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Abstract

The goal of this deliverable is to provide an overview to the Beneficiaries, the Partners, and the ESRs of the different governing bodies that play a role in the ATLAS project. The deliverable summarizes the different contact persons, and how responsibilities and duties are shared amongst the beneficiaries. The deliverable further describes the evaluation criteria of ESRs and the activities related to training that are planned. The deliverable resumes part of the information of the Consortium Agreement, namely the part regarding the managing structure and the decision-making process. Note that training activities are described in greater depth in deliverable **D6.1** and are therefore not elaborated in this deliverable.

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List of Acronyms

BR	Beneficiary Representative
CA	Consortium Agreedment
CAB	Clinical Advisory Board
CoE	Centre of Excellence
ESR	Early Stage Researcher
GA	General Assembly
LTA	Local Training Activities
NTA	Network-wide Training Activities
SAB	Industrial Advisory Board
IPR	Intellectual Property Rights
PC	Project Coordinator
PCDP	Personal Carrier Development Plan
PM	Project Manager
PMS	Project Management Staff
PR	Partner Representative
RTA	Researchers Training Activities
SAB	Scientific Advisory Board
SB	Supervisory Board
WPL	Work Package Leader

1 Management of the *ATLAS* project

1.1 Overview of the governing structure of the *ATLAS* project

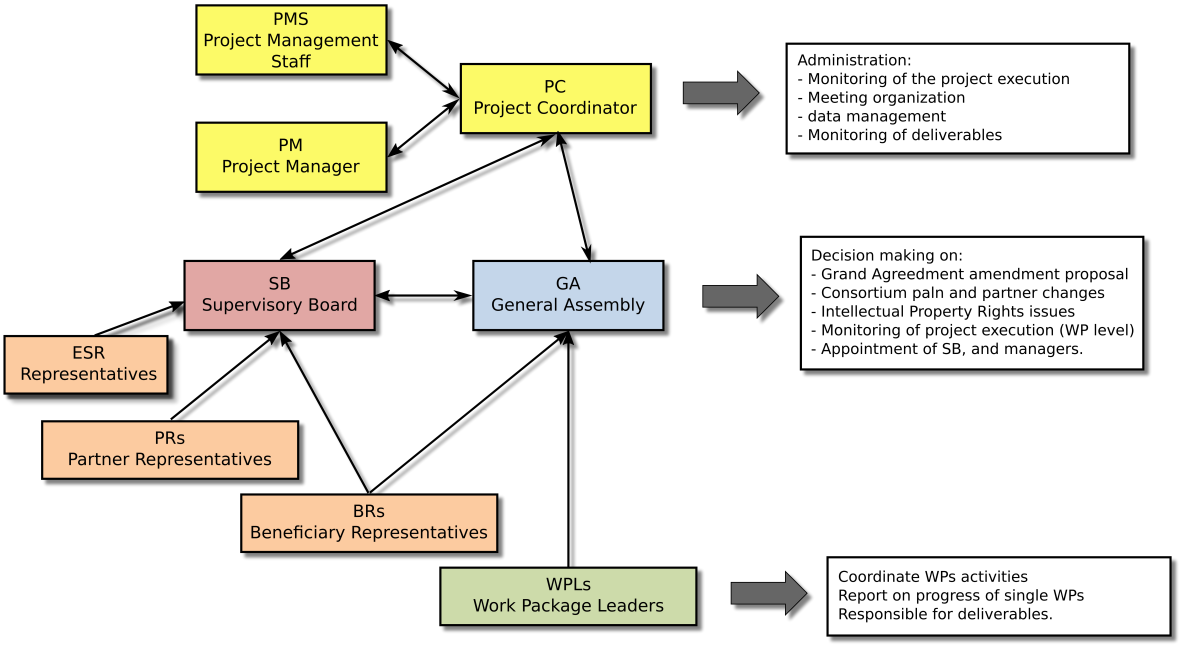


Figure 1.1: Organigram of the *ATLAS* management structure

The *ATLAS* management is based on an integrated structure as depicted in Fig.1.1. It is composed out of different governing bodies that each address particular focused tasks. The structure has been designed to ensure smooth interaction between parties and, at the same time, to allow a fast response to opportunities or issues that may arise.

