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COMMISSION STAFF WORKING PAPER

IMPACT ASSESSMENT
on the possible use of security scanners at EU airports

Accompanying the document

COMMISSION REGULATION (EU) No …/..

amending Commission Regulation (EC) No 272/2009 supplementing the common basic standards on civil aviation security as regards the use of security scanners at EU airports

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1. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

1.1. Organisation and timing

1. The present impact assessment relates to a possible proposal to amend part A (1) of the Annex to Commission Regulation (EC) 272/2009 to include security scanners on the list of the eligible screening methods and technologies for passengers, point 4.1.1.2 of the Annex to Commission Regulation (EU) 185/2010 to allow security scanners as an alternative screening method to walk-through metal detectors and hand search, and point 12 to establish detection performance requirements. In addition, points 4.1 and 12 of Commission Decision (2010)774 (which is restricted legislation) would detail detection performance standards and operational conditions applying when using security scanners for passenger screening.

2. A general description of security scanner technology and of its functioning is provided in Annex II.

1.2. Policy background

3. The possibility of introducing security scanners on the list of eligible screening methods and technologies for screening persons was first proposed to the Council and the European Parliament on 5 September 2008 on the basis of the positive vote of the Member States' aviation security experts[1].

4. The European Parliament, on 23 October 2008, adopted a resolution on the impact of aviation security measures and body scanners on human rights, privacy, personal dignity and data protection requesting a more in-depth assessment of the situation[2], opposing the Commission's proposal. The Commission agreed to review these matters further and withdrew security scanners from its original legislative proposal. The draft legislation became Commission Regulation (EC) No 272/2009[3] to apply as of 29 April 2010.

5. The methods for passenger screening are laid down at point 1 of part A of the Annex to Commission Regulation 272/2009/EC and are:

   (a) hand search;

   (b) walk-through metal detection (WTMD) equipment;

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1 Aviation Security Committee of 9/10 July 2008.

2 The EP Resolution (2008)0521 asked the Commission to: carry out an impact assessment relating to fundamental rights; consult the European Data Protection Supervisor (EDPS), the Article 29 Working Party and the Fundamental Rights Agency (FRA); carry out a scientific and medical assessment of the possible health impact of such technologies; carry out an economic, commercial and cost-benefit impact assessment.

3 Commission Regulation (EC) No 272/2009 of 2 April 2009 supplementing the common basic standards on civil aviation security laid down in the Annex to Regulation (EC) No 300/2008 of the European Parliament and of the Council (OJ L91, 3.4.2009, p. 7).

(c) hand-held metal detection (HHMD) equipment;

(d) explosive detection dogs;

(e) explosive trace detection (ETD).

6. Point 4.1.1.2 of the Annex to Commission Regulation (EU) 185/2010 requires passengers to be screened by a hand search or by a walk-through metal detector. Additional requirements on combining different methods in order to achieve effective detection are included in EU security restricted legislation. More detailed information on the aviation security legislative context is available in Annex I.

7. In its Communication to the European Parliament and the Council on the use of security scanners at EU airports[4] of 15 June 2010 the Commission contended that security scanners can achieve higher detection rates at EU airports[5] than metal detectors alone (although where metal detectors are used in combination with a full hand search, results will be broadly equivalent to those achieved by the use of security scanners[6]). The report also identified the need to avoid any risks to human health and to ensure the protection of fundamental rights.

1.3. Consultation of other Commission Services

8. The work on the present impact assessment started in July 2010. Five meetings of the Inter-Service Steering Group were held with representatives from DG SANCO, HOME, JUST, ENER, RTD, ENTR, TAXUD, INFSO and the Secretariat-General. The Legal Service and all other DGs' were also invited to take part. The meetings took place on 9 September, 7 and 29 October, 15 November and 1 December 2010.

1.4. External studies

9. To gain additional expertise, the Commission arranged for a study examining the potential of security scanner technology, the detection performance as well as health and safety issues[7]. This technical report provided an overview of the different types of security scanner technology used for aviation security purposes, described the detection performance capability of the different technologies as also tested at some EU airports and summarised the main consequences for health as established by the most recent European and International studies. Such information is used in the present impact assessment to analyse the detection performance and health issues.

1.5. Public consultations

10. In order to further assess the implication of the use of security scanners at EU airports, the Commission organised a forum with stakeholders, called the task force on security scanners, which took place on 12 December 2008 and 14 September 2010.[8] Participants

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4 COM (2010)311.

5 Para 85 of the Commission Communication (2010)311 of 15.06.2010.

6 See point 55 of Commission's Communication of 15.06.2010.

7 See Annex II.

8 See minutes in Annex IV.

were heterogenous and constituted by members of the European Parliament, several Member States, airports and airlines associations, a European consumers' association, associations for the defence of human rights, the Radiation Protection Agency, several manufacturers and a few individual citizens. They expressed their different views on the effectiveness of security scanners for the purposes of aviation security, the implications related to their use, notably in terms of fundamental rights and health protection. This information is used in the present impact assessment to analyse the necessity and the proportionality of the possible introduction of security scanners while respecting fundamental rights and health.

11. In addition the Commission launched an on-line public consultation from 27 November 2008 to 19 February 2009, complying with the Commission's minimum duration requirements for written public consultation. Approximately 50 stakeholders provided the Commission with information and their opinions on security scanners as technology to be applied in aviation security. Overall the views on the potential of security scanners were positive, although several important fundamental rights and health concerns were raised on the basis of the then available technological solutions. These contributions have been analysed and are taken into account in the present impact assessment to evaluate the necessity, the proportionality of the possible introduction of security scanners and compliance with fundamental rights and health provisions.

12. In particular the European Data Protection Supervisor (EDPS), the Article 29 Data Protection Working Party[9] and the Fundamental Rights Agency were consulted and in 2009 expressed reservations about security scanners creating images as those were considered to have a great impact on privacy and data protection of passengers. In 2010 the EDPS acknowledged the existence of security scanner models compliant with EU law and the position adopted by EDPS and WP 29"[10].

1.6. Other contacts

13. Before and during the impact assessment, the Commission constantly cooperated with the European Parliament, the Member States bilaterally and within the Aviation Security Committee ("AVSEC Committee"), which meets every two months. Moreover, the Commission was in contact with the EU Economic and Social Committee, the European Data Protection Supervisor, and stakeholders associations, such as the Airports Council International in Europe ("ACI Europe) and the Aviation Security Service Association International ("ASSA-I"). Recently ACI Europe provided the Commission with an analysis of the economic impact of security scanners. ASSA-I transmitted an estimation of the operational costs related to human screeners. The Stakeholders' Advisory Group on Aviation Security ("SAGAS"), which meets every two months, also regularly provided the Commission with feedback and information on security scanners.

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[9] The Working Party on the `Protection of Individuals with regard to the Processing of Personal Data` set up by Article 29 of Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data.

[10] Reaction of the EDPS on the Meeting of LIBE Committee on recent developments in Counter-terrorism policies (body scanners, "Detroit flight"...) European Parliament, Brussels 27 January 2010.

14. Third country authorities were also consulted: in particular the Transportation Security Administration in the US provided data on detection performance and fundamental rights issues; in addition the TSA organised the Advanced Imaging Technology International Summit in Washington DC on the 9-10 November 2010 to further explain their current practices in respect of security scanners. The Canadian and Japanese authorities also provided information on the use of security scanners at the airports of their countries. In addition the Commission exchanged views on the subject of security scanners within the framework of the established cooperation with Australia and Canada ("QUAD"). Third country experience, and particularly information from the USA, was very useful for the Commission to gain knowledge on the use of security scanners and on the operational conditions attached to their deployment with a view to improve security and ensure protection of fundamental rights and health.

15. Finally, by letter of 21 September 2010 (D(2010) 674579), the Commission requested the Member States using security scanners under trial conditions, as a more stringent measure or as a demonstration, to provide updated information and data on the detection performance, the fundamental rights, health and costs issues, by means of trial reports and/or impact assessments or public consultations. Under 12.8.5 of Regulation 185/2010 Member States have the obligation of providing the Commission with a progress report. However, in September in most cases the time-limit to report had not expired yet. All Member States concerned, except Italy, provided the Commission with detailed but not always complete information. Overall Member States which had conducted trials reported to the Commission that security scanners are more effective than current screening methods in terms of detecting items of different materials, that the level of passenger throughput is good and that passengers (between 75% and 95% as shown in Annex II)[11] and staff generally consider them as convenient. The results of this consultation can be found in Annex II.

16. Because of the restricted nature of most of the information provided by Member States and third countries and also because in some cases trials are still on-going, only limited information was made available to the Commission. For this reason and based on their explicit request, this information is referred to throughout the present impact assessment in aggregated form and, in some cases, without indicating the precise country and/or airport concerned. For the same reason, concrete evidence could not always be provided in the present impact assessment.

17. Moreover, because of the scarcity of available detailed information especially as regards the cost elements related to the use of security scanners, a full cost-benefit analysis was not possible. Indeed, among all countries deploying security scanners only the UK have conducted an assessment of the economic impact of deploying security scanners at their airports compared to the current situation, which is publicly available[12]. However, also this assessment does not provide a full cost-benefit analysis of the use of security scanners but, given that in the UK's views security scanners are necessary to enhance security, it only analyses the problem and quantifies the costs from the perspective of having a final code of practice that adequately and appropriately provides for the protection of the privacy and health of passengers, and staff, and which is consistent

[11] See also http://www.unisys.com/unisys/news/detail.jsp?id=1120000970001910179

[12] http://www.dft.gov.uk/consultations/closed/2010-23/ia.pdf

with equality legislation. To this effect the policy options considered by the UK are whether a code should be developed by each individual airport, or it should take into account the views of stakeholders or airports should deploy security scanners without any regulation.

18. All relevant information collected in the framework of the public consultation has been used to support the analysis in the present Impact Assessment report. Since the Commission has already conducted an analysis on the use of security scanners at EU airports in its Communication of 15.06.2010[13] (hereafter "Communication of 15.06.2010"), the present impact assessment will analyse the current situation by also using the information given in the Communication of 15.06.2010.

1.7. Scrutiny by the Commission impact assessment board

19. The impact assessment board of the European Commission[14] assessed a draft version of the impact assessment in January 2011. It issued its opinion on 14 January 2011. The impact assessment board made technical and substantial suggestions for improvement. In the light of these suggestions, the new version of the impact assessment notably:

- Presents problems and objectives in a more balanced way (cf. sections 2 and 3)
- Presents impacts in a more comprehensive and balanced way (cf. sections 5.1.2.2, 5.1.3.4 and 5.2.1);
- Present arguments concerning the possibility for opt-outs in a more balanced way, especially with regard to the claim that opt-out would entail significant additional costs for airports 9 (cf. sections 5.2.1, 6.1 and 6.2);
- Integrates the fundamental rights and health concerns in the problem definition (cf. section 2.1);
- Includes fundamental rights and health as a specific objective emphasising the trade-offs between airport efficiency, security, minimisation of risks and protection of fundamental rights (cf. chapter 3);
- Clarifies the concept of general efficiency and provides reasons why a full cost-benefit analysis was not possible (cf. sections 2.1 and 5.2.1);
- Explains the problems incurred in collecting data and analysing quantitative evidence (cf. section 1.6 and 5.2.1).
- Present options in a tabular form (cf. paragraph 123) and better adapts the final evaluation to the available evidence notably as regards options 5 and 6 (cf. chapter 6, in particular sections 6.1, 6.2 and 6.3).

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13 Communication from the Commission to the European Parliament and the Council on the use of security scanners at EU airports of 15.06.2010, COM(2010)311.

14 http://ec.europa.eu/governance/impact/iab_en.htm

– Improves the overview tables for the comparison of options by integrating the best possible quantitative estimates and figures (cf. section 6.2)

– Clarifies that the baseline refers to a situation under the current legislative framework which rules out the permanent use of scanners and justifies why the baseline does not take technological development into account as an exogenous factor (cf. paragraph 61);

– Enhances the presentation (table of contents, numbering of pages in the Annexes) and use stakeholder consultation ad information from the technical report (Annex II).

– The present version of the Impact Assessment report also took onboard technical comments transmitted by note of 7 January 2010 to the author Directorate General.

20. A second draft version of the impact assessment was examined by the impact assessment board of the European Commission in February 2011. In its opinion of 11 March 2011, the impact assessment board -while recognising that the text had improved along the lines of its first opinion- made few additional technical suggestions. In the light of these suggestions, the final impact assessment:

– Supports the statement that opt-out possibilities under options 4 and 6 would have a negative impact on security levels (cf. paragraphs 150,175 and 211);

– Reinforces the problems encountered in collecting and analysing quantitative evidence (cf. paragraphs 14 and 16);

– Includes more references to stakeholder input received during consultations and relevant information from the technical study (cf. paragraphs 135, 137 and 170).

2. PROBLEM DEFINITION

2.1. Problem definition

21. In the light of the new threats which aviation security has being facing over the last years, technology is progressing fast in the security field, in particular for security scanners.

22. In this context security scanners are being deployed at airports worldwide. The Transportation Security Administration ("TSA") in the US currently deploys approximately 350 security scanners, based on X-rays and active millimeter wave radiation, as primary means for screening in approximately 70 airports. In case of overflow passengers are also directed towards walk-through metal detectors[15]. Security scanners will number 500 by the end of 2010 and additional 500 units will be deployed in 2011. Russia has been using security scanners at airports since 2008 and will continue to deploy them more widely in the future.

[15] This is the so called "zero queue protocol". At present the majority of passengers is still scanned by the walk-trough metal detectors.

23. In 2008 the Canadian Air Transport Security Authority ("CATSA") trialled security scanners based on millimetre wave technology at Kelowna International airport. On the basis of the results of this testing procedure CATSA is recommending to use this technology in Canada[16]. A total of 44 security scanners is planned for deployment in 2011. The Australian Government declared in February 2010 its intention to introduce security scanners at airports as of next year.

24. In 2010 Japan carried out different trials of active millimetre-wave/terahertz wave types of security scanners at Narita airport and on the basis of these results is currently examining the possibility of introducing security scanners in Japan.

25. In Europe, as explained in section 1.2 "Policy background" above, **security scanners are currently not on the list of allowed methods for passenger screening**. Airports may only deploy security scanners:

(a) Under new equipment trials to temporarily replace the current primary screening system[17]. Trials are authorised by the Commission for a maximum period of 30 months on the basis of the Member States' notification. Such notification includes information on the new method used, its duration and location, how it is intended not to negatively affect the overall level of security, how passengers are informed, etc. or,

(b) As a more stringent security measure[18] in addition to the required screening methods and responding to higher threat risk as assessed at national level.

26. In addition, Member States are not prevented from carrying out equipment demonstrations at airports of new equipment which involves no obligation to notify the Commission. These are based on the voluntary participation of passengers and cannot replace the current screening system.

27. Regulation 300/2008 and its implementing legislation are designed to favour technological development in the interest of efficient screening and better security[19]. They facilitate trials of new equipment in Member States (Section 12.8 of the Annex to Regulation 185/2010) and allow for the addition of new screening technologies by means of a rapid comitology procedure (Article 4.2 and 4.4 of Regulation 300/2008). Extensive trials with security scanners have now been conducted to ensure that the technology complies with the security performance required but also – more recently- to test operational conditions safeguarding health and fundamental rights. As indicated in Annex III, the trialling of security scanners has been linked to the application of operating protocols in order to give consideration to fundamental rights and health concerns.

28. European trials as well as the experience gathered elsewhere in the world have addressed seriously and generally satisfactorily the concerns of the European Parliament on the need to carry out a more thorough assessment of the situation before allowing the

16 Letter of Transport Canada of 01.10.2010.
17 Chapter 12.8 of Regulation 185/2010.
18 Article 6 of Regulation (EC) 300/2008.
19 Recital 5 of Regulation 300/2008.

general deployment of security scanners as primary screening method (see part 1.2. "Policy background" above).

29. The use of security scanners in Europe is at present fragmented as security scanners are not systematically and uniformly deployed by Member States at their airports. Moreover, their use is not harmonised in terms of detection performance standards as there is no European legal framework providing for common detection performance standards for security scanners, which are therefore regulated at national level.

30. This fragmentation means there is a risk that the "one-stop security" principle is undermined, were Member States to lose confidence in each other's screening methods. The principle of harmonisation of security measures and standards at EU level means that once controlled at one EU airport passengers and baggage do not need to be rescreened (cf. paragraphs 59, 65 and Annex I). Passengers would be required under these circumstances to undergo additional screening procedures in different Member States.

31. The absence of security scanners from the list of the allowed screening methods affects the following aspects:

- Need to increase the number of passengers screened for non metallic items

32. As indicated in the Commission Communication of 15 June 2010[20], recent attacks on civil aviation, such as the so-called shoe bomber who endeavoured to hide explosives in the heel of his shoes in 2001, the attempt to blow up several aircraft over the Atlantic using liquid explosives in 2006 and the attempted terrorist attack with hidden explosives on Northwest Airlines flight 253 from Amsterdam to Detroit on 25 December 2009, reminded of the limits metal detectors, commonly used at airports, have in detecting non-metallic threat items on persons.

33. These incidents highlight indeed the fact that aviation security is facing new types of threats to which the traditional security technologies used at airports cannot give an adequate and efficient response. Today, walk-through metal detectors' weakness in identifying non-metallic items require screeners to undertake full body hand searches in order to achieve comparable results.

34. The quality of hand searches may sometimes vary because often hand searching is considered intrusive by passengers and screeners (see paragraph 49) and because of the pressure to screen high numbers of persons on a continuous basis, in particular at larger airports. The high qualification and performance of airport security staff are then essential aspects for aviation security in terms of effectiveness. This means that airport managers must provide for constant supervision and frequent training of their staff so as to ensure that hand searches are carrried out according to EU requirements.

35. Given that security scanners have the capability of detecting metallic and non-metallic items, they could offer a valuable alternative to full hand search and WTMD as a screening method and that their deployment at EU airports could help the latter adapt to

[20] Section 2.1.

the need to increase the number of passengers screened for non-metallic items. Such capability was also confirmed by Member States and associations in their replies to the consultation launched by the Commission at the turn of 2008/2009, as mentioned in Annex IV.

- General efficiency of airport security operations[21]

36. The absence of security scanners from the list of allowed screening methods negatively affects the general efficiency of security operations and the competitiveness of EU airports in the following ways:

– Cost-efficiency

37. The security services are usually provided by the national authorities themselves or delegated to the airport or to a private contractor although the situation may vary depending on the Member State. Typically in the EU, passengers finally bear the security costs since these are transferred into the ticket price; in some other cases Member States pay for security through their national budgets. It was estimated[22] that in 2002 airlines, passengers and cargo shippers covered more than 90% of the aviation security costs while Member States covered 6-7% of these costs.

38. According to ACI, before 11 September 2001, the security costs at European airports were on average 5 to 8 percent of airport operating costs[23]. Following the implementation of the European legislation on aviation security of 2002, the overall cost of aviation security for airports has increased. Indeed, in order to comply with the increased requirements on security controls of passengers and cargo, significant new investments were necessary at airports, such as the refurbishment of some airport terminals and the acquisition of additional screening equipment and recruitment of additional staff. However, public data on airport security costs is scarce. ACI reported that security operations at European airports account nowadays for about 35 percent of operating costs.[24] More detailed data is not available.

39. The adoption of Regulation 300/2008 was intended to simplify the rules and to provide more flexibility to structure security checkpoints[25] in such a way as to provide more flexibility and the most efficient way for airports of meeting the EU security requirements[26]. However, since the final text of the legislation adopted by the Council and the Parliament fell short of expectations in what concerns the use of innovative technology, such as security scanners, it has not succeeded in containing the rise of security costs at EU airports. For the time being, security operations at checkpoints are labour intensive. Indeed, while metallic items can be detected by WTMD, in general

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21 "General efficiency" is defined here as a combination of cost efficiency, passenger satisfaction, airport reputation. It is in this sense that the term will be used in the rest of the text.

22 SEC (2009)615 of 11.5.2009, Commission Staff Working document accompanying the proposal for a Directive of the European Parliament and the Council on aviation security charges, COM (2009)217 final.

23 http://www.globalpost.com/dispatch/european-union/100120/airport-security-body-scanner#

24 Ibid.

25 Checkpoints are set up differently depending on the size, layout and operational organisation of the airport, the type of operations, peak throughput, etc.

26 Recitals 3, 4 and 5 of Regulation 300/2008.

screening for non metallic items is conducted by full hand search. The experience of the "2009 Detroit flight bomber" has shown the importance of the latter type of screening for ensuring a satisfactory level of security. More than 80,000 skilled, trained, reliable and motivated personnel are required at EU airports to help provide effective aviation security. In this respect, a crucial element under current legislation is the availability of skilled staff at an affordable price.

40. Access to security scanners would provide airports with more options to possibly improve their cost-efficiency in their security operations. Indeed, although at present, as it is developed further in the present impact assessment, the deployment of security scanners appears *prima facie* to keep the same level or to increase the cost-efficiency of an airport, the cost-efficiency could be improved by combining security scanners with other screening methods and reorganising the security lanes. In the future, especially if security scanner technology makes further progress, access to security scanners may allow airports to improve cost efficiency and, for example, rely more on technical solutions where there is a shortage of well-trained staff in the local labour market to perform controls manually and where high staff turnover could affect the quality of security screening[27].

– Passenger satisfaction

41. Often screening procedures are relatively long and passengers complain about long queuing time and the discomfort linked to intrusive hand searches. Allowing airports to better organise their security controls by using more comfortable and possibly faster screening procedure would help passengers better accept the screening procedure. Indeed, trial results[28] show that security scanners are perceived as a less intrusive method than full hand search, and can therefore reduce the possible discomfort for passengers linked to current screening methods.

42. In addition from an airport's perspective, this would mean that passengers could also increase their use of airport facilities increasing their business and competitiveness.

– Airports' reputation

43. Some airports might consider that using more advanced technologies in screening procedures would give an image of a modern airport. This could also attract passengers and business and improve the competitiveness of an airport. Moreover, using the latest available security technologies could help maintain good relations with some third country partners where these technologies are widely deployed and trusted, notably in the United States.

