2024

Proposal to Establish Five Centres of Excellence in Virtual and Mixed Reality

SUBMITTED TO

DIRECTORATE GENERAL OF TRAINING, MINISTRY OF SKILL DEVELOPMENT AND ENTREPRENEURSHIP, GOVERNMENT OF INDIA

Skillveri

Meta

Executive Summary

This proposal outlines the creation of five "Centres of Excellence in Virtual Reality (VR) and Mixed Reality (MR)" across India, established through a collaborative effort between the Directorate General of Training (DGT), Ministry of Skill Development and Entrepreneurship (MSDE), Meta, and SkillVeri. These centers will equip learners and instructors with the latest VR technology to learn and enhance existing skills in a safe, immersive, and engaging environment.

Background

The Indian skilling landscape is undergoing a rapid transformation. Virtual Reality (VR) and Mixed Reality (MR) present a unique opportunity to redefine skill development by providing learners with:

- **Realistic simulations**
  - MR will allow both learners to practice skills in simulated environments, replicating real-world scenarios without risk or limitations. Mixed Reality will allow students to see their real surroundings blend with virtual equipment relevant to their trades, leading to a conducive learning environment.
  - Instructors will get an opportunity to upgrade their knowledge under this program around mixed reality.
- **Improved engagement:** MR will foster a more interactive and immersive learning experience, leading to better knowledge retention.
- **Accessibility:** VR has the potential to make skill development more accessible by overcoming geographical barriers and providing on-demand training.

Project Description and role of partners

Meta intends to partner with the Directorate General of Training and Skillveri in establishing five "Centres of Excellence in MR" across India. These centres will be equipped with:

- **SkillVeri**
  - VR & MR Technology and curriculum: SkillVeri will provide VR & MR resources technology which can be utilised for imparting practical knowledge to learners. The curriculum will be in line with the DGT training curriculum.
  - The intellectual property of the VR & MR simulations shall remain with SkillVeri. It will be licensed to the centres of excellence for the duration of the project.
  - Skilled MR instructors: SkillVeri will coordinate with NSTIs/ ITIs nominated under this project to deploy trained professionals to 1) handhold instructors with an aim to lead workshops on their own. 2) Upskill learners to use VR technology.
  - Curriculum aligned with NSQF: SkillVeri team has repurposed existing content which is aligned to National Skills Qualification Framework (NSQF), ensuring industry relevance and certification upon completion can be delivered through MR experience.

- **Ministry of Skill Development and Entrepreneurship**
  - Approve on methodology and approach to undertake a survey to assess impact and perceived value of the program for both the learners and instructors.
  - Each respondent participating in this program will be provided an opportunity to participate in baseline and end line surveys.
  - Support is sought from DGT, MSDE to identify 5 strategic locations/ NSTIs to establish "Centres of Excellence in MR" based on their strategic importance, existing infrastructure, and potential for high student enrolment.
  - Sensitising and mobilizing beneficiaries of the program.
- **Meta**
  - The project is supported by Meta and there will be no burden on the exchequer or the beneficiaries under this proposed project.

Impact Anticipated

- **Enhance skill development:** By providing students with access to MR technology, they can develop existing skills in a more effective and engaging way.
- **Increase employability:** Graduates from these centers will be equipped with in-demand skills and MR training experience, making them more competitive in the job market.
- **Bridge the skill gap:** MR can address the growing skill gap in India by providing accessible and efficient training opportunities.
- **Promote Industry Collaboration:** Foster collaboration between the government, leading technology companies, and educational institutions.
- **Innovate Training Methods:** Utilise MR to create interactive and engaging learning environments, increasing student engagement and retention.

Duration of Project and Milestones

- The project is proposed for a period of 6 months with the following proposed timelines:
  - September 2024
    - Alignment and execution of partnership between Meta, DGT and SkillVeri
    - Establishing CoEs and initiating the project
  - October 2024
    - Convening in New Delhi to announce the partnership
  - January 2024
    - Consolidate learnings and alignment on findings from the project i.e. whitepaper.
    - Identification of 10 impact stories of learners and educators who have benefitted from the project.

Skills to be available and number of hours

Sl #	Skill Module	ITI Trade	No. of hours of content under each
1	Gas Metal Arc Welding (GMAW)	Welder	180
2	Manual Metal Arc Welding (MMAW) or SMAW	Welder	294
3	Gas Tungsten Arc Welding (GTAW) with and without filler rod	Welder	294
4	Flux Core Arc Welding (FCAW)	Welder	180
5	Submerged Arc Welding (SAW) Operations Introduction	Welder	16
6	Decorative Painting with HVLP Spray Process	Painter	40
7	Decorative Painting with Airless Spray Process	Painter	40
8	Automotive Refinish / Repair Painting with HVLP Spray Process	Painter	30
9	Automotive Refinish / Repair operating procedure with sanding & masking steps	Painter	30
10	Automotive OEM / Factory painting with conveyor painting module – HVLP Spray Process	Painter	40
11	Automotive OEM / Factory painting with conveyor painting module – Electrostatic Spray Process	Painter	40
12	Automotive OEM / Factory painting with conveyor painting module – Air Assisted Airless Spray Process	Painter	40

