

# TELEMEDICINE

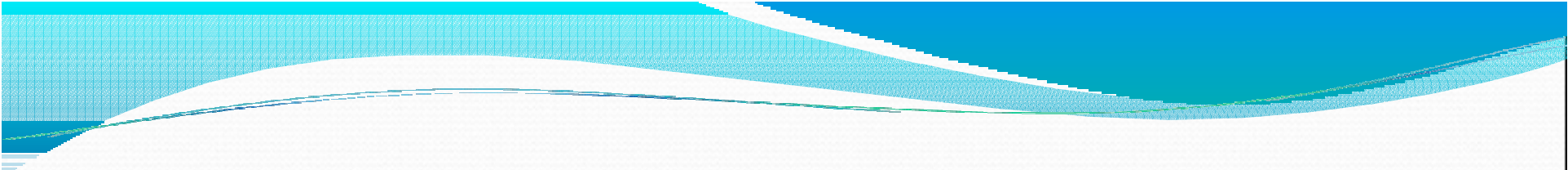


# TELEHEALTH & TELEMEDICINE

- What is the difference between Telehealth and Telemedicine?
  - Telehealth can either refer to clinical and/or non-clinical services.
  - Telemedicine only refers to the provision of clinical services.

# Introduction

- The advancement in telecommunication and satellite communication in the recent years has experienced many fold development in India in IT enabled services, BPOs, Overseas communication, rural telephony, and also in the field of medicine.
- Telemedicine is the new buzz word amongst the healthcare administrators around the world.

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- In the last decade leading hospitals and healthcare providers in India have used telemedicine as a medium of communication between medical fraternity in seeking opinion for rendering better patient care services and sharing of knowledge base to the fellow counterparts.

□ Making healthcare accessible reduces investment in health thus contributing to overall economic and social development. India faces various problems in the provision of medical services and health care, including

➤ funds,

➤ expertise and

➤ resources.

➤ Telemedicine has the potential to improve both the quality and the access to health care regardless of the geography. It enables medical and health care expertise to be accessed from under served locations.

