QUICK for Defense

Anticipating simulation needs in Defense with quantum computing

QUICK

Defense stakeholders face extremely complex physical scenarios, ranging from ballistic modeling to electromagnetic propagation and multiphysics simulations of complex systems. Most of these problems rely on solving partial differential equations that require massive computations and high reliability.

QUICK is a hybrid quantum-classical simulation platform developed to meet these challenges.
Based on our proprietary H-DES algorithm, QUICK enables **experimentation**, **prototyping**, and **gradual integration** of quantum approaches into existing modeling tools, ensuring sovereignty, accuracy, and technological foresight.

Use cases of Partial Differential Equations solving with quantum computing in Defense

Electromagnetic simulation and radar stealth

Detection, communication, and stealth systems rely on solving large-scale Maxwell's equations in complex environments.

With QUICK: Fast and accurate solving of electromagnetic PDEs to model wave propagation, reflection, and absorption.

Impact

- Acceleration of RCS (Radar Cross Section) studies
- Optimization of stealth materials and shapes
- Realistic simulation of multi-band electromagnetic interactions

Ballistic modeling and structural dynamics

Impact, penetration, and detonation simulations require solving nonlinear PDEs coupling mechanics, thermal effects, and fluid dynamics.

With QUICK: H-DES enables the handling of these complex multiphysics models with a high degree of numerical accuracy.

Impact

- Improved ballistic accuracy and penetration models
- Reduction in the number of physical tests
- Optimization of material design and behavior under extreme conditions

Wave propagation and atmospheric phenomena simulation

Modeling the propagation of acoustic, seismic, or electromagnetic waves through variable environment is essential for surveillance, communication, and guidance.

With QUICK: Simulation of coupled propagation equations (waves, turbulence, diffraction) in real or simulated environments.

Impact

- Improved prediction of propagation in complex environment
- Support for operational planning and advanced detection
- Enhanced performance of sensors and communication systems

Why adopt QUICK now?

Hardware-agnostic   **Ready for the quantum era**   **Accessible and integrated**

Our Vision

We are preparing defense stakeholders for a new era of scientific computing, where simulation speed and accuracy will become strategic assets. By combining advanced physical solvers, multi-hardware compatibility, and a sovereign architecture, QUICK enables public and industrial organizations to develop today the critical simulation capabilities of tomorrow.