



E.02.13-D18-ALIAS Final Project Report

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Abstract

The final report of the ALIAS project provides a publishable summary of the results. In addition it lists all deliverables, dissemination activities, eligible costs, deviations, bills and lessons learned.

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Publishable Summary

Through the SESAR Programme, a new generation of air traffic management systems will be developed with the purpose of augmenting today's capacity, while making traffic safer and more fluid, more efficient and sustainable at the same time. Higher levels of automation will be introduced so that automated technologies will manage with increasing levels of autonomy tasks currently carried out by human operators or will provide human operators with inputs they may not be in a position to question. ATM operators will participate in increasingly complex socio-technical systems, where the effects of their acts will be dependant on organisational and technological frameworks. In this new scenario new legal approaches and solutions are needed and in particular a redefinition and reallocation of legal liabilities is required. Who is responsible for accidents in highly automated socio-technical systems? How is liability for ATM failures apportioned among individual operators, service providers and producers of technologies? How can the different liability regulations at supranational, national and local levels be harmonised? How can accountability be guaranteed, while promoting safety?

Addressing the new legal issues pertaining to automation in ATM is the fundamental purpose of the ALIAS (Addressing the Liability Impact of Automated Systems) project, carried out by the European University Institute and Deep Blue. ALIAS was co-financed by EUROCONTROL on behalf of the SESAR Joint Undertaking as part of long term and innovative research WPE. The project lasted from May 2011 to October 2013.

ALIAS has produced two main outputs: the Legal Case and the Network of Legal Research in ATM.

The **Legal Case** is the novel methodology to address legal issues of automated technologies for ATM during the design process. The methodology includes a variety of supporting tools, such as (a) tables to specify levels of automation and identify tasks and duties, (b) flow diagrams to guide the assessment process, (c) maps to classify failures, identify possible liabilities and analyse their legal grounds, (d) tables and reports to embed the produced results.

The Legal Case is based on the following leading principles.

1. Proactive approach to liabilities

Legal liabilities are significant risks concerning the implementation of a concept. This means that legal liabilities should be addressed from an anticipatory risk-management perspective, rather than focusing on how to handle them after a failure has taken place. The Legal Case is a means to anticipate the identification of potential liabilities, the assessment of their probability, and the definition of possible measures to prevent liability-causing events or to mitigate their effects.

2. Design according to liability

Legal issues should be addressed in a coherent and comprehensive way at the design stage of a new concept, so that mitigation measures can be identified and adopted in a timely manner. Such measures may involve either the modification of technical/organisational aspects of the concept, or legal arrangements such reallocation of liabilities or insurance. This approach can be applied proactively to address liability issues that may emerge in the design of new technologies, or retroactively to address liabilities resulting from existing technologies.

3. Socio-technical approach to liabilities

Legal liabilities, as well as system failures, can only be understood in systemic socio-technical perspective. Based on a socio-technical perspective, the Legal Case facilitates a systemic understanding of possible accidents, focusing on their organisational and technical latent conditions, thus contributing to prevent the unfair treatment of individual operators.

4. Multidisciplinary approach

The Legal Case is a means to facilitate the communication between legal experts and technical experts involved in the design of a new concept, thus making legal issues more easily understandable to technical experts and facilitating the integration of technical, organisational and regulatory approaches to concept design and safety enhancement.

5. Standard Case-based approach

The Legal Case should be coherent with the other available Cases. Being in line with the Generic Transversal Areas Assessment Process, the Legal Case complements the other cases, and it should be possible to eventually integrate it with the other Cases into the Business Case. In particular, the legal analysis maps of the Legal Case, having an argument-based structure, can be integrated with safety arguments and other argument- or tree-based models of failures and risks.

Through the Legal Case methodology, legal problems can be identified and addressed before the deployment of the automated technology being analysed, thus allowing the application of mitigation means based on convenient technological adaptations or legal arrangements.

The **Network of Legal Research in ATM** is a virtual community meeting online, sharing digital materials and addressing themes of liability attribution in automated contexts. A dedicated platform was developed to support active participation and sense of belonging of the registered users. The platform is available at <http://network.aliasnetwork.eu/> and provides a forum for discussion, statistics of access, and a digital library to share materials.

The Network of Legal Research in ATM and the Legal Case are complemented by other deliverables of ALIAS, which provide information and examples. In particular Deliverable 1.3 “Framing the Problem” introduces the socio-technical approach to the analysis of ATM systems, and discusses the principles of legal liability and their application to ATM. Deliverable 3.1 “Repository of Cases” presents a set of accidents and discusses their legal implications, including court proceedings and doctrinal analyses. Deliverable 3.3 “Case Based Analysis and Modelling” summarises and classifies the legal issues emerging from the cases.

ALIAS has succeeded in achieving its objectives.

In the future, we plan to refine and consolidate the Legal Case using specific test cases and case studies in order to provide SESAR and the ATM Community in general with a validated methodological tool ready for use by the stakeholders.

After consolidating the methodology, training and coaching sessions on the Legal Case will be organised in order to feed and smooth its adoption by the European CNS/ATM community. Training support materials will be developed and made available through the network platform and during the coaching sessions.

The Network of Legal Research in ATM will continue to be available and active. We plan to complement the online initiatives with the organisation of an annual ALIAS conference on liability and automation.

1 Introduction

1.1 Purpose of the document

The purpose of this document is to:

- Summarise the technical results and conclusions of the project (Publishable Summary);
- Provide a complete overview of all deliverables;
- Provide a complete overview of all dissemination activities (past and in progress). Where appropriate, provide feedback from presentations. Describe exploitation plans.
- Provide a complete overview of the billing status, eligible costs, planned and actual effort (incl. an explanation of the discrepancies).
- Analyse the lessons learnt at project level.

1.2 Intended readership

The document itself is intended for the Project Officer of the ALIAS Project. Through this document, the Officer is provided with a report of the activities carried out in the project and of the achievements reached.

The publishable summary is intended for the SESAR Community, in particular for those involved in the Technical and Operational Projects of SESAR. All those developing new technological solutions based on automation may profit by the application of the Legal Case produced by the ALIAS project to explore the liability implications of their technologies.

The summary is also intended for the Transversal Projects of SESAR, involved in the development and refinement of other case-based methodologies (e.g. the Safety Case or the HP Case), as the Legal Case intends to complement those Cases and be also integrated in the Business Case.

1.3 Inputs from other projects

The Project has used input from the CAATS and CAATS II projects¹ (Cooperative Approach to ATM Service) that greatly contributed to the development of the Human Factor and Safety Cases and to the work for their integration into the European Operational Concept Validation Methodology (E-OCVM). These works acted as useful input for the design and development of the Legal Case methodology.

