Haskoning
Enhancing Society Together

Capability statement:

Predictive simulation



Make smarter decisions today for a more sustainable tomorrow

Introduction

How can you minimise risk in important business decisions when the right answers aren't always obvious?



What is the best strategy to improve operational performance? What changes are required to deliver ambitious production targets? Is there a robust business case for expansion? How can you identify and eliminate inefficiencies and achieve more with less?

Answering important questions like these often involve processes that are complex, variable and interconnected. There may be thousands of candidate process design or change options, but quantifying cause-and-effect is rarely straightforward. The challenge lies in simplifying complexity to identify the decisions that deliver the greatest value.

That's where the unrivalled power of predictive simulation comes in.

Predictive simulation allows you to create virtual, dynamic models that accurately represent the complex behaviour of real-life processes. By capturing the randomness and interdependencies inherent in real-life operations it enables you to explore incremental or radical 'what-if?' scenarios in a risk-free virtual environment, before committing to significant investments or process changes.

Unlike static spreadsheet analysis, predictive simulation accounts for complex decision logic, the resources required across multiple processes, and potentially disruptive variability in areas such as process times, demand volatility, quality or even weather. The result is deeper insights, stronger foresights, and greater confidence in your decisions.

From understanding your processes and overcoming operational constraints to engaging stakeholders and stress-testing options, we help you maximise business value from predictive simulation.

In this capability document, we outline how Haskoning's unique combination of digital and domain expertise maximises the value and impact of predictive simulation, enabling organisations to make evidence-based decisions that enhance sustainability, competitive edge, business resilience, and operational excellence.

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About Haskoning

Haskoning is an independent consultancy founded in 1881, combining engineering, design and consultancy services with software and technology to deliver lasting value for clients. Based on our mission of Enhancing Society Together, we take responsibility for creating positive impact on the world and contributing to the United Nations Sustainable Development Goals. We challenge ourselves and our clients to develop sustainable solutions to local and global issues related to the built environment, infrastructure and industry.

Our services span a wide range of sectors, including industry, maritime, energy, aviation, buildings and infrastructure, transport and water. Backed by the expertise of almost 7,000 people we have offices in more than 25 countries worldwide and help clients turn their challenges into opportunities and make the transition to smarter, more sustainable operations.

Our purpose is Enhancing Society Together

We focus on delivering added value for our clients while addressing the challenges societies are facing. These include the growing global population and aging workforce; climate change; water security and water safety; pressures on traffic and transport; resource availability; increasing complexity; energy demands and waste/ circularity issues.

By showing leadership in sustainable development and innovation, we're working to become part of the solution to a more sustainable society, now and into the future. Our predictive simulation capabilities play an important role in this, helping our clients solve key challenges as together we scale our positive impact on society.

We help you make better and faster business decisions with predictive simulation

We have a proven track record over 45 years helping clients apply predictive simulation to answer complex business questions that impact operational excellence, business resilience, sustainability and competitiveness. This approach applies to ideation, engineering, design and construction phases (CapEx), as well as operational and maintenance phases (OpEx) of your organisation's facility, process or asset lifecycles. Whether it's saving millions by eliminating bottlenecks or rightsizing facilities, finding ways to improve the customer service or identifying optimal carbon reduction strategies our simulation solutions are used daily in hundreds of organisations worldwide.



The Haskoning difference

Whether you are increasing capacity, streamlining supply chains, reducing costs, developing new resilient business models or advancing AI initiatives, major decisions today involve complex, cyber-physical systems with interconnected and dynamic business processes.



Predictive simulation enables you to model and visualise these systems and processes, experiment with alternative designs and run robust 'what-if' scenarios in a risk-free virtual environment. But technology alone does not deliver impact. Real value comes from applying simulation in a way that aligns with your business strategy, operating model and digital transformation ambitions, guided by our domain knowledge and experience.

Translating digital capability into confident decisions

Haskoning understands it's not 'all about the technology'. Successful predictive simulation depends on clear problem framing, stakeholder alignment and a pragmatic roadmap for adoption.

