Contribution of France Telecom Group

to the Consultation

on the Report on ERG

“Regulatory Principles of IP-IC/NGN core”

ERG IP-IC/NGN Core 2008

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*This **ERG Consultation Document on Regulatory Principles of IP-IC/NGN Core** (ERG (08) 26rev1 sets out some regulatory principles focusing on the core network. It is based on the ERG report on IP interconnection (see ERG (07) 09, published in March 2007), tackling IP interconnection and its implications as one of the main challenges emerging out of the developments towards multi-service NGNs in the core network and also takes into account more recent developments.*

Based on the 2007 consultation on IP interconnection, the ERG has launched a new consultation on the Regulatory Principles of IP interconnection/NGN core, focussing on the core network.

The ambition of this consultation is to go beyond voice interconnection, taking into account all the potential areas of the IP core network in terms of the diversity of services that could be provided to consumers.

If the capabilities of NGN potentially lead to more services, it must be reminded that the deployment of IP services is at the very early stage and that the “basic” voice business is still the most important revenue source for the operators. Hence any recommended charging models should not serve to compromise the delivery of voice for the consumer.

At this stage, stakeholders still have a great deal of expectations, but have often made little progress on technical and commercial issues.

Many questions remain open which partly explains why the IP core network deployment is generally slow. The new economic equation set out in the consultation remains unproven and there is, as yet, no one model which provides a more convincing solution to the issue of IP interconnection than the current arrangements.

As mentioned in the report, there is no real dispute about IP interconnection; the actors are satisfied with the current offers. There are, apparently, no strong incentives to accelerate investment which would not bring the same level of service. The reduction in costs is not definitively proven yet and is not the key driver for replacing the legacy network.
Furthermore, on the side of the interconnected operator, the transition to another interconnection point will entail costs as well, with no guarantee of having the same quality level but with possible operational risks inherent to technology changes.

Nevertheless, the migration will occur at different times and at different speeds from one country to another. It is clear that various interconnection models will coexist for a certain period of time. This duration could be long, generating extra costs that are also part of the overall equation. Nevertheless, running two networks is the most efficient solution in order to ensure the service continuity.

To foster this move, the regulator should lighten the regulatory constraints on the new networks, re-examining the existing ones on the PSTN network.

In the discussion about IP-NGN interconnection, references to the Internet model can be more confusing than helpful. Firstly, the Internet model cannot be automatically transposed to the NGN interconnection world. Secondly, it would be a mistake to underestimate the difference between the two worlds.
Furthermore, security is a fundamental issue for NGN-IP interconnection that is not fully addressed in the consultation.

The consequences of the possible separation between the transport layer and the service layer in an IP environment are not yet completely clear and the necessary links between the two must not be neglected.

As well, convergence due to the IP environment will lead to new services, to ubiquitous services, to new techniques and behaviours that are still under investigation. That introduces uncertainty with respect to regulatory issues, as mentioned in the report, and with respect to potential new markets, to business models and associated revenues. NGN-IP interconnection is a nascent domain which should not be hampered by premature regulation.

In this context, France Telecom Orange Group is concerned that the Consultation Document appears to be advocating significant intervention in relation to charging models and mandating a minimum quality of service, which is neither based on clear evidence of specific problems nor a full assessment of the implementation issues and costs and benefits of such intervention.

If the report states that several issues merit further study, like the question of understanding if the current framework would allow the imposition of Bill and Keep, we consider that the legal grounds for the NRAs to impose any constraint on quality is unclear.

Furthermore, taking into account the current situation regarding NGN deployment, it is unclear which charging models applied to particular interconnection arrangements will best support the delivery of the emerging services. Intervening now would potentially close off the development of some innovative services that could be supported through flexibility in interconnection charging arrangements. The future nature of interconnection charging models is difficult to predict at present. Mandating a single model for all interconnection arrangements at this stage would risk creating significant inefficiency.

Consultation questions

1) *A.4.1 Separation of transport and service*

Considering that according to the ITU definition of NGNs where service-related functions are independent from underlying transport-related technologies, how do you evaluate the concepts of transport interconnection and service interconnection as defined in the document?

If future NGN is functionally separated between the control of the services and the transport of flows (media, control and management), all these flows will be carried over the same backbone IP network. Therefore, in order to ensure the quality and the security of the services, these flows are carried by overlay virtual networks that are built on the IP backbone network. These overlay networks must be defined in accordance with the functional command architecture (call server, session border controller, etc in IMS networks).

Consequently, we must point out that service and transport interconnections cannot be considered as independent units and assembled together like Lego bricks. They form a global entity that must be used in a specific scheme.

The main and important consequence of this functional separation between the media and the command plans in NGN networks is the disappearance of the local switching level. In TDM, two switching levels exist: a local and a transit one (the international transit switching level is not taken into account here). In many countries, it is possible to interconnect at both levels. In France there are about five hundred local POIs (each corresponding to a local exchange) and few dozen transit POIs.

The existence of these 2 levels of switching (and interconnection) has important consequences on the interconnection market. It clearly defines three distinct and elementary interconnection products: departure, transit and termination of calls.

In the IMS-NGN context, switching is totally different. Probably, only one switching level will exist. Moreover we can not precisely locate "VOIP switches" as it is possible today with local or tandem TDM exchanges.
The treatment of calls (establishment and control) requires the success of different functions. Up to now, the location of these different functions and how they are aggregated in the equipments is not clearly defined. The solution depends on each NGN manufacturer. In coarse-grained, a NGN network would be composed of three kinds of equipments.

- The equipments in the network periphery: they are the "interface" between the core network and the different access (fixed, mobile, WiMax …) networks. These equipments work as mediation proxies. They also contribute to the security of the network and the protection of the different flows (media and signalling). A priori, they will be located at the boundary of the core network. We must underline that these equipments have no routing capabilities. Therefore, they can not provide service interconnection functions.
- The equipments in the core network: they are involved in the calls treatment (customer authentication …) and the services establishment. We generally name these equipments "Call Servers".
- The interconnection equipments: depending on the NGN manufacturer solution, several border equipments could exist. It depends if this equipment treats both media and signalling flows or if specific equipments exist for each kind of flow. We will call these equipments Interconnection Session Border Controllers (I-SBC). The I-SBC act as a front for media and signalling flows exchanges with others operators and are located within the IP backbone. Their objective is to assure service interconnection. One of their main tasks is to

protect clients and core network equipments against potential attacks and other malicious actions coming from the Internet and from other operator networks. They also carry out (fulfil) mediation task as codec adaptation and accounting functions. Up to now, no consensus exists on the number and location of SBCs.

