MINUTES OF MEETING

ASCOS EASA WORKSHOP

APRIL 19 2013, COLOGNE

Meeting Title: ASCOS EASA Workshop			
Date	**Meeting Time**	**Meeting Location**	
19/04/2013	9.00 am – 5.30 pm	EASA, Cologne, Germany	
Meeting called by	Gerard Temme, CertiFlyer		
Work Package	WP 6.3		
Type of meeting	Workshop		
Facilitator	EASA		
Prepared by	Monique Heiligers, Gerard Temme (CertiFlyer)		
Attendees	Name	Organisation	Remark
	Bernard Pauly	Thales Air System	ASCOS WP1
	Alan Simpson	Ebeni	ASCOS WP1
	Alfred Roelen	NLR	ASCOS WP2 & WP3
	Lennaert Speijker	NLR	ASCOS project manager & WP4
	Izaro Etxebarria	Isdefe	ASCOS WP 5
	Jean Pierre Magny	Jean Pierre Claude Magny	ASCOS WP3
	Terry Longhurst	CAAi	ASCOS WP1 & WP2
	Monique Heiligers	CertiFlyer	ASCOS WP6
	Gerard Temme	CertiFlyer	ASCOS WP6
	John Vincent	EASA	Executive Directorate - Deputy Director for Strategic Safety & Head of Safety Analysis
	Emmanuel Isambert	EASA	Executive Directorate - Research Project Officer
	Clement Audard	EASA	Executive Directorate - Safety Team Support Officer
	Michel Masson	EASA	Executive Directorate - Safety Action Coordinator
	Catherine Gandolfi	EASA	Executive Directorate - Policy Officer
	Santiago Haya Leiva	EASA	Executive Directorate - Occurrence Reporting Officer
	Henk Pruis	EASA	Certification Directorate - Powerplant Expert
	Alexandra Florin	EASA	Certification Directorate -

			Development Assurance and Safety Assessment Expert
	Eric Duvivier	EASA	Certification Directorate - Environmental Control Systems Section Manager
	Sandro Fabbrini	EASA	Standardization Directorate – Head of Technical Training Department
	Panagiota Pantazopoulou	EASA	Standardization Directorate - Standardisation Coordination Officer
	Jean Bruno Marciacq	EASA	Rulemaking Directorate - Rulemaking Officer Initial Airworthiness
	David Haddon	EASA	Rulemaking Directorate - Rulemaking Officer Initial Airworthiness
	Bryan Jolly	EASA	Rulemaking Directorate - Rulemaking Officer ATM
	Emanuil Radev	EASA	Rulemaking Directorate - Rulemaking Officer ATM
	Ken Engelstad	EASA	Rulemaking Directorate - Rulemaking Officer ATM
	Heiko Udluft	TU Delft	ASCOS WP1 & WP3
	John Penny	EASA	Rulemaking Directorate – SNE
	Marcel Kompare	EASA	Standardization Directorate
	Max Romano	EASA	PCH
	Marieke van Hijum	EASA	Safety Analysis and Reporting Section Manager
Additional distribution			

Agenda

Agenda Topic		
Time	**Description Title**	**Main Speaker**
9.00	Registration	
9.30	Welcome	Ken Engelstad, John Vincent
9.45	General Introduction to the ASCOS project	Lennaert Speijker
10.30	Results of WP1: Definition/evaluation innovative certification approaches	Bernard Pauly
11.00	Coffee Break	
11.15	Discussion of results WP1	Gerard Temme
12.30	Lunch	
13.30	EASA Learning Gateway	Sandro Fabbrini
14.00	Metrics for Safety Key Performance Indicators for the Performance Scheme	Alfred Roelen, Emmanuil Radev
14.45	FAST/EME1.1 methodology	Michel Masson
15.30	Coffee Break	
15.45	Continuous Monitoring Approach	Panagiota Pantazopoulou
16.15	ECCAIRS/IORS	Alfred Roelen
17.00	Any Other Business	
17.15	Evaluation	Gerard Temme
17.30	End of Meeting	

For the annotated agenda please refer to Appendix 1.

Document Change Log

Version	Author(s)	Date	Affected Sections	Description of Change
0.1	Monique Heiligers	06/05/2013	All	Initial version.
0.2	Monique Heiligers	10/05/2013	All	Review comments sections 1-11 Speijker, Temme and Engelstad. Sections 12 and 13 added
1.0	Monique Heiligers	10/06/2013	7, 13	Checked by workshop participants. Review comments Speijker, Masson. First approved version.