Our philosophy is: *"think big, start small, move fast"*. We help you build sustainable capability while delivering early, but rapidly scalable value.

We also remain at the forefront of simulation methodologies and technologies, collaborating with leading industry partners and academic institutions worldwide. This ensures our clients benefit not only from proven delivery experience, but also from cutting-edge thinking.

Outcome-driven

Our simulation approach is outcome driven, starting with your business objectives rather than technology. Models, scenarios and experiments are designed to inform real decisions, quantify impact and illustrates how different options affect outcomes, highlighting the implications of each decision. The focus is on actionable insight, measurable value and confident planning.

Digital + domain expertise

Combining digital solutions with our deep domain knowledge, we deliver measurable value. Digital tools provide speed, scale and insight, while our expert knowledge ensures models, data and decisions reflect real-world complexity. Together they enable smarter choices, reduced risk and solutions that deliver practical, trusted outcomes

Holistic approach

Our holistic approach considers the whole lifecycle, not a single, isolated problem. We connect strategy, design and delivery, while aligning people, processes and digital models around shared goals. This ensures insights are relevant at every stage, decisions are consistent, and value is realised across the organisation, not just within individual projects teams

Proven methodology

Our proven Haskoning Simulation Methodology ensures our solutions create the insight and value our customers need. We work with you to define requirements, design scenarios, and align KPIs to business priorities. We build, verify, and validate fit-for-purpose models, then plan and run experiments. Finally, we interpret results to deliver insight that supports confident planning, decisions, and measurable business value across complex challenges and evolving operational contexts.

Deep domain expertise

We help the world's leading companies confidently make business-critical, evidence-based decisions using predictive simulation across:



Aerospace | *Automotive* | *Aviation* | *Business and engineering* | *Construction* | *Defence* | *Distribution and retail* | *Finance*



FMCG | *Food and beverage* | *Government and health* | *LNG* | *Manufacturing* | *Maritime* | *Offshore wind* | *Supply chain and logistics*

Our predictive simulation capabilities

Built on more than 45 years of leadership in dynamic process simulation, Haskoning Witness is the foundation of our simulation offering and our flagship software.

Alongside Witness, we draw on a broad range of expertise, approaches and technologies to ensure the right solution for each challenge. We offer a comprehensive simulation capability that combines industry-leading software, expert training, responsive expert-led support and consultancy services.

Whether you're starting your simulation journey, scaling a high performing internal capability, or fully outsourcing to trusted experts, we help you *think big, start small, move fast*.

Witness Software

Haskoning's own Witness Simulation Software gives you the power to validate decisions in a risk-free environment by interrogating virtual models of your existing and planned facilities and operations, empowering you to simplify complexity.

Haskoning Enhancing Society Together | Witness™

A simulated model of your business generates powerful future-state data and helps demystify much of the inherent complexity by providing insightful, interactive visualisations of your process and your performance metrics. Witness simulation helps both analysts and decision-makers understand their business processes and data.

Benefits of Witness:

Evidence-based decision making

Analyse ideas and 'what-if' scenarios where testing in real life would be impractical, expensive or dangerous

Secure stakeholder buy-in

Communicate challenges and opportunities more clearly, accelerating stakeholder and investor buy-in

Operational efficiency

Quantify risk and enable data-driven decision making to support strategic and operational efficiency

Maximise return on investment

Understand the impact of change to help optimise resources and drive higher return on investment

With Witness' intuitive drag-and-drop interface, users can create models that incorporate all required process data, linked where appropriate to existing external data sources. As you run models, dynamic charts and reports display key performance indicators, showing how different scenarios lead to different results, enabling strategic decision making, based on data, rather than gut feel. It is possible to choose how to present your findings for maximum stakeholder impact. – From dashboards to detailed 3D models, the level of visual detail can be tailored to meet the business and stakeholder requirements. You can unlock the full power of your simulation assets using Witness Experimenter, which automates and optimises scenario testing to get you quickly to the right solution.