In NGNs, like in TDM networks with CCITT n°7 signalling, media, signalling and network administration flows are treated and sometimes routed independently. In the core network, media flows are directly routed between mediation proxies (in the case of On-Net calls) or between the mediation proxies and the interconnection I-SBC (in case of Off-Net calls) without transiting through the call servers. For quality and security reasons, all these flows can be carried over different overlay VPN networks. For all the flows crossing inside one operator network, these VPNs guarantee the security and the performance of the IP transport. Theoretically, transport interconnection could be made everywhere; however the closer to the I-SBC the better for cost and performance reasons.

To conclude this point, one must retain that local switching does not exist in NGN networks. Consequently, the concept of “last segment” will evolve and service interconnection will exist at only one level. Moreover transport interconnection and service interconnection must be considered jointly and I-SBCs equipments will interface the media and signalling flows between the operators.

Another point to consider is that the business model of Carrier Pre-selection operators does not hold.

1) With circuit-switched technology, carrier selection usually enables selecting a transit network. Transit exchanges are required in circuit-switched networks to avoid installing TDM trunks between every pair of local exchanges. This is no longer required in a full IP environment; any call server can send signalling messages to any other call server as long as they are connected to the same IP network or to interconnected IP networks.

2) With circuit-switched technology, the subscriber is connected to a Local Exchange embedding "Class 5" call processing and routing logic. There is no way for the subscriber to select any alternative "Class 5" logic. The carrier selection procedure provides an exception for selecting a specific route beyond the Local Exchange. With the IMS, the subscriber can select the "Class 5" logic by registering to the desired network prior to establishing an outgoing call. Thus, there is no need for a special procedure for selecting a specific carrier/route.

3) Carrier Pre-selection was imposed by NRA on the PSTN in the first phase where the incumbent was the only network operator on the market. There is no more regulatory reason to apply it in the new context of NGN.

Furthermore, we have some comments about certain points in the report.

Page 101, the report states the following; “The division between transport and service may lead to other market definitions like markets for transport interconnection (without relation to specific services) and additional interconnection markets on the service level though it is open if such markets would be susceptible to *ex ante* regulation”. The potential threat of future regulation by adding new relevant markets to the existing list will induce uncertainty in NGN investment which could be alleviated by committing to the lightest application of appropriate regulation. The intention behind the Commission’s Recommendation on Relevant Markets is to reduce the number of markets not to increase them and this intention should also be maintained in the context of IP interconnection.

Page 93, the report states “Therefore, NRAs may have to ensure that interconnection is possible at specific functional levels in a reasonable manner. This separation of transport and services is also expected to be reflected in the respective interconnections services, i.e. service interconnection and transport interconnection.”

We recommend prudence and patience before the NRAs deal with these technical questions. They must be solved by the industry and the operators, and it would be

risky to have NRA, with no real technical expertise, pushing for solutions, that could turn out to be a technical disaster.
The NRAs must be technology neutral and it is not clear on what legal ground “the separation of transport and services is expected.”

2) A.6 Structure of the document

Do you see other issues regarding regulatory principles of IP-interconnection/NGN core that should be dealt with?

The current consultation focuses more on the change of billing model than on the economical, operational and technical reality of IP-Interconnection/NGN.
To assess the feasibility and economical reliability of such a new and still potential environment should be the first step,

3) B.3.3.1 Number of network nodes and points of interconnection (PoI))

Can you make more precise statements on the number of network nodes and/or points of interconnection in NGNs?

As far as nodes are concerned, potentially, the number should vary in respect to equipment power Furthermore, redundant nodes will be required for reliability reasons.

Today, the regulatory constraint to offer access to all the relevant network points leads to a number of points where alternative operators are deployed through interconnection or unbundling. So, the notion of an efficient operator must be seen through the notion of service continuity, at the same level of functionality. The

current interconnection points are constrained by regulation and service continuity. Thus, it is not a parameter that can be changed without a change of regulation.
In NGNs, on the one hand, the costs depending on the traffic are less dependant on the distance, which is a factor of centralisation. And on the other hand, the need to deliver media flows, so as to minimize the path between the source and the destination (another point of interconnection or a mediation proxy), makes it necessary to rationalize the location of the various SBC.

During the transition period, regulatory constraints impose the continuity of interconnection services. So the capillarity of network interfaces must be maintained due to interconnection services under current regulatory obligations, in particular that interconnection should be granted at all network points where it is technically feasible.

Concerning NGN, the architecture will be also defined taking into account the access constraints and technical potentialities. It is likely that the number of interconnection points in NGN will be reduced and that these points will be more centralised.

4) *B.3.3.2 Definition of local interconnection*

a) Is there an equivalent in NGNs to the concept of local interconnection as known from PSTNs?

As voice services will be more and more nomadic, "local" interconnection will probably no longer make sense in the context of wide scale NGN deployment.
"Local" interconnection was mainly justified by:

- predictable location of subscribers assigned with geographic numbers and
- distance dependent costs in the context of TDM based architectures.

The location of the customer has no relation with the location of the NGN platform. In theory, in a NGN network, if we do not consider scalability issue, a platform can manage customers of a whole national territory, thus the notion of geography, inherent to a local level of interconnection has no real sense.

b) What do you consider to be the locations for the lowest level of interconnection (physical and/or service), e.g. the broadband remote access servers (BRAS)?

The lowest level of interconnection is not the broadband remote access server. It may possibly be regional aggregation points, the SBCs as said in A.4.1. Several wholesale offers should exist to allow competition on access market. The lowest level of IP (transport) routage functions is located in these regional points. So, the lowest level of physical interconnection should naturally be these points. IP interconnection needs interconnection functions (routage charging, security, filtering, codecs translation) which are centralised on equipments which can not be located under this level.

c) Could the maximum number of PoI offered be considered equivalent to local interconnection?

Today, in France, for technical and organizational and regulatory reasons, the PSTN France Telecom Network interconnection is supplied at two levels:

- the first one is “local” and only allows the customers connected to a Local Exchange to be reached. About 480 interconnection points are available at this level.
- the second one is “regional” and allows customers of a technical zone of FTG Network which covers the Local Exchange of a region to be reached. About 45 interconnection points are available at this level. Notice that these points also allow all the customers of FTG to be reached, throughout the national territory.

As exposed in question 4)a, the number of interconnection points in NGN will be reduced for both signalling and media flows : these points will be more centralised, especially signalling interconnection points.. This number is the maximum number of PoI offered. These points are not equivalent to local interconnection (Cf. question 4).

