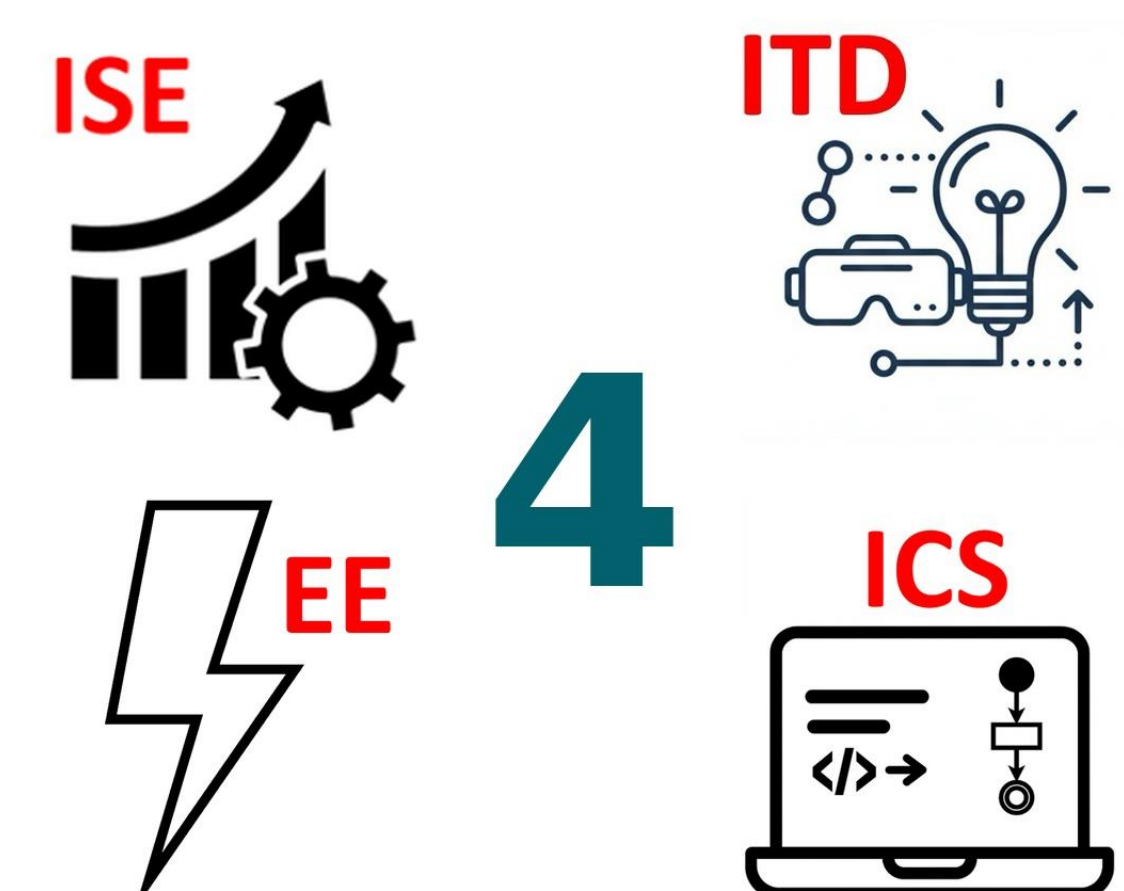


TEAM F015

5D Virtual Reality Exploration of KFUPM Landmarks and Campus Heritage

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Coach: Dr. David Wynn



Problem Statement

KFUPM landmarks are difficult to explore, especially for remote users. Current methods lack interactivity and immersion, leading to low engagement. The project aims to preserve and promote campus heritage through immersive digital access

Constraints

Unity-based VR, Separate fan & heat/vibration circuits, Cost ≤ 5420 SAR, Footprint ≤ 2.5×2.5 m, Pulsed fan (3–5 s), Modular web, Cross-platform access

