

**KEYNOTE ADDRESS BY LG(NS) LIM CHUAN POH, DEPUTY CHAIRMAN,  
AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH (A\*STAR) ON  
31 JANUARY 2007 AT THE LAUNCH OF SERC AEROSPACE  
PROGRAMME AT THE SINGAPORE INSTITUTE OF MANUFACTURING  
TECHNOLOGY**

Distinguished Guests,  
Ladies and Gentlemen,  
Good Morning.

**Introduction**

Let me welcome all of you to the launch of the SERC<sup>1</sup> Aerospace Programme this morning. This is an important milestone for the aerospace industry in Singapore. The Programme brings together as key partners the combined experience and technical expertise of four big players of the global aerospace industry. The Programme also attracted keen interest from many other companies in the aerospace industry cluster.

**Aerospace Industry and Activities in Singapore**

Singapore's aerospace industry has been growing strongly since it started in the 1970s. It has consistently achieved double-digit compounded annual growth rate over the last 20 years. In 2005, the sector employed over 14,000 workers and enjoyed a record turnover of S\$5.2 billion. As part of this high growth, the local aerospace industry continued to expand its capabilities and geographical reach to service a wider market. Today, Singapore is a vibrant aerospace hub in Asia. At Asian Aerospace 2006, S\$25 billion dollars worth of business deals were signed. The record deal done in Singapore strongly indicates that Asia is becoming a major driving force in the growth of the global aerospace industry and underscores Singapore's position as a global aviation hub. Singapore is also Asia's largest and most comprehensive Maintenance, Repair and Overhaul (MRO) hub with 25% of Asia's market share.

Looking ahead, industry observers have predicted that the airlines in Asia are set to double their fleet of aircraft by 2015, and Singapore has to position itself to capture a healthy share of this rapidly growing market. To this end, the Singapore Government is investing S\$60 million to develop Seletar Airport and its surrounding area of over 140 hectares of land into literally one "super hangar" that will host a new integrated aerospace industry cluster.

The new Seletar Aerospace Park will incorporate aerospace activities in Maintenance, Repair and Overhaul; design and manufacturing of aircraft systems and components; business and general aviation activities; as well as serve as an aviation campus for the training of pilots, aviation professionals and technical personnel. In addition, the Park will provide additional space for expansion, complementing aerospace activities at other parts of the island.

The Park clearly demonstrates Singapore's commitment to provide the necessary resources and infrastructure to grow the aerospace industry. The Park is expected to create 10,000 new jobs, and contribute S\$3.3 billion annually in value-add or about 1% of GDP in 10 years time.

### **Collaboration in Aerospace R&D**

As much as the globally connected world of the 21st century holds tremendous growth potential for the aerospace industry, it will also pose many complex challenges as a result of the increased competition and costs of input factors. Forecasts by aviation leaders predict future demand of microjets and wide-body aircrafts to accommodate higher rate of air traffic; multi-functionalities within the interior of an aircraft to ensure passenger well-being and comfort; as well as a high turnaround rate for aircraft maintenance, overhaul and repair to reduce down time. Technological advances through research and development will hold the key to meet many of these challenges especially in enabling the industry players to remain competitive. Some examples include the usage of nanocomposites and metal alloys for light-weight planes for fuel savings; the development of sensors for non-destructive inspection and testing to better customized the maintenance program; as well as avionics for flight control and in-flight entertainment to improve the overall quality of service. Many of these R&D efforts are becoming increasingly costly in themselves.

In the pursuit to build larger, faster, lighter planes, the industry will also need to consider the entire life cycle costs of the planes and not just the fuel savings. A more integrated and holistic industry view of efficiencies in the entire value chain from design to manufacturing and then maintenance is therefore useful. In addition, the advent of budget airlines and terminals has impacted quite significantly the air travel industry and generated immense competitive pressure on the full-service commercial segment of the

aerospace industry. The players in the aerospace industry have therefore become a lot more cost conscious. A viable option for aerospace companies is to embark on international alliances to pool resources and share risks to develop advanced technologies on a cost-sharing basis instead of absorbing hefty R&D bills individually. Pre-competitive R&D collaboration is one way that will enable industry leaders to move forward via a mutually beneficial platform – one that permits the overcoming of basic obstacles and the understanding of fundamentals in order to capture knowledge to reduce the time and barrier from research to application. At the same time, it allows the costs of such work to be shared. With the vibrant aerospace activities in Singapore and Asia, aerospace companies are increasingly seeing the benefits of conducting research closer to their Asian counterparts. Aerospace companies are increasing their commitment in Singapore to support their Asia-Pacific activities. This includes design and R&D, expansion of facilities and setting up of new manufacturing plants to cater to growing demand.

