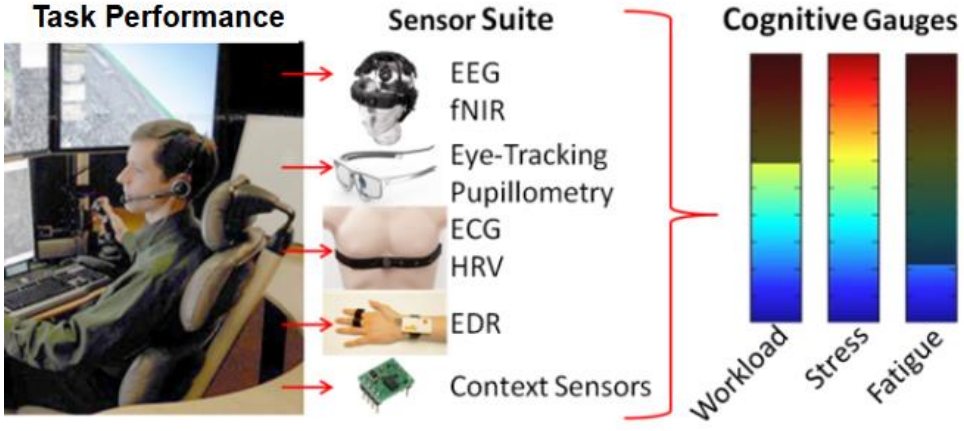
Q-States – Cognitive and Physiological State Classification

Warfighter State Monitoring with Q-States

Q-States is QUASAR's real-time software platform for cognitive state monitoring, purpose-built to transform raw physiological data into actionable insights for mission-critical operations. Leveraging EEG, ECG, EOG, and other physiological inputs, Q-States applies machine-learning algorithms to classify operator states such as workload, stress, fatigue, and engagement with >90% accuracy. Integrated with adaptive aiding frameworks, Q-States enables commanders and supervisory systems to anticipate operator performance degradation and dynamically adjust mission demands, reducing cognitive overload and enhancing mission effectiveness in high-tempo operational environments.

Q-States in Use



Q-States Benefits

- **Mission-focused monitoring** – Detects cognitive overload and fatigue before performance degradation occurs.
- **Adaptive aiding integration** – Enables dynamic task allocation or interface adjustments to reduce operator error.
- **Validated performance** – Demonstrated improvements in operator performance in multi-UAV control and other high-tempo mission simulations.
- **Research-to-operations transition** – Deployable for human factors research and operational readiness training across DoD platforms.

Your Applications

Q-States was developed under DoD research funding and has been validated in operationally relevant environments. Applications include:

- Cognitive state monitoring in flight and mission operations
- Adaptive aiding for UAV or command-and-control systems
- Workload and fatigue tracking in simulators and training environments
- Human factors research for operator performance optimization

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