It will be noted that in 2004 BCSL believed the marketing literature put
out by the biometrics suppliers. That belief was undermined by the
evidence of the UKPS biometrics trial and US-VISIT. BCSL is now a
biometrics apostate, a state recommended here to everyone else, the UK
Home Office included.

There is an alternative – dematerialised ID

A submission prepared exclusively for the

Home Affairs Committee

in connection with its inquiry into

Identity Cards

by David Moss

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Credentials David Moss of Business Consultancy Services Ltd (BCSL) has 27 years experience in IT and has spent 18 months researching dematerialised ID. He is a tax-payer and believes that the Home Office budget of £3,145m of tax-payers' money could deliver a better ID voucher scheme than the one proposed.

Many people have criticisms of the Home Office's proposed scheme. BCSL has gone beyond that point and taken the trouble to propose an alternative – dematerialised ID.

Dematerialised ID, named following the successful example of dematerialisation in the securities industry, is described in the BCSL report available as supplementary material to this submission. It includes the references to the source material which supports the assertions made here.

The report has been peer reviewed and is due to be delivered as a paper at a conference in Prague next month.

Evidence

Summary	1. The Home Office has embarked on a course which assumes that it is natural to issue everyone with a material ID card. That is the traditional method. Everyone else does it that way. It is not, however, the only way to implement a scheme which vouches securely for people's identity.
	2. BCSL recommends that dematerialised ID should be considered as an alternative route to the same destination before we go any further down the current path. Instead of storing biometrics on material credit card-sized smart cards, they could instead be transmitted to and stored on our mobile phones.
	3. Dematerialised ID could deliver all the benefits sought by the Home Office and more. It is more imaginative and it could be more future-proof, cheaper, more popular and more effective than the present proposals.

The ID card kit	4. The Home Office scheme comprises a population register, biometrics and smart cards.

Population register	5. If you once decide to introduce an ID card scheme, you must have a population register. That element of the scheme is not considered further in this submission.

Biometrics	6. With regard to biometrics, the National Physical Laboratory (NPL) feasibility report for the Home Office, UKPS and DVLA concludes unconditionally that biometrics based on facial geometry do not work.
	7. The NPL report concludes that biometrics based on irisprints would identify people uniquely. The statistics in their report do not support this conclusion. BCSL wrote to the NPL pointing this out. It is noted that, in interviews given when the Identity Cards Bill was published in draft, the NPL subsequently expressed more reservations about irisprints than in their report.
	8. If facial geometry and irisprints are excluded, then the only remaining candidates for biometrics are DNA and fingerprints. The Home Office has rejected biometrics based on DNA as being too invasive.
	9. That leaves fingerprints. The statistics in the NPL report suggest that fingerprints could identify people uniquely, not just parochially in the population of the UK, but in the population of the whole world.
	10. The fingerprints the NPL are considering would not currently be admissible as evidence in court. Not everyone can have their fingerprints taken. Assuming that these matters can be resolved with special provisions, this paper proceeds on the basis that the biometrics used in the Home Office scheme will be based on fingerprints.
	11. A copy of each person's fingerprints will be digitised and certain geometrical relationships will be calculated and stored on the population register.

Smart cards 12. So why have smart cards in addition? Whenever a person's identity is challenged, you could simply require them to have their fingerprints taken again and verified against the record held on the population register.

13. That is not inconsistent with the Home Secretary's evidence to the Home Affairs Committee. He suggested that for serious checking, whenever it really matters, that is exactly how a person's identity will be established.

14. This leaves smart cards to be used only when checking is *not* really important. In that case, perhaps we can do without the smart card component of the Home Office scheme.

Mobile phones 15. That hypothesis is probably wrong. People probably do need some sort of a voucher, which proves that they have enrolled in the scheme and which includes a digitised copy of their biometrics.

16. Digital records can be stored on any digital medium. You might choose to store them on smart cards. You might choose to store them alternatively on PalmPilot-type PDAs or MP3 players or digital cameras but not many people have those.

17. What most people do have – perhaps 80% of the residents of the UK – is a mobile phone. The ideal choice, it is suggested, would be to store people's ID vouchers on their mobile phones.

18. Not everyone has a mobile phone. That does not make dematerialised ID inconsistent with the Home Office's long-term plan to introduce a compulsory ID scheme. Everyone could still be required to record their biometrics on the population register which, remember, is the important component.

Disadvantages 19. The Home Office estimate that they will need to issue 67.5m ID cards in the
of smart cards, first 10 years of operation of the scheme. They estimate the cost of these
benefits of cards to be £2,007m, which comes to £29.73 each. BCSL estimates the com-
mobile phones parable cost of producing digital certificates to be 0.9p each.

20. This is tax-payers' money. 80% of tax-payers have already paid for a device which could store their ID voucher. Why should they pay for another one?

21. Smart cards account for two-thirds of the Home Office budget for identity cards. Dematerialised ID could significantly reduce the budget required. It could be an example of a PPP which genuinely yields good value for money.

22. Smart cards cost money to distribute by post or by courier. Dematerialised vouchers, by contrast, could be distributed for much less by making a telephone call and transmitting them from UKPS to the bearer's mobile phone.

23. Smart cards take time to distribute – hours by courier or days by post. Using telecommunications to distribute ID vouchers could take seconds.

24. Smart cards wear out and need to be replaced. Dematerialised ID vouchers cannot wear out.

25. Suppose that smart cards have to be withdrawn and replaced, perhaps be-

cause of an error or omission, perhaps because of a change in circumstances. That entails another £2,007m of expenditure and all the associated time and effort.