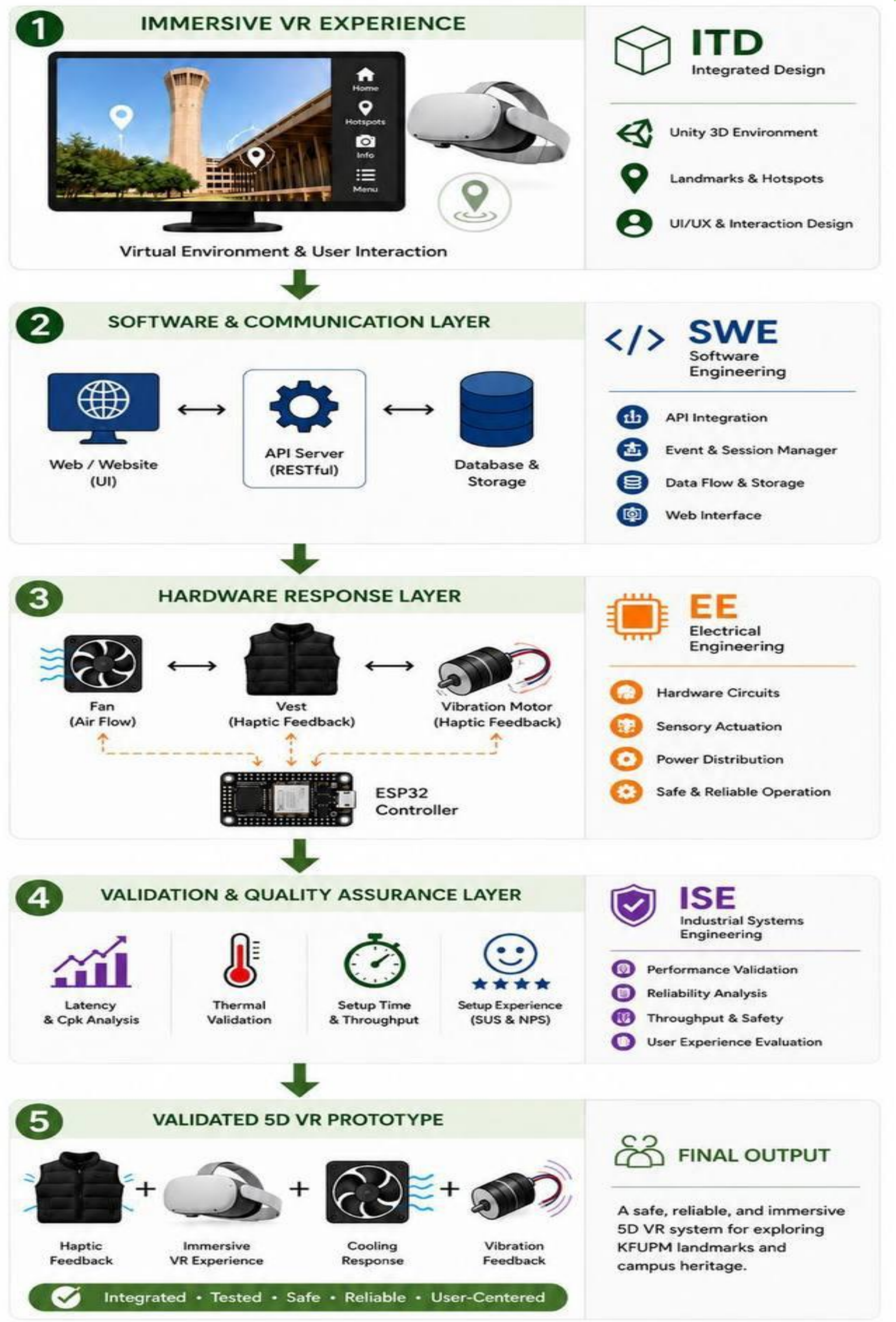
Specifications

- ≥3 verified info elements/page
- 80% reach hotspot ≤2 min
- Temp ≤45°C, Hardware ≤12V DC
- ≥3 interactive elements/visit
- Load time ≤7 s
- Setup ≤15 min (2 users)
- Cpk ≥1.33 (response delay)
- 25 users / 8h, wait ≤8 min
- Comfort ≥7/10, weight ≤1.5 kg
- Sync latency ≤500 ms
- NPS > 0, SUS ≥75
- Availability ≥95% (≥10 min use)
- Add new landmark ≤4–6 days

