

Penyampai : TAN SRI DATO SERI AHMAD SARJI BIN ABDUL HAMID
Tajuk : THE INTERNATIONAL CONFERENCE ON ADVANCES IN STRATEGIES
Lokasi : UNIVERSITY KEBANGSAAN MALAYSIA, BANGI
Tarikh : 12-06-1995

1. I wish to take this opportunity to thank the organiser of this Conference for giving me the honour to address the International Conference on the Advances in Strategic Technologies. The topics for discussion at this Conference are indeed very relevant to the ongoing deliberations of the National Scientific Council on Research and Development with respect to enhancing science and technology development in Malaysia.

2. Malaysia has launched the National Plan of Action for Industrial Technology Development which designates Advanced Manufacturing Technology, Advanced Materials Technology, Electronics Technology, Information Technology and Biotechnology as priority areas for R&D. While it is heartening to note that the majority of post-graduate degrees awarded by local universities based on research done under the Intensification of Research in Priority Areas (IRPA) Programme are in these designated priority areas, it is recognized that there still exist large gaps in the supply/demand situation with respect to a number of emerging technology areas. As a short term measure to overcome this problem, the Government has introduced a scheme for recruiting foreign scientists and engineers to help accelerate the development of priority technological areas.

3. To further advance the key technology areas, the National Scientific Council On Research Development has formulated several initiatives including the establishment of new organisations, building of new facilities and the creation of specific schemes that will facilitate collaboration between the public and private sectors in technological development. In the field of biotechnology, we have set up the National Biotechnology Directorate whose aim is to strengthen biotechnology research, commercialise biotechnology research and facilitate the development of biotechnology-based firms. Biotechnology as you may be fully aware has had major impacts on human health care during the last decade. New drugs have been developed and new therapeutic and diagnostic products are reaching the market. In Malaysia, research on diagnosis for dengue has resulted in the commercialisation of diagnostic kits. Biotechnology also holds promise in the agricultural field. This can be seen from new plant varieties with high yielding and disease resistant characteristics to new fish breeds. The development of a food-based vaccine for poultry has been one of the major achievements in biotechnology in Malaysia. The establishment of the National Biotechnology Directorate is expected to push further the development of biotechnology and stimulate the emergence of new enterprises.

4. The manufacturing sector has provided the major stimulus to the economic growth of Malaysia. It is therefore imperative that advanced technologies be deployed to sharpen Malaysia's competitiveness in manufactured products. However, we are aware of some problems in the application of advanced manufacturing technologies (AMT). Among them are difficulties in the acquisition of certain technologies, lack of awareness of AMT especially in the small and medium enterprises, shortage of knowledge workers and low level of R&D in AMT. A survey of manufacturing practices in the microelectronics and components sectors conducted as part of an National Scientific Council on Research and Development study on the Development of a National Strategy for AMT indicates a much higher degree of AMT use in large companies than in small ones. Large companies hold a pronounced lead in most of the basic technologies such as computer- aided design (CAD); however, the projected growth in AMT use between 1994-1999 indicates that small companies intend to narrow that technology gap in the next five years. It also shows that multi- national companies use more advanced technology than Malaysian owned companies. In terms of sources of technology acquisition, it is clear that Malaysia is still very much dependent on imported technology. The study shows that more than half the product engineering technology as well as production technology have been or will be purchased. Technology licences play a minor role in these technologies. Many companies, however, have developed their own information technology systems for use in manufacturing.

5. Realising the technological threats faced by the Malaysian manufacturing sector from more advanced countries, the Government is fully committed to developing the necessary policies and infrastructure for

ensuring the maximum deployment of advanced technologies in the manufacturing sector. In this regard, the Advanced Manufacturing Technology Centre in the Standards Industrial Research Institute of Malaysia (SIRIM) was established with the purpose of developing cooperative programmes with industry in advanced manufacturing technology applications. A national centre for Computer Aided Design/ Computer Aided Manufacturing (CAD/CAM) has also been set up in SIRIM to spearhead the development of CAD/CAM technology in Malaysia.

