



Food Item Classification Framework (FICF)

v1.0

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About this Document

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1. Abstract

The absence of a unified, programmatically verifiable standard for distinguishing between a **Hot Dog** and a **Sandwich** has led to significant inefficiencies in the global culinary supply chain, menu-mapping fragmentation, and consumer "identity-crisis" friction. The **Food Item Classification Framework (FICF) 1.0** establishes a technical taxonomy and a set of deterministic criteria to ensure interoperability across Point of Sale (POS) systems, delivery APIs, and nutritional reporting engines.

2. Introduction

In the current ecosystem, the "Sandwich" designation is often used as a catch-all category, leading to poor data signals and suboptimal user experiences. For instance, a Hot Dog mistakenly bid upon as a "Sub-category: Sandwich" results in mismatched condiment expectations (e.g., the "Ketchup Paradox").

This specification moves the industry toward **Gastronomic Transparency** by defining the physical and structural properties required to qualify for each object class.

3. Structural Definitions & Taxonomy

To facilitate automated classification, FICF 1.0 introduces the **Starch-Based Substrate (SBS)** and the **Primary Protein Payload (PPP)**.

3.1 The Sandwich Object (SO)

A **Sandwich** is defined by a "Discrete Multi-Layer Substrate" model. To be compliant with the SO classification, the item must meet the following:

- **Substrate Discontinuity:** The SBS must consist of two or more distinct, non-contiguous pieces of starch (e.g., sliced sourdough, rye, or separate bun halves).
- **Horizontal Orientation:** The primary consumption axis is parallel to the ground during the assembly phase.
- **Structural Independence:** If one piece of the SBS is removed, the PPP remains gravitationally supported by the secondary SBS layer.

3.2 The Hot Dog Object (HDO)

A **Hot Dog** is defined by a "Unified U-Shaped Encapsulation" model. To be compliant with the HDO classification, the item must meet the following:

- **Substrate Continuity:** The SBS must be a single, contiguous piece of starch (the "Hinged Bun") that encompasses the PPP on exactly three sides.
 - **Vertical Inversion:** The primary insertion of the PPP occurs via a vertical or diagonal axis relative to the hinge.
 - **The Hinge Clause:** If the hinge of the SBS is accidentally severed during consumption, the object does not retroactively become a Sandwich; it is instead classified as a "Fractured Hot Dog" (FHD).
-

4. Technical Criteria (The "Hinge" Formula)

Classification is determined by the **Bread Curvature & Encapsulation Ratio (BCER)**. If the BCER exceeds the threshold of 180° , the item is disqualified from Sandwich status.

The mathematical model for determining the **Encapsulation Index (EI)** is:

$$EI = \frac{\theta_{\text{arc}}}{360} \times \sigma$$

Where:

- θ_{arc} is the angle of the starch-based substrate surrounding the protein.
- σ is the structural integrity constant of the hinge.

Note: An $EI > 0.5$ generally indicates a Hot Dog or a Taco-derivative, whereas an $EI \leq 0$ indicates a Standard Sandwich.

5. Schema Example (JSON)

For developers implementing FICF 1.0, the following JSON object should be used to signal item types in OpenRTB (Open Real-Time Bready) requests.

JSON

None

```
{
  "culinary_object": {
    "version": "1.0",
    "id": "HD-99823",
    "classification": "HOT_DOG",
    "attributes": {
      "hinge_integrity": 1.0,
      "substrate_type": "brioche_bun",
      "payload_geometry": "cylindrical",
      "condiments": ["mustard", "relish"],
      "is_sandwich": false
    },
    "compliance_flags": {
      "iab_certified": true,
      "no_ketchup_on_adult_hotdog": true
    }
  }
}
```

6. Edge Cases & Non-Compliance

6.1 The Open-Faced Anomaly

Items featuring a single substrate layer with zero encapsulation (e.g., Avocado Toast) are strictly categorized as **"Toast-Based Platforms"** and are excluded from both Sandwich and Hot Dog taxonomies.

6.2 The Burger Exclusion

While structurally similar to a Sandwich, Burgers operate on a "Vertical Stack Protocol" and are governed by the Tech Lab's **Meat-Disk Specification (MDS 2.1)**.

7. Compliance and Certification

Culinary entities wishing to display the "**IAB Tech Lab: Hot Dog Verified**" seal must undergo a physical audit of their bun-hinge manufacturing process. Failure to maintain hinge continuity in more than 5% of inventory will result in a downgrade to "Sandwich-Lite" status.