

PrepSKA Work Package 4

Deliverable 2

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“Report on viable governance options for the SKA Organisation”

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1. Introduction

This is the second deliverable of Work Package 4 on governance and legal structure for the EC-funded Preparatory Phase Study of the Square Kilometre Array (PrepSKA). The first deliverable of Work Package 4 provided an overview of the best practices of existing multinational collaborations relevant for the SKA. The main conclusions of that report are summarised here for clarity. They have fed the discussion on a suitable governance model and formed the starting point for another study based on similar organisational requirements but on a different set of models. We have obtained external advice on corporate structures to check their suitability for a large scientific organisation. This report contains the main aspects of that analysis and its conclusions.

Long-term governance

Work Package 4 has also led a Tiger Team to provide input for the discussion in the Agencies SKA Group (ASG) towards a Joint Implementation Agreement for the long-term SKA Project. This Tiger Team has developed a strawman governance, constructed a list of priority items that at least should be present in the Joint Implementation Agreement, and discussed the contents of these items among the Tiger Team members and the Core Group of Work Package 4. The main results have been presented to the ASG in March 2010 and are briefly summarised in this report.

Short-term governance

Whereas those studies focussed on the long-term governance of the SKA Project, it has also been necessary to make it more concrete and investigate the possibilities for the near future. The end of the preparatory phase is approaching and the SKA Project is preparing itself to enter the next phase: the pre-construction phase (2012-2016). During the pre-construction phase the legal capacities of a legal entity are required to be able to make important decisions for the SKA Project (e.g., on SKA design, construction contracts, site selection, and host of the SPO). This report therefore also contains a section on different models for the pre-construction entity.

Finally, we distilled the lessons we learned from the comparison of all different models into a checklist for selecting an appropriate governance model.

The Square Kilometre Array (SKA)

The SKA will be a revolutionary radio telescope made of thousands of receptors linked together across an area the size of a continent. The total collecting area of all the receptors combined will be approximately one square kilometre, giving 50 times the sensitivity and 10,000 times the survey speed of the best current-day radio telescopes.

The SKA will cover the frequency range from 70 MHz to > 25 GHz and will play a major role in answering key questions in modern astrophysics and cosmology. It will be one of a small number of cornerstone observatories across the electromagnetic spectrum that will provide astrophysics and cosmologists with a transformational view of the Universe.

The construction of this radio telescope with a wide frequency range is a major undertaking and is planned to be implemented in phases in order to spread the cost impact. Phased implementation is an effective strategy for an aperture synthesis telescope as it can start operating before construction is completed.

PrepSKA

PrepSKA is the preparatory phase study for the SKA (Square Kilometre Array) telescope funded under the EC Seventh Framework Project in which 11 research institutes and 11 funding agencies of different continents do participate. PrepSKA integrates the R&D work from around the globe in order to develop the fully costed design for Phase 1 of SKA, and to deliver an Implementation Plan for the full instrument. With the active collaboration of funding agencies and scientists, policy-related questions are also being investigated. PrepSKA's objective is to prepare for the realisation of the construction and operation of SKA, the Square Kilometre Telescope.

The PrepSKA project consists of 7 work packages of which 3 policy work packages: Governance and Legal Framework (WP4), Procurement and industrial involvement (WP5), and Funding Model (WP6), 2 technical work packages: design and siting study; 1 coordination work package (WP1) and one work package that combines the results of all work packages into one implementation plan (WP7).

The overall deliverable of PrepSKA is an Implementation Plan for SKA that will form the basis of a funding proposal to governments to start the construction of SKA. The contribution of WP4 constitutes of a report on the best practices for large scale research infrastructures (Del. 1), a report on viable options for a long term governance structure of the SKA Organisation (Del.2) and a final report (white paper; Del.3), which will cover the model of the pre-construction legal entity for the SKA. A concluding workshop will be provisionally scheduled to present the results to a broader group, with a focus on the start-up of an international governance structure.

PrepSKA Work Package 4: Governance and Legal Framework

Work Package 4 (Work Package 4) has been tasked with the development of viable options for the SKA legal framework and governance. One of the milestones in the work plan of Work Package 4 was to develop a comparative study on best practices of governance and legal frameworks for international large science projects. This has provided input for developing the options of the legal framework and governance for SKA.

The main focus of Work Package 4 was on a study of the governance models for existing multinational collaborations for mega science projects. Its first deliverable presented a comparison of models of existing large research infrastructures in order to distil the best practice that has emerged from these projects, thus ensuring that SKA could benefit from previous experience.

This document summarises that comparison and its main conclusion. It also elaborates on it by adding two more models to the comparison. For the selection of these models, we have looked beyond typical models for science projects and included models that have proven to be

sustainable over a long period of time in other parts of society (i.e. the multinational enterprise and 'Stichting' (Dutch Foundation)).

The main goal for Work Package 4 has been to use past experience to develop options for the optimal governance structure for the SKA during its construction and operational phases and to study in greater depth the potential legal frameworks under which the SKA project might ultimately be established. Work Package 4 has been working to reach these goals and the results so far are presented in this document.