1 Agenda item 1 Welcome

Ken Engelstad welcomes the ASCOS team and thanks everybody for preparing the meeting. All EASA directorates are represented at the workshop, not all EASA participants will attend the entire workshop.

Short introduction round of all workshop participants.

Introduction by Ken Engelstad

Ken Engelstad briefly recalls the background of this meeting. EASA is a member of the User Group. During the first User Group meeting Ken Engelstad invited ASCOS to a workshop at EASA. The workshop should make all EASA directorates aware of the ASCOS project, should enable exchange of information between ASCOS and EASA, and should clarify how EASA can help within the ASCOS project.

It is proposed and accepted to switch agenda items 6 and 9.

Introduction by Gerard Temme

Gerard Temme emphasizes the goals of the meeting: to get as much as possible input from the EASA side on what ASCOS is doing/is supposed to do in the future. EASA could be the most important user of the results that ASCOS is trying to achieve. Therefore ASCOS needs to know what EASA's position is, what EASA needs and what EASA's questions are. ASCOS will present intentions and results so far, and would appreciate to get as much feedback as possible.

Introduction by John Vincent

John Vincent is very pleased that ASCOS has succeeded in being part of the EU Framework Programme 7. EASA is looking for ideas: the technical challenges we face in the near future are quite considerable, EASA legislation cannot stand still. Therefore we aim for an open environment today, we should not defend the status quo, but try to solve the problems in a new way.

2 Agenda item 2 – General Introduction to the ASCOS project

Lennaert Speijker thanks EASA for the invitation and for hosting the workshop. He explains that the initial idea for the ASCOS project originated in 2009, and that the ASCOS project started eight months ago, in mid 2012. The total duration of the ASCOS project is 36 months. The topic of ASCOS is the certification of new operations and systems. Continuous safety monitoring is taken into account in order to assess safety and to enable monitoring of safety during the entire lifetime of all elements in the total aviation system.

Lennaert Speijker briefly explains the background of the ASCOS project: many new ideas, systems or tools are not developed because of a long and difficult certification trajectory, whereas many of these new systems can have substantial safety benefits. The ASCOS project focuses on easing the introduction of such safety enhancement systems. The ASCOS project aims to develop tools, methods and systems that can help to design

systems in a safe way. The scope of the project is <u>all</u> aviation, and the project looks at change from a total system perspective.

Lennaert Speijker emphasizes that ASCOS is an EU <u>research</u> project, the aim of the project is to arrive at new ideas, it is – in this respect - not the aim to obtain approval from regulatory bodies (for the new operational concepts or systems under investigation) at the end of the project.

Lennaert Speijker points out that this presentation will focus on the plans and goals of the ASCOS project, the first preliminary results will be presented in subsequent presentations.

Slide 7 – Emmanuel Isambert questions whether aircraft ground handling damage is a safety issue. Gerard Temme replies that indeed it is if it is not detected. Michel Masson remarks that – given the increase in traffic - ASCOS should also take into account runway safety such as runway excursions [ACTION 1].

Slide 14- Lennaert Speijker explains that the current status of project is that the first results of Work Package 1 are now becoming available.

End of presentation

Max Romano recapitulates that the main objective of ASCOS it to propose changes to the certification process to ease somehow the certification of safety enhancing systems. Is ASCOS going to come up with some sort of a shortcut for safety enhancement systems? Or will it have a broader scope, since it focuses on the certification <u>process.</u> What exactly does ASCOS aim at??

Lennaert Speijker answers that the presentation in agenda item 3 will explain possible certification process adaptations (changes), and will explain what changes will, and what changes will not be considered. As an example: it is a possibility to move to a performance based certification process for the total aviation system (whereas some parts are now compliance based only). Gerard Temme adds another example: there is a disconnect between the different domains within EASA (for example product certification and operational certification), when certifying the same system, both domains use different processes, and better alignment is required. Max Romano responds that the solution to ease certification of these systems (covering multiple domains) is to make an analysis of the total aviation system, not of the separate subsystems as perceived from different points of view. Catherine Gandolfi adds that the same disconnect exists with the ATM domain. Gerard Temme reponds that this is also true for maintenance. John Vincent concludes that an open view is needed to arrive at a solution, andthat it will be necessary to work towards a holistic approach to risk.

