

Wide Field Astronomy & Technology
for the
Square Kilometre Array

Proceedings of the conference held at the Château de Limelette, Belgium, 4-6 November 2009

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Foreword

The conference “Wide Field Science and Technology for the Square Kilometre Array” was the culmination of four years of design studies funded by the European Commission Framework Programme 6. It was held at the Château de Limelette, near Brussels, Belgium from 4 to 6 November 2009. Over 100 people participated in the conference from SKADS partner institutes across Europe, Australia, Canada, and South Africa, and also from the USA.

The Square Kilometre Array Design Studies (SKADS) began in 2005 and was conceived as a collaboration bringing European partners together to work on developing a viable SKA design which satisfies the scientific requirements and cost envelope. It was also conceived with the purpose of defining more precisely the scientific and technical requirements for the SKA.

Another aspect of SKADS was the training of future generations of radio astronomers and engineers who will work with the SKA. A number of workshops and training schools were funded by the Marie-Curie Conferences and Training programme of the European Commission. This conference itself was partly funded by the MCCT.

These proceedings summarise the advances made in the past four years to arrive at a mature SKA design. There was a large proportion of young people not only participating in the SKADS conference, but also presenting new results, and this demonstrated how successful was the MCCT programme.

The SKADS Conference was an excellent forum for taking stock of our achievements over the past four years, and for looking forward to moving into the detailed design and construction phase of the Square Kilometre Array.

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Preface

Dear colleagues,

In this Conference we have heard and discussed in detail the latest technical developments and the final deliverables of this remarkable Design Study, which is now coming to an end.

I would like now to review the past, present and future of this remarkable project from another angle: the human angle.

Arnold and I started suffering together for SKADS in 2005: I still have very vivid memories of a phone call we had in early July 2005. I was then trying to deal with the builders at my house when we agreed on a strategy to try and bring the negotiations to a successful conclusion without further delays. Amongst other actions on both sides, I ended up in Swindon to convince PPARC that the EC absolutely did not want to force funding agencies to fund the Square Kilometre Array, but that since the Design Study was shortlisted for funding, we could find a way to work together towards this limited goal and see what happens.

It is fair to say that my life has never been the same again.

At the end of 2006 SKA entered the ESFRI Roadmap. The year after that PrepSKA was submitted for funding, then negotiated.

The pace of development of the SKA was (and still is) such, that in the cases of both SKADS and PrepSKA, the Description of Work had become obsolete by the time we signed the contracts!

At about the same time the funding agencies decided that no way scientists and engineers could be allowed to be let loose with such a toy on their own. Thus they decided to start meeting informally twice a year: a real turning point for the SKA. Agencies and governments were starting to notice.

Throughout this remarkably fast process for such a large and complex project, many remarkable people have dedicated a lot of work, passion, discussion time, late nights, bottles of wine and pints of variously alcoholic drinks from different continents to figure out very creative ways to go forward. The dedication has been immense, at all levels.

What is then the tremendous appeal of the SKA that engages so many people at so many different levels?

The SKA is the collective effort of a remarkable worldwide community, a community which is fundamentally democratic and welcomes everybody at face value for what they can contribute to the project in any area - and this, believe me, is no mean feat. This community is fully mixed - scientists and engineers work together, with some healthy constructive interference from the funding agencies and government departments.

The project has enormous potential appeal at all levels - scientific, technical, industrial, ICT, political, mediatic, and educational. In one short sentence: I believe the SKA makes people dream.

From the Commission's point of view, the project has very high visibility. The Research Infrastructure action started in FP7 to develop its strategy for international cooperation and radio astronomy is a good example of such cooperation through SKADS, PrepSKA and RADIONET, which in turn hopefully also benefits the project at large.

SKADS has been the first Design Study where non-European partners are fully integrated, to the point where now we expect radio astronomy projects to contain in different ways a healthy percentage of Australians, South Africans, Americans, Canadians, Koreans, and hopefully before long also Russians, Chinese and Indians.

It is also fair to say that SKADS has raised the visibility of the Commission's funding instruments for research infrastructures outside Europe, and proved that they can work.

SKADS now comes to an end: we have seen in this conference the wealth of results, for which the community has all worked very hard, and should be proud of its achievements.

SKADS's legacy lives on in different ways.

Again, the community: the AAVP hopefully will keep the European effort focussed beyond the EC project - and note the very liberal use of the word European, with both Australia and South Africa fully involved. This is really a case of the long-term structuring effect on an EU instrument!

The White Paper will be a very concrete piece of work that will feed results into PrepSKA.

On a personal level, all this frenzied activity forced me to re-open books that had gathered dust on the shelves for years so at least I could make a passable impression of someone who knew what you are talking about. The soundtrack of *Lord of the Rings - The Two Towers* (musical

background of my evening studies) now automatically triggers memories of pulsars, radio jets, extreme stellar environments and antenna feeds - a reaction I have not had since I was at University preparing for exams, I must say.

I am deluding myself that, by managing SKADS, indirectly I may have given a small contribution towards the realisation of the SKA. Now that the project draws to its successful close, however, I must ask myself what am I going to do without the voluminous SKADS reports to read, or Arnold and André chasing me on my gsm?

PrepSKA has taken over fully, the SKA Agencies Group is very active, André keeps chasing me over the phone and email for RADIONET issues, and I have been volunteered for tasks I shouldn't be doing, so everything is as it should be.

It will be an interesting few years ahead, and I wish everybody fun all the way to first light of the SKA.

Elena Righi-Steele
European Commission
17 February, 2010

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