5) C.1 Existing and proposed Framework

How do you assess the proposed Framework in the light of the migration process towards NGNs, their technical characteristics and economic implications? Are the proposals suites to address the specific challenges that these present?

The ERG consultation mentions some particular points of the Commission proposals on which it is necessary to make some comments.

"An additional sentence has been inserted in Art 5 par 1FD with regard to information to be provided by undertakings on network development." The proposed addition concerning information to be provided on future network and service development would be problematic because that kind of information should most likely contain company confidential information. The threshold of such a requirement should be very high. In this case, it must be clear that the information to be provided should be strictly limited to the technical elements necessary to the completion of the regulatory task. So, information related to investment plans cannot be made public, neither transmitted to a third party, even NRAs.

"A new section on security and integrity of networks and services has been introduced as Art 13a and 13 FD"

The proposal introduces further responsibilities of Member States and NRAs towards ISPs security and integrity of networks and services. In particular, Member States shall ensure that ISPs correctly manage security issues.

This proposal is dangerous and inefficient.

Security is a sensitive matter in terms of communication and the impact of the proposed systematic notifications are unforeseeable. Notifications about weaknesses or potential problems always expose a vulnerability, which can be immediately exploited. Notifications of personal data security breaches to end-users should be triggered only if harm is irreparable.

Operators already have the obligation to deal properly with security issues including personal data breaches. At present, operators have legal, penal and commercial responsibilities towards their customers and apply well known industry standards and best practices such as ISO27001/ISO17799. It is in the consumers' interests that operators remain in charge of the decision to communicate or not on security breaches because notifications always expose a vulnerability which can be immediately exploited. Besides, multiplying unnecessary notifications will undermine consumer e-confidence.

Operators ensure security and integrity of their networks and services and must remain in charge of the decision to communicate or not on security breaches. Sharing responsibilities with NRAs would result in watering down their responsibilities which goes against consumers' interests. Introducing a further Member State implication will oblige operators to a double and inefficient communication towards institutions.

FTG is convinced that security issues are best resolved through industry-led self-regulation, a field where industry showed commitment and successful international cooperation.

"The list of potential access obligations in Art 12 par 1 AD has now been complemented".

The purpose of the review is not to extend the obligations. In respect of sharing elements of the network and associated facilities, certain elements should not be included in this framework, when they are reproducible or when they contain confidential, personal data, particularly customers' personal data. This is the case for platforms that support presence and localisation functions.

"Art 5 par 4 AD, has been deleted…..Therefore the ERG holds the view that the power of NRAs to act on their own initiative to ensure end to end connectivity /interoperability should be maintained"

In the case of obligations imposed outside the main procedure of market analyses, the so called Article 7 procedure– that is, on the basis of Art 5 of the Access Directive, it is necessary to introduce a procedure of reviewing regulatory obligations imposed by regulatory authorities in order to withdraw the previously imposed obligations if there is no further justification of maintaining them. In the case of failure to conduct this relevant review within a specified period, the previously imposed obligations should be automatically abolished.

« in Art 22UD a new para 3 is inserted allowing the Commission to adopt technical implementing measures concerning minimum quality of services… »

If minimum quality of service is to be designed, it should be proposed by the Industry and be defined at service level, knowing that it does not go without quality at the network level: a network will typically convey a range of services, each of them presenting specific quality requirements. Any quality requirement, if any, should be considered at service level. In the Universal Service context, this requirement should only apply to the telephone service.

Network management is under the operator's responsibility and imposing non-discrimination regarding the use of network management tools could create

detrimental consequences for consumers, particularly in the case of traffic prioritisation necessities (for real-time applications, for example).

The current framework underestimates the difficulty linked to NGN deployment, the open technical or commercial questions, and the transition phase during which complementary infrastructures will be running in parallel.
It fails to go further into detail in the necessity to provide good incentives for investments, which are: more commercial flexibility, risk sharing and less regulatory pressure on operators willing to invest.

6) C.3.1 Interoperability issues

What type of interoperability requirement do you consider necessary?

As NGN protocols offer many options to handle such or such functionality, agreements will be signed between operators to provide a minimum of interoperability of services when they pass through interconnection borders (media codecs, protocols…). These agreements will freeze the run profile in interconnection transaction of the most used NGN protocol: SIP. Another direction that can help operators to provide VoIP services with high quality of service will be to include in these agreements a chapter restricting the number of common allowed codecs at interconnection interface. In order to shortly insure the best interoperability, guaranteeing the largest coverage of a great number of services, these agreements will be beneficial if they are defined by operators.
Nevertheless, there is a need for harmonization for a consistent implementation of regulatory approaches of pan-European business services.

7) C.3.2 Impact of charging mechanism on transport bottlenecks

How do you assess different wholesale charging mechanisms in the light of the transport-related bottlenecks?

In this question, we understand that ERG presents two wholesale charging mechanisms, Bill and Keep model against CPNP model, suggesting that CPNP can exploit the physical bottleneck.

It has been long accepted by Regulators and operators subject to termination rate regulation, that Operators have significant market power in the termination of calls on their own network. It can be noticed that this market power directly derives from the regulatory obligation to interconnect and to buy and provide termination services. So this is a good example of circular regulation: regulation trying to fix a problem originating in regulation. This is in essence the physical bottleneck. However, it is not clear that Bill and Keep automatically avoids the problem.

Bill and Keep may be an efficient option under freely accepted commercial agreements when there is equal exchange of traffic between operators. Bill and Keep has emerged in contexts where interconnection results from common interests not from regulatory obligations. When the traffic flows are asymmetric then there may be a distortion of incentives which leads operators to be unwilling to interconnect. For example, operator A who only receives incoming traffic from operator B and does not send any traffic to that operator B may be unwilling to make its network available for interconnection if it receives no payment for the termination service. In such a case operator A has invested in and operates the network as a “free good” for operator B. In the world of commercial agreements where Bill and Keep is sometimes used, it is not used in those cases where traffics are asymmetric.

Therefore it could be necessary to impose an obligation to interconnect. But, mandatory Bill and Keep associated with an obligation of interconnection leads to market distortions and no more interest to maintain networks. There is no more incentive for investing which becomes counter productive because the competitors

only will benefit from this investment. This demonstrates the absurdity of such a model.

If the regulator intends to impose obligations, it must be compensated by fair payments, because the obligation is on the seller's side as well as the buyer's side.

France Telecom does not agree with the assumption that CPNP is a mechanism allowing the abuse of physical bottleneck. To change the model in favour of Bill and Keep will not alter the key issues. The CPNP model in a maturing environment has been proven to work.

8) C.3 Bottlenecks and SMP positions

Do you see other areas (potential bottlenecks) for regulatory intervention?