The question is raised whether novel designs such as Unmanned Aircraft Systems (UAS) are part of ASCOS. Lennaert Speijker explains that the methods and tools developed in ASCOS should be applicable to any change in the total aviation system, and would in that case be usable for UAS related matters as well. ASCOS will establish – as part of WP2 - a baseline risk picture for the main operational issues identified in the EASp based on the situation today. Assuming that a change (e.g. new system or operation) does not result in a new operational issue (and its associated accident scenarios), what we have to show, is that the future situation adheres to the same safety objectives as can be derived from the baseline risk picture. It gives reasoning for

setting safety requirements for any new system or operation that you want to introduce. Alfred Roelen adds that ASCOS will indeed address emerging risks and novel designs in risk assessment models. Lennaert Speijker does point out that ASCOS focuses on commercial air transport.

David Haddon remarks that ICAO largely sets the regulation framework, but ICAO is not part of the User Group. When people certify products they want it to be easily certificated worldwide. If you focus on Europe, this will be difficult. Therefore an ICAO member could be very useful, make sure that ASCOS connects to ICAO [ACTION 2].

3 Agenda Item 3 – Results of Work Package 1: Definition/evaluation innovative certification approaches

Bernard Pauly gives a presentation about the first results of ASCOS Work Package 1.

Slide 5 – Bryan Jolly points out that regulations for ATM under EASA scope are mentioned, but there are other regulations as well which might cause bottlenecks and shortcomings. Many ICAO regulations are not incorporated in EASA regulations. Terry Longhurst replies that ASCOS needs another iteration to get the complete scope. [ACTION 3]

Alexandra Florin asks about the definition of 'shortcomings' in current regulations and certification processes, is this cost driven, time driven, safety driven? Bernard Pauly answers that a shortcoming can be identified when there are safety occurrences. Alexandra Florin replies that occurrences are allowed to happen. Gerard Temme adds that many safety occurrences of the same type can be regarded as a shortcoming in the regulations. A mechanism that identifies shortcomings that will emerge in the future can be very beneficial, the regulations can then be amended up front. It is however understood that the level of occurrences can never drop to zero. John Penny advises to deal with shortcomings at a high level, e.g. the cooperation between different domains, do not go into separate cases

John Vincent advises to give attention to the good recommendations from the FAA certification process study, a lot of which consider feedback. [ACTION 4]

Michel Masson remarks that there is a difference between occurrences we can see today, and occurrences in the future. What would be the ten types of accidents that we will most likely see when new SESAR developments are being employed? These might be different. You cannot switch from present occurrence, to occurrences in a future system. Which occurrences does ASCOS focus on? ASCOS WP2 focuses on the present situation, whereas ASCOS WP3 focuses on the future situation taking into account emerging risks.

Gerard Temme asks whether the EASA representatives have an advice for ASCOS how to arrive at future occurrences? Michel Masson: create a better link between WP1 and WP3 [ACTION 5]. SESAR have identified the top 5 of ATM related risks, e.g. midair collisions, and they have introduced measures in the design in order to keep the ATM related risks low. Catherine Gandolfi remarks that this was also based on current

occurrences. Michel Masson suggests that it may be worthwhile to analyse how these present regulations fit on the future situation [ACTION 6].

Terry Longhurst explains in which regard WP1 differs from SESAR: The regulatory analysis in WP1 is different in nature to that performed in the SESAR Project Definition Phase (SESAR PD) and by CATSII in so much as it is looking to identify areas for change. Without wishing to under-represent what was achieved by the SESAR PD and CATSII, their main output appears to be orientated more towards design goals (i.e. addressing issues such as Fragmentation, Accountability, Duplication, Complexity), basic principles and key requirements (i.e. relating to Structural Aspects and Implementation Issues).

By looking more to the impact of regulation on the performance on the ATM system WP1 aims to provide a more action-orientated approach with clearly identified areas for improvement. Impact may, for example, be expressed in terms of the confidence one might have in the behaviour/performance of a regulated entity or safety barrier. This can be achieved a) retrospectively by looking at past incidents and exploring the role regulation did / could or should have played in influencing the outcome and b) proactively by looking at the role regulation could have in increasing the confidence in the assumptions made, especially with regards to performance, in the various predictive risk models.

