M. Munasinghe
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THE COMPUTER SOCIETY OF SRI LANKA.

PLANNING FOR FUTURE COMPUTER DEVELOPMENT IN SRI LANKA

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1. Introduction

Let me begin by expressing my deep gratitude to the Computer Society of Sri Lanka. and Mr. R. B. Ekanayake in particular, for having offered me the opportunity of speaking to you today. I am indeed privileged to address such a distinguished gathering of computer professionals and their special guests.

This particular annual meeting is especially significant since it coincides with the birth of a new national body called the Computer and information Technology Council (CINTEC), functioning directly under His Excellency the President. We are very fortunate in Sri Lanka, to have strong support for computer development originating from President Jayewardene himself. His initiative and vision of the future are evident in the following extract from a speech made at the opening of Parliament on 9 February 1983:

"We must look to the future. The foundations for spiritual and material progress according to contemporary world conditions have been laid. Where does the future lead us to?

The Government has considered that too. We hope to lead our youth into the technological age, complete with robots and computers. Already plans are being prepared for the establishment of centres of education and for the assembly and manufacture of the necessary equipment."

The 10 member Computer and Information Technology Council will advise the government in formulating, coordinating and implementing policy. CIN TEC would provide a guiding framework within which Sri Lankan public and private sector institutions in the computer field can develop and interact fruitfully, without unnecessary duplication, wastage of scarce resources, and policy conflicts. The emphasis will be on promotion, encouragement and coordination, rather than controls and regulation that can stifle initiative.

The establishment of CINTEC is based on the conviction that given the support and guidance of the government, and a committment of resources that will be very modest in terms of our overall national investment programme, the resulting developments in computers and information technology will bring about fundamental improvements in our lifestyles and contribute significantly not only towards material progress but also sociopolitical development and national cohensiveness.

2. Future Scenario

As a physicist and engineer, I have been deligated by the recent advances in solid state technology and the mass production of micro-electronic devices. These developments have given impetus to the world-wide information revolution, which has been compared in terms of its likely impact on contemporary society to the industrial revolution of the last century.

A few statistics illustrates this trend. Computer hardware that would have filled a room 35 years ago would now fit into a silicon chip the size of a pea, while power requirements have also declined correspondingly. Most importantly, nominal costs have declined by a factor of more than 100 over this same period, while reliability of operation and ease of maintenance have improved substantially.

Comparable reductions in cost and improvements in both hardware and software capability are anticipated in the coming decades. A sampling of exciting potential developments for the future include the ultrafast light computer capable of trillions of operations per second, and very large scale integrated circuits culminating in "molecular" switches which are a billion times smaller than comparable devices today. Software sophistication is also growing but not at the same pace as hardware. In fact, the apparent weakest area for the future is in our intellectual capability to describe and conceptualize complex microelectronic systems in order to analyse, test and fully exploit their capabilities.

As an economist and policy planner; I am equally cognizant of the need to rationally and efficiently allocate Sri Lanka's scare financial and manpower resources, so that we can harness these new technologies to maximize socio-economic development. Let me outline a desirable scenario for computer applications in Sri Lanka.

In the short-run (2 to 3 years), we may expect progressive gains in productive efficienty of private and especially public sector organisations, through the use of computers. Improving the quality of high level decision-making where management skills are scarce, will help create more jobs at lower levels rather than making workers redundant. Working level opera-

tional efficiency and quality of work will also improve. Better application of computers to science and technology will enable the intellectual community to enhance their contribution to national development. The initiation of a major effort in computer education, encompassing schools, universities, industry and commerce, and the general public is already under way.

The medium–term (5 to 10) years is likely to lead to the development of Sri Lanka as an Asian Service Centre for computerised international banking and trade. Our assets include the attractive economic policies of the government and stable climate for investment, convenient geographic location, highly educated manpower base, and acceptability among all countries in the region. In this time frame, we also expect the development of more decentralized domestic institutions, to meet the needs of administration, finance, production, and exchange of goods and services. The use of computers will significantly improve the flexibility of citizens to make use of their skills and talents. This will provide an additional impetus for entrepreneurial activities more in keeping with national character and temperament. Exports of computer software and hardware as well as programmers and analysts provide encouraging prospects. By this time, centres of excellence like the Arthur Clarke Centre will be making significant contributions.