The general management and decision-making takes place at the level of the Supervisory Board (SB). This board assesses the operational performance of the ESRs and the effectiveness of the collaboration between beneficiaries and partners on research and training aspects. The board evaluates new opportunities or imminent risks and proposes actions to take advantages of opportunities that arise or to mitigate problems that may occur. The board is responsible for the overall strategy and will see how it can help support the exploitation of project results. The SB further checks Intellectual Property Rights (IPR) and manages the finances. Each beneficiary and each partner organisation have a representative, the Beneficiary Representative (BR) and the Partner Representative (PR), respectively, who will seat in the SB.

The overall financial management is led by the Project Coordinator (PC) with support of the accounting and administrative staff (Project Management Staff (PMS)) of the coordinating institution. Note that decision with respect to the envisioned financial strategy, especially in terms of distribution of management and training costs, together with rules concerning the project management, the management of IP and ownership of results has already been defined in the Consortium Agreedment (CA).

In line with Fig.1.1 the Joint Governing Structure of *ATLAS* is composed out of:

- the General Assembly (GA),
- the Project Coordinator,
- the Work Package Leaders,
- the Supervisory Board members, and
- the representatives of the ESRs.

The GA is the ultimate decision making body of the consortium. It acts in accordance to the rules specified in Section 1.5. The Project Coordinator is the link between the Funding Authority, the consortium, the GA and SB. *ATLAS* management includes a number of managers, that are responsible for a specific area of interest, and a reference point for ESRs who want to address issues in such specific area.

1.2 Description and composition of bodies

1.2.1 The representative bodies

The *ATLAS* project management involves representatives of beneficiaries that participate to the SB and the GA. The representatives to the different bodies are the *Beneficiary Representatives*, and *Partner Representatives* as listed in Table 1.1 and in Table 1.2, respectively. In addition, also the ESRs will be represented by one or more representatives that will be elected by the ESRs once all the recruitment activities are finalised.

Table 1.1: Beneficiary Representatives

TUDELFT	J.Dankelman
SSSA	A. Menciassi
UNISTRA	B. Rosa
UPC	A. Casals
KULEUVEN	E. Vander Poorten
UNIVR	P. Fiorini
POLIMI	E. De Momi

Table 1.2: Partner Representatives

IRCAD	Silvana Perretta
OLV Robotic Surgery Institute	Alexandre Mottrie
VHIR	Antonio Gil-Moreno
ISTITUTO EUROPEO DI ONCOLOGIA SRL	Ottavio De Cobelli
INRIA	Christian Duriez
IIT	Leonardo De Mattos
Imperial	Guang-Zhong
DEAM	Jules Scheltes
FBGS International	Johan Vlekken
EYE-TECH srl	Monica Vatteroni
CAMELOT	Matteo Santoro
OROBIX	Luca Antiga
UNIPI- EndoCas	Mauro Ferrari
AM2M	Anna Szkulmowska

1.2.2 Work Package Leaders and Managers

The everyday management and monitoring is assigned to specific persons from the Beneficiary Institutions as listed in the GA (see Section 1.3). Work Package Leaders are in charge of monitoring the progress of the respective WPs, including the drafting and timely delivery of Deliverables and Milestones. The appointed Work Package Leaders (WPLs) are reported in Table 1.3. Specific aspects of the projects that are horizontal to all the scientific, management, innovation, and dissemination activities are monitored and steered by a group of experts. ESRs can refer to managers for issues that falls in their specific field of interest. Managers are chosen amongst the consortium. Appointed Managers have a proven knowledge of the activities that they are called to enforce.

