

Fingerprint Quality Standards Specialist Group (FQSSG)

Note of the meeting held on 4 February 2020 at Home Office, 2 Marsham Street, London.

1. Welcome, Introduction and Apologies

- 1.1 The Chair welcomed all to the meeting. A full list of the attendee organisations and apologies is provided at Annex A.

2. Minutes of the last FQSSG meeting on 17 October 2019

- 2.1 The previous FQSSG minutes were approved as an accurate reflection of the discussion held, subject to minor amendments, and the secretariat was asked to publish them.

Action 1: The Secretariat to amend and publish the minutes of the FQSSG meeting held on 17 October 2019 on GOV.UK.

3. Actions and Matters Arising

- 3.1 The following matters arising from the previous FQSSG meeting were discussed:
- 3.2 Action 1: Finalise and publish minutes of the June meeting.
This action was pending accessibility checks of the document.
- 3.3 Action 3: The Regulator and FSRU to discuss commissioning of proficiency tests (PT).
An update was provided by a representative from the FSRU. The costings provided for the previous submission had been too expensive, on further discussions it was agreed that some of the currently funded work commissioned from Dstl could be adapted and used for a PT. A two-part test; enhancement and comparison had been agreed. A request had been sent via the FEL group requesting applications for the enhancement part for completion in time for results to be delivered as a workshop at the FEL conference. The comparison aspect would be carried out from May to July. Funding from the HO had been agreed and the project had started. As the old CAST labs were closing at the end of February deadlines were tight. A couple of weeks deadline was given to sign up as Dstl needed to get the samples out before the labs closed. The Dstl representative highlighted that this was more of a collaborative exercise than a PT and the FSRU would change the terminology accordingly. It was mentioned that there would be no wrong answer, the purpose of the test being to provide feedback on decision making and lessons learnt. The FSRU representative would encourage engagement and explain why the time

frames were short. The DSTL representative would check if there were any other labs who should be invited to join the test, such as facilities supporting the UK Counter Terrorism Policing Network.

- 3.4 Action 4: Dstl to discuss with the Regulator and FSRU the development of a suitable fingerprint enhancement workshop.
The workshop would be held at the FEL conference. The feedback from the collaborative testing would be provided at this workshop. The workshop would be delivered on day two of the conference.
- 3.5 Action 5: Michelle Painter to raise imaging and transmission with the CSI expert network and investigate if any police forces were including imaging and transmission from crime scenes within their scope. Feedback on this action was that image transmission was not in scope for police forces. The Regulator commented that it would be made clear in the Codes that this would be part of the CSI scope. It was noted that imaging and transmission was in the enhancement scope, but this hadn't been picked up for crime scene accreditation, although this scope should apply to CSI. The representative from EMSOU had been in discussion with forces about benefits of 1000dpi for image capture. The Met representative mentioned that they were undertaking work on image quality and that Transforming Forensics' science had been asked to work on comparing JPEG and TIFF images as many bureaux were using TIFF images. The representative commented that this was a big piece of work which would require funding.
- 3.6 Action 6: FSRU to amend "Fingerprint interpretation quality standard to fingerprint interpretation guidance."
This action was complete, and the ToR had been updated and ratified by the group.
- 3.7 Action 7: The FSRU to invite representatives to sit on the new FISG.
This action was complete, the interpretation group members had been organised and had good representation although as work progressed other members may be brought in. It was decided that the FSRU would chair this group.
- 3.8 Action 8: Secretariat to publish the updated FQSSG Terms of Reference.
Publication of the ToR was awaiting amendments to make the document accessible.
- 3.9 Action 9: TF to update the stage/progress of verification bureaux with routine updates.
This action to be closed and moved to routine updates.
- 3.10 Action 10: FSRU to contact FINDS for an action plan for a national ten prints service.
The group asked for clarification on this action in terms of what the ten print service was. The representative from the Metropolitan Police Service (MPS) explained that this was an extension of existing processes for issues with ten print submissions. As these submissions were automatic and don't go through bureaux there can be errors such as incorrect ethnicity codes. The ten print service was about data integrity between IDENT1 and the PNC. Some forces have a system in place to check ten print submissions, however it was noted that as issues were generally

local there would be little benefit in a national service. It was agreed that this action should be closed, however the issue could be discussed with the new head of FINDS once in post.