1.4 Glossary of terms

This section identifies terms not covered in one or more referenced documents and a proposed definition.

¹ <http://www.caats2.isdefe.es/index.htm>

2 Technical Project Deliverables

Number	Title	Short Description	Approval status
<i>As per latest schedule</i>	<i>As per latest schedule</i>		<i>Submitted, approved or rejected</i>
D1.1	Framing the Problem – 1 st draft	The document is 1 st draft of the deliverable D1.1 "Framing the Problem" of the ALIAS project. It aims at composing a framework on the issues raised by the introduction of automated technologies in socio-technical systems, in particular with regard to legal liability. The framework will be used in the project to define methods and tools for addressing the legally-relevant issues occurring in the various stages of the design, development and deployment of new technologies in socio-technical systems.	Approved
D1.2	Framing the Problem – Consolidated version	The document is the consolidated release of the deliverable D1.1 "Framing the Problem" of the ALIAS project.	Approved
D1.3	Framing the Problem – Final Version	The document is the final release of the deliverable D1.2 "Framing the Problem" of the ALIAS project.	Submitted
D2.1	Network of legal research in ATM – 1 st draft	This document describes the first release of the ALIAS Network. It contains the technical specifications of the network as well as an overview of the contents and services.	Approved
D2.2	Network of legal research in ATM – Final version	This document describes the final release of the ALIAS Network. Compared with the first release, the final release of the ALIAS Network enlarged its scope. The achievements regard both the technical features of the platform (that have been enriched with new services) and the life of the ALIAS Community (that has been enhanced through new communication initiatives).	Submitted
D3.1	Repository of Cases	The document is the final release of the deliverable D3.1 "Repository of cases". The repository of cases includes: (1) real accidents occurred in various socio-technical systems (including ATM); (2) hypothetical accidents that may occur in the ATM domain further to the adoption of new automated technologies. This work constitutes the basis for the deliverable D3.2 "Case-based analysis and modelling - first draft".	Approved
D3.2	Case-based analysis and modelling – 1 st draft	The document is the 1 st release of the Deliverable D3.2 "Case-based analysis and modelling". It is developed on the basis of an analysis of cases presented in D3.1. All the cases have been reviewed in order to identify similarities, discrepancies, and trends across all cases, with the aim to develop an analysis of the relations between various errors and conditions leading to accidents, the actors involved, and their liabilities, with a particular focus on the adoption of automation. The analysis directly fed into the development of the Legal Case (D4.1: The Legal Case - 1st draft).	Approved

D3.3	Case-based analysis and modelling – Final Version	This document is the final version of the deliverable D3.2 “Case-based analysis and modelling”.	Submitted
D4.1	The Legal Case – 1 st draft	The document presents the first release of the Legal Case. Firstly, it provides information on how the Legal Case was designed, starting from a close examination of the Cases currently available in ATM. Secondly, it outlines the purpose of the methodology and describes how to apply the Legal Case process. The appendixes provide detailed analysis of the connections of the Legal Case with the other Cases (Appendix A) and examples of its proactive application (Appendix B) and retroactive application (Appendix C).	Approved
D4.2	The Legal Case – Final Version	The document presents the final version of the Legal Case methodology. This version embeds comments and suggestions coming from the first time application of the Legal Case, carried out in June 2013 with EUROCONTROL. Compared with the first release, the improvements concern the description of the legal framework, the liability argumentation maps and the description of the results achievable through the application of the methodology.	Submitted
D5.1	Dissemination and communication strategy and plan	This document describes the dissemination and communication strategy of ALIAS.	Approved
D5.2	Project Web Site – 1 st Release	This document describes the first release of the ALIAS project web site. It contains the technical specifications of the web site as well as an overview of the contents and services.	Approved
D5.3	Project Web Site – Final Release	This document describes the final release of the ALIAS Project Web Site.	Submitted
D5.4	Launch of the Network on legal research in ATM	The document represents the deliverable D5.4 "Launch of the Network of Legal Research in ATM" of the ALIAS project. The deliverable includes: (1) a detailed description of how the ALIAS Conference (June 14-15, 2012, European University Institute (Fiesole, Italy) gave start to the network of legal research in ATM; (2) the list of people who attended the conference as speakers and participants (and consequently, of the stakeholders who assisted the launch of the network); (3) a brief description of each speaker's presentation and a permanent link to full presentations available on the ALIAS' SlideShare page.	Approved
D5.5	Launch of the Legal Case	This deliverable presents the activities carried out to officially launch the first release of the Legal Case methodology, recently developed in the framework of the ALIAS Project and still under refinement and consolidation. The Legal Case was officially launched during the 1st World ATM Congress, held in Madrid on the 12-14th of February 2013. The document outlines the communication strategy, the dissemination material that were prepared accordingly. As the Legal Case has been recently developed, the key expectation of the ALIAS team was to gather initial feedback from the stakeholders in order to improve and refine the methodology. The conclusions highlights the outcomes achieved.	Approved
D5.6	Dissemination materials	This document describes the dissemination and communication activities carried out during the ALIAS Project.	Submitted

Table 1 - List of Project Deliverables

3 Dissemination Activities

3.1 Project WebSite

The project website (available at www.aliasnetwork.eu) is the main means used by the project to communicate and disseminate its results. The technical specifications of the web site are described in D5.3 Project Web Site – Final Release, together with an overview of its contents and services.

The project website contains the link to the ALIAS Network Platform developed by the project and described in D2.2 Network of legal research in ATM – Final version.

3.2 Presentations/publications at conferences/journals

In the timeframe of ALIAS, 12 scientific publications and presentations were produced. Among them, we have 8 are research papers (2 published in international Journals and 6 presented at selected Conferences or Workshops) and 4 speeches at conferences and/or events.

In addition, an extended version of the paper on “Assessing Liability with Argumentation Maps: An Application in Aviation Law” presented at the ICAIL (International Conference on Artificial Intelligence and Law) Conference, held in Rome (Italy) in June 2013, is being produced to be included in the Journal of Artificial Intelligence and Law or the Oxford Journal of Law, Probability, and Risk.

Of the 12 scientific publications and presentations carried out, 10 concerned Conferences and Journals of the Aeronautics domain, 2 concerned Conferences and Journals of the legal domain.

