CASE STUDY

E-Training Project Implementation for Indian Airforce

Digital Content

Learning Management

Tablets for Trainees and Instructors

Networking

Administration and Mentoring
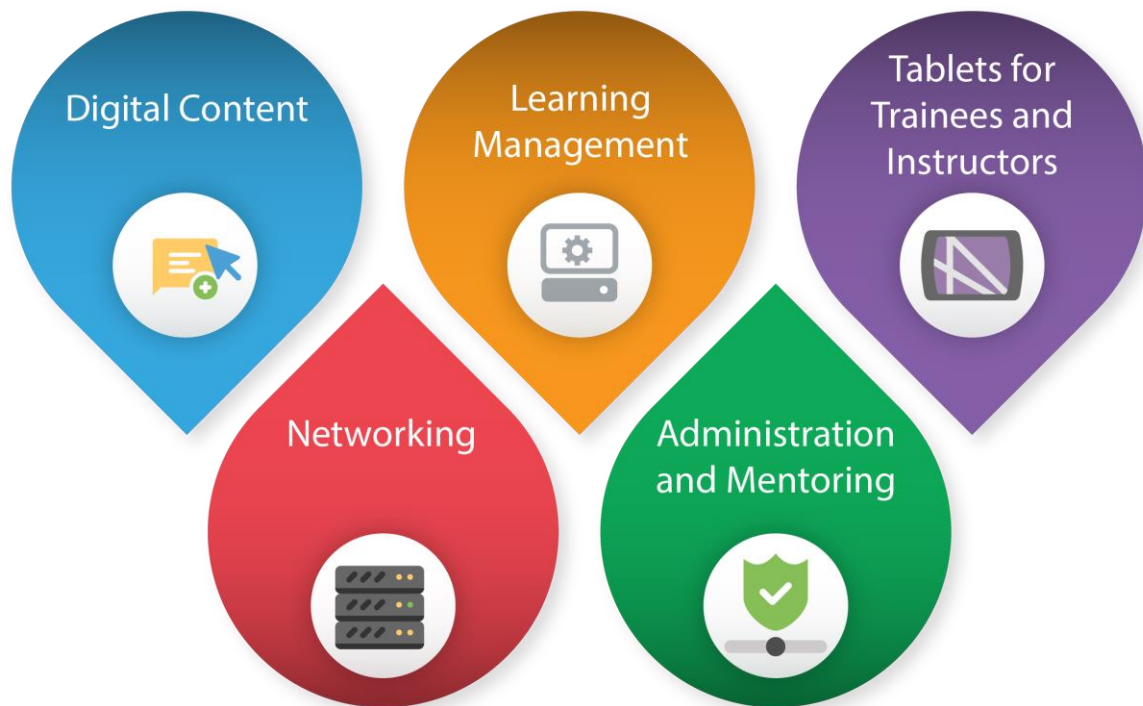
Background

Technicians were trained in Indian Air Force (IAF) under various specialized streams like Airframes, Aero Engines, Aircraft Instruments, Electricals, Wireless, Radar and Armaments and allotted according to the individual's aptitude. The Technical Training College of IAF imparts education and training to engineers from various disciplines on the current technologies of aircraft and instill qualities of military leadership and managerial skills for members of officer cadre.

Challenges/Concerns

- All training was delivered via conventional mode by the instructors who controls the learning environment and it was through chalk and talk method.

- IAF was keen on leveraging the latest advancements in the field of Information and Communication Technology to introduce 'e-Training Project'.

