Project N°: **ASA6-CT-2006-044543**

Project acronym: **ASTERA-3**

Project title: **A**eronautical **S**takeholders **T**ools for the **E**uropean **R**esearch **A**genda **3**

Instrument: **Specific Support Action**
Thematic Priority: **Aeronautics and Space**

FINAL ACTIVITY REPORT

Period covered: **from 01/01/07 to 30/06/08**   Prepared: **4ᵗʰ August 2008**

Start date of project: **01/01/07**   Duration: **18 Months**

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Organisation: ASD
(**A**ero**S**pace and **D**efence Industries Association of Europe)

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Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	PU
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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1. Introduction

This final activity report of ASTERA-3 aims at describing the work achieved in the nine months from the 1st January 07 to 30th June 08, the progress against the planned objectives, milestones and deliverables set for the period.

Overview of the Project's Objectives

The overall objective of ASTERA 3 is to provide the requisite management support, administrative services and technical support to facilitate the activities of ACARE (the Advisory Council for Aeronautics Research in Europe).

In order to briefly recall the background of ACARE it suffices to remember that in its January 2001 report "*European Aeronautics: A Vision for 2020*", the Group of Personalities chaired by former Commissioner Philippe Busquin established a number of recommendations for fulfilling the European Aeronautics' ambition to better serve society's needs and strengthen its quest for global leadership. In particular, the Group recommended the creation of ACARE to develop and implement a strategic approach to European aeronautics research.

Public web site of ACARE: www.acare4europe.org
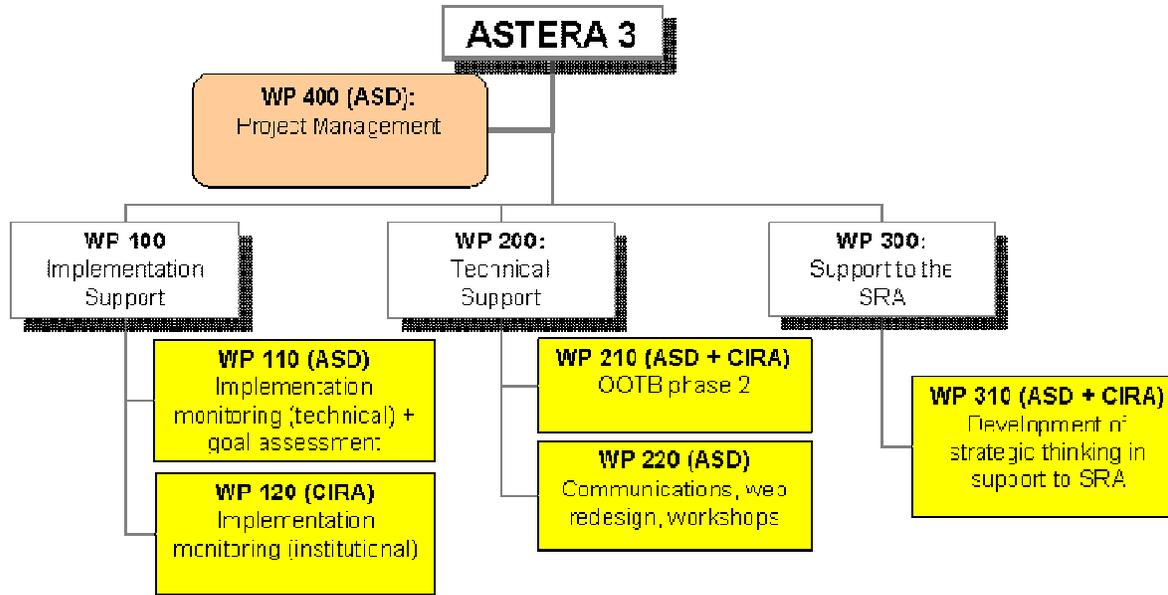
Contractors Involved

The ASTERA 3 Team is composed of two partners: ASD and CIRA which are jointly responsible for the effective management of the project. They form the Participants' Group which provides guidance and support to the Project Manager, who is in turn responsible for the routine management and administration of the project. ASD acts also as project co-ordinator.

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Work Package Structure

The diagram below shows the structure of the ASTERA-3 work packages as outlined in the proposal and contractual documentation.

ASTERA 3

WP 400 (ASD):
Project Management

WP 100
Implementation
Support

WP 200:
Technical
Support

WP 300:
Support to the
SRA

WP 110 (ASD)
Implementation
monitoring (technical) +
goal assessment

WP 120 (CIRA)
Implementation
monitoring (institutional)

WP 210 (ASD + CIRA)
OOTB phase 2

WP 220 (ASD)
Communications, web
redesign, workshops

WP 310 (ASD + CIRA)
Development of
strategic thinking in
support to SRA

2. Project Objectives and Major Achievements during the Reporting Period

Objectives

The contractual objectives of ASTERA 3 in the context of the 18-month reporting period are as follows:

- To provide the requisite project management support for the efficient and effective execution of the ASTERA 3 contract. This involves the usual project planning, control and reporting but also technical co-ordination and support to ACARE and its working groups.

- To complete the monitoring of the implementation (technical and institutional) of the SRA and provide a final report on each aspect.

- To develop a methodology for the periodical assessment of the progress being achieved towards the ACARE goals.

- To develop a new ACARE website

- To modify the SRA tools for web use and distribution

- To organise and perform the second Out Of The Box workshop

- To complete a first international collaboration workshop

- To support ACARE in the development of the strategic thinking towards the preparation for a new Vision and new Strategic Research Agenda.

- To support in the preparation of the Addendum to the SRA-2.

- To support ACARE in the development of position papers.

- To support the ACARE working groups.

It has to be noted that the above plan had to be slightly adjusted to comply with ACARE's decisions and prioritisations of activities.

In particular the foreseen international collaboration workshop didn't take place in the originally envisaged form, i.e. an event organised by ACARE. However, other high-level events on international collaboration between EU and Russia took place in Moscow during the period, and ACARE participated. This can be considered as a partial fulfilment of the original contractual plan.

Besides the above contractual tasks, ASTERA-3 personnel were also involved in the planning of future projects aimed at supporting the ACARE roadmap beyond the ASTERA-3 timeframe.

Work Performed

The activities during the reporting period have spanned the full range of work packages.

As far as ASD is concerned we can start by mentioning the _communication activities_ where ACARE was represented by one or more speakers.

▪	ETP leaders seminar, Brussels	December 12, 2007
▪	The Future of Science and Technology in Europe, Lisbon	October 8-10, 2007
▪	CEAS conference, Berlin	September 10-13, 2007
▪	US-EU ATM seminar, Barcelona	July 2-3, 2007

▪ EUCASS Conference Aero-Space Sciences	July 1-6, 2007
▪ ARTS Conference, Berkeley	June 21-24, 2007
▪ Paris Le Bourget	June 18-24, 2007
▪ AEROCHINA Workshop, Barcelona (Spain)	April 25-27, 2007
▪ EU-Russia workshop, Moscow	March 28-30, 2007
▪ FP7 energy and transport information days, Bruxelles	February 13-14, 2007
▪ SESAR Forum D2 - Geneva	January 24, 2007
▪ Single European Sky, Eurocontrol Brétigny	January 31, 2007

The ASTERA-3 team also provided routine support to the working groups of ACARE, namely the Integration, Communication, Implementation and Institutional groups and also to the ACARE plenary. In particular:

The Communication Group developed the communication plan for 2007-08, defining the modes of participation of ACARE in the numerous important aeronautics workshops which have taken place in 2007-08. The group also finalised the development of the public awareness tool which had been initiated and virtually completed in ASTERA-2.

The Implementation Group largely focused on Framework Programme 7 by supporting the preparation of the content for the collaborative research ultimately and the "Clean Sky" Joint Technology Initiative.

