

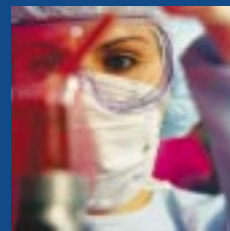


Home Office

# Police

## Science & Technology Strategy

2004 – 2009



The Science and Technology Strategy for the Police is reviewed annually. Therefore your comments and feedback are invited, to help us to improve future revisions. These should be posted, faxed or e-mailed to the following address:

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It will be assumed that respondents are content for their comments to be attributed to them and made publicly available, unless otherwise indicated. All responses may be included in statistical summaries of comments received.

The Science and Technology Strategy for the Police 2004-2009 is available on the police reform website: [www.policereform.gov.uk](http://www.policereform.gov.uk)

We would like to acknowledge the assistance of all of those who kindly supplied photographs for this publication.

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# Police & Science Technology Strategy

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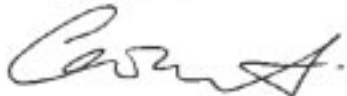


# Foreword

## Parliamentary Under-Secretary of State's Foreword

- i. As we said in the first strategy last year, 'Society, as a whole, is experiencing rapid and accelerating change.' Much of this is driven by the science and technologies that are evolving day by day. These new technologies provide many benefits - but they also provide new opportunities for abuse and criminal exploitation. Hence, this revised strategy meets the commitment we gave last year to update and review the strategy.
- ii. However, this revised strategy does not present a dramatic change of direction. New technologies take time to implement, which is why this remains a five-year strategy with the same overarching aims and objectives. Building on the commitments we made last year, we will continue to present the vision of how we will address not only our immediate policing needs, but also the capabilities the police will need in the future.
- iii. This strategy is a key vehicle for the delivery of the Government's priorities presented in the National Policing Plan, namely:
  - *Providing a citizen focused service to the public, which responds to the needs of individuals and communities and inspires confidence in the police particularly amongst minority ethnic communities.*
  - *Tackling anti-social behaviour and disorder.*
  - *Continuing to reduce burglary, vehicle crime, robbery and drug-related crime in line with the Government's Public Service Agreement targets.*
  - *Combating serious and organised crime, both across and within force boundaries.*
  - *Narrowing the justice gap by increasing the number of offences brought to justice.*
- iv. Science and technology play a vital role in modern policing. A recent example of this is the National DNA Database, which has revolutionised crime detection. The UK leads the world in the application of DNA technology to the identification of criminals. We have the largest DNA database, and the highest proportion (3.7%) of the population represented. A typical month has seen suspects identified for 15 murders, 31 rapes and 770 car crimes.
- v. However, the increased use of science and technology by organised crime and terrorism means we must ensure that the police have access to the sophisticated technology they need to stay one step ahead. I want to ensure that the police service is equipped with the best tools and techniques available to enable them to work with maximum effectiveness and efficiency. New communications and information systems mean that officers can spend more time on the streets engaging with local people and less time tied up in the station with paperwork.
- vi. Last year a unique partnership was developed between central Government, the police service, police authorities, industry and academia. These key stakeholders, working together as the Police Science and Technology Strategy Group, have over the last year continued to turn this strategy into a reality. I am very grateful to the Group's members for the continuing commitment they have shown to the development and implementation of this strategy.

- vii. We need to look beyond our department if we are to fully recognise not just the opportunities extended by science and technology but also the dangers it can present when used in the wrong way. I am pleased therefore to express my gratitude for the valuable independent input of the newly formed Home Office Science and Technology Reference Group and also the continuing support from those who helped us with the previous strategy: – the Fellows of the Royal Society, the Royal Academy of Engineering and members of the Jill Dando Institute.
- viii. Most people have experienced the enormous benefits and opportunities of new technology such as faster communication through mobile phones. Sadly, others have experienced its cost with the advent of computerised identity theft. This strategy will continue to be updated to ensure the police are equipped to take advantage of the opportunities in science and technology to deliver effective policing and help us stay one step ahead of the criminal.

Yours  


**Caroline Flint**

Parliamentary Under-Secretary for tackling drugs, reducing organised and international crime, public order, police science and technology and international and European issues, May 2004

# Introduction

## Background

1. Science and technology<sup>1</sup> are already important tools in all areas of policing, particularly in the fight against crime. Their contribution is vital to policing - most people will already be aware of the importance of fingerprints and more recently DNA in solving crime. But, every day, the police forces of England and Wales rely on an increasingly wide range of Information and Communications Technology (ICT), forensic science, and other technologies to serve the public.
2. The effective use of these tools is critical if more offenders are to be brought to justice and bureaucracy eliminated to free up officers for front-line duties. As science develops and new technologies become available, there will be further opportunities for harnessing these to deliver effective policing.
3. As part of the police reform programme, the major stakeholders in policing identified the need for an overarching strategy for the police use of science and technology. The purpose of this police science and technology strategy is:
 

*‘to ensure the police service is equipped to exploit the opportunities in science and technology to deliver effective policing as part of a modern and respected criminal justice system’.*
4. This single overarching strategic framework, first published in 2003<sup>2</sup>, creates a clear common, understanding of how requirements are identified and met, how funding and priorities are agreed, and how local and national needs are balanced. This allows the strategic management of a single portfolio of police science and technology, with a strong operational focus, including a clear role for research and development.