# Telemedicine's Past and Immediate Future

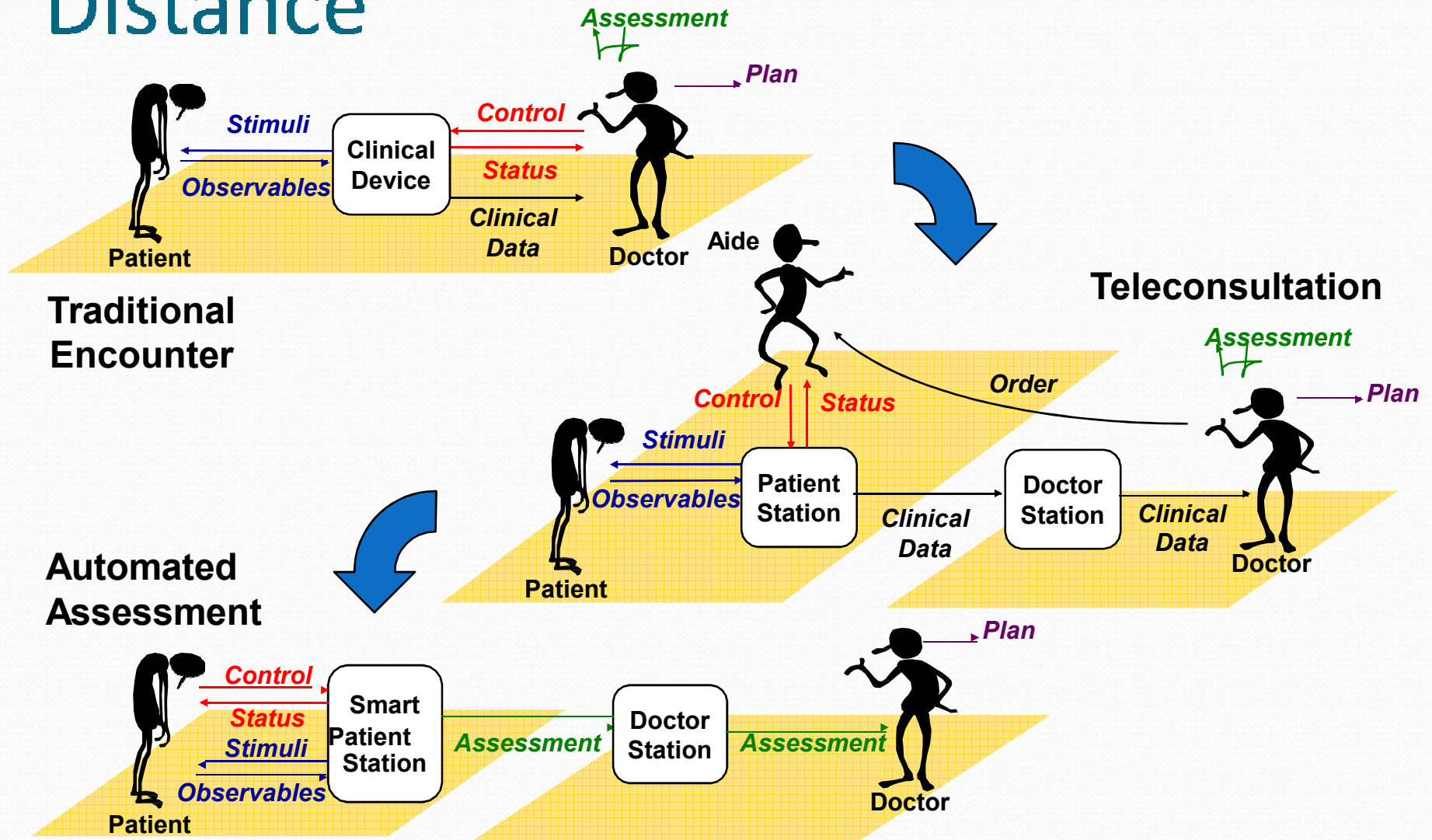
	<b>First Wave</b>	<b>Second Wave</b>	<b>Third Wave</b>
<b>Timeframe</b>	<b>60's-70's</b>	<b>Early 90's to present</b>	<b>Coming decade</b>
<b>Emphasis</b>	<b>Feasibility</b>	<b>Clinical Development</b>	<b>Industrialization</b>
<b>Scope</b>	<b>Very limited</b>	<b>Fringe populations</b>	<b>Mainstream Care Delivery</b>
<b>Nature</b>	<b>Video links</b>	<b>+ Instrumentation</b>	<b>+ Informatics</b>

Telemedicine is still young and evolving. Maturing it fully will require **vision** and deliberate **attention to the technical foundations** on which it rests.

# TELEMEDICINE???

- Tele-medicine system consists of customized medical software integrated with computer hardware, along with diagnostic instruments connected to the VSAT (Very Small Aperture Terminal) at each location.
- Generally, the medical record/history of the patient is sent to the Specialist Doctors, who will in-turn study and provide diagnosis and treatment during video-conference with the patient's end.

# Telemedicine Is About More Than Distance





# What is telemedicine

□ It consists of three elements:

- Firstly, it uses the information technology to provide information for medical decision making.
- Secondly, it changes signals which could be Bioengineering components.
- Thirdly, arrange the practice for medicine at distance.

# Objectives of Telemedicine

- To enhance citizens' equality in the availability of specialised medical services by bringing these services to remote primary health care centers.
- To promote the proficiency of physicians and other health care personnel by means of teleconsultation and video conference based training
- To reduce the waiting lists in specialised health care, eg for glaucoma and retinopathy screening and follow-up, and for initial and follow-up visits in surgery.
- To save money!