The 12 scientific publications and presentations are listed hereafter, in chronological order:

- Contissa G., Sartor G., Finger M.P., Rosa A. “Automation and liability in ATM as fundamental issues in socio-technical systems” Proceedings of the 2nd International Conference on Models and Technologies for ITS - MT-ITS 2011, Leuven, Belgium, 2011;
- Contissa G., "Liability Impact of Automated Systems in Air Traffic Management", in The Aviation and Space Journal, N. 3, Bologna, Italy;
- Bannon L., Contissa G., Lanzi P., Marti P., Masutti A., Sartor G., “Liability and Automation: issues and challenges for Socio-Technical Systems”, Proceedings of the 1st SESAR Innovation Days, Toulouse (France), 29 November – 1 December 2011;
- Simoncini M., “EU Risk Regulation and Air Traffic Management. Standardisation of Safety and Liability Issues”, speech given at Conference on Mapping the global regulatory space for risk governance, hosted by the European University Institute (Florence, Italy) on May 28, 2012
- Contissa G., “Liability and automation: the case of Air Traffic Management”, speech given at Conference on Mapping the global regulatory space for risk governance, hosted by the European University Institute (Florence, Italy) on May 28, 2012
- Contissa G., Lanzi P., Marti P., Sartor G., Tomasello P., “Liabilities and Automation in Aviation” in Schaefer, Dirk (ed) Proceedings of the 2nd SESAR Innovation Days, Braunschweig (Germany), November 27-29, 2012;
- Lanzi P., informal communication on “The Legal Case: retroactive application”, presented at the Seminar on Accident Investigation, Rome (Italy), April 5, 2013;
- Sartor G., Contissa G., Schebesta H., Laukyte M., Marti P., Lanzi P., Tomasello P., “The Legal Case” Proceedings of the 2nd ATACCS (Application and Theory of Automation in Command and Control Systems) Conference, Naples (Italy), May 28-30, 2013;
- Contissa G., Laukyte M., Sartor G., “Assessing Liability with Argumentation Maps: An Application in Aviation Law” presented at the ICAIL (International Conference on Artificial Intelligence and Law) Conference, Rome (Italy), June 10-14, 2013, to be included in either

Journal of Artificial Intelligence and Law or the Oxford Journal of Law, Probability, and Risk.

- Sartor G., Contissa G., Schebesta H., Laukyte M., Marti P., Lanzi P., Tomasello P., “Liability and automation: issues and challenges for socio-technical systems”, The Journal of Aerospace Operations Volume 2, Number 1-2/2013;
- Sartor G., Contissa G., Schebesta H., Laukyte M., Marti P., Lanzi P., Tomasello P., “Classification and Argumentation Maps as support tools for liability assessment in ATM” to be presented at the 3rd SESAR Innovation Days, Stockholm, November 26-28, 2013.
- Tomasello P., abstract “The Legal Case: a new case-based approach to consider liability in the design process of new automated technologies” presented at the EXCROSS Symposium, Turin (Italy), October 18, 2013.

The following sections provide information about each of these events, mentioning the name of the event, date and place, the title, a short description of the presentation, the full reference of the associated paper and information on the feedback received.

3.2.1 The Conference on Models and Technologies for ITS (June 2011)

The ALIAS technical paper entitled “Automation and liability in ATM as fundamental issues in socio-technical systems” was produced for the Second International Conference on Models and Technologies for Intelligent Transportation Systems (ITS), held in Leuven (Belgium) on June 23, 2011. The Conference was targeted to scientists, academia and transportation systems experts.

The paper is available in the library of the ALIAS Network at: <http://www.scribd.com/doc/79828306/065-G-Contissa-Et-Al-Automation-and-Liability-in-ATM-as-Fundamental-Issues-in-Socio-Technical-Systems>.

The full reference of the paper is:

Contissa G., Sartor G., Finger M.P., Rosa A. “Automation and liability in ATM as fundamental issues in socio-technical systems” Proceedings of the 2nd International Conference on Models and Technologies for ITS - MT-ITS 2011, Leuven, Belgium, 2011.

Giuseppe Contissa presented the paper at the conference and profited by the conference to establish contacts with experts in socio-technical systems and intelligent transportation systems.

3.2.2 The Aviation and Space Journal (October 2011)

The technical paper entitled “Liability Impact of Automated Systems in Air Traffic Management” was published in *The Aviation and Space Journal*, N. 3, Bologna (Italy) issued on October 24, 2011. The full reference is:

Contissa G., “Liability Impact of Automated Systems in Air Traffic Management”, in The Aviation and Space Journal, N. 3, Bologna, Italy

The paper, available at http://www.ingfo.unibo.it/servizi/rivista/The_Aviation_Space_Journal_n3-2011.pdf and also in the library of the ALIAS Network, focuses on the liability attribution scheme used in the current operational scenario and assesses whether innovation and technology advances, foreseen for the future ATM, will affect it. In fact, in the current operational scenario of ATM, liability is mainly allocated to the operators who are responsible for air traffic control and air navigation (e.g. controllers and pilots). Nevertheless, advances in automation and technology may bring about drastic changes from the legal and regulatory perspectives, questioning the allocation of liability mainly to operators.

The paper got positive feedback from aviation experts, who agreed that the more innovation and automation in ATM are progressing, the more the theme of liability attribution is meant to become crucial.

3.2.3 The SESAR Innovation Days (SID) 2011 (November 2011)

The ALIAS technical paper entitled “Liability and Automation: issues and challenges for Socio-Technical Systems” was produced for the 1st edition of the SESAR Innovation Days, hosted by the Ecole Nationale de l’Aviation Civile (ENAC), Toulouse (France), from November 29 to December 1, 2011.

The full reference is:

Bannon L., Contissa G., Lanzi P., Marti P., Masutti A., Sartor G., “Liability and Automation: issues and challenges for Socio-Technical Systems”, Proceedings of the 1st SESAR Innovation Days, Toulouse (France), 29 November – 1 December 2011

Patrizia Marti, Giovanni Sartor and Giuseppe Contissa presented the paper at the conference.

The paper (available at <http://www.scribd.com/doc/75462037/SID-Liability-and-Automation-ALIAS>) presents the outline framework of the Project, its objectives, and the initial steps taken to create an online multidisciplinary “community of practice” around the relationships between liability and automation in socio-technical systems.

Patrizia Marti, Giovanni Sartor and Giuseppe Contissa profited by the event for presenting the ALIAS topics and objectives and introducing the 1st ALIAS Conference. For achieving this, the Consortium had purposely prepared a brochure. The brochure (available at <http://www.scribd.com/doc/75545555/Brochure-SID2011>) described the scope and the objectives of ALIAS and included a section for inviting people to join the Network of Legal Research in ATM.

The event was useful for drawing the attention on ALIAS and its initiatives. It received a positive feedback from the SESAR WP-E Community.

3.2.4 The Conference on Mapping the Global Regulatory Space for Risk Governance (May 2012)

The ALIAS Project presented itself at the Conference on Mapping the global regulatory space for risk governance, hosted by the European University Institute (Florence, Italy) on May 28, 2012. The programme of the Conference, targeted to the legal community and risk regulation experts, is available at: <http://www.eui.eu/seminarsandevents/index.aspx?eventid=74454>.