- The existing training delivery had these following challenges faced by both the trainees and trainers

- Resource Intensive Planning & Workflow management

- Cumbersome Files & Paper records management process

- Absence of effective tracking mechanism to monitor individual trainees' learning needs & performance

- Poor trainer and trainee engagement

- Lack of clear conceptual understanding of basics by trainees

- Lack of interest and motivation due to absence of self-paced learning

- Lack of detailed reports & metrics to gauge the trainee progress on various courses

E-Training Project

The e-Training project is the apostle of all the ongoing changes in the training philosophy of the Indian Air Force. E-Learning is aimed at centralization and organization of all learning-related functions into one system, enabling efficient access via layered interface navigation. The trainee, with the help of the hand-held monitor (device), would have access to a plethora of information (e-content) from a central server in a secured manner within their network. Moreover, the proposed solution facilitates collaboration among other trainees and instructors during the off-duty with the help of blogs, e-mail or direct video conferencing features. This pilot project involved digitizing their existing textual content in an interactive e-book format preloaded in tablet devices issued to the ab initio trainees.

GA Software Technologies provided an end-to-end solution for the e-Training Project and was launched at the Electrical and Instrument Training Institute, a premier Technical Institute of the IAF located at Jalahalli. in Bengaluru.

Solutions Provided

With our core competencies in e-content development and LMS implementation, we provided the following solution components as part of the e-training project.

- Customization and Implementation of Learning Management System (LMS) (software and hardware)

- Content Analysis and e-Content Development

- Network hardware and software and infrastructure including OFC and UTP cable Laying to set up a secured Wi-Fi network

- End point Hardware (Hand Held Monitors)

- MDM Solution - Security software and hardware for managing and controlling the hand-held devices

- Documentation & Training

Learning Management System (LMS)

GA Software customized the open source LMS Moodle to meet the requirement specified by E&ITI. The LMS was designed to address the needs of various learning delivery.

- Learner-led: Asynchronous, on-demand e-training (self-paced learning).

- Instructor-led: Live presentation of content and supervision of learning experiences by an instructor.

  - ✓ Co-located: Instructor and trainee co-located, usually in a classroom setting.

  - ✓ Virtual Classrooms: Instructor delivery of learning to trainees at a distance, using a technology such as video conferencing hardware or web conferencing software. We provided virtual classroom by integrating BigBlueButton with the Moodle LMS.

The entire manual workflow for the training process right from creation of Weekly Training Plan to Mentoring were automated in the LMS thereby eliminating the manual intervention and to improve the overall efficiency of training administration.

Customized LMS Solution:

- Allows uploading and accessing various learning resources like ILT sessions, Tests, WBT, surveys etc.

- Enables uploading of various file-formats viz. DOC, PDF, PPT, XLS, AVI, MPEG, JPEG, etc.

- Enables various real time and offline interactions and discussion by trainees with instructors

- Captures the qualitative and quantitative performance of the trainees

- Provides comparative Analysis between performance in Subjects and Courses

- Generates reports for Individual trainee performance, complete course reports, weekly course progress report as per BTP/ WTP, Pie, bar analysis chart for each type of report

- Allows the instructors to handle sessions through video conferencing with the Integrated virtual learning environment

Content Analysis and Development

GA Software analyzed the existing training contents which is in the form of precis (textbooks) and developed them as e-learning content that can be deployed in the LMS. We developed 560 minutes of SCORM compliant digital content which comprises of Level-1 (280 minutes) and Level -2 (280 minutes) content.

- Level-1 content had basic interactive elements and the engagement in the courseware is achieved through

  - ✓ Point and click interactions and

  - ✓ Read only Pop-ups (ROP)

- Level-2 content included rich 2D animations and 20% of each module had Level-2 content.

- Assessment Questions were introduced at the end of every module to track and measure the learner's progress and randomization of test items were scored and tracked via LMS.

- Enriched analytics with features like Course level tracking, Page level tracking, and User-level bookmarks etc.