In order to foster IP-NGN deployment the regulator should look at existing constraints on PSTN and remove them as far as they are obsolete in an IP environment. If constraints should be maintained, they should be as light as possible in order to facilitate the migration process on commercial basis.

9) C.4.2 Measures based on USO directive

a) Do you consider sufficient to potentially regulate minimum quality (Art. 22 USD new para 3)?

France Telecom understands the Commission's rationale, for the Commission, to propose minimum quality levels and, more precisely, that quality of service parameters are defined in the Universal Service Directive. However, if supplementary minimum quality of service standards is to be designed, it should be proposed by the

industry and be defined at the service level to satisfy the requirements, knowing that it goes hand in hand with quality at the network level.

The network will convey a range of services, each of them presenting specific quality requirements. Quality requirement, if any, should be defined at the service level. In the Universal Service context, this requirement should only apply to the telephone service which involves real-time constraints and prioritisation of traffic.
Quality of service differentiation is key to tap the full potential of NGN environment. Intrusive regulation in this area would risk freezing a dynamic marketplace and slow innovation and investment. Quality of service is a means to enhance consumer welfare and foster added-value services in a context of competition for the whole benefit of the customers. Through product differentiation, well-informed customers may use quality as a decision parameter in order to select a provider or an operator and choose between several offers from various operators and providers.

Therefore, operators should directly manage their networks because they are legitimately the best placed to do it. Mandated quality of service would impede the flexibility needed to adjust and control capacity constraints according to particular circumstances.

For instance, without adequate and direct management, operators would not be able to avoid or limit congestion and to implement prioritisation of traffic when delivering real-time services.

It is all the more difficult to regulate interconnected operators' quality as this quality has to be technically measured but also legible and clearly understandable by the customer. It also requires making the quality published by interconnected operators objectively comparable between themselves. With that purpose in mind, measurement methods (identical measurement scope, measurements tools, representative

geographical measurements points) as well as ways of presenting or displaying the quality parameters must be thoroughly defined and common to all interconnected operators. This is far from trivial to put in place: the combination of possibilities is very wide ranged and requires an overall consensus of all operators whose network constraints are likely to be very different one from the other.

Finally, it is not justified to presuppose an a priori anti-competitive behaviour from operators and, consequently, an assumption such as "therefore operators might have an incentive to degrade their best effort class" is totally unfounded, because competition between operators prevents such behaviour. If any undertaking adopts anti-competitive behaviour, it can be handled by Competition law.

b) Does this require additional regulation at the wholesale level?

Service level agreements between operators already exist which is a sound response to the needs for providing an end-to-end quality of service to customers. The best answer is to let the market forces conclude commercial agreements which allow a provider to make commitments on a level of quality of service when delivering dedicated offers to its end-users.
Furthermore, the universal service directive only applies to retail offers and the question, if relevant, must not be set in this context.

c) What is your opinion on ERG's consideration that the power to set minimum quality of service requirements (both on end-user and network level) should be entrusted directly to NRAs?

Neither the European Commission nor the ERG nor individual NRAs should set quality of service requirements for the reasons described above. Ex ante intervention

is not appropriate and acts as a disincentive to innovation and diversity with a negative effect on consumer welfare and choice.

FTG cannot agree with the assumption that operators designated with SMP (incumbents) would have the incentive to reduce quality for interconnection. This is because the customer experience is based on the completion of the call not on how many networks the call crosses. Therefore, the customer will relate the quality of the call to their own operator and not to the terminating party's operator, so the originating operator must ensure that the terminating operator is fully incentivised to offer an equal quality of service level. Otherwise there is a danger that the terminating operator could degrade the quality of the interconnection by underprovisioning resources in its network, as it can use lower cost services without responsibility to its customers. The customer cannot determine which provider causes the quality degradation but experiences the reduction in quality.

10) C.5 Costing and Pricing

General: Regarding technical and economical criteria, today's legacy networks allow the delivery of all services in an efficient way. Migration to IP, starting by Core networks towards full IP NGNs, is a general trend, but it appears to us today that it is still too early for a detailed assessment, because migration is not yet very advanced.

- legacy networks continue to respond properly to customer demand, with a high level of efficiency and quality of service.
- IP networks are not technically finalized today, and there is neither urgent reason nor any interest to accelerate the move from existing legacy to new NGNs.

a) Do you agree with the description of the relevant change regarding the cost level, the cost drivers and the cost structure?

Description of the relevant charge

Concerning the description of the relevant changes regarding the cost level, the cost drivers and the cost structure, we would like to make the following comments:

1- Cost level: the consultation stresses upon the fact that NGNs should have a lower cost due to fewer physical layers, fewer components and better packet switching efficiency. Even if it is obvious that operators would not evolve towards less efficient networks, some calculation has to be made to get a fair idea of the real evolution of cost level.

In the ERG report we read the following: «Based on the hypothesis that the economic rationale for NGN's is partly based on the expectation that the costs of delivering voice services in the long run will be no higher (and probably significantly lower) than using legacy PSTN technologies then it is reasonable for NRAs, in modelling/evaluating NGN costs and/or associated pricing decisions, to assume that the cost of voice services will be no higher than currently calculated."

This sentence calls for two remarks:

- the fact that global costs decrease does not mean that unit cost will also decrease, if the global volume carried by the network also decrease, which may well be the case concerning the volume of fixed telephone services in the years to come,
- annual costs based on replacement assets do not per se lead to lower figures than annual costs based on historical assets, when they are correctly calculated. In general, when annual cost based on replacement asset are found much lower than the annual costs based on historical assets, it does not indicate that the actual network is inefficient, it mainly indicates that there are most probably large errors in the calculation of replacement costs: either the

technical configuration which is modelled would not work because half the functions or the capacity are missing, or naïve and erroneous depreciation schemes have been used.

In the new NGN environment, cost basis will continue to be the reference, and analytical detailed cost models have to be developed to obtain a proper understanding of this new environment.

Regulators know that purely theoretical Greenfield bottom-up models are not an economic panacea and that correct cost modelling of incumbent operators' networks need to take into account actual observations such as the actual nodes of the incumbent network, observed utilisation characteristics, accounting operating and support costs etc… Works on network cost modelling has led to the current practice of regulatory costing of fixed incumbent networks. Current practice has been taken from both top-down (e.g. for operating and support costs) and bottom-up (e.g. for direct capital costs) approaches, from the observation of actual network configurations and from the evaluation of existing capacities at replacement values.

The cost of network usage will always depend on the number of elements (network elements and service platforms) involved to establish a call or a session, transmit content and emulate a service. Networks will continue to follow a set architectural hierarchy, for the optimization of their design and security.

