Data Provenance & Sensor Protocol

BCI

Protocol No.: BCI-TEC-2026-008

Purpose and Scope

This Protocol defines the quality standards, auditability principles, and data sovereignty boundaries governing the physical and behavioral signals used by BCI. Its purpose is to ensure that all model inputs satisfy requirements of traceability, verifiability, and institutional legitimacy.

01 | Governance Logic: From "Data" to Structural Signals

Within the BCI analytical framework, markets are not treated as collections of discrete data points, but as complex systems that continuously emit structured behavioral signals.

Traditional collection methods based on keywords, clicks, or volume primarily capture distribution intensity rather than structural meaning.

BCI therefore applies a Sensor Protocol to transform multi-source behavioral data into signal vectors suitable for structural modeling.

This Protocol does not define data ownership. It defines the precision, stability, and auditability conditions that signals must satisfy in order to enter the model.

Only signals validated under BCI Sensor Standards may be used as model inputs or participate in weight calibration.

02 | BCI Sensor Standards

Across the four dimensions of the BCI model, BCI defines three classes of sensor interfaces:

Gravity Sensors — for extracting MT signals
Data sources include: deep community user-generated content, actual payment behavior records, and secondary market price deviation indicators.

Collection logic shifts from keyword frequency toward semantic aggregation and deviation detection, in order to identify spontaneous, non-marketing-driven preference signals.

Cleansing processes exclude dissemination significantly influenced by paid promotion. When marketing interference exceeds defined thresholds, signal weights are automatically adjusted to prevent MT distortion.

Friction Sensors — for extracting PL signals
Data sources include: search correction paths, customer service interaction records, and information retrieval depth.

Core indicators measure the structural complexity and time latency from intention formation to value confirmation.
PL readings reflect cognitive friction; high-frequency, real interactions take precedence over static surveys.

Entropy Sensors — for extracting ES^{-1} and TS signals
Data sources include: organizational mobility patterns, user retention dynamics, and market volatility indicators.

These sensors identify whether system energy is flowing toward order formation or dissipation.
Signals must span at least two full business cycles to support robust estimation of temporal structure.

03 | Data Sovereignty Protocol

To ensure signal integrity, lawful provenance, and auditability, the following principles apply:

Immutability
All raw signals are timestamped and cryptographically validated prior to model entry to ensure integrity.

Source Independence
BCI prioritizes diversified data combinations that are difficult for any single party to control, reducing manipulation risk. This principle does not involve any unlawful or unauthorized data acquisition.

Standardized Cleansing
All cleansing and filtering rules follow predefined algorithmic standards. Manual or ad hoc weight intervention is prohibited.

04 | Technical Interface Guidance (for CTO / Data Science Teams)

BCI requires the evolution of traditional data pipelines into structural signal pipelines, including but not limited to:

Interface Instruction 01: Execute MT vectorization, exclude nodes with significant marketing interference, and retain only semantic clusters exhibiting persistent deviation characteristics.

Interface Instruction 02: Calibrate PL sensors to cover the full decision pathway and compute the structural friction gradient from initial search to confirmation behavior.

All interface descriptions define signal transformation logic only and do not impose mandatory data source requirements or exclusivity constraints.

05 | Evolution, Review & Compliance

Model and Sensor Evolution
BCI sensor standards and cleansing rules may evolve as environments change. Within reasonably practicable limits, BCI applies versioned governance to material changes and institutionally supports their traceability.

Review and Challenge
BCI permits its methodologies to be reviewed and discussed within reasonable bounds by third parties and academic institutions, and supports methodological validation without disclosure of commercially sensitive information.

Privacy and Compliance
BCI does not collect or process personally identifiable information, or applies anonymization where legally required, and complies with applicable data protection and cross-border transfer regulations.

Correction and Disclosure

If signal misclassification, bias, or methodological defects are identified, BCI commits to timely correction and disclosure of revisions.

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