

## INNOVATIVE THERAPEUTIC DISCOVERY UNIFY MODELING AND TESTING TO ACCELERATE THE DISCOVERY OF HIGH-QUALITY NOVEL THERAPEUTICS



### BRING BETTER THERAPEUTIC CANDIDATES TO MARKET FASTER BY ACCELERATING KNOWLEDGE-DRIVEN INNOVATION

The pharmaceutical and biotech industry is facing higher operational costs and increased pressure, with up to 90% failures in clinical development. With fewer candidates receiving approval, there is an increasing need to innovate faster and achieve better outcomes while reducing costs. The significant increase in data generated by research and development (R&D) teams in pharmaceutical and biotech organizations, combined with advancements in machine learning, artificial intelligence (AI) and cloud computing, has the potential to address these challenges. However, the implementation of these tools is still lagging behind. Dassault Systèmes' **Innovative Therapeutic Discovery** Industry Solution Experience helps pharmaceutical and biotech organizations identify high-quality candidates faster and reduce costs and time to market by delivering collaborative, cloud-based solutions that unify experimental data from the lab with virtual predictions that use AI, machine learning, and molecular modeling and simulation.

## KEY BENEFITS

- Combine Nobel Prize-winning AI methods with best-in-class molecular modeling and simulation for designing high-quality drug candidates
- Facilitate multidisciplinary collaboration through seamless integration of *in silico* and lab experimentation
- Enhance data integrity, security, traceability and consistency throughout the drug development lifecycle
- Deploy data-driven R&D operations by democratizing 3D modeling, AI and machine learning
- Utilize agile, secure and scalable cloud-native solutions with a low total cost of ownership
- Reduce time to market and the cost of market expansion by improving innovation and efficiency in discovery research, delivering better candidates faster
- Integrate Quality by Design principles to accelerate drug development and increase the duration of market exclusivity

## Integrate data and technology to optimize collaborative, multidisciplinary therapeutics discovery

Drug discovery is a lengthy and costly process. The trend toward personalized medicine is shifting the focus from blockbuster drugs to targeted therapies for specific populations, reducing the market potential for each drug. As a result, pharmaceutical and biotech companies are facing increased pressure to successfully deliver new therapeutics faster and at reduced costs. Dassault Systèmes' **Innovative Therapeutic Discovery** Industry Solution Experience supports data-driven predictive modeling that is key to accelerating and improving innovation. Through seamless integration of siloed applications and data from virtual and lab experimentation on a single platform, multidisciplinary project teams can access the highest quality information available anytime, from anywhere. **Innovative Therapeutic Discovery** enables scientists to collaborate easily to reduce typical wet-lab experimentation, advancing only the candidates that are likely to succeed in clinical development.

## Unify predictive science and experimental results to accelerate drug design

Drug design is a multi-objective challenge. Potency, selectivity, efficacy, ADME (absorption, distribution, metabolism and excretion) and toxicity characteristics need to be optimized in parallel. **Innovative Therapeutic Discovery** allows R&D teams to apply Quality by Design principles from the beginning as part of an integrated, comprehensive, rational design approach. By integrating AI, machine learning and 3D modeling into the design process, researchers can reduce physical experimentation and identify safe and efficacious drug candidates faster, saving time and resources. Through seamless integration of the entire drug design process, from virtual target identification to lead optimization and laboratory testing, researchers can address potential liabilities early on and advance the most promising candidates that are likely to succeed in clinical studies.

## Predict drug behavior to optimize manufacturing and delivery

Innovation does not stop once the right active pharmaceutical ingredient (API) has been found. It's also about providing the right patient experience and, therefore, the right administration form. *In silico* experiments can guide the choice of formulation and delivery methods and help pharmaceutical and biotech organizations understand key properties such as solubility, viscosity and developability. **Innovative Therapeutic Discovery** enables the prediction of critical manufacturability characteristics and delivers an integrated, comprehensive, rational approach for accelerating the development of novel therapeutics. Combining knowledge from predictive modeling tools with experimental data also builds Quality by Design principles into the drug development process.

To learn more about the **Innovative Therapeutic Discovery** Industry Solution Experience provided by Dassault Systèmes, visit [here](#).

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