# NEED FOR TELEMEDICINE

- In India only one-third of households are in urban areas, with remaining two-thirds in rural areas but majority of healthcare activities and availability of healthcare facilities are present in urban areas
- Non availability of adequate number of resources and the challenge to overcome can possibly be done by (
  - a ) Making specialist services available in rural / remote healthcare settings and
  - (b) Making critical care accessible to rural / remote areas.

# NEED FOR TELEMEDICINE

- Tele-medicine helps patients in rural and distant areas to avail timely consultations of Specialist Doctors without going through the ordeal of travelling long distances.
- The facility enables transmission of patient's medical records including images, besides providing live two-way audio and video link.
- With the help of these, a Specialist Doctor can advise a Doctor or a paramedic at the patient's end on the course of treatment to be followed. He can even guide the Doctor during a surgery.
- In the context of rural and distant areas, the Tele-medicine-based medical care is also highly cost effective.

# Examples

- ❖ Some examples of Telemedicine
  - ❖ Teleconsultation,
  - ❖ Telemonitoring,
  - ❖ Telediagnosis,
  - ❖ Teletreatment,
  - ❖ Telecare-provision.
  - ❖ Store And Forward

# Teleconsultation

- Connect professionals to share data and obtain expert opinion. For example video-consultation



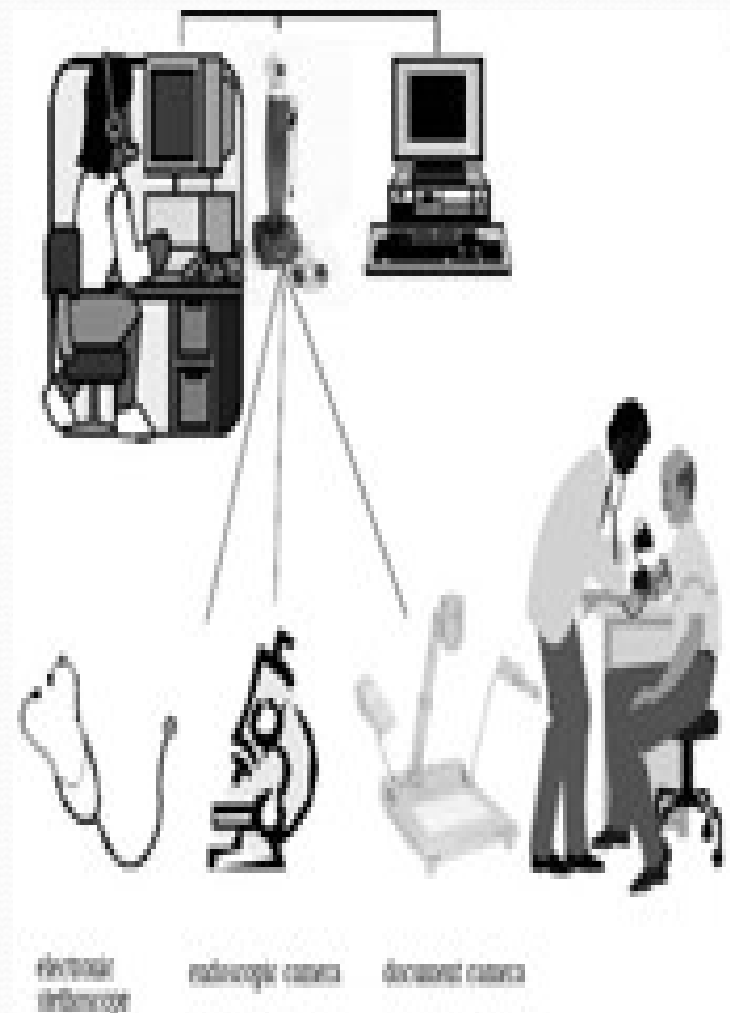
# Video conferencing

Any videoconferencing terminal must have a few basic components:

- ❖ a camera (to capture local video),
- ❖ a video display (to display remote video),
- ❖ a microphone (to capture local audio),
- ❖ and speakers (to play remote audio).
- ❖ optionally a document

# Telediagnosis

- To perform diagnosis remotely
- Patient-to-doctor connection (vs doctor to doctor connection in Teleconsultation)
- Mobile tele-medical unit can perform specialist care (central hospital standard) studies in health care centres using mobile telemedical units.
- The results can be sent to super specialty hospital, thus
- permitting telediagnosis.





