Public Consultation on Cloud Computing

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Your Profile

Are you responding for a Company?   Yes

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Sector
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Country where legally established
Spain

If you are a **user** of cloud services: Please describe your current use of cloud computing.

What kind of problems do you encounter when using cloud computing solutions in the EU? Elsewhere?

Telefónica is currently using several cloud services, provided by 3rd parties and/or provided by Telefónica itself. Those services are mainly related to IaaS (Infrastructure-as-a-Service) and SaaS (Software-as-a-Service).Telefónica would not highlight severe problems when consuming cloud services neither within the EU nor elsewhere. Telefónica challenges when consuming cloud services are pretty similar to those we have been facing when consuming other services or capabilities: proper understanding of our business needs before consuming, ensuring the right economics of such a bid, ensuring the

appropriate terms and conditions for the service to be consumed. In some cases, some budget issues have to be faced, as we were meant to move some budget from CAPEX to OPEX. We also have had to deal with the challenges of migrating legacy systems and services in order to adapt them to the new environment. Nevertheless, we haven't found severe troubles as we haven't transformed mission-critical workloads nor data privacy related workloads.

If you are a **potential user** but not active yet:

What are the main reasons for <u>not</u> (or not yet) using Cloud Computing?

If you are a **provider** of cloud services: Please describe your offer.

What kind of barriers do you face in providing your cloud computing services within the EU? Elsewhere?

Telefónica is offering cloud services for the 3 categories: (1) SaaS: Productivity Suites (e-mail, collaboration tools, office applications) and SaaS Marketplace applications for SMEs (2) PaaS: tools for the applications developers community linked to certain processes for enabling these developers for monetizing their innovations (BlueVia) (3) IaaS : mission critical oriented service for creating and provisioning ICT infrastructure (Virtual Data Center), Remote Virtual Desktop, Storage and Backup as a Service. When providing these services within the EU, we are facing some issues regarding:1-Data Protection: cloud computing requires a trusted, flexible and a comprehensive global legal framework that guarantees the same level of protection for EU cloud users, irrespective of where the cloud service provider is located, either in the EU or in USA or Asia. Otherwise, privacy failures and security breaches will occur and it will work as an inhibitor of cloud computing services demand. 2-Taxes for digital contents: some taxes in the EU are impacting European service providers whilst foreign providers offering similar services are not impacted by these taxes so we as an European cloud provider are less competitive than others in the US or Asia. A part of the solutions could be to implement an European harmonized and reduced VAT system for online services which would not only reduce the costs of managing cross-border trade but it would also remove a source of competition distortion.

If you are not a user, nor a potential user, nor a provider:

Please describe your interest in this topic and the source of your knowledge.

Clouds for users

Do you feel that in the cloud services   Yes
you are currently using or have been
evaluating (or are providing), the rights
and responsibilities of both user and

provider are clear?

Please comment.

Based on the experienced gained by Telefónica, as a provider as well as a user of cloud computing services, no problems involving a confusion of rights and obligations between either role have occurred. Nor have there been any significant legal issues. It is nevertheless true that due to the dynamic and flexible nature and enormous potential of cloud computing services, whether they are used as end services or whether they are used to provide other services, cloud computing represents one more element in the entire value chain. This can create a situation whereby, in the future, the roles of user/provider may not be so clear. In any case, the relationships between the different actors across the value chain included the user and provider, should develop in a pragmatic and flexible way. Therefore, we should emphasize the clarity, transparency and security of these services at the time of assigning rights and obligations.