Slide 23 – John Vincent remarks that there are some constraints: public responsibility, accident investigators will continue to make recommendations, and public bodies will have to do something with this. This is a constraint for all options. Take these constraints into account. [ACTION 7]

4   Agenda Item 4: Discussion of results Work Package 1

Michel Masson: if your work is supposed to influence reality (not only R&D), start by a conservative approach, you cannot change drastically. Even wanting to change part of the existing regulation is difficult, also States themselves object. Therefore Michel Masson suggest to start with a 'bridge' based on the current situation that regulations come in 'silos' or separate areas: introduce a connection where a connection is needed. Take Operational Suitability Data (OSD) as an example for such a bridge: with assumptions about pilot competencies. This actually is an elaboration on Option 7 on slide 23 [ACTION 8]. Jean Pierre Magny emphasizes that a bridge is necessary between Aircraft and ATC. Catherine Gandolfi adds that EASA has already indicated this to the EC, it would be good if ASCOS would indicate the same to the EC. [ACTION 9]

Catherine Gandolfi: Identify whether there are overlaps, inconsistencies, redundant requirements or even contradictory requirements between different domains and remove these, this will improve safety and efficiency. We do not yet have an overview of this, only some examples on a case by case basis. [ACTION 10]

Gerard Temme remarks that there is a difference between the domains: whereas one domain is compliance based, the other domain is performance based. Would there be an advantage to make all domains either performance based or all of them compliance based (option 2 in slide 23)? Catherine Gandolfi answers that an important consideration in performance based or compliance based is whether the role is performed by a system or by a human. If it is performed by a system the tendency is to work on a compliance based basis, if

the role is performed by a human it is more performance based. Gerard Temme suggests that some roles may change in the future from human to system (e.g. ATM). Michel Masson states that it is not one or the other (compliance vs. performance): performance based comes as an addition, one needs at least one rule to comply with to turn it into a performance based system.

David Haddon points out that rules are prescriptive in nature, but that EASA has moved away from that, the certification process itself *is* flexible: the applicant has to show that a new idea/system is 'as safe', it is more work, but it *is* flexible. Also, applicants prefer compliance based, since this gives them clear instructions what to do, performance based is –in this respect – more unclear.

Alexandra Florin advises not to forget the electronic hardware in the certification processes (which was forgotten in SESAR) [ACTION 11].

David Haddon: there is an additional option for slide 23: a combination of product and organization certification [ACTION 12]. It should be analyzed what the optimal combination is: what can you rely on the applicant to self-certify, and what does EASA need to get involved in? At the moment this balance is not reasonable. Catherine Gandolfi adds that in certification a risk based approach has been put in place exactly for this purpose. Michel Masson suggests ASCOS to have a look at the presentation at the sixth EASA Rotorcraft Symposium in December 2012 by Frederic Copigneaux this relates to performance based certification. It shows where certification is heading at the moment. ASCOS needs this information in order to be effective. [ACTION 13].

Emmanuel Isambert asks whether other sectors/industries will also be evaluated with respect to compliance vs performance based. Alan Simpson points out that this will be done in Work Package 1.3 [ACTION 14].

Eric Duvivier : Could it be an option to be more involved in the product development (design assurance levels) itself instead of in the product? It is not an option in your slide. Emmanuel Isambert: How can we get data on shadow products that are being developed? Gerard Temme answers that the Proof of Concept process could be used to develop requirements at the same time as the product is being developed. Gerard Temme will send a document explaining what ASCOS regards as a proof of concept [ACTION 15].

John Penny: On the one hand there is performance vs. compliance based, and on the other hand product vs. service. The general move is away form compliance based, the responsibility then lies with the regulator, EASA wants to move it towards the people in the field, such that they own the risk.

Michel Masson comments on the options for adaptation of regulatory/certification process mentioned on slide 23. For option 7 it was suggested to replace it with the Bridge option. Furthermore, does ASCOS want to work out one proposal? Or does ASCOS aim for a set of proposals and get the best of all options? It is difficult for the options to cover the transfer of risk of impact from certification to operation. Certification is based on competences of the flight crew, which information is not always available to the operational authorities. Currently long haul pilots may have 200 hours of manual flying in standard conditions. But the more automation is used, the less experience is gained when manual take over is necessary. This should impact the

certification of today. Try to encompass this in one of your options. (e.g. OSD approach) [ACTION 16]. Also, use recovery training in simulators or aircraft. Make sure that you introduce risk mitigation in training when new systems are being installed in aircraft.

