

# QUICK for Defense

Anticipating simulation needs in Defense with quantum computing



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.



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