

BY HAND

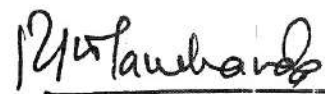
**CENTRAL COUNCIL FOR RESEARCH IN HOMOEOPATHY**

**Subject: Report of the Working Group on Telemedicine in AYUSH.**

This has reference to Ministry of AYUSH letter No. T-11011/08/2015-IT Cell constituting a Working Group for Development of Telemedicine System for Ministry of AYUSH.

After due deliberations, the Working Group has finalized its report. Five copies of the report are sent herewith for further necessary action.

The Working Group has also finalized an MoU to be signed by Ministry of AYUSH with ISRO for implementation of the project. A copy of the MoU is also enclosed for necessary Action.



**(Dr. R.K. Manchanda)  
Chairman, Working Group and  
Director General(CCRH)**

Joint Secretary(AS), Ministry of AYUSH, AYUSH Bhavan, INA, New Delhi.

CCRH U.O. Note No.30-1/2015-16/CCRH/Misc/Tech/WG/Telemed/1856 dt. 17/05/16

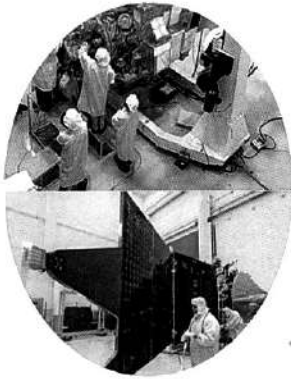
Copy along with a copy of the Report to all the Members of the Committee for information.

**List of Members of the Working Group**

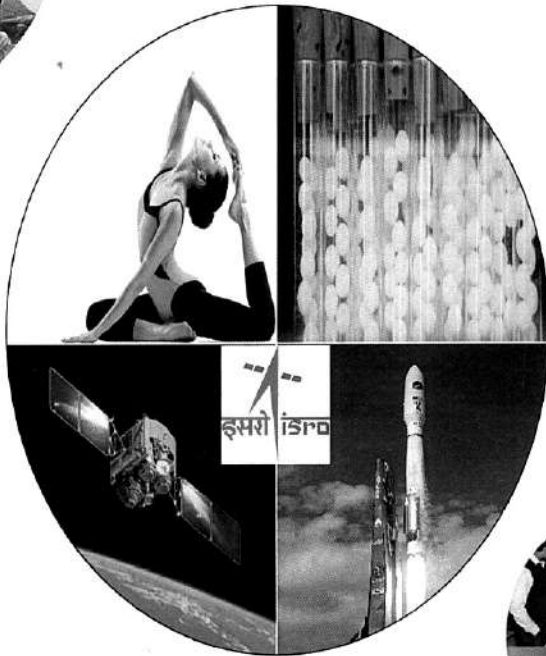
- 1. Shri Virender Kumar, Director, DECU, Space Application Centre, ISRO, Ahmedabaed.**
- 2. Shri H. Rayappa, Dy. Director, SatCom Applications, Sattellite Communication and Navigation Programme Office, ISRO HQ, Bangalore,**
- 3. Advisor (Ayurveda – MN), Ministry of AYUSH.**
- 4. Advisor (Homoeo) ), Ministry of AYUSH**
- 5. Advisor(Unani) ), Ministry of AYUSH**
- 6. Director (RK) ), Ministry of AYUSH**
- 7. Jt. Advisor (Siddha) ), Ministry of AYUSH**



सत्यमेव जयते



Report on  
Tele-AYUSH PROJECT



**A Collaborative Project  
Ministry of AYUSH  
&  
Indian Space Research Organisation  
2016**

## **FOREWORD**

Healthcare in India has always been a major issue to tackle, chiefly due to the sheer scale of the numbers. India's mammoth population, coupled with the vast and varied terrain, which separates the rural and urban areas and the lack of basic, adequate facilities in rural and remote areas has made it a gargantuan task to provide quality and efficient healthcare to the people residing in such areas.

