

# ASTRONET Workshop: Tools, best practices and methodologies for Technology Transfer

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# About ASTRONET

- ASTRONET is created by a group of European funding agencies in order to establish a strategic planning mechanism for all of European astronomy. It covers the whole astronomical domain, from the Sun and Solar System to the limits of the observable Universe, and from radio astronomy to gamma-rays and particles, on the ground as well as in space; but also theory and computing, outreach, training and recruitment of the vital human resources. And, importantly, ASTRONET aims to engage all astronomical communities and relevant funding agencies on the new map of Europe.
- ASTRONET has been supported by the EC since 2005 as an ERA-NET. Despite the formidable challenges of establishing such a comprehensive plan, ASTRONET reached that goal with the publication of its *Infrastructure Roadmap* in November 2008. Building on this remarkable achievement, the present project will proceed to the implementation stage, a very significant new step towards the coordination and integration of European resources in the field.

# About ASTRONET

- The objectives are:
  - to establish a permanent mechanism for planning and coordination in European astronomy;
  - to follow-up and implement the Roadmap, thus ensuring the construction of the new facilities that are needed to keep Europe at the forefront of scientific knowledge and at the same time optimise existing programmes in scientific as well as financial terms;
  - to narrow the scientific and – in particular - technology gaps between the European countries;
  - to establish a regularly updated data base with key information on the financial and human resources available to astronomy in all European countries, as well as the structure and governance of astronomical research in each country.
- ASTRONET is funded as an ERA-Net by the European Commission at a level of 1.6 M under the FP7 initiative «Integrating and Strengthening the European Research Area (ERA)» for a duration of 48 months (end 31 December 2014).

# About ASTRONET WP5

## WP 5 Follow-up of the road map – common actions

### ■ Objectives

- Strong European-wide processes for cost-benefit optimisation of existing research facilities
- Release joint calls on themes providing a strong European added value
- Other advanced joint activities and programming in Europe

# WP 5 Tasks

- Task 5.1 Implementation of the ETSRC recommendation, Task Leader: MINECO
- Task 5.2 Implementation of recommendations for European radio telescopes, Task leader: INAF
- **Task 5.3 Implementation of Roadmap recommendations on education, recruitment and training, public outreach, and industrial links, Task Leader: ESO**
- Task 5.4 Prepare further common actions for the coordination of national programmes, Task leader: PT-DESY/BMBF)
- Task 5.5 European-wide joint calls in A&A, Task leader: PT-DESY/BMBF)

# Task 5.3 WG Members

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## Task 5.3 Objective

- To follow-up on the recommendations of “Panel E” pertaining to common actions in the areas of education, recruitment and training, public outreach, and industrial links. “Panel E” identified 10 recommendations covering various topics and actions.

# ASTRONET Roadmap Panel E Recommendations

1. *Create new and support existing training courses for the career and professional development of teachers*
2. *Encourage schools to use their playgrounds as open-air astronomical observatories equipped with simple devices*
3. *Encourage European stakeholders involved in developing educational programmes and curriculum delivery to realise the inspirational quality of learning using astronomy-related exercises and experiences*

# ASTRONET Roadmap Panel E Recommendations

4. *Implement a centralised, web-based distribution system for educational material in a range of languages*
5. *Active steps should be taken to forge links between science museums/planetaria and the European Agencies (ESA/ESO), the principal providers of high quality media and related resources in astronomy*
6. *Adequate strategic long-term support must be provided for public communication and education in Europe. Firstly, observatories, laboratories and all facility funding authorities should allocate sufficient resources for public communication and education*

# ASTRONET Roadmap Panel E Recommendations

7. *Ensure clear career-relevant recognition for scientists who become involved in public communication. Provide, and encourage scientists to utilise, media training courses*
8. *Support the creation of a standardised European science communication portal for media, educators, interested laypeople and others*
9. *Create an international network of experts in technology transfer which organises an annual audit of technology transfer activities in order to increase the visibility of the industrial relevance of astronomy*
10. *Large-scale, potentially high impact astronomical research in Europe generally has to go through a “two-hoop” process for the allocation of facility time and the support of analysis and publication. We propose that a way is found of using the high quality peer review process already operated by the facilities to provide “fast-track” funding for suitable projects, so enabling them to be internationally competitive and of high value for training.*

# Activities of ASTRONET 2 Task 5.3

- 15 July 2012: [Establishing a work programme](#) for Working Group, face to face meetings, teleconferences
- 12 Sept 2012: [Telecon 1](#)
- 12 Dec. 2012: [Telecon 2](#)
- 1 February 2013: [Face-to-face meeting](#) at ESO
- 5 March 2013: [Telecon 3](#)
- 17-18 June 2013 [Workshop 1](#) and second face-to-face meeting: Astronomy Education & Public Outreach: 34 participants (internal planning [doc](#)). [Website](#).
- 9 July 2013 [Telecon 4](#)
- 29 October 2013 implementation [plan](#)
- 12 February 2014 [Astronet Panel E Roadmap Update](#) (for ASTRONET 1 Panel E, delivered to Ian Robson)
- 22 September 2014 [Telecon 5](#)
- 7 Oct. 2014 [Telecon 6](#)
- 21 Oct. 2014 [Telecon 7](#)
- 24 November 2014 [Workshop 2](#) on TT
- 25 November [Third face-to-face meeting](#)
- End of 2014: [Final report](#) (D5.11) and end of ASTRONET 2

# Recommendations

It now seems clear that the need for a Europe-wide coordination and consolidation of efforts in education and public outreach is stronger than ever before. Specific ideas for the implementation:

- Creation of a Europe-wide translations agency that can serve as a service to agencies and national entities
- Creation of a Europe-wide Educational material repository
- Creation of a Europe-wide Teacher Training agency
- Creation of standards for a “Top-50” list of astronomical topics/concepts/phenomena that students need to get acquainted with at some point during their primary or secondary studies. Some examples:
  - Seasons
  - Lunar phases
  - Tides
  - Gravity
  - The Sun as a star
- Creation of a Europe-wide standardised educational resources (kits that can be mass-produced and localised)
- Creation of open access resources for images, videos, educational activities, presentations and planetarium content
- TT?



# ASTRONET Workshop: Tools, best practices and methodologies for TT

1. CHRISTENSEN, Lars L. ESO
2. PATKÓŠ, Enikő ESO
3. DR. KUBE, Jens Desy
4. COLOMER, Francisco OAN
5. PÖSSEL, Markus Haus der Astronomie
6. Tautvaišienė, Gražina TFAI
7. CHESTA, Enrico CERN
8. SALZGEBER, Frank ESA
9. DIAZ , Lluc ESA
10. MAZUR, David CERN
11. ZIOGAS, Nicholas CERN
12. MITCHELL, Edward ESRF
13. BONUCCI, Antonio XFEL
14. ROTH, Martin M. AIP, innoFSPEC
15. DR. SKARDA, Vlad STFC
16. PERNA, Corrado INAF
17. BONEV, Tanju BAS
18. WILSON, Sandi STFC
19. HUGOT, Emmanuel LAM
20. BERNAGOZZI, Andrea Ettore OAVdA, INAF
21. WANG, Qiming