

Address during the Launch of India Innovation Growth Programme Federation House, New Delhi

World Knowledge Platform and Innovation Growth

“Knowledge is powered by Technology and Innovation”

I am happy to participate in the inauguration of Exposition and Launch of the India Innovation Growth Programme organized by Department of Science & Technology in partnership with Indo-US S&T Forum and Lockheed Martin Corporation. It is indeed a good effort that as a part of this programme FICCI is working on commercialization in India and abroad of a number of innovative ideas and technologies. I greet the organizers who are promoting the culture of innovation among our entrepreneurs. While promoting such innovations, I would like the specialists to consider how such opportunities for non farm rural employment and the resulting sustainable product flows across the world can have a positive impact to overcome the global economic recession.

Friends, today we are meeting under difficult circumstances of terrorist attacks. It is essential for the citizens: “When evil minds combine, good minds have to work together to combat”. Peace of the nation is very vital for economic development and societal growth. The teams which have assembled here have to think different with solutions for assisting the nations to enhance its innovative capacity to make the world free from terrorism.

While I am launching India innovation programme partnered by multiple institutions, I was asking myself what type of innovation is needed to enrich the Indian economy and other world economies which are presently in turbulence. I had discussion on this subject with the experts at Indian Institute of Management Ahmedabad few days back. It came to light that the Indian economy will be less affected due to the world financial crisis. This is due to (i) the Indian banking system has always been conservative which has prevented the crisis (ii) The liberalization process in India has its checks and balances consistent with the unique social requirements of the country (iii) The Indian psyche is generally savings oriented and living within means is part of the mind set. This situation has reduced the effect of global turbulence in the Indian economy. However, the resultant effect will be reduction in export and reduction in outsourcing. The drop in annual growth rate of GDP could be around two percent.

This is the time we need innovation in our thinking to rejuvenate the agricultural sector particularly through value addition and the small and medium scale industries and enterprises for making higher levels of contribution to the GDP. Simultaneously, we have to enhance the rural and urban infrastructure particularly through the establishment of 7000 PURA complexes spread in different parts of the country.

. The mission of PURA is employment generation with value added skills through connectivities. The investment in these three areas will not only provide value added employment to our citizens and will generate higher growth in economic activity. Innovation has to come into action to strengthen the economy and progress the development of the nation. I have personally experienced how organizations within countries and nations of the world, when they combine the core competencies effectively and embark on a jointly funded programme, can produce results for mutual benefit of partners. Let me present a case study of innovative technological cooperation.

Fusion of core competence of two nations

BRAHMOS is a unique experience of developing a system through a joint venture initiative identifying the right type of core competence of two nations. The technological and managerial leadership of the two nations and an investment of around two hundred million dollars by each nation have enabled the realization of the world's first Supersonic Cruise missile called BrahMos within 5 years. The foundation of the Joint venture is based on joint design, development, production and marketing.

BrahMos is the first supersonic operational cruise missile in the world, which can be launched from multiple platforms such as ships, submarines, road mobile and silo, and with modifications from aircraft. This is indeed the result of technological co-operation leading to operational system. The robust design of the missile, elaborate ground tests and simulation has ensured 100 percent success rate in all the flight tests conducted for the Armed Forces by the joint venture company. In successful design, development, production and marketing of BRAHMOS missile, an innovative way of technology co-operation has emerged between India and other countries for multi-billion dollar business.

This experience leads me to consider the creation of world knowledge platform for pooling the resources of multiple institutions for promoting innovation leading to economic development. Based on this experience, I would like to talk on the topic "World Knowledge Platform and Innovation Growth".

World Knowledge Platform

"World Knowledge Platform", will integrate the core competencies and innovations of the partner countries to develop knowledge products and systems. This platform will enable joint design, development, cost effective production and marketing of the knowledge products in various domains. World knowledge platform is a meeting place for innovations in science, technology, industry and management. While humanity has progressed in every conceivable sector, the challenges faced by humanity in the ensuing decades would require the combined efforts of nations to produce quick optimum solutions for the benefit of the entire world.

Missions of World Knowledge Platform: The "World Knowledge Platform" will take up the missions, in some of the following areas, which are of utmost urgency to all of us to make our world a safe, sustainable, peaceful and prosperous place to live. The areas are: (a) Energy independence from fossil fuel leading to pollution free environment. (b) Water: desalination, networking of rivers, layered wells for water storage in hill regions and flood control. Water harvesting, recycling and water management. (c) Healthcare: nano-technology based drug delivery system, development of vaccines for HIV-TB, Malaria and cardiac diseases. (d) fossil fuel free transportation systems (e) disaster prediction and management, particularly earthquake forecasting and assessing the quantum of rain for a given cloud condition. (f) capacity building through development of quality human resource in all the above areas.

