

Minutes of the 8th Meeting of the International Square Kilometre Array Steering Committee

ASTRON, Dwingeloo 16-17 August 2002

Draft: 2 October 2002

ISSC Members Present:

Australia:	Wim Brouw Ron Ekers	CSIRO CSIRO
Canada:	Peter Dewdney Russ Taylor	National Research Council University of Calgary
China:	Peng Bo	National Astronomical Observatories
Europe:	Harvey Butcher Phil Diamond Richard Porcas ¹ Arnold van Ardenne Peter Wilkinson	ASTRON MERLIN/Jodrell Bank Observatory Max Planck Institut fur Radioastronomie ASTRON Jodrell Bank Observatory
India:	Pramesh Rao	National Centre for Radio Astrophysics
USA:	Bernie Burke Ken Kellermann Bob Preston Jill Tarter Yervant Terzian Jack Welch	Massachusetts Institute of Technology National Radio Astronomy Observatory Jet Propulsion Laboratory SETI Institute Cornell University University of California, Berkeley

¹ Substitute for Anton Zensus

Observers:	Willam Baan Jim Cordes Justin Jonas Roustam Dagkessamanski Hisashi Hirabayashi Makoto Inoue	ASTRON Cornell University Rhodes University, South Africa Astro Space Center, Russia ISAS, Japan National Astronomy Obs., Japan
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1. Approval of the Agenda

Agenda approved unanimously.

2. Approval of the Minutes of the 7th Meeting of the ISSC

Motion by Kellermann for approval of the minutes of the 7th meeting of the ISSC. Seconded by Tarter. Passed unanimously.

Ekers asked all the attendees to introduce themselves.

3. Review of Action Items

Taylor reviewed the action items from the 7th ISSC meeting.

1. van Ardenne to circulate a program of the URSI meeting to ISSC members. **Done**
2. Ekers, Schilizzi and Kellermann to facilitate a Joint Discussion Group on Future Large Facilities at the Sydney IAU GA in 2003. **Done**
3. Butcher to contact the appropriate DSN organization in Europe including space agencies and planetary science community. **Done**
4. Hirabayashi to contact the corresponding appropriate bodies in Japan **In process**
5. Taylor to invite Paris Herouni to attend the next ISSC meeting as an observer. **Done**
6. Yervant to provide contact information to Taylor **Done**
7. Ekers to appoint committee to recommend process for new membership in the ISSC. **Done**
8. The new membership committee to present recommendation at the next ISSC meeting. **Done (see agenda item 16)**
9. Taylor to distribute action items separately to ISSC in advance of next meeting. **Done**
10. Taylor to communicate ISSC executive telecon discussions to ISSC. **Not done, will be corrected in future.**
11. Taylor to place a disclaimer on the SKA memo series page that memos are the opinions of the authors. **Done**
12. Butcher to draft a guideline statement on the process for decision making and invite comments from individual consortia. **Done**
13. Taylor to collect PowerPoint presentations at ISSC meeting and place in ftp site. **Done**
14. Preston to draft letter inviting strawman concepts with guidelines. Taylor to send the letter with guidelines to project leaders of the concepts. **Done**
15. Tarter and Butcher to report at the Dwingeloo meeting on "Steps toward an International Organizational Structure for the SKA Project" **Done (see agenda item 5).**
16. Ekers to contact China and India on ability to commit funding. **In process**
17. All to send comments to Taylor on the draft advertisement. Feedback on ad to Taylor before January 28 then it will be sent out to ISSC for final approval.
18. Kellermann to look into getting the add into the AAS newsletter. **Done, but not implemented**
19. Butcher to develop guidelines for evolving the strawman technical specifications. **Done**