Giovanni Sartor was the moderator of the panel session on “Liability and Risk Regulation. Safety in Aviation”. While Giuseppe Contissa and Marta Simoncini attended the event as speakers, introducing the ALIAS achievements on the socio-technical analysis of real ATM accidents. In particular the following speeches were given:

- Marta Simoncini, EU Risk Regulation and Air Traffic Management. Standardisation of Safety and Liability Issues
- Giuseppe Contissa, Liability and automation: the case of Air Traffic Management

Positive feedback from the experts was gathered and included in the ALIAS deliverables D1.2 Framing the Problem and D3.1 Repository of Cases.

3.2.5 The SESAR Innovation Days (SID) 2012 (November 2012)

The ALIAS technical paper entitled “Liabilities and Automation in Aviation” was produced for the 2nd edition of the SESAR Innovation Days, co-hosted by DLR & Technical University of Braunschweig (Germany) on November 27-29, 2012. The full reference is:

Contissa G., Lanzi P., Marti P., Sartor G., Tomasello P., “Liabilities and Automation in Aviation”, in Schaefer, Dirk (ed) Proceedings of the 2nd SESAR Innovation Days, Braunschweig (Germany), November 27-29, 2012

Giuseppe Contissa and Giovanni Sartor presented the paper at the conference.

The paper, available at <http://www.scribd.com/doc/116210424/Contissa-G-Sartor-G-Lanzi-P-Marti-P->

[Tomasello-P-Liabilities-and-automation-in-aviation](#), presented some preliminary results of the ALIAS legal research: firstly, it provided a theoretical framework for liability attribution in aviation; secondly, it applied this framework to real air disasters and to hypothetical accident scenarios involving Unmanned Aircraft Systems (UAS).

The presentation got positive feedback by the Conference participants, who showed interest in the ALIAS achievements and willingness to participate in the ALIAS Network discussions.

3.2.6 The STASA Seminar on Accident Investigation (April 2013)

On April 5, 2013 the ALIAS Project attended the workshop organized by Centro Studi STASA (<http://www.stasanews.it/news.php>) regarding liabilities for aviation accidents.

The workshop was targeted to aviation law experts, accident investigators and ATM experts. It investigated the outcomes of the legal trials emerged after three Italian air disasters: the Linate runway incursion, the Cagliari plane crash and the Ronchi dei Legionari accident. The analysis carried out by the speakers showed that, in some of the judicial decisions resulting from these cases, the Italian legal system did not take completely into account the importance of institutional-organisational aspects in allocating criminal liabilities and attributed the greatest part of responsibility to the individual closest to the accident (the front-line operator). A more detailed analysis of these trials showed a problem of “misalignment” between legal trials and investigation processes. On the one hand, the results of the investigation often come out when the legal trial has been concluded, thus not helping judges to use accident investigation results as evidence in court. On the other hand, judges and courts are potentially used to override accident investigation results as they are viewed as a means for highlighting lessons learnt rather than as a means for helping to attribute responsibility.

The objective of the ALIAS participation in this event was to present the Legal Case methodology, and, in particular, its retroactive application, which is meant to support the identification of the legal impact of automated systems that played a crucial role in particular air disasters. Paola Lanzi presented an informal communication explaining the Legal Case retroactive process. She highlighted in particular the kind of results that could be obtained by the application of the Legal Case retroactive process, also underlining the way in which the methodology could support accident investigators. She took the opportunity for presenting the ALIAS Project in general and the Network of Legal Research in ATM, distributing the ALIAS brochure among the participants (for the description and the link to the brochure see section 3.4.3).

The audience showed interest in the project and in the Legal Case. Reference to the ALIAS speech was included in several newsletters issued by STASA. A paper on the Legal Case was published on their bi-monthly ebook (audience: 34.000 lawyers in Italy).

The full reference is:

Lanzi, P., “Il Legal Case. un nuovo strumento metodologico per considerare gli aspetti di attribuzione di responsabilità nel processo di design di nuove tecnologie complesse e ad alto livello di automazione per la gestione del traffico aereo”, in Ebook bimestrale dell’Ordine degli Avvocati del Lazio, May 2013.

3.2.7 The ATACCS 2013 (May 2013)

The ALIAS technical paper entitled “The Legal Case” was produced for the 3rd edition of the ATACCS Conference (Application and Theory of Automation in Command and Control Systems), which was hosted by the University of Naples Federico II and took place on May 28-30, 2013.

The full reference of the paper is:

Sartor G., Contissa G., Schebesta H., Laukyte M., Marti P., Lanzi P., Tomasello P., “The Legal Case”, Proceedings of the 2nd ATACCS Conference (Application and Theory of Automation in Command and Control Systems), Naples (Italy), May 28-30, 2013

Giovanni Sartor presented this paper at the conference. Paola Lanzi and Paola Tomasello participated in the conference as well.

The paper, available at <http://www.irit.fr/~Marco.Winckler/ataccs2013-full-proceedings.pdf>, presented the first release of the Legal Case. The Legal Case gathered a great interest among the Conference participants and the feedback received was integrated in the following releases of the methodology. The presentation is available at <http://www.slideshare.net/aliasnetwork/the-legal-case>.

3.2.8 The International Conference on Artificial Intelligence and Law (June 2013)

Giovanni Sartor and Giuseppe Contissa presented a technical paper entitled “Assessing Liability with Argumentation Maps: An Application in Aviation Law” during the workshop on formal argument and evidential inference at the ICAIL (International Conference on Artificial Intelligence and Law) Conference, held in Rome on June 10-14, 2013. The Conference was targeted to scientists, software engineers, legal scholars and other experts working in the field of artificial intelligence and law.

The paper gathered a useful feedback from the audience, namely the interest in the ALIAS outcomes and in collaboration.

The full reference of the paper is:

Contissa G., Laukyte M., Sartor G., “Assessing Liability with Argumentation Maps: An Application in Aviation Law” presented at the ICAIL (International Conference on Artificial Intelligence and Law) Conference, Rome (Italy), June 10-14, 2013, to be included in either Journal of Artificial Intelligence and Law or the Oxford Journal of Law, Probability, and Risk

An extended version of the paper is going to be published in the Journal of Artificial Intelligence and Law or the Oxford Journal of Law, Probability, and Risk.

3.2.9 The Journal of Aerospace Operations (August 2013)

The ALIAS technical paper entitled “Liability and automation: issues and challenges for socio-technical systems” was published in The Journal of Aerospace Operations, Volume 2, Number 1-2/2013, issued on August 26, 2013.