6. The Government has established the Malaysian Institute of Microelectronics System (MIMOS) to be a national centre-of-excellence for research and development (R&D) activities in microelectronics and information technology; one that would initiate, facilitate and contribute towards technology for value creation, in line with national aspirations of becoming a fully developed nation by the year 2020. Three key technologies have been targeted that are expected to catalyze the development of the industry. The first strategic area of focus is microelectronics fabrication and design. Microelectronics is one of the core technologies that is driving the electronics industry. Even though Malaysia is one of the world's largest exporters of ICs, currently all wafers are imported. To enter the area of design and processing ICs, a wafer fabrication facility is a must. These facilities provides a platform from which designs can be prototyped, going through controlled cycles of development and finally becoming competitive products in a cost effective manner. This facility in addition can support large wafer manufacturing fabs that are being planned by multinational companies (MNCs) by supporting them with contract research services to increase productivity and continually enhance their capability to exploit state-of-the-art technologies.

7. The second area that MIMOS is focusing on is information technology (IT). At present the target is the development of comprehensive computer and telecommunication networks. These networks provide the information infrastructure that is essential for economic and social development.

8. The third area that MIMOS is targetting is machine intelligence. With the rapid growth of the economy and the consequent shortage of labour as well as increase in its cost, industrial automation is being looked upon as the long-term solution.

9. By supplying the industry with new technologies and R&D services, MIMOS can help the industry to become competitive and innovative by bridging research and practical applications.

10. The field of advanced materials offers tremendous opportunities to improve quality of life and economic prosperity. Improved and new materials can contributed to improved environmental quality, improved health care cost, development of information superhighways and production of new transportation vehicles. Malaysia is endowed with a variety of raw materials that have great potential to be transformed into materials and products of very high value and great utility. The tin industry may be said to be a 'sunset' industry, however with the ingenuity of scientists and engineers, some of the byproducts of the tin industry could be transformed for industrial applications. R&D in advanced materials are currently being conducted in most of the research institutes and universities with some results showing great potential. To further accelerate the development in this area, an Advanced Materials Research Centre (AMREC) has been established.

11. The inclination towards near complete utilisation of efficient and environmentally friendly energy resources and technologies, due to the increasing environmental impact of conventional energy sources, has provided a justification towards R&D on new energy technologies. National R&D should focus on technologies with a strong cost-effective output, and on which indigeneous policies and facilities support. Among the technologies that should be pursued include co-generation applicatons, fuel cells, clean coal, fluidisation and gasification.

12. In the world of rapid technological change, it is necessary to be equipped with the appropriate tools to track new developments in the technology area. This has become even more urgent as the technology become the property of the world market. No one country holds a monopoly on technology for more than a short period of time, nor does any one country comprise the entire market for that technology. The success of Japan in semiconductor design, robotics advanced fuel cells to name a few is attributed partly to its ability to monitor and subsequently aquire American technological advances. While the onus is on

companies to follow closely technological developments worldwide, the Government has also a role to facilitate this monitoring process. In this context, the Malaysian Science and Technology Information Centre (MASTIC) of the Ministry of Science, Technology and the Environment has acquired Techmonitoring which is a comprehensive high technology information monitoring and evaluation service. Techmonitoring provides access to expert opinion through 'technology profiles' and monthly updates on significant technological changes.

13. Malaysia would not be able to achieve or sustain its current growth rates over the next decades and achieve become a fully developed nation by the year 2020 if it remains dependent on imported technologies. It is imperative to develop the necessary capabilities and capacities to develop indigeneous technologies. One way of achieving this is through R&D programmes which supports the changing economic structure. During the period 1988- 1995, the Government allocated a total of RM 1 billion for public sector R&D under the IRPA Programme. We hope for an increased allocation in the Seventh Malaysia Plan. To ensure that these resources are channelled to meet national needs in particular the advancement of industrial technological development, a comprehensive priority setting process was undertaken and the whole national R&D funding system is being redesigned. In addition to this, the Government's investment in human resource development will be further enhanced.

14. Malaysian scientists and engineers have an important role to play to help the nation gain a leading place in the technology race. I sincerely hope the deliberations over the next few days will provide us with some ideas that would direct the development of key and strategic technologies in Malaysia.