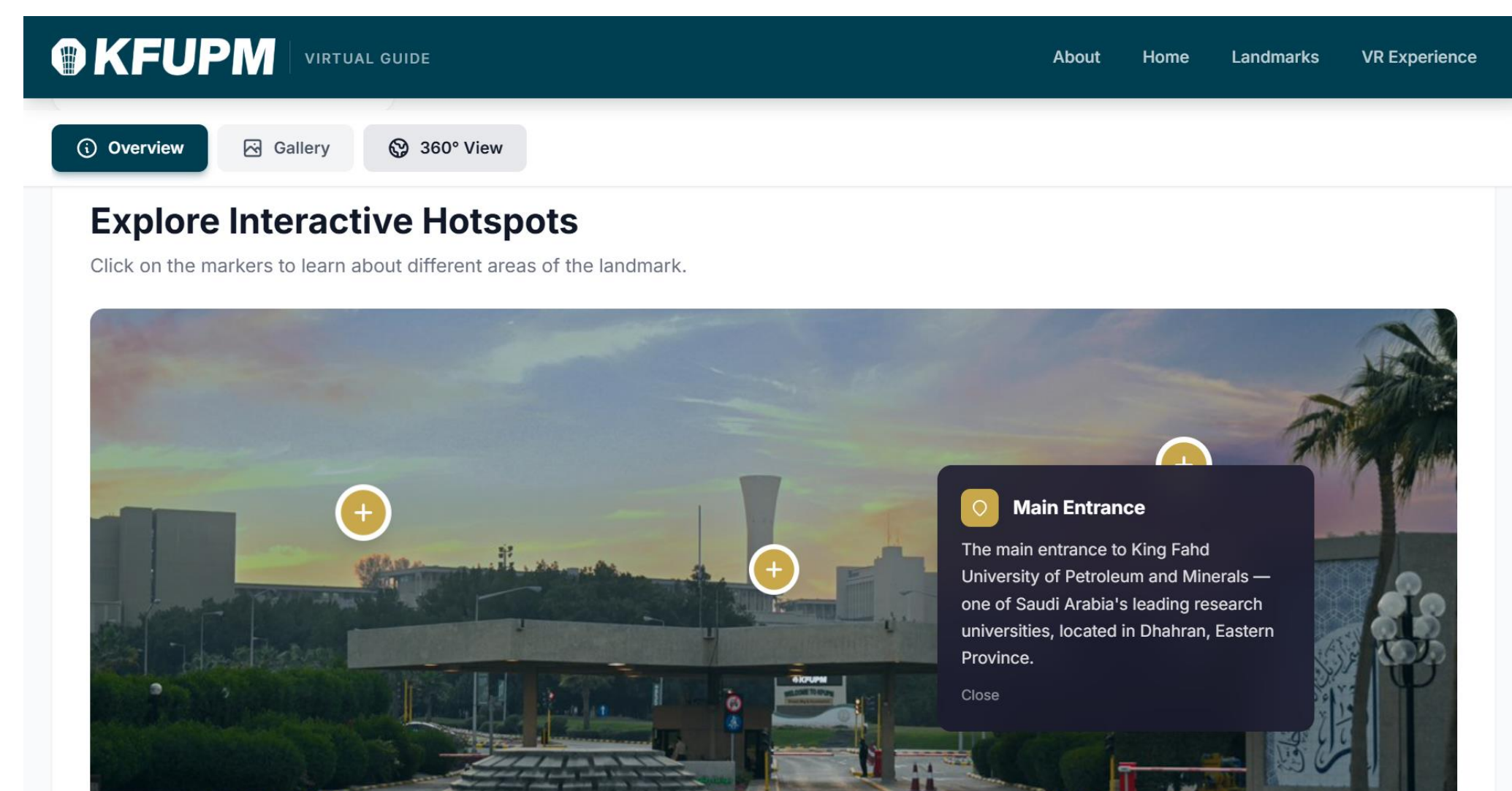
Standards Followed

- ISO 13732-1 (Thermal Safety)
- ISO 25010 & IEEE 830 (Software & Latency)
- ISO 9241-210 & 29148 (HCI & Requirements)
- OpenXR & SASO Standards