ATLAS foresees the following managers and specific roles:

Training Manager The training manager verifies the training program at the large and of each single ESR in particular.

Scientific Manager The scientific manager provides guidance regarding the best practices in scientific research, *e.g.* conducting reviews, FAIR data management principles and so on.

Exploitation Manager The exploitation manager helps the consortium and the ESRs in identifying opportunities to translate the achieved results toward industry. He/She gives advice to ESRss for which these activities is relevant.

Clinical Manager The clinical manager provides the necessary information or refernces to be able to translate prototypes for later use in clinical practice.

Communication Manager The communication manager is in charge of organising dissemination activities directed at the whole consortium at large, but is also responsible for managing media coverage, social media, *etc.*

Publication Manager The publication manager is engaged in scientific dissemination for the whole consortium. He/she proposes relevant conferences and workshops ESR could be participating to in order to increase the scientific impact of the work conducted by all ESRs.

IPR Manager The IPR manager gives advice and guidance regarding the Intellectual Property Rights, in particular regarding potential intellectual property that follow from the work by ESRs and that may require protection.

Ethics Manager The ethics manager forms the interface between medical partners and researchers. He/she can give advice on how to approach validation experiments. He/she will be able to inform when research requires considerations from an ethics viewpoint.

Gender Issue Manager The gender issues manager verifies that no discrimination based on gender takes place during recruitment, but also afterwards during the project implementation. All participants in the training network can approach the gender issue manager who will ensure confidential treatment of all issues. In the case that inappropriate behaviour takes place, the gender issue manager will consult with the person who reported the issue to determine how to take action. This may be reporting to the GA. This board could e.g. start an investigation in order to take appropriate actions to address the concerns.

Project Manager assists the PC in the everyday management of the project, the management of the website, the review of deliverables *etc.*

The appointed managers are listed in Table 1.4. Managers are chosen based on their established prior experience. Lastly, the project is coordinated by the Project Coordinator (see Table 1.5) who is responsible to bridge the gap between the different assemblies, the WPLs. He is also the main contact point for communication with the Funding Agency.

Table 1.3: Work Package Leaders

WP1 Leader	J.Dankelman	Actuation Technology for Soft Autonomous Robots
WP2 Leader	A. Menciassi	Intra-operative Intraluminal Sensing
WP3 Leader	E. De Momi	Modelling and Reconstruction
WP4 Leader	D. Dall'Alba	Autonomous Intraluminal Navigation and Control
WP5 Leader	G. Borghesan	Hardware and Software Integration
WP6 Leader	J. Vander Sloten	Recruitment and Training
WP7 Leader	A. Casals	Communication, Dissemination and Translation
WP8 Leader	E. Vander Poorten	Management
WP9 Leader	P. Fiorini	Ethics requirements
WP10 Leader	M. Gora	Clinical Specification, Verification & Validation

Table 1.4: Managers

Training Manager	E. De Momi
Scientific Manager	B. Rosa
Exploitation Manager	P. Fiorini
Clinical Manager	S. Tognarelli
Communication Manager	A. Casals
Publication Manager	G. Ferrigno
IPR Manager	F. Nageotte
Ethics Manager	M. Gora
Gender Issues	A. Menciassi
Project Manager	G. Borghesan