- 3.12 Action 13: Sharing and publishing of validation findings
The representative from Regional Scientific Support Services Yorkshire and the Humber had spoken with the chair of the FEN group. In the short term this could not be covered by the FEN group as a result of other work already planned and so would be covered in the HOB workshops. However, in the long term, sharing and publication of validation findings would sit with the FEN group.
- 3.13 Action 14: raise the possibility of a fingerprint conference with Transforming Forensics.
This action was complete, combining a fingerprint conference with the FEL conference was considered but it was agreed that this conference sat well as a separate event and should not be combined. The group discussed the Chartered Society of Forensic Sciences (CSFS) hosting this conference and providing CPD points for attendance.
- 3.14 Action 15: Share the link to the Research4Justice project at Staffordshire University. This action would be completed by the secretariat after the meeting.
- 3.15 Action 18: Sub working group to be agreed and convened.
This action was complete, and the working group had been organised. The agenda for their first meeting would be informed by the standards currently available that would be brought together to begin working on the guidance document. The working group planned to meet in April.
- 3.16 Action 20: Subgroup formation to progress review and update FSR-C-127 using feedback and crime scene considerations.
This action was complete, the working group was agreed and the FSRU would chair the group. The working group would need to meet before June in order to prepare a document for review at the end of March. It was discussed that imaging capture and transmission, including by CSI, would be included in the update. The representative from UKAS commented that it would be useful to have someone to feedback issues from the CSI accreditation process to support this group and offered to review documents and provide comment. It was also proposed that a representative from Transforming Forensics joined the subgroup to bring insights from CSI accreditation visits.
- 3.17 Action 21: Feedback from bureaux to be obtained on FSR-C-128 the comparison document.
This action was complete as feedback would be provided through the working group.

Action 2: Representatives from the Regional Scientific Support Services Yorkshire and the Humber and EMSOU to provide input on review and update of FSR-C-128 via the working group.

- 3.18 All other actions were complete (12,16,17, AW 22) or would be covered during the meeting as agenda items (11)

4.0 Work Plan

- 4.1 The group discussed delivery dates for documents on the workplan. The representative from UKAS commented that it would be useful to prioritise documents that related to CSI accreditation. It was agreed that FSR-C-127 would be the priority document with the aim of agreeing this document at the November meeting. This would be followed by FSR-C-128 for sign off in spring 2021.
- 4.2 The group were informed that the AFIS/searching HOB project had a three-month delay which may extend, delivery was planned for November.
- 4.3 The research/knowledge collation document on interpretation issues was ready for publication pending accessibility updates.
- 4.4 The Regulator commented that the interpretation guidance documents would be published before the end of her term, however it was expected that there would be a long implementation period. A draft would be circulated before November. The representative from the College of Policing asked to be kept up to date with developments so that they could be incorporated into training documents ready for release of the final guidance document.
- 4.5 It was agreed that the bureaux tools should be a watching brief of TF projects and not a work plan item for this group. The group commented that a demonstration of these tools would be beneficial.

ACTION 3: Request a demonstration of the TF bureau tool

- 4.6 The FSRU representative asked the group if there was anything to add to the work plan. It was suggested that the collaborative exercise be added, and that this become an annual event and a regular slot at the FEL conference.

