**Installation Environment Setup**

**1. Introduction**

* This document provides guidelines for the physical setup of the RESI neurofeedback installation, including recommended room layouts, projector positioning, and speaker arrangements to maximize immersion and user comfort.

**2. Physical Space Requirements**

1. **Room Size**: Aim for a space that comfortably accommodates 2–6 participants with room for projection surfaces or screens.
2. **Acoustics**: Prefer semi-anechoic or dampened rooms to minimize echo, ensuring clear auditory feedback. Acoustic paneling or curtains may be used to reduce reverb.
3. **Lighting**: Use dimmable overhead lights or indirect lighting; excessive ambient light can wash out projections and disrupt sensor accuracy.

**3. Equipment Layout**

1. **EEG/PPG/GSR/TEMP Station**:
   * Place sensor equipment near seating areas to facilitate quick wiring and minimal cable tangling.
   * Provide comfortable seating to encourage a relaxed participant posture.
2. **Projection System**:
   * Mount projectors on the ceiling or stable stands.
   * Align projection surfaces (screens or walls) so participants have an unobstructed view.
   * Consider edge-blending techniques if using multiple projectors for a panoramic visual experience.
3. **Speakers and Audio Setup**:
   * Position speakers in a surround or semi-surround configuration for spatialized audio feedback.
   * Subwoofers should be placed near corners or walls to evenly distribute lower frequencies without overwhelming participants.

**4. Cabling and Signal Management**

* Use high-quality shielded cables to minimize interference, especially for EEG signals.
* Label all connections to simplify troubleshooting.
* Route power cables separately from signal cables to reduce noise interference.

**5. Environment Safety and Comfort**

1. **Participant Safety**:
   * Ensure sensor leads and devices meet basic medical-grade or consumer-safe certifications.
   * Provide clear instructions about sensor placement and device usage to participants.
2. **Ergonomics**:
   * Use chairs or cushions that promote a stable, upright posture for consistent EEG readings.
   * Encourage breaks for longer sessions to prevent fatigue.
3. **Ventilation and Temperature**:
   * Maintain a comfortable ambient temperature and proper air circulation; extremes can affect biometric readings.

**6. Setup Validation and Testing**

* Conduct weekly (or event-based) calibration checks on projectors (focus, color balance) and speakers (volume balance).
* Perform a “dry run” using recorded biometric data to confirm that visuals and audio respond as expected.

**7. Conclusion**

* A thoughtfully arranged physical environment is crucial for accurate biometric readings and an engaging, immersive experience.
* For integration details on sensor data with software, see *Neurofeedback\_AudioVisual\_Integration.md*. For sensor specifics, see *Hardware Specifications*.