

The Department of Electronics (DoE) has been entrusted with the development of electronics, control instrumentation, robotics and artificial intelligence. All imports in these sectors are regulated by the DoE.

#### Leading Indian Companies

ITI started its production with strowger equipment, and later switched over to Pentaconta cross-bar equipment and digital E-10B exchanges. ITI also manufactures various types of transmission and terminal equipment. Bharat Electronics Ltd (BEL) and Electronic Corporation of India Ltd. (ECIL) manufacture microwave systems and telex equipment in collaboration with Siemens.

In the last few years, some state governments have also set up public sector companies to manufacture and market telecommunication and electronic equipment, and components. The communications needs of the Indian Armed Forces are also being met by indigenous sources, namely BEL, Hindustan Aeronautics Ltd (HAL), ITI and ECIL.

For telephone instruments, three technologies - Siemens, Ericsson and Face of Italy - have been standardized. Several companies are making telephone instruments under licence, using the above technologies and production is adequate. For the PABX, three technologies have been standardized. These are: OKI, GTE and Jeumont Schneider.

#### Research Centres

R & D activity in India basically started as an import substitution exercise for items having a sizeable domestic demand. R & D in the telecommunications sector has been primarily undertaken by the Telecom Research Centre (TRC). Industrial research in this field has also been undertaken by the Central Electronics Engineering Research Institute (CEERI); the National Physical Laboratory (NPL), and the Railway Design and Standards Organization (RDSO). More recently, TRC was merged with the C-DoT. The Telecom Engineering Centre (TEC) has been assigned the mandate of providing high technology inputs to the DoT.

The Indian Space Research Organization (ISRO) undertakes research and development activities in space science and technology. The United Nations Development Program (UNDP) and its technical consultant, the International Telecommunications Union (ITU), have provided support in developing the facilities for the Satellite Instructional Television Experiment (SITE). India has benefitted from the help provided by a number of countries, particularly Canada, UK, U.S.A., Germany, the erstwhile USSR, France and Japan for various space projects. The priority given to R & D has enabled India to develop several sophisticated technologies indigenously and in the process, strengthening the local industrial base.