In the long-run, towards the turn of the century, we should aim for a systematic transformation of the economy. Sri Lanka can move rapidly from the agricultural to the services oriented stage of economic development, while avoiding some of the worst aspects of the intermediate heavy industrial stage. We can concentrate on industries that are knowledge-intensive and efficient in the use of scarce resources such as capital, skilled manpower, land, and energy. It will also be possible to avoid investments in industries where future developments world-wide., especially in robotics, are likely to erode the advantages of our low-cost labour.

CINTEC will play the leading role in coordinating and guiding the sustained and systematic national effort necessary to bring about this scenario. Moreover, this will also require several essential prerequisites including clear-cut definition of national objectives, policy guidelines and orgnisational framework for implementation.

3. National Computer Policy Objectives:

The following broad national computer policy objectives have been identified in the National Computer Policy Committee's report of April 1983, and subsequently approved by the government.

(*a*) Harness computer technology in all its aspects, for the benefit of the people of Sri Lanka, and to further the socio-economic development of the nation.

(*b*) Promote and guide the development of computer-related resources and their application, to anticipate and meet the future needs of the national economy.

(*c*) Enhance and supplement manpower resources and increase the efficiency and productivity of management and workers at all possible levels.

(*d*) Improve the quality of life of the people of Sri Lanka, including the job satisfaction and working conditions of employees.

(*e*) Increase the flexibility and dynamism of Sri Lankan society to enable it to successfully meet the challenges of the future, arising from the ever increasing pace of world–wide, scientific and technological advances.

Let us examine the rationale underlying these objectives.

The first objective is intended to clearly establish that computer technology in all its aspects should be treated like any other instrument of Government policy, to improve the well being of the people of Sri Lanka and contribute to the national socio-economic development effort.

The second objective is somewhat more specific, and seeks to encourage planning and systematic analysis of the national need for computers and computer-related resources. Once these requirements are established, it would be possible to meet them, so that economic growth and prosperity would not be hindered due to the lack of this vital element of modern infrastructure.

Objective three relates to sensitive issues of computerisation and automation in the context of a labour-surplus developing country such as Sri Lanka. It is important to recognise the role of the computer as an instrument which substitutes for and enhances manpower at the skilled level where it is most scarce, rather than one that displaces surplus unskilled labour. A properly designed computer policy will create many new jobs, while enhancing the efficiency and productivity of management and workers at all levels.

The fourth objective is aimed at improving the quality of life of the people of Sri Lanka and eliminating drudgery both at home and in the work place. The advent of relatively inexpensive and versatile micro–computers will revolutionalize life styles and working habits over the next few decades, because of the greater flexibility provided by the new computer technology, e.g. the lives of Sri Lankans can be significantly improved by providing access to large amounts of information, and by improving communications.

The fifth objective is a general one. It recognizes the fact that for its long–run viability, any nation

or society must be sufficiently resilient and dynamic to successfully meet the challenges of the future. This is particularly relevant to a small country like Sri Lanka, which has from historical times, has prided itself on its ability to utilize and innovatively incorporate into its own cultural framework, the most valuable elements of ideas and technologies brought in from different parts of the world.

4. Policy Guidelines

The following is an initial set of national policy guidelines that should be revised in the future, when appropriate:

(*a*) **Acquisition:** Potential users should be encouraged to treat the acquisition of a computer and/or related items as any other investment, including clearcut identification of computer needs and technical, economic and financial evaluation of the project. Government imposed regulations, rules, or financial disincentives that would restrict or delay purchasing of computers and related items should be minimized wherever possible.

(*b*) *Utilization and Access:* Sharing of computer hardware, software and data resources should be promoted. Computer installations should be fully utilized by permitting access to users during as many hours of the day as possible. However, it would be undesirable and impracticable for the government to attempt to compel owners of computers facilities to share their resources. Interchange of information regarding computer hardware and software resources available among different users should be promoted.