20. McKenna-Lawlor to send the Birr site survey report to Taylor. **Not Done. Proposal for SKA site withdrawn.**
21. Taylor to respond to letters noting that guidelines will be sent by October 2002. **Done**
22. Terzian to suggest a name for US working group member on IP to Schilizzi. **Done**
23. SESC will submit a draft guideline document to Taylor by July 1 for review and discussion by the ISSC at the Dwingeloo meeting. **Done (see agenda item 10).**
24. Taylor to ask Hall if EMT reports can be put on the SKA memo web page. **Done. EMT reports are in the SKA memo series.**
25. Ekers to ask Hall to consider staying on as chair of the EMT. **Done**
26. All to send recommendations for replacement to Ron Ekers.
27. Taylor to update budget with balance forward. **Done**
28. Members of the ISSC to nominate candidates for vice-chair before the next ISSC meeting. **In process**
29. Van Ardenne to send more detailed program of Groningen Workshop to ISSC for comment. **Done**
30. Terzian to send proposed dates for the Arecibo meeting to Taylor. **Done**
31. Taylor to inform Bruce Thomas of new Geraldton Workshop Planning Committee members. **Done. Peter Hall, Chris Carilli will also be added. Kellermann nominated for chair of the committee by Ekers, second by Terzian. Approved.**

4. Process for Decision Making

Butcher tabled a [document](#) that was made available on the ISSC web page before the meeting. .Butcher raised the questions: How can we arrive at decisions made by this committee? And how can they then be carried out when resources are not yet in place to implement them? Moreover, decisions should be made within a win-win situation to keep all players “on-board”.

Several points were raised:

- Tarter noted a disconnect between Item 2.3 and item 4.3 A decision on the concept must be a formalized competitive process. The second phase cannot be an “elastic” process. For the US the rules and process must be well defined as part of a proposal process. Tarter suggest we remove item 4.3a
- Terzian noted that there is an Implicit assumption is that the selection of the site will be made by the ISSC. Is this correct?
- Preston noted that this is the first step in an important process and perhaps we need a subgroup to move this along. Ekers recommended that we keep the discussion within the entire group for now. For many countries continued participation must include involvement in some way. The process must allow for this.
- Brouw noted that one problem we confront is difference in culture on how decisions are made.
- Pramesh queried we the ISSC would overturn recommendations of the technical committees for political reasons? Will the technical committee work in a vacuum? Will the process in the end be subverted by a political decision based on votes in the ISSC.

Butcher will amend the document on the process of decision making based on the discussion.

A revised version will be placed on the web site and revisited next meeting. A subcommittee or Tarter, Preston, Brouw and Butcher was appointed to help evolve the document. *All ISSC members are requested to send comments to Butcher.*

5. Steps toward an International Organizational Structure for the SKA Project

Butcher tabled a [document](#) that was made available on the ISSC web page before the meeting. The following discussion was accompanied by PowerPoint presentation by Butcher.

Treaty based cooperative organizations began after the second world war. However this mode of organization is not possible anymore. Europe has moved toward project specific agreements among research councils, with generally only a few partners. Many partner agreements do not seem to work well. Two current organizations in development are:

1. ITER (a global fusion facility). Here siting and technical concept issues were problematic and critical and have come close to killing the project.
2. ALMA: Siting issue were agreed early on in a 3rd country that is not a major player. Also there are a small number of negotiating partners. This seems a successful paradigm.

Tarter noted that if site and concept decisions are to be made at the same time there is a possibility of negotiation and trade off between the two. Should the site decision be made early independent of the concept?

A third organization, TESLA, may be closest situation to SKA. This is a particle accelerator facility at DESY. The project will build a facility based on collaborations between institutes all over the world. The institutes share cost and responsibilities for construction and operations, and each country has to maintain their part of the facility. There is no central organization that maintains the entire facility. There are no site issues because all have agreed to use an existing organization. The participating institutes plan to form a legal organization that will sign a service contract with DESY for support. Operations centres will be distributed among participating institutes. They see the SKA approach as a model to emulate.

Ekers suggest we invited key individuals from some of these other projects to address an ISSC meeting. Dewdney moves that we do this. Butcher will add TESLA information to a revised document on international organizational structures and AUGER. *Butcher will invite someone from TESLA to attend the next meeting at Arecibo.*

Kellermann suggests that we get perspective from more than one partner in the project. *Tarter will approach Jim Cronin.* Ekers suggest we also look at interagency agreements on space projects and on global deep space networks.

Ekers described the situation with the Global Biodiversity information system, GBIS, – an international facility for managing biological information. Early on there were five potential sites. Decision was made by vote, with every country having one vote. The EU coordinated block votes and outvoted the rest to win a European site (Denmark). This was a highly political decision which has subsequently impacted the attitudes of governments.