Table 1.5: The Project Coordinator

Project Coordinator	E. Vander Poorten

1.3 The General Assembly

The General Assembly (GA) is the main decision body of the *ATLAS* project. The GA meets at a least once every 12 months, or if there is a request for it (see Section 1.5). The main task of the GA is to monitor and verify the project implementation and take actions if the implementation deviates from the plan that has been detailed in the Grant Agreement. This includes an evaluation of the performance of the Early Stage Researcher or of the quality and timing of the proposed training activities. The GA is responsible for appointing the SB, the managers, and the WPLs. In case some of the above-mentioned roles need to be re-appointed, the GA will evaluate the new candidatures. The GA is also responsible to design, formulate or implement changes in the Grant Agreement that may arise upon request of the Funding Agency, requests for changes that may originate from within the consortium and that could be posed for approval to the funding agency or to investigate possible changes to the composition of the consortium. If such requests will be voted and agreed upon, the PC shall enquire the Funding Agency officer to evaluate the proposed amendment. Lastly, the GA is responsible to evaluate and search for solutions, or put on the agenda issues that might arise within the consortium, for example regarding ownership of results, issues related to IPR. The General Assembly is chaired by the PC, and consists of the BRs, which have voting rights. In addition, the WPLs and the Project Manager (PM) who supports the PC, have

the right to attend and raise issues, but they do not have voting rights in this function.

Table 1.6: General Assembly Composition and roles

chaired by	the Project Coordinator
voting rights	the Beneficiary Representatives
can be attended by	the Project Manager the Work Package Leaders

1.4 The Boards

In the following the constitution and tasks of some *ATLAS* boards is explained.

1.4.1 The Supervisory Board

The training activities organised by the *ATLAS* project are coordinated by the Supervisory Board (SB), which oversees the quality of the programme and ensures an adequate balance between scientific, technological, and transferable skills training. The SB is composed by the BRs, the PRs and the representative(s) of the ESRs. The SB can also include external experts. The composition of the SB is listed in Table 1.7. The SB includes the PC, and can include the WPLs, the PM if they are present (with no voting rights, unless they are BRs). The SB is chaired by the PC. The SB is responsible, for example, for the following:

- approving, for each ESR, the Personal Carrier Development Plan (PCDP),
- reviewing training and networking activities for the next year,
- monitoring the individual projects results,
- establishing the communication and exchange of best practice among partners and ESRs.

The SB will meet at the kick-off meeting to schedule the overall training programme. Then, the SB will meet every 12 months, with an extra meeting to evaluate the progress of the PCDPs.

Table 1.7: Supervisory Board Composition and roles

chaired by	the Project Coordinator
voting rightss	the Beneficiary Representatives the Partner Representatives
can be attended by	the Project Manager the Work Package Leaders external experts

1.4.2 Advisory Boards

ATLAS considers three advisory boards: the Scientific Advisory Board (SAB), an Industrial Advisory Board (SAB) and a Clinical Advisory Board (CAB). The first one, composed of the BRs, will advise the ESRs on scientific and technical matters, by communication with the SB or directly to the ESRs. The SAB will follow the industrial training and personal skills achievement of the ESRs and the development of the exploitation plans. The SAB is composed of the representatives of the industrial Partner Organizations plus eventual experts appointed by the GA. The CAB is composed of the representatives of the clinical partners and surgical training centres. Note that these boards will all be established during the kick-off meeting.

1.5 Boards and Assemblies rules

All the rules e.g. regarding the voting process, the timing, the organisation of an assembly have been specified in the CA that is signed by all the beneficiaries. Section 6.2 of the CA covers most of the relevant rules. In the following a short

summary is provided.

Representation in meetings Any member should be present at any meeting, or indicate a substitute to attend and vote.

Preparation of meetings The General Assembly and the Supervisory Board meet once a year. An extraordinary meeting of the GA can be requested at any time upon written request of the SB or of $1/3$ of the members of the GA. Ordinary and extraordinary meetings must be notified by the PC at least 45 and 15 calendar days before, respectively. An agenda will be sent ahead of time. It will be sent to all the participants. All members will receive minutes of the meeting afterwards.

How to add items to the agenda Any member may add items to the agenda, by written notification before the meeting, or if all the members agree unanimously, during the meeting.

Decision making Decisions are taken by voting. A decision is considered accepted if there is no objection on the truthfulness of the circulated minutes, ahead of the prescribed time.