(*c*) *Computer Education, Public Sector Applications, Computer Literacy and Appreciation of the Potential of Computers:* The Government should take immediate steps to improve computer-related skills and promote their application as widely as possible, especially in the following areas: scientific analysis, higher education, industry, business and financial management, and schools. The establishment of standards for computer education should also have high priority. Particular attention should be paid to identifying and encouraging the application of computers in the public sector. Efforts should be made, as soon as possible, to ensure adequate financial incentives and job satisfaction, in order to attract and retain the services of computer personnel in Sri Lanka. Computer literacy and appreciation of the potential of computers among the general public should be increased.

(*d*) *Self-reliance, Export of Computer Services:* Efforts should be made to make the country as self-reliant as possible in computer skills, establish a sound indigenous capability to evaluate and acquire foreign computer technology when necessary, and also export computer services (both software and hardware, especially assembled products).

(*e*) *Computer-Related Infrastructure and Legal Environment:* The Government should give high priority to improving infrastructural facilities that are essential for developing computer use in Sri Lanka, including: local and overseas telecommunications services, and electricity supply. An adequate legal environment should also be created which recognizes the role of computers, as well as its impact on society.

(*f*) *Other Areas Related to Computers:* Development in areas related to Computers such as satellite communications, other telecommunications, and robotics should be closely monitored and adapted for application in Sri Lanka whenever appropriate, by both the Government and other interested groups.

5. Organization of the Cumputer Sector and Role of the Computer Society

The proposed organization of the computer sector in Sri Lanka is indicated in the attached figure.

CINTEC will create a Central Computer Sectretariat (CECSEC) to service its needs and those of the sector. Permanent committees of CINTEC will also be established on: (a) Computer Education; (b) Computer Applications in the Public Sector; and (c) Telecommunications and Data Transmission; to advise on and promote activities in these areas. These committees will ensure close collaboration with the Ministries of Higher Education and Education, a well as other concerned government institutions.

The growth and development of several Centres of Excellence, identified in the first instance as, the Arthur Clarke Centre, the Universities of Colombo, Moratuwa, and Peradeniya, and the National Institute of Business Management, will be supported. CINTEC also hopes to establish channels of communication with and draw on the contributions of the Computer Society of Sri Lanka, and other private special interest groups and companies.

I take this opportunity of urging the Computer Society to expand its activities and fulfil the role we envisage for it within this framework. Specific areas in which your support and collaboration would be invaluable to CINTEC, include:

(*a*) Establishing and maintaining a code of conduct for computer professionals:

(*b*) Maintaining the standards of computer education, especially among private organisations;

(*c*) Providing a forum for exchanging ideas, and disseminating in Sri Lanka, the latest information on computers; and

(*d*) Helping to ensure the integrity and security of data in computer installations, and to prevent abuse of privacy.

One of the first items on CINTEC's 1984 work programme would be the organizing of several regional/international workshops on the latest applications of computers in science, technology and business. Leading foreign and local experts will lecture and demonstrate to enable a large number of Sri Lankan participants to obtain valuable up-to-date training and skills in these areas. Specific studies concerning the scope of application and impact of computers in different sectors will be initiated. We welcome the Computer Society's assistance in these efforts.

