Insights from bPrescient

INSIGHTS ON TECHNICAL INNOVATION IN BIOTECH AND PHARMA

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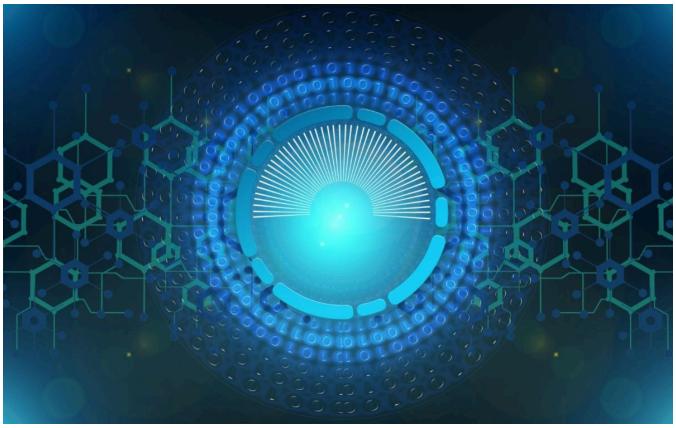
TRANSFORMING THE DMTA CYCLE



Pharma and biotech organizations and the instrument vendors that support them have invested heavily in high-throughput synthesis, screening robotics, and integrated assay platforms. As a result, the Make and Test stages of the Design-Make-Test-Analyze (DMTA) cycle are more automated than ever before. Yet true end-to-end automation remains elusive and inefficiencies persist, hampering innovation.

Historically, bottlenecks have been in Design and Analyze: disconnected ELNs and LIMS, fragmented assays, manual model building, and too many human-dependent decisions. Today, advances in generative and physics-based predictive models and agentic AI systems are beginning to close that gap. Companies such as Lila Sciences are pursuing AI-driven hypothesis generation that they hope can be directly coupled with automated experimentation, potentially shrinking iteration cycles from months to weeks.

But better tools are only part of the solution. A major blocker to full DMTA automation is architectural. Without harmonized ontologies, consistent metadata strategies, interoperable ELN/LIMS ecosystems, and well-defined decision logic, automation efforts become siloes that fail to deliver significant overall value. Closed-loop R&D requires intentional system design and data engineering that supports traceable AI outputs, infrastructure that enables real-time feedback, and governance models that align scientific and digital teams.

When done well, the impact is measurable: fewer low-value experiments, faster convergence on viable candidates, reduced handoffs between teams, and improved portfolio capital efficiency. Automation is not simply about throughput; it is about decision velocity and experimental quality.

The organizations that will lead the next decade of drug development will not just deploy AI models; they will integrate them into the operational fabric of discovery. The question is no longer whether the full DMTA cycle can be automated, *but how to architect it so that each iteration makes the next one smarter.* **Get in touch** to discuss ways bPrescient can help.

Get In Touch
