



Development and Educational Communication Unit (DECU)
Indian Space Research Organisation
Ahmedabad



Space-based Societal Applications for the **National Development**



Background

DECU is involved in the system definition, planning, implementation and socio-economic research/evaluation of satellite based societal applications.

To this end, it works with user agencies to experiment with innovative configurations to meet their requirements.

It is through these applications-oriented experiments/demonstrations for communications, production of educational communication material and joint working with end-users - with the 'end-to-end' approach - that DECU facilitates covering of the 'last mile' in space applications.

DECU is an outgrowth of ISRO's software activities in systems planning, TV program production & transmission and social research initiated during the Satellite Instructional Television Experiment (SITE) in 1975-76.

It was earlier the Software Systems Group (SSG) of SAC and got spun off as a separate entity/unit of ISRO (co-located in SAC campus) in 1983-84.

DECU Activities

The Major Programs, at present, of DECU - to promote the satellite-based communication systems to support development, education & training - include:

- Edusat Utilisation for Tele-education.
- Gramsat Program (incl. Training and Development Communication Channel),
- Telemedicine, and
- Other Satcom Development and Applications.

The DECU Roles/Activities for these are -

- Satcom Networks - Configuration, Implementation & Utilisation,
- Content Generation/Program Production & Transmission,
- Social Research & Evaluation, and
- Training



DECU Organisation

DECU has five Groups looking after various responsibilities:

- ◆ **CGG** - Content Generation Group - Program Production / Content Generation
- ◆ **SFG** - Studio Facilities Group - Technical facilities support, Defining and Setting up of Studios for User Agencies
- ◆ **SRD** - Social Research Division - Formative, Process and Summative Research
- ◆ **SNDG** - Satcom Network Deployment Group - Implementation, Deployment & Operations
- ◆ **PPG** - Planning & Projects Group - Project Management & Monitoring



Tele-Education

The Edusat, launched by GSLV-F01 in September 2004, is India's first thematic satellite dedicated exclusively for educational services. The satellite is specially configured to reply through audio-visual medium, employing multi-media multi-centric system, to create interactive classrooms. Edusat has multiple regional beams covering different parts of India - five Ku-band transponders with spot beams covering northern, north-eastern, eastern, southern and western regions of the country, a Ku-band transponder with its footprint covering the Indian main-land region and six extended C-band transponders with their footprints covering the entire country. The Edusat Utilisation is being implemented in three phases i.e. pilot, semi-operational and operational phases. While pilot phase has continued, semi-operational and operational phase have been put into implementation.

The Edusat is already providing a wide range of inter-active educational delivery modes like one-way TV broadcast, video conferencing, computer conferencing, web-based instructions, etc.

64 networks have been setup so far - out of which, 11 networks are in national beam and 53 networks are in regional beams. There are more than 3365 interactive classrooms (SITs) and 30403 receive-only classrooms (ROTs) totaling close to 33768 classrooms. Networks have already been setup in 23 states covering almost the entire country including all islands (Andaman & Nicobar, Lakshadweep), North-Eastern states and Jammu & Kashmir. Implementation in remaining states is under progress.

Training and Development Communication Channel (TDCC)

A total of 8 Ext.C-band channels - 6 on INSAT-3B and 2 on Edusat - are being used for TDCC, a service that has been operational since 1995. It provides 1-way video & 2-way audio system of interactive education. The teaching-end includes a studio and an uplink facility for transmitting live or pre-recorded lectures. The participants at the classrooms located nationwide, receive lectures through simple dish antennas (DRS) and have facility to interact with lecturers using telephone lines. The teaching-ends are now available at Gujarat, Madhya Pradesh, Orissa, Karnataka and Goa. The DRS network consists of more than 5000 classrooms spread over the country. Several state governments & universities are using TDCC system extensively for Distance Education, Rural Development, Women & Child Development, Panchayati Raj, Health, Agriculture, Forestry, etc.

Average utilisation of TDCC is about 25 to 30 days a month with 60 to 75 interactive training programmes.

Gramsat Program

The Gramsat programme is an initiative to provide communication networks at the state level connecting the state capital to districts and blocks. The networks provide Computer Connectivity, Data Broadcasting and TV Broadcasting facilities having applications like e-Governance, National Resource Information System (NRIS), Development Information, Tele-conferencing, Disaster Management, Tele-medicine and Distance Education.

The Gramsat networks are operational in Orissa, Andaman & Nicobar islands, Rajasthan and West Bengal.

Integrated Networks

Now, the plans are to provide the integrated services thro' a single hub for the state networks - i.e. a grid for diverse developmental services, with integration of Satcom networks with existing communication infrastructure for seamless information thro' hybrid systems.



Tele-Medicine

The Telemedicine is one of the unique applications of space technology for societal benefit. The ISRO TM programme, which started in 2001, has been connecting remote, rural & medical college hospitals and Mobile Units through INSAT and Edusat to major specialty hospitals in cities and towns. The TM connectivity covers the areas of Jammu & Kashmir, Ladakh, Andaman & Nicobar and Lakshadweep Islands, North-Eastern States, mainland states including tribal districts of main-land states like Kerala, Karnataka, Tamil Nadu, Chhattisgarh, Punjab, West Bengal, Orissa, Andhra Pradesh, Maharashtra, Jharkhand, Rajasthan, etc.

While, ISRO provides TM systems (software, hardware and communication equipment as well as satellite bandwidth), the state governments and the specialty hospitals have to allocate funds for their part of infrastructure, manpower and maintenance. The technology development, standards and cost-effective systems have been evolved in association with various state governments, NGOs, specialty hospitals and industry for bringing an understanding between the parties thro' the MOUs.

The TM network has been further expanded to cover the areas of Mobile Tele-health and Continuing Medical Education. Presently, in ISRO TM network, about 306 hospitals are provided with this facility - 263 remote/rural/district/medical college hospitals connected to 43 specialty hospitals with 10 Mobile TM units that have been established.

ISRO's effort has led to the constitution of a National Task Force by the Ministry of Health and Family Welfare. The 'Task Force' has been working out various aspects of implementing TM in the country.



Conclusion

The continuing expansion of space applications programs like Tele-education, Tele-medicine, etc. reiterates the increasing role played by DECU in providing direct benefits to the society. Thus, DECU continues to pursue successful goals on all fronts in meeting the objectives of space-based societal applications for the national development.



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