

*New Initiative for Science and Technology in the Twenty-first Century**

Foundation of Science and Technology
University of Science and Technology (UST)
&
Technology Park (TP)

Chairman of the Board of Patrons
H. E. President of Egypt

Proposed Plan and Structure
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Synopsis

Under the patronage of H.E. President Mohammed Hosni Mubarak, it is proposed to create a nonprofit Foundation of Science and Technology, with the mission of establishing the University of Science and Technology (UST) and the related Technology Park (TP). This project offers a means for building an advanced science base in this age of science and globalization, which requires the integration of human resources, technology, and capital. It is clear that a strong science base forms the foundation for technological advances, and both are the driving force for prosperity of the nation and for secure peace in the Middle East.

UST and TP are to provide the nucleus for a center of excellence, with the aim of: 1) the education of the young generation in world-class science and

* Reproduced From *Voyage Through Time – Walks of Life to the Nobel Prize*, A.H. Zewail, American University in Cairo Press (2002).

technology; 2) the development of new technologies in the country and the region; and 3) the participation in the technology-based global economy, regionally and internationally. The founding research/education institutes are unique in their focus and represent twenty-first century frontiers: genetic medicine, energy and water resources, femto- and nanotechnology, information technology, and others.

In order to be successful, this historic undertaking requires the following three essentials: *new academic and administrative plans*, which include the development of a new education and research curriculum for a select number of students and researchers; a *new law*, which permits this center of excellence to achieve its goals; and a *new capital endowment*, which should be devoted to the project without any personal profit motive.

The academic and administrative planning of the project has been structured in detail, and is outlined below. As for the capital, it is anticipated that support will come from two sources without any burden on the government: tuition charged for undergraduate education (similar to the American University in Cairo) and income from an endowment raised especially for the advanced research and high-tech endeavors of UST and TP.

The site for the UST and TP project on a parcel of 300 acres in October 6 City has already been apportioned by the government of Egypt (the groundbreaking ceremony was held on January 1, 2000). The fundraising campaign can only begin after the approval of the new law. Already some prominent people, Egyptians and non-Egyptians, have expressed willingness to participate in supporting this project. Equally importantly, prominent scientists from around the world have offered their help in this new initiative. The patronage of President Mubarak is essential for the success of this project, which should propel Egypt and the Arab world into a renaissance in science and technology.

Historical Perspective

Egypt and the Arab world have historically made major contributions to the advancement of human thought and civilization. Over many millennia, Egypt, the birthplace of scientific thought, made discoveries and inventions in science, engineering, medicine, and other fields. Nearly a millennium ago, Arab civilization and its scientific advances reached Europe and Asia; without doubt this contact was significant to the birth of the European Renaissance. In recent times, however, the contributions from Egypt and the Arab nations to world science have been modest. This situation has resulted in a “brain drain” of many able scientists to the West and the necessity of importation of technology from the West. The brain drain coupled with the absence of a solid and sustained science base locally has defined the current technological status of Egypt and other Arab countries and hence their impact on the world market. However, the Arab world is rich in resources, both human and, in many countries, financial. Thus, there should be no fundamental barrier to building an essential science base here. Moreover, such a science base is critical to the future of the Arab world, especially in the context of any hoped-for peace in the Middle East.

The twentieth century has witnessed revolutions in science and technology. The invention of lasers, computers, and transistors has resulted in new technologies that have transformed our society. Discoveries have spanned the entire universe, from the world of the very small to the world of the very large and the very complex. Quantum theory, relativity, new dimensions in time and space (femto and nano), black holes and the expanding universe, and the deciphering of the genetic code are examples that have transformed human thought and are the basis of new quests for new frontiers. In the twenty-first century, new discoveries will surely be made and will affect society in every respect—human health (medicine), human informatics (Internet, etc.), and human existence (environment). Globalization drives the integration of human resources,

capital, and technology, making it impossible for any nation to influence the global economy in a significant way without a strong science base.

The University of Science and Technology and the associated Technology Park constitute a focused new concept designed to bring about a serious participation in twenty-first century science and to advance local technologies to the world-class level. With the first Nobel prize in science for Egypt and the Arab world and the desire of the respective governments and their peoples to reach this level of accomplishment, excellence is a goal that can be achieved in a relatively short time. What is needed is a commitment to excellence within a new system capable of providing present and future generations with the opportunity to build a science and technology base of international stature. The ultimate goal is to advance the means for the betterment of human health and defense and to acquire new knowledge, from atoms to outer space. The science base is the basis for endless frontiers. UST is not a luxury – it is of vital importance to the nation and to the region.