Network Hardware, Software, and Infrastructure including OFC and UTP Cable Laying

GA Software Technologies designed and implemented the entire network infrastructure (including hardware & software) required for communication between the server and the end user device for Pilot e-Training Project. The network solution consists of servers deployed in the main building connected efficiently to the different building of the campus through OFC (Optical Fiber Cable), High-performance Wireless Access Points (WAPs) about 60 in numbers managed by the Wireless LAN Controller and in-house centralized service that administrators need to configure and monitor the wireless networks. The server acts as a centralized knowledge repository holding the entire digital content, course catalogues, tracked performance data of the individual trainees, generated reports on trainees' progress, course schedules, examination timetables etc. With suitable sizing and placement of the APs, the wireless solution was used to provide pervasive and reliable wireless connectivity at the admin block, trainee billets (hostel), instructor rooms and classrooms. The wired connectivity was provided at classrooms using UTP cabling.

End point Hardware (Hand Held Monitors)

GA Software provided hand held monitors for instructors and trainees at E&ITI. The handheld monitors enabled both instructors and trainees for various training purpose as indicated below.

For Trainees

- Content reference during classes
- Making notes during classes or afterwards using active stylus/touch screen

- Individual self-assessment

- Self-paced Learning (Anytime & Anywhere within campus)

- Doubts clarification in an interactive trainee-instructor blog

- Review and view all lectures/classes that the trainee might have missed due to leave/ hospitalization/absence

For Instructors

- Content distribution & Content reference during classroom delivery

- Making notes and annotations to help trainees to visualize and assimilate content interactively

- Administer crisp pre-assessment and post-assessments to trainees to evaluate trainee content assimilation instantly

- Conduct online exams for the group

MDM Solution - Security software and hardware for Hand-held Devices

To ensure secured access of content through the device, we provided handheld monitors installed with Mobile Device Management (MDM) software. MDM software allows the administrators to monitor & control hand held devices of the trainees and instructor monitors at any point of time. MDM software allows users to connect only to a specified network and all other access are restricted. Hand Held Monitors has many features that are not required for the training purpose. The security module of the MDM software allows the administrator to enable/disable the features as per their requirement of E&ITI. For E&ITI, administrator blocked Bluetooth Connectivity, Wi-Fi Connectivity except the specified connection, External SD card slot, USB port except for charging, and Camera Usage. Apart from this, MDM software allows administrator to track the user's device location within the campus and remote wiping of data from the device in case device is stolen or misplaced or not visible to network for three days.

Results & Outcome

- Learning Management System provided E&ITI with Digital Learning Platform facilitating interactive blended learning methodology, mix of traditional classroom training and online learning via hand held monitors that enhanced conceptual understanding of trainees significantly.

- The Level 1 and Level 2 digital content developed helps trainees in visualizing & better understanding of the working principles of various electrical instruments. Also, it reduced the logistics and carrying handouts and training materials to the training sessions.

- Major resource intensive and time consuming manual workflow have been automated using LMS.

The following are the benefits enjoyed by different categories of users.

➢ Instructors host & conduct test, maintain profile, update designated subject with study materials and grade performance of trainees through LMS

➢ Mentors maintain General Service Training records that include trainee participation in sports, games, extracurricular activities and link with trainee dossiers through LMS

➢ Flight Commanders manage faculty portal, detailing of instructor w.r.t the subject allotted, administer the complete activities of all instructors of his faculty, grading, report generation through LMS

➢ Squadron Commander monitors the overall progress of the learning processes executed by the instructor and the Flight Commander and provide feedback through LMS

➢ Chief Instructor monitors all the activities through TCO, conduct of exams, overall assessment of trainee's performance, generating result, taking feedback, review of syllabus allocation of subjects to other faculties, making weekly, monthly and annual training plans through LMS

- Reports & Analytics in LMS provides various metrics to gauge the trainee performance and trainer effectiveness in providing classroom training for proactive planning and additional training intervention

- Collaboration features of LMS enhances interactions and engagements of trainees with the instructor through Email, Chat messenger, Discussion Forums & Blogs

- Handheld monitors facilitate self-paced learning and anytime & anywhere (within Campus) access to the training resources for the trainees

- MDM software allows the administrator to monitor and locate the trainees' hand held monitors within the campus, refrain from them browsing and inappropriate device usage

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