

# COGNITIVE AI FOR PRODUCT FORMULATION

## Cognitive AI Accelerates Product Development to Increase Efficiency, Reduce Costs & Maximize Profit

### Benefits

- + Efficiently generate, predict, improve & update formulations
- + Accelerate time-to-market for viable lead candidates
- + Optimize processes to reduce material & program cost
- + Enhance insight into confidence scores for optimized results
- + Reduce regulatory, compliance & failure risks

### Lubricant Formulation: A High-cost, High-risk Process

Traditional formula development for lubricants is a complex, expensive, and time-consuming process that requires extensive resources and experimentation. Lubricant formulation often involves multiple steps of discovery, optimization and testing, and demands significant specialized domain expertise and extensive trial/error procedures. As a result, the process is often high-cost and high-risk, further complicated by constantly changing regulations and guidelines.

Ever-evolving regulations, fluctuations in oil prices and other base stocks, and technology demands have made it difficult for the lubricant industry to maintain profitability. To remain competitive, it is paramount that the industry revisits its practices and evolves long discovery to testing procedures to enhance processes, optimize formulations, and accelerate time-to-market.

### Unlock a Crucial Competitive Edge from Discovery to Testing

Beyond Limits Cognitive AI for product formulation harnesses the latest advancements in artificial intelligence, machine learning, computer science, and cloud technology to tackle challenges commonly encountered during lubricant formulation processes. In contrast to traditional experimentation approaches, our method is data-driven, providing a quick and efficient solution in a fraction of the time traditional formulation procedures would normally take.

**SaaS**

#### COGNITIVE FORMULATION ADVISOR

##### Integrated Industry Data

Industry Test Requirements & OEM Specifications



SME Knowledge

**Beyond Limits**  
Cognitive IP

## Beyond Limits Cognitive AI for Formulation Increases Operational Efficiency

Cognitive AI emulates human-like reasoning and is designed to intelligently recommend formulations based on codified domain expert knowledge and historical blend data. Some benefits include:

- + More accessible recommendations for hundreds of optimal, viable lead candidates
- + Accelerated development, fast-tracking time-to-market
- + Reduced time, cost & risk associated with testing processes
- + Readily identifiable top-performing blends & more economic combinations
- + Lowered program & material costs
- + Integrated knowledge, leading to a more standardized formulation process that is readily accessible across the organization

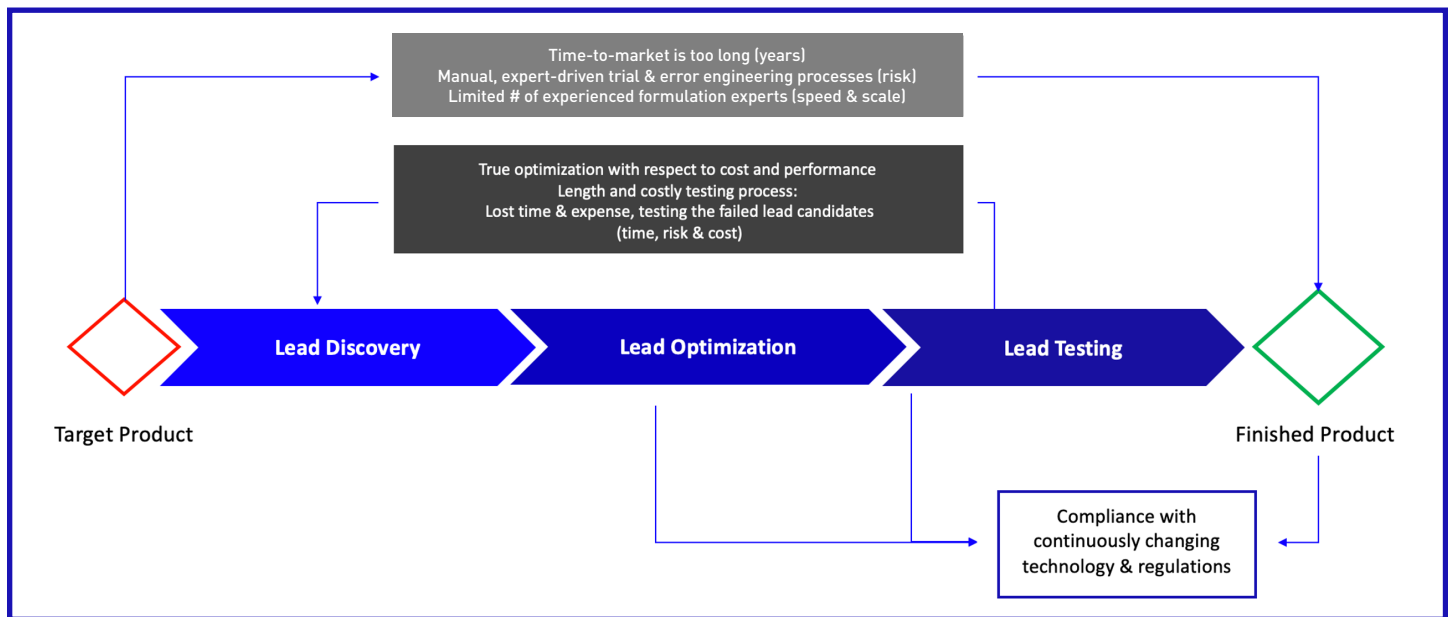


Figure 1- Challenges in formulation processes across industries

## Cognitive AI: Explainable Solutions with Human-like Reasoning

Cognitive AI offers many advantages to lubricant formulation organizations. Beyond Limits systems work particularly well when data sparsity (missing data) exists, or when encountering noise in data (misleading data), by leveraging the industry's most valuable domain knowledge. Our systems also deliver transparent audit trails designed to be clearly understood by humans, thus building essential trust in the technology.

### About Beyond Limits

Beyond Limits is a pioneering Artificial Intelligence engineering company creating advanced software systems that go beyond conventional AI. Founded in 2014, Beyond Limits is helping companies solve tough, complex, mission-critical problems and transform their business.