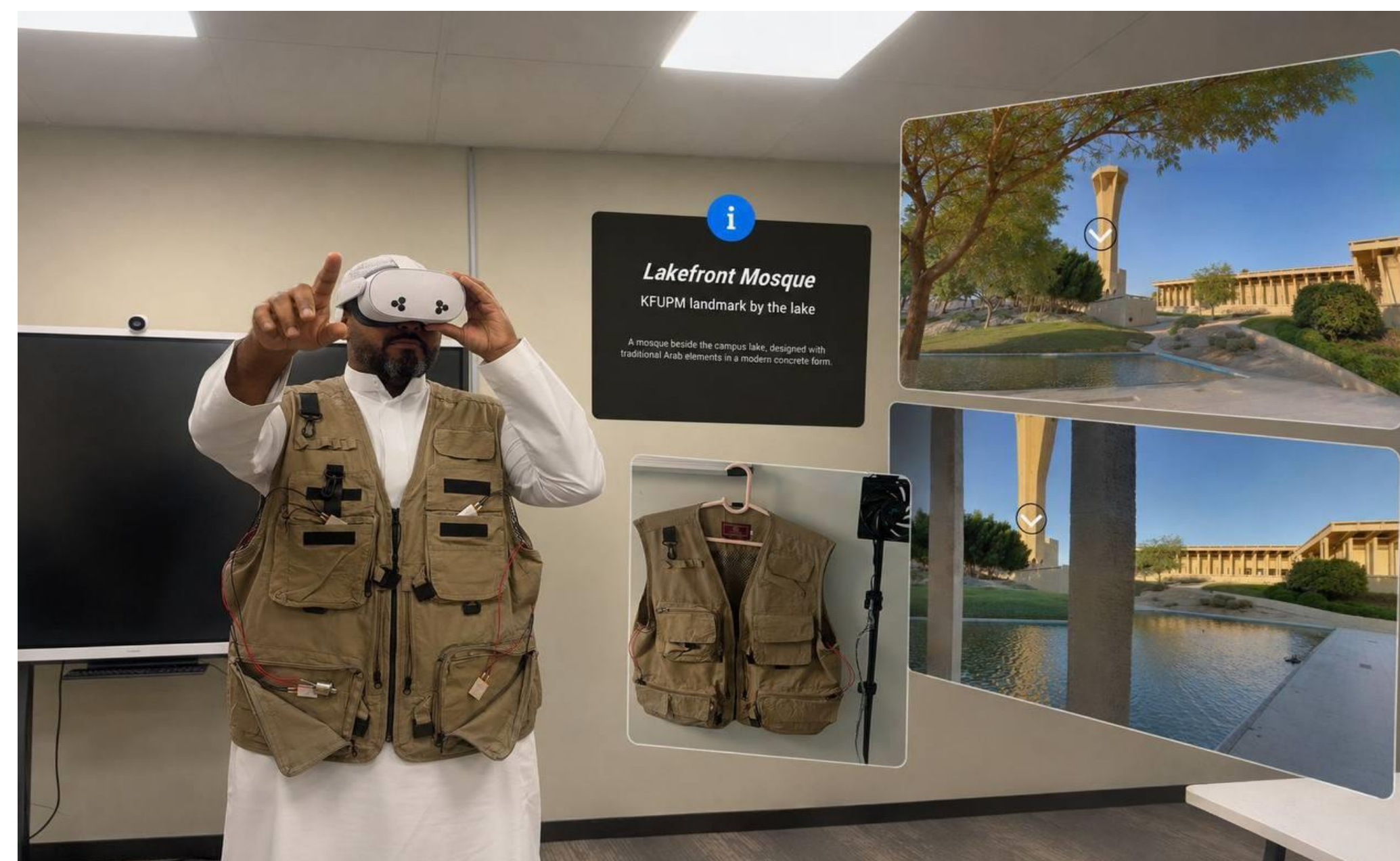
Prototype Design



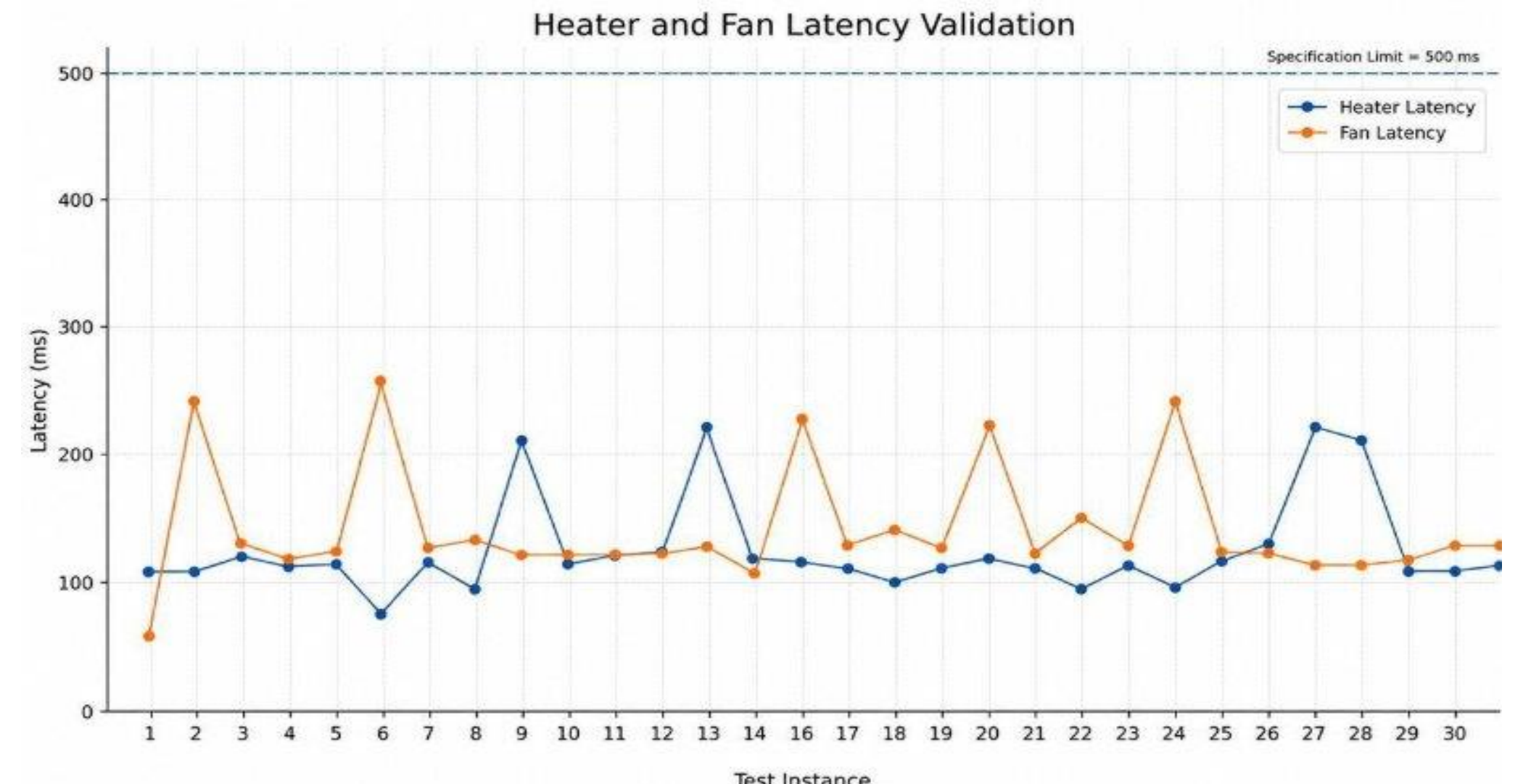
