

Virtual Skill Development of Operators

Background

The skill development of workers/operators are currently enabled by the following models.

1. Detailed Step by Step work instructions shared through:
 - a. PDFs or similar passive documents, usually in local language, with tips to rectify common mistakes
 - b. Digital feed (eg: MP4) showing an operator performing the steps
2. On the job training
 - a. Experienced / Senior operators training beginners - on the job

The challenge

In the case of critical lines, on the job training does impact capacity and consumes more bandwidth causing lower output, diminishing cost-effectiveness, and delayed delivery.

It also effects quality, exposing the company to the risk of poor-quality output, since the experienced training operator can easily overlook error made by the new “in-training” operator.

The current solutions have a long evaluation process to determine whether the senior operator is at the right level of training to train beginners. However, this evaluation process is subjective in nature and might not always deliver consistent results

What are we looking for?

The main goal of this challenge is to find a solution wherein an operator can perform the physical steps virtually, under the leadership of a digital companion or trainer.

The said solution must carry out the following operations:

- The operator would need to be initially trained by the digital companion or trainer using AR/VR.

Note: Augmented reality (AR) augments your surroundings by adding digital elements to a live view, often by using a camera. Virtual reality (VR) is a completely immersive experience that replaces real-life environment with a simulated one.

- The solution should be able to be built across a real production line or a test line that is set up for the purpose to provide a near “real life” experience. So, the second stage after initial training would be for the operator to “go solo” while being assisted, monitored, and supported by the digital companion/trainer under VR.
- In the third stage, the operator would need to “go solo” in an assessment context. The solution should be able to make an assessment after the operator has performed several successful Production Processes while going solo with the VR solution.

- The assessment could also have the capability to be tailored per line/operator, meaning the number of successful repetitions with a critical error rate and non-critical error rate can be set by the client - leading to an operator rating of not ready/ competent/ performer/ expert.
- The operator rating should be saved and integrated to the LDS e-Versatility module.

What are we NOT looking for?

Passive Solutions

Technology Specification

The solutions will be evaluated according to the following criteria:

- A VR and/or AR powered solution for the initial training.
 - In virtual reality, the user almost always wears an eye-covering headset and headphones to completely replace the real world with the virtual one. The idea of VR is to eliminate the real world as much as possible and insulate the user from it. Once inside, the VR universe can be coded to provide just about anything but in our case, it's production processes
 - Augmented reality integrates the simulated world with the real one. The screen is then overlaid with helpful information, which includes implementations such as operator instructions and placement of components within the assembly.
- Ability for the VR to make an assessment against pre-defined criteria.
 - Decision data includes whether the user chose the correct sequence, placement location and assembly techniques or was the VR able to find mistakes or safety hazards in a virtual environment. The user is asked to complete tasks, and steps and results are evaluated to evaluate proficiency.
 - Immersive data measures attention and behavior, primarily in terms of hand, head, and eye movement — where the user is looking in a situation. This helps us understand why and how a user got to the results they did - and can assist in determining the operator assessment level score/rating.
 - Time Data the assessment would also be expected to measure the speed of the operator, and this can also assist in determining the operator assessment level score/rating.
- Output of data for integration into LDS e-Versatility.
 - Best Business Case: initial investment (CAPEX) + operational cost (OPEX)

Evaluation Criteria

The solutions will be evaluated according to the following criteria:

- Robustness of the solution and technical viability
- The ability for the client to build the VR/AR streams internally (preferably autonomous)
- The look, feel and the overall ability for operators to use the solution
- Ability of the solution to be able to make assessments
- Best Business Case: initial investment (CAPEX) + operational cost (OPEX))

Deliverables

A PDF including the following:

Brief description of the proposed solution, including a short specification of the equipment, materials, and functioning scheme

- Images, videos, 3D models, screenshots
- Feasibility evidence
- Estimated investment and operational costs. Include the investment in equipment, the number of workers, operating time (estimation), and/or cost for the service.

Please, send a structured description of your solution, avoid long texts, and include an index and lists. Also, you can support your solution with images and sketches/diagrams.

For more details and to apply click [here](#)