

Telemedicine in India: Initiatives and Perspective

B.S.Bedi

Senior Director

Department of Information Technology

Ministry of Communications & IT

Government of India

What is Telemedicine?

- Telemedicine is the use of electronic information and communications technologies to provide and support health care when distance separates the participants ...

Institute of Medicine, 1996

Introduction

- Telemedicine primarily refers to use of Tele-communication for diagnosis and treatment of disease
- Emergent mode of delivery of health care at distance
- Telemedicine provides healthcare where there is none and improves the health care where there is some
- One way to bring / provide access to quality health care to under-served rural & urban masses

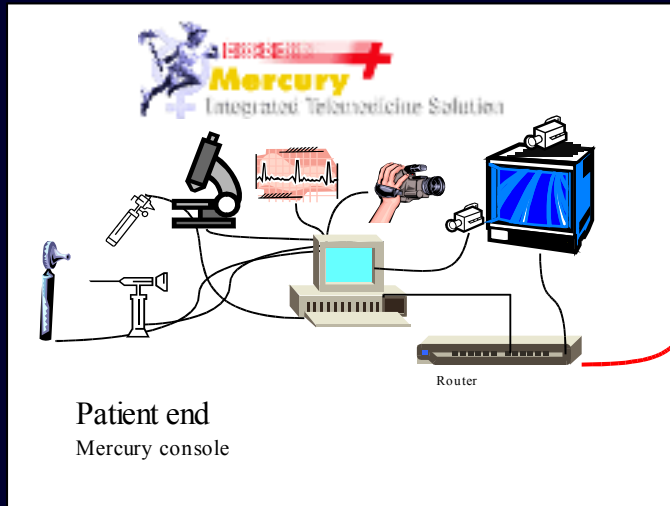
Telemedicine: India's Option or Necessity

- India characterized by low penetration of healthcare services
- 90% of secondary & tertiary healthcare facilities in cities and towns away from rural India where 68% of population lives
- Primary health care facilities for rural population highly inadequate
- Despite several initiatives by Government & private sector the rural and remote areas continue to suffer from absence of quality healthcare
- Significant proportion of patients in remote locations could be successfully managed locally with advice/ guidance from specialists/ super-specialists in cities, without having to travel to the specialists.
- Key driver of public:private partnership for health care delivery to the people of India

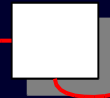
Telemedicine: The Promise

- Taking modern healthcare to remote areas using IT as specialists are city based
- Majority of diseases not requiring surgery conducive to telemedicine
- Can also play a significant role in training of medical personnel across the country
- Decrease in price and complexity of this technology over last five years makes it economically viable

