

# DGT Distance Learning Program: Minutes of Meeting

## 1) Meeting Details

Venue: **Amrita E-Learning Research Lab, Amrita University,  
Amritapuri Campus, Kollam, Kerala**

Date: **22 Jan 2016**

## 2) Attendees:

Shri. Dinesh Nijawan (Director, SDI/DFI, DGT, New Delhi)

Shri. Pratap Singh (Asst. Director, DGT, New Delhi)

Dr. M. Jayaprakasan (Deputy Director, ATI, Chennai)

Shri. V. Kathiresan (TO RDAT Chennai /Principal, ATI, Calicut)

Prof. Kamal Bijlani (Director, E-Learning, Amrita University)

A-VIEW Team Leads and Staff

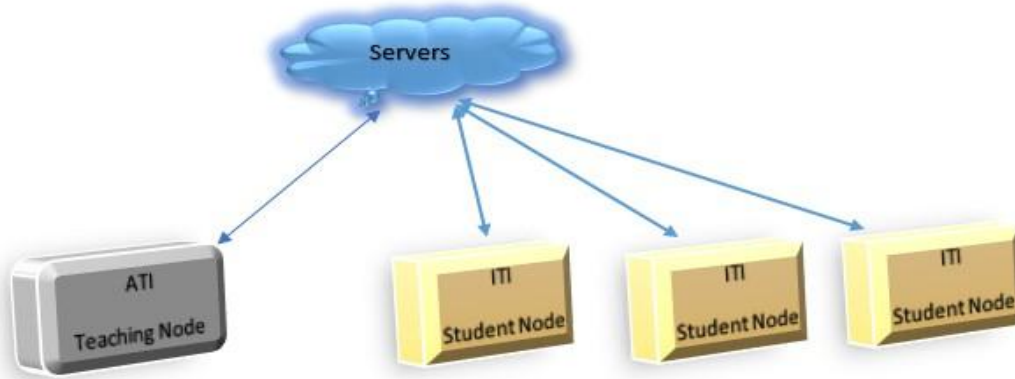
## 3) Objective of the meeting:

Currently, the Skill Ministry is using the A-VIEW platform, developed by Amrita University, for distance learning. Several major programs have been conducted. Using Distance Learning Programme (DLP), lakhs of learners can be trained all over the country.

- DGT has an objective of achieving minimum 200 days/year utilization for the DLP and it should have both common national and regional content using the 10 hubs and their extensions across all districts in the country.
- An annual training schedule be published in advance and all the e-content/e-learning material should be readily available for anytime access by trainees/trainers.
- Currently, the Internet delivers media content for DLP. Additionally, see how the DTH service facility can be activated with the support of ISRO, exclusively for the skill ministry to reach out to the rural areas.
- A mobile app is to be made for trainees to access e-content.
- Linking all the field institutes with video conferencing.
- Use Amrita E-learning content platform to engender learning spirit of ITI Trainees.

In order to achieve this objective, certain preparatory steps need to be performed. This meeting was held to brainstorm the necessary steps for achieving high utilization for National DLP.

#### 4) Broad Strategy



- The high-level steps are:
  - o Setup National Servers for DLP
  - o Setup Teacher / Student Nodes for DLP
    - Purchase necessary equipment
    - Identify operational manpower
    - Provide necessary training
  - o Plan the Programme
    - Identification of teachers/ experts for actual teaching
    - Identification of DLP topics
    - Language selection (regional delivery)

#### 5) Setup of National Servers for DLP

Currently A-VIEW Server is operated as a Single National Server out of ATI, Chennai. To conduct a national programme, we should have multiple servers (including backup) at different geographic locations

- Add multiple servers for load sharing and redundancy at different geographical locations (minimum of 2 for the database/application, and 3 for streaming and content).
- Adequate Internet bandwidth with minimum 1 Gbps from NKN (presently ATI, Chennai has got only 100 Mbps NKN connectivity which should be upgraded to 1 Gbps forthwith to interact with more than 75 spokes at a time)