- Fundamental rights and health

[27] This example has been reported in the Netherlands. In particular, the labour market for security personnel is increasingly tight. This is reflected by the catchment area from which new personnel is recruited: the radius of the catchment area for new security personnel expanded to 80 kilometres over the past years. In the future, the Dutch authorities expect the demographic changes to lead to a strong increase of the ageing population in the Netherlands that will further tighten up the labour market for security personnel.

[28] In the UK, Finland and the NL.

44. The use of security scanners for screening passengers at airports has raised over past years concerns in terms of respect of fundamental rights and health, also expressed by the European Parliament in the Resolution (2008)0521 of 23.10.2008.

45. In particular, it has been reported by Members of the Parliament and civil society in Europe and worldwild that some security scanners have raised privacy and human dignity concerns since they reveal a detailed display of the human body and medical details and have the capability to capture and process the image of a person without his/her consent. The deployment of some security scanners has also been seen critically, for example by the Fundamental Rights Agency, from the perspective of reconciling religious beliefs with the review of detailed body images by a human screener and also from the perspective of the protection of the children.

46. With reference to health, the type of radiation emitted by security scanners, and especially ionising radiation, has been a matter of concern for the European Parliament and the civil society. Particular concerns have been expressed with regard to airport and airlines staff members and frequent fliers. In particular the European Cockpit Association in a public hearing of 11.01.2001 organised by the Economic and Social Committee has expressed its concerns as regards the exposure of pilots and other crew members to additional ionising radiation above that already received from flying high altitude.

47. Member States and third countries have addressed the fundamental rights and health concerns at national level. In most of the Member States and in certain third countries, the deployment of security scanners was and is linked to the application of codes of conduct. Others, such as the USA, also foresee the possibility for passengers to opt for an alternative screening method of at least equivalent effectiveness- normally a full hand search together with the search of cabin baggage- on grounds of fundamental rights and/or health reasons. In the UK, the refusal to be screened by a security scanner results in persons being denied access to security restricted areas and to board an aircraft. The UK reported that in 2010 three persons refused to be screened by a security scanner for religious and health reasons and were denied boarding. In the Netherlands where opt-outs are possible, few persons decided to make use of this possibility.

48. The situation is at present fragmented as security scanners are not systematically and uniformly deployed by Member States at their airports. In addition, their use is not harmonised in terms of operational conditions as they are regulated at national level. To give an example it may well be that some codes of conduct foresee that the reviewer located remotely can communicate via radio with the screener while others prohibit any communications, or that the code of conduct states that images generated for female and male passengers are reviewed by a person of the same gender while other practices limit the analysis of the image to one gender. The unharmonised way in which security scanners are operated today therefore may imply a reduced treatment of fundamental rights where certain countries apply a less stringent code of practice.

49. However, as indicated before (paragraph 34), also hand searches have been considered by some passengers as being intrusive and raising fundamental rights concerns, notably human dignity and privacy. Some airports have reported a considerable number of passenger complaints in regard to screening by hand search including for medical and

religious reasons[29]. In particular airport staff may face situations whereby passengers with metallic prostheses or implants trigger the alarm when being screened by a metal detector. More recently, some Member States have reported[30] some difficulties in screening religious headwear.

50. Based on the EU and international trials, experience and studies on health, the present impact assessment will analyse how the different options address these aspects with a view to fully protect fundamental rights and health enshrined in EU legislation.

51. This analysis shows that Member States/ airports must face important trade-offs when deciding whether or not to deploy security scanners for passenger screening. Indeed, while keeping security at the highest level is an aspect which cannot be put into question, the way to achieve such a level has to take into account, especially for those airports where security operations are not financed by the State, the need to operate an efficient and competitive business. In this context while reducing discomfort for passengers is an element which has an impact on the airport efficiency, minimising health risks and protecting fundamental rights fall under the Member State responsibility.

The absence of security scanners from the list of the allowed screening methods restricts the ability of airports to use new technologies in order to enhance security and optimise their general efficiency. Moreover, the non harmonised way security scanners are currently deployed and operated may imply a reduced treatment of fundamental rights and health across the EU. When deciding whether or not to deploy security scanners for passenger screening Member States/ airports face important trade-offs between airport efficiency, keeping security at the highest level, reducing discomfort for passengers, minimising health risks and protecting fundamental rights.

2.2. Affected categories

52. Several categories of stakeholders are affected: namely airports, Member States, passengers, airport and airline staff and manufacturers.

53. Airports: As airport security is an increasingly large share of airport's daily operations, overall cost for airports is high. Such cost is typically transferred to airlines and then to passengers. However some Member States finance them entirely or partially[31] with the general budget. For this reason, where the costs of security are not financed by Member States, the optimisation of security operations for airports is an essential element in a competitive environment. In the current context, then, the rigidity of the legal system does not give airports the possibility of optimising their overall efficiency by combining existing security screening methods.

54. In so far as security decisions are taken and costs are borne by Member States, airlines and passengers, these are also affected by the restriction as they cannot entirely benefit from new effective screening methods. In particular, the advantages of less intrusive and

[29] Airports in the UK and NL.

[30] Primarily the UK. However, some other Member States such as Poland, Spain and Germany reported few cases.

[31] Germany for example partially pays security costs through the national budget.

potentially faster screening methods cannot be passed on to passengers that would benefit by spending less time at security check points while travelling. Also, trial reports have borne out that passengers experience with security scanners as being less intrusive than hand searching.

55. Moreover, any kind of screening method affects airport and airline staff who have to be screened according to the same rules that apply to passengers - often several times a day. All persons required to be screened – passengers as well as staff – therefore have a significant interest that the most efficient screening solutions are available at all times and ensure high levels of aviation security and efficiency while protecting their health and fundamental rights.

56. Finally, manufacturers are limited in their commercial activities because they are unable to sell their products on the aviation security market due to the limited use that airports can make of them. In such a context security scanner prices cannot develop in a competitive way.

2.3. Baseline scenario

57. Given that Member States having tested security scanners under trials and/or still using these technology at their national airports, such as Finland, the Netherlands and the UK, have reported to the Commission that security scanners are a valid alternative to existing screening methods in terms of efficiency and effectiveness, it seems probable that in the short term they will continue deploying security scanners within the limits of the current legal framework. Based on this experience it is also possible that other Member States will start deploying this equipment at their national airports.

58. This would imply that fundamental rights and health issues will not be assessed in a harmonised manner by Member States' authorities (under the application of operating protocols regarding health and fundamental rights within the framework of the EU and EURATOM legislation). The potential co-existence of different fundamental rights standards will result in a different treatment of travellers across European airports.

59. Also detection performance standards, which are not enshrined in EU legislation, could vary depending on the testing methodology and the machine used. Consequently, non harmonised detection performance standards will be allowed to be used on a trial or on a more stringent measure basis. The fragmented deployment of security scanners at EU airports in terms of operational conditions and detection performance standards would undermine the "one-stop security" principle governing airport security in Europe (see Annex I). Indeed, if Member States no longer relied on each other's screening methods (see section 2.4), this would potentially create additional unnecessary screening for passengers.

60. Given the fact that security scanners have been considered less intrusive than full hand search by passengers taking part in trials[32], the business-as-usual scenario will imply that an opportunity to enhance the travelling experience of passengers has been lost.

[32] In the UK, Finland and the NL.

61. In the longer term, in the absence of a legal EU framework allowing the possibility for a wider choice in the deployment of security scanners at EU airports under clear conditions, willingness to test security scanners could be significantly reduced. Moreover, EU rules limit trials to a maximum duration of 30 months, which could force these Member States to remove the scanners. Member States and airports will be discouraged from investing in new generation of security scanners (as described in Annex II) as the legal system will not allow to permanently use them as primary methods for screening passengers and will not put airports in a position to recover investment costs. For this reason the baseline scenario, which refers to a situation under the current legislative framework which rules out the permanent use of scanners, does not take technological development into account as an exogenous factor.

62. Moreover, the potential of security scanners to improve airport general efficiency and possibly reducing airport costs – as described above – will not be used. The expected growth in air travel (Projections for transport activity in the PRIMES Reference scenario show that air traffic in Europe will double between 2010 and 2030: from 576.9 giga passenger kilometres (Gpkm) to 1054.9 Gpkm[33], respectively. Slightly higher than in the PRIMES Reference scenario, Boeing projects a 4.2% growth per year between 2009 and 2029[34] and Airbus an air traffic growth of 4.3% per year for the same period[35]), concentration of flows on the biggest airports and ageing of the population, which will put a strain on the workforce availability, are likely to exacerbate the problem of costs of security personnel in particular especially given that generally security costs account for quite a substantial percentage of the overall airports' operating costs (cf. paragraph 38). Due to the many assumptions behind, it is difficult to give a scale or timeframe to the evolution of this problem, but it seems reasonable to think that it will touch to a different degree a number of big airports across Europe. In the most extreme case, the lack of skilled workforce can reduce the effectiveness of the whole security system. Furthermore, in the light of the evolving threats to civil aviation more and more hand searches would be required to increase the number of passengers screened for non-metallic items. This could further exacerbate the problem of deployment of security staff and related cost issues.

63. Finally, if current restrictions in the use of security scanners are maintained, manufacturers will have less incentive to develop hardware and software responding to the European requirements in terms of detection performance and in particular fundamental rights and health as defined by EU legislation. The baseline scenario can therefore limit the development of security tools fully respectful of fundamental rights. Indeed, even if technological developments were to better address detection performance, fundamental rights and health issues, their impact on the baseline scenario would be limited given that security scanners would still not be allowed under the current legal framework.

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33 Projections for transport activity in the Reference scenario, European Commission (2010), EU energy trends to 2030 – Update 2009; http://ec.europa.eu/energy/observatory/trends_2030/doc/trends_to_2030_update2009.pdf

34 Source: Boeing; http://www.boeing.com/commercial/cmo/market_developments.html

35 Source: Airbus; http://www.airbus.com/en/corporate/gmf2009/

2.4. Does the EU have the right to act and is EU added-value evident – Treaty base, 'necessity test' (subsidiarity) and fundamental rights limits?

64. The Commission would act according to comitology rules, notably Regulation (EC) 300/2008, on the basis of Article 100 of the Treaty on the functioning of the European Union.

65. The main result of EU action in aviation security is the application of the one-stop security principle[36]: European legislation ensures that, once controlled at an EU airport, passengers, baggage and cargo can in principle be transferred at another EU airport without the need to be controlled again.

66. This principle, which also applies to passengers and goods arriving on flights from third countries that have been recognised as applying equivalent aviation security standards, is one of the main achievements of the common aviation security standards laid down in Regulation (EC) 300/2008 and its implementing rules[37]. It provides passengers with great facilitation and gives the industry – both airports and airlines – a competitive advantage and generally considerable benefits, financially as well as operationally, as it ensures lower security costs, higher throughput of passengers and cargo and simplification of procedures.

67. Without one-stop security, which means harmonisation of measures and standards at EU level, Member States would regulate aviation security themselves without being able to rely on each other common standards.

68. Without common aviation security standards agreed upon at EU level Member States and airports would not be in a position to overcome individually the current situation and deploy security scanners for aviation security in a harmonised way and thus fully benefit from one-stop security.

69. The lack of EU action and the undertaking of fragmented or uncoordinated action by individual Member States (e.g. the deployment of security scanners under national rules) would increase the existing concerns on fundamental rights and health and create inequality of treatment of passengers and staff at different EU airports.

70. In addition, an EU action would also ensure that technology developments in the aviation security field, as foreseen by the Regulation 300/2008, are taken into account for use in EU airports.

71. Finally, the Commission is also, in its role and with the EU Member States, in a position to apply leverage and propagate best practices and standardisation at international level such as within ICAO, to promote international cooperation, and work bilaterally with important EU partners such as the US in a more effective way than any Member State could do on its own.

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[36] The UK does not apply the one-stop security principle as they consider that the threat level in their country needs the deployment of additional security measures.

[37] This principle does not prevent Member States considering to face a higher level of threats from applying more stringent measures going beyond EU existing security standards.

3. OBJECTIVES

72. Regulation (EC) 300/2008 aims at increasing the flexibility of the security authorities in adopting security measures and allowing the introduction of new security technologies.

73. The general objective of the proposed amendment is to allow airports to make the best possible use of security scanners while meeting the security requirements laid down in EU law. This objective could be achieved by allowing the use of security scanners as a primary method for passenger screening.

74. The specific objectives are:

(1) To allow the deployment of security scanners at airports to help them adapt to the need to increase the number of passengers screened for non metallic items, as is the case today for metallic items.

(2) To help airports improve their general efficiency and strengthen their competitive position in the following ways:

– Optimising airport security costs;

– Increasing passengers' satisfaction and reducing the discomfort for passengers related to intrusive screening methods;

– Increasing their reputation as a modern airport using the most advanced screening technologies.

(3) To ensure the protection of health of passengers and secure the respect of fundamental rights.

75. When deciding whether or not deploying security scanners, Member States/ airports would be facing important trade-offs. Given that aviation security shall always be kept at the highest level, Member States and/or airports would have to consider for example that deploying security scanners would reduce discomfort for passengers and increase airport's reputation but require significant investments especially under current technology; or they would have to balance the choice of using security scanners with the need of minimising health risks and protecting fundamental rights.

4. POLICY OPTIONS

76. The previous analysis has shown that the increased importance of aviation security puts a strain on the general efficiency of existing screening methods whereas Member States and airports are limited in their choice of the most efficient technology for organising their security operations. The sections below describe possible ways to address the present situation in view of the specific objectives indicated above.

4.1. Description of policy options

(1) Option 1: No new EU regulatory action (baseline scenario)

77. The baseline scenario implies that no new regulatory action is taken at European level. In this case Member States would continue to ask the Commission's authorisation to carry out trials for testing security scanners for a maximum of a 30 month period or to notify the Commission of their use as a more stringent measure in case of increased level of threat and in addition to currently recognised security screening methods.

(a) Detection performance

78. Several expert bodies[38] have tested and defined basic standards which ensure the effectiveness of the use of security scanners in aviation security. In particular, the European Civil Aviation Conference (ECAC) has developed the so-called Common Testing Methodologies (hereafter "CTM") for security scanners.

79. These standards are not included in EU regulations. Establishing the detection performance is therefore currently a national prerogative. However, once EU detection performance standards are established at EU level certified equipment in one Member States could be recognised in another member States.

80. Under this scenario, therefore, Member States/airports would continue to test security scanners they intend to use under one of the common testing methodologies available on the market.

(b) Fundamental rights

81. Different legislation aiming at protecting fundamental rights exist at EU level and must be complied with. The Charter of Fundamental Rights of the European Union and the European Convention of Human Rights provide, *inter alia*, for protection of private life, human dignity and personal data as well as Article 16 of the Treaty on the Functioning of the European Union. Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 (hereafter "Directive 95/46/EC") provides for the protection of individuals with regard to the processing of personal data and on the free movement of such data (see also section 5.1.2).

82. Under this scenario, while respecting the existing EU rules, Member States/airports would continue to decide whether or not to adopt codes of practice in order to address fundamental rights concerns.

(c) Health

83. Different legislation aiming at protecting persons' health exists at EU level. In particular security scanners using millimetre wave technology are subject to the Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (hereafter "Council Recommendation 1999") and to Directive 2004/40/EC (of the European Parliament and of the Council of 29 April 2004 on the minimum health and safety requirements regarding the exposure of workers to the risks

[38] Since November 2008 the European Civil Aviation Conference (ECAC) has developed and applied the Common Testing Methodologies (CTM). The US Department of Homeland Security Transportation Security Administration (TSA) and the Canadian Air Transport Security Authority (CATSA) have also developed and applied testing paradigms to evaluate operational effectiveness and detection performance.

arising from physical agents (electromagnetic fields) (hereafter "Directive 2004/40/EC")[39].

84. The use of X-ray security scanners falls under the provisions of the legislation established under the Euratom Treaty[40] and more specifically is subject to the requirements of the Euratom radiation protection legislation for non-medical use (see 3.2.5), notably to Council Directive 96/29/EURATOM[41] ("Directive 96/29/EURATOM"). Although such legislation does not explicitly deal with security scanners, the principles and exposure limits set out in it must also apply to these technologies.

85. Member States and airports using security scanners are responsible for making an evaluation of the potential risk to health associated with the use of a given security scanner technology before allowing its deployment within the EU and Euratom legal framework. This has happened for all Member States having deployed security scanners. The UK is the only Member State having authorised the use of security scanners based on ionising technology[42].

86. Since health protection is already foreseen by specific EU and Euratom legislation (see also below section 5.1.3) which requires Member States to comply with principles and dose limits and to make a risk assessment before deploying equipment using a given energy for non-medical use (including the obligation to monitoring the use of such equipment), the present impact assessment considers that EU/Euratom specific legislation already provides a level of health protection.

(2) Option 2: No/discontinued EU action: the abolition of the exclusive nature of the list of allowed screening methods and technologies

87. Under this scenario, the Commission would propose to amend the European aviation security legislation with a view to establishing that passengers can be screened by one or more of all allowed methods and technologies and that those listed are only some of the possible eligible methods and technologies.

88. More particularly this would imply two Commission proposals to amend part A (1) of the Annex to Commission Regulation (EC) 272/2009, which pursuant to Article 4(3) of Regulation (EC) 300/2008 sets the methods of screening allowed, and point 4.1.1.2 of

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39 Council Recommendation of 12 July 1999, on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) (OJ L 199, 30.7.1999). Directive 2004/40/EC of the European Parliament and of the Council of 29 April 2004 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) (18th individual directive within the meaning of Article 16(1) of Directive 89/391/EEC - OJ L 184, 24.5.2004).

40 Treaty establishing the European Atomic Energy Community, consolidated version in O.J. C 84 of 30 March 2010

41 Council Directive 96/29/EURATOM of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation (OJ L 159, 29.6.1996, p. 1).

42 See for example "the assessment of comparative ionising radiation doses from the use of Rapiscan secure 1000 x-ray backscatter security scanner" by the Health Protection Agency (UK), published at the following website: http://www.dft.gov.uk/pgr/security/aviation/airport/securityscanners/securitys canner/

Commission Regulation (EU) 185/2010, which implements Commission Regulation (EC) 272/2009 detailing how passengers must be screened.

89. Consequently, once the limitations imposed by the list were removed, Member States and airports would decide which technology to deploy, including security scanners, the type of machine and would set the technical standards and operational conditions of its use. Member States could then adopt detection, health and fundamental rights requirements set at national level in full compliance with EU and EURATOM legislation.

(a) Detection performance

90. Under this scenario, the same considerations as expressed under option 1 would apply as regards the detection performance of security scanners.

91. Moreover, because of the removal of the exclusive character of the list of recognised screening methods, Member States would be able not only to set detection performance standards for the permanent use of security scanners but also for all new technologies they might decide to deploy at their airports in the future.

(b) Fundamental rights

92. Under this scenario, the same considerations expressed under option 1 would apply. In addition Member States would decide whether or not to set operational conditions for other technologies to be possibly deployed in the future in full compliance with EU and EURATOM legislation.

(c) Health

93. Under this scenario, the same considerations expressed under option 1 would apply. In addition Member States/airports would decide whether or not set operational conditions for other technologies to be possibly deployed in the future.

(3) Option 3: Adding security scanners to the list of allowed screening methods for passengers

94. Under this scenario security scanners would be added to the list of the allowed screening methods and technologies for passengers and would be therefore recognised as an equivalent screening method. More specifically, the Commission would amend part A (1) of the Annex to Commission Regulation (EC) 272/2009, which pursuant to Article 4(3) of Regulation (EC) 300/2008 sets the methods of screening allowed, and point 4.1.1.2 of Commission Regulation (EU) 185/2010, which implements Commission Regulation (EC) 272/2009 detailing how passengers must be screened.

95. Under this option Member States/airports would no longer be limited to deploying security scanners under trials or more stringent measure and could decide to choose to deploy them to entirely replace the current screening system. No specific conditions governing their use would be laid down at EU level.

(a) Detection performance

96. Under this scenario, the same considerations expressed under option 1 would apply with the difference that if security scanners were to be used at EU airports, detection performance standards would be set at national level for their permanent use.

(b) Fundamental rights

97. Under this scenario, the same considerations expressed under option 1 would apply. Moreover, Member States/airports would decide whether or not to establish operational standards for the use of security scanners as permanent screening method.

(c) Health

98. Under this scenario, the same considerations expressed under option 1 would apply. Member States would decide whether or not to establish operational standards for the use of security scanners as permanent screening method in full compliance with EU and EURATOM legislation.

(4) Option 4: Adding security scanners to the list of allowed screening methods for passengers and fixing the detection performance standards with the general possibility for passengers to opt out

99. This option suggests that security scanners would be added to the list of the allowed screening methods and technologies for passengers and could be therefore allowed as a passenger screening method at EU airports. Detection performance standards and the possibility to opt for alternative screening methods would be set at EU level

100. Under this scenario the Commission would amend part A (1) of the Annex to Commission Regulation (EC) 272/2009 and point 4.1.1.2 and 12 of the Annex to Commission Regulation (EU) 185/2010 to include security scanners on the list of the allowed screening methods and technologies for passengers and indicating that persons refusing to go through a scanner are given an alternative screening method of equivalent effectiveness, for example a full hand search.

101. In addition point 12 of the Annex to Commission Regulation (EU) 185/2010 would provide for the general principles on detection performance standards applying when using security scanners for passengers screening while points 4.1 and 12 of Commission Decision (2010)774 would further detail the detection performance standards

(a) Detection performance

102. Under this scenario, the EU legislation would define detection performance standards. Such standards would be based on the already developed ECAC technical standards (see section 5.1 social impacts "detection performance", and in particular footnote 25), which would have to be agreed on by the regulatory Committee for Aviation Security.

103. General principles would be, for example, that :

– Security scanner shall detect and indicate by means of an alarm at least specified metallic and non-metallic items including explosives;

– Detection shall be independent of the position and orientation of the item:

– Security scanner shall give both a visual and an audible alarm;

– The system shall have a visual indicator to show that the equipment is in operation;

– The performance of scanners shall not be affected by sources of interference

– When the equipment alarms, the cause of the alarm shall be resolved.