Main work performed is:

▪ Support to the preparation of strategic contents for Collaborative Research (joint IMG4-ARG paper)

▪ Development of an official ACARE opinion on Aeronautic JTI (Clean Sky) through an ad-hoc task force issuing specific recommendations (Acare official request to start Clean Sky end of February).

▪ Advice on 1st and 2nd call. In particular an ad-hoc task force, the WAG (Work-Program Advisory Group) was created in order to elaborate strategic guidelines for the 2nd and following calls of the aeronautics programme of FP7 (on Sept 07 an official paper was sent to EC).

▪ Collaborative Research: a strategic thinking started among stakeholders for a possible improvement of L1/L2 performances. In particular it was registered a need for improvement of the L1 success rate, dramatically decreasing, and of the L2 selection process, in order to make more transparent current competition.

Moreover the overall budget decreasing for Collaborative Research (FP7 wrt FP6), joint to the new yearly call process envisaged by EC, was highlighted as a major blocking factor for SRA implementation because of leading to reduced (as scope and as money) calls, not useful for integrating all the aspects of the SRA (ATS as Integrated system being one of the major novelties and focus of SRA).

Therefore the IG tasked again the WAG to consolidate the long debate and major issues as integration to the paper released on Sept 07. The draft paper was also requested as advice by EC on the new established process for calls (WP 2010 and following) during May.

The ad-hoc group worked over last months June-July on a tight schedule and prepared a draft position that was presented for discussion on 9th July ACARE IT. An official paper should be consolidated in the second half of 2008, after the disclosure of the second calls results in order to better specify next calls contents needs and strategic lines.

▪ Clean Sky: the IG acted as an unique, independent and open forum to transfer to all the stakeholders, the progress and results obtained by the task force, in close collaboration with the EC, for defining the governance process and rules managing Clean Sky. Moreover technical progress and updated were reported.

The ACARE IG supported both process, the achievement of the official launch and set up of the JU and the stakeholders' integration (associates and the stakeholders' community ready for forthcoming calls). In particular the IG monitored that no overlapping/redundancies/duplications or gaps with the

other instruments (collaborative research, SESAR) were affecting the design process. The IG fully supported through all its stakeholders the achievements of the major Clean Sky milestones: Council Approval begin 2008, Official Launch February 08, Grant Agreement signature at ILA May 08 with the official launch of operational activities.

- SESAR: the IG also closely monitored all the activities defining the SESAR current status in order to ensure the proper alignment with the SRA strategy implementation. The definition phase was successfully completed in May 2008 with the final delivery of D5 and D6 deliverables, defining the SESAR Masterplan and the related Work Program for the implementation. Full and complete presentations were organized for the IG on the different aspects tackled by SESAR in order to allow all the stakeholders to analyze the results/goals and report to IT/Plenary for ensuring coherence with the ACARE objectives. In particular Marco de Sciscio (EC DG TREN Unit F2) reported on the JU set up and implementation aspects, Francois Etienne (Eurocontrol) on the definition phase achievements and masterplan objectives, Doris Schroeker (DG TREN Unit F2) on the future SESII package and policy objectives for ATM growth and improvement wrt SESAR and Alain Siebert (SESARJU Chief Economics and Environment) on the Environmental objectives and plans for SESAR, specifically the future interface with Clean Sky.

  In particular the ACARE IG developed a draft paper, submitted to April 08 Plenary and currently under discussion with the Sesar JU Board, on the Long Term Research aspects that SESAR should integrate too. Acare expressed its recommendations on ATM research Long Term Issues in order to grant some independency and innovation to future ATM organization.

Finally the IG took also care of the instruments established by ACARE in order to monitor current implementation. Continuous report and related recommendations were ensured on new projects set up (Agape, Mefisto, and Create) and on the TOP and IOP results. In particular in order to better analyze the final results from the TOP and issue some recommendations a small task force was called at the end of the activities (June 2008) in order to start a consistent analysis of the data.

The Institutional Group consists of:

- The Member States group, which has continued activities where in particular the national representatives were regularly updated on the progress of ACARE, the Clean Sky JTI, also in connection with the Programme Ctee.
- The Human Resources and Education sub-group   .
- The Research Infrastructure sub-group developed its recommendations on aeronautics infrastructure needs, also after linkage with ESRI.

The Member States group as well as the HR & Education and R&D Infrastructure sub-groups started in the meantime their official set-up by developing new Terms of Reference and membership.

In this context ASTERA was involved in coordination activities with AirTN, aimed at exchanging information and ensuring harmonisation of objectives. Several meetings were held for this purpose.

The Integration Team, besides coordinating the activities of the groups above, also furthered the development of next ACARE steps and decided to form a _Strategy Review Group_. The objectives of the group were two-fold: to prepare an addendum to the SRA taking into account new drivers and constraints which were not relevant or were not properly elaborated in the SRA-2 and to develop a roadmap for a completely new Vision and SRA-3.

The Strategy Review Group activity also started with the definition of the following priority areas of change to feature in Addendum:

Technical:

- Environmental Issues
- Alternative Fuels
- Security

Institutional:

- Business Models
- International Collaboration

Initial draft papers on each subject were assembled, working groups were set-up and a brainstorming consultation workshop organised with the participation of dozens of experts. This provided material for the drafting of the first iteration of the chapters of the Addendum. Then a lengthy process of refinement of each section started, and a professional editor was engaged to provide a consistent style to the document. The Addendum was presented to the ACARE Plenary for finalisation and endorsement. Final steps included the graphics design and printing. The first public dissemination of the Addendum is planned at the EU Civil Aviation Summit on the 17-18 November in Bordeaux.

The ASTERA team also dedicated a substantial amount of man-hours to the daily _administration and project management_ and the more mundane tasks such as preparation of reports, letters, meeting minutes, providing information and acting as communication hub to ACARE etc.

Position Papers: It is part of the mission of ACARE to continuously develop a thinking process on current topics which become increasingly important for the Air Transport sector.

In order to actively contribute to the ongoing debate on the future of Air Transport, a key part of the process involves the development of common, agreed position papers outlining the official opinion of ACARE with respect to certain issues which may have not been essential when the SRA-1 or SRA-2 were published, but which are becoming of crucial importance for the future.

The scope of the topics analysed by ACARE during the course of the reporting period of the ASTERA-3 project is wide and included the following examples: establishing the relative merits of emission trading schemes vs. fuel taxes, climate change and the role of aviation, the prospects of alternative fuels, investigating the possibilities offered by funding mechanisms outside the R&T Framework Programmes (e.g. the Community structural funds), general aviation, air-freight transport, inter-modal transport, research infrastructure, education, the changing business models etc.

The outcome of the debate didn't always culminate with a dedicated official position paper on each of the topics mentioned. A prioritisation of the issues was made and resources allocated to develop the selected topics in depth.

The methodology for the development of agreed positions followed a standard ACARE process, consisting in the creation of ad-hoc groups populated with representatives of all the relevant communities, on a voluntary basis. A chairman and rapporteur were appointed. The ASTERA 3 team provided the required administrative and logistics support for the management of meetings, drafting working documents etc.

Once a draft paper was available, it was circulated within the Integration Team for review and finally to the ACARE Plenary for final endorsement, before shipment to the European Commission together with an accompanying letter.

Most of the topics mentioned above have been discussed to different degrees of depth and the following three position papers have been produced:

- Position paper on the European Research Area Green Book Consultation
- Position report from the ACARE Work-Programme Advisory Group (WAG) for FP7 aeronautics Call 2
- ACARE view of possible R&T implications of Emission Trading Schemes applied to the Air Transport Sector

A new draft paper was also prepared during last two months by the WAG, updating the previous paper toward 3rd call (WP 2010) and analyzing new approach envisaged by EC (yearly budget on yearly calls.The draft position was presented for discussion on 9th July ACARE IT. An official paper should be consolidated in the second half of 2008, after the disclosure of the second calls results in order to better specify next calls contents needs and strategic lines.

