

E-ALFA Software Working Group #9  
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May 13, 2003

## 1 Principles

In order to insure success and broad participation in the E-ALFA surveys, participants need access to resources covering all aspects of survey planning, software development, carrying out the observing program, data processing and analysis, education and outreach. Current participants find themselves in varying employment circumstances with varying opportunities for funding.

Factors which complicate financial support for participants of the E-ALFA surveys include:

- the multi-year duration of the surveys
- their legacy nature, that is, that they produce data products that enable further research by a broader community
- the major manpower effort involved in their planning, execution software development and data processing and verification
- the computer hardware resources necessary for data storage, data processing and scientific analysis
- the diverse, international and collaborative nature of the consortium/teams
- the national center character of NAIC and the Arecibo Observatory

While some of these complications are fairly new to extragalactic HI science at Arecibo, they are not new to other large facilities, namely the NRAO, NOAO, 2MASS, SDSS, SIRTf, HST, Chandra, XMM, etc. How participants in those large survey projects are supported and coordinated varies significantly, and not all paradigms are equally applicable to the circumstances that affect E-ALFA.

The E-ALFA surveys offer enormous potential to explore the nearby universe and to gain insight into how gas disks assemble and evolve. They will produce unique data products that will enable and stimulate follow-up research by a much greater community. Therefore it is in the interest of all parties – the survey teams, the NAIC and the funding agencies - to secure sufficient resources to insure that the full potential of the E-ALFA surveys is achieved.

## 2 US NSF Funding

The 2000 Astronomy and Astrophysics Survey Committee (AASC) report “Astronomy and Astrophysics in the New Millennium” urged that the funding agencies provide adequate funding for data analysis along with facility support. In a recent experiment, NRAO has begun to offer support for instrumentation development and graduate student thesis research associated with use of the Green Bank Telescope. The latter program is being expanded to the VLA and VLBA within the limits of available funding.

While the NRAO/GBT programs are valuable first steps, they (a) do not apply to software development and (b) do not allow for student tuition payments. Therefore, they alone do not address the needs of faculty at most US institutions. University faculty participants need support for summer salary, travel, capital equipment, publications, student stipends and tuition, as well as applicable indirect costs; in the case of E-ALFA, they may also need an augmentation for communications costs. For a truly level playing field, sources of funding for all of these costs must be identified.

Tenure-track faculty at many U.S. institutions must demonstrate their ability to raise adequate support for all of their research initiatives, including student support. Thus, to enable junior faculty to participate, funding for E-ALFA must be commensurate with that available from other possible sources (e.g., NASA).

The decoupling of E-ALFA support from the grants program funding process places the NSF-supported individual investigator at risk of being granted telescope time but not having the funding resources to carry out the observations, software development and subsequent analysis, or vice versa. In the case of the major survey efforts involved in E-ALFA, covering all phases of the project from concept development through to scientific analysis, the timescale for science results may exceed the grant duration. Because of the diverse nature of the likely E-ALFA survey teams and the importance to the NAIC and the broader astronomical community of the success of these surveys, possible mechanisms for long term continuity of funding, tied to project review, should be explored. A collaborative proposal between NAIC and the consortium and its participants might be the best fit with the current NSF peer review process.

For full impact, NSF funding should also be provided, as suggested by the 2000 AASC report, for analysis of the E-ALFA Level II data products by the broader community.

The broader impact, educational and outreach potential of the E-ALFA surveys are enormous. Likewise, funding support for those activities should be approached collectively as a partnership by the E-ALFA teams, the other X-ALFA consortia and the NAIC to both maximize and optimize their effectiveness.

## 3 EU Funding

The international interest in E-ALFA is evident. Specifically, concerning the interest shown from within the European Union: among the 65 E-ALFA consortia members presently registered on its website, 22 are from astronomical institutes in the European Union, representing a total of 11 Institutes in 5 countries (France, Germany, Italy, Spain and the United Kingdom).

The European Commission, within its Sixth Framework Programme (FP6), covering the period

2004-2008, has funds for various kinds of projects. The most appropriate for the E-ALFA project appears to be the inclusion of research themes related to it in a Research Training Network of European Institutes.

The main purpose of such networks is the employment of postdocs, who do not necessarily need to be citizens of a European Union country, thereby also providing potential job opportunities for young astronomers from the US and elsewhere. The proposal for a Network can include other research themes as well. In practice, at most a dozen Institutes can form a network and employ about one postdoc per institute in total.

There are in principle different options for the employment of postdocs under the FP6 Marie Curie Actions: host-driven-actions (Marie Curie Research Training Networks, etc.); individual-driven actions (Marie Curie Individual Fellowships); and excellence promotion and recognition (Marie Curie Excellence Grants, etc.).

The different options of benefit to the E-ALFA Consortium will be investigated further. Information on the FP6 and the Marie Curie Actions can be found on the website (<http://www.cordis.lu/fp6>) of *CORDIS*, the Community Research and Development Information Service.