UNIVERSITAT JAUME I,
A SHIFT TO THE CLOUD MODEL.

Paúl Santapau[1], Manuel Jose Ginés Rodríguez[2], Vicent Andreu Navarro[3] and Manuel Mollar Villanueva[4]

[1]Technology Innovation Specialist, santapau@uji.es. [2]External contractor, ginesm@guest.uji.es. [3]Senior Technology Innovation Specialist, andreuv@uji.es. [4]Director of Technology Support Project for the Electronic Administration Deployment, Universitat Jaume I, Spain, mollar@lsi.uji.es.

KEYWORDS
Cloud, Google Apps, Collaborative tools, Infrastructure, Authentication, Security, Integration, eLearning.

1. INTRODUCTION
With the improvement of the reliability and the integration possibilities they offer, cloud-based services are becoming more and more popular nowadays. Big companies, such as Amazon, Microsoft or Google, are trying to give users a solution in which the infrastructure maintenance costs can be dramatically reduced.
University Jaume I has been committed to information technology as its sign of identity, becoming a proactive and early adopter of new technologies in the pass. In this context of continuous improvement, the University has deployed a plan to provide several services based on a cloud solution.

1.1. BACKGROUND
When the governing bodies of the Universitat Jaume I decided to migrate several services to a cloud-based provider, an in-depth study was done in order to asses the available platforms, evaluate the risks (both from the technical and legal perspective) and chose the appropriate solution. This platform resulted to be Google Apps because of its stability, reliability and possibilities of integration. In this presentation we will explain all the advantages and drawbacks of the adoption of this type of solution and also we will expose the deployment process from its very early phases to the full migration of the services.

2. UNIVERSITAT JAUME I, A SHIFT TO THE CLOUD MODEL.
University Jaume I relied on a self operated email system who was composed by several machines that operated more than fifty thousand mailbox accounts. As any email system operated by big institutions, the spam was a huge problem to the extent that, during certain periods of the year, the amount of spam that reached the systems represented 80% of the total received email (i.e. in August 2010, the number of incoming emails was 18 million, within that amount only 3 million were licit messages and 15 million were spam).

This problem leads to over-sized infrastructure needs in order to provide an acceptable service and also the operating and maintenance costs are higher.

By the time this problem was getting worse, the University governing bodies were more and more confident about cloud technologies being a reliable option and then, the Technology Innovation Laboratory (TecLab) initiated a study to assess the different available platforms.

The solution to be adopted should provide appropriate long-term value and make possible the future adoption of collaborative tools (such as Documents, Spreadsheets, Images, ... online edition).

Microsoft Office 365 and Google Apps were studied, because other platforms did not offer such a wide range of collaborative tools. By the time of the decision, Google had successfully deployed its solution in several Universities (mainly located in the EEUU and UK), thus they could offer a well-tested platform. The completeness of the API was considered also a key factor for the final decision because this API proved fully capable of managing the migration of the service and the provisioning process.

Thus, the next step was to define a planning to migrate several services to the cloud. The very first steps were to integrate the services back-end making use of the Google Apps API and then migrate and synchronize the user accounts. For a second phase, the authentication was integrated by delegating it to RedIRIS (an Spanish academic and research network), this brought to the users the possibility of using several mechanisms for authentication, such as digital certificates from different providers or even STORK (Secure idenTity acrOss boRders linKed) credentials.

The services delivery was performed in different steps. First, Google Docs application was made available to the University Staff. In a second phase, Calendar, Sites, GTalk and most of applications of the suite, even those non officially supported by Google, were put at the disposal of the community. The Email migration was divided into two steps, the first step was a voluntary one in which selected users were able to indicate the willingness of having their Email migrated. The second step was a compulsory migration of the service in which the remaining accounts were moved to the cloud.

By the time of this writing, Google Apps services are being widely used in the Universitat Jaume I with more than 8000 single accesses a day and almost 40000 documents created or uploaded by 5000 creators and 27000 collaborators.

To conclude, we must say that, despite the obvious long-term cost reduction, the migration to the cloud has had considerable efforts linked to development, training and support that cannot be ignored. Also, regarding to security, some liability is transferred from the data owner (the University, acting on behalf of the academic community) to the data processor, (in this case Google) that is responsible for the implementation of the needed safeguards in its services and to inform the user in the case that any incident happen.
It must be taken into account that the agreement with most of cloud-service providers is a "Contract of adhesion", that meaning that the University accepts the conditions offered by the provider. So, as there is not much leeway for adapting the conditions of the service to the particular specifications of the organization, those conditions must be carefully considered in advance in order to guarantee, for instance, that the support offered by the cloud provider is enough (because of the high dependency created on the provider) or that changes in the applications (software updates) have a limited impact on the user. If needed, additional support, new training courses or developments must be planned.