Terry Longhurst: When a pilot is the mitigating factor, assign a probability on the chance that the pilot is successful, have a look at this number and determine how much confidence we have in this number. Michel Masson: it is not only a question of confidence; one has to make sure with training that the pilot has the competence. The general idea is that safety goes up with more automation in aircraft, on the ground and on data transfer. If we change the roll of ATC from being actively involved to monitoring, is this actually the good way forward? The Human Factors point of view is that this is not ideal. There has to be a strong focus on training. Are the mechanisms that are now being designed powerful enough to cover the entire problem area? Or do we need a more global approach? David Haddon points out that Human Factors issues were picked up as a problem for the whole system; a global approach in all the domains is needed. John Penny suggests to take the development model of SESAR: some changes are very broad affecting many domains. Design a model that shows how these changes are going to take place and how the regulator can act on these changes.

5 Agenda Item 5: EASA Learning Gateway

Lennaert Speijker explains that the Description of Work for the ASCOS project states that an e-learning environment will be developed within the project to support the newly proposed certification process. ASCOS will develop both the software environment as well as the technical content, and the e-learning environment should be accessible to the public. When the ASCOS proposal was submitted in 2011, the ASCOS consortium was not aware of the existence of the EASA learning gateway (ELG). The ELG only came to the attention of the ASCOS consortium a couple of months ago. In order to avoid the possibility that work is duplicated within ASCOS, the ASCOS representatives would very much appreciate an explanation about the ELG.

Sandro Fabrini: The ELG hosts online training for both EASA employees as well as customers outside of EASA. We manage all types of formats through ELG from e-courses, to classroom courses, to knowledge courses (e.g. limited to reading information). The catalogue encompasses 120 courses, which comes down to 250 classroom courses per year. We mainly develop our own courses (through subject matter experts), the courses are internally delivered by EASA's own experts, but EASA also uses external providers through tenders. Management courses (soft skills) are also part of ELG.

Next to the courses, the ELG also has a testing platform (examination). The score that comes out of the ELG examination has no legal status, the examination is only intended to test oneself. There are 27 e-examinations, consisting of open book multiple choice questions, at the end the user receives a document with a unique number with indication of which parts were missed .

The system is available for all EASA staff, but also for external customers. External providers can give courses to their clients, and can offer their clients the e-examinations on the ELG. For this purpose the external

provider has a license. They can develop their own training material based on the EASA syllabi. Use of the ELG is not for free, and not available to the public.

The ELG also encompasses a learning management system (with invitations, scheduling of courses, a repository with course information). Also, all EASA employees are incorporated in the system, such that it is possible to monitor the learning performance of all employees, and to check whether all employees take the courses they are supposed to take (for example courses on new regulations).

It is concluded that the ELG mainly is a tool of EASA, which is mainly used by EASA staff and the European national civil aviation authorities, with access to others on a commercial basis. In order to avoid duplication, the e-learning environment to be developed within ASCOS will be restricted to (i.e. focus on) of e-learning and training material for the new methods and tools developed in ASCOS only.

6   Agenda Item 6: ECCAIRS/IORS

Alfred Roelen explains that within ASCOS the aim is to go from retrospective event monitoring to real time risk monitoring. At the moment there are probabilities for events based on historic data. ASCOS strives to put a system in place that allows for real time adaptation of these probabilities. The intention is to cover the total aviation system, including the ATM role.

Alexandra Florin asks about the exact purpose of this system? Alfred Roelen explains that the aim is to go from events to a risk picture, to monitor the level of safety. Terry Longhurst adds that when certification would be completely or partly removed, this method can justify to pay or pay not attention to a certain system. Lennaert Speijker explains that Safety Performance Indicators (SPIs) play a role at the highest level. For each of these SPIs the number of occurences is quantified (based on actual safety data) and kept up-to-date in real time, resulting in the possibility to monitor in real time the development of SPIs.

Michel Masson summarizes that there are two changes: continuous vs retrospective, and event vs risk. Actually the current way of monitoring is also continuous albeit with a large time interval. There are also helicopter companies that monitor over 200 SPIs on a daily basis, this is almost continuous, but not risk based and not a sophisticated approach. It is thus possible to arrive at continuous monitoring without using a complex method. Alfred Roelen replies that the strength of the proposed method is in the combination of the different domains, since the risk of the total system is not obtained by simple combination. Additionally, Michel Masson points out the there is a relation between frequencies and probabilities. When monitoring frequently, one could arrive at odd probabilities, an item with a probability of 10-6 could fail on the first day already, how will ASCOS handle this? Alfred Roelen replies that this indeed is a complex problem, but that confidence levels can be incorporated in the algorithm.

It is concluded that there should be emphasis on assuring good data quality, the input into the system is very important in order to be able to confidently use the tool to get data out.