5. The Science and Technology Strategy is reviewed regularly. This is the second edition.

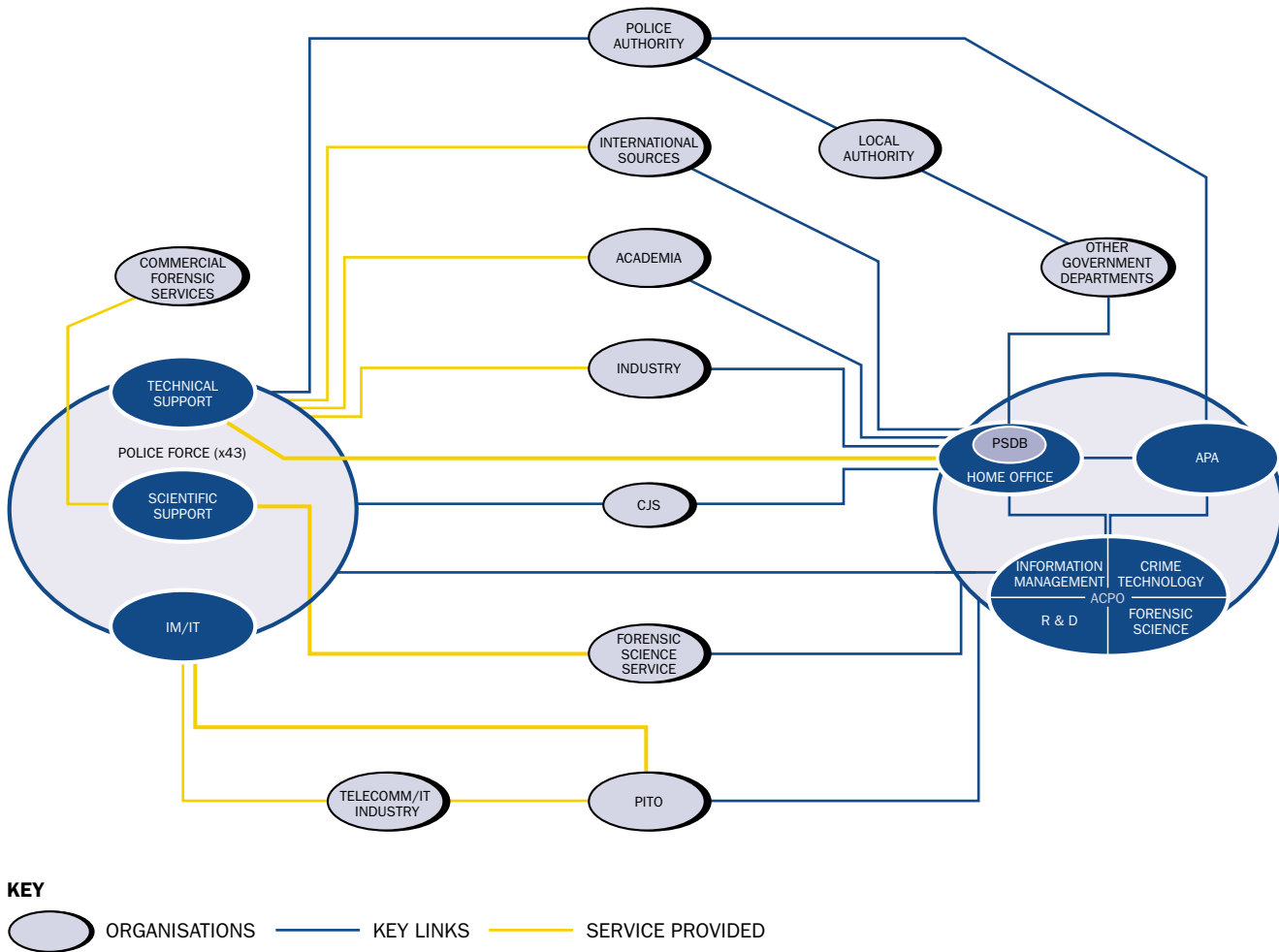
## Police Science and Technology Strategy Group

6. The Police Science and Technology Strategy Group,<sup>3</sup> created in July 2002, remains the main driver of the strategy. It includes representatives of the tripartite parties (Home Office, ACPO<sup>4</sup> and APA<sup>5</sup>) and other key stakeholders<sup>6</sup>, key providers of science and technology, including the Forensic Science Service (FSS), the Police Information Technology Organisation (PITO) and the Home Office Police Scientific Development Branch (PSDB) along with staff associations<sup>7</sup> and independent input from the Office of Science and Technology and the Royal Academy of Engineering.
7. The Group oversees the development and implementation of the police science and technology strategy and also provides the Home Secretary with authoritative advice on the strategic management of police science and technology.

## The role of the strategy

8. Many organisations are involved in supplying the science, technology and information systems used by the police service. Figure 1 summarises the roles of the key stakeholders. This strategy does not replace individual plans, at local or national levels, but provides an overarching framework for their development by setting high level priorities, improving co-ordination and providing a clearer focus on future threats and opportunities.
9. By identifying the capabilities needed to deliver national priorities as part of a single overarching strategy, the Strategy Group can and has been

**Figure 1: Providing police science and technology**



This diagram is a much-simplified representation of the complex relationships between the key organisations involved in the provision of police science and technology. The left-hand circle represents police forces of England and Wales (shown with the three key areas of science, technology and information management). The right-hand circle indicates the main bodies representing policing at a national level: APA, the Home Office and ACPO (shown here with the four key areas represented on the Police Science and Technology Strategy Group).

identifying the gaps between police requirements and existing capabilities to avoid unnecessary duplication. At the same time healthy competition amongst service providers has reduced costs and driven up quality (including improved timeliness). In

more specialist areas it will be in the interests of the service to reduce duplication and encourage co-operation between suppliers.

### The scope of the strategy

10. This strategic framework deals with the application of technology and the physical sciences to policing in England and Wales. This definition of ‘science and technology’ includes, but is not limited to, ICT, forensic science and technical equipment.
11. The strategy also reflects the important role of the social sciences both in understanding the human and social factors that are essential to the effective use of science and technology and identifying emerging social and criminal issues.
12. To make the best use of both existing and emerging technologies the strategy assumes a five-year horizon, to look beyond current plans and encompass emerging science and technology. This will not inhibit us from looking further ahead where necessary.
13. Many issues, such as effective information systems, need to be addressed across the whole of the Criminal Justice System (CJS). Whilst this is primarily a policing strategy it will also address the needs of the broader CJS agenda.

### National policing priorities for 2004-2007

14. In November 2003 the Government’s key priorities, and plans for policing developments were laid out in the second annual National Policing Plan 2004-2007<sup>9</sup> (NPP).
15. The primary objective for the police service for the NPP’s three year duration is to deliver improved police performance and greater public reassurance with particular regard to the following priorities:
  - Provide a citizen focused service to the public, especially victims and witnesses, which responds to the needs of individuals and communities and inspires confidence in the police particularly amongst minority ethnic communities.
  - Tackling anti-social behaviour and disorder.
  - Reducing burglary, vehicle crime, robbery and drug-related crime in line with the Government’s Public Service Agreement targets.
  - Combating serious and organised crime, both across and within force boundaries; and
  - Narrowing the justice gap by increasing the number of offenders brought to justice.
16. Underpinning these priorities are the following themes:
  - Community engagement and civil renewal; and
  - Countering terrorism and the threat of terrorism.
17. The Science and Technology Strategy helps to outline the necessary capabilities which police forces need to establish to meet both national and their local priorities, and overall requirements in technology to provide those capabilities.