While their urban brethren continue to enjoy the choicest medical care and attention, India's poor and underprivileged do not have access to basic life necessities, let alone healthcare. Keeping this in mind, the Ministry of AYUSH (MoAYUSH) and the Indian Space Research Organisation (ISRO) have come together to collaborate on a unique and extremely efficient method of providing healthcare benefits to the poorest of the poor. Telemedicine is one of the many such projects undertaken by ISRO in order to utilize its space resources and research for the betterment of humanity.

## **EXECUTIVE SUMMARY**

Bringing quality healthcare to India's underprivileged is no easy task, keeping in mind the logistics involved. The costs of setting up hospitals and clinics, sending doctors and healthcare personnel to remote and rural areas, keeping a track of which areas need immediate attention, the costs of medicines and related items are a true logistical nightmare.

With the advent of telemedicine, which involves the optimal use of satellite technology in the area of healthcare, the MoAYUSH and ISRO have embarked on a noble endeavour of taking excellent healthcare facilities to the people living in the poorest and remotest areas of our country, where conventional methods of transport and help usually fail to work.

This joint effort will make it possible for doctors and healthcare professionals to save many lives in areas where basic life sustenance is a daily problem. Precious lives are needlessly lost just because there was no doctor at hand when the situation required.

The Tele-AYUSH project aims at providing feasible healthcare services to the neediest beneficiaries of our country, making the best use of satellite technology, which will be provided by ISRO.

## **TABLE OF CONTENTS**

<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>1.1</b>	<b>MEMBERS OF THE WORKING GROUP</b>	<b>1</b>
<b>1.2</b>	<b>SALIENT POINTS</b>	<b>1</b>
<b>2</b>	<b>INTRODUCTION TO TELEMEDICINE</b>	<b>1</b>
<b>2.1</b>	<b>MEANING</b>	<b>1</b>
<b>2.2</b>	<b>RATIONALE</b>	<b>1</b>
<b>2.3</b>	<b>BENEFITS</b>	<b>2</b>
<b>2.4</b>	<b>ISRO'S CONTRIBUTION</b>	<b>2</b>
<b>2.4.1</b>	<b>INTRODUCTION TO ISRO'S TELEMEDICINE NETWORK</b>	<b>2</b>
<b>2.4.2</b>	<b>PROJECTS UNDERTAKEN</b>	<b>2</b>
<b>3</b>	<b>RECOMMENDATIONS</b>	<b>3</b>
<b>3.1</b>	<b>INFRASTRUCTURE/FACILITIES</b>	<b>3</b>
<b>3.2</b>	<b>YOGA</b>	<b>3</b>
<b>3.3</b>	<b>CONTINUING MEDICAL EDUCATION</b>	<b>3</b>
<b>4</b>	<b>IMPLEMENTATION OF THE PROJECT</b>	<b>4</b>
<b>4.1</b>	<b>PHASE-1 ACTIVITIES</b>	<b>4</b>
<b>4.2</b>	<b>PHASE-2 ACTIVITIES</b>	<b>4</b>
<b>5</b>	<b>ROLES AND RESPONSIBILITIES</b>	<b>4</b>
<b>5.1</b>	<b>ROLE OF ISRO</b>	<b>4</b>
<b>5.2</b>	<b>ROLE OF THE MINISTRY OF AYUSH</b>	<b>5</b>
<b>6</b>	<b>DELIVERABLES</b>	<b>6</b>
<b>6.1</b>	<b>BY ISRO</b>	<b>6</b>
<b>6.2</b>	<b>BY THE MINISTRY OF AYUSH</b>	<b>6</b>
<b>7</b>	<b>KEY AREAS OF CONSIDERATION</b>	<b>7</b>
<b>7.1</b>	<b>MANPOWER</b>	<b>7</b>
<b>7.2</b>	<b>TIME SCHEDULE</b>	<b>7</b>
<b>7.3</b>	<b>MONITORING</b>	<b>7</b>
<b>7.4</b>	<b>BUDGETARY ESTIMATE</b>	<b>7</b>
<b>8</b>	<b>FUTURE ACTIONS</b>	<b>7</b>
<b>9</b>	<b>Annexures</b>	<b>8-9</b>