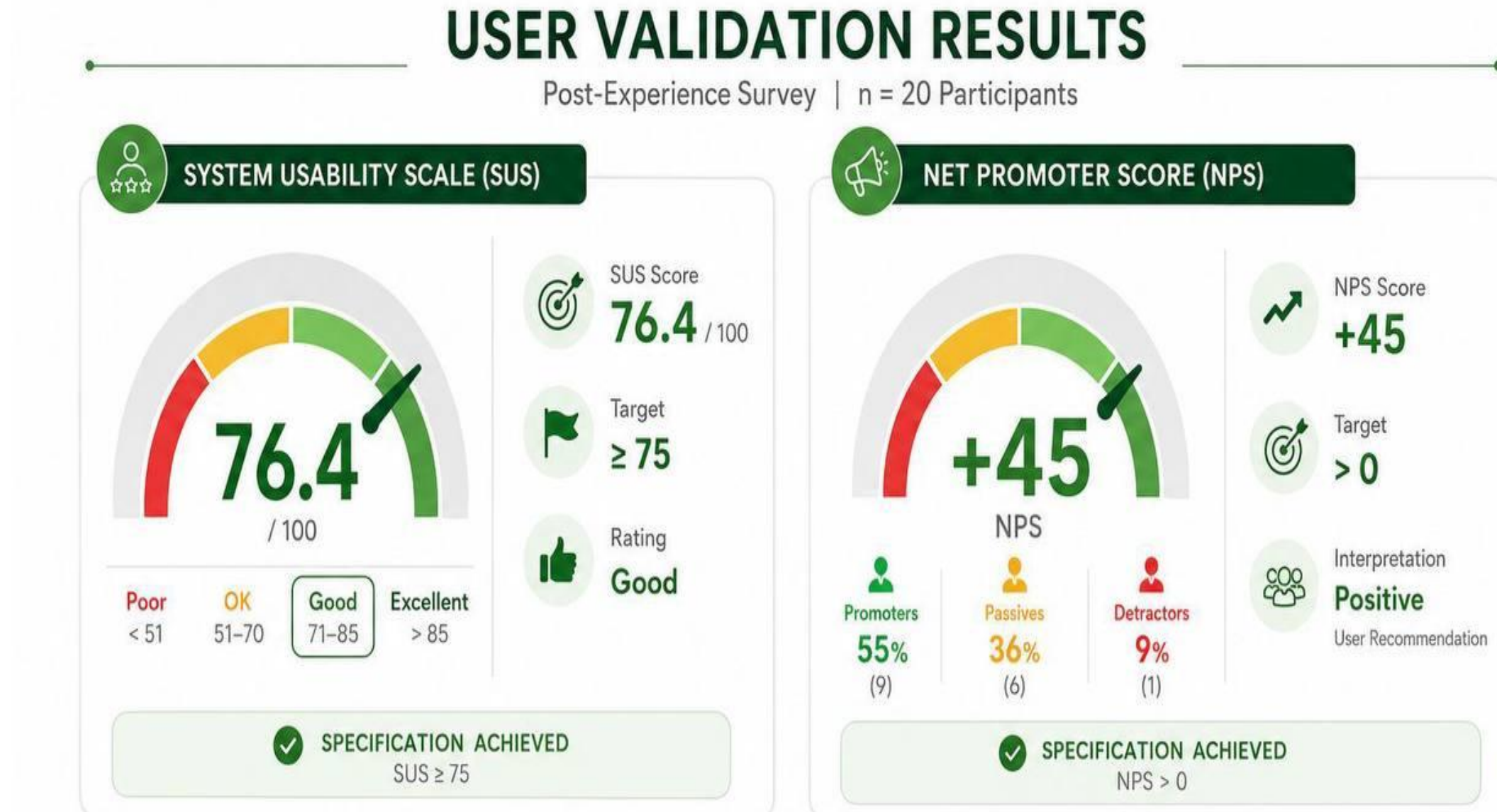
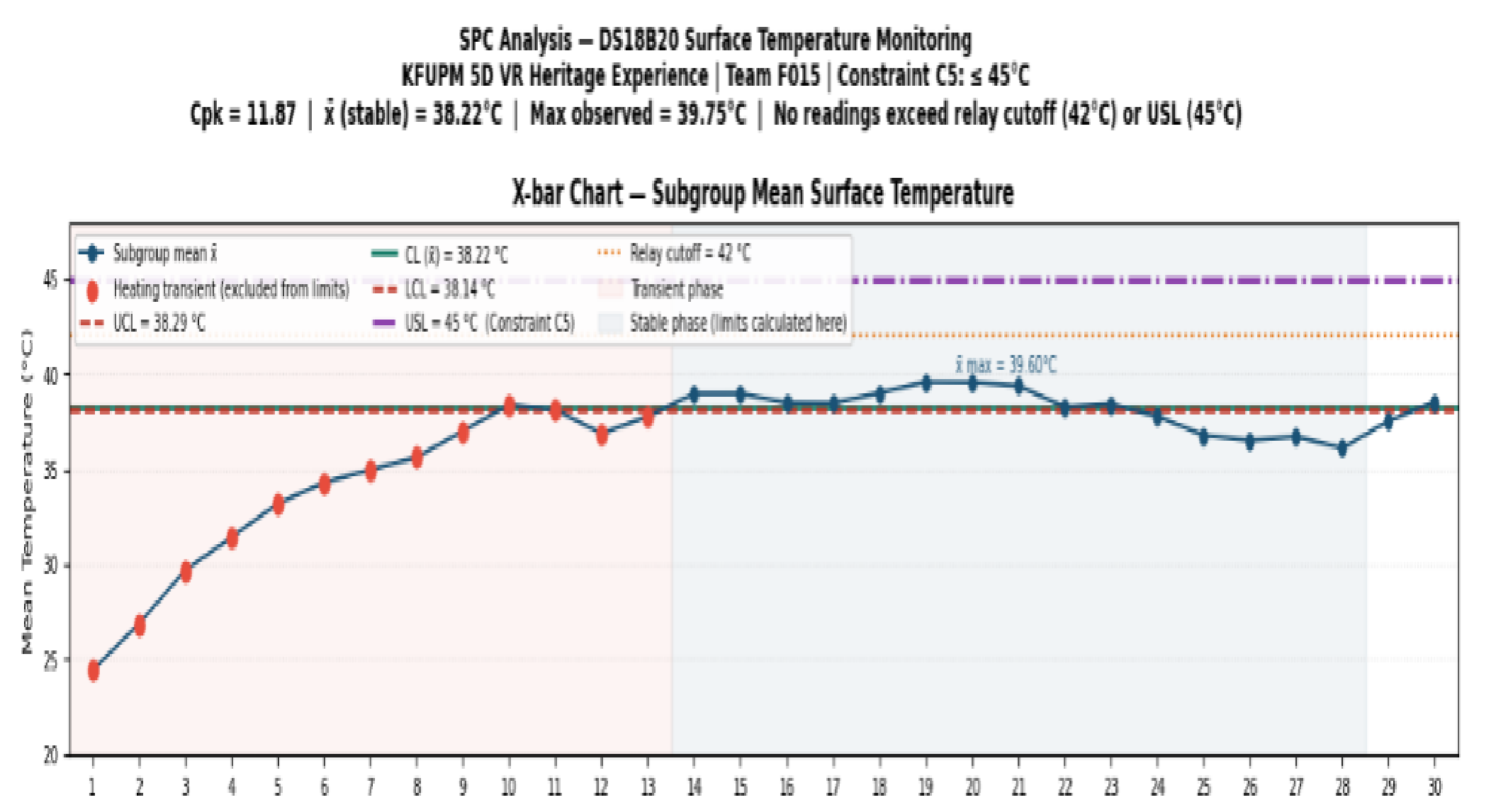