Witness.io	Custom Solutions
Witness.io is a subscription-based cloud service for running simulation models at scale, either directly within Witness or integrated into other applications. It lets you execute complex scenario sets utilising multiple cores in the cloud, so you're not constrained by desktop resources or long run times. The result is faster turnaround on complex questions, with analyses that might otherwise take hours or days completed in minutes.	For organisations that need simulation embedded directly into their planning or operational workflows, Haskoning can develop lightweight, sector specific applications built around Witness technology. These solutions provide an intuitive interface, guided scenario management, and clear decision ready outputs—without requiring users to work directly with the underlying model. A proven example is our LNG Logistics Simulator, used by multiple LNG providers to support long term planning, assurance activities, and operational optimisation across the value chain.

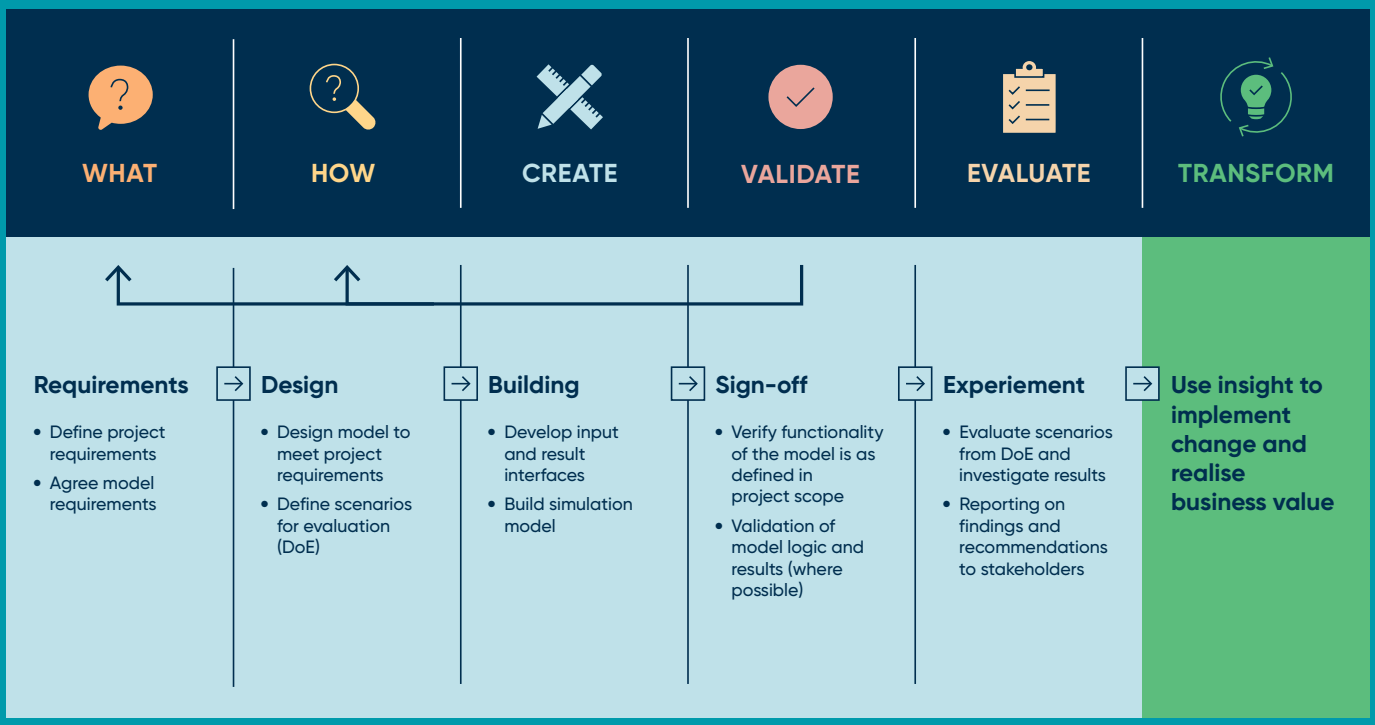
> *"The simulation expertise enabled us to pinpoint the most efficient manufacturing processes in a risk-free situation. We therefore minimised risk and waste – and avoided the time and expense of implementing real pilots."*
>
> – Project Leader at BAE Systems

Simulation modelling and Consultancy

Simulation is highly dependent on the quality of its inputs and underlying assumptions. There is both an art and a science to properly scoping, building, and interrogating a simulation model, and the approach taken directly determines the quality and reliability of the results. This makes experienced, trusted expertise essential throughout the simulation journey.