26. It will be cheaper and quicker to re-transmit dematerialised ID vouchers and, in that sense, the dematerialised ID option being advocated here is more flexible.

27. Suppose that a person's right to travel is revoked. Perhaps he is a football hooligan, banned from travelling to overseas matches. Under the current proposals, he would still have his smart card passport and so, to the naked eye, he would still have the right to travel.

28. Under dematerialised ID, UKPS could make a telephone call and, in seconds, overwrite the hooligan's old ID voucher on his mobile phone with a new one, which continues to affirm his identity but which revokes his right to travel overseas.

29. Smart cards require a nationwide network of card-readers, keyboards and screens to be useful. The acquisition, installation and maintenance cost of this network is not included in the Home Office's identity cards budget. It will fall on most departments of state and on most companies and other organisations like another stealth tax.

30. The UK already has five public commercial mobile phone networks up and running. Mobile phones include keyboards and screens. Why pay for yet another network of keyboards and screens? In dematerialised ID, the handset is the terminal.

31. The Home Office states that people will not be compelled to carry their ID card with them wherever they go. It would serve its purposes better, though, if people did tend to have their ID card with them.

32. People naturally carry their mobile phone with them at all times. Mobile phones are already evolving into *de facto* ID vouchers. From that point of view, storing ID vouchers on mobile phones has a powerful synergy.

33. Smart cards can be tracked intermittently, when they are used. Mobile phones can be tracked all the time. This makes them more useful in crime prevention and detection.

34. Some people have registered their mobile phone and some have not. This is identified as an obstacle by NCIS in their UK threat assessment.

35. In order for UKPS to transmit your ID voucher to you, you must give them your mobile phone number. Dematerialised ID would result in more people giving their mobile phone number to the authorities and could thus assist the fight against crime in a way that smart cards cannot.

Finland 36. Dematerialised ID is not a figment of the imagination of BCSL. Finland is conducting trials of an identity voucher system based on mobile phones.

Intellect 37. Mobile phone networks are operated in the UK by Vodafone, mmO$_2$, T-Mobile, Orange and 3G UK Ltd.

38. How many of them are members of Intellect? None.

Atos Origin 39. When the US government became anxious about cost and time over-runs on IT projects, they established the Software Engineering Institute (SEI) to try to find a way to overcome the problem. The SEI devised the capability maturity model (CMM) and scored IT organisations on a scale of 0 (worst) to 5 (best).

40. The Atos Origin corporate brochure says that it is a CMM-level 3 company.

41. Atos Origin are attractive because they include the old SchlumberSema smart card business. If that becomes less relevant, then the Home Office could choose a CMM-level 5 supplier.

Authentica-tion 42. If ID vouchers can be counterfeited, then they will be devalued. Professor Thomas's evidence to the Home Affairs Committee made it sound inevitable that any attempt to authenticate ID cards, cable and satellite TV cards and anything else could be defeated.

43. It is to be hoped that this is not the case with PKI, the public key infrastructure. Dematerialised ID relies on PKI being secure.

44. PKI is used for secure communications by governments, the military, the security services and commercial organisations all over the world. Some examples are noted below.

45. In the UK, the responsibility for secure central government communications rests with GCHQ and relies on PKI.

46. The International Civil Aviation Organization relies on PKI to protect machine-readable travel documents.

47. The European Commission has devised a blueprint for ID card schemes called "OSCIE" – the open smart card infrastructure for Europe – which relies on PKI to authenticate biometrics and other data stored on smart cards.

48. The credit card companies rely on PKI to authenticate their merchants.

49. The mobile phone network operators rely on PKI to authenticate the equipment on their networks and thus guard against spoofing.

50. BT uses PKI to authenticate the suppliers it trades with over its extranet.

51. You rely on PKI when you buy your books from Amazon.

52. All the mobile phone handset suppliers have PKI products available and all the PKI software companies have versions of their products suitable for mobile applications.

53. Is Professor Thomas right? Are we all wrong?

54. It is respectfully suggested that the Home Affairs Committee seek further evidence which BCSL has been unable to obtain.

55. It could be useful to take evidence from Finland to find out the results of their mobile phone trial.

56. It could be useful to take evidence from the mobile phone network operators and handset suppliers. Do they agree that dematerialised ID would be feasible? Would they be prepared to host the service?

57. It could be useful to take evidence from GCHQ on the strength of PKI.

58. Dematerialised ID could be adopted in any country with a well-developed mobile phone infrastructure. It could sweep the world like privatisation and it would be nice to see the UK in the vanguard.

59. It could have economic benefits in addition to the crime prevention and detection benefits indicated here.

60. This submission is an edited version the full BCSL report. The conclusions of that report are noted below.

61. Dematerialise. Stop issuing material vouchers.

62. Use PKI to safeguard authenticity. It may expand the economy.

63. Issue digital certificates to organisations as well as individuals to combat money-laundering and identity theft effectively.

64. Forget biometrics based on facial geometry. Use fingerprints instead.

65. Forget compulsory ID voucher schemes in the UK. Dematerialised ID is a voluntary scheme.

66. Forget smart cards. They are expensive, limited and out-dated. Use mobile phones instead. They are already evolving into ID vouchers.

67. Dematerialised ID is a PPP which will be cheaper for the tax-payer. It reduces the risk of failure for the project to introduce ID vouchers. It requires less terminal equipment. It may help to reduce crime.

68. One step needed to safeguard civil liberties is to regulate the HLRs and the VLRs on the mobile phone networks.

69. Consider using location identity as an identification criterion.

70. Establish an Institute of Dematerialised ID.

70 paragraphs, 1,996 words of evidence