



# THE LEGAL ISSUES IN OUTER SPACE DATA STORAGE BY CLOUD-COMPUTING SERVICES

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**Abstract:**

*Cloud computing services are increasingly being used globally and is a useful resource, viable and necessary for large companies. Using these services has some legal implications at national and international level. Data storage in outer space is a real problem because a large space of time this was regarded as a legal vacuum. The problem drones floating in outer space has some legal implications internationally.*

**Key-words:** *Outer space, cloud computing, drone, legal implications, applicable legislation*



## 1. Introduction

The moments of launching of the first satellite, getting in the cosmic space and then the first step on the Moon have been and are still considered to be reference moments in the science, technique and human intelligence evolution.

Time has passed, the technology has evolved and here we are today in a moment in which the internet has become vital for the human life, being a service as common as drinking water or electrical energy. Part of this active, alert life style, based on the internet and its great speed is also the cloud computing service [1].

This type of service has been in practice since 2006-2007, and its denomination derives from the symbolical graphical representation of the Internet, often encountered in the shape of a cloud.

Taken word by word the expression cloud computing is a modern concept in the area of computers and informatics, representing a distributed set of computing services, applications, access to information and data storage, without the need of the user to know the location and physical configuration of the systems that provide these services [2].

The cloud is a well-known metaphor of the internet, a familiar cliché, which combined with the word “computing”, gives birth to an expression which may seem grandiose to some or just a nebula to others.

In reality, cloud computing doesn't have to suggest anything else than simplicity, being in fact a secondary possibility, a follow up of the easiness which with we can now access all the servers and the Internet interconnected computing centers. These services are similar to an electrical network to which you connect to and pay according to the own consumption of electrical energy. The usage is performed by request and in variable quantities, and the payment is made according to the consumption, meaning that what you do not use, you won't pay.

There are three major categories of cloud computing services:

- Software as a Service (“SaaS”): The SaaS providers grant access to informatics programs and applications, through the internet, to organizations or physical persons which choose not to install or buy licenses for the basic informatics program.
- Infrastructure as a Service (“IaaS”): Through IaaS is provided access for organizations to a series of informatics resources (servers, informatics programs, storage space) through a completely externalized space [3].
- Platform as a Service (“PaaS”): PaaS offers people the possibility to develop, test and launch their own applications without the need and costs for basic software and hardware purchases.

These services have a series of advantages for both physical persons and juridical ones, but they come in a package with also a set of problems to solve. The advantages of such services could be: good synchronization and simplicity of the data of the user which uses more than one devices linked to the cloud, online documents from cloud can be edited through web applications, increased computational speed and storage capacity, but without the investment in the own configuration, and the data cannot be stolen and the data carrier cannot be damaged.



Through the disadvantages which these services have one can find: fast and reliable internet connection, the lack of confidence of the users in the data security from the cloud and last but not the least the complex legal situation which accompanies this type of services, because the user isn't located in the country or countries in which the servers that store his data are.

In these conditions the insurance of confidentiality, of data access rights in the contextual and also juridical situation of this type of services is somehow uncertain.

If at a national level we can say that is applied the national legislation of the state in which these servers with stored data are, when we talk of IaaS, of completely externalized databases, and we do not refer to the state of origin of the companies that provide these services or to the users nationality, but to the storage of this data on the so called drones which will float in the extra-atmospheric space, we can say that we are facing a serious juridical issue, linked to the juridical system of the storage spaces and of the cloud computing services.

Although not taken serious in the beginning, these drones practically create the viable solution for certain companies which speculate this "regulatory vacuum" with which the extra-atmospheric space is confronted.

We say this because the lack of conventional rules regarding the extra-atmospheric space has determined some jurists to sustain that in the area of legal space, we find ourselves in a "juridical vacuum", and by consequence the states, organizations or juridical persons aren't forced to respect not even the minimum of legal rules in the space.

The specific doctrine of the international law doesn't recognize the right of the states to benefit of absolute action liberty or unlimited in the extra-atmospheric space. They must perform their activity in such a manner that it won't hurt the rights and interests of others.

## **2. The international law in this field**

Since the beginning have been concerns of establishment of the legal regime of the extra-atmospheric space and of regulation of spatial activities, which have taken place within the United Nations, through the creation, in 1958 of a special committee – The Committee for peaceful usage of extraterrestrial space – which has built, after four years, 2 sub-committees: Sub-Committee for technical-scientific aspects and the Juridical Sub-Committee [4].