The full reference is:

Sartor G., Contissa G., Schebesta H., Laukyte M., Marti P., Lanzi P., Tomasello P., “Liability and automation: issues and challenges for socio-technical systems”, The Journal of Aerospace Operations Volume 2, Number 1-2/2013

The paper, available at:

<http://iospress.metapress.com/content/x261q8417530v70k/?p=d31798e64b6c4d1bb7fd99b8855085d&pi=5> and in the Library of the ALIAS Network, presents the outline framework of the ALIAS project, its objectives and some preliminary results. In particular, it outlines a framework for liability in aviation, an analysis of real accidents and of a hypothetical case involving UAS according to a methodology developed in the project. Finally, it introduces the Legal Case as a methodological tool recently developed by ALIAS and aimed at identifying and addressing liability issues of automated ATM systems.

3.2.10 The EXCROSS Symposium (October 2013)

EXCROSS (EXploiting safety results aCROSS transportation modes) is a Supporting Action of the European Commission to enhance cross-fertilization and synergies between safety research initiatives in the different transportation modes (e.g. road transportation, aviation, etc.).

The EXCROSS Symposium was hosted by the [Human Factors and Ergonomics Society Europe Chapter Annual Meeting](#) and took place in Turin (Italy), on October 18, 2013. The event presented the main results of the EXCROSS research, offering the opportunity to participants to define the European Human Factors research agenda for Horizon 2020, with particular attention for cross-modal research areas and cross-fertilisation opportunities. The Symposium, targeted to safety experts of different transportation domains, saw the participation of other European Projects, dealing with safety

issues in different transportation modes, such as: *i*) OPENCROSS (Open Platform for Evolutionary Certification Of Safety-critical Systems) <http://www.opencross-project.eu/>; *ii*) PROS (Priorities for Road Safety Research in Europe) <http://www.pros-project.eu/>; *iii*) D3COS (Designing Dynamic Distributed COoperative human-machine Systems) <http://www.d3cos.eu/index.php/home>. The Final Programme including further information on these projects is available at <http://www.excross.eu/programme.htm>.

ALIAS took the opportunity for presenting the Legal Case methodology to people pertain to other transport domains (i.e. maritime, automotive and train). Paola Tomasello presented it. She outlined that the liability allocation scheme used in the Legal Case has been derived from the analysis of a corpus of real and hypothetical accidents and incidents which occurred in the ATM, as well as in other safety critical domains such as transportation (rail, automotive and naval), healthcare and nuclear. This implies that although developed for the ATM, the use of the methodology has potential to be extended to other socio-technical domains. The ALIAS abstract has been uploaded on the EXCROSS website at <http://www.excross.eu/abstract.htm#2>, while the presentation is available at <http://www.slideshare.net/aliasnetwork/the-legal-case-for-the-excross-symposium>.

The presentation was interesting to the EXCROSS Community, who showed the willingness to cooperate in the application of the Legal Case methodology to technologies being developed in other transportation domains, such as the automotive and naval.

3.2.11 The SESAR Innovation Days (SID) 2013 (November 2013)

The ALIAS technical paper entitled “Classification and Argumentation Maps as support tools for liability assessment in ATM” has recently been accepted by the SID 2013 Committee and is currently under review. The paper presents an application of classification and argumentation maps for assessing the liability impact of ATM systems.

The full reference is:

Sartor G., Contissa G., Schebesta H., Laukyte M., Marti P., Lanzi P., Tomasello P., “Classification and Argumentation Maps as support tools for liability assessment in ATM” to be presented at the 3rd SESAR Innovation Days, Stockholm, November 26-28, 2013

This work will be presented during SID 2013, that will be hosted by KTH Royal Institute of Technology in Stockholm (Sweden) on November 26-28, 2013.

3.3 Presentations/publications at other conferences/journals

Provide one paragraph per presentation, mentioning the name of the event, date and place, the title and a short description of the presentation. Add the full reference of the associated paper in 0. Provide an additional paragraph on the feedback, where appropriate.

Two publications out of the 12 produced during the project were not for ATM or Aeronautics conferences/journals. They are described in the previous section 3.1.

3.4 The ALIAS events

This section presents the dissemination events organized by the ALIAS Consortium. These are, in chronological order:

- The Workshop on digital technologies and liabilities (European University Institute, Florence, April 10, 2012)
- The ALIAS Conference (European University Institute, Florence, June 14-15, 2012)
- The Launch of the Legal Case at the World ATM Congress (Madrid, February 12-14, 2013)

The following sections provide information on each event.

3.4.1 Workshop on digital technologies and liabilities

The Workshop on digital technologies and liabilities

(<http://www.eui.eu/seminarsandevents/index.aspx?eventid=77777>) was hosted by the European University Institute (Florence, Italy) and held on April 10, 2012.

The workshop, targeted to the legal community, dealt with liability for software. It investigated how liability for software failures or malfunctioning in software-driven machines and infrastructures can be allocated to developers, users and organisations. It addressed the distinction between software as a product and as a service, as well as responsibilities related to design, production and deployment, including both contractual and tort liability. ALIAS played a twofold role in the workshop, acting both as organizer and as presenter. Regarding the latter, two lectures were presented: the first focused on how to frame the problems associated to automation and liability, while the second presented a socio-technical analysis of real ATM accidents.

The achievements of the workshop consisted in useful feedback from liability experts, feedback that was included in the ALIAS deliverables D1.3 Framing the Problem and D3.1 Repository of Cases.

3.4.2 The ALIAS Conference

The ALIAS Conference was hosted by the European University Institute (Florence, Italy) and held on June 14-15, 2012. The Conference was entitled “A SESAR Innovation Challenge: Responsibilities, Liabilities and Automation in Aviation” and was intended to address the ways in which automation affects liability issues in complex and safety-critical socio-technical domains. The Conference explored the wide spectrum of the relations between automation and liability in highly automated socio-technical systems, focusing not only on ATM and Aviation, but also on other domains such as Healthcare and Oil and Gas Industry. The event was targeted to scientists, academia, ATM experts, legal experts, ATM users and Regulators.

As the topic was (and currently is) innovative and challenging, the ALIAS team aimed at addressing it also over a dedicated Network, so as to enable an ongoing structured debate and discussion forum, leading to the development of a body of knowledge, competence and expertise on the relationship between liability and automation. The ALIAS Conference was purposely organized to officially launch the Network on Legal Research in ATM and offered its members the opportunity to meet, know each other and start debating the theme of liability and automation.

This is the reason why the ALIAS Conference was organized in discussion panels (the Conference Programme is available at <http://www.scribd.com/doc/86759783/ALIAS-Conference-20120326>). The first section set the scene and provided background information, while the second presented a set of panel sessions that were intended to highlight the point of view of different stakeholders and stimulate their discussion on the possible impact of automation on liability. A keynote speech was given by Francis Schubert from Skyguide (available at http://www.slideshare.net/aliasnetwork/the-liability-of-air-service-provider-some-lessons-from-the-ueberlingen-by-f-schubert?from_search=2): he spoke about the liability of Air Navigation Service Providers (ANSPs), focusing in particular on lessons learnt from the accident of Überlingen in 2002.