**18.** Significant milestones achieved since this strategy was first published include:

- The profiles of the majority of known active criminal population (2.5 million) on the national DNA database.
- Airwave, the new digital police radio communications service, rolled out to 30 forces and is fully operational in 10 forces.
- Automatic Number Plate Recognition (ANPR) extended to 23 forces.

**19.** However, this strategy document with its longer-term perspective – at least five years – will look beyond the immediate needs of policing. Science and technology will play a key part in meeting the objectives of the NPP over the next three years. During which the police service, working as necessary with its criminal justice partners, should by:

- 2005, complete the roll-out of Airwave to all forces in England.
- 2005, establish a secure portal to enable victims to track their case online in those areas where case management systems and the CJS Exchange<sup>10</sup> have been implemented.
- End of 2005, all criminal justice professionals will have the capability to e-mail each other securely.
- June 2006, Airwave fully operational in all forces in England and Wales.
- March 2006, the core criminal justice organisations will have electronic access to shared case file information by means of a web browser or a case management system.
- 2008 have completed the implementation of the Forensic Integration Strategy (FIS).

**20.** The NPP requires that forces and police authorities should use this strategy as a framework to inform their individual plans for the use of science and technology.



### Science and technology strategy aims and objectives

**21.** The three key aims of the strategy are:

- To establish *priorities* for current and future science and technology applications and research.
- To *co-ordinate* the development and implementation of technology between users and suppliers to ensure a coherent and effective process.
- To implement processes for *future scanning* to ensure that the police service can exploit new technology at the earliest opportunity and is prepared for new technology-based threats.

**22.** These summarise the complete set of seven aims agreed by the Strategy Group. These aims along with revised objectives are presented in detail in Appendix 1.

# Police Science and Technology Needs

## Policing capabilities

**23.** Capabilities are defined in the context of what policing is required to accomplish both now and in the future. Therefore this strategic framework is intended to accelerate the improvement of police capabilities. It is not intended to promote science and technology for its own sake. A full understanding of capabilities leads to development and prioritising of policing requirements. There are many areas of policing, where science and technology can make an effective contribution either by enhancing existing processes or by providing genuinely new capabilities.

**24.** The Strategy Group, working in close co-operation with the police service, has identified the key capabilities, which the service will need. From this comprehensive list<sup>11</sup> the Group has identified those capabilities which contribute most effectively to the delivery of national priorities and will have the greatest impact on police performance. These are, in order:

- Identifying and eliminating threats to public safety, taking account of the increased risk of terrorist activity.
- Effective use of intelligence-gathering technology.
- Secure exchange of data between forces and other agencies.
- Mobile data input and retrieval.
- Maximising the value of evidence.
- Effective management of investigations including the use of intelligent systems to assist decision-making.

- Monitoring offenders that pose a threat.
- Undertaking effective surveillance.
- Effective location and recovery of evidence.
- Protection of officers and vulnerable individuals.

**25.** These capabilities are reflected in the work programmes of PSDB, PITO and the FSS. They have also formed the basis by which the PITO Central Customer has prioritised the future ICT needs of the police service.



**26.** Current national programmes already reflect many of these priorities including: maximising the use of DNA evidence to convict offenders, the roll-out of Airwave as an enabler for improved secure mobile data provision, and the work of the Criminal Justice Information Technology (CJIT) programme to provide the secure exchange of data between agencies.

## Science and technology requirements

**27.** Providing these capabilities requires the police service to maintain, acquire, develop and research a broad range of technologies. The prime role of

this strategic framework is to identify the requirements, and to provide an overall framework for more detailed planning. Appendix 4 provides a comprehensive list of technologies currently being deployed, under development, or available to meet these needs.

**28.** It is important that the investment in science and technology strikes the right balance between immediate, medium-term and future needs. The wealth of policing science and technology activity falls broadly into four categories: operations, deployment, development and research.

**29. Operations:** Delivering the science and technology services, which are used every day. This includes for example ensuring the police have access to the facilities of the Police National Computer (PNC), forensic science services, and local and national technical support units, the national DNA database and the National Automated Fingerprint Identification System (NAFIS). In addition further investment is necessary to maintain the functionality and robustness of these systems, and improve their adaptability and interoperability.

**30. Deployment:** Delivering new policing capabilities, either locally or nationally. For example:

- Airwave, the new digital communication system being rolled out to all forces.
- The Custody and Case preparation suite of applications, as part of the drive towards a joined-up criminal justice service.
- Development of seamless and secure information processing across the Criminal Justice System.
- Wider deployment of ANPR technology across

the service to target known offenders.

- The National Management Information System (NMIS) allows forces to manage their performance and resources and feed statistics automatically to the Home Office.
- The Violent and Sexual Offenders Register (ViSOR).

**31. Development:** provides new capabilities for the service, often through the adaptation or integration of existing technologies. For example:

- Automated and miniaturised equipment to allow the speedy analysis of DNA and other processes at crime scenes, 'lab-on-a-chip.'
- Evaluation of more efficient incapacitants.
- Evaluation of less lethal options.
- Technologies with surveillance applications such as passive millimetric microwave imaging.
- New drug testing equipment to save time and money by removing the need for analysis in laboratories.
- The evaluation of mobile data entry systems in policing applications.
- Portable and reliable detection systems to search for concealed drugs or explosives.
- Application of video enhancement to evidential images.
- Exploring the options to link police systems to build real-time criminal intelligence tools in support of the National Intelligence Model (NIM).
- Exploring options for widening the scope of access to on-line police services.

**32. Research:** where existing technologies are insufficient to meet the needs of the service, applied research has the potential to deliver new capabilities. Promising areas for Home Office sponsored research include:

- *Biometrics* – including face and voice recognition.
- *DNA* – identifying offender characteristics from DNA.
- *Imaging methods* and technologies – e.g. image analysis and new cameras, to detect crime, enhance images and support anti-terrorism.
- *Spectroscopy* – e.g. Raman Spectroscopy – to provide more sensitive drugs and explosives detectors (e.g. roadside drug detection).
- *Chemistry* – new techniques to recover latent fingerprints.
- *Cell Type Analysis* – to determine the origin of cells (e.g. hair, skin).
- *Improved Profiling* – of illicit drugs to help identify their source.

