Biometrics Assurance Group

Annual Report 2007

Foreword by the Government's Chief Scientific Adviser and Head of the Government Office for Science

Professor John Beddington CMG FRS

Technologies around biometric identification of people are becoming more widespread and, of course, form a central part of the Government's proposals for the National Identity Scheme as well as featuring in other Government programmes. The success of biometric technologies in these Government programmes is dependent on specialist skills and knowledge from several disciplines, and ensuring that policy makers have access to the right advice and analysis and are able to make decisions with confidence. This was recognised by the Home Affairs Select committee when they made the recommendation which led to the establishment of the Biometrics Assurance Group.

I have not been in the position of chair of the Biometrics Assurance Group (BAG) for very long. Indeed I was not chair for any of the period of work covered in this report but am grateful to my deputy chair, Professor Brian Collins, the Chief Scientific Adviser to the Department for Transport, for his work and for providing continuity during this time. I recognise the large amount of dedication and commitment from the members of the BAG which the report represents and would like to take this opportunity to thank them. I believe that independent groups such as the BAG play a critical role in examining what Government does. They provide challenge and criticism and, by being transparent in their operation, they have the potential to raise public confidence in the work which they examine. For these reasons I am enthusiastic about my role as chair of the BAG, and look forward to working with the group over the coming year.

Professor John Beddington CMG FRS
Chief Scientific Adviser to HM Government

Table of Contents

1. Introduction

This document summarises the work of the Biometrics Assurance Group during 2007. The aims, membership and remit for the group are covered in sections 1 and 2. Sections 3 and 4 cover the specific topics the group discussed and the recommendations they made.

Much of the work of the group is based on material and information which is not in the public domain and which is internal to the projects within the Identity and Passport Service (IPS) set up to deliver the National Identity Scheme. Some of this information is sensitive and its disclosure would compromise either the procurements planned for delivering the Scheme or the integrity of the Scheme itself. For this reason, the report, in order that it can be made public, covers the deliberations of the group at a high level and provides a picture of the topic areas addressed by the group and the nature of its discussions, rather than documenting everything the group covered in detail.

1.1 Biometrics

Biometrics is based on biological and behavioural characteristics of an individual that can be detected and from which distinguishing, repeatable biometric features can be extracted for the purpose of automated recognition of individuals[1]. Examples include facial, fingerprint and iris images.

Face, iris pattern and fingerprint were nominated the most suitable biometric types for use at border controls and passports by the International Civil Aviation Organisation (ICAO) in May 2003.

The Identity and Passport Service (IPS) is at the forefront of the application of these new methods of identification. In addition to the proposed National Identity Scheme which will record people's biometrics before issuing them with identity cards, IPS also plans to record fingerprint biometrics as part of the passport application process, building on the introduction of e-Passports in 2006 and enhancing security.

The Government is also using biometrics in other applications:

- The UK Border Agency operates the Iris Recognition Immigration System (IRIS)[2] at some UK airports which provides a fast, secure and convenient way for foreign and returning UK travellers to enter the UK.

- The fingerprints of asylum seekers are recorded when they register for an Application Registration Card (ARC).

- UKvisas record visa applicants' fingerprints, to help check whether they have been refused a visa in the past or have previously applied under a different name, or whether they have previously applied for asylum.

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[1] ISO/IEC JTC 1/SC 37 draft definition

[2] http://www.iris.gov.uk/

2. Biometrics Assurance Group

The Biometrics Assurance Group (BAG) provides a degree of oversight and review of the biometric elements of Government programmes to offer advice and additional assurance that they are making effective use of the technology.

The National Identity Scheme (NIS) and other programmes across Government which use biometric technology need to ensure and demonstrate that, given the specialised nature of biometrics and its associated risks, they can successfully deliver and that their business benefits and vision will be realised. Independent assurance is a tool which can help to achieve this. Therefore a key requirement of these programmes is independent peer review of their approach to biometrics testing, their requirements and proposed solutions. This review and the provision of advice based on this review as well as *ad hoc* advice is the responsibility of the Biometrics Assurance Group (BAG).