Positive feedback was given by the audience, who regarded the Project activities with particular attention and showed interest in actively participating in the discussion over the Network platform.

The reference material about the Conference is available both directly through the ALIAS digital library and vicariously through the link to the ALIAS social networks. In particular, the playlist showing all the videos of the lectures presented at the Conference is available on the ALIAS channel of youtube at http://www.youtube.com/watch?v=--faQrbs9Vo&list=PL0ZA5wgfZOxDQnsbN39LQRvo_PZzhFz1O. The videos in the playlist are arranged in the exact order as they were presented at the Conference, so as to enable the overview of the topics discussed by the speakers and the possibility to choose and watch the preferred video(s), as well as even potentially virtually attend the First ALIAS Conference at any time. The presentations are available at http://www.slideshare.net/aliasnetwork/edit_my_uploads, while the photos of the Conference can be found at <http://www.flickr.com/photos/69171845@N07/sets/72157630192903546/>.

Further information about this event (as for instance the list of participants and speakers) is available in D5.4 Launch of the Network of Legal Research in ATM.

3.4.3 Launch of the Legal Case

The launch of the first release of the Legal Case took place during the ALIAS exhibition at the 1st edition of the World ATM Congress (WAC), organized by CANSO (Civil Air Navigation Services Organization) in association with ATCA (Air Traffic Control Organization) and held in Madrid on February 12-14, 2013. The event was the inaugural ATM Congress of the CANSO. The key challenge of CANSO was to provide global civil, commercial and defence ATM industry with a new international platform of reference for the global civil, commercial and defence air traffic management industry for discussing the future of air traffic management. The event hosted the most important stakeholders of the ATM field, including ANSPs, regulatory agencies and the major international industries of the civil aviation, thus representing a great occasion for networking opportunities and exchange of information about the latest trends and developments in air traffic control. Moreover, it combined the large-scale exhibition with world-class conferences and workshops, organized by SESAR JU and EUROCONTROL. These included a workshop on the latest research on Remotely Piloted Aircraft Systems (RPAS) and close-out demonstration sessions of the System Wide Information Management (SWIM) technology, currently under development in the framework of SESAR.

The World ATM Congress was chosen on purpose by ALIAS as key event for the launch of the first release of the Legal Case for two reasons: firstly, because it involved the worldwide ATM Community; secondly, because it was focused on the future of ATM. In line with this, the event represented a privileged platform to discuss the ALIAS topics as it provided key opportunities for close interactions with manufacturers, certificatory authorities and all other stakeholders that may be interested in addressing the topics of liability and automation during the design and development phases of new ATM systems.

The ALIAS Project had its own booth in the area of the Exhibition Hall dedicated to Universities and Research Centres. Although the main purpose of the ALIAS exhibition at the World ATM Congress was the launch of the Legal Case, the event represented an opportunity to present to the ATM community the ALIAS project in general and the achievements that the project reached so far, especially the Network of Legal Research in ATM.

Specific dissemination materials were prepared to provide information about the Project, the Network and the Legal Case. The materials consisted: in leaflets and posters, but also encompassed a video about the Legal Case methodology, a gadget and the ALIAS business cards. Moreover, in order to gather the feedback on the Legal Case from the stakeholders, a brief questionnaire was set up.

3.5 Participation in other Workshops and Events

In addition to the events organized by the Consortium (section 3.3) and to the conferences attended to present papers (section 3.1), the ALIAS Consortium was also active in a number of other initiative. The participation in those cases was to get information and contact that could be useful for the project, although no papers were presented.

The list of events attended, in chronological order, follows:

- Participation in the 3th European Air Transport Regulation Forum (April 2012);
- Participation in the Meeting of the Working Group on Complementary Measures, as part of the European RPAS Steering Group (September 2012);
- Participation in the ICONUS Workshop (September 2012);
- Participation in the RPAS civil operations Forum (December 2012);
- Meeting with EASA (March 2013);
- Participation in the 4th European Air Transport Regulation Forum (April 2013);
- Participation in the International Workshop on legislation and regulation of risk management in aviation activities, co-organized by EUROCONTROL and CUST (Transport Studies University Center Euromed) of Messina and held at the Excelsior Palace Hotel in Taormina (Italy) (September 2013).

Details on each of these events are provided hereafter.

3.5.1 The 3rd European Air Transport Regulation Forum (April 2012)

The 3rd European Air Transport Regulation Forum (EAirTRF) was held at the European University Institute on 23 April 2013 (more information available at:

<http://fsr.eui.eu/Events/TRANSPORT/Forum/2012/120423EAirTRF.aspx>)

The forum aimed at bringing the relevant stakeholders to the table and discuss the problems that arise along the implementation process of the SES and its performance objectives. The aim was to have a constructive debate kicked-off by the following questions:

- Does current performance-based regulation actually drive performance improvements?
- If collaboration is the only way to reach the performance targets, then how can this be achieved under the current institutional framework?
- Or will stakeholders concentrate on their own targets to the detriment of FAB or network ones?
- Who is taking risks and the burdens and how are those going to be credited? And ultimately: who is responsible for what?
- How can the stakeholder work effectively with the network manager? Should the network manager also have targets set for him?
- What will be the role of the charging regime regulation

Giuseppe Contissa, Paola Lanzi and Giovanni Sartor attended the event. The forum was a useful occasion to establish contacts with representatives of international organisations (as EUROCONTROL, ICAO, IFATCA, etc.) that were then involved in the ALIAS Conference and to collect information on new automated technologies being developed in SESAR (as for instance the Remotely Operated Tower) that was reused in the design of hypothetical scenarios collected in D3.1 "Repository of Cases".

3.5.2 Working Group on Complementary Measures – as part of the European RPAS Steering Group (September 2012)

This workshop took place on September 11, 2012. The event, targeted to ATM and legal experts, was dedicated to discuss complementary measures to foster the development of civil Remotely Piloted Aircraft Systems (RPAS).

ALIAS took the opportunity to join the debate. Giovanni Sartor, Giuseppe Contissa and Anna Masutti participated as auditors. During the discussion, they highlighted the need to investigate which liability attribution scheme could (or should) be associated to the deployment of RPAS technologies. The ALIAS perspective raised interest in the audience, who unanimously agreed that a liability analysis of such technologies is required before they are implemented in civil airspace.

