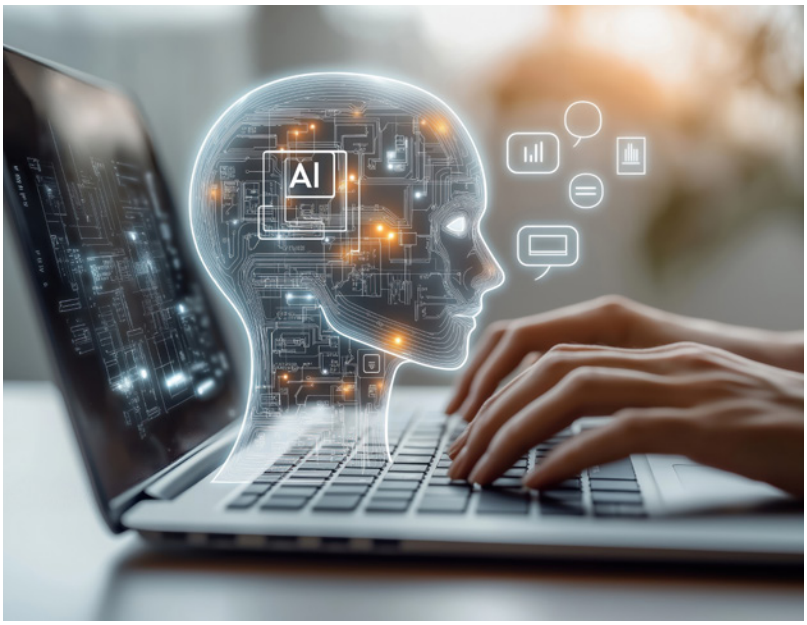
CASE STUDY:

From Code to Cure: Accelerating Drug Discovery for a Global Biopharma Company with Expert AI Agent Developers

OVERVIEW

A global biopharmaceutical company was experiencing a variety of challenges in its R&D operations — data fragmentation and siloed knowledge, bottlenecks in complex target evaluation, inadequate data visualization tools, burdensome user permissions management — that slowed down their drug discovery pipeline. To address these challenges, the company decided to build a browser-based agentic AI application designed to support drug discovery across core therapeutic areas.

Given our experience in sourcing highly specialized resources for the life science industry, the company contracted with Kalleid to provide 3 software engineering developers who would be full-time over the entire project lifecycle.



BUSINESS CASE

The company was experiencing several distinct business and technical challenges that drove them to initiate and scale this AI-driven project:

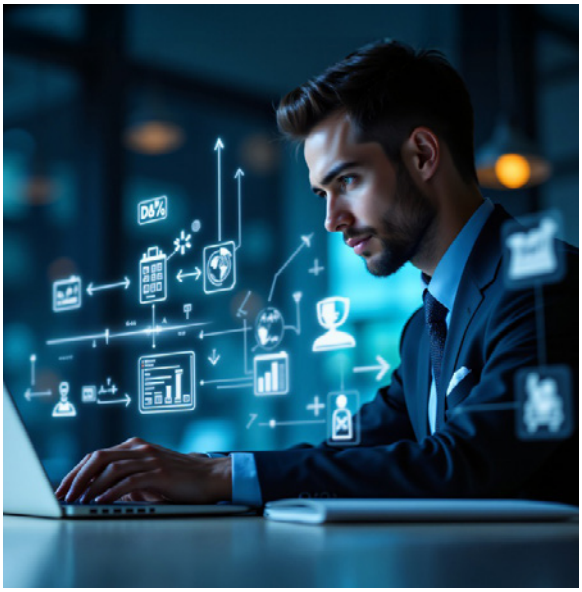
- **Data Fragmentation and Siloed Knowledge**
  Scientific data was scattered across disparate environments, making comprehensive research slow and cumbersome.
- **Bottlenecks in Complex Target Evaluation**
  The manual evaluation of therapeutic targets against strict drug-ability criteria was too slow to keep pace with global discovery timelines.
- **Inadequate Data Visualization Tools**
  Traditional data visualization tools were failing to adequately represent increasingly complex, modern drug modalities.
- **Operational Friction and Deployment Risks**
  The platform's early iterations suffered from infrastructure scaling limits, manual deployment risks, and unpredictable AI behaviors.
- **Burdensome User Permission Management**
  Managing user permissions across a global R&D footprint was becoming a compliance and administrative burden.

By scaling these capabilities with the AI application, the company aimed to empower its research divisions with sophisticated data discovery, advanced visualization, and automated deep research tools.

SERVICES PROVIDED

Kalleid provided three developers to the company who delivered technical services across four core functional areas to expand, optimize, and stabilize the platform:

1 Core Application Support & Extension



- Performed ongoing maintenance, addressing minor fixes and providing feature support for user-initiated target ingestion, risk assessment, and document generation.
- Transitioned user authentication from task-based methods to a full enterprise Okta integration.
- Designed and implemented an organized visualization approach for targets, with specific support for bi-specific and tri-specific formats and associated diseases.
- Enabled direct document and HTML upload for end-users.

2 Agentic Workflow & Risk Assessment

- Integrated specialized chat and database agents with external and internal data repositories, including Open-Targets, Uni-Prot, and NCBI, to maximize knowledge capture.
- Reconfigured prompt controls and data injection specifically to power the platform's risk assessment "deep research" modules.
- Instituted a formal testing protocol to evaluate LLM-based workflows and catch side-effects prior to deployment to protect the production environment.

3 Architecture Expansion

Implemented a major expansion of the core assessment architecture to include:

- Target identification, validation, and interactome mapping.
- Structural/biophysical druggability and format selection
- Discovery Campaign Strategy, Reagents, and Manufacturing/CMC
- Competitive Intelligence, IP, and IND-Enabling Dossier support.
- In vivo workflow management guide to assist researchers in pre-planning animal studies.

4 Infrastructure & Deployment

- Expanded the platform's Prefect integration to manage/automate all batch jobs.
- Linked and tuned AgenticBoost with internal Research and Development Data and Technology (RDDT) applications via a Control Tower Sync.
- Matured the deployment by migrating the application to new EC2 instances and implementing an optimized auto-deploy protocol.

RESULTS DELIVERED

The project successfully completed all target milestones within the allocated timeline and budget. The collaboration successfully delivered several enterprise-grade milestones:

- **Integrated Okta Authentication Module:** Delivered full integration of enterprise-level authentication to transition the system to secure, advanced user management.
- **Assessment Suite:** Developed an expanded user interface and robust backend capable of supporting 12+ new discovery criteria across target, structural, CMC, IP, and in vivo workflows.
- **Advanced Multi-Specific Visualization Engine:** Implemented a tailored visual interface providing deep, organized rendering of bi-specific and tri-specific formats and their corresponding diseases.
- **LLM Testing & Evaluation Framework:** Authored formal documentation and scripts designed for pre-deployment benchmarking to evaluate LLM workflows before release.
- **Updated Data API:** Expanded the system API to support new CRUD (Create, Read, Update, Delete) operations across diversified drug modalities.

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