Are you aware of the applicable jurisdiction in different types of disputes that could arise during your provision or use (or potential future use) of specific cloud offerings?	Yes
Is there an alternative approach to the determination of jurisdiction that may work better both for users and providers?	Yes

If yes, please comment.
In relation to the above questions (Q3 and Q4) we believe that the topic of applicable jurisdiction is not an issue specific to cloud computing. Instead it is an issue that arises due to the proliferation of information society services in general whose more generalized feature is their global nature. From the point of view of territoriality, the on-line world entails numerous advantages but also uncertainties and complexities that have to be resolved and dealt with. Whenever services are provided to companies or multinational customers, contracts have to include certain clauses that specify the law as well the applicable jurisdiction in the event any disputes or controversies should arise between the parties, in which the use of international arbitration is increasingly a frequent option. Regarding those contracts with consumers and end users, European and national consumer laws normally apply. The terms and conditions of those contracts are usually drafted by the service provider and adhered to by the customers taking into account applicable regulation.Usually the law and applicable jurisdiction coincides with the place in which the consumer receives the provision of service (irrespective of where the physical equipment that the provider uses for this purpose is located). Neither is it unusual for consumer arbitration mechanisms to be included for the resolution of conflicts. Nevertheless, given the territorial complexity and pressing nature of this option, in the majority of cases, consumers and users of information

society services, which include cloud computing, opt for online conflict resolution systems, which have the feature of being easy to use, convenient, quick and low cost.

Please comment.

| Do you feel that the question of liability in cross-border situations is clear for cloud users and cloud providers? | Yes |

Why?
Starting from the premise that liability is always contractually linked to the end user service provider and the end user, as it happens with other services provided by consecutive providers integrated in a value chain, we should highlight the importance at a cloud computing services level of determining who the main parties in charge of operating the business service on top of the cloud are. Therefore, those roles are generally very clearly specified in a prior contract whether it be through adherence or contractually negotiated between the parties. It is certain, however, that a cloud computing service provider, in turn, may request to obtain from other operators other upstream provisions in the value chain and/or may outsource certain provisions that are necessary for configuring the end services to its customers. In other words, prior to the contract with the end customer, a more or less complex linkage of inter-company provision services relationships may exist, which may or may not be linked to one another and may be of different nationalities. All these players in the value chain must assume their responsibilities with regard to providing the part of the service that they are committed to (including the security of the service and the protection of privacy and personal data) and which are likely to incur non-compliance within the chain that will result in prejudicing the end user. Finally, regarding the terms and conditions for end users contracts, national consumer Laws always apply even in case of abusing clauses for foreign cloud service providers.

Legislative Framework

| Do you think there are updates to the current EU Data Protection Directive that could further facilitate Cloud Computing while preserving the level of protection? | Yes |

If yes, please describe.
The Public Consultation regarding Directive 95/46/EC has demonstrated the need for adapting the current regulation to the new digital world establishing a EU legislative framework that stands the test of time and serves as a reference on an international scale (future proof). The Communication takes into account the challenges arising from globalization and the impact of the new technologies, among which cloud computing services. We consider necessary that the new drafting of Directive 95/46/EC, should include improvements such as (1) a general principle that imposes transparency regarding who collects and uses the data, for which purposes, and for what period of time (2) the possibility of transferring data between entities of the same group of companies without the need for giving consent (3) improved conditions while

exercising the right to access, rectify, cancel or oppose and guaranteed data portabilitys (3) promoting privacy systems from their design. To avoid competitive disadvantages for European cloud services providers we propose a kind of European Safe Harbour Agreements covering the valuable data protection principles of the Directive 95/46.This would allow companies located in the EU to transfer data to any company outside the EU which had previously obtained the certificate of accession to the European Safe Harbour Agreement. This certificate will be issued by the EU itself, without having the European company the mandatory obligation of requesting for each international data transfer the correspondent authorization. We refer to the need to transfer data to companies outside the EU and not just to companies within the "same group of companies", without the rigidities that the current local legislation imposes. These improvements should lead to a fairly more flexible and pragmatic framework and would provide cloud computing systems specifically, and all other information society services in general, with a high degree of trust, security and protection.

| Are you aware of specificities in Member State data protection rules, or other legislation, that prevent you from using/providing cloud services within the EU? | Yes |