Packet networks are designed to be multi service and provide several classes of services; cost levels can be different according to service requirements, QoS levels, and service platform implementations.

An additional important element needs to be pointed out: the false belief of double counting. It needs to be rectified, as it might weigh significantly on the total initial cost of NGN. The consultation recalls that interconnection has to be technically

neutral, and wholesale tariffs must reflect the cost of the most efficient way to provide it. All of this is only acceptable if it takes into account the reality that the most efficient technical configuration able to serve the real set of services offered is, actually today and for the years to come, hybrid configuration. A full and pure NGN is not and will not, in the near future, be able to offer all the services currently offered on the real network.

PSTN is still necessary for commercial, operational and regulatory reasons. On commercial issues, the constraints of the contracts for national or local services could be more than three years. Today, the operators are satisfied with TDM interconnection, so to move to another technology represents costs and manpower, and could introduce technical risks with no advantage. On regulatory aspects, there are a lot of constraints on PSTN which are more or less difficult, or costly to offer through NGN (ISDN, X25, LL). So it seems necessary in a first phase to analyse these services and to organize the end for some of them. But until then, they still have to be provided on the replacement network.

PSTN seems to be efficient much longer than it was predicted few years ago. Even BT has reviewed its calendar concerning the end of the PSTN

TDM is the main technical interconnection interface in Europe; IP interconnection is not a proven technical solution to date.

Operating two networks is the minimal, efficient configuration to ensure service continuity.

They permit to ensure the continuity of wholesale and retail services when NGN is not yet able to offer the service,

From one year to another, the level of the existing functionalities will not be 100% available on NGN, so the optimal network is a mixed network, even in the hypothesis of full replacement.

If correct calculations are carried out using economic depreciation concerning capital costs, one of the features is that when you have a price decrease trend, the annual

instalments are independent of the age of the asset. Whatever the network is, old or new, the result is the same.

It is not possible to switch instantaneously from a TDM network to a NGN network, and there is a need for a transition period to guarantee the continuity of service provision throughout the entire period during which the efficient replacement network is a hybrid network. Today, we do not yet have a clear visibility on when a NGN replacement network will be able to insure the services currently provided and how long we need to maintain TDM networks. The main reason of this uncertainty is that some TDM services cannot easily migrate to NGN networks while keeping the same QoS. We do not agree to isolate the legacy part of the network as long as it continues to be necessary to provide the services. **Efficient cost orientation means that the price of specific services must be oriented to the efficient cost to produce the same service. It does not mean that the price of a specific service may be oriented to the cost of another service!** Based on today's and even tomorrow state of technology, full NGN cannot be the technical reference hypothesis for the efficient provision of retail and wholesale services because it has not been proven in the field and because it cannot provide the services currently provided by the real network. Therefore the concept of double counting is a false belief, and all network elements which are effectively necessary to provide the services must be counted.

It is important to remind that a judgment of the European Court of Justice: dated April 24, 2008 concluded that neither current nor historic costs could be used exclusively and introduced the term "actual costs", which take into account both historic costs and (forward-looking) current costs. According to the ECJ, it is the NRAs' task to define detailed rules for determining the calculation basis. The court also supported the NRAs' practice to use analytical bottom-up or top-down cost models in the absence of complete and comprehensible accounting documents." *in order to determine the calculation basis of the costs of the notified operator, the national regulatory authorities have to take account of actual costs, namely costs already paid by the*

notified operator and forward looking costs, the latter being based, where relevant, on an estimation of the costs of replacing the network or certain parts thereof. When national regulatory authorities are applying the principle that rates are to be set on the basis of cost-orientation, Community law does not preclude them, in the absence of complete and comprehensible accounting documents, from determining the costs on the basis of an analytical bottom-up or top-down cost model." Therefore, it is only if accounting documents are not provided in a complete and comprehensible way that NRA may use analytical bottom-up or top-down models.

2- Cost driver: Contended capacity measures the dimensioning needs to transport the service across the network and can therefore be identified as one of the cost drivers. But it is not the only cost driver, and since NGNs are multi services networks, platform services specific costs will have to be taken into account.

For some network elements, it may be correct to calculate the contribution to interconnection network cost on the basis of the bandwidth which is necessary to transport the service. Another relevant cost characteristic could be the class of service (data, voice, video, etc.), as it can have an impact on network resources being used.

The roll-out of fibre infrastructure for backbone and now for backhaul transmission capacity makes traffic dependent costs less dependent on distance. However, traffic dependent costs may depend on the number of network elements used to carry the traffic. Furthermore, TDM and IP interworking requires trunking gateways which are designed on TDM parameters, and of which costs are TDM like. With NGN the number of network elements used during a session can differ according to the geographical location, and must be considered.

If the operators have to manage a massive migration of line cards, linked to the NGN core migration, then the driver for this operation is the enhancement of the transport network and not the enhancement of the access network that does not need such operation. So, applying the principle of cost causality, the cost of massive migration

of line cards for the sake of NGN Core implementation should be allocated to transport and not to access.

As stressed above, IP networks are still in their infancy, and it is very premature to attempt any precise determination on the way each new service implementation will weigh on the whole cost of the network.

The only certainty is that there will be a long time during which a hybrid TDM and IP network will be the most efficient replacement technology able to provide the services currently provided by the real network. It would be inefficient and dangerous to take unproven hypothetical technical hypothesis as a reference to define cost models now, when networks do not yet exist in their definitive form.

3- Cost structure: NGNs are multi services with multiple classes of services. So concerning cost structure we will have to consider that the same service can be offered in different ways with different Quality of Service levels.

Several elements will intervene in the NGN cost structure, such as software application licence fees, capacity, channels, etc...
Prices of licences may vary according to level of service. On the pure transport side, several levels may be required according to capacity, QoS, and also reliability.

b) For a pricing regime under CPNP, which of the wholesale pricing regimes (EBC or CBC) do you consider more appropriate for IP interconnection?

Pricing regime

We do not think that there is any link between transition to NGNs and use of Bill & Keep. In existing applications of Bill and Keep, all conditions are defined in

commercial agreements, at first, the decision to interconnect or not to interconnect, without any need for regulation.

Concerning EBC or CBC, even if EBC is the most used today in legacy networks, CBC also exists in some cases. For NGNs, the two options must remain open and there is no rationale today that allows eliminating one or the other. We also consider that regulation should not impose EBC or CBC, and choose one in favour of the other is not a concern for regulation, but it must result from a commercial agreement between interested parties

11) C.6 Charging mechanisms

a) How do you assess the arguments with regard to the properties of the charging mechanisms CPNP and Bill & Keep raised in the sections C.6.2 – C.6.10?