6. Status of SKA Director Position

The SKA Director search committee consists of : Diamond, Butcher, Ekers, Terzian, Kellermann, Taylor, Swarup,. Diamond was elected chairman by the committee. Diamond table a short written report.

The following criteria for assessment of candidates were agreed by the committee. (E = essential qualification, D = desirable qualification).

1. Ph.D. in astronomy, astrophysics, physics or engineering (E)
2. Background in radio astronomy (D)
3. Knowledge of the SKA (D)
4. Demonstrated ability to handle political issues (E)
5. Demonstrated leadership ability (E)
6. Understanding of the International frameworks used for managing multinational facilities (D)
7. Experience in major collaborative projects (E)
8. Project management and project planning experience (E)
9. Broad scientific background in relevant areas (D)
10. Ability to interact with engineers (E)
11. Stature in the community (E)
12. Communications skills and interpersonal skills (E)
13. Ability to promote the project at National and International levels (E)

Six applicants responded to the advertisement. Diamond tabled a list of the criteria that were established by the search committee. The candidates were ranked based on those criteria by each of the committee members. Three of the candidates have been short listed. The leading candidate will be interviewed by a subset of the committee and if acceptable the committee will forward their recommendation to the ISSC for approval.

The selection committee recommends that Ekers take on the responsibility to negotiate with the new director even though he will no longer be chair of the ISSC. This recommendation was unanimously approved by the ISSC. Anyone with question that they feel should be raised at the interview with candidates should contact Diamond within the next few days.

7. Management Structure

This discussion was postponed to item 13 and 14.

8. Agreement on Intellectual Property Rights

A [document](#) prepared by Schilizzi was posted on the ISSC web site for discussion at the meeting.

Brouw suggests we not make too legal an agreement at this stage. What we need is more a statement of intent.

Schilizzi will be asked to redraft the IPR document as a statement of intent.

We need an inventory of normal practice among the institutes/countries that are members of the consortium. ISSC members are requested to send information to Schilizzi on normal

practice for IPR. Each consortia should identify individual and send this information to Schilizzi to contact individuals to get this information.

Brouw recommends we set up an intellectual property register. This should be maintained by the secretariat for now. This process should be set up by the secretariat.

Taylor to collect IPR forms and maintain a database that is available only to the ISSC with password protection.

Taylor to set up the ISSC site as password protection. Username issc. Password ska2010

How can we facilitate coordinate between companies in different countries without entanglements in legal issues? Companies can coordinate with member institutes for information on the IPR register. Each consortia will designate a member who is a contact person for industry for access to the IPR database.

9. Report from the Site Evaluation and Selection Committee

The Site Evaluation and Selection Committee (SEC) has six members: Tezian (chair), Ananthakrishnan, Baan, Jonas, Thomas, Wu. The last meeting was in Groningen on Tuesday, 13 of August. The committee would like the ISSC makes the criteria for the project clear. For example, what band should RFI measurements span? Assuming frequency range 150 MHz to 22 GHz. RFI will be tested over this range.

Seven countries have responded to the initial call of expressions of interest: Argentina, Australia, Brazil, China, Europe, Ireland, South Africa, USA. For all these to respond with full proposal is a substantial amount of work. The committee suggests that we asked for a preliminary proposal with the intent to narrow down the list. (Diamond notes that Ireland has withdrawn their response after discussion with European consortium leaders.)

Tarter asks if the SESC has listed criteria that would be included in a preliminary proposal that would be the basis for exclusion? Terzian noted that possibilities are RFI, array configuration, ionospheric, tropospheric opacity, data distribution, security, etc. Terzian suggest we send these requests by October with response within one year.

Tarter suggests that a preliminary proposal request might have politically negative ramifications. Ekers points out that the level of effort required for a full proposal is not inconsistent with resources required of a realistic host for the SKA. Burke suggests that we use available global data to exclude possibilities ourselves, e.g. maps of tropospheric opacity, RFI environment. Jonas suggests that a continued, non-terminal feedback from site proposers would be beneficial to both the ISSC and the proposers. Suggests a white paper format, e.g. proposers send non-terminal white papers allowing early assessment and allowing for feedback to the proposers from the ISSC. The approach is approved by the ISSC. The timeline for white papers is to be discussed.

SESC recommends that we it set up a working group on RFI measurements. This recommendation was approved.