3.5.3 ICONUS Workshop (September 2012)

On the 13th of September 2012, representatives of the ALIAS Project, namely Giuseppe Contissa, Paola Lanzi and Paola Tomasello, attended the ICONUS Workshop. The Workshop was organized in Rome by Deep Blue and focused on the integration of Unmanned Aircraft Systems (UAS) in non-segregated airspace.

ICONUS (Initial CONcept of operations for Uas in SESAR) was launched by the SESAR Joint Undertaking in April 2012. The project aimed at defining the requirements, in terms of capabilities and equipment, for UAS users to operate safely and efficiently in a SESAR environment.

The workshop was intended to initially validate a first set of requirements developed by the project for the integration of UAS in non-segregated airspace. Each requirement was analyzed in order to

highlight possible open issues to be further investigated. The analysis was firstly conducted during break-out sessions of group-work. Three working groups of stakeholders, respectively coming from operational, industrial and research domains, were created. They were required to choose a set of requirements from the list developed by the ICONUS project and to raise possible open issues on them. The results of each working group were presented in a plenary session at the end of the workshop. This approach allowed each group of stakeholders to state his own point of view, share it with the audience, and stimulate the debate.

Giuseppe Contissa, Paola Lanzi and Paola Tomasello contributed actively to the debate, participating in the group-work sessions. They introduced two scenarios of possible accidents associated to the RPAS deployment and drew the attention on the legal issues raised by the implementation of RPAS in civil airspace. The discussion confirmed that the legal issues are crucial and need to be examined when considering the integration of UAS in SESAR environment, and the ALIAS perspective gained interest by the participants.

3.5.4 RPAS Civil Operations Forum (December 2012)

The workshop on RPAS civil operations (http://rpas-civilops.org/RPAS-CivOps_Program-Bios-Abstracts_121126_Final-EV.pdf) was hosted by the Royal Military Academy in Brussels (Belgium), on December 4-5, 2012.

The event, targeted to the RPAS Community, SESAR and EASA, aimed at increasing the awareness of the European Commission (EC) and its agencies on the currently on-going civil RPAS operations (commercial & non-commercial; non-governmental & governmental).

Damiano Taurino joined the debate on behalf of the ALIAS Project. He outlined the need to investigate the legal issues associated to the integration of RPAS in civil airspace and presented the ALIAS Network, which is hosting discussions currently active on this topic. Workshop participants showed interest in participating in the ongoing debate on this topic on the ALIAS Network.

As a follow up of this activity, the ALIAS Consortium has been recently admitted in the Definition Team of the Study Group on RPAS-Related Responsibility, Liability and Insurance (

3.5.5 Meeting with EASA (March 2013)

On the March 6-7, 2013, Giuseppe Contissa, Migle Laukyte, Hanna Schebesta and Marta Simoncini met EASA for presenting the research carried out during the ALIAS project. The ALIAS goals and results were presented to EASA's legal experts, engineers and safety experts, who expressed their interest in future collaboration with the ALIAS project, and gave feedback on different questions that were addressed during the presentation.

3.5.6 The 4th European Air Transport Regulation Forum (April 2013)

On April 22, 2013, Giuseppe Contissa, Giovanni Sartor, Migle Laukyte, Hanna Schebesta and Paola Tomasello participated as auditors in the 4th European Air Transportation Regulation Forum (EAirTRF), organized by the Florence School of Regulation and held at the European University Institute (Florence, Italy).

The workshop focused on different institutional, regulatory and technological aspects, problems and drawbacks (also called "dichotomy institutions-technology"), that the development of the Single European Sky (SES) has to deal with so as to be successfully implemented. The participants represented the positions of all the main stakeholders (air carriers, ANSPs, airports, authorities, associations and academics), thus making this Forum an exceptional occasion to get an insider's view on some of the most urgent topics of SES. Just to cite a few examples, Mr. Weder (SKYGUIDE) presented "virtual centres" as a solution to the infrastructural problems of SES, Mr. Riemens (CANSO) identified the fragmentation of the current ATM as one of the biggest problems that the SES should solve, while Mr. Borghini (SESAR) explained the role that SESAR plays in answering the technological needs of SES.

Needless to say that taking into account the questions discussed and the participating stakeholders,

this event was also an extraordinary occasion for the ALIAS project. The ALIAS team took the opportunity to attend the Forum and present the project in general and the Legal Case in particular to many of the representatives from the EU Commission, Skyguide, ENAV, SESAR and other international and national institutions. The interest in the topics of ALIAS was high enough to include an introduction to the liability problem in the SES and a brief presentation of the ALIAS project in the last issue of European Transport Regulation Observer. The ALIAS contribution was prepared by Giovanni Sartor and is embedded in the II edition of the European Transport Regulation Observer, which is entirely dedicated to the 4th EAIRTRF and entitles "The Single European Sky: we have a problem" (available at: <http://fsr.eui.eu/Publications/WORKSHOPPAPERS/Transport/2013/130422EAirtROBSERVER.aspx>). As suggested by its title, the Observer focuses on the issues related to the consolidation of the Single European Sky, which were discussed during the Forum. The contribution provided by Giovanni Sartor addresses the liabilities that may arise in the framework of the Single European Sky and presents the Legal Case methodology as potential support tool for the correct identification of such liabilities.

3.5.7 The International Workshop on legislation and regulation of risk management in aviation activities

On September 20-21, 2013, Paola Lanzi participated as auditor in the International Workshop on legislation and regulation of risk management in aviation activities (<http://www.fog.it/convegna/programmi/13-09-20.pdf>), co-organized by EUROCONTROL and CUST (Transport Studies University Center Euromed) of the University of Messina and held at the Excelsior Palace Hotel in Taormina (Italy).

The event represented a good occasion for approaching the EUROCONTROL Safety Team and discuss possible synergies among safety assessment, investigations and the Legal Case.

3.6 Demonstrations

The project did not organize demonstrations.

3.7 Exploitation plans

Both the Network of Legal Research in ATM and the Legal Case methodology developed during the ALIAS Project are considered promising tools to investigate the challenging topics of liability aspects of new automated technologies. The interest raised by the project and by its initiatives witnesses the relevance of the topics addressed and the suitability of the means adopted.