CPNP and Bill & Keep assessment has to take account of the multi-service nature of interconnection in NGN. Firstly, it is important not to restrict the scope of this consultation to voice services (fixed and mobile telephony) and extend it to other potential services that would be supported by NGN networks (IPTV, VOD, Video conferencing, content sharing, instant messaging …)

Bill and Keep can not be the answer for all services that the NGN will bear. Many of these future services will have asymmetrical traffics: IPTV and VOD are two examples for which Bill and Keep is inapplicable: traffic flows are unidirectional. In fact, the charging mechanisms for the interconnection between NGN networks must not be a monolithic solution as they will have to answer to multiple and various situations; they must be pragmatic and flexible.

To design a pragmatic charging mechanism, it would suffice to meet the following basic and fair economic principle: the people who must pay for the costs of a communication are those that cause the transaction.

Willingness to pay for a call is fairly represented in willingness to make a call under the CPNP system.

The report discusses the utility obtained from a call and suggests that Bill and Keep could be more capable of internalising positive usage externalities. In reality, there is no theoretical foundation for this statement which unequivocally proves that Bill and Keep can internalise call externalities in a way that CPNP cannot. At this stage two comments can be made about the possibility of high negative call externalities for the called party and that other more and legitimate models than RPP can be introduced to deal with positive call externalities.

- one important drawback of Bill and Keep is that it encourages massive spamming as every Internet user knows very well. The value of being protected against mail spams is already high. It would be much higher against voice spams. In a welfare analysis, the role of termination rates against voice spams should be very seriously assessed. Everyday life already shows that those customers suffer much less from undesired commercial phone calls on their mobile than on their fixed line in Europe.

- introducing RPP would break the very important principle that the one who pays should be the one who initiates the service, by a positive decision. Moreover, in one way or another, calling parties could be indirectly interested in the revenue generated by the RPP principle and be involved in massive frauds, costly to fight, and creating a very negative impact on customer's confidence. Finally, seeing RPP as the only way to take into account positive call externality (a) ignores the existence of cost and revenue sharing for special service for commercial communications and (b) shows a very narrow view of how people regulate the interpersonal communication. Sharing the value of communication between the calling and the called parties does not have to be done within a single phone call. People generally have a continuous telephonic relation throughout time, and they regulate the value of this communication for both parties through how often one of the parties calls the other.

Moreover, such a personal regulation is much more efficient as it integrates personal and bilateral parameters out of reach of network operators.

The report states page 105 “Coupled with a direction of payment flows the charging mechanism may have implications on the definition of relevant markets and the determination of SMP.” Again, the current relevant market recommendation applies and we do not see how the definition could change or how services like multi-media services are potentially covered by any obligation in term of tariff.

Charging both transport and service interconnection could be the right approach

A charging mechanism is flexible if it is able to adapt to all possible services (not only VoIP). It is also possible to consider a third part in interconnection tariffs: the payment for content rights which is relevant for IPTV and VOD interconnection.

IP transport charging would take into account the interconnection compensations at the IP transport level. At this level, all services that interconnect would be aggregated and different classes of service could be considered to reflect different quality requirement. The charging mechanism at the service level should adapt to a case by case basis depending on the characteristics of the service and who initiates and gets benefit from this service transaction and who pays the resources implemented to serve it.

Bill and Keep would greatly simplify the NRA tasks but …

In this consultation, ERG shows that it is particularly favourable to a Bill and Keep charging method for interconnection in NGN. The ERG would understandably like to simplify the audit of interconnection costs. But if the objective is to simplify NRAs task the correct solution is to stop regulating and not to apply a wrong regulation.

Paradoxically, the consultation shows that NRAs would propose to control a minimum level for the quality. To guarantee this minimal quality level requires being able to identify who is responsible when quality is under the minimal threshold. As there is no normalized way neither a universal consensus on how to build an NGN network, the control of the end-to-end quality could necessitate putting in hand a complex experimental process to measure some KPI. This task could finally be much more tedious than auditing costs model

Asymmetry risk is certainly one of the main drawbacks of Bill and Keep

Bill-and-Keep should be considered only if freedom of interconnection is granted and under symmetric conditions. First, providers which interconnect in a Bill and Keep charging mechanism must belong to the same class of network access providers. Other providers such as application server providers or content providers must not be allowed to interconnect without charging. In fact we can generalize this principle saying that only providers that have the same cost structure could agree to interconnect in a Bill and Keep charging scheme. That excludes Bill and Keep between fixed and mobile access network providers since the marginal call termination costs are much higher on the second.

Moreover, for the long term we gather that Bill and Keep applied to mobile access networks will not give good incentives for the usage of the radio frequency bandwidths by the actors. Indeed with the development of broadband mobile data services, radio frequency more than ever will become a scarce resource. Contrary to fixed networks where the bandwidth to access the clients is independent (each client has its own access link and the bandwidth he uses does not impair the bandwidth available for all other clients), radio frequency bandwidth in a mobile access network is a shared and scarce resource. The bandwidth used by a client becomes unavailable for the others and so incurs an opportunity cost in its use. Allowing caller party networks to access for free such a resource will not give the appropriate price signals to the market. That would permit low value services to engage resources to the

detriment of a more valued one, contrary to the principle of opportunity cost. The end result is a negative impact on welfare.

Secondly, the volume of traffic between the two providers must be symmetric. But with the coming of new services and the evolution of old ones, this condition cannot be taken as granted. Moreover Bill and Keep favours providers to acquire clients that initiate more calls than they receive. We can imagine that some business clients such advertising and On-Line marketing call centres would become very good clients as they bring to their operators great revenues and low costs, while imposing no revenues but high costs to other operators.

Here, we find the "spit" problem. A free call termination will lead to a proliferation of unsolicited calls as for the electronic mail boxes and it would be extremely more difficult (and costly) to filter unsolicited voice calls rather than email Ascii texts.

It would also be very difficult to forecast how traffic will evolve tomorrow. One can take the Internet as example. Up to now traffic volumes on the peering link were roughly symmetrical: the ratio between upload and download directions usually did not exceed (1:2). More recently with the exploding increase of video services such as Youtube, DailyMotion or other services such as Web TV, this ratio between upload and download traffics also explodes: from (1:2) to (1:20).