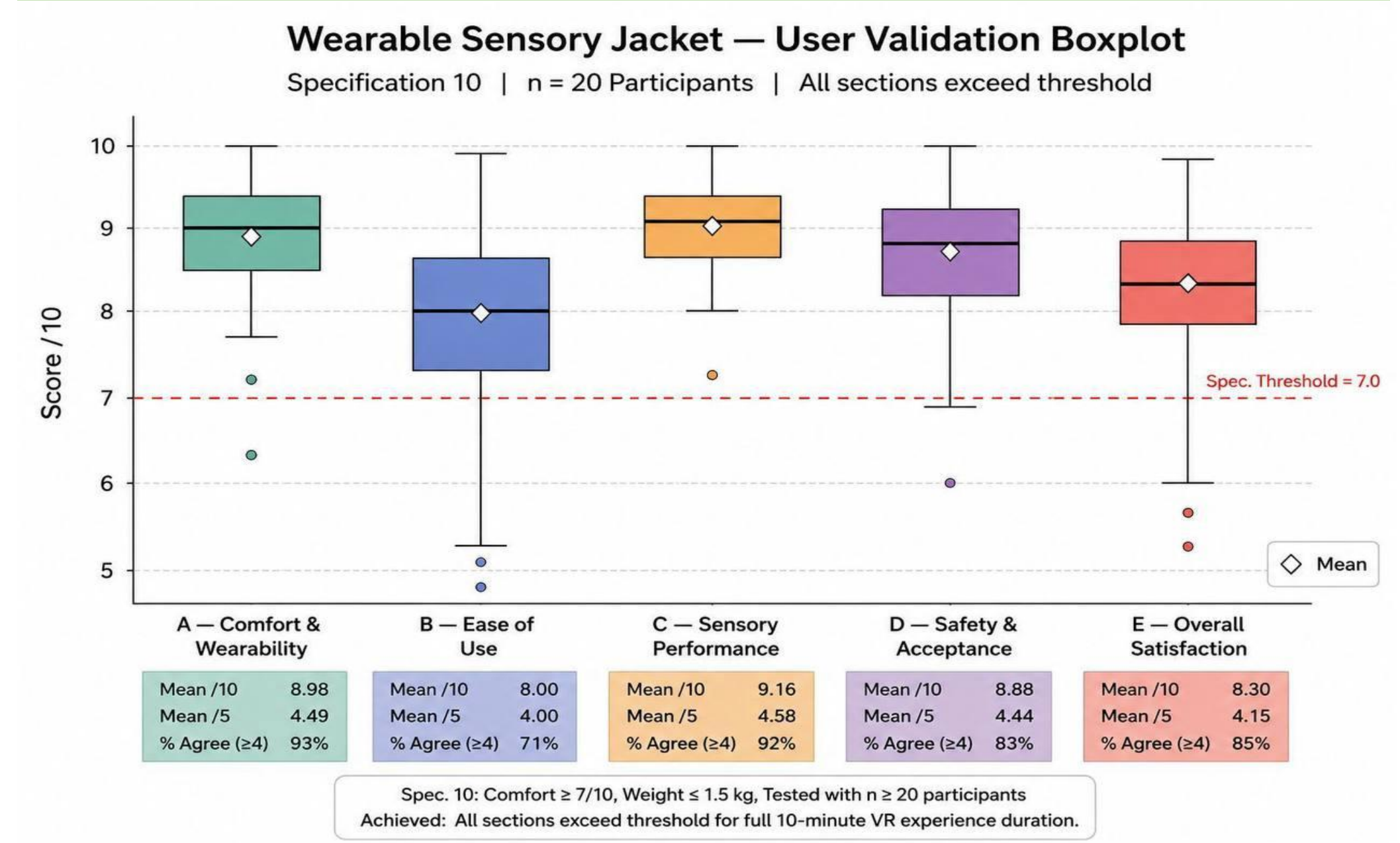
Website Prototype



Physical Prototype



Testing & Validation



Conclusion

Our project developed a multisensory 5D VR system for immersive exploration of KFUPM landmarks, integrating VR, sensory feedback, and performance validation across four disciplines.