5.0 Quality/Scientific/Development Updates

a. HOB

- 5.1 A representative from Hampshire Constabulary joined the meeting for this update via teleconference. The representative from the Home Office gave the group an update on the two main projects, Strategic Matcher run by Fujitsu, and Strategic Central Bureaux and Platform run by LEIDOS. The later project would eventually be cloud-based and consolidated with a bureaux refresh. Knowledge transfer workshops were ongoing.
- 5.2 The group were informed that an early parallel run was planned for March however, Fujitsu had found some problems with their infrastructure resulting in a three-month delay. Testing had also been pushed back to nearer deployment. Operational performance testing had been pushed back. Systems acceptance testing, to confirm accuracy was as initially demonstrated, had been pushed back to June.

- 5.3 The group were informed that the front end of the matcher platform appeared unchanged but there were a number of improved and additional features, such as automated image rotation for palm searches and orthogonal and boost search modes that further improved match accuracy. Optimised process had been proposed to suggest how bureaux processes may be adapted to utilise the benefits of the new matcher.
- 5.4 The HO representative commented that the validation workshops had been run and were well attended. A restricted group in the knowledge hub (35 members) was also being used as a forum for discussion.
- 5.5 Local verification was discussed. This would use a container approach, with 250,000 background sets pre-loaded, which forces could seed into with their own ground truth data (GTD) sets. The container approach uses the live matcher, but keeps the loaded data separate from the main UC collection. This prevents operational searches hitting on data in the container. Some of the core evidence sets, used in HOB's central validation, could also be provided as an example of what the matcher was capable of and allow forces to compare the performance of their own GTD to the core data. Known error rates would also be available. Information from HOB's central validation would be provided on the performance of the matcher to compare performance via the knowledge hub. It was noted that accuracy drops off with quality of marks.
- 5.6 The representative from the FSRU asked what forces would be provided with to assist with verification of the matcher. The group were informed that there would be a background set loaded into a special restricted access container in the matcher. HOB have GTD sets, e.g. one from Dstl however, these couldn't be shared with other forces and uploaded to the database because of the issue of consent. It was explained that while data sets were currently being used for testing once the system was live any GTD marks left amongst the background, would be visible to other users of the container. Background test sets were taken from IDENT1 so there is no consent issue as the use is the same.
- 5.7 The representative from the MPS stated that the initial testing of the matcher would be by the selected forces. There had been a call for a national GTD but marks had not been submitted for it.
- 5.8 A representative from Hampshire Constabulary had joined the meeting to cover points raised from forces following the validation workshops. Feedback was that forces would like a standard set of data to test the matcher in-house. This should be formally structured to help forces who were not involved in the parallel test run. A force may have a plan for in-house verification. It was not clear if this was consistent with other forces' approaches or how, when running in-house verification, issues could be confirmed as local (related to the data), or central (related to the matcher).
- 5.9 The chair commented that because the match accuracy was known, if GTD data was run in-house and this achieved the same or similar accuracy then this would show the system was performing correctly. The representative from UKAS noted that this would depend on size of GTD and some guidance would be needed on the size of the GTD. The representative from the HOB programme commented that

there would be variation with the quality of the marks, however the results should be consistent with the central validation results.

- 5.10 The representative from the FSRU suggested that for the first run of the system it would be beneficial to have a commissioning data set provided to all users that should give the same results and would confirm that the set up and operation of the system was working correctly. This was agreed with by the representative from Hampshire Constabulary and the academic representative added that a benchmark set was essential for forces to be able to verify the system operating as it should. A question was raised as to who would provide the commissioning set, this would not be the HOB programme. Transforming Forensics/FCN was suggested.
- 5.12 The representative from Hampshire Constabulary also requested some high-level guidance on the how to perform the verification, the types and numbers of marks that should be searched. Forces would like to be verifying consistently and this would provide assurance that the verification would meet UKAS requirements. UKAS rep thought a template idea for verification would be very helpful.
- 5.13 The group also discussed training and what kind of training and competency testing would be expected. The representative from the FSRU stated that this was touched on in the guidance documents, but at quite high level. The UKAS representative suggested that TF and FCN should take a lead on this.