On the contrary to what ERG asserts in the consultation in C6.8, this increasing asymmetry of the traffic flows exchanged on the peering links in the Internet jeopardize Internet connectivity and threatens the quality. A recent dispute (and disconnection) between Telia and Cogent Tier 1 IP transit provider has proved this. The consequences on the bandwidth capacity expansion are serious. As Internet access providers do not benefit from any revenue from this asymmetric traffic, they are not encouraged to invest in capacity extension in their network in order to allow this traffic to flow with a proper level of quality. Some recent studies (see the Idate[1] one) forecast a possible bandwidth shortage due to the traffic imbalance brought on

[1] Idate – Saturations des réseaux - 2006

by these new video services. Due to these difficulties, continuation of free peering agreements in the Internet is not guaranteed today. Many actors, especially Internet access network providers, want to change the charging rules; above all, when upload and download traffic flows are greatly different. Service providers that send more traffic than hey receive must pay for it in any case.

Beyond the necessary symmetry of sent and received traffics, Bill and Keep partners must also agree on the traffic volumes they intend to exchange including especially those in the peak period. We find again the situation where an actor will exceed its forecast agreements. Treating this kind of situation should also fall under free trade negotiation …

Bill and Keep favours high income customers against low income ones and CPNP favours new service penetration

In page 88 of the document ERG says that "Bill & Keep seems to be associated with incentives for efficient network usage". . The ERG assertion is based on four country cases that ***seem*** to be favourable to Bill and Keep, Figure 3. But perhaps one can question if some specific conditions on these markets will explain the difference shown by the figure. It is easy to find one for Hong-Kong and Singapore. They are both small territories (~1000km^2 and ~700km^2) with very high population density (> 6500 per km^2). It is not relevant to compare such territories with much larger countries such as France, Germany or Spain. (For example the population density in Ile-de-France, the most densely populated region in France, is less than 1000 per km^2).

For the US mobile market case, the argumentation does not clarify if the retail price comparison indicator takes into account only sent calls or both sent and received calls. To our knowledge the US mobile customers also pay to receive calls (Mobile Party Pays is usual on the US retail mobile market). This is not the case on the European mobile market where mobile customers only pay to send calls. (except for international calls).

To fairly compare mobile retail price, it would be necessary to aggregate both volume and total price paid for sent and received calls. It is not clear if this is done in the Merrill Lynch study.

Moreover, and apart from the question of accounting both for incoming and outgoing traffic, there are other differences: billed minutes are higher than conversation minutes ; the first second of communication releases the billing of one minute and ,on the top of it, signalisation and ringing time are added. So, even if the price per minute could give the impression of being low, the final billing is higher than what it should be.

To be fairly objective, ERG should also compare other economic indicators (not only the usage in function of the retail price). An example of one of these could be the service density (% of population with a mobile) as function of the GDB per inhabitant. We find the data for this comparison in "Le marché mondial des services télécoms Marché-Zones géographiques, M10307, Idate, Mars 2008".

Country	Mobile density (% of population) (data for 2006)	GDP per inhabitant (in thousand USD) (data for 2004)
USA	78%	39,5
Canada	56%	33
France	82%	28
Germany	103%	29
UK	118%	29

From this table we could conclude that Bill and Keep (applied by some mobile operators in USA and Canada) does not favour service density.

Despite their lower GDP per inhabitant, the European countries with the CPNP interconnection charging principle have a greater mobile density. The difference is from 1 to half, if we compare UK to Canada. From the social welfare point of view, one may wonder whether it is preferable to favour access to the service to most of the

people even if they have low incomes or whether it is better to promote usage for people with the highest incomes.
It is commonly assumed that high call termination rates promote the penetration of a service. Service providers have the ability to subsidize handset acquisition..

On the mobile market we are probably at the beginning of a new era: that of new broadband data services including mobile IPTV and other video services. Fixed-mobile service integration is also a key element that would impact future of telecommunication services. Fixed-mobile integrated services and mobile broadband data services will need to renew most of the mobile handsets. Maintaining financial conditions such that mobile providers will be able to subsidize these new handsets is a mean to speed up penetration of these new services especially for low and medium income people.

b) How can the migration process towards all-IP infrastructures be alleviated for the following options: 1) long term goal CPNP, 2) long term goal Bill & Keep? How do you evaluate the measures and options discussed here? Please also consider problems of practical implementation.

Impose Bill and Keep would lead to great operational difficulties

If it is submitted under duress and not freely chosen, "Bill and Keep" appears as a violation of property rights since it does not allow a fair remuneration of resources invested by an actor and requisitioned to be used by another.
Moreover if Bill and Keep became an obligation for a SMP operator, it becomes a right for some other actors. As it is impossible to accept everybody, one must determine eligible actors. Belonging to the list of operators reported to the NRA is not a sufficient criterion. For instance in France they are 790! The theoretical criterion may be to propose access service, but obviously any undertaking could be able to sell

a few access lines for the sake of being eligible to mandatory Bill and Keep! As an example of this practical complexity we can report that the rule of the future "2.6 GHz frequency" auction, notably in UK, will allow actors who purchase frequencies to resell a part of them. Such rules will multiply the list of potential candidates for Bill and Keep NGN interconnection. And there is no clear regulatory reason to accept some and reject others.

The simplest and most efficient way to choose the candidate would be free trade negotiations between the players. Allowing all candidates to interconnect in a Bill and Keep charging mechanism would lead to non optimal interconnection network configurations. Too many candidates would bring scalability difficulties and also would prevent the development of a transit market! Why pay for interconnection if it is possible to interconnect for free.

After determining the eligible candidates for Bill and Keep interconnection, one must also define which traffic is eligible. In theory only traffic that is addressed to customers on the last segments behind the considered POI would benefit from Bill and Keep. But what to do with traffic for other destinations? Will they purely and simply be rejected or will they be rerouted by the operator to their effective destinations? In the first case, it can be noticed that this filtering costs and there is no reason that local customers pay costs caused by traffic which they are neither the source nor the destination. Moreover traffic rejection would be source for many disputes (see the phantom traffic problem in the US).

In the second case, one will price for the rerouting of the calls. One must therefore be able to assess who sends what to whom. Then the hypothetical savings on the transaction costs brought by Bill and Keep are lost.

Bill and keep is also known to discourage efficient call treatment: see the so called "hot potato" routing problem in Internet interconnection. In NGN interconnection this problem will be worse. The following case is a first example of a similar effect to the "hot potato" routing problem. For a telecommunication transaction, the network of the caller will have no interest in achieving in its network the codec translation of its calls.

As this treatment is expensive (it needs significant resources in session border controller equipment), it will leave this task to the receiving operator. To avoid conflict on this point, the NRA should strictly define and impose which codec is allowed in what condition and for what service. Such constraints will harm the development of innovations in networks and services …

Implementing Bill and Keep in a country is not an easy task. Following the theoretic works done by economist of the FCC (see DeGraba, Atkinson and Barnekov [2]), in 2001, FCC has tried to propose Bill and Keep to unify inter-carrier compensation regime[3] in the US. This attempt failed.