The consolidated strengths of industry leaders in Singapore, the presence of a capable supporting local industry, and technology capabilities in our A\*STAR RIs and other public institutions creates a strong aerospace partnership in Singapore. This clustering effect generates value for all the players in the industry here. Let me share with you some examples of how our research institutes have helped aerospace companies with the technology we have. We worked with Turbine Overhaul Services to develop and optimize process parameters for complex polishing of turbine airfoils that met with the stringent quality standards of the aerospace sector and helped to reduce cycle time by as much as 40%. This won the 1999 National Technology Award. We also worked with ST Aerospace to develop an automated inspection system for aircraft wings that was used on F5 military aircrafts. This won the Flight International Aerospace Industry Awards 2002 (Maintenance Modification Category) as well as ST Aerospace's President's Innovation Award in the same year.

### **SERC Aerospace Programme**

From the broader perspective, A\*STAR is launching its Aerospace Programme in order to bring together global aerospace players, local industry partners and the R&D community to work in a coordinated and synergistic way for the whole industry to drive innovation and aerospace research.

The Programme will tap on R&D capabilities, infrastructure and resources in the Science and Engineering Research Council's (SERC's) seven research institutes to conduct pre-competitive, basic-directed and applied research work. It will address technological challenges in five key areas that have been jointly identified with the industry as follows: advanced materials; manufacturing processes & automation; information & communication; inspection & non-destructive testing; as well as computational modeling & dynamics.

Four aerospace giants, Boeing, EADS, Pratt & Whitney and Rolls Royce, have joined us as first partners in the SERC Aerospace Programme. The keen participation of these industry giants in the SERC Aerospace Programme reflects the value that R&D is adding to their business and contributing to Singapore's overall R&D capabilities. This unique multi-party partnership will not only strengthen the value-chain amongst the aviation, MRO and the precision engineering industry, it will also help local companies understand future requirements in strategic areas in the aerospace domain to gain the competitive edge and achieve growth.

### **Reinforced Partnership with Industry**

Two of the four companies, Boeing and Rolls Royce, are no R&D strangers to A\*STAR. Rolls Royce has been collaborating with A\*STAR's research institutes since 2004, working on several discrete projects in aerospace, marine and fuel cells. More recently, it has embarked on a 3-year project with A\*STAR to develop a 1 mega watt solid oxide fuel cell system through integrative R&D. A\*STAR's partnership with Boeing also pre-dates this Aerospace Programme. In September 2004, researchers from A\*STAR participated in a joint technology road mapping session with Boeing in Seattle, where many areas of mutual interest were discovered that led to a signing of a Master Research Collaborative framework in October 2005. Since then, both A\*STAR and Boeing have been working on exploratory studies in areas ranging from advanced materials to computational science and wireless communications. I understand that these specific collaborations are progressing well. We are also in discussion with EADS and Pratt and Whitney on new projects and hope to be able to embark on these R&D projects soon. It is highly significant that the SERC Aerospace Programme has brought

together in-competition industry giants to collaborate on the same platform. Despite the aerospace industry being a highly competitive one, our first four partners have decided to come together to pursue common objectives through R&D, lending to the SERC Aerospace Programme their invaluable guidance, experience and support. We encourage other companies in the aerospace, MRO and precision engineering sector to actively participate in the Programme. The industry stands to benefit from technological transfer, as well as training and capability development of their staff through attachments to research institutes. I look forward to many innovative projects being rolled out as a result of the collaborative efforts between our research institutes and the aerospace industry.

On this note, it is my pleasure to declare the SERC Aerospace Programme officially launched! Thank you.

<sup>1</sup> **SERC** refers to the Science and Engineering Research Council of Singapore's Agency for Science, Technology and Research