Quantum Dice and North Wales Police evaluate probabilistic computing for emergency-response vehicle deployment planning

Quantum Dice and North Wales Police demonstrate modelled emergency response times 52% below study target using probabilistic computing.



Representatives from Quantum Dice, North Wales Police and OPCSA

OXFORD, OXFORDSHIRE, UNITED KINGDOM, September 15, 2026 /EINPresswire.com/ -- Oxford, UK & North Wales - 15 September, 2026 - Quantum Dice and North Wales Police today announced the results of Project PROTECT, a proof-of-technology evaluating how Quantum Dice's probabilistic processor can support emergency-response vehicle deployment planning.

The project demonstrated that probabilistic optimisation can significantly improve forward-deployment planning for emergency response vehicles while maintaining operational constraints that are critical to policing.

In a constrained modelled deployment scenario, retaining one vehicle at each of five station wards and optimising the placement of ten surplus vehicles, Project PROTECT reduced average response times to 4.82 minutes, a reduction of approximately 40% compared with the station-based baseline.

The project also increased the proportion of high-priority (P0) demand reachable within 10 minutes from 58.8% to 75.6%, while geographic ward coverage improved from 39.3% to 64.3%.

George Dunlop, Co-founder and Director of Partnerships at Quantum Dice, said: “Project PROTECT demonstrates that advanced optimisation technologies can deliver meaningful operational insights for public-sector organisations today. By leveraging our UK-made

probabilistic processor, we have shown how sovereign UK computing capability can support critical public-safety missions and provide a practical pathway to scalable deployment."

North Wales Police operates across a geographically diverse region where emergency response planning must balance response speed, rural coverage, station resilience, vehicle availability, officer welfare and operational practicality. Forward deployment addresses this challenge by strategically positioning response vehicles closer to likely future incidents while retaining the constraints needed for safe and equitable policing. The proof-of-technology project was supported through the Test and Learn Programme from the UK Policing National Science and Innovation Board (NSIB).

Alistair Hughes, Advanced Analytics and AI lead at North Wales Police, said: "Optimising forward deployment remains one of the most challenging problems in policing. Project PROTECT allowed us to evaluate a probabilistic computing approach addressing optimisation targets and also critical operational constraints that are common across policing environments. The results provided valuable evidence, demonstrating the potential benefits of further development and future deployment."

Beyond the constrained deployment experiment, Quantum Dice developed a dynamic optimisation and simulation environment that continuously recalculated vehicle placements as incidents occurred and vehicles became available. In a 24-hour simulation covering 13 urgent incidents, all incidents were responded to while respecting work-rest scheduling constraints. The best-performing configuration achieved an average response time of 7.76 minutes, outperforming the project's target ambition of approximately 10 minutes.

A spokesperson at OPCSA said: "Projects such as PROTECT help us move beyond discussions about emerging technologies and assess their potential in the context of real operational requirements. Through the NSIB Test and Learn Programme, this work has generated evidence on the application of advanced optimisation techniques to a nationally relevant policing challenge, while highlighting opportunities that may also be relevant across wider public services. It demonstrates the value of collaboration between policing and innovative technology partners in exploring future capabilities."

The project delivered a working decision-support prototype combining optimisation, simulation and visualisation capabilities. While the results are based on historical demand data and further validation would be required before operational deployment, Project PROTECT provides a foundation for future evaluation of advanced optimisation approaches in policing and other resource-constrained environments.

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