The world knowledge platform will also evolve a virtual design centre with the participation of collaborating countries.

Innovations for non-linear Growth

Now, I would like to highlight the importance of innovation and creativity for transforming India into a knowledge society. Indian Enterprises in agriculture, manufacturing and service sector have to recognize their own domestic consumer markets as a source of virtually limitless economic power. This will enable the

enterprises to build capacity for the kind of economic engine – a prodigious production-and consumption machine – that can propel growth for years to come.

We have come across how in India and elsewhere individuals and small companies have contributed through entrepreneurship. India has to nurture the entrepreneurial gene to enable a competitive and global industry which propels innovation and creativity leading to non-linear growth. The government corporate and venture capital system should propel the innovation and creativity of the entrepreneurs through investment to compete globally. This will make the enterprises to go global. When the world is globally changing, there is a paradigm shift from export driven market to investment driven market.

Global Sourcing

Global sourcing has acquired prominence in the last few decades driven by market exploration elsewhere with potential cost advantages, skill utilization and business strategies. The communication revolution has enabled a rapid growth of global sourcing. Innovation in working together can result in global sourcing as a source of benefit to the entire human kind.

There are several challenges that are faced by the humanity as a whole, whether they are developed or developing due to the present economic turbulence. Clean environment, abundant energy, copious supply of water, empowerment of people with education and health care, availability of globally employable human resources, preservation of human culture and value system are all global challenges as well as opportunities rather than just national issues. They require thinking globally and acting globally and locally.

Global sourcing should be seen as an activity to create knowledge workers and leaders who are beyond the realm of narrow borders of geography, disciplines and products. Global sourcing should be seen as a methodology to combine the core competence of organizations and nations to design develop products, processes and human resources for solving the major problems facing the planet earth. It should be realized that such working together would not only enable world-class products of optimum performance, cost and time, but also provide a sense of security to the world. Hence, Indian industry has to transform itself from the export oriented

domestic enterprises into a Globally Integrated Enterprise using technology, innovation and its core competence in a borderless world.

Globally Integrated Enterprise (GIE)

How to leapfrog into a GIE from the present form is the challenge today before all of us. GIE will reinforce World Knowledge Platform for growth in innovation. Economic development is powered by competitiveness. Competitiveness is powered by knowledge. Knowledge is powered by technology and innovation. To achieve a non-linear growth, it is imperative that the enterprises should be globally competitive and should have global presence with competitive products, systems and solutions. When we focus on the transformation towards GIE (Globally Integrated Enterprises), we should understand its characteristics such as the following:

- a. Having the same brand worldwide
- b. Having the best leaders from the global talent pool
- c. Adaptation of uniform quality standards and processes worldwide
- d. Global R&D with its research centers worldwide based on the core competence of research and its available potential for the growth of research.
- e. Having a Global mindset

Hence it is essential that the Indian enterprises should adopt the global mindset to spread its wings to further its reach. They should integrate with the world economy and become the key agents of change in dispersing technology widely adopting the internet-2 and web2.0 technologies enriching all the sectors of the economy, thereby promoting economic progress in the developing world.

The grand vision of Indian multinationals can be realized only by producing technologically superior products and systems. What we need is an innovative solution for the future, aiming to offer the best innovative solution to the world problems globally. We need to think big and aim high. Our aim and processes should set the standards for the growth ensuring quality and productivity with high efficiency rather than through increased costs.

System design

Recently, I visited the system design complex of one of the software houses and had interaction with the scientists and engineers over there. Also I have seen the

presentation of the solutions for subsystem level and system level problems. I had an interesting walk through in the blue tube to watch Me Shadow (Interactive Floor projection) with i-table, which demonstrates the capability in virtual collaborative design environment. This is an example of creating a robust virtual design environment for engineering system in India based on its vision towards the global manufacturing industry with international partnership in multiple countries. This experience leads me to think that Information and Communication Technology enterprise has the capability to become a system designer, system integrator and system manager at a particular centre in the nation with multiple sub-systems designers and developers contributing to the system spread in different parts of the world.