- Keep multiple Internet connectivity with a minimum 100 Mbps as a standby from other agencies like BSNL/Airtel etc to avoid internet down time (redundancy/failsafe operation)
- Keep Backup Servers at different locations with proper backup power system with proper Standard Operating Procedure and compliance checks.
- Keep documented regular backups of application data (database / storage) in an external storage system (e.g., SAN) in a different physical location as well.
- Record the talks/lectures and make them available on national servers on demand anytime.
- Proper firewall should be maintained and activity logs properly monitored to avoid hacking and/or misuse besides mitigation of failure.
- Atleast minimum two support personnel (one for networking and firewall management and another for database and server data backup) to be available to support the server administrator.
- Power supply to the server should be redundant and should be provided from two different feeders/sources.
- Two 5 KVA ONLINE UPS each with 4 Hrs backup for the server may be required to provide uninterrupted operation of the live programme in case of power failure. This will have to be more if additional loads are envisaged – redundant servers, backup devices, lighting/ventilation, etc.
- A generator with sufficient capacity for the entire facility is advised to be provided atleast at the hubs.

## 6) Setup of Teacher Nodes for DLP

Ten Central Institutes have been identified as National ATI Teacher Nodes (HUB) and necessary equipment has already been purchased. However to conduct programmes from these Teacher Nodes certain additional steps need to be performed:

- Identification of personnel in each Teacher Node. It is recommended **that atleast 6 people** (redundancy / leave replacement to be factored in) **be identified at each Teacher Node.** Their roles will be:
  - 2 for operating the two Cameras
  - 1 for operating Audio/Video Mixer
  - 1 for System/Networks
  - 1 for A-VIEW support & consultancy
  - 1 as Teaching Assistant (managing content, interaction)
- DLP training for the selected project staffs to include:
  - In-depth training

- Operating the Camera, Audio Mixer, Video Mixer
  - Live recording from the Video Mixer
  - Using the A-VIEW software
  - Role of Moderator, Teacher
  - Course Content Management
  - Recording the Course
  - Publishing course schedule in Calendar
  - Meeting module for Interaction between ATI Officers
  - Editing the Course Recording
    - Publishing high quality Video into Video Libraries
    - Placing Video in National Servers – catalogued and indexed for search ability
  - Training
    - Phase 1 by A-VIEW Amrita Trainers
    - Phase 2 by ATI trainers
- **DLP transmission over Internet, webcasting, DTH and Mobile apps**

Presently DLP transmission being done via Internet to the spokes centers having interactive features during question/answer session. Additionally to reach out to more people, especially those accessing through laptop/PC from their workplace itself, DGT National Server at ATI, Chennai has already been configured with non-interactive web casting feature (listening mode). When required it can be reconfigured as interactive through chat mode. Amrita e-learning Lab provides complete support on this issue.

- **DTH service exclusively for Skill Ministry**
  - Shri Dinesh Nijawan, Director, CFI suggested the possibility to use DTH service for the DLP programme along with ICT.
  - Direct To Home telecast (DTH) may provide a new depth to distance learning and promises to integrate the disparate areas of our vast country into a seamlessly merged community of learners.
  - This breaks down the barriers of learning, as even the remotest ITI in the village will be able to use the facility at affordable rates

(one TV and Set box) where high speed internet facility is still out of reach.