104. Only equipment complying with the EU standards would be allowed to be used at European airports.

(b) Fundamental rights

105. As passengers would have the possibility of opting out, no specific operational rules would be fixed at EU level as regards fundamental rights over and above the general EU rules which Member States would have to respect. The same considerations expressed under option 1 and 3 would thus apply. Moreover EU legislation would impose on Member States/airports the obligation that each person is fully informed of the implications of being screened by a security scanner and that those refusing to be screened for fundamental rights reasons would need to undergo an alternative detection method of similar effectiveness, involving for example full body hand search in order to maintain high levels of aviation security.

(c) Health

106. Under this scenario, also in respect of health protection the same considerations expressed under option 1 and 3 would apply. Moreover, EU legislation would impose upon Member States/airports the obligation to fully inform each person on the implications of being screened by a security scanner and would indicate that those refusing to be screened for health reasons would need to undergo an alternative detection method of similar effectiveness, involving for example full body hand search in order to maintain high levels of aviation security.

(5) Option 5: Adding security scanners to the list of allowed screening methods and technologies for passengers and fixing the detection performance standards and the operational conditions under the implementing legislation without the general possibility for passengers to opt out

107. This option suggests that security scanners may be deployed by EU airports to screen passengers.

108. Under this scenario the Commission would amend part A (1) of the Annex to Commission Regulation (EC) 272/2009, point 4.1.1.2 of Commission Regulation (EU) 185/2010 to include security scanners on the list of the allowed screening methods and technologies for passengers and point 12 to establish detection performance requirements. In addition, points 4.1 and 12 of Commission Decision (2010)774 would detail detection performance standards and operational conditions applying when using security scanners for passengers screening.

109. Under this scenario EU legislation would foresee that passengers are not given an alternative screening method to security scanners (unless security scanners cannot be used in specific situations[43]) as fundamental rights and health concerns are addressed by the operational conditions fixed in EU rules (see "fundamental rights" below).

(a) Detection performance

110. Under this scenario, the same considerations expressed under option 4 would apply.

(b) Fundamental rights

111. Under this scenario EU legislation would require that Member States/airports, deciding to use security scanners for passenger screening, apply hardware and software incorporated in security scanners, such as privacy by design and Privacy Enhancing Technologies (PETs), to ensure that:

- The image is destroyed immediately after that the passenger is cleared;
- Where a screener is needed to interpret the image and individual body contours are visible, the image is analysed remotely by a person of the same gender as the passenger screened;
- The image is not otherwise stored, retained, copied, printed or retrieved;
- Where individual body contours are visible, the image is not linked to the identity of the screened person, including remote viewing, and is kept 100% anonymous;
- Any unauthorised access to this information is prevented;
- Passengers are fully informed of the procedures.

112. These operational conditions have been recognised by the European Data Protection Supervisor[44] and the Fundamental Rights Agency[45] to mitigate concerns as regards the protection of human dignity, data protection and other fundamental rights.

(c) Health

113. Under this scenario, the same considerations expressed under option 1 and 3 would apply.

(6) Option 6: Adding security scanners to the list of allowed screening methods and technologies for passengers and fixing the detection performance standards and the operational conditions under the implementing legislation with the general possibility for passenger to opt-out

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43 Such as for example for small children and disabled people.

44 See the Resolution on the use of body scanners for aviation security purposes adopted by the European Privacy and Data Protection Commissioner's Conference on 29-30 April 2010.

45 See "The use of body scanners: 10 questions and answers" of the Fundamental Rights Agency of July 2010 (http://fra.europa.eu/fraWebsite/attachments/FRA_Opinions_Bodyscanners.pdf).

114. This option would be a combination of options 4 and 5: detection performance standards and operational conditions would be set at EU level as in option 5 and passengers would be given the general possibility of opting for an alternative screening method, as in option 4.

(a) Detection performance

115. Under this scenario, the considerations expressed under option 4 and 5 would apply.

(b) Fundamental rights

116. Under this scenario, the same considerations expressed under option 5 would apply. However, passengers refusing to be screened by a security scanner for fundamental right reasons would be given the possibility of opting for an alternative screening method of equivalent effectiveness as in option 4.

(c) Health

117. Under this scenario, the same considerations expressed under option 5 would apply. However, passengers refusing to be screened by a security scanner for health reasons would be given the possibility of opting for an alternative screening method of equivalent effectivenessas in option 4.

(7) Option 7: Making the use of security scanners mandatory at all airports, in combination with the operational conditions of option 5

118. This option imposes the mandatory and permanent use of security scanners for screening passengers fully replacing the current system (metal detectors + hand searches) at each European airport. Security scanners are added to the list of eligible methods and technologies for passengers screening and detection performance standards and operational conditions are also set at EU level. Passengers are not given an alternative screening method to security scanners and refusal to be scanned by a security scanner results in denying boarding.

119. Under this scenario part A (1) of the Annex to Commission Regulation (EC) 272/2009, points 4.1.1.2 and 12 of Commission Regulation (EU) 185/2010 are amended. In addition, points 4.1 and 12 of Commission Decision (2010)774 are also amended.

(a) Detection performance

120. The same elements indicated under option 5 would apply.

(b) Fundamental rights

121. The same elements indicated under option 5 would apply.

(c) Health

122. The same elements indicated under option 5 would apply.

123. The table below summarises the possible options.

	OPTION 1	OPTION 2	OPTION 3	OPTION 4	OPTION 5	OPTION 6	OPTION
	No new EU regulatory action (baseline scenario)	**EU Discontinued action Removal of exclusive list**	**Optional use of security scanners**	**Optional use of security scanners + detection performance standards + opt-outs**	**Optional use of security scanners+ detection performance standards + operational conditions + no opt-outs**	**Optional use of security scanners+ detection performance standards + operational conditions + opt-outs**	**Mandat use of security scanner opt-outs**
Deployment of security scanners	Not allowed (except for trials and more stringent measures	Optional for scanners and other new technologies	Optional.	Optional	Optional	Optional	Mandato
Detection performance standards	Set at national level	Set at national level for security scanners and new technologies	Set at national level	Set at EU level.	Set at EU level	Set at EU level	Set at EU level
Operational conditions for fundamental rights	No specific EU operational conditions	No specific EU operational conditions	No specific EU operational conditions	No specific EU operational conditions	Specific operational conditions set by EU	Specific operational conditions set by EU	Specific operation condition by EU
Operational conditions for health	No specific EU operational conditions	No specific EU operational conditions	No specific EU operational conditions	No specific EU operational conditions	No specific EU operational conditions	No specific EU operational conditions	No speci EU operation condition
Opt-outs	Member State decide	Member State decide	Member State decide	Yes	No	Yes	No

5. ANALYSIS OF IMPACTS

124. As certain impacts, notably the ones related to fundamental rights and health issues only slightly vary from one option to another, it was decided to structure this part by type of impact rather than by option.

5.1. Social impacts

5.1.1. Detection performance

125. Overall tests carried out in laboratories and as part of operational trials at airports in several countries show a reliable security performance of security scanners and in particular an enhanced detection probability for non-metallic items and liquids compared to walk-through metal detectors. Indeed as indicated before, and as shown by trials, security scanners can detect not only metallic but also non-metallic items, such as liquids and plastic explosives.

126. In its Communication of 15 June 2010 the Commission indicated that security scanners are proven to offer an equivalent screening effectiveness to the established and presently applied screening methods, as showed by ECAC and other testing bodies, reported by Member States under trials[46] and reported in the NDP Technical Report[47]. Moreover, performance standards developed at European and international level once turned into EU legislation would ensure a sufficiently high performance level in view of detection capability and other relevant parameters of security scanners. Consequently, in terms of detection capability, security scanners could be used as a primary method for passenger screening and be an alternative to current screening methods. The increased detection capability of security scanners is reported by Member States and airport and airlines associations in their replies to the consultation launched by the Commission at the turn of 2008/2009, as referred to in Annex IV.

127. In the light of this, the effectiveness of the use of security scanners is not put into question in the present impact assessment. However, detection performance is analysed in the different options in terms of the possible impact on aviation security resulting from the existence or not of detection performance standards enshrined in EU legislation.

Options 1, 2, 3

128. In all the options where detection performance standards as well as the methods of testing equipment are not fixed in the legislation, establishing the detection performance would remain a national prerogative.

129. Detection performance at European airports would then vary depending on the testing methodology and the machine used with the risk of different standards being applied across the EU. Though it is foreseeable that Member States, which are actively involved

[46] See Annex III.
[47] See Annex II.

in ECAC works and mainly test security scanners according to the ECAC CTM, will presumably continue doing so, there is an increased risk that the lack of harmonised use of common detection standards may affect the overall security level in the EU. This could also imply that passengers and stakeholders could lose benefit from the application of the one-stop security principle[48] if Member States lose confidence in the quality of each other's controls. Finally, the absence of common aviation security standards risks that EU Member States lose their common voice at international level.

130. The risks related to the detection performance would be relatively higher under option 2, as not only security scanners, but also other innovative security tools and methods would remain outside the scope of European legislation

Option 4, 5, 6 and 7

131. Under these options, the detection performance standards would be set at EU level. Arguably the highest degree of harmonisation in detection will be achieved under option 7.

132. Compared to the other options, including the baseline, options 4, 5, 6 and 7 offer the perspective of a better and more harmonious level of detection performance. However, leaving the security choice to passengers/staff members, as foreseen by options 4 and 6, could have some negative impact on overall security. Indeed allowing passengers, and potentially criminals, the possibility of testing the weaknesses of the security system would undermine the unpredictability principle -which is an essential principle in the effectiveness of European airport security implying that passengers should not be able to self-select, predict or avoid security procedures at one airport- and thus aviation security. Also, it requires considerable training and close supervision for a full body hand search to achieve similar effectiveness in maintaining high levels of security as a security scanner.[49]

5.1.2. Data protection and other fundamental rights

133. Generally, the use of security scanners at airports can involve the possible capture and processing of the image of an identified or unidentifiable person in order to allow a human reviewer to perform the security relevant assessment.

134. As such this capture and processing interferes with the fundamental right to the protection of private life and to the protection of personal data as recognised under Articles 7 and 8 of the Charter of Fundamental Rights of the European Union and Article 8 of the European Convention of Human Rights, as well as Article 16 of the Treaty on the Functioning of the European Union. Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data is equally applicable.

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48 See Annex I.

49 In their reply to the public consultation in 2009, on 11.02.2009 Article 29 Working Party and EDP pointed out that giving a choice to be screened the individual might at first sight appear as a more balanced solution but raises serious questions as to the effective necessity and efficiency of security scanners and eventually does not appear to be a valid basis for scanning. Excluding some individuals would appear to open a weakness in the system.

135. As indicated in the Commission Communication of 15 June 2010, and also by several stakeholders during the Commission public consultations, the criteria against which the scanning has to be assessed are i) whether the measure proposed is appropriate to achieve the objective (detection of non-metallic items and therefore a higher security level), ii) whether it does not go beyond what is necessary to achieve this objective and iii) whether there is no less intrusive means.

5.1.2.1. Data protection

136. Directive 95/46/EC requires that persons, of whom images are being taken should be informed in advance that they are subject to such an exercise and of the possible use of the image. As a rule personal data such as images should only be collected, processed and used in compliance with the applicable data protection principles. Images should only be used for aviation security purposes. In principle, storage and retrieval of images created by the security scanner should not be possible once a person has been cleared as not carrying any threat items. Only if an individual is stopped for carrying such a prohibited article may an image be retained as evidence until the passenger is ultimately cleared or denied access to the security restricted area and eventually the aircraft.

5.1.2.2. Other fundamental rights

137. The use of some security scanners has raised concerns with regard to human dignity and private life because of the technical capability of some screening technologies to reveal a detailed display of the human body (even if blurred), medical details, such as prostheses and incontinence padsThe European Association for the Defence of Human Rights for example has considered that security scanners constitute an attack to human integrity and dignity, as indicated in Annex IV. The deployment of some security scanners has also been seen critically from the perspective of reconciling religious beliefs with a procedure foreseeing the review of body images by a human screener. However, the appreciation level of intrusion of security scanners may depend on cultural and personal context, as reported by the article 29 Working Party and EDPS (see Annex IV).

138. In addition, the use of security scanners requires a careful analysis of aspects related to the rights of the child and the child's entitlement to protection and care as well as the full compliance with the Fundamental Rights Charter's requirement to ensure a high level of human health in all European policies and activities. Moreover, as far as the right to equality and the prohibition of discrimination is concerned, operating standards related to the use of security scanners must ensure that passengers requested to undergo a security scan are not chosen based on criteria such as gender, race, colour, ethnic or social origin, religion or belief

139. All these aspects are also taken into account in the assessment of the policy options. Additionally, trials[50] showed an improvement of the employment satisfaction rating for security staff compared to the often negative feelings staff have with regard to hand searches.

[50] In the UK and the NL.

Options 1, 2, 3 and 4

140. Under scenarios 1, 2, 3 and 4 existing European legislation on fundamental rights will be applicable and Member States and airports having already put in place codes of conduct for the use of security scanners would presumably continue doing so without the Commission systematic control. In addition although Member States use codes of practice to comply with fundamental rights issues these may vary: for example, as indicated in Annex II, in the UK, in order to mitigate some fundamental rights concerns, the reviewer analysing the images is remotely located while in the Netherlands the same concerns are addressed by the deployment of a full automated version of security scanners with no reviewer (Automatic Threat Recognition). In addition, while the UK code of practice clearly establishes that "If a passenger declines to be scanned that passenger must be refused access to the Restricted Zone, with the result that the passenger will not be able to fly"; other Member States/airports do not have a similar provision in the set of operational conditions.

141. Similarly, other Member States wishing to start deploying security scanners would most probably establish rules on fundamental rights. However these rules would vary from a Member State to another or from an airport to another. In such a case fundamental rights will continue to be assessed at national level in an uncoordinated way and, thus, passengers and airport staff would be differently treated across Europe.

142. Moreover, such a situation would not provide incentives for manufacturers of security scanners to further develop hardware and software for the purpose of complying with the highest fundamental rights and health standards defined by the European Union (see section 2 "problem definition" for more details on this topic).

143. Finally, the risks related to the fundamental rights would be higher for options 2 and 3 than in the baseline. Under option 2, since the exclusive nature of the list of allowed screening methods and technologies would be removed, the lack of European standards on fundamental rights would concern not only the security scanners, but all new equipment and methods likely to be introduced in the future. Under option 3, on the other hand, levying the current restrictions on the deployment of security scanners would probably mean more airports using them. The risk of fragmentation of fundamental rights would therefore be multiplied proportionately to the number of airports using the method.

144. In particular, as regards option 4, the same considerations as expressed under option 3 would apply. However, persons would generally be given the possibility of opting out for an alternative screening method. Although Member States would be obliged to ensure compliance with the existing legal framework for protecting fundamental rights, passengers could suffer from biased or incomplete information on the potential threats to their fundamental rights. As a result, although the opt-out possibility would help address *per se* the fundamental right concerns per each individual, option 4 would offer a non harmonised and then sub-optimal protection of fundamental rights in comparison to the setting of binding standards at the EU level which would exclude the possibility of violating fundamental rights within the meaning of the European Charter on Fundamental Rights. In addition, although in principle offering a general opt-out helps to address the fundamental right concerns per each individual, few persons seem to make use of such a possibility as shown by the trial in the Netherlands and the

experience in the United States, where 99% of persons are opting to be screened by the security scanners. For this reason, also the concrete benefits in terms of protection of fundamental rights might be limited.

Options 5, 6 and 7

145. Under options 5, 6 and 7, while existing European legislation on fundamental rights will be applicable as in all other options, EU legislation would set detailed operational conditions for compliance with fundamental rights. As a consequence Member States and airports would not be allowed to establish their own and often differing codes of conduct for the use of security scanners. All Member States and airports wishing either to continue or to start deploying security scanners would have to do so in accordance with EU operational conditions on fundamental rights. This would ensure that travelling persons and airport staff members are treated uniformly in EU, in accordance with the highest standards compatible with the European Charter on Fundamental Rights.

146. The necessity of the interference with fundamental rights is justified by the public interest of a better and more harmonised level of detection necessary for enhancing aviation security. The alternative screening method of hand search is not considered a less intrusive means. Operational safeguards will be put in place (as listed in point 111) under options 5, 6 and 7 in order to ensure that the interferences into the fundamental right to data protection and other fundamental rights do not go beyond what is necessary and are therefore proportionate. In the light of the established safeguards, options 5 and 7 argue that passengers would not need to be given the possibility to opt out for fundamental rights reasons since they would already receive the necessary protection.

147. However it has to be noted that certain categories of persons which are already receiving special attention notably under Euratom legislation on protection against ionising radiation, such as for example air crew and pregnant women, will continue to be protected according to this legislation. Moreover, for justified cases and on a case by case analysis, persons such as wheelchair users, who could not enter the security scanner equipment, or infants and children, who might not be able to mantain the necessary position, and others would be provided with alternative screening methods.

148. Finally, the Commission would have a systematic control on the compliance with fundamental rights operational conditions set for the use of scanners. This would increase citizens' protection at EU airports.

149. As regards option 6, compliance with fundamental rights and health requirements would also be ensured in the best way. While the fact that operational condition are set at EU level already satisfactorily addresses fundamental rights' concerns, the opt-out could provide an additional element to facilitate social acceptance of security scanners and address concerns in relation to the new technologies used and their fundamental rights compliance, although the limited available empirical evidence suggests that few people make use of the opt-out and that therefore also the impact on the social acceptance is limited.

150. In any case, granting the possibility of opting out would require that passengers undergo an alternative detection method of similar effectiveness, for example full body hand search in order to maintain high levels of aviation security. Indeed giving passengers the

possibility of influencing the screening process would allow them to test the possible weaknesses of the security system. This would undermine European airport security. Also, as indicated by aviation security experts, it requires considerable training and close supervision for a full body hand search to achieve similar effectiveness in maintaining high levels of security as a security scanner.

5.1.3. Health

151. As indicated, different legislation aiming at protecting persons' health exists at EU level. Although such legislation does not explicitly deal with security scanners, the principles and exposure limits set out in it must also apply to these technologies.

152. Scanners using millimetre wave technology are subject to the Council Recommendation 1999 on the limitation of exposure of the general public to electromagnetic fields and to Directive 2004/40/EC[51].

153. The use of X-ray security scanners falls under the provisions of Directive 96/29/EURATOM[52] . In particular, as regards the use of ionising radiation for non-medical use, health protection of the exposed individuals- general public and workers- is governed by three principles:

- Justification of any practice involving exposure to ionising radiation to ensure that it will result in a net benefit to individuals and to society, outweighing the health detriment of radiation exposure;

- Optimisation of the health protection to ensure that the total radiation doses are as low as reasonably achievable taking into account economic and social factors; and

- Limitation of the radiation doses to ensure that no individual will receive a dose above the legally established dose limits.

154. The compliance with these principles and the specific legal provisions for radiation protection of the general public and the workers is ensured through the introduction in the Euratom legislation of requirements for reporting to the national authorities and authorisation of practices involving ionising radiation and for regulatory enforcement through inspection

155. In particular if a practice is found to be generally justified, an authorisation for each specific use should be given (or refused) by the competent authorities on the basis of an evaluation of the potential exposure doses and the compliance with the radiation protection rules. Air crews, pregnant women, children and minors for example are made subject to specific and different protection under Euratom legislation on radiation

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51 Council Recommendation of 12 July 1999, on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) (OJ L 199, 30.7.1999). Directive 2004/40/EC of the European Parliament and of the Council of 29 April 2004 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) (18th individual directive within the meaning of Article 16(1) of Directive 89/391/EEC - OJ L 184, 24.5.2004).

52 Council Directive 96/29/EURATOM of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation (OJ L 159, 29.6.1996, p. 1).

protection. It has also to be noted that some Member States, such as France, Italy, Austria and Germany, have in their legislations a general prohibition of the use of ionising radiation on the human body for non-medical purposes.

156. The Commission is preparing a major revision of Directive 96/29/EURATOM[53], with a view to proposing more specific provisions for the use of ionising radiation for non-medical purposes.

157. European and international studies[54] have been focusing on the safety aspects of security scanners or their underlying technology, including radio wave and ionising radiation exposure of persons being screened, operators and others who work in the vicinity of the systems. Several studies investigate in a more general way the impact of these technologies on the human being. The present impact assessment mainly focused on those studies looking at the impact in relation to aviation security use of security scanners.

5.1.3.1. Passive millimetre-wave imaging systems

158. Since no radiation is emitted, there are no health concerns when using passive millimetre wave technology.

5.1.3.2. Active millimetre-wave imaging systems

159. Millimetre-wave technology uses non-ionising radiation and, in current systems, millimetre radiation with a frequency of approximately 30 gigahertz (GHz).

160. As indicated in the Commission's Communication of 15 June 2010 and the technical Report of 22 March 2010 non-ionising radiation is generally considered not harmful compared to ionising radiation. Studies on millimetre technology and the longstanding experience with this technology[55], for example, for mobile phones and microwave kitchen ovens, indicate that the exposure of persons to non-ionising radiation below limit values specified in current EU legislation has not been shown to have health implications.

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53 http://ec.europa.eu/energy/nuclear/radiation_protection/doc/art31/2010_02_24_draft_euratom_basic_safety_standards_directive.pdf

54 At European level see: Note of 15.2.2010, Agence Française de Sécurité Sanitaire de l'Environnement et du Travail relative au "scanner corporel à ondes "millimétriques" ProVision 100"; L'Institut de Radioprotection et de Sûreté Nucléaire (IRSN), Evaluation du risque sanitaire des scanners corporels à rayons X « backscatter », rapport DRPH 2010-03; Health Protection Agency, Centre for Radiation, Chemical and Environmental Hazards (HPA), UK, Assessment of comparative ionising radiation doses from the use of Rapiscan Secure 1000 X-ray backscatter body scanner, UK January 2010 (Available at www.dft.gov.uk). For international studies see: The American Interagency Steering Committee on Radiation Standards (ISCORS), Guidance for Security Screening of Humans Utilizing Ionizing Radiation Technical report 2008-1; The National Council on Radiation Protection and Measurement (NCRP), commentary 16-Screening of Humans for Security Purposes Using Ionizing Radiation Scanning Systems (2003) and International Commission on Non-Ionizing Radiation Protection (ICNIRP), Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields 1998;
Further reference to studies can be found in the Technical Report on "Body scanners for aviation security", Network for Detection of Explosives (NDE), 22.3.2010.