# Report on Tele-AYUSH Project

## 1. INTRODUCTION

The Ministry of AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy) recently constituted a working group, in association with the Indian Space Research Organisation (ISRO), Department of Space (DOS), for the development and propagation of a Telemedicine system (Tele-AYUSH), under the chairmanship of Dr. R. K. Manchanda, Director General, Central Council for Research in Homoeopathy. The first meeting of officials from both sides was held in Delhi, followed by a meeting held in Ahmedabad under the chairmanship of Shri Virender Kumar, Director-DECU, ISRO. This collaborative effort has been undertaken in order to provide services to those areas and people who are cut off from the main cities and towns, and are unable to receive proper health care facilities.

### 1.1. MEMBERS OF THE WORKING GROUP

1. Advisor (Ayurveda)
2. Advisor (Homoeopathy)
3. Advisor (Unani medicine)
4. Director (AYUSH)
5. Director (DECU/ISRO)
6. Deputy Director (Satcom Applications, ISRO Hq)

### 1.2. SALIENT POINTS

The working group was asked to deliberate on the following points and submit a report with their inputs:

- Gather the detailed requirements from the Ministry of AYUSH
- Gather information on the technicalities of implementation
- A detailed budgetary analysis for the entire project
- Ascertain resource requirement (human, hardware/software, infrastructure, etc.)
- A feasible time-line for development and deployment
- A thorough analysis and study of the entire project

## 2. INTRODUCTION TO TELE-MEDICINE

### 2.1. MEANING

The rural and remote areas of our country are still plagued by diseases and unsanitary conditions, simply because they do not have easy access to healthcare and related facilities. The healthcare centres which operate in and around rural areas are sometimes too far, or too isolated for a person to reach. Tele-medicine aims to be a

including fixed and mobile terminals. This network is also being used for Continuing Medical Education (CME).

In addition, ISRO and the Ministry of Health and Family Welfare (MoH&FW) are also jointly implementing two Telemedicine projects as given below:

- Setting-up telemedicine nodes in Himachal Pradesh, Odisha, Arunachal Pradesh and Meghalaya.
- Setting-up Telemedicine nodes at the Char Dhaams, Kailash Manasarovar, Amarnath and Ayyappa pilgrimages.

### **3. RECOMMENDATIONS**

#### **3.1. INFRASTRUCTURE/FACILITIES**

- The Ministry can utilize the existing infrastructure (dispensaries etc.) for providing healthcare services in remote and rural areas.
- Tele-AYUSH can also utilise the ISRO's Existing Telemedicine nodes located across country.
- Community Health Centres (CHCs) and Primary Health Centres (PHCs) can be strengthened and developed by providing the services and expertise of AYUSH doctors.
- These can also be used as specialized centres for providing exclusive healthcare services to people.
- AYUSH doctors/paramedics can be further trained by CME programs conducted through the TM network. They can act as consultants at the PHCs and CHCs as required and provide valuable help to the already practising doctors and healthcare personnel.
- Smaller research units of the Councils, or Ayushgrams, can be implemented in rural/tribal areas which can function as nodes for the public outreach programmes with the provision and deployment of adequate manpower.
- National/All India Institutes and Central/Regional Institutes of Research Councils of AYUSH systems can also operate as nodes for specialized consultations.

#### **3.2 YOGA**

Tele-AYUSH can be utilized to boost the ancient practice of yoga in order to keep lifestyle diseases at bay. The Ministry of AYUSH could collaborate with the Ministry of Defence to conduct regular yoga sessions for the armed forces through Tele-AYUSH.