The _Technical Observation Platform_ database made substantial progress through the collection of the long-awaited data for 2005 and 2006. Contrary to the other National stakeholders, who themselves introduced their data in the database template; Germany and the Netherlands provided their pre-defined format. The

data were extensive and detailed but lacked, as expected, the required linkages to the SRA terminology. The hardwiring of each project had then to be done within ASTERA with guidance by relevant PoC.

Another milestone in the development of the TOP was the mapping of the data for the Framework Programmes 6 – 3rd call. This was done jointly with the EC, who provided the electronic raw data, as well as an assessment of the relevance of each project to the various ACARE goals, challenges, HLTCs etc. The final results can be summarised as follows:

- Establishment of a database of individual RT projects and development of agreed methodologies to extract information, thus leading to:

- A partial but significant view of National aeronautics R&T programmes (public and private funding):

  For the years: For the countries:

  2004   Belgium, France, UK, Sweden, Germany

  2005 and 2006   Belgium, France, UK, Sweden, Germany, Austria and The Netherlands

- A complete view of the Community Framework Programmes 5 & 6 (public and private funding) covering the following periods:

  2000-2006 for FP5

  2003-2010 for FP6

- A mapping of the funds flowing towards each product area and each SRA goal.

As far as CIRA is concerned the work carried was essentially focused, as contractually agreed, on the continuation of the implementation monitoring of institutional issues, according to the criteria defined during the ASTERA-2 final report.

Continuous and specific assistance to the management activities carried out by the coordinator, on all the other Work Packages, was also granted, as contractually stated, supporting the technical and logistical coordination, the events organizations, the spread into the ACARE community of all relevant information, the reporting to ACARE stakeholders and the related working groups management.

In particular the implementation monitoring of institutional issues, performed under the _Institutional Observation Platform_ (IOP)-WP 120, progressed according to the stated scope and steps:

1) Monitoring and status evaluation were granted at European level for several institutional actions, out of the forty-three identified during the first phase of ASTERA 2, as worthy to be sustained for supporting the SRA goals achieving.

2) In order to get a clear picture of the Institutional Framework, enabling or blocking the implementation of the SRA, a detailed description and related assessment (according to the format sheet, criteria and metric elaborated and established in the first ASTERA 2 phase) was performed on several mechanisms related to the following institutional enablers: Airport Infrastructures, Safety and Security, Quality and Standardization, Supply chain strengthening, Education concerning the Aeronautic and Air Transport perception, etc.

3) In particular the analysis was concentrated on institutional actions deemed necessary toward forthcoming ATS urgent issues or constraints and where particular gaps were identified in the communication inside the aviation community, e.g. Airport Infrastructure vs. capacity, Safety and Security issues vs. passenger needs, Standards vs. cost efficiency and market/society enlargement, etc.

4) The same monitoring and assessment was carried out also at local National/Regional level, when requested by policies recommendations, requirements, best practices knowledge spread and

according to availability of data, often difficult for the different Member States and local competition issues.

5) The final result was the issue of a set of recommendations (according to the evaluation and assessment results, per each different monitored action) worthy to be supported by the ACARE stakeholders and institutional actors in order to strength the institutional framework and European consensus around the SRA implementation.

As far as the support activity is concerned, the following groups were assisted by the CIRA representative (groups were defined above):

- Implementation Group (IG)
- Work-programme Advisory Group (WAG)
- Research with respect to Emission Trading Schemes (RETS)

Further work carried out was focused, as contractually agreed, on:

- The completion of the implementation monitoring of institutional issues, according to the criteria defined during the ASTERA-2 final report.
- Continuous and specific assistance to the management activities carried out by the coordinator, on all the other Work Packages: supporting the technical and logistical coordination, the events organizations, the spread into the ACARE community of all relevant information, the reporting to ACARE stakeholders and the related working groups management.

In particular the Institutional Observation Platform database made some further progress and the final results can be summarised as follows:

- Development and consolidation of a database and a methodology to assess Institutional Enablers status and issues, thus leading to:
- A partial (somewhere particular and detailed on specific aspects), but significant view of the status of SRA Institutional Enablers, as elaborated in Chapter 4 of the Agenda:
  - o   The research infrastructure
  - o   Certification and qualification
  - o   Education
  - o   Supply chains
  - o   Trans-European synergy
  - o   International Collaboration (Some info recollected and distributed, though no significant progress with respect to SRA, as recalled in the forthcoming Addendum, where the same SRA suggestions were reformulated).
- An useful support for future elaboration of recommendations/suggestions, taking into account that the analysis is related to the period of performance (e.g infrastructure 2006) and meanwhile the institutional status might be changed (new policies, instruments may be occurred).
- A source of information on different institutional topics, useful for all the stakeholders not specialized in the specific mentioned areas (Infrastructures, Education, Certification, Supply Chain etc.).

As far as the support activity is concerned, the following groups were assisted by the CIRA representative. Groups and related activities were defined and detailed above. The RETS group is an ad-hoc group established for developing a position on R&T needs for reducing emissions and sustain a possible ETS scheme.

- Implementation Group (IG)
- Work-programme Advisory Group (WAG re-activation for WP 2010 and next calls advice).
- Research with respect to Emission Trading Schemes (RETS group)

3. Work Package Progress of the Period

The following sections are meant to describe in more detail the developments which took place in each work package:

ASD Activities

Work Package 110 – Technical Implementation:
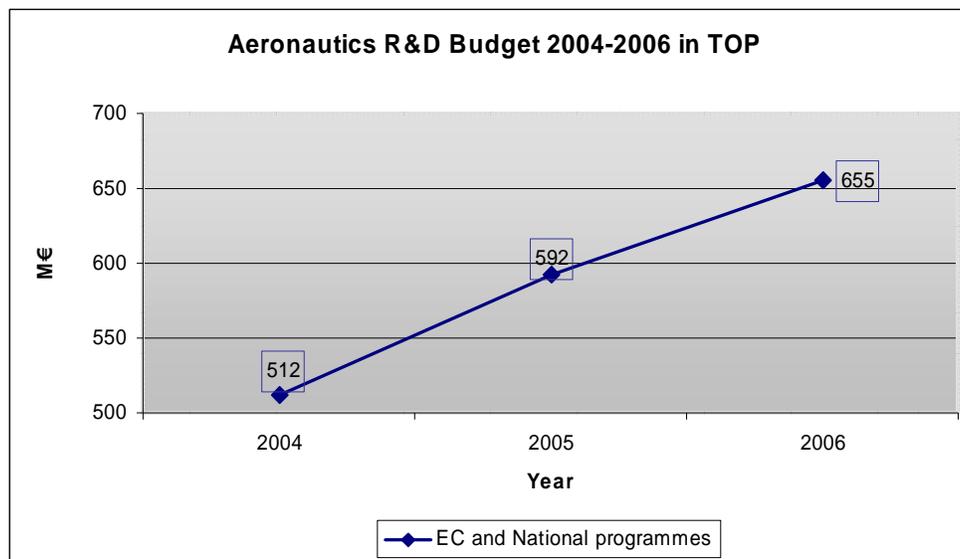
a) Objectives

The objectives of WP110 the ''Technical Observation Platform'' (TOP) consist of providing support to the monitoring of the technical elements of the Strategic Research Agenda (SRA). The specific objectives of the reporting period consisted in:

1) The collection of national R&T data 2005 and 2006 <u>for National R&T data</u> and the finalisation of the data on the 3rd call of FP6 from the European Commission.
2) The analysis of the whole data collected.
3) The update and graphics finalisation of the TOP Navigator.

b) Progress

The data was consolidated into the central TOP data repository, based on a flexible MS Access database.

The evolution of the Aeronautic R&D budget over the period 2004-2006 captured in TOP database is illustrated by the following diagram.

