(HEPC) Erasmus+ Project

Boosting Higher Education by Developing Private Cloud Data Centers

1- Overview:

IT services are currently got lots of attention especially in academic sectors. The vast increasing amount of information passed through any university faculties and departments within limited IT infrastructure available affects the data processing speed and quality. Any university may struggle to meet service levels and maintain backups across its massive and widespread environment. IT costs are dramatically increasing which add more difficulties for the university to meet the growing capacity for its students and employees. Moreover, purchasing new IT resources is a costly process and may need long time to complete. Sometimes, same IT infrastructure (e.g., operating systems, software packages) is ordered for each department separately. The capability to search and locate data through the entire university is still not an easy to achieve. Data integration is another drawback.

To remedy such problems and boost the performance among the world's academic institutions, any university needs a fast and flexible IT infrastructure to meet users' needs. Cloud computing can be a promising solution which can reduce costs, increase speed and flexibility of the IT infrastructure, applications and services. As a result, the development of private cloud data center for the university is essential to get its IT infrastructure performing better, satisfying its users, increasing the quality of service, controlling the data flow, processing data efficiently, eliminating duplications and decreasing costs.

The private type of the cloud data center is the solution because it can merge the proses of the public cloud with those of on-premise data center, such as standardization, self-service automation, scalability, high security,

customization capabilities, and increased control over quality of service. Providing Infrastructure As A Service (IaaS) as starting point, private cloud data center can efficiently provide the most essential IT services such as computing, storage and network resources with much less cost. Moreover, private cloud can be easy extendable to cover other cloud models (i.e., Process As A Service (PaaS) and Software As A Service (SaaS)) and to include resources from a public cloud (i.e., hybrid cloud model). Moreover, building cloud data center will enable the university connecting and communicating efficiently with other academic sectors to enhance the academic cooperation with local, regional and overseas partners.

In many cases, and in particular, in countries like Jordan, Egypt and Syria, the lack of capital investments and the lack of integrated vision and precise information about cloud centers and its impact on higher education did not encourage decision makers to take solid actions in what direction to move. Better understanding of the educational and technical impacts of preparing the cloud centers enables faster and more sustainable development and improvement of the HE sector. Moreover, it might establish a better connection with enterprises and international academic instantiations. However, this field suffers from the lack of experience and proper knowledge. This deficit can be reduced not only by building the center itself but also by a proper preparation of qualified working force needed to sustain the development and enhancement the higher education sector.

The University of Damascus, the largest and most prestigious public university in Syria, is one of the universities that suffer from aforementioned IT difficulties and consider developing private data cloud center to improve the level of research, scientific development and services. Listing the problems and suggested solutions, Damascus University is seeking interested local and regional partners that might have similar problems (i.e., in countries like Jordan, Egypt and Lebanon), and European partners who have strong experience in cloud computing to cooperate in achieving the aim of the project under Erasmus plus funding schema.

2- Project aim:

Develop and Establish a Private Cloud Data Centre in Damascus University and local or regional partners' premises to boost higher education processes by reducing costs, increasing speed and flexibility of the IT infrastructure, applications and services.

Achieving the project aim will add a great value to:

a. Deepen the understanding of cloud impacts on higher education sector.
b. Improve the quality of higher education process to prepare well-educated and trained students.
c. Building the capacity of teaching and technical staff in the associated universities.
d. Enhance the academic cooperation amongst the Middle Eastern academic institutions and overseas universities.
e. Promote technologies associated with the establishment of proper cloud centers.
f. Enable a better connection with the industries.

3- Project Objectives:
a. Survey the state of the art literature on the Cloud in Higher Education.
b. Study similar successful projects to gain the essential knowledge about how to build a cloud data center.
c. Perform gab analysis to identify the distance between our resources and the required cloud infrastructure.
d. Identify all types of IT services needed to boost the higher education processes including teaching and research.
e. Establish different private cloud data centers with all possible facilities at the partners' premises.
f. Integrate each cloud data center established with the others to facilitate resource sharing.

g. Set up training courses for the center management team to ensure sustainability.

4- **HEPC Project and Erasmus+ Priorities:**

Related intersections for this project with regional and national priorities are under

   a. **Category B - Improving quality of education and teaching**
      i. Enhancing and developing Learning and teaching tools.
   b. **Category C - Improving management and operation of higher education and institution**
      i. Enhancing University services such as student and research services.
      ii. Internationalizing high education institutions.
      iii. Developing research and innovation capacities.
   c. **Category D - Developing the higher education sector within society at large**
      i. Enhancing University-enterprise cooperation

5- **Project Partners:** Seeking interested organizations (Universities, relevant HE institutions, research centers and related business organizations) in EU countries and South-Mediterranean region to participate in creating and developing this project.

Some of those organizations might be as follows:

   a. European universities that have similar experience in developing cloud data centers.
   b. Related business organizations in EU and South-Mediterranean region.
   c. Related Lebanese, Jordanian and other South-Mediterranean region universities that have relevant experience or interested in developing such cloud data centers.
   d. Syrian privet and public universities that will benefit directly from the centers.

Finally, we would like your organization to be an added-value to **HEPC Project**. We appreciate your kind response by sending us your approval via e-mail and then we will arrange Skype meeting to discuss the roles of each partner.

Best Regards,