#### **3.3 Continuing Medical Education (CME)**

Tele-AYUSH can be used effectively for the Continuing Medical Education programmes for people in remote and rural areas.

Apart from these points, there is also a possibility of coordinating with the Ministry of Health and share their network also. This project will lead the Ministry of AYUSH and



- Provide computer hardware and software at these nodes for phase-1 for enabling tele-consultation between the beneficiary nodes and selected specialist consultation nodes.
- Arrange Telemedicine hub services to Tele-AYUSH network.
- Arrange hands-on training to the technical staff at the telemedicine centres.
- Maintenance Support for one year. Subsequent to one year, maintenance charges to be borne by MoAYUSH directly or through the user agencies (where the TM nodes are installed).
- Arrange shared satellite bandwidth for the limited period, which may reviewed from time to time.
- Coordinate between user departments/agencies and vendor in case of any unresolved matter.
- Maintain and operate the national TM hub for network functioning.
- ISRO shall continue to provide only technical assistance and guidance to expand the network during operational phase (Phase-2 onwards) and financial support shall be limited to Satcom (VSAT part only) related equipment and software.

## **5.2. ROLE OF THE MINISTRY OF AYUSH**

- Identify Super Specialist Nodes (SS Nodes) & Patient Nodes for providing telemedicine consultation services by the Ministry of AYUSH.
- Preparation of TM consultations weekly schedule well in advance and to be sent to all concerned, like Doctor end nodes, patient nodes, TM hub at ISTRAC Bengaluru and DECU/ISRO
- Monitor and send monthly network utilisation report to DECU/ISRO.
- Arrange maintenance of civil, electrical and other supporting infrastructures at the user location.
- Arrange safe custody of items supplied and installed, identification of the custodian for each TM node and maintain the inventory which should be verified periodically.
- Arrange lodging complaint with local police in case of theft/loss of any item and to send one copy of FIR to DECU/ISRO.
- Enter into separate MoUs between themselves and the user agencies where TM nodes are to be installed for operations, safekeeping, maintenance payments after one year of phase-1 etc.
- Identifying local dedicated site coordinators at the telemedicine centres for enabling smooth setup of facilities.
- The selected centres to provide required civil infrastructure like room (10' x 20'), space for antenna, power, UPS, furniture, etc.
- Providing manpower support for the smooth operation of the Telemedicine nodes and identification of the doctors/medical staff for supporting tele-consultations, both at the Patient nodes and selected Super Specialist Nodes.

- Electrical earthing (for equipment) and lightening arrestors to safeguard antenna system and building from lightening.
- Any other medical devices – as per the need.
- Cage for antenna to protect from monkey menace (In case required)
- Shifting of node (In case required)  
(Details of the estimated budget is as per Annexure-I)

## **7. KEY AREAS OF CONSIDERATION**

A project of this magnitude requires efficient and optimal use of its resources. Some of the major areas of concern are enumerated as follows:

### **7.1. MANPOWER**

- ISRO will establish the Telemedicine nodes through outsourcing.
- Ministry of AYUSH will ensure one technical operator/Trained person at each Telemedicine centre and constant availability of healthcare practitioners at the patient nodes and specialists at the consultation nodes.

### **7.2. TIME SCHEDULE**

The pilot Telemedicine nodes will be functional around 6 months of the date of the minutes being signed by the authorities.

### **7.3. MONITORING**

A team formed of both ISRO and the Ministry of AYUSH officials will periodically review the progress and also be available for consultation.

### **7.4. BUDGETARY ESTIMATE**

The whole project will incur an expenditure of about 13.65 Lakhs per node. A detailed account of the estimate is given in Annexure-1. This does not include expenditure on manpower as it is proposed to work with the existing manpower to start with.