When starting any project, we follow a clear and structured process that ensures we understand the problem, its context, and the value simulation can create through our Haskoning Simulation Methodology.

The framework below illustrates our structured, end to end approach to simulation led insight and value creation. Beginning with a clear definition of the problem and model requirements, we progress through rigorous model design, build, verification, and validation before undertaking targeted experimentation. Each stage is deliberately aligned to move from understanding what and how, through to creation and validation, to evaluation and ultimately transformation — ensuring the simulation is not just technically sound, but directly focused on delivering meaningful, decision ready outcomes.



All of this is led by our team of simulation specialists who guide clients through the full simulation lifecycle. Combining technical excellence with practical decision making insight, we ensure simulation efforts are focused on the right questions, supported by fit for purpose models, and aligned to the stage of the decision process.

Our approach enables both immediate value and long term benefit through model evolution, re use, and capability transfer — from early scoping and requirements capture through to model delivery, experimentation, insight generation, and training, all supported by robust data engineering foundations.

Training, mentoring and support

To help clients realise the full value of their simulation investment, Haskoning provides comprehensive training, mentoring, and ongoing support that accelerates capability development and build long-term confidence.

Our training services are designed to meet organisations where they are, whether establishing a new simulation function or deepening the skills of experienced modellers. Courses span foundational, intermediate, and advanced levels, ensuring teams can develop the technical skills required to build, test, and analyse robust simulation models.

Beyond technical proficiency, we help embed best practice, governance, and consistent modelling approaches so that knowledge is shared, retained, and scaled across teams.

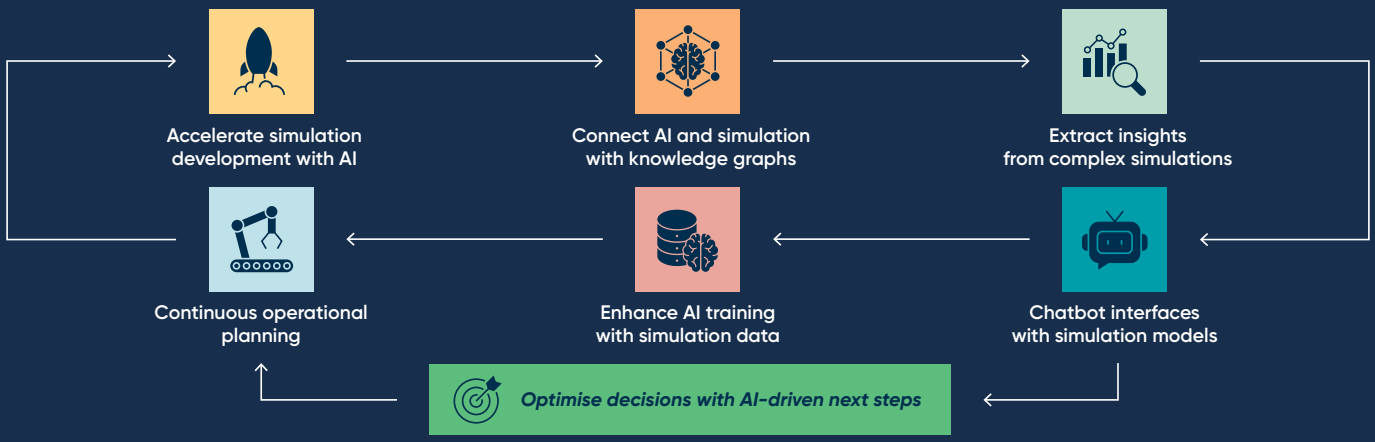
All maintained Witness customers benefit from access to our dedicated Customer Support Portal and expert Helpdesk. This provides timely support to resolve technical challenges, and modelling queries, as well as access to the latest version of Witness, User Forum and a Knowledge Base, which includes blogs written by our expert consultants, offering insights and tips into making the most of your Witness licence.

