.

Moreover, the reasons listed in the Commission's recommendation state that "*The starting point for carrying out a market analysis for the purpose of Article 15 of the Framework Directive is not the existence of an agreement or concerted practice within the scope of Article 81 EC Treaty, nor a concerted practice within the scope of the Concentration Regulation, nor an alleged abuse of dominance within the scope of Article 82 EC Treaty, but is based on an overall forward-looking assessment of the structure and the functioning of the market under examination.*"

In this framework, "*The designation of an undertaking as having SMP in a market identified for the purpose of ex-ante regulation does not automatically imply that this undertaking is also dominant for the purpose of Article 82 EC Treaty or similar national provisions. (…) It merely implies that, from a structural perspective, and in the short to medium term, the operator has and will have, on the relevant market identified, sufficient market power to behave to an appreciable extent independently of competitors, customers, and ultimately consumers*" (§ 30 of the Commission Guidelines).

Therefore, an examination of market power in a market analysis is a new exercise with respect to the practice of competition authorities. So, while ARCEP will seriously consider EU case law, it will also be very attentive to the specific nature of the exercise it is conducting.

## 4.2. Analysis of the market power of Metropolitan MNOs

### *4.2.1. Market share*

The previous section stated that the markets in question were the SMS termination service for MNO customers on each individual network in Metropolitan France, regardless of the origin of the SMS (mobile, fixed, Internet, national or international), and regardless of the technology used to produce this service (GSM or UMTS). This market includes both SMS CT and Push SMS offers for each MNO. Therefore, ARCEP should determine whether each operator has a significant influence on its SMS call termination market.

Each operator controls 100% of market share of the mobile SMS call termination market on its own network. Originating operators have two types of service at their disposal, services offered directly by the terminating MNO (SMS call termination and operator Push SMS) and those offered by SMS aggregators (aggregator Push SMS). In the second case, the originating operator does not buy its service directly from the terminating operator. However, the service it buys includes a termination service that the MNO sells to the aggregator providing Push SMS, and whose price is indirectly controlled.

In all cases, the SMS termination traffic transits through the network of the terminating operator that controls 100% of the market.

In addition to the fact that each operator controls 100% of market share, it is technically impossible for a new entrant to break onto these markets (an operator cannot propose an offer which competes with the MNO to terminate SMS traffic on the MNO's own network). These two elements are listed by the European Commission Guidelines as being important indicators for assuming significant market power (SMP).

Market share of 100% and a lack of potential competition are important indicators of market power. Still, in order to evaluate the scope and in accordance with the Guidelines, an in-depth and exhaustive analysis of the market's economic characteristics has to be conducted.

It is important to evaluate the possible countervailing buying power of the buying operator or the consumer when determining the operator's degree of power and to understand whether it can effectively act in total disregard of demand and its competitors. This ability to act independently of others can be confirmed by examining the termination rates established in the past and the possibility to durably move away from price levels corresponding to reasonable profits.

### *4.2.2. Analysis of the behaviour of consumers and buyers of SMS-MT*

#### *4.2.2.1 Lack of consumer countervailing buyer power on the retail market*

In France, as in all European countries, the calling party pays economic model prevails: the operator bills only outgoing SMS to the customer and no fee is charged for receiving SMS. The SMS call termination rate is set by the called party's operator (and depends on the choice of operator), but is paid by the calling party's operator, and ultimately by the calling party.

However, called parties choose their MNO. They make that decision based only on criteria which affect them directly, that is the price of the mobile phone (whether subsidised or not), the price of a bundled offer which takes into account, among other things, the price of outgoing calls and the possibility of sending messages (number of SMS included in the package, price of SMS per unit, etc.).

So, callers are insensitive to the rate of mobile SMS call termination because they even ignore its existence, since it is not public. In this sense, the "calling party pays" principle gives operators little incentive to set competitive SMS call termination prices.

Therefore, because of the "calling party pays" principle, the consumer has no effective countervailing buyer power.

#### 4.2.2.2 Lack of negotiating power of SMS MT buyers on the wholesale market

##### 4.2.2.2.1. Influence of players on the wholesale market

It is important to analyse whether customers on the wholesale market can have countervailing buying power. For SMS, Bouygues Telecom's major customers are Orange France and SFR, Orange France's major customers are Bouygues Telecom and SFR, and SFR's major customers are Bouygues Telecom and Orange France.

According to ARCEP's estimates based on responses to the quantitative questionnaires on SMS mobile communications services, each MNO's two competitors represent over 87% of total *SMS MT* purchases. Non-mobile customers (aggregators, fixed operators, IAPs, publishers) represent only a marginal share, less than 10%, of *SMS MT* purchases, and purchases by foreign MNOs represent less than 3%. The table below shows the relative weight of the various players on the wholesale market.

**Weight of several actors on wholesale markets for a French metropolitan mobile operator in 2004**

| | |
|---|---|
| Domestic SMS MTR (other French MNOs) | over 87% |
| Push SMS (aggregators, IAPs, fixed tel. operators, publishers, etc.) | from 5 to 10% |
| International SMS MTR (foreign MNOs) | less than 3% |
| **TOTAL SMS-MT** | **100,0%** |

Source : ARCEP (2005)

##### 4.2.2.2.2. MNOs among themselves

In the past, no MNO has ever forced Bouygues Telecom, Orange France or SFR to lower their SMS call termination charges.

Indeed, it is in the interest of each individual operator to impose a high SMS CT charge on incoming SMS in order to increase its interconnection revenues, while obtaining low SMS CT for outgoing SMS (off-net) to minimise interconnection costs. So, if an operator were to decide to unilaterally raise its SMS interconnection rate, the other two would likely respond with a similar increase in order to balance incoming and outgoing flows. On the other hand, if an operator were to decide to unilaterally lower its SMS interconnection rate, the other two would have no interest in decreasing theirs because their interconnection costs would decrease without their revenues being affected.

Under these conditions, an operator wishing to increase its SMS interconnection rate above the cost of providing the service could set it at an arbitrarily high level. In this sense, the countervailing buying power of SMS call termination buyers appears very small.

This is why the only possible balance is at levels above cost, depending on the interests initially defended by the three Metropolitan MNOs. Once the SMS CT rate has been set, it becomes extremely difficult for any player to lower the SMS interconnection rate. As explained above, the only countervailing power that exists would push prices up.

This lack of effective countervailing buyer power is obvious: the SMS call termination charge has remained unchanged since the interoperability agreements were signed in December 1999. This lack of price change is analysed in section 4.2.3.

*4.2.2.2.3. Foreign MNOs*

SMS interoperability agreements with foreign MNOs are overseen by the *GSM Association* and are covered by bilateral contracts. As a result, there are many international SMS termination rates, which can differ from one French operator to another. Still, it is important to note that the amount of the international SMS call termination rate is in general 10 to 15% higher than that of national SMS call termination, which tends to limit the possibilities of arbitrage.

Given both the disparity of international SMS call termination rates from one Metropolitan MNO to another and the low influence of these players on the wholesale market (less than 3%), ARCEP considers that foreign MNOs do not have sufficient countervailing buying power to influence the level of SMS call termination rates in Metropolitan France.

*4.2.2.2.4. Non-mobile players (SMS aggregators, fixed operators, Internet access providers, service publishers)*

Despite their number, non-mobile customers represent a small share (5 to 10%) of *SMS MT* purchases. They do not have any real countervailing buying power, as explained below.

***Lack of countervailing negotiating power of IAPs and service publishers***

As explained above (cf. section 2.5.2), most IAPs and service publishers prefer to use the services of an SMS aggregator, rather than pass by the various Push SMS offers of MNOs. As a result publishers and IAPs have little influence on the wholesale market with respect to that of aggregators.

There could be countervailing buyer power based on the fact that publishers (e.g. in the framework of a direct marketing campaign) could choose not to target the customers of an MNO because of the high cost of its Push SMS offer (or that of an aggregator reselling this offer). However, in reality, this possible countervailing buyer power would still be insufficient to affect operators' rates. In particular, since the prices of Push SMS are set in coherence with SMS CT (substitutability discussed in Chapter 3), any countervailing buyer power exerted by publishers would be significantly diluted because their use represents less than 10% of SMS sent.

***Lack of countervailing buyer power of France Telecom***

Since it is the only operator to offer an SMS service from fixed lines, France Telecom controls almost 100% of market share on this segment. Despite this quasi-monopolistic position, the incumbent has extremely limited negotiating power because it would be unthinkable for it to refuse to offer its fixed customers access to the customers of any MNO.

Despite the privileged relationships that France Telecom enjoys with its mobile subsidiary, one should note that France Telecom currently has no direct interconnection with Orange

France's network, but buys a Push SMS service from it, which is almost identical to those Orange proposes to service providers wishing to route SMS on its mobile network.

Finally, it is important to remember that in the lack of any agreement between the parties, SMS from France Telecom are sent to SFR and Bouygues Telecom's mobile networks via an aggregator and no mini messages are sent by these two operators to France Telecom's network[46].

Thus, despite the ownership links between France Telecom and its subsidiary Orange France and the monopoly which it enjoys for the transmission of SMS from fixed phones, it is clear that the incumbent currently has no real negotiating power with respect to Metropolitan MNOs as for the sending and the reception of SMS. This situation seems to be explained by low volumes.

***Lack of countervailing buyer power of other fixed network operators***

Despite the popularity of SMS with consumers and the clear interest of fixed operators in eventually offering such a service to their customers, the absence of SMS service offers from fixed lines provided by alternative operators is an additional proof of the low negotiating power that these players have with respect to MNOs.

***Lack of countervailing buyer power of SMS aggregators***

SMS aggregators route major volumes of traffic for service publishers, IAPs and France Telecom. Still, given the monopolistic situation of each operator, these players do not have any leverage through which countervailing buyer power could be expressed.

### *4.2.3. Lack of evolution in SMS call termination tariffs in Metropolitan France*

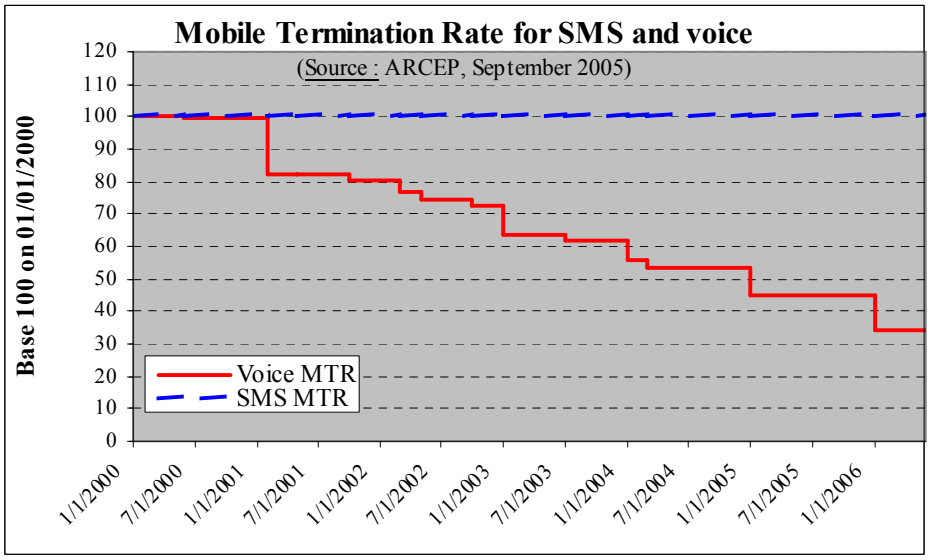
Since its application in December 1999 and despite the strong development of the service that followed (sevenfold increase in SMS traffic between 2000 and 2004), the SMS termination rate has never changed. Initially set at FRF 0.35, this charge remains at the same level (5.336 c€).

In comparison, the voice call termination rate in Metropolitan France declined by 66% between 2000 and 2006 (4.2.3.1), whereas SMS call termination in Israel was divided by 15 between 30 April 2004 and 1st March 2006 (4.2.3.2).

#### *4.2.3.1 Comparison with respect to voice call termination*

As shown in the graph below, the voice call termination rate fell by 66% between 1st January 2000 and 1st January 2006. This drop followed measures taken by ARCEP, upon conclusion of its market analysis for voice call termination on mobile networks.

[46] As explained in section 3.3.3.1.1, SMS from SFR and Bouygues Telecom on the incumbent's fixed network are vocalised.

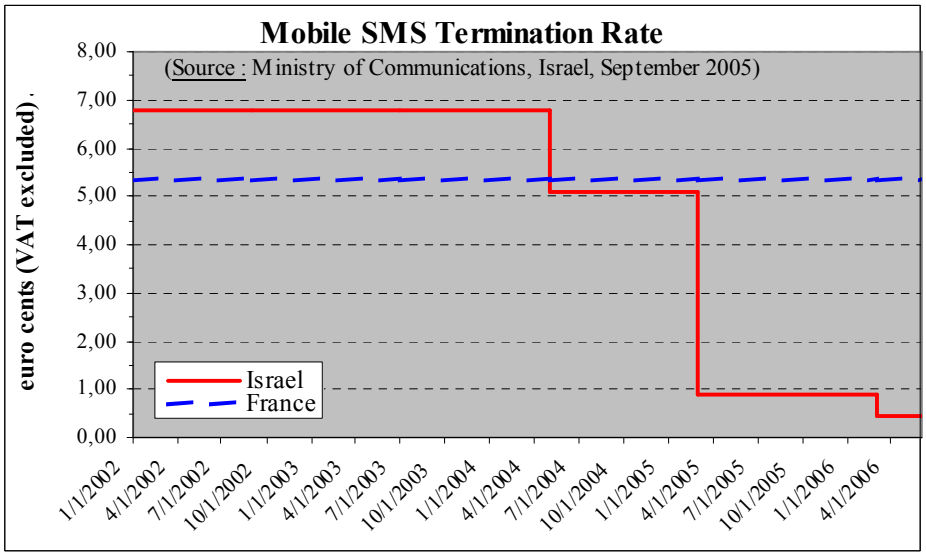



Although they are two different wholesale markets, one might reasonably think that the costs of voice and SMS termination would have evolved in similar proportions, with the accelerated development of SMS between 2000 and 2005 allowing MNOs to amortise their investments more quickly.

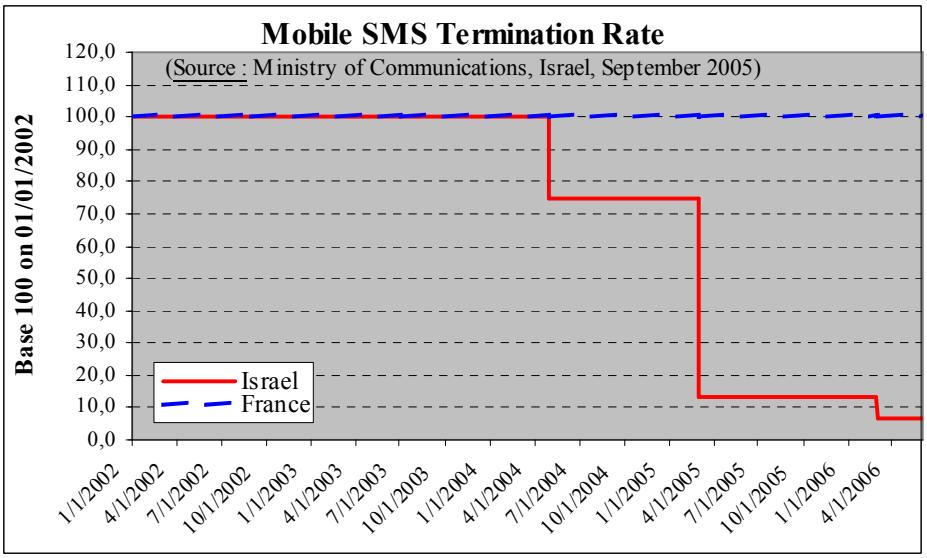
#### *4.2.3.2 Comparison with respect to SMS termination in Israel*

At ARCEP's request, the Ministry of Communications responsible for regulating electronic communications in Israel has provided ARCEP with a number of documents which it used to determine the target levels of voice call and SMS termination in Israel.

