Instructions for submitting an ASKAP Survey Science Project proposal

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Expressions of Interest for an initial set of ASKAP Survey Science Projects were solicited from the international community in December 2008. A total of 38 submissions were received by the deadline with PIs from 10 different countries.

On 2009 Jan 30, the PIs of successful Expressions of Interest were invited to submit a full proposal. The instructions for submitting such a proposal are contained on this webpage.

These instructions are for the information of the community only. Proposal submission is by invitation only, with the exception of anyone who wishes to submit a proposal related to SETI (Search for Extra Terrestrial Intelligence). If you are interested in submitting a SETI proposal, please contact the ASKAP Project Scientists using atnf-askap-ps@atnf.csiro.au.

Proposals must be submitted in PDF format as an attachment in an email to atnf-askap-ps@atnf.csiro.au. The closing date for submission of an ASKAP Survey Science Project proposal is midnight AEST 2009 June 15 (equivalent to 1400 UT 2009 June 15).

Information about the ASKAP Survey Science Projects is described on the ASKAP webpages.

If you are submitting a proposal, you are strongly encouraged to read the ASKAP User Policy, which can be accessed from the ASKAP webpages.

Please circulate this document to the co-Investigators on your team and contact the ASKAP Project Scientists using atnf-askap-ps@atnf.csiro.au for any further information you might require.

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1. SURVEY SCIENCE PROJECT SELECTION PROCESS

A three-stage process involving a proposal stage, a design study stage and a scheduling stage is being employed to select a set of Survey Science Projects envisaged to utilise at least 75% of ASKAP's observing time during the first five years of its science operations. A description of these stages is given below and the timeline is shown in **Tables 1a** & **1b**.

Table 1a: Survey Science Project Selection Process Stages

Stage	Description	Commencement Date
I	Proposal Submission	2008 Nov 1
II	Design Study	2009 Aug 1
III	Scheduling & Science Operations	Early 2012

Table 1b: Survey Science Project Timeline

Stage	Date	Event
Ia	2008 Nov 1	Call for Expressions of Interest
	2008 Dec 15	Expressions of Interest Deadline
Ib	**2009 Mar 15**	**Survey Science Project proposal invitation**
	2009 June 15	**Survey Science Project proposal deadline**
	2009 Aug 1	Survey Science Projects announced
II	mid 2009-late 2011	Survey Teams carry out Design Study
	mid 2010	Design Study progress review
	mid 2011	Final Design Study progress review
	Late 2011	Outcomes of reviews of Design Studies
III	Early 2012	Scheduling of Survey Science Project observing time
	Late 2012	Science Operations begin

1.1 Description

1.1.1 Stage I: Proposal Submission

Ia (completed): Expressions of Interest

- The EoI Evaluation Committee has evaluated your Expressions of Interest in terms of scientific, technical and operational feasibility. Expressions of Interest *were not* ranked.
- The EoI Evaluation Committee identified projects where merging seemed practical and reasonable and suggested that these groups consider submitting a merged Stage Ib Survey Science Project proposal.
- On 2009 Jan 30, the Principal Investigators of all Expressions of Interest that broadly met the feasibility checks were invited to submit Stage Ib Survey Science Project proposals. For some, this invitation is subject to caveats or recommendations by the EoI Evaluation Committee.
- The title, list of investigators and abstract for all Expressions of Interest were made publicly available on the same date.

Ib (current): Survey Science Project proposal

The Survey Science Project Assignment Committee will rank the Survey Science Project proposals based on the criteria given in Section **3** of this document.

Submission of proposals must be in PDF format and emailed to the ASKAP Project Scientists at atnf-askap-ps@atnf.csiro.au.

1.1.2 Stage II : Survey Science Project Design Study

Survey Science Projects that are highly ranked in Stage Ib will proceed to a Design Study stage lasting for 2.5 years, from mid 2009 to end 2011.

Outcomes from the Design Study

- Science simulations that refine and improve the expected scientific returns from the Survey Science Projects.
- Design and characterisation of the software pipeline necessary to produce the required data products for the ASKAP Science Archive.
- Results and analysis of the commissioning data from BETA and identification of software/hardware issues relating to any systematic effects in the data.
- Strong connection with groups from complementary facilities at radio and other wavebands to identify common scientific goals and sky coverage.

Survey Science Teams Opportunities

- The ATNF will support the top-ranked Survey Science Teams by dedicating post-doctoral staff to activities such as science simulations, technical studies and software development of direct relevance to each Survey Science project. The scope of such support that is currently foreseen is between 0.5 and 1 FTE per project; these post-docs will be based at ATNF headquarters in Sydney.
- The ATNF will fund workshops related to Survey Science Projects.
- Survey Science Teams will have the opportunity to assist in the commissioning of BETA and have access to BETA data as a vital tool in optimizing survey design and solving technical issues.
- Survey Science Teams will have ample opportunities to influence aspects of the ASKAP design and software instruments that remain under discussion as well as be in an optimal position to analyse the survey data as soon as possible.

