

ARTICLE

VERSIONED TRUTHS

How Circle preserves data integrity in a world where knowledge never stops changing.



THE STATIC ILLUSION OF TRUTH

Healthcare operates under the illusion that truth is fixed. Clinical guidelines are written as if immutable, and datasets are stored as if their definitions will always hold. But in reality, medicine is dynamic. New evidence redefines diseases, alters diagnostic thresholds, and revises outcomes.

A dataset frozen in time eventually diverges from clinical reality. And when AI models train on outdated definitions, they perpetuate error at scale – **precision without validity**.

Truth in healthcare isn't static; it's **versioned**.

THE PROBLEM OF EVOLUTION WITHOUT MEMORY

Most data systems handle change by overwriting – updating records without preserving prior definitions or assumptions. This makes updates invisible and history irreproducible.

When regulators ask how a model was trained, or a study needs replication, the answer is often: *we can't know for sure*. That's not a technical failure; it's a structural one.

Without version control, evolution becomes amnesia.

CIRCLE'S APPROACH: VERSIONED TRUTH

Circle treats truth as a living construct – one that must evolve **without losing its lineage**.

Each **Observational Protocol (OP)**, dataset, and derived model is versioned independently. Every update – a variable redefinition, a new timepoint, or an algorithmic retraining – creates a linked successor, not a replacement.

Each version retains:

- Its full provenance (who, when, why).

- Its operational context (clinical definitions and assumptions).
- Its validation state (how it was verified at the time).

The result is a **chain of truth**, where evolution is transparent and traceable.

WHY VERSIONING MATTERS TO AI

AI systems evolve with their data. If the underlying definitions shift but aren't tracked, the model's learning becomes disconnected from the reality it aims to represent. Circle solves this by aligning model metadata with dataset versions: every algorithm knows which version of reality it was trained on.

This allows explainable comparisons – between model generations, between institutions, and across time. It also allows regulators to reconstruct exactly what the model “knew” when it made a decision.

In medicine, where accountability is everything, that capability is revolutionary.

INSTITUTIONAL AND REGULATORY IMPLICATIONS

Versioned truth redefines institutional governance.

- **Hospitals** can update protocols without losing audit continuity.
- **Researchers** can reproduce or refute findings from any point in the past.
- **Regulators** can trace decisions across evolving evidence standards.

This model aligns perfectly with emerging FDA and EMA frameworks that require version-controlled documentation of AI lifecycle management. What used to require endless documentation now happens automatically – as a property of design.

STRATEGIC OUTCOME

Versioned truth turns change from a liability into an asset. It allows healthcare systems to evolve confidently, knowing that every prior state remains intact, explainable, and auditable.

In Circle’s architecture, knowledge grows like a tree — each branch traceable back to its root. That’s how evidence remains both current and credible.

As medicine accelerates and AI learns faster than regulation can follow, **versioned truth is how progress stays accountable.**

KEY TAKEAWAYS

Stakeholder	Practical Implication
Clinicians & Researchers	Maintain reproducibility even as definitions evolve through protocol versioning.
Health Systems	Implement version-controlled datasets to ensure transparent governance and regulatory defensibility.
Investors & Regulators	Use versioned truth to synchronize model updates with evolving clinical and evidentiary standards.

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 [RegenMed | www.rgnmed.com](https://www.rgnmed.com)

 circles@rgnmed.com



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