With global sourcing perspective, can we find a solution to our domestic and national requirements? Such capability of Indian enterprise can definitely be deployed in planning and implementing some of the major national programmes of societal importance such as:

1. National e-governance programme to provide G2G, G2C, G2B solutions.
2. Empowering the Public sector enterprises to adopt e-governance to propel its growth potential.
3. Establishment of 100,000 common service centers in different parts of the country
4. Creation of State Data Centers in all States and UT thus ensuring the seamless e-governance transaction.
5. Establishment of 15,000 e-courts leading to e-judiciary for faster clearance of pending cases and increasing the efficiency of justice delivery systems.
6. National tax management system providing a simple tax collection and IT returns.
7. Contributing to the provision of electronic, knowledge and economic connectivities to the 7000 PURA Clusters (Providing Urban Amenities in Rural Areas) spread in different parts of the country thus providing sustainable rural development.

Innovations in Chandrayaan

Friends, you have an opportunity to give a new vision in innovations and contribute for transformation of the world. All of you are aware how the scientists and engineers of ISRO have made the country proud by their path breaking accomplishments in Chandrayaan Mission recently.

The precise launch, crucial orbit raising operations, the perfect lunar orbit insertion, payload operations and precise guiding of the Moon Impact Probe (MIP) to the

specific location of their choice have all been demonstrations of disciplinary and interdisciplinary expertise in this high tech area and acknowledged by the world. I personally witnessed the MIP operations along with the confident, cautious and jubilant faces of the young and experienced. How many different types of hardware and software systems these scientists have perfected in a short duration of five years for on-board computers of Chandrayaan, mission planning and simulations, spacecraft tracking, payload data processing, spacecraft check out and launcher operations. How did they succeed? ISRO engineers thought it is possible to take up the challenges of such a complex mission. They not only have completed a successful mission, but have ignited many minds to take up innovative missions of their lives to explore the Earth-Moon-Mars complex. I am sure the India innovation growth programme can create a new vision challenges for the young minds of India and other nations who are waiting to be tapped by such world knowledge quest.

Virtual Collaborative GRID for design and development

With the technological background and the core competence in multiple areas achieved by our Indian institutions, I am visualizing a "Virtual Collaborative GRID for design and development" for enabling the design to reality - Product life cycle management framework that will enable India to realize its vision for the manufacturing sector, pharmaceutical sector, agro-processing sector and become competitive in the Defence and the commercial market of consumer and consumer durable goods and services. Institutions like Department of Science and Technology and FICCI should facilitate connecting the Virtual collaborative GRID to Academia, industry, R&D Laboratory in India and abroad through a high bandwidth network along with the hundreds of work centers. It will become the foundation for the Virtual Collaborative design platform with full fledged concept to reality product life cycle management environment for the development of any type of system such as fighters, helicopters, automotive digital cars, locomotives such as trains, robotic cars, robotic payload for the space missions in a much faster throughput with quality in a cost effective manner.

My friends, the mission of "Virtual Collaborative Platform" is the integration of everything that we do in science and technology including the networking of the scientists and the scientific minds, which will lead to establishment of Virtual Collaborative environment for conceptual design to reality leading to realization of marketable systems and products.

Conclusion: Mission in Life

Dear friends, when I see you all, I see in you great business leaders, great scientists, great technologists and great entrepreneurs. Let me share with you, what are the traits needed to accomplish these goals based on my experience.

I have seen three dreams which have taken shape as vision, mission and realization. Firstly, space programme of ISRO (Indian Space Research Organisation), AGNI programme of DRDO (Defence Research and Development Organisation) and PURA (Providing Urban Amenities in Rural Areas) becoming the National Mission. Of course these three programmes succeeded in the midst of many challenges and problems. I have worked in these areas. I want to convey to you what I have learnt from these three programmes based on my personal experience.

- a. Wherever there is a dream in life, that transforms into a vision and vision takes shape as many missions.
- b. The necessity of high level thinking to transform the Vision into Missions.
- c. Acquisition of knowledge from all sources.
- d. Working and working without boundary conditions till the realization of the mission with innovation.
- e. Leader absorbs the failure and takes the responsibility and gives the credit for success to his team while executing the Mission.

Leaders with these five traits are creative leaders. For success in all the missions, it is essential to have creative leaders. Creative leadership means exercising the vision to change the traditional role from the commander to the coach, manager to mentor, from director to delegator and from one who demands respect to one who facilitates self-respect. For a non-linear growth of the nations' economic sectors, national enterprises need large number of creative leaders.

With these words I inaugurate the Exposition and Launch the India Innovation Programme. My Greetings and Best wishes to all the participants of this programme for success in their mission of enhancing the innovative capability of the entire Indian society.

May God Bless you.

APJ Abdul Kalam