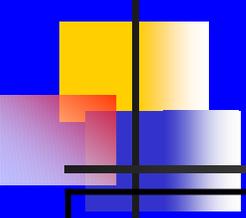


# SPACE SCIENCE AND TECHNOLOGY FOR CAPACITY BUILDING AND SUSTAINABLE DEVELOPMENT

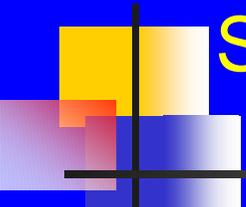
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Prof. U.R. Rao  
Chairman, PRL Council  
(Former Chairman, ISRO & Secretary, DOS)  
Department of Space, Antariksh Bhavan  
New BEL Road, Bangalore – 560 094.



## Status of Developing Countries (2003)

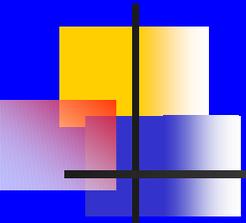
Category	High Income	Low Income	Medium Income	Low + Med Income
Population (billions)	1.0	2.3	3.0	5.3
GNP (billion \$)	27,732	1,038	5,732	6,762
GNP – Per Capita (\$)	28,550	450	1,920	1,280
Adult Literacy (%)	100	61	90	78
Below Poverty line (Millions)	--	620	290	910
Food Productivity (Tons/Ha.)	3.6	1.6	3.2	2.5
Life Expectancy (years)	78	58	70	65
Under-5 Mortality (per 1,000)	7	126	38	88
Agriculture (% GDP)	4	27	10	12
Industry (% GDP)	30	30	36	35



## Status of Developing Countries (2003)

Contd..

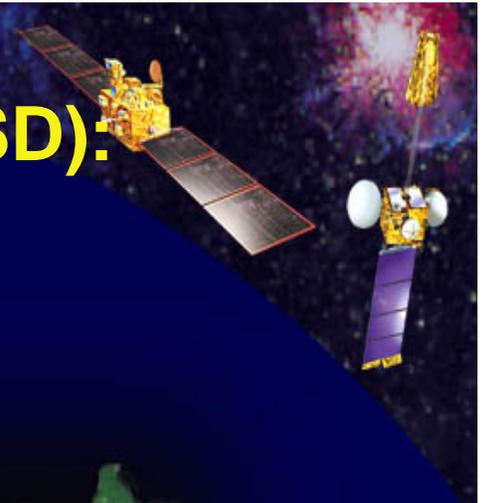
Category	High Income	Low Income	Medium Income	Low + Med Income
Services (% of GDP)	66	43	55	54
Energy Per Capita (Kg oil Equivalent)	5,369	563	1,360	1,005
Use of Tractors (Per 1,000 workers)	908	0	12	8
Use of Telephones (Per 1,000)	567	23	109	69
Use of TV (Per 1,000)	661	76	257	172
Use of PC (Per 1,000)	311.2	3.2	22.9	15.6
Internet Hosts (Per 1,000)	777.2	0.4	10.0	5.4
R&D Scientists/Engineers (Per million)	3,166	120	668	430
Annual Deforestation (Km <sup>2</sup> )	-11,700	45,130	68,288	1,13,418



# Food Security Through Sustainable Development

	<b>Problems</b>	<b>Space Solutions</b>
1	Uses 1 <sup>st</sup> wave technology	Employ ICT Revolution
2	Unsustainable Green Revolution	Ever Green Revolution
3	Non-conservation of Soil & Water	Combine Space & Bio-Technology for Conservation, Monitoring & Sustainable Development
4	Poor Agricultural Practices	Employ GIS/Precision farming
5	Improper Monitoring	Use Remote Sensing Monitoring
6	Poor Productivity	Employ Site-Specific Treatment for Achieving Higher Productivity
7	Lack of Expertise	Education – Capacity Building