Aeronautics R&D Budget 2004-2006 in TOP

Year	M€
2004	512
2005	592
2006	655

Legend: EC and National programmes

In general, a positive trend has been observed, but longer series need to be studied in order to check if the increase is subject to a short-term fluctuation or if a steady grow is to be expected.

The table below summarises the total funding, in million of Euros for the years 2004 till 2006 and the yearly total for both programmes.

Origin	EC Programmes	National Programmes *	Total M€
2004	306 M€	206 M€	512
2005	370 M€	222 M€	592
2006	378 M€	277 M€	655

2004: data mapped from Belgium, France, UK, Sweden, Germany
2005 and 2006: data mapped from Belgium, France, UK, Sweden, Germany, Austria and The Netherlands

The European Commission (EC) programmes show a growing trend over the period analysed. The overall budget in 2005 and 2006 is significantly higher than in 2004. The main reasons for the variation since 2004 are the increased number of running projects and the start of some projects having a high financial weight.

For the National Programmes the budget has grown quite strongly in 2006. In 2005, a change occurred, signalled by the availability of data on the national Aeronautics R&D funding of The Netherlands and Austria. The effect of their participation in the TOP database is limited due to the strong decline on expenditure of one particular clustered project in 2005 and 2006.
The variability of the characteristics of the projects is provided in the table below.

	EC Programme			National Programmes		
	2004	2005	2006	2004	2005	2006
Count of projects	119	127	143	102	118	136
Public funded budget (in M€)	174	212	216	120	122	147
Public funded budget (in %)	57	57	57	58	55	53
Total budget (in M€)	306	370	378	206	222	277
Project average size (in M€)	4.9	5.0	5.0	2.2	2.4	3.2
Project annual average size (in M€)	1.4	1.4	1.3	0.7	0.7	1.0
Average duration projects (in years)	3,5 - 4	3,5 - 4	3,5 - 4	3 - 3,5	3 - 3,5	3 - 3,5

With an average project lifespan between 3 and 4 years, around 25-33% of the projects are new each year. Changes of direction therefore take several years to ripple through the whole programme. Therefore, no essential change is observed over the years under consideration, but rather between FP5 and FP6.

Some considerations on the comparison between FP5 and FP6 are hereafter reported:

EC funding (FP5 and FP6) vs. Budget ranges
FP6 projects appear slightly skewed towards larger budgets than in FP5, i.e. the average FP6 project is larger than the average FP5 project. This shift is particularly evident by looking at the relative number of projects within the budget range 20 – 50 M€, where FP6 has a much higher value.

EC funding (FP5 and FP6) in % vs. ACARE product areas
Both for FP5 and FP6 the bulk of the research is concentrated on the vehicle side, i.e. the airframe, engines and equipment. This is quite understandable. A slight element of differentiation is apparent in FP6 which has some resources spent in more systems oriented areas such as ATM and airport. This is in line with the fact that FP6 (contrary to FP5) could benefit from ACARE's SRA-1 input, which stressed the relevance of ATM and (to a lesser extent) of airports towards an integrated EU aeronautics research approach.

EC funding (FP5 and FP6) in % vs. ACARE Taxonomy
FP6 is more evenly spread among taxonomy areas than FP5. Large differences between the two FPs appear in the relative allocation of funds to areas such as *A/C systems and equip.* (where FP5 has much higher intensity) and *integrated design and validation* (where the opposite is true). This marks a shift from the more

traditional vehicle-related research to a more integrated, systems-oriented approach. Furthermore FP6 has some research done in the ATM and airport domain, contrary to FP5. The above observations are partially explained by considering that FP6 could benefit from the recommendations of ACARE's SRA-1 which presented a broad spectrum of technology domains to be addressed, not focusing just on the more traditional vehicle-related areas which however always tend to absorb the bulk of the R&T effort.

<u>EC funding (FP5 and FP6) in % vs. ACARE Challenges</u>
Thanks to the SRA-1 input, FP6 is more evenly spread across all challenge areas than FP5. In particular FP5 did not address the security topic at all, while some resources have been put into it in FP6, following September the 11th and the subsequent SRA-1 recommendations. Furthermore, relatively more resources are allocated in FP6 to safety and ATS efficiency, with less emphasis instead on the challenge of affordability. The very few data on Security suggest caution in drawing any conclusions.

<u>EC funding (FP5 and FP6) in % vs. ACARE Goals</u>
Here there appears to be a higher relative effort in FP6 towards the reduction in accident rates (challenge of safety) and the higher relative effort towards the airport-related goals (punctuality of flights and reduction of time in airport).
Other goals which FP6 addresses and FP5 largely ignored are: progress in green manufacturing, competitiveness of the EU industry and zero successful hijack. The overall picture reinforces the message that FP6 is a more balanced R&T programme than FP5.

<u>EC funding (FP5 and FP6) in % vs. Top Level Objectives</u>
The classification here is maybe a bit arbitrary, however both ACARE Top Level Objectives are generally addressed.

<u>R&T budget captured in the OP access database</u>
It is noteworthy to observe that the TOP, even in its current incomplete status, still captures a substantial percentage of the overall R&T funding across Europe.
The EC programmes are in-fact matched in general by a quasi equivalent amount of private / public money from the partners undertaking the research (data available to us).

An amount of 217 M€ of EC funding were allocated in 2006. This amount grows to 378 M€ worth of R&T in 2006, if we consider the co-funding..

A similar argument applies to the national programmes, where often projects are co-funded by the performers of research, i.e. private companies, research establishments, universities, airports etc. Considering the 147 M€ public funding, the mapped national-level R&T amounts to about 277 M€ in 2006.

Therefore the TOP maps a total of roughly 655 M€ of European R&T for the year 2006.

The total (public + private) R&D expenditure in civil aeronautics in Europe amounts to about 5 billion of euros per year (from ASD Facts & Figures), out of which the amount of R&T (excluding development) can be assumed to be roughly 20% i.e. about 1 billion of euros. This means that the current TOP already captures about 65% of the total EU aeronautics R&T.

Eurocontrol and NSPs (National ATM Service Providers) do not participate directly in TOP activities. The ATM-related research activities mapped in the TOP are the ones funded in the context of the Community Framework Programmes, which are separate from the ones funded by Eurocontrol. Details on Eurocontrol ATM R&D funding can be interrogated via the ARDEP website http://eurocontrol.int/ardep. Eurocontrol's budget grew to € 85 M for 2006. The R&D funding of National ATM Service providers is roughly estimated at € 70 M per year

We can therefore say that the only R&T typology which totally escapes the mapping above is the one fully privately funded, where there is no real hope to access the data anyhow for competitive reasons.

<u>Data presentation tool</u>
For ease of use of the above data, and also in the context of dissemination events, a comprehensive presentation with navigation facilities has been assembled (the TOP Navigator). In this presentation all most relevant data display charts have been prepared. This allows a user to easily navigate through the available data with a menu and buttons.

Work Package 210 – Out of the Box – Phase 2

a) Objectives

The overall objective of this study is to stimulate creative thinking and to provide directions for future radically innovative research and the associated research infrastructures as input for possible updates to the SRA and for content of the Framework Programme 7.

Building on the first phase of the Out Of The Box project funded within ASTERA 2, the goal is to carry out a second workshop aimed at translating the conceptual issues of the first workshop into research topics and the need for research infrastructures.

b) Progress

The OotB workshop has been held at the ASD premises in Brussels on April 17-18, 2007.
The assessment resulted in 6 ideas that were seen as the most promising. These ideas cover alternative propulsion, Global ATS, the cruiser/feeder type of long range transport, ground assisted take off and landing, personal air travel and advanced systems for airports.

The technology content of these ideas were then reviewed and identified. The results were provided to the European Commission so that some of the technology issues could be incorporated in the work-program of the 7th Framework program.