If yes, please detail.
We believe that a Digital Single Market for cloud services can succeed with the current European data protection framework but only if: (a) New more flexible ways to obtain informed consent are allowed. Data protection rules should not stifle innovation being flexible enough to allow the development of new services, with greater personalization and increasing mobility of personal data. This would allow EU companies to more equal compete with US competitors (b) Harmonisation of data protection legislation. The real problem is to have 27 different solutions depending on which Member State the customer is from. Cloud is a cross-border service. We call for as much harmonisation as possible, regarding to data breaches notifications and the different levels of sanctions imposed by each country (c) Simplification of Cross border data transfers. Instead of a per case notification the legislation should allow for a new European Safe Harbour procedure. Companies signing up for this procedure would then be able to more easily transfer data without undermining the level of protection of users' data. It is also important to simplify the regulatory environment and reduce the administrative burden. Without the above and others modifications, which don't imply a lowering of data protection standards, European cloud providers will be at a disadvantage to providers from the US and Asia. It would be desirable to achieve a same level playing field for all on line service providers running websites and providing services which target EU citizens irrespective of where they are located, however we are aware that this is an unrealistic goal at least in the short term. In the mid-long term we should strike for structural solutions as global data protection standards or if US and Asian data protection standards were to be brought in line with those of the EU. We suggest above and promote transparency at a global level so that EU customers are aware of the level of service they contract into

From your perspective, would it be useful if model Service Level Agreements or End User Agreements existed for cloud services so that certain basic terms and conditions could easily be incorporated into the contractual agreements?	Yes

If yes, further thoughts about how this might/should work

Telefónica's experience in contracting cloud computing services, as a provider as well as a customer, has shown that it is useful to include standard clauses of terms and conditions, provided these clauses are clear and simple in their wording as well as in their meaning. This measure, which cloud computing providers and customers adopt voluntarily and independently, would yield better results if it were adopted by the entire industry through standard consensual wording and were accepted by all players which would then be included in a Code of Conduct or Best Practice Guidelines for the global sector. In addition, it could be also positive to strengthen European citizen privacy Rights to elaborate Standard Contractual Privacy Clauses in such a way that the contractual sub-processor assumes that the receiving data is to be handled as though the EU Laws. On the other hand, model Service Level Agreements should not act as an obstacle for different competitive and strategic approaches by the different service providers, allowing a certain degree of differentiation among them.

Embracing interoperability

Please describe interoperability or (data) portability issues you have encountered when using/providing cloud services or are otherwise aware of. Our understanding: (1) interoperability is the capability of different cloud services environments (cloud providers, cloud services, cloud infrastructure) to seamlessly work together, (2) portability is the capability of cloud services consumer to move their data and services from one provider to another avoiding incompatibility issues. A federation model addresses interoperability and portability issues. Telefónica considers cloud services providers are meant to become mature enough in order to ensure native interoperability and portability but work is still in progress. Proprietary solutions may provide short-term benefit for pioneer cloud players to capture the early adopters' market but in the mid and long-term it will imply a negative impact in terms of interoperability and will create users lock-in. This market is meant to evolve very rapidly so now it's the time for education and awareness altogether with a powerful services deployment and consumption to consolidate the market, setting up in parallel well defined standards. Standards development should be carefully addressed to avoid the risk of reducing the pace of innovation. In this sense (1) Telefónica would support a worldwide attempt for standardization as we consider the current de facto solutions do not cover the market needs (2) Telefónica would strongly recommend not addressing a "local" standardization programme at European level. Telefónica offers our clients the assistance and protocols for cancelling the service and moving the clients' data to other

parties and we avoid creating artificial barriers for our clients to move out. Federation for the sake of interoperability and portability is not a simple task, potentially implying additional costs (higher prices) and presumably not being always feasible to offer an immediate and/or automatic response (i.e.: two cloud services may be interoperable, but transferring workloads from one to the other may require manual activities and human intervention)

Which existing or emerging standards support interoperability across clouds and portability of data (from one cloud to another)?

Please list and describe.