# Integrated Mission for Sustainable Development (IMSD): Chandrapur - A Success Story



## Action Plan for Micro-level Watershed Development

Drainage/  
Ground water



Land use/  
Land cover



Soil



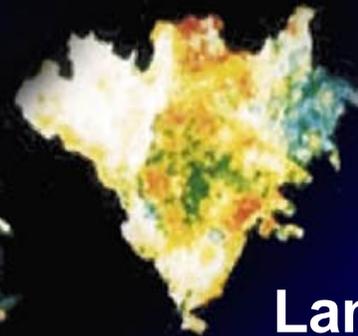
Geology



Slope

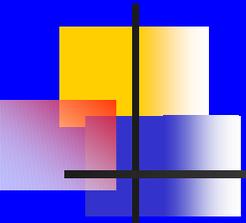


Landform



... Capacity building  
Rural India





# Sustainable Economic Security

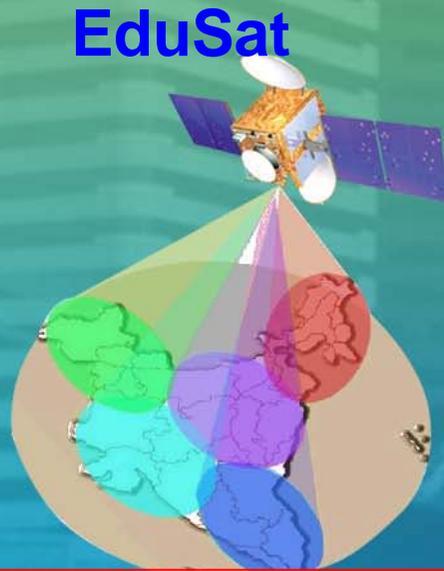
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	<b>Problems</b>	<b>Space Solutions</b>
1	Industrial Backwardness – Imported Know-how and use of Cheap Labour	Innovation Using Knowledge Based Systems
2	Poor Educational Facilities	Employ Tele-Education for Quality Education, Training and Retraining
3	Lack of Capital	Become an Outsourcing Destination Through Education / Capacity Building
4	Increasing Digital Divide	Bridge Digital Divide Through IT
5	Rural Poverty	Value Addition Through Info. KIOSKS - Village Service Centers

