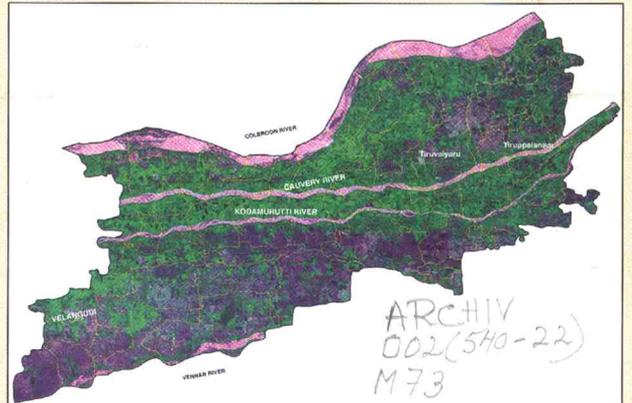


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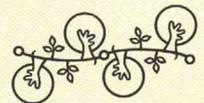
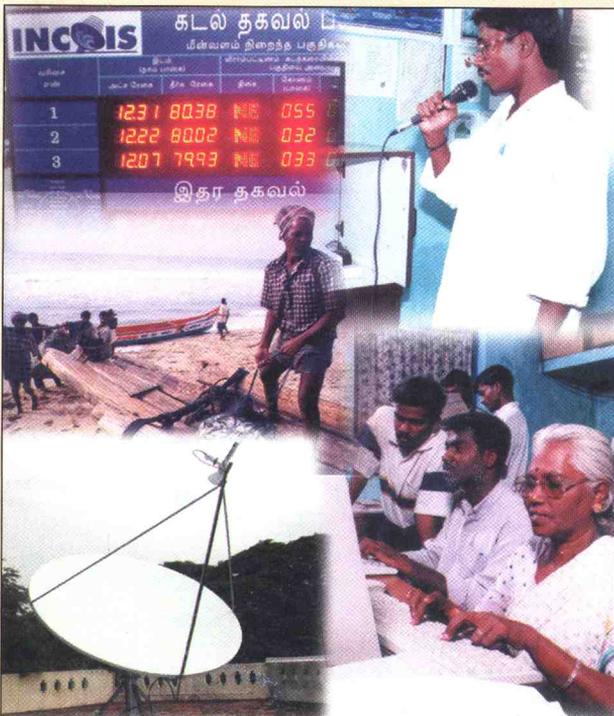
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# Harnessing the tools of the Space Age for Rural Transformation



## Opening doors for a Fulfilling Life in Rural India



Indian Space Research Organization  
M S Swaminathan Research Foundation

## Socially Relevant Space Applications

Space technology, as the powerful enabler, provides alternate route for holistic and rapid rural development. India has been among the world leaders, in the areas of developing end-to-end capability for both remote sensing and communication satellites. Indian Space Research Organization (ISRO) has made remarkable progress in building state-of-the-art space infrastructure like the Indian National Satellite (INSAT) and the Indian Remote Sensing (IRS) satellites. ISRO has also been a champion in demonstrating the use of space technology for societal good.

ISRO has piloted several socially relevant space application projects like the Satellite Instructional Television Experiment (SITE), the Training and Development Communication Channel (TDCC), the Jhabua Development Communications Project (JDCP).

Space based services, emanating from Satellite Communication (SatCom) and Earth Observation (EO) satellites, hold considerable value to transform village society. EO enables community centric spatial information up to cadastral level in terms of geo-referenced land record, natural resources, suitable sites for potable/drinking water as well as recharge, incidence of wastelands for reclamation through rural employment creation, watershed attributes, environment, infrastructure related information, alternate cropping pattern, water harvesting etc. Synthesizing spatial information with other collateral and weather information, EO also facilitates locale specific



