Open source innovation driving defence advantage

Dstl develops an open source framework to standardise, test, and speed up innovation in sensor fusion and tracking for modern defence operations.

Modern defence operations must have fast, accurate situational awareness to support decision-making and operational effectiveness. Until now, there hasn't been a standardised way to develop and test the complex techniques behind sensor fusion and tracking.

This slows innovation and makes it harder to turn academic research into defence capability.

Working with industry

To address this, the Defence Science and Technology Laboratory (Dstl) developed Stone Soup. This is an open source software framework that is transforming collaboration across:

- defence
- academia
- industry
- international partners

Released as a public beta in 2019 – meaning it was made openly available for testing and feedback before its final version – and stabilised in 2023, Stone Soup is used in dozens of:

- Dstl projects
- UK and international companies
- academic institutions
- government agencies

The impact of Stone Soup

Faster innovation

Stone Soup enables rapid evaluation of emerging algorithms in realistic scenarios, which reduces integration time and duplication of effort.

Collaborating globally

Dstl's Digital Advantage C4ISR teams developed Stone Soup with the following partners:

- University of Liverpool
- Defence Research and Development Canada
- Fraunhofer FKIE
- Loughborough University
- Roke Manor

Building workforce skills

Industry partners now include Stone Soup in graduate training and recruitment.

UK job adverts list it as a desirable skill which supports career pathways and sector growth.

Operational relevance

The framework supports robust tracking and sensor fusion which is critical for modern defence systems across all domains.

Leveraging and influencing internationally

In 2024, Stone Soup received a prestigious award from The Technical Cooperation Program (TTCP). This is an international defence science and technology collaboration between the following nations:

- Australia
- Canada
- New Zealand
- UK
- US

TTCP promotes joint research and innovation to strengthen allied defence capabilities.

Preparing for the future

As part of the Sense and Understand Programme, Dstl will continue evolving Stone Soup to support higher Technology Readiness Levels, more complex scenarios, and diverse sensor types.

Ongoing collaboration will ensure the UK remains at the forefront of sensor fusion capability development.

Find out more about our sensing capability.

https://www.gov.uk/government/case-studies/open-source-innovation-driving-defence-advantage