55 See in particular those quoted by the NDP technical brief in Annex II.

161. Although exposure to electromagnetic radiation above certain limit values may cause damage for different types of frequencies (such as for example the heat generation in body tissue), Council Recommendation 1999) and Directive 2004/40/EC provides for basic restrictions of the power density delivered by electromagnetic fields, for example, caused by electronic equipment, in order to prevent damage due to a local heating of skin[56].

162. According to the evaluation carried out by the Agence Française de Sécurité Sanitaire de l'Environnement et du Travail (AFSSET)[57] on the effect of a commercially available active millimetre-wave security scanner operating in the range 24-30 GHz, the measured surface power densities are very low[58] compared to the power density exposure of 10 W/m² for members of the public (and 50 W/m² for exposed workers) limit. Consequently, the AFSSET study concluded that based on the current knowledge of the effects of millimetre-waves on health, this equipment did not provide adverse risk for health in the mentioned frequency. The study also suggests that exposure levels arising from natural and everyday activities (e.g. mobile phones[59] and microwave ovens[60]) are very close to or go beyond levels of radiation used in millimetre-wave security scanners.

5.1.3.3. X-ray backscatter

163. As indicated before, the risks to human health linked to the exposure to ionising radiation have been extensively studied and demonstrated at European and international level. X-ray security scanners will expose individuals to ionising radiation even though the dose from a single scan is low. As indicated in the Commission's Communication of 15 June 2010, typically a single backscatter X-ray screening of an individual will result in the person receiving a radiation dose between 0.02[61]and 0.1 • Sv[62]. Radiation doses are cumulative, so an individual's total dose will depend on the number of scans.

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56 For frequencies between 2 and 300 GHz, the millimetre-wave security scanners would be using, the maximum power density level recommended for members of the public is 10 W/m2 and is 50W/m2for exposed workers.

57 Note of 15.2.2010, Agence Française de Sécurité Sanitaire de l'Environnement et du Travail relative au "scanner corporel à ondes "millimétriques" ProVision 100". The electromagnetic radiation level delivered by the millimetre wave equipment under analysis was also very low compared to those set in national law (Decree 2002-775 of 3 March 2002 on limited values for electromagnetic field exposure emitted by telecommunication equipments and radio electric installations).

58 Ranging between 60 to 640 µW/m^2 (1µW=1microwatt=0,000001W)

59 The radio waves used are of an equivalent to 0.01% of the permissible dosage for mobile phones.

60 The centre for Occupational Health and Safety has measured the intensity of electromagnetic waves at 2 W/m^2) (watt per square meter) the leak level for domestic ovens. This value is considerably lower than the 10 W/m^2 (50 W/m²) official power density exposure limit.

61 UK Health Protection Agency, Centre for Radiation, Chemical and Environmental Hazards, January 2010. Available at www.dft.gov.uk

62 Millisievert (1 mSv = 10• 3 Sv) and microsievert (1 • Sv = 10• 6 Sv).

The French Institute for Radioprotection and Nuclear Safety made a recent evaluation of the health risk of X-ray backscatter Security Scanner systems estimating at approximately 0.1µSv the dose for a passenger screening (2 scans). IRSN, Evaluation du risque sanitaire des scanners corporels à rayons X « backscatter », rapport DRPH 2010-03. The International Electrotechnical Commission - Committee for the radiation protection instrumentation (IEC/SC 45 B) indicates that the dose per screening procedure should not exceed 0.4µSv.

164. As regards operators of security scanners or persons working close to the equipment, it has been estimated[63] that the dose received may be up to 0.01 µSv per operation, i.e. per person screened, without specific operator protection. Based on 500 screenings/day, the annual dose for an operator ranges between 0.3 to 1 mSv per year.

165. In February 2010 the UK Health Protection Agency (HPA) published the results of the assessment of a commercially available backscatter technology scanner. The report shows that the radiation dose from a (single or double) scan is 0.02 µSv which is a small fraction of the average dose received by members of the public from natural and other sources. HPA states that the radiation doses from backscatter scanners are so low that the traditional radiation risk comparators, for example cancer risk may not provide the best illustration. For this reason a range of traditional and other comparators such as for example fatal accidents and fatal lifetime cancer risk induced by exposure to background radiation having similar or higher fatality risks are used. The fatality risk for the backscatter technology has been estimated at 1 in 166,000,000 which is the same of other fatality risks and is lower compared to other activities.

166. HPA recommends a dose limitation of 300 µSv/year for an individual from practices involving the deliberate use of ionising radiation sources. A passenger would need to be examined 5000 times before exceeding this limitation (based on three scans per examination). HPA concludes that the potential doses received from the use of a correctly installed and used X-ray backscatter security scanner are likely to be very low and that even in the case of frequent fliers the doses are unlikely to exceed 20 µSv/year.

5.1.3.4. X-ray transmission imaging

167. Generally, the radiation dose for individuals from a transmission system technology is higher than the dose from backscatter technology: typically about 0.1-5 • Sv per scan depending on the system applied and the resolution required. The transmission scanners using the higher doses of X-rays (2-5 • Sv/scan) could cause some of the EU legally established annual limits to be exceeded at least for airports and airlines staff.. However, whether this is the case will depend on the number of individual scans.

168. The results of these studies as detailed before and in the technical report of NDP in Annex IV are summarised in the table below:

Security scanners technology	**Type of energy used and level of exposure**	**Estimated health impact**
Passive millimetre-wave	No radiation emitted	No health impact
Active millimetre-wave	Non-ionising radiation (24-30 GHz range), 60 to 640 µW/m^2	No health impact in this frequency
X-ray backscatter	Ionising X-ray radiation between 0.02 and 0.1 • Sv per	Cumulative doses

63 IRSN, Evaluation du risque sanitaire des scanners corporels à rayons X « backscatter », rapport DRPH 2010-03.

	screening	Potential impact on health depending on a very high number of scans
X-ray transmission imaging	Ionising X-ray radiation between 0.1-5 • Sv per screeningn	Higher cumulative doses Possible impact on health notably for aviation staff, depending on the number of scans

Options 1, 2, 3, 4, 5, 6 and 7

169. Under all options the existing European legislation on health protection, as regards exposure to ionising and non-ionising radiation, would be applicable. Member States would continue to make their own risk assessment before deciding whether or not to authorise the use of security scanners using ionising or non-ionising technologies and airports would continue to decide whether or not to adopt codes of practice in order to address health concerns in compliance with EU and Euratom legislation. Also under option 7 which would impose the mandatory use of security scanners in EU airports, such assessments and also the choice of security scanner technology will be carried out at national level.

170. While at present there is evidence that ionising radiation has an impact on health[64] and this concern has been especially expressed by frequent fliers such as pilots, it is not proven that active millimetre wave active technology used in the frequency of security scan can adversely impact on health.

171. As regards X-ray energy, since the existing EURATOM legislation is applicable, not only would Member States have to authorise each specific use of X-ray security scanners but they would also have to ensure that specific categories of persons, such as air crews and pregnant women for example, are ensured a special protection, as it is already the case under this legislation.

172. It has also to be noted that as some Member States such as France, Germany, Italy and Austria prohibit by law the use of ionising radiation for non-medical use; it is expected that in the future security scanners using ionising radiation technology would not be generally authorised throughout the EU.

173. Moreover, under the on-going procedure aiming at revising Directive 96/29/EURATOM, laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation, the question of whether or not security scanners based on ionising radiation should be

64 See studies referred to in the Impact assessment SEC…()… accompanying the Proposal for the revision of Council Directive 96/29/EURATOM laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation and the associated directives. [if we go to the board before this IA is published, we have to refer to the **draft** IA]

used for non-medical purposes is specifically addressed. Therefore, whereas today this decision is taken at Member State level as provided for by the current Euratom legisaltion, it is not excluded that it could be regulated in the future under Euratom legislation.

174. For the reasons above, and notably due to the application of the existing EU and EURATOM radiation legislation, allowing the use of security scanners as an eligible method of screening for aviation security is not expected to affect significantly the existing protection of public health provided that EU and EURATOM legislation is complied with. In addition, as regards ionising radiation, the revision of the EURATOM legislation is already specifically addressing public health protection in relation to security scanners. This concerns all the options, including option 7 which foresees the mandatory deployment of security scanners at all the European airports

175. However, overall, the possibility of opting out from a security scanner could help further mitigate health concerns in relation to certain technologies, notably those based on the use of ionising radiation, especially for certain categories of persons such as airport staff and crew members who are submitted to systematic security checks. In any case, granting the possibility of opting out would require that passengers undergo an alternative detection method of similar effectiveness, for example full body hand search in order to maintain high levels of aviation security. Indeed allowing passengers to influence the screening process would allow them to test the possible weaknesses of the security system. This would undermine European airport security. Also, as indicated by aviation security experts, considerable training and close supervision are needed for a full body hand search to achieve similar effectiveness in maintaining high levels of security as a security scanner.

5.1.4. Employment

176. As explained in section 3 above, one of the objectives is to help airports improve their general efficiency which implies in the future the possibility to also reduce the costs of airport security without weakening security. In the future a reduction of the costs could be achieved in particular through a reduction in the number of screeners employed as a result of technological progress and improved organisation of the screening process.

177. As for fully explained in the section headed "Costs" below, in the short term the introduction of such equipment will have little impact on, or even slightly increase employment needs (see in particular picture 1 and 2 under paragraph 187). However, as screening needs are likely to increase in relation to the increasing security threats as illustrated by the number of terrorist attacks perpetrated since 2001 and the need to increase the number of passengers screened for non-metallic items, security scanners could help prevent an exponential increase in the number of security personnel required. It is important to note, however, that this will mean hiring fewer new staff by better allocating existing resources and ensuring the highest quality of hand searches rather than reducing employment. Already today, some airports report experiencing problems with finding workforce for security operations on the local market (see section 2, paragraph 40). The introduction of security scanners is therefore unlikely to contribute to unemployment problems. The impact on employment is likely to be very limited.

5.2. Economic impacts

5.2.1. Costs

178. For the purpose of the present impact assessment only the financial costs linked to the possible deployment of security scanners are taken into account. The methodology for cost calculation is described in Annex V.

179. Few Member States have conducted detailed assessments of the economic impact of deploying security scanners at their airports compared to the current situation. In some cases security scanners were used as a demonstration and no impact analysis was carried out[65]. In the Netherlands the cost effectiveness of security scanners has been assessed in terms of better employing security staff (especially in peak period) by allowing them to carry out targeted hand searches instead of full hand searches.

180. In the UK, the use of security scanners was analysed in terms of what is the best way of ensuring that security scanners are used appropriately, safely and in a non-discriminatory way[66]. However, a full cost-benefit analysis was not carried out. Indeed, the UK assessment only quantify the costs related to developing codes of practice and whether these should be developed by airports or centrally by the UK government. In the UK, in fact, the introduction of security scanners is considered not only to improve security but also to facilitate passengers. According to the UK's impact assessment the deployment of one security scanner would cost approximately EUR 114,000 (cost of machine and staff training), ongoing maintenance EUR 11,000 per year. The enforcement cost of establishing and operating a code of practice would be approximately EUR 57,000 per year.[67] It is not clear from the impact assessment carried out by the UK exactly what type of enforcement this cost represents, whether this cost is related to the deployment of one or more security scanners and whether it is borne by the airport or the government. In what follows, we will therefore use this estimation only for illustration purpose without including it in the total cost calculation. The total benefit in the UK impact assessment is not indicated. The report concludes that requiring airport operators to use security scanners in accordance with a code of practice that takes into account the views of stakeholders offers the best way of ensuring that security scanners are used appropriately, safely and equitably.

181. In the US, the cost effectiveness of security scanners has been evaluated in terms of lives saved and limitation of damage to the economy and replacement of full hand searches with targeted hand searches. However, more detailed information was not provided to the Commission on grounds of confidentiality.

182. It should be noted that in all of the options considered with the exception of option 7, the deployment of security scanners would be optional. In the end, the cost-efficient deployment of scanners would be ensured by each individual airport taking into account its local circumstances and preferences. There is therefore little risk that the EU regulator would impose solutions which are not cost effective for the airports. This

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65 France for example did not conduct an economic analysis of the impact of using security scanners at Paris Charles De Gaulle airports since security scanner was used as a demonstration only.

66 See: http://www.dft.gov.uk/consultations/closed/2010-23/ia.pdf

67 All figures originally expressed in pounds but here expressed in EUR for simplification.

impact assessment nevertheless assesses cost impact, using the best available information applied to a typical screening checkpoint as shown in figure 1 and 2 on page 31. In the absence of comprehensive empirical data, the following analysis provides only an illustration of what costs might be.

183. According to information received from manufacturers the purchase cost of a basic security scanner ranges from EUR 100,000 to 200,000[68]. This price corresponds to the initial investment and does not include upgrading the equipment with additional software which might be needed to address for example the privacy and data protection concerns, nor components allowing for example the automatic use of the security scanner equipment. Additional equipment components costs might be estimated at approximately EUR 20,000[69].

184. Member States report that airports have different agreements with equipment manufacturers and/or other contractors that are providing them with a security related service, all of which impact on overall costs (such as leasing costs, outright purchase costs, costs of staff training packages, maintenance deals etc). It can also be reasonably assumed that the price of scanners in Europe remains high because of the small volumes purchased because use is limited to trials and demonstrations.

185. In any case, security scanners are considerably more expensive than metal detectors since a typical walk-through metal detector costs between EUR 6 000 and 17 000 per unit. To date the average throughput achieved by using security scanners (180 – 270 passengers per hour) is comparable to that of a metal detector (170-275 passengers per hour)[70]. However keeping throughput at current level very much depends on the concept of operations accompanying the use of security scanners such as for example the correct passenger divesting procedure which can speed up the screening procedure and on the security lane configuration. Increasing throughput would strongly depend on further technical developments and the optimisation of processes. At present without including the divesting and alarming procedure it takes on average between 6 and 20 seconds to screen a person and analyse the image, automatically via an Automatic Threat Recognition system ("ATR security scanners") and/or via a reviewer remotely located. In any case overall passenger throughput is often determined, with and without security scanners, by the speed of screening a person's cabin baggage; as this is generally slower, a typical screening checkpoint would include two baggage conveyors, but this choice depends entirely on the operator.

186. The figures below illustrate a typical European checkpoint with traditional security screening method (walk-through metal detector) and with a security scanner. In figure 1 below the traditional security checkpoint consists of one walk-through metal detector (N.1) and two conveyors for cabin baggage (N. 2). The security personnel needed would be two X-ray loaders helping with baggage and divesting (N. 7), two X-ray operators analysing baggage images (N. 6), two baggage searchers (N. 5), two screeners (male and female) to control the process and conduct hand searches where required (N. 3) and one supervisor (N. 4). Staff marked in blue are not always deployed.

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68 Figures from different sources, such as Member States and manufacturers. Unconfirmed US figures put the cost per unit at approximately of EUR 150 000, excluding training, installation, and maintenance costs.

69 Average figure reported by different sources, such as Member States and manufacturers.

70 ACI Europe.

187. In figure 2, the walk-through metal detector is replaced by a security scanner (N. 9) and the image reviewer (for non ATR systems) is located remotely (N. 8).

Figure 1. Traditional security set-up for central check-point

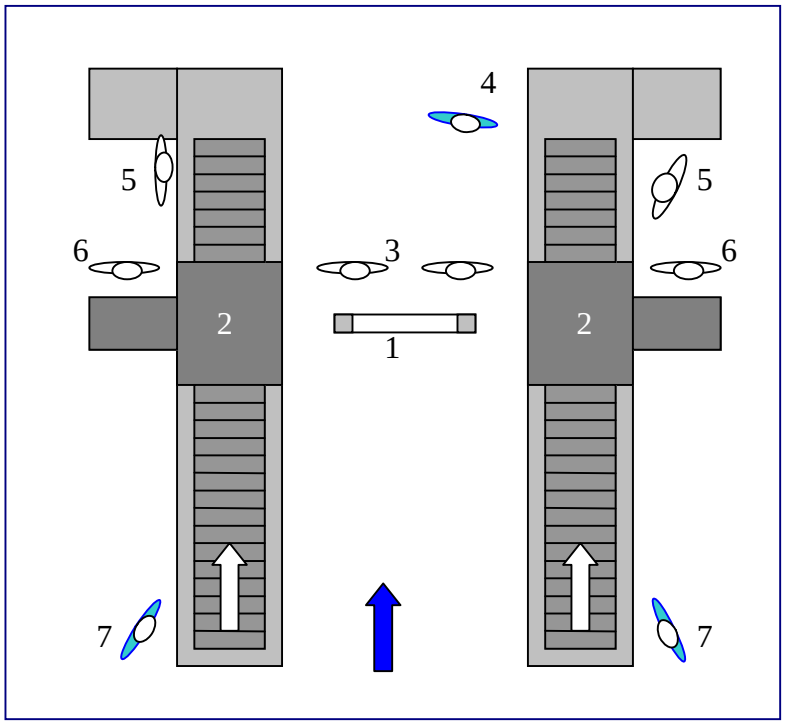
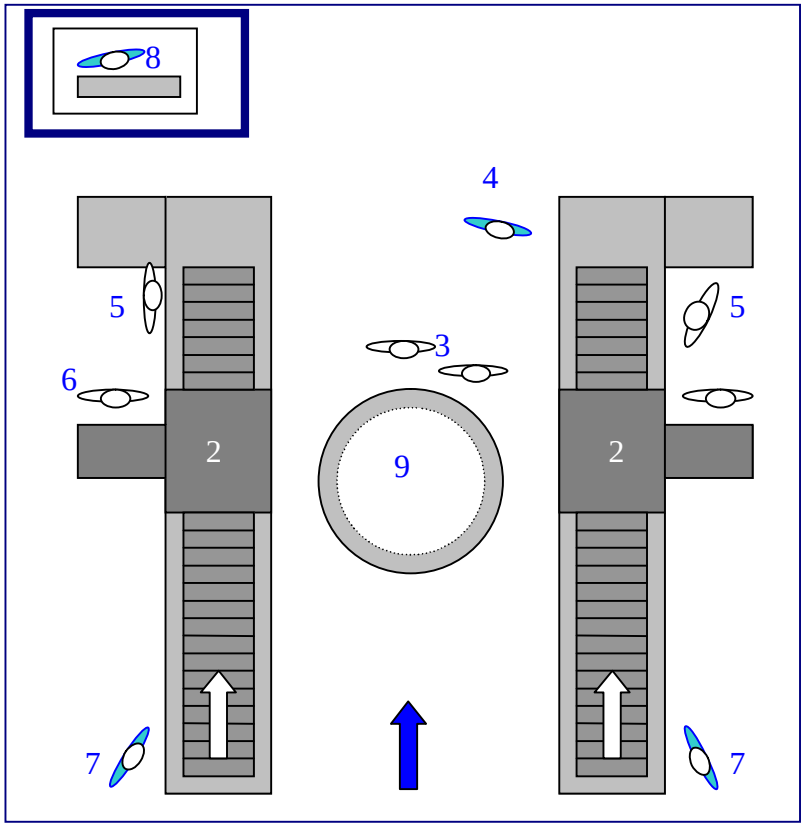


Figure 2. Security set-up for central check-point with security scanner



188. At present at least 2 screeners (male and female) are needed to operate one security scanner to resolve alarms with hand searches and to deal with cases where specific passengers are unable to go through the security scanner, such as for example infants or disabled people. In case of a general opt-out, it is possible that two screeners might be insufficient to carry out hand searches especially should a large number of persons prefer an alternative screening method. An additional person may be required in front of the scanner to facilitate the opting out process.

189. In general, for those security scanners needing a remotely located reviewer at least one additional person is needed in order to analyse the image. In principle in Europe at central checkpoints between 6 and 9 screeners are deployed to operate one traditional security lane (as composed of one walk-through metal detector and two conveyor belts for baggage); if scanners are introduced to replace walk-through metal detectors trials show that between 6 and 10 screeners (including on average 1 remotely located reviewer[71]) would be necessary to operate one security lane (composed of two conveyor belts and one security scanner).

190. For those airports using ATR security scanners, between 6 and 9 screeners would be required – meaning no change in comparison to the situation without the security scanner. It is important to note that personnel requirements very much depend on the

[71] While at least two reviewers – one male and one female – are necessary for fundamental rights reasons, under a typical configuration with several security lanes each of the reviewers can analyse images from two or more checkpoints. For this reason we assume that up to one person equivalent is necessary to ensure the remote review of scanner generated images.

organisation of the checkpoints and notably on the number of lanes. Generally, the more lanes there are at checkpoints, the more security staff personnel can share security tasks. For instance, in the US according to the Transport Security Administration (TSA), three staff members (+ 1 remote reviewer) are needed to operate one lane composed by with one security scanner, one walk-through metal detector and two conveyor belts while three additional staff screeners can serve more lanes to carry out different security tasks.

191. As regards staff costs, according to data collected from a representative group of 12 European countries[72] it has been estimated that the net income per hour per screener ranges between 3.50 EUR and 18.93 EUR. Based on more specific data available for three of these countries it is assumed that the cost of employment for the airport represents the double of the net income and therefore ranges between 7 EUR and 37.86 EUR per hour. For an airport operating 24 hours[73] a day 365 days per year (which is the case for the biggest international airports), this translates into a yearly cost of employing one screener of between 61 320 EUR and 331 653 EUR.

192. In the example of a typical checkpoint in Europe described above, the introduction of a security scanner will imply an additional cost linked to the scanner itself (100 000 to 200 000 EUR, typically depreciated over 7 years[74]) as well as its maintenance cost (11 000 EUR[75]), or between 25 285 EUR and 39 571 EUR per year. In the case of security scanners requiring the presence of a remote reviewer, an additional cost be incurred because of the need for an additional screener, of between 61 320 EUR and 331 653 EUR per year. As a result, with current technology, the introduction of a security scanner in the standard European checkpoint with remote viewing may imply an additional annual cost of between 86 605 to 371 225 EUR. Policy enforcement costs have also to be taken into account in the total cost calculation. According to the UK Impact Assessment, they could reach 57 000 EUR per year per 2-4 scanners[76].