The main existing or emerging standards that support interoperability across clouds and portability of data are: 1-For IaaS services: DMTF (Distributed Management Task Force) Cloud Management WG is going to release a first Cloud Management API (Application Programming Interface) specification (EOY 2011). DMTF's Virtualization Management & OVF (Open Virtualization Format) in addition facilitates the virtual environment management portability of applications across clouds. 2-For Portability of Data in SaaS: some standards such as e-mail (POP – Post Office Protocol, IMAP – Internet Message Access Protocol), XML (eXtensible Mark up Language) feeds, (RSS – Really Simple Syndication, ATOM Publishing Protocol and Syndication Format), XQuery (XML Query Language), Open Document Format, WebDav (Web-based Distributed Authoring and Versioning), FTP (File Transfer Protocol), and web 2.0 open API specifications (facebook, Linkedin, etc.) have demonstrated that data-portability is possible. 3-For bulk data access: SNIA (Storage Networking Industry Association) CDMI (Cloud Data Management Interface) can be used for data portability across clouds.

Which are the most important standards that are currently missing but which you feel are necessary to ensure interoperability and portability? Please describe in detail the aspects they should cover.

With DMTF and SNIA standards, Telefónica believes that IaaS Cloud Portability will be pretty well covered with the proper evolution and adaptation to industry needs. The most important standards that are currently missing but that would presumably be necessary to ensure interoperability and portability are: 1-With respect to PaaS services: it lacks of standardized cloud-aware development frameworks and scalable application models. Open specification of multi-language APIs and technologies would be needed. 2-With respect to SaaS services: domain-specific application data interchange standards would be needed in the way of financial services (XBRL – eXtensible Business Reporting Language). Another option could be to make the Cloud Providers to offer open interfaces to access and retrieve application data.

Public sector clouds

What can the public sector do as a cloud user to support the emergence of best practices?
We suggest the EU to define a traceable and measurable plan for ensuring an intensive consumption of cloud services within the Public Sector organisations all across the EU so this way the EU can generate awareness and remove psychological barriers inherited from the big corporations when, at the end of the day, the cloud computing model is proposing a very natural and well-known consumption model: "this is the offer, this is the price, consume it at your own will". This will certainly help in implementing more efficient solutions and processes across the public sector. It could make sense to implement an awareness and education programme for the executive levels within the Public Sector to achieve a true understanding on the benefits of cloud computing for the economy and the Welfare state all across the EU. Several key topics would be addressed in such awareness program: 1- How can we foster the economy in the EU thanks to the cloud computing model? 2- How can we ensure trust in cloud services without preventing cloud provider to develop and achieve profitability and competitiveness? 3- Are we setting the basics for the professionals of the future? 4- Are we enabling our citizens with tools for a much more social and connected and smart society?

Please elaborate in particular on public procurement of cloud services.
The most challenging situation for a public sector organisation when purchasing cloud services is the current mandatory need to use CAPEX instead of OPEX. This becomes a clear barrier for adoption and something is meant to be changed in the budgeting processes in the public sector (i.e. moving from CAPEX to OPEX).

In particular, can the deployment of eGovernment and eScience infrastructures by the public sector act as an example for other sectors?

Absolutely! First, let be sure we are using cloud services for eGovernment and eScience (just a web portal does not imply the whole cloud computing service model is in place). So, adopting the cloud computing model for eGovernment and eScience would demonstrate the cloud computing model is secure, efficient, productive and an innovation enabler.

Please list Member State **initiatives** in the area of Cloud Computing that you are aware of.
1- United Kingdom: G-Cloud. 2-In Spain: Junta de Comunidades de Castilla – La Mancha: Cloud services platform for internal departments such as Education, etc.

Do you think they are:

Please elaborate.

How can Member States best cooperate to create interoperable solutions and shared best practices?
Telefónica considers that cooperation and knowledge shared between Member States is profitable, but our recommendation would be not to stick only the EU

scope, as interoperability and best practices are global matters. We would also recommend a closer collaboration between the executive levels of the Member States and a Cloud Experts Council, which could be based on EU experts, but trying to engage other countries' experts too. The profiles to involve should not be constrained to technical staff but we should also engage "business" experts and "services science" experts.