These two types of termination have been subject to price control (cost orientation) since 1st May 2004. Further, the Israeli authority has informed ARCEP that the SMS termination rate, which was initially IT 0.38, or 6.78 c€, was lowered to IT 0.285 (5.09 c€) on 1st May 2004, then IT 0.05 (0.89 c€) on 1st March 2005, reaching IT 0.025 (0.45 c€) on 1st March 2006. The exchange rate of IT 5.6041 to €1 dates from 1st September 2005.




With three MNOs (Partner, Pelephone and Cellcom), the situation in Israel is similar to that of France on this level. However, when comparing the geographic conditions and population density, one might conclude that cost levels in Israel are, very approximately, about three times lower than in France[47]. On this basis, SMS termination costs in Metropolitan France would be about 1.35 c€. However, ARCEP is not able to judge the relevance of the "bottom-up" model underlying this estimate, in particular of the keys used to allocate network costs between voice and SMS.




[47] With a surface area of 20 770 sq. km and a population of 6.5 million, average density per inhabitant in Israel is about three times greater than that of France.

#### *4.2.4. Comparison with respect to the estimated maximum cost of SMS call termination*

ARCEP sent a questionnaire to the MNOs in order to determine the relevant CT level at the time of this public consultation.

Still, in view of elements in its possession (cf. Appendix D), given the network costs linked to the use of SMS, and a fair contribution to shared costs, ARCEP estimates the maximum cost of SMS CT in Metropolitan France to be about 2.50 c€ per SMS.

### 4.3. Conclusion on market power

ARCEP considers that without regulation of the SMS call termination rates, Bouygues Telecom, Orange France and SFR are able to act without regard to buyers on the SMS call termination market, and that the system in which their customers are not billed for the SMS they receive does not incite these operators to maintain reasonable SMS call termination rates.

In conclusion, ARCEP considers that Bouygues Telecom, Orange France and SFR have significant market power on the wholesale SMS call termination market on their respective networks.

It is currently technically impossible for a new entrant to break the monopoly of Metropolitan MNOs on SMS call termination. It is unlikely that this situation will change during the timeframe of this analysis. Nevertheless, if the situation were to change before the end of the analysis period, ARCEP would have to re-evaluate the market power of the MNOs.

# Chapter 5 Obligations

## 5.1. Introduction

In accordance with Article L. 38 of the CPCE, if its analysis of the degree of development of competition concludes that a market is not effectively competitive, ARCEP will impose specific and appropriate obligations on the firms identified as having significant market power. These obligations must be imposed based on the nature of the obstacles preventing the development of effective competition and proportionate to the fulfilment of the objectives mentioned in Article L. 32-1 of the CPCE.

The objectives of regulation listed in section II of Article L. 32-1 of the CPCE are to oversee:

"*1. the provision and financing of all public service components of electronic communications*
*2. the exercise of fair and effective competition between network operators and the suppliers of electronic communications services, to the benefit of users*
*3. the development of employment, of efficient investments in infrastructures, of innovation and competitiveness in the electronic communications sector*
*4. the definition of conditions of access to public networks and the interconnection of these networks which guarantee that all users can communicate freely, and the equality of the conditions of competition*
*5. the respect by electronic communications operators of the secrecy of correspondence and the principle of neutrality with regard to the content of the messages sent, as well as the protection of personal data*
*6. the respect by network operators and suppliers of electronic communications services of public order and defence and public safety obligations*
*7. the consideration of the interests of the territories and users, especially handicapped users, in access to services and equipment*
*8. the development of shared use of installations by operators as mentioned in articles L. 47 and L. 48*
*9. the absence of discrimination, in similar circumstances, in the treatment of operators*
*10. the implementation and development of networks and services and the interoperability of services at the European level*
*11. the efficient use and management of radio frequencies and numbering resources*
*12. a high degree of consumer protection, through the provision of clear information, especially through the transparency of prices and the conditions of use of public electronic communications services;*
*13. the respect of the highest possible degree of neutrality, from a technological point of view, for the measures they take*
*14. the integrity and security of public electronic communications networks."*

In accordance with Article L. 38 of the CPCE:

" *I. - Operators presumed to have a significant influence on a market of the electronic communications sector may be imposed, as concerns interconnection and access, one or more of the following obligations, which are proportionate to the fulfilment of the objectives mentioned in Article L. 32-1:*
*1. Publish interconnection or access information, in particular, a detailed technical and pricing offer for interconnection or access when they are subject to obligations of non*

*discrimination;* Autorité de regulation des communications électroniques et des postes *may require modifications to such an offer at any time in order to bring it into conformity with this code. For this purpose, the operator submits all necessary information to* Autorité de régulation des communications électroniques et des postes

*2. Provide interconnection or access under non-discriminatory conditions*

*3. Satisfy reasonable requests for access to network elements or to associated resources*

*4. Not to practice excessive or predatory prices on the market in question and practice prices reflecting the corresponding costs*

*5. Isolate certain interconnection or access activities in accounts, or separate the accounts of services and activities which make it possible to verify whether the obligations imposed by virtue of this article have been respected; the respect of these prescriptions is verified, at the operator's expense, by an independent body designated by ARCEP*

*6. If necessary, under exceptional circumstances, respect all other defined obligations, after approval by the European Commission, in order to raise or alleviate the barriers to the development of effective competition identified during the market analysis stipulated in Article L. 37-1.*

(...)

*V. - In its examination of the proportionate nature of the access obligations that it may impose in application of 3º of I, ARCEP takes the following elements into consideration:*

*a) The technical and economical viability of the use or implementation of competing resources, given the rate at which the market changes and the nature and type of interconnection and access concerned*

*b) The degree of feasibility of providing the proposed access, given the available capacity*

*c) The initial investment made by the owner of the resources, without ignoring the risks inherent to the investment*

*d) The need to preserve competition in the long term*

*e) If necessary, any relevant intellectual property rights*

*f) The provision of pan-European services.*

As concerns access, an operator with significant market power may be required to satisfy reasonable requests, in particular when ARCEP considers that refusal or unreasonable proposals would prevent the emergence of a durable competitive retail market or be detrimental to end users.

ARCEP may define the outline of the obligation to satisfy reasonable requests for access by imposing certain specific mechanisms that are listed in article D. 310 of the CPCE.

### *5.1.1. Identifying competition problems*

In accordance with Article L. 37-1 of the CPCE, ARCEP is responsible for identifying the relevant markets "*in particular with regard to obstacles to the development of effective competition*". The obligations stipulated in Article L. 38 are "e*stablished, maintained or eliminated based on the market analysis defined in Article L. 37-1."*

#### *5.1.1.1 Competition problems on the wholesale market*

##### *5.1.1.1.1. With respect to MNOs depending on the size of their customer base*

The SMS CT of Operator A constitutes a variable cost for Operator B wishing to route an off-net SMS to one of Operator A's lines. On the other hand, when Operator B routes an on-net SMS, it bears only its own costs, that is, its network costs for SMS termination. When the

SMS CT rate is significantly higher than the corresponding costs, the MNOs bear variable costs that are significantly different between an on-net SMS and an off-net SMS. And, in view of elements in its possession (cf. Appendix E), ARCEP observes that the SMS CT rate (5.336 c€ per SMS) currently practiced by the three Metropolitan France operators is significantly higher than the corresponding costs (less than about 2.50 c€ per SMS).

***Consequences on the costs borne by MNOs for the provision of retail SMS service***

Statistically, SMS sent by a user are broken down according to the destination mobile networks depending on the market share in terms of numbers of customer of each network (that is the probability that a caller is a customer of Operator A is equal to the market share of A in the number of customers). In particular, if $x$ designates the market share of Operator B, the proportion of outgoing *on-net* SMS will theoretically be $x$, and $(1 - x)$ for outgoing *off-net* SMS[48]. If $c$ designates the cost of SMS termination (*on-net*), and $t$ the level of SMS CT of other operators, the average termination cost borne by Operator B for an outgoing SMS is $x * c + (1 - x) * t = c + (1 - x) * (t - c)$. The SMS interconnection cost for an MNO is all the more higher that the operator's market share is small and the SMS CT rate is high compared to real costs.

For example, if $c$ = 2.50 c€ for all operators in Metropolitan France, and $t$ = 5.336 c€, with a market share of 47.1% for Orange France, 35.7% for SFR and 17.2% for Bouygues Telecom[49], the average SMS termination cost would be 4.0 c€ for Orange France, 4.3 c€ for SFR and 4.8 c€ for Bouygues Telecom. Bouygues Telecom's average SMS termination cost is more than 20% higher than that of Orange France.

Therefore, the high SMS CT level mechanically increases the costs of operators having fewer customers, without this resulting from poorer efficiency.

One might object, however, that in the hypothesis where the customers of the MNOs have identical average consumption of outgoing SMS, the operators' incoming and outgoing traffic would balance out: if $N$ is the number of mobile-to-mobile SMS sent in a month, $x$ the market share of Operator A and $y$ the market share of Operator B, then in theory A-to-B traffic is $N * x * y$, and B-to-A traffic is $N * y * x$. According to the elements at ARCEP's disposal, this is in fact true to within 5% (at least until 2003). Since SMS CT rates are identical for all three operators, the overall flow of incoming and outgoing invoicing balances out. In the end, the level of SMS CT seems to be neutral for the global SMS economy (incoming and outgoing) of each operator.

Nevertheless, this argument comes up against the fact that, if an operator effectively views its SMS activity in a global manner (that is, considering both incoming and outgoing traffic), it will not adopt this type of approach on the whole SMS activity, but more retail offer by retail offer.

Indeed, SMS retail tariffs are generally more advantageous for customers who consume large quantities of the service (cf. Appendix C); in general, an operator's customers can be broken down among the operator's offers depending on their average consumption (a customer who sends only SMS by the unit at €0.15 will consume fewer SMS than a customer with a flat rate of 100 SMS per month at €10.00). A customer's average outgoing traffic, and therefore its outgoing off-net traffic is therefore very different from one offer to another. On

[48] The actual proportions can be a few points off the theoretical proportions, because of price differentiation practices for on-net/off-net pricing.
[49] Data at 30 June 2005, Mobile Observatory.

the other hand, a customer's average incoming traffic is more homogenous for all customers, even though a customer who sends many SMS would also tend to receive a large number. As a result, when the SMS CT is high with respect to costs, the greater customers' consumption of the offer, the greater the net termination cost (including termination costs and income). This differential increases if the operator's market share is low.

This does not encourage operators to develop the market because customers who consume little artificially appear to be more profitable. In other words, by adopting an aggressive strategy for customers with high consumption, an operator would expose itself to the risk of seeing its SMS incoming/outgoing traffic balance deteriorate. This doubly penalises small operators that, as the latest arrival, not only bear a greater cost differential but also tend to focus on customers having high consumption.

Therefore SMS CT appears to be a cost of outgoing traffic, in particular for offers with a more advantageous retail price. At the extreme, if an MNO were to offer an off-net tariff which is lower than SMS CT, it would expose itself to the risk of seeing some players develop "mobile box" solutions, that is, technical solutions which bypass SMS CT using end-to-end SMS services. Finally, the existence of on-net/off-net price differentiation practices (cf. below) can point up the existence of differences in costs between routing an on-net SMS and an off-net SMS.

***Price differentiation***

On-net/off-net price differentiation practices appeared in late 2003. As described in Appendix C, these take the form of bonuses (possibility of sending some on-net SMS at no charge) and are part of the framework of flat rates for major consumption (with Orange France and, until March 2005, with SFR) as well as of special offers ("nuits KDO" for Orange France, unlimited text messages and MMS to 3 favourite numbers for SFR). Without being anecdotic, this practice is still limited to date in comparison with a more generalised differentiation, which would affect the prices of "pay as you go" SMS.

This type of practice is not necessarily problematic on a competitive level, particularly when it reflects cost differences (cf. *Conseil de la concurrence* opinion no. 01-A-01 of 16 March 2001 on France Telecom's pricing of phone calls originating on its network to other networks). However, the on-net/off-net differentiation does encourage the "club effect", that is the fact that, *in ceteris paribus*, prospective customers will prefer to subscribe with an operator with which their phone contacts already subscribe, in order to benefit from the on-net price for as many SMS as possible. At the same time, their contacts may encourage them to subscribe to the same operator as them, in order to pay the on-net price when they send SMS.

Any operator can create a club effect. Nevertheless, the chance that a club effect can be created will be greater if a prospect's contacts made a conscious choice to subscribe with this operator rather than with another. The larger the operator's customer base, the more probable this is.

When considering a prospect with 10 contacts[50], the probability that more of these 10 contacts are with one operator rather than another is 56.3% for Orange France, 26.6% for SFR and 3.4% for Bouygues Telecom[51].

[50] The probability, for each contact of being a customer of Bouygues Telecom, Orange France or SFR is equal to these operators' market share in customer numbers of (respectively 47.1%, 35.7% and 17.2%).

So, because of the club effect, the on-net/off-net price differentiation is mechanically unfavourable to operators with a smaller customer base. In its decision no. 02-D-69 of 26 November 2002 regarding claims and requests for conservative measures by Bouygues Telecom, the *Union fédérale des consommateurs Que Choisir* and the *Confédération de la consommation, du logement et du cadre de vie*, the *Conseil de la concurrence* also noted: "*price differentiation may influence consumers' choices when making a first purchase or at renewal, since they will be more likely to consider the networks to which their main contacts belong. These effects would limit the interoperability of the networks and therefore favour the largest customer base, since customers value the possibility of calling and being called by the largest possible number of contacts.*"

One might object that on-net/off-net price differentiation induces a dynamic that encourages competition by inciting each operator to increase its market share in order to benefit as much as possible from the club effect.

This argument, taken from economic literature, is quite relevant when operators' market shares are balanced. Each one gains the same benefit from the club effect and seeks to gain an advantage over its competitors. On the other hand, when the market shares are imbalanced, as is the case in Metropolitan France, the club effect creates a handicap for smaller operators, locking them in a "vicious circle": the smaller their market share, the less attractive their offers are; the less attractive their offers are, the smaller their market share, and so on.

In any case, when this dynamic that encourages competition exists, its beneficial effect constitutes only a second-rate optimum with respect to a situation in which SMS CT remain close to costs.

***Conclusion***

The high level of SMS CT rates with respect to costs artificially increases the costs borne by smaller operators at the retail level, which reduces their margin with respect to their larger competitors, and may make it difficult for them to "replicate" certain offers, particularly promotions or special volume offers.

The high level of SMS CT rates with respect to costs also favours the on-net/off-net price differentiation, which handicaps smaller operators through the club effect.

