VR Training for Airline Staff: A Case of KLM Royal Dutch Airlines

Source: Unsplash (2018)

Background

Established in 1919, KLM Royal Dutch Airlines is the flag carrier of the Netherlands, based at Schiphol Airport in Amsterdam (KLM, n.d.). Together with its subsidiary regional airline, KLM Cityhopper, the KLM Group operates a vast network of 92 European cities and 70 intercontinental destinations (KLM, n.d.).

In an effort to add more flexibility to pilot training, KLM introduced VR training for pilots flying the new Embraer 175 and 190 aircraft for its regional airline (KLM, 2020). The VR training program includes three applications. First, the virtual cockpit simulates the point of view from the captain's seat inside the cockpit and allows the pilot to control the aircraft by interacting with the virtual control panel. With the availability of a virtual first officer, pilots can test their knowledge and train procedures anywhere, anytime (KLM, 2020). Secondly, the training program includes a 360-degree instructional video where the pilot can observe takeoff and landing from the perspective of the cockpit jump seat (rear seating) (KLM, 2020). Thirdly, in the virtual walkaround, pilots can explore the aircraft inside and out to practice their pre-flight checks (KLM, 2020). The company believes that pilots will have more time to practice specific situations in the physical simulator if they can rehearse procedures and simple maneuvers, such as starting the engine, at home using VR (KLM, n.d.).

On the other hand, KLM has utilized similar technology to create realistic and immersive fire drill training for its cabin crew. In the event of a fire emergency in a virtual aircraft kitchen, crew members must work in pairs as they navigate the scenario, practice fire extinguishing procedures, and control panicking virtual passengers (KLM, n.d.). With the ability to see and hear the fire through the VR headset, the simulation is able to recreate the tension of a real fire situation onboard (KLM, n.d.). As a result, VR-powered immersive experiences effectively increase staff focus on their training content and enhance training effectiveness. In addition to fire drills, VR simulations for bridge operation and evacuation on water have also been developed (KLM, n.d.).

Apart from training, KLM has also incorporated VR in the reintegration process to help cabin crew prepare for returning to work after a long period of absence (KLM, 2024). The VR experience simulates a full working day, from getting ready at home, to reporting at the crew center, handing in luggage, preparing for takeoff, performing in-flight duties, and arriving at the layover hotel (KLM, 2024). This not only helps staff feel less nervous when they actually return to work, but also helps the company identify where returning staff are having difficulties and provide targeted support and treatment (KLM, 2024).

Challenges

While VR simulations clearly enhance preparation for real-life situations, developing highly realistic simulation software remains costly, despite decreasing hardware prices. Additionally, the reliability of these training programs poses a challenge, as real-life scenarios often involve variables that cannot be accurately replicated in simulations. Moreover, it is worth noting that KLM's VR pilot training has yet to be recognized by the European Union Aviation Safety Agency since its release in 2020, highlighting an important hurdle in its broader acceptance and implementation.

Discussion Questions

1. How does VR training improve flexibility for pilots compared to traditional methods?
2. What are the potential limitations of VR training for pilots?
3. What are the advantages and disadvantages of VR cabin crew training compared to traditional training?
4. What are the main challenges KLM faces in implementing VR training?
5. What future advancements in VR technology could further revolutionize training and operational procedures in the airline industry?

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Keywords

- Airline
- Pilot Training
- Virtual Reality (VR)
- Reintegration
- Cabin Crew
- Simulation
- Training Effectiveness

VR 培训在航空公司员工中的应用：以荷兰皇家航空公司为例

Source: Unsplash (2018)

背景

荷兰皇家航空公司成立于 1919 年，是荷兰的国家航空公司，总部位于阿姆斯特丹史基浦机场 (KLM, n.d.)。KLM 集团与其子公司区域性航空公司 KLM Cityhopper 共同运营着庞大的航线网络，覆盖 92 个欧洲城市和 70 个洲际目的地 (KLM, n.d.)。

为了增加飞行员培训的灵活性，KLM 为其区域性航空公司执飞新款 Embraer 175 和 190 飞机的飞行员引入了 VR 培训 (KLM, 2020)。该 VR 培训项目包含三个应用。首先，虚拟驾驶舱模拟了驾驶舱内机长座位的视角，允许飞行员通过与虚拟控制面板互动来控制飞机。由于虚拟副驾驶的存在，飞行员可以随时随地测试他们的知识并训练程序 (KLM, 2020)。其次，培训项目包含一个 360 度教学视频，飞行员可以从驾驶舱观察员座位（后排座位）的视角观察起飞和降落过程 (KLM, 2020)。第三，在虚拟绕机检查中，飞行员可以里里外外地探索飞机，练习起飞前检查 (KLM, 2020)。公司相信，如果飞行员能在家中通过 VR 预习程序和简单操作（如启动引擎），他们将有更多时间在实体模拟器中练习特定情况 (KLM, n.d.)。

另一方面，KLM 也利用类似技术，为其空乘人员创建了逼真且沉浸式的消防演习培训。在一个虚拟飞机厨房发生火灾的紧急情况场景中，机组人员必须两人一组，应对场景、练习灭火程序并控制惊慌失措的虚拟乘客 (KLM, n.d.)。通过 VR 头显能够看到和听到火情，该模拟能够重现机上真实火灾情况的紧张感 (KLM, n.d.)。因此，由 VR 驱动的沉浸式体验有效地提高了员工对培训内容的专注度，并增强了培训效果。除了消防演习外，还开发了关于廊桥操作和水上撤离的 VR 模拟 (KLM, n.d.)。