## **8. FUTURE ACTIONS**

This project is currently being implemented as a pilot initiative. Based on the response, the implementation, the success rate and the satisfaction of the beneficiaries, a long term plan involving the expansion of Telemedicine to cover broader areas and incorporating terrestrial and satellite communication technologies will be drawn up. The plan for implementation and operation will be prepared by the Ministry of AYUSH for integration with the National Telemedicine network/grid already in place.

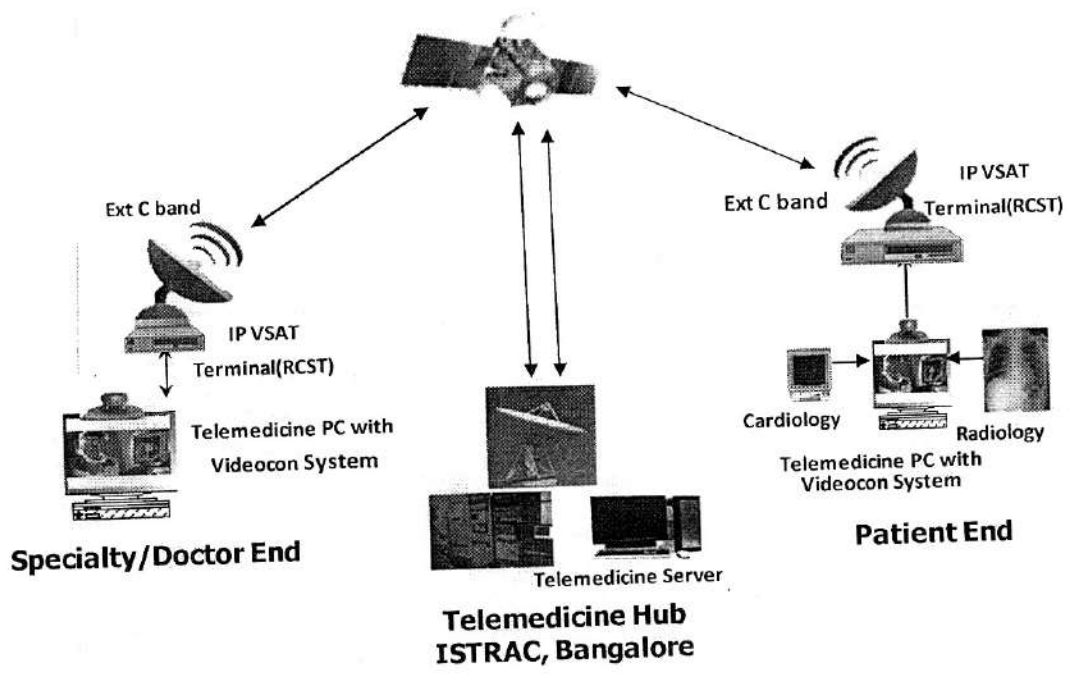
### **ANNEXURE-1: BUDGETARY ANALYSIS**

**Typical cost of one TM node**

<b>A.</b>	<b>Share of ISRO</b>	<b>Qty.</b>	<b>Price (Rs.)</b>
1	1.8m Antenna system	1	60000
1a.	RCST	1	82000
2	2W BUC	1	40000
3	PLL LNBC	1	27000
4	IFL cables (Set) - Standard RG -11	1	5000
5	8 Port Ethernet Switch	1	1500
6	Branded PC - CPU - i3 processor, 2GB RAM, 500 GB HDD, Monitor ~24 inch, keyboard, mouse, speaker set, High-end Graphics Card with preloaded Licensed Windows Operating System	1	67000
7	Osprey card	1	37000
8	PTZ camera	1	85000
9	Handheld microphone with 10m XLR cable	1	3000
10	TM software (Wherever needed)	1	10000
11	LMS Software	1	5000
12	Videoconferencing software	1	25000
13	Multi-function colour Inkjet/Laserjet Printer	1	20000
14	Miscellaneous - cables/connectors, Extension Board, adaptor for BUC, RCST, PTZ camera etc.	1	2000
15	Antivirus for Patient PC/Doctor PC	1	2000
16	Earthing kit (standard copper wire to be used)	1	5000
17	Installation and Commissioning at site	1	35000
18	Transportation	1	45000
	<b>Total cost (Approx. 4.75 Lakhs)</b>		<b>556500</b>