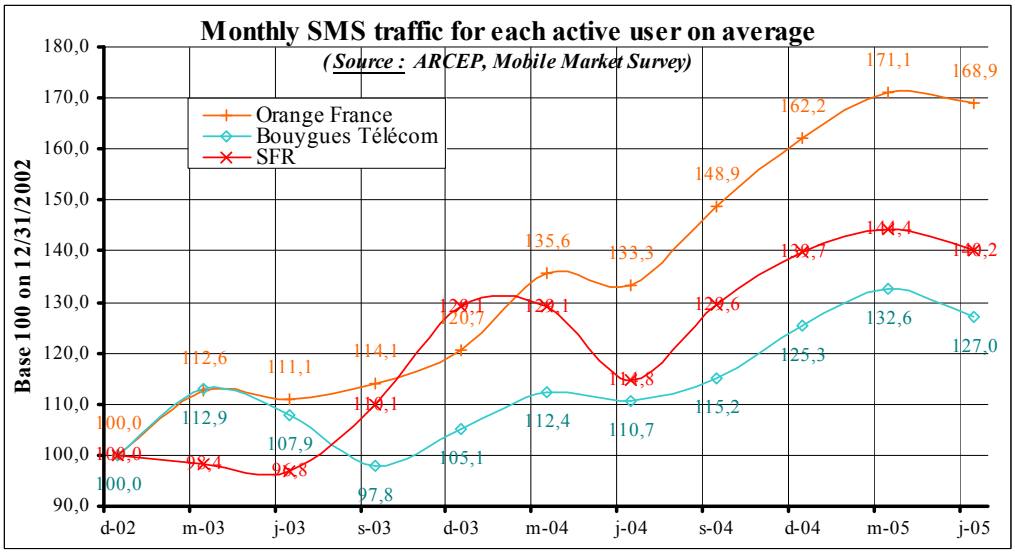
In the market analysis, Bouygues Telecom informed ARCEP of its difficulties in developing its SMS activity. The evolution of monthly traffic per active customer of the three Metropolitan MNOs since 2003 shows Orange France gaining ground and sustained growth for SFR, but relative stagnation for Bouygues Telecom (68.9% growth for Orange France and 40.2% for SFR on the period, compared with 27% for Bouygues Telecom).

[51] These data are relatively sensitive to the number N of contacts chosen (here N = 10). As a general trend, the greater N, the greater the differential between operators (majority effect). With N = 1, we find the distribution in market share. With N = 4 we find probabilities of 43.4% for Orange France, 25.7% for SFR and 7.7% for Bouygues Telecom.

**Monthly SMS traffic for each active user on average from 12.31.2002 to 06.30.2005**

| Operator | déc-02 | mars-03 | juin-03 | sept-03 | déc-03 | mars-04 | juin-04 | sept-04 | déc-04 | mars-05 | juin-05 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Orange France | 13,5 | 15,2 | 15,0 | 15,4 | 16,3 | 18,3 | 18,0 | 20,1 | 21,9 | 23,1 | 22,8 |
| SFR | 18,9 | 18,6 | 18,3 | 20,8 | 24,4 | 24,4 | 21,7 | 24,5 | 26,4 | 27,3 | 26,5 |
| ByT | 17,8 | 20,1 | 19,2 | 17,4 | 18,7 | 20,0 | 19,7 | 20,5 | 22,3 | 23,6 | 22,6 |
| **TOTAL** | **16,1** | **17,2** | **16,8** | **17,6** | **19,6** | **20,8** | **19,6** | **21,8** | **23,6** | **24,7** | **24,1** |

Source : ARCEP, Mobile Market Survey




*5.1.1.1.2. With respect to other public network operators*

As discussed in Chapter 4, the countervailing buyer power of non-mobile public network operators is even lower than that of MNOs amongst themselves. Therefore, these players bear the brunt of the monopolistic power of each MNO on its SMS CT more directly.

Certain IAPs offer interpersonal SMS services, generally originating on their portal. Still, these services are currently limited because of the high level of SMS CT rates, which makes interoperability difficult between instant message services (based on a different economic model, cf. section 2.5.3.2) and SMS. In the same way, fixed or multi-play operators have expressed an interest to ARCEP in launching or developing interpersonal SMS services, if SMS CT rates can be brought down to a reasonable level, so that they can charge retail prices which customers would be willing to pay.

As a general rule, ARCEP supports the analysis according to which overly high interconnection tariffs block the establishment of interconnections that are needed for the greatest possible interoperability of services. For interpersonal SMS in particular, uses to or from fixed networks might develop alongside mobile-mobile SMS, which currently represent almost all SMS traffic. Currently, no interconnection has been implemented in this direction, with players preferring to use Push SMS offers given the limited volumes at stake.

ARCEP considers that the SMS CT levels currently practiced hinder the development of alternative SMS services by increasing their retail prices. Further, if some+ operators did launch such services, in view of the current structure of the SMS market around mobile,

users might tend to send more SMS than they receive, which would once again disadvantage new entrants in the global service economy (outgoing and incoming traffic), at least initially.

Incidentally, ARCEP notes that some IAPs and aggregators have mentioned pricing practices by MNOs which they consider discriminatory: the possibility of sending *on-net* SMS for free (or WebSMS) under one-off promotional offers, the distinction between retail peak/off-peak tariffs which do not exist on the wholesale market, and the introduction of flat rates offering SMS for less than 6 c€ excluding VAT. Nevertheless, ARCEP understands that the scope of such practices, if established, would be limited to a large extent if interconnections were implemented between these players and the MNOs in question.

#### *5.1.1.2 Competition problems on the retail market*

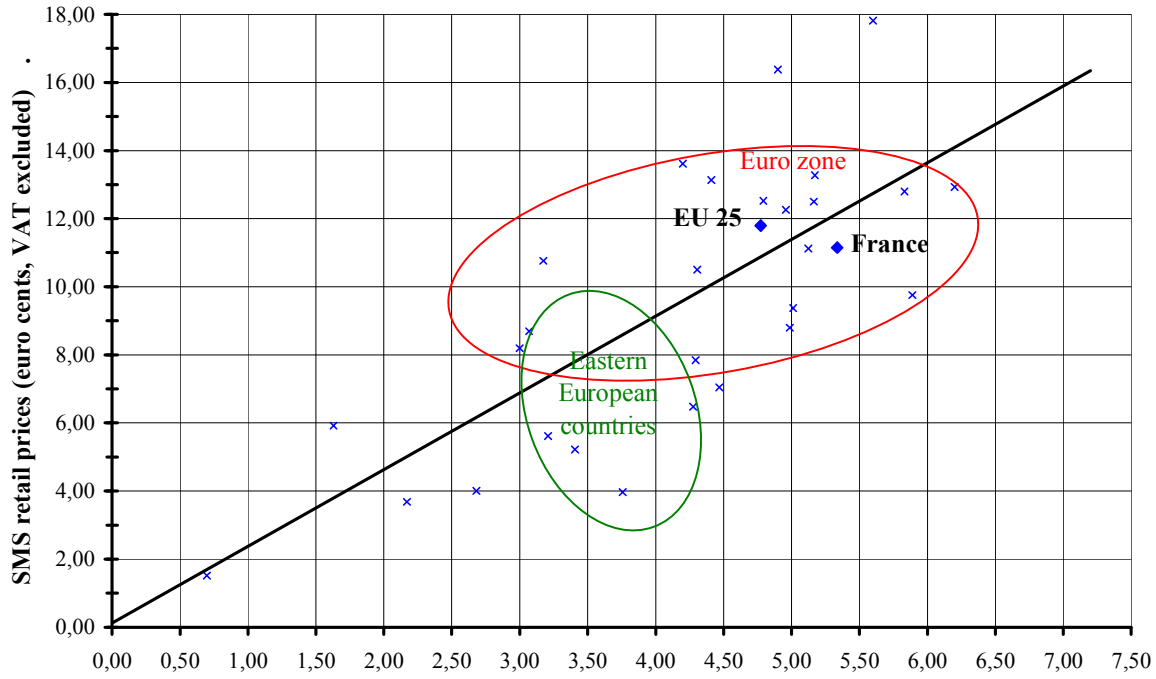
##### *5.1.1.2.1. Play of competition held back on the retail level*

***The current SMS call termination rate hampers the free play of competition in retail***

During the summer of 2005, ARCEP conducted an international comparison of SMS call termination rates and retail SMS prices with the help of interested NRAs. The benchmark covered the 25 members of the European Union, plus Bulgaria, Iceland, Norway, Romania and Switzerland.

For these countries, the graph below shows the SMS retail prices depending on the national SMS interconnection rates on January 1st 2005. The retail prices are calculated as the arithmetic average of tax-free prices practiced by each MNO in the country for off-net SMS, at peak times, applied to post-paid customers and excluding flat rates. The SMS interconnection rates are calculated as the arithmetic average of charges practiced by the operators in the country when they are different or have a time modulation.

At the request of some NRAs, the countries' names have not been included on the graph for reasons of professional secrecy.




Source : ARCEP, September 2005

This comparison calls for a number of observations.

First, SMS CT appears clearly to be a component of retail SMS prices, and more precisely a cost for providing SMS at the retail level (which confirms the analysis presented in section 5.1.1.1.1). On the one hand, there is indeed a correlation (correlation coefficient greater than 0.70) between the level of a country's SMS CT rates and the level of retail SMS prices in this country. On the other hand, for 28 of the 30 countries listed, SMS CT represents a minimum price below which no SMS service offers are proposed.

Second, with an SMS CT equal to 5.336 c€, Metropolitan France was in September 2005 one of the five countries where the SMS interconnection charge was the highest in absolute value. The average of the countries of the European Union, weighted for the population, is 4.77 €c.

Finally, it appears that European SMS CT rates are all the more lower that they were fixed recently. It is notably the case of such many countries which practiced "bill and keep"[52] for SMS until 2002 or 2003. Eastern European countries, shown in green on the graph, are a good example. This trend is confirmed by the Swedish example where the SMS CT dropped by 30% between 2002 and 2005. This dynamic has to be taken into account when analysing the SMS CT rates within Europe.

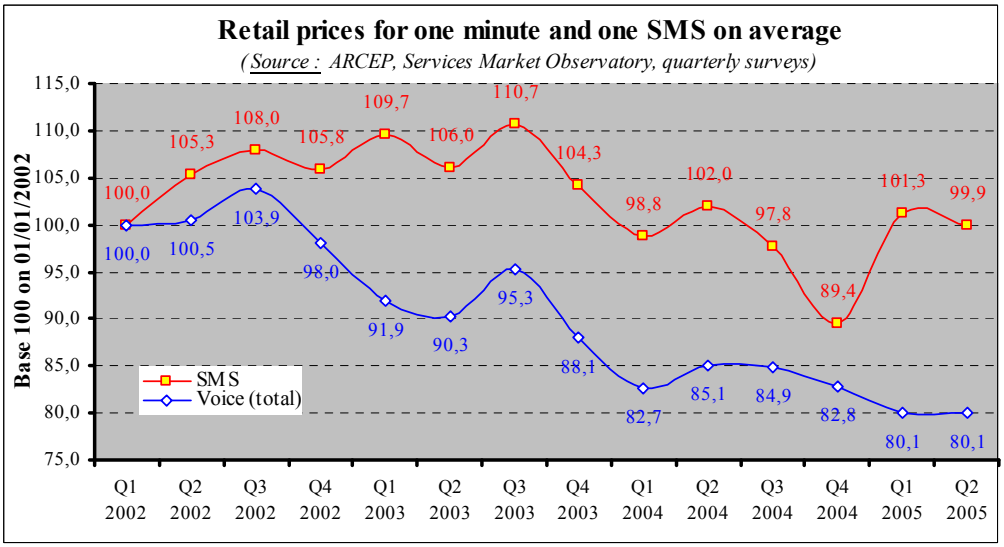
While France's retail price levels are overall within the European average, the SMS interconnection charge seems very high, representing close to 50% of the price of an SMS before tax. In this sense, the high level of SMS CT rate in Metropolitan France is a consequence of an historical situation and constitutes an obstacle to full competition at the retail level, and in particular to a decline in retail prices.

[52] The MNOs did not bill each other for terminating SMS on their networks.

***Relative stagnation of retail SMS prices***

As discussed in the analysis of the wholesale markets for access and mobile call origination (market 15)[53], competition on the retail market in Metropolitan France has been losing steam in the past few years. Retail SMS prices have significantly declined only once since 1999, in the summer of 2004[54], following a request by consumer associations supported by government authorities.

The graph below shows changes in average SMS prices (including VAT) since the first quarter 2002 in France (when it was 12.57 c€), compared with the change in average prices (including VAT) per minute of outgoing voice traffic (25.42 c€ at the time). The graph shows that prices fell by about 10% during the summer of 2004, although this decline must be confirmed over the long term.




*5.1.1.2.2. On-net/off-net price differentiation*

Incidentally, ARCEP notes that the distinction between on-net and off-net SMS, beyond the aspects already mentioned in section 5.1.1.1.1, is not really pertinent for the user, who basically just wants to send an SMS. On an economic level, the on-net/off-net price differentiation leads to discrimination of the retail market that is not based on buyers' differences in preference.

As mentioned, the on-net/off-net price differentiation can only be considered a second-rate optimum, in response to the market distortion caused by the high level of SMS CT with respect to costs.

[53] http://www.arcep.fr/dossiers/mvno/projet-art-05-0331.pdf
[54] SMS tariffs excluding flat rate at peak time of the three Metropolitan MNOs declined from 0.15 c€ including VAT, to 0.15 c€ including VAT for SFR, 0.13 c€ including VAT for Orange France and 0.12 c€ including VAT for Bouygues Telecom. This decline was accompanied by peak/off-peak time modulation for Orange France and SFR (0.10 c€ including VAT in off-peak hours for these two operators).

#### *5.1.1.3 Conclusion*

ARCEP understands that SMS CT rates were set in Metropolitan France when SMS were launched in late 1999, at a level that was consistent with the retail prices of a service in full expansion, and likely with the corresponding cost levels. Since then, the use of SMS has generalised and their production costs have significantly declined (cf. Appendix D), so that this SMS CT level is no longer justified. Further, in countries where, after using bill and keep, operators have set an SMS CT recently, this new level is significantly lower.

Individually, each operator wishes to practice the highest SMS CT rate possible, but wants its competitors to practice the lowest SMS CT rates possible. This leads to a stable situation (Nash equilibrium) in which all operators practice the same SMS CT rates and where it is not in the interest of any operator to lower its own SMS CT rate (cf. section 4.2.2.2.1). This has contributed to the situation in which SMS CT rates have not declined since their establishment in late 1999.

During the market development phase (2000-2002), there was sufficient space between "pay as you go" retail SMS prices and SMS CT for operators to offer volume discounts, in particular for SMS flat rates, according to "development of uses" strategies (the pricing grids encourage customers to use the service more). With the generalisation of SMS, this space may have appeared progressively insufficient, leading SFR and Orange France to use on-net SMS prices as leverage to develop uses (this price was constrained less by the level of SMS CT) starting end 2003.

While a normal reaction of players, on-net/off-net price differentiation practices are still just a second-rate optimum. In particular, through the club effect, they disadvantage operators with a smaller customer base, in this case Bouygues Telecom[55]. Although currently limited, it is not impossible that they may be generalised. So, the play of competition at the retail level must be expressed without necessarily being any on-net/off-net price differentiation. The current level of SMS CT constitutes an obstacle to such a change, in particular to a decline in retail prices.

Further, this artificially high level mechanically generates additional production costs for Bouygues Telecom, because of the size of its off-net traffic.

Finally and above all, the SMS CT level considerably hampers the development of alternative SMS offers which IAPs or fixed operators might wish to propose.

[55] It is also important to note that in March 2005, SFR eliminated the on-net/off-net price differentiation in its new range of SMS flat rates.