10. Guidelines for Siting and Hosting the SKA

[Document](#) made available on the web from the SESC.

Given to outcome of agenda item 9 regarding white papers, this is now an internal ISSC document for developing consensus and agreement on site issues.

Suggestions raised: The document should not read as if the SKA will be hosted solely in one country. Brouw suggests that reference to science centres in each Country and operations centre located at the central site be modified, since these requirements have not been generally agreed to. It would be worthwhile to refer to the back side of the moon as an example of a radio quiet zone by international treaty.

All are requested to send comments on the draft document to Terzian.

Tarter points out that we need a way to track revisions and feedback on documents.

11. Report from the Science Advisory Committee

Chris Carilli, the chair of the ISAC, reported to the meeting.

The ISSC unanimously endorsed Carilli as chair of the ISAC for two years as of August 2002.

The process of removing and adding members to the ISAC was discussed. We will make all the appointments term appointments, two years starting from the Berkeley meeting for original members. Carilli will request confirmation of intent to continue to be members from the current membership. Prior to the Arecibo meeting in January Carilli will report on status of membership and make recommendation for new members for approval of the ISSC. The ISSC will discuss the membership based on recommendation of the ISAC chair.

The mandated of ISAC includes the following:

1. Generate the next edition of the science case.
2. Generate a science case web presence..
3. Coordinate ISAC membership and teams.
4. Provide input to the concept groups and white paper designs.

Carilli notes the potential conflict of interest on the ISAC due to concept proposers being members of the committee. This is not viewed as a problem by the ISSC.

ISAC will provide a written report on the white papers in October 2002. This report will be a preliminary review. The ISAC will propose milestones for the next year to the ISSC. The ISSC will review this in Arecibo.

Wilkinson requests any presentation material from working groups for the generic SKA presentation.

Carilli stated that the intent of the ISAC is to revise the original science case by August 2004.

The next face-to-face meeting of the ISAC will be at Geraldton. Meanwhile an SKA science meetings will be held in Oxford in November 2002.. Other topical meetings may be held.

Diamond noted that planning is progressing for a joint SKA/NGST/SKA for October 2003 in Berlin.

Tarter requests that an SKA presentation template with the logo be posted for use in SKA presentations.

Taylor to distribute a ppt template with SKA logo.

The ISSC request that a representative of ISAC be present at the Arecibo meeting.

12. Report from the Engineering Management Team

Presented by Peter Hall, the chair of the EMT

The EMT has eight members. Thompson, Napier, Viedt, Spencer, Kant, Ananth, Nan, Hall. All existing members are willing to continue for another year. Ekers raised the possibility that we require each project to appoint a member to the EMT. Hall points out that this is almost the current situation.

The EMT endorses the present structural model of the EMT and ISAC. Interaction with the ISAC has gone very well. The EMT proposes to develop a working group substructure, and notes that software engineering is currently underrepresented. A software engineering working group has now been set up.

The EMT looked at policy for review of stage 1 white papers. It was noted that the stage 2 process will involve the proponents in a good deal of work. Therefore a rigorous review at this stage is desirable to save effort later on. The EMT recognizes the political sensitivity of these reviews. Their philosophy will be to “be honest but not blunt”. The [preliminary review](#) of the EMT was tabled at the meeting. The EMT will submit to the ISSC a more complete review of the concepts by October.

The requirements for the next stage were discussed. The EMT recommends that we relax the submission date for phase 2 proposals to mid-2004. The EMT will try to lay out a plan for developments between now and stage 2, and will work toward more explicit guidelines for the stage 2 process in concert with the concept groups. Milestones should be set and reported at Geraldton 2003. The final EMT feedback to the concept proponents will ask for a publicly available document addressing the points raised by the EMT. These responses should be provided by the beginning of May. Preston suggests the responses also contain more detailed reports, including reports on political situations, opportunities for international cooperation and consequences of not being selected for the SKA.

The EMT held technical discussion of the various concepts. Long distance data transfer needs to be looked at more closely, since it will likely be site-dependent. Hybrid designs and synergies and collaborations were also discussed. The EMT feels that simulation tools will be required to make progress on many difficult technical assessments. They suggest an international coordination for development of simulation tools. This could be part of the software engineering group mandate. Resources are being put in place at various institutes for SKA simulations. The way forward requires a combination of concept specific simulations and coordinated simulations from the international project.

