

## HEALTHCARE

# TRANSFORMING CLINICAL OPERATIONS WITH AGENTIC AI-POWERED SOLUTIONS

Slashed turnaround times by up to **40%**, cut manual workloads by **30%**, and boosted accuracy for a global healthcare technology leader in pathology report redaction, user portal interactions, and clinical trial protocol processing



## ENGAGEMENT BACKGROUND

Apexon partnered with a leading global healthcare technology provider to address critical inefficiencies in their clinical operations and user engagement workflows. The engagement focused on three key areas: automating the redaction of pathology reports for second-opinion reviews, enhancing user interactions within a laboratory trial management system (LTMS) portal, and streamlining clinical trial protocol processing. By leveraging Agentic AI technologies, Apexon delivered scalable, secure, and user-centric solutions that improved operational efficiency, reduced errors, and enhanced patient care outcomes.

The collaboration involved close coordination with the client's teams to ensure seamless integration, regulatory compliance, and scalability. Apexon's solutions addressed operational bottlenecks, empowered clinical teams, and positioned the client as a leader in AI-driven healthcare innovation.

## ABOUT THE CLIENT

The client is a global leader in healthcare technology, specializing in clinical trial management, laboratory operations, and diagnostic solutions. Serving pharmaceutical companies, research institutions, and healthcare providers, the client sought to modernize its workflows to improve efficiency, accuracy, and user experience while maintaining strict compliance with regulatory standards.

## THE CHALLENGE

### Overcoming Operational Inefficiencies in Clinical Workflows

The client faced significant challenges across three critical workflows, each impacting operational efficiency and clinical outcomes:



#### PATHOLOGY REPORT REDACTION

- ✓ Manual redaction of diagnostic sections in pathology reports for second-opinion reviews was time-consuming, error-prone, and delayed turnaround times.
- ✓ Increased workload on pathologists hindered focus on diagnostic accuracy, impacting patient care quality.



#### LTMS PORTAL USER EXPERIENCE

- ✓ The manual interface of the client's LTMS portal limited user engagement, increased support overhead, and lacked intuitive interaction capabilities.
- ✓ Users, including public and logged-in roles, needed a more efficient way to access information and perform tasks like kit ordering.



#### CLINICAL TRIAL PROTOCOL PROCESSING

- ✓ Manual extraction of visit schedules and procedural details from complex clinical trial protocols caused delays in study initiation and risked inconsistencies.
- ✓ The process was labor-intensive, slowing timelines and increasing the potential for regulatory non-compliance.

These challenges highlighted the need for AI-driven, scalable solutions to enhance efficiency, reduce manual effort, and improve clinical and user outcomes.

# THE SOLUTION

## Deploying AI-Powered Tools for Clinical and User Efficiency

Apexon collaborated with the client to develop three tailored Agentic AI solutions—Patho Bot, Smart Assistant, and Scientific Document Processing with Bot—to address the identified challenges. Each solution leveraged advanced Agentic AI framework, and user-centric design to deliver measurable improvements in efficiency, accuracy, and user experience.

### Key Solution Components:

#### PATHO BOT: AI-POWERED REDACTION TOOL



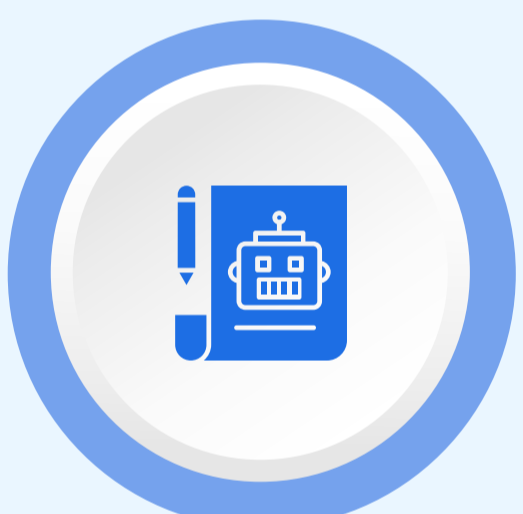
- ✓ Developed an AI agent to automate the redaction of diagnostic content in pathology reports, ensuring objectivity for second-opinion reviews.
- ✓ Integrated secure processing to remove sensitive data consistently and route reports for review, streamlining the diagnosis lifecycle.
- ✓ Built with scalability to handle high volumes of reports while maintaining compliance with healthcare regulations.