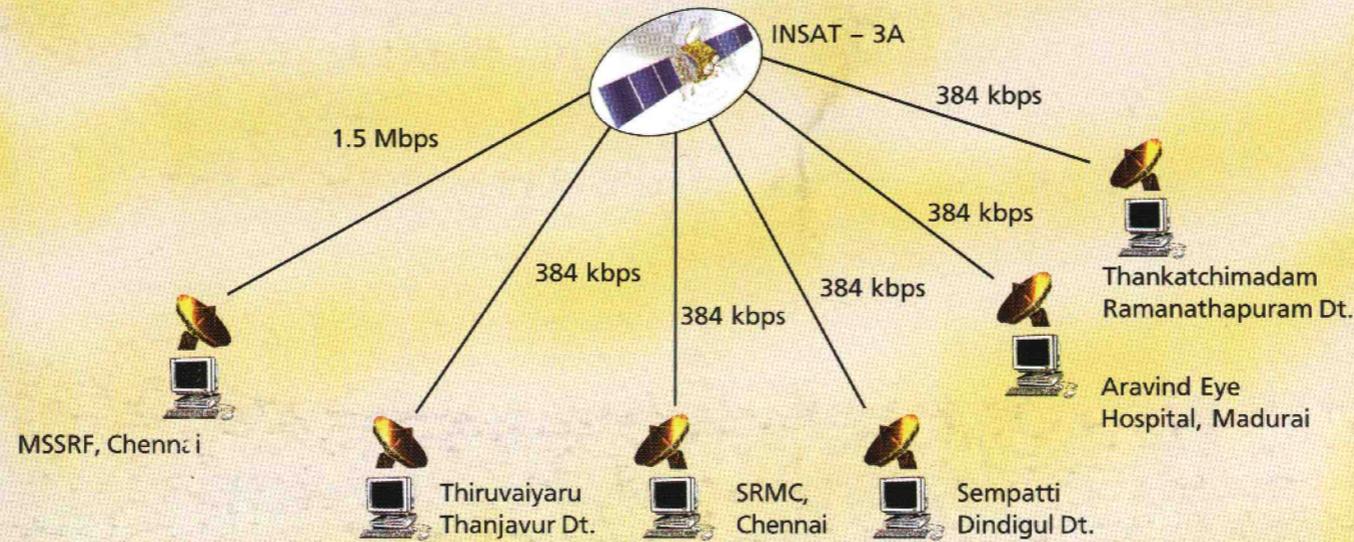
### Knowledge-based Solutions

"My vision of rural transformation in Tamil Nadu by technological leapfrogging envisages new initiatives in science that could become the launching pad for the sustainable development of our village economies, providing knowledge-based solutions which would help productivity in agriculture, greater employment in the rural economy, higher levels of enrolment at the Elementary School level, adult literacy and sound primary healthcare delivery systems."

**Dr J Jayalithaa**

Hon'ble Chief Minister of Tamil Nadu

## ISRO – MSSRF VRC Network



community advisory services. Disaster management support, community based vulnerability and risk related information, early warning and extreme weather information dissemination mechanisms provide reliable disaster management support at the village level.

In order to disseminate the portfolio of services emanating from the space systems as well as other Information Technology (IT) tools, directly down the line to the rural communities, a partnership between ISRO and the M.S. Swaminathan Research Foundation was formed to address the dynamic and critical needs of rural communities in the most efficient ways.

### ISRO-MSSRF VSAT Network

The ISRO-MSSRF VSAT Network is a totally interactive network consisting of four nodes: Thiruvaiyaru, Thankatchimadam, Sempatti and Chennai. The central node is located at the MSSRF Office in Chennai. The network is based on Ext-C band and uses INSAT-3A satellite. Each node is capable of sending data up to 384 Kbps and receiving at 1.5 Mbps. With this capability, full video and audio interactivity can take place from one node to another.

Each of the four nodes can be further expanded using other technologies like Wi-Fi, Wireless, Optical Fiber. These extensions may serve as local clusters around the areas where the VRC is located. These local clusters can then be linked automatically to the central node in Chennai.

The viability, sustainability and scalability of the Village Resource Centres will ultimately depend on the relevance of ICT to the

lives and livelihood of rural families. Thus, the VRC aims to reach every rural household with location, need, gender, livelihood and time specific knowledge. It will concentrate on helping rural women, men and children to meet their basic needs in education, health, nutrition, drinking and irrigation water, and vocation. The programme will cover both farm and fisher families based on the motto: **"Food, water, health, literacy and work for all and for ever"**.



### Digital revolution: Crossing the Development Bridge

"Dear countrymen, from the National Common Minimum Programme, I have identified seven priority sectors for focused attention. These are agriculture, water, education, healthcare, employment, urban renewal and infrastructure. These seven sectors (saat sutra) are the pillar of the development bridge we must cross to ensure higher economic growth and more equitable social and economic development. The concerns of most of our citizens revolve around what we do for agriculture, water, education, health and employment. We recognize that for the development of the country what we are able to do in the key infrastructure like power, roads, railways, ports and airports is also critical."

**Dr Manmohan Singh,**

Hon'ble Prime Minister of India  
in his Independence Day Speech, 15 August 2004

## Knowledge Revolution for a Better Life

The ISRO - MSSRF Village Resource Centre (VRC) Project is a partnership made to uplift the life and livelihood of Rural India. It aims to promote a single window delivery need based services in the areas of education, health, nutrition, weather, environment, agriculture and livelihoods, to rural women and men. The VRCs will handle both dynamic and generic information to empower rural communities through spatial information infrastructure including broadband, internet, telephone and fax. It will help launch a knowledge revolution in rural India designed to enhance ecological and livelihood security and accelerate human development and quality of life by taking the benefits of the space age for improving the productivity, profitability and sustainability of agriculture and for generating value-added on farm and non-farm employment.