Action 4 – ask FCN if they would develop national guidance on a verification process for IDENT1 with the new matcher and provide a commissioning set of marks

- 5.14 The representative from Hampshire Constabulary also raised the issue of re-searching of IDENT1 using the new strategic matcher given. It had been explained in the workshop that one quarter of the database had been searched using the new matcher generating around 6000 matches, the Hampshire representative asked if there were plans to search the remaining three quarters.
- 5.15 The representative from the MPS stated that there was no funding to do this and it wasn't clear whether the system would cope with this. In addition, there was a significant time resource needed to process these additional matches, most of which had not resulted in useful outcomes. It was suggested that bureaux should carry out local re-searching of cases with the new matcher by calling back marks from archive and this could be done by crime type.
- 5.17 The representative from Hampshire Constabulary acknowledged the work load but queried whether forces should be obliged to re-search using the new algorithm bearing in mind the requirement in the Codes to apply new technology to existing data. If this couldn't be done nationally could national guidance be given. The representative from the MPS responded that forces already have a re-searching processes where they regularly select marks to re-search, and this should be continued with the new matcher. An assessment did need to be carried out on the risks of not re-searching all of the database and the data from the application of the new algorithm to the 6000 marks already re-searched could be used to assist with this assessment.

- 5.18 As there was no plan for the HOB programme to carry out a database wide re-search the chair asked if there would be a national position on this and which group would be in a position to provide it. The Regulator highlighted that if there was no national position on researching then each force would be required to state their position in their implementation documents.
- 5.19 The representative from GMP suggested that communications could be put out through the NPCC lead for Fingerprints, Rachel Swann. It was agreed that the representative from the Regional Scientific Support Services, Yorkshire and the Humber would first raise the issue of a national position at the HOB programme meeting and establish whether this would be communicated from them.
- 5.21 The representative from the FSRU suggested adding guidance on considering re-searching of marks using the new algorithm to the validation and verification guidance.

Action 5 – NW to ask at the NFB what the national position would be on re-searching marks currently on the database against the new strategic matcher.

Action 6 – FSRU to ask the FCN for a commissioning data set and to provide national guidance on verification of the new strategic matcher.

b. DSTL

- 5.22 The representative from Dstl provided an update on the Dstl/CAST integration and the relocation of the Sandridge laboratories to Porton Down would be carried out between March and August during which time they would only have interim labs.
- 5.23 The November newsletter included the new Indandione process written in a format so it could be dropped straight into the manual when updated. The new physical developer (PD) process was also included. This work was carried out with the University of Leicester who investigated how PD was acting to develop fingermarks. The University had provided some training of the process however to ensure that the method was consistently delivered Dstl would provide a dual roll out going forwards.
- 5.24 An update was provided on the testing of Foster+Freeman's 'Recover' fingerprint recovery system. This method would be brought into the MPS accreditation scope in January for cartridge cases and knives. Dstl carried out two studies looking at a "black box" comparison, following manufacturer's instructions. In the first the performance of the Foster+Freeman system was compared to superglue and dye staining on fired 9mm cartridge cases. Dstl found comparable results to superglue. Similar work by the Royal Canadian Mounted Police had found better success rates but their studies used larger cartridge cases with groomed marks. Dstl had yet to experiment with maximisation of the Foster&Freeman method. The second study looked at using the Foster+Freeman system at the end of the sequential process on stainless steel knives. Dstl found it was the most effective single process and added extra marks at the end of a process. More research would be carried out over the summer.

