For Immediate Release

AUB to develop its high performance computing capacities in the service of research and oil exploration

Beirut, Lebanon- 09/12/2013 – The American University of Beirut is taking steps to become a high performance computing center that will be able to process massive amounts of computer data in the service of research and science, including oil and gas exploration.

AUB Provost Ahmad Dallal revealed AUB's strategic academic initiatives, during a conference titled, "Big Data, Big Computing & the Oil Industry: Opportunities for Lebanon and the Arab World," organized by the Munib and Angela Masri Institute of Energy and Natural Resources, the AUB Computational Science Program and the Center for Computational Science at University College London (UCL) at the Jassim Al-Qatami Engineering Lecture Hall on December 6, 2013.

Big data usually includes data sets with sizes beyond the ability of commonly used software tools, requiring instead parallel software running on tens, hundreds, or even thousands of servers.

According to Wikipedia, supercomputers, or high performance computing, play an important role in the field of computational science, and are used for a wide range of computationally intensive tasks in various fields, including quantum mechanics, weather forecasting, climate research, oil and gas exploration, molecular modeling (computing the structures and properties of chemical compounds, biological macromolecules, polymers, and crystals), and physical simulations (such as simulations of the early moments of the universe, airplane and spacecraft aerodynamics, the detonation of nuclear weapons, and nuclear fusion).

In other words, high performance computing bridges theory and experimentation and allows researchers and engineers to probe and examine physical phenomena that would have been impractical or impossible without computers.

"AUB is interested in advancing computational science and engineering to fulfill a translational role in developing leading edge research in the diverse fields of science and technology making," said AUB Provost Ahmad Dallal. "The computational capacity of the University is important for venturing into solving complex and advanced real world research problems in the medical and energy fields, both of which are of central interest at an international level."

He added: "The need for skilled IT experts in software and hardware world-wide is increasing at a very high rate and AUB is considered as one of the institutions that have the capacity to educate and train many of the most talented people in the Middle East."

This is why the University has established the High Performance Computing (HPC) cluster to enable world leading research to be conducted at the University, and the search for a skilled academic director has been launched. Also, the University is planning to establish a partnership with University College London, a co-organizer of the conference, to collaborate on educational opportunities and advanced training in high computational computing and information technologies.

Already, the university has multiple operating systems for high performance computations and several faculty members who contribute to big data domains. The faculty contributing to big data domains come from different home disciplines in computer science, chemistry, physics, electrical and computer engineering, mechanical engineering, chemical engineering, life and biomedical sciences, where the production, management and analysis of “big data” is also increasingly a key challenge.

“An economic transformation will be happening in Lebanon as a result of the rapid growth of the oil and gas industry in the country,” said Makram Suidan, dean of the Faculty of Engineering and Architecture (FEA) at AUB. “This poses major opportunities and challenges for the education, training and skills of the Lebanese population, as well as that of the wider region.”

Suidan considered that the need for a workforce trained in modern methods of information technology, including many levels of computing expertise and the management and analysis of "big data" is essential, and the investment of international oil companies in this endeavor within Lebanon would therefore be entirely relevant at this time. Such investments necessitate a transformation of the educational curriculum to ensure that the workforce of the future is suitably educated and trained to exploit these scientific and technological developments.

“FEA is interested in creating relevant training and leading edge research capacity in diverse fields of technology, while fostering industrial and public sector engagement to inform our educational developments and resource allocation for research support in the target field,” he added. “In cooperation with the Masri Institute and the Lebanese Petroleum Administration Team, the FEA has formed research clusters in areas related to the gas and oil sector.”

“There is no doubt of the potential of big data as a transformative opportunity for Lebanon and its prospective workforce,” said Patrick McGreevy , dean of the Faculty of Arts and Sciences at AUB. “The country desperately needs those jobs and the computational methods’ training that will ensure those jobs.”

“We are accumulating data at an alarming rate with the challenge of making it accessible and understandable to exploit the knowledge,” said Peter Coveney, director of the UCL Centre for Computational Science, one of the keynote speakers at the conference. “Both data gathering and computing… are needed to make sense of the volume, variety and velocity of the gathered information.”

Coveney considered that big data and big computing have now become a central theme to all departments of activity and there is a huge gap that needs to be filled with the right IT skills to advance the knowledge economy.

Stefano Martinotti, McKinsey & Company Partner noted that even small efficiency improvements and gains can be translated into increases in billions of dollars of revenue at the end of a fiscal year, significantly affecting the profit and loss statement of a company.

“The oil companies have now grasped the advantages of big data and big computing and are closing the gap with huge investments in this sector,” said Martinotti. “Lots of talent is now needed to staff this sector and ensure its proper functioning.”

Hany Azzam, application platform technical lead at Microsoft MEA Centre of Expertise, and Sebastian Del Bano Rollin, senior research fellow at the UCL Centre for Financial Computing and Analytics, highlighted big data’s unleashing the full potential of the oil and gas sector and the big-data-driven business impact on finance, retail and e-healthcare, respectively.

In conclusion, McGreevy hoped that the oil and gas boon would benefit the country as a whole, and not just serve the interests of an elite minority, forging a modern Lebanon in the image of a Norway with the oil wealth being distributed among the population at large, creating a more diverse and democratic country.

The conference was held in conjunction with the Lebanese International Oil & Gas Summit, held at Phoenicia Hotel on December 4-5, and with the support of the Lebanese Petroleum Administration which is collaborating in the organization of the event. The Masri Institute serves as an interfaculty coordinating unit in AUB, and a catalyst for advanced research in the sciences and engineering for the management and conservation of natural resources and energy.

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Note to Editors

About AUB

Founded in 1866, the American University of Beirut bases its educational philosophy, standards, and practices on the American liberal arts model of higher education. A teaching-centered research university, AUB has more than 700 full-time faculty members and a student body of about 8,500 students. AUB currently offers more than 100 programs leading to the bachelor’s, master’s, MD, and PhD degrees. It provides medical education and training to students from throughout the region at its Medical Center that includes a full service 420-bed hospital.

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