**33.** One challenge is to ensure a coherent strategy across all these and similar areas. Whilst it will always be high priority to address current operational needs, it is important to track, support and harness longer-term research with the potential to provide capabilities beyond those available from current technologies. These more forward-looking opportunities will involve unleashing the potential of the science base, both in the UK and internationally. We must ensure both that research is focusing on future policing needs (i.e. business driven) and that we are able to explore how new technology can provide currently unimagined solutions (i.e. technology led). We are already working

closely with the UK Research Councils,<sup>12</sup> the Engineering and Physical Sciences Research Council (EPSRC) in particular, to encourage researchers to focus on the contributions they can make to crime reduction. The Think Crime Programme, now in its third round, has already stimulated valuable co-operation and networking above and beyond the small number of projects which were successful in their bids for funding.

**34.** During this period the Strategy Group will begin to identify the scope for leverage from commercially financed research and development (R&D) that will enhance police capabilities more quickly and more cost effectively than if our R&D base is confined to the above constituents. For example, we need to assess the extent to which DNA R&D funding by the pharmaceutical industry is applicable to police requirements (e.g. Lab-on-a-chip).

### Sources of science and technology

**35.** Currently there are three main providers of science and technology services and advice to the police.

- The *Police Scientific Development Branch* (PSDB) is a core unit of the Home Office, providing impartial advice on a diverse range of physical science technologies to Ministers, Home Office policy units and the police themselves; as well as providing a wide range of equipment for the police by setting standards, evaluating commercial systems and development. PSDB already supports other Home Office aims and this trend is expected to continue.
- The *Forensic Science Service* (FSS) is currently a Home Office executive agency with trading fund status. In July 2003 the Home Secretary

announced that the FSS would be established as a Government-owned company, prior to its development as a private sector classified Public Private Partnership (PPP). This decision followed a comprehensive, independent review<sup>13</sup>. The FSS is the principal provider of impartial forensic science services to extract, process and analyse physical evidence from crime scenes, victims and suspects, to provide information to support the investigation of crime and produce evidence for the Crown Prosecution Service (CPS) and Courts. The FSS also provides independent advice to the Home Office, police and other investigating authorities.

- The *Police Information Technology Organisation* (PITO) is a Home Office Non-Departmental Public Body (NDPB) which manages national IT and communications systems development for the police. PITO is currently undergoing a comprehensive review. The review, announced on the 14 January 2004, will address itself primarily to an examination of how PITO delivers its organisational objectives of ICT provision to the police. Within that context the review will also examine the current structure of PITO, to determine whether it is appropriate to deliver the best possible provision of ICT to the police service and the criminal justice system.

**36.** Other organisations also play an important role in the supply of science and technology to the police and the wider Criminal Justice System (CJS). These include the Defence Science and Technology Laboratory (DSTL) and private sector companies, particularly Forensic Alliance and LGC who are significant providers of forensic science services; and Northrop Grumman and mmO<sub>2</sub> who are key providers of national information and communications systems to the service. It will also be

important to leverage the government's investment in defence. The Ministry of Defence laboratories (i.e. DSTL) and the private sector capability now within QinetiQ work in many areas relevant to policing and anti-terrorism. A substantial amount of work is undertaken by individual police forces, often in partnership with private companies or universities.

### Top-down modelling

**37.** The Strategy Group will need to understand in depth the links between policing requirements and the individual technologies, which exist and are emerging. Realistic scenario modelling and comprehensive modelling can help this. Military tools already exist to model the urban and general environment. These could indicate how existing technology can assist in crime and terrorist environments, and how new technologies can develop new solutions. These techniques can also assist across the spectrum of the CJS.

<sup>1</sup>More correctly Science, Engineering and Technology (SET), but shortened to science and technology for ease of reading.

<sup>2</sup>The Police Science and Technology Strategy 2003-2008, Communication Directorate, January 2003. PSTS1. Available on the police reform website [www.policereform.gov.uk](http://www.policereform.gov.uk)

<sup>3</sup>For membership and terms of reference see Appendix 5

<sup>4</sup>The Association of Chief Police Officers

<sup>5</sup>The Association of Police Authorities

<sup>6</sup>Metropolitan Police Service, Her Majesty's Inspectorate of Constabulary, the Police Standards Unit, Centrex

<sup>7</sup>Police Superintendent's Association of England and Wales, Police Federation, UNISON

<sup>8</sup>The 'tripartite relationship' for policing in England and Wales is between the Home Secretary, chief officers and police authorities.

<sup>9</sup>The National Policing Plan 2004-2007, Home Office Communication Directorate, November 2003. NPP1. Available on the police reform website [www.policereform.gov.uk](http://www.policereform.gov.uk)

<sup>10</sup>A strategic IT system to link criminal justice organisations' IT applications

<sup>11</sup>Included as Appendix 4

<sup>12</sup>UK Research members: The Biotechnology and Biological Sciences Research Council (BBSRC), The Council for the Central Laboratory of the Research Councils (CCLRC), The Engineering and Physical Sciences Research Council (EPSRC), The Economic and Social Research Council (ESRC), The Medical Research Council (MRC), The Natural Environment Research Council (NERC), The Particle Physics and Astronomy Research Council (PPARC)

<sup>13</sup>Work is currently underway to implement the key recommendations of the final Report of the independent 'McFarland Review' of the Forensic Science Service namely, that FSS should be transformed into a private sector classified public private partnership (PPP), and to establish an independent body to oversee and administer the operation of the National DNA Database (NDNAD). This work will also take into account the FSS's relationship with the Police Science and Technology Strategy Group.



# Delivering the strategy

## Framework for delivery

- 38.** Existing sources of science and technology summarised above and in Figure 1, all play a part in delivering the strategy. This strategy provides the framework for the individual plans of PITO, FSS and PSDB to be structured to ensure a more co-ordinated approach to meeting the science and technology needs of the police service.
- 39.** The strategy will also inform local planning as forces and police authorities, guided by the NPP, draw up their individual plans for the use of science and technology. Hence, the role of this overarching science and technology strategy is not to usurp or replace individual plans and strategies but to provide a framework for their development and provide the opportunity for a more co-ordinated approach in those areas where that is appropriate. In response to Her Majesty's Inspectorate of Constabulary (HMIC) assessment of police reform in 2003, 81% of forces reported that they referred directly to the science and technology strategy in their force strategies.



