Consultancy for the Elaboration of a Regional Study on Roaming in South America

Preliminary summary of the project

Buenos Aires, 29 September 2008

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Introduction

The initiative for the Integration of the South American Regional Infrastructure (IIRSA) was created in September 2000 during a meeting of Presidents from the 12 official South American countries (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela)

With an initial mandate of ten years (2000-2010), the main premise of the initiative is the integration of the physical infrastructure in South America to promote economic growth throughout the region

In November 2004, the Implementation Agenda based on Consensus (AIC) was defined by the IIRSA Executive Committee (CDE), which included 31 priority projects to be implemented before 2010, among them the "South American Roaming Agreement" project, based on the successful experience from the Brazilian Roaming Association (ABR)

The objectives of the IIRSA project for the "South American Roaming Agreement" are:

- Promote the creation of competitive roaming markets in the South American region, and identify opportunities and challenges to improve costs, quality and coverage
- Take the first steps towards regional coordination for its implementation by the regulators from participating countries, defining a viable action-plan and discussing it with interested stakeholders

In March 2008, the IIRSA-CITEL workshop on "International Roaming Services for Mobile Telecommunications" was conducted with participation by the representatives from the regulators, operators and telecommunications associations of 18 countries

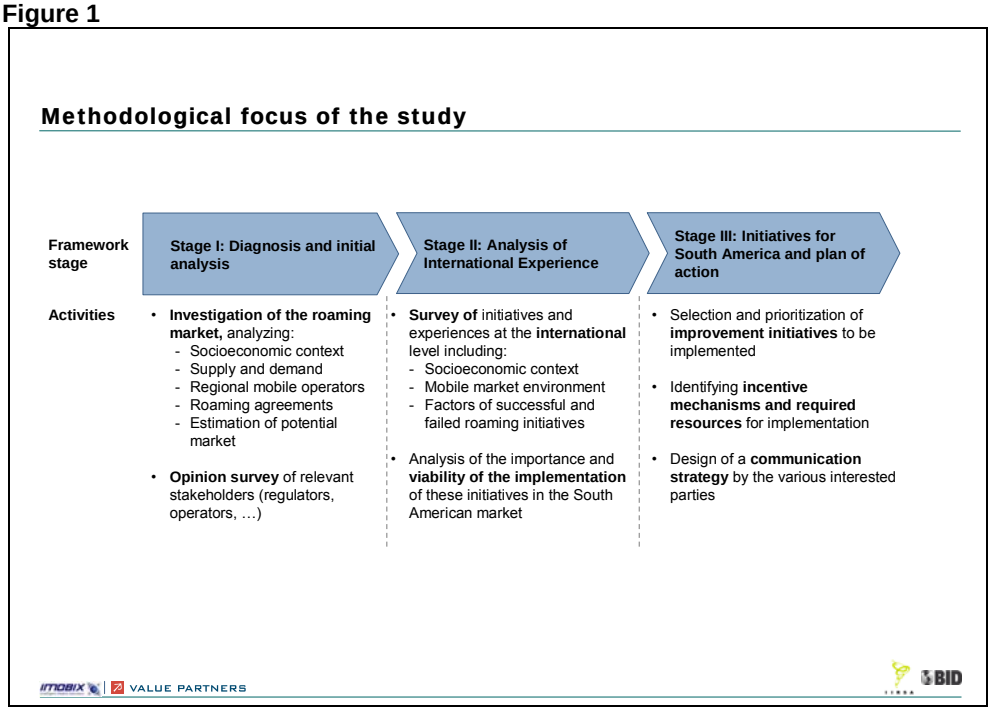
For these reasons, IMOBIX / Value Partners were commissioned to conduct a study on the international roaming services market in South America, with the objective of:

- Producing an in-depth market analysis report
- Comparing this scenario to the developed best practices in other regions of the world
- Assisting with decision-making to contribute to the implementation of the IIRSA project

Methodological focus of the study

As seen in Figure 1, the study is structured in 3 stages:

Figure 1



Stage I presents the current South American roaming market, analyzing the socioeconomic context, the offer and demand of roaming services, the mobile operators of the region, and roaming agreements, to reach an estimation of the potential market, and at the same time conduct a poll of relevant stakeholders (regulators, operators, consumer protection agencies) in order to identify opportunities and challenges for roaming initiatives in the region.

Stage II presents a comparative analysis of the South American scene with the situation in other regions of the world and shows initiatives and experiences at the international level in three roaming markets (Europe, Africa and the Middle East, and Asia-Pacific), analyzing their relevance and viability of implementation in the South American market. The analysis includes the socioeconomic context and the telecommunications market, with the regulations and the roaming alliances in each case, and also identifies the initiatives with the greatest potential and applicability for South America.

Stage III consists of the selection and prioritization of the best initiatives to implement in the South American region, and the identification of incentives and resources required for their implementation

1. Results from Stage I: Diagnostics and analysis of roaming in South America

1.1. Socioeconomic context of South America

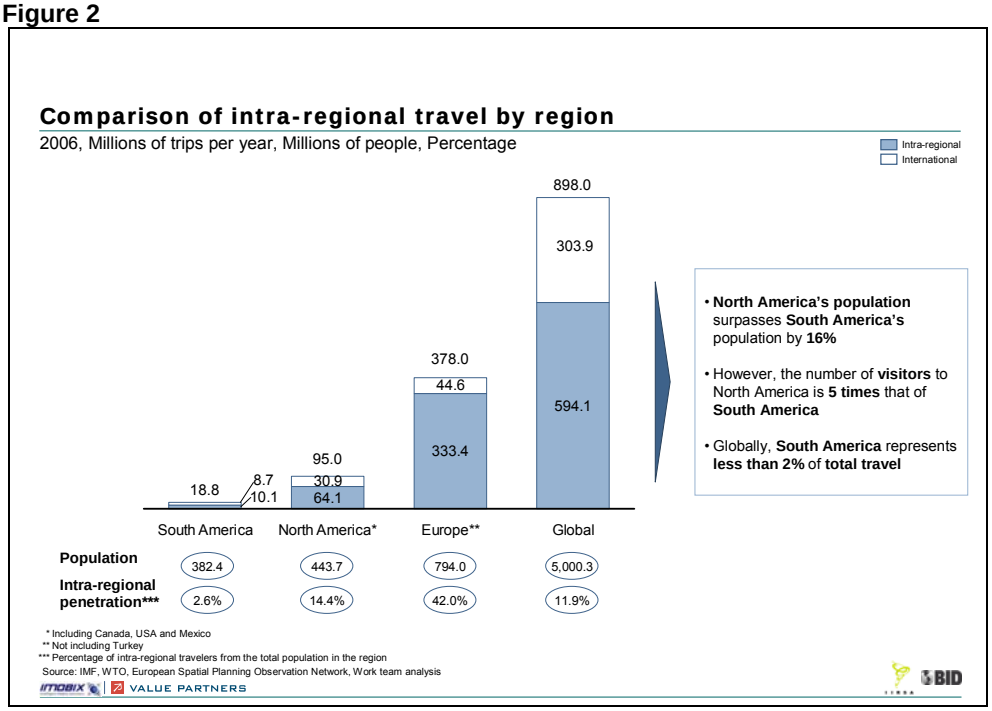
In economic terms, the region has made many positive developments over the past five years: GDP and private consumption have grown at a rate of more than 4% annually, incomes by inhabitants were stably maintained, unemployment rates have improved, and regional currencies have appreciated by almost 8% annually. It is particularly notable that, in recent years, the South American countries have managed to control and reduce inflation, which currently at 6% annually is an important advancement considering that inflation was once one of the region's greatest structural problems.

South America is a heterogeneous region, with large differences in the socioeconomic context of its members. In particular, as a group the four main countries in the region (Brazil, Argentina, Colombia and Venezuela) make up 79% of the population and 84% of the total GDP of the region. Large disparities in terms of poverty level, wealth distribution and the degree of urbanization also exist, making them prominent issues that must be considered when looking at the development of roaming initiatives.

To measure the potential of roaming services in the region, the behavior of South American international travelers and the population characteristics of the most relevant border zones were analyzed.

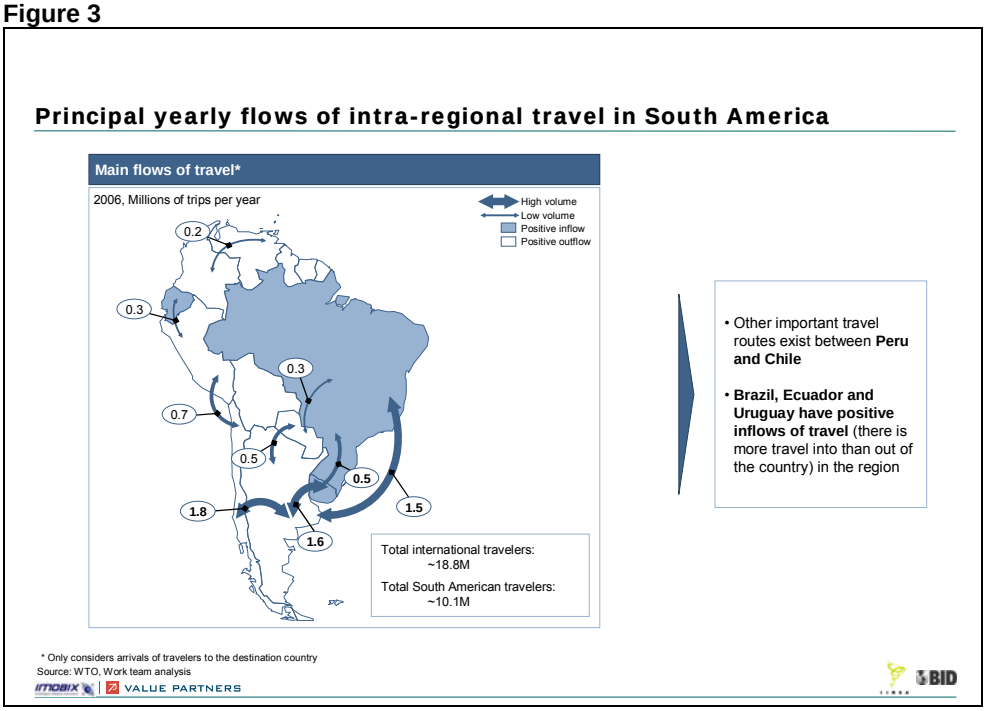
In terms of the volume of international travel, South America is still underdeveloped in comparison to other regions, since intra-regional trips are made by only 6% of the population, vs. 42% in Europe, 14% in North America and 14% worldwide.

Figure 2



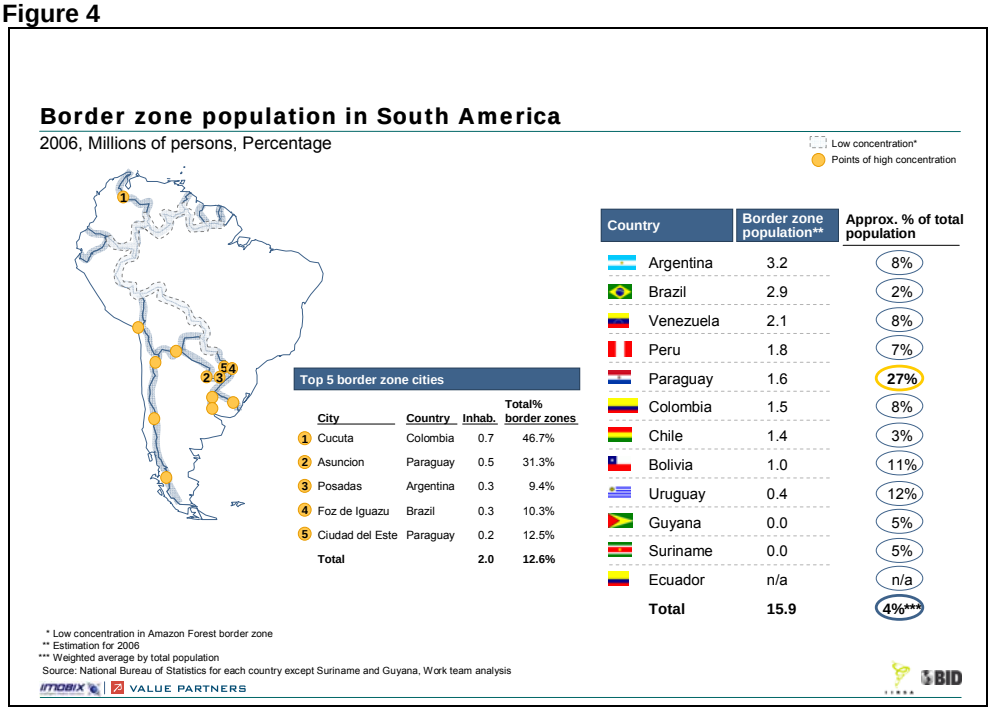
Nevertheless, there is evidence of a strong proportion of intra-regional trips to overall number of trips taken in South America, where more than half of the trips in the region (~10 million annually) are made by South Americans. The most important flows of intra-regional travel occur within Argentina, Chile, Uruguay and Brazil, routes that concentrate 54% of total traffic as shown in Figure 3.

Figure 3



In terms of border zones, Figure 4 shows that in South America there are ~16 million people living in border zones, representing a relatively low percentage of the population (around 4% of the total). Nevertheless, the population in these areas is concentrated in a small number of cities, generally dedicated to trade, generating opportunities for the development of roaming in the most relevant border zones.

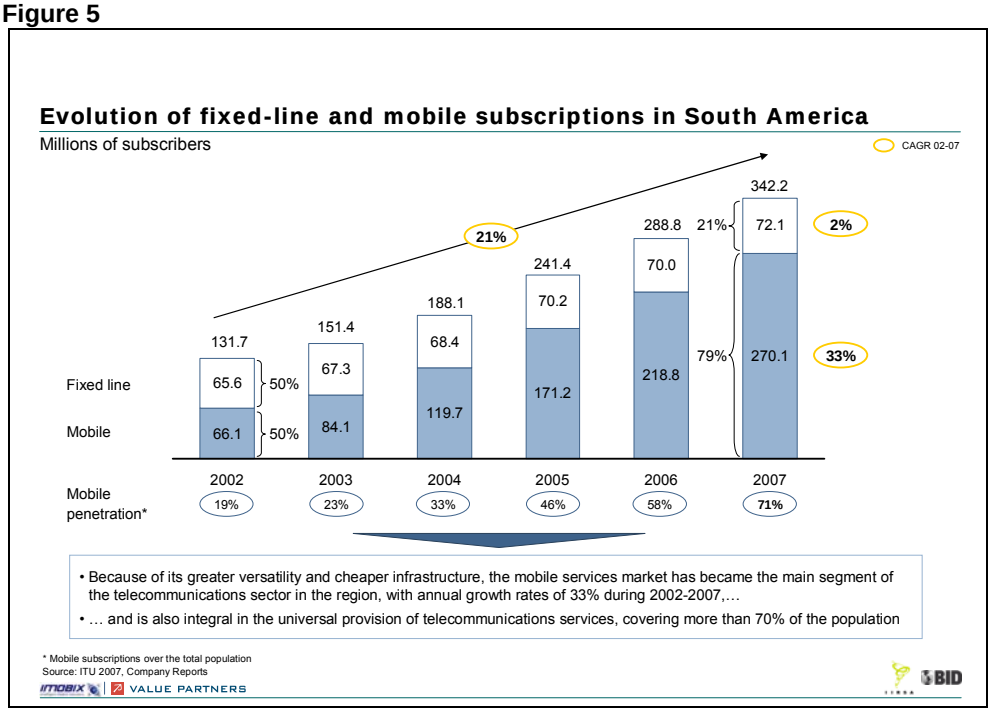
Figure 4



1.2. Mobile telecommunications market in South America

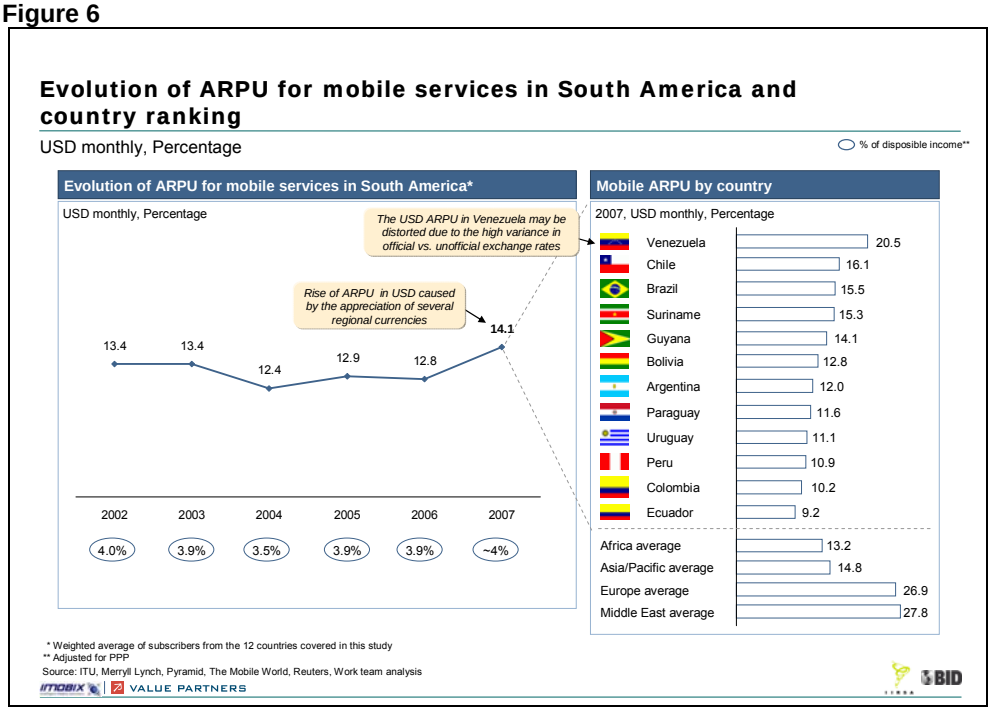
The South American mobile market has experienced major growth in recent years, reaching a penetration rate of 71% in 2007. As can be seen in Figure 5, the largest growth has come from prepaid services, which currently represent 82% of total lines. With respect to technological standards, GSM continues to be the leading technology in the region, used by 82% of total handsets in 2007.

Figure 5



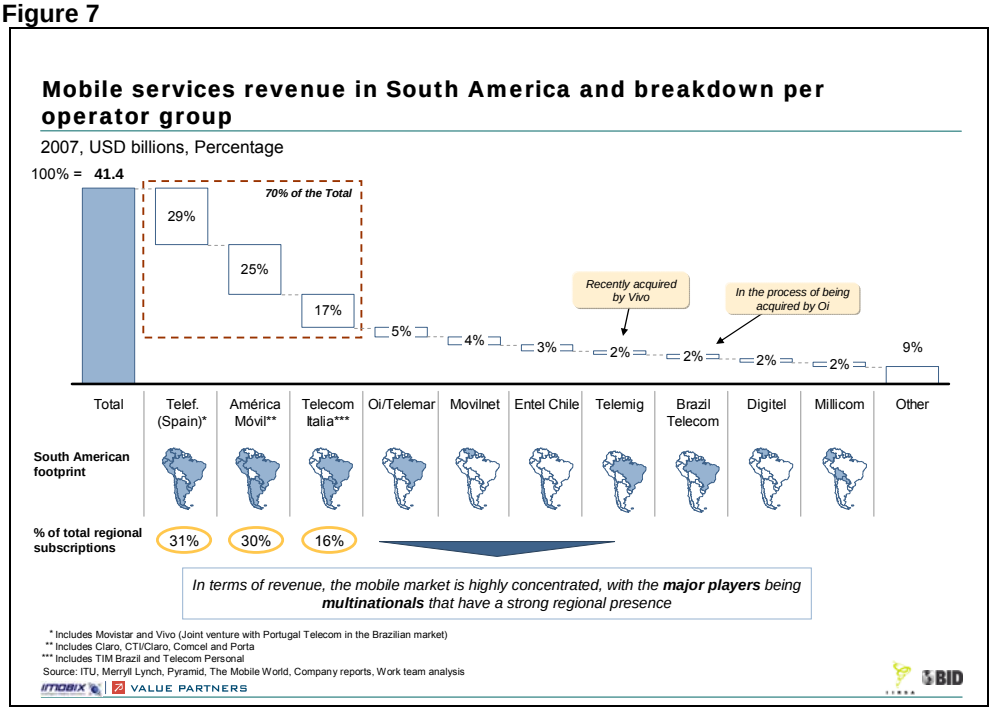
In regards to service revenue, the ARPU (average revenue per user) in South America is relatively low, at around USD 14 monthly, which is significantly lower than in Europe (USD 27), although it is in line with the ARPU in Africa (USD 13) and the Asia-Pacific region (USD 15), as can be seen in Figure 6

Figure 6



In recent years, the ARPU, measured in USD, has been relatively stable in the region (though slightly lower in terms of local currency), which, in addition to strong growth in the subscriber base, has helped to maintain sustained growth in total revenue. Consequently, in 2007 revenue for mobile services reached USD 41.4 billion. Regarding the operators, the mobile market in the region is highly concentrated by three large business groups that make up 77% of total subscribers and 70% of the total revenue: Telefónica (Spain), América Móvil (Mexico), and Telecom Italia (see Figure 7), highlighting the importance of including the support of at least one of these groups to be able to carry out roaming initiatives on a large scale.

Figure 7



There have been important advances in relation to telecommunications regulation. This has been due to the definition of consolidated legal frameworks and the creation of established regulatory organizations. The region is still in an early stage, however, in regards to international roaming regulation.

In other regions the majority of advances in roaming regulations are on the supranational level, given that the service is international in nature (local users only utilize it when they are outside their country of origin), permitting the coordination of distinct national regulators. Within South America, as shown in Figure 8, the regulatory coordination of telecommunications is carried out by two regulatory agencies, Regulatel and CITEL, and regional economic integration initiatives by MERCOSUR, CAN, and IIRSA

Figure 8

Principal multilateral telecommunications and regional integration initiatives

Multilateral initiatives	Organization	Objectives	AR	BO	BR	CH	CO	EC	GY	PA	PE	SU	UR	VE	Other
Telecomm-unications	Regulatel	• **Promoting the cooperation and coordination** for the development of Latin American telecommunications through: - **Information Exchange** - Promoting regulatory **coordination** - Defense of **regional interests** at international forums	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	• Mexico • Cuba • 7 Central American countries
	CITEL	• **Promoting the development of telecommunications** for American nations through: - **Information exchange** - Unification of technical **norms and criteria** - **Perfecting and** coordinating procedures - Promoting adoption of **official agreements** among governments	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	• U.S.A. • Canada • Mexico • 20 Central American and Caribbean countries
Regional integration	MERCO-SUR	• **Creation of a common market** with: - Free circulation of goods - Common trade policies - Coordination of sectorial and macroeconomic policies - **Coordination of legislation**	✓		✓					✓			✓		
	CAN	• Community for **integration and development** through: - Economic and social cooperation - Promotion of free-trade - Strengthening of regional solidarity - **Coordination of legislation**		✓			✓	✓			✓				
	IIRSA	• Creation of competitive roaming markets in the South American region to improve: costs, quality and coverage • Regulator coordination at the regional level	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Source: Regulator web sites, MERCOSUR, Work team analysis

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Though these organizations were able to generate some initiatives on roaming, they were never able to completely reach the desired objectives. For example, in MERCOSUR a resolution was passed for international roaming, aiming to achieve better transparency regarding the information provided to users, as well as to increase the technical coordination of the operators. However, in practice this resolution did not apply in full form to the coordination of frequencies in border zones and the arbitration of inter-operator tariffs. During this study, it was concluded that differential rates for roaming do not exist within regional integration groups (eg. MERCOSUR, CAN), given that the prices are set according to the flow of transmitted data, associated costs and other dynamics related to the demand for roaming.

