



CIPHER

DECODE . TRANSMUTE . OPTIMIZE .

THE THESIS

We are asking the core question of the ENCODE challenge: *What happens when AI is the interface, not just a feature?*

Current health tech is passive—it acts as a database browser that dumps raw ingredient lists on the user. **CIPHER** is an active biological operating system. It moves beyond "Tracking" (What did I eat?) to "Reasoning" (How does this fuel *my* specific biology?).

THE "BLACK BOX" OF NUTRITION

The modern food supply chain is optimized for regulatory compliance, not human understanding.

Nutrition Facts

Serving Size 1 cup (228g)

Sodium 1600mg

THE DATA GAP

A standard label lists "1600mg Sodium." To a database, this is just a number. To a human, it is meaningless without medical context.

THE "ONE SIZE" FALLACY

Existing apps treat a hypertensive diabetic the same as a competitive powerlifter.

THE FRICTION WALL

The cognitive load of reading labels and manually logging food is the #1 cause of user churn.

WHY "SMART" APPS FAIL

Most "AI" nutrition apps are just wrappers around OCR (Scanning) technology.

1. Menu-Driven

They force users to navigate complex hierarchies.

2. Filter-First

They require users to manually set filters, assuming the user knows what they need.

3. Passive

They wait for input rather than anticipating outcomes.

*"WE DON'T NEED MORE DATA ACCESS. WE NEED A **TRANSLATOR** THAT CONVERTS CHEMICAL COMPOSITION INTO BIOLOGICAL IMPACT."*

CIPHER

v2.1 // Technical Report

CORE STACK

- > Next.js 14 (App Router)
- > Groq Cloud (Llama-3)
- > Tailwind CSS v4

ZERO-UI ANALYSIS

We eliminated forms. Input is handled via a single "Omni-Input" that accepts text, barcodes, or natural language.

POLYMORPHIC INTERFACE

The UI is not static. It is a **Component Factory** that renders 10+ distinct UI types based on inferred user intent.

CINEMATIC AUTOPILOT

A script-driven "Ghost Engine" simulates DOM interactions, eliminating video files.

THE BIO-SYNC ENGINE

USER PROFILE CONTEXT

```
{
  "biometrics": "BMI/BMR (Dynamic)",
  "conflict_guard": [
    "Flag: Peanuts (Allergy)",
    "Flag: High Sodium (BP)"
  ],
  "goal_alignment": "Muscle_Gain_v2"
}
```

Products are scored not universally, but based on "Fit" for the user's specific goal.

THE SIMULATION ENGINE

"WHAT IF" RECIPE HACKING

Interactive Toggles

REAL-TIME RE-CALC

Drain Noodles

Double Protein

RESULTING SODIUM: 420MG (-60%)

Polymorphic Component Factory

We do not stream text. We stream Visual Metaphors.

User Query



Intent Classifier



Select Component



Render React Node

`components/generative/compliance_matrix.t`

COMPLIANCE MATRIX



Diet/Allergy safety checks visualization.

`components/generative/battle_card.tsx`

BATTLE CARD



Split-screen head-to-head macro comparison.

`components/generative/toxicity_gauge.tsx`

TOXICITY GAUGE



Visual risk assessment of specific additives.

Key Innovation: The AI determines the *best way* to visualize the data, giving us an "Infinite Interface."

THE REASONING ENGINE

MODE: ACTIVE SIMULATION // CONTEXT: HYPERTENSION PROTOCOL

Target: Muscle Gain

● LIVE CONNECT

>> ANALYSIS LOG

CRITICAL MISMATCH

Sodium load (1600mg) induces vasoconstriction. This conflicts with your pre-workout vasodilation target.

AI_REASONING_CHAIN:

- > Detected: High Sodium with Hypertension History
- > Action: Suggest Modification

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OPTIMIZED

Remove Flavor Packet
-800mg Sodium

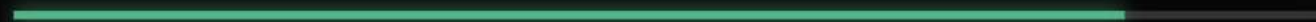


Add Spinach
+Nitrates (Flow)



>> BIO-METRICS

PROTEIN EFFICENCY 85%



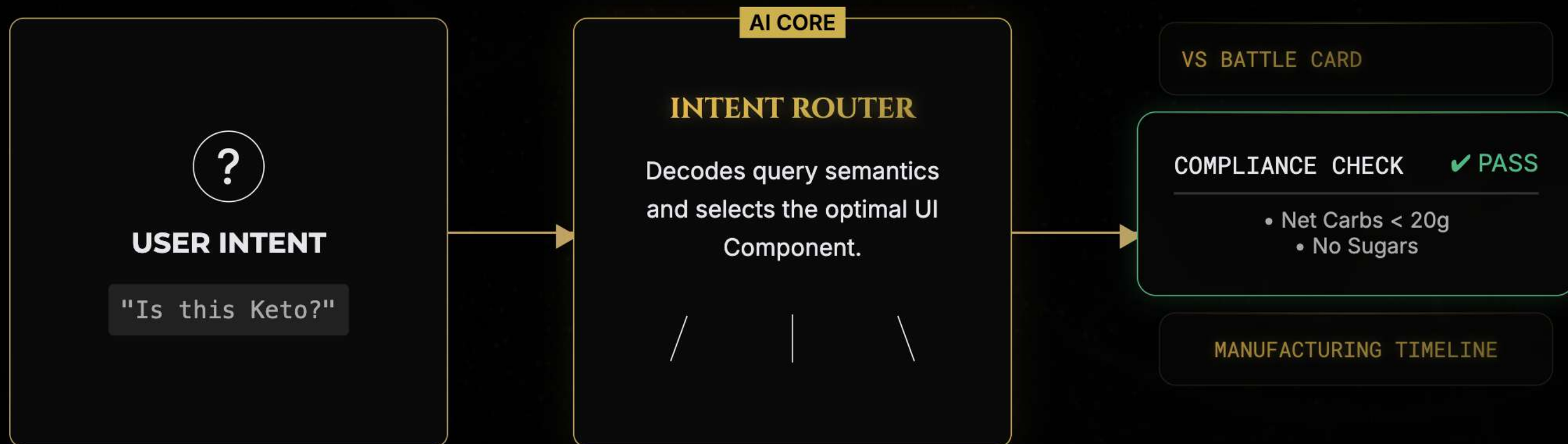
GLYCEMIC STABILITY 92%



MULTI-AXIS SCORE

POLYMORPHIC GENERATIVE UI

The interface shapeshifts based on intent. We do not use static templates.



THE "GHOST" AUTOPILOT

Solving the "Cold Start" problem via Cinematic Calibration.

T-MINUS 0:00

△ ERROR

?

SUBJECT UNIDENTIFIED

User searches without context. System rejects the query to prove that generic data is dangerous.

T-PLUS 0:15

★ AI TAKEOVER



> CALIBRATING_PROFILE...
> SET_GOAL: HYPERTROPHY

"Ghost Engine" takes control of the cursor.
Builds the Bio-Avatar automatically.

T-PLUS 0:45

✓ OPTIMIZED

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MATCH CONFIRMED

Search re-runs automatically with new context.
User sees the value of personalization instantly.

THANK YOU

**UNIT:
HALLUCINATORS**

BITS PILANI

CIPHER // DECODE. TRANSMUTE. OPTIMIZE.