The adopted resolutions by the General Assembly of ONU regarding the usage of extra-atmospheric space have fueled the codification in this area, leading to the implementation of several juridical international tools in the years that followed. All these lead in the end to the making of the international space right, which can be defined as a branch of international public right, made of the totality of the international juridical rules, conventional and customary, which have as purpose the relations between the states, between them and some international organizations, in the exploring field and cosmic space usage for peaceful purposes and for the well-being and usage for all mankind.

Although rudimentary at first, the sources of international special right have constituted the base of realization of the rules framework of this relatively new branch of international right [5].



Although at first the issues regarding this new view as subjects of this new ranch of right only the stars, since the development of the technology and growth of accessibility to it, have made those new subjects of right to become international governmental organizations like ONU or general or regional specialized organizations.

The format of the new juridical framework was guided by a set of principles which are defining for the handling of such big space. Among the general principals of the spatial right there are:

- The principle of using the extra-atmospheric space for peaceful purposes;
- The principle of using the extra-atmospheric space for the interest of all mankind;
- The principle of free exploration and usage of extra-atmospheric space by all states in conditions of equality;
- The principle of national non-closing of some part of the extra-atmospheric space, through the sovereignty proclamation, through the usage or occupation, or through any other mean;
- The principle of international cooperation and reciprocal assistance in the extra-atmospheric space;
- The principle of international liability for actions that take place in the extra-atmospheric space by states and international organizations;
- The principle of keeping the jurisdiction and control of the states in which launched objects in the extra-atmospheric space are registered to, over the objects and staff that are in the extra-atmospheric space or on a space body;
- The principle of immediate information of the states and of the general secretary of ONU about any phenomena discovered in the extra-atmospheric space.

Not having an expertise in the field, the specialists have considered these principles as axioms of the exploration of the extra-atmospheric space. Comparable and resembling to the juridical regime of free seas, the juridical regime applied to the cosmic space is that of space unruly to sovereignty of the states.

To the extra-atmospheric space cannot be applied, for the definition of the juridical nature, the notions of *res communis omnium* or of *res nullius*, taken from the roman right. Applying these notions which assume the idea of a property of lack of property is rejected in the present and in which concerns the juridical regime of the free sea.

However, the states exercise in this space their sovereignty over the vehicle space which they launch and which are registered in their documents, as per the resolution 1962 (XVIII) of the General Assembly of ONU. << Declaration regarding the juridical principles that rules the state activity in the field of exploration and usage of the extra-atmospheric space.>>[6].

Although the frame has been established at the beginning of exploration of the extra-atmospherical space, these fundamental principles imposed by ONU, are still valid and applicable in this space. Also the principles forbid the usage of the extra-atmospherical space for violent purposes, for threatening by force or using force against the territorial integrity or political independency of a state.



This framework of rules created for the extra-atmospherical space, is a very generic one, and the obvious evolution and accelerate progression in the field, among which of the services like cloud computing have determined the modification of the approach in what concerns the juridical regime applicable to this space.

Practically, the basic forms of this service, data storage on virtual servers and access to the protected materials by the copyright legislation, according to their usage, raises numerous juridical issues, which often search their solution in the court of law. The usage of these services has been extended in all fields, from offering of juridical services up to consultancy or accountancy.

### **3. The future of cloud computing services**

Publicity for this type of services caused it to evolve very fast, being also accompanied by the greatest risk it represents, the publication to third parties of information stored by clients in the cloud system, which raises some question marks about the reliability of confidentiality of these databases.

The evolution of this type of services has been made through social networks, but also through mobile telephony companies which provide such services. An example would be Facebook which intends to build drones and satellites placed on low orbits, which allow the connection to the Internet through infrared laser. A similar project is also developed by Google, the Loon project, which tends to fulfill the same purpose but by using balloons placed at high altitudes [7].

The problem that is raised is given by the juridical regime applicable to these drones which will be used as bases for data storage on one hand, but also by the apparition of new international right subjects, meaning juridical persons.

Another problem that occurred is the control from the juridical point of view of these data bases and their submission to national legislations from different domains. An example would be the threat given by The Pirate Bay, one of the greatest websites of torrents in the world.