In examining a project or programme, the principal responsibilities of the BAG are to:

- Ensure the requirements for biometrics, biometrics testing and biometrics procurement are adequate.
- Evaluate the biometrics elements of proposed solutions offered by suppliers and integrators.
- Review and interpret the outcomes of testing.
- Review the advice the project or programme has received from others and offer advice in those areas that are unclear or in which it is felt there has been insufficient consideration.
- Report to the project or programme governance structures (e.g. SRO or board) as necessary on biometric strategy, risks and issues.
- Identify emerging issues and alert the project or programme to any potential impact upon delivery.

Full terms of reference for BAG are in the Annex.

2.1 Background to the development of the Biometrics Assurance Group

The House of Commons Home Affairs Select Committee fourth report of session 2003-4[3] examined the Government's case for identity cards and how the security and reliability of biometrics might be ensured. The committee recommended that the biometric proposals be subject to scrutiny from independent experts, led by the Government's Chief Scientific Adviser.

This recommendation led to the formation of the Biometrics Assurance Group as a panel to provide systematic peer review of the scientific and technical advice provided on biometrics to the Identity Cards Programme. The group is made up of industry and academic experts in biometrics and fields relevant to biometrics. The group meets regularly and members of the group provide their services on a *pro bono* basis. Secretariat support for the group is provided by IPS. In future secretariat support will be provided by the Home Office science secretariat.

2.2 Biometrics Assurance Group: Membership

In addition to the chair, there is a deputy chair who can stand-in for the chair, and 7 members.

The Biometrics Assurance Group met on:

- 15 March 2007
- 12 June 2007
- 4 September 2007

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[3] HC 130-I, http://www.publications.parliament.uk/pa/cm200304/cmselect/cmhaff/130/130.pdf

- 15 January 2008 (this meeting was originally intended to be held in December 2007. For this reason it was decided to include it in the 2007 report.)

Sir David King	Chair	UK Government Chief Scientific Adviser and head of the Government Office for Science. Sir David King retired from this post at the end of 2007 and was succeeded by Professor John Beddington.
Brian Collins	Deputy Chair	Chief Scientific Adviser, Department for Transport
John Daugman[4]		University of Cambridge
Mike Fairhurst		University of Kent
Peter Hawkes		Self-employed consultant in identification technologies and advisor on patent development and licensing.
Peter Higgins[5]		Higgins-Hermansen
Dick Mabbott		APACS –the Association of Payments and Clearing services-- the UK payments association
Angela Sasse		University College London
Valorie Valencia		Authenti-Corp
Peter Waggett[6]		IBM

2.3 Working Groups

At the BAG's second meeting it was decided to establish working groups from the BAG membership to consider issues relating to specific areas of biometrics.

Working Groups will only continue to exist where they can serve a specific need. Once the group has been able to consider the specific area and the BAG is satisfied that the necessary assurance has been provided then BAG may terminate the group as necessary.

Two working groups are currently in operation:

Countermeasures Working Group (CWG): This group aims to provide the BAG with considered opinions on the adequacy or otherwise of security countermeasures planned by the Identity and Passport Service (IPS) relating to the applications of biometrics in the National Identity Scheme. The work of this group has included discussions around: anti-spoofing measures for fingerprint biometrics; inventions and strategies; prevention or detection of authorised or unauthorised persons misusing biometric and other personal data stored in the NIR and related Government records; potential for exploitation of 'lookalikes' by which unregistered individuals can search mirror databases and borrow documents from similar people; investigations of possible card and passport chip insecurity. Further work planned by the CWG includes: personal data protection measures planned for use in the National Identity Scheme; and assurance regarding IPS plans to recover from security breaches.

BAG advised that systems needed to be designed to be tamper proof and that the finance industry had useful expertise in dealing with deception, fraud, conspiracy etc.

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[4] See Conflicts of Interest

[5] See Conflicts of Interest

[6] See Conflicts of Interest

Usability and Performance Working Group: This group aims to consider how to balance performance and the user's experience within the legislative framework. The work of this group has focused on requirements for more research into exception handling. The group circulated a report from the Royal National Institute of Blind People on accessibility problems for visually impaired users of a biometric system. BAG agreed that the report demonstrated the need to do further research into the issues it highlighted and other potential exceptions. Following this, the Group devised a programme of research to address the issues raised. BAG endorsed the value of this research.