- e-Learning content/video on demand possible.
  - Even though it may be uni-directional (unicast), interactivity can be managed through SMS/PHONE.
  - Already IIT, Madras has adopted this technology with the support of ISRO. Hence, it has been suggested that Skill Ministry may approach ISRO to leverage this DTH facility. Amrita e-Learning Research Team may provide Support and technical guidance in this regard.
- **DLP and e-Learning Content Management access via Mobile Apps for ITI Trainees.**
- Mobile devices offer not just convenience and flexibility, but potentially a new way of studying. Equipped with cameras, video and sound recorders, and GPS, they enable students to become creators as well as users of information.
  - The potential for using mobile technologies to transform the experience of distance learning is huge.
  - Distance-learning providers already use virtual learning environments (VLEs) to enable students to
    - Read documents online,
    - Contact tutors,
    - Submit coursework, and/or
    - Engage in discussions with other students.
  - The increasing popularity of smartphones, iPads and Kindles means that educational institutions are now responding to student demand to access those resources from their mobile devices.
  - Amrita E-Learning Lab has already developed a mobile app for DLP on the Android platform and lot of e-Learning content in different

sectors like 3D simulation of equipment/machinery are already easily accessible through it.

- Skill Ministry can make use of Amrita E-Learning Research Lab's vast expertise in this field to develop a mobile app exclusively to access the recorded lectures, e-Learning content, training schedule, course material, syllabus, video animation of course material, self test and evaluation etc. This will be very much ideal for trainees who want to study during lunch breaks, free time at work, while traveling or just about when convenient.

## 7) Setup of Student Nodes for DLP

Around Two Hundred Centers have been identified as Student Nodes and necessary equipment has already been purchased. Now additionally 364 spokes also identified in each district across the country. However to receive programmes certain additional steps need to be performed:

- Identification of personnel in each Student Node. It is recommended that 2 people be identified in each Student Node. Their roles will be:
  - 1 for operating the Computer/Network and Related Software (e.g., A-VIEW)
  - 1 for Managing Interaction (e.g., if a student asks a question, pass the mike to that student)
- DLP training for the selected project staff to include:
  - Using the A-VIEW software
  - Downloading and Installing the A-VIEW software
  - Using User/Password to Login
  - Pre-Testing Audio/Video Equipment
  - Pre-Testing Bandwidth Connectivity
  - Interacting with the Teacher
  - Private Chat with System Admin
  - Obtaining the Course Recording from the Video Library and providing it students for offline viewing
  - Initial Phase 1 training can be provided by A-VIEW Amrita Trainers and subsequently ATI trainers can conduct the Phase 2 trainings.
  - Student node setups has to be certified and rated accordingly

## 8. Video Conferencing to integrate the field institutes of DGT

- Amrita's A-VIEW is an advanced multi-modal, multi-platform, collaborative e-learning solution which allows an instructor to teach or interact with a large number of learners transcending geographies on a real-time basis through live audio/video streaming and synchronized content sharing.
- Besides that, A-VIEW can also act as an online meeting tool (video conferencing) that can support online social collaboration and interactions with multiple users from various locations simultaneously.
- DGT makes use of this tool to link all field institutes through video conferencing for day-to-day activities and information exchange in a smart way.
- Amrita Lab has already configured the National Server of DGT at ATI, Chennai with this full functional feature of video conferencing and is now managed by ATI, Chennai and at DGT Headquarters level as well when required.
- Another advantage of this videoconference tool is multiple meetings can be conducted simultaneously and it also features SMS and email alerts for commencing the meeting.
- The minimum hardware requirement is
  - 1) Atleast 2 Mbps Internet connected Desktop PC /Laptop
  - 2) USB Web camera (eg Logitech c270 HDCAM –Rs 1500/-) or integrated webcam of laptop will also do
  - 3) Headphone and Mic.
- Training on video-conferencing use will be carried out by Amrita.

## 9. Amrita's e-Learning Activities and way of Use in Skill Ministry

- Amrita E-Learning Lab has done a lot of creative work in e-content development in different skill sectors. In addition, they have developed 3D simulation and many PC based multipurpose equipment simulators, which are very useful, attractive and inspirational to the trainees at the ITI entry level.

- In order to find a way to transform it to suit the Skill Ministry, Amrita can do the following:
  - Arrange a demonstration at New Delhi to the Skill Ministry
  - Subsequently submit a detailed proposal for makeover of the e-learning content developed for content management in the national server for any time access
  - Development of mobile app for the Skill Ministry.
  - Creating website for annual training calendar

## 10. Equipment Recommendations

Please refer to Appendix 1-4, for the necessary equipment recommendations for teacher and student nodes, server upgradation and video recording /editing options. This equipment may need to be updated to the latest models.