The EMT would like to meet twice per year, however travel funding may be problematic. Is there a possibility of support for some members of the EMT? Ekers suggested that on a case-by-case basis the Director may allocate funds for support of participants at EMT and ISAC meetings from the Directors budget. There was general agreement to this.

Burke notes that the cost of the SKA is clearly not going to be \$600M unless the SKA is descoped. A nominal target to use for the cost of the SKA is \$1B.

13. Review of SKA Development Timeline (Preston)

13.1 Management Structure

Preston reviewed the Management Structure (moved from original agenda item 7). A [draft management structure](#) arising from discussion at the previous ISSC meeting was presented by Preston. Debate ensued about the appropriate level of the ISAC and the relationship between the ISAC and EMT. It is important that the ISAC and EMT must interact closely. Preston presented a revised draft management structure ([attached 17 August 2002](#)), incorporating discussion. Debate continues. The majority of the ISSC felt the ISAC is a committee of the ISSC, and does not report to the director.

13.2 Timeline

Preston presented a draft timeline revised draft as of [2 August 2002 attached](#). The current timeline does not align choice of site and concept. The revised draft suggest we align this in 10/2005. Preston presented a proposed detailed timeline and milestones for down selection of concepts and sites ([draft document 11 August 2002](#)). Preston also presented a list of [questions about the time line](#).

Ekers calls for a discussion on the fundamental driver of the timeline.

Discussion resumes on Saturday morning. Ekers stresses that we must examine big picture.

Taylor suggests US decadal review is a prime driver. We need to have an evolved technical concept that is well costed before the US Decadal review.

Cordes notes that prototyping needs to happen between 2006 and 2010. In US ATA will be operating. The first 12 m antenna for the DSN demonstrator array will be produced in 2005. ALMA construction funding is completed by 2011. The EVLA is funded on a similar timescale. This does not preclude prototyping in US.

In Australia demonstrators cannot be completed until after 2006. Current funding extends to 2006. Planning has been working to the current published SKA timescale.

The European 6th framework could provide significant funding for design studies only as early as 2004. It will then be 2006/7 before an evolved European concept would be in place, based on the next major set of studies and prototyping. Major capital opportunity could appear around 2008. The SKA needs to be at the forefront in Europe at that time. In Europe there will be a proposal to move forward on a large optical telescope on the same time scale as the SKA.

Canada has development funds for the next few years, but no funds for prototyping identified yet.

China expects to begin construction of FAST around 2005. Current activities will progress

and are funded. Next opportunity for major funding will be in 2007.

In Japan VSOP2 earliest launch is 2009. SKA demonstrators might be a significant contribution to VSOP2. Funding constraints are imposed by ALMA. The US budget profile is 9 years starting from 2002. The spending profile is maximum in the middle. The European profile is an 11-year plan starting in 2002. Their funding profile is a maximum at the end. In Japan the ALMA budget begins in 200 and ends in 2012.

In South Africa increase funding of science is expected over the next few years. Some of this is expected for SKA.

For the US and European time scales we need a final concept and site and substantive document comprising the SKA proposal around 2007/8. Therefore final concept selection should be in 2007.

Butcher pointed out that for site selection there is an additional consideration driving time scales; the time to develop international protected zone. The earliest date that a proposal could be brought forward is the World Radio Conference in 2006. A country will need to promote this well before 2006.

Ekers recommends that the site selection process should not be extended to match a delayed concept selection process. Kellermann notes that site location is linked to the concept. However, many site criteria are linked to the SKA specs rather than the specific concept; e.g. Welch notes that if we go to 20 GHz, as agreed at the Groningen workshop, water vapour is an issue. This requirement may rule out some sites. Terzian suggests that we continue with the white paper process that we agreed to in agenda item 9.

The new director will develop a revised time line for discussion at Arecibo.

Brouw notes that the proposed down select process must be also be reviewed by ISSC members at their home institute.

Butcher, Preston and new director will review the down select process.

Is it best to have a single concept at a well defined date, or should we work toward more than one options for construction of the SKA? Kellermann suggest that instead of labeling the process down select, perhaps better to call it working toward a “final design”. Dewdney notes that high priority is to demonstrate feasibility of the SKA. If it can be done in more than one way so much the better. Butchers suggests “facilities definition”, which would include operational models, etc.

