# Quantum Learning as a Service

## Computing Solutions

# Accelerating the quantum revolution

Hartree Centre
Science & Technology Facilities Council

Atos

# Get ahead of the quantum computing curve

Over the next decade, quantum computing will become a reality. It will deliver exponential increases in performance and digital possibilities will be transformed for organisations everywhere, particularly in molecular dynamics, physics, pharmaceuticals, database search, Artificial Intelligence (AI) and cyber security. We can help your organisation to future-proof its operations and make sure that when stable quantum computing arrives, you're ready.

Atos, in partnership with The Science and Technology Facilities Council (STFC) Hartree Centre, provides our Quantum Learning Machine as a service to organisations wanting to learn about, and experiment with, quantum computing. Quantum Learning as a Service (QLaaS) addresses the challenges involved with programming and creating applications in a quantum environment and allows key opportunities in quantum computing to be understood.

## Atos Quantum Learning Machine

It's not yet clear which theoretical approach will eventually deliver mainstream quantum computing, yet waiting until the right solution emerges will be too late to ensure that your competitors don't gain competitive advantage.

The Atos Quantum Learning Machine (QLM) enables researchers, engineers and students to develop, test and experiment with quantum software by emulating a real-world quantum computing environment. Powered by a dedicated hardware infrastructure, it simulates the effects of different kinds of quantum computing systems, so you don't have to second-guess which one you will eventually use.

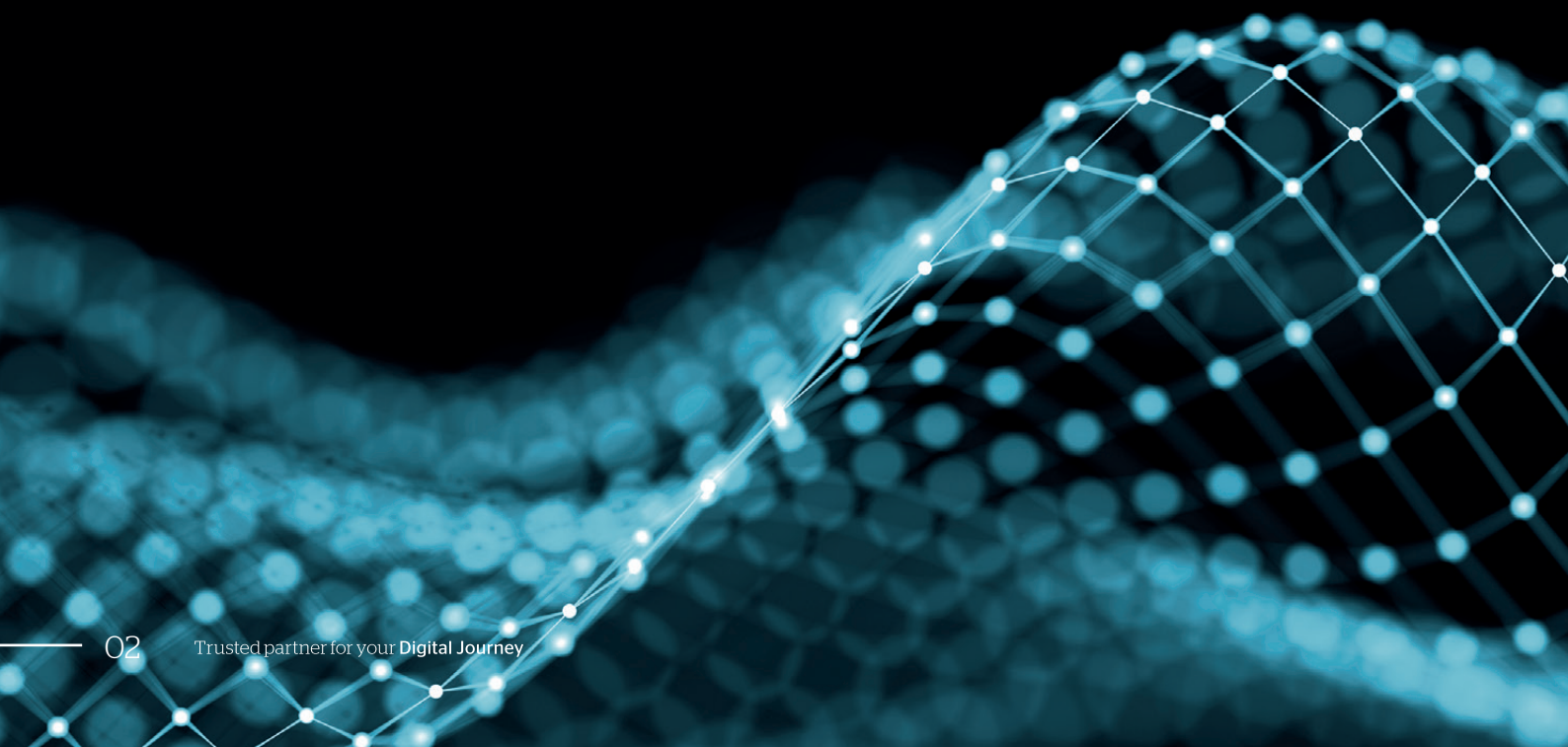
We provide support in two domains: quantum programming with optimisation and simulation using a variety of selectable quantum noise models. Our frameworks and tools enable easy quantum programming through python HL and Atos Quantum Assembler (AQASM), and quantum libraries such as Jupyter Notebook.