# Tele Education



**EduSat**



Video  
+  
Audio



Video  
+  
Audio

5 Spot Beams in Ku Band  
1 National Beam in Ku Band  
1 National Beam in Ext C  
Band (6 Channels)

Audio

**Multimedia Content**



Teaching-End

**Receive Only**



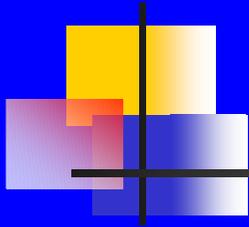
Class Room-1

**Video Interactive**



Class Room-2

# Sustainable Health & Environmental Security



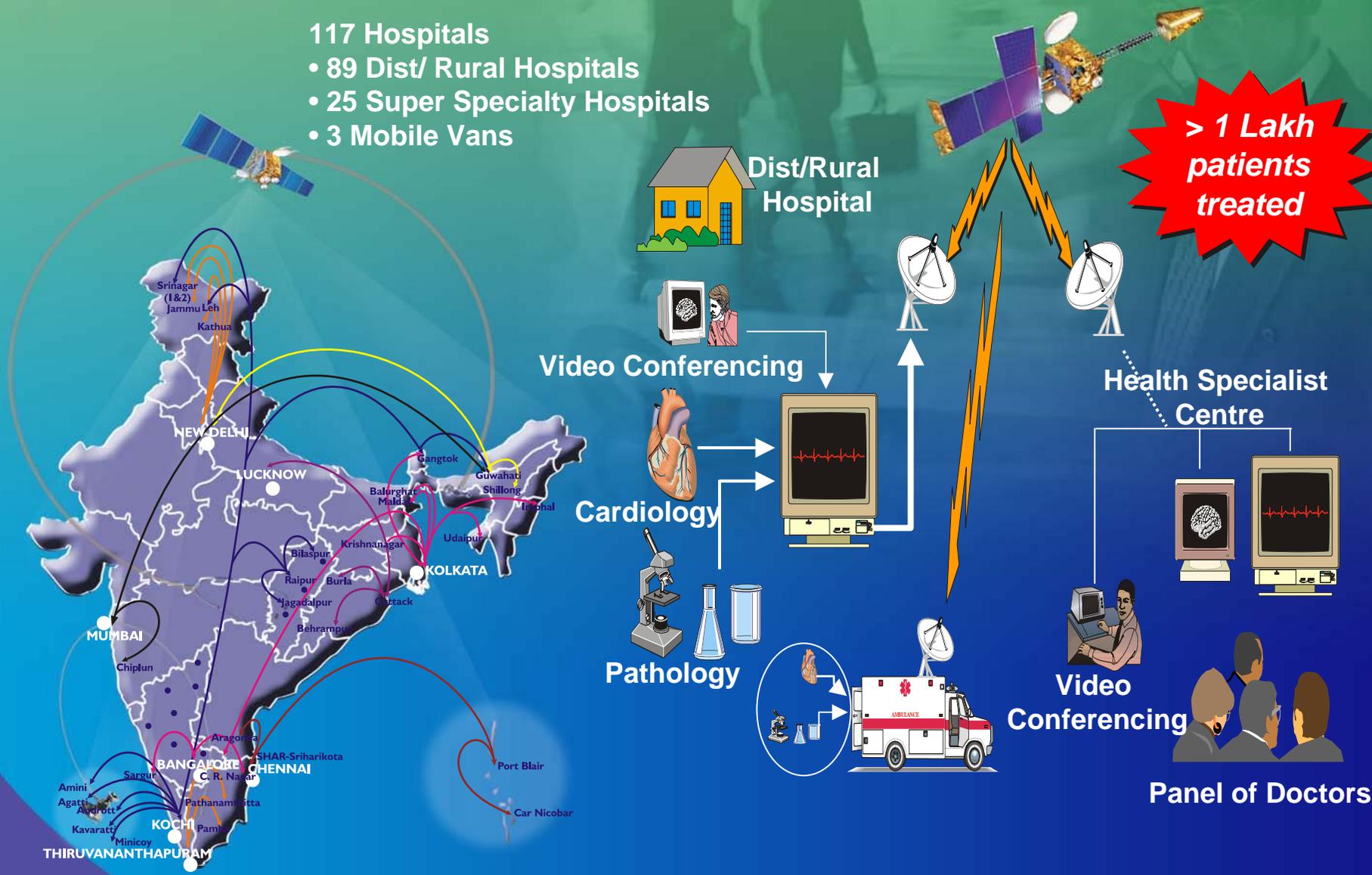
	<b>Problems</b>	<b>Space Solutions</b>
1	Large Environmental Pollution	Use Space Technology to Identify and Correct
2	Lack of Medical Doctors	Extensive Use of Tele-Medicine
3	Vulnerability to Disasters	Space for Disaster Alert, Relief and Mitigation

# Telemedicine

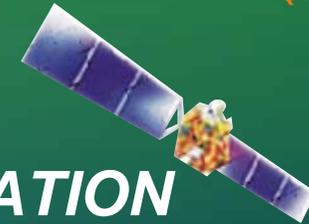
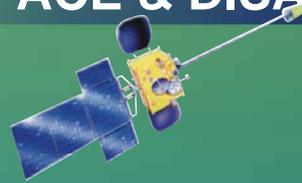


- 117 Hospitals
- 89 Dist/ Rural Hospitals
- 25 Super Specialty Hospitals
- 3 Mobile Vans