Preston presented a [revised timeline document](#) incorporating the discussion points above. Final selection of concept design is August 2007. First iteration site white paper are due next May for review at Geraldton.

14. Evolving the Strawman SKA Specifications

A [draft document](#) from Butcher was available on the ISSC web page for discussion. Further discussion was felt unnecessary given the substantive discussion of time lines in agenda item

13.

15. Election of ISSC Executive

Taylor explained the process as per his email of early August.

The positions of Chair and vice-chair if the ISSC are two-year terms, and the terms of the current chair and vice-chairs are completed in August 2002. The MOU states that "The chair and vice-chair of the ISSC will be elected by majority vote of the core membership".

At the 4th ISSC meeting (August 2000) the current temporary executive structure consisting of a chair, two-vice chairs and executive secretary was set up with the following understanding (item 1a from the minutes of the 4th meeting):

"In order to have representation from all major regions Ekers suggested that the executive be increased to four members. The proposal arising from discussion was for a temporary structure for the executive that would allow for a total executive of four, consisting of the chair, vice-chair, past-chair and executive secretary. During the first cycle (two years), we will elect two vice chairs. At the next election, when the current chair becomes the past-chair, we will revert to one vice-chair as laid out in the Memorandum of Understanding."

The ISSC agreed at the 7th ISSC meeting (Bologna 2002) to hold the election as part of the next ISSC meeting and the new chair and vice-chair will assume office at the end of that meeting. We therefore need to elect one of the current vice-chairs (Butcher or Tarter) to ISSC chair at the meeting. Both have agreed to let their name stand. Following this there will be an election for a new vice-chair. The current vice-chair who is not elected to chair will automatically become a nominee for vice-chair. Ron Ekers will remain on the executive as past-chair.

The question was raised, should we take into consideration geographic sensitivity vis-à-vis the SKA director? Since the director will not be known until after this meeting we would have to delay the election. It was agreed to proceed with the elections at this meeting.

Kellermann moved that the director should be an ex-officio member of the executive committee. Terzian seconded the motion. Burke recommends an amendment that the "SKA Project Director will attend and participate at all meetings of the ISSC and the ISSC executive, except for specified executive sessions." Passed by vote.

There have been no nominations for vice-chair. Ekers proposes Tarter for chair, Butcher for vice chair. Seconded by Terzian. Carried unanimously.

16. Membership of the ISSC

16.1. New Membership

A subcommittee (Diamond, Brouw, Kellermann, Burke) was formed to make a recommendation to the ISSC regarding a policy for expanding the membership of the ISSC.

Diamond presented the recommendations. ([Powerpoint here.](#))

The current MOU limits the size of the ISSC to 20 members. In considering models for expansion the committee agreed to the basic principles that the SKA and ISSC must be inclusive, but that membership should attempt to reflect the expected distribution of capital of 1/3 Europe, 1/3 US and the 1/3 rest of the world. Three model were raised for discussion:

a) new members are welcome with three conditions

1. must pay membership fee
2. must be accepted by majority vote
3. may be charged an entrance fee to offset previous expenditure

Each signatory to an amended MOU may have up to 2 members on the ISSC. When funding comes each signatory will be required to pay according to GDP. In this model there must be a mechanism for ensuring that the three natural groupings retain equal number of votes.

b) Membership via one of three consortia

1. North America,
2. Europe,
3. Rest of the world

Each consortium contributes 1/3 administration and 1/3 of the voting membership of the ISSC. ISSC can expand with vote of the ISSC members.. Members of the ISSC are appointed by individual consortia. Prospective members may be observers for one year, then must join one of the existing consortia. ISSC fees are paid through that consortium. SKA consortium cost are paid by the three consortia.

c) Membership based on resources contributed

The ISSC would be composed of representatives from regions actively contributing to the SKA and expected to contribute toward the eventual construction costs. Individuals from regions not on the ISSC can play major roles in EMT, ISAC and as SKA employees. Allow say 4 at-large members who can vote on science and technical issues but not on financial issues.

Kellermann points out that model c) allows contribution from individuals without expectation of financial contribution. Ekers asks in model c) what is the metric for measuring contribution sufficient for core membership?