7   Agenda Item 7: FAST/EME1.1 methodology

Michel Masson indicates that the goal of this presentation is to explore together the role and possibility for ASCOS to use FAST EME1.1 in a test case. It would be very beneficial to the EME1.1 project team to validate the EME1.1 Methodology on a test case, as suggested by the EASAC, the Committee advising EASA on the European Aviation Safety Plan (EASp). The proposal is to incorporate this in ASCOS Work Package 3. The expected output would be a brief report of about two pages (indicative), stating that ASCOS has used EME1.1 on a specific test case, and mentioning the conclusions and recommendations of this test exercise.

Lennaert Speijker replies that ASCOS WP3 already plans to incorporate the FAST Methodology, but the actual application of the resulting WP3 methods and tools will have to stay within the boundaries of the case studies as contractually defined in the ASCOS Description of Work. Michel Masson indicates that this is fine.

Alfred Roelen points out that the application of the methodology is actually part of WP4, and that the case studies will start at the beginning of 2014. Michel Masson replies that beginning 2014 is acceptable. Lennaert Speijker adds that EME1.1 would not be the only method that will be tested in WP4 (e.g. the Causal model for Air Transport Safety (CATS), which was originally developed for the Dutch CAA, is also being further developed and applied). Michel Masson indicates that this of course fine.

At the time of the ASCOS proposal submission there was no EME1.1 Methodology. Lennaert Speijker asks what the difference is between the FAST Methodology of two years ago and EME1.1. Michel Masson clarifies that EME1.1 can be considered the latest revision of the FAST Methodology, plus that the EME1.1 Methodology has additional recognition as EASp deliverable.

It is concluded that a gentlemen's agreement needs to be created between ASCOS and EASA stating that ASCOS will test FAST/EME1.1 in the ASCOS project. [ACTION 17]

8   Agenda Item 8: Continuous Monitoring Approach

Panagiota Pantazopoulou gives a very clear presentation about EASA's Continuous Monitoring Approach which serves as a model for inspection planning. It is input for strategic inspection planning, and indicates confidence, not risk. Panagiota Pantazopoulou elaborates on data gathering and the use of the Country Dashboard. It is emphasized that this information is not public domain.

9   Agenda Item 9: Metrics of Safety Key Performance Indicators for the Performance Scheme

Alfred Roelen gives a presentation about the safety key performance indicators and explains that the main goal is to define a framework of Safety Performance Indicators for the total aviation system.

Catherine Gandolfi and Alfred Roelen agree that a logical taxonomy of ATM systems is globally lacking.

Marieke van Hijum asks about the probabilities that are used in the model, are they to identify the different performance indicators? Alfred Roelen replies that they provide information of how the performance indicators are quantitatively linked with an accident probability. Marieke van Hijum points out that it is important to select which indicators to track.

Marieke van Hijum inquires whether ASCOS is aware of the fact that EASA is using the three-tier model, which is different from the barrier model. Alfred Roelen acknowledges that there are different activities on SPIs, ASCOS looked at all of them, and tried to incorporate important elements in ASCOS.

Emmanuil Radev gives a short summary of page 8 of the E3 Task Force Report on Metrics for Safety Key Performance Indicators for the Performance Scheme. In this report three safety KPIs were identified:

1. the effectiveness of safety management for air navigation services providers (ANSPs) and national supervisory authorities (NSAs)
2. the application of the severity classification of the Risk Analysis Tool
3. the reporting of the just culture

Emmanuil Radev explains that these safety KPIs have been evaluated and it is currently being considered whether adaptation is necessary. Additional to the above three safety KPIs, three new PIs have been introduced. Emmanuil Radev will send the report in which these are presented [ACTION 18].

Marieke van Hijum points out that these SPIs differ from the system proposed by Alfred Roelen, and also differ from the SPIs used by EASA. The SPIs mentioned above are more political, the member states should be able to work with these SPIs and should accept them. Michel Masson adds that indeed the work proposed in ASCOS is much better underpinned, with an actual link between SPIs and accidents, it will come close to the Technical reliability approach of components.

Emmanuil Radev, Gerard Temme and Alfred Roelen conclude that when these SPIs are published, the authorities will build their organization such that they will comply with the SPIs. When indicators are linked to the target, then the authorities will tweak and make sure that the target will be met, but the overall objective is not met. SKPIs should be such that one cannot tweak these, this is well documented in literature, but there is no solution. ASCOS will take this into account [ACTION 19].