### *5.1.2. Examination of the three criteria*

In its recommendation on relevant markets, the European Commission defines three criteria used in drawing up its list of markets whose characteristics may justify the imposition of regulatory obligations defined in the specific directives. In accordance with point 9 of the Recommendation, NRAs are responsible for examining these three criteria when they plan to consider markets not appearing in the Recommendation. These three criteria are as follows:

- Existence of barriers to entry or obstacles to the development of competition
- Lack of possible evolution to a situation of effective competition
- Relative efficiency of competition law and usefulness of *ex ante* regulation

#### *5.1.2.1 Barriers to entry and obstacles to the development of competition*

*"The first criterion is whether a market is subject to high and non-transitory barriers to entry. The presence of high and non-transitory barriers to entry, […] two types of barriers to entry and to the development of competition in the electronic communications sector appear to be relevant: structural barriers and legal or regulatory barriers.*

*A structural barrier to entry exists when, given the level of demand, the state of the technology and its associated cost structure are such that they create asymmetric conditions between incumbents and new entrants impeding or preventing market entry of the latter.*

*Legal or regulatory barriers are not based on economic conditions, but result from legislative, administrative or other state measures that have a direct effect on the conditions of entry and/or the positioning of operators on the relevant market."*

Like voice call termination, it is currently technically and structurally impossible for a new entrant to provide SMS termination to a customer of an MNO having a wireless network (or of an MVNO using this operator's wireless network): only this operator can terminate SMS traffic for the called party.

Therefore, the SMS termination service is unavoidable. Indeed, in the definition of these markets (i.e. the wholesale SMS termination market on each Metropolitan individual mobile network), only these operators can provide the services in question. Any other operator is required to purchase SMS termination services to ensure its users can reach the users of mobile networks.

The obstacles to the development of competition are also discussed in section 5.1.1.

#### *5.1.2.2 Lack of possible evolution to a situation of effective competition*

*"The second criterion, therefore, is whether a market has characteristics such that it will tend over time towards effective competition. This criterion is a dynamic one and takes into account a number of structural and behavioural aspects which on balance indicate whether or not, over the time period considered, the market has characteristics which may be such as to justify the imposition of regulatory obligations as set out in the specific directives of the new regulatory framework."*

The technical and structural barrier mentioned above is not liable to change. Thus, like voice call termination, each operator's structural monopoly for SMS termination on its network will continue.

As a result, in the absence of regulation, the current pricing situation in which prices have not declined in several years even though the use of these services has exploded and production costs have decreased considerably, is likely to continue.

Moreover, because of the calling party pays economic model which prevails, the economic conditions of the sale of these services directly affects the conditions under which competition is exercised between operators on the retail market, as well as the possibility of developing alternative SMS offers.

Indeed, in this economic model, the calling party is billed for all charges for routing the SMS to its contact, including to customers of other networks.

Thus, operators' offers, particularly as concerns pricing, are constrained by the SMS termination rates that are billed to them by the MNOs, which can also be their competitors on the retail market.

As a result, there is little or no intrinsic economic incentive for Metropolitan operators to lower their SMS call termination rates to "competitive" levels, i.e. levels that might be observed if these services were subject to effective competition.

#### *5.1.2.3 Relative effectiveness of competition law and value of additional* ex ante *regulation*

*"The third criterion considers the sufficiency of competition law by itself (without ex ante regulation), taking account of the particular characteristics of the electronic communications sector.*

*The final decision to identify a market that fulfils the first two criteria (high and persistent barriers to entry and absence of characteristics such that the market would tend towards effective competition) as justifying possible ex ante regulation, should depend on an assessment of the sufficiency of competition law by itself (without ex ante regulation) in reducing or removing such barriers or in restoring effective competition.*

*Ex ante regulation would be considered to constitute an appropriate complement to competition law in circumstances where the application of competition law would not adequately address the market failures concerned. Such circumstances would for example include situations where the compliance requirements of an intervention to redress a market failure are extensive (e.g. the need for detailed accounting for regulatory purposes, assessment of costs, monitoring of terms and conditions including technical parameters etc) or where frequent and/or timely intervention is indispensable, or where creating legal certainty is of paramount concern."*

Like voice call termination, SMS termination is a bottleneck, a required step for any third-party operator wishing to route SMS to the customers of the operator in question.

Still, it is not certain that the concept of a bottleneck strictly corresponds to that of an "essential infrastructure" under competition law. In its opinion no. 02-A-08 of 22 May 2002 for the complaint lodged by the *Association pour la promotion de la distribution de la presse*,

the *Conseil de la concurrence* stated that "*the contractual freedom of the holder of an essential infrastructure is limited when:*

- *First, the infrastructure is possessed by a firm which has a monopoly (or a dominant position)*
- *Second, access to the infrastructure is strictly necessary (or indispensable) to perform a competing activity on a market which is upstream, downstream or complementary to that on which the holder of the infrastructure has a monopoly (or a dominant position)*
- *Third, the infrastructure cannot be reproduced under reasonable economic conditions by the competitors of the firm managing it*
- *Fourth, access to this infrastructure is refused or authorised under unjustified restrictive conditions*
- *Fifth, access to the infrastructure is possible."*

France Telecom's copper local loop is an example of an essential infrastructure. This situation legitimises the imposition of access obligations (unbundling, wholesale subscription sales, etc.) on this operator. On the other hand, mobile networks can be duplicated: potentially, two competing mobile networks could function without being interconnected and without infringing on competition law (just like computer systems or software are not necessarily interoperable).

By imposing the principle of service interoperability and therefore of network interconnection, sector regulation creates the obligation to sell, but also to buy interconnection services when they correspond to bottlenecks. As a result in this last case, the selling operator's (sometimes artificial) market power can justify additional intervention, in order to apply the principle of interoperability to its fullest extent. Other obligations, in addition to that to grant interconnection, are:

- non-discrimination, transparency and price control obligations
- measures required to monitor the respect of these obligations, such as obligations of cost accounting and account separation

First, ARCEP understands that competition law would not necessarily be able to impose the first type of obligation in the absence of an "essential infrastructure"[56].

Second, *ex ante* regulation has appropriate tools such as *ex ante* price control or the implementation and monitoring of obligations of account separation. The precise definition and implementation of technical and pricing obligations require in-depth knowledge of technical practices and accounting for regulatory purposes, coherence with similar measures imposed on voice call termination, as well as recurrent work to process, monitor and update the measure. On this level, competition law alone might appear insufficient to remedy competition problems on these markets.

More precisely, like voice call termination, a price control may be necessary to remedy market failures observed on the wholesale SMS termination markets (cf. 5.1.1). The implementation of such measures requires detailed accounts for regulatory purposes, the

[56] In opinion no. 02-A-08, the *Conseil de la concurrence* added: "*because the right of ownership is one of the foundations necessary for the functioning of the market economy and for the dynamic development of our firms, for the holder of an essential facility, the implicit expropriation which represents the obligation to grant its competitors (upstream or downstream) access to the facility it controls, is closely regulated, in order to prevent the competition authority's intervention from discouraging investment in such infrastructures and from impeding economic efficiency.*"

assessment of costs, the consideration of many technical parameters, as well as data processing and monitoring, generally on an annual basis.

Moreover, SMS call termination tariff control is linked to similar obligations imposed by ARCEP on the voice call termination markets. Indeed, most of the termination costs for a mobile network are shared by voice and SMS (joint costs). The allocation of costs shared by voice and SMS requires joint processing, without which, some might not be recovered, and others recovered twice.

Finally, the measure must be reviewed on a regular basis in order to take account of market changes and technological developments. For example, since 2003, WebSMS and mini messages have appeared on France Telecom's fixed network in France. At the same time, the role of aggregators has developed in Europe. Most of all, major changes can be expected because of the launch of new services, in particular via UMTS.

#### *5.1.2.4 Conclusion on the relevant character of the markets under Article L. 37-1*

The obstacles to the development of effective competition discussed in section 5.1.1 justify that ARCEP consider as relevant the wholesale SMS termination markets on individual mobile networks in Metropolitan France under Article L. 37-1 of the CPCE.

In accordance with the abovementioned Commission Recommendation on relevant markets, these markets also meet the three criteria establishing their relevance for *ex ante* regulation.

## 5.2. Obligations

The obligations planned below on the wholesale SMS termination markets target solely SMS call termination services under the interconnection regime, to the exclusion of Push SMS offers.

In a forward-looking perspective, ARCEP considers that aggregators, IAPs and fixed telephony operators will send SMS on mobile networks via interconnection and not through Push SMS offers, as is currently the case (cf. 2.6). Further, SMS CT regulation will also benefit other categories of Push SMS buyers (publishers, etc.) because the value of these services is impeded greatly by the level of SMS CT.

### *5.2.1. Interconnection and mobile network access services*

Under Article L. 38 I 3° of the CPCE and article 12 of the Access Directive, ARCEP can impose obligations of access to an operator having significant market power.

In order to allow service interoperability and efficient interconnection or access investments and given the monopolistic position of each MNO on its market, ARCEP considers as necessary to impose on each MNO an obligation to satisfy any reasonable request for interconnection and access, in order to terminate SMS traffic for Orange France, SFR and Bouygues Telecom's customers (or of an MVNO using their respective networks) in accordance with article D. 310 1° of the CPCE.

ARCEP notes that these three operators already satisfy this type of request. It is therefore not a disproportionate obligation for them.

With regard to the objective of efficiently developing infrastructures and sector competitiveness mentioned in paragraph 3 of Article L. 32-1 of the CPCE, it is also necessary and proportionate that MNOs present the services they offer in a sufficiently clear and detailed manner, and that they not subordinate the provision of one service to another, in order to require players to pay for services they do not require.

Further, ARCEP also considers as necessary that these three SMP operators negotiate in good faith, in accordance with article D. 310 paragraph 2, in order to minimise the number of disputes, and to avoid exploiting the significant influence they enjoy on these markets in negotiations with operators. Finally, given the investments made by players requesting interconnection, it is also justified that these three SMP operators be subject to the obligation to not withdraw access that has already been granted, without the approval of ARCEP or of the operator in question.

Because an operator wishing to terminate an SMS on the network cannot use its own infrastructures, these obligations of access and interconnection are justified and proportionate, in particular with regard to the objective established in Article L. 32-1 II of the CPCE aiming to define "*conditions of access to public networks and the interconnection of these networks which guarantee that all users can communicate freely, and the equality of the conditions of competition"*.

### *5.2.2. Obligation of non-discrimination*

Article L. 38 I 2° of the CPCE and article 10 of the Access Directive include the possibility of imposing an obligation of non-discrimination.

Obligations of non-discrimination ensure that operators apply equivalent conditions in equivalent circumstances to firms providing equivalent services and that they provide others with services and information under the same conditions and with the same quality as those which they use for their own services, or for those of their subsidiaries or partners.

As stated in paragraph 17 of the Access Directive, the application of an obligation of non-discrimination ensures that powerful firms on a wholesale market do not distort competition on a retail market, especially when they are vertically integrated undertakings that supply services to undertakings with whom they compete on downstream markets.

The highly technical nature of interconnection and access services make it easy for a powerful operator to apply different technical and pricing conditions for its customers, partners and its own departments.

Discriminatory technical and pricing conditions on the wholesale market would be prejudicial to competition on the retail markets requiring SMS termination.

The obligation of non-discrimination aims primarily to prevent MNOs from increasing their prices to buying operators with a lesser negotiating power, or from favouring their partners or subsidiaries, which compete with other SMS termination buyers. Such practices would distort the play of competition between operators on retail markets.

It is therefore justified and proportionate to impose an obligation of non-discrimination between customers, and between customers and internal departments, with regard to the objective to ensure "*the exercise of fair and effective competition between network operators and electronic communications service providers, to the benefit of users*".

Therefore, an operator with SMP is not permitted to practice artificially differentiated conditions, in particular when the interconnection service provided is the same, regardless of the type of buyer (third-party MNOs, aggregators, etc.) or the origin of the SMS (Metropolitan France, Overseas *département*s and territories, international). However, this obligation does not exclude the possibility for an operator to differentiate its services based on objective criteria, in particular of a technical nature, related to the type of network.

### *5.2.3. Obligation of transparency*

Article 9 of the Access Directive regarding transparency obligations and Article L. 38 I 1° of the CPCE state that ARCEP may request that an operator with significant market power publish certain information concerning interconnection and access.

For interconnection or access agreements, Article L. 34-8 of the CPCE states that any agreement must be transmitted to ARCEP on request. In order to give full measure to this provision, and to be able to verify the respect of the obligation of non-discrimination, ARCEP considers it necessary to impose an obligation to inform ARCEP of the signing of any new interconnection or access agreements, or of addenda to existing agreements, within seven days of signature.

The analysis of the situation of SMS termination also leads ARCEP to consider that it is not necessary to require mobile operators to publish a reference offer in the current state of the market. Indeed, and in accordance with article D. 307 III of the CPCE, it is justified and proportionate that operators publish their major tariffs relative to SMS call termination on their web site.

By imposing such obligations for SMS call termination services ARCEP can ensure that operators respect the obligation of non-discrimination or, in any case, MNOs can be dissuaded from implementing discriminatory practices.

These obligations must also facilitate negotiations for the implementation of interconnection.

These obligations appear justified and proportionate, in particular with regard to the objective to ensure "*the exercise of fair and effective competition between network operators and electronic communications service providers, to the benefit of users"*.

### *5.2.4. Obligation of price control*

#### *5.2.4.1 Wholesale tariffs reflecting costs*

Article 13 of the Access Directive and Article L. 38 4° of the CPCE state that ARCEP may require that operators "*not practice excessively high or predatory prices on the market in question and practice tariffs reflecting corresponding costs.*"

Each of the three Metropolitan MNOs enjoys SMP in a long run on its own market, given its monopolistic position with respect to its customers (or to the MVNOs using its network).

The analysis of significant market power on these markets shows that these services are essential for all electronic communications operators wishing to develop an SMS service, meaning that they do not have any countervailing buying power on the latitude with which the three MNOs establish their tariffs.

ARCEP notes that the lack of an obligation for prices to reflect costs allows Orange France, SFR and Bouygues Telecom to enjoy income linked to their monopolistic position, which raises many competition problems (cf. section 5.1.1) and impedes the exercise of effective competition on the retail prices of interpersonal SMS.

Therefore, ARCEP considers that the tariffs of these services must reflect costs. Like voice call termination, the costs in question cover only network costs related to SMS call termination, plus an equitable contribution to the operator's shared costs, except for charges related to its commercial activity other than interconnection for SMS termination.

Since there is currently no less restrictive measure which would prevent any distortion of competition, this obligation is proportionate to the objectives of Article L. 32-1 II of the CPCE and to the exercise "*of fair and effective competition*", to the development of competitiveness and "*equal conditions of competition*".

ARCEP does understand that if SMS CT rates were to become very low (close to zero), there would be a high risk of spamming, that is of unsolicited messages. Ill-intentioned players could take advantage of a low Push SMS tariff to make cost effective direct marketing campaigns going against the principle under which customers may not be sent messages of this type unless they have given their express consent (opt-in). In particular, it is not sure that SMS aggregators would be able to control their partners or customers in order to prevent this type of practice.

The consideration of the risk of spamming in the SMS CT pricing framework also appears proportionate to the objectives of Article L. 32-1 paragraph II of the CPCE: "*a high level of consumer protection*" as well as "*network integrity and security*".

However, ARCEP believes that an SMS CT rate of more than 1 c€ per SMS would probably not present a serious risk of spamming.

#### *5.2.4.2 Maximum SMS CT level given available elements*

In accordance with paragraph I of article D. 311 of the CPCE, as part of its obligations of price control, ARCEP may "*ask these operators to respect a multi-year tariff framework*".

The elements available to ARCEP to date are insufficient to establish any real multi-year framework at this point.

