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ESP360° — ONE-PAGE RESEARCH BRIEFING

The missing decision layer in type 1 diabetes data

CORE PROPOSITION

Clinical data record outcomes. An AI system intended to understand therapeutic decisions must also represent the human conditions that produced those outcomes. Similar glucose trajectories can arise from materially different decisions; when the reasoning is invisible, a system may misclassify expert correction as non-adherence, or learn the wrong causal relationship.

WHAT ESP360° IS

ESP360° is a decision- and context-representation architecture. It structures decision provenance: what was known, what was perceived, which physiological and cognitive states were competing, what action was selected, when it occurred, and how the result changed the next decision. Its purpose is to convert latent decision structure into explicit, auditable, machine-usable representation.

EMPIRICAL IMPLEMENTATION

N-OF-1 PROOF OF CONCEPT · 68 CONSECUTIVE DAYS
536 RECORDS · 340 STRUCTURED VARIABLES
21 HUMAN-STATE ANNOTATION LAYERS · 468 DECISION EVENTS

536 records = 468 event rows + 68 day-review rows · 340 variables = 137 captured or partly captured · 200 derived · 3 reserved

Continuous window: 12 October – 18 December 2025. Single subject. Proof of concept, not validation.

WHY IT MATTERS

Models that observe glucose, insulin and outcomes alone can miss fear of hypoglycemia, fatigue, interruption, exercise, food absorption, prior adverse experience, deliberate waiting and other conditions that change the meaning of an action. ESP360° preserves that provenance for clinical AI, automated insulin delivery, remote monitoring, model governance and adaptive decision support.

SCIENTIFIC STATUS

The work is presented as a proof-of-concept research architecture. It seeks expert criticism, the correct verification and validation pathway, inter-rater reliability work, and future cross-user evaluation. In its present state ESP360° is middleware, an AI-training framework, or licensable integration technology — not a regulated, patient-facing clinical product.

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Three abstracts accepted through competitive review at the Breakthrough T1D Clinical & Research Congress, Philadelphia, 9–11 October 2026: #47 as an oral presentation, #33 and #51 as e-posters.

Mark E. Paull · 60th year with type 1 diabetes · Peer reviewer and published author, Diabetes Care (ADA) · CME accreditation in type 1 diabetes · Two U.S. provisional patent applications (NOVA, MIRRA)