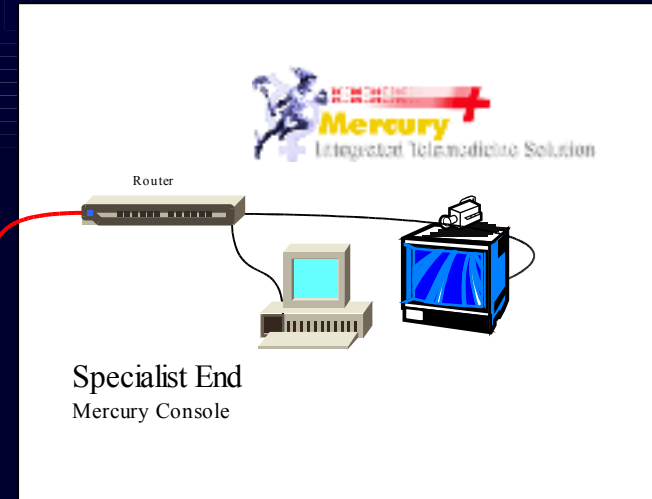
A Typical Telemedicine System



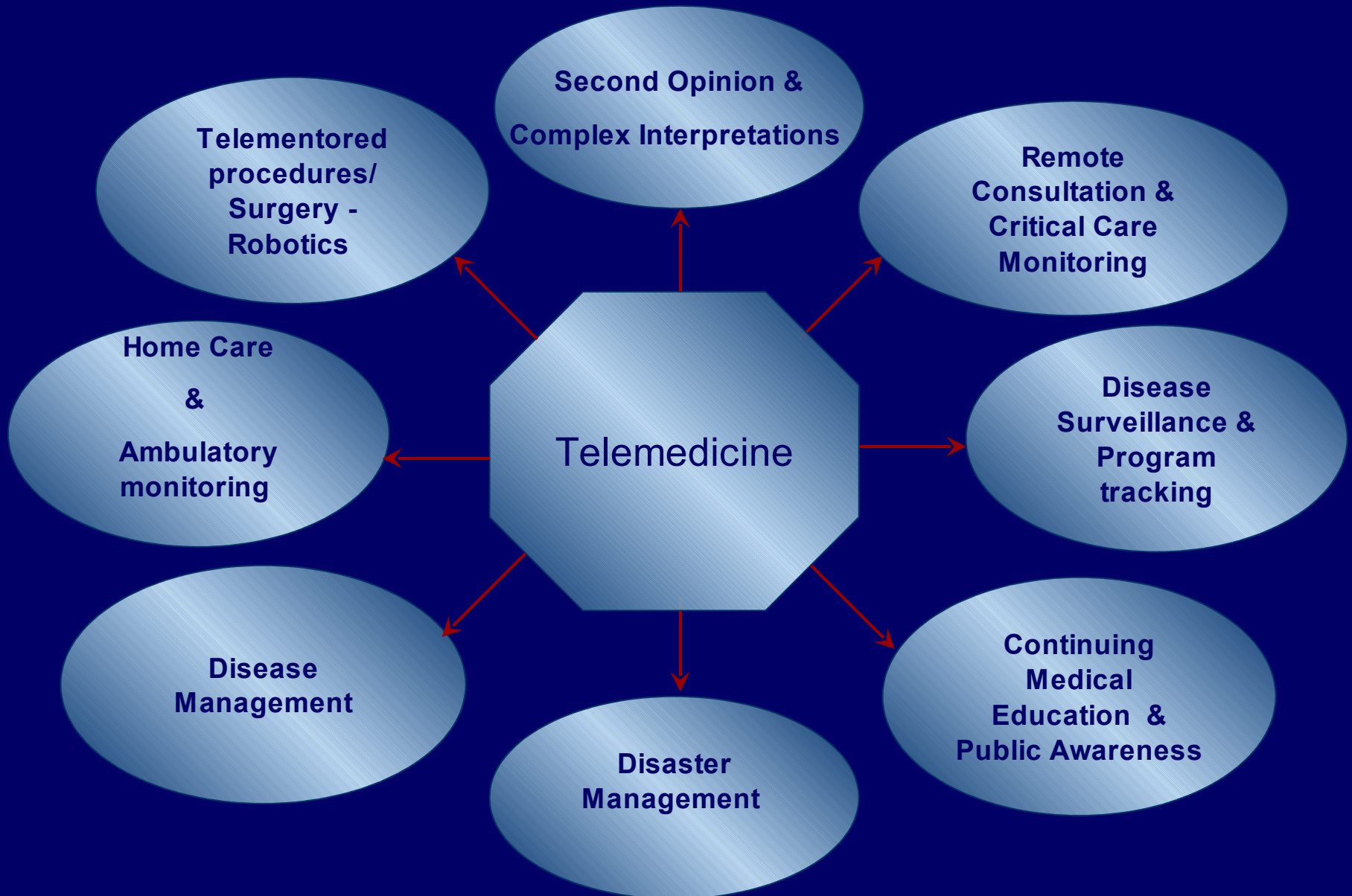
384
kbps



384
kbps



Telemedicine - Applications



Current Efforts

- **Many programs worldwide using variety of telemedicine technologies**
- **In India telemedicine programs actively supported by:**
 - Dept. of Information Technology
 - Indian Space Research Organization
 - NEC Telemedicine program for North-Eastern states
 - Apollo Hospitals
 - Asia Heart Foundation
 - State governments
 - Telemedicine technology also supported by some other private organizations.

DIT Initiatives

- As a Facilitator, with long term objective of effective utilization/incorporation of IT in all major sectors , DIT has taken following leads in Telemedicine:
 - Development of Technology
 - Initiation of pilot schemes
 - Selected Specialty e.g. Oncology, Tropical Diseases
 - General telemedicine system covering all specialties
 - Standardization
 - Framework for building IT Infrastructure in health

Development of Telemedicine Technology

- Telemedicine software system has been developed
 - Mercury by Centre for Development of Advanced Computing, C-DAC
 - Supports Tele-Cardiology, Tele-Radiology & Tele-Pathology, etc.
- Uses ISDN, VSAT, POTS
- Used to connect the three premier Medical Institutes of the country (viz. AIIMS New Delhi, SGPGIMS, Lucknow, and PGIMER Chandigarh).
- Now being connected to include Medical centres in Rohtak, Shimla & Cuttack.