## Delivery mechanisms

- 40.** The oversight role of the Strategy Group is a vital one for ensuring a comprehensive and prioritised approach on major science and technology issues. In addition, as key stakeholders form its core membership, it is able to influence and promote both the propagation and implementation of the strategy. Other well-established delivery mechanisms include: training, the application of standards, dissemination of good practice and legislation. The Group oversees implementation against an agreed implementation plan.
- 41.** If the benefits of science and technology are to be realised then training is essential and not only for those in specialist roles, but for all officers and support staff. Centrex<sup>14</sup> (NCPE) and other training providers play a key role in ensuring that all staff can make the most of science and technology. The National Centre for Policing Excellence<sup>15</sup> (NCPE), in co-operation with ACPO, APA, HMIC and the Police Standards Unit (PSU), will play an important part in the identification, capture and dissemination of good practice in operational policing, for example, through Genesis, a new information system available to forces through the secure Criminal Justice Extranet (CJX).
- 42.** If appropriate, statutory codes of practice will be developed to ensure a common approach to the use of science and technology. In addition, the PSU will assist forces to ensure they make the best use of existing science and technology, for example the use of DNA, ANPR and NAFIS.
- 43.** Working with the PSU, HMIC will, through a combination of inspections, reports<sup>16</sup> and follow-up action ensure that forces are taking advantage of

science and technology to raise standards. The Police Performance Assessment Framework (PPAF) will form the cornerstone of assessing police forces performance and we will aim to ensure that the use of science and technology is reflected in the framework. We can already show how the use of DNA samples and fingerprint marks can generate more detections.

44. Delivering the strategy will involve building on the collaborations which already exist between those responsible for the delivery of policing both nationally and locally. In the unlikely event that compliance would need to be enforced, existing legislation could be used to ensure that a consistent approach is taken across the police service.<sup>17</sup>
45. Adopting the strategic framework and a common approach for their own policies, operation and development will help forces to co-operate to solve common problems and optimise their use of science and technology. Improving co-ordination is a key theme of the strategy. Working together rather than acting individually will allow forces to learn from each other by sharing solutions though in some cases solutions are best provided and funded nationally for the overall benefit of the service and the public.
46. The Police Science and Technology Strategy Co-ordination Sub-Group (see paragraph 60) has developed criteria for the use of common national solutions, which is included as Appendix 6.

**The DNA expansion programme: Example of a successful application of science to improving police performance:**

In September 1999, the Prime Minister announced a programme to expand the National DNA Database (NDNAD). The aim was to enable the police to take a DNA sample from all current known active offenders by April 2004.

The DNA Expansion Programme has provided £182.6m to police forces since April 2000. This has funded the sampling of all suspect offenders, the recruitment of more Crime Scene Examiners and the collection of more DNA material left by offenders at crime scenes. At the end of March 2004, the Database held 2.5 million DNA profiles taken from suspect offenders, the great majority of known active UK offenders.

The Programme achieved its target due to successful partnership between the police service, ACPO, the Database Custodian and the Home Office. The graph below shows the actual and projected growth in the Database from 2000-07, including projected future growth arising from the new powers to sample arrestees. (See Graph 1).

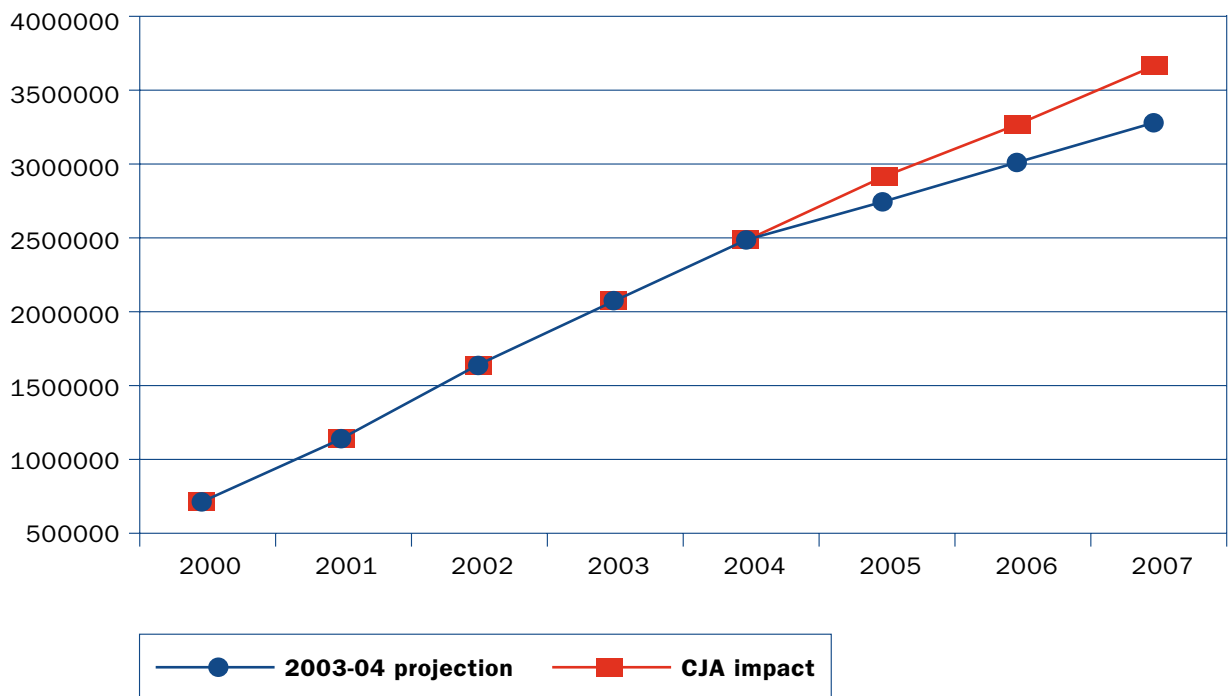
There were nearly 50,000 “offender-to-scene” matches in 2002-03, providing the police with vital intelligence on the identity of the offender, and over 21,000 “DNA detections” (detected crimes in which a DNA match is available), an increase of 145% over the 1999-2000 figure. A DNA match can significantly enhance the chances of detecting crime, particularly volume crime where police clear up rates are traditionally lower. While the overall detection rate (for all crime) is 24%: where DNA is successfully recovered from a crime scene, the detection rate rises to 38%. In domestic burglary, the detection rate rises from 14% to 48% where crime scene DNA is put on the Database.

The UK leads the world in the application of DNA technology to the identification of criminals. We have the largest DNA database, and the highest proportion (3.7%) of the population represented. Several other countries are now following our lead and investing in DNA to increase its use (See Graph 2).