The membership of the Working Groups is shown below:

Countermeasures	Peter Hawkes and Mike Fairhurst
Usability and Performance	Angela Sasse and Mike Fairhurst

3. Work of the Biometrics Assurance Group in 2007

In the period covered by this report, the Biometrics Assurance Group met four times. Most of the BAG's attention over 2007 was given to examining the National Identity Scheme (NIS) but they also spent some time on other UK Government projects and general discussion of biometrics.

The areas covered included:

- The National Identity Scheme (NIS)
- UKvisas
- e-Borders[7]
- Semaphore[8]
- miSense[9]
- IRIS
- IAFS[10]

Each meeting focused on a number of key areas:

- 15 March 2007: NIS developments: specific areas of discussion included biometric matching and storage, face testing specifications; and an update on other Home Office biometrics programmes.

- 12 June 2007: The NIS procurement process provided the main focus for this session. BAG also received a presentation on privacy/security and details of the final face test specifications in the NIS along with an update on other biometric programmes (miSense, IRIS and Semaphore).

- 4 September 2007: The purpose of this session was to update BAG on UKvisas and e-Borders. The group also discussed NIS, Joint Ventures, procurement, timescales and exception handling.

- 15 January 2008: The group was updated with the progress of the NIS procurement process. Evaluation of the first phase was completed in December 2007, the second phase began in January 2008. The Treasury options analysis[11] and the results of biometrics trials were also discussed.

3.1 National Identity Scheme (NIS)

3.1.1 NIS Procurement Process

The group were briefed in June on the Scheme and progress of the proposed procurement of the NIS, the proposed 'Framework' approach to procurement, and the role of partner organisations such as the Department for Work and Pensions (DWP).

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[7] e-Borders: A joined up modernised intelligence-led border control and security framework. http://press.homeoffice.gov.uk/faqs/controlling-our-borders/

[8] Semaphore: The first phase in the Government's e-Borders initiative with the aim of screening and recording individuals as they enter and leave the UK. http://press.homeoffice.gov.uk/faqs/controlling-our-borders/

[9] miSense: A pilot project at Heathrow aimed at proving the use of biometrics to improve identity security and enhance passenger experience. http://www.accenture.com/Global/Services/Accenture_Technology_Labs/Client_Successes/SPTIntGrpHthrwBiometrics.htm

[10] IAFS: Immigration and Asylum Fingerprint System

[11] Treasury options analysis: A review conducted by HM Treasury with the aim of examining options for the initial rollout of the Scheme.

BAG suggested that the number of consortia that IPS was planning to have in the Strategic Supplier Framework (approximately 6) could lead to poor quality bids if there was only a small chance of obtaining the contract. IPS stated that it was possible for a number of suppliers to be awarded contracts and that these would be chosen using a "whole life" cost analysis, not simply the cheapest. BAG recommended that IPS monitor biometrics development worldwide to ensure that NIS benefited from global experience and is kept abreast of overseas projects that could impact on supplier capacity.

3.1.1.1 Procurement Requirements

The group reviewed the requirements for the procurement of the biometric service for the NIS. They advised the following amendments to the requirements:

- The distinction between storing ten or two fingerprints and the need to verify single prints should be made clearer.

- The standard for signature capture using tablets needs to be refined and specified.

- EFTS[12] needs to be explained and the terminology for biometric formats reviewed.

- The need to meet all appropriate international standards for capture of information should be specified.

- More clarity on how suppliers will be held to the biometric matching rates they agree to should be provided.

- The responsibility of suppliers to adhere to the Data Protection Act should be made clearer.

- Interoperability between all elements and subsystems is critical: for example card production procurement should progress at the same time as the biometrics procurement.

- The current rules on data sharing and the Identity Cards Act should be referenced in the requirements.

- A requirement for contractors to list any intellectual property rights they are aware of, including but not only their own, should be included.

- The appropriate level of security marking for the data stored should be shared with suppliers as it would have an impact on the solution produced.

3.1.1.2 Procurement Specifications

BAG was provided with IPS's plans to test suppliers' biometric solutions during the procurement and delivery for the National Identity Scheme. BAG reviewed a number of test specifications for their technical and practical content.

The specific points discussed around testing were:

- **The need to ensure common practice across the various proposed test programmes:** Having reviewed a number of testing specifications, BAG suggested they could be better aligned. As part of this a common format for testing across the potential vendors would make administration of the test process much easier. In particular, the alignment of live enrolment and facial recognition tests needed to be improved to ensure usability was fully covered.