Regardless of these considerations, it is expected that roaming regulation initiatives will be supported by the previously mentioned regional agencies.

In summary, the South American mobile market presents potential for the development of international roaming services, given the mobile service penetration of more than 70% of the population and the consolidation of the GSM technological standard, which facilitates the inter-operation of the networks in the region. It should be taken into account, however, that South American users have lower levels of consumption and ARPU and that the market has a high proportion of prepaid subscriptions. For this reason, which will be further discussed in the next section, the South American roaming market has developed primarily among business travelers. In this context it is not surprising that the focus of national regulators is geared towards other issues with greater general impact on mobile users, such as the universalization of services or number portability.

1.3. Roaming market in South America

The South American roaming market, USD ~343 million, represents less than 1% of the total operator revenue in the region (see Figure 9).

Figure 9

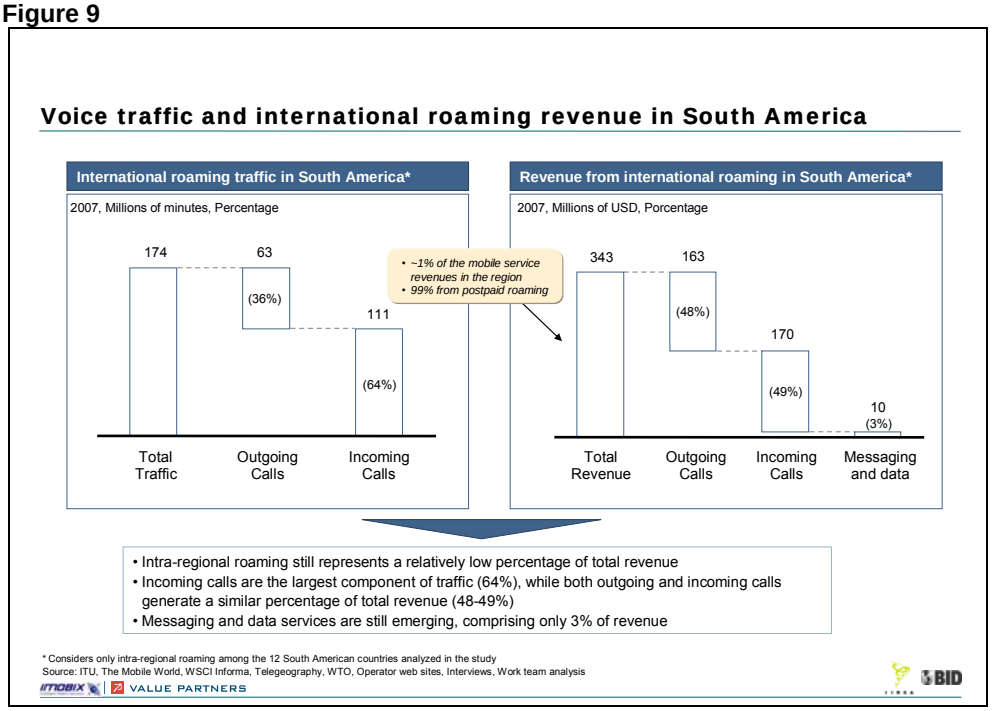
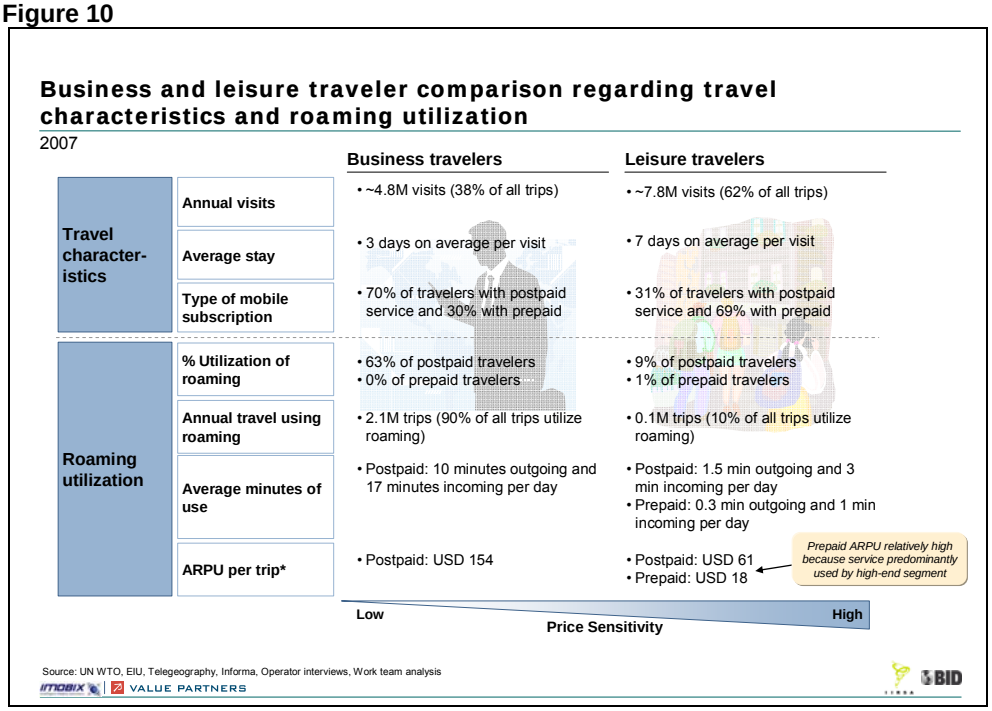


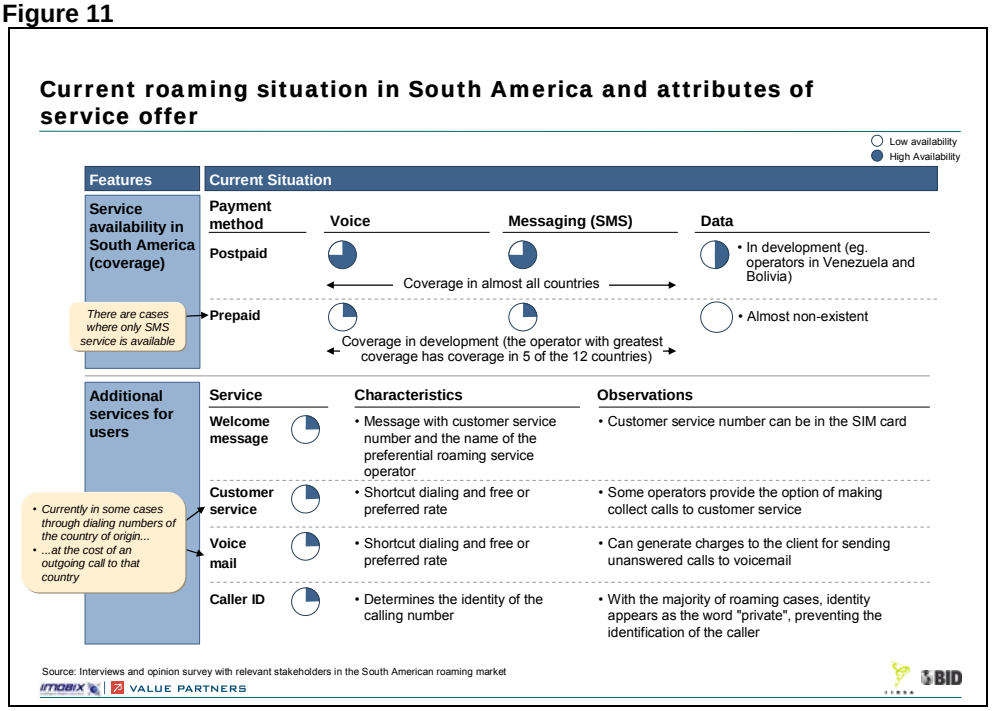
Figure 10 shows that business travelers are the main roaming users, representing 80-90% of the total, with an ARPU of 154 USD/trip. Leisure travelers represent the remaining 10-20%, with a significantly lower ARPU, approximately 61 USD/trip.

Figure 10



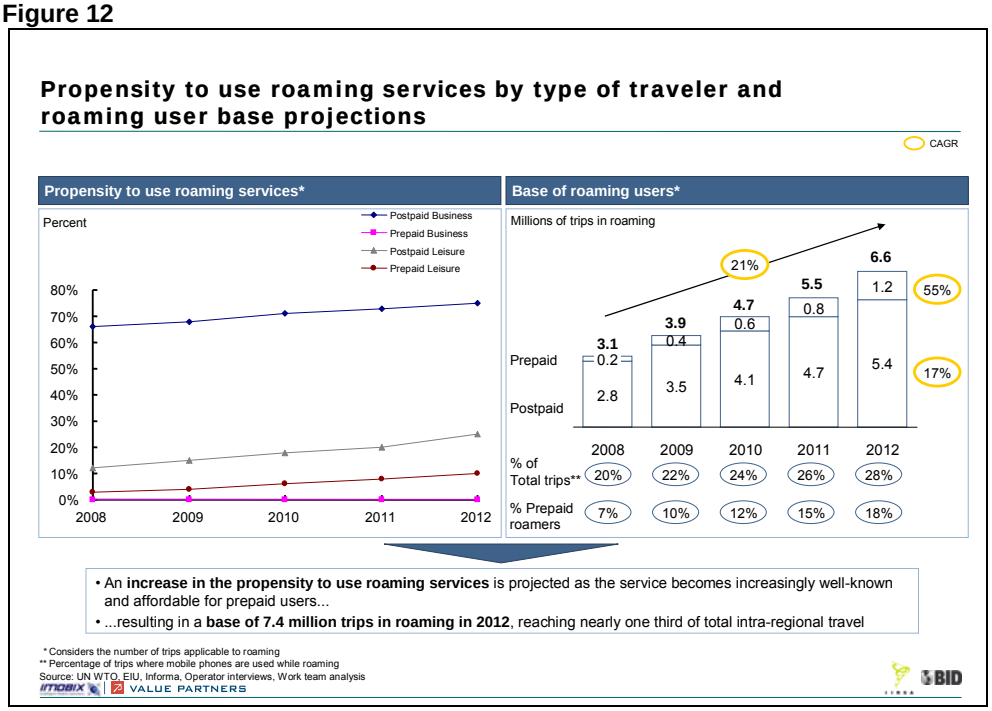
Currently roaming services in South America are centered on voice and messaging for postpaid services, with little or nonexistent penetration in prepaid service. There are also opportunities to improve the service via additional features for the user, such as welcome messages, customer service access codes, voice mail, and caller ID, among others, as shown in Figure 11.

Figure 11



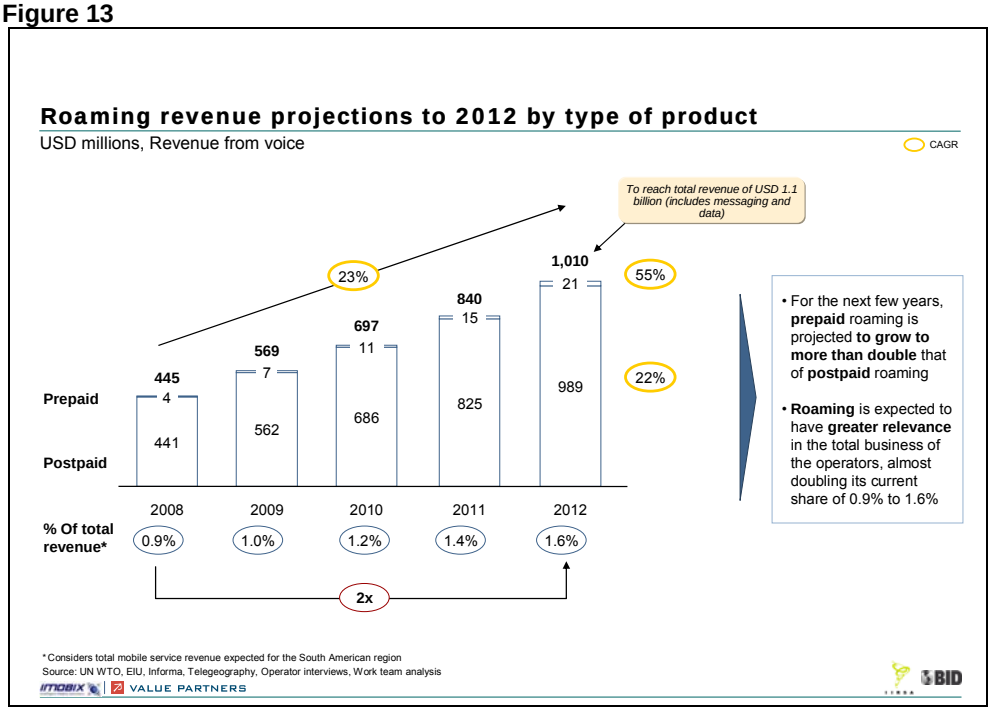
It is estimated that, for the next few years, South America's intra-regional roaming service will become increasingly more relevant for operators in the region. Intra-regional roaming trips (South Americans traveling within South America) are expected to reach 6.6 million annually by 2012, as can be seen in Figure 12, which will prompt a greater utilization of roaming services, as much for the business segment as for individuals on vacation.

Figure 12



The main driving force of this growth will come from individuals in the currently almost non-existent prepaid roaming segment, as they will represent 18% of the total South American intra-regional trips made that same year. Revenue from this segment is expected to reach USD ~1 billion in 2012, equivalent to 1.6% of total mobile revenue, which almost doubles the levels expected for 2008 (0.9%) (see Figure 13).

Figure 13



Retail roaming rates in South America, seen in Figures 14 and 15, are high and also present significant price variations for the same concept (eg. for outgoing voice). These prices can vary as much as 75% within the same country. Local outgoing calls are usually cheaper (1.66 USD/min including taxes), while calls to the country of origin are the most expensive (3.23 USD/min including taxes)[1]. Text messaging (SMS) in roaming represents a cheaper alternative to voice calls, given that incoming messages are free in general, and outgoing messages cost on average 0.56 USD/message. Data services are still in the developmental phase, and in 3 of the 12 participating South American countries, these services still do not exist. In the other 9 countries there is high variation in data roaming rates, averaging ~18 USD/Megabyte (MB).

[1] Excluyendo llamadas salientes a terceros países por ser muy poco frecuentes

Figure 14

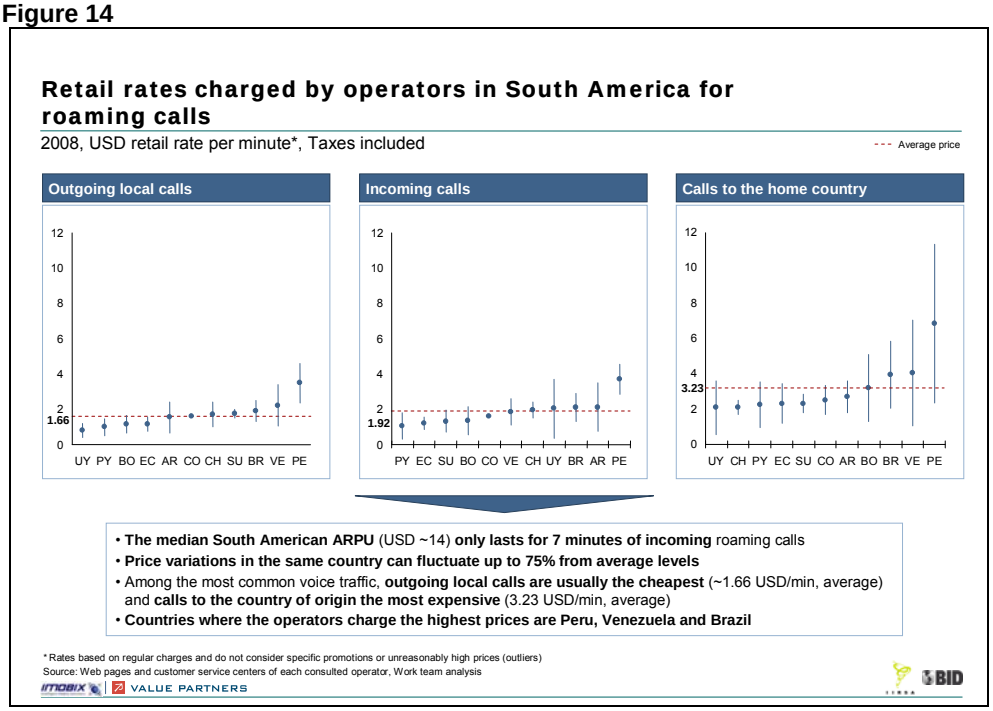
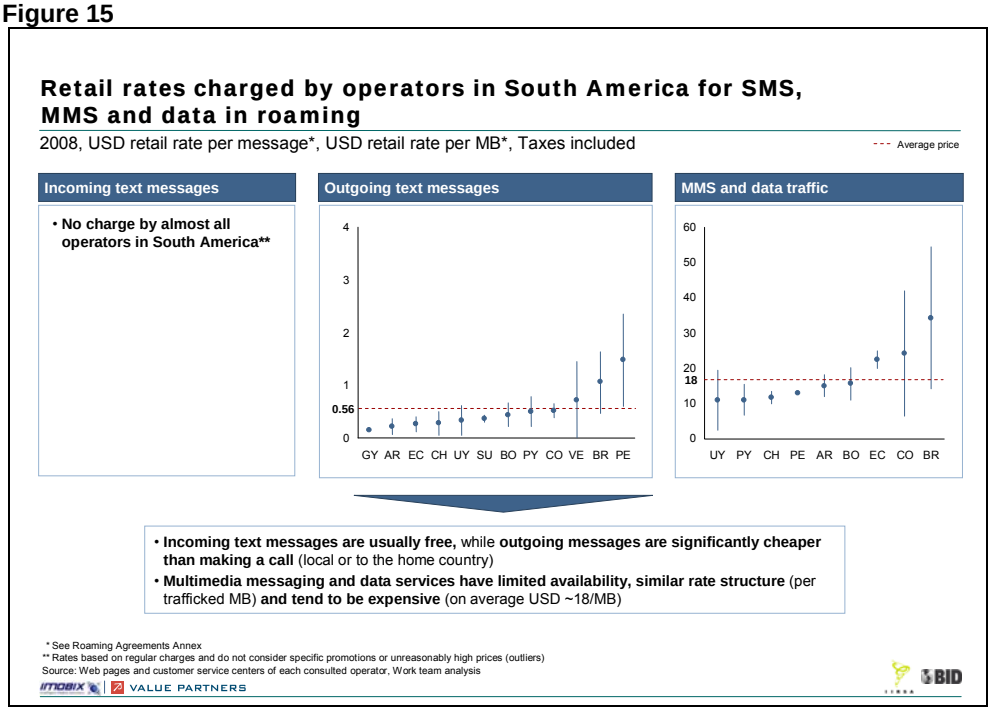


Figure 15



One of the most important components of retail rates are the Inter-operator Tariffs (IOT), that in general are applied to outgoing calls and messages but not to incoming calls and messages. These IOTs are defined in private roaming agreements between operators, and according to industry standards they should be impartial regarding the operator that is using wholesale roaming services. In practice,

however, there are discounts for large volumes or for member operators of roaming alliances, of which are estimated to enjoy discounts of 30 – 35% off regular IOTs.

These reductions in IOTs are strong incentives for the creation of regional alliances among national operators, but there are other incentives to motivate operators, such as the marketing leverage of a common brand, the possibility to redirect visitor roaming traffic onto their networks (steering techniques), and the potential to achieve a higher quality of service.

As can be seen in Figure 16, there are currently three alliances in South America: two by large business groups (Telefónica (Spain), America Móvil (Mexico)) and one by independent operators (Roaming Alliance). Roaming calls utilizing the network of a member operator of the alliance can result in discounts of up to 40%, though the communication of these discounts is not very clear and is not applied in a uniform manner.