Telemedicine in Kerala

- Setting up of Telemedicine & Telehealth Education facilities in Kerala using the Technology developed under DIT
 - The project will link three specialty medical hospitals at MCH, SCTIMST & the RCC, with 4 District/ Rural Hospitals.
 - Continuing Medical Education (CME)
- CancerNet: Telemedicine system for Cancer Patients in Kerala
 - Establishment of an Oncology Network for providing Telemedicine services
 - Cancer detection, treatment, pain relief ,patient follow-up and continuity of care in peripheral hospitals(nodal centres) of Regional Cancer Centre (RCC).
 - Implemented by C-DAC, Trivandrum and RCC
 - Connects RCC, Trivandrum and five nodal outreach centres
 - More than 3000 patients treated/consulted at these nodal centres
 - Major financial benefit to patients

Telemedicine System in West Bengal

- Telemedicine for Tropical Diseases
 - Utilizes Technology developed by WEBEL & IIT Kharagpur
 - Tele-medicine for diagnosis & Monitoring of tropical diseases in West Bengal
 - Uses low speed POTS connectivity
 - Diagnosis and monitoring of skin and blood related tropical diseases
 - The system has been installed in School of Tropical Medicine, Kolkata and two District Hospitals
 - More than 800 patients undergone consultations
 - Being upgraded & extended to cover two referral hospitals and four District hospitals
 - Will use 512 KBPS leased line and the West Bengal State Wide Area Network optical link of 2 Mbps

Telemedicine in North East States in India

- Need: the area is very remote and lacks Specialty Healthcare
- Kohima – Turnkey Project
 - Implementation of Telemedicine Solution at Kohima Hospital in Nagaland
 - Partnership between Govt. of Nagaland, Marubeni India Ltd, Apollo and Ministry of Communications and Information Technology
- Setting up of two telemedicine centres connecting hospitals in capitals of the North-eastern states of Sikkim & Tripura with Super-specialty hospital under Community Information Centre scheme of DIT
- Major scheme is planned by North Eastern Council of India to cover all 75 districts in seven states through Telemedicine

Telemedicine during Mela Festivals/ Disaster

- Maha Kumbhamela
 - Attended by about 10 million people in about a month
- Implemented by SGPGIMS, OTRI & State Govt. of Uttar Pradesh
 - TeleConsultation
 - Tele-monitoring of Public Health activities
- 115 referrals

Telemedicine Initiative of Dept of Space

- Towards improving rural health care in India under *Space for Health* Programme
- Uses primarily Satellite connectivity
- Currently 32 Telemedicine nodes
 - 11 Super specialty
 - 21 District / Rural Hospitals
- Plans
 - 50 nodes by end of 2003
 - 100 nodes by 2004