Nevertheless, at the time of this public consultation, ARCEP sent a questionnaire to the MNOs in question in order to determine the relevant level for SMS CT. Based on the elements it receives, ARCEP will be able to define a maximum SMS CT level which would be applicable upon the implementation of its decisions regarding this market analysis.

This maximum level would then be revised, in view of elements which will be reported by operators at a later date, in application of the accounting obligations that ARCEP plans to impose on them (cf. section 5.2.5).

Still, in view of elements in its possession (cf. Appendix D), ARCEP wishes to state that the cost of an SMS CT in Metropolitan France would be about 2.50 c€ maximum per SMS, taking into account the network costs linked to the use of SMS as well as a fair contribution to shared costs.

### *5.2.5. Accounting obligations*

*5.2.5.1 General objectives*

Account separation and cost accounting obligations are separate remedies that ARCEP may impose on an operator with SMP on a given market upon completion of the market analyses conducted in accordance with the procedure described in Article 16 of the Framework Directive.

Article 11 of the Access Directive states that ARCEP may "*impose obligations for accounting separation in relation to specified activities related to interconnection and/or access*", in order to verify the respect of transparency and non-discrimination obligations.

In particular, ARCEP may "*require a vertically integrated company to make transparent its wholesale prices and its internal transfer prices to ensure compliance where there is a requirement for non-discrimination under Article 10 or, where necessary, to prevent unfair cross-subsidy*."

Therefore, ARCEP can "*specify the format and accounting methodology to be used*" and "*require that accounting records, including data on revenues received from third parties, are provided on request*".

The cost accounting obligation is defined by Article 13 of the Access Directive, including obligations linked to cost recovery, price controls and the cost orientation of prices. The purpose of imposing these obligations is to prevent that "*a lack of effective competition means that the operator concerned might sustain prices at an excessively high level, or apply a price squeeze, to the detriment of end-users"*.

Article L.38 I paragraph 5 of the CPCE states that "*operators considered to exercise significant influence on a market of the telecommunications sector may be required,* (…) [to] *isolate in their accounts certain interconnection or access activities, or keep separate accounts for services and activities which make it possible to verify that the obligations imposed under the present article are being respected*".

The integrated character and position of each of the three operators Orange France, SFR and Bouygues Telecom on the SMS call termination markets could create discriminatory distortions on the wholesale and retail markets, which can be monitored thanks to an account separation obligation.

It is proportionate to the objectives set out in article L.32-1 of the CPCE, and in particular paragraphs 2, 3 and 4. This obligation constitutes the absolute minimum to be certain that there are no anticompetitive behaviours and that the cost-orientation obligation is respected.

#### *5.2.5.2 Specifications and principles*

Account separation should help to:

- provide coherent information to operators which is indispensable for price control
- identify network activity, and in particular the conditions of use of the various resources by the operator's internal and external departments
- distinguish between the MNOs' retail and wholesale activities, with sufficient detail and in a format made necessary to monitor the obligations for this market

The format of the accounting reports will be used to specifically monitor obligations regarding the wholesale market being analysed. It must also provide ARCEP with a sufficiently complete view to allow it to verify the coherence of the entire accounting mechanism put in place.

In accordance with article D. 312 of the CPCE, under this obligation, and in order to respect coherence between operators, ARCEP can define the specifications of a cost accounting system, as well as the valuation methods and the cost allocation rules. It also determines the format and the degree of detail of the accounts, to verify that any obligations of non-discrimination and cost orientation have been respected.

In order to guarantee a sufficient degree of information, relevant elements from the information system and accounting data are made available to *Autorité de Régulation des Communications électroniques et des Postes*, upon request.

At a later date, ARCEP will define all the rules concerning any specifications for accounting systems, valuation methods and cost allocation rules, as well as the format of the accounts to be produced.

These rules will be coherent with those to be defined for the regulation of the wholesale voice call termination markets in Metropolitan France.

#### *5.2.5.3 Audits*

In accordance with Article L. 38 paragraph 5 of the CPCE, the accounts produced and the cost accounting systems are audited by independent audit companies on an annual basis. These companies are designated by *Autorité de Régulation des Communications électroniques et des Postes*. This audit is performed at the expense of the operators in question. The designated audit companies annually publish a certificate of conformity of the accounts.

This obligation is consistent with those defined for the regulation of the wholesale voice call termination markets in Metropolitan France. An audit of the accounting system is necessary to guarantee its solidity and conformity with ARCEP's decisions and the reliability of the accounting data it produces. ARCEP considers this obligation justified and proportionate to the objective to guarantee the exercise of fair and effective competition between network operators and electronic communications service providers, to the benefit of users.

# Appendixes

# Appendix A Geographic scope

## A.1. List of French territories

France is composed of four major units:

- Metropolitan France: the mainland and Corsica
- The **Overseas *départements***: Réunion[57], Guadeloupe, Martinique and Guyana
- The ***territorial units***: Mayotte[58] and Saint Pierre et Miquelon[59]
- The **overseas territories**: New Caledonia, French Polynesia, south polar regions and French Antarctic regions, Wallis and Futuna Islands

The *Post and Electronic Communications Code* is applicable in Metropolitan France, the Overseas *départements*, Mayotte and Saint Pierre et Miquelon.

It is important to note that voters on the islands of Saint Martin and Saint Barthélemy, which are currently members of the overseas department of Guadeloupe, voted in a referendum to change their islands' statuses. If their status were to be changed, the islands of Saint Martin and Saint Barthélemy would become two overseas units under article 74 of the Constitution. Saint Martin would retain its status as an outermost region of the European Union. Saint Barthélemy would have autonomy in setting prices and in telecommunications.

[57] The Iles Eparses, although administered by the Réunion regional prefect, are not part of the European Union.
[58] Departmental unit by virtue of law number 2001-616 dated 11 July 2001.
[59] Territorial unit of the French Republic under law number 85-595 dated 11 June 1985.

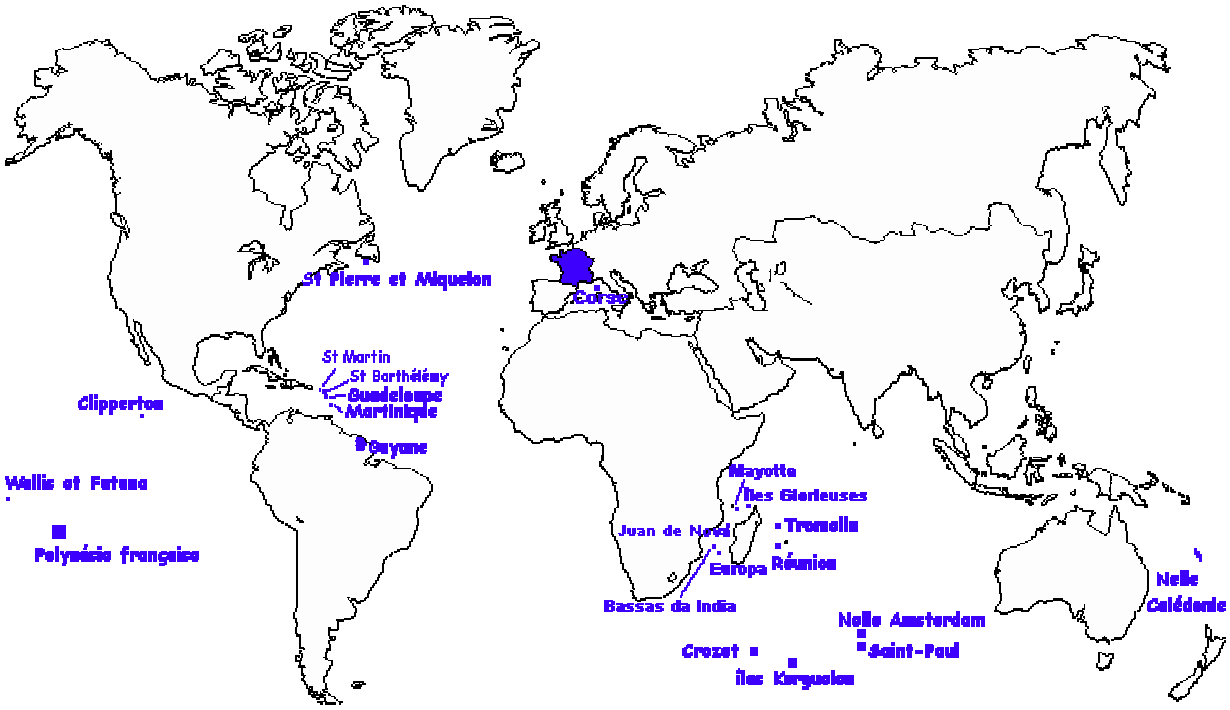



**Figure 14: Source: TTFR - http://a.ttfr.free.fr**

## A.2. List of specific territories of Member States of the European Union

The European Union classifies the specific territories of Member States of the European Union in three categories:

- **Outermost regions**: Guyana, Guadeloupe, Martinique and Réunion (France); Azores Islands, Madera (Portugal), Canary Islands (Spain)
- **Overseas countries and territories:** Mayotte, New Caledonia, French Polynesia, Saint Pierre et Miquelon, French south polar regions and Antarctic regions, Wallis and Futuna Islands (France); Greenland (Denmark); Anguilla, Cayman Islands, Falkland Islands, South Georgia and South Sandwich Islands, Montserrat, Pitcairn, Saint Helena and Dependencies, British territories of Antarctica, British territories of the Indian Ocean, Turks and Caicos Islands, British Virgin Islands (United Kingdom); Dutch Antilles, Aruba (Netherlands)
- **Specific territories**: Jersey, Guernsey, Isle of Man (United Kingdom); Faeroe Islands (Denmark)

Community law does not apply to overseas countries and territories.

For France, Article 299 of the EC Treaty stipulates that Community law applies to France and its Overseas *départements*. Articles 182 *et seq.* state that the other territories attached to France (listed in appendix II of the treaty) are subject to the special arrangements for association.

# Appendix B Consultations

## B.1. Collection of information (July 2004 – July 2005)

On July 29th 2004, ARCEP initiated a first information collection phase using qualitative and quantitative questionnaires sent to fixed and mobile operators, to SMS aggregators, IAPs, service publishers, and user associations.

For the quantitative aspect, the purpose of these questionnaires was to collect relevant and necessary data for the analysis, i.e. sales, volumes and customer data for the period 2003-2004, since the elements collected for these two years are useful for a forward-looking assessment. For the qualitative aspect, players were questioned about market definition aspects (in particular substitutability) and a competition analysis (verification of the three criteria). The responses helped ARCEP better understand the competition problems and obstacles that exist on the market.

On May 10th 2005, ARCEP began a second information collection phase in the form of bilateral interviews with the different categories of players. The purpose of these interviews was to better understand the global SMS economy, to target the competition problems raised in the first phase and to clearly determine the position of the players. The responses received in this framework have helped ARCEP understand both the stakes and the need for *ex ante* regulation.

## B.2. Public consultation (24th October – 2nd December 2005)

NB: Elements highlighted in grey are covered by professional secrecy and are identified either by [PS] or by [professional secret].

Twelve players answered to the public consultation that was launched from October 24th to December 02nd 2005.

Among these players, there are three mobile public network operators (Orange France, professional secret, PS), four SMS aggregators (PS, PS, Jet Multimedia Hosting, Prosodie), one service publisher (Telegate / le 118000), one MVNO and fixed operator (Tele2) and three associations (AdUF, AFUTT, MMA France).

Four players demand their responses to be covered in full by professional secret.

***List of responses***

- [PS]
- [PS]
- Jet Multimedia Hosting,
- Prosodie,
- AdUF (Association des Utilisateurs de Free),
- AFUTT (Association Française des Utilisateurs de Télécommunications),
- MMA France (Mobile Marketing Association),
- Tele2 France,

- Telegate / le 118000,
- [PS]
- [PS]
- Orange France.

# Appendix C Retail prices of SMS offers

This appendix presents the major offers for the residential and business customers of the three Metropolitan MNOs, available in October 2005.

## C.1. Bouygues Telecom's SMS offers

### *C.1.1. Post-paid customers*

Since April 2004, Bouygues Telecom has been marketing a new range of SMS monthly flat-rate packages. Customers can choose from five flat-rate packages, of between 30 and 480 SMS per month. They include a sliding scale of prices for volume. They have no time commitment and the SMS flat-rate packages are compatible with the "Référence" and "Intégral" offers.

| Flat-rate package | Tariff (including VAT) | Nominal price per SMS sent |
|---|---|---|
| 30 SMS | €3.00 | €0.10/SMS |
| 60 SMS | €6.00 | €0.10/SMS |
| 120 SMS | €10.00 | €0.0834/SMS |
| 240 SMS | €18.00 | €0,075/SMS |
| 480 SMS | €34.00 | €0.071/SMS |

**Figure 15: Post-paid SMS tariffs (Bouygues Telecom)**

The nominal price per unit varies from 7.1 to 10 euro cents (VAT included) depending on the flat rate chosen. Customers can send SMS with no difference in price based on the recipient's operator and can combine SMS flat-rate packages of different amounts.

High school and university students can receive 60 free SMS each month for 24 months through a special offer.

The limited series Millennium SMS flat rate includes 75 SMS per month to all operators as well as unlimited SMS to Bouygues Telecom customers from Monday to Friday (in addition to unlimited calls to fixed telephones in Metropolitan France and to Bouygues Telecom mobiles on weekends).

Since 2003, SMS have been included in the voice flat rate package as well as in the flat-rate packages of the Intégral range, which includes 30 SMS per month.

If the customer has no SMS flat rate package, the SMS retail price per unit has been €0.15 or €0.12 since 25 August 2004.

### *C.1.2. Pre-paid and "Mini Compte Bloqué" customers*

For pre-paid customers ("Nomad"), an SMS offer called *Avantage Flash* has been available since 2 March 2004. It offers SMS at 7.5 euro cents, since Nomad customers who choose

this option consume their card twice as quickly. Customers who do not choose Avantage Flash pay €0.12.

"Mini Compte Bloqué" customers pay 10 euro cents per SMS.

A decrease in unit prices has been added to these new offers: since August 25th 2004, SMS (in excess of the SMS flat rate or excluding SMS flat rate) cost 12 euro cents for all new Référence, Intégral or Mini flat rate customers and Nomad card customers.

### *C.1.3. Business offers*

Bouygues Telecom's first SMS offer for firms, *SMS Only*, was launched in late 1999. It was an annual subscription, costing FRF 80 (€12.20), allowing businesses to send SMS at a unit price of 11.43 euro cents excluding VAT.

This offer is still available, with the same price conditions.

Since November 2003, in addition to its *SMS ONLY* offer*,* Bouygues Telecom also markets the following SMS flat-rate packages:

- a flat rate of 15 SMS for €1.50 excluding VAT/month/SIM card, for a unit price of 10 euro cents
- a flat rate of 30 SMS for €3.00 excluding VAT/month/SIM card, for a unit price of 10 euro cents

Each SMS exceeding the flat-rate limit is billed at 11.43 euro cents. Unlike the *SMS ONLY* offer which can taken out alone, these SMS flat-rate packages are an accessory service (option) to subscriptions to a major offer.