Survey Science Teams Responsibilities

- Providing input to aspects of the ASKAP design that remain under discussion, such as the survey design and implementation, software instruments, database design, data quality control and processing;
- Developing and participating in end-to-end simulations that are required in advance of 2012, in order to take full advantage of ASKAP as soon as possible after first light;
- Participating actively in the commissioning of BETA by using early engineering and test data to undertake science pipeline tests, and thus determine the data quality, identify any systematic effects, etc., and recommend ways to address any problems that are identified.

Review of Design Studies

A standing Survey Review Committee will conduct reviews of the Survey Science Projects and Teams. The reviews will include scientific and technical progress towards achieving the goals of the Survey Science Project, management of Survey Science Teams and personnel issues, and any external factors such as the changing scientific landscape.

1.1.3 Stage III : Scheduling and Science Operations

Time allocation will depend on the outcomes of the reviews of the design studies. Observing time will be scheduled for Survey Science Projects whose design studies have demonstrated credible outcomes.

2. ASKAP USER POLICY

The ASKAP User Policy is available from http://www.atnf.csiro.au/projects/askap.

3. INSTRUCTIONS FOR SUBMITTING A PROPOSAL

Proposals must be submitted in PDF format as an attachment in an email to atnf-askap-ps@atnf.csiro.au. Authors will be acknowledged via email that their proposal has been received and will also be allocated an ASKAP proposal number.

The closing date for submission of an ASKAP Survey Science Project proposal is midnight AEST on 2009 June 15 (equivalent to 1400 UT 2009 June 15). Assistance with technical or other issues related to submitting your proposal can be sought by contacting the ASKAP Project Scientists (see section **6** for contact details).

Proposals will be reviewed and ranked by the ASKAP Survey Science Project Assignment Committee according to the criteria laid out in section **3.2**. The proposal must fully address all of sections **3.1 - 3.5** (note that only **3.2** will be ranked) and must be written with a minimum 11-point font. Please note any proposal that does not conform to the instructions laid out in this document will not be considered.

3.1 Summary Information (2 pages)

3.1.1 Title and abstract

3.1.2 Investigators and affiliations

NB: To facilitate interactions with ASKAP designers, each Survey Science Team should include at least one person associated or affiliated with ATNF.

3.1.3 Changes between this proposal and your EoI

Please give a brief outline of how sections 3.1.1 and/or 3.1.2 are different to your Expression of Interest; e.g., did you merge with another group, have you gained or lost investigators?

3.2 Selection Criteria (14 pages)

3.2.1 Scientific Justification (6 pages + 1 page for references)

Relative weight given in ranking of proposal: 50%

The overall scientific merit of the proposed Survey Science Project, including the lasting and important scientific value to the astronomy community, the contribution to maximising the overall scientific return of ASKAP and the uniqueness of ASKAP capabilities in advancing knowledge in the proposed area of research.

3.2.2 Design Study Implementation Plan (4 pages)

Relative weight given in ranking of proposal: 25%

A realistic and credible plan that describes the individual Survey Science team members' commitment of effort to play a lead role in survey design, software instrument design, early science commissioning, pipeline testing, data processing and quality control. Here you must include a detailed 2.5 year plan for the Design Study.

3.2.3 Benefit to Community (2 pages)

Relative weight given in ranking of proposal: 15%

A realistic and credible plan that describes the benefit of the Survey Science Project to the broad astronomy community. This could include education (e.g. student and postdoc-training) and the extent to which your Survey Science Team propose to develop value-added data products and/or software analysis tools that would enrich the overall scientific return from the Survey Science Project or other ASKAP data.

3.2.4 Team Organisation (1 page)

Relative weight given in ranking of proposal: 10%

A realistic and credible plan that describes how the Survey Science Team leader(s) will organise and manage the scientific, technical and personnel aspects of the project. You should include the resources (both currently available and planned) that will be required to conduct a Design Study.

3.3 Technical Requirements (2 pages)

This section should be addressed either with dot points or in table format

Here you should the give technical requirements including approximate/expected values of your survey parameters. Technical requirements should be listed as dot points or in the form of a table. You should include multiple entries if your survey has several parts (eg a deep and wide survey or observations over multiple frequency bands). Entries should include:

- Observing time
- Sky coverage in terms of required number of square degrees and specific region.
- Observing frequency
- Bandwidth
- Spectral resolution and/or number of frequency channels
- Time resolution
- Survey speed
- Point source and/or brightness sensitivity
- Polarisation products
- Required Field of View

Note: *Your Expression of Interest was evaluated to be technically feasible. Please check with the ASKAP project scientists (before submitting this proposal) if you are unsure of the feasibility of any modified and/or additional technical requirements beyond those listed in your Expression of Interest.*

3.4 Detailed Functional Requirements (2 pages)

This section should be addressed either with dot points or in table format

This section is crictially important so that ASKAP Engineering and Computing can fully understand what your proposal entails and how best to implement the design of ASKAP. You should include multiple entries if your survey has several parts (eg a deep and wide survey or observations over multiple frequency bands). Entries should include:

- Details of the correlator configuration (zoom modes, number of channels, centre frequencies etc).
- Dynamic range (spectral and continuum)
- Polarization purity (post calibration)
- Imaging requirements (Do you require deconvolution? What weighting? Continuum subtraction? Do you require postage stamps/cubes? Include as much detail as possible).