193. Amsterdam Schiphol Airport anticipates a reduction of 50% in staff numbers, but trials to date have not supported this claim. Overall the situation may vary depending on the set-up of the security checkpoints and on the concept of security operations. For example at one European airport[77] the deployment of security scanners associated to the reorganisation of the set-up has led to a better deployment of the number of screeners and to a limitation of additional costs: for example by having one remote reviewer analysing the images for two lanes. This allowed this airport to limit the increase in the personnel to half a person on average in comparison with the requirements for a traditional checkpoint. his means that the introduction of a security scanner translated – based on the data available to us – to an increase in annual security costs for the airport ranging from 55 945 EUR and 205 398 EUR. This same airport is studying the possibility of reducing the average number of screeners operating at security scanner from 2 to 1. If this happens, the annual cost change to operate a security scanner in comparison to the previous situation with metal detectors will range between a loss of 8

72 Source is confidential.

73 Normally airports, especially large airports, are open 24 hours a day. Though night flight restrictions can be in place at certain airports depending on their location, a given number of night flights, for which security personnel is necessary, is still allowed.

74 The figure comes from interviews with industry experts.

75 Figure originally expressed in pounds but expressed in EUR for simplification.

76 *Idem*.

77 Source is confidential.

311 EUR and a saving of 140 541 EUR. These cost calculations do not take into account the annual enforcement cost.

194. More specifically costs are influenced by the fact that some airports are choosing to use scanners as an alarm resolution technology, integrating them into their existing security system, while others use them to replace walk-through metal detectors. In the first case, the cost of the security scanner (purchase, maintenance and enforcement) adds to the existing security costs; however, as indicated before, the deployment of security scanners could nevertheless allow a re-organisation of the checkpoint in order to limit cost increase.

195. Although at present cost reduction for most airports does not seem realistic, it is considered[78] that over time the efficiency and speed of operation of security scanners would improve. Passenger throughput is likely to increase due to technology improvements (e.g. ATR) and growing familiarity of passengers with the screening method and related procedures such as the divesting of objects carried. Such developments may reduce the number of lanes required for peak throughput and/or the number of screening staff required at each lane. As the above analysis bears out, a reduction of even one screening staff member employed at the screening checkpoint has a crucial impact on the opportunity cost of using security scanners. By contrast, walk through metal detectors are a mature technology and probably have reached the limits of their capabilities in terms of both technology developments and processes optimisation.

196. Finally, experience shows that when a new security event occurs, additional security measures are imposed, often at short notice. These measures which can be imposed pursuant to a national security risk assessment or by third countries on flights originating from Europe generate further costs. In such cases security may be enhanced by increasing hand searches which implies the deployment of additional staff. According to ACI Europe, after the Detroit incident, overall staff costs increased of approximately 10 000 EUR to 50 000 EUR per week at EU airports, without mentioning other difficulties such as flight delays, etc. Given the better detection performance of security scanners compared to metal detectors, airports deploying security scanners may avoid the same difficulties and additional costs experienced after the Detroit incident[79].

197. Even in the absence of security related incidents, there is a general trend to increase the level of passenger screening with a view to having a higher detection performance for non-metallic prohibited items (see specific objectives paragraph 74). This can be achieved through the deployment of a larger number of security personnel in charge of performing hand searches, or through the use of security scanners, which can effectively detect non-metallic prohibited items. Assuming that the level of threat in aviation security will stay at a similar level or higher than today, the potential of security scanners to reduce security costs will probably increase in the near future, although it is difficult to exactly assess today this potential in quantitative terms.

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78 For example by the Dutch authorities in their reply to the public consultation at the turn of 2008-2009.

79 ACI Europe. For example additional airport security staff need after the Detroit incident were: Amsterdam-Schiphol (+50 staff), Brussels (+30 staff), Copenhagen (+38 staff), Reykjavik (+15/20 staff), Barcelona (+11 staff), Athens (+10 staff), Helsinki (+10 staff) and Prague (+8 staff).

198. Generally, deploying security scanners is publicly perceived to enhance security. Although difficult to express in monetary terms, airports may value the likely positive public response to seeing the most modern technologies deployed at screening checkpoints. In addition passenger and staff experience can be an element of evaluation of airports which may lead some airports to decide on introducing security scanners: where the screening process is quick and efficient, passengers may have more time and inclination to use the airport's commercial outlets, such as shops and restaurants. Such considerations are also difficult to estimate in monetary terms, but shops and restaurants constitute a key component of any modern airport's business model. Indeed it has been estimated that 43% of income (EUR 12.6 billion in 2008) at European airports is derived from non-aeronautical revenues (shops, parking etc)[80].

199. **Overall the administrative burden for all options is limited.** More specifically there would be a limited impact under options 1, 2 and 3 since reporting obligations are already foreseen under current EU legislation for trials and more stringent measures and no new obligations would be imposed. Still, the deployment of security scanners under option 2 and 3 would probably be more general than today and Member States are likely to monitor the implementation of national operational conditions.

200. As regards options 4, 5 and 6 there would be an increased but still limited impact in terms of the administrative burden since those airports wishing to deploy scanners would have to comply with the operational conditions set at EU level for the deployment of security scanners but European legislation would not impose any reporting obligations. It seems reasonable to expect, therefore, that the administrative burden for Member States would remain similar to the one under options 1, 2 and 3. Moreover the reporting obligations already foreseen under current EU legislation for trials would apply to any other new technology and not for security scanners. As regards option 7 it is probable that, because of the mandatory nature of the measure at all EU airports, introducing security scanners would have a higher administrative impact for Member States/airports. At the same time, the likelihood that administrative costs would be considerably reduced through economies of scale is very high under this option.

Option 1

201. In the baseline scenario, the short term economic impacts in comparison to the current situation will be small, since the rules under which security scanners can be deployed will not change. In the longer term, under the assumption that the level of threat in aviation security will stay at a similar or at higher level, as recent events show, the trend to increase the screening of passengers for non-metallic prohibited items as it is the case today for metallic items would imply rising costs for the airports linked to the need to deploy additional security staff to perform additional hand searches. In case of a sudden new security threat, the cost for the airports can rise by 10 000 to 50 000 EUR per week as observed after the Detroit incident. Hiring additional security personnel in view of increasing the screening rate for non-metallic prohibited items will cost between 61 320 and 331 653 EUR per year per additional screener, and with a high degree of probability would exceed the cost of installing a security scanner.

[80] Source ACI Europe.

Options 2, 3, 4, 5 and 6

202. Under the four options which allow the deployment of security scanners without imposing them, the economic impacts are likely to be neutral or slightly negative in the short term (airports would not install security scanners if this implies a high financial loss), although reductions in these additional security costs are possible (see above the UK airport example) and there may well be savings in the future. In the long term, with the rising need to screen a larger number of passengers for non-metallic prohibited items, it becomes probable security scanners will help airports deploy their security personnel more efficiently and, if the technology makes further progress, possibly reduce their security personnel needs and therefore their security costs. To give an indication of the scale of the potential future cost reduction, this could range between 61 320 and 331 653 EUR per year per screener. Even under options 4, 5 and 6, which impose EU defined operational conditions and therefore an administrative burden linked to checking the conformity of scanner use with EU legislation, the potential savings with even one less screener exceed the enforcement costs which, as estimated by the UK, could amount at 57 000 EUR per airport per year.

203. In addition to this, as regards option 4 and 6, additional costs might result from allowing a general possibility for passengers to opt out. While the refusal to be screened by a security scanner could result in denying boarding under options 5 and 7 and could then be costly for passengers, providing a general opt-out, as in options 4 and 6, might result in the need for an airport to deploy additional security staff to perform the alternative screening procedure where security scanners were to be deployed on a great scale and if a large number of passengers decided to opt out from the security scanner. For example a general opt-out might imply the deployment of additional screening capacity (male and female) to stand by behind the scanner to perform full hand searches upon request. Moreover, it is not excluded that an additional screener might be positioned in front of the security scanner in order to manage the persons flow and separate persons being screened by a security scanner from those deciding to opt out. Depending on the layout of the checkpoint, the size of the operations, the technology used and the operational conditions, the impact on costs could however be quite small.

204. Moreover, the limited available empirical evidence at European and international level suggests that at present few persons make use of the opt-out Indeed, they seem to indicate that most passengers prefer security scanners to currently used methods[81]. In particular, in the United Kingdom opt-outs are not provided to passengers and refusal to be screened results in denying boarding and in the Netherlands opt-outs are provided but the security scanners deployed are based on non-ionising radiation and do not create images. In the US, where scanners deployed in airports are both based on ionising and non-ionising technology, the rate of passengers opting out is also very low (1%).

[81] In the UK and the NL. It has to be noted that in the UK, where no opt-out is given under trials, and refusal to be screened by a security scanner results in denying boarding, only three persons have been denied boarding over the whole year. In the NL, where opt-outs are offered to passengers, few passengers have opted for an alternative screening method than a security scanner using non-ionising radiation..

Option 7

205. Today, as shown in the example of a typical European airport (see figure 1 and 2 above), introducing a security scanner is likely to raise the operating costs of an average security checkpoint by between 86 605 EUR and 371 225 EUR for a scanner with remote reviewer and by between 25 285 EUR and 39 571 EUR for an ATD scanner. As in other options, it is necessary to add to these figures the enforcement cost for governments.

206. In the medium to longer term, with the rising need to screen more passengers for non-metallic prohibited items, the introduction of security scanners will be economically viable for a rising share of airports. Still, it will very probably remain an unsuitable solution for many airports with low volumes of passengers who can be effectively screened by hand search. As a result, even in the long term option 7 is likely to result in additional unjustified costs, especially for small airports which additionally have lower capacities for supporting such costs. Whether the overall financial result of option 7 in the longer term will be better or worse than the baseline scenario will depend, among other issues, on how rapidly the number of passengers screened for both metallic and non-metallic items is increased and how rapidly air traffic flows grow at different airports.

5.3. Environmental impacts

207. The environmental impact of all the options is negligible.

6. COMPARING THE OPTIONS

208. In this part, all the options will be compared against option 1 (baseline scenario) and the impacts will be evaluated in terms of enhancement/worsening of the situation in comparison with option 1. The impacts of option 1 are therefore zero by definition and will not be presented below.

209. In what follows, the options will be assessed against the criteria of their effectiveness and efficiency in meeting the objectives, but also against other overarching goals and in particular the criteria of detection performance, the respect of fundamental rights and health protection.

210. To recall, the following three specific objectives have been formulated:

- Objective 1: to allow the deployment of security scanners to help them adapt to the need to increase the number of passengers screened for non metallic items;;
- Objective 2: to help airports improve their general efficiency;
- Objective 3: To ensure the protection of health of passengers and staff and secure the respect of fundamental rights.

6.1. Effectiveness of the options in meeting the objective

- Objective 1

211. All the options except the baseline scenario (option 1) effectively meet the objective of allowing the deployment of security scanners. However, option 7 renders it mandatory. Options 4 and 6 could weaken security. Indeed, leaving the choice to passengers to influence the screening process would allow them to test the possible weaknesses of the security system and would thus undermine the unpredictability principle as explained in paragraph 132. Also, as indicated by aviation security experts, it requires considerable training and close supervision for a full body hand search to achieve similar effectiveness in maintaining high levels of security as a security scanner.

- Objective 2

212. Option 2 gives the airports the greatest flexibility in choosing the screening methods and tools, including innovative methods other than security scanners. It therefore allows the second objective to be met in the most effective way. Indeed airports would be able to decide how best to combine the different aspects of the concept of general efficiency, such as cost-efficiency, passenger facilitation and airport reputation. Option 3, which allows the deployment of security scanners without imposing any restrictions on the airport, also meets the objective in a very effective way. In Options 2 and 3 passengers facilitation and airport reputation partly depend on the decision taken by the Member States/airports.

213. Option 4, by allowing airports to give passengers the possibility of opting out from being screened by a security scanner, might reduce the potential efficiency gain of security scanner deployment in terms of cost-efficiency. Whether this option brings an improvement in comparison to the baseline scenario will depend on the number of security scanners deployed and of persons who choose to opt out and the ability of airports to organise the back-up facilities and personnel for hand searches. However, at present based on limited experience the use of opt-outs is quite small (cf. paragraph 144 and 204).

214. Overall the effectiveness of this option in helping airports improve their general efficiency could be lower than for the other options if a large number of persons asked for opt-outs and opt-outs were highly valued by the passengers. However, this condition does not seem confirmed by the results of the trials in countries where opt-outs were allowed, and remain hypothetical although possible. In terms of passenger satisfaction as an element of the general efficiency, although option 4 would take into account people's perception of what is a less intrusive screening method through the opt-out possibility, these opt-outs might hypothetically risk making the screening process slower and thus reduce the possibility for passengers of making an increased use of airport facilities. The effect of opt-outs on costs (negative effect) and on passengers satisfaction (positive effect) is likely to be quite small judging by the limited available experience in the Netherlands and in the United States and would not be decisive for the overall assessment of the effectiveness in achieving objective 2.

215. In terms of airport reputation, option 4 as all other options, in particular options 5, 6 and 7, would increase the airport reputation by using more advanced technologies for passenger screening.

216. In option 5, airports are not restricted in their choice of deploying security scanner technology but their possible deployment has to be done in full compliance with the

operational conditions set at European level. However since some operational conditions are already set at national level Member States and airports are prepared to respect a given number of conditions, this therefore would not greatly affect the airport cost efficiency, it can therefore be assumed that option 5 is as effective in meeting objective 2 as option 3. However, this option would be slightly less efficient than option 6 in terms of reducing the discomfort for passengers since people's perception of what is a less intrusive screening method would not be fully taken into account. In terms of passenger satisfaction facilitation, not allowing opt-outs might hypothetically speed up the screening process and thus increase the possibility for passengers of making use of airport facilities. As for option 4 taking into account existing experience in the Netherlands and in the United States these impacts are likely to be quite small and would not be decisive for the overall assessment of the effectiveness in achieving objective 2. As indicated for option 4 the deployment of security scanner would increase the airport reputation under option 5.

217. In option 6, as in option 5, airports are not restricted in their choice of deploying security scanner technology but their possible deployment has to be done in full compliance with the operational conditions set at European level. However since under option 6 a general opt-out would be given to all passengers for fundamental right and health concerns, though not proven by the limited evidence available at present, this might hypothetically affect the airport general efficiency in terms of cost-efficiency if airports faced in the future situations of large number of persons opting out which could require the deployment of additional staff or to reallocate existing staff to perform the alternative screening procedure. However in terms of passenger facilitation although opt-outs might slow down the screening process option 6 would be more effective than option 5 since people's perception of what is a less intrusive screening method would be fully taken into account. However as for options 4, the effect of opt-outs on costs (negative effect) and on passengers satisfaction (positive effect) is likely to be quite small judging by the limited available European and international experience and would not be decisive for the overall assessment of the effectiveness in achieving objective 2

218. It could therefore be assumed that options 5 and 6, though being each effective on different grounds, are like option 4 likely to be less effective in meeting objective 2 than options 2 and 3. Option 6, as options 4, 5, and 7 and options 2 and 3 if security scanners were to be deployed, also provides for an increase in the airport reputation.

219. Option 7, finally, is very likely to restrict, rather than increase the potential of the airports to increase their general efficiency notably in terms of costs, as it will reduce their choice of security screening methods. For some airports the use of security scanners might increase the cost-efficiency in the medium to long term if technology makes further progress. Overall, however, it is highly probable that this option will be an obstacle to the efficient use of resources in many European airports. In terms of passenger facilitation and airport reputation the same considerations expressed under option 5 would apply.

- Objective 3

220. In all options existing EU and Euratom legislation protecting fundamental rights and health persons fully apply. Options 2 and 3 would reach the objective less effectively as

specific operational conditions would not be set at EU level and opt-outs would be decided at national level.

221. Options 5, 6 and 7 would reach more effectively this objective than options 2, 3 and 4 as specific operational conditions would be set EU level. Option 4 would reach the objective less efficiently since specific operational rules would not be established at EU level although persons would be given the choice to decide on the screening process on fundamental rights and health grounds. Option 6 is considered to reach most effectively this objective since operational rules would be established and person's preferences would be entirely taken into account by giving them the possibility of opting out.

6.2. Efficiency of the options in reaching the objectives

222. The achievement of all three objectives is linked to the introduction of security scanners as an allowed method for primary screening of passengers. Therefore the efficiency – and in particular the cost efficiency of each option can be measures with its financial cost in comparison to the cost of the baseline scenario. As described above, today the introduction of a security scanner can cost between 86 605 EUR and 371 225 EUR for a scanner with remote reviewer and by between 25 285 EUR and 39 571 EUR for an ATR security scanner. In the future, with the evolution of the technology, the reorganisation of the checkpoints and probable increase in the frequency of screening passengers for non-metallic prohibited items, the security scanners are likely to allow cost reductions. Due to the speculative character of the assumptions, the potential for this cost reduction is difficult to evaluate, but can range between 61 320 EUR and 331 653 EUR per work post yearly because of the reduction in screening staff needed.

223. Options 2 and 3 will allow the less costly introduction of security scanners by the airports, as they impose no conditions on the type of security scanners to be used. In practical terms, this can mean that, for example, the price of the security scanners used will be in the lower end of the 100 000-200 000 EUR range.

224. Options 4 and 6 could result in a better public acceptance but might hypothetically be more expensive than options 2, 3 and 5, if, as indicated in paragraphs 188 and 203, due to the possibility for opt-outs, security scanners were not be used at their maximum capability and airports needed to deploy more screeners to perform hand searches for large number of passengers opting out. This is however not very likely.

225. Option 5 will be slightly more expensive for the airports than options 2 and 3, as due to the operational conditions set at the European level the price of the scanners is likely to stay in the higher end of the 100 000-200 000 EUR range. Nevertheless, this would translate in a cost difference not exceeding 15 000 EUR per year.

226. Finally, option 7 will probably be very costly, as security scanners are unlikely to be a viable option even in the long term for a significant number of airports with low passenger traffic. The enforcement costs for the government under this option could be lower than for the other options thanks to efficiencies of scale, but it is very probable that the overall social cost will remain high.

227. The following table summarises in an illustrative form the above consideration on effectiveness.

	Effectiveness Objective 1	Effectiveness Objective 2	Effectiveness Objective 3
Option 2	Allow deployment with no conditions	Higher cost-efficiency – passenger satisfaction and airport reputation vary between Member States	Protection of fundamental rights and health varies between Member States
Option 3			
Option 4	Allow deployment but opt-outs could affect security	Marginally less cost-efficient – Acceptable passenger satisfaction - Good airport reputation	Good protection fundamental rights and health
Option 5	Allows deployment	Good cost-efficiency - Good passenger facilitation - Good airport reputation	Good protection of fundamental rights
Option 6	Allow deployment but opt-outs could affect security	Marginally less cost-efficient Acceptable passenger facilitation - Good airport reputation	Higher protection fundamental rights and health
Option 7	Imposes deployment	Very costly – good passenger satisfaction - good airport reputation	Good protection of fundamental rights and health

228. The following table provides figures to illustrate the relative efficiency of the different options in reaching the objectives. Due to the lack of full quantified data, a cost-benefit analysis was not possible. The figures provided below show the estimated additional cost or benefits for the individual airports per security lane.

	Additional cost/benefit per security lane	
	Today	In the future
Option 2 **Option 3** **Option 4** **Option 5** **Option 6**	Additional cost of 25 285 – 371 225 EUR (depending on the technology chosen and on the cost of workforce); nevertheless, only airports for which the benefits in terms of general efficiency compensate this additional cost are likely to opt for deployment. The benefits are therefore likely to overcome the costs. Options 2 and 3 are likely to be the most efficient, followed by option 5 and options 4 and 6. Differences between the options should not exceed 15 000 EUR per year.	Potential savings of between 61 320 EUR and 331 653 EUR per work post which becomes not necessary. In the near future, savings of up to 140 541 EUR per security lane seem possible. This is in addition to benefits in terms of increased general efficiency. Airports for which deployment does not bring sufficient benefits would not be forced to do it.

Option 7	Additional cost of 25 285 – 371 225 EUR (depending on the technology chosen and on the cost of workforce) for all airports, including those for which the increase in general efficiency does not compensate this additional cost.	Potential savings of between 61 320 EUR and 331 653 EUR per work post which becomes not necessary. In the near future, savings of up to 140 541 EUR per security lane seem possible.[82] Still, even in the future the deployment of security scanners through this option is likely to be inefficient for some airports.

6.3. Other impacts

229. The social impacts, and in particular the impacts on the detection performance, the fundamental rights and health are essential in the discussion on the deployment of security scanners. They are therefore assessed in more details for each of the options in the table below which also compares the options in terms of their other impacts.

[82] See example quoted in par. 193.

	OPTION 2 **EU Discontinued action Removal of exclusive list**	OPTION 3 **Optional use of security scanners**	OPTION 4 **Optional use of security scanners + detection performance standards + opt-outs**	OPTION 5 **Optional use of security scanners+ detection performance standards + operational conditions + no opt-outs**	OPTION 6 **Optional use of security scanners+ detection performance standards + operational conditions + opt-outs**	OPTION 7 **Mandatory use of security scanners + no opt-outs**
Impact on aviation security	Higher risk of different standards being applied in the EU (option 2: also for future technologies) Loss of common voice at international level in standardisation processes		Establishment of common EU standards (option 4 and 6: but opt-outs could potentially affect aviation security) Enhanced EU position at international level on standardisation processes			
Impact on fundamental rights	Fragmentation of the assessment of fundamental rights at national level (option 2: also for future technologies)		Fragmentation of the assessment of fundamental rights at EU level but opt-out possibility provides a protection of fundamental rights	Coordinated assessment of fundamental rights at EU level (option 6: and opt-out possibility provides additional protection of fundamental rights)		
Impact on health	Limited impact on health because of i) health protection in relation to X-ray established at European level in the Euratom legislation, and ii) non-medical use of X-ray being not allowed under several national legislation for security scanners (option 2: increased potential health consequences associated to future technologies)					
Impact on Member State: administrative burdens	Limited impact since the measure would be optional Report obligations already exists under current EU	Limited impact since additional report obligations would not be imposed	Limited impact since though fixing standards additional report obligations would not be imposed			Higher impact because of the mandatory nature of the measure at all EU airports

	legislation			
Impact on relations with other countries from a Member State perspective	Full possibility to adapt to evolving international context but risk to lose EU common approach	Increased possibility to adapt to international context		Very limited adaptability to international context

6.4. Preferred options

230. Option 1 provides Member States and airports with very little flexibility as to how to organise their aviation security operations; moreover it only allows them to use new screening technology available on the market in a very limited and non-harmonised way in terms of detection performance, fundamental rights and health.