除了培训，KLM 还将 VR 融入重返工作岗位的过程中，以帮助空乘人员在长时间缺席后做好返岗准备 (KLM, 2024)。该 VR 体验模拟了一个完整的工作日，从在家中准备，到在机组中心报到、托运行李、起飞前准备、履行机上职责，直至抵达过夜酒店 (KLM, 2024)。这不仅帮助员工在实际返岗时减少紧张感，也有助于公司识别返岗员工在哪些方面遇到困难，并提供有针对性的支持与治疗 (KLM, 2024)。

挑战

尽管 VR 模拟显然增强了对现实情况的准备，但开发高真实度的模拟软件仍然成本高昂，尽管硬件价格在下降。此外，这些培训项目的可靠性构成了一个挑战，因为现实场景通常涉及无法在模拟中准确复现的变量。再者，值得注意的是，KLM 的 VR 飞行员培训自 2020 年发布以来，尚未获得欧盟航空安全局的认可，这突显了其获得更广泛接受和实施的一个重要障碍。

讨论问题

1. 与传统方法相比，VR 培训如何提高飞行员培训的灵活性？
2. 针对飞行员的 VR 培训有哪些潜在局限性？
3. 与传统培训相比，VR 空乘培训有哪些优点和缺点？
4. KLM 在实施 VR 培训过程中面临的主要挑战是什么？
5. VR 技术的哪些未来发展可能进一步革新航空业的培训和操作程序？

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关键词

- 航空公司
- 飞行员培训
- 虚拟现实
- 重返工作岗位
- 空乘人员
- 模拟
- 培训效果

VR 培訓在航空公司員工中的應用：以荷蘭皇家航空公司為例

Source: Unsplash (2018)

背景

荷蘭皇家航空公司成立於 1919 年，是荷蘭的國家航空公司，總部位於阿姆斯特丹史基浦機場 (KLM, n.d.)。KLM 集團與其子公司區域性航空公司 KLM Cityhopper 共同運營著龐大的航線網絡，覆蓋 92 個歐洲城市和 70 個洲際目的地 (KLM, n.d.)。

為了增加飛行員培訓的靈活性，KLM 為其區域性航空公司執飛新款 Embraer 175 和 190 飛機的飛行員引入了 VR 培訓 (KLM, 2020)。該 VR 培訓項目包含三個應用。首先，虛擬駕駛艙模擬了駕駛艙內機長座位的視角，允許飛行員透過與虛擬控制面板互動來控制飛機。由於虛擬副駕駛的存在，飛行員可以隨時隨地測試他們的知識並訓練程序 (KLM, 2020)。其次，培訓項目包含一個 360 度教學影片，飛行員可以從駕駛艙觀察員座位（後排座位）的視角觀察起飛和降落過程 (KLM, 2020)。第三，在虛擬繞機檢查中，飛行員可以裡裡外外地探索飛機，練習起飛前檢查 (KLM, 2020)。公司相信，如果飛行員能在家中透過 VR 預習程序和簡單操作（如啟動引擎），他們將有更多時間在實體模擬器中練習特定情況 (KLM, n.d.)。

另一方面，KLM 也利用類似技術，為其空服人員創建了逼真且沉浸式的消防演習培訓。在一個虛擬飛機廚房發生火災的緊急情況場景中，機組人員必須兩人一組，應對場景、練習滅火程序並控制驚慌失措的虛擬乘客 (KLM, n.d.)。透過 VR 頭顯能夠看到和聽到火情，該模擬能夠重現機上真實火災情況的緊張感 (KLM, n.d.)。因此，由 VR 驅動的沉浸式體驗有效地提高了員工對培訓內容的專注度，並增強了培訓效果。除了消防演習外，還開發了關於空橋操作和水上撤離的 VR 模擬 (KLM, n.d.)。

除了培訓，KLM 還將 VR 融入重返工作崗位的過程中，以幫助空服人員在長時間缺席後做好返崗準備 (KLM, 2024)。該 VR 體驗模擬了一個完整的工作日，從在家中準備，到在機組中心報到、託運行李、起飛前準備、履行機上職責，直至抵達過夜酒店 (KLM, 2024)。這不僅幫助員工在實際返崗時減少緊張感，也有助於公司識別返崗員工在哪些方面遇到困難，並提供有針對性的支持與治療 (KLM, 2024)。

挑戰

儘管 VR 模擬顯然增強了對現實情況的準備，但開發高真實度的模擬軟體仍然成本高昂，儘管硬體價格在下降。此外，這些培訓項目的可靠性構成了一個挑戰，因為現實場景通常涉及無法在模擬中準確複現的變量。再者，值得注意的是，KLM 的 VR 飛行員培訓自 2020 年發佈以來，尚未獲得歐盟航空安全局的認可，這突顯了其獲得更廣泛接受和實施的一個重要障礙。

討論問題

1. 與傳統方法相比，VR 培訓如何提高飛行員培訓的靈活性？
2. 針對飛行員的 VR 培訓有哪些潛在局限性？
3. 與傳統培訓相比，VR 空服培訓有哪些優點和缺點？
4. KLM 在實施 VR 培訓過程中面臨的主要挑戰是什麼？
5. VR 技術的哪些未來發展可能進一步革新航空業的培訓和操作程序？

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關鍵詞

- 航空公司
- 飛行員培訓
- 虛擬實境
- 重返工作崗位
- 空服人員
- 模擬
- 培訓效果