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| PU | Public | |
| PP | Restricted to other programme participants (including the Commission Services) | x |
| RE | Restricted to a group specified by the consortium (including the Commission Services) | |
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D5.1: Report on an implementation plan for common actions concerning education, training, public outreach

The Astronet Task 5.3 will focus on the structural and sociological issues identified in the infrastructure roadmap considering common actions in the areas of education, recruitment and training, public outreach, and industrial links. The roadmap “Panel E” worked out 10 recommendations in these areas. Tools to broaden and deepen these activities will be developed within this task. Educational matters will require getting in contact with the appropriate European stakeholders and the various countries. Contact points with stakeholders of the Bologna process will be explored. The goal is to coordinate existing activities and initiate new ones in the educational sector. This also holds for the recruitment and training issues. In order to foster industrial links the creation of a common international network of experts in technology transfer (TT) is envisaged. Actions appropriate for joint calls will be transferred to Task 5.5.

In this context, a number of recommendations from the roadmap are not directly related to agencies contributing to ASTRONET. This includes:

- **Ministries of Education:**
 - 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
- **Employers of research scientists:**
 - 7. Ensure clear career-relevant recognition for scientists who become involved in public communication. Provide, and encourage scientists to utilise, media training courses (see Washington Charter CAP)
- **Pan-European (EU or delegated body):**
 - 4. Implement a centralised, web-based distribution system for educational material in a range of languages
 - 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.
- **ESA/ESO or other stakeholders:**
 - 5. Active steps should be taken to forge links between science museums/planetariums and the European Agencies (ESA/ESO), the principal providers of high quality media and related resources in astronomy
- **Agencies:**
 - 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

- 8. Support the creation of a standardised European science communication portal for media, educators, interested laypeople and others (e.g., Portal to the Universe)
- 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.

Schedule

1. Q1-Q2 2012: Establish a work programme, Working Group, face to face meetings, teleconferences
2. Mid-Sept 2012: Telecon 1
3. Mid-Dec. 2012: Telecon 2
4. January-February 2013: Face-to-face meeting possibly at ESO or in Madrid
5. Q1 2013 implementation plan to be finalised.
6. March 2013: Telecon 3
7. Q2 2013 Workshop 1 and second face-to-face meeting: Astronomy Education & Public Outreach: The size would be roughly 20-30 experts in our area. (planning document)
8. Q3 2013 Telecon 4
9. Q4 2013 Telecon 5
10. Q4 2013 Revision of the Astronet Roadmap
11. Q1 2014 Telecon 6
12. Q2 2014 Telecon 7
13. Q3 2014 Workshop 2 on Technology Transfer and third face-to-face meeting
14. End of 2014: Final report and end of ASTRONET 2

Deliverables

The planned deliverables are:

1. Report on an implementation plan for common actions concerning education, training, public outreach
2. 4 Working Group meetings
3. 2 medium workshops
4. Final Report on the implementation of common actions concerning education, training, public outreach

Summary of the work done until November 2013

We have had two face-to-face meetings, four telecons and one Workshop.

Especially the workshop gave us a deep insight into the European EPO community. The workshop included Working Group members as well as international experts on astronomy education and outreach, and had the purpose to gather information and evaluations on the European perspective on astronomy EPO, to enable the definition of European priorities concerning future astronomy EPO infrastructure. Some of the questions we addressed were:

- Which EPO activities need support at the European level?
- How can the EU help to leverage national EPO resources
- How can we best share best practice examples, as well as EPO material?

The venue of the workshop was the *Haus der Astronomie* (literally “House of Astronomy”), a Centre for Astronomy Education and Outreach operated by the Max Planck Society on the Königstuhl mountain in Heidelberg, Germany.

The Conference programme and all the presentations can be downloaded from:
<http://www.eso.org/public/events/special-evt/astronet2013/>

In total 34 people participated. The contributions were organized in 4 sessions, followed by 3 panel discussions. The following aspects were recognized:

- A large number of Education and Public Outreach (EPO) activities have been/are being developed in Europe.
- Many EPO activities are developed in the context of a “project”, which runs for a limited number of years (typically 3-4 years). The products are often not available after the project finalizes.
- For EPO to be effective, it must be embedded in the overall activities of the developers (institutes, schools, etc.). A plan for sustainability and a map of activities and resources is urgently needed.
- EPO is to become international (and then, down to local).
- The EU must be assisted to issue better calls.
- Create networks (e.g. ESON, IPS) to optimize efforts and dissemination. Also to allow long-term funding of the best EPO projects (e.g. EU UNAWA, GHoU).
- EPO material must be available in many languages. On demand (e.g. “Scientix”), by volunteers (but content checking is essential, “Education vs. Translation”), or by a wiki-kind system.
- Scientists are to be trained in media/outreach communication.
- EPO performed by scientists needs to be recognized (by their Directors, in CV).
- Scientists are to become aware of the importance of their own outreach, and involved.
- Astronomy can be a door to get students interested in science.
- Virtual Observatory (VO) is a great tool to guide students through and towards real science.
- Involve amateur astronomers associations into local EPO activities.

Action items:

- Create a map of EPO networks and other initiatives.
- ESO to help identify volunteers for translations (from own database).
- Write a letter from Panel to the directors of astronomy institutes to stress the importance of scientists to become aware and involved in the outreach of their own research, and for this effort to be recognized (endorsing Washington Charter).

During our Workshop in Heidelberg, we were able to identify some specific issues which are related to Recommendations...

- ... (4) “Implement a centralised, web-based distribution system for educational material in a range of languages”;
- ... (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;

- ... (8) Support the creation of a standardised European science communication portal for media, educators, interested laypeople and others (e.g., Portal to the Universe).

In Europe, there exists a wealth of small and medium-sized initiatives which address the points covered by these recommendations. All these initiatives have in common that they are funded only for a limited time (sometimes only in the order of one year) and with a very limited amount of personnel. One of the larger of these projects, EU UNawe (unawe.org), already offers the implementation of Rec. (4) and (8) in large parts. Our working group recommends to agencies to support this project over a longer-than-usual timeframe and allocate enough funding to it, so that EU UNawe can be extended to meet the following recommendation:

Educational material in the context of astronomy should be labelled as “certified by [IAU,ASTRONET,??]”. The certification should contain two separate instances:

- Scientific correctness: The science contained in the material is correct with regards to the current state of research. Two different professional astronomers have to un-anonymously mark the material as “correct”. The affiliation as a research scientist at a professional state-funded astronomical research institute should be key to be allowed to certify the material.
- Suitability for the indicated age: Two different persons with an educational background (teachers, ...???) should certify that the material can be understood by the persons to whom it is intended for. Process as above.

A newly launched initiative by the IAU called AstroEDU: <http://astroedu.iau.org/> may be able to play a leading role for this certification.

During our discussions, we found out that there are very many projects, which already are addressing many topics. To be sure that funding goes to the best and possibly longest-lasting projects, a survey of existing projects should be conducted.

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