

ASTRONET: Towards a Strategic Plan for European Astronomy

J. Gallego, J. Torra, X. Barcons, and M. Mas-Hesse

Abstract ASTRONET is an ERA-Net financed by the European Commission FP6 under the initiative “Integrating and Strengthening the European Research Area (ERA)”. ASTRONET was created by a group of European funding agencies in order to establish a comprehensive long-term planning for the development of European astronomy. The objective of this effort is to consolidate and reinforce the world-leading position that European astronomy has attained at the beginning of this 21st century. The Ministerio de Ciencia e Innovación is the Spanish representative.

1 What is ASTRONET?

ASTRONET was created by a group of European funding agencies in order to establish a comprehensive long-term planning for the development of European astronomy. The objective of this effort is to consolidate and reinforce the world-leading position that European astronomy has attained at the beginning of this 21st century.

The success of present-day European astronomy has been built by combining previously scattered resources into multilateral partnerships, the most important of which are ESO for ground-based optical astronomy and ESA for space astronomy. Developing this concept and its impact and expand it to all domains of astronomy and all of Europe requires a shared, comprehensive Science Vision and roadmap for future infrastructures in astronomy. In parallel, the barriers which impede co-

J. Gallego

Ministerio de Ciencia e Innovación (Spain) and Universidad Complutense de Madrid (Spain) e-mail: jgm@astrax.fis.ucm.es

J. Torra

Ministerio de Ciencia e Innovación (Spain) and Universidad de Barcelona (Spain)

X. Barcons

Ministerio de Ciencia e Innovación (Spain) and Instituto de Física de Cantabria (Spain)

M. Mas-Hesse

Ministerio de Ciencia e Innovación (Spain) and Centro de Astrobiología (Spain)

ordinated joint projects among countries must be identified, and ways to overcome these barriers must be proposed and tested.

To do so, ASTRONET will cover all astrophysical objects from the Sun and Solar system to the global structure of the Universe, as well as every observing approach, in space and from the ground, and from radiation at any wavelength to astroparticles and gravitational waves. It will address the whole “food chain” from infrastructure and technology development to observation, including the Virtual Observatory, modelling, and theory. Equally importantly, ways to better coordinate the planning and execution of research programmes in astronomy among European countries will be explored and demonstrated in practice.

Starting September 2005, 1st, ASTRONET is financed by the EC up to a level of 2.5 million euros, out of a total budget of 3.2 million euros. The project duration is 4 years. ASTRONET is an ERA-Net financed by the European Commission FP6 under the initiative “ Integrating and Strengthening the European Research Area (ERA)”.

The ASTRONET consortium, which is intended to widen, has ten participants at the moment: CNRS/INSU (coordinator), France, BMBF and PT-DESY, Germany, ESO, International, INAF, Italy, MICINN, Spain, NOTSA and NWO, the Netherlands, STFC, United Kingdom, and NCBiR, Poland. The ASTRONET consortium has Fifteen Associates at the moment: ESA, International, MPG and DFG, Germany, LAS, Lithuania, SRC, Sweden, GNCA, Greece, HAS, Hungary, ESF, Estonia, SER, Switzerland, FWF, Austria, AI SAS, Slovak Republic, CAS, Czech Republic, ROSA, Romania, NASU, Ukraine, and ARRS, Slovenia. Finally, The ASTRONET consortium has four Forum members: ISA, Israel, Institute of Astronomy of the University of Latvia, Academy of Finland, and FNU, Denmark.

The ASTRONET Internet web page can be found at <http://www.astronet-eu.org/>

2 Report on the Management of European Astronomy

ASTRONET is establishing a comprehensive, consensus-based, coordinated strategy for developing European Astronomy at all wavelengths, in all countries, on the ground and in space. In parallel, ASTRONET will establish an exchange of information and co-ordination of best practices between agencies and initiate joint research programme, transforming European Astronomy into a true European Research Area.

To build such an ambitious permanent coordination framework, a deep knowledge of the management of Astronomy in the European countries is needed. For this goal, ASTRONET members produced a “Report on the Management of European Astronomy”. This Report provides an analysis of the organisation of the astronomical research systems in the main participating European countries. For each country, a description of the main Agencies and Research Institutes are presented, together with their managing rules, quantitative research data and financial resources involved.

The final version of the document can be found at the ASTRONET web page.

3 The ASTRONET Science Vision

One of the ASTRONET main goals is to establish a global European Science Vision for Astronomy for the next 15-20 years, based on the existing national and regional strategic plans, complemented from analysis of key scientific themes by ad-hoc panels set up by the ASTRONET Board. Where appropriate, ASTRONET uses results obtained by OPTICON and RADIONET JRAs and networking activities.