Tarter asks, how is our current model broken? Does the limit of 6 members from one of three blocks not allow for the right distribution of people?

Inuoe suggests that we should not adopt a budget model, but base the ISSC on scientific and technical expertise. Hirabayashi endorses this statement. Using the GNP is not a good model. Japan will explore options for the consortium approach.

Burke suggests that we just allow the membership to grow without changing the US and European membership (remain at 6). New members must contribute intellectually and be

expected to contribute to the capital funding of the SKA. We could keep the current membership but allow up to six new members. The ISSC could have associate members who will have a different financial requirement. Associate members are invited by the ISSC.

Rastam prefers model b. Russia would become a member of European consortium. Burke suggests the committee continue its work and return to Arecibo meeting with a single proposal.

The Membership committee to bring revised proposal to Arecibo meeting.

Pramesh inquires what is the basis for forming consortia? He suggests that the ISSC should evolve individually instead of enforcing consortia structure on the members.

16.2. At-large Membership

The ISSC MOU allows for two at-large members of the ISSC. Richard Schilizzi fills one of those slots.

Ekers notes that Jim Cordes has attended the last three meetings as an observer. Cordes is the PI of the US SKA NSF proposal. It is not appropriate for the Cordes to continue as an observer. Ekers proposes that Burke become an at-large member allowing for Cordes to become a core member of the ISSC as one of the US representatives. Ekers moves. Tarter seconds. Approved with one recuse (Burke) and none opposed.

17. Secretary's Report

The Secretariat carries out, tracks and coordinates the business of the ISSC. At this point in time the business of the ISSC is the whole SKA project, since there is no other responsible body or person. When the SKA Director is in place, the Executive Secretary will be more properly restricted to the ISSC business only.

During the last year Taylor made extended visits to two SKA institutes, DRAO and CSIRO. With a few exceptions ISSC Executive held monthly teleconferences. Secretariat also maintains the Secretariat web site.

The newsletters have been produced annually in October for the past two years. I will begin work on the next newsletter in September. This is perhaps the last newsletter produced by the ISSC secretariat. More appropriately this would be organized by the director.

Over the next year the relationship between the Secretariat and directorate will need to be clarified. Will the ISSC Secretariat maintain an independent existence from the SKA directorate? Taylor and new director will discuss distribution of responsibilities.

Ekers had requested a colour version of the logo. There is currently no agreed colour version.

Taylor to present some colour options.

Taylor to produced a professional SKA PowerPoint template

Budget Update for Period February 2002 - July 2002	CAD	USD
Balance Forward	60,154.49	37,897.33
Revenue		
Expenses		
Nature Publishing - Employment Ad	4448.45	2802.52
American Institute of Physics - Employment Ad	2318.00	1460.34
University of Calgary	35,250.00	22,207.50
Account Balance	18,138.04	11,426.97

18. Reports from Observers

18.1 Japan

Inoue gave a short [presentation](#) on developments in Japan. There has been no formal process on the SKA in Japan process since the Bologna meeting (January 2002), but importance of the SKA becoming recognized. Japan is looking for a possibility to participate as an SKA member.

In Japan VERA is under testing, (data from two beam system was shown). Japanese participation in ALMA is under negotiation. As well the VSOP2 proposal is under development, with launch expected at the earliest in 2009.

18.2 South Africa

A proposal has been submitted to the National Research Foundation for \$200 k Euros for a site survey and annual \$200 k to conduct SKA work. We expect formal confirmation of success of this proposal in the near future.

The South African government has identified five areas for future priorities. Astronomy is one of these and the only one that is not multi-disciplinary. South Africa is looking for ways to collaborate directly with the international SKA project.

18.3 Russia

During this year scientific interest in SKA/LOFAR has been discussed. At Puschino observations have been made to search for low frequency radio emission from gamma-ray bursts. Initial observations were made at 100 MHz with no success. Subsequent observations will be carried out at lower frequencies. Searches have also been made for transients associated with high energy particles via searches for pulses arising in our atmosphere related to atmospheric showers. The moon has been observed at higher frequencies for nano-second pulses.

Upgrades have been completed on the low frequency radio telescopes. Two independent beams have been successfully used on the low frequency array for the past year. The beams are scheduled independently for different science programs. Russia continue to discuss possibility to use the Luneberg lens for radio astronomy. Currently the possibility to construct half cylindrical len is under study. A test lens may be constructed over the next year.

