Collecting data with Unity using the HTC VIVE Focus Vision

The VIVE Focus Vision is a hybrid standalone/PC-VR headset with inside-out tracking. It includes multiple sensors and supports additional trackers. Unity developers can access these sensors via the VIVE Wave XR plugin (for standalone use) or OpenXR (for PC-VR). Relevant data types include:

- **Eye tracking (built-in):** The headset has four tracking cameras and two dedicated eye-tracking camerasvive.com. It provides binocular gaze data at 120 Hz with 0.5°–1.1° accuracy, 5-point calibration and automatic IPD adjustmentvive.com. Through the Wave XR plugin, Unity can read gaze origin, gaze direction, eye openness, pupil diameter and pupil position. This data is valuable for measuring where users direct their attention during VR activities.

- **Head- and controller-movement:** The inside-out tracking system (four tracking cameras, depth sensor, gyroscope and G-sensorvive.com) provides six-degree-of-freedom (6DoF) head position and orientation. Controllers include hall-sensors and capacitive sensors on triggers, joysticks and thumb-rest areasvive.com, enabling detection of hand gestures and grasp strength. Developers can capture these movement streams via Unity's XR Input APIs or the Wave XR plugin to monitor navigation, motor performance and reaction times.

- **Speech and audio:** The Focus Vision has dual microphones with noise- and echo-cancellationvive.com. Unity's Microphone API allows recording audio data for speech analysis or speech-to-text processing. There is no built-in speech-recognition engine, so third-party packages (e.g., Windows or cloud-based services) can be integrated for automatic transcription.

- **Facial expressions (optional accessory):** The "Facial Tracker for VIVE Focus Series" attaches via the headset's USB-C port and uses a mono camera to capture 38 facial blend-shape coefficients across the lips, jaw, cheeks, chin, teeth and tongue. It tracks expressions at 60 Hz and interfaces with Unity through the VIVE Wave or SRanipal SDK. This enables real-time monitoring of smiles, frowns or mouth movements, which could be used to gauge user engagement or emotional state.

- **Full-body tracking (optional):** The Focus Vision supports VIVE trackers and track-straps (sold separately), providing body-tracking for legs, waist or elbows. Unity can integrate these trackers via the Wave XR plugin, enabling analysis of larger motor movements such as stepping or balancing. This is useful when combining cognitive tasks with physical exercise.