In addition, teacher nodes require the following software and systems for recording and editing:

- Recording hardware
- Recording software - Camtasia
- Video Editing software – Aver Media Composer/Final Cut Pro / Adobe Premiere
- Local Systems and Storage for recording and editing
  
- The machinery and equipment procured for the hub and spokes should be brought under Annual Maintenance Contract (AMC) for smooth operation / to reduce downtime of the resources created. DGT may take action on this issue.
  
- Presently, for all the spokes centre, DGT has provided 2 Mbps BSNL connectivity under NMEICT project ( 75% payment will be Ministry of HRD and 25% by Skill Ministry. As per the ADSL connectivity of BSNL, downloading should be 2 Mbps and uploading should be at 512 kbps.
  
- In general, most organizations use the download bandwidth for internet usage, and do not make much use of the upload bandwidth. However, for video conferencing, the upload bandwidth is critical and needs to be 512 kbps as specified. It has been observed that in most of the spokes centers, the upload speed provided has been less than 512 kbps. We request DGT to approach BSNL and ensure good upload bandwidth of 512 kbps at all the spokes centers.



## APPENDIX 1: National Server at ATI Chennai – additional Hardware recommended

- 1) Presently, the DGT National Server has been set-up at ATI Chennai with a **single rack server**.
- 2) To conduct a national programme, we should have multiple servers (including backup) at different geographic locations
- 3) Multiple servers can be added for load sharing and redundancy at different geographical location. (minimum of 2 Nos for the database/application, and 3 Nos for streaming and content)
- 4) In the initial phase, the configuration of the present server at ATI Chennai is
  - Dell R720 Rack Server dual core Xeon Processor with 128 GB RAM and 6 TB HDD – 4 Nos.
  - It is recommended to **upgrade the RAM capacity to 256 GB and with additional 4 Nos of 6 TB HDD**, which enables it to store more video content.
- 5) To have a load balancing and failsafe operation, **a mirror server can be procured with the same configuration as above** and should be kept at different location to safeguard it from total loss during fire/natural calamities. Later on, if required the mirror server can be moved to different geographical location also provided if adequate internet bandwidth connectivity obtained from NKN.
- 6) **5 KVA online UPS each with 4 hours backup – 2 Nos** for redundancy in backup power supply so as to provide an un-interrupted operation during the live programme
- 7) **NKN connectivity of 100 Mbps should be upgraded to 1 Gbps** to interact with more than 75 spokes at a time.
- 8) Keep **multiple Internet connectivity** with a minimum 100 Mbps as a standby from other agencies like **BSNL/Airtel/Others** to avoid NKN failure / down time redundancy / failover switching operation)
- 9) To monitor the spokes and other database management, **27” or above HD Digital Monitor/Display – 2 Nos** are required.
- 10) **Furniture** for Server room, control pc and video editing station – as required.
- 11) **Air conditioning System** for server and recording/editing station – as required.

## APPENDIX 2: Video Recording /Editing Hardware /Software Recommended

### I) Video Capturing (Recording): - for all the 10 HUBS

Inside Video production facility (Video Floor / Studio) the content acquired from the Sony PMW-200 - XDCAM camcorder using SXS Card or SD Card has limitation in recording time. Hence it is suggested to keep a Solid State Device (SSD) Recorder (Serial No. 1 and 2 ) which can records larger duration using SSD cards up to 960 GB (Serial No.3) for continues recording schedules.