In July 2006, FCC proposed another plan, the Missoula Plan, whose objective was once again to unify the compensation rates for a vast majority of carriers and reduce all inter-carrier compensation rates to three tracks depending on the population density in the area of the access networks. To our knowledge this plan has not encountered more success than the previous one.

Bill and Keep may not deliver all the benefits announced by the ERG

Finally, we must point out that it is illusive to require minimal quality level while imposing Bill and Keep. Quality costs money and it cannot be perceived by clients if an operator does not respect the minimal quality level. Lowering the cost of its networks by suppressing resources needed to maintain a good quality level would be an optimal strategy for every individual operator. This would lead to a general decrease of service quality as it allows proposing low cost services to clients.

[2] **A Competitively Neutral Approach To Network Interconnection December 2000 -** Jay M. Atkinson Christopher C. Barnekov- Federal Communications Commission- December 2000

[3] **Federal Communications Commission FCC 01-132-**

c) Assuming that different charging mechanisms would apply in different Member States: would this imply specific problems (e.g. arbitrage)? If so, how could they be addressed?

Migration from TDM to NGN is neither the first nor the last technological transition which the international operator's community is facing. In this specific case, the transition period, that will be different in each country, could allow the operators to find equilibrium into the methods used for charging. The step by step method, on commercial bases, would be the more efficient method, solutions being found for each new question. This is definitively far from the idea that all the Member states could, at the same time, change for a new model that is unrealistic.

d) Do you consider that the issues mentioned here are comprehensive with regard to the application of Bill & Keep for IP-interconnection?

As previously mentioned, the ERG report is taking for granted development or mechanisms that are not finalized and even that may not be eventually chosen.
Before tackling the billing models issues, it could be relevant to take into account what NGN will look like in reality.
A lot of questions remain open:
Standards: Several organisations are working on the related standards, sometimes on the same subject (IETF, ITU-T, 3GPP about SIP interfaces) with necessary discussions to avoid the risk of divergence between the standards. The organisations dedicated to mobile networks and those dedicated to fixed networks also face a risk of divergence. The subject is not mature and time is needed to have the final technical and efficient standards.
Furthermore, in general, implementing standards is not free from problems leading to malfunctioning.

Network costs: they are still only partly known. They are really dependent on the manufacturer's plans and road map.

Migration period: the network is concerned by the terminal equipment as well, which brings another parameter into the equation. The ad hoc terminal production is not sure; changing the legacy still need to be proven from an economical point of view. It would take time in any case and is very likely not to cover all the services currently provided by the existing network. .

The separation between the transport and the service layer: in general the question remains open but for real-time services with quality requirement such as voice services it is quite sure that transport and service layers cannot be independent. The codecs used are indicated in the signalling and so are the flow characteristics of the transport plan. This is also the signalling that indicates the content of the media flow. What is distinct is the way used by the two flows for signalling and media. This is not new at all in telecommunications: in TDM networks: signalling and media flows already follow different routes. When CCITT n°7 was developed in TDM networks, there were dreams of independent signalling and media routing which never came into reality just because it was neither realistic nor efficient for voice service. It is still the case today and TDM interconnections cover both media and signalling levels. It is entirely possible that the same dreams will lead to the same result for NGN. Then, we could have one interconnection offer covering the service and the transport.

To summarize our position, we assert that Bill and Keep could only be proposed as a free trade commercial agreement as it is the case in the Internet. It can not be imposed. The guarantee of symmetry in traffic and in the cost functions is certainly one of these win-win conditions.

Other points …

Assumptions

- Page 4 (and also later in the document), the author says that charging in Internet interconnection arrangements depends on the sum of traffic flows in both directions. To our knowledge it depends on the maximum of traffic flows in both directions.
- Page 8, the author says that "best effort" quality does not mean low transmission performance and low quality of service. This affirmation would require more quantitative justification. It is true that, almost always, Internet services work well but sometimes one can experiment very bad functioning. Many of these are due to intrinsic characteristics of the IP protocols (BGP rerouting instabilities is one of these characteristics). Most generally, one observes that pure IP "best effort" networks are less available than TDM networks (more than one order of magnitude difference). If this quality level is sufficient for services offered for free to customers (difficult for a customer to grumble against a provider that offers free services), it is unacceptable for commercial services. For business customers quality expectations are even higher.

Pure Internet

The author considers quality of services but does not deeply treat security and trust. Nevertheless, trust is surely the main difference between services offered by telcos and services offered by «open Internet" players. Contrary to the Internet mail services, clients of telco services such as telephony are not confronted with up to 97% unsolicited transactions (the rate encountered with Internet mail services) coming mostly from anonymous persons. Telecommunication transactions on Telco service platforms are supervised and controlled. The identities of the caller and calling parties in a communication transaction are authenticated by the telco operator using fixed line or terminal identifications (SIM card is an example). So, in a telco service transaction, all the caller(s) and calling(s) parties are almost sure of the line or terminal identification. Of course, it is always possible for a malicious person to steal a mobile

terminal or to call unduly from a given fixed line. In fact in the telco world, telcos play the role of third party trusting. As a consequence, all customers have a closely and clearly identified entity to which they can complain! That is not the case in the world of pure Internet services where it is often impossible to identify who is responsible. Moreover when we identify one, its legal administration is on the other side of the planet inaccessible to the normal client.

An open network solution as pure Internet has certainly some advantage but we don't believe that someone wants to see his answering machine transformed into a wastebasket in the manner of email boxes – thanks to Bill and Keep in the Internet world. And we do not talk about identity theft, such as spoofing, that is developing more and more on the Internet.

Business actors which are particularly sensitive to issues of security and confidentiality of their information and data do not choose the "Open Internet" to carry their traffic. They prefer to use private IP backbone networks (VPN IP backbone) even if these solutions are more costly. Trust, confidentiality and quality of services cannot be obtained for free.

List of acronyms:

ATM: Asynchronous Transfer Mode

GSM : Global System For Mobile Communication

IPTV: Internet Protocol Television

IMS: IP Multi Media Subsystem

ISDN : Integrated Services Digital Network

I-SBC: Interconnection Session Border Controller

LEC: Local Exchange Carrier (ILEC : Incumbent Local Exchange Carrier)

PSTN : Public Switched Telephone Network

TDM: Time Division Multiplexing

SBC: Session Border Controller

VOD: Video On Demand

VPN: Virtual Private Network