- 5.25 The group were informed that, following the Dstl representative highlighting to the fingerprint community the need for research into developing marks on biodegradable plastics there had been a good response with several institutions contacting Dstl.
- 5.26 Batch testing of fingerprint powders had been formally requested as a HO piece of work. Dstl were also looking to update validation of powders from 15 years ago and compare scanning electron microscopy images from the original powders to the modern powders as there were concerns about the use of supra nano powders without sufficient testing of health and safety issues and evidence of ability to develop fingermarks.
- 5.27 Dstl were working with Lincoln University (the technical lead is based at Hull University) to establish a link between how amino acid test strips behave and how fingerprints behave. These could be used as a positive control for amino acid reagents such as Ninhydrin.
- 5.28 The update of the fingerprint manual was expected in the winter and newsletters would provide updates in the meantime. Other updates were that; the Dstl representative had stepped down from the ENSFI fingerprint working group; Dstl were supporting a PhD project at Sheffield Hallam University using MALDI to identify blood.
- 5.29 Dstl highlighted that if the group required additional R&D support for the coming financial year, they should contact the Home Office Commissioning Hub to discuss their needs. The representative from the MPS asked about research into the quality of images and what effect different file types had on the images. This was highlighted as a gap in Dstl's work. The Regulator suggested there were imaging experts who could be consulted on this. It was noted that Transforming Forensics products required images to be TIFFs which may go against in-house validation. The Dstl representative stated that research into multispectral imaging with photoshop was also required.

c. NPCC – Transforming Forensics (TF)

- 5.30 A written update was provided from the TF representative. The FCN Bureau App development was now on Sprint 20 and all updates had been shared with Regional Representatives of England & Wales Policing (Forensics). Testing of the App was at Beta 2 and regional representative were visiting forces to carry out testing. Testing environments at EMSOU & Yorkshire and the Humber had been established with testing activities to commence from February 2020.
- 5.31 The CSI App was on Sprint 7 with additional work taking place to progress testing activities and a validation plan. The testing approach and Master Test Plan had been produced by the Projects Test Manager and the validation approach and plan had been drafted and was being reviewed by FCN Quality. Resources had been assigned for the testing and validation activities across an end to end plan and the FCN Training and Competence Manager would be assisting by constructing a training plan. Sufficient resources in Small and medium-sized enterprises had been

identified as a risk to the project and mitigating activities were taking place to reduce this risk.

Action 7 – Science Secretariat to circulate the TF newsletter to group

d. NPCC – NFB and Enhancement Labs

5.32 The group was informed that the FEL conference would be in June and delegates could attend one or both days.

6. Accreditation Updates

a. UKAS

- 6.1 The group were informed that a new forensics section had been created at UKAS. Forensics had previously been incorporated into other groups such as environmental sciences and this had created some administrative work load in terms of ensuring cases were correctly allocated. Very large forensic providers would remain with the Corporate department. UKAS were currently advertising for a forensic section head. It was clarified that digital forensics would be included in the forensic section. All forces, digital, and smaller FSPs would sit in the new department. Medical forensics would sit in the Medical section.
- 6.2 Gloucester and North Wales forces had been accredited for fingerprints. There was one remaining bureau to be accredited and one other that was being restructured.
- 6.3 The UKAS representative reminded the group that validation was expected to continue, this would be reviewed at subsequent visits.
- 6.4 On CSI accreditation the focus was on police providers and 18 pre-assessments had been completed. Six further assessments were arranged and there were four outstanding applications. Non-police forces and security companies were also applying. UKAS had made one offer of accreditation. In terms of fingerprinting issues identified some forces had no validation on 1:1 photography, part of fingerprint capture. In addition, there was a lack of consideration of anti-contamination measures; old or unsuitable kits that would not be easily cleaned; batch control and testing of powders, some variability in the performance of the powders had been noted. UKAS have noticed learning from pre-assessments had been taken on board by forces. Sharing of good practise had been improved since the fingerprint accreditation process. It was noted that timescales were very tight in terms of getting systems in place, validating them and implementing them. Assessments at some forces had been too early to demonstrate a well embedded system and UKAS were seeing bunching of visits.
- 6.5 It was mentioned that learning had been coordinated by TF and an event had been organised for the 12th of February at the National CSI Expert Network meeting. The representative from the MPS suggested that this group review the findings from the CSI assessments so they could pick up whether there were potential issues for fingerprint comparison, for example use of brushes that may damage fingerprints. The group discussed that the initial applications for CSI accreditation would be