Sl.No	Description	Qty	Unit Price ~	Appx. Amount
1	Blackmagic Design HyperDeck Studio 12G Professional high performance broadcast deck with advanced 12G-SDI and HDMI 2.0 for recording and playback of all SD, HD and Ultra HD formats up to 2160p60	1		
2	Blackmagic Design Hyperdeck Shuttle 2	2	5,00,000.00	5,00,000.00
3	960GB Sandisk Extreme SSD Drive	4		
4	BMD UltraStudio Express ( To transfer the data from SSD drive to PC for further upload to cloud centre at ATI, Chennai for editing/content management.)	1		
5	Camtasia – Screen capture software	1		
6	Western Digital (or equivalent) 24 TB My Cloud DL	1	1,20,000	1,20,000.00
	<b>Sub Total Rs</b>			<b>6,20,000.00</b>

**II) Avid or Final Cut Pro Non Linear Video Editing System: (FOR ATI CHENNAI ONLY hosted in National Server on editing )**

After content acquisition, the recorded video will be brought to the Video Editing facility (Edit Suite) by an SSD card, which will be uploaded in to a Mac OS based Video Editing system using an SSD card reader called Shuttle 2. Now the ingested VIDEO content would be taken over by AVID Media Composer / Final Cut Pro Software for editing and for various post production works like titling mixing and fine tuning in color etc., A professional broadcast monitor has been suggested to make previews and for reference of the finished video content.

Sl.No	Description	Qty	Unit Price ~	Appx. Amount
1	Mac Pro 6-core Xeon E5 3.5GHz/16GB/256GB/Dual FirePro D500 3GB or latest	1	6,50,000.00	6.50,000.00
2	Thunderbolt to HDMI Adapter	1		
3	4Tb Thunderbolt & USB 3 HDD	1		
4	BMD UltraStudio Express	1		
5	Software : Avid Media Composer /Final Cut Pro NL video editing .	1		
6	27" HP C4D27AS LED Colour Monitor	1		
7	TV Logic 24" Professional Broadcast Monitor Model : LVM-246W 24" 3G LCD Monitor HD/SD, Audio Disembeder, Internal speaker, HDMI,DVI input	1	2,75,000.00	2,75,000.00
	<b>Grand Total Rs.</b>			<b>9,25,000.00</b>

**III) Centralized storage system for media archival and SAN editing  
(FOR ATI CHENNAI ONLY - content management)**

The pool of media content as files can be archived in a SAN of at least 16 TB storage capacities over fiber 10 Gigabit/Sec switch for preserving the data for long duration with a RAID redundancy as well as for future reproduction or retrieval. Streaming (Using a workstation and compatible streaming card) also can be done via an Intranet if the necessity arises.

<b>Sl.No</b>	<b>Description</b>	<b>Qty</b>	<b>Unit Price ~</b>	<b>App. Amount</b>
1	1Beyond EzSAN Shared storage solution 16/32 TB RAW with 2/4 TB disks in 8 Bays with one spare HDD	1	7,50,000.00	7,50,000.00
2	Western Digital (or equivalent) 24 TB My Cloud DL 4100 NAS HD server populated with hard disks (WDBNEZ0240KBK)	4	1,20,000	4, 80, 000.00
	<b>Total Price</b>	<b>Rs.</b>		<b>12,30,000.00</b>

## APPENDIX 3: Teaching Node

Equipments	Recommended Specification
Computer	Windows 7 PC - Intel i5 with minimum of 4 Core processor, minimum 16 GB RAM, HDD with minimum of 500 GB
Camcorder with HDMI	Sony PMW 200 or Equivalent (Highly professional cameras) 2
Video Capture Device	Avermedia - DarkCrystal HD Capture Pro C027
	Avermedia - Game Broadcaster HD C127
Video Mixer	Edirol V-8
Audio Mixer	Allen Heath Z10
Wireless Microphone	Sennheiser SL HEADMIC 1 SB
	Sennheiser ew 122 G3-1G8
	Shure BLX 14 A/ CVL Lapel
HD Projector	Epson EH-TW550 HD
	Epson MG-850HD
Projector Screen	Widescreen : minimum 10 feet wider OR minimum 12 x 8 feet size
Audio Speakers -2	Yamaha MSP3 (Can be used without Amplifier)
	Ahuja SMX-902 (Should be used with Amplifier)
Audio Amplifier	StuDiomaster DJA100
	StuDiomaster DJA550
	Samson Servo 200
Document Camera	Wolfvision VZ-8plus4
Digital Writing Pad	iBall Takenote
Camera Tripod	Any Brand
Cables	XLR Female to XLR Male cable (Mic) -2
	A to B USB 2.0 Cable -1
	RCA to RCA Cable -1
	Amplifier to Speaker wire -2
	HDMI Cable -2
	HDMI Splitter -1
UPS - UPS 1500VA (850W) with battery	APC BR1500G-IN OR equivalent (To sustain power of PC, Audio video setup and Projector)

