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Subject: (Embargoed) Speech By Dr Tony Tan, 1 Jan 2000, 7.30pm

# *Singapore Government*

# ***PRESS RELEASE***

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**SPEECH BY DR TONY TAN KENG YAM, DEPUTY PRIME  
MINISTER AND MINISTER FOR DEFENCE, AT THE NTU  
LAUNCH OF MILLENNIUM CELEBRATION AND OFFICIAL  
OPENING OF NANYANG AUDITORIUM HELD ON SATURDAY,  
1ST JANUARY 2000 AT 7.30 PM**

Happy New Year

We are at the beginning of a new millennium. What can we expect in the coming years? It is always hazardous to try and predict the future. But it is safe to predict that what will happen will exceed our expectations.

In 1844, US commissioner of patents Henry Ellsworth famously

predicted that “the advancement of the arts from year to year seems to presage the arrival of that period when further improvements must end”. Since Ellsworth’s prediction, the telegraph, the electric light, the aeroplane, the computer, the Internet and a host of other inventions have changed our lives. The accelerating technological changes that had transformed our world in the last century will continue unabated into the new millennium. These advances in science and technology have made the world smaller and more intertwined. Globalization, technological change and technopreneurship, the three major trends dictating the course of the world's economy, will continue to re-shape our lives and the way we make a living.

In the last 100 years, the world has been transformed by three major industrial revolutions. The first revolution was in the early 20th century with the wide spread electrification of cities and industries. This allowed a whole range of new industries to be built, made coal-mining increasingly uncompetitive and transformed the lives of citizens throughout the world. The second revolution came after the Second World War with the growth of worldwide transportation ie. the spread of railroads, shipping networks and airlines throughout the world. All these made the world much smaller and enabled companies to operate in different continents. Even though the transportation revolution enabled countries to be more closely connected together, there was always the problem of the time difference between countries and the difficulty of connecting operations in many countries at the same time. We are now at the beginning of the third industrial revolution caused by the convergence of Information Technology and Communications to form a new Infocom platform. This Infocom platform has made it possible for manufacturing and services operations to be controlled on a real time basis in many countries in the world and has truly

made the world a global village enabling companies to have plants in many countries but integrated together to operate as one seamless whole.

Globalization is a reality today and it is not possible for countries which wished to progress to isolate themselves and separate from the world economy. We are increasingly becoming inter-dependent and the country that can best ride on the globalisation wave will be the country with the fastest growth rate.

In the new millennium, technological change will increase in magnitude and pace.

In businesses, there will be constant and accelerated change. Existing businesses, which are presently thriving, will face competition from new start-ups using technologies and business models which have not yet been invented. New business areas which have not been thought of before will emerge. Technological change has been most widespread and most rapid in the Infocom area. The rise of mobile telephones, telecommunications network and software has given rise to great companies, many of whom did not exist even fifty years ago. The rise of Nokia, which manufactures mobile phones in Finland, to become the most valuable company in Europe and Microsoft, the most valuable company in the world, are examples of the great wealth that can be built rapidly in this new period of technological change.

The combination of globalisation with technological change brings about the third trend which is transforming the world economy and that is technopreneurship. In the new market environment, size is not necessarily an advantage. It is possible for small groups of people to set up companies which have a global impact within an unprecedented short period of time. The growth of NASDAQ, which is dependent on technology companies,

shows the potential of technopreneurship. In Singapore, through our Technopreneurship 21 initiative, we are developing a more entrepreneurial environment in our economy and encouraging more start-ups to be established in Singapore.

All these three global trends - globalization, technological change and technopreneurship - will impact the development of Singapore's Knowledge Based economy. A knowledge-based economy depends not on resources or manpower for growth but on knowledge which is the true key to wealth in the world today.

To respond to such an environment, you, as students, will have to learn to continuously master new knowledge and skills if you aspire to have a meaningful working life that lasts for forty to fifty years instead of just for the next few years. In this millennium, leaving school or even university will not mean a person's education has ended.

Leaving university means the start of a life long career in acquiring and using knowledge.

The traditional meaning of job security in the sense that one can expect to work with a company or hold a particular position in a company throughout one's working life will change. Instead people will have to get used to changing jobs several times whether in the same organisation or not, during their working lives. The acquisition and mastering of new skills will be a continuous process.

As an institution, NTU has come a long way since it was first established as NTI in 1981 and re-constituted as NTU in 1991. Over the years, NTU has built up strong Schools in Engineering, Business, Education and Media. NTU, however, can not rest on its laurels but must continue to forge ahead to keep abreast of changes in the world and anticipate and

prepare for new challenges and opportunities.

To be technopreneurial for NTU means not only equipping students with the technical knowledge in the current fields of science and technology but also to educate them to be able to identify opportunities and prepare them to take the risk of seizing these opportunities. NTU must be prepared to constantly review and extend its horizons to identify new opportunities and new areas to be involved in.

With its strengths in engineering, business and media, NTU is well placed to play an even more active and larger role in the Singapore economy as Infocom throws up new opportunities particularly in services and products related to the Internet. Looking further ahead, many people have suggested that, after the Infocom revolution, the next growth area will be the life sciences which is producing a revolution in the medical and pharmaceutical fields.

Singapore is well placed to benefit from the life sciences revolution. World-class organisations, ranging from healthcare giants such as Merck, Glaxo Wellcome and Baxter to research universities such as Johns Hopkins, have set up significant establishments in Singapore. The output of life sciences companies manufacturing in Singapore is expected to double within the next five years.

Recognizing the potential of the life sciences area, world-renowned technical universities overseas are rapidly building strong capabilities in the life sciences.

Examples are the Technion (Israel Institute of Technology) through its Medical School and MIT through the Whitehead Institute of Bio-medical research. Caltech (California Institute of Technology), an institution renowned for its strengths in the physical sciences, is raising US\$100

million for its Biological Sciences Institute which seeks to support new undertakings in biological research at the interfaces between biology and the physical sciences.

NTU has made a start in building a capability in the life sciences area through its collaboration with the Singapore General Hospital (SGH) in the field of biomedical engineering. This is a good start but more can be done. To realize the potential of the life sciences area, it is timely for NTU to set up a task force to consider how NTU can expand and strengthen its collaboration with SGH and other hospitals in Singapore to build a world class capability in the life sciences to enable Singapore to take advantage of the opportunities which will abound in this rapidly growing field in the coming years.

In building such a world class capability in the life sciences, NTU will face new challenges, create new opportunities and open new horizons for tertiary education in Singapore in the new millennium.

Let me conclude by congratulating NTU on completing this brand new 1,800-seat auditorium. The completion of the auditorium is a testimony to NTU's successful implementation of its campus planning and development. The auditorium will serve as a multi-purpose hall for Convocations, ceremonies, cultural activities, concerts and major lectures. I am confident that the staff and students will look forward to the exciting use of this beautiful and functional auditorium in the years to come. The design and construction of this contemporary building signifies the bold and impressive entry of NTU into the new millennium. It gives me great pleasure to declare the Nanyang Auditorium open on this first day of the new millennium.

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