- **The personnel to deal with exceptions:** BAG noted the use of the phrase 'facial comparison expert' in the test specification for facial recognition. BAG suggested that given there were no certified experts in this field, it would be better for more than one individual to agree each match.

- **Standards for facial images:** With regard to the specification for facial recognition search and matching, BAG stated that both the ISO standard for facial definition and current standards for passport photos should be referenced to ensure they were complied with.

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[12] Electronic Fingerprint Transmission Specification (EFTS): Specifications used by the FBI

- **Enrolling people with challenging biometrics:** Having reviewed the composition of the test group, which is composed of those with potentially challenging characteristics, BAG suggested that the group should be expanded to include individuals with the following characteristics: being elderly, mute, non-English speaking, blind or visually impaired.

- **The confidence level required to be met by bidders:** The scoring of fingerprint matching will be derived from the number of false negatives (matches missed by suppliers' systems) but reduced for every false positive. BAG raised concerns that this method might allow bidders to optimise their systems to get the best score and that this might not be easy to spot. It was recommended that the exact numbers be recorded. IPS advised that this would take place.

- **The format and quality of images on the database to be used for facial recognition testing:** The use of JPEG format images was questioned because future image data will be stored in the JPEG2000 format. BAG was reassured that the datasets would be compliant. However the images might have to be de-compressed for suppliers, matching will be compared with the original image.

  - The use of the test database was queried; it is composed of 5 million images of varying quality, dating back to 2005. IPS agreed this was not ideal but advised digital capture would be used going forwards and noted that there would be a requirement to deal with legacy data for some time.

  - BAG noted that the four tests referred to were all quite different and queried the weighting given to each one. IPS advised that they were working to address this issue. The results of this work will be shared with the BAG in due course.

- **Application of data in wider circumstances:** BAG advised that the data produced from facial recognition tests would be very useful in a number of applications outside IPS. It was recommended that as much data as possible be recorded and that, with due consideration to privacy and security concerns, data should be shared as widely as possible. The more detail recorded (e.g. age, gender), the more useful these results would be.

- **Evaluation strategy** BAG recommended that in developing their evaluation strategy, IPS consider the novel protocols being devised by FBI/EU VIS2 system.

- **Indelible numbers on chips:** BAG recommended all chips supplied should have an indelible number on them to prevent cloning.

- **Interoperability and systems integration:** BAG emphasised the importance of interoperability and of the system integrator role.

3.1.2 Research

Research and funding available for testing: BAG advised that there were a number of programmes in various universities which could be utilised to help with testing and shared details of those who could be of assistance.

IPS public survey: IPS published results of a survey[13] which revealed a lack of public knowledge regarding biometrics.

- BAG suggested the transformation of the study into a longitudinal one to capture the change in perception over time. IPS agreed this would be helpful.

- BAG also suggested that the positive result of this survey, and a survey into a possible biometric system for the Criminal Records Bureau, were very different to the results of qualitative research undertaken by universities.

- BAG emphasised that understanding routes of redress and compensation are critically important to the public because it is impossible to fully reassure them that

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[13] See http://www.ips.gov.uk/identity/publications-research.asp

the Government can be trusted with their information. IPS stated there was further research planned into these areas.

3.1.3 Iris

The use of iris in the NIS: BAG raised concerns that the use of iris biometric technology was not mandated in the NIS requirements.

It was explained that the position of IPS has not changed in relation to the use of biometrics in the NIS. A flexible approach is in place: IPS will only prescribe biometrics to be included in the Scheme where there is a legal, policy or international agreement mandating their use; an output-based approach is used in relation to other biometrics. Suppliers have been advised to provide cost and performance options, with a minimum level of acceptable performance. If the performance can be met without enrolling iris, the programme would cost less and be delivered more easily. However there would also be a requirement on the service provider to demonstrate the capability to deploy other biometric modalities (including iris) not implemented from the outset.

3.1.4 Fingerprints

Standards for fingerprint readers: In the course of being briefed on a number of cross-Government biometric programmes, the proliferation of different fingerprint readers was noted. It was suggested that this could lead to confusion and enquired as to whether a co-ordinated strategy was planned. BAG was advised there are currently no plans to arrange this. IPS's preference is to impose minimum standards on suppliers rather than mandating hardware. In the case of fingerprints, image data and quality standards are imposed rather than mandating hardware choices as this brings its own problems.