UST Goals and Uniqueness

The concept behind UST and its partner TP can be realized only if a *highly select* group of faculty and students form the University. The plan is to build a campus, housing a maximum of up to five thousand students and faculty, that is equipped with state-of-the-art facilities and research laboratories. The campus will be self-sufficient and will provide a true scholarly environment to nurture new ideas and make new contributions. UST will emphasize learning and communicating scientific ideas and technology at the level of the advanced nations (the United States, Europe, Japan, etc.), but it will maintain an equal focus on the home culture, pride, and ethics. UST will be unique for several reasons:

First, UST will prepare a new generation of students with versatile and up-to-date qualifications in science and technology. The current state university

system is less than able to provide such critical preparation at the international, competitive level.

Second, UST will put Egypt and the Arab world on the international map in research and development, permitting serious participation in world science and technology and exchanges with world cultures. The current university system is less able to provide such participation in a significant way.

Third, UST will have an enormous impact on society and the world, seeding the “scientific society” of the future. As an enlightening center of excellence, UST will engender a special pride in the population, help other institutions achieve excellence through mutual interactions, and communicate advances on the new frontiers of science and technology to all segments of society, including the vital industrial, economic, and agricultural sectors. It will forge new links between scientists and laypersons, merging scientific and societal values. These contributions will be of significance nationally and internationally, as they will build bridges and establish rational dialogues.

UST Structure

The basic structure of UST is as follows:

- The undergraduate program will, initially, emphasize the basics of science (mathematics, physics, chemistry, engineering, economics, etc.) at the highest level, along with a multidisciplinary curriculum. In addition, it will introduce, especially at the freshman level, some courses in languages and humanities with cultural, historical, and artistic appeal. With this curriculum, the initial preparation of students of different backgrounds will end with candidacy for admission to the UST advanced program. This program provides specialization in different areas of multidisciplinary science, engineering, medicine, and related areas.
- For the graduate schools, institutes are to be established at the highest level possible, similar in spirit to the Max-Planck Institutes. Ideally, these institutes

should be devoted to new fields to ensure originality and encourage creative thinking. This means aiming at new frontiers that have special relevance to problems in Egypt and the region, such as energy, information, and genetics.

- The founding institutes should not exceed five to seven in number, and all should be twenty-first century frontiers: molecular medicine, genetic engineering, informatics, materials, lasers, water resources, global changes, space exploration, etc. International programs should be established to encourage student and faculty exchanges.

UST Organization and Support

UST is a nonprofit organization administered by the Foundation of Science and Technology. Both the foundation and the university should function under the umbrella of a new law, signed by President Mubarak and approved by the People's Assembly, which gives them independence as a nonprofit, nongovernmental organization. The operational structure of UST must be free of bureaucratic hindrances, but with careful accountability for 1) resources and expenses and 2) the level of excellence. Support for UST and its TP should derive mainly from two income streams: tuition and endowment. Tuition should cover the operating costs of UST, and the income from the endowment should maintain the research and development activities at the institutes. The initial endowment should be the result of a fundraising campaign for one billion dollars, secured in full at the end of the first five-year phase. It will fund a grant system that supports research with an emphasis on creative ideas and teamwork. A fellowship program will also be established from the endowment for exceptional students.

The world will take note of UST's significance when it is fully operational within its first five-year period; in another five years the university should stand out as a distinguished world-class institution. In time, after the first decade, the addition of new institutes will need to be addressed, with an eye to maintaining UST's unique size, structure, and excellence.

The Technology Park

The interface of UST with society will be through a Technology Park (TP) that will provide young entrepreneurs with the opportunity to develop new technologies and industries; laboratory space and financial support from UST and its parent foundation will be provided on a contractual basis. Equally importantly, the TP will provide a problem-solving body (a research corporation), important to different sectors of high-tech industries. The realization of both objectives in UST's TP will cement the link to society by keeping the young entrepreneurs in the country and advancing new technologies; moreover, in the long run it will bring in valuable income resources for UST and the foundation through joint agreements.

Administrative Structure

A distinguished Board of Trustees will be formed to oversee the foundation. The trustees will include distinguished personages, including Nobel prize winners from all over the world, distinguished Arab scholars, and distinguished members of the business community and other sectors in the region and the world. Patrons include heads of state, prime ministers, and ministers. President Mubarak has kindly agreed to chair the patrons' board. The foundation will appoint the UST and TP presidents and approve their boards of directors.

The Site

The land for UST has been assigned by the government of Egypt on a 300-acre parcel in October 6 City. A groundbreaking ceremony was held on January 1, 2000, under the patronage of President Mohammed Hosni Mubarak, and in the presence of the prime minister, the ministers of higher education and housing and land reclamation, myself, and other dignitaries. A building was assigned to the Foundation, but was later proclaimed invalid.

The above text was prepared in January 2000 for a brochure; all detailed documentation of what has followed since then is available and will be part of the archive of the Foundation.