# TELEMEDICINE IN INDIA

- One of the recent applications of space technology initiated by ISRO is in the field of Tele-medicine to provide expert medical services to the rural and remote areas.
- Under the Tele-medicine project, Hospitals/health centers in remote locations are linked via INSAT satellites with super specialty Hospitals at major towns/cities, bringing in connectivity between patients at remote end with the Specialist Doctors for medical consultations and treatment.
- Tele-medicine pilot projects are undertaken by ISRO with the involvement of selected super specialty Hospitals located in major cities and smaller health centers in distant and rural areas.

# TELEMEDICINE IN INDIA

- Indian Space Research Organisation has done pioneering work by partnering with leading healthcare providers, various state governments in making healthcare accessible in the rural and remote parts of the country.
- With the advent of communication technology especially the Satellite Communication (Sat-Com) combined with Information Technology, enables benefiting from the advanced medical sciences to reach even the remote and inaccessible areas.
- Indian Space Research Organisation (ISRO) as a part of application of space technology for Health care and education, under GRAMSAT (rural satellite) programme, has initiated number of Telemedicine pilot projects which are very specific to the needs of development of the society.



# TELEMEDICINE IN INDIA

- ISRO's satellite based Telemedicine network, which started in 2001 on an experimental basis has linked remote/rural district hospitals with super-speciality hospitals in major cities via INSAT. While ISRO provides the software, hardware and communication equipment as well as satellite bandwidth, the speciality hospitals provide the infrastructure, manpower and maintain the system. ISRO's telemedicine network has matured into an operational system and now covers 165 hospitals – 132 remote/rural/district hospitals/health centres connected to 33 speciality hospitals located in major cities.

# TELEMEDICINE INSTRUMENTS

- Telemedicine enables access to specialists for seeking their opinion in shorter time with accuracy, efficiency and precision.
- Provide expert advice to remote locations
- Link medical professionals by utilizing live video from a microscope through video conferencing software
- Offer instant answers to patients or other clinicians through live video communication
- Display real-time motion video over broadband networks through existing PC or room-based video
- Create easy to use, affordable and scalable solution

## Mobile Video Cart with Digital Stethoscope



The i8570 MVC is specifically designed for applications where a compact, mobile system is required. The i8750 MVC can be utilized for many clinical applications, such as remote consultations, rural health care and emergency response, as well as administrative meetings and continuing medical education.

