



UNIDOScope

weekly internet newsletter

CONTENTS 29 May - 4 June 2005:

■ [IAMOT 2005 - Productivity Enhancement for Social Advance: the Role of Management of Technology - Award for UNIDO paper](#)

■ [COMING SOON](#)

■ [OTHER INDUSTRY NEWSLETTERS](#)

■ [Current Feature](#)

■ [PRINT-FRIENDLY VERSIONS of UNIDOScope](#)

■ [UNIDOScope 2004 archive](#)

PAST ISSUES

this month

[22 - 28 May](#)

[15 - 21 May](#)

[8 - 14 May](#)

[1 - 7 May](#)

past months

[Apr-2005](#)

[Mar-2005](#)

[Feb-2005](#)

IAMOT 2005 - Productivity Enhancement for Social Advance: The Role of Management of Technology Award for UNIDO paper

Vienna, Austria, 24 May 2005



UNIDO paper receives award at IAMOT 2005

from left: the winner - UNIDO Representative in Sudan, Jebamalai Vinanchiarachi; IAMOT President, Tarek Khalil; UNIDO Arab Bureau Director, and founding member of IAMOT, Mohamed El Nawawi

Pictures: [Day 1](#) ; [Day 2](#); [Day 3](#); [Day 4](#); [Day 5](#)

The [14th International Conference on Management of Technology](#) took place at the Austria Center in Vienna 22 - 26 May, 2005. UNIDO Director-General, Carlos Magariños addressed the plenary session which was opened by [IAMOT](#) (International Association for Management of Technology) President, Tarek Khalil. Referring to the theme for IAMOT 2005, *Productivity Enhancement for Social Advance: The Role of Management of Technology*, which strongly echoes the [UNIDO Corporate Strategy](#), Dr. Khalil said "We strongly believe that the management of technology field can make significant contributions to stimulating economic growth, improve productivity, lead to social change, increase living standards

and quality of life in developed and developing countries. There is a gap emerging between those who possess the technology and knowhow and those who are lagging in using technology as a major contributor to wealth creation. We are particularly excited about the prospect of involving many countries around the world in a debate to help reduce this emerging economic and social gap."

IAMOT 2005 was organized in 20 tracks with over 470 papers being presented. Thirty five papers were presented in a special UNIDO track *Productivity Enhancement in Developing Countries* (see www.unido.org/iamot2005).

UNIDO Representative in Sudan, Jebamalai Vinanchiarachi received the "Best Paper IAMOT 2005" award for his paper, entitled *International Comparison of National Policy Instruments and Innovation Systems for Technology Development* ([view or download paper](#)), presented in Track 6 - *National Systems for Technology Development*. "This is a critical issue. Today, all responsible policy makers in both developed and developing countries are asking "what more can we do to build a national innovation system where new knowledge is generated by universities, exploited by laboratories and commercialized by firms"" said Mr. Vinanchiarachi to UNIDOScope.

Citing a background document for the [UNIDO Industrial Development Report 2003](#), entitled *Strategies in Technology Development – With particular reference to East Asia*, Vinanchiarachi says that Taiwan's R&D consortia formed in the 1980s and increasingly in the 1990s can stand as typical example of best practice in gaining synergies from complementary human and technical assets of firms, and thereby gaining economies of scale in enterprise R&D and technical collaboration. "The success in technology upgrading was due largely to the efforts of public sector research and development institutes, such as Taiwan's Industrial [Technology Research Institute \(ITRI\)](#) which since its founding in 1973 has acted as the nerve centre and propellant of leveraging of advanced technologies from abroad, and for their rapid diffusion or dissemination to Taiwan's firms. The role of ITRI helped small firms overcome the scale disadvantages. Drawing on ITRI-induced scale advantage inter-firm R&D alliance dramatically enhanced firms' own adaptive capabilities in collaborative product development, leading the country's strong performance in communications products.

These consortia have been generally successful and some of them are more successful than others - but all seem to have learned organizational lessons from the early cases where government contributed all the funds, and research tasks were formulated in generic and overly ambitious terms for the companies to take advantage of them. The more recent R&D alliances have been more focused, more tightly organized and managed, and have involved participant firms much more directly in co-developing a core technology or new technological standard which can be incorporated by the companies, through adoption and adaptation, in their own products."

Mr. Vinanchiarachi presents the varying degrees of success of public innovation policy instruments in a range of countries covering Taiwan, Japan and other OECD countries, Sudan, Nigeria, Republic of Korea, India, South Africa, Brazil. He then draws our attention to the policy implications of lessons learned in Singapore, Malaysia and India.