## What is Quantum Learning as a Service?

Quantum Learning as a Service is delivered collaboratively by Atos and The STFC Hartree Centre, leveraging our unique combination of skills and resources to offer breakthrough results.

Quantum Learning as a Service is a complete on-premise environment which, given that quantum is so new, also includes adding value with:

- **Quantum consulting** on quantum technologies and strategies
- **Specialist expertise to explore algorithms** from mathematicians, quantum computing experts and software developers, as part of our remit to support UK industry
- **Training and system admin support**, from fast-start basic to advanced training using the Quantum Learning Machine.



## Benefits of Quantum Learning as a Service

The Atos Quantum Learning Machine is designed to accelerate and de-risk your future adoption of quantum computing.

### Unmatched power

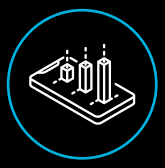
- Superior simulation capabilities, much more than any other affordable appliance
- Simulates up to 38 qubits
- Emulates the properties of physical quantum noise
- Hybrid classical-quantum emulator, so you can explore applications in-part optimised for quantum

### High extensibility and interoperability

- Complete environment for development, execution and optimisation
- Hardware agnostic so developers can focus on applications and algorithms
- Software development kit
- Universal quantum assembly language to support strong interoperability

### Unique on-premise services at The STFC Hartree Centre

- First quantum computing simulator available in the UK as a service
- Stand-alone appliance, offering the confidentially of customer developments
- Quantum computing experts at The STFC Hartree Centre working in collaboration with Atos



### Cost-effective and scalable

- Only pay for what you use, no wasted assets
- No capital expenditure required

## Experts in quantum computing

The QLM Research Programme has been established by Atos and The STFC Hartree Centre as a means of testing and evaluating quantum algorithms in a manner that is agnostic of the quantum technology used. The programme aims to further the creation of UK quantum algorithm development activity, establish collaborative research projects, create a UK repository for open source quantum algorithms and train local staff and academia.

Together, Atos and The STFC Hartree Centre run proof of concepts engagements with academia and industry to identify common use cases and create algorithms to solve industry challenges. These engagements are coupled with collaborative quantum workshops, with hands on experience using the Quantum Learning Machine.

# About Atos

Atos is a global leader in digital transformation with 120,000 employees in 73 countries and annual revenue of € 13 billion.

European number one in Cloud, Cybersecurity and High-Performance Computing, the Group provides end-to-end Orchestrated Hybrid Cloud, Big Data, Business Applications and Digital Workplace solutions through its Digital Transformation Factory, as well as transactional services through Worldline, the European leader in the payment industry. With its cutting-edge technologies and industry knowledge, Atos supports the digital transformation of its clients across all business sectors.
The Group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and operates under the brands Atos, Atos Syntel, Unify and Worldline. Atos is listed on the CAC40 Paris stock index.

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Let's start a discussion together



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