Recording of fingerprints: BAG noted that while the EU requires that forefingers are recorded, some evidence indicates that the thumbprint maybe better.

False match effects on large databases: BAG raised concerns regarding the statements made by John Daugman in the media regarding the false match rates in large databases.

IPS explained that the figures used by Daugman appeared to be based on the NIST[14] US-VISIT[15] programme which uses two fingerprints rather than the ten which will be used in the NIS. However the scenario depicted (of a false match rate of 1 in 1000) would still be within IPS's capability and could be dealt with by existing resources within the fingerprint bureau. Nonetheless, an enlarged fingerprint bureau is already planned to ensure exceptions can be handled.

Exception handling: BAG was particularly concerned with the plans for exception handling, noting that it would be a large part of the NIS (for example, more than 4 million people are over the age of 75 in the UK, a group for which it is hard to obtain good quality fingerprints). Exception handling has a large impact not only on the technical elements of the Scheme but on business processes, schedules and costs. BAG provided a strong endorsement of the importance of research in this area.

3.1.5 Privacy

NIS biometric service requirements: BAG recommended that proper attention be paid to the privacy/consent issue across the National Identity Scheme. They sought clarity about issues of privacy, consent and use of data and advised that data governance structures for the biographic data should be well-defined. BAG also raised the need for internal systems within the overall biometric system to be compliant with standards.

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[14] NIST: (National Institute of Standards and Technology)- an American organisation which has been testing fingerprint recognition algorithms.

[15] US-VISIT: (United States Visitor and Immigration Status Indicator Technology)- an immigration and border management system operated by the US Government which enrols the face and fingerprints of an individual for checking before entry into the US.

IPS advised that security measures including a rules engine will restrict searchable data and place restrictions over use. It was explained that the Identity Cards Act allows data to be used and shared with certain Government bodies without the consent of the individual under certain circumstances.

BAG emphasised that the public should be well-informed about how data could be used and shared. A recommendation that a consent diagram should be built into the architecture was also made.

BAG advised that the management structure needs to clearly define the responsibilities for security and information assurance.

Privacy and consent: IPS presented information relating to privacy and consent within the NIS drawing on those sections in the Identity Cards Act relating to information sharing and consent. The BAG questioned the governance of the rules to do with the provision of information for verification of biometrics. They were advised that this would rest with the Scheme Commissioner.

3.2 Other work

Although most of the BAG's attention over 2007 was given to examining the NIS programme they also spent time on other UK Government projects and general discussion of biometrics.

IRIS, miSense and Semaphore programmes: BAG was briefed on the IRIS, miSense and Semaphore programmes and was generally encouraged by the progress made.

The BAG noted that the error values for the IRIS programme were likely to improve should newer technology be used. BAG also suggested those who are regularly rejected by IRIS should be monitored to ensure there is improvement. BAG also stated the expectation of quick performance on IRIS was not always met.

Registered traveller scheme enrolment process: BAG noted the enrolment process used for registered traveller schemes should be of interest to the NIS and requested a briefing on their future use.

The inclusion of fingerprints in e-Borders/UKvisas: BAG was advised of two proof of concept trials planned to begin to begin in Autumn 2007 and early 2008. Both involve the capture of fingerprints from passengers arriving in the UK in position of a biometric visa issued by UKvisas. The purpose of this is to compare the biometric data obtained at the port with that provided at the time of visa application.

UKvisas biometric programmes: The UKvisas programme involves recording the biometric and biographic data of applicants on a number of systems and matching that information. BAG was briefed on the processes and asked a number of questions around information storage, image resolution, the use of membranes for fingerprint readers and the enrolment process. BAG was encouraged by the progress made and was content to offer the services of the Group in the future if required. It was also requested that management information, once it had been compiled, should be shared with IPS for use in their programme.

e-Borders system and progress: BAG was briefed on the e-Borders programme, which will provide the ability to read and authenticate biometrically enabled travel documents on arrival in the UK. It was explained that the programme had been de-risked by the Semaphore programme, on which BAG had already been briefed. Concerns were raised that those who were stopped as a result of shared details with those on the alert lists would be continually stopped. It was confirmed this may occasionally happen but will not be a common occurrence.