The consequence of looking further to the future and for more radical ideas is that some may need a long time to mature. Therefore some kind of incubator mechanism should be set up in Europe to allow the fundamental knowledge to be developed. The 7th Framework program is one of the possible mechanisms that could offer this incubator environment. It is hoped for that universities and research establishments will understand the importance of the development of radical technologies and will join forces to enable these to become mature.
As a result of the Out of the Box project, a systematic approach was developed to stimulate radical and novel ideas for air transport. Future workshops and in house research by European air transport stakeholders could lead to additional ideas that - once assessed - could provide additional opportunities to incubate and develop new ideas for the future air transport system.

The final report has been drafted. It integrates the results of the first and second workshops. The Final report is a self-standing and comprehensive document. It will provide a good basis for future ACARE developments of the SRA and also provide a good basis for negotiations with ESFRI on future research infrastructures. The EC will take care of printing out the "Out of the Box - phase 2" brochures.

Work Package Description 220 – Communication

a) Objectives

The objectives of this work package were spread among a number of different activities having the common denominator of being communication-related. These activities can be broadly split in three distinct categories associated to different levels of communication:

1) Internal within ACARE
2) External to the general public
3) Towards the international dimension

b) Progress

The objectives have been reached in the following areas:

The member's area with its document sharing tool is operational. To reduce effort not only in the development aspect but also in the learning curve of the user, the same system as the one used on the ASD

extranet was adopted, customised and provided to ACARE members. Work was done in the customisation of the tool to the ACARE needs, creation of the different areas particular to the working groups and the creation of different access levels to the corresponding users. The area is arranged by WG so that each group has its section containing only its documents. Folders for each meeting are accessible, containing all the working papers, the agendas and the associated minutes. The result is a faster and easier to use document sharing tool that will better serve the ACARE working groups and which can be extended or customised in the future.

A considerable amount of effort went on the adaptation for web use of the previously developed communication tools the SRA Navigator and the Public Awareness Tool. Both tools are online accessible from the ACARE website.

The SRA Navigator is available and can be used directly from the ACARE website without the need to be downloaded on the viewers' computer. Every function of the tool is operational as in the CD-ROM version such as the relations between the ACARE Goals, Challenges, HLTCs and Scenarios, Success Stories, the Technology Matrix etc…. The ACARE Public Awareness Tools is also available from the website. In order to keep the quality of the images and animations the tool is provided as a downloadable file.

Another achievement of the ASTERA 3 was the development of the new web site of ACARE, http://www.acare4europe.org
The major improvements this new web site brings compared to the old one are threefold;
1. Improved graphical interface
2. A new navigation concept
3. Dynamic Content Management.

Work Package 310 – Strategic thinking for SRA support

a) Objectives

The general objective is to provide support for the strategic thinking to further the development of the Strategic Research Agenda (SRA). This took the form of position papers on a range of topics.

In order to actively contribute to the ongoing debate on the future of Air Transport, a key part of the process involves the development of common, agreed position papers outlining the official opinion of ACARE with respect to certain issues which may have not been essential when the SRA-1 or SRA-2 were published, but which are becoming of crucial importance for the future.
These activities fall in two broad categories:

- Papers produced as part of the background work in support of future editions of the Strategic Research Agenda (e.g. the Addendum to the SRA).

- Papers prepared under specific request from the Commission, where ACARE is asked to advise on specific topics (e.g. the opinion on the soundness of the technical content of the Clean Sky Joint Technology Initiative).

The methodology for the development of agreed positions followed a standard ACARE process, consisting in the creation of ad-hoc groups populated with representatives of all the relevant communities, on a voluntary basis. A chairman and rapporteur were appointed. The ASTERA 3 team provided the required administrative and logistics support for the management of meetings, drafting working documents etc.

b) Progress

It is part of the mission of ACARE to continuously develop a thought process on current topics which become increasingly important for the Air Transport sector.

The strategic thinking activity is seen as background work in support of a future edition of the SRA, the preparation of which is foreseen by ACARE but will not take place in the short term.

The methodology agreed by ACARE involved the creation of ad-hoc groups within the ACARE community, populated by voluntary members. The ASTERA 3 team provided the required logistics support for the management of meetings, drafting working documents etc.

An ad-hoc working group, **the Progress Evaluation Team (PET)** was set up in late 2006 with the objective of developing a methodology for the monitoring of the status of the ACARE goals..
During the course of its four-month operational lifetime, the PET considered all of the Challenges and Goals of SRA-1 and developed a methodology for the evaluation of progress against each of them.

The objectives of this "Definition Phase" carried out by the PET were to:
* Define an outline of activity to be pursued during the "Implementation Phase" of the Progress Evaluation
* Provide guidance on the approach to be followed during the "Implementation Phase" of the exercise
* Define the datum from which the evaluation is to be carried out
* Define a consistent approach to address all types of goals
* Define the expected outcome from the "Implementation Phase"

The PET delivered a report outlining a baseline procedure for the assessment of the progress in each goal. The activity considered all of the SRA-1 Challenges and Goals and how progress against each can be evaluated. The report gives interpretations of the goals and suggests metrics such that each goal can be assessed relative to a starting point of year 2000.

In the report, the PET also suggested a method for the implementation phase of the evaluation, based on a two-stage process:

* Stage 1 to give a general overview
* Stage 2 to add detail and provide ACARE a firm basis to review "next steps"

The report proposed that the assessment be carried out by several experts in the field appropriate to the Challenge / Goal being assessed and cover the full range of ACARE Air Transport System interests.

The PET is the precursor of a longer term activity which was submitted as a proposal in the first call of FP7: the AGAPE project.

The following papers were produced:

Position paper on the European Research Area Green Book Consultation
In 2000 Commissioner Philippe Busquin developed his vision on the European Research Area (ERA), which was adopted politically by Council and Parliament as a guideline for European Research Funding. Driven by the challenges for European Aeronautics identified by the Vision 2020 and based on the long lasting experience in European Collaboration, the aeronautical sector contributed successfully to the development of ERA in particular by establishing ACARE as the first European Technology platform giving guidance to all European aeronautical research.

In April 2007, the European Commission issued a document (*GREEN PAPER – The European Research Area: New Perspectives; COM(2007) 161 final; 4/4/2007*) aimed at assessing the progress made and at discussing future orientations of the ERA.

All concerned institutions, organisations or even individuals were invited to comment or react on the Green Paper through a Web consultation process or in written form.

ACARE provided its views through a paper, aimed at maintaining aeronautics as a model case for ERA. The document is structured according to the following six major headings (which touch upon several of the topics mentioned in Section 1.2):

- An Adequate flow of competent researchers
- World-class research infrastructures
- Excellent research institutions
- Effective knowledge sharing
- Optimizing research programmes and priorities
- Wide opening of the European Research Area to the world

FP7 - 2nd Call Aeronautics – ACARE Position Paper
This paper presents the set of recommendations of ACARE with respect to the work-programme of the FP7 second call in the field of aeronautics. A dedicated group named WAG (Work programme Advisory Group) was assembled and worked in the period Feb-Sept 07 to draft the recommendations. The main topics covered are the following:
- L1-L2-L3 Projects and the need to achieve synergy among the different levels
- Networks of Excellence (NoEs) and how to adapt this instrument to the needs of the air transport sector
- International Cooperation: how to effectively organise dedicated calls on specific topics where this type of collaboration is deemed possible
- The support for a second phase of the AirTN ERA-Net
- Education issues: how to make steps towards a voluntary common accreditation system and to develop a common European strategy for constantly updating University curricula
- Technical content of the projects: the need to cover all of the ACARE High Level Target Concepts, devoting adequate attention also to operational aspects and to an outlook to the far future
- Cross-cutting activities exploring inter-modal transport

Paper on Emission Trading Scheme applied to the Air Transport Sector
The EU policy makers have initiated a process which aims at addressing the growing climate change impact through the inclusion of aviation in the EU Emissions Trading Scheme (ETS).
A dedicated task force and Terms of Reference were created in Dec 06 with the objectives to enable ACARE to better understand the different possible ET schemes and their potential impact on the Air Transport community and to provide advice on R&TD topics to the ACARE stakeholders. This involved the assessment of how ETS schemes may affect the achievement of the ACARE goals, and the identification of those research areas which would be most relevant in an ETS scenario. This exercise was particularly useful since ETS had not been considered in the scenarios of the ACARE Strategic Research Agendas.
Experts of atmospheric sciences were involved in the task force, together with the essential participation of airlines representatives.