Figure 16

South American roaming alliances

2007, Millions of subscribers

Alliances		Claro	movistar	Roaming Alliance
Type		• Business group (América Móvil)	• Business group (Telefónica)	• Independent operators
Operators by country	Argentina	CTI/Claro	Movistar	Telecom Personal
	Bolivia	-	-	Entel Móvil
	Brazil	Claro	Vivo	Tim Brasil
	Chile	Claro	Movistar	Entel PCS
	Colombia	Comcel/Claro	Movistar	Tigo (formerly Ola)
	Ecuador	Conecel/Claro	Movistar	-
	Guyana	-	-	-
	Paraguay	CTI/Claro	-	Personal
	Peru	Claro	Movistar	-
	Suriname	-	-	-
	Uruguay	CTI/Claro	Movistar	Ancel
	Venezuela	-	Movistar	Digitel
Total number of clients		• 81.9M	• 83.7M	• 60.5M
Percentage of clients to total in the region		• 30.3%	• 31.0%	• 22.4%

~84% of total South American mobile users are clients of operators that belong to alliances

Source: WCIS, Work team analysis

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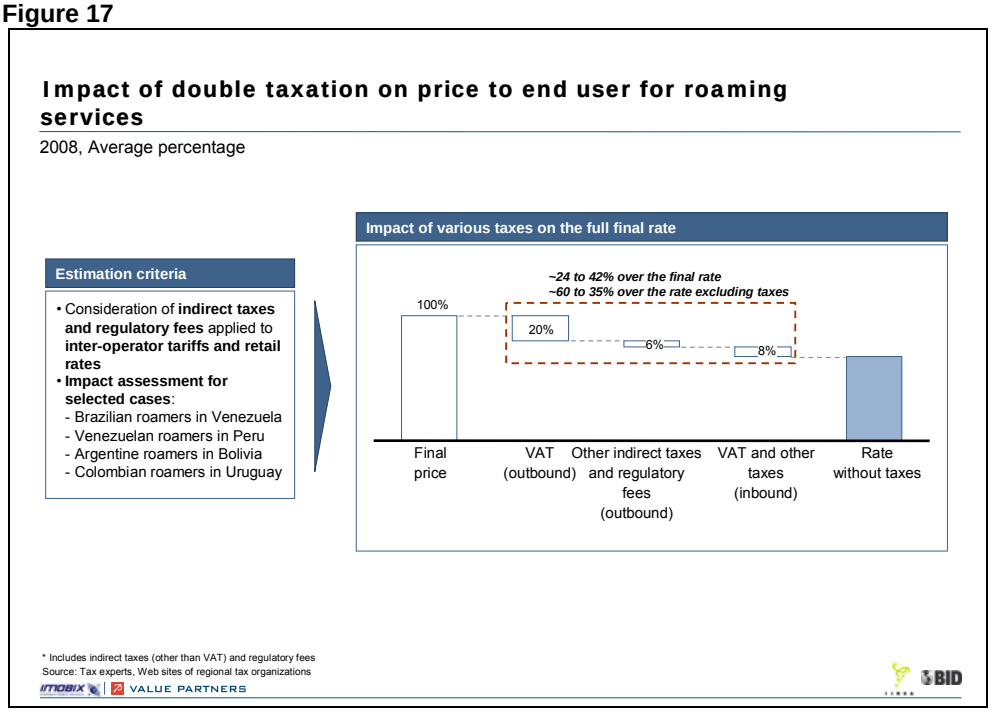
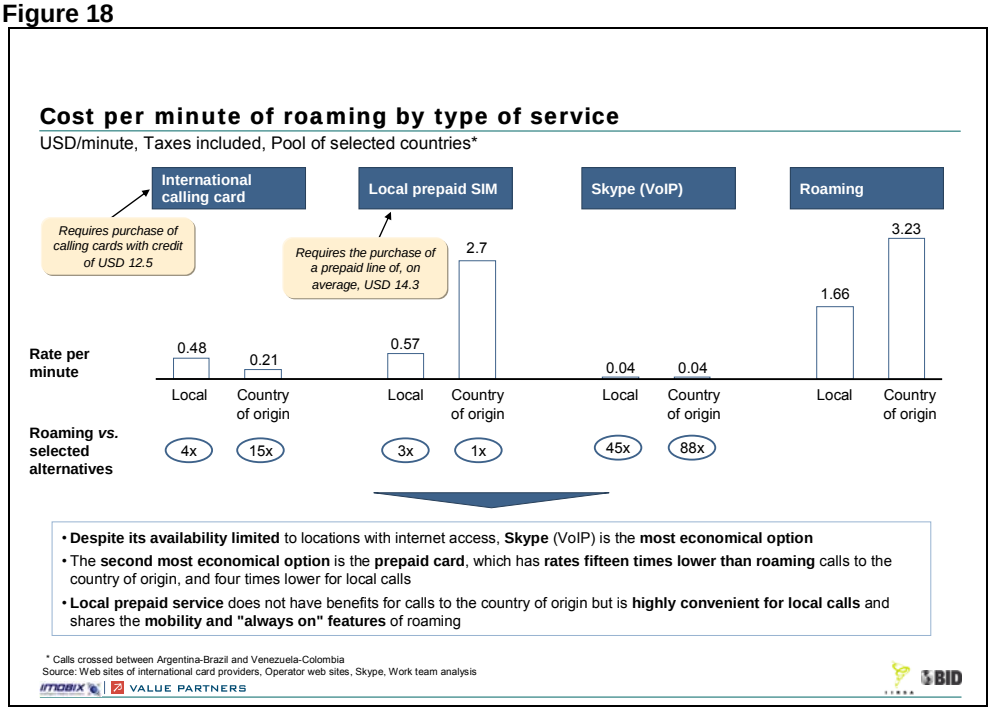
Finally, another very important component of retail roaming rates is the tax burden, which for the effect of the dual application of the VAT and other similar indirect taxes, generates a surcharge of between 35 and 60% above the rate without taxes, as can be seen in Figure 17. The problem of double taxation exists because of the dual application of taxes on the value of the service in the country visited (justified by the concept of locality) and in the country of origin of the roamer (justified by the concept of residency). Double taxation affects most roaming services in South America, and the dual application of the VAT (the most relevant indirect tax) is applied to 72% of the possible combinations of roaming scenarios among the countries in the region.

Figure 17



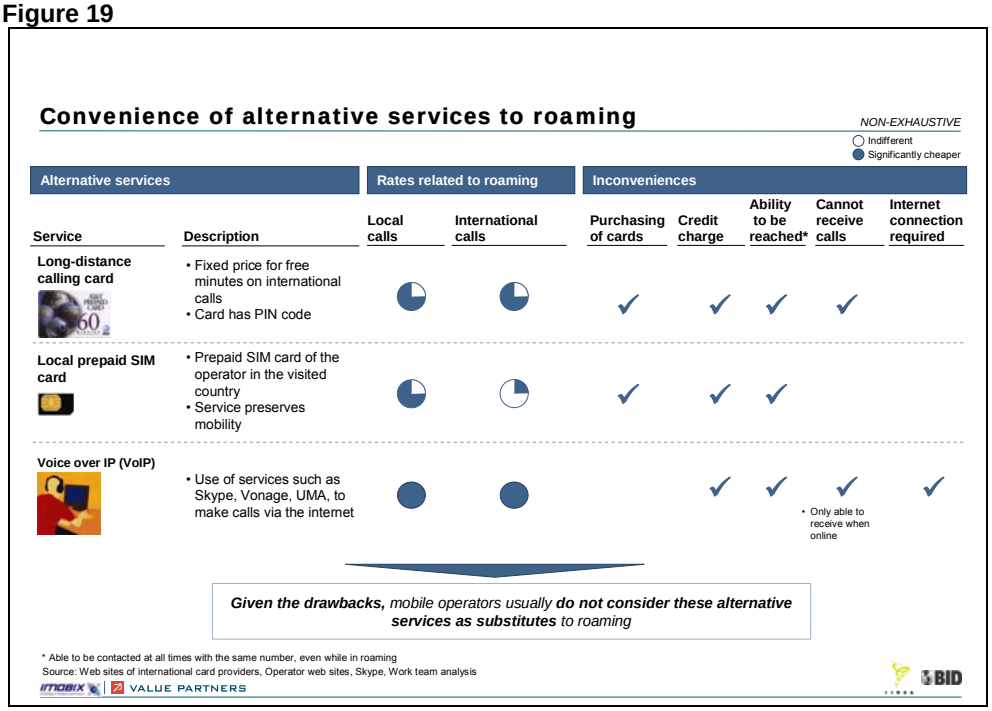
Due to the high cost of roaming, South American travelers utilize more economical services, such as long distance calling cards, local prepaid services available in the visited country and voice over internet protocol (VoIP), as can be seen in Figure 18. Considering the total fixed costs for the utilization of long distance calls and prepaid services (e.g. purchase of calling card at fixed price or purchase of a local prepaid mobile phone chip), these alternatives to roaming still generate savings for the user after the first 6 minutes of a local call or after the first 3 minutes of a call to the home country. In the case of VoIP (e.g. Skype), the costs are always cheaper than the roaming rate, though this calling experience is distinct for the user.

Figure 18



In spite of the economic benefits, these alternative services present various obstacles for the user, such as the need for a fixed phone line to use prepaid calling cards, a computer/PDA with internet access to make VoIP calls, or the need to purchase credits (for prepaid services or calling cards), as shown in Figure 19. As a consequence of these limitations, roaming continues to be attractive to users despite its high prices, although at a limited frequency of use.

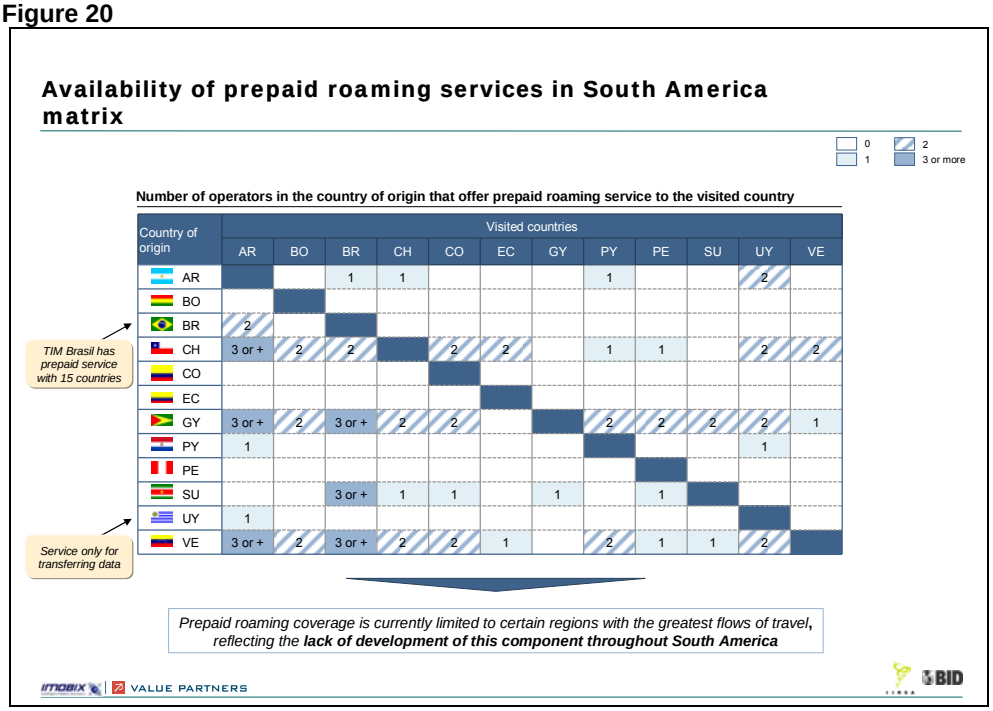
Figure 19



In terms of initiatives, the operators are reinforcing transparency in rates and services offered through better communication via their web sites and contact centers as well as the standardization of rates for different roaming destinations. Clients, however, still do not have a good understanding of the rates and the general dynamics of roaming services. There is still room for improvement through educating clients about prices and service quality.

Operators in the region are working to improve the availability of prepaid roaming, prioritizing heavy travel zones. Although availability is still low as shown in Figure 20, the development of prepaid roaming coverage throughout all zones is advancing slowly, due to the complexity of implementing the system adopted in the region (the most popular system used globally), where service should be implemented on a one-on-one basis among the operators that have roaming agreements.

Figure 20



Operators are also developing distinct initiatives in matters regarding fraud, coordinated by industry groups such as the GSMA. Roaming fraud causes significant losses for various operators, and can decrease roaming revenue by 3-5%. The risk of fraud arises, in large part, from the delay in the exchange of information between operators regarding roaming consumption for specific lines. For that reason, the GSMA developed the Near Real Time Roaming Data Exchange (NRTRDE) initiative, in order to reduce the time for information exchange between operators. In the implementation of this initiative, South America is relatively advanced, where more than 80% of operators have already implemented NRTRDE or have plans to do so by October 1, 2008.

1.4. Perspective from relevant stakeholders

During this study, key figures within the South American roaming market were interviewed (operators, regulators, consumer protection agencies), with face-to-face interviews in four countries and supplementary opinion survey questionnaires to the remaining stakeholders. In general they are optimistic about the development of roaming, proposing an increase in the relative importance of the total revenue for this service (from 1-5% in 2008 to 5-12% in 2011). In terms of opportunity, the relevant stakeholders agree on some key points to promote roaming in the region:

- Leverage the universalization of the service to increase the number of potential roamers (price is indicated as the main barrier to roaming usage)
- Improve education and communication to consumers

- Leverage GSM technology for improved inter-operability between countries
- Advance the anti-fraud initiatives in the industry

At the same time they indicated that the main challenges for the development of the services are:

- Creating an attractive business case for investment in the improvement of prepaid roaming service availability
- Criminalizing acts of fraud at a governmental level
- Creating a differentiated plan for roaming services in the border zones
- Lowering the levels of double taxation in order to achieve better rates for users

2. Results from Stage II: Comparative Analysis of the South American and International Roaming Context

2.1. Experience in Europe

In Europe, the greatest advances in roaming regulation have occurred within the framework of the European Union (EU), a common market comprising 27 countries and accounting for 60% of the total population and 85% of total GDP in the region. Europe has a developed economy, with a PPP (purchasing power) adjusted per capita GDP of USD 22,000 (2007), while the European Union, with several of the more developed economies, has a higher per capita GDP of around USD 32,000.

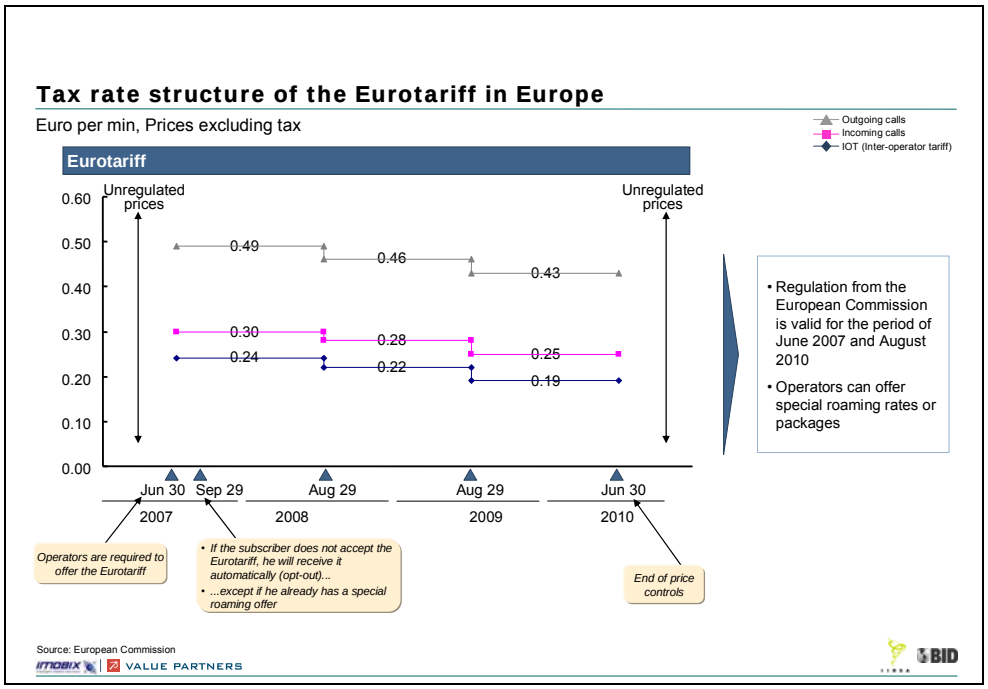
The European mobile telecommunications sector is considered a mature market with high average revenue per user (ARPU). Penetration of the mobile market is over 100%, with an ARPU reaching USD 27 per month, which represents 3% of disposable income in the economy. In recent years, the largest mobile market development was in the prepaid segment, which has grown 20% annually and reached 68% of total subscriptions in 2007. Moreover, all handsets in Europe are compatible with the main technology, GSM, given that 90% of handsets have the technology and the remaining 10% have UMTS, the third generation successor to GSM.

The European Commission (EC) is the agency responsible for regulating the telecommunications market at the regional level, with power to define and implement common laws and regulations within the EU. Within the EC, the respective national telecommunications regulators are part of the European Regulatory Group (ERG), which among other things, studies European international roaming in detail and coordinates the application of market regulations.

Roaming service is highly popular in Europe. European travelers use roaming services in 41% of all trips taken, resulting in 173 million trips using roaming per year. As a result, revenue from European travelers using roaming (outbound) is significantly high, and was estimated at USD 14.8 billion in 2008.

In analyzing the regulatory initiatives in Europe, it is important to consider that the region has strong incentives to promote intra-regional roaming, given the high incidence of travel in the region. In this context, as can be seen in Figure 21, the EU regulation EC717/2007 is very important, as it defines maximum wholesale and retail rates for international roaming between member countries

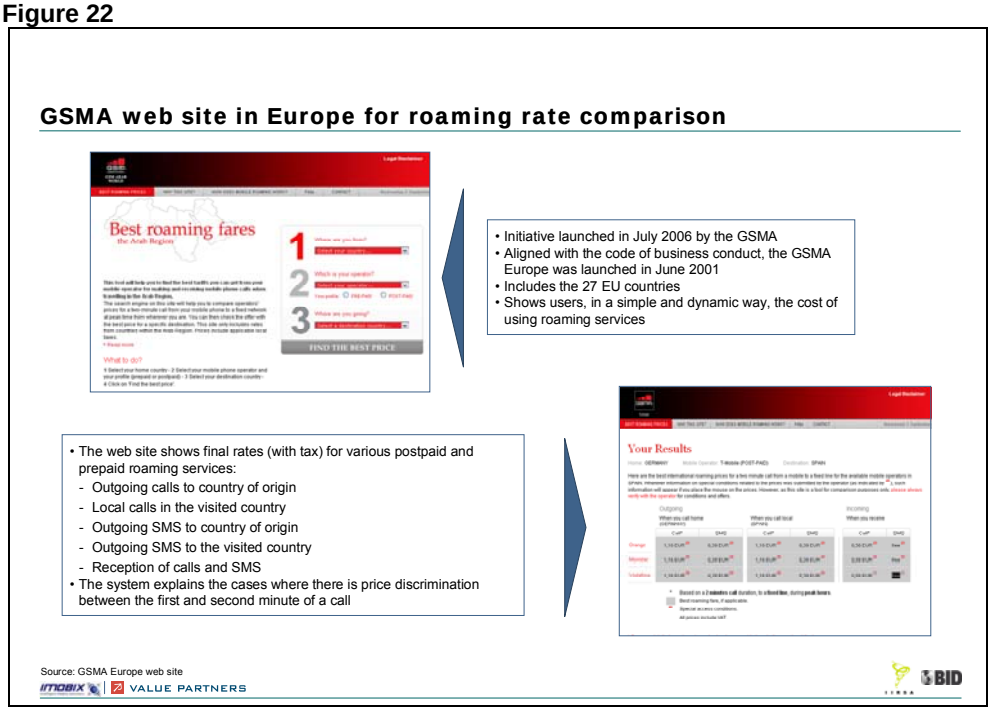
Figure 21



This regulation is the result of successive initiatives and studies by the EC on transparency, perception of service by clients and pricing:

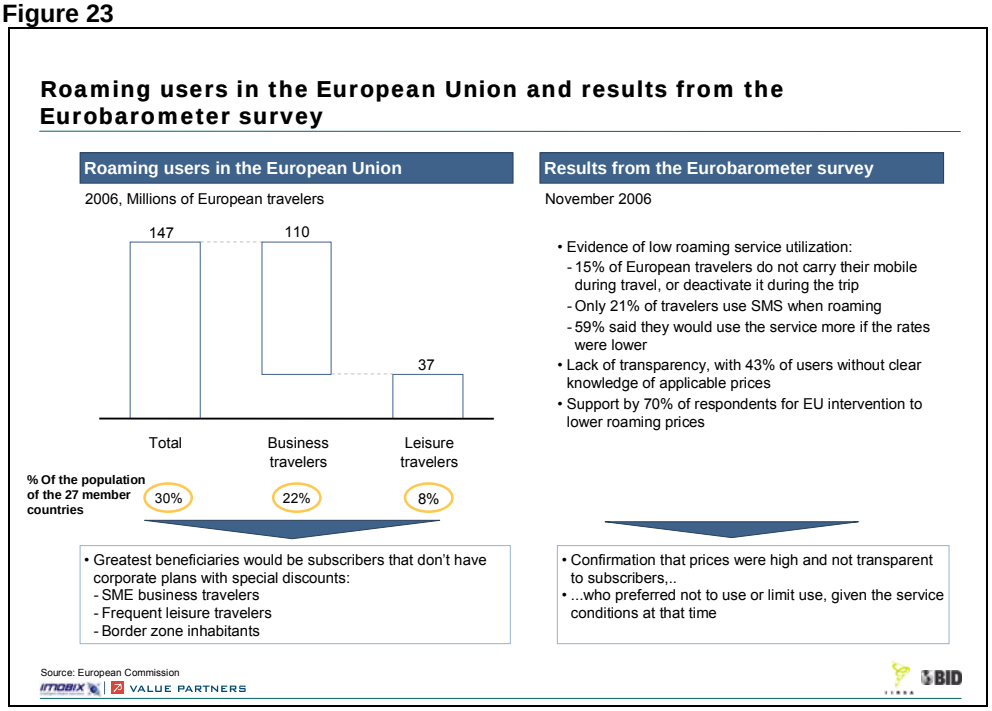
- Initially, the EC sought to increase transparency of the roaming market with a web site comparing operator roaming rates in various countries within the region. The site was not effective, however, given its limited coverage of countries and outdated information. Nevertheless, as seen in Figure 22, the initiative did provoke a reaction by an industry organization, the GSMA, who in response launched a similar web site with complete and updated rates.

Figure 22



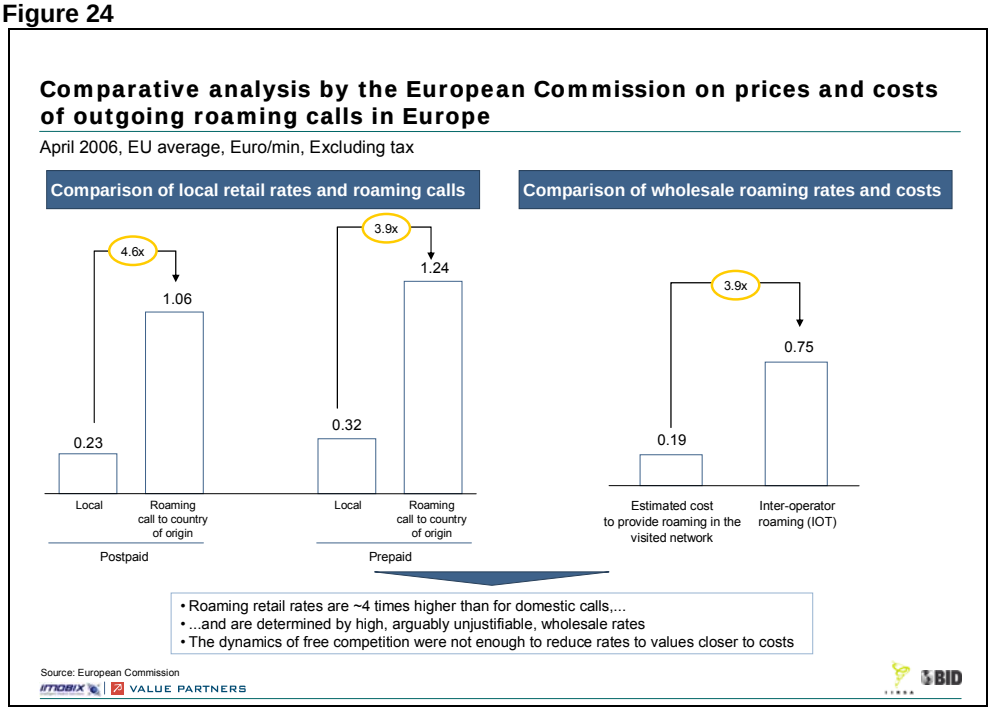
- Furthermore, in order to understand user perception, the EC carried out a survey on European roaming, which revealed that many travelers do not use the service due to its high prices, as seen in Figure 23

Figure 23



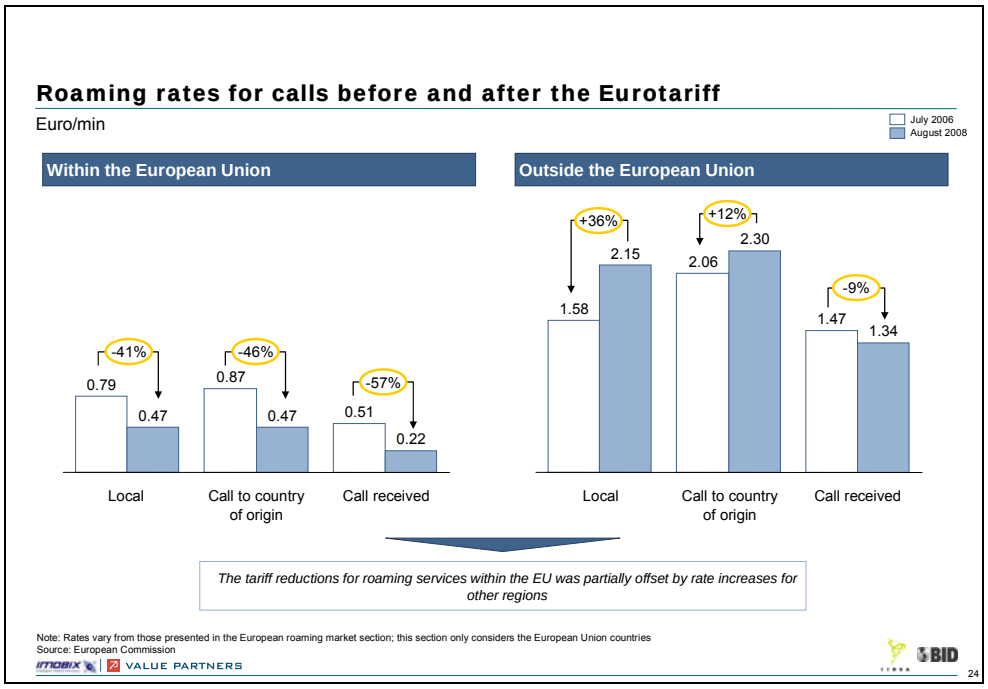
- The EC also conducted a survey of roaming rates, noting that they were significantly higher than domestic rates and that this disparity was not based on actual costs. This is shown in Figure 24.

