Capabilities

XDtec Technical Services is an independent consultancy specialising in the application of technologies for detecting explosives, weapons and illicit drugs. XDtec was set up in 2008 by Tim Sheldon, former Programme Manager at the UK's Home Office Scientific Development Branch and supports both commercial and government organisations by:

- helping suppliers and developers to understand user requirements and the user community – so you talk to the right people about your products and ideas
- evaluating equipment and systems in a way that is meaningful to the user and allows comparability with other systems
- helping researchers to understand the "big picture" and to steer R&D towards realistic and useful goals
- developing training materials
- developing concepts of operation (CONOPS), standards and procedures to enable effective deployment of technology
- organising conferences and workshops

Background

Explosives, weapons and drugs detection technologies draw on a wide range of scientific disciplines, ranging from nuclear and particle physics through to zoology and animal behaviour. Techniques which are currently used include:

- ion mobility spectrometry
- mass spectrometry
- gas chromatography
- biosensors & immunoassay
- neutron activation analysis and radiography
- X-ray imaging & automated image analysis
- metal detection
- millimetre wave and terahertz imaging
- animal olfaction

Taking these techniques from lab to field requires a clear grasp of their capabilities, the constraints of the operating environment and the problem they are intended to help solve – detecting lethal explosive devices, weapons and illicit drugs, and frustrating the activities of terrorists and smugglers who will, of course, use all their skills to beat the system.

It is increasingly recognised that no one technique provides a complete solution to the wide range of detection problems and that the intelligent combination of technologies, perhaps bringing in video analytics, biometrics and profiling systems, is the way forward. Again, thorough undersatanding of capabilities and threats is vital in making this work.

XDtec's can supply the knowledge, analytical skill and practical experience to enable the effective development and deployment of single-technology and multi-technology detection systems to address the threats of the present and future.

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Tim Sheldon BSc, CPhys

I graduated from Birmingham University with a BSc in Physics in 1982. Early in 1983 I started work at the UK Home Office Scientific Research and Development Branch (now the Home Office Scientific Development Branch HOSDB), working on physical and perimeter security systems. In 1986 I joined a new group working on explosives and weapons detection. Highlights of my time in this group were evaluating vapour and trace detection systems for the Channel Tunnel project, carrying out the first UK-led tests of a remote sampling system for dogs, developing sampling devices and procedures for trace detection, starting an entirely new drugs detection programme and editing the UK Government *Manual of Search and Detection Equipment* (Blue Book) for many years. I also spent 3 years working on police protective equipment and less-lethal-weaponry. I became head of the explosives, weapons and drugs detection team in 2002, having gained experience of all the major detection technologies as well as project and programme management. From 2003 -2006 I attended meetings of the International Civil Aviation Organisation (ICAO) Ad-Hoc Group of Experts on the Detection of Explosives and the International Explosives Technical Committee as part of the UK delegation.

In 2008 I left the Home Office to form XDtec Technical Services and have since carried out technical reviews for government and industry customers in the UK and USA, researched user requirements for novel technologies, carried out equipment testing and helped organise three millimetre-wave security workshops for the International Wireless Industry Consortium (IWPC).

My publications include:

Explosives Vapour Detectors for Personnel and Baggage Search – A Large Scale Field Trial	1987
Raman Microscopy and 2-D Imaging of Explosives and Drugs (with C Cheng, DN Batchelder, RJ Lacey,)	1992
Sampling Systems for Vapour and Trace Detection (with RJ Lacey, GM Smith, PJ Moore, L Head)	1993
In-Situ Detection of Trace Explosives by Raman Microscopy (with C Cheng, TE Kirkbride, DN Batchelder, RJ Lacey)	1995
Specification for CS Sprays for Operational Police Use (with J.Tan)	1997
Detection of Concealed Drugs on Prison Visitors (with GM Smith, S Doherty, R Waddell, T Donelly, A Parker)	1998
The Manual Of Search and Detection Equipment (annual publication)	1997-2007
Security Detection Techniques and Requirements	2008
Threat Definition and Performance Evaluation for Multi-Technology Integrated Explosives and Weapons Detection Systems (poster)	2009
IWPC mm Wave Security Sensor Test Protocol Version 1.0 (editor)	2008

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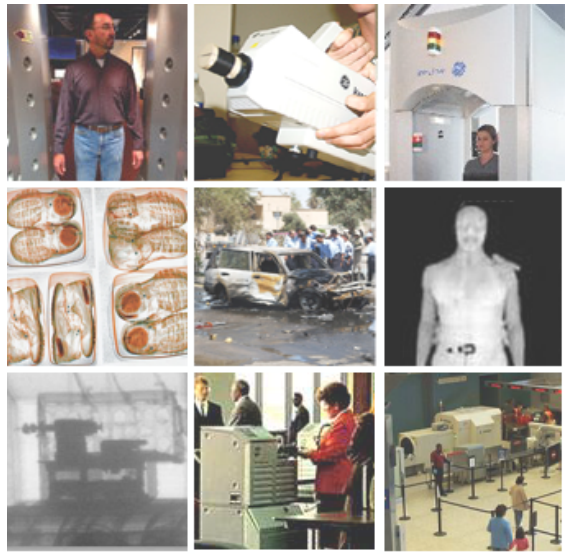
Technical Services

Understanding, evaluating and using explosives, weapons and drugs detection technologies



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