231. Option 2 offers a greater flexibility for Member States and airports in deciding on possible improvements for the general efficiency of their security operations compared to the baseline scenario reflected in option 1. However, security and fundamental rights would be seriously undermined.

232. Option 3 would allow Member States and airports to decide how to possibly improve the general efficiency of their security operations by using security scanners, if these are more efficient. However, security and fundamental rights would be undermined in the absence of harmonised standards for detection performance and fundamental rights.

233. Option 4 would improve the situation as described in the baseline scenario since airports could decide to deploy security scanners to increase their general efficiency while ensuring the harmonisation of security and compliance with fundamental rights. An opt-out would weaken security. It could increase the public acceptance of the security scanners technology but it would weaken the achievement of cost-efficiency. However, the latter two effects are likely to be marginal.

234. Option 5 proposes a good balance between meeting the objectives and optimising other policy impacts. Indeed it allows airports to deploy security scanners to improve their general efficiency while ensuring the harmonisation of security levels and compliance with fundamental rights and health protection. However, because opt-outs are not foreseen the social acceptance of this technology might be reduced.

235. For option 6, the same considerations as in option 4 apply. On the one hand, it would improve the situation in comparison to the baseline scenario, since airports would be allowed to deploy security scanners to increase their general efficiency and provide an increased protection of fundamental rights and health by providing the possibility of opting out. On the other hand, although opting-out possibilities could increase the public acceptance of the security scanners technology, they could weaken the achievement of cost-efficiency. However, as in option 4 the latter two effects are likely to be marginal. Finally, under option 6 opt-out possibilities could be seen to weaken security.

236. Option 7 would improve and harmonise security in EU but would not allow airports to make decisions based on general efficiency considerations. As in option 5, option 7 would ensure compliance with fundamental rights and health protection but would not offer the advantages of options 4 and 6 in terms of social acceptability.

237. For the reasons above, while option 5 would appear to be the best option from the perspective of efficiency and security, option 6 would offer the best protection of fundamental rights. The present impact assessment considers that both options are valid and that the trade-offs between them have to be addressed by the political decision makers.

238. In any case, this analysis confirms that a European action is needed and would serve to address the identified problem.

7. MONITORING AND EVALUATION

239. The Commission will monitor and evaluate the situation in the Member States and at EU airports by making use of instruments foreseen under the current aviation security legislation, notably the national civil aviation security programmes and national quality control programmes, which have to be established by each Member State, and the airports' security programmes. Member States are also required to report annually on the fulfilment of their obligations, which would in future include rules on security scanners.

240. Moreover, Member States will report on the implementation of security measures within the Aviation Security Committee which takes place every two months. Other stakeholders, notably airports, will also report on their operations in the Stakeholder Advisory Group on Aviation Security which takes place every two months.

241. Additional information will be collected by the Commission inspectors in the regular inspections activities carried out according to Regulation 18/2010.

ANNEX I

Aviation security context and EU legislation

Before 2001 aviation security was the responsibility of individual states. Following the events of 9 September 2001 a common European aviation security policy was developed and in 2002 Regulation (EC) No 2320 of the European Parliament and of the Council establishing common rules in the field of civil aviation security was adopted.[83]

At first this legislation followed the international standards on aviation security as laid down in Annex 17 of the Chicago Convention[84] and further developed through the International Civil Aviation Organisation (hereafter "ICAO") and the European Civil Aviation Conference (hereafter "ECAC"). However in the following years a more detailed harmonisation of the European rules became necessary and several implementing acts were added.[85] On 29 April 2010 Regulation (EC) 300/2008 accompanied by supplementing and implementing legislation[86] fully replaced the 2002 rules.

The main principle of European aviation security legislation is to avoid that threat items such as arms, knives or explosives ("prohibited articles") are taken on board aircraft. For this reason every passenger, every baggage and cargo departing from an EU airport, or coming from a third country and transferring through an EU airport, must be screened or otherwise controlled in order to ensure that no prohibited articles are being brought into security restricted areas of airports and/or on board aircraft.

Other important principles of aviation security are "one-stop security", that is harmonisation of security measures and standards at EU level which implies that once controlled at one EU airport passengers and baggage do not need to be rescreened and "unpredictability", which consists in setting the appropriate conditions ensuring that passengers are not able to self-select, predict or avoid security procedures.

Under the applicable legal framework, Member States and/or airports are given a list of screening and controlling methods and technologies which can be used either alone or in combination for screening passengers to detect possible prohibited items carried by passengers when accessing restricted areas of EU airports. Member States and/or airports are then restricted to choose from this list the necessary elements in order to perform effectively and efficiently their aviation security tasks. In addition, the appropriate authorities may subject to special screening or exempt from screening certain categories of passengers for objective reasons, and have to inform the Commission thereof.

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83 Regulation (EC) No 2320/2002 of the European Parliament and of the Council of 16 December 2002 establishing common rules in the field of civil aviation security, OJ L 355 of 30.12.2002.

84 Convention on the International Civil Aviation signed on 07.12.1944.

85 The most important implementation acts are Commission Regulation (EC) No 622/2003 of 4 April 2003 laying down measures for the implementation of the common basic standards on aviation security, OJ L 89 of 05.04.2003 replaced by 820/2008, laying down measures for the implementation of the common basic standards on aviation security of 08.08.2008, OJ L221 of 19.08.2008.

86 Regulation 300/2008 of the European Parliament and of the Council of 11.03.2008 on common rules in the field of civil aviation security and repealing Regulation (EC) No 2320/2002, OJ L 97 of 9.04.2008; Commission Regulation (EC) No 272/2009 of 2.04.2009 supplementing the basic standards on civil aviation security laid down in the Annex to Regulation (EC) 300/2008 of the European Parliament and the Council, OJ L 97 of 03.04.2009 and implementing package, part of which is a regulation phasing out the ban on liquids and replacing it with a technology based solution.

The methods for passenger screening are laid down at point 1 of part A of the Annex to Commission Regulation 272/2009/EC and are:

(a) hand search;

(b) walk-through metal detection (WTMD) equipment;

(c) hand-held metal detection (HHMD) equipment;

(d) explosive detection dogs;

(e) explosive trace detection (ETD).

The way how these different methods have to be best combined in order to allow for effective detection and airports to apply them efficiently is part of EU security restricted legislation.

ANNEX II

Network for Detection of Explosives

Body Scanners for Aviation Security

Technical Report

A report prepared by:
Iconal Technology Ltd
TNO Defence, Security and Safety
CEA
ENEA

Co-ordinated by **Dr M C Kemp, Iconal Technology Ltd**

on behalf of the:
Network for the Detection of Explosives
EU Contract JLS/2008/ISEC/PR/020-D1

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ANNEX III

Under this section trials and other tests carried out by Member States/airports are summarised on the basis of the information provided by the latter. However, as specifically requested by the Member States concerned confidential information is not included for security and commercial protection reasons.

Moreover, it has to be noted that conclusions drawn by Member States on testing security scanners and particularly the same type of security scanner technology can vary. This is due to numerous factors, such as the testing methodology chosen, whether or not staff was trained to carry out the trial, the concept of operations linked to the operation of the scanner and several others.

By letter of 21 September 2010 (D(2010) 674579), the Commission requested to the Member States currently using security scanners under trials, as more stringent measures or as a demonstration (the UK, the Netherlands, Germany, France and Italy) to provide it with updated information and data on i) the detection performance, ii) the fundamental rights, iii) health and iv) costs issues, by means of trial reports and/or impact assessments or public consultations. Italy did not provide the Commission with the requested information. A similar request was also sent to the US and Canada. The Commission has no information on the test carried out by Denmark, at Copenhagen airport.

TRIALS

A) Finland - Helsinki Vantaa Airport

During the period from 7 December 2007 to 18 October 2008 Helsinki Vantaa Airport decided to start testing the use of security scanners. As the equipment uses radiation, also permission from the authority that controls radiation in Finland was needed. To this effect, the radiation agency inspected the equipment and the process and granted permission in November 2007. The chosen equipment was RAPISCAN Secure 1000 with a radiation emission of 0.044 • Sv per scan.

The test was based on volunteer participation. Passengers were selected for interview from the queue on random, so that the tester or the passenger could not have any influence on the process. Passengers were explained how the equipment works, what kind of a picture was taken and who was going to look at it and the amount of radiation received. All passengers under the age of 18 and women pregnant or suspecting to be pregnant, were advised in the interview not to participate in the test. If the passenger was not willing to participate in the test, he/she and his/her items carried were screened by using WTMD and hand searched.

The actual screening process took around 40 seconds. Real-time passenger flow could not be counted because of the personal interviews of each passenger selected.

The actual scanning equipment and the screener looking at the image on display (the reviewer) were located in different rooms, so that the reviewer could not identify the passenger. Access to the screening image room was restricted only to specially trained screening personnel on duty. Another screener was assisting passengers in the scanning room to take the correct position for being scanned.

After few seconds the picture was destroyed. Pictures were not saved nor could they be returned back on the screen by the screener.

Overall 13.685 passengers were interviewed, of which 57 % male and 43% female. 2.156 persons (15,8 %) refused being screened with security scanners. 249 non-metallic items and 312 metallic items were detected. No prohibited items were found.

The civil aviation authority in Finland indicated that the test showed that the passengers were very willing to be screened by the scanner as the scanner was much more acceptable than a personal hand search. It also concluded that security scanners are a valid alternative to existing screening methods: indeed their use increases the effectiveness of detection of items of different materials, reduces the costs and increases passenger and staff convenience. In proportion to the annual radiation exposure, the radiation received from one scanning is minimal (0.044 µSv) compared to a flight Helsinki – Frankfurt (10 µSv).

B) The Netherlands – Amsterdam Schiphol Airport

Since November 2009 tests are on-going at Amsterdam Schiphol airport. The equipment deployed is Provision 100 produced by L3 communication based on electromagnetic wave technology with a wavelength between approximately 8 and 10 millimeters. The system operates as it follows: a passenger enters the scanner portal, a security staff member behind the scanner presses a button to start the scan, which takes approximately 2 seconds. A computer algorithm analyses the scan data and produces a stick figure indicating "OK" if no prohibited item is detected or the area of the body where further search is needed.

The equipment has been tested according to the Common testing methodology developed by ECAC as has given satisfactory results. The Dutch authorities reported that the use of scanners improve significantly the overall security level in comparison to the common screening methods at airports, particularly in detecting latest most prominent form of objects. The Dutch authorities indicated that the choice of this technology was also due to the fact that it was scientifically reported that millimeter waves are not proven to adversely affect staff and passengers health.

Several operational conditions are in place in order to satisfactorily take care of privacy and data protection concerns: storage of data is not possible and data is not accessible; no image is produced and the analysis is done automatically (without need of a reviewer); the scanner is physical and technical separated from other data processing systems; the passenger is informed on the optional use of the security scanner and is informed of technology used; a procedure for complaint is in place.

Since the use of security scanners the number of passengers passing the scanner per minute was overall equal to the throughput registered under common screening methods. In the future, on the basis of progress achieved with the introduction of the automatic detection capability, it seems realistic to assume that the use of security scanners might allow registering a higher throughput with the same staffing per check.

The Dutch authorities reported that overall passengers were willing of being scanned with the security scanners and that complaints were negligible compared to the number of complaints from passengers screened according to traditional methods.

C) UK

London Heathrow and Luton airports

The UK Department for Transport has conducted a number of trials of enhanced screening processes using security scanner technology. These have included trials at London Heathrow

Terminal 4 from June 2004 using Rapiscan Secure 1000 X-ray backscatter technology, and at London Luton from November 2007 using L3 Millimetre Wave technology.

In both cases trials involved the use of security scanning systems as an alternative to hand searching in detecting items (metallic and non-metallic) beneath a person's clothing. The primary objectives of these trials were: to determine detection capability; to explore passenger and staff acceptability; to develop an optimised generic configuration for deployment and to develop a process to ensure an acceptable level of passenger throughput.

Passengers were selected randomly. Once selected, they were informed about the type of equipment used and were offered a full hand search as an alternative to being screened by the security scanner. The produced data was sent to a remote reviewer for detection of any items concealed on or beneath clothing. To safeguard privacy, the screen operator did not see the selected passenger at any stage during the process. Should the case be, the reviewer indicated any areas of potential concern to the screener for him/her to target the areas with a hand search.

A detailed training programme was developed for the trails, which included ensuring that the security officers fully understood the technology and the health, safety and privacy issues around it. Independent radiological surveys were commissioned; the outcome of which showed that the equipment deployed presented extremely low risks to passengers and operators. The results of these surveys were made available to staff members.

The trials provided data to further enhance processes and training to increase the detection rate. Anecdotal evidence and monitoring indicated a low rate of refusal by passengers to be screened by security scanner. There were no significant issues regarding health, safety or privacy.

The trail deployments of security scanners did not call for any significant changes to the layout of the search area. However, additional space was required to accommodate the reviewers and specific methods of communication between search officers and the remote officer assessing the image were needed. The trials also identified ways to improve the level of passenger throughput.

The UK used the results on these trials to inform its further work in this area, including UK regulations on the use of security scanners.

Since 1st February 2010, the UK Department for Transport has required the use of security scanners at London Heathrow Terminal 4 for the screening of departing passengers as a More Stringent Measure according to 6 of Commission Regulation 300/2008. Passengers may be selected at random on a continuous basis without regard to personal characteristics (i.e. on a basis that should not constitute discrimination such as gender, age, race or ethnic origin).

The process is the same as described for Manchester airport (see below).

Manchester airport

The first security scanner trial at Manchester airport was carried pout in the period October 2009-Ferbuary 2010. This first trial used security scanner as an more stringent measure, over and above the existing process. Selected passengers where invited to be scanned by X-ray machine after passing walk-through metal detector. The trial was voluntary and children and under 18s were exempted.

Following the attempt to bring down the Detroit transatlantic flight on 25 December 2009, the UK authorities decided to make it mandatory from 1 February 2010 and with no general exemption for passengers.

Since May 2010 (and for a period of 18 months) a trial is taking place at Manchester airport Terminal 2 with security scanners being fully integrated in the security system. . Its objective is to test and evaluate the use of security scanner technology as a secondary screening method resolving alarms generated by walk-through metal detectors, thus replacing full hand searches. If selected for security scanning further to an alarm passengers are not offered an alternative method of screening and refusals to be screened result in them not being allowed to travel.

The equipment deployed is the Rapiscan Secure 1000 Single Pose system which uses X-ray backscatter technology. A Health and Safety evaluation has been conducted on this technology by the UK Health Protection Agency (HPA).

The process involves a reviewer who sits in a room located away from the security scanner and two screeners (1 male and 1 female). Once selected, passengers are been given explanations on why they have been selected and informed that in case of refusal of being scanned they will not be allowed to proceed into the security restricted area, and to board their flight.

The produced image is sent to the located remotely reviewer for examination. To safeguard privacy the reviewer does not see the selected passenger at any stage during the process and passengers' facial features are blurred by the computer. Images are anonymous, cannot be stored or transmitted.

The interaction between the reviewer and the screener is completely automated (no verbal communication is technically possible). Should the case be, the areas of potential concern appear on the machine in the security area as a red box on a cartoon mannequin. The screener then proceeds with a targeted hand search. All alarms will be resolved before the passenger is permitted to continue into the security restricted area

Detailed training programmes have been developed, including operational test procedures, plus health, safety and privacy issues. The training programmes have been produced in consultation with the manufacturers and the Department for Transport.

On the basis of the interim report transmitted at the beginning of October, over the three month trial period security scanners prove to be better than hand searches in terms of detection performance. Approximately 92% of passengers found the process better or much better than a hand search. Since May 2010 over 255,000 passengers screened through the security scanners and only one refused. Airport security staff feedback was very positive and preferred the scanner to conducting a hand search. The trial showed that the introduction of security scanner as a secondary screening method (alarm resolution) does not have a detrimental impact on passenger throughput since a security scan is faster than a full hand search.

D) Germany

In September 2010 a trial started at Hamburg airport for six months. Two machines supplied by L3 Communications, Model Pro Vision 100, based on active millimeter wave and using Automated Threat Detection systems ("ATR systems") are deployed at Hamburg Airport main screening point (Plaza) as a primary passenger screening method.

The participation of passengers in the trial is voluntarily. Passengers are requested to divest coats, jackets, belts, shoes and to empty all pockets of clothes still being worn. Passengers are then requested to step into the security scanner to be screened. The image is then automatically analysed (no reviewer) and only areas where the security scanner has generated an alarm will be rescreened to the screener's satisfaction. In addition critical areas of the body, where the security scanners detection ability is not sufficient, will be submitted to a additional search quote, even if these areas have not alarmed during the screening process. In a later phase shoe scanners shall be installed as a supplementary measure. Then the screening of shoes as cabin baggage will only become necessary if the screener cannot determine otherwise the passenger is not carrying prohibited articles.

If the security scanner alarms in more than 4 (four) different regions of the body a hand search will be carried out.

To date, according to the Germany authorities, security scanners in use at Hamburg airport have a better detection performance of some prohibited articles compared to human screeners though some parts of the body are more difficult to analyse.

Radiations emitted are far below the legal limits; privacy and data protection are addressed satisfactorily by the ATR system. The impact on passenger throughput and staff costs is under evaluation; some additional costs are needed to deploy security scanners however in the future the technology could help increasing throughput and reducing costs compared to the current traditional screening system.

OTHER TESTS

A) France - Paris Charles De Gaulle airport

On 22 February 2010 France introduced at Paris Charles De Gaulle airport, terminal E2, a millimetre wave equipment for US departing flights. Tests are based on a voluntary participation and the security scanner does not replace current common screening methods . Passengers are indeed primarily subjects to traditional EU controls then they are chosen on a random basis to further checks, such as full baggage check and hand search or security scanner screening, if they consent to pass through the scan. This system was operational for three months.

A strict code of conduct has been established for the use of these equipments. In particular the storage and registration of data and images is forbidden and several others safeguards are taken, such as that the screener is located in remotely in closed and secured buildings in which mobile phones, cameras are not allowed and access is restricted, the reviewer is of the same gender of the screened person, only a radio communication is allowed between the reviewer and the screener, etc.. Passengers consenting to be screened by a security scanner are given information on the security scanner equipment deployed.

The French authorities indicate that the equipment deployed at Paris Charles De Gaulle airport also allows the automatic detection of prohibited dangerous items and also tested this configuration.

Before deploying the security scanner equipment, the conformity with health requirements has been assessed by several independent bodies, such as in 2010 the Agence Française de Sécurité

Sanitaire de l'Environnement et du Travail (AFSSET) and the French Institute for Nuclear Radioprotection and Safety (IRSN).

The French civil aviation authorities indicate that the scan takes approximately 3 seconds and that the average analysis takes 18 seconds. The fully automated version allows a better detection of given items.

B) Italy

At the 59th Aviation Security Committee meeting of 22-23 September 2010 the Commission was informed of the fact that, as reported by the press, some demonstrations were taking place at the following Italian airports: Rome Fiumicino, Milan Malpensa, Venice and Palermo. Security scanners deployed were based on active and passive millimetre wave radiation and infrared.

On the 23 September 2010 the Italian Civil Aviation Authorities (ENAC) issued a press release indicating that demonstrations at Rome Fiumicino, Milan Malpensa and Venice airports were concluded while at Palermo airport were on-going. The press release also indicates that the results of demonstrations would be analysed by the Inter-ministerial Committee for the Security of Air Transport and Airports (CISA - Comitato Interministeriale per la Sicurezza del Trasporto Aereo e degli Aeroporti) in the second half of October and communicated promptly to the EU. To date the methodology used and the results have not been transmitted.

C) Denmark – Copenhagen airport

The Commission has been informed recently that a test is carried out at Copenhagen airport. However to date no information is available.