Voting, quorum and veto rights A minimum of $2/3$ is necessary to discuss an item. Decisions are normally taken with a majority of $2/3$ of votes. Veto rights can be exercised in particular circumstances.

2 Training activities

2.1 Organization of training activities

Each ESR is assigned to a specific research project that captures the core activity related to his/her scientific research. In addition the ESRs will be exposed to different forms of training, namely:

Focused training on the topic of the research project;

Intersectoral training on other scientific relevant domains. This will allow him/her to be able to work and collaborate in team across different domains;

Transferable skills training which will help the ESR to work efficiently. These skills training programs aim to strengthen the ability to review the state of art, engage in team-working, improve communication with peers and clinicians, help understanding and evaluating the feasibility of requests made by clinicians to name a few;

Secondments will allow ESRs to get acquainted and proficient in collaborating with companies and/or medical centres.

These activities are overviewed by the SB and the other relevant advisory boards. The training activities are organised in two modalities: Local Training Activitiess (LTAs), and Network-wide Training Activitiess (NTAs). Moreover, ESRs will organise, in collaboration with supervisors and sometime partners, the Researchers Training Activities (RTA). In addition, each beneficiary has its own doctoral schools that offer general courses on academic writing, writing text towards the broad public, open access, proposal writing, effective presentations, project management, entrepreneurship, *etc.* In addition, beneficiaries will take on the role as a Centre of Excellence (CoE) addressing specific training objectives and questions. The CoE's and associated expertises are summarized in Table 2.1. Each CoE is in charge to organise courses that fall within their field of expertise.

Table 2.1: Centres of Excellence

CoE	Excellence	Base for excellence
UNISTRA	Clinical needs and translation.	Clinical translation of Axilum Robotics and STRAS multi-arm robotic colonoscope.
TUDELFT	Soft robot actuation	Pioneering many different miniature actuation mechanisms for medical devices.
SSSA	Intra-operative sensing	Integrator of sensors, circuits and mechanisms in biomechatronic medical devices.
POLIMI	Modelling and reconstruction	Expert in model-based control for assistive technology.
KUL	System integration	Experienced developer of robotics middleware for robotics.
UNIVR	Dissemination & exploitation	Founder of int. workshops and summer schools on surgical robotics.
UPC	Human factors & robo-ethics	Track record in GUI development, evaluating ethic aspects in the EuRoSurge project.

The following sections contain the descriptions of the different training activities that were already described in the *ATLAS* training guide (and are detailed further in deliverable **D6.1**).

2.2 Local Training Activities

The following sections include short descriptions of the LTA. Several of these activities are organised yearly, as part of the doctoral schools of each university.

LTA1: Management and Policy Aspects of Technology in Healthcare (KUL, yearly) After this course, the student will be able to understand, to assess and to contribute to policy and management issues concerning healthcare technology. The student will understand the challenges (and supporting decision techniques) for a biomedical/clinical engineer in a hospital context. The student will be able to explain the principles of HTA and will be able to critically read HTA reports. The course is taught by L. Pintelon.

LTA2: Summer School on Cognitive Surgical Robotics (UNIVR, biannual) The main objective of the Summer School on Control of Surgical Robots (COSUR) is to introduce the multidisciplinary research field of surgical robotics, with particular focus on the control algorithms used in robotic surgery and the impact of cognition in directing the control. COSUR offers lectures, hands-on laboratory experience, and opportunity for informal interaction with clinicians and leading experts from academia and industry. The school will go beyond the current approach of doctoral schools and will give trainees an in depth understanding of cognition and control in robotic surgery.

LTA3: Ethics in Research (POLIMI, yearly) This course, taught by Prof. A. Aliverti, aims to make participants: a) fully aware on how scientific and technological research have ethical implications; b) to identify ethical issues in specific research cases and procedures; c) to understand how the adherence to ethics standards is essential not only for respecting ethical values and fundamental rights, but also to increase quality and likely impact of research.