This explored the rules vacuum still specific to the area and practically invented the piracy, without barriers or stoppings, through some GPS controlled drones, on which their servers will be located, not being able to be shut down by any institution or organization.

They went through with the idea and proposed that these drones to redirect randomly the traffic from one server to another, in such a manner that the signal should never be stopped [8].

The juridical issues related to these services don't stop here. Also, from the point of view of taxing these services there is a set of ambiguous juridical situations. The most important is the lack of an actual headquarters for these databases, or in some cases even of the company that provides these services, all the activities being developed in the virtual space. In the global context of the providing of the services of cloud computing, the issue raised concerns in which measure the providing of the services or even their usage can generate a risk of permanent headquarters for the provider or beneficiary of cloud services.



Present day rules for the determination of the existence of a permanent headquarters gives great importance to the physical person, the concept of permanent headquarters being defined in most national legislations and in the Model Convention OECD as a “fixed location of activity development” to a non-resident [9].

Also, at an international level, especially in the present day global conjuncture, animated by various inter-ethnic or civil conflicts, the problem raised regarding these databases is that they might be used as part of a cybernetic war or influence in a bad way a classic armed conflict, through processing and interception of some data.

#### 4. Conclusion

The juridical regime of this space should ensure its exploration and exploitation in exclusively peaceful purposes. The juridical statute consecrates the usage of this space in purposes exclusively peaceful, having the statute of a space totally demilitarized and neutralized. Thus, the problem of demilitarization and neutralization through its close connection to disarmament could not be solved until present day.

There have been a series of international agreements, with the purpose of demilitarization and its total neutralization. Such an example is the Moscow Treaty from 1963, which forbid the nuclear experiences in the cosmic space, or the 1884 resolution, adopted by the General Assembly at October 17<sup>th</sup>, 1963, through which is saluted the agreement between the URSS and USA, of not placing in the orbit, objects that carry nuclear weapons or other types of weapons of mass destruction, inviting all the states of the world to not do that kind of acts [10].

Through such measures, the space tends to acquire the statute of a large denuclearized area, creating the premises for the demilitarization and its total neutralization, which might be fulfilled simultaneously with the measures of terrestrial disarming, to which they are closely linked.

At national level a series of states have tried to regulate the legal framework of such cloud computing services. Thus, in July 2013, in USA have been adopted statutes regarding the legal usage of cloud computing. A series of professional organizations have regulated the usage of cloud computing for the current activities drawing attention over the reasonable diligence imposed to all entities which implement cloud computing type applications at a professional society level. These professional associations have adopted a series of very strict regulations, meaning that the burden of ensuring the information confidentiality is dealt with by the providers of cloud type services, meaning that they are legally accountable for its reliability [11].

Also at UE level there is interest encountered for the personal data protection processed in such data bases.

The regulation framework for personal data protection is given by art. 16, line (1) of the Treaty Regarding the functioning of UE (TFUE) and by art. 8 from the Carta of fundamental rights of UE [12].



Going further, UE has acknowledged the creation of a regulation framework made of rules with unitary application, which ensure free circulation and in safety conditions of personal data between the member states.

Thus, the European Commission has initiated since 2012 a public debate, regarding the adoption of two regulation acts: a regulation which establishes the general framework of UE regarding the data protection, which replaces the 95/45/CE Directive, and a regulation which institutes the rules regarding the personal data protection, processed with the purpose of prevention, investigation and criminal persecution of criminals, but also for the purpose of linked juridical activities [13].

Linked to this subject, in ONU have been also examined the proposals regarding the production of security regulations for the usage of nuclear energy in space. The result has been the adoption of a resolution through which the launching states have been requested to inform the interested states, in case a spatial object that carries sources of nuclear energy is at risk to fall to the ground and has been requested to be given immediate assistance in case of accident, for the search and recovery of the objects and also for decontamination.

It can be observed that the regulations adopted nationally, regionally and internationally in this field are far from regulating in a satisfying manner the problems. However, we can say that we are on the right road in this field. It has been acknowledged that we have a regulation semi-vacuum in the field and that immediate measures have to be taken for the juridical regulation of this space. The point is that the regulation of the extra-atmospherical space and the problems regarding the data storage through cloud computing service to keep up with the technological development from this field, in order to avoid the confrontation with such juridical issues.

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