To establish a global European astronomical Science Vision for the next 15-20 years has been the task of the Science Vision Working Group (SVWG). The field has been divided in four broad science questions: (1) Do we understand the extremes of the universe?; (2) How do galaxies form and evolve?; (3) How do stars and planets form?; and (4) How do we fit in?

The Science Vision draft was distilled by thematic Panels drawn from the astronomical Community and put on-line on December 17, 2006. It covered all astrophysical domains and both ground and space based observing means (relying mainly on the ESA Cosmic Vision for the latter). A comprehensive co-ordination effort with the Astroparticle Community was performed. A web-based discussion Forum on the “future scientific challenges in Astronomy” was opened on the ASTRONET site, also on 17 December, in preparation for an ASTRONET Symposium.

The 2.5 day Symposium on “future scientific challenges in Astronomy” was aimed at getting essential feedback from the European astronomical community at large to refine and consolidate the scientific goals of European Astronomy for the next two decades. It was held on January 23 - 25 at the Futuroscope Palais des Congres near Poitiers (France). The Symposium programme featured in particular parallel sessions between the four ASTRONET science panels enlarged to enclose all participants. The status of the similar US planning exercise was presented by G. Illingworth.

Following the Symposium, the ASTRONET Science Panels completed their task, delivering the “Science Vision” to the European Commission by end April 2007. This in turn is the major input for the Infrastructure Roadmap Panels.

4 The ASTRONET Infrastructure Road Map

In this Work Package, the aim is to build a Roadmap for the infrastructure needed to implement the European Science Vision for Astronomy for the next 20 years and establish the funding and organizational routes to fulfil the plan.

Three are the main objectives:

- Starting from the Scientific Vision, produce a plan for the development of infrastructure for European Astronomy over the next 10-20 years: “the Roadmap”. This will involve the diverse facets of astronomy spanning solar physics to cosmology and consider facilities and infrastructures in support of all aspects of astrophysical research.
- Engage stakeholders to develop an implementation plan for the Roadmap.

- Co-ordinate the implementation plan for the Roadmap internationally by engaging with top level European and global bodies e.g. ESFRI & OECD GSF.

ASTRONET organized a “Infrastructure Road Map Symposium” that was held in 16 – 19 Liverpool (UK). This symposium provided a live platform for community consultation and debate on the ASTRONET Infrastructure Roadmap. The Symposium was free and open to anyone interested in contributing to the delineation of a comprehensive, prioritised, community-based roadmap. The outcomes of this meeting were incorporated in the final roadmap.

The final Road Map Document was published by ASTRONET in the Autumn of 2008 and it is now available at the ASTRONET Internet web page.

5 The first ASTRONET Joint Call for proposals

The “ASTRONET ERA-NET” project was initiated with the aim of enhancing the co-ordination and co-operation between national funding and research management organisations in Europe who are responsible for astronomical research.

The ERA-NET scheme is the principal means for the Sixth Framework Programme (FP6) to support this trans-national harmonisation of research activities (e.g. programmes, strategic projects) being funded and carried out at national or regional level. The organisations involved in ASTRONET (national funding organisations, research councils, research ministries, research programme management organisations) have been closely co-operating with the goal of initiating a truly trans-national funding initiative (call for proposals) in Astronomy in early 2008.

Under the umbrella of ASTRONET

- the Austrian Science Fund (FWF), Austria;
- the National Centre for Scientific Research/ National Institute for Science of the Universe (CNRS/INSU), France;
- the Federal Ministry of Education and Research (BMBF), Germany;
- the Netherlands Organisation for Scientific Research (NWO), The Netherlands;
- the Ministry of Science and Innovation (MICINN), Spain;
- the Swedish Research Council (SRC), Sweden;

(hereafter called the Partners) have together decided to open the first joint call for multilateral trans-national research projects. This call has become effective on the 1st of February 2008 and is open for research projects aiming at: “Common Tools for Future Large sub-mm Facilities”.

On September 22nd 2008, the ASTRONET Joint Call Board convened to decide on funding for the 11 ASTRONET proposals (with in total almost 100 participants, from 9 different EU countries). Their decision was based on the ranking of the proposals by the ASTRONET Joint Call Jury (an independent panel of experts belonging to different countries) and the prospectively available budget. The ASTRONET Joint Call Board recommends five proposals for funding by the national funding agencies.

The six ASTRONET Joint Call Partners (BMBF, CNRS, FWF, MICINN, NWO and SRC) have in total 3.2 million euros available for funding of their researchers in this call. The applicants from the other 3 countries (Czech Republic, Italy and the UK) found the proposals interesting enough that they will participate at their own expenses.