<b>B.</b>	<b>Share of MoAYUSH</b>	<b>Qty.</b>	<b>Price (Rs.)</b>
1	Civil Infrastructure (Use existing)	1	0
2	Electrical Power	1	25000
3	2 KVA UPS with 4 Hrs Backup	1	70000
4	Air Conditioning	1	50000
5	Electrical Earthing	1	20000
6	Lightening arrester	1	60000
7	Cage for antenna to avoid monkey menace (In case required)	1	50000
8	CAMC for 3 years		200000
9	Operations (3 years)		200000
10	Miscellaneous		25000
11	Furniture - 2 table, 3 chair, patient bed, etc		50000
12	Foundation for antenna installation at site including ballast weights (in case required)	1	50000
	<b>Total</b>		<b>800000</b>
	<b>Total budget per TM node including CAMC and operation cost for 3 years (A+B) (Approx. 13.65 Lakhs)</b>		<b>1356500</b>

# ANNEXURE-2: TYPICAL TELEMEDICINE NETWORK CONFIGURATION



**Memorandum of Understanding (MoU)**

For

**Setting up of Telemedicine Networks**

Between

**Ministry of AYUSH (MoAYUSH)**

(Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy)

and

**Department Of Space (DOS),**

**Indian Space Research Organization (ISRO), Ahmedabad**

**Signed on this day ..... of ..... 2016**

**Shri Virender Kumar**

**Director, DECU**

Development & Educational Communication Unit  
Dept. of Space, ISRO, Space Applications Centre  
Jodhpur Tekra, Ahmedabad  
Gujarat – 380015

**Joint Secretary**

Ministry of AYUSH  
AYUSH Bhawan  
B Block, GPO Complex, INA,  
New Delhi – 110 023



**Development & Educational Communication Unit (DECU),  
Indian Space Research Organization (ISRO), Ahmedabad**

**Memorandum of Understanding (MoU)  
For Setting up of Telemedicine Networks  
Between Ministry of AYUSH (MoAYUSH) and Department Of Space (DOS)**

This Memorandum of Understanding is entered into on the \_\_\_day of \_\_\_\_\_' 2016

Between

1.0 Department of Space, represented by the Director, Development and Educational Communication Unit (DECU), Indian Space Research Organization (ISRO), Government of India, Ahmedabad (here-in after called ISRO) for the one part,

and

The, Ministry of AYUSH, Government of India, New Delhi represented by the Joint Secretary, Ministry of AYUSH, (here-in-after called MoAYUSH), Government of India for the other part,

On the terms and conditions herein contained:

**2.0 Preamble**

ISRO is committed to the use of space technology for national development, particularly the Hill regions, remote, backward and rural areas. ISRO has been collaborating with several user agencies which include central ministries and departments of the Government of India, State Governments and academic institutions, etc. to promote the utilization of satellite-based communication, navigation and remote sensing.

ISRO had initiated Tele-medicine (TM) program by establishing nodes (based on VSAT connectivity through Communication Satellites) across India including J&K, Andaman & Nicobar Islands and Lakshadweep to provide healthcare services from many Super Specialty nodes to remote patient end nodes. The network is also utilized for providing Continued Medical Education (CME) to the keep knowledge of doctors/paramedical staff residing in rural areas up to date.

2.1 AND WHEREAS the MoAYUSH is primarily responsible for providing good quality medical & health to people across India, which is based on medical therapies like Ayurveda, Homeopathy, Unani, Siddha & Yoga.

