Claims

1. A cheat-prevention competition system for at least one strategic game of skill, the system comprising:

1.1 a transparent, electromagnetically-shielded Faraday enclosure (10) sized to house a human competitor, the enclosure blocking external wireless signals while permitting spectator visibility;

1.2 a sealed, tamper-evident computing terminal (18) within the enclosure, the terminal executing only an authorized game application and including a tamper sensor (22) configured to trigger an alert upon breach of the housing;

1.3 a multi-modal sensor suite monitoring the enclosure in real time, the suite including:

(a) at least one optical camera (12);

(b) an infrared light-curtain sensor (20) spanning an access portal of the enclosure;

(c) an acoustic microphone array (14);

(d) a radio-frequency analyzer (16); and

(e) at least one biometric or presence sensor (26, 36);

1.4 a cryptographic module (40) configured to hash successive sensor outputs and game events into a time-ordered chain of digests, each digest linked to a preceding digest;

1.5 a distributed ledger interface (44) that transmits said digests to a distributed ledger (48) to create an immutable record of match integrity;

1.6 an automated control logic operative to transition the match through predetermined lifecycle states—including setup, active play, pause, void, and complete—in response to signals from the sensor suite and validation of the digest chain; and

1.7 a conditional escrow module (46) configured to hold wager funds and to release or refund the funds based on (i) confirmation from the distributed ledger

that the digest chain is unbroken and (ii) absence of tamper or cheat events indicated by the control logic.

2. The system of claim 1, wherein the Faraday enclosure further comprises waveguide-beyond-cutoff ventilation ducts (30) that permit airflow while maintaining at least 80 dB attenuation of radio-frequency energy up to a defined cutoff frequency.

3. The system of claim 1, wherein the sensor suite further comprises a near-floor electromagnetic or metal-detection sensor (34) positioned to detect covert electronic devices or conductive objects in footwear or beneath a playing surface.

4. The system of claim 1, wherein the radio-frequency analyzer (16) is coupled to a machine-learning classifier trained to distinguish benign ambient emissions from suspicious transmission patterns and to raise an anomaly flag when a suspicious pattern is detected.

5. The system of claim 1, wherein the biometric sensor comprises a locking biometric cuff (26) that measures heart-rate variability, electrodermal activity, and inertial motion, the control logic being configured to interpret loss of biometric signal or abnormal vitals as a potential player substitution event.

6. The system of claim 1, further comprising a seat pressure sensor (36) that confirms continuous player occupancy; the control logic cross-checks seat pressure data with door status and biometric data to detect unauthorized player absence.

7. The system of claim 1, wherein interruption of the infrared light curtain (20) during active play causes the control logic to immediately pause the match and log an anomaly to the distributed ledger.

8. The system of claim 1, wherein the control logic is programmed such that a first detected anomaly triggers a paused state and any subsequent unresolved anomaly triggers a void state that invalidates the match.

9. The system of claim 1, wherein the escrow module is implemented as a smart contract deployed on the distributed ledger and is executable only upon receipt of a cryptographic proof that the final digest in the chain corresponds to a complete, unbroken sequence.

10. The system of claim 1, further comprising a certificate-generation module configured, upon completion of a valid match, to create a digitally signed match certificate containing (i) a record of game events, (ii) a summary digest of the integrity chain, and (iii) metadata identifying the players, the certificate being

issued as a non-fungible token (NFT) on the distributed ledger.

11. The system of claim 1, wherein a plurality of Faraday enclosures are networked so that competitors located in different physical sites play a single match, each enclosure operating an independent sensor suite and contributing digests to a common distributed-ledger chain.

12. The system of claim 1, further comprising a spectator-interface module (60-68) that publishes real-time game data and integrity status to external platforms, enabling regulator-auditable wagering overlays that automatically suspend betting upon issuance of an integrity alert.

13. The system of claim 1, wherein the control logic further incorporates an engine-assist detection module that statistically compares player decisions to optimal computer moves and, when correlated with timing or biometric anomalies, flags suspected external cognitive assistance.

14. The system of claim 1, wherein before active play the control logic performs an automated calibration routine that captures an RF baseline, acoustic noise floor, camera exposure settings, and biometric liveness confirmation, logging the calibration results to the distributed ledger.

15. A method of conducting a secure, wagered competitive game, the method comprising:

    (a) placing each competitor inside a Faraday-shielded enclosure that blocks external wireless communication;

    (b) monitoring the competitor and enclosure with a plurality of sensors including optical, acoustic, infrared, radio-frequency, and biometric modalities;

    (c) generating a cryptographic hash chain of sensor outputs and game events and publishing the chain to a distributed ledger in real time;

    (d) automatically pausing the game upon detection of a first anomaly and voiding the game upon detection of a confirmed tamper event or discontinuity in the hash chain; and

    (e) releasing wager funds from escrow only if the distributed ledger confirms an unbroken hash chain and the control logic designates the match as complete.

16. The method of claim 15, wherein the competitors are located in different geographic locations, each competitor being monitored in a separate Faraday enclosure and all enclosures contributing to a single distributed-ledger integrity

chain.

17. A non-transitory computer-readable medium storing program instructions that, when executed by processing circuitry, cause a competition-control system to:

(i) acquire multi-modal sensor telemetry from a Faraday-shielded game enclosure;

(ii) hash the telemetry and link each new hash to a prior hash to form a chronological chain;

(iii) transmit each hash to a distributed ledger;

(iv) detect anomalies in sensor data or discontinuities in the hash chain;

(v) issue pause or void commands to a game application responsive to said anomalies; and

(vi) trigger a smart-contract escrow to settle or refund wager funds based on whether the match concluded without integrity violations.

18. An apparatus comprising the transparent Faraday-shielded enclosure of claim 1, wherein the enclosure further includes conductive-mesh wall panels, at least one waveguide-beyond-cutoff ventilation duct, and shielded feed-through filters for any required power or data cabling.

19. The apparatus of claim 18, wherein the enclosure walls are modular and re-configurable to accommodate different games of skill, including chess, go, poker, bridge, Scrabble, mahjong, collectible-card games, e-sports, and academic quiz competitions, each variation being played under the same cheat-prevention architecture.

20. An automated escrow apparatus comprising a smart contract stored on a distributed ledger, the smart contract being configured to:

(a) hold wager funds for a competitive game executed in a Faraday-shielded cheat-prevention system;

(b) receive a match-completion event including a final integrity digest;

(c) validate that the final integrity digest forms part of an unbroken chain stored on the distributed ledger; and

(d) automatically release the wager funds to a designated winner if validation

succeeds or refund the funds if validation fails or if the completion event indicates a voided match.