International biometrics standards: The British Standards Institute (BSI) asked BAG to consider the UK Government's strategic requirements for international biometrics standards and how best to meet them. BAG confirmed the importance of applying international standards to the interoperability of biometric systems and therefore to the use of biometrics globally.

Miscellaneous trial projects: The BAG also looked at two other trial projects, based at major UK airports. The first aims to speed UK and EEA citizens with 1st generation passports through UK border controls, using facial recognition to match people with their travel documents. The other project aims to verify the identity of UK visa-holders through a comparison of a single fingerprint with one of the prints they gave when applying for the visa.

4. BAG Forward Look

Throughout the year, there have been a number of discussions on the format of BAG and its relation to the assurance structure for the NIS.

At the June meeting, proposals were outlined for the new assurance structure put forward by IPS. The intention was for the then Independent Assurance Panel, along with additional members as required, to form an Independent Scheme Assurance Panel (ISAP) to which BAG would report, potentially meeting as a group less frequently.

BAG stated they felt they had developed a clear identity and were a cohesive unit. BAG also noted that their remit includes all biometric programmes across Government, not just those of IPS. Members recommended that BAG continue unchanged, but that the deputy chair become a member of ISAP in order to ensure proper joining up of BAG's work on NIS with that of ISAP. It was also recommended that consideration be given to co-locating BAG and ISAP meetings on subsequent days from time to time to allow the groups to engage with each other.

These recommendations from BAG have been accepted and BAG continues to meet quarterly, with their views being taken to ISAP by BAG's deputy chair.

Following a number of BAG members stepping down due to conflicts of interest, it was agreed new members should be appointed. A number of nominations were made by BAG members and Home Office staff and these are currently being pursued.

5. Recommendations

Below are the key recommendations made by the BAG during 2007, with the response to each recommendation from IPS.

BAG recommended that proper attention be paid to the privacy/consent issue across the National Identity Scheme, BAG considered that the issue was not fully addressed by the publication of the Strategic Action Plan and that the public needed to be better informed over this, and that a consent diagram should be built into the architecture.
IPS accepts the merits of this recommendation. A presentation dealt with the Identity Cards Act which covered the governance of the confidence threshold required for provision of information for the verification of biometrics which would rest with the NIS Commissioner and would be probability based. Security vulnerabilities need to be identified and as IPS goes through the design phase of equipment these will be picked up.

BAG recommended that Iris should be included in the testing for the following reasons:

- The potential for iris biometric technology to mature and become more useful.

- As a fall back for those unable to enrol fingerprint biometrics.

IPS accepts that iris biometric technology has potential but is not inclined to mandate its testing during the current procurement as it is unlikely to be used for Scheme launch or immediately thereafter.

BAG recommended that research & development funding be used for investigation of the exception handling issues raised in the RNIB report and similar areas.
IPS agrees that appropriate research into exception handling is beneficial and has funded trials which investigated the enrolment of people with characteristics that may make biometric enrolment challenging. IPS considered the research programme developed by the Usability and Performance Working Group and suggested that the programme be refocused to deliver on a timescale consistent with the procurement of the National Identity Scheme. It also suggested that consideration be given to a larger dataset to increase the applicability of the results to large scale deployments.

BAG recommended that care should be taken to ensure data is handled in accordance with the Data Protection Act. IPS should ensure that suppliers comply with the Act and this should be emphasised in the procurement.
IPS agreed to this recommendation.

BAG recommended that the current rules on data sharing and the Identity Cards Act should be referenced in the requirements.
IPS agreed with the importance to the success of the Scheme of proper rules on data sharing, data governance and adherence to these rules. Suppliers' understanding of these form part of the procurement evaluation.

BAG recommended access controls for request handling should be more secure than username and password.
IPS agreed that access to sensitive data must be robustly controlled to protect privacy and maintain trust in the Scheme. The technical details of the access control solution which will be used have not yet been resolved.

BAG recommended that the results of facial recognition tests should be shared, as widely as possible, taking into consideration security and commercial concerns.
IPS agreed with the BAG on the benefits to the Scheme and to those working on facial recognition technology of using the results from the facial recognition tests and will explore how this can be done while ensuring privacy of the test subjects.

BAG recommended that the procurement strategy ensure the interoperability of subsystems.
IPS stated that compliance with standards will be part of the evaluation criteria for the procurement of the scheme. Adherence to standards will enable the interoperability of subsystems.