2.2 AND WHEREAS MoAYUSH and ISRO believe that Space Technology is an important tool, which must be leveraged for increasing and strengthening better medical treatment at low cost. It is further believed that the Satellite communication can provide connectivity between the far-flung rural areas and the urban centers for low cost treatment, and can prove to be a vehicle to provide medical treatment to the people, who are still deprived from getting treatment from the good doctors at low cost. For this purpose, the two parties have agreed to work jointly towards effective utilization of ISRO's satellite based TM network and identify their respective roles and responsibilities.

<p>ISRO.</p> <ul style="list-style-type: none"> <li>• Coordination between user departments/agencies and vendor in case of any unresolved matter</li> <li>• Maintain and operate the national TM hub for network functioning.</li> <li>• ISRO shall continue to provide technical assistance and guidance to expand the network during operational phase (Phase-2 onwards) and financial support shall be limited to Satcom related equipment and TM software.</li> </ul>	<ul style="list-style-type: none"> <li>○ Maintenance of civil, electrical and other supporting infrastructures at the user location.</li> <li>○ Arrange safe custody of items supplied and installed and identification of the custodian for each TM node.</li> <li>○ Shall not shift/modify the TM node and other hardware without prior written permission of DECU, ISRO.</li> <li>○ Separate MoUs between themselves and the user agencies where TM nodes are to be installed for operations, safekeeping, maintenance payments after one year of phase-1 etc.</li> <li>• Be responsible for all medical, legal issues and all statutory requirements.</li> <li>• Arrange payments for new purchases after one year of Phase-1 and for Phase-2 onwards: <ul style="list-style-type: none"> <li>○ 2KVA UPS with 4 hours backup</li> <li>○ Diagnostic equipments</li> </ul> </li> <li>• Arrange payments for Comprehensive AMC</li> </ul>
---	--

**4.0** That each of the two parties shall designate Coordinator/Focal point at sufficient senior level immediately. In addition, a high-level committee of identified senior officials representing both MoAYUSH & ISRO shall be constituted by Director, DECU to review the progress at regular intervals.

**5.0** It is understood that the TM nodes shall be ultimately operated, maintained and monitored by MoAYUSH. The charges/availability of satellite bandwidth should be mutually discussed for operational phase of the project.

**6.0 Use of satellite bandwidth (BW)**

MoAYUSH and any other affiliated hospital shall not use the satellite BW provided for this facility for any purpose other than for which it is intended.

Sustenance plans may be worked out by MoAYUSH for long term. However, in no circumstances this shall be used for profit making objectives by MoAYUSH during the period of charge free satellite BW provided by ISRO.

**7.0 Evaluation of system/usage**

ISRO reserves the right to evaluate the functioning of the TM facility of MoAYUSH TM network and its utilization as and when required.

**13.0 Alteration**

This MoU may by mutual consent in writing, be altered, amended or substituted from time to time during the term of this agreement at the hands of the duly authorized representatives of the parties.

**14.0 Effective date & duration of MoU**

The MoU shall be effective when both parties sign and from the date of the last signature. It shall be effective for a period **Three (3) years** after which it may be renewed by the parties for mutually agreed periods. In the absence of such a renewal, this MoU shall lapse without any liability on any party.

IN WITNESS WHEREOF, the Parties have, as their free acts and deeds, caused this Memorandum of Understanding to be executed by their respective duly authorized representative as of the date first set forth above.

**For and on behalf of:**

**Indian Space Research Organisation (ISRO)**

**Ministry of AYUSH (MoAYUSH)**

**Name : Mr. \_\_\_\_\_**  
**Title : Director, DECU**  
**ISRO, Ahmedabad**

**Name: Mr. \_\_\_\_\_**  
**Title : Joint Secretary**  
**Ministry of AYUSH, New Delhi**

**Signature:**

**Signature:**

**Date :**

**Date :**

In presence of WITNESS: -

**By:**

**By:**

**Name:**

**Name:**

**Title:**

**Title:**