LTA4: Microrobotics for surgery, innovative actuation technology (SSSA, yearly) The course consists out of two modules:

Microrobotics for surgery: The main objective of the course is to provide students design rules for the realization of micro-robots for medical applications. The main scaling laws from macro-domain to micro/nano domains will be illustrated, together with the main components of micro-mechatronic machines. Each topic covered during the course will be supported by specific examples from the medical sector.
Innovative Actuation Technology: Introduction to the use of novel materials and novel technologies for the development of not conventional actuators. Smart materials (e.g. piezoelectric actuators, shape memory alloys, etc.) and enabling fabrication and integration technologies will be the main topics of the course.

LTA5: Business Engineering and Surgical Technologies (UNISTRA-IRCAD, yearly) BEST is a one-week course led by Silvana Perretta from IRCAD. Students first have to follow a free online course (http://www.best-innovation.eu/on-line-course/), and based on this they can be selected for the onsite course : http://www.best-innovation.eu/our-mission/

The onsite course mixes students and researchers from different backgrounds (business, engineering, medicine). They form teams and get one week onsite training on different aspects (hands-on MIS as well as business for startups and maturation, for instance), and they also have brainstorming sessions to create new ideas and projects. The onsite course in Strasbourg happens every year around the end of August.

LTA6: Bio-Inspired Design (TU Delft, yearly) The course Bio-Inspired Design boosts creativity in mechanical design by showing a large range of clever solutions from nature and their applications in bio-inspired instruments and machines, and by combining this overview with extensive training in the ACRREx design methodology that was developed by Prof. Breedveld to enhance creativity in the design of novel mechanical devices. Examples of bio-inspired topics are: strength at low weight, stiffness with soft structures, robustness and redundancy, storing energy in springs, energetically efficient muscle configurations, biological vibration systems, clamping with hands, claws, suction, glue, dry- and wet adhesion, biological walking, swimming, crawling and flying, locomotion of micro- and single-celled-organisms, and evolution and engineering of living systems. The course Bio-Inspired Design is given once per year in a series of lectures and training sessions from September till December.

LTA7: Medical Robotics (UPC, yearly) This course taught by A. Casals covers classes to help participants studying the requirements of robotics, acquire knowledge regarding mechanics, user aspects and explains the different paradigms of human-robot-interaction. The course covers all aspects up to intelligent shared control.

2.3 Network-wide Training Activities

Network wide activities are opened to all the ESRs and in some cases to external PhDs. Each course is given periodically to give the opportunity to each ESR to participate at least once. The following schools are organised by the consortium.

NTA1: Medical Device Development and Translation One-week course on workflow analysis, clinical need assessment, device development controls, tech transfer, good manufacturing and clinical practices, in close collaboration with IRCAD.

Organisers: UNISTRA, UPC

NTA2: Sensing and actuation for soft robotics Three-day course introducing methods for designing, manufacturing and integrating sensing and actuation in soft robots, hands-on building of common ATLAS research platforms.

Organisers: TUDELFT, SSSA, KUL

NTA3: Best integration practices and robotic middleware One-week course offering basics of data-acquisition, visualisation tools, introducing programming paradigms that helps in lean software development and integration. As use case, hands-on control of common ATLAS platforms will be considered.

Organisers: KUL, UNIVR, UPC

NTA4: 3D intraluminal modelling One-week course in pre- and intra-operative techniques for registering, segmenting and reconstructing rigid and deformable anatomies.

Organisers: POLIMI, UNIVR

NTA5: ATLAS session at CRAS The Joint Workshop on new technologies for Computer/Robot Assisted Surgery (CRAS) is held yearly. A special session dedicated to the ATLAS project will allow ESRs to jointly show their advancements.