Figure 24



From these findings, the EC considered various alternatives to reduce roaming rates in the region, looking to simultaneously determine retail and wholesale rates, with the aim of encouraging the development of the service, increase transparency and avoid "price squeezing" (ie, operators who seek to harm other smaller operators by offering their services at below cost). Finally, the EC decided to regulate wholesale and retail rates through the creation of the Eurotariff, which had full compliance among operators, including some cases of pricing below the set cap, as shown in Figure 25. Users have benefited from significant price reductions in the order of 40% to 60% on international roaming calls within the EU. Rates to destinations outside Europe remain high, however, at around three times more expensive than intra-regional (see figure 25).

Figure 25



Finally, the EC717/2007 regulation also provides analysis and subsequent regulation of SMS and data roaming fees. This analysis is still ongoing, and it is expected that the EU will impose wholesale and retail rates for SMS roaming, and will define transparency measures for data roaming.

Europe has two interesting operator alliances, which offer attractive roaming rates and services beyond those required by regulation, as can be seen in Figures 26 and 27.

Figure 26

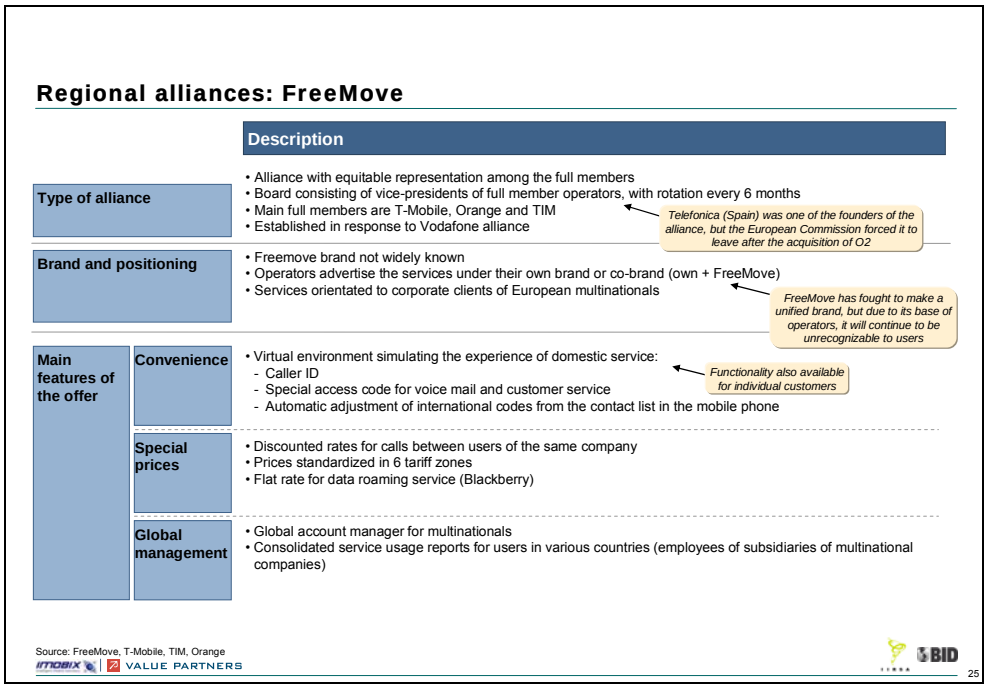
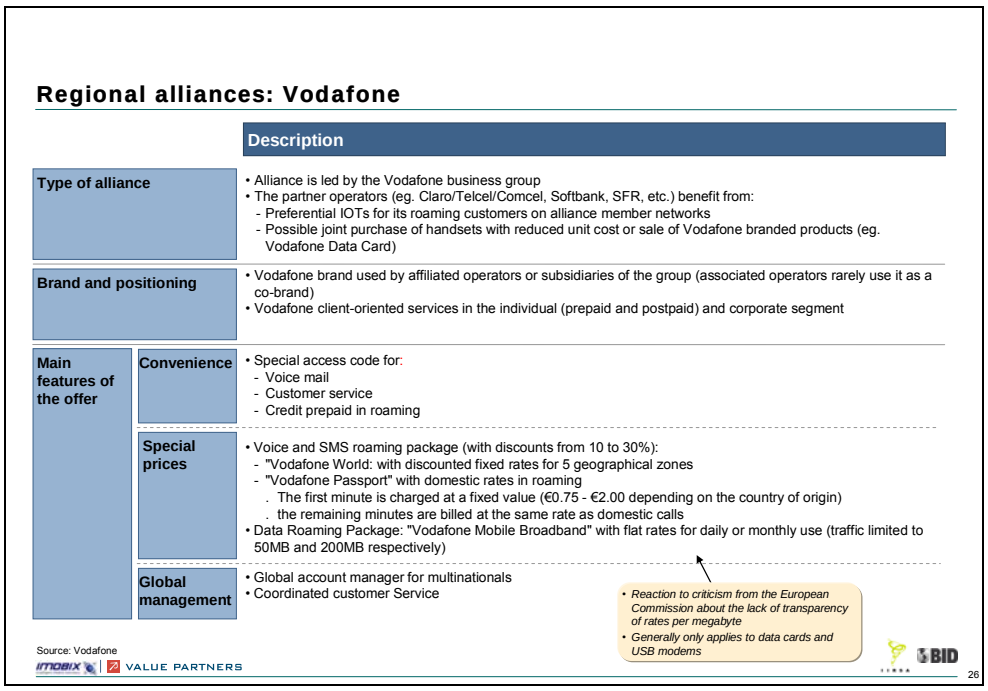


Figure 27



The FreeMove alliance is led by 3 large European groups (Orange, T-Mobile and TIM), with coverage in 27 countries (25 in Europe and 2 in the Americas) and offers services targeted at data roaming for corporate clients. FreeMove does not have a joint pricing policy, and each participant operator offers its individual roaming rates to its clients. The Vodafone alliance is comprised of 22 subsidiary and affiliate

operators, and a further 42 partners in countries where it does not have an actual presence. Within this alliance, Vodafone offers an attractive range of roaming services for voice and data for both individual and corporate clients, and within the Vodafone Passport service, offers roaming rates at the same cost as a local call plus a fixed charge for connection of between €0.75 and €2.00, depending on the country of origin.

In summary, the European experience is a very interesting case study given the high degree of development of the roaming market in the region. EU regulatory initiatives had a strong impact, as much as on service tariffs as for the insights gained from analysis of roaming supply and demand. It is important, however, to emphasize that these initiatives were commissioned by the EC, which has a power of enforcement that does not exist in the regional entities of other regions. Europe, however, has also shown development of very positive initiatives by operators, both in response to regulatory pressures (eg. web site for comparison of rates), and in creating competitive advantages (eg. roaming alliances) in a market where roaming traffic is extremely important given the amount of intra-regional travel. For comparative purposes, it is necessary to understand that these initiatives were launched in a particular context that is very different to that of South America, one that is mature and highly competitive, with great potential for roaming given the amount of international travel by users and high levels of ARPU, and especially with very active regional regulators with enforcement authority.

2.2. Experience in Africa and the Middle East

In Africa and the Middle East various international roaming initiatives have been put forth at the regulatory level and by the operators. Although both regions are different in socioeconomic terms, it is relevant to consider them together in this study given the ties between the two at the socio-political and mobile market level. Several countries in Africa and the Middle East are grouped in pan-regional organizations like the League of Arab States and the Arab Regulators Network (AREGNET). Moreover, the mobile markets of both regions are relatively integrated, with several of the largest mobile operators in Africa and the Middle East serving customers in both regions (eg. Zain, Etisalat).

Similar to South America, both regions have a high concentration of population and GDP per country. Additionally, Africa and the Middle East are quite different from each other in terms of PPP adjusted per capita GDP, given that Africa has levels close to USD 5,000 while the Middle East has levels near USD 10,000.

In both regions, the mobile market has grown strongly in recent years, with growth rates of 40-50% annually. The African market is still developing, with a penetration of 29%, while the Middle East has shown more advanced development, with a mobile penetration of 61%. In both regions, the growth of mobile lines has been driven by prepaid services, which account for 95% of total lines in Africa and 69% in the Middle East.

In terms of average revenue per user (ARPU), there is a clear disparity between the two regions, with Africa having a monthly ARPU of USD 13 versus almost USD 28 in the Middle East. In both regions, these values represent a high percentage of disposable income, around 7% in both cases. Finally, GSM is the dominant technology used in Africa (97% of handsets) and in the Middle East (94% of handsets).

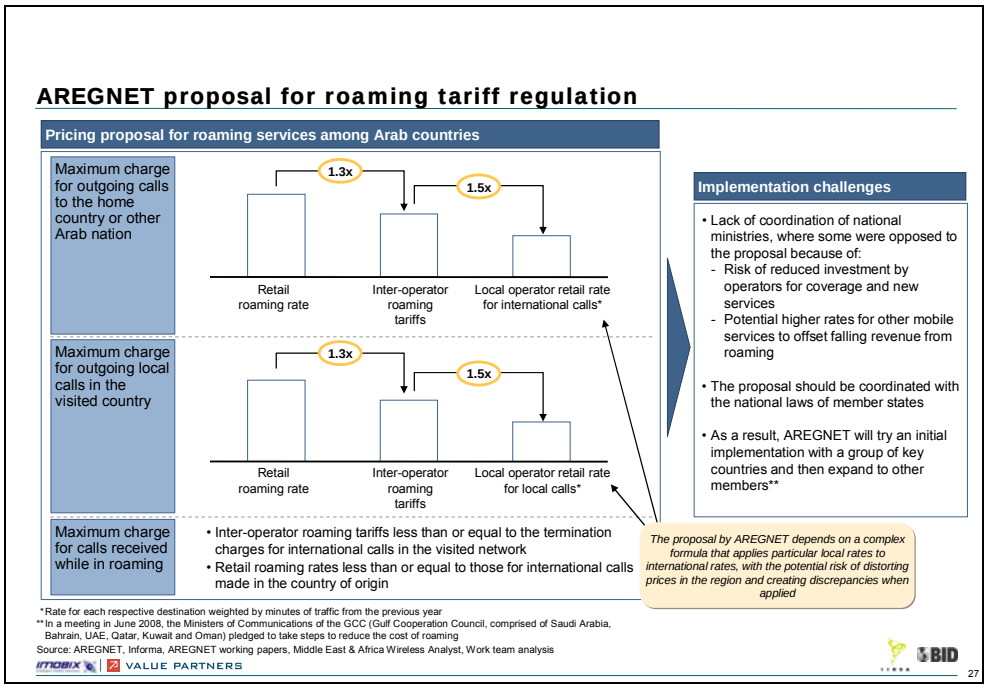
In terms of regulation, the main national regulatory association in both regions is AREGNET, which includes 19 Arab countries in the Middle East and Africa, with a working group specializing on international roaming. While in Africa there are other regional telecommunications regulation associations, the participation in international roaming by these associations has been very limited.

Regarding roaming services, it is estimated that as an aggregate of Africa and the Middle East, travelers use roaming services in 55-60% of total travel in the region, resulting in 26 million trips per year using roaming. Of the roaming trips, most are by leisure travelers (individuals) who account for 67% of the total. This behavior is significantly different from that shown in the other regions where business roamers (corporate) are the majority. In terms of revenue, the roaming market for both regions was estimated to reach USD 2.3 billion in 2008 (outbound), with 75% from the Middle East and the remaining 25% from Africa.

Africa and the Middle East are making some efforts to encourage intra-regional roaming, although in absolute terms, domestic travel within these regions is not as significant as in Europe. Africans account for 38% of total travel in Africa (equivalent to 2% of the total population), while Middle Eastern travelers represent 35% of total travel in the Middle East (equivalent to 9% of the total population). In both cases, the values are well below the European level, with European travelers representing 88% of total travel in Europe (equivalent to 42% of the total population).

In roaming regulation, AREGNET has made the most significant advances in the region. In 2005, the association formed a working group specializing on international roaming rates in the League of Arab States (in the Middle East and North Africa). In 2006, as a first step, the group conducted a survey on the rates charged for roaming between Arab countries and concluded that they were excessive and not very transparent. From these results, in 2007, the GSMA Arab World created a web site to compare rates among Arab countries, similar to that implemented a year earlier in the EU by the GSMA Europe. Considering that the actions by the operators were insufficient to tackle the problems of roaming in the region, in 2008, AREGNET defined a price capping proposal for wholesale and retail voice roaming rates, in line with the Eurotariff defined by the European Commission, as shown in Figure 28.

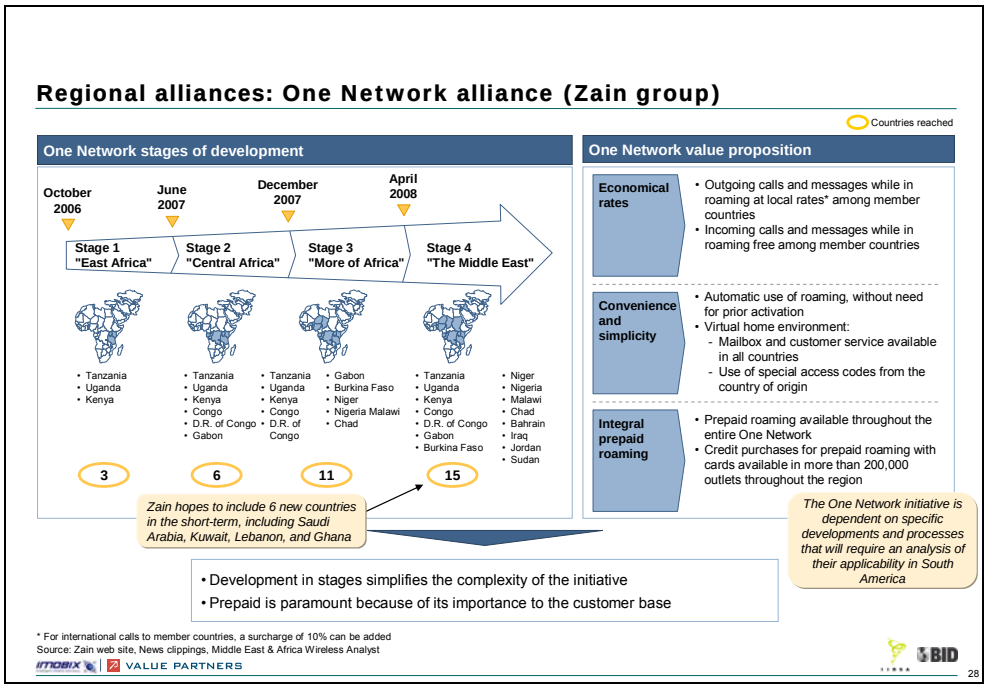
Figure 28



In practice, the AREGNET proposal faces serious implementation problems, since it requires coordination among member countries, and most importantly, AREGNET does not have the same regional enforcement capacity as the European Commission. This point is important for South America, where the absence of a regional regulatory structure also makes the definition of coordinated regulation and consensus difficult. For this reason, AREGNET initially implemented its recommendations among a smaller group of the Gulf Cooperation Council countries, and then gradually expanded the regulation to the rest of the Arab countries.

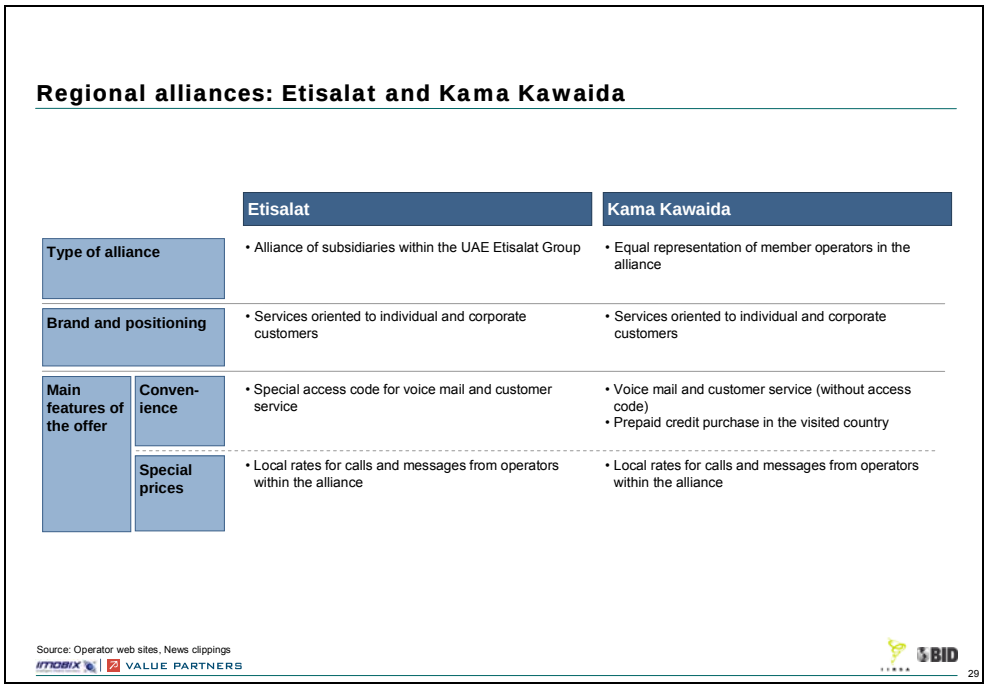
The Middle East has three operator alliances offering attractive roaming rates and services without the need for regulation: One Network, Kama Kawaida and Etisalat. The One Network alliance was the first to develop in the region, and as shown in Figure 29, currently comprises 15 subsidiaries of the Zain group in Africa and the Middle East. Launched in 2006, this alliance differentiated itself by offering roaming rates equal to local rates for calls and messaging between member operators. In addition, One Network offers prepaid roaming in all alliance countries, and offers the possibility of purchasing credit in the visited country. The creation of the One Network alliance had a significant impact on the positioning of Zain in the region. Moreover, it required the active participation of governments to remove duty barriers, facilitate foreign investment, and allow open access to international links.

Figure 29



The other two alliances in the region emerged largely in response to One Network, and offer similar services, as shown in Figure 30. Kama Kawada, launched in 2007, is an alliance between independent operators in 5 Eastern African countries. Etisalat, launched in 2008, is an alliance formed by three subsidiaries in the Middle East and North Africa from the United Arab Emirate's Etisalat group. Both alliances focus their offer on the provision of roaming rates equal to local rates for calls and messaging between member operators. Due to their recent formation, these alliances are still in the process of expansion and service development, so it is not yet clear what the degree of success in competition against One Network will be.

Figure 30



In summary, Africa and the Middle East show important similarities to South America. In all cases, intra-regional travel represents less than 10% of the population, and in particular, Africa and South America have very low ARPU levels. AREGNET's regional regulatory initiatives face similar coordination problems as is the case for CITEL and Regulatel, and for this reason it will be important to follow the progress of these initiatives to evaluate alternatives for generating industry incentives in the absence of regional enforcement capabilities. Unlike in South America, in Africa and the Middle East there have been very positive initiatives by operators, both in response to regulatory pressures (eg. web site that compares rates) and to obtain competitive advantages (eg. roaming alliances). In particular, the case of Zain and its One Network alliance in Africa and the Middle East should be of special interest to South America, given its relatively low ARPU (USD16),

2.3. Experience in Asia-Pacific

The Asia-Pacific (AP) region provides fewer advances in roaming compared to Europe, Africa and Middle East. Asia-Pacific has important socioeconomic contrasts among its countries, given the weight of China and India in the region, accounting for 67% of the total population and 35% of regional GDP, and the high degree of development in Japan, which accounts for 34% of regional GDP, and only 4% of the population. Taking into account these differences, income is relatively low, with an average per capita GDP of USD 8,000.

The mobile market in Asia-Pacific is rapidly expanding, with a penetration of 27% and recent growth rates of 26%. Prepaid service was the largest driver of development, growing at 39% annually and accounting for 69% of all lines by 2007.

The region has a low average revenue per user (ARPU), at around USD 15 monthly in 2007, impacted more by the Chinese (USD 12) and Indian (USD 10) markets than by the Japanese (USD 52), South Korean (USD 45) and Australian (USD 43) markets. In terms of mobile technology, GSM is dominant in the region, used in 80% of handsets in December 2007.

In terms of regulation, there are three major associations who bring together the national regulators to coordinate regulation and accelerate the development of telecommunications. So far, however, none of these associations has had an important impact on international roaming, limiting themselves to defining technical standards and declaring intentions to increase roaming coverage. This lack of initiatives to promote roaming is very striking when considering the importance of intra-regional travel in Asia-Pacific; Asians account for 87% of total travel in the region (equivalent to 6% of the total population).

The Asia-Pacific international roaming market is moderately developed, and Asia-Pacific travelers use roaming services in 30-35% of all trips made, resulting in 73 million trips per year using roaming, 64% of which by business travelers (corporate) and 36% by leisure travelers (individuals). As a result, revenue from Asians travelers using roaming (outbound) reached USD 3.9 billion in 2008

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In the absence of regional regulation, operators within the region have formed three international roaming alliances: Bridge, Conexus and AMI. Figure 31 shows that the Bridge alliance is led by Singtel and spans 11 countries with 207 million subscribers. Bridge has a complete offering for both the individual and business segments, with reduced rates for calls and messages, and flat-rate plans for data. The Conexus alliance is a competitive response to the Bridge alliance, covering 11 countries and 190 million subscribers, and has an offer focused more on the business segment, as can be seen in Figure 32. The AMI alliance was the first in the region but is now in decline, and covers only 6 countries and 77 million subscribers; its gradual decline has been caused by the lack of an attractive and differentiated combined offer (given that each operator has its own offer) that is limited to offering discounted roaming rates on associate networks in the visited country.