Marieke van Hijum offers to review the WP2.1 draft report on Safety Performance Indicators once it is available [ACTION 20], Marieke van Hijum will share what has already been done within the network of analysts. John Vincent adds that it is no problem to have different teams on the same subject. It is good to have different views on the same matter.

10 Agenda Item 10: Any Other Business

Jean Bruno is trying to set certification rules for suborbital aircraft. There are no data available, only two flights so far. ASCOS mentions novel designs. How do we certify novel designs? Lennaert Speijker explains that in general the approach/methodology that is develop within ASCOS should be applicable to any type of change, however, suborbital flight is not planned to be part of the case studies. ASCOS focuses on commercial air

transport operations. Lennaert Speijker offers to discuss the issue of suborbital flight with the ASCOS team and to have a discussion with Jean Bruno in more detail [ACTION 21].

11 Agenda Item 11: Evaluation

Gerard Temme concludes that ASCOS is very satisfied with the feedback received on the presentations. As ASCOS is still at the start of the project, the level of what could be presented was limited. ASCOS learned a lot from EASA presentations, with so many experts around the table. Thanks for your time and effort.

John Vincent concludes that is was a full and comprehensive exchange, EASA wishes ASCOS success, if ASCOS does succeed it will be valuable to us all. Our world is complex, we can make it more complex, but the challenge is to make it simple. We do need a repetition of such an exchange at some future milestone in the project [ACTION 22].

End of meeting 17.30

12 Meeting Presentations

All the presentations are available to consortium partners in the ASCOS Restricted Sharepoint Portal.

#	Presentation	Main Speaker	File name
1	General Introduction to the ASCOS project	Lennaert Speijker	EASA ASCOS Workshop – Agenda item 2 general introduction ASCOS
2	Results of WP1: Definition/evaluation innovative certification approaches	Bernard Pauly	EASA ASCOS Workshop – Agenda item 3 WP1 results
3	Metrics for Safety Key Performance Indicators for the Performance Scheme	Alfred Roelen,	EASA ASCOS Workshop – Agenda item 6 SKPIs
4	FAST/EME1.1 methodology	Michel Masson	
5	Continuous Monitoring Approach	Panagiota Pantazopoulou	EASA ASCOS Workshop – Agenda item 8 CMA
6	ECCAIRS/IORS	Alfred Roelen	EASA ASCOS Workshop – Agenda item 9 ECCAIRS IORS

13 List of Actions

List of Actions			
#	Action Items	Responsible	Deadline
1	Explore the possibility to take into account runway safety such as runway excursions within ASCOS	WP4	
2	Connect ASCOS to ICAO	WP6	
3	Perform another iteration to get the complete scope of regulations including the ICAO regulations.	WP1	
4	Take into account the recommendations from the FAA Certification Process Study	WP1	
5	Create a better link between WP1 and WP3 as a start towards incorporating future occurrences.	WP1, WP3	
6	Analyse how the present regulations fit on the future situation	WP1	
7	Take constraints relating to public responsibility into account when analysing the different options for	WP1	

	adaptation of regulatory/certification process.		
8	Elaborate on Option 7 for adaptation of regulatory/certification process: start with a 'bridge', introduce a connection where a connection is needed. Take Operational Suitability Data (OSD) as an example for such a bridge: with assumptions about pilot competencies.	WP1	
9	Introduce a recommendation within an ASCOS WP1 deliverable, stating that a bridge is necessary between regulations for Aircraft and ATC.	WP1	
10	Explore the possibility to identify – within ASCOS - whether there are overlaps, inconsistencies, redundant requirements or even contradictory requirements between different domains and remove these	WP1	
11	Explore the possibility to - within ASCOS - take into account the electronic hardware in the proposed new certification process adaptations	WP1	
12	Consider an additional option for adaptation of regulatory/certification process: a combination of product and organization certification	WP1	
13	Study the presentation at the sixth EASA Rotorcraft Symposium in December 2012 by Frederic Copigneaux which shows where certification is heading at the moment	WP1	
14	Evaluate other sectors/industries with respect to compliance vs. performance based certification.	WP1	
15	Provide an explanation regarding what ASCOS regards as a proof of concept .	Gerard Temme	
16	Certification is based on competences of the flight crew, But the more automation is used, the less experience is gained when manual take over is necessary. This should impact the certification of today. Encompass this in one of the options for adaptation of regulatory/certification process.	WP1	
17	Compose gentlemen's agreement between ASCOS and EASA stating that ASCOS will test FAST/EME1.1 in WP4 of the ASCOS project (Principle agreement by email).	Lennaert Speijker	
18	Send report to ASCOS in which three new PIs have been introduced additional to the three SPIs in the E3 Task	Emmanuil Radev	