Future Research and Innovation programmes

Which are the most important technical aspects of cloud computing that researchers are currently working on?

Please explain the importance of each concrete example.

1- Automatic Scalability: for improving users Quality of Experience, performance, energy efficiency and cost; 2- Standardization and interoperability; 3-Security: for gaining confidence from enterprise and public sector; 4- Cloud Storage; 5-PaaS solutions.

Beyond these, do you see technical problems/limitations of current cloud service offerings that will require further research in the coming years?   Yes

Please elaborate.
1- Transition issues from customer data centre to private-hybrid cloud solutions and finally to a public cloud. 2- Cloud-aware Distributed Applications Models and Application design patterns for a federated Cloud that guarantee Fault Tolerance and also improvements on performance and Quality of Service (QoS). 3- Computing Cloud/Network Convergence: for controlling the full delivery path and assuring QoS and integrating network services in the Cloud. 4- Cloud Mobile: using the cloud as the computing power, virtualization on mobile device, techniques for less latency, etc. 5-PaaS evolution: A-Standardized and scalable PaaS: portable development and execution frameworks; B- Application Scalability and Self-healing advanced application monitoring, profiling and service characterization. C- Big Data service evolution from the cloud provider perspective in order to include it into the PaaS offering. 6-Secure Cloud: Identity methods, secure communications, data protection patterns in the cloud, and adaptation of Security normative to the Cloud.

Should public R&I funding be used to establish prototypes of new cloud infrastructures?   Yes

If yes, please describe types of projects/prototypes you would see as useful, and explain why.
It would be interesting to have a testbed designed to support research into different aspects the design, provisioning and management of services in a federated cloud environment. A collaboration community could be also created in order to share best-practices. The kind of projects and prototypes could be:

1-Federated Cloud Adoption: research on interoperability and portability which allows the progressive evolution from a company private data centre to a private-hybrid cloud and finally to a public cloud. Interoperability and portability demonstrative testbeds. 2- There is technical, economical and psychological aspect to solve such as how re-use or justify recently purchased hardware, how guarantee security, performance, other legal issues, etc 3- Best Practices and Benchmarking of Cloud Technologies: cloud services architectures and technologies comparison and benchmarking. Testbeds for evaluating the research results described in Q3. 4- Cloud-aware Application Design Patterns: Project and prototypes to demonstrate highly distributed and fault tolerant application design patterns for federated clouds, 365 days x 24 hours service guarantee is critical for many services.

Global solutions for global problems

What are the most important Cloud Computing problems that have to be discussed at global level? Please list and explain.

We consider there are several key topics to be addressed, not willing to consider them as actual problems. Those key topics are however important for developing this market and they are meant to be addressed at a global level. 1-Standardization: A-Interoperability / Federation B- Portability 2-Regulation: A-Data location, Data transfers, Data access, Data protection B-Intellectual property . C- Auditability 3-Taxes 4- Certification: A-Most of the areas suitable for certification are already covered by current standards: a-Security: ISO27001 b-Service Management: ISO20000 c- IT Governance: ISO38500 B-Additional areas are suitable for assessment: QoS (performance) C- Ensure competitiveness: a - Ensuring there are no differences among providers (taxes, legal, liability…) within the EU.b- Fostering commitment with the EU authorities, citizens and economy supporting those providers who invest in the EU

Which would be the right **fora**/apporaches to tackle them?

Please expand.

Starting from the premise that all the above mentioned challenges and main topics are not specific to cloud computing but to all Internet services, we consider paramount for all internet services in general and more specifically for cloud computing services, the acquisition of a global level playing field that guarantees a competitive scenario within Internet based on transparency and standardization. Therefore, we find necessary to obtain a balance situation that protects and watches over customers' rights and at the same time, to provide a competitive and ambitious framework that fosters and promotes European Cloud Computing services consumption. Otherwise, American and Asiatic cloud computing will take the lead in this globalize world.