Figure 31

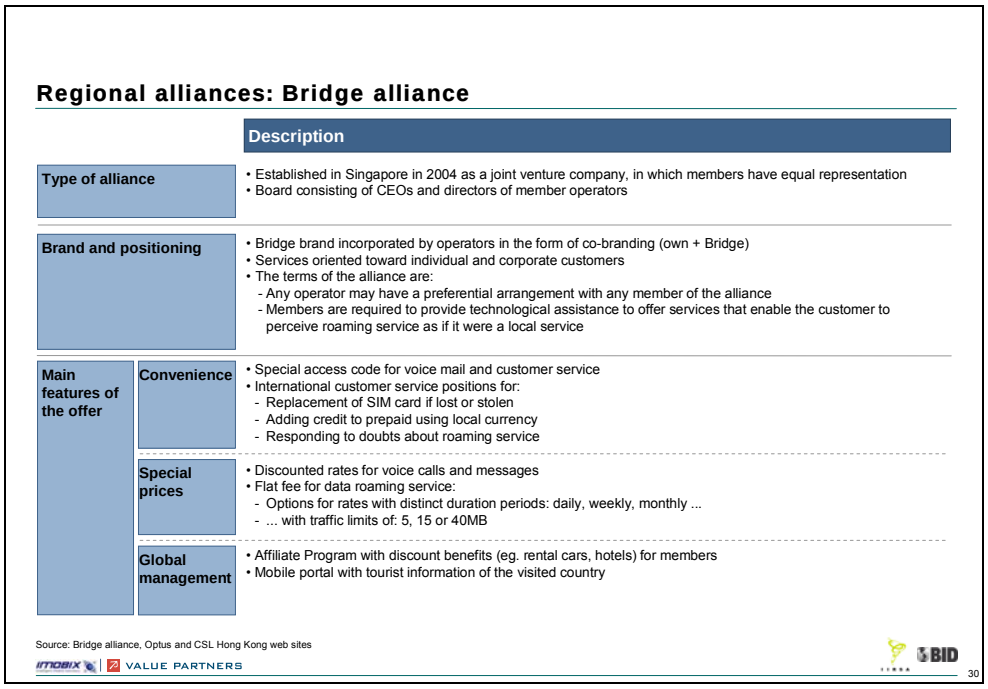
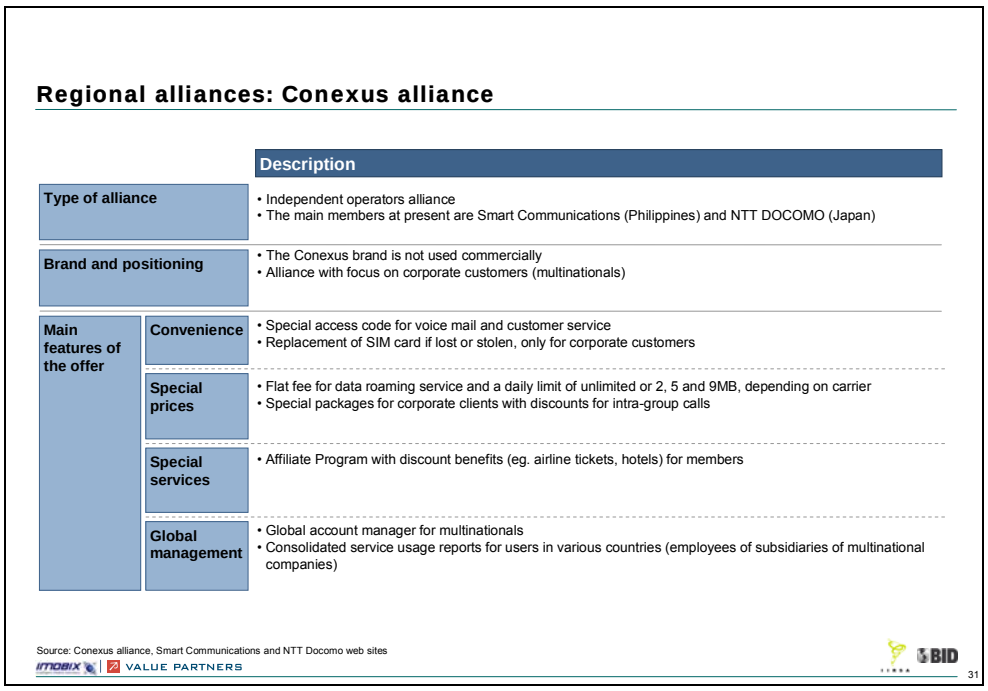


Figure 32



In conclusion, the Asia-Pacific experience provides an enriched vision for South America when analyzing the development of international roaming alliances in the absence of regulatory pressures and could be useful to South American operators. In particular, the Bridge alliance should be investigated further due to the

ability of its lead operator, Singtel, to coordinate the other alliance operators and structure attractive and innovative offers.

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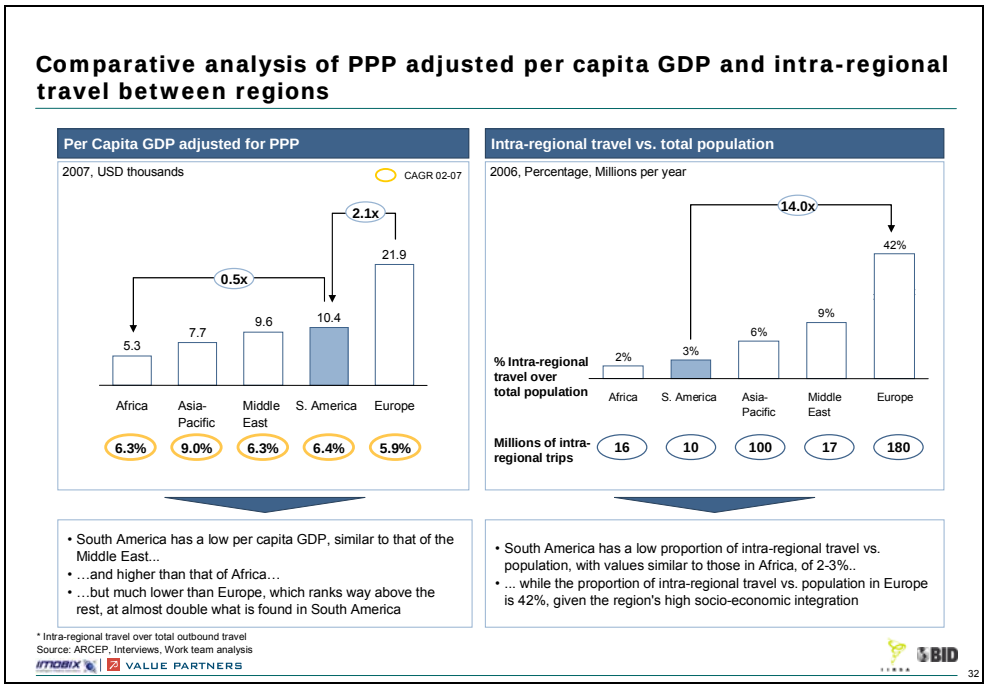
2.4. Comparison of the examined regions vs. South America

In relative terms, South America has some unique socioeconomic, market, and telecommunications regulation level conditions. There also exist parallels, however, with other regions, especially Africa and the Middle East.

As can be seen in Figure 33, South American income is half the level of the other regions, with PPP adjusted per capita GDP in South America at USD 10,400, similar to that in the Middle East (USD 9,600), higher than in Africa (USD 5,300), but well below European levels (USD 21,900).

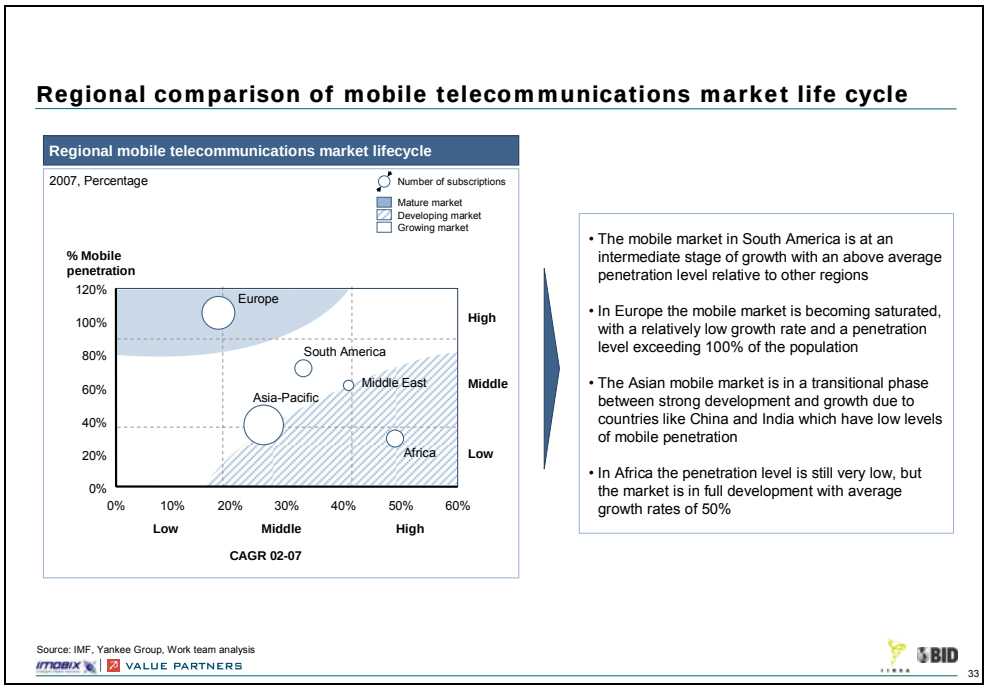
Figure 33



In terms of tourism in South America, the proportion of intra-regional travel vs. total population is the lowest among all examined regions at 2%, similar to the 3% shown in Africa, but well below the 6% in Asia-Pacific, 9% in the Middle East and 42% in Europe.

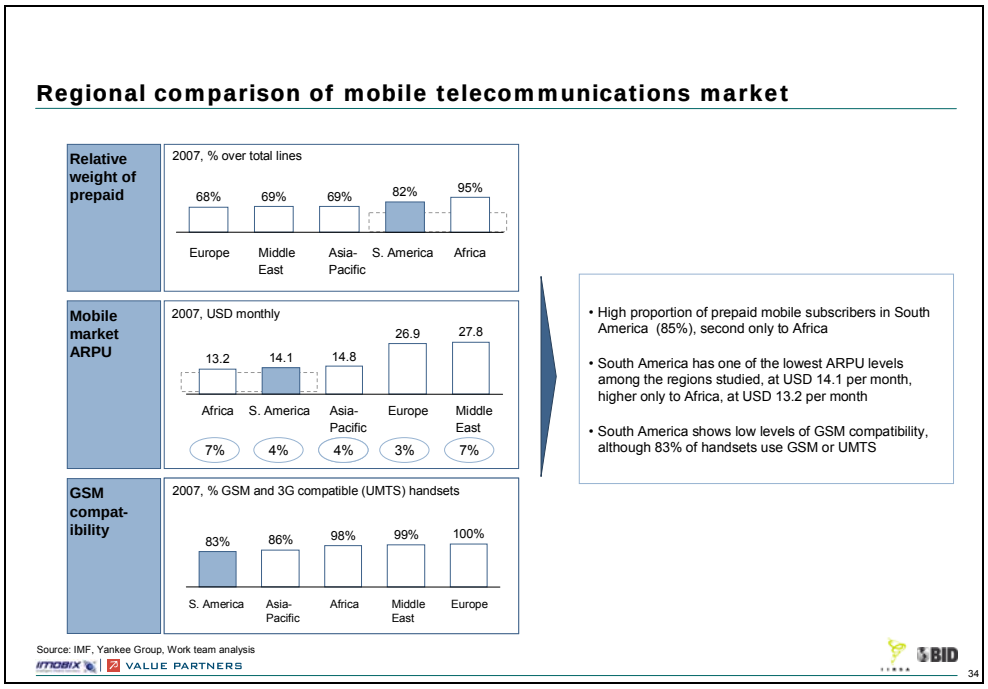
The South American mobile market is only half as developed as the other regions, presenting a medium to high penetration level and intermediate growth rates, as shown in Figure 34. In contrast, the European market is already fully mature, and the other regions (Asia-Pacific, Africa and the Middle East) are still in full development, with lower mobile penetration levels and high growth rates.

Figure 34



As can be seen in Figure 35, in South America, prepaid service is very important, and covers 85% of total lines, comparable only to Africa, where 95% of subscribers are prepaid. In the other regions the proportion of prepaid, while significant, is less than 70% of the total. In terms of mobile ARPU, South America has one of the lowest levels among the regions studied (USD 14.1 per month), comparable to Africa (USD 13.2 per month) and Asia-Pacific (14.8 USD) but with less dispersion than the latter. In contrast, the Middle East and Europe have much higher ARPU levels, at USD 27.8 and USD 26.9, respectively. Finally, in terms of technological standards, South America has the lowest coordination of GSM technology, although it has already been established as the dominant technology and is used in 83% of handsets in the region

Figure 35



It is evident, as much in South America as in Asia-Pacific, the Middle East and Africa, that regulatory coordination between countries is a clear challenge to actually carry out regional roaming initiatives.

When comparing roaming travel in South America vs. in other regions, the proportion of South American roaming to total travel is very low, at around 20%, as shown in Figure 36. In the other regions this ratio is always over 30%, and in the case of Africa and the Middle East as a whole, reaches 60%. Moreover, Figure 37 shows that the South American roaming ARPU appears unusually high compared to other regions, and is partly explained by high roaming rates and the large component of business travelers using roaming in South America, who account for 85-90% of total roaming usage vs. 67% in Europe, 64% in Asia-Pacific and 33% in Africa and the Middle East

Figure 36

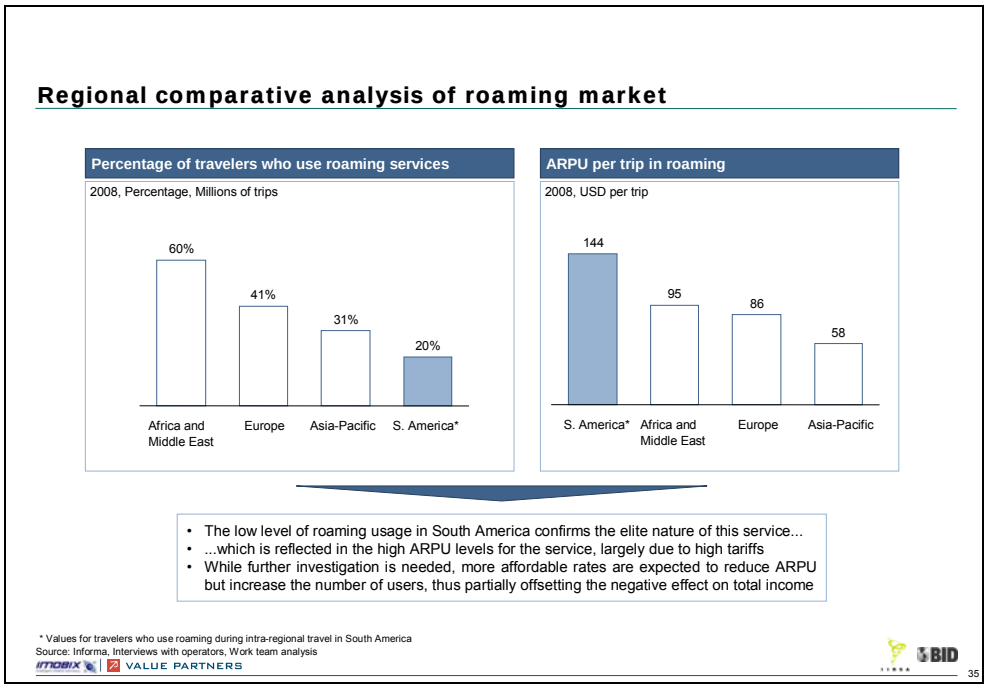
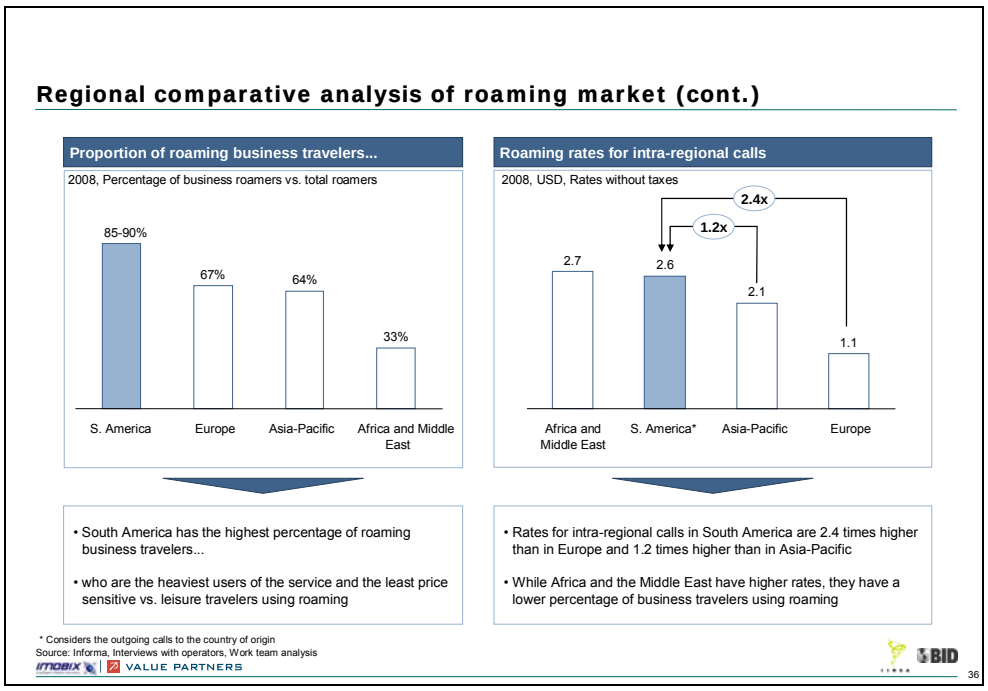


Figure 37



2.5. Regional roaming initiatives at the international level

To encourage further development of the roaming market in South America, the various regional roaming initiatives in Europe, Africa, the Middle East and Asia-Pacific are presented. 26 initiatives for international roaming are identified, and can be grouped into four types:

- Regulatory (5 initiatives)
- Informative (4 initiatives)
- Roaming alliances (8 initiatives)
- Technical and industry innovation (9 initiatives)

Regulatory initiatives are comprised of regional regulations on tariffs, services, and transparency, and of industry self-regulation initiatives. Informative initiatives providing rate comparisons are carried out by both regulators and industry associations. In the roaming alliances, various operators offer differentiated roaming rates and services. In technical and industry innovations, there are initiatives that focus on fraud, improving service quality and operational efficiency. In these initiatives, six types of stakeholders were identified: regional regulators, national regulators, industry associations, operator groups, individual operators and service providers.

To analyze the impact of the distinct initiatives presented, potential impact was evaluated in three main areas: pricing, service and transparency.

- In regulatory initiatives, it became clear that the biggest impact is in terms of pricing transparency, with the Eurotariff having a strong impact on price reductions. AREGNET sought to achieve a similar impact on price reductions, but the results are still not clear
- In informative initiatives providing rate comparisons, the biggest impact was also in greater price transparency, with the more effective initiatives led by industry associations (GSMA Europe, GSMA Arab World)
- The greatest impact from roaming alliance initiatives is in both services and pricing, mainly by large business groups (eg. Zain and Vodafone). The case of Zain and its One Network alliance in Africa and the Middle East should be of special interest to South America, given its relatively low ARPU (USD16), and ability to develop a competitive offer that has been very attractive to its predominantly prepaid customer base (97% of total)
- Regarding technical and industry innovation initiatives, the biggest impact is in service, in terms of safety (eg. Near Real Time Data Exchange), availability (eg. Open Connectivity), and quality (eg. Global Roaming Quality)

Considering the impact of the different initiatives analyzed, one can extract the following key success factors for each type of initiative:

- In informative initiatives providing rate comparisons, the active role of industry associations was key to ensure proper updating of rates and

completeness of information. The threat of regulation was relevant to these initiatives, leading operator associations to create web sites with information on regional rates

- In the roaming alliance initiatives, the key success factor was strong leadership by a group of operators to facilitate the coordination of the various national operators and generate more aggressive price offerings. In particular, ownership of different operators by a single business group was important in the case in Africa.
- In technical and industry initiatives, the active coordination of operator associations was the key success factor. It is also important, however, to analyze these initiatives based on their payback and economic and financial attractiveness

In all cases analyzed, the most common key success factor was the ability of the initiative leader to lead or coordinate the other stakeholders.

3. 3. Results from Stage III: Initiatives for South America

From the study of the current conditions of roaming services in South America and the outcomes from international experiences, 9 initiatives were identified to contribute to the development of roaming and improved integration in the region:

1. Improving the transparency of services and rates
2. Regulation on rates
3. Legislation against fraud
4. Reduction in the tax burden of double taxation
5. Incentives to reduce prices within alliances
6. Regulation for the quality of voice roaming services
7. Measurement of the quality of roaming services
8. Promotion of regional prepaid roaming
9. Promotion of border zone roaming

3.1. Description of the proposed initiatives

Initiative 1: Improving the transparency of services and rates

This initiative will improve transparency and communication of operators to users in terms of services and roaming rates. This has a high relevance for South America because, as is evident from the study, the users in the region in general do not have easily accessible and detailed information on prices and available services.

The first component of this initiative includes the definition of common rules for the adequate communication of the service in distinct communication channels (website, commercial offices, call centers), with a focus on:

- Explicit rates (including full cost of service and taxes)
- Description of the characteristics of the provided services
- Special access code for customer service and welcome message in roaming

These rules must be coordinated by a multilateral agency (eg. Regulatel, Citel, IIRSA) to ensure such coordination at the regional level, and require the active participation of national regulators for implementation in each country.

Furthermore, it has been proposed that, in parallel with the creation of rules on transparency, this multilateral agency creates a website for comparison of the roaming rates of each operator for all South American destinations. In particular, following the international experience in Europe and the Arab World, an association from the mobile industry (eg. GSMA, CDG) will be invited to be included in this initiative and be responsible for creating and maintaining an improved site on rates.

This initiative hopes to achieve that, through a proper understanding of the costs of roaming calls, the user will have greater confidence in roaming and thereby

increase usage of these services. A more transparent and competitive market, in turn, is also expected, which will bring about a reduction in rates of up to ~20%, and with better education and information about the service, users will seek the most economic alternative.

The industry stakeholders have the following incentives for participating in the proposals:

- For multinational agencies, the biggest motivation is the ability to coordinate regional initiatives to encourage South American integration, thereby improving conditions for roaming users and promoting the usage of the service.
- For the industry stakeholders, the motivation is lower and therefore requires action by the regulators for assistance and coordination and also the creation of a threat (such as price regulation, penalties for user complaints) to encourage operators to implement the initiatives.
- For national regulators, the main motivation is to create a better experience for users. In any case, given the elitist nature of the service at present, it is necessary to stress that the efforts of the initiatives seek to generate increased roaming usage within the context of South American integration.

Initiative 2: Regulation on rates

This initiative seeks to reduce roaming rates in South America, encouraging the use of the service in the region. As a first step, improving the transparency of operator pricing structures and margins for roaming services, along with requiring the operators to report information on South American inter-operator tariffs (IOT) to the national regulators have been proposed. As a second step, advancing the definition of rules for maximum IOTs and retail prices for roaming has been discussed, with:

- IOTs tied to other comparable mobile services (local retail rates for local roaming calls, international retail rates for roaming calls to the country of origin)
- Retail prices tied to IOTs, setting maximum mark-up levels

In a similar fashion to the European regulation's Eurotariff and the proposed AREGNET regulation in the Arab world, this initiative aims to regulate IOTs and retail rates seeking standardization with the price levels of other comparable telecommunications services. For the proper implementation of this initiative a thorough study is required to evaluate the applicable fee levels and structures.