48. Appendix 3 provides an overview of the way in which police science and technology is funded and where the money has been spent in previous years. In addition to increased funding for forces, significant resources will be provided centrally to fund key developments. The cost of the Custody and Case implementation will be met separately

Graph 1

Actual and Forecast DNA Database Growth



Resources

47. Total Government supported expenditure on the police for 2003/04 was £9,683 million and spending on policing supported by central Government will rise this year to £10,086 million. Some of this funding will be used to provide the science and technology used daily by forces across the country.

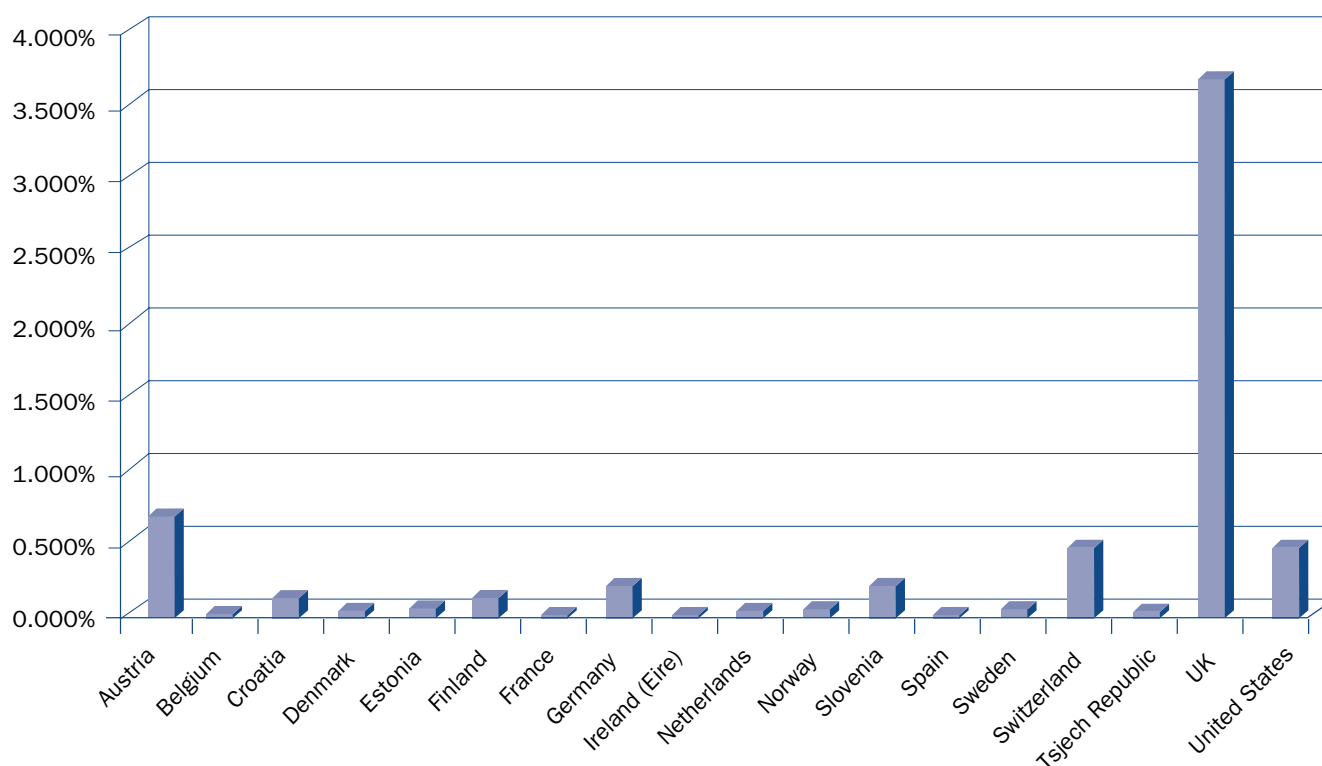
from CJS IT funds and core elements of the Airwave communications system will be paid for by the Home Office, along with some of the costs for DNA. Also in 2004/05 £48 million will be available through the Home Office<sup>18</sup> to support the work of PSDB, PITO and projects supported by the PSU.

The funding<sup>19</sup> for major projects in 2004/05 will include:



**Graph 2**

**Percentage Population on National Database – International Comparison**



- Implementing Airwave £164m

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- National DNA database £61m

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- NAFIS/IDENT1 £13m

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- NSPIS £23m

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- CJS IT £86m

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**49.** The Strategy Group’s input has helped to identify the policing science and technology priorities for the 2004 Spending Review.<sup>20</sup> The Group plans to manage the various disparate elements of police S&T funding in a more strategic framework by presenting them as a single portfolio. This will provide us with a much clearer picture of the balance of expenditure between research, development and the

deployment of new technology and the match with our priorities. It will also ensure that this strategy will have a more sustained impact on the allocation and optimisation of the resources available for science and technology.

**Ethics and the police use of science and technology**

**50.** In the application of science and technology, the Strategy Group recognises the fundamental importance of ensuring that science and technology is used by the police only to enhance civil society. That is, in the sense of people’s safe and secure enjoyment of their lives and property without intrusion that would breach their civil rights on scientific ethics. The

Home Office is developing and applying science and technology for policing purposes and will have due concern for ethical issues.

51. When commissioning research, many of those providing research will already have their own framework for the ethical oversight of their work either at the institutional level (i.e. University) or provided by professional associations and learned societies. The imposition of a separate and further ethical framework would most likely lead to confusion. Instead Home Office contracts will require research providers to have a procedure for examining ethical issues in relation to their research which takes due account of any institutional or professional requirements. In this way the suppliers of science and technology will be responsible for taking due consideration of ethical issues involved in their work and having demonstrable procedures for doing so.

**The National DNA database: An example of addressing ethical issues:**

The National DNA Database (NDNAD) currently holds the DNA profile records for almost 2.5 million people charged with recordable offences. From April 2004 it will also hold records of all people arrested for recordable offences. A repository of sensitive personal information such as this must be managed in an open, ethical and accountable manner to protect the civil rights of those whose information is held.