### *C.1.4. Summary of Bouygues Telecom's offers*

**Summary of pay-as-you-go SMS tariffs**

| | | |
|---|---|---|
| Sending SMS (160 char.) from Metropolitan France for postpaid customer | • to mobiles of French operators (excluding SMS flat rate) | €0.12/SMS sent for new customers beginning 25/09/04<br>or €0.15/SMS sent |
| | • to mobiles of foreign operators | €0.30/SMS sent |
| Sending SMS (160 char.) from Metropolitan France for prepaid customers | • to mobiles of French operators (excluding SMS flat rate) | €0.12/SMS sent for new customers beginning 25/09/04<br>or €0.15/SMS sent<br>or €0.075 cents with Avantage Flash |
| | • to mobiles of foreign operators | €0.30/SMS sent |
| Sending SMS (160 char.) from abroad for postpayed and prepaid customers | | €0.30/SMS sent |
| Receiving SMS for postpayed and prepaid customers | | FREE |

**Figure 16: Table of pay-as-you-go SMS tariffs (Bouygues Telecom)**

**Summary of SMS flat-rate tariffs**

| | | |
|---|---|---|
| Cost of SMS flat-rate packages taken out in addition to a voice flat rate for postpayed customers | 30 SMS/month flat rate (160 char., excluding SMS+) | €3.00/month or €0.10/SMS |
| | 60 SMS/month flat rate (160 char., excluding SMS+) | €6.00/month or €0.10/SMS |
| | 120 SMS/month flat rate (160 char., excluding SMS+) | €10.00/month or €0.0834/SMS |
| | 240 SMS/month flat rate (160 char., excluding SMS+) | €18.00/month or €0.075/SMS |
| | 480 SMS/month flat rate (160 char., excluding SMS+) | €34.00/month or €0.071/SMS |

**Figure 17: Table of SMS flat-rate tariffs (Bouygues Telecom)**

## C.2. Orange France's SMS offers

For SMS in Metropolitan France, Orange France's major prices are as follows.

Non flat-rate SMS, the unit price of an SMS is the same for all customers, whether post-paid or pre-paid: it is €0.13 including VAT during the day and €0.10 including VAT at night (between 9.30pm and 8.00am) and on week-ends (from Friday at 9.30pm until Monday at 8.00am).

Orange France has specific offers, generally in addition to voice telephony:

- SMS flat-rate packages for major consumers: 30 SMS for €3.00 including VAT per month, 80 SMS for €7.50 including VAT per month, 130 SMS for €12.00 including VAT per month, 180 SMS + 30 SMS to Orange mobiles for €18.00 including VAT per month, 250 SMS + 50 SMS to Orange mobiles for €25.00 including VAT per month

| Flat-rate package | SMS frees to Orange mobiles | Tariff (incl. VAT) | Nominal price per SMS sent |
|---|---|---|---|
| 30 SMS | - | €3.00 | €0.1000/SMS |
| 80 SMS | - | €7.50 | €0.0938/SMS |
| 130 SMS | - | €12.00 | €0.0923/SMS |
| 180 SMS | 30 | €18.00 | €0.0857/SMS |
| 250 SMS | 50 | €25.00 | €0.0833/SMS |

**Figure 18: Table of SMS post-paid flat-rate tariffs (OF)**

- An offer for university students proposes 90 free SMS per month (plus three hours of voice calls)

- The Mobicard "com'à 5" option proposes a tariff of €0.12 including VAT per SMS, and the SMS option on the Mobicard proposes €7.00 including VAT for 84 SMS (or 0.0833 c€ per SMS) every two weeks.

- Offers for under 18 year olds, "Orange Plug", propose an SMS flat rate for "Compte Mobile" customers at €0.08 including VAT per SMS up to the flat rate limit and €0.10 including VAT per SMS for Mobicard solutions.

- The "Motamo" flat rate, designed for those with hearing or speech deficiencies, proposes 200 SMS for €15.00 including VAT per month (or 0.075 c€ per SMS)

➢ Through occasional promotions, Orange France proposes more attractive tariffs to its customers: e.g. "Nuits KDO", during which customers can send SMS free of charge

➢ For business customers, tariffs of €0.125 excluding VAT per SMS are available for voice subscriptions and €0.11 excluding VAT per SMS for data subscriptions. There are also SMS flat-rate packages, proposing 30 SMS for €2.50 excluding VAT per month, 80 SMS for €6.25 excluding VAT per month and 130 SMS for €10.00 excluding VAT per month. Refill packs are available for data subscriptions, offering 1 000 SMS for €80.00 excluding VAT (valid 6 months) or 5 000 SMS for €380.00 (valid 9 months).

| Flat-rate package | Tariff (excl. VAT) | Nominal price per SMS sent |
|---|---|---|
| 30 SMS | €2.50 | €0.0833/SMS |
| 80 SMS | €6.25 | €0.0781/SMS |
| 130 SMS | €10.00 | €0.0769/SMS |
| 1 000 SMS refill | €80.00 | €0.0800/SMS |
| 5 000 SMS refill | €380.00 | €0.0760/SMS |

**Figure 19: Table of business SMS flat-rate tariffs (OF)**

➢ SMS are received free of charge.

In June 2004, Orange France lowered its unit SMS prices for residential customers, from 15 cents to 13 or 10 cents depending on the time period.

## C.3. SFR's SMS offers

### *C.3.1. Post-paid customers*

Since January 19th 2005, SFR has been marketing a new range of monthly SMS flat-rate packages. Customers can choose from among five flat-rate packages, from 25 to 500 SMS per month. It includes a sliding scale of prices for volume, with the first month at half price. With no time commitment, the SMS flat-rate packages are compatible with the "Essentiel" and "Evolution Pro" offers.

| Flat-rate package | Number of text messages | Tariff (incl. VAT) | Nominal price per SMS sent |
|---|---|---|---|
| 25 package | 25 | €2.50 | €0.10/SMS |
| 50 package | 50 | €5.00 | €0.10/SMS |
| 100 package | 100 | €10.00 | €0.10/SMS |
| 200 package | 200 | €16.00 | €0.08/SMS |
| 500 package | 500 | €35.00 | €0.07/SMS |

**Figure 20: Table of SMS post-paid tariffs (SFR)**

The unit nominal price varies from 7 to 10 euro cents depending on the flat rate chosen. Customers can send SMS with no difference in price based on the recipient's operator and can combine SMS flat-rate packages of different amounts

The old residential "Pro" and "Perso" ranges included 10 SMS in each voice subscription.

With the "Le Compte package", customers can send 60 text messages for €6.00 including VAT per month (€0.10 per SMS) or 120 text messages for €10.00 including VAT (€0.0833 per SMS). These two flat-rate packages are subsidised during the first two months.

For customers without an SMS flat rate, the unit price of one SMS is €0.15 including VAT during the day and €0.10 including VAT at night (between 10.00pm and 8.00am) and on week-ends (from Friday at 10.00pm until Monday at 8.00am).

### *C.3.2. Pre-paid customers*

For pre-paid customers ("SFR La Carte"), an SMS offer called "*Les Exclusives"* offers SMS for 10 cents. Customers not choosing this package pay €0.15 including VAT to send an SMS during peak hours (8.00am to 10.00pm weekdays) and €0.10 during off-peak hours.

### *C.3.3. Business offers*

Business offers do not automatically pair voice and SMS. SMS are sold in addition to a voice subscription either in flat-rate packages (cf. table below), or pay-as-you-go at the price of 10 c€ excluding VAT/SMS.

| Flat-rate package | Number of text messages | Tariff (excl. VAT) | Nominal price per SMS sent |
|---|---|---|---|
| 25 package | 25 | €2.00 | €0.08/SMS |
| 50 package | 50 | €4.00 | €0.08/SMS |
| 100 package | 100 | €8.00 | €0.08/SMS |
| 200 package | 200 | €13.00 | €0.065/SMS |
| 500 package | 500 | €29.00 | €0.058/SMS |

**Figure 21: Table of *"Messages Entreprises"* SMS prices (SFR)**

# Appendix D Available SMS CT cost elements

NB: Elements highlighted in grey are covered by professional secrecy and are identified either by [PS] or by [professional secret].

## D.1. Introduction

Under the previous framework, Orange France and SFR sent account reports to ARCEP each year, according to a methodology and a format defined in the appendix to decision no. 01-458 of 11 May 2001 adopting the Guidelines on price conditions of interconnection of mobile powerful operators on the national interconnection market.

In its decisions no. 04-937, no. 04-938 and no. 04-939 dated 9 December 2004, ARCEP imposed a number of obligations on the operators Orange France, SFR and Bouygues Telecom under its analysis of the wholesale voice call termination markets on mobile networks.

Article 7 of each of these decisions states that these operators "*are subject to an obligation of account separation and of cost accounting for access and interconnection services for 'direct' voice call termination. The methodology for these obligations will be defined by an ART decision at a later date"*. Finally, this same article states that during a transition period, the operators must submit accounting data to ARCEP according to the rules and formats defined in the abovementioned decision no.01-458.

The Metropolitan operators have transmitted to ARCEP accounting reports for the year 2003 composed of five reporting forms, according to the format and the rules of cost allocation specified in the appendix to decision no. 01-458. In accordance with Articles L. 38 paragraph 5 and D. 312 of the CPCE, these reports have been audited. This audit was performed by the firm Ernst & Young, designated by ARCEP in decisions no. 05-272, 05-273 and 05-274 of 24 March 2005.

ARCEP evaluates a maximum SMS CT cost on the basis of these audited cost elements.

## D.2. Regulatory accounts for 2003 (voice perimeter)

### *D.2.1. Presentation format*

#### *D.2.1.1. Perimeter*

Of all of an MNO's activities, the main families of services, which are technologically homogenous are as follows:

- voice services
- SMS services
- data services, i.e. narrowband multimedia excluding SMS and high speed

For each family of services, several services can be distinguished:

- for use by a mobile service subscriber present in Metropolitan France. It is important to state that, when a subscriber abroad or from an Overseas *département* or territory uses the Metropolitan MNO's network, these are *roaming in* services. Similarly, the customer can be of a MVNO that uses the network of the operator in question. On a technical level, in both cases, the services provided are almost equivalent, whether they concern a Metropolitan customer of the operator or of an MVNO, or a customer from an Overseas *département* or territory or a foreign customer.
- for use by a Metropolitan mobile service operator's subscriber or an MVNO's customer present in a foreign country or in an Overseas *département* or territory (*roaming out*). Since in this case, the Metropolitan MNOs buys international roaming services from the foreign MNO or MNO of the Overseas *département* or territory, we generally do not speak of a technical service requiring physical use of its network.

The perimeter of the reporting for regulatory purposes is limited to voice services. Thus, SMS services, data services and in particular the data service in circuit mode (WAP-CSD), are excluded from the reporting perimeter.

Moreover, the regulatory reporting perimeter covers the technical services provided by the Metropolitan MNO which are associated with use of its own network: so roaming out traffic is excluded from the reporting perimeter.

#### *D.2.1.2. Cost accounting*

An MNO's cost items are broken down under the following headings:

- Network and interconnection purchase activities
- Commercial activities (marketing and sales, customer service, invoicing and collection)
- Common and structural activities

To date, these items have been evaluated using a historic cost approach. Because of this, the network topology and, as a general rule, the operation and sizing choices of the operator are not at issue.

Moreover, the network equipment supporting the operator's activities is an investment expense that is depreciated according to the probable lifespan of the equipment. Therefore the asset investment cost appreciates annually. This annual cost corresponds to the irreversible loss of value of the equipment during the year in question; it is equal to the sum of amortizations recorded in operating expenses for the year and the return on the immobilised assets.

The evaluation of the capital cost of network assets is based on an accounting method which uses the accounting lifetime of the equipment, its net accounting value, a capital rate of return and the value of amortizations for the year according to the following formula:

$A_t = (1+k)*K_{t-1} - K_t$

The capital annual cost ($A_t$) is composed of two terms:

- the capital usage cost (depreciation): $K_{t-1} – K_t$
- the return $k* K_{t-1}$ of the immobilised capital $K_{t-1}$ at the rate of return k

The capital rate of return used for 2003 accounts was 17%.

### *D.2.1.3. Cost allocation*

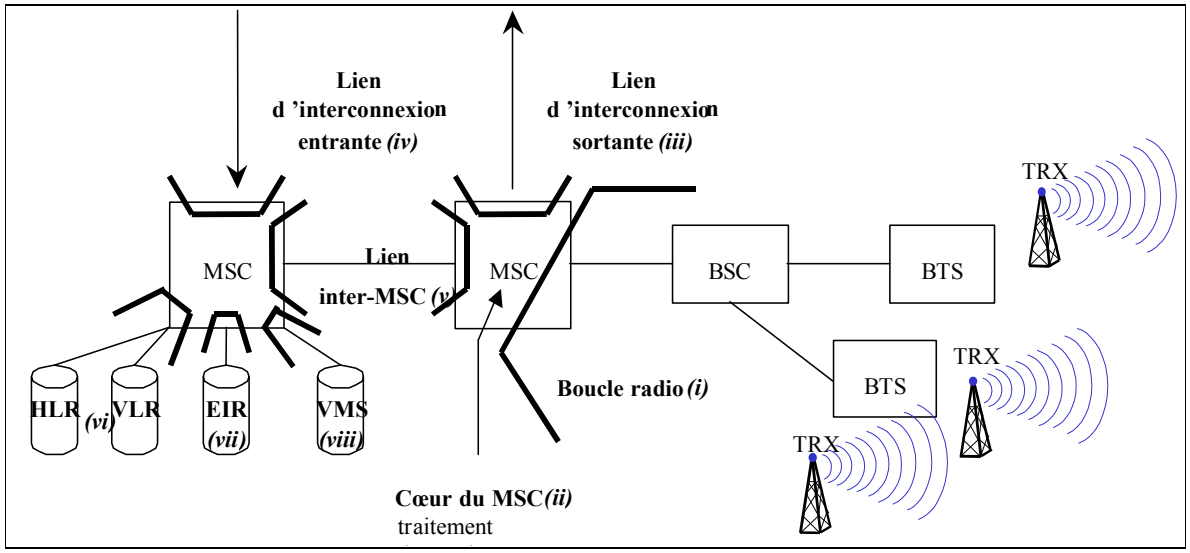
Cost allocation follows the following principles:

- Completeness: the allocation must cover all technical services provided by the MNO
- Causality: the costs of an element or activity are allocated depending on which one is the "cause" that is, in practice, depending on the use of this element or activity. The respect of this principle meets the objective of auditability by providing traceability for the costs. If a single service is at the origin of a given cost, the causality principle directly allocates the entire cost to the service inducing it. If a number of services are at the origin of the cost of a given element, the principle of causality allocates the cost of this element to the different services proportionate to the consumption of the element, e.g. by elaborating a matrix of routing factors (or of the use of network elements by the various services). The application base measuring the consumption of the element by the services must be as relevant as possible with regard to the use of the element.
- Non-discrimination
- Auditability

Cost allocation is done in three steps:

- Each production cost is allocated to one or more *network macro elements*
- The costs of the network macro elements are allocated between service families (restriction to the voice perimeter)
- A *matrix of routing factors* (also called usage factors) allocates in a coherent way the costs of the network macro elements (the various services do not use the network elements in the same proportions) to the various technical voice services. The matrix of routing factors is the table that associates to each voice service the network macro elements it uses.