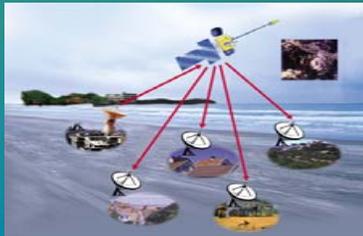
**> 1 Lakh patients treated**



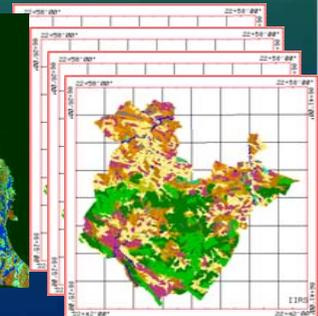
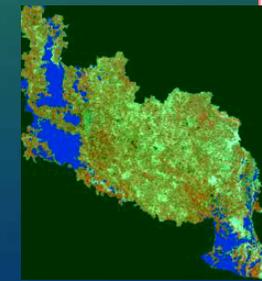
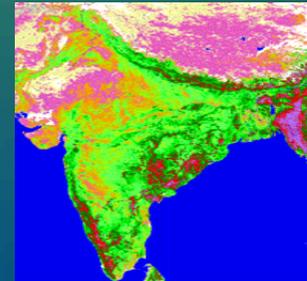
# SPACE & DISASTER MANAGEMENT



## SPACE FOR CONNECTIVITY & OBSERVATION



### OBSERVATION FOR INFORMATION



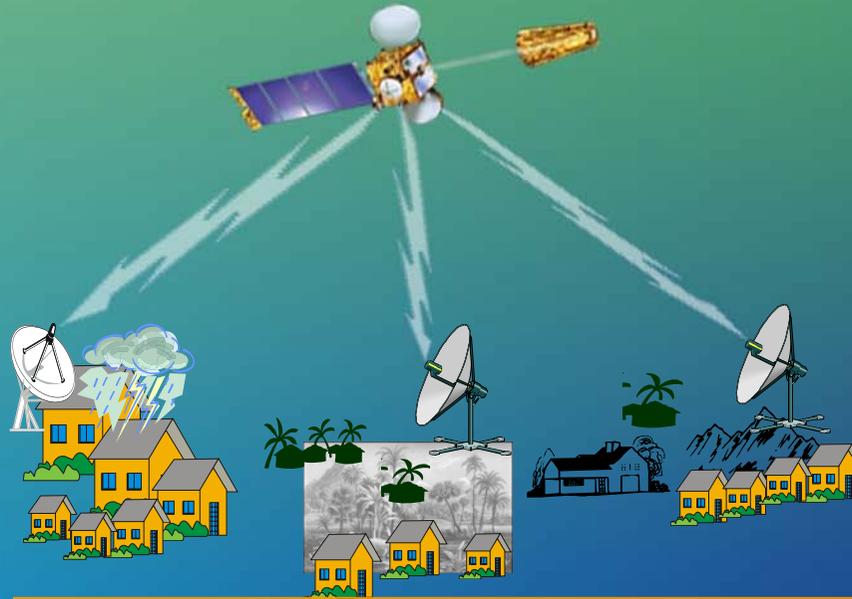
**INFORMATION FOR DECISION**



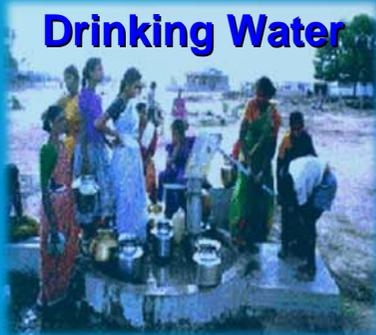
**DECISION FOR ACTION**

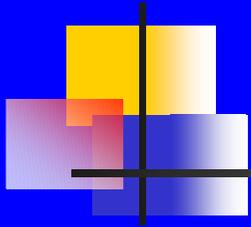


# Village Resource Centre (VRC)



Space-based Services for  
Community Outreach





Thanks