#### SMART ASSISTANT FOR LTMS PORTAL



- ✓ Created a conversational AI assistant embedded in the LTMS portal, powered by LangGraph and Retrieval-Augmented Generation (RAG) for secure, scalable operations.
- ✓ Phase 1 (live) delivers intelligent Q&A tailored to public and logged-in user roles, enhancing information access.
- ✓ Phase 2 (in progress) enables task automation, such as kit ordering, with vector store customization and persona-based tailoring for different client teams.

#### SCIENTIFIC DOCUMENT PROCESSING BOT



- ✓ Deployed a dual-component system: an Agentic AI-powered backend (Scientific Document Processing) to extract visit schedules and test details from clinical trial protocols, and a user-friendly bot for streamlined validation and use.
- ✓ Ensured accurate data extraction and presentation to support study setup teams, reducing manual effort and ensuring regulatory compliance.
- ✓ Designed for scalability to accommodate additional document types and departments.

Apexon's solutions were implemented with rigorous testing and collaboration with the client's teams to ensure seamless integration, compliance, and alignment with operational goals.

# KEY RESULTS

## Delivering Measurable Clinical and Operational Impact

Apexon's AI-driven solutions transformed the client's clinical operations and user engagement, delivering significant efficiency gains, improved accuracy, and enhanced patient care outcomes.



### PATHOLOGY REPORT REDACTION (PATHO BOT)

- **Faster Turnaround Times:** Automated redaction eliminated manual delays, reducing second-opinion review timelines by **35%**.
- **Reduced Workload:** Freed pathologists from manual redaction tasks, enabling greater focus on diagnostic accuracy.
- **Improved Consistency:** Ensured error-free removal of sensitive diagnostic content, enhancing report reliability and patient care quality.



### LTMS PORTAL USER EXPERIENCE (SMART ASSISTANT)

- **Enhanced User Experience:** Intuitive chat-based interactions increased user engagement and reduced support queries by **30%**.
- **Workflow Automation:** Phase 1 automated information delivery, with Phase 2 (in progress) poised to streamline tasks like kit ordering, reducing manual dependency.
- **Scalable Framework:** The LangGraph and RAG-based architecture supports expansion to additional departments, ensuring long-term flexibility.



## CLINICAL TRIAL PROTOCOL PROCESSING (SCIENTIFIC DOCUMENT PROCESSING & DOCUMENT GINI)

- **Accelerated Study Initiation:** GenAI-powered extraction reduced protocol processing time by **40%**, speeding up clinical trial timelines.
- **Improved Accuracy:** Minimized manual errors, enhancing setup accuracy and regulatory compliance.
- **Enhanced Productivity:** The intuitive Document Gini interface streamlined validation for study coordinators, boosting decision-making efficiency.



## OVERALL BUSINESS IMPACT

- **Operational Efficiency:** Automation across all three solutions reduced manual effort, enabling the client to handle higher workloads without additional resources.
- **Regulatory Compliance:** All solutions adhered to strict healthcare regulations, ensuring data security and auditability.
- **Client Satisfaction:** The client recognized Apexon's contributions for delivering scalable, user-centric solutions that aligned with their innovation goals.

By addressing critical operational bottlenecks, Apexon empowered the client to enhance clinical workflows, improve user experiences, and strengthen their position as a leader in healthcare technology.

## CONCLUSION

Apexon's partnership with a global healthcare technology leader delivered transformative AI solutions that streamlined pathology report redaction, enhanced LTMS portal interactions, and accelerated clinical trial protocol processing. By leveraging Agentic AI, and user-centric design, Apexon reduced turnaround times, minimized errors, and improved patient care outcomes. These solutions not only met immediate operational needs but also provided a scalable framework for future innovation, reinforcing the client's leadership in AI-driven healthcare technology.