13	Protective Coatings and heavy industrial painting – with Airless Spray process	Painter	60
14	Site survey training module for domestic solar panel installations	Electronics / Electrician / Smart Agriculture / Smart IOT / Smart Healthcare	4
15	Inverter & charge controller assembly module for domestic solar panel installations	Electronics / Electrician / Smart Agriculture / Smart IOT / Smart Healthcare	16
16	Use and handle Nitrogen gas in the leak detection process	RAC	20
17	Use of a gauge manifold assembly	RAC	4
18	Brazing using correct techniques to fix the leak in the copper tubes	RAC	4
19	Single evacuation method to remove moisture from the system	RAC	8
20	Measuring system evacuation level	RAC	4
21	Demonstrating the weigh-in charging method	RAC	4
22	Demonstrating charging using the manufacturers literature	RAC	8

23	Knowledge in using the following equipment 1. Gauge Manifold 2. Charging Scale & Charging Cylinder 3. Brazing equipment 4. Vacuum pump 5. Nitrogen Cylinder 6. Clamp metre	RAC	2
24	Perform water cleaning of the outer casing of the outdoor unit in Commercial AC	RAC	2
25	Perform water cleaning of the outer casing of the AHU unit in Commercial AC	RAC	4
26	Perform water cleaning of the filters of the AHU unit in Commercial AC	RAC	4

Journey of Instructor

1. Learn how to use the VR/MR technology devices
2. Turning ON/OFF the devices
3. Perform Casting operation by connecting the Meta device with the laptop to facilitate external guidance
4. Instructor will gain the ability to complete all the levels in the training module
5. They will gain the ability to access reports and analytics of the students
6. Provide guidance to the students based on the reports
7. Guide trainees during the training to correct any mistakes made during the training and help them in gaining the skills

Journey of Learner

1. Learn how to safely use the VR/MR technology devices for training
2. Become familiar with the importance of dexterity skills in welding and painting
3. Understand the process behind performing installation and troubleshooting services on various machines
4. Learn about various hardware components and controls involved in CNC machines

5. Understand the safety measures to be taken before starting to train on any process
6. Complete all the levels one after the other in a systematic manner in increasing order of difficulty to become proficient
7. Analyse the score of each level and improve the performance by repeated practising
8. Learn the steps involved to perform a process from start to finish to correctly perform the activity

Proposed Next Steps

Upon approval of this proposal, following is requested:

- **Project Steering Committee:** it is requested to establish a project steering committee headed by DGT and its members composed of representatives from Meta and SkillVeri. The project steering committee will monitor the progress of the project and recommend improvisation in approach as and when required with an aim to deliver anticipated impact.
- **Nodal Officer:** Nomination of a nodal officer from the Ministry of Skill Development and Entrepreneurship.
- **Site Visits:** Facilitation of team's visit to shortlisted NSTIs/ ITIs to establish Centers of Excellence across India.
- **Survey questionnaire:** Alignment between DGT, Meta and SkillVeri on the baseline and endline survey questionnaire to capture perceived value of technology and program.

Data Collection, Analysis and Privacy

No personal information that will be collected by Meta and Skillveri under this project.

Analytical information to undertake baseline and endline survey comprising of the scores and performance of the students in each attempt of the simulation will be stored and used for analytics purposes - how every student progresses in the planned set of lessons, the time taken, number of attempts, how this compares against class average, industry sector average, etc will provide valuable insights into designing better systems. To protect individual privacy this data will be processed only in an aggregated manner.

This data will assist all DGT (MSDE), Meta and Skillveri to monitor progress and curate a whitepaper towards the end of the program.

Proposed locations: NSTI located at Chennai, Bangalore, Hyderabad, Kanpur and Jodhpur.

Furthermore, Meta is committed to providing a digital skilling curriculum for aspiring entrepreneurs within the DGT ecosystem. This curriculum will empower them to harness the potential of popular applications such as Facebook, WhatsApp, Instagram, and Reels to build and grow their businesses. By doing so, we aim to foster a culture of innovation and entrepreneurship, ultimately contributing to the growth and development of the Indian economy.

About Meta

Meta, formerly known as Facebook, is a leading technology company that connects billions of people worldwide through its social media platforms i.e. Facebook, Instagram, and WhatsApp, but also offer products like Messenger and virtual reality experiences. Meta is constantly innovating to build new ways for people to connect and explore the potential of immersive technologies.

About Skillveri

Skillveri is a tech pioneer which started in IIT Madras and has built a multi-skill simulation platform on XR and VR. The spray-painting simulation on our platform has become the world's most-used simulator, and the welding simulator is India's most used. It has 150+ customers using 550+ installations, including reputed industries like JCB, ThyssenKrupp, Suzuki, TAFE, Hero, Asian Paints, Berger Paints, Axalta Coatings, etc and reputed private and govt training centres including IITs, NITs, NSTI-B and over 40 ITIs. It has set up XR/VR Centre of Excellence in multiple locations in Odisha (eg, ITI Cuttack), Maharashtra (eg. ITI Aundh). Skillveri in the US has established such VR centres across 60 schools in the US, which it hopes to scale up bigger in India.

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