BAG recommended all chips supplied should have an indelible number on them to prevent cloning.
All chips come with a unique serial number in the chip; however this will not specifically be

used to prevent cloning. IPS's policy is to manage the risk of cloning by adhering to the EU Extended Access Control (EAC) standard.

BAG recommended that IPS provide suppliers with copies of reports from trials undertaken by IPS at an appropriate stage in the procurement process.
IPS agrees that sharing details from reports would be beneficial where the results are relevant to a particular procurement and can be expected to improve the value that IPS receives from its suppliers.

Annex 1: Conflicts of Interest

John Daugman stepped down from the BAG in March, as a result of a potential perception of a commercial conflict of interest and will rejoin when there is no longer a conflict.

Peter Higgins stepped down from the BAG in August, as a result of a potential perception of a commercial conflict of interest and will rejoin when there is no longer a conflict.

Peter Waggett stepped down from the BAG before the meetings in 2007, as a result of a potential perception of a commercial conflict of interest and will rejoin when there is no longer a conflict.

Annex 2: BAG Terms of Reference

The National Identity Scheme (NIS) and other programmes across Government which use biometric technology need to ensure and demonstrate that, given the specialised nature of biometrics and its associated risks, they can successfully deliver and that their business benefits and vision will be realised. Independent assurance is a tool which can be used to achieve this. Therefore a key requirement of these programmes is an independent peer review of their approach to biometrics testing, their requirements and proposed solutions. This review and the provision of advice based on this review as well as *ad hoc* advice will be the responsibility of the Biometrics Assurance Group (BAG).

In examining a project or programme, the principal responsibilities of the BAG are to:

- Ensure the requirements for biometrics, biometrics testing and biometrics procurement are adequately specified.

- Ensure that methods in place for monitoring the performance of any biometric process are adequate.

- Ensure that proposed SLAs appropriately reflect assignment of risk between HM Government and a Service Provider.

- Evaluate the biometrics elements of proposed solutions offered by suppliers and integrators.

- Review and interpret the outcomes of testing.

- Review the advice the project or programme has received from others and offer advice in those areas that are unclear or in which it is felt there has been insufficient effort.

- Report to the project or programme governance structures (e.g. SRO or board) as necessary on biometric strategy, risks and issues.

- Identify emerging issues and alert the project or programme to any potential impact upon delivery.

Further responsibilities, regarding a policy framework for biometrics:

- The BAG should take a view on what areas of biometrics is it appropriate to set cross-Government policy in (e.g. standards, operator training, and enrolment security). These are policy areas that could be applied across Government biometric projects.

- The BAG may also wish to take a view on which areas are not appropriate for cross-Government policies.

- The BAG should not create the policies but may indicate where they recommend this policy be drawn from (e.g. a specific project, NPIA, CESG the Biometrics Centre of Excellence). They may periodically review the 'fitness for purpose' of the policies

- This resulting framework of policies and principles should then be used by the BAG as a tool when looking at biometric projects. Not all projects would be expected to score on all areas of the policy framework and there may be areas which are entirely inappropriate for some projects. It is not intended that the framework be administered and owned by the BAG. Rather it would be more appropriate (and a model more analogous with other such frameworks in Government) for this to be held centrally, for example by the Home Office Biometrics Centre of Excellence, or by Cabinet Office.

- Projects which the BAG saw as diverging from this framework without good reason could be reported as doing so in the BAG annual report – and the BAG should consider using the policy framework in this way to promote consistent practice in biometrics.

Annex 3: Abbreviations

ARC	Application Registration Card
BAG	Biometrics Assurance Group
BSI	British Standards Institute
CWG	Countermeasures Working Group
DWP	Department for Work and Pensions
EFTS	Electronic Fingerprint Transmission Specification
IAFS	Immigration and Asylum Fingerprint System
ICAO	International Civil Aviation Organisation
IRIS	Iris Recognition Immigration System
ISAP	Independent Scheme Assurance Panel
ISO	International Organisation for Standardisation
JPEG	Joint Photographic Experts Group - Sets the standard for the JPEG file format commonly used for storing and transmitting photographs.
NIS	National Identity Scheme
SLA	Service Level Agreement
IPS	Identity and Passport Service