Additionally, in order to carry out this initiative it is important to count on the strong drive of a multilateral agency (eg. Regulatel, Citel, IIRSA) to boost the support of national regulators in the region and be responsible for coordinating the definition and implementation of the maximum rate policy. It is expected that both the multilateral agency and the national regulators will face strong opposition to this initiative from the operators. Therefore, in a manner similar to the European case,

this type of regulation may be temporary, applying for only 2-3 years and becoming a deregulated rate policy later.

At the international level, South America currently has the lowest use of roaming services while traveling and one of the highest levels of charges. This initiative seeks to reduce the cost of roaming for users to generate an increased use of roaming services during travel in South American. The exact amount of price reduction depends on the final defined rate structure. As an example it can be noted that the European initiative achieved reductions of 40-60% in intra-regional roaming rates.

Finally, the distinct stakeholders have the following incentives for participating in the initiative:

- For the multilateral agencies, the biggest motivation is the ability to coordinate regional initiatives that promote South American integration, by promoting use of the service to more segments of the population
- For industry stakeholders, it is expected that operators and associations will show strong opposition, arguing that reducing rates will affect the sustainability of the business, so the only possible mitigation is to suggest a transitional nature for the regulation, and show potential growth in intra-regional traffic, given the joint implementation in all countries of the region
- For national regulators the main motivation is to benefit the users through lower prices and increased service usage. Again, it is necessary to emphasize the South American integration context of the initiative

Initiative 3: Legislation against fraud

This initiative seeks to promote the establishment of legislation that allows for the penalization of telecommunications fraud, including roaming fraud by the:

- Definition of telecommunications fraud crime, including fraudulent acts with technological developments, similar to the "Blumberg" law in Argentina
- Criminalization of offenders of said telecommunications fraud laws

Fraud was reported by a number of South American operators as a critical problem for roaming, since it amounts for ~25% of total mobile service fraud (which can account for up to USD 50M in the region). For this reason, operators have pushed for several initiatives internally and within industry organizations (eg. GSMA) to combat fraudulent transactions. These measures are not completely effective, however, and a law on the subject in each country would be key to substantially tackling this problem.

This legislation initiative requires the active participation of legislative powers of the various South American countries in the definition of rules. It is very important that multilateral agencies (eg. Regulatel, Citel, IIRSA), industry associations (eg. GSMA, CDG) and certain operators participate in the initiative by promoting the treatment and development of this initiative nationally. In the case of industry associations and operators, they should promote the coordination of this legislation with the ongoing initiatives of the industry.

Finally, to the extent that this initiative will contribute to reducing the amount of roaming fraud, it will generate a decrease in the risk of providing the roaming service, which could lead to lowering the rates offered to users, although this cannot be guaranteed *a priori.*

Finally, the distinct stakeholders have the following incentives for participating in the initiative:

- For the multilateral agencies, the biggest motivation is the ability to coordinate regional initiatives that promote South American integration
- For operators, the biggest motivation is the possibility of achieving efficiencies in the operation of the business through the improved risk profile of the roaming service
- For regulators, the main motivation is to promote an initiative of South American integration that further improves the conditions of business of the regional telecommunications market

Initiative 4: Reduction of the tax burden of double taxation

This initiative aims to reduce prices for roaming by decreasing the tax burden that currently affects the service in South America and at the same time achieve greater integration of the services within the region. A first step towards this objective is to improve communication to the user, along with an improvement in the procedures for tax refunds that already exist in the various South American countries. A second step is to define taxation agreements between countries in order to avoid double taxation of VAT in international roaming services. To achieve this, multilateral or bilateral agreements should be created to charge VAT on services in general, exclusively according to the criterion of residency (instead of the criterion of locality), ie, only in the category of retail sales. This type of approach would be aligned with what was defined in the Melbourne agreement for the taxation of international telecommunications services, although the treaty cannot be directly applied to current roaming services.

This initiative requires the active participation of executive powers and/or legislative and finance ministries of the various South American countries to assess fiscal impact and develop policies in this respect. It is also necessary to include this initiative within the agenda and priorities of multilateral regional integration agencies (eg. MERCOSUR, CAN, IIRSA, UNASUR).

In terms of impact, according to the analysis of double taxation in South America, an increase in the use of roaming services is expected as a result of the more affordable rates. In particular, it is estimated that the roaming rates will be reduced by 8% on average by the elimination of VAT in the wholesale segment of the service (which may in some cases achieve up to a 10-15% reduction).

For comparative purposes, if opting for the locality criterion instead of applying the residency criterion and only charging VAT in the wholesale segment, it is

estimated that the reduction in rates would reach 20% on average. It is believed, however, that the locality criterion for taxes has less support in international roaming practice.

Finally, the various stakeholders have the following incentives for participating in the initiative:

- For the multilateral agencies, the biggest motivation is the possibility of coordinating regional initiatives that promote South American integration, thereby improving conditions for roaming users in South America
- For industry stakeholders, the motivation is to reduce the tax burden in the provision of roaming services
- For national regulators, the main motivation is participating in a South American regional integration initiative with the potential to reduce the prices of regional telecommunications services
- For governments, the main incentive is to promote regional integration in a stable South American context and strengthen ties between the various countries in the region, without harming the local context (eg. significantly reduced public revenues) and creating a precedence for bi-taxation arrangements in other services.

Initiative 5: Incentive to reduce prices within alliances

This initiative seeks to reduce roaming rates between users who utilize the network of operators that are members of one of the three roaming alliances in South America (Claro, Movistar, Roaming Alliance). To this end, it seeks to actively incorporate the large groups of operators that form these alliances within the IIRSA initiative, participating in the:

- Identification of potential benefits from price reductions on roaming rates within a group of operators, both to users and operators
- Support for large groups of operators in the definition of conditions for roaming rates within the group, based on information of internal costs and international experiences (eg. Zain and it's "One Network", Vodafone and it's "Vodafone Passport")

As indicated in Chapter I, 84% of subscribers in the region are served by the 3 South American alliances, so the impact of this initiative is very significant at the regional level. As a result, it requires the active cooperation of IIRSA and at least one of the alliances in the region, likely either Claro or Movistar, given each's ease of coordination from having all local operations belonging to the same shared group.

In accordance with the international experiences of Vodafone Bridge, the potential for reductions in roaming rates would be 20% to 30% on average, which also allows for the possibility of increasing rate transparency through rate coordination or having them be tied to the cost for local calls in the country of origin (eg. Vodafone Passport). Furthermore, although support is required from at least one of the regional alliances, it is expected that, similar to that shown at the international

level and particularly in the African case, the other alliances will join this initiative by also implementing price reductions to remain competitive in the roaming market.

Finally, the various stakeholders have the following incentives for participating in the initiative:

- For the multilateral agencies, the biggest motivation is the possibility of coordinating regional initiatives that promote South American integration, therefore improving conditions for roaming users in South America
- For industry stakeholders, the initial motivation will be weak, thereby requiring action by the regulators to assist and coordinate with the operators
- For regulators, the main motivation is to create a better experience for users, reduce prices and increase transparency of the service, emphasizing the impact on the regional integration implied by the initiative

Initiative 6: Regulation for the quality of voice roaming services

This initiative seeks to promote regulation at the regional level with the aim of:

- Standardizing the criteria for measuring the quality of voice services
- Increasing the transparency and equality of service provided by carriers to small and large operators

This initiative is relevant to the region as currently various regional operators have difficulty ensuring an adequate level of quality in roaming services by the international carriers. The quality of the voice roaming service depends on the delivery routes and platforms (IP and non IP) used to transport the call. This service is provided by a few carriers that concentrate the supply. The ability to negotiate the level of quality depends on the volume of traffic from the operator, exposing small operators to a great disadvantage. Additionally, poor quality levels can be found in cases of negotiating lower prices for service transmission without giving notice to the operators.

As a result of this poor quality level, these operators have few leveraging tools to sign new international roaming agreements.

In Europe this key aspect of the industry has been addressed since 2002 by the GSMA through the formation of the interconnection group, which developed a set of available best practices.

In this initiative the following activities are expected:

- To select the key quality indicators (KQI) defined by the industry associations and their applicability in the region
- To establish the level of quality required in service level agreements (SLAs) between operators and service providers
- To establish mechanisms for reward and/or punitive damages to achieve compliance with the agreements, in order to avoid abusive situations and to coordinate the quality of service
- To publish the standard conditions and KQIs and make them known throughout the industry

The definition of a regulation on quality of voice roaming services implies the following benefits:

- For users: enhanced standard quality of roaming services in the region
- For regional operators:
  - Protection mechanisms against potential abusive situations by the carriers
  - Increased ability to negotiate agreements with operators from other regions by the increased ability to provide quality of service for visiting roamers
  - Increased revenues from greater use of the service
  - Better protection for smaller operators

The development of this initiative requires the leadership of a multilateral agency that can act as coordinator (ie IIRSA / Citel / Regulatel) and has an active role in end-user quality control and the coordination of conflict resolution measures. On the other hand, it requires the involvement of national regulators to implement locally defined regulations and enforce them. It must also include industry associations and operators to contribute to the identification of applicable indicators and guidelines. Finally, this initiative requires the participation of the long distance and interconnection service providers to adjust the quality of the product delivered on the basis of the defined regulations.

The various stakeholders have the following incentives for participating in the initiative:

- For the multilateral agencies: the possibility of coordinating a regional initiative that allows for the standardization of the quality of voice calls in roaming
- For national regulators:
  - Supporting a measure that benefits both operators and consumers with a better quality of service
  - Using the quality parameters defined for measuring the local mobile telephony and knowing the level of coverage, for example, in rural areas or in regions with fewer resources
- For regional operators: increasing the level of consumption for roaming services as a result of increased availability and an acceptable level of quality
- The carriers in principle will not have incentives to support this initiative, so their involvement must be brought about by regulatory requirements or joint operator initiatives

Initiative 7: Measurement of the quality of roaming services

This initiative seeks to promote a regional level project to measure the quality of roaming services, with the aim of:

- Establishing a common model for the application of:

  - Quality control indicators
  - Measurement methods tailored to the needs of the region
- Promotion of the use of quality measurement services between operators at an affordable cost and the implementation of a model defined in a market-based solution

Operators in the region face complaints from users on quality issues with a country/operator which cannot generally be solved immediately. Operators are, therefore, evaluating the solutions for measuring the quality available in the market, although no necessary infrastructure investments have yet been made.

Standards for measuring quality are currently being addressed within the Global Roaming Quality group (GRQ) of the GSMA for bilateral agreements between operators at the international level. This group developed a standard model for controlling the quality of service, which was tested with the leading solutions available in the market, in a joint work between operators and providers. Globally, it is expected that in 2-3 years, most operators will have tools for monitoring the quality of service (QoS) and service level agreements (SLAs) implemented with their partner roaming operators and interconnection providers. It is also expected that the GSMA will determine certain quality testing as mandatory for its members. Thus, it is believed that the quality initiative proposed for South America should take advantage of the strength of the GSMA and GRQ to leverage advances in these experiences and adapt them to the region.

The scope of the initiative includes:

- Identification of key quality indicators (KQI), measurement methods, and parameters for the region, adapting the KQIs already defined by industry associations to the South American region
- Evaluation of the solutions available for their implementation, and selection of the solution provider that best suits the needs of the region while complying with the previously defined KQIs
- Agreement on affordable prices for the region in return for reduced level of risk for the supplier:
  - Coordination with the operators to create an initial demand that allows for a reasonable time for recovery of investment
  - Potential funding with the initial investment required in the region
- Implementation of a comparative measurement service - between operators, countries, regions, types of roaming services - that can be used by regulatory authorities to:
  - Monitor the quality of voice service by the various operators (knowing the strengths and weaknesses of each)
  - Measure the quality of service in border areas (eg. overlapping frequencies between operators)

From this initiative the following benefits for the consumer are expected:

- Increased satisfaction in using the service resulting from the improved quality of service provided by operators
- Greater knowledge of the levels of quality for roaming services between the various operators

It is also expected that operators in the region will have the following benefits:

- Possibility of having a model of indicators and measurement methods
- Possibility of reducing costs and implementation time of the measurements compared to an independent, non-joint initiative
- Potential to increase the number of international roaming agreements with operators in other regions from the introduction of minimum quality standards in the agreements (especially with operators from developed countries)

In developing this initiative a multilateral agency should be involved to act as lead coordinator and take an active role in the quality measurements carried out and published. The involvement of industry associations is also necessary to identify the indicators and methods to employ, define the specifications of the service required by the provider, and identify the common features of the model to be implemented by operators. Furthermore, it is necessary to include service providers in the initiative, to present their solutions and implementation approach to suit the needs of the region.

The various stakeholders have the following incentives for participating in the initiative:

- For the multilateral agencies:
  - Possibility of coordinating a regional initiative that allows for the evaluation of the quality of international roaming service and at the same time the measurement of the national mobile service
  - Control tool for monitoring service providers for voice interconnection
- For industry associations, the possibility of developing a model of regional quality comparable to other international initiatives
- For operators in the region:
  - Possibility of reducing costs and the implementation time of the service
  - Potential to generate new roaming agreements with international operators for services in their network (inbound)

Initiative 8: Promote regional prepaid roaming

This initiative seeks to promote the regional roaming service for prepaid subscribers, by:

- Motivating operators to include prepaid roaming in their short-term business plans (eg. sharing specific business cases, sharing information on the impact of this action in other regions)
- Communicating different alternatives for implementing prepaid roaming to operators, depending on the time and cost of implementation as referred to in the business cases
- Supporting and promoting solutions for purchasing credit on regional trips

The expansion of prepaid roaming coverage is of high relevance to South America, where at the regional level, prepaid represents 82% of total lines. Moreover, operators have thus far focused on the development of prepaid roaming for routes with the highest intra-regional travel (eg. Argentina-Brazil, Argentina-

Uruguay). This initiative is expected to promote comprehensive development, incorporating prepaid roaming coverage in more countries and helping to resolve critical issues in the service, such as the purchase of credit while traveling.

The scope of the initiative includes the following activities:

- Development, through industry associations, of a study with concrete business cases:
  - Reconfirmation of the business case for implementing prepaid roaming in terms of investment recovery time
  - Exploration of alternatives for implementing CAMEL to optimize cost and implementation time:
    . Regional hub solutions
    . Solutions for regional credit purchase to allow for the use of the service in sectors with poor literacy rates and/or in demanding business sectors
- Implementation of the recommendations from the study:
  - If necessary, to support the implementation of a regional prepaid hub that allows for the reduction in implementation costs and time for the launch of agreements
  - To give support to regional operators for launching CAMEL agreements

As a result of the initiative the following benefits are expected for the regional roaming market:

- For consumers: universal service through the extension of coverage to new segments (eg. the lower income bracket, small to medium enterprises, or youth segment, who are more oriented to cost control of mobile services)
- For operators in the region:
  - Increased turnover associated with both new segments in home roaming users (outbound) and visiting users to their networks (inbound)
  - Better service and the possibility of increased traffic by offering regional credit purchases
  - Reduction in cost of deployment and operation of the service, greater standardization by economies of scale resulting from the joint development by various operators

In particular, for this initiative to be successful, it should be coordinated by a multilateral agency serving as lead coordinator, with the active participation of industry associations to collaborate on the initiative, take responsibility for carrying out the study and exploring implementation alternatives. Moreover, including operators to support and participate in the study and implement a coordinated service for prepaid roaming is vital. Finally, it is also important to count on the participation of suppliers that offer alternatives to CAMEL and credit recharge platforms in order to evaluate the technical options available for the region.

The stakeholders have the following incentives for participating in the initiative:

- For operators:
  - Increase in turnover

  - Improved image as a forerunner to an initiative with a social component
  - Potential financial support from multilateral lending agencies for implementation, in exchange for a commitment to benefit the users (eg. lower prices, greater range of services, better coverage)
- For industry associations:
  - Ability to collaborate on the growth of prepaid roaming and a larger part of the subscriber base in the region
- For suppliers that offer alternatives to CAMEL, opportunity to promote their service in the region

Initiative 9: Promote border zone roaming

This initiative seeks to boost border zone roaming services through service standardization, including:

- Dissemination and standardization of technical solutions and commercial procedures commonly accepted by regulators and operators at the international level (eg. standardization of customer service levels, establishment of border zone roaming areas)
- Transparency and communication for users on border zone roaming through:
  - Website with regional information including lists of operators and applicable roaming areas
  - Mobile service quality monitoring in applicable roaming areas

As a result of this initiative, the following benefits are expected:

- Improvement in the user experience for mobile services in border zones
- Improvement in retail prices for roaming users in affected zones
- Better management by the operators of the dynamics of mobile services in border zones (eg. control of overlapping signals, reduced number of complaints by customers, improved quality of service)

The development of this initiative requires the leadership of a multilateral agency to act as coordinator (industry associations in cooperation with regulators and IIRSA Citel / Regulatel), to define standards and collect information. Furthermore, participation by the operators is essential for the definition of standards that meet the business requirements in the region. Finally, it is desirable to have the involvement of consumer advocacy organizations acting as outside observers of the service.

The stakeholders have the following incentives to participate in the initiative:

- For the multilateral agencies, the possibility of coordinating a regional initiative with direct impact on users
- For national regulators:
  - Increasing the amount of information available to the consumer
  - Promoting the implementation of standard solutions in the region
  - Facilitating control of the service in many border zones
- For operators and industry associations, reducing operating and maintenance costs, and reducing customer complaints

3.2. Comparative analysis of the initiatives

With the objective of prioritizing the initiatives, the relative merits of each have been analyzed in terms of enhanced benefits to users, necessary stakeholders, risks in implementation, implementation timeline, levels of investment and required resources.

3.2.1. Potential benefits of the proposed initiatives

The benefits of the various initiatives under consideration are summarized in Figures 38 and 39, structured in four main dimensions for analysis:

Benefits to the user

- Expected reduction in retail rates
- Improvements in service, in terms of:
  - Expansion of coverage (eg. prepaid roaming, data roaming)
  - Additional features and services
  - Perception of Quality
- Improvements in transparency in terms of:
  - Rates (eg. coordinated rates for different destinations, easy access to pricing information)
  - Services (eg. easy access to coverage information and available services in the visited country)

Benefits to operators

- Improvements for service providers, in terms of:
  - Income for operators (eg. from new services, lower taxes, etc.)
  - Operation (eg. cost savings and in reduced time to implement roaming agreements)
  - Regulatory environment (eg. laws against fraud, simplification of tax structures)

Figure 38

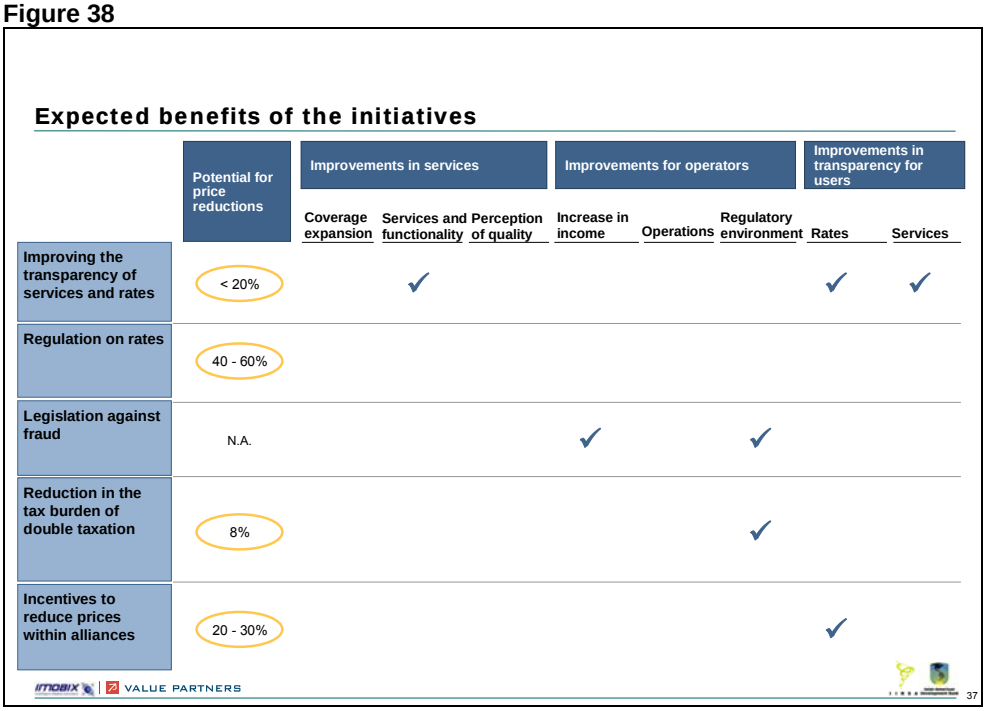
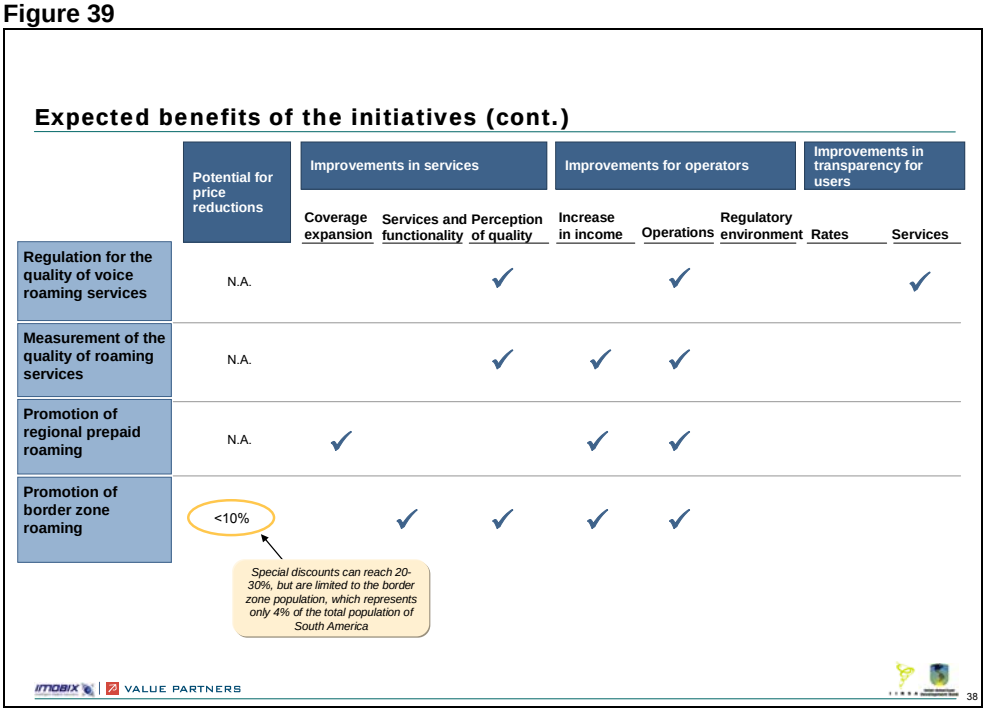


Figure 39



The initiative for rate regulation is the most effective in terms of reducing prices (in the order of 40-60%), while initiatives to improve transparency have benefits in the interim of price reductions along with service improvements (incentive of providing a home service environment for the visiting user) and improvements in the transparency of the service. The initiative to reduce prices in alliances can significantly reduce costs for users and also has the potential to increase price

transparency. The initiative to reduce the tax burden and the initiative for legislation on fraud have a focus on improving the regulatory environment for operators providing services. The initiative for border zone roaming is also positive in terms of price, but its effect on the total roaming market is low, given the low percentage of the population in border zones in South America.