Telehealth & Telemedicine

## StethOne™ Chest Piece Set

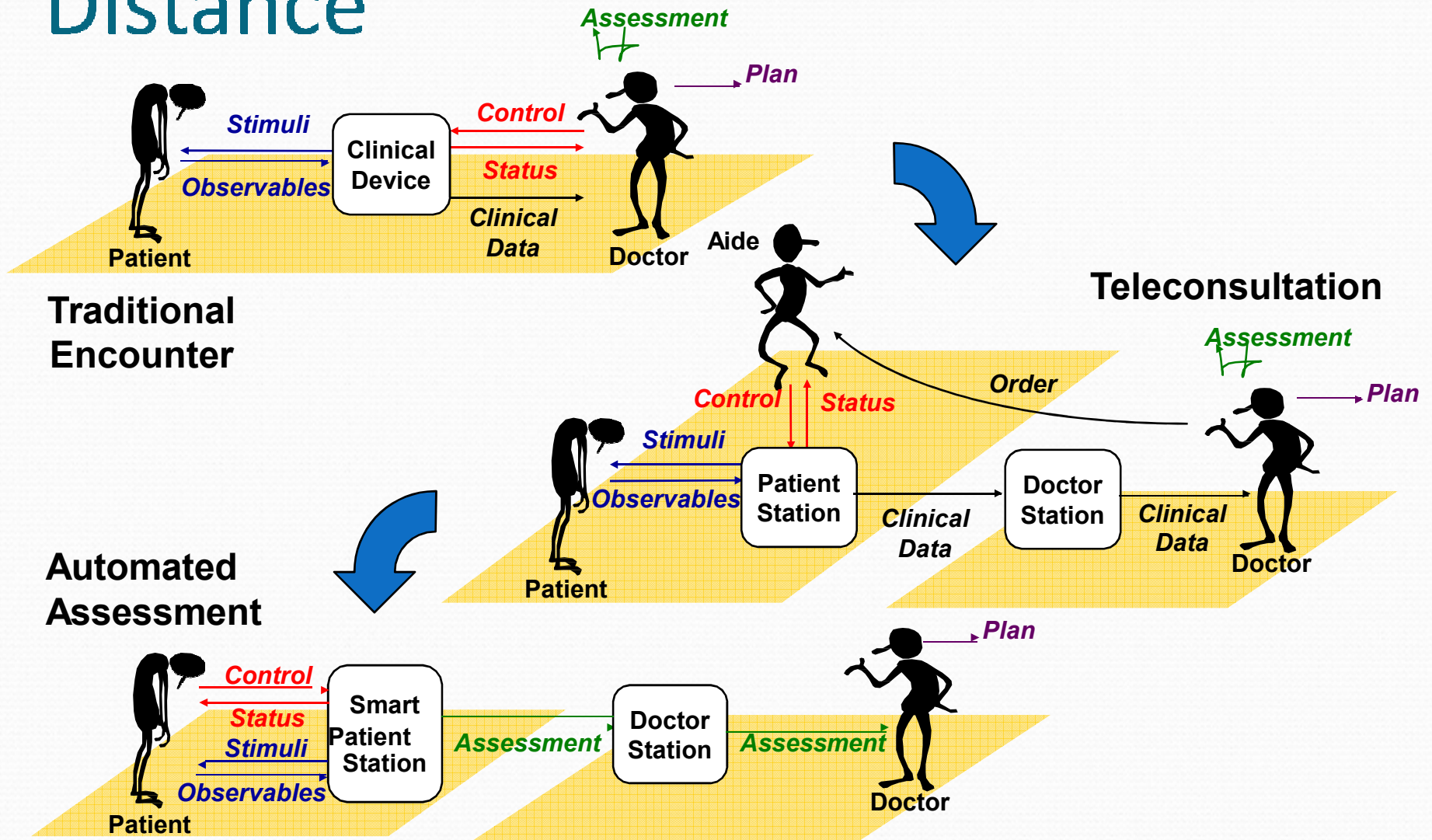


The StethOne™ Telephonic Stethoscope transmits and receives heart sounds through high speed broadband connections or through most videoconferencing systems for the ultimate in medical video conferencing. This patient transmit package includes; one - dual noise reduction headset, one - extended frequency transmit and receive bases and one - chest piece.

# LIMITATIONS OF TELEMEDICINE

- Expensive Telemedicine Software and high tech gadgets like digital cameras, online microscopes, medical scanners used in transfer and storage of medical data like X-Rays, CT Scans & MRIs get eliminated in centres where there is no facility for a patient to access and undergo such high-tech examinations in the first place
- Trained manpower

# Telemedicine Is About More Than Distance







# Conclusion

- Telemedicine offers solutions for emergency medical assistance, long-distance consultation, administration and logistics, supervision and quality assurance and education and training for health care professionals and providers.
- Telemedicine needs to be implemented carefully and managed well. The impact of telemedicine on health care structures can be significant. In this respect, telemedicine can be seen as a tool that is being used to build up new health care horizon. However, there are