The ACARE position paper recommendations, issued in Nov 07, focus on the need for a coherent multi-disciplinary research effort covering atmospheric sciences, aerospace sciences, economical sciences and operations.

Addendum to the Strategic Research Agenda

A dedicated Strategy Review Group was created in Sept 07 with the objective to take into account and review new drivers and topics which are now integral part of the air transport landscape but which were not relevant four years ago during the preparation of the SRA-2. In light of this, the group was tasked with updating / complementing the agenda in a line of continuity with SRA-2 on issues where this was deemed necessary due to changed circumstances.

The main topics covered in the Addendum are:

Technical
- The Environment
- Alternative Fuels
- The Security Challenge

Institutional
- Business Models
- International Collaboration
- Research Infrastructure
- Education

On each of the above subjects, ACARE has looked at the nature of the changed landscape assessing what corrective actions may be necessary to the priorities, pace or content of the SRA. The process entailed also the organisation of a workshop with experts covering the whole range of topics above. The workshop outcome generated the raw material for the creation of draft papers on each subject. The assembled document was presented to the Integration Team, commented, reviewed, approved by the Plenary and finalised in May 08.

Future outlook

ACARE adopted in 2006 a list of priority objectives to support the above roadmap, and several proposals for support actions were developed by the ASTERA Team. Some were submitted in the first call of FP7 and have already been mentioned in the mid-term report of ASTERA-3 (AGAPE, CREATE and MEFISTO). Others have been submitted in the second call of FP7 and are hereafter reported:

- MOG (My Own Green Flying Machine) – a student artistic contest on aviation and climate issues to stimulate interest in air transport.

- Green Horizons – organisation of a high-level event aimed at showing the determination of the aviation sector towards greening of air transport, highlighting the EC efforts in the Framework Programmes, associated with a flow-down of the event results into the ACARE process, as a contribution towards the SRA-3

Based on the above inputs, the Strategy Review Group (SRG) of ACARE developed a draft plan towards the preparation of a new Vision and ultimately a new SRA-3. The activities of the SRG formally ended with the SRA Addendum preparation, but the Integration Team mandated the creation of a new task force which will have to define by the end of 2008 a detailed roadmap of step-wise actions and actors for the preparation of the new Vision 2030/40/50. Among other things, the task force will have to define which actors beyond the air transport community will be needed (e.g. economists, sociologists, philosophers). The new group will have to be imaginative, exploring e.g. the social trends, the evolution of oil price, availability of energy sources, alternative modes of transport, Asian rise, infrastructures etc. The figure below illustrates the roadmap leading to the SRA-3:
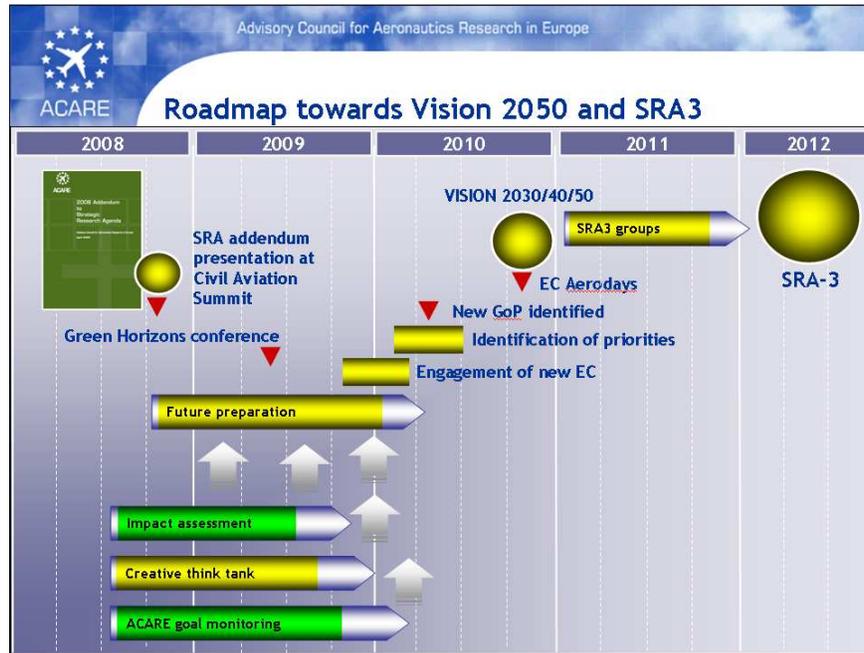
<u>FP7 – WAG position on 3rd (WP 2010) and subsequent calls-Draft Paper</u>

This draft paper presents a set of recommendations prepared by the WAG to the ACARE IG with respect to the forthcoming work-programme 2010 in the field of aeronautics.

The WAG was reactivated upon IG request to update the previous paper and express an advice on the new EC approach to calls. The WAG worked over last months June-July 08 on a tight schedule, preparing a first draft position. As anticipated this draft paper is the second issue related to the 7th Framework Programme, On July-September 07, within the framework of preparation of the 2ndCall, the ACARE issued specific recommendations (see previous presented paper FP7 - 2nd Call Aeronautics – ACARE Position Paper). Those recommendations, although established in the frame of the 2nd call are considered as applicable for next ones. Anyhow, this draft paper reassess the previous paper in order to take into account the 2008 environment, the new approach proposed by the Commission for the next calls (yearly calls with yearly budget) and to answer the concerns expressed by the EC (perception of lack of competition for Level 2 projects, due to high success rate compared to the other sectors, dramatic decrease of success rate for Level 1 projects). The draft position was presented for discussion on 9th July ACARE IT. An official paper should be consolidated in the second half of 2008, after the disclosure of the second calls results in order to better specify next calls contents needs and strategic lines.

CIRA Activities

Work Package 120 – Institutional Implementation:

a) Objectives

Main objective of this Work Package is the monitoring of the Strategic Research Agenda (SRA) institutional elements (the so-called Institutional Enablers) implementation, both at European and at local national/regional level.

In particular the aim is achieved through a dedicated mechanism, the IOP (Institutional Observation Platform), developed in ASTERA 2, providing to the ATS community, a support instrument granting a constant monitoring and assessment of useful information on the institutional issues, related to aeronautics and worthy to be sustained with specific policies by the stakeholders, mainly the institutional actors (MS, EU agencies, EC), in order to ensure the SRA goals achievement and a sustainable growth of the ATS.

Finally a set of recommendations is issued for each monitored/evaluated action in order to provide to the stakeholders useful hints and guidelines for further development and implementation of the SRA Institutional Enablers within their policies, in order to grant the right level of maturity of the institutional actions for supporting the strategic ATS roadmap and achieving the Vision objectives.

The specific objectives consisted in:

1) The completion of collection of info data on the Certification, Supply Chain and Trans-European Synergy in particular oriented to Safety, Airport Infrastructure (vs Capacity) and Innovation in Europe.
2) An analysis and assessment of the current status based on collected data (detailed for Certification oriented to Safety, more general for Airport Infrastructures and Innovation, because of the WAG supplementary activities, performed during June-July)
3) Development of a set of major recommendations to be taken into account for further progress on the implementation of the above-mentioned institutional issues. (detailed for Certification oriented to Safety, more general for Airport Infrastructures and Innovation, because of the WAG supplementary support activities, performed during June-July).

b) Progress

According to the above-mentioned specific objectives, main progresses and performed work during the ASTERA 3 period are strictly related to the continuation of the institutional implementation monitoring activities undertaken in the beginning of Astera-3 (specifically reported in the intermediate activity report), as follow up of the methodology and analysis developed under the ASTERA 2 IOP-Institutional Observation Platform contract phase.

