

United Arab Emirates finds partnership a fast path to leadership in the global knowledge economy.

Overview

■ **Business Challenge**

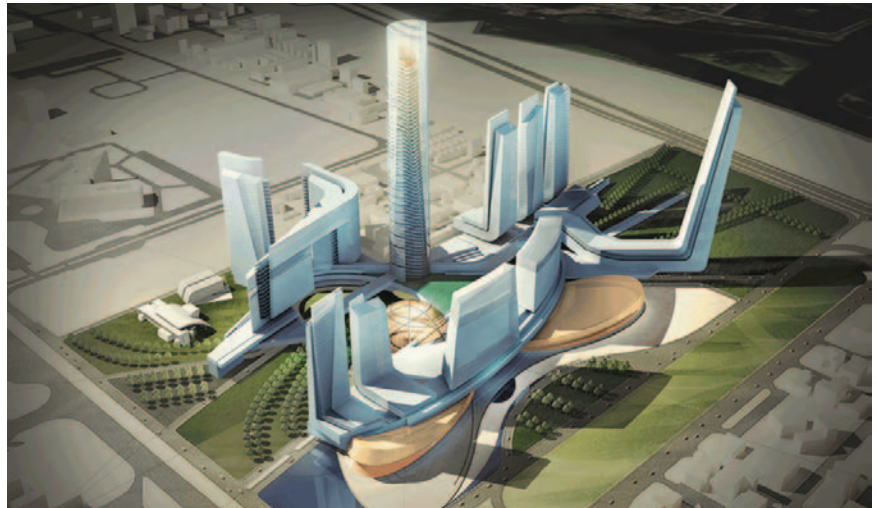
While boasting a per-capita income that rivals many developed nations, the UAE recognized that its future economic security depended on its successful transition to a more knowledge-based economy. In order to jumpstart its research capabilities, it needed an accelerated path to becoming a regional—and ultimately world—leader in strategic technology areas.

■ **Solution**

The UAE entered into a close and strategic collaborative partnership with IBM designed to support and nurture innovation in key areas and, through knowledge transfer, create a strong foundation for the UAE's own organic research capabilities.

■ **Key Benefits**

- Improved ability to compete in the knowledge-based global economy
- Broadening and diversification of economic opportunity for the UAE
- Business model strength, exemplified by the expected generation of US\$20 million in annual revenue on a US\$5.6 million investment in telematics



Centre of Excellence for Applied Research & Training (CERT) is the commercial arm of the Higher Colleges of Technology in the United Arab Emirates and is in the business of developing and providing education, training and applied technology for public and private sector clients. CERT is involved in strategic alliances with a number of large multinational organizations in developing a diverse range of business and technology solutions.

In think tanks, the press and all other venues where the health of the world's economy is discussed, the perils of excessive dependency on oil are usually associated with the demand side of the equation. The orthodox view is that too much dependency on finite energy resources endangers the long-term growth and viability of the developed and developing nations that rely on them. To counter this, these nations have recognized the need—and in some cases have already begun—to make the transitions necessary to adapt and thrive in the next century.

“IBM’s expertise and ability to transfer it makes IBM a great partner. Our mission to nurture and support our innovation efforts would have been difficult to achieve with many other companies.”

– Dr. Tayeb Kamali, Vice-Chairman, Centre of Excellence for Applied Research & Training, UAE

Business Benefits

Overall benefits

- Improved ability to compete in the knowledge-based global economy
- Broadening and diversification of economic opportunity for the UAE
- Regional leadership in innovation through increased intellectual property generation
- Strengthening of human capital among the UAE's citizens

Initiative-specific benefits

- Improved motor vehicle safety and reduced fatalities
- Expected generation of US\$20 million in annual revenue on a US\$5.6 million investment in telematics

“Our strategy is to accelerate the development of a world-class research capacity through business activity.”

– Dr. Tayeb Kamali

Now, however, a new view on oil dependency is taking hold that looks at the negative implications from the producer's perspective. The crux of this view is that an economy built on the extraction of commodity resources such as oil is, in fact, at a disadvantage when it comes to competing in the increasingly knowledge-based global economy. While it's true that oil-based economies produce some of the highest per capita incomes in the world, as well as some of the world's most state-of-the-art infrastructures, the resource abundance underlying these advantages can also be a potent disincentive for the development of a knowledge-based economy. Perhaps the best exemplar of this, by way of contrast, is Japan, whose deeply ingrained culture of innovation owes much to its limited endowment of exploitable resources.

Starting from scratch

A key challenge facing the countries at the other end of the spectrum, most notably the oil-rich states of the Persian Gulf region, has been finding a way to overcome what might be called “innovative inertia.” Largely lacking the grassroots conditions that tend to incubate “bottom-up” innovation—mainly the close collaboration of business, government and universities—oil states need more than just a catalyst to shift toward a knowledge-based economy successfully. They need, in effect, to create a pro-innovation environment from the ground up, and make it not only organic and self-sustaining but also competitively vibrant.

The extent of this challenge—and the need for knowledge-based transformation—was fully grasped by the United Arab Emirates (UAE). Established just 34 years ago by the federation of seven emirates at the southeastern tip of the Arabian Peninsula, the UAE had already evolved into one of the most important commercial hubs for multinational companies doing business in the Middle East. However, even in this role, its leaders realized that—like the rest of the Arab world—the UAE was largely a bystander in the global knowledge economy. They further realized that for the UAE to assume a more participatory role in this economy, it would need to plant seeds today to yield tomorrow's innovations. This meant first targeting—then aggressively yet patiently nurturing—the areas of expertise that would enable the UAE to stand out in the global community. Above all, the UAE's planners realized that close collaboration between the country's higher education establishment and the right group of global technology and innovation leaders would be essential to the initiative's success. To achieve this outreach, it created the Centre of Excellence for Applied Research and Training (CERT).