- Details of data products required (cubes, images, catalogues etc)
- Expected data volumes (cubes, images, catalogues etc)
- Survey strategy (including piggy back possibilities, day/night observing, how long per pointing, how many revisits etc)
- Brief description of what your source finder will do and what its requirements are.
- Will you need to re-process or post-process the data or data products (e.g. stacking experiments). If so, give details.

Note: *Proposals involving VLBI and/or high time resolution data have an entirely different set of functional requirements. A description of these is contained in a separate document that should be used for these proposals.*

3.5 Response to EoI Evaluation Committee (1 page)

Please describe what changes you have made to your proposal as a result of the feedback you received on your Expression of Interest. If relevant, please justify your reasons for not accepting any recommendation. If you were not subject to any caveats in moving through to Stage Ib, then write "not subject to caveats from the EoI Evaluation Committee" in this section.

4. RELEVANT READING MATERIAL

A large amount of information on ASKAP is available from the ASKAP web pages, http://www.atnf.csiro.au/projects/askap/ including:

- Instructions for submitting a Survey Science Project proposal (this document)
- The Expression of Interest Information Pack
- The ASKAP Science Cases
- The ASKAP User Policy
- The Initial ASKAP Array Configuration document

5. FREQUENTLY ASKED QUESTIONS

Why should I contribute to a Survey Science Project?

By contributing directly to a Survey Science Project, you will have:

- The opportunity to influence software instrument development and survey design and implementation.
- The distinct scientific advantage that comes from a deeper understanding of the instrumental capabilities and the survey data products.

- Direct participation and collaboration with the ATNF hardware and software engineering teams developing the survey instruments.
- Access to commissioning time including data from BETA.
- Access to data during the period used for quality evaluation.
- The ATNF will support the top-ranked Survey Science Teams by dedicating post-doctoral staff to activities such as science simulations, technical studies and software development of direct relevance to each Survey Science project. The scope of such support that is currently foreseen is between 0.5 and 1 FTE per project.
- Opportunities to involve students in leading edge scientific, computational and engineering research.
- Survey Science Project design or data release papers will be cited by users accessing this data from the ASKAP Science Archive.

What is BETA?

There will be an initial commissioning array called the Boolardy Engineering Test Array (or BETA) that comprises the first six ASKAP dishes and has full field of view capabilities and a prototype correlator. BETA commissioning will begin at the end of 2010 and will continue operating until ASKAP begins science operations in late 2012. BETA will be a test bed for all kinds of ASKAP engineering and science verification including data analysis, pipeline testing, imaging and calibration.

Will the Survey Science Project data be made public?

Yes. All data and data products produced by the software instruments (subject to storage capacity) will be made publicly available through the ASKAP Science Archive on a time scale determined by operational issues (e.g. quality control) and not proprietorial interests.

When will ASKAP begin operations?

ASKAP is expected to begin operation in late 2012. BETA, which will consist of 6 antennas and a prototype correlator, will be commissioned in late 2010.

What is the point of the Design Study stage?

The Design Study stage, which runs from mid 2009 to mid 2011, is an important step in determining the Survey Science Projects. The ATNF will endeavour to provide resources to the Survey Science Teams for activities during the Design Study stage and the teams will have access to observing time on BETA. The outcomes from the Design Study stage are expected to produce

- Science simulations to refine and improve the expected scientific returns from the Survey Science Projects.

- Design and characterisation of the software pipeline necessary to produce the required data products into the ASKAP Science Archive.
- Results and analysis of the commissioning data from BETA and identification of software/hardware issues relating to any systematic effects in the data.
- Strong connection with groups at other wavebands to identify common scientific goals and sky coverage.

When will actual observing time be allocated?

Observing time will be allocated to all Survey Science Projects whose design studies have demonstrated credible outcomes. Observing time will be scheduled in early 2012, with observations expected to begin in late 2012, and will depend on the outcomes of the reviews of the design studies.

Can I join a Survey Science Team closer to 2012?

Yes. It is the Survey Science Projects, not the Team members that are being defined in this process. Teams will not be set in stone in early 2009. Evolution of the teams will necessarily occur – people may join and/or people may leave depending on different circumstances. Management of the Survey Science Teams will be an important component of the review process both during the Design Study stage and once ASKAP is fully operational.

Can I submit a proposal if I didn't submit an EoI?

The Principal Investigators of the successful Expressions of Interests are invited to submit Stage Ib Survey Science Project proposals. In addition, the EoI Evaluation Committee identified that a specific scientific area (SETI) was not covered. Anyone wishing to submit a Survey Science Project proposal aligned with SETI should contact the ASKAP Project Scientists.

6. FURTHER REQUESTS FOR INFORMATION

Check online: http://www.atnf.csiro.au/askap

Email atnf-askap-ps@atnf.csiro.au