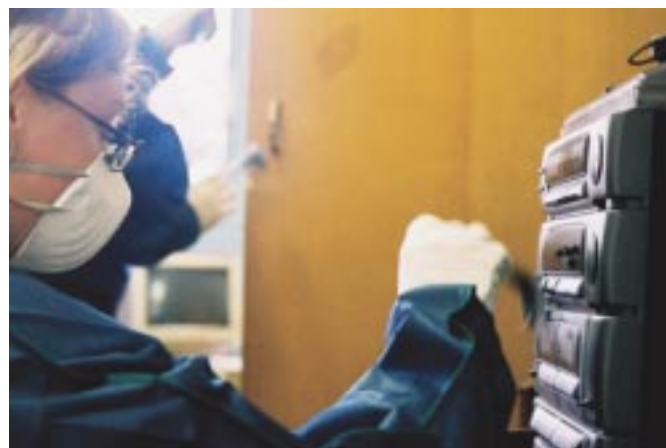
The NDNAD is governed by a board chaired by ACPO and with representatives of the FSS Custodian (who manages the database on behalf of the police service), Home Office, ACPO Scotland and the Human Genetics Commission (HGC). The HGC play a key role in providing ethics oversight

and a lay-view in the decision-making of the Database Board.

The 'Custodian', currently the Chief Scientist of the FSS is responsible for the scientific standards of all DNA services and processes that lead to the addition of DNA profile records to the NDNAD. The 'Custodian' also regulates access to the database itself, strictly limiting access to FSS Custodian staff.

As the FSS moves to PPP, the NDNAD will remain fully in the public sector to ensure public confidence in its management and use.

In addition, through the European Network of Forensic Science Institutes processes have been agreed to enable data to be exchanged according to internationally agreed quality standards.



**Priorities**

52. Using this prioritised list (paragraph 24) of overarching police science and technology capabilities there is now an explicit process by which the Strategy Group can identify and recommend relative priorities to Ministers.

- 53.** Once identified, the priorities can be linked to the delivery of improved police performance. This approach shows both where science and technology can improve police performance and also highlight areas where there is greater scope for innovation. The overarching priorities will in turn inform the development of the individual strategies of the service and providers in the Home Office group<sup>21</sup> and also within individual forces. A Central Customer function has been created within PITO to identify and prioritise the emerging ICT requirements of the police. This prioritisation uses as its basis the overarching priorities of this strategy.
- 54.** The shortlist of priorities<sup>22</sup> does not imply that other activities will be ignored, but reflects where science and technology can have the greatest impact on the service provided to the public. Inevitably changes will be needed to reflect developments both in policing and in science and technology. This framework for prioritisation can be built upon and adapted as the requirements of the police evolve.

### Co-ordination

- 55.** The complex array of players involved in police science and technology (figure 1) means that effective co-ordination is essential to make the best use of opportunities and avoid duplication. This section provides an overview of the current co-ordination mechanisms and the new work being developed as part of this Strategy. The main areas for co-ordination are within the police service and Home Office - both complex organisations in their own right - and between these organisations and their wider links with industry and academia.

### Current mechanisms

- 56.** Within the police service a number of ACPO business areas take responsibility for providing the national co-ordination on science and technology. A chief officer manages each business area or portfolio and those with the most direct interest in science and technology matters<sup>23</sup> are represented on the Strategy Group.
- 57.** Regular consultation with ACPO business areas and user groups provides information about relevant Research and Development (R&D) being conducted by police forces. ACPO are closely involved in identifying the policing priorities for the Home Office Science Policy Unit's R&D budget.



- 58.** Within the Home Office, the Chief Scientific Advisor (CSA) provides oversight of the entire department's science interests. The CSA ensures that the science portfolio is brought together into an overall science and technology strategy. The new Home Office Strategic Plan commits the department to a more proactive use of science, technology, research and analysis to drive policy and practice. This integrated

approach to managing the department's investment in science will include: a central mechanism for science planning, strategy, quality assurance and future scanning, ensuring that Ministers are involved in this planning and strengthening cross-Whitehall science links.

- 59.** The CSA is also the Director of the Research, Development and Statistics (RDS) Directorate, which undertakes much of the Home Office's work in the social sciences. He is supported by the Home Office Hard Science Co-ordinator who co-ordinates the physical sciences R&D of Home Office's provider organisations. Both are members of the Strategy Group.

#### Improving co-ordination

- 60.** A dedicated co-ordination sub-group reporting directly to the Strategy Group has developed specific proposals for enhancing co-ordination and information sharing. These include criteria for the use of common national solutions (see Appendix 6) and a new database. This secure co-ordination database will be available to all forces via the Criminal Justice Extranet (CJX). This will make it much easier for forces to learn from each other by sharing both their successful applications of science and technology and any failures. This will result in greater efficiency through forces being able to pool resources against common requirements and provide a means for local innovation to be made more widely available.

#### Wider co-operation

- 61.** Links with government, industry and academia, both in the UK and abroad, are essential to

maximising the potential of science and technology for policing. International links are valuable because of the potential to share both experience and solutions. The Home Office has a wide range of high quality international memoranda of understanding,<sup>24</sup> international committees, visits, conferences, joint projects and secondments are used to share information, best practice, skills and risk with overseas colleagues.

- 62.** Many projects can only be successfully progressed using the cutting edge scientific and technical provision available in industry. The Government does not seek to duplicate or compete with industry and projects can benefit from wider industrial expertise.
- 63.** It is important that we make good use of the UK science base. By working closely with Research Councils,<sup>25</sup> as well as over 30 universities, the Home Office intends to ensure that fundamental medium term progress in science can meet the crime reduction and analysis needs of the future. The social science research conducted by the Home Office is fundamental, addressing problems for which no significant knowledge base exists.
- 64.** The Engineering and Physical Sciences Research Council (EPSRC) has developed a funded programme supporting relevant technology in co-operation with the Home Office and the Strategy Group. Individual projects are often conducted in partnership between industry, Government facilities and academic institutions, through joint programmes, PhD sponsorship or direct contract. Secondments and exchanges with institutions and learned societies are actively encouraged. RDS has a memorandum of understanding and well established

links with the Economic and Social Research Council (ESRC), and a team in the Home Office Science Policy Unit co-ordinates crime reduction work with the Research Councils, particularly EPSRC.

### Co-ordination with other strategies

65. The DNA expansion programme has had proven success in leading change and improvements in the police use of DNA in volume property crime. Building on this programme, the Home Office is to develop a new Forensic Integration Strategy (FIS) to improve standards and co-ordination across the entire CJS. Working in partnership with key stakeholders the FIS will achieve a step change in the impact of forensic science on police performance in order to make major contributions to crime reduction and closing the justice gap.
66. The strategy will tackle not only the scientific standards associated with each type of forensic intelligence, but also the effective integration of this intelligence - with other forensic material and through NIM processes and products with broader criminal intelligence at Basic Command Unit, force and national levels. It will also look at working practices and expectations of non-forensic specialists within police forces, maximum efficiency in the use of the supplier base and the enhancement of the integrity of forensic evidence in court.
67. E-crime is a rapidly emerging and evolving crime phenomenon which challenges Government and law enforcement's ability to respond to it before new crime patterns become established or it

undermines the Government's objectives on use of the internet and e-business. It is an area where there is a paucity of reliable information in which to frame a policy debate and where the level of debate is not mature, but where there are a number of medium and long-term issues that need to be addressed.