However it is recognized that, although the ALIAS project succeed in achieving its objectives, the level of maturity of both its products (namely, the Network of Legal Research in ATM and the Legal Case) is still too low and not sufficient to consider them stable. They both need to be refined and consolidated at research level. This will be done during the ALIAS II project, which was requested and funded by EUROCONTROL on behalf of the SJU as follow-up of ALIAS with the purpose to consolidate these results. In particular the following activities are foreseen:

- a) ALIAS II will continue the networking activity started in ALIAS, meaning that the Network of Legal Research will maintain its status of a virtual community meeting online and discussing about themes of liability attribution in automated contexts. However, in addition to this, the network's scope will be extended beyond the original idea, so that the network will become a key reference within SESAR for all those projects (both primary and WPE) that deal with topics of liability attribution and legal issues in general. While ALIAS started the network by creating the community and developing the technological platform to gather the interested professionals and support their discussion, ALIAS II will extend the networking activity, including also initiatives similar to those carried out by other Networks, such as HALA! and Complex World. The interaction modalities with and between the users will be extended, through conferences and other meetings, and the platform will evolve in order to host web-pages dedicated to WPE projects addressing "Legal Implications".
- b) ALIAS II will continue the activity on the Legal Case started in ALIAS. However its focus will

not be on the extending the methodology of the Legal Case, but rather on applying and consolidating it. The final aim of ALIAS II is to provide SESAR and the ATM Community in general at the end of the project with a self-standing and valid methodology, ready to be used by the stakeholders.

- c) ALIAS II will organise sessions of training and coaching on the Legal Case in order to feed and smooth the adoption of the Legal Case in the European CNS/ATM community. Training support materials will be developed during the project and made available through the network platform and during the coaching sessions. Contacts have also been established with an Editor for the publication of a book about the legal Case.

No other exploitation activities are foreseen for the moment by the members of the ALIAS Consortium outside those planned in ALIAS II.

4 Total Eligible Costs

This section is based on the Project Costs Breakdown Forms of the eligible costs incurred by project participants.

Date	Deliverables on Bill	Contribution for Effort	Contribution for Other Costs (specify)	Status
<i>Date of invoice</i>	<i>List of deliverable numbers</i>	<i>Requested contribution for effort</i>	<i>Requested contribution for travel, licences, logistics etc.</i>	<i>Billed or paid</i>
14.2.2012	D01 Project Management Plan D5.1 Dissemination and Communication Strategy and Plan D0.2 Progress Report (intermediate) D1.1 Framing the Problem – 1 st draft D0.3 Progress Report (formal) D2.1 Network of Legal Research in ATM – 1 st release D5.2 Project Web Site – 1 st release	122.790,00 €	7.622,40 €	Paid
28.11.2012	D0.4 Progress report (intermediate) D0.5 Progress report (gate) D1.2 Framing the problem - Consolidated Version D3.1 Repository of cases D5.4 Launch of the network legal research in ATM	114.603,60 €	5.826,84 €	Paid
11.7.2013	D06 Progress Report (intermediate) D3.2 Case-based analysing and modelling – 1 st draft	97.179,00 €	12.746,75 €	Paid

	D4.1 The Legal Case – 1 st draft D0.7 Progress Report (formal) D0.8 Progress Report (intermediate) D5.5 Launch of the Legal Case			
To be issued	D0.9 Progress Report (formal) D1.3 Framing the problem - Final Version D2.2 Network of legal research in ATM - Final Version D3.3 Case-based analysis and modelling - Final Version D4.2 The legal case - Final Version D5.3 Project web site - final D5.6 Dissemination materials D0.10 Final report	Estimated € 234.506,19	Estimated € 1.792,54	To be issued
GRAND TOTAL		Estimated € 569.078,79	Estimated € 27.988,53	

Table 2 Overview of Billing

Company	Planned man-days	Actual man-days	Total Cost	Total Contribution	Reason for Deviation
EUI coordinator	1.096,93	1.096,9 (total man-days of which 575,6 consolidated and 521)	€ 312.064,02 estimated	€ 312.064,02 Estimated	(Data are calculated up to the third invoice. Expected final values will approach the planned amounts without significant deviations)..

		estimated for last invoice)			
DeepBlue	842,51	857,73	€ 342.686,35	€ 257.014,77	The minor difference between planned and actual man-days is due to a slight change in the work sharing among the resources involved
Estimated GRAND TOTAL	1939,44	1954,63	€ 654.750,37	€ 569.078,79	

Table 3 Overview of Effort and Costs per project participant

5 Project Lessons Learnt

What worked well?

Give the Top-5 of positive aspects and explain why it allowed the project to achieve its objectives.

The topic proposed. Considering the interest raised by the project and by its initiatives, the very limited literature on the same topic and the number of recent conferences and events that start dealing with the same aspects, we conclude that the project, when launched, was dramatically innovative and challenging. In the last part of ALIAS we participated in some of the conferences that start now discussing this theme, and it was evident that the experience gathered during ALIAS makes our initiative quite mature with respect to other initiatives that are being launched nowadays.

The tools proposed (namely the Network of Legal Research in ATM and the Legal Case). They are both raising a large interest in the aviation community (and in other transport domains) and seem smooth to integrate in the SESAR framework and community.

The cooperation within the ALIAS Consortium. The topic addressed by the project is new and extremely challenging. A continuous debate and a close cooperation were necessary between the two Partners in all phases of the project, since the complementary of their knowledge and background was essential for the development of the project.

The proposed approach. The project provides a new approach to legal risk management, linking legal analysis to technological risk assessment. It promotes communication and cooperation between legal and technical experts, a crucial aspect in the development of new innovative concepts. The legal argumentation maps foster a new approach in bridging the technological innovation and the legal perspective, which represents a novelty for the legal domain, where very few legal scholars have endeavored to design, develop or study such ways of modeling legal rules.

The cooperation with EUROCONTROL and the SJU. Both EUROCONTROL and the SJU adopted a very supportive and cooperative approach with the project. The feedback and suggestions provided revealed extremely useful for the development of project results and the complete achievement of its objectives.

What should be improved?

Give the Top-5 of potential improvements / suggestions.

The ALIAS Community. The ALIAS Community has recently constituted. Improved communication and dissemination strategies for actively involving the stakeholders in the discussion over the network platform should be set. This will be carried out in the framework of ALIAS II.

The Legal Case. The Legal Case has been recently developed. An iterative process of validation and consolidation should be carried out for gaining higher maturity level of the methodology. This will be done in the framework of ALIAS II. In addition more integration is needed between the legal case and existing methods for risk assessments, in particular those using argument-models, or similar tree-based models for risk analysis.

The Project Web Site. Since problems have been faced in the last part of the project with WebFaction, causing malfunctions of the web-site and difficulty to access it from some browsers/platforms, the service provider is expected to be changed at the beginning of ALIAS II.

Software tools for the application of the Legal Case methodology were used during the ALIAS project. Other software supporting tools may introduced in ALIAS II to enhance the application of

the Legal Case methodology. This will be investigated in the framework of ALIAS II.

Number of deliverables, workplan and respect of deadlines. The workplan defined at the beginning of the project revealed ambitious in terms of both schedule and contents expected. On the one side this contributed to make the project challenging, but on the other side implied also difficulties for the project in meeting the deadlines and consequently delays in delivering the documents.

Table 4 - Project Lessons Learnt