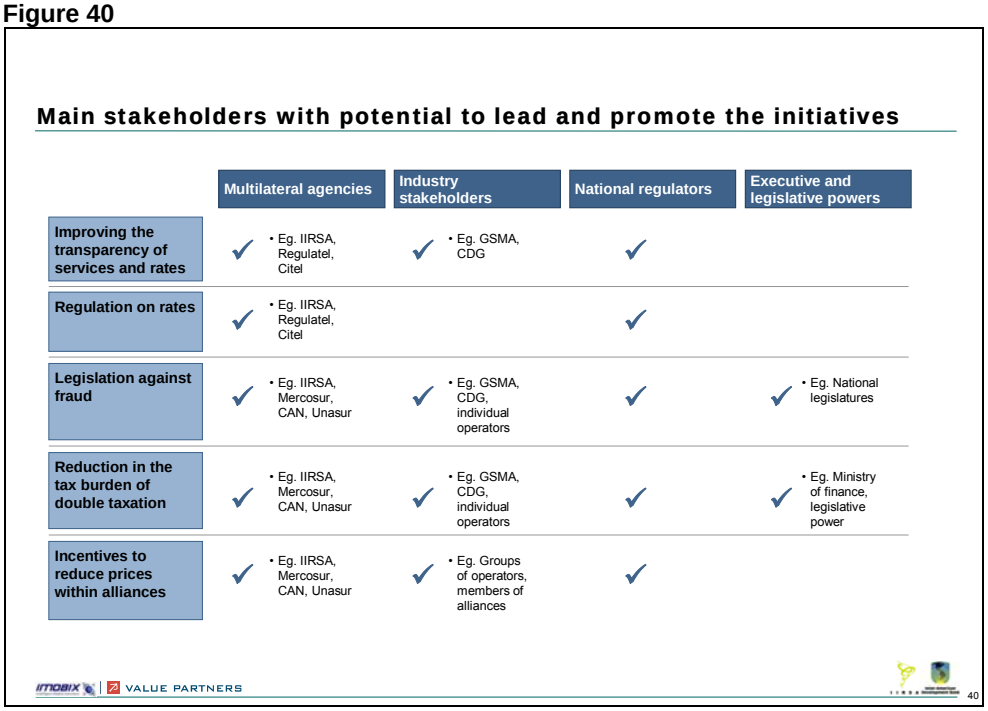
In the majority of the initiatives discussed, there is a great diversity of benefits in terms of improvements in services, the business environment for providers, and transparency. In particular, the initiatives with a higher technical focus for measuring quality and for boosting prepaid roaming generate significant improvements in the operation of service providers. While they do not have direct potential to generate lower prices, they can lead to possible improvements for users in terms of services and/or rates in the future.

3.2.2. Details of stakeholders with potential to lead and promote the initiatives

An analysis of successful initiatives at the international level highlights the importance of strong and committed stakeholders to ensure concrete results. In the case of the proposed initiatives, as seen in Figures 40 and 41, the stakeholders involved can be classified into 4 main categories:

- Multilateral agencies, including both regional integration agencies (IIRSA, MERCOSUR, CAN and UNASUR) as well as regional telecommunications agencies (Regulatel and CITEL)
- Mobile industry stakeholders, including industry associations (eg. GSMA, GSMLAA, CDG), groups of mobile operators (eg. Movistar, Claro), specific operators and service providers for operators (eg. Mach, Syniverse)
- National regulators, including the telecommunications regulatory agencies of the South American countries
- Executive and legislative powers, including housing ministries, legislative chambers and other government agencies that can impact the initiatives studied

Figure 40



Main stakeholders with potential to lead and promote the initiatives

	Multilateral agencies	Industry stakeholders	National regulators	Executive and legislative powers
Improving the transparency of services and rates	✓ • Eg. IIRSA, Regulatel, Citel	✓ • Eg. GSMA, CDG	✓	
Regulation on rates	✓ • Eg. IIRSA, Regulatel, Citel		✓	
Legislation against fraud	✓ • Eg. IIRSA, Mercosur, CAN, Unasur	✓ • Eg. GSMA, CDG, individual operators	✓	✓ • Eg. National legislatures
Reduction in the tax burden of double taxation	✓ • Eg. IIRSA, Mercosur, CAN, Unasur	✓ • Eg. GSMA, CDG, individual operators	✓	✓ • Eg. Ministry of finance, legislative power
Incentives to reduce prices within alliances	✓ • Eg. IIRSA, Mercosur, CAN, Unasur	✓ • Eg. Groups of operators, members of alliances	✓	

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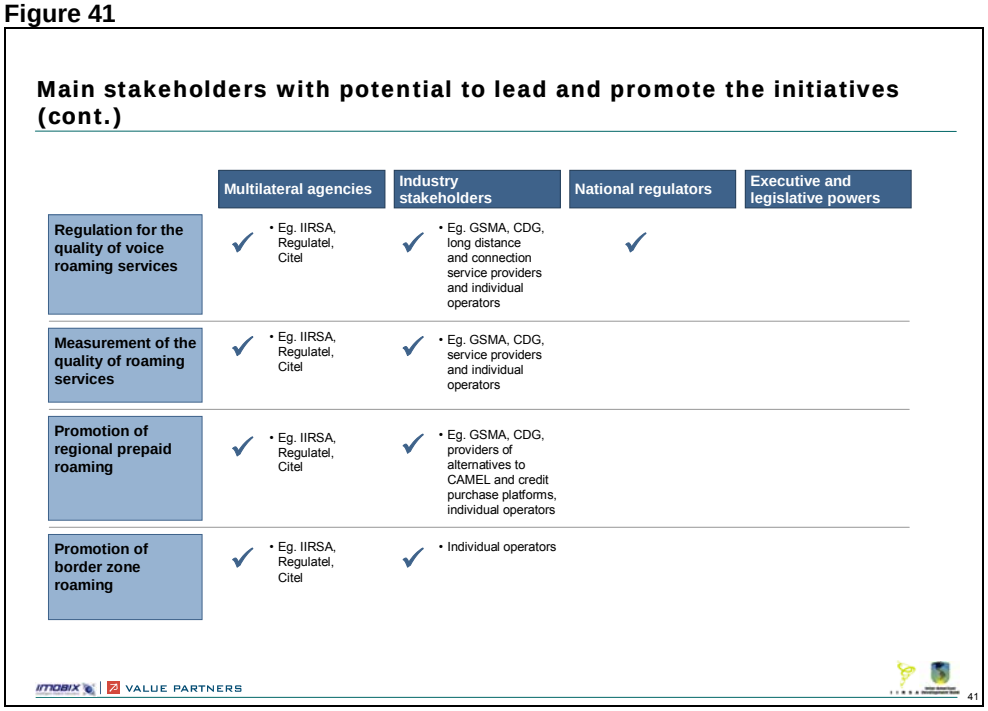
Figure 41



Main stakeholders with potential to lead and promote the initiatives (cont.)

	Multilateral agencies	Industry stakeholders	National regulators	Executive and legislative powers
Regulation for the quality of voice roaming services	✓ • Eg. IIRSA, Regulatel, Citel	✓ • Eg. GSMA, CDG, long distance and connection service providers and individual operators	✓	
Measurement of the quality of roaming services	✓ • Eg. IIRSA, Regulatel, Citel	✓ • Eg. GSMA, CDG, service providers and individual operators		
Promotion of regional prepaid roaming	✓ • Eg. IIRSA, Regulatel, Citel	✓ • Eg. GSMA, CDG, providers of alternatives to CAMEL and credit purchase platforms, individual operators		
Promotion of border zone roaming	✓ • Eg. IIRSA, Regulatel, Citel	✓ • Individual operators		

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The role of multilateral agencies and national regulators is key in most cases, either to directly lead initiatives or instigate action by other stakeholders (eg. industry associations, executive powers). The industry stakeholders also have an important role in many cases, and it would be desirable to actively involve them in the IIRSA South American roaming project, in order to ensure proper coordination of the

proposals to implement with the realities of the market. The executive and legislative powers of national governments are involved in only two of the initiatives, which involve reforms that go beyond the telecom market (fraud and tax structure), but their participation is a precondition for progress on these fronts.

In general, an initiative becomes more complex to implement as it incorporates a higher number of stakeholders, because it requires coordination of a greater number of specific agendas. Furthermore, the participation of certain stakeholders can be especially complicated, as is the case of the executive and legislative branches of the various countries in the region, since their procedures and processing times tend to be longer than those in the mobile market.

3.2.3. Potential risks of the initiatives

As seen in Figures 42 and 43, the proposed initiatives face three main types of risks:

- Lack of interest by the stakeholders who should lead the initiative
- Opposition by operators
- Complexity of implementation

Figure 42

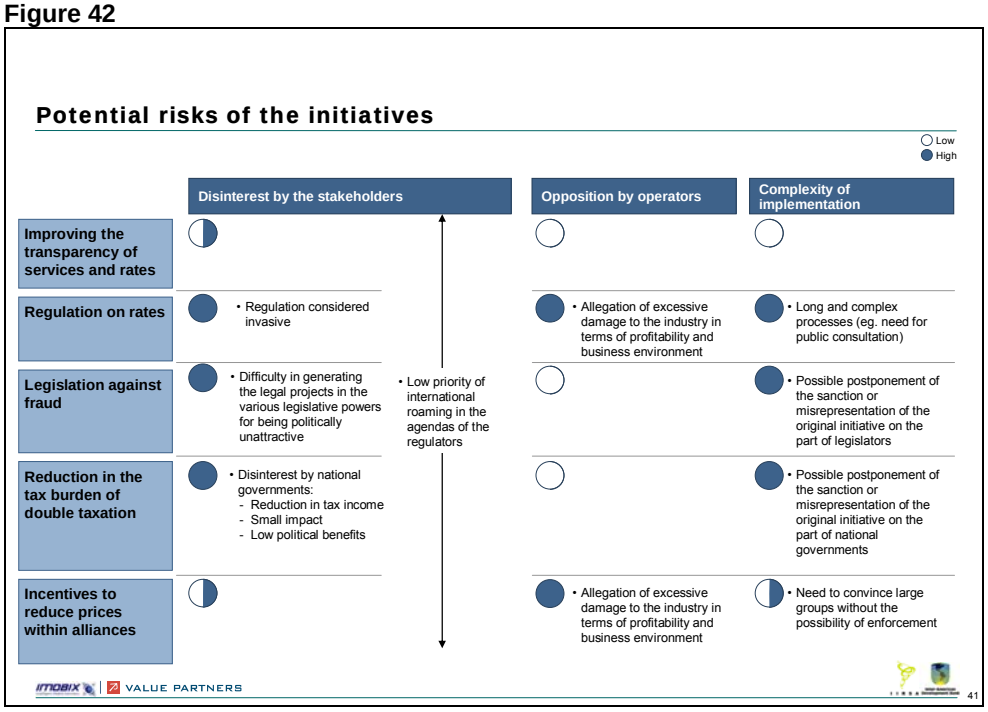
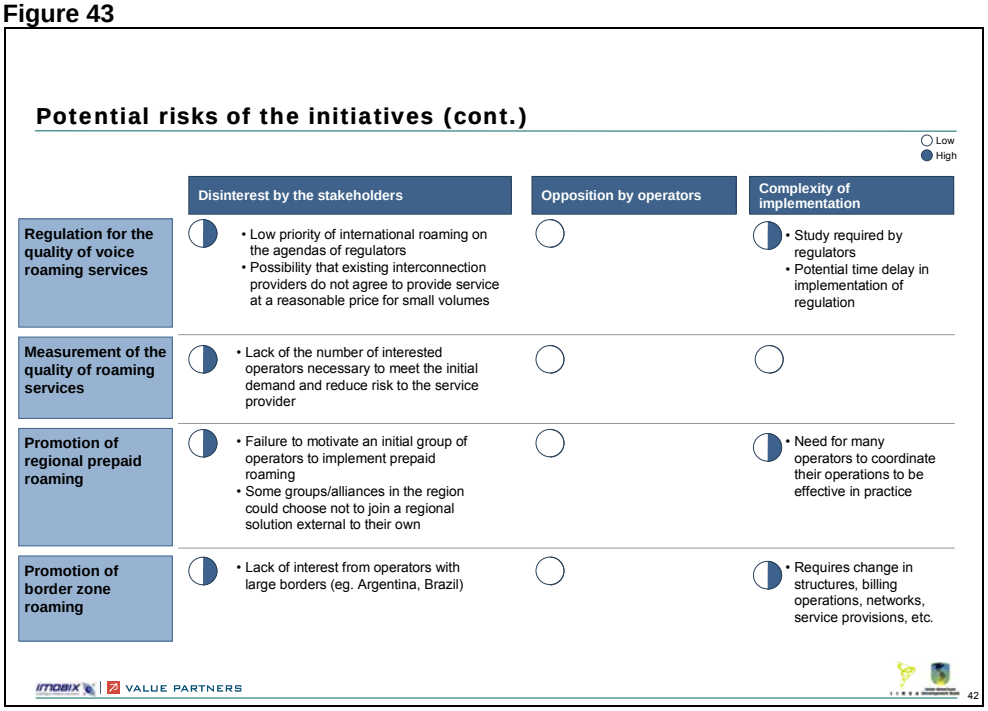


Figure 43



Within these three types of risks, the impact on the initiatives is classified as low, medium and high, to allow for comparison among them. It is noted that in general the greatest risks arise from the complexity of implementing a number of initiatives, and the eventual disinterest on the part of the relevant stakeholders. Furthermore, two of the initiatives (tariff regulation and incentives to lower prices in alliances) may face strong opposition from operators.

In this sense, it is relevant to have the option to structure and present to stakeholders, especially operators, the initiatives to implement as a whole, in a joint plan aimed at improving the conditions of roaming in the region, with the aim of offsetting the benefits/partial disadvantages of each individual initiative.

3.2.4. Timescale for the initiatives

To organize the implementation of the 9 selected initiatives, a macro-plan was designed with implementation times for the main groups of initiatives, as illustrated in Figures 44 and 45.

Figure 44

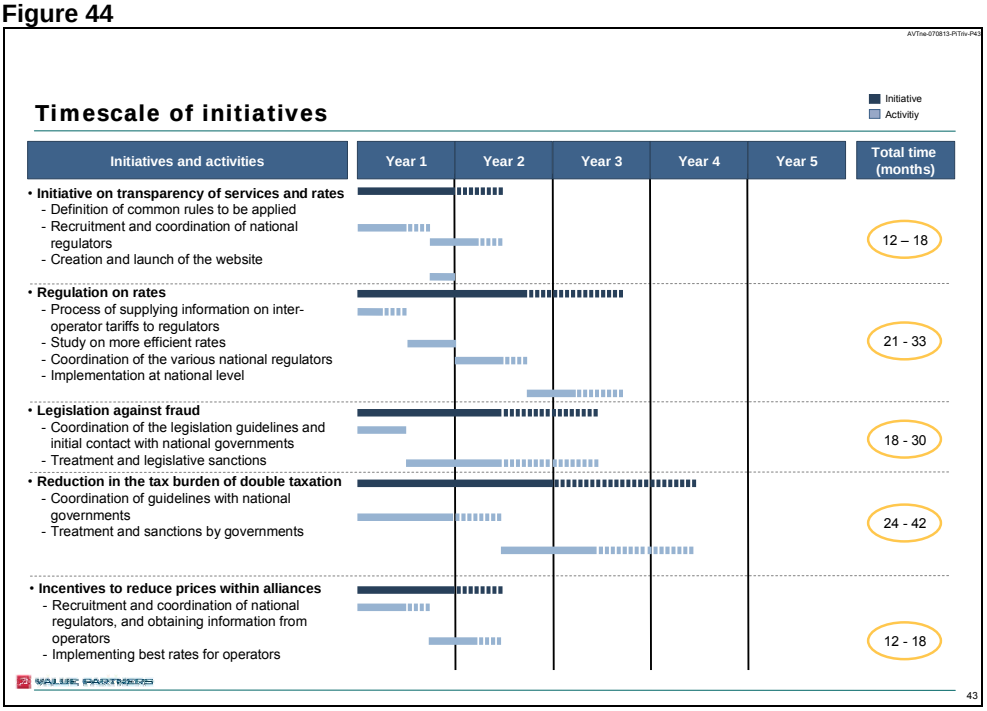
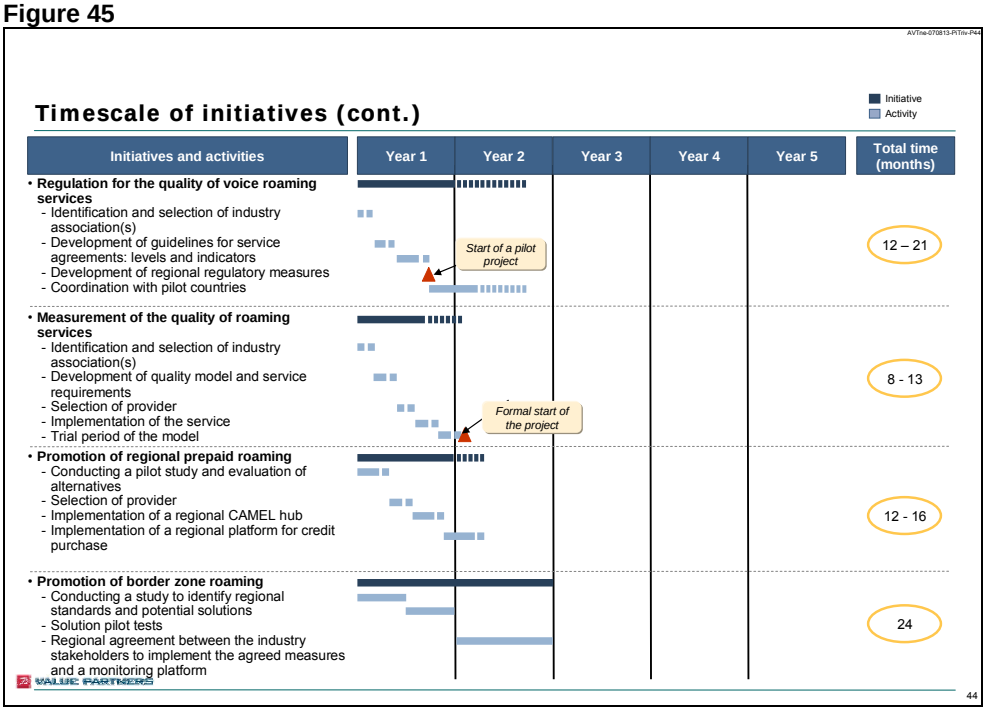


Figure 45



From the macro-plan above, it is clear that most of the initiatives that impact South American roaming have medium- and long-term timeframes.

In particular, the initiatives for legislation against fraud and reduction of roaming taxation have the longest timescale (potentially more than two years), because they require private implementation processes within each government.

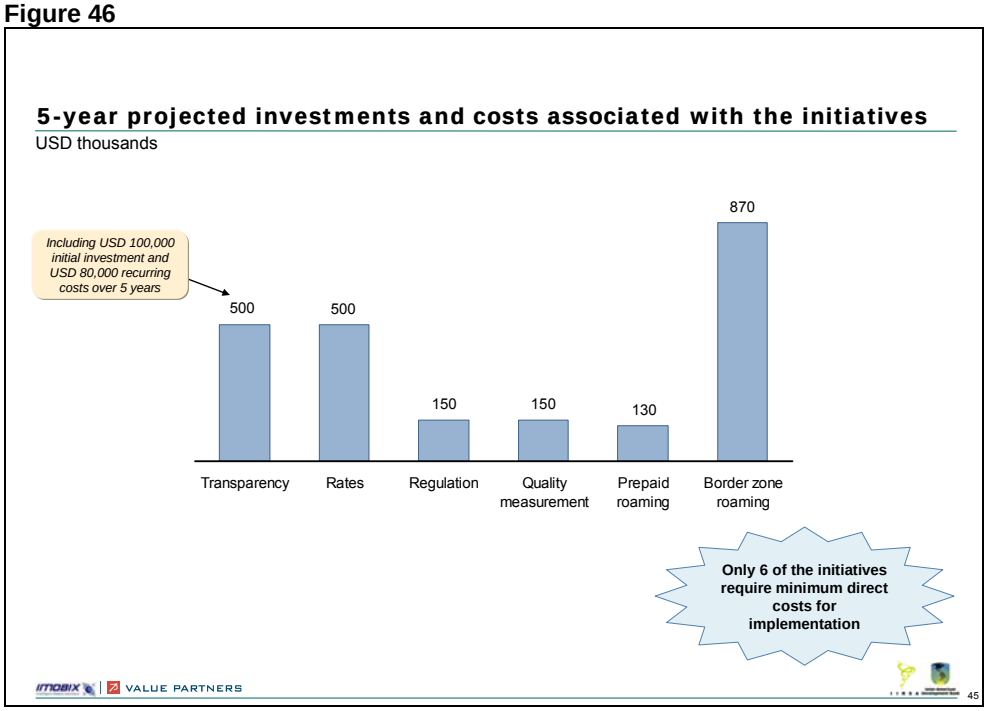
In contrast, the initiatives for transparency and lower prices in alliances present a much shorter implementation timescale since they require the involvement of a smaller number of key stakeholders to achieve results.

Finally, the initiatives with a higher technical component have shorter timescales, like the implementation of quality of service measurements and prepaid and border zone roaming services, depending on the time of operational implementation.

3.2.5. Investments and necessary costs for the various initiatives

For a comprehensive understanding of the viability of the proposed initiatives, investments and costs were identified that are required by the various stakeholders. At the time of implementation, it should be considered whether such investments and operating costs should be borne by the industry, based on higher revenues expected for the service, or if some type of financial assistance from governments or multilateral credit institutions is needed. Investment and associated costs, as shown in Figure 46, differ substantially between the various initiatives under consideration. Only 6 of the proposed initiatives require investments and direct costs, while the 3 remaining initiatives are dependent on already existing structures.