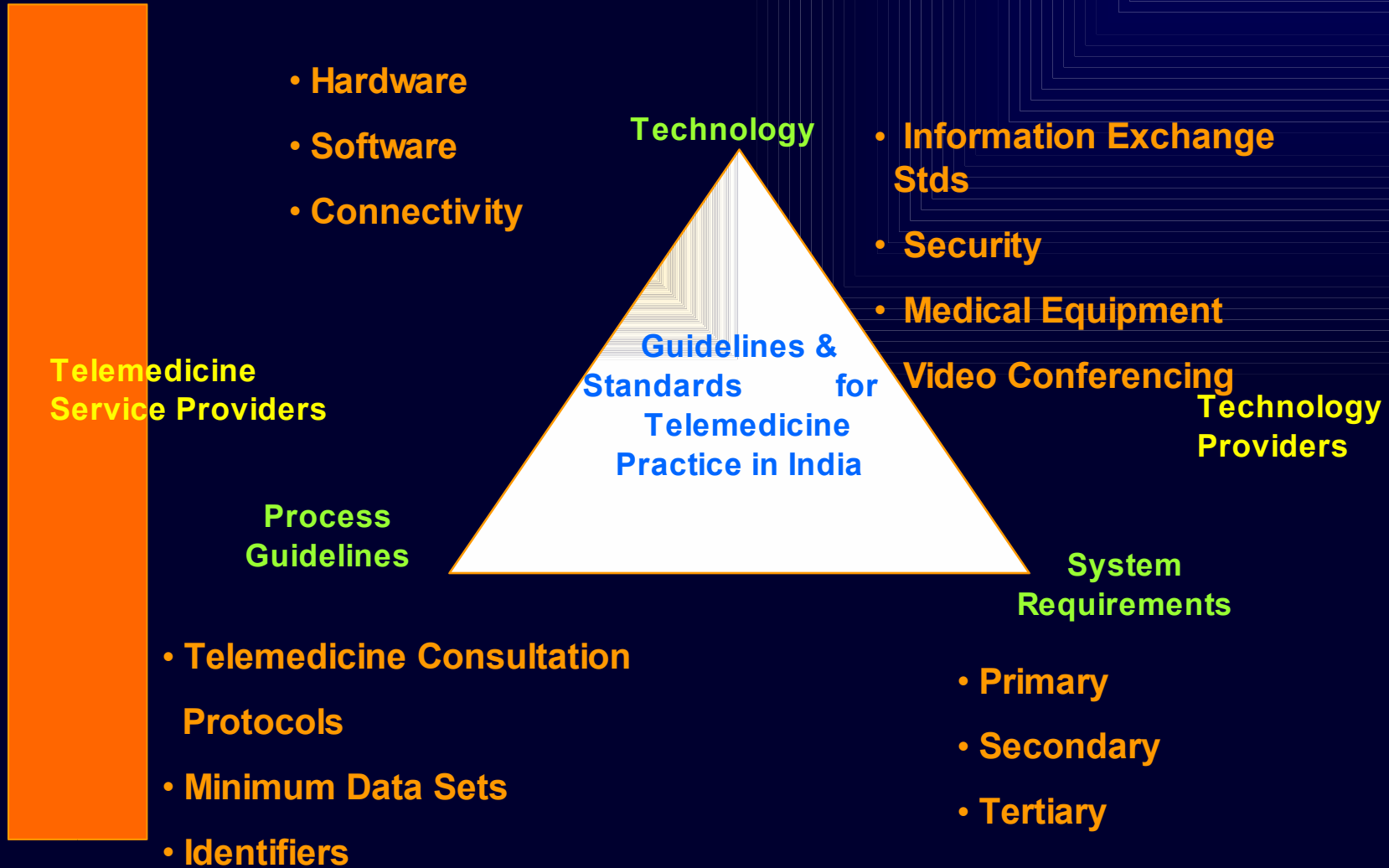
Other related Initiatives

A decorative graphic in the top right corner of the slide, consisting of multiple concentric, slightly offset lines that create a sense of depth and movement, resembling a stylized corner or a series of overlapping planes.

Telemedicine Standardisation

- Need:
 - Large number of Telemedicine networks being installed in the country
 - Lack of uniform, multipurpose telemedicine standards meeting needs of diverse user groups at different hierarchical levels hamper effective use of telemedicine
- Adherence/adoption to standards ensures
 - Telemedicine Systems are interoperable
 - Compatibility with new version of technology
 - Scalability of systems without total replacement while expanding capability
- Recommended Guidelines and standards for Telemedicine Technology & Practice in India evolved under a high level committee.
 - Document released on Sept 9, 2003

Framework – an Overview



Vision: Defining a National Telemedicine Network

- Vision for National Telemedicine Network to cover large population. A three tier hierarchical connectivity structure can be contemplated for implementation in phases to include:
 - A Primary Health Centre (PHC)/Community Health Centre connected to District level hospital
 - A District level Hospital connected to a State Level Hospital/ Selected Specialty Hospital
 - State Hospitals and selective District hospitals being connected to a super specialty hospital at the National level

National Telemedicine Network: Major Challenges

- Resource requirement evaluation
 - Connectivity/ Bandwidth (B/W) provision & reliability
 - Telemedicine cost consideration /affordability
 - Adherence to open platforms and open architecture standards
 - Sustainability
 - Sourcing Specialist availability
 - Trained manpower
- Phased roadmap for implementation e.g. District Hospital to Referral/Specialty hospital in 1st phase
- Crucial role for DoS: Provision of B/W through VSAT
- Private and Public Health Provider partnership crucial



Thank you

Bedi@mit.gov.in