	Force Report on Metrics for Safety Key Performance Indicators for the Performance Scheme.		
19	When Safety Performance Indicators are linked to a target, then the authorities could tweak and make sure that the target will be met, while not meeting the overall objective. SKPIs should be such that one cannot tweak these, this is well documented in literature, but there seems to be no solution yet. ASCOS needs to address this issue within its SPI work	WP2	
20	Review the WP2.1 draft report on Safety Performance Indicators once it is available, and share what has already been done within the network of analysts	Marieke van Hijum	
21	Discuss the issue of suborbital flight with the ASCOS team and have a discussion with Jean Bruno Marciacq in more detail	Lennaert Speijker	
22	Repetition of information exchange between EASA and ASCOS at some future milestone in the ASCOS project	WP6	

Appendix 1: Agenda

Agenda
EASA ASCOS workshop
19 April 2013
Cologne, Germany

Goal of the meeting: 1. To inform the relevant EASA departments about the ASCOS project, 2. To present and discuss the first results of ASCOS regarding innovative approaches to certification, 3. To discuss developments related to EASA relevant for the ASCOS project, 4. To agree on main principles how to incorporate these developments within the ASCOS project.

9.00 – 9.30   Registration

9.30 – 9.45   1. **Welcome** - Ken Engelstad
                Introduction - John Vincent

9.45 – 10.30   **2. General introduction to the ASCOS project** –Lennaert Speijker
                Form: presentation by ASCOS followed by questions
                Goal: give the EASA participants an overview of the goal and contents of the ASCOS project and its Work Packages

10.30 – 11.00   **3. Results of Work Package 1: Definition/evaluation innovative certification approaches -** Bernard Pauly
                Form: presentation by ASCOS
                Goal: Give the EASA participants a detailed insight into the first results of the ASCOS project with an emphasis on innovative approaches to certification.

11.00-11.15   **Coffee break**

11.15 – 12.30   **4. Discussion of results Work Package 1** – Gerard Temme
                Form: Plenary discussion
                Goal: To obtain feedback from the EASA participants regarding the feasibility of the results of Work Package 1.

12.30 -13.30   **Lunch**

13.30-14.00   **5. EASA Learning Gateway** – Sandro Fabbrini
Form: discussion
Goal: to identify how the e-learning environment (to support the newly proposed certification process) that will be developed within ASCOS can relate to the EASA Learning Gateway

14.00-14.45   **6. Metrics for Safety Key Performance Indicators for the Performance Scheme –** Alfred Roelen, EASA (name tbc)
Form: Short presentation by ASCOS on plans in WP2 regarding framework of safety performance indicators, short presentation by EASA about current and future efforts of the E3 Task Force w.r.t. safety performance indicators followed by discussion
Goal: To align the efforts within ASCOS and within the E3 Task Force, to identify the main issues that should be incorporated in the ASCOS framework of safety performance indicators based on the findings of the E3 Task Force.

14.45 – 15.30   **7. FAST/EME1.1 methodology** – Michel Masson
Form: Presentation by EASA followed by discussion
Goal: To clarify EASA expectations regarding the use of FAST/EME1.1 in ASCOS, to agree on the main principles of the use of FAST/EME1.1 in ASCOS.

15.30 – 15.45   **Coffee break**

15.45 – 16.15   **8. Continuous Monitoring Approach** – Panagiota Pantazopoulou
Form: Presentation by EASA followed by discussion
Goal: To clarify EASA expectations from the perspective of the Continuous Monitoring Approach regarding the methodology and supporting tools for multi-stakeholder Continuous Safety Monitoring that will be developed within ASCOS.

16.15 – 17.00   **9. ECCAIRS/IORS** – Alfred Roelen
From: Presentation by ASCOS followed by discussion
Goal: To present the plans for ASCOS WP2 in which ECCAIRS will be supplemented with a module for Continuous Safety Monitoring. To agree on the main principles this module should adhere to.
EASA focal point: Santiago Haya-Leiva

17.00 – 17.15   **10. Any Other Business** – Gerard Temme
Form: -
Goal: to address any other business.

17.15 – 17.30   **11. Evaluation –** Gerard Temme
Form: plenary discussion
Goal: to evaluate whether the goals of this workshop have been achieved

17.30   **Closure**