## APPENDIX 4: Student Node

SI No	Equipment	Description
1	HD Handy-cam with HDMI Output	Sony HDR-CX220E/B OR Panasonic HC-V130 OR equivalent
2	Tripod	Any standard tripod
3	HDMI Video Capture Card	Avermedia - DarkCrystal HD Capture Pro C027 OR Avermedia - Game Broadcaster HD C127
4	Audio Mixer with AUX Out with Control	Allen Heath Z10 OR Yamaha MG10 OR Yamaha MG102C
5	Audio Amplifier with 2 Speakers	Amplifier StuDiomaster DJA100 OR StuDiomaster DJA550 OR Samson Servo 200 OR Crown/Bosch. Ahuja SMX-902 OR equivalent
6	Wireless MIC Shure SVX24/PG58 OR equivalent	Shure SVX24/PG58 OR equivalent
7	HD Projector 720P HDMI Input	Epson EH-TW550 HD
8	Projector Screen Widescreen : minimum 10 feet wider OR minimum 12 x 8 feet size 7,000 x 7,000	Widescreen : minimum 10 feet wider OR minimum 12 x 8 feet size
9	Windows PC (Core i7 with 8/16GB RAM) HDMI Out Motherboard With 21" LED/LCD Monitor Min 4 Core intel processor with original intel mother board with HDMI Output.	
10	UPS 1500VA (850W) with battery To sustain power of PC, Audio video setup and Projector	APC BR1500G-IN OR equivalent
11	Cables and Connectors	One long HDMI cable from camera to PC and one for PC to Projector (Depends on the classroom size and position of camera, PC and projector). One 1 IN x 2 OUT HDMI Splitter. XRL to XRL Cable, RCA to RCA Cable, Speaker Cable etc.

# DGT Distance Learning Program: Minutes of Meeting

Venue: Amrita E-Learning Research Lab, Amrita University,  
Amritapuri Campus, Kollam, Kerala

Date: 22 Jan 2016

## Attendance Sheet

S.No	Name and Designation	Mobile	Email	Signature
1	Shri Dinesh Nijawan Director/CFI, DGT, New Delhi	96504 40008	<b>Dinesh_nij@hotmail.com</b>	
2	Shri. Pratap Singh Asst Director, DGT New Delhi	95822 41994		
3	Dr M. Jayaprakasan Dy. Director, ATI, Chennai	98404 01002	Jp_ati@vsnl.net	
4	Shri V Kathiresan TO, RDAT/HOO-ATI Calicut	98845 09882	vkdgt@gmail.com	
5	Prof. Kamal Bijlani Director, Amrita E- Learning Lab, Amrita University, Kerela	8129459900	Kamal1008@gmail.com	
6	Shri Sankaran Narayanan, Amrita E- Learning	8589004188	<a href="mailto:n.sankaran@gmail.com">n.sankaran@gmail.com</a>	
7	Shri Sethu Subramanian N., Amrita E-Learning	9645082804	amritasethu@gmail.com	
8	Shri Padmakumar GS, Amrita E-Learning	7293088787	<a href="mailto:padmakumarnext@gmail.com">padmakumarnext@gmail.com</a>	