A general conclusion is that "effective national systems for technology development are underpinned by educational systems that are continually restructured, with an accent on technical and vocational education providing a growing pool of skilled workers and technicians, and fostering rapid expansion of engineering, business and computer education. Fiscal incentives like grants and tax incentives can be put into operation only after a critical mass of this technically trained human resource is developed. In addition to the creation of a pool of technically trained personnel who would emerge as techno entrepreneurs and skilled workers in other firms for effective networking, the State should encourage positive spillovers from foreign companies through a variety of instruments."

In spite of the need for "an accent on technical and vocational education providing a growing pool of skilled workers and technicians" we are warned that a "high level of education does not necessarily mean the automatic creation of technological dynamism and productivity catch-up... " One inhibitor identified by Mr. Vinanchiarachi is "institutionalized inactivity in R&D". He says "Institutionalized inactivity in R&D" is behind "the paradox of India having the largest pool of scientists and engineers and their shortage for R&D and innovation at the enterprise level". He explains in his intercountry comparison. "By the late 1990s, Singapore had around 79 scientists and engineers per 10,000 labour force, compared to 6 in Malaysia in 1998 and 8 in India in 1996. The high R&D and innovation intensity of Singapore is due largely due to the fact that a large majority of scientists and engineers were actively involved in R&D and innovation. The educational policy of Singapore encouraged a number of well-known foreign universities to establish their branches in the country, and having completed science and technology related subjects, students were seldom encouraged to join government departments as civil servants. Rather, they were encouraged to emerge as entrepreneurs and to be engaged in R&D and innovation with the aid of proper incentive systems, both fiscal and non-fiscal. In contrast, of the 8 scientists and engineers per ten thousand labour force in India, hardly one was actively engaged in R&D and innovation. Once they join institutions and enterprises, most of them are more administrators than scientists.

The situation can be called "institutionalized inactivity in R&D in innovation", implying that they have a large number of research institutions, scientists and engineers, with little involvement in enterprise R&D and innovation... ."

India is not without its successes though. The Tata Indica: "An innovative Indian car with 100 per cent indigenous components", is just one example of a positive use of global connectivity and an effective response to pressures for efficiency gains. India's Council of Scientific & Industrial Research, (CSIR or Brain Bank) also gets good marks with the following reference. "Recommending an ideal system of national innovation for Latvia for the 21st century, Watkins and Agapitova (2004) suggest that to "facilitate matchmaking services with foreign laboratories and enterprises: Latvia should establish one centralized network where potential foreign partners can go to find R&D capabilities and industrial partners. In India, for example, the Council of Scientific & Industrial Research, (CSIR or Brain Bank) links 40 government research institutes and provides a comprehensive directory listing scientists by area of expertise. In addition to maintaining a centralized database, the database managers should make a proactive effort to bring these research capabilities to the attention of venture capital firms in the US, Europe and elsewhere. The purpose of this outreach effort would not be encourage venture capital firms to invest in Latvia, although that may be secondary benefit. Instead the objective would be to encourage their portfolio firms to consider Latvia as a potential source of low cost, high quality contract research expertise that can help solve critical technical problems."

The concluding section of Mr. Vinanchiarachi's paper gives us "An Agenda for Action" suggesting that adaptive R&D is the best place to start "since all technologies are location-specific and consequently any technology that is imported from abroad will have to be adapted to local conditions." the "dos" and "don'ts" presented in the paper should make that very difficult job at least a little easier. It should also make interesting reading to those policy makers who are asking "what more can we do to build a national innovation system where new knowledge is generated by universities, exploited by laboratories and commercialized by firms"

IAMOT is the largest professional organization dedicated to capacity building, research and application of technology management. The IAMOT Conference is one of the largest international gatherings of experts in the field and its attendees include government officials and policy makers, managers of well-known corporations and international organizations, engineers, researchers and educators. With Director of UNIDO's Arab Bureau, Mohamed El Nawawi as a founding member of IAMOT, the organization has a long-standing relationship with UNIDO. UNIDO Director-General Carlos Magariños presented his reflections on the development agenda to IAMOT 2001 in Lausanne, Switzerland, March 2001 ([UNIDOScope 26 March - 1 April 2001](#)) and on 29 - 30 May 2001 UNIDO and IAMOT held the *Global Forum on Management of Technology - Focus on the Arab Region* at UNIDO HQ in Vienna (see [Feature Story](#)).

This year IAMOT organized the Conference in collaboration with UNIDO. Other sponsors of the event were: the Austrian Ministries for: [Transport, Innovation and Technology](#); and [Economy and Labour](#); the [City of Vienna](#); [Austrian Research Centres](#); [Austrian Airlines](#); and [Siemens Austria](#).

The 15th International Conference on Management of Technology is scheduled to be held in Beijing May 22-26, 2006, under the banner *East Meets West - Challenges and Opportunities in the Era of Globalization*, at the School of Economics and Management at Tsinghua University. The announcement of the conference and call for papers is at <http://www.iamot.org/IAMOT2006/index.html>.

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[coming events](#)

▲ **TOP**

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