A framework for innovation

A unit of the Higher Colleges of Technology, one of the UAE's three public universities, CERT (www.certonline.com) was founded to provide an institutional framework for commercializing strategically important technologies. At first glance, this arrangement resembles the traditional approach employed by universities, under which "home-grown" research comes first and commercialization second. But as Vice-Chairman of CERT Dr. Tayeb Kamali explains, the fact that CERT was essentially starting from scratch called for a more unconventional approach. "The exciting thing is that we're following exactly the opposite approach, that is to first develop a viable commercial offering, and then plow the intellectual property and expertise that comes from it, down into the university," says Dr. Kamali. "Our strategy is to accelerate the development of a world-class research capacity through business activity." For this approach to work, choosing the right technology partners was absolutely essential. In selecting them, the breadth and quality of technology portfolios, while important building blocks, were only a start. Much rarer—and arguably more important—attributes were the ability to innovate in a collaborative setting and a willingness to do whatever it takes to ensure success. CERT found these qualities in IBM Global Engineering Solutions.

Percolating progress

Working in close collaboration with IBM, CERT established a number of key technology areas that would be targeted for development. While the business model underpinning this collaboration requires that initiatives be economically self-sustaining, the more strategic aspect was the knowledge transfer—from IBM to the CERT staff—that it enabled. CERT's first such initiative, in the area of telematics, provides a compelling example of this dynamic at work. After working side by side from the outset on development, IBM and CERT introduced a telematics device that was originally intended to address road safety. Combining industry standard wireless technology with IBM's POWER® microprocessor architecture, ViaVoice® speech recognition software and WebSphere middleware products, the device monitors vehicle speed and alerts the driver if the speed is exceeded. The fact that the new device is expected to generate US\$20 million in revenue on a US\$5.6 million investment by the UAE underscores the importance of viability and sustainability in CERT's business model. Just as important, though, are the strategic implications of the new platform—namely, that it will enable CERT to offer derivative solutions in the area of commercial shipping and logistics services, and that it puts in place the first homegrown center of telematics expertise in the heart of the Arab world.

Key Components

Software

- IBM WebSphere® products

Hardware

- IBM Blue Gene® Supercomputer

Services

- IBM Global Engineering Solutions

Timeframe

- Telematics initiative: 9 months
- Supercomputing initiative: 6 months
- Nanotechnology initiative: In progress

Why it matters

While wealthy in natural resources, the 34-year-old United Arab Emirates sought to transform itself, and the Gulf region as a whole, into a key player in the global knowledge-based economy. To close its knowledge gap, it created a unique "fast-track" approach to intellectual capital formation. This new model, which has already begun to bear fruit in such areas as telematics and seismic modeling, is the linchpin of the UAE's vision of becoming a leader in the fields of biomedical research (through genomic modeling) and water desalination (through nanotechnology).

More emblematic of CERT's "growth seeding" strategy is the organization's effort to become a regional power in the area of supercomputing. CERT realized that to succeed, it first needed to attract supercomputing expertise—in the form of faculty and research staff—which could then serve as a foundation for the development of its own organic supercomputing capabilities. Its most decisive step in this direction was its recent acquisition of an IBM Blue Gene supercomputer, the first such deployment among any Arab countries and the nucleus of the newly formed CERT Centre for Supercomputing. The success of this approach is already becoming evident in the list of organizations signing on to leverage the center's capabilities. One major example on the life sciences front is the Dubai Biotechnology and Research Park, or DuBiotech, whose partners in the area of biotechnology, pharmaceutical and life sciences will be able to leverage the Blue Gene's 5.7 Teraflops of computing power to conduct drug and life sciences research of particular interest to the Gulf region. The center has also recruited AcuraGen, a startup developer of oncology drugs based in the UAE, India and USA, to use the Blue Gene supercomputer.

Another key sector targeted by CERT is the petrochemical industry, which requires supercomputing capacity to run the seismic imaging solutions that underpin their exploration activities. Under its relationship with Houston, Texas-based Tsunami Development, LLC, the CERT Centre for Supercomputing will house and run Tsunami's seismic imaging software suite for its petrochemical customers in South Asia, the Middle East and North Africa. The most recent addition to CERT's technology portfolio—with perhaps the greatest potential to change life in the UAE—is nanotechnology. Currently being built by CERT and supported by US\$100 million in dedicated funding, CERT's center of excellence for nanotechnology hopes to develop revolutionary new methods for water treatment and desalinization—issues of enormous importance across the Gulf region. With nanotechnology in its infancy and its promise seemingly without limit, CERT's success in this area would cement its role as a world-class source of intellectual capital.

Dr. Kamali believes that few nations have the combination of foresight and resources needed to build a world-class research infrastructure from the ground up—let alone one that's been in existence for just 34 years. In his view, the most important reason behind the initiative's success is—and will continue to be—CERT's selection of IBM as its innovation partner. "IBM's expertise and ability to transfer it makes IBM a great partner," says Dr. Kamali. "Our mission to nurture and support our innovation efforts would have been difficult to achieve with many other companies."

For more information

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