

# SIMULATION SOLUTION

## Simudyne & Cloudera

Improve decision making by generating greater foresight and insight



**Industry**

Financial Services

**Website**

[Simudyne.com](http://Simudyne.com)

**Company Overview**

Simudyne is a simulation technology company based in London. It uses advanced analytics and AI alongside agent-based modeling and simulation to help institutions, exchanges and governments solve complex problems and make better decisions.

**Product Overview**

Simudyne's technology is the only enterprise-ready simulation platform certified to run on Cloudera's hybrid data platform. Using Java or Scala, Simudyne helps modelers, data scientists and quants to build models that reflect the complexity of the real world. With Simudyne, you can massively scale your computer simulations while efficiently collaborating through a unified platform.

**Solution Highlights**

Cloudera has partnered with Simudyne to jointly bring a suite of advanced computational simulation capabilities to financial firms.

- Create high fidelity models of complex financial markets
- Run simulations at massive scale
- Evaluate and stress-test decisions in a safe environment
- Run in the cloud, on premises or in a hybrid environment
- Fully integrated into your big data platform



**Why extend your analytics tool kit to include Agent Based Modeling?**

Financial firms are under pressure to grow their business while containing risk and complying with regulations. Combined with current modeling and analytical approaches like machine learning, agent-based modeling and simulation incorporate the variables, feedback, inter-dependencies, and related complexities that are required to properly capture potential real-world events. Agent-based simulation is a method for studying a wide variety of complex, real-world systems. It helps visualize how micro-level behavior interacts to produce emergent macro-level outcomes while accounting for emergent phenomena. Agent-based models help in areas where traditional machine learning models struggle such as contagion, volatility, human behavior and geopolitical events.

**What is Agent Based Modeling?**

Agent Based Modeling (ABM) models complex adaptive systems such as financial markets. These models are composed of autonomous agents that interact with and influence each other, learn from their experiences, and adapt their behaviors. Depending on the scenario, agents could be people, governments, banks, corporations, or investors that participate in complex systems like societies. All act with realistic behaviors to produce collective outcomes that may not be discoverable with traditional modeling techniques.

The strength of these models is that they show how even very simple individual behaviors can combine to form complex outcomes observed in the real world.

When combined, machine learning and agent-based simulation are highly complementary. They better capture the dynamics and interactions in complex systems that change over time.

Simulations are a critical tool for managing risk, capital markets trading, portfolio management, marketing and policy making because they:

1. Provide a more robust and holistic view of possible future outcomes
2. Offer a solid understanding of the key factors and dynamics underlying these outcomes

**Use Cases in Financial Services**

Some sample use cases that are improved by ABM include:

- **Balance Sheet & P&L Forecasting** for institutions
- **Simulating Credit Risk** for institutions
- **Climate Risk Management** for institutions
- **Simulating Equity Markets** for exchanges and brokers
- **Mortgage Market** for banks and funds
- **Central Clearing Party Model** for funds and banks
- **Portfolio Management** for credit card issuers
- **National Security** for governments

Cloudera enables help financial services embrace both the present opportunity around data, as well as the emerging sources of new information to manage risk and compliance more effectively.

To learn more about how Cloudera enables climate risk scenarios, visit [cloudera.com/solutions/financial-services](https://cloudera.com/solutions/financial-services)

#### About Cloudera

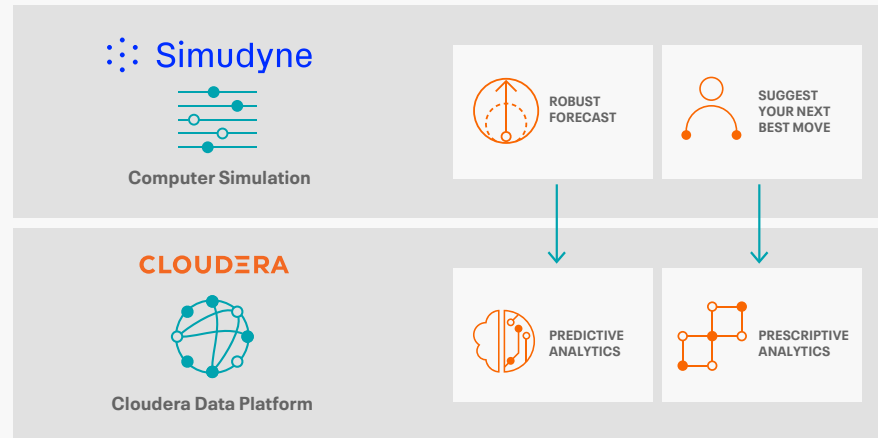
At Cloudera, we believe that data can make what is impossible today, possible tomorrow. We empower people to transform complex data into clear and actionable insights. Cloudera delivers an enterprise data cloud for any data, anywhere, from the Edge to AI. Powered by the relentless innovation of the open source community, Cloudera advances digital transformation for the world's largest enterprises.

Learn more at [cloudera.com](https://cloudera.com)

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**Simudyne**

### DATA SCIENCE AND AGENT-BASED SIMULATION



### Simudyne and Cloudera - ABM for Computational Simulation

Simudyne's simulation software uses ABM to enable financial institutions to quickly and efficiently simulate unlimited scenarios and test decisions in a virtual environment. Natively built on Cloudera's hybrid data platform, the solution enables financial services with greater insight needed for today's critical decisions. Simudyne's simulation SDK leads the way in ABM for financial markets.

**Scalable** – An enterprise ready, scalable solution that can be distributed across machines to run concurrently, speeding the simulation process up by many multiples. The data platform automatically scales resources as demand increases and or scales down as workloads wind down. This ensures optimal performance and cost efficiency when activities such as modelling/stress tests require more resources.

**Secure** – As a deployed solution, the technology is safe and secure. It sits behind the firewall, and all data and models remain proprietary. Cloudera's **Shared Data Experience (SDX)** delivers an integrated set of security and governance technologies built on metadata and delivers persistent context across all analytics as well as public and private clouds.

**Cloudera Certified** – Simudyne's simulation platform leads the way in agent-based modeling and is the only simulation platform certified on Cloudera. Cloudera efficiently manages massive volumes of data and ingests streaming data to serve the real-time needs of an enterprise.

In an uncertain world, Agent Based Modeling enables firms to create scenarios to better understand risks and adjust your strategy accordingly. To learn more about how Simudyne can be used in areas such as central counterparty risk, market simulation or climate risk modeling, visit [simudyne.com](https://simudyne.com).

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