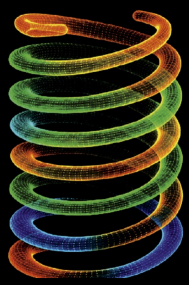
Clinical AI is missing a layer. I built it.



A decision-provenance architecture — a translator between lived human experience and machine-readable clinical data.

Clinical AI learns from outcomes.

ESP360° captures and models the decisions behind them.

MY CLAIM

I've identified and instantiated a missing layer in diabetes data. Here's evidence that it can be represented. Now I need the right people to challenge it, determine the appropriate verification and validation pathway, and help take it further.

IN PLAIN LANGUAGE

Devices record what happened. ESP360° captures the reasoning behind it — what a person knew, observed, weighed and decided — as structured data on the same timescale, then aligns the two streams. It does not score compliance and does not establish causation.

WHO THIS IS FOR

IMMEDIATE · DEVELOPMENT & INTEGRATION

AI, software, medical-device and research organizations able to integrate, test and challenge the architecture.

ULTIMATE · BENEFICIARIES

Patients and clinicians — who gain reviewable decision context, not a compliance score.

N-OF-1 IMPLEMENTATION · 60 CONSECUTIVE DAYS · PROOF OF CONCEPT

536 DECISION RECORDS · 341 VARIABLES
21 ANNOTATION LAYERS · 360 DECISION EVENTS

Of 341 variables: 138 captured or partly captured · 200 derived · 3 reserved.
Single subject · one continuous 60-day window · not a multi-patient cohort. Proof of concept, not validation.

STRATEGIC APPLICATIONS

Explainable clinical AI · decision governance and audit · closed-loop safety layers · AI training data with human decision context · therapy personalization · evidence for regulatory decision review.



Mark E. Paull

Independent Researcher · Decision Systems Architect · 60th year with type 1 diabetes

Peer reviewer, Diabetes Care and Clinical Diabetes · Published in Diabetes Care (ADA), Diabetes Technology & Therapeutics and STAT News · Two U.S. provisional patent applications.

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THE SAME ARGUMENT, TOLD FROM INSIDE

COME ON, MARKY *— a memoir*

The reasoning layer, kept by hand since 1967. Full manuscript under review.

Photograph: Canadian Diabetes Association Newsletter, Fourth Quarter 1968, Vol. 15 No. 4 — one year after diagnosis.

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REVERSE →

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Trim to 8 x 10 in. Print actual size 100%, no scaling. Two-sided, flip on long edge.

How decisions become computable, classifiable, and governable.

ESP360° captures the decision context surrounding an action — not only its outcome: the state, uncertainty, timing and judgment behind it, recorded so that it is computable and auditable. Where conventional clinical records emphasize the resolved entry, ESP360° also preserves structured pre-resolution context.

N-OF-1 IMPLEMENTATION · 60 CONSECUTIVE DAYS · PROOF OF CONCEPT

536 RECORDS · 341 VARIABLES · 21 ANNOTATION LAYERS · 360 DECISION EVENTS

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01 · THE ARCHITECTURAL PIPELINE

STATE CAPTURE	**TEMPORAL SYNCHRONIZATION**	**CONTEXT LOAD**	**DECISION REPRESENTATION**
TRAJECTORY COMPARISON	**DEVIATION CLASSIFICATION**	**HUMAN REVIEW & ARBITRATION**	**PROVENANCE LOCK**

02 · DECISION DEVIATION SIGNAL (DDS)

Divergence between expected and observed trajectories is **classified before root-cause attribution.**

MISSED | **DELAYED** | **RESISTANT** | **OVER-CORRECTIVE**

CORE FINDING · NEAR-MATCHED ENDPOINTS, DIFFERENT PROVENANCE

Near-matched glucose endpoints, different decision pathways.

Single-subject 60-day N-of-1 window. Matched within 0.3 mmol/L pre-decision; endpoints within 0.2 mmol/L.

RECORD A · DAY 10 · 2025-10-21 17:32		RECORD B · DAY 23 · 2025-11-03 16:25	
State	14.7 mmol/L, drifting	State	14.4 mmol/L, post-meal spike
Judgment	restraint — “sticky drift”	Judgment	escalation — “knock it down”
Action	**2.0 U correction**	Action	**4.0 U correction**
Endpoint	**13.9 mmol/L at +93 min**	Endpoint	**13.7 mmol/L at +130 min**

Outcome data collapse these into one bucket. ESP360° preserves them as two structured records.

VERIFICATION & VALIDATION ROADMAP

DEMONSTRATED	NOT YET ESTABLISHED	PLANNED NEXT
• N-of-1 implementation	• Design verification matrix	• Inter-rater reliability study
• Temporal alignment with device data	• Formal risk analysis	• Cross-user evaluation
• Auditable provenance record	• Intended-use validation & safety	• Regulatory pathway determination

PRODUCT SCOPE

ESP360° currently comprises the decision-representation and mapping architecture — middleware, an AI-training framework, or licensed integration technology — not a regulated, patient-facing clinical product.

AT CRC 2026 I am seeking expert criticism, the correct verification and validation pathway, and clinical, engineering and industry partners.

COME ON, MARKY — the years this work came out of. The reasoning layer, kept by hand since 1967.

Full manuscript under review. Ask me about it — markpaull56@gmail.com

ORCID EMAIL LINKEDIN

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