



## Extended Reality Technical Group

The Extended Reality Technical Group (XRTG) consists of people interested in all aspects of human factors as applied to Virtual, Augmented, and Mixed Reality technologies and systems. These XR tools and methods are being leveraged more than ever to drive system design and evaluation, human performance support, immersive experiential learning, and several other human factors related research questions. The focus of the XRTG is to provide a forum to share and connect across the community to better support modernizing the evolution and application of XR.

### TECHNICAL FOCUS

The XRTG is concerned with human factors issues associated with human-virtual environment interaction. This includes designing and implementing interfaces and interactions for XR systems, optimizing performance, and ensuring that XR experiences are accessible and inclusive for all users. Additionally, the XRTG should be concerned with the human factors and ergonomics of XR systems, which includes evaluating the user experience, minimizing discomfort and fatigue, and ensuring that XR systems are safe and effective to use. Examples of activities and methods used by the HFE practitioner in the development of systems include the following:

- Human-Machine Interface Design
- Digital Engineering
- User Testing and Evaluation
- Experiential Learning Design and Assessment
- Team and Collective Training
- Accessibility and Inclusivity
- Real-time Performance Optimization
- Multimodal Sensory Feedback Design
- Training Effectiveness
- Simulation Sickness
- Next-Generation Metaverse

### MEMBERSHIP

The XRTG consists of over 200 international members drawn from educational institutions, government agencies and laboratories, military branches and their research laboratories, and a wide variety of consulting, manufacturing, and contracting firms in private industry. The XRTG was formed to provide an integrated forum within HFES to support the growing interest in Extended Reality applied research from HFES colleagues and from colleagues of other varied disciplines, including: human-systems integration, learning engineering, neuroscience, cognitive science, mathematics, user experience, robotics, and computer science and engineering. The

XRTG's primary goal is the exchange of information among members, and to actively promote the research and development of applications in this exciting technology space.

#### BENEFITS OF MEMBERSHIP

The XRTG performs a variety of functions and services, including: sponsoring technical paper sessions, special symposia/panels, and poster sessions on topics associated with XR tools and method at the HFES Annual Meeting; providing outreach opportunities via collaborations with other relevant TGs and at other international human factors-related meetings; providing a forum for hands-on demonstrations and engagements with leaders in the society through the recurring XR Showcase, and; recognizing outstanding student work through our yearly Best Student Paper Award presented at the XRTG Annual Business Meeting. Members also receive the bi-annual XRTG and have access to the XRTG website. These resources are used to promote important news and events, highlights of current research and development efforts, discussions of current events and issues, and general announcements of interest.

#### ADDITIONAL READINGS

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Peddie, J. (2017). *Augmented reality: Where we will all live*. Springer.

Stanney, K. M., Nye, H., Haddad, S., Hale, K. S., Padron, C. K., & Cohn, J. V. (2021). eXtended reality (XR) environments. *Handbook of human factors and ergonomics*, 782-815.

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