ANNEX IV

SUMMARY OF THE REPLIES

TO THE PUBLIC CONSULTATION ON BODY SCANNERS

27 NOVEMBER 2008 - 19 FEBRUARY 2009

List of Acronymes

BS – Body Scanners

MS – Member States

WTMD – Walk-through metal detectors

HHMD – Hand-held metal detectors

I. GENERAL INFORMATION ON PARTICIPANTS

Sender

ACI –Europe	Airports Lobby
aviation	
ADANI	Advanced Analytical Instruments
industry	Belarus /Russia Manufacturer
AEA	Association of European Airlines
aviation	
Art. 29 WP + EDPS	Article 29 Working Party on Privacy + Data Protection
EU	European Data Protection Supervisor
AS&E	American Science and Engineering Inc (USA)
industry	Equipment Manufacturer of Backscatter X-ray scanners, including the Smart Check Personnel screening System
ASSA	Aviation Security Services International - EU's most important security services
aviation	

	providers at airports
BAA UK *Aviation*	BAA airport services provider at Heatrow and other UK airports
BRAUN MEDICAL & COMPANY LTD *industry*	UK Manufacturer in medical and security equipment (COMPASS BODY SCANNER Model BRAU 1950 trial at Manchester airport)
Brijot Imaging Systems Inc. *industry*	USA Manufacturer GEN 2 System Body Scanner (millimetre wave-type)
BSCA Security *aviation*	Brussels South Charleroi airport
Bulgarian CAA *government*	CAA
CEIA *Industry*	Manufacturer WTMD (assessment of passive mm wave technology)
Citizen	French citizen
Citizen	Dutch citizen
Condor Flugdienst Gmbh *aviation*	German Leisure Air Company
CZ CAA *government*	CZ Republic CAA
DE	Federal Ministry for

government	Home Affairs
DETECTER *R&D*	Research Project on the impact of detection technologies in human rights within the 7th FP UK and other countries
DGCA France *government*	Direction générale de l'Aviation Civile
EBAA *aviation*	European Business Aviation Association
ELFAA *aviation*	European Low Fares Airline Association
Estonia CAA *government*	Estonia CAA
Finland *government*	Civil Aviation Authority (CAA) and Ministry of Justice.
FRA *EU*	EU Agency for Fundamental Rights
FRA *EU*	Fundamental Rights Agency
Germany *government*	Government to Parliament (kleine Anfrage FDP Fraktion)
Gilardoni SA *Industry*	X-Ray and Ultrasound Equipment Design & Manufacturing
Hennis Plasschaert MEP-LIBE *EU*	MEP LIBE/TRAN Committee Mrs Hennis Plasschaert EP

IACA Aviation	International Air Carriers Association
Italy *government*	ENAC Italy CAA
L-3 Security & Detection Systems *industry*	L-3 Security & Detection Systems Manufacturer UK
LUX Ministry of Health *government*	Ministère de la Santé du Luxembourg
LV *government*	LV CAA
MilliLab R&D *industry*	Millimetre-wave Laboratory and VTT Technical Research Centre of Finland - non-profit
Millivision *industry*	Manufacturer passive millimetre wave
Netherlands *government*	Government
NUCTECH *industry*	UK Manufacturer
Philipp BRADBOURN MEP-LIBE *EU*	Philipp BRADBOURN EP-LIBE 2009-2014
PL *government*	Polish CAA

Rapiscan Systems	US/UK Manufacturer of body imaging systems
Industry	
SESM	www.sesm.it
R&D	Consortium of the project ATOM Airport Security Programme
industry	
Smiths Detection	IE/UK Manufacturer
industry	
SONS	State Office for Nuclear Safety/Regulatory Authority for Radio Protection
Lab/gov	
STUK	Finnish Radiation and Nuclear safety Authority
Lab/gov	
TRANSEC UK	TRANSEC, Department for Transport.
government	
USA TSA	US Government
government	
Vantaa Airport Finland	Vantaa Airport /Finavia
aviation	

II. DETECTION CAPABILITY OF BODY SCANNERS

ACI-Europe	Detection rate is high when compared to WTMD and to HHMD. Good results of millimetre wave scanner on trial at Schiphol airport.
ADANI	Detection rate is very high compared to WTMD, HHMD.

AEA	Good detection capabilities, especially compared to WTMD, HHMD and hand searches. Highest possible detection standard is body scanner together with metal detectors.
AS&E	Backscatter technology rates very high compared to WTMD and HHMD. Rates good compared to hand searches, but detection depends highly on technology.
ASSA	Detection rate is average compared to WTMD and HHMD.
BAA UK	Detection rate is very high compared to WTMD, HHMD.
BRAUN MEDICAL & COMPANY LTD	Detection rate is very high compared to WTMD and HHMD; some body scanners can detect items that are swallowed or hidden into the body.
Brijot Imaging Systems Inc.	Detection rate is very high compared to WTMD, passive millimetre wave type and deterrent-effect.
BSCA Security	Detection rate is high; even when compared to WTMD, HHMD and hand search.
Bulgarian CAA	Detection rate is average compared to WTMD, but higher when compared to HHMD and hand searches.
CEIA	Passive millimetre wave is not a detection system but an imaging system, therefore it is not comparable to WTMD.
CZ CAA	Detection rate is very high compared to WTMD and HHMD.
DGCA France	Detection rate is very high compared to WTMD, HHMD.
ELFAA	Detection is rated high; objects on body and in clothing are identified well through the image display. Compared to WTMD and HHMD, body scanners perform really well. It can detect possible explosives and weapons.
Estonia CAA	Detection rate is very high compared to WTMD, HHMD.
FRA	Detection rate is high when compared to hand searches.
Germany	Detection rate is very high; especially when compared to WTMD, HHMD and hand search.
Gilardoni SA	Detection rate is low when compared to hand search, but high when compared to WTMD and HHMD.
L-3 Security & Detection Systems	Detection rate is very high compared to WTMD, HHMD and hand searches.
LUX Ministry of	Compared to hand search detection rate is low.

Health

MilliLab	Detection performance is high with the *x-ray backscatter*. It has an excellent image resolution. Existing *active portals* are also rated high. It has sufficient spatial resolution and dynamic range. *Semi-passive portals* are rated medium. The contrast of this system is barely sufficient. Existing *stand-off imagers* are rated low. It has a limited capability of anomaly detection. But it could still be sufficient for an airport application. Compared to WTMD's and HHMD's body scanners are rated very high. WTMD's and HHMD's do not provide very coarse location information, the false alarm rate is quite high, alert the operator, and above all do not scan for non-metallic items. Body scanners can scan for metals, liquids, dielectrics, d>3mm objects.
Millivision	Detection rate is very high; WTMD is not reliable enough for detection
Netherlands	Detection rate is very high; especially when compared to WTMD, HHMD and hand search.
NUCTECH	Detection rate is high when compared to WTMD, HHMD and hand searches.
Philipp BRADBOURN MEP-LIBE	Equal rate of detection.
Rapiscan Systems	Based on backscatter technology, detection rate is very high compared to WTMD and HHMD. This technology can detect explosives, ceramic/plastic knives and guns and all metallic and non-metallic threats.
SESM	Detection rate is high; even when compared to WTMD, HHMD and hand search.
Smiths Detection	Detection rate is very high compared to WTMD, HHMD.
TRANSEC UK	Detection rate is very high compared to WTMD, HHMD.
USA TSA	Detection rate is very high; especially when compared to WTMD, HHMD and hand search.
Vantaa Airport Finland	Detection rate is very high compared to WTMD, HHMD and hand searches. Body scanner is the only mean available to detect liquids.

III. FUNDAMENTAL RIGHTS

a) General

ADANI	Less intrusive than hand searches.
AEA	No physical controls; which means less intrusive with regards to human dignity.
Art. 29 WP + EDPS	The appreciation level of intrusion of body scanners will be depending on cultural and personal context.
BAA UK	Body scanning is no less dignifying than being hand searched.
BSCA Security	Mapping someone is more intrusive than waiting for an alarm when the same person goes through a WTMD.
Condor Flugdienst Gmbh	Body scanners have a high impact on a person's dignity.
CZ CAA	Body scanners are less intrusive than hand searches; women should be screened at remote distance by women screeners.
ELFAA	Most body scanners are far less intrusive than physical hand searches.
Estonia CAA	Respect for life should be listed here.
FRA	Using of Body Scanners in accordance with article 52 Charter of Fundamental Rights and article 8 of European Convention of Human Rights – privacy issues.
Germany	No impact on fundamental rights.
Gilardoni SA	No other fundamental rights affected.
L-3 Security & Detection Systems	Body scanners are far less intrusive than hand searches.
MilliLab	Most body scanners are far less intrusive than hand search. Only the X-ray backscatter could be intrusive with person's privacy. The other systems are not intrusive.
Netherlands	Less intrusive than hand search.
Smiths Detection	Body scanners are justified on security matters.
STUK	Is it justified to expose individuals to radiation when it is clearly not for medical purposes.

USA TSA	A name should never be associated with an image.
Vantaa Airport Finland	Less intrusive in person's dignity than hand searches.

b) Passengers should be given a choice

AEA	Yes, at least during a certain time after the deployment of the technology.
ASSA	On a voluntary basis
BRAUN MEDICAL & COMPANY LTD	Yes, the person should be given a choice.
BSCA Security	Yes, the person should be given a choice.
CZ CAA	Yes, the person should be given a choice.
DGCA France	If passengers refuse body scanners, they can be obliged to undergo a hand search.
FRA	Search according to current standards, consent based on full information plus example image.
Germany	Yes, the person should be given a choice.
Gilardoni SA	Yes, the person should be given a choice.
Hennis Plasschaert MEP-LIBE	Yes, the person should be given a choice.
LUX Ministry of Health	Yes, the person should be given a choice.
MilliLab	Active/X-ray portals : a choice should be given
Millivision	Initially yes.
Netherlands	Have an alternative without giving a reason for their choice
Philipp BRADBOURN MEP-LIBE	Yes, the person should be given a choice.
Smiths Detection	Yes, the person should be given a choice.
TRANSEC UK	Initially yes, passengers should be given a choice. After 36 months of application no choice.

USA TSA	Yes, except under extreme security alerts.
Vantaa Airport Finland	Yes, the person should be given a choice.

c) Passenger should be given no choice

ACI-Europe	No choice should be given, unless the person to be scanned is under exemption categories.
Art. 29 WP + EDPS	No choice, as it raises questions as to the effective necessity and efficiency of body scanners.
AS&E	The passengers should not be given a choice.
BAA UK	No choice should be given.
Brijot Imaging Systems Inc.	No choice should be given.
Bulgarian CAA	The majority of the BG CAA believes the passengers should not be given a choice.
ELFAA	Fundamental principle of good security that passengers should not be able to self-select, predict or avoid certain procedures.
Estonia CAA	No choice should be given, unless the person to be scanned is under exemption categories.
MilliLab	Passive/semi passive mm-wave / THz systems: No choice, there are no health issues and no explicit nude imagery.
SESM	No choice should be given

d) Information to passengers

ACI-Europe	Information that the technology is safe. Information should be given via pre-deployment campaign, on airline/airport websites, at check-in, in the line before the screening point.
ADANI	Information on airports' website, check-in desk, before security check point.
AEA	That the technology is not harmful to health, no storage and review by a remote screener. But responsibility is not with the airline.
Art. 29 WP	The data that is being processed, what the scanner does, responsible persons for the data processing, consequences of not using the scanner,

+ EDPS	exemptions, info point for more detailed information.
AS&E	Information at the screening point, on airline/airport and government authority websites.
BAA UK	Information that provides assurance on safety and the protection of human rights, and build into the screening process when possible.
BRAUN MEDICAL & COMPANY LTD	To focus information on the not existing impact on health.
Brijot Imaging Systems Inc.	Information at the airports, websites and screening point.
BSCA Security	Information given at screening point.
CEIA	Passengers should be notified that the inspection with body scanners is conducted with radio-wave technology or x-rays.
CZ CAA	Information about the principles of the use of the device. Expert assessment in the case of x-ray equipment. Info should be given on the airport website and at check-ins.
DGCA France	Only information at the screening point.
ELFAA	No information for passenger.
Estonia CAA	Information concerning privacy and health issues via media.
FRA	On functioning, purpose, benefit, prohibited items, FR/health risks, image produced, data storage, possibility for of refusal, including alternatives and consequences. Information should be provided at airlines, travel agent, screening point, check-in, general media.
Germany	Information on health impact and purpose of Body Scanners.
Gilardoni SA	Give information on health impact and privacy issues, and time of analysis. Info should be given 10 metres before the screening point.
Hennis Plasschaert MEP-LIBE	Information campaign in media, airports, airlines.
LUX Ministry of Health	Info on health issues, especially negative effects of radiation.
Millilab	The equivalent dose of the screening process and the associated health risks, as well as the method which is used to ensure data privacy.
Netherlands	Info at screening point, by airports, airlines and regulators.

Philipp BRADBOURN MEP-LIBE	Information on health impact.
SESM	At an early stage not close to the body scanner point
Smiths Detection	Information to the motivation, methodology, procedure, privacy, health should be available.
TRANSEC UK	Radiation exposure and alternative screening methods.
USA TSA	Data on health and safety testing and measurements, directly at the checkpoint, at entrance to airport and on the web.
Vantaa Airport Finland	Information on the alternatives for body scanners. This info should be given before the screening point and website airport.

e) Should exemptions be provided?

ACI-Europe	Only exemptions when there are clear medical reasons.
Art. 29 WP	Only if appropriate alternative screening measures are available.
+ EDPS	
AS&E	Prevent people with pacemaker from undergoing screening through Millimetre Wave or t-ray technologies. It may affect them.
BAA UK	Back scatter type: various types of passengers should be excused for medical reasons. Millimetre wave system: only children younger than 12 years.
BRAUN MEDICAL & COMPANY LTD	Pregnant women and children should be offered an alternative screening method.
Brijot Imaging Systems Inc.	No exemptions.
BSCA Security	Exemption for people with distinctive anatomic characteristics like one-legged people and pregnant women.
Bulgarian CAA	Exemptions for people with serious medical problems, individuals with pace-makers and pregnant women.
CZ CAA	Exemptions for pregnant women and people who have been exposed to some radiation in the past.
DGCA France	No exemptions.

ELFAA	Only if technology is proven to cause a risk for health of certain categories of persons.
Estonia CAA	No exemptions.
FRA	Only for pregnant women and people with pace makers.
Germany	The same rules apply as for the WTMD.
Gilardoni SA	Disabled persons and children younger than 12 should be exempted.
L-3 Security & Detection Systems	Subjects in wheel chairs, subjects wearing casts, wet clothing items, subjects who cannot stand still for 2 seconds, physically unable to enter the system.
LUX Ministry of Health	All persons asking for hand search and persons having grounded medical or psychological objections.
MilliLab	No, unless legislation so requires.
Millivision	Only in case of proven health concern.
Netherlands	People in wheel chairs, children, and people who do not fit in the detection portal.
NUCTECH	No exemptions.
Philipp BRADBOURN MEP-LIBE	Pregnant women, people under 18, persons with a pace maker, persons objecting a screening on moral or religious grounds.
Rapiscan Systems	Only wheel chair bound exemptions.
SESM	No exemptions
Smiths Detection	No exemptions.
STUK	Exemptions for pregnant women and young persons.
TRANSEC UK	No exemptions.
USA TSA	Yes, people in wheel chairs, people that are overly overweight, optional for people with health concerns, such as pregnancy.
Vantaa Airport Finland	No exemptions. The technology is safe.

IV. HEALTH IMPACT

ADANI	X-Ray scanner radiation similar to X-Ray medical scanner is not harmful

	for health, but goes through whole body including vital organs. It is advisable to follow the recommendations of the International Commission on Radiological Protection.
AS&E	X-rays on body are too insignificant to be measured, Backscatter X-ray technologies complies with American National Standards Institute and Health Physics Society standards.
ASSA	Millimetre wave does not have impact in health.
BAA UK	Transmission type x-rays are unsuitable for use on passengers. Backscatter is safe. Millimetre and Terahertz systems are safe.
BRAUN MEDICAL & COMPANY LTD	No impact on health.
Brijot Imaging Systems Inc.	No health implications.
Bulgarian CAA	After tested the Millimetre Wave and Backscatter, there was no indication of impact on health.
CEIA	No implications with passive millimetre wave.
CZ CAA	Use of body scanners in accordance with Public Health Directive on Radiation.
DGCA France	X-Ray Techniques are forbidden in France, they are only allowed for medical purposes.
Estonia CAA	No medical but psychological impact, concerns over medical and privacy issues.
Germany	Intensity value is suitable and does not have impact on the internal organs.
Gilardoni SA	No health implications.
Hennis Plasschaert MEP-LIBE	No impact on health following the TNO report. EP resolution requests health impact assessment.
L-3 Security & Detection Systems	No health implications.
LUX Ministry of Health	X-Ray machine can provoke cancer. Exposure to radiation breaches the precaution principle.
MilliLab	Power levels for Active mm-wave portals are very small, thus highly

	unlikely to have health risks. Passive systems have no radiation, thus no health effects at all.
Netherlands	According to a study from April 2007, the mm wave: 1mm or 0,02% of the EU maximum for electronic radiation, has no impact for medical heart devices.
NUCTECH	Safe for general use.
Rapiscan Systems	Negligible effect on health.
SESM	Millimetre Wave, Terahertz/-ray and 15-35 GHz Frequencies à no evidence of impact on the health.
Smiths Detection	No health risks.
STUK	Backscatter body scan: health implications are negligible.
TRANSEC UK	All body scanners can penetrate vital organs; it depends on the level of radiation.
Vantaa Airport Finland	There is no impact on health.

V. PROTECTION OF PERSONAL DATA

a) Can the use of body scanner being considered as processing personal data?

ACI-Europe	Not considered as processing personal data as long as there is no possible method available to the airport screener to clearly identify the person and that there is no available technology to store the image.
ADANI	No impact on data processing, the images are blurred and immediately deleted, the screener who examines the image is not in contact with the person.
AEA	No, the individual cannot be identified from the image.
Art. 29 WP	Yes, it is considered as data processing.
+ EDPS	
AS&E	No impact; the image generated is not associated with the scanned person. Screeners shall be trained as appropriate.
ASSA	No, the images are anonymous and voluntary, the faces are blurred.
BAA UK	No impact on processing data.
BRAUN MEDICAL	No impact, the person can not be identified and images deleted or saved

& COMPANY LTD	with security codes.
Brijot Imaging Systems Inc.	No impact on processing data, it is only an imaging system.
BSCA Security	No, the individual cannot be identified from the image.
Bulgarian CAA	No impact in accordance with Bulgarian law on data protection, when there is no storage and the faces are blurred.
CEIA	Yes, if they are conceived as Imaging Body Device No, if designed as threat detection system.
Condor Flugdienst Gmbh	High impact on data processing.
CZ CAA	Not a form of processing personal data.
ELFAA	No, the individual is not personally identified by the technology.
Estonia CAA	No impact unless the image is linked to a specific person with details.
FRA	The information generated by body scanners should not constitute personal data. Anonymisation of the image is needed. Commission should take account of Privacy Enhancing Technologies.
Germany	No impact when faces are blurred, images are not saved and people are informed about privacy.
Gilardoni SA	Not considered as processing personal data since the operator is not able to recognise the passenger.
Hennis Plasschaert MEP-LIBE	Body Scanners only can be used whether these technologies meet data protection safeguards: blurring faces, no storage, training screeners, the image generated is checked by a screener who is not in direct contact with the screened person.
L-3 Security & Detection Systems	No impact, the images are not of photographic quality.
LUX Ministry of Health	Yes, processing personal data.
MilliLab	No, the persons screened cannot be identified from the imagery.
Netherlands	No processing of personal data.
NUCTECH	No, images are not recorded with a means of identifying the individuals.
Rapiscan Systems	There is no impact, an individual cannot be identified.

SESM	Body scanner image is not associated to the identity of the scanned person and person gives consent to handle his/her image
Smiths Detection	No impact on processing data.
TRANSEC UK	No impact if the images are blurring, if there is no storage and no contact between passenger and screener.
USA TSA	Yes, the image is related to a passenger.
Vantaa Airport Finland	Individual cannot be identified; images are not stored, only used for consultation in certain situations. Screener is situated in remote location

b) Storage of data

Art. 29 WP + EDPS	Images must be overwritten after clearance.
ELFAA	Yes, only until latest arrival time of relevant aircraft.
USA TSA	Until take of aircraft.

c) Would the use of body scanners for aviation security meet the condition of "legitimacy"?

ACI-Europe	Absolutely, the body scanners are better, technologically advanced and more comprehensive way to protect the interests of the passengers than the current means of screening.
ADANAI	Yes, it is legitimate.
Art. 29 WP + EDPS	Yes if there is a proven threat, remote/no storage once cleared plus review & audit mechanism, schematic view of body also to reviewer à blurring whole body minus detection areas.
AS&E	Yes, body scanners can clearly contribute to detecting and preventing threats.
ASSA	Yes, the body scanner does not generate more intrusion than hand search.
BAA UK	Yes as it detects to a higher level than current processes. Those items are likely to be used by in any such incident of unlikely interference.
BRAUN MEDICAL & COMPANY LTD	Yes, when the people have chosen to undergo a scan, they are consenting for their image to be examined.
Brijot Imaging Systems Inc.	Yes, safeguards such as body scanners permit a level of security.

BSCA Security	Yes, facing the threats to the security of aviation with every mean will always be legitimate.
Bulgarian CAA	Yes, this method does not limit personal freedom more than necessary.
CEIA	Yes, if device is a threat detection system and not a body imaging device.
CZ CAA	Yes, because body scanners increase civil aviation security.
DGCA France	Yes, legitimate.
ELFAA	Yes, in accordance with EU regulation.
Estonia CAA	Yes, no difference with currently allowed methods.
FRA	Individual guilt or concrete law enforcement activity otherwise less justified and therefore higher privacy standards à objective is legitimate and responds to 'pressing social need'.
Germany	Yes, there is no clear image therefore it is legitimate.
Germany	Yes, it is legitimate.
Gilardoni SA	Yes, for passenger safety.
Hennis Plasschaert MEP-LIBE	Legitimate if it meets data protection requirements.
L-3 Security & Detection Systems	Yes, it is legitimate.
LUX Ministry of Health	No, since there exist other alternatives.
MilliLab	Yes, general interest to prevent unlawful interference with civil aircraft. The use of body scanners is also far less intrusive than personal search.
Netherlands	Image cannot be saved, closed network, no link between image and passenger.
NUCTECH	Yes, it is legitimate.
Philipp BRADBOURN MEP-LIBE	No, use of imaging technology when other methods are available is incompatible with fundamental privacy rights.
Rapiscan Systems	Yes, body scanners can help counter the ever changing threat to the aviation industry deriving from terrorism.
SESM	Protection of society against unlawful acts legitimates per se.

Smiths Detection	Yes, it is legitimate.
TRANSEC UK	Yes, legitimate.
Vantaa Airport Finland	Yes, body scanners are better then other methods.

d) Should rules on the use of body scanners be set at Community (EC) level or at Member State level?