about getting the basics correct and the expectation was that there would be development and improvement of the systems once they were in place. This would include improved communication across departments and greater customer focus, such as CSI to fingerprint bureaux. Scopes were understandably narrow initially and this was the beginning of a long process. The Regulator noted that there was scope for a shared learning document and that it would be beneficial to produce a review of this process. The UKAS representative pointed out that if there is potential for 'simplification', it should be borne in mind that not all processes will work at every site.

b. NPCC – Bureau

- 6.6 The group were asked whether, as almost all bureaux were now accredited, this section should become feedback on preparedness for IDENT1. The UKAS representative agreed but highlighted that not all bureaux were accredited for all aspects of their work so there would also need to be feed in on the extensions of scope. Preparedness for re-assessments were also mentioned. Care needed to be taken to avoid simplifications to processes to ensure that accreditation was not lost.
- 6.7 Communication within the FEN group on validation and would also be fed back.

c. NPCC - Crime Scene

- 6.8 This update was covered by the UKAS update.

7. Professional Updates

a. R&D/ENFSI

- 7.1 The group were informed that the National Institute of Justice (NIJ) ground truth data set was being developed and would be available for researchers from April. Donors consent had been sought and they could request to be removed from the data set at any time. The representative from the MPS noted that this data set couldn't be used for strategic matcher but could be used for collaborative testing.

b. College of Policing

- 7.2 The representative from the College of Policing informed the group that a new fingerprint programme was being developed with a two-stage approach; foundation, and specialist skills including verification and court presentation and reference to evaluation and interpretation. Fingerprint biology had been moved to the specialist stage as this related to court presentation. The programme had increased inputs on bias and probabilistic methods.
- 7.3 The representative noted that the development of this training would benefit from input from development of guidance and standards documents.

- 7.4 The group were informed that two main elements should launch in the summer. A challenge had been finding images for practicals and the NIJ set might be useful for this.
- 7.5 Elective modules, such as recovery of fingerprints from cadavers were being created as not all forces required these.
- 7.6 The group were informed that the terminology used for the programmes would b describe and demonstrate for CSI, and describe for fingerprint experts who need to have the same knowledge but don't need the practical skills of a CSI.
- 7.7 The working group had been sent the content of the learning programmes to assess the minimum standards. The representative from the MPS asked who stated that these are the minimum standards. The College of Policing representative replied that the College can't mandate minimum training so this would be for local bodies to determine the requirements for competence. The College practical skills courses can have individual elements taken out to use locally, they are not all or nothing courses, but are intended to address competences and are not limited to technical aspects alone.

c. CSFS

- 7.8 The group were informed that the CSFS had a new board member with fingerprint expertise.

8. AOB

- 8.1 The FSRU representative mentioned that the FSR conference would be on the 10th of March 2020, and that there were 140 confirmed attendees. The theme is learning from the past and planning for the future.
- 8.2 The next meeting would be held on the 11th of June in Birmingham.

Annex A

Organisation Representatives Present:

Forensic Science Regulator
Forensic Science Regulation Unit (FSRU)
Scottish Police Authority (SPA)
Lausanne University
Dstl
United Kingdom Accreditation Service (UKAS)
Metropolitan Police Service (MPS)
Home Office Biometrics (HOB) Programme
The Chartered Society of Forensic Sciences (CSFS)
East Midlands Special Operations Unit - Forensic Services
College of Policing
Greater Manchester Police (GMP)
Regional Scientific Support Services Yorkshire and the Humber
Crown Prosecution Service (CPS)
Home Office Science Secretariat (HO)

Apologies:

Transforming Forensics (TF)
Fingerprint Associates Limited
West Midlands Police Service
National Police Chief's Council (NPCC)