Predictive simulation and AI

Simulation and AI are increasingly being explored together as complementary approaches to decision support. Simulation provides a structured way to represent how complex systems behave over time, helping organisations understand cause and effect and safely explore “what if” scenarios. AI, meanwhile, offers techniques for learning patterns from data, identifying signals, and supporting faster interpretation of large or complex datasets. When brought together thoughtfully, these approaches have the potential to move organisations beyond static analysis towards more dynamic, insight led decision making.

At Haskoning, we see the combination of simulation and AI as an evolving capability rather than a one size fits all solution. Simulation can provide a safe, transparent environment in which AI techniques can be tested, trained, or enhanced, while AI can help make simulation models faster to build, easier to explore, and more accessible to a wider group of decision makers. Used together, they offer a promising foundation for future digital twin capabilities, supporting better understanding, improved confidence, and more informed decisions as organisations navigate increasing complexity.

AI and simulation: Unlocking new possibilities



Predictive simulation and digital twins

Digital twins are increasingly used to provide a live, data-rich representation of assets, processes, and operations, giving organisations greater clarity over performance in complex, fast-moving environments. Their value increases significantly as they evolve beyond visualisation into simulation-enabled digital twins, where predictive capability is built in. In this context, simulation is not separate from the digital twin, it is what enables it to move from descriptive to truly decision-supportive. A simulation digital twin combines real-world data with a dynamic model of system behaviour, allowing teams to explore what-if scenarios, test future states, and assess the impact of decisions before they are made. This progression allows organisations to move beyond understanding what is happening today, towards anticipating bottlenecks, evaluating options, and planning with confidence. As digital twins mature from descriptive to predictive, prescriptive, and ultimately transformative, robust simulation capability becomes foundational.

Our Witness-based modelling expertise underpins this evolution, providing the proven simulation engine that enables digital twins to deliver scenario-driven insight, supporting both day-to-day operational decisions and longer-term strategic planning.

Simulation impact stories

Ford Valencia

Ford Valencia used predictive simulation to optimise AGV deployment, reducing costs and installation time, improving decision-making, and establishing a scalable, data-driven approach adopted across multiple plants.

Learn more →

Mondelēz

Mondelēz R&D used simulation to test and compare breakthrough production technologies, reducing reliance on costly trials while optimising processes and validating capital investment decisions.

Learn more →

ASCO

Simulation modelling of Scotland's offshore wind supply chain identified critical bottlenecks and enabled data-driven investment decisions, reducing risk and accelerating delivery of large-scale renewable energy infrastructure.

Learn more →

DS Smith

DS Smith used predictive simulation to gain clear insight into complex production flows, enabling data-driven scheduling, reduced risk, and confident operational and capital investment decisions.

Learn more →

Safran

Safran Aircraft Engines used predictive digital twin simulation to optimise complex production processes, improving lead times and quality while enabling data-driven investment decisions worth millions of euros.

Learn more →

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About Haskoning

Haskoning is an independent and employee-owned company dating from 1881 integrating engineering, design, consultancy, software and technology to deliver more added value for clients. Through our mission Enhancing Society Together, we take responsibility for having a positive impact on the world and contribute to UN Sustainable Development Goals. We constantly challenge ourselves and others to develop sustainable solutions to local and global issues related to the built environment and the industry. Backed by the expertise of around 6,000 colleagues working from offices in more than 25 countries across the world, we are helping clients with challenges ranging from climate change and digital transformation to changing customer demands and the energy transition.

Next steps

To discuss our simulation capabilities in more detail, please email:

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