Figure 46



The associated costs and investments were estimated according to regional industry standards; however, these can vary by specific country and by particular conditions at the time of contract. Below are the costs considered for each initiative:

- **Transparency:**
  - Website investment (approx. USD 100,000)
  - Cost of operating resources (3 people at USD 75-80,000 per year in total)
- **Regulation for rates:**
  - Study for defining more efficient rates (approx. USD 400-500,000)
- **Measuring the quality of roaming services:**
  - Cost for the development, implementation and maintenance of the quality model:
    - Initial cost of USD 120,000 for creation of the model and selection of provider
    - Annual cost for maintenance of the model of USD 30,000
- **Regulation on the quality of voice roaming services:**
  - Cost for the development, implementation and maintenance of the quality model:
    - Initial cost of USD 120,000 for creation of the model and selection of provider
    - Annual cost for maintenance of the model of USD 30,000
- **Promotion of regional prepaid roaming:**
  - Phase 1 – Study
    - USD 50,000 for resources associated with the study
    - USD 30,000 for travel expenses associated with the study
  - Phase 2 – Selection of provider: USD 50,000
- **Promotion of border zone roaming:**
  - Phase 1:

  - 3 resources to form a Special Working Group (SWG) for 6 months (USD 80,000)
  - Attendance of several participants in the meetings of the SWG during the phase (USD 50,000)
  - Preparation of technical information by experts in the field and building the business case (USD 100,000)
- Phase 2:
  - 3 resources to maintain a Special Working Group (SWG) for 6 months (USD 80,000)
  - Attendance of several participants in the meetings of the SWG during the phase (USD 50,000)
  - Estimation of USD 300,000 for a pilot project (USD 100,000 for 3 sites)
- Phase 3:
  - 3 resources to maintain a Special Working Group (SWG) for 12 months (USD 160,000)
  - Attendance of several participants in the meetings of the SWG during the phase (USD 50,000)

The implementation of border zone roaming is the most expensive initiative, with a total cost of USD 870,000 over 5 years, given the high initial costs required. In contrast, the other initiatives are more feasible in terms of investment required, averaging between USD 130-500,000 in financial capital needed.

3.3. Comparison and prioritization of the various initiatives

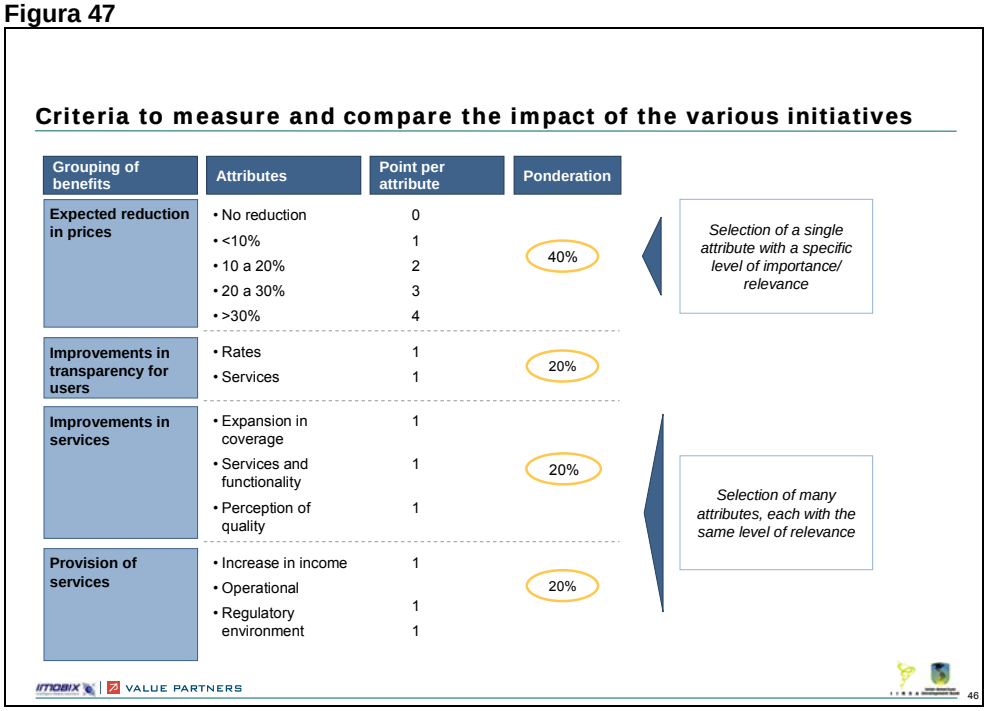
In order to prioritize and compare the initiatives on the same plan, two indices were constructed to measure the benefits and feasibility of implementation.

3.3.1. Ranking of benefits

For the ranking of benefits there are four possible groupings listed, using the concepts discussed during the comparative analysis of initiatives (Figure 47):

- Expected reduction in prices
- Improvements in services
- Provision of services
- Transparency

Figura 47



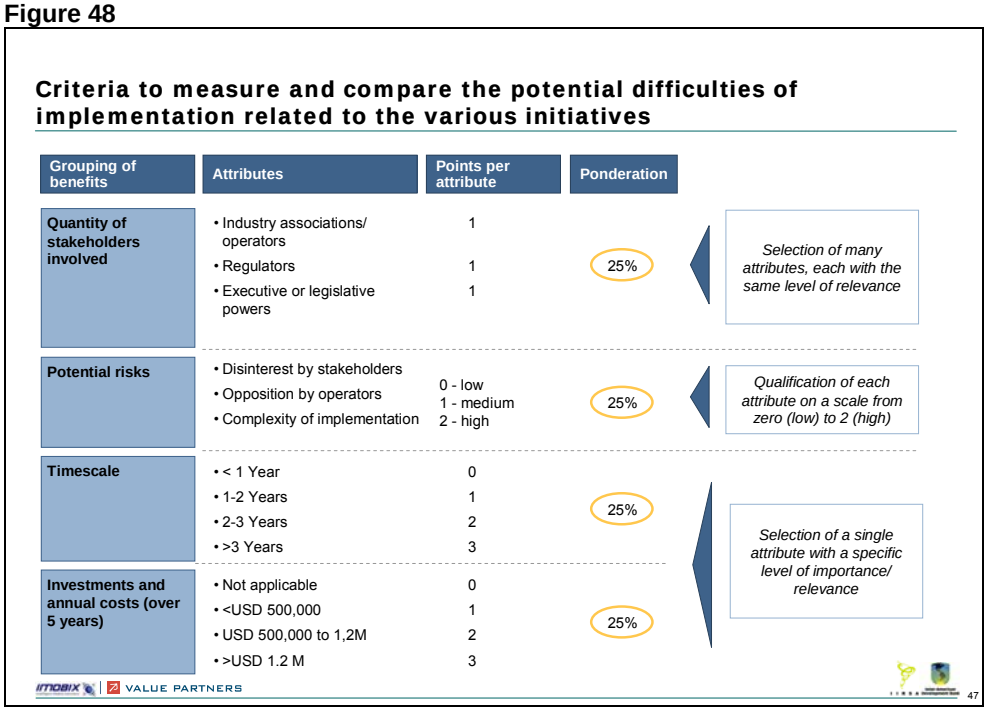
In particular, for each of the attributes of the groupings of benefits, two scoring systems were identified. The first applies only to the first grouping, reductions in prices, and gives a value from 0 to 4 according to the level of rate reduction achieved by the initiative. The second scoring system, which applies to the other three groupings, gives a point for each improvement that the initiative provides for each attribute. Finally, the groupings of benefits are weighted to reflect the greater relative importance of reduced prices over the other expected benefits.

3.3.2. Ranking of difficulty of implementation

For the ranking of difficulty of implementation, 4 possible groupings are listed, using the concepts expressed during the comparative analysis of initiatives (Figure 48):

- Number of stakeholders involved
- Potential risks
- Timescale of implementation
- Investments and annual costs over a period of 5 years

Figure 48

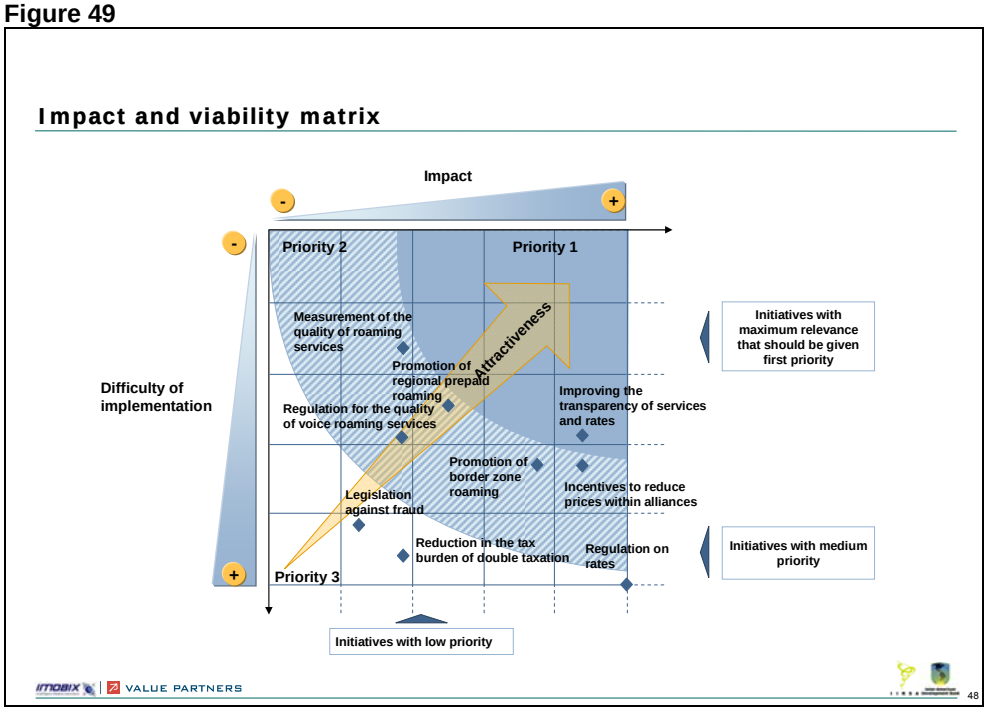


In particular, for each of the attributes of the groupings, three scoring systems were identified. The first, which applies to the first grouping, the number of stakeholders involved, gives one point for each of the stakeholders required by the initiative. The second, which applies to the second grouping, potential risks, gives a grade from 0 (low risk) to 2 (high risk) for each of the attributes considered. The third, which applies to the last two groupings, implementation timescale and required investments, gives a value from 0 to 3 according to the level of criticality of the attribute for the rate reduction achieved by the initiative. Finally, the groupings of benefits are weighted to reflect the slightly greater relative importance of implementation time in that the initiative be feasible to realize within the roaming project of the IIRSA.

3.3.3. Initiatives prioritization matrix

Based on the ranking of impact and difficulty of implementation, a matrix for the prioritization of initiatives was created and is illustrated in Figure 49.

Figure 49



This matrix allows for the prioritization of the various initiatives based on strategic importance, seeking the greatest possible impact with the least amount of difficulty of implementation. In general it is expected that the initiatives with the biggest impact will require greater implementation efforts, so it is important to identify the initiatives that present the best trade-off between viability and impact.

The prioritization matrix identifies that the most relevant initiative for implementation and the one that should have the highest priority is the one that seeks to improve price transparency and roaming services, given that this presents a relatively high impact without significant difficulty of implementation.

Moreover, there are five initiatives in a second level of priority, with an intermediate relationship between impact and difficulty of implementation:

- Reduction of prices in alliances
- Measurement of roaming quality
- Regulation of voice quality in roaming
- Prepaid regional roaming
- Border zone roaming

Finally there are three initiatives that are less attractive for the development of regional roaming:

- Regulation on rates
- Measures to reduce double taxation
- Legislation on fraud

While the regulation of rates has the greatest impact on the roaming market, it faces serious difficulties in implementation, requiring the coordination of multiple

national regulators and is vulnerable to opposition from the operators. If these impediments can be resolved, the development of this initiative would be very positive for the market.

4. Conclusions

Although South America is composed of countries with marked differences in socioeconomic context, the telecommunications market has grown in all countries of the region (21% annual growth rate 2002-2007), mainly due to the strong prepaid mobile services market (33% annual growth rate 2002-2007).

But despite this development in communications, the use of roaming is still lagging far behind (only 20% of the total number of travelers use the service), and thus presents significant opportunities for development.

Among the main reasons for this lag are: the high cost of service (average cost of USD 2.6 per minute outbound), low levels of intra-regional travel (3% of the total population), a limited postpaid offer (representing only 18% of the total), low revenue priority by operators for its marginal significance (~ 1% of income), low border zone population (4% of total population), and no effective regulation at the regional level, among others.

This has some similarities with the experiences of other regions of the world, but in any case, is never exactly comparable. Europe shows a clearly successful model, with the roaming market more developed and beneficial for the user. Experiences from this region, however, have limited application in the South American case, due to the existence of a supranational body for coordination and regulation within the European Union which, in virtue of its enforcement capability, permitted the definition of maximum rates for roaming calls between member countries (resulting in a reduction in retail rates of between 40% and 60%).

Based on contextual similarities, the experiences in Africa and the Middle East are most valuable for South America. Among the most important initiatives are: the development of intra-group alliances, which helped achieve roaming rates closer to local rates (eg. Zain, Kama-Kawaida, Etisalat), and the attempt at coordinating regulatory standards between independent regulators from the various countries, implemented through a network of Arab telecommunication regulators, although this initiative is still under development and its results are awaiting evaluation.

As a result of the analysis for the South American case, the survey of experiences in other regions and of the direct communication with various stakeholders in the industry (operators, regulators, industry associations and consumer organizations), a number of initiatives were identified with the potential for implementation in the region. These initiatives were evaluated individually in terms of their expected impact, risks, time and resources required, feasibility of implementation, coordination and stakeholders needed. The results of this analysis identified 3 sub groups of initiatives with different priorities:

- **Initiatives with Priority 1**: This sub group contains initiatives with easy implementation and relatively high impact. The importance of this sub group is twofold: first, to implement initiatives and quickly achieve concrete results, second, to kick start and encourage the execution of

other IIRSA initiatives aimed at developing roaming. The initiative included in this group is:

- Improve the transparency of services and rates

- **Initiatives with Priority 2**: This sub group includes initiatives whose implementation requires more resources and coordination efforts. The importance of these initiatives is linked to the continuity of the project and depth of its direct impact. The initiatives include:
  - Measuring the quality of roaming services
  - Promoting regional prepaid roaming
  - Promoting border zone roaming
  - Encouraging the reduction of prices in alliances
  - Regulating the quality of voice roaming services

- **Initiatives with Priority 3**: This sub group includes high-impact initiatives, although their implementation is highly complex in function with the number of stakeholders involved (eg. local governments) or the absence of appropriate coordination mechanisms (eg. supranational regulator). The initiatives of this sub group are:
  - Regulation on rates
  - Reduction of the burden of double taxation
  - Legislation against fraud

Communication and implementation of the initiatives

It is critical to adopt the appropriate communication and implementation strategies considering that the initiatives are diverse in nature (ie, different benefits and disadvantages for the various stakeholders involved, distinct action points, and varying implementation timescales) and that their success require the sustained support of market stakeholders and the continuous monitoring of the initiatives to be implemented. In this regard, we recommend communicating this plan as an integrated package, as a plan that does not attempt to benefit certain sectors over others, or that is of limited scope to a single issue, but that this plan seeks to create the basis for the development of roaming in a sustainable manner and in line with that done in other more developed regions. To this end, we recommend integrating the initiatives into a plan of action, defining objectives, times, activities and responsibilities in each case, with the aim also to provide traceability in the process for all stakeholders.

In the same vein, it is important to define the coordinating body of the plan, the entity responsible for ensuring that it is carried out, in charge of defining intermediate objectives, coordination, monitoring, progress control, and resource and support searches.

5. Comments by GTE in Bogotá

November 7, 2008

The GTE Executive Technical Group on "The South American Roaming Agreement" met on November 7, 2008 in Bogotá, Colombia. The event had the following objectives:

- Present the progress of the study "Analysis of opportunities, challenges and technical obstacles, economics, legal and taxation for the implementation of the IIRSA project 'Implementation of a South American Roaming agreement'" in Stage I (regional market study) and Stage II (best practices at the international level)

- Establish guidelines for the plan of action for the project to be considered for the Stage III study report (work plan for the short- and medium-term).

At the event, regulators and operators prioritized the following initiatives to promote the development of the roaming services in South America:

Regulator proposals:

- Implement the system of partial Bill & Keep for IOTs between operators
- Develop on-net offers for transnational operations (example: Movistar and América Móvil)
- Improve prepaid mobile roaming services with:
  - Ability to purchase credit with currency from the visited country
  - Collect calls for prepaid roaming users
  - Integration of the operator microcredit and micro payment platforms
- Reduce fraud by:
  - Formation of a working group to analyze the various types of fraud
  - Creation of an international blacklist and executive fraud team
- Exclude the charging of roaming rates in areas surrounding national borders (free border zone roaming)
- Obligation to provide basic functions for roaming services, for example:
  - Caller ID
  - Free access to customer service via a special access code
  - Automatic text messages on roaming conditions, prices and new services

Proposals by mobile operators:

- Enforce regulation on service providers that impact the price and quality of roaming service:
  - Signaling
  - Clearing house
  - International long distance
  - Data transmission
- Lowering taxes with benefits towards investments in roaming (eg. prepaid roaming coverage and development of border zone roaming)
- Prioritizing the development of SMS roaming services before voice (cheaper and meets the expectations of prepaid subscribers)
- Do not implement the Bill & Keep system because it is difficult to operate and is detrimental to mobile operators whose networks receive more incoming than outgoing communications.
- Implement border zone roaming as an initiative to integrate the operators and not as one of regulatory enforcement

The Figure below presents an exhaustive list of each item and the respective proposals of the regulators and operators:

Figure 50: Table of initiatives suggested by GTE in Bogotá

#	Initiative	Regulator proposals	Mobile operator proposals
1	Improve the **transparency** of services and tariffs	- Develop a website to compare roaming prices and services	- Website already available, although it is not comparative. Commitment to achieve greater detail, and regular updates
2	Regulation on **tariffs**	- To encourage investment in telecommunications that be economically and socially inclusive (Peru delegation) - Conduct a study on the regional market of long distance calling to show the regulatory gaps that lead to the use of low-quality routes (Comcel Colombia and Brazil delegation)	
3	Legislation against **fraud**	- Conduct a study on the different types of fraud and specific regulatory proposals (Brazil delegation))	- Conduct a study on the different types of fraud in the region especially regarding bypassing (Tigo Colombia)
4	Reduce the burden of double **taxation**	- Consider the use of partial Bill & Keep on IOTs in areas where traffic is sufficiently balanced (Brazil delegation)	- Lower taxes with benefits directed to investments in roaming (eg. prepaid roaming coverage and development of border roaming) - Do not implement the Bill & Keep system because it is difficult to operate and is detrimental to mobile operators whose networks receive more incoming than outgoing

#	Initiative	Regulator proposals	Mobile operator proposals
			communications (GSMA). - Reduce the impact of double taxation, which would introduce a strong stimulus for investment in roaming in the region and reduce prices
5	Incentive to reduce **rates** within **alliances**	- Study in depth Zain's One Network for its applicability in the region(Brazil and Chile delegation) - Develop on-net offers for transnational operators (eg. Movistar and América Móvil)	- Conduct an analysis of providers and costs involved in the provision of roaming service
6	**Regulation** of the **quality** of voice roaming services	- To encourage investment in telecommunications that improve quality of service (Peru delegation) - Obligation to provide basic functionality for roaming services, for example: – Caller ID – Free access to customer service via special access code – Automatic text message on roaming conditions, prices and new services	- Study the main prepaid traffic routes
7	Measuring the **quality** of roaming services	- Encourage investment in telecommunications that improve quality of service (Peru delegation) - Obligation to provide basic functionality for roaming services, for example: • Caller ID • Free access to customer service via special access code	- Study the regulation that prevents "writing off" connection lines of low quality - Consider how to ensure services such as caller ID
8	Promote regional **prepaid** roaming	- Encourage investment in telecommunications that will produce economic and social inclusion (Peru delegation) - Undertake a detailed study on the elasticity of demand for roaming services (Comcel Colombia) - Consider the prepaid user as a local user, initially Bill & Keep for international calls (Brazil delegation) - Integration of microcredit and micro payment platforms that allow calls to be made with low credit and promote the use of collect calls (Brazil delegation) - Improve prepaid mobile services with: . Possibility of purchasing credit with currency from the	- Prioritize the development of SMS roaming services before voice (cheaper and meets the expectations of prepaid subscribers)

#	Initiative	Regulator proposals	Mobile operator proposals
		visited country . Allow collect calls for users of prepaid roaming	
9	Promote **border zone roaming**	- Analyze the feasibility of pilot projects for border zone roaming (Chile delegation) - Promote the integration of border zone areas. Local treatment of roaming (Brazil delegation) - Exclude the charging of roaming rates in areas surrounding national borders (free border zone roaming)	- Implement border roaming as an initiative to integrate the operations and not as one of regulatory enforcement - Make efforts to prevent inadvertent roaming (Grupo Telefónica)

List of acronyms

3G:	*Third generation mobile telephony*
ABR:	*Brazilian Roaming Association*
AIC:	*Consensual Implementation Agenda*
AMI:	*Asia Mobility Initiative*
AMPS:	*Advanced Mobile Phone System*
APT:	*Asia-Pacific Telecommunity*
AREGNET:	*Arab Regulators Network*
ARICEA:	*Association of Regulators of Information and Communications for Eastern and Southern Africa*
ARPU:	*Average Revenue Per User*
ARTAC:	*Association of African Telecommunications Regulators*
ASEAN:	*Association of Southeast Asian Nations*
BEVC:	*Bureau Européen des Unions de Consommateur*
Bitkom:	*German E-communications and New Media Association*
BO:	*Bolivia*
BR:	*Brazil*
CAGR:	*Compound annual growth rate*
CAMEL:	*Customized Applications for Mobile Enhanced Logic*
CAN:	*Andean Community of Nations*
CDE:	*Executive Steering Committee of IIRSA*
CDG:	*CDMA Development Group*
CEIR:	*Central Equipment Identity Register*
CITEL:	*Inter-American Telecommunication Commission*
EIU:	*Economist Intelligence Unit*
ERG:	*European Regulation Group*
ETNO:	*European Telecommunication Network Operator*
EU:	*European Union*
HPMN:	*Home Public Mobile Network*
GB:	*Great Britain*
GRQ:	*Global roaming quality*
GSM:	*Global System for Mobile*
GSMA:	*GSM Association*
GSMLAA	*GSM Latin America Association*
IDEN:	*Integrated Digital Enhanced Network*
IIRSA:	*Integration of Regional Infrastructure in South America*
IMF / IMF:	*International Monetary Fund*
INTVG:	*International Telecommunication Users*
IOT:	*Inter-operator Tariff*
ITU:	*International Telecommunication Union*
LD:	*Long Distance*
ILD:	*International Long Distance*
KQI:	*Key Quality Indicator*
MMS:	*Multimedia Messaging Service*
M:	*Millions*
MTN:	*Operators in Tanzania*
NA:	*Not applicable*
NMT:	*Mobile Network Technology*
NRA:	*National Regulatory Authority*
NRTRDE:	*Near-Real-Time Roaming Data Exchange*
GDP:	*Gross Domestic Product*

PPP:	*Purchasing power parity*
SME:	*Small and medium enterprises*
SARRC:	*South Asian Association for Regional Cooperation*
SIM:	*Subscriber Identity Module*
SLA:	*Service Level Agreement*
SMS:	*Short message service*
TACS:	*Total Access Communications System*
TDMA:	*Time Division Multiple Access*
IT:	*Information technology*
TRASA:	*Telecommunications Regulators Association of Southern Africa*
UAE	*United Arab Emirates*
USB:	*Universal Serial Bus: Used as a port for connecting devices to a computer*
USD:	*U.S. Dollar*
US-TDMA:	*TDMA United States*
VPMN:	*Visited Public Mobile Network*
WATRA:	*West Africa Telecommunications Regulators Assembly*
W-CDMA:	*Wideband-Time Division Multiple Access*
WCIS:	*World Cellular Information Service*
WTO:	*World Tourism Organization*

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