ACI-Europe	Rules should be set on Community level. A legal act should be enacted in order to ensure a smooth application of the one-stop aviation security principle. Airports that choose to invest in this method should be allowed and encouraged.
ADANI	Harmonisation at EU Level
AEA	Rules on Community level to grant harmonisation of measures.
Art. 29 WP + EDPS	Rules at Community level will foster the harmonisation of data protection safeguards.
ASSA	On Community level and on Member State level.
BAA UK	One standard compatible with EC law providing assurance for passengers and security staff alike.
BRAUN MEDICAL & COMPANY LTD	Rules should be set on Community level.
Brijot Imaging Systems Inc.	Rules should be set on Community level.
BSCA Security	Rules on Community level to avoid different rules to the same problem.
Bulgarian CAA	Rules should be set on Community level.
CEIA	Rules should be set on Community level.
CZ CAA	Should be set on Community level as is the case for other security equipment.
DGCA France	Rules should be set on Community level.
ELFAA	Community level; strongly supports the EC's aim of European one-stop security.
Estonia CAA	Rules should be set on Community level.

FRA	Uniform standards contain less (abusable) discretion for Member States and higher foreseeability, subsidiarity concerns may be dealt with by minimum standards.
Germany	Freedom to MS to choose between several types of screening.
Gilardoni SA	Rules on EC level to avoid differences between EU countries and to avoid passenger confusion.
Hennis Plasschaert MEP-LIBE	To set a standard on EC level, all citizens should be able to rely on the same data protections safeguards in al Member States.
LUX Ministry of Health	No obligation to use body scanners.
Netherlands	Rules should be set on Community level.
Philipp BRADBOURN MEP-LIBE	It should be regulated on Member State level.
Rapiscan Systems	The EU should allow/mandate the use of body scanners in all EU Member States, including those that currently prohibit the use of certain technologies.
Smiths Detection	A minimum guidance from EC level should be available.
TRANSEC UK	On Community level, but in case of lack of financial resources the Member States can decide for themselves.
Vantaa Airport Finland	EC level would help harmonizing and helping the usage of scanners.

e) Would the use of body scanners in the field of aviation security be proportionate to the end pursued so that they can be considered necessary and genuine?

ACI-Europe	Yes, body scanners address in a very effective way, a very specific and persistent type of threat.
ADANI	Yes, easier, faster and safer circulation of passengers.
AEA	Yes, more efficient for threat detection.
Art. 29 WP + EDPS	Only if an acceptable balance is reached considering ton the one hand the necessity and the effectiveness of their use and on the other hand the intrusion on the privacy of individuals.
AS&E	Yes, the scanners do not process data.

BAA UK	Yes, protection of the travelling public in the field of aviation security to be proportionate to the end pursued so that they can be considered necessary and genuine.
BRAUN MEDICAL & COMPANY LTD	Yes, body scanners are critically necessary and genuine.
Brijot Imaging Systems Inc.	Yes, it does not violate privacy or compromise health.
BSCA Security	Yes
Bulgarian CAA	Yes, this method does not limit personal freedom more than necessary.
CEIA	No, the current screening procedures are effective security measures.
CZ CAA	Yes, it is proportionate.
DGCA France	Yes, it is proportionate.
ELFAA	Yes, emerging threats have to be detected.
Estonia CAA	Yes, focus on technology which can detect the prime tool of terrorists, explosives.
FRA	Clear advantages: security, passengers, staff, airport.
Germany	Yes, when no personal rights are violated.
Gilardoni SA	Yes, passengers' safety is main goal.
L-3 Security & Detection Systems	Yes, it is proportionate.
LUX Ministry of Health	No, alternatives exist.
MilliLab	Yes, less intrusive than alternatives and provides added value in terms of aviation safety.
Netherlands	Current threats and robustness for new emerging threats, passenger convenience, employment conditions: negative feelings when hand searching, deterrence effect, better quality control of screening.
NUCTECH	Yes, it increases the protection of threat.
Philipp BRADBOURN MEP-LIBE	No, there are other methods.

Smiths Detection	Yes, it is proportionate.
TRANSEC UK	Yes, it is proportionate.
USA TSA	Not installing body scanners may leave a gap in the protection of aviation.
Vantaa Airport Finland	Yes, the chances for mistakes are less with body scanners.

VI. ECONOMIC, COMMERCIAL AND/OR COST-BENEFIT IMPACT ASSESSMENT

ACI-Europe	Difficulties to conduct an economic impact assessment. Still need improvements in the field of throughput management. Current prizes for body scanners are high, making them more expensive then current screening methods.
ADANI	Besides budgetary considerations, the accuracy of images and the detection capabilities should be examined.
AEA	Faster screening process, higher passenger throughput
AS&E	Airports should decide for themselves if they want to purchase body scanners.
BAA UK	Necessary to carry out a cost-benefit impact assessment. Particularly any extra costs that would be associated with voluntary use that would not arise if use was mandatory.
BRAUN MEDICAL & COMPANY LTD	It would be beneficial to carry out such an assessment.
Brijot Imaging Systems Inc	Welcome such an impact study, but some elements cannot be statistically measured.
BSCA Security	Necessary to carry out a cost-benefit assessment for smaller airports in order to decide if the benefits are bigger than the costs of purchasing body scanners.
Bulgarian CAA	Use of body scanners will have an economic impact on Bulgarian budget and airports' financial capacities.
CZ CAA	Whether use of body scanners is optional, use of thereof would be based on risk analyses and budget availability.
ELFAA	Transparency of costs in line with the Commission's position on Financing of Aviation Security and cost-benefit analysis to support the use of body scanners.

Estonia CAA	Cost-benefit assessment could reassure also the general public that body scanners are the optimal way to proceed.
FRA	Cost-benefit assessment is unclear, but hand luggage screening is faster.
Gilardoni SA	Providing a safer environment by using body scanners cannot be measured only with economic, commercial and cost-benefit assessments.
IACA	All costs for a cost-benefit assessment and purchase of body scanners should be bared by the governments.
L-3 Security & Detection Systems	Allows much higher passengers throughput with the same or less screeners.
MilliLab	A targeted research activity to improve the cost/performance of these systems is needed.
Netherlands	Efficiency with future central reviewer room, no cost impact assessment at EU level It is the airport responsibility.
NUCTECH	Individual airports should decide for themselves.
TRANSEC UK	Necessary to get best value for money for public/customers. Also needs to be realistic for industry/operators to implement within commercial constraints.
Vantaa Airport Finland	Cost-benefit assessments are expensive, but it adds to the security and customer service level.

XIV. Impact on passengers

AEA	Increases passenger comfort
ELFAA	Increases passenger comfort
Netherlands	Increase passenger and staff comfort
Vantaa Airport Finland	Customer service level increases

SUMMARY OF THE TASK FORCE MEETINGS

Summary of 1st Body Scanner Task Force meeting

12 December 2008

Attendees

Representatives of the European Parliament, ALDE-LIBE Secretariat and other Community bodies (Art 29 WP/ FRA, EDPS), Member States (DE, FI, NL, UK), the aviation industry (ACI, AEA, ECA,IATA, Schiphol airport), manufacturers (Brijot, FIPRA International, Iconal Technology, L-3, Rapiscan, Reveal Imaging, Smiths Detection, US Millivision, Security Europe, Security Services ASSA, Thales Security Systems US High-tech AeA), research bodies and academia (Catholic University of Louvain, Leiden University, Leuven University, Research Gildaroni Research MMW Finland St James' Hospital).

Introduction

(1) The Chair explained the background to the proposal to include body scanners in the aviation security implementing legislation planned to complement Regulation (EC) 300/2008. He summarised the concerns raised by the European Parliament in its 23 Oct Resolution and set out how the Commission intended to proceed.

(2) The Chair also flagged up the risks of a legal vacuum. If there were no European legislation on body scanners, Member States would be able to adopt their own rules under the more stringent measures provisions, leading to varying regimes across the Community.

(3) Members of the Task Force were then invited to give opening comments on the issues.

Opening comments

A number of industry bodies (IATA, ECA, ACI) and Member States' Appropriate Authorities (NL, FI) who had been involved in trials spoke in support of body scanner deployment, citing the following reasons:

- the capability of body scanners to detect plastic explosives which would not cause a Walk Through Metal Detector (WTMD) to alarm;

- the demonstrably higher detection rates, as revealed by covert testing, for all types of prohibited articles;

- removal of the need for physical hand search, which passengers found highly intrusive (to the point of making allegations of indecent assault against staff) and which were sometimes performed badly because of a general antipathy to the method;

- the very high degree of passenger participation during trials, across all population groups;

- the enhanced deterrent effect in relation to both prohibited articles and other illegal substances/items; and

- the potential improvements for passenger throughput. If no alternative to existing methods of screening were found, increasing passenger numbers at European airports would cause gridlock.

The only concern raised by this group (ECA) related to the possible impact on health resulting from regular screening using backscatter technology.

Other delegates then gave their comments and posed questions as follows:

General

- the use of such technology was unnecessary, when viable alternatives which raised no similar privacy concerns – for instance, air sampling and passenger profiling – were available;

- the use body scanners should be limited to secondary or even tertiary levels of screening, following an alarm during primary screening;

- whether there was in fact a security gain, if the screening by body scanner remained voluntary (those with something to hide would opt for another method);

- there might be particular sensitivities in the use of body scanners for certain population groups;

- there was a danger of negative public perception (especially following sensationalist and ill-informed press comment);

- whether issues relating to the use of body scanners in fact fell under the third pillar.

Health

- that, although such equipment had already been considered by experts on radiation safety and was or would be included in the relevant European legislation, usage outside the medical arena could lead to problems unless proper protocols were in place and staff were properly trained;

- that a distinct difference should be made between ionising and non- ionising technologies, as only the first raised possible health queries;

- why pregnant women and minors should have been excluded from trials if there were no health concerns;

Data

- whether the proposals fully respected data protection requirements;

- whether data protection was actually relevant when no data was stored;

- whether interview results and the apparent willingness of passengers to participate in trials really provided reliable data, as both would depend on the information given to and the questions asked of respondents. They might also simply perceive scanners as a quicker alternative to other screening methods;

- whether there would be a suitable protection regime in relation to minors;

Technical

- whether body scanners could not just give an indication of where an item was concealed on a generic body image;
- whether body scanning equipment actually stored images; and
- whether body scanners could detect items concealed within the body.

In response to these questions and comments, industry, Member States and expert bodies provided the following additional information:

General

- Alternative methods of screening, such as air sampling, were considered by technical experts as not yet reliable. Profiling could not be considered as a method for detecting prohibited articles and its value more generally as a risk indicator had still to be demonstrated;
- either ceramic weapons nor explosives would cause WTMDs to alarm and both could also be difficult to detect by hand search;
- the only reasonably reliable alternative for finding ceramic weapons and explosives would be a 100% hand search (which would be highly unpopular and cause serious delays);
- the most frequent security-related complaints from passengers concerned hand search;
- the most frequent security failings concerned human factors and the use of body scanners would reduce the human element;
- during trials, a number of passengers who had not been selected for body scanner screening asked to be included on a voluntary basis;
- passengers and crew had given positive feedback on body scanner screening during interviews without any discernable variation in attitudes according to gender, ethnicity etc;
- for security purposes, all passengers had to be treated alike – there could be no differentiation on grounds of ethnicity;
- body scanners were emphatically a first pillar issue because the basis is first pillar legislation, namely Regulation (EC) 300/2008.

Health

- not all body scanners used radiation. Where they were, national radiological agencies had been involved;
- pregnant women and minors had been excluded from some trials on a precautionary principle basis, not on grounds of any empirical evidence. Exclusion from a trial would not necessarily lead to exclusion under a legal regime;
- some trials had in fact included pregnant women and minors;

- passengers would receive a far higher dose of radiation during a flight (particularly at higher altitudes and during long haul flights) than from any type of bodyscanner;

- although body scanners had the potential to provide quicker screening, this was not always the case during trials and was unlikely to have influenced choices;

- FI offered to provide the Commission with a copy of the report provided by its radiation authority;

Data

- the use of bodyscanners would probably be subject to data protection legislation because of the possible consequences for an individual following analysis of an image;

- ACI offered to share results of interviews with passengers.

Technical

- detection was more reliable when the image related directly to the person being screened rather than just giving an indication on a generic outline.

A number of manufacturers of bodyscanners then provided further **technical** details along and explanations, confirming:

- that images could be presented in a variety of formats (more or less detailed, with or without modesty adjustments, with or without a facial image, etc) depending on the legal requirements;

- that body scanners did not routinely store images of persons screened (they could be adjusted to do so, for development research, etc but this had not been done during live trials); and

- that body scanners could not detect substances or items concealed inside the body.

Conclusions

The Chair noted that delegates had offered two factors which might influence views on the deployment of body scanner:

- whether screening by body scanner remained optional; and

- whether the impact on privacy could be limited.

The Commission would consider these and other points raised, then:

- analyse the answers to the questionnaire after the 19 Feb deadline;

- consider reports (for instance, from DG SANCO on heath issues); and

- organise another Task Force in due course.

Delegates were asked to make any relevant reports available to the Commission.

SUMMARY OF THE 2ND TASK FORCE MEETING ON SECURITY SCANNERS

14 September 2010

Introduction

The Commission introduced the meeting by recalling the background of the Commission Communication on security scanners COM (2010)311 of 15.06.2010 and in particular the European Parliament Resolution of 23 October 2008, which raised several concerns to the use of this technology at EU airports. He pointed out that, in the light of some recent incidents occurred in aviation security, the present screening system presents a certain degree of vulnerability which has to be addressed.

The Commission indicated that its Communication of 15.06.2010 addresses this problem and concludes that security scanners have a better detection capability of metallic and non-metallic items and that fundamental right and health issues can be satisfactorily dealt with under today available technology and with operational safeguards.

The Commission indicated that certain important issues, such as for example under what conditions the use of security scanners could be allowed in order to full respect fundamental rights and health, are still open and that the Commission is currently carefully analysing these issues in an impact assessment, which might be finalised at the beginning of 2011.

After the opening remarks it was reminded that the objectives of the meeting were to present the Commission Communication of 15.06.2010 and to collect the stakeholders' comments.

Presentations

The Commission gave a presentation of the Communication on security scanners recalling its background, concerns, main findings and conclusions.

The European Data Protection Supervisor (EDPS) briefly recalled some of the comments contained in its Resolution of 29-30 April 2010 on the Commission Communication of 15.06.2010, notably the need to enhance international cooperation in aviation security, the need to balance the use of security scanners against other less intrusive screening methods of equivalent detection capability, the need to seek the passenger consent and to give the latter the possibility to opt for an alternative screening method.

A short presentation of the Dutch experience at Amsterdam Schiphol airport was given by the Dutch Civil Aviation Security Department.

The Dutch authorities recalled the context leading to the decision of deploying security scanners at Amsterdam Schiphol airport and informed on the results of the trials carried out at this airport. In particular, the trials show that security scanners have increased the overall level of security and have improved passenger acceptability and facilitation reducing complaints. The Dutch authorities indicated that the system is not mature yet to draw conclusions on security personnel needed for security checks.

The representative of the UK Department of Transport reported on the UK experience in the use of security scanners at airports. Security scanners based on ionising radiation are currently deployed at Manchester airport, under a trial to solve alarms, and at London Heathrow airport as a more stringent measure. Their use is associated to the operation of a code of practice, which has been subject to a public consultation and sets the principles for addressing the issues of fundamental rights and health. Under current procedures passengers selected for being screened with a security scanner cannot opt for an alternative screening method.

Since the beginning of the trial, in February 2010, 288.000 scans have taken place at Manchester airport. Security scanners are proven to be more effective and efficient and have a better detection capability. 95% of passengers consider them to be better than traditional screening methods. In the UK's view, future EU legislation should consider security scanners as being part of the primary screening methods. EU legislation should be technology neutral and, in particular, should not limit the use of ionising radiation based technology.

Open debate

Members of the Task Force were then invited to give opening comments on the following issues: 1) Fundamental rights; 2) Health, 3) Detection, and 4) Costs. The following points were raised:

(1) Fundamental rights

- The representative of the Fundamental Rights Agency (FRA) indicated that security scanners should be proven to have an added value in terms of detection capability compared to other less intrusive methods. The use of security scanners should be proportional to the objective pursued. In all cases religious beliefs should be respected and in no cases discriminatory criteria should be applied in choosing passengers to be screened through security scanners. No storage of collected data should be allowed; however, should this be permitted, the conditions to store and use these data would have to be set by law and this legislation made public. Passenger acceptability should be assessed by an independent body. Opting-out possibilities should be given to the passengers as the non mandatory use of security scanners implies that other screening methods can be used. Finally, passengers should consent to be screened through a security scanner and should receive comprehensive information on all aspects related to the use of this technology.
- The European Association for the Defence of Human Rights considers that security scanners are of no use and constitute an attack to human integrity and dignity. Their effectiveness in terms of better detection capability is not proven as prohibited articles carried inside the body cannot be detected. As regards the passenger consent, this would not be a "real agreement" should the alternative be not flying. A written contribution will be provided to the Commission.
- The representative of the Greek delegation wondered what information should passengers receive and the real need to provide them if no alternatives to security scanners are given.

(2) Health

- The representative of the International Electrotechnical Commission - Committee for the radiation protection instrumentation (IEC/SC 45 B) informed that they have adopted standard for radiation exposure in June 2010.
- The issue of who should check the radiation level and how frequently was raised by the Austrian Cockpit Association. The Dutch representatives indicated that at Schiphol airport the machines are checked regularly. More generally the industry (Rapiscan) indicated that machines are tested daily and that rigorous safety regimes are applied to their scanners.
- The industry indicated that no higher radiation doses are necessary if jackets are not divested.
- The UK delegation considers that specific vulnerable groups cannot be identified as ionising radiation doses currently used by some security scanners are very low. However, one vulnerable group could be represented by the airport staff.

- The French Radiation Agency (ASN – Autorité de sûreté nucleaire) pointed out that the use of ionising radiation is not justified and that there is a lack of findings on the use of ionising radiation on workers.
- The European Cockpit Association indicates that, independently from the doses, radiation is per se harmful for health. Pilots are already very exposed to cosmic radiation and such exposure would increase in the future as flights fly higher. For this reason, security scanners using ionising radiation would expose pilots to additional radiation doses. They also indicated that the backscatter technology emits radiation doses which are up to 20 times higher than those officially indicated by their manufacturers.

(3) Detection

- The Austrian representative (Ministry of Environment) raised some concerns that some areas of a person's body could not be detected with security scanners. The UK representative pointed out that security scanner weaknesses can be remedied with operational conditions or with the use of other equipment, such as trace detection equipment.
- The Manchester airport indicated that it considers that detection rate has increased and that the final report of the Manchester trial will be available in September.
- Iconal Technology ltd stressed that not all technologies are equivalent especially in respect of false alarms and that minimum standards should be set.
- Smiths Detection stated that at present the technology is developing on the possible use of not only non automated scanners but also automated ones. However, common detection standards are needed at EU level.

(4) Costs

- The Association of the European Airlines (AEA) indicated that only a combination of screening methods could ensure unpredictability and that it is important to consider, when introducing security scanners that the throughput is not decreasing.

(5) General

- The Association of the European airports (ACI Europe) expressed itself in favour of the introduction of the non mandatory use of security scanners as quickly as possible. AEA and ELFAA also supported the introduction of scanners.
- The Commission indicated that the impact assessment will focus on the possible use of security scanners in the specific context of aviation security.

ANNEX V

Methodology for cost calculation

The illustrative cost estimates contained in part 5.2.1. *Costs* have been derived from the scarce quantitative figures that were available to DG MOVE, i.e.:

- Average wages of security employees, ranging from 7 to 37.86 EUR/hour, depending on the Member State – source confidential;

- The enforcement costs of 57 000 EUR – source: UK Impact assessment on security scanners, conversion from GBP to EUR at 0.88 EUR/GBP. It is unclear in the source if the enforcement cost are valid only if 2 or 4 scanners are deployed per airport (only these two scenarios are envisaged in the British IA) or for any number of scanners in an airport;

- Annual maintenance costs of 11 000 EUR - source: UK Impact assessment on security scanners, conversion from GBP to EUR at 0.88 EUR/GB;

- The price of a security scanner ranging from 100 000 to 200 000 EUR; This price is amortised on average over 7 years, resulting in approximate yearly costs of 14 285 – 28 571 EUR – source: interviews with industry experts, exact sources cannot be disclosed;

- Additional weekly cost of security staff per European airport after the Detroit flight attack of 10 000 EUR to 50 000 EUR – source: ACI Europe (Airports Council International Europe);

- Share of income at European airports derived from non-aeronautical revenues of 43% (EUR 12.6 billion in 2008) – source ACI Europe.

On this basis, the following calculations were made (they are described in the same order as they appear in the text):

1. Yearly additional cost of introducing of a security scanner without remote reviewer in a typical checkpoint in Europe as described in the text of the Impact Assessment:

Yearly amortisation + maintenance cost = 25 285 EUR (under the assumption of lowest possible costs) to 39 571 EUR (under the assumption of the highest possible costs).

2. Yearly additional cost of introducing of a security scanner with remote reviewer in a typical checkpoint in Europe as described in the text of the Impact Assessment (assuming that the checkpoint works 365 days per year, 24h/day:

Yearly amortisation + maintenance cost + 365*24*average wage of security employees = 86 605 EUR (under the assumption of lowest possible costs) to 371 225 EUR (under the assumption of the highest possible costs).

3. Enforcement cost per airport

We assume it is 57 000 EUR per airport on the basis of the British IA.

4. The deployment of security scanners in one European airport[87] where reorganisation of the set-up has led to a better deployment of the number of screeners and to a limitation of additional costs (only ½ additional workpost needed):

Yearly amortisation + maintenance cost + ½*(365*24*average wage of security employees) = 55 945 EUR (under the assumption of lowest possible costs) to 205 398 EUR (under the assumption of the highest possible costs).

5. For the same airport, the savings resulting from a reduction of current screening personnel by ½ work post, studied as a possibility after the deployment of security scanners:

Yearly amortisation + maintenance cost - ½*(365*24*average wage of security employees) = additional cost of 8 911 EUR (under the assumption of highest price of scanners and lowest wages) to a saving of 140 541 EUR (under the assumption of lowest price of scanners and highest wages).

6. Yearly cost of hiring one additional security related work place on a 24h/day, 365 days/year basis:

365*24*average wage of security employees = 61 320 EUR (under the assumption of lowest wages) to 331 653 EUR (under the assumption of highest wages).

87 Source is confidential.