Network macro-elements result from a logical breakdown of the network in order to isolate the network resources in coherence with the technical services that use these resources. The diagram below shows the network macro elements chosen for the 2003 accounts:




*Logical architecture of a GSM network*

In all, eight network macro elements are identified for voice:

- The wireless loop corresponds to the wireless subsystem and therefore includes the BSC, the TRAU, the BTS, the TRX, the transmission links between these equipment elements, some of the MSC ports and the transmission links for the BSC
- The MSC core corresponds to the features used by the processor in order to handle the call
- The outgoing interconnection link corresponds to the links established by the operator in order to route traffic to a third-party network and to the MSC ports assigned to this use
- The incoming interconnection link corresponds to the resources immobilised in order to terminate traffic from a third-party network: the MSC ports assigned to this use and, if appropriate, the transmission links established by the operator to connect with the third-party operator
- The inter-MSC link corresponds to the transmission capacities put in place by the operator or leased in order to move traffic between the MSC and to the MSC ports assigned for this use
- The databases (HLR, VLR) store the subscriber characteristics and make it possible to locate them
- The EIR are the databases used to check that the equipment used is authorised on the network
- The VMS are used to manage and provide voice message service applications

### *D.2.2. Aggregated costs of the three operators*

The table below shows the sum of the audited costs of the three operators for the year 2003. Six network macro elements (wireless loop, MSC core, outgoing and incoming interconnection link, inter-MSC link and EIR) are covered by the heading "transmission and switching":

| **"Voice" perimeter** | Transmission and switching | HLR, VLR and positioning | Specific voice (VMS) |
|---|---|---|---|
| Network costs (M€) | [PS] | [PS] | [PS] |

Moreover, the overall ratio between shared and other costs (excluding purchase of interconnection) is [PS].

## D.3. Evaluation of a maximum SMS CT cost

### *D.3.1. Principle*

ARCEP has in its possession:

- methods according to which the operators have allocated the costs of the network macro elements among service families (voice, SMS, other)
- the cost of network macro elements following restriction to the voice perimeter

On the basis of these elements, ARCEP suggests calculating an upper limit to the costs of network macro elements attributable to SMS, then a maximum cost for SMS CT.

### *D.3.2. Maximum cost of network macro elements attributable to SMS*

#### *D.3.2.1. Principle*

The principle of allocating the cost ***C*** of a network macro element among service families (voice, SMS, other) is as follows:

- a cost driver common to all service families (minute, call, number of customers, etc.) is identified, according to the principle of causality
- the volume of cost units used by each service family is evaluated ($V^{voice}$, $V^{SMS}$, $V^{other}$)
- the cost of the macro element network is allocated to each service family ($C^{voice}$, $C^{SMS}$, $C^{other}$) proportionate to the volumes of cost units used, according to the principles of completeness and non-discrimination.

In this exercise, ARCEP has the cost allocated to voice $C^{voice}$ and determines a maximum cost allocated to SMS $C^{SMS}$ based on an estimate of the maximum value of the ratio $V^{SMS}/V^{voice}$ using the formula:

$$C^{SMS} = C^{voice} * V^{SMS}/V^{voice}$$

#### *D.3.2.2. "Transmission and switching"*

Since more than [professional secret] of the costs of macro elements under the heading "transmission and switching" belong to the "wireless loop" macro element, the costs of all these macro elements are divided among service families (voice, SMS, other), according to the key chosen for the "wireless loop" cost allocation.

There are two types of radio channel in the GSM network: signalling channels (called SDCCH), used for voice signalling, SMS transmission, call processing and positioning, and traffic channels (called TCH) used to transmit voice and data.

Each physical traffic channel (TCH) is divided into "time slots"[60], and the different types of services (voice, data in mode circuit, data in mode packet) are transmitted on the TCH in one or more time slots.

The elements of the "wireless loop" macro element are:

- radio network equipment (BSC and BTS)
- transmission links between radio network equipment (such as the BTS-BSC link)
- the cost of facilities hosting radio network equipment

For each "wireless loop" element, the corresponding cost is first allocated between SDCCH and TCH channels proportionate to the total number of channels used by each type of channel.

Since signalling occupies less than one channel out of eight, the share assigned to SDCCH channels is at most **12.5%**.

[60] The band dedicated to the GSM system is divided into frequency channels with a width of 200 kHz. On a frequency band, signals are sent modulated around a carrier wave located in the centre of the band. Each carrier wave is divided into time intervals called time slots. The duration of a slot has been set at about 0.5769 ms.

Second, the cost of TCH channels between voice and other service families is allocated according to a hypothesis of maximum consumption of **10%** of the resource by services other than voice in 2003.

Third, the cost of SDCCH channels is allocated based on an identical occupation by all three uses: SMS transport, voice call processing, positioning[61]. According to the elements available to ARCEP, this hypothesis appears to be a maximum for SMS.

All these hypotheses set the cost of the "transmission and switching" macro element at 86.52% for voice and at 4.35% for SMS. Overall, the maximum value of $V^{SMS}/V^{voice}$ is **5%**.

*D.3.2.3. "HLR, VLR and positioning"*

Positioning costs are for updating the HLR and VLR databases with information regarding the location of customers, essentially for incoming and *on-net* traffic (since for outgoing traffic, customers automatically signal their position to the network when they request the establishment of a call). These updates are done automatically and extremely frequently, in order to ensure almost real-time monitoring of the subscriber's location, based on information uploaded by the signalling channels from the BTS and MSC concerned.

ARCEP wonders how pertinent it is to allocate these costs to traffic in deferred time, and to SMS in particular. Indeed, for an incoming or *on-net* voice call, the called party must be immediately located in order to reserve the resource needed to establish a communication circuit between the calling party and the called party. However, incoming and *on-net* calls in deferred time do not require that the position of the called party be updated as frequently in the databases.

Still, in order to determine a maximum value for network costs attributable to SMS, the costs of the "HLR, VLR and positioning" macro element are attributed to voice and SMS (and other) proportionate to incoming and *on-net* traffic, using the call for voice and the message for SMS as a unit cost.

Data traffic taken from audited 2003 regulatory accounts show total incoming and *on-net* voice traffic of [professional secret] Mmin for [professional secret] million calls, with an average call duration of 100 seconds. At the same time, mobile-to-mobile SMS traffic was 8.188 billion SMS[62]. This gives a maximum value of the $V^{SMS}/V^{voice}$ ratio of [professional secret – value higher than **25%**].

*D.3.2.4. "SMS-specific"*

This macro element covers operators' SMS-C. The corresponding cost is estimated at €3 million, or €1 million per operator per year.

[61] Positioning is covered by the "HLR, VLR and positioning" macro element, which means that the corresponding costs are excluded from the "transmission and switching" macro element studied here.
[62] Source: ARCEP, Market Observatory

*D.3.2.5. Conclusion*

In these hypotheses, the maximum cost of network macro elements attributable to the SMS activity are as follows:

| **"SMS" perimeter** | Transmission and switching | HLR, VLR and positioning | Specific SMS (SMS-C) |
|---|---|---|---|
| Network costs (M€) | [PS] | [PS] | [PS] |

### *D.3.3. Maximum cost of SMS CT in 2003*

Three types of technical services for SMS have been identified:

- origination, the upstream part of SMS, from the subscriber to France Telecom's SS7 network international for an off-net SMS, and to SMS-C (included) for an on-net SMS
- termination, the downstream part of SMS to the subscriber, from France Telecom's SS7 network international for an off-net SMS, and from the SMS-C (excluded) for an on-net SMS
- other technical services

Routing factors are as follows:

| | Traffic (million SMS) | Transmission and switching | HLR, VLR and positioning | Specific SMS (SMS-C) |
|---|---|---|---|---|
| Origination | 8 188 | 1 | 0 | 1 |
| Termination | 8 188 | 1 | 1 | 0 |
| Other | - | - | - | - |

In order to maximise the SMS CT cost, only traffic for interpersonal SMS is taken into consideration.

Based on these hypotheses, the maximum network cost attributable to SMS CT in 2003 is [professional secret].

Given shared costs, allocated according to the EPMU method (equi proportional mark-up), i.e. proportionate to other costs excluding interconnection purchase costs, the total maximum cost is about **2.50 c€ per SMS**.

# Appendix E Quantitative analysis of Voice – SMS non substitutability

The analysis below is based on Market Observatory (quarterly surveys) data, published on ARCEP's web site[63]. These are global data, covering all operators. Therefore, the effects studied are global effects that bear on mass behaviours.

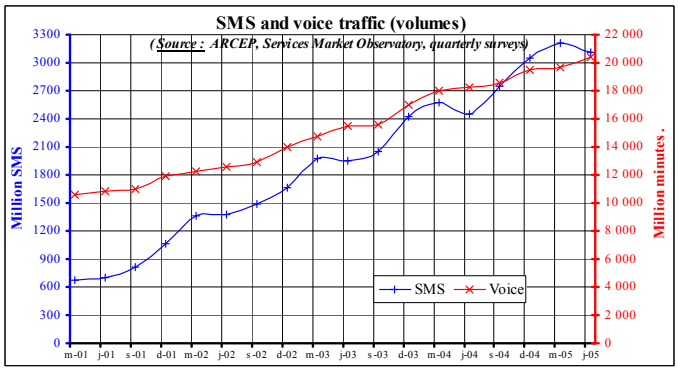
## E.1. SMS and voice have not seen the same development between 2000 and 2004

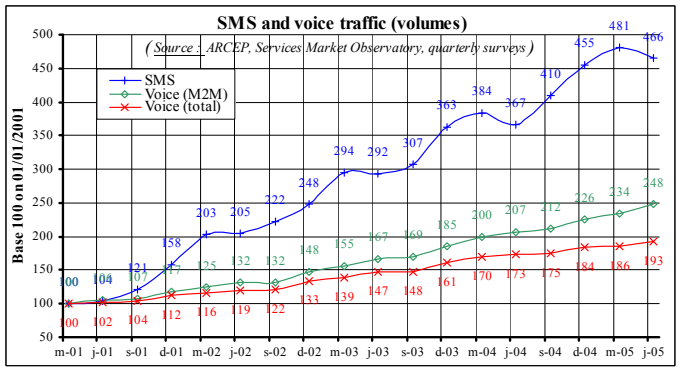
### *E.1.1. SMS traffic grew 3.5 times faster than voice in volume between 2000 and 2004*

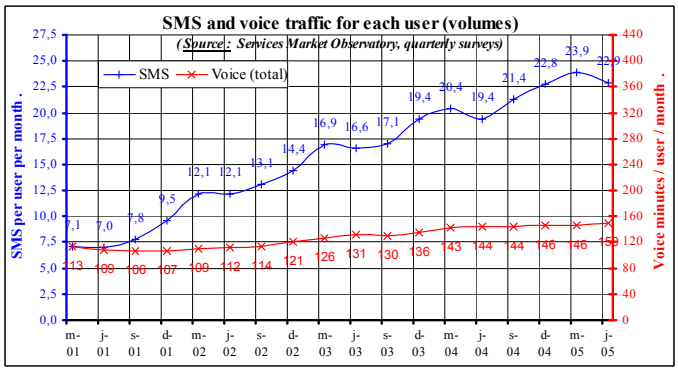
The number of exchanged SMS grew very strongly between 2000 and 2004. In the space of five years, this number increased sevenfold, from 1.5 billion in 2000 to close to 11 billion in 2004, whereas, at the same time, voice traffic doubled in volume, growing from 35.7 billion minutes to 74.3 billion minutes in 2004[64]. Quarterly data collected since 2001 confirm this trend, as shown in the four graphs below. They suggest a specific functioning of the SMS market, partially decorrelated with respect to voice[65].

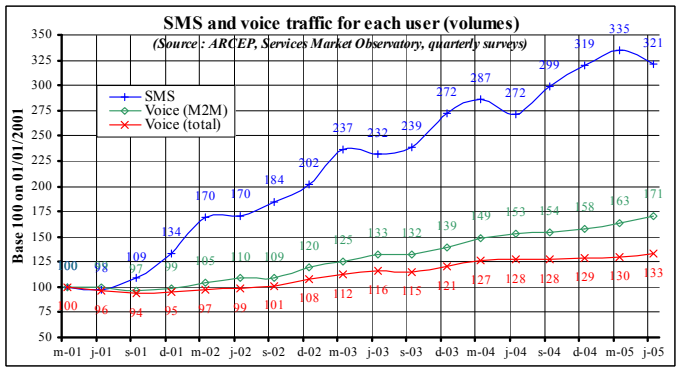
Indeed, under the hypothesis of perfect substitutability between SMS and voice, the slope of these two curves should theoretically be the same, which is clearly not the case, especially since the growth of SMS traffic does not appear ready to slow, although this market is now beginning to mature.

[63] cf. http://www.arcep.fr/
[64] ARCEP, Market Observatory, annual survey. This increase in SMS and voice traffic can be attributed to two types of cause: the growth in the number of mobile phones which almost doubled between 1st January 2000 and 31 March 2005, and the development of uses (cf. section E.2.1).
[65] Cf. section E.2.3.



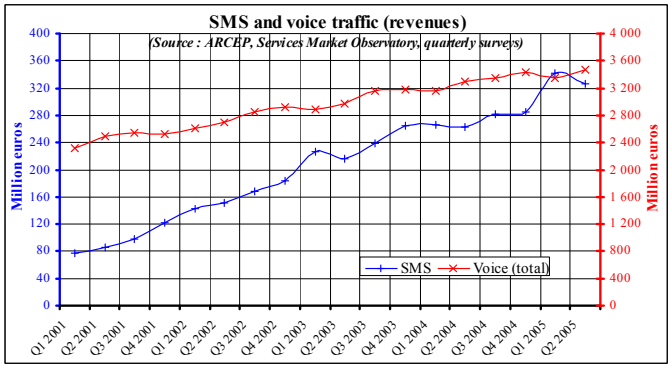



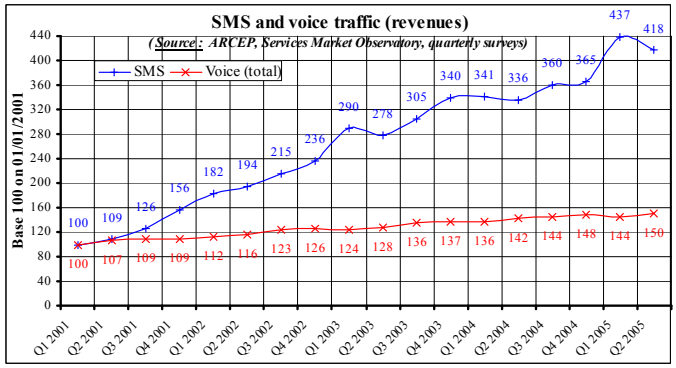



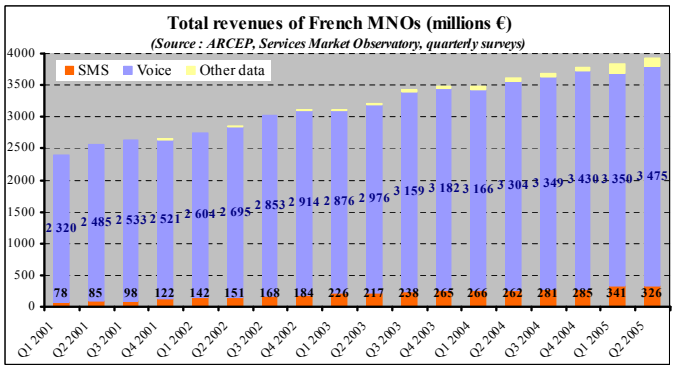

### *E.1.2. At the same time, SMS is gaining ground in the income structure of Metropolitan MNOs*

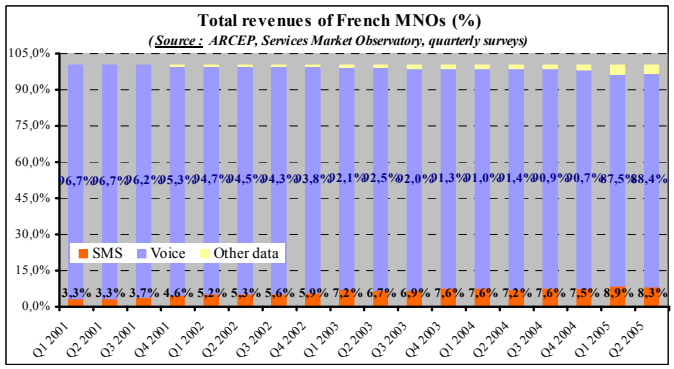
To complete this analysis in volume, it can be interesting to note that between 1st January 2001 and 31 March 2005, revenues generated by SMS grew three times faster than voice revenues (cf. graphs below).