The dedicated mechanism, the IOP (Institutional Observation Platform), designed and developed during ASTERA 2, was used as basis to perform the activity and ensure a constant monitoring and assessment of the Institutional Enablers and related actions/mechanisms, according to the Synopsis sheets, criteria and metric assessment (the IRL, Institutional Readiness Level), elaborated and proposed as tools for the data info recollection and evaluation in the final ASTERA 2 report.

In particular, detailed monitoring, status evaluation, assessment and set of recommendations are proposed at European level for several institutional actions, deemed worthy to be taken into account for the observation out of the forty-three identified as supporting the institutional framework of the Strategic Research Agenda.

This wide and complete analysis is achieved, as stated above, by mean of the ASTs (Action Synopsis Tables) recollecting main data info on the mapped mechanisms, the related goals with respect to the SRA implementation, the matrix for the evaluation (Goals vs Institutional Readiness Level) and the final suggestions according to the evaluation results.

In particular a single AST is dedicated to each specific monitored action, providing:

- A full synopsis of the present situation: SRAs Background, current institutional framework at EU and possibly MS level, major actions going-on in the European context.
- Useful links to documentation, references, web info and institutional players
- Main goals of the action according to the SRA and the final general aim within the overall strategy.
- An evaluation with respect to the goals ensured by the Evaluation Matrix (Goals vs IRL)
- The current status with respect to the elaborated metric IRL (Institutional Readiness Level)
- A set of recommendations in order to achieve further improvements and upper institutional maturity levels in the SRA implementation context

During the IOP set up phase, developed under the ASTERA 2 contract, ten Institutional Enablers were identified as worthy to be supported by the stakeholders in order to improve the SRA implementation. In particular, as also reported in the final ASTERA 2 report (ref: *ASTERA2-WP120 Institutional Implementation Monitoring Final report*) forty-three related actions and mechanisms were listed as possible targets for the monitoring action, being the core instruments supporting the Institutional Enablers.

The complete list is also available per IE category in the above mentioned final report. The ASTERA 3 institutional monitoring phase was built upon this list and, as anticipated, was intended to extend the observation and assessment to relevant actions out of the forty-three, providing constant and continuous update on urgent institutional issues, according to the current scenario and also on the stakeholder requests, based on particular needs or framework.

Main criteria driving the observation and the monitored mechanisms selection were based on the current needs or urgency from the Air Transport Sector and related economical and societal scenarios. Therefore the analysis was concentrated on institutional actions deemed necessary toward forthcoming ATS critical issues or constraints and where particular gaps were identified in the communication inside the aviation community, e.g. Airport Infrastructure vs. capacity, Safety and Security issues vs. passenger needs, Standards vs. cost efficiency and market/society enlargement, etc.

To get a clear picture of the Institutional Framework, enabling or blocking the implementation of current strategic ACARE issues, already stated in the SRA, but of more and more urgency for a policy and institutional support action, a detailed description and related assessment, via the ASTs, was ensured on several mechanisms out of the forty three in the ASTERA2 base list, in particular:

IE 1- Education with respect to Long Term Innovative Research (LTIR) and the Aeronautic and Air Transport Image and Perception, in particular the mechanisms related to the organization via experts from Universities and Res for LTIR coordination (linked to the incubation part of innovative ideas in possible connection with a full think-tank/incubator mechanism for Aeronautic) and the award for excellence in education (often linked to multicultural team experiences supported by the industry exigencies and needs). The choices are covering actions 1.3.2, 1.4.5 and partly 1.5.1 of the table elaborated during the Astera 2 phase.

IE 4 Regulation-Qualification and Certification with respect to the urgency to establish an European based control, via specific authorities, for Safety and Security. Moreover consideration on Quality and Standard are taken into account as major enablers for improving the full European integration and also stimulating the international cooperation within the ATS and the new global system approach. Also environmental issues with respect to new quality and standard required are considered (REACH regulation and new life-cycle approach to the products). The choices are covering actions 4.1.1, 4.1.2 and partly 4.1.3, 4.1.4, 4.2.1, 4.2.2. of the table elaborated during the Astera 2 phase.

IE 5 Technology and Product Supply Chain with respect to the strengthening of a global and common approach to the long term strategies and innovation in Europe. Breakthrough ideas should foster and be the backbone of the future European strategies and leadership according to the Lisbon objective, whilst the need of strong and well integrated processes to generate new ideas, incubate and let them healthy growing inside the European RTD supply chain should be a target of the institutional framework in order to really exploiting the European Research Area innovation potential. Institutional and policies support should be granted in order to enable a strong source of innovation and an high level of integration of this in the European technological and product supply chain. Introduction of mechanisms like the US DARPA supporting new technological concepts and their integration in the supply chain is analyzed in the European context. Aerospace technology incubation, watch and think-tank actions are considered as valuable way to implement this strategy. The choices are covering actions 5.2.1, 5.2.2 and 5.2.3 of the table elaborated during the Astera 2 phase, also making full use of the results of some studies performed under that phase, analyzing the possibility of integration in the current European RTD strategy of such instruments.

IE 8 Air Transport System: Management and Infrastructure with respect to the urgent need of ATS infrastructure deployment in Europe, in order to afford the current growth of air traffic and the consequent issues of capacity and congestion, blocking possible steps forward and avoiding to reach the SRA objective of time efficiency across Europe. Sustainable growth ensuring safety and efficiency, connectivity as main economic basis for European integration, management and infrastructure capacity, job and business support, gap between capacity and demand and the consequent congestion, also creating enormous environmental and safety costs, are the institutional factors considered in the analysis. The choice is covering actions 8.2.1 of the table elaborated during the Astera 2 phase.

Clearly, when requested by policies recommendations, requirements, best practices knowledge spread over Europe but moreover when useful data were available and accesible, the abovementioned monitoring and assessment was carried out also at local National/Regional level. Indeed structuring the process at national and regional level is becoming difficult and a quite huge effort because of the thousand initiatives tackled by the different members states both at national and regional level. These are much more oriented to local competition issues, market needs and own interests for economical strategies and positioning in the European and also International scenario (e.g. bilateral collaboration with third countries different for each of the 27 MS).

In any case links and exchange of info data were ensured with some MS and also within the dedicated trans-national action ERA-Net supported at MS level for the Air Transport Sector, the AIR-TN. In particular the performed analysis are taking into account possible inputs coming from Air-TN partners. At this purpose an

ad-hoc presentation to the AIR-TN Management Group was held in June (12th June 2007 CDTI Madrid) in order to present the IOP mechanism and first results.

Links, reporting and info exchanges are also ensured with other RTD instruments running at European level (E.g. SESAR, JTI, etc.) in order to harmonize as much as possible the way to define and enabling the Institutional SRA Frame, moreover regarding governances, institutional relationships and therefore policy implementations.

Final considerations are issued, as before described, through the Action Synopsis Tables with a set of recommendations (according to the evaluation and assessment performed on each different monitored action) worthy to be supported by the ACARE stakeholders and institutional actors in order to strength the institutional framework and European consensus around the SRA implementation.

For detailed information on the IOP mechanism and way to work (Institutional Enablers and related 43 identified actions/mechanisms, IRL-Institutional Readiness Level, ATS-Action Synopsis Tables, Evaluation Matrices-Goals vs IRL) a general description is made available and a detailed scope and way of functioning is described in the Astera2 IOP final report. Summarizing, single AST- Action Synopsis Tables are dedicated to specific monitored action, providing:

- Synopsis of current situation: SRAs Background, current Institutional Framework (EU/MS level), major actions undertaken in the European context.
- Useful links to documentation, references, web info and institutional players/main actors.
- Main action goals, according to the SRA, and the action 'General Aim' within the overall strategy.
- An evaluation with respect to the goals ensured by the Evaluation Matrix (Goals vs IRL)
- The current status with respect to the elaborated metric IRL (Institutional Readiness Level)
- A set of recommendations in order to achieve further improvements and increase the institutional maturity levels in the SRA implementation context.