68. The Government e-crime strategy, to be published soon, aims to provide a coherent, consolidated statement of the Government position across departments in relation to e-crime. It provides a framework for Government, law enforcement and industry action in response to e-crime, seeking to resolve specific questions and to focus debate on longer-term issues.

### Links within Government

69. The FSS, PITO and PSDB all work closely with other departments to minimise duplication and maximise the benefits of collaboration. This is particularly important in the case of the other organisations in the Criminal Justice System,<sup>26</sup> where their work is brought together in the Ministerial Committee on the CJS and the CJS Strategic Board. CJIT is working to all three of the principal Criminal Justice departments to deliver the vision of a modernised, joined up Criminal Justice System, as set out in the Government's White Paper "Justice for All"<sup>27</sup>. The review of the FSS identified a key role for this strategy in co-ordinating forensic advice once the FSS ceases to be a trading fund agency of the Home Office.

## Future scanning

### What is future scanning?

**70.** An effective science and technology strategy requires the capacity to search systematically for the likely benefits and threats from emerging technology or changing patterns of criminal behaviour. This systematic future scanning needs to cover not only scanning for the new technologies, but also the new types of problems the police (and their partners, in criminal justice and elsewhere) are likely to face. This will include new crime targets, new types of victims, new offenders and new environments where crime can take place (e.g. the Internet). Long-term scanning is being addressed through the Foresight programme, whilst this strategy addresses primarily the time frame 0-5 years.



### The requirement

**71.** Society, as a whole, is experiencing rapid change including its greater dependence on science and technology. New technologies not only provide many benefits but also new opportunities for criminals. The police service needs to be able to identify emerging technologies or trends early

enough to implement changes in the technology, operational requirements or legislation, without wasting resources by over-reacting to every possible development.

### Current capabilities

**72.** The Strategy Group has established a dedicated Future Scanning sub-group building on the existing abilities within PITO, PSDB and the FSS. This group brings together members from the key providers, police service representatives and external sources of expertise including members from the DTI Office of Science and Technology, Learned Societies<sup>28</sup> and the Research Councils. The group has strong links to other groups including:

- *Other Home Office Group sources* e.g. the Strategic Policy Team, Centrex and the National Centre for Policing Excellence.
- *Police Service* e.g. ACPO futures groups
- *UK Specialist* policing agencies (operational and support) e.g. NCIS, NCS, NHTCU, the Immigration Service, HM Customs and Excise.
- *Other Government Departments* e.g. Foresight programme,<sup>29</sup> The DTI Office of Science and Technology, Cabinet Office Strategic Futures Group, Ministry of Defence, DEFRA, OST Globe network.
- *Professional bodies* e.g. Royal Society, Royal Academy of Engineering, Institute of Physics, Royal Society of Chemistry.
- *Private sector* e.g. Insurance companies and the Association of Payment and Clearance Services, telecom companies, QinetiQ, public utilities, information technology organisations and others via the Home Office business crime unit.



- *Research Councils* Crime Prevention Programme.
- *International sources* e.g. the USA the National Institute of Justice and the FBI.

### Improving future scanning for police science and technology

**73.** Along with a wide cross section of academia, many of these groups were represented in a workshop organised to identify the Science and Technology Innovations (STIs) most likely to impact on policing over the next five years. The Future Scanning sub-group identified candidate STIs using a common framework developed for future scanning. The innovations ranked highest included, new generations of handheld communications, new imaging techniques (including passive millimetric waves and terahertz imaging), encryption, biometrics, and 'lab on a chip'. Appendix 7 provides an overview of the technologies and their possible impacts. We plan to develop the capacity for more in-depth future scanning, which will inform the allocation of R&D funding.

### Next steps

**74.** Future scanning, by its very nature, is a continuous process, as is the development of any strategy in a modern society which is experiencing rapid and accelerating change. This revision confirms our commitment to the continuing development of a strategy for police science and technology, and the need to adapt to change. Constant change cannot be an excuse for constant planning, as planning achieves nothing without actual delivery. In this strategy we have laid out the achievements already met and our challenges ahead: to ensure that the



police service is equipped to exploit the opportunities in science and technology to deliver effective policing as part of a modern and respected criminal justice system.

<sup>14</sup>The Central Police Training and Development Authority, including the National Training Centre for Scientific Support to Crime Investigation

<sup>15</sup>Established in April 2003 and now represented on the Strategy Group.

<sup>16</sup>For example, Under the Microscope (HMIC 2000) and Under the Microscope Refocused (HMIC 2002)

<sup>17</sup>For example, Police Reform Act 2002, Part 1, Section 6

<sup>18</sup>The majority of FSS funding comes from the charges made to police forces

<sup>19</sup>These figures include, where appropriate, direct Home Office funding (CRCSG baseline), funding allocated from the Formula Spending Share and Additional Levered Funds.

<sup>20</sup>Covering financial years, 05/06 to 07/08.

<sup>21</sup>The term Home Office group includes the core Home Office, Home Office agencies such as the FSS and NDPBs such as Centrex and PITO which the Home Office sponsors

<sup>22</sup>see paragraph 24

<sup>23</sup>Information Management, Forensic Science, Technology and R&D

<sup>24</sup>The Home Office has Memoranda of Understanding with USA (Office of National Drug Control Policy, National Institute of Justice), Canada (Royal Canadian Mounted Police, Canadian Correctional Service), Germany (BKA) and the Netherlands (KLPD).

<sup>25</sup>Economic and Social Research Council (ESRC), Engineering and Physical Sciences Research Council (EPSRC)

<sup>26</sup>Primarily the Home Office and its agencies, Department for Constitutional Affairs, the Attorney General's Office, the judiciary and magistracy

<sup>27</sup>Home Office (2002), CJS White Paper : Justice for All, CM5563, Stationery Office

<sup>28</sup>Representatives from the Royal Society and Royal Academy of Engineering.

<sup>29</sup>The Home Office leads the Cyber Trust and Crime Prevention Programme