Russia is exploring how to join the LOFAR project. There are several possible ways to join. Perhaps Russia will construct a LOFAR station at Puschino. Alternately Russia may construct a more sensitive array for one or two frequencies to work with LOFAR in VLBI mode. Another possibility is to construct an array with large field of view for transient searches.

19. Update on OECD Spectrum Management Task Force

Butcher reported that the final outcome of the OECD Task Force is in draft form. It is expected that there will be statements to science ministries and study program into the ITU (WRC-2006).

Specific cases examined, 1) ATA and Sky Bridge constellation, and 2) LOFAR and Orbcomm constellation. Sky Bridge has 80 satellites with 700 km footprint working at 10.7 – 12.5 GHz. For the ATA narrow primary beam yields < 1% data loss due to saturation. However the satellite downlink is always present in the sidelobes and therefore downlink signals will be present always at about 300 times the noise. Orbcomm has 36 satellites operating from 137-138 MHz. Because of the low frequency the footprint is large. Near RF saturation is produced in LOFAR in an all sky main beam. For a site at 54 degree latitude there is 8% data loss to saturation. For site at 30 degree lat this increases to 30% data loss. Downlink signals are always present at 100-300 times the noise. Mitigation techniques will be necessary to remove persistent downlink .signals

20. Future Meeting

20.1 Next ISSC meeting, Puerto Rico: January 2003 (Terzian)

Dates are January 17 and 18 (Friday, Saturday). The meeting will be hosted at the observatory. The EMT and ISSC may also meet. Emails will be sent by end of September with details. It is a 1.5 hour drive from San Juan airport to observatory. Preston proposes EMT meet 16,17 so they are prepared to report to the ISSC on the 18th. Terzian recommends that arrangements be made early, due to high tourist season in the Caribbean.

Taylor to send list of attendees in Arecibo to Terzian. (Including two invitees for TESLA and AUGER)

20.2 SKA meeting, Geraldton: July 2003

Taylor reported that Michelle Story has replaced Bruce Thomas as chair of the LOC. The meeting dates are : Tuesday 29 July to Friday 1 August 2003.

The organizers hope to organize a half day visit to Mileura Station (one of the potential proposed central sites for the SKA) for ISSC and SESC, probably on Friday afternoon following the ISSC meeting.

The meeting will be opened by the Premier of Western Australia

Venue:

We concluded, that if the price were acceptable, it would be optimum to base the conference at the Ocean Centre Hotel, which is on the

Facilities include:

- 92 rooms
- a 170-seat principal conference room
- 5 or 6 individual meeting rooms, each seating over 30 people, to facilitate Working Group discussions

20.3 ISSC meeting, January 2004

Invitations to host the January 2004 ISSC meeting were offered by India (probably in Pune) and South Africa. Major vote was in favour of South Africa.

Jonas to send proposed dates for the meeting.

21. Summary of Action Items Arising

1. Butcher will amend the document on the process of decision making based on the discussion. A revised version will be placed on the web site and revisited next meeting.
2. All to send comments to Butcher on document
3. Butcher will add TESLA information to a revised document on international organizational structures
4. Butcher will invite someone from TELSAs to attend the next ISSC meeting at Arecibo.
5. Tarter will approach Jim Cronin to attend the next ISSC meeting.
6. Schilizzi to redraft the IPR document as a statement of intent.
7. All to send information to Schilizzi on normal practice for IPR. Schilizzi will contact individuals to get this information.
8. Taylor to collect IPR forms and maintain a database that is available to ISSC only.
9. Taylor to set up the ISSC document web site with password protection .
10. Consortia to designate a member of each consortium who knows the password and is a contact person for industry.
11. Taylor to inform the SESC that RFI working group has been approved.
12. Taylor to produce an SKA powerpoint template.
13. The Director will develop a revised timeline for discussion at the next ISSC meeting.
14. Butcher, Preston and new director will review the down selection process.
15. ISSC Membership subcommittee to prepare a revised proposal for the next ISSC meeting.
16. Taylor to produce sample colour versions of the SKA logo.
17. Taylor to send list of invitees for the Arecibo meeting to Terzian.
18. Jonas to send proposed dates for January 2004 ISSC meeting.