Further main performed activities, might be summarized according to the following points:

- Monitoring and status evaluation were granted at European level for some institutional actions worthy to be sustained for supporting the SRA goals achieving.
- The analysis focused on institutional actions deemed necessary toward forthcoming ATS urgent issues or constraints and where particular gaps were identified in the communication inside the aviation community.
- Three major issues were analyzed:
    o **Certification aspects**, in particular **oriented to the Safety Objective** vs. stakeholder (technology development) and passenger needs. Environmental and Security related aspects were also considered as part of the Certification scope. Certification/Standards improvements were considered in order to support both scopes: society and cost efficiency / time to market needs.
    o New policies for **ATM improvement** (SESII package) and achievement of EU Single Sky, in particular the **Airport Infrastructure** vs. the ground capacity problem (Airport Package). The new European Observatory on Airport Capacity was highlighted as last major Eu institutional achievement.
    o **Long term and Innovation aspects** with respect to the European status (Innovation and Technology mechanisms needs. e.g. Technology Watches, Think-Tank/Incubator, Accelerators, etc.) and major related actions (ERC, EIT, etc.) in order to strength the Eu supply chain.

During the first phase a complete analysis was performed on the Education Institutional Enabler with respect to the "Aeronautic and Air Transport Image and Perception". A workshop was organized on the subject by the ACARE Human Resources Group in order to discuss the results.

Accordingly, the same approach was followed: a complete analysis was performed on the Certification Institutional topics, currently considered as an issue to be clarified and solved, as highlighted also in the elaborated Addendum.

After a preliminary analysis/discussion during ACARE IG and IT in May, a full day workshop was hosted by EASA on June 27th in order to present, to the ACARE/Astera IOP, the European specific strategy and policies implementation with respect to major institutional aspects related to the Certification issue. In particular info

data were recollected according to the five major institutional goals identified as fundamental for a comprehensive evaluation of the status with respect to SRA (Evaluation Matrix: Goals vs IRL):

- *R&D support to certification.*
- *The Safety Goal Implementation.*
- *Anticipation: Regulatory/Certification development parallel to Technology Development.*
- *ATS as system of systems: the global certification approach (systems interfaces).*
- *Eu sustainability and competitiveness.*

General information and analysis (less detailed because of the WAG supplementary support activities, performed during June-July) were recollected also on:

- The SESII Package policy (a dedicated debate session was organized during 12-06-08 Acare IG with the kind presentation by Mrs Doris Schroecker from DG TREN-Unit F2), in particular oriented to the new Airport Package policy for ground infrastructures, in order to afford the capacity crunch. Indeed an urgent need of ATS infrastructure deployment is arising over Europe, in order to sustain the current growth of air traffic and the consequent issues of capacity and congestion, blocking possible steps forward and avoiding to reach the SRA objective of time efficiency across Europe. Institutional issues considered in the analysis are:
  - Sustainable growth ensuring safety and efficiency.
  - Connectivity as main economic basis for European integration management
  - Infrastructure capacity
  - Job and business support
  - Gap between capacity/demand with the consequent congestion, generating also enormous environmental and safety costs.

  The new European Observatory on Airport Capacity in this case is highlighted as a major European institutional achievement.
- Long term and Innovation actions (ERC, EIT, Technology Mechanisms, etc.), also recollecting and summarizing detailed info elaborated during the ASTERA-2 studies on the topics.

General info with respect to all the other Institutional Enablers were spread, for stimulating and starting discussions, over the ACARE groups, in particular the IG, charged to review the implementation issues, also related to the institutional side (e.g. with respect to the International Cooperation the Transatlantic Aviation Issues Conference, debating major institutional issues related to US-EU dialogue, was announced and reported to the group).

The abovementioned monitoring and assessment was carried out also at local (National/Regional) level or on other sectors than Aeronautics (e.g. Space), whenever useful data were available and more easily accessible or whenever requested by policies recommendations requirements (e.g. National Center of competences) or useful as best practices for European knowledge (e.g. adoption at European level of policy schemes well working at national/regional or other sector level).

Moreover links and exchange of info were ensured with other institutional initiatives and instruments at European and MS level, in particular within the dedicated trans-national ERA-Net action, the AIR-TN, supported by MS for improving coordination and harmonization at Eu level in the Air Transport Sector. Info data collection, networks links and performed analysis were also taking into account possible inputs coming from Air-TN partners and vice versa.

For example a mutual exchange of info for organization and results management was ensured with the Air-TN Fora organization, of which CIRA is also responsible on behalf of the Italian Ministry, granting a large synergy and effective harmonization, spreading info through all ACARE stakeholders:

- Single European Sky, Air-TN Forum *January 31st 2007 EUROCONTROL, Bretigny France* http://www.airtn.eu/eCache/AIR/5/029.html
- The Green Air Transport System, Air-TN Forum *October 31st 2007, Bonn, Hotel Hilton* http://www.airtn.eu/eCache/AIR/7/495.html
- Unmanned Arial Systems & General Aviation - *February 6th 2009, Capua, CIRA* http://www.airtn.eu/eCache/AIR/10/137.html

Finally links, reporting and info exchanges were also ensured with other RTD instruments running at European level (E.g. SESAR, JTI/Clean Sky, etc.) through a constant reporting/monitoring into the ACARE IG. Indeed, as mentioned above, such instruments are the direct mean for the SRA Implementation strategy, defining a good policy implementation and support to the institutional framework, through the maturity and efficiency of their governance systems.

Final results achieved in the Work Package, along the whole ASTERA 2/3 projects, might be summarized as follow:

- Development and consolidation of an info database (Action Synopsis Tables) and a methodology (SRA goals vs Institutional Readiness Level) to assess Institutional Enablers status and issues.

- Availability of significant (though limited and detailed to specific dedicated aspects, due to the broadness of institutional aspects) status evaluation of particular topics/actions related to SRA Institutional Enablers, as elaborated in Chapter 4 of the Agenda:

    a. The research infrastructure

    b. Certification and qualification

    c. Education

    d. Supply chains

    e. Trans-European synergy

    f. International Collaboration

- Availability of a useful set of reviewed recommendations/suggestions on topics related to the abovementioned SRA Institutional Enablers, in order to further improve mechanisms and actions to step forward into maturity of institutional issues related to aeronautics.

    These suggestions might be useful for future vision and strategy development (Mid-term review, new Vision, policy development, new project assessment as MEFISTO, etc.) Indeed some of them where already used to support the strategic thinking of the WAG (elaborating recommendations for future WP Calls) and of the Strategy Group in the Addendum:
    o Suggestions on Infrastructures, like the need of an Era-net for harmonization.
    o Suggestions on Education for an Accreditation system.
    o Suggestions on need of a renewed Energy policy and alternative fuels, due to oil crisis and climate change.
    Indeed since the beginning in the ASTERA 2 project, the IOP framework was claiming for two new IE to be considered: IE-8 AMI (ATS Management and Infrastructure), taking into account ground and air capacity constraints and IE9-Energy/Fuel Management, taking into account long term strategies for new energy/propulsion concepts, in order to get rid of carbon dependency, and short term strategies, as alternative fuels, for facing oil crisis.

In any case we should take also into account the fast changes nowadays occurring, so the analysis are related to the period of performance (e.g Infrastructure 2006) and meanwhile the institutional status might be developed in a worst or better condition (new policies, instruments, technology may be occurred radically changing the scenario).