Organisers: SSSA, KUL, POLIMI, UNIVR

NTA6: Hands-on ATLAS session at Summer School of Cognitive Surgical Robotics (COSUR) During the Summer School on Control of Surgical Robots (COSUR) a special hands-on session will be organized for introducing the student to most important aspects related to actuation, sensing, modelling and integration for soft robotics in medical applications.

Organisers: UNIVR, SSSA, TUDELFT, KUL,

NTA7: Soft skills for soft robotics A three days course offering basic aspects on ethics, with a wide scope ranging from the analysis of risks so as a safe procedure can be planned, to aspects related to information to the user, adequacy of treatment and patient accompanying. The course will also consider the ethical and regulatory aspects related to knowledge diffusion, as open access, data management, and data privacy.

Organisers: UPC, UNIVR, UNISTRA

NTA8: Tech transfer for Surgical robotics Course on managing Intellectual Property Right, entrepreneurship, and how to individuate and leverage funding opportunities for technological transfer.

Organisers: POLIMI, UNIVR, KUL, UNISTRA, TUDELFT

NTA9: Advanced bioengineering methods, technologies and tools in surgery and therapy The XXXVIII Bioengineering School is aimed at presenting the emerging bioengineering technologies and practices in surgery and therapy. Advance image-based patient modelling, machine learning-based diagnostics, augmented reality, navigation solutions and surgical robotics are examples of technologies which are reshaping the future of care. In such a process, technology professionals, and particularly biomedical engineers, are pivoting the innovation.

Terms like evidence-based medicine and personalized medicine have progressively entered into medical language and mostly rely on our capability to extract and elaborate information from diagnostic tools and translate them into specific clinical strategies and approaches. There is indeed a strong need for an interdisciplinary approach and biomedical engineer is asked to manage. All details can be found here: http://www.bioing.it/archiviodati/scuola_bressanone/BRESS19/index.html

Organisers: POLIMI, SSSA

2.4 Researchers Training Activities

These activities involve regular contact between ESRs and partners, and with local master students. Periodic activities are organised roughly every two weeks, when no other training activity is present.

RTA1: Capita Selecta A delegate from industry (*e.g.* partner) or alternatively representative of the clinical field provides a talk on a selected topic relevant for ATLAS. One ESR is made responsible for introducing the talk and for moderating the discussion.

RTA2: Journal club Two ESRs introduce a seminal work within their domain to the other ESRs. One ESR moderates the discussion and gathers feedback.

RTA3: Master thesis guidance Each ESR will be involved in guiding a master thesis at another beneficiary's institute, together with a local ESR that provides local guidance.

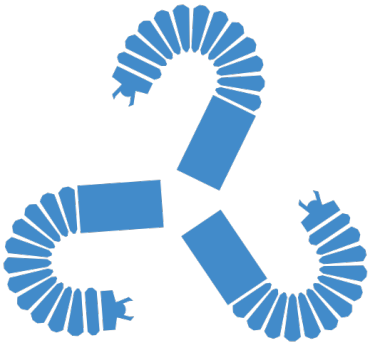
RTA4: Review of scientific papers ESRs will team up with an ESR from another institute to conduct at least two reviews of international peer-reviewed scientific papers. ESR's advisors will provide feedback on the conducted review. Before submitting original ATLAS work, other ESRs will be asked to proofread and comment. This will prepare ESRs for future R&D positions by promoting critical thinking. It will also increase the overall impact and collaboration of ATLAS through a better understanding of each other's work.

2.5 Monitoring of ESRs progresses

The work of the ESRs will be evaluated by the SB using different measures:

- presentation of the PCDPs after 6 months from enrolment;
- involvement in writing the scientific deliverables of *ATLAS*;
- evaluation of results after the participation to the foreseen courses and lectures;
- production of scientific publications in the field of their individual projects;
- critical review of papers and literature;
- report and presentation at the end of each year of the work performed up to that evaluation period.

Evaluation and monitoring is performed on a yearly base.



The ATLAS project

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