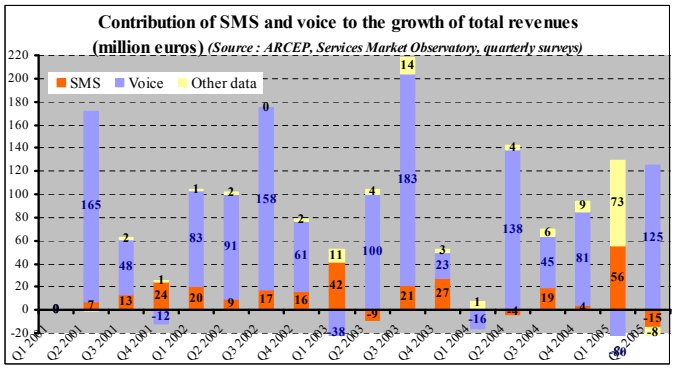



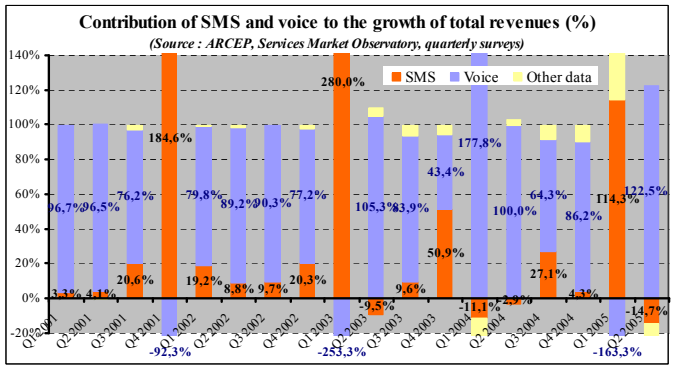

SMS represent only a small share (less than 9%) of the turnover of the three Metropolitan operators (cf. graphs below), but this share has more than doubled in four years, growing from 3.3% in the 1st quarter 2001 to 8.8% in the 1st quarter 2005. In total, data exchange currently represents over 10% of the total revenues of MNOs and is expected to develop strongly in the months and years to come.




This last comment is accentuated by the fact that SMS and, to a lesser degree, other data contribute strongly to the growth of MNOs' turnover, in particular during the year-end holiday period (cf. graphs below).




## E.2. Asymmetric seasonal effects between SMS and voice on volume data

### *E.2.1. Methodology note on data reprocessing: considering number effects*

In the next part of the study and in particular when calculating the correlations between SMS and voice traffic series, it is important to take into account the growth in cell phone numbers.

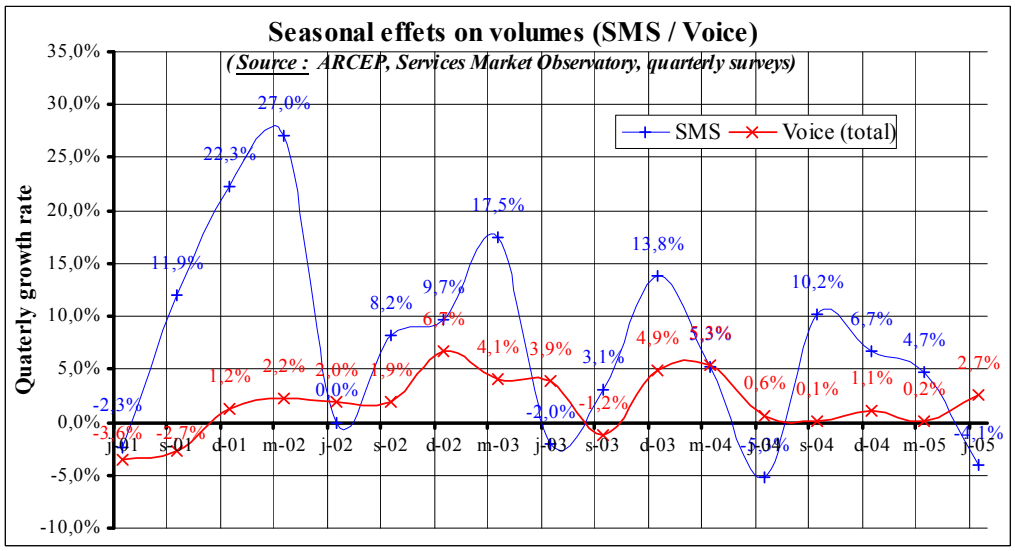
SMS and voice traffic growth have two components: an internal component, primarily related to the development of uses, i.e. to the change in consumer behaviour (each user, depending on his/her preferences, decides to whether or not increase his/her SMS/voice consumption) and an external component, related to the increase in the number of phones (SMS and voice traffic increase mechanically by the simple fact that more people use cellular telephones).

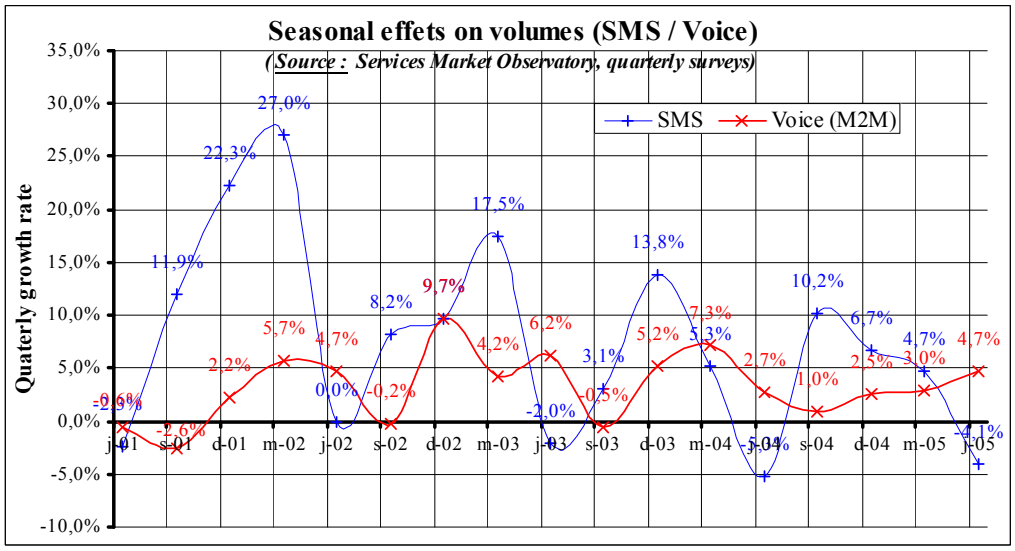
Thus, to isolate the share related to the behaviour of consumers in the analysis, one needs to work on SMS (or voice) traffic data adjusted for number effects ("park effect"), e.g. dividing the number of SMS sent (or minutes consumed) by the total number of phones.

### *E.2.2. Seasonal effects are asynchronous and of a greater amplitude for SMS than for voice*

It can be relevant to study, not raw data, but the quarterly growth rates for SMS and voice traffic adjusted for number effects.

Therefore, it can be first observed that the growth of these two types of traffic is marked by a seasonal effect (cf. graphs below), which is not identical from one series to another.




Indeed, the peaks in SMS traffic have an average amplitude of 20.5% for the period 2001-2004, whereas those for voice traffic are 4.5% (total voice traffic) and 7.2% (M2M traffic) during the same period[66]. As a result, SMS have much greater seasonal effects than voice (cf. table below).

[66] Total voice traffic includes fixed national calls, outgoing international calls, roaming out and mobile-to-mobile traffic (M2M) which can be divided into calls to mobiles on the same network and calls to third-party networks.

| Maximum length between SMS and voice quaterly growth series in volume | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Period** | June 01-March 02 | March 02-June 02 | June 02-March 03 | March 03-June 03 | June 03-Déc 03 | Dec 03-June 04 | June 04-Sept 04 | **Average** |
| **SMS** | 29,3% | 27,0% | 17,5% | 19,5% | 15,8% | 19,1% | 15,5% | **20,5%** |
| **Period** | Sept 01-March 02 | March 02-Sept 02 | Sept 02-Déc 02 | Dec 02-Sept 03 | Sept 03-March 04 | March 04 -Sept 04 | Sept 04 -March 05 | **Average** |
| **Voice (total)** | 5,9% | 0,3% | 4,8% | 8,0% | 6,6% | 5,2% | 0,9% | **4,5%** |
| **Voice (M2M)** | 8,3% | 5,9% | 9,9% | 10,2% | 7,8% | 6,3% | 2,0% | **7,2%** |

Source : ARCEP, Services Market Observatory, quarterly surveys

On the other hand, it is also important to note that the periods impacted by these seasonal effects are different. Users tend to send the most SMS in the first quarter of the year (January, February, March), then the rate of the consumption growth falls regularly during the second quarter (April, May, June), before rising again during the last two quarters.

The situation is different for voice. While the first quarter (January, February, March) appears to be the period of the year where cellular telephone users use voice services most, the quarter where the traffic generally grows more slowly is not the second, but the third quarter of the year (July, August, September), which clearly indicates a lack of correlation between SMS and voice traffic.

### *E.2.3. A decorrelation between SMS and voice traffic*

This lack of correlation is confirmed when calculating the correlation coefficients between SMS and voice quarterly growth series adjusted for number effects over the period 2001-2004 (cf. table below).

| Correlation coefficients between SMS and voice quaterly growth series in volume for each user from 2001 to 2004 | |
|---|---|
| **Coefficient de corrélation (total)** | **0,22689** |
| **Coefficient de corrélation (M2M)** | **0,11284** |

Source : ARCEP, Services Market Observatory, quarterly surveys

ARCEP reminds readers that the sign of a correlation coefficient can be positive or negative (series which vary in the opposite direction), whereas its absolute value is always between 0 (total lack of correlation) and 1 (perfect correlation).

The correlation coefficient values between the SMS and voice quarterly growth series adjusted for number effects on the period 2001-2004 are 0.227 (total voice traffic) and 0.113 (M2M traffic). Thus, the two data series are very imperfectly correlated, and therefore the situation of SMS with respect to voice is closer to non-substitutability than to substitutability.

## E.3. Conclusion of the comparative analysis of voice and SMS traffic data

The various elements of analysis on volume data support our thesis that the uses of interpersonal SMS differ from those of voice. The strong growth in SMS traffic and the identification of seasonal effects that are both asynchronous and with a more marked amplitude than voice, quite clearly indicate that the transmission of interpersonal SMS and the use of voice are two different modes of communication, which are very imperfectly substitutable.

# Appendix F Definitions

| | |
|---|---|
| Aggregator | Also called a facilitator, an aggregator is an operator that takes charge of the technical connection of networks for everything involving the transmission and reception of SMS. |
| BSC | *Base Station Controller.* This equipment controls one or more BTS and manages the wireless resource. |
| BTS | *Base Transceiver Station Equipment.* GSM equipment composed of radio transmitters/receivers and serving as the interface between the BSC and mobile phones. |
| Chat | Text communication via Internet that involves the exchange of instant messages. |
| Customer | Designates a customer of a GSM operator sending an SMS *MO* or receiving an SMS MT and having a GSM mobile phone associated with a SIM card identified by a number. |
| Efficient SMS | Designates an SMS MT effectively received by the customer. |
| End-to-end SMS | Concatenation of an SMS *MO* and an SMS MT. |
| GPRS | *General Packet Radio Service.* Data transmission service in packet mode including via radio. |
| GSM | *Global System for Mobile communications.* European mobile telephony system. |
| HLR | *Home Location Register.* Nominal positioning register. Database containing the profiles and general coordinates of network subscribers. |
| Incoming SMS | SMS received by a mobile network operator. |
| Inefficient SMS | An SMS MT processed by the SMSC, but not effectively received by the customer. |
| MMS | *Multimedia Messaging Service.* Allows the transmission and reception of multimedia content (text, photos, videos, music, etc.). |
| MSC/VLR | *Mobile-services Switching Center/Visitor Location Register.* Switch (MSC) adapted to the GSM and/or UMTS standard which allow the transmission of outgoing SMS (*SMS MO*) and reception of incoming SMS (*SMS MT*). This switch is paired with a database (VLR) that contains a copy of the customer profile and information on the location of the mobile phone. |
| MSISDN | *Mobile Station Integrated Services Digital Network Number.* Designates the subscriber's number. This is the only identifier of the subscriber mobile service known outside the GSM network. |
| Node B | UMTS equipment composed of radio transmitters/receivers and constituting the interface between the RNC and mobile phones. |
| Off-net SMS | SMS between two customers on different mobile networks. |
| On-net SMS | SMS between two customers of a single mobile network. |
| Outgoing SMS | SMS sent by a mobile network operator. |
| PLMN | *Public Land Mobile network.* |
| RNC | *Radio Network Controller.* UMTS base station. Commands one or more Node Bs and manages the radio resource. |
| SGSN | *Serving GPRS Support Node.* Router adapted to GSM and/or UMTS that manages calls in packet mode. |
| SIM | *Subscriber Identity Module*. Smart card inserted in the mobile phone containing subscriber data and allowing authentication on the network. |

| | |
|---|---|
| *Smiley* | A graphic representation of a human face (one must turn the head to the left to see the eyes, nose and mouth) created by a series of characters expressing an "emotion": a smile :-), surprise :-o, a wink ;-), disappointment :-(, etc. |
| SMS | *Short Message Service.* Composed of a maximum 160 characters, it allows written and discrete communication between two people on the move. |
| SMS + | Surtaxed SMS for the message sender (SMS MO) most often granting permission for an SMS MT to deliver desired information (games, chat, information, etc.). In France, SMS+ is managed by the SMSplus.org association |
| SMS call termination | Interconnection SMS offer between two MNOs having signed an interoperability contract. Designates routing by the Destination MNO of an SMS transmitted to its mobile service subscribers as an SMS MT. |
| SMS MO | *Mobile Originated.* Designates the transfer of an SMS from a mobile phone to the SMSC. |
| SMS MT | *Mobile Terminated.* Designates the transfer of an SMS from the SMSC to a mobile phone. |
| Push SMS | Purchase or wholesale sale of *SMS MT*. Designates all commercial offers offered by an MNO (or an aggregator) for aggregators, fixed operators, IAPs and service publishers to route an SMS to a mobile service subscriber. |
| SMSC | *Short Message Service Center.* Equipment managing the storage and sending of SMS. |
| Spam | Unsolicited mass electronic communications for advertising or dishonest purposes. |
| UMTS | Universal Mobile Telecommunication System. |
| VMS | *Voice Mail Service*. |
| Vocalisation | The reading of an SMS by a synthetic voice. SMS is transformed into a voice message left on a fixed or mobile voicemail. |
| VPN | *Virtual Discrete Network.* Use of Internet for transmission. We speak of a virtual private network to designate the network created artificially. This network is called virtual because it links two "physical" networks (local networks) by an unreliable link (Internet), and private because only computers on the LANs on both ends of the VPN can "see" the data. |
| WIFI | *Wireless fidelity.* Commercial name for the wireless local area network (WLAN) IEEE 802.11b technology, based on the 2.4 GHz frequency. |
| WLAN | *Wireless Local Area Network*. Wireless network located in a restricted area. |
| WLL | *Wireless Local Loop.* |