6. Concluding Observations:

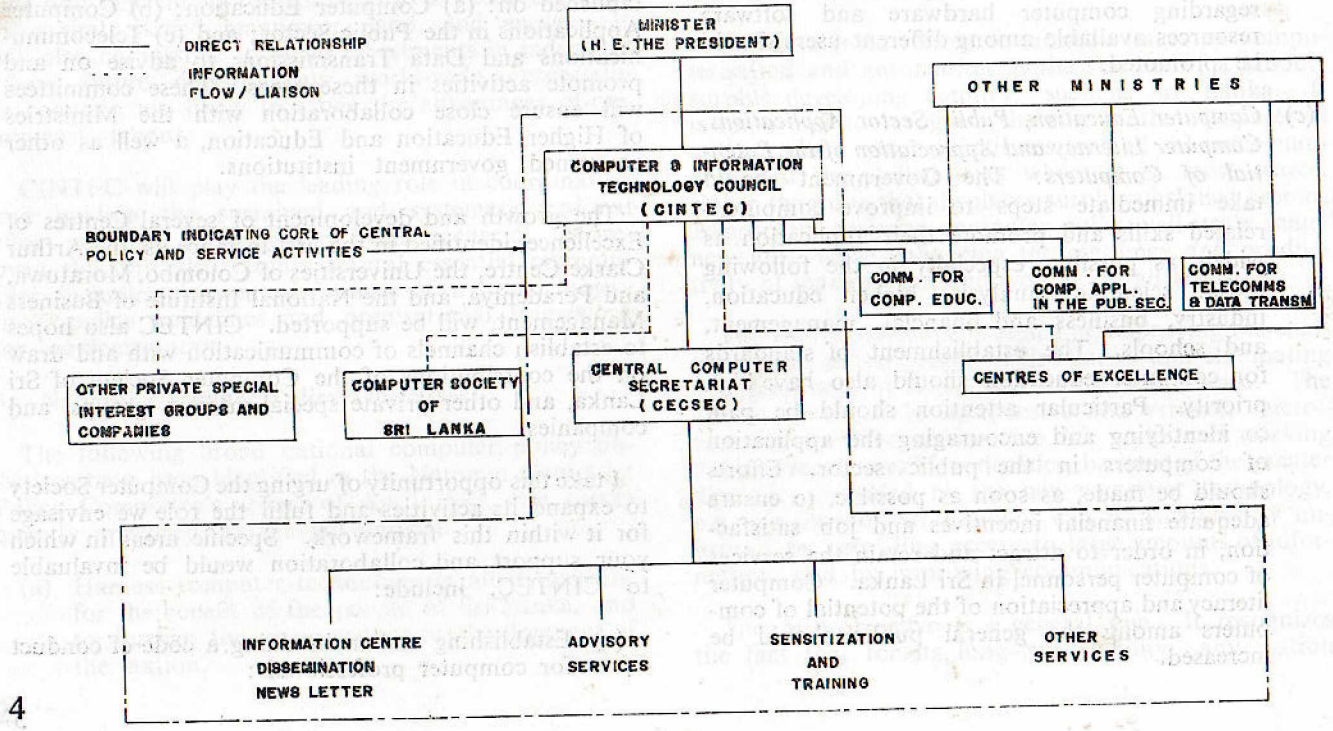
Sri Lankan society is transforming itself rapidly today, adapting to fast paced changes worldwide, We must expect some teething problems or growing pains. Sri Lankans are confident that our experienced and far–sighted leadership will solve the sociopolitical problems. But we the professional and technical community must provide the necessary effort to meet the physical and economic challenges. Our country is blessed with a unique and invaluable resource—a highly enlightened and well educated population, especially the youth, which CINTEC must harness. The primary impetus for intellectual growth must come from indigenous sources. Foreign technology transfer can and will accelerate this process, but a high degree of self-reliance and self-respect is essential

In the recent past, there has been great concern about the possibility of Sri Lanka falling within the various spheres of influence of larger foreign powers. This is not positive thinking. Let us press on with our own policies and plans, so that at least in the computer area, we may soon be able to talk about other neighbouring countries being within the Sri Lankan "Sphere of Influence."

Let me conclude by pointing out that from ancient times, intellectual development has been a revered goal in Sri Lanka. Over the centuries, we have displayed the wisdom and good sense to absorb the best elements of knowledge brought from abroad, without fear or favour. In the same spirit, we Sri Lankans will look outwards with open minds, into the futuristic world of computers and modern technology, secure in the basic strengths provided by a rich socio-cultural heritage and our sound contemporary intellectual skills. The future may be uncertain but it is not entirely beyond our control. We are confident that the challenge of modern technology will offer us a unique opportunity to speed up development efforts and build a truly united Sri Lanka through the enhanced application of the human intellect.

Thank you and good luck.

FIGURE I ORGANIZATION OF THE COMPUTER SECTOR IN SRI LANKA



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