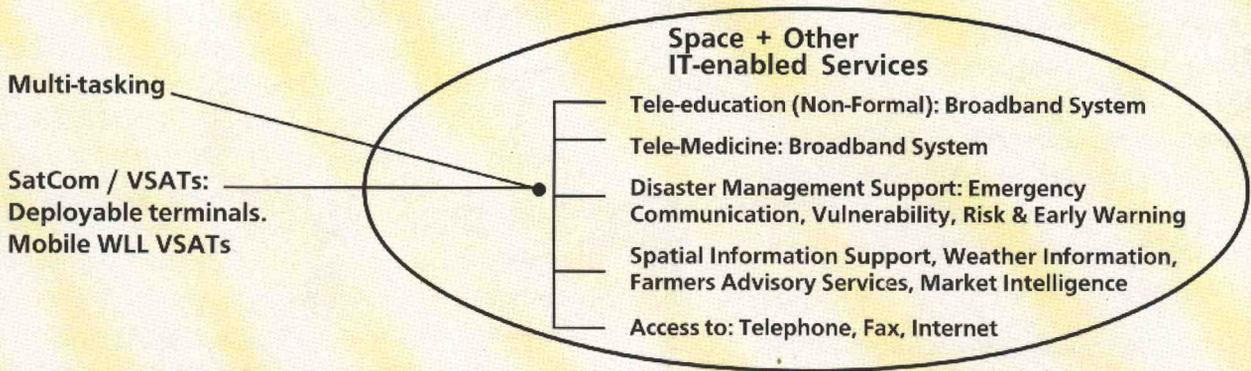
The Information Village Project of the MSSRF stand witness to how technology enhances networking and sharing of knowledge and information. It provides an avenue or facilities linking the women, men and children of the village with government departments, NGO, academic institutions and experts. Based on govt. entitlements information, several women have started their own businesses. The farmers got good price for their grains from different markets. School teachers are using our Educational CDs to improve the science / arithmetic knowledge of children. Panchayat (Local body) leaders are keeping the accounts, typing letters in the knowledge centres. Old people share their traditional medicinal knowledge and make it available for all the networked villages. Villagers have used the facilities available at the centres for various purpose to help them improve their lives.

### This is only the beginning...

Technological divide has been an important factor in further widening the already extensive gap between the rich and poor. The challenge is to enlist technology as an ally, and not an adversary, in the movement for economic, social and gender equity.

The creation of the Village Resource Centres is just the first step. The challenge is to provide a brighter future, connected to the world of opportunities and growth for 600,000+ Indian villages by the year 2007. It may seem like an impossible task, but as Jamsetji Nusserwanji Tata showed, seemingly impossible tasks could be achieved through vision, determination, hardwork and tapping the resources already in place.

## Village Resource Centre (VRC): Concept Providing Key Technological Solutions for Development through Integrated SatCom & EO Capabilities



**Tele-education:** focusing on building indigenous skill and imparting training and capacity building, including formal, non-formal and adult education. As a virtual community centric learning centre, VRCs aims to bring access to knowledge at the village doorstep.

**Tele-medicine:** to bring the services of speciality hospitals and expert doctors closer, the VRCs will provide connectivity to these centers. The Arvind Eye Hospital, Madurai and Sri Ramchandra Medical College and Research Institute (SRMC), Chennai, Tuberculosis Research Centre, Chennai has already been tapped to provide their services to the villages. It is envisaged to create zones where preventable diseases are totally eradicated, like cataract-free zones with the help of the Arvind Eye Hospitals. Furthermore, any one of these VRC nodes can get connected to any of the 75 hospitals of the ISRO Telemedicine network, of which 19 are super-speciality hospitals.

**Online Decision Support:** with the comprehensive databases on detailed scales extracted from high resolution satellite imageries, VRC will not only bring access to spatial information on various themes such as land-use/land-cover, soil, ground water prospects but also enable the farmers to get query based decision support. GIS databases comprising all thematic layers, cadastral boundaries, road network, canal and drainage network have been created. A simple software package has been developed for accessing and querying the natural resource information and related advisories, which will enable farmers to get online decision support at cadastral levels.

**Interactive Farmers' Advisory Services:** VRC will enable online interactions between the local farmers and agriculture scientists working at MSSRF and the Tamil Nadu Agricultural University. The advisory will cover a wide range of subjects starting from alternate cropping systems, optimization of agricultural inputs – seeds, water, fertilizer, insecticides, pesticides and producer-oriented marketing opportunities.

**Tele-fishery:** the coastal region of Rameswaram will be provided with near real time charts, based on satellite derived potential fishing zones, for fishing and information on sea state, wave heights and other conditions related to the behaviour of the sea.

**E-governance services:** services such as governmental schemes on agriculture, poverty alleviation, rural employment, social safety nets – food for work programme and other basic entitlements, internet radio, animal husbandry and livestock related services, services related to Self Help Group (SHGs).

**Weather Services:** Short, medium and long-term weather forecasts will be converted into location and farming system specific action plans.

**Water Management:** community centred advisories on soil and water conservation, on adopting water efficient cropping patterns, on practices related to rainwater harvesting, on participatory watershed management, etc.