Approach

For the content of the second deliverable, Work Package 4 has tuned its approach to the recommendations of the Global Science Forum of the Organisation for Economic Co-operation and Development (OECD), which can be found in the report they produced in 2010 concerning the establishment of large scale research infrastructures. The report advocates a phased approach for the governance, which in the current political environment ensures the building of graduate support. Governmental bodies may be hesitant to make a long-term commitment for the following reasons:

- over-commitment to costly, large projects that can stress available science resources;
- lack of flexibility for responding to new scientific challenges;
- neglect of small and medium projects;
- loss of focus through overly broad scoping of roadmapped scientific domains; and
- inappropriate combining of information from dissimilar roadmaps¹.

Long-term vs. short-term

This phased approach for the governance suits the SKA project very well. During the preparatory phase it became clear that it would not be possible to provide a full implementation plan at the end of PrepSKA and enter into construction from there. Important decisions on the system design and site selection would not be made before the end of PrepSKA. The pre-construction phase was defined as the period between the end of PrepSKA and the beginning of construction of the SKA, i.e., the period 2012-2016. The mission and the scope of the pre-construction phase have been clearly laid out in the Project Execution Plan for the SKA (which can be found [here](#)). One of the goals described in the Project Execution Plan, or PEP, is to mature the SKA legal entity into an organisation capable of carrying out the construction, verification, and operation of the telescope. As this fits in well with Work Package 4's work for PrepSKA, we have steadily been providing input on governance issues to the pre-construction working group, a group installed by the Agencies SKA Group² to identify options for the funding and governance of the SKA in the pre-construction period.

Work Package 4 has given priority to its work for the pre-construction working group. Figure 1 shows the Work Package 4's activities. It is clear that the work for the long-term can (and has already proven to) benefit from the work for the short-term governance. This work is on-

¹ See OECD's GSF report, December 2010, on Large Infrastructures, p14.

² The Agencies SKA group was succeeded by the SKA founding Board in April 2011

going; the aim is to establish a national legal entity with a pre-construction mission before the end of 2011. Some intermediate results are presented in this document (section 3).

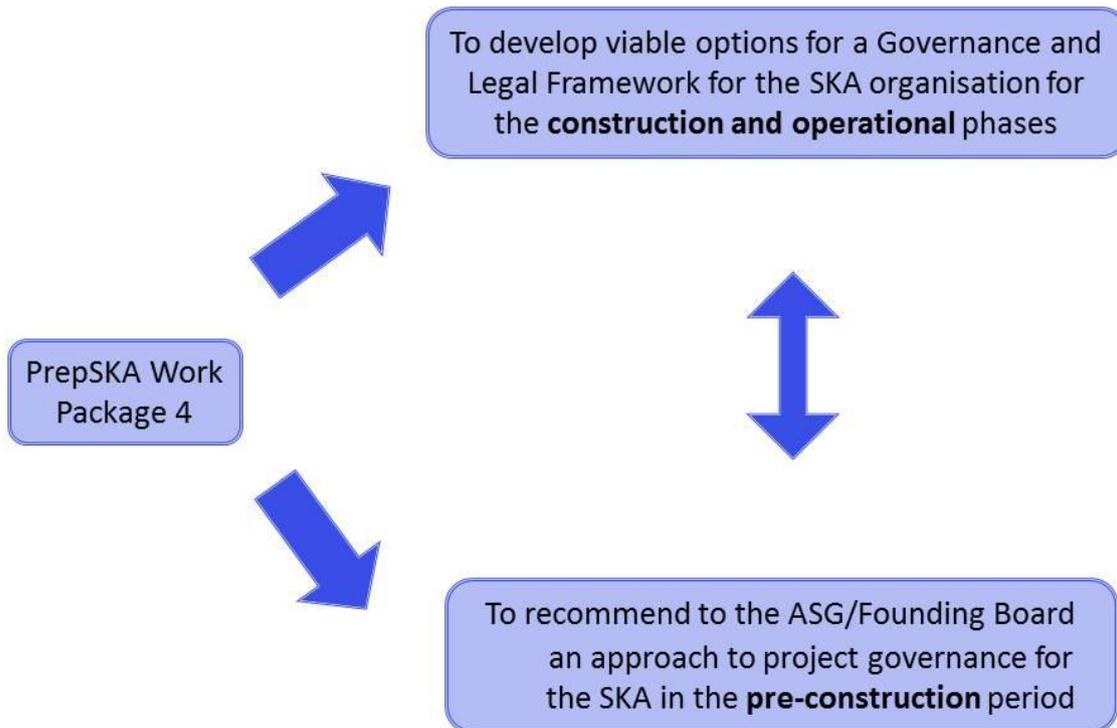


Figure 1 - Overview of the activities of Work Package 4 divided over developing the long-term governance and providing input for the pre-construction period. The findings regarding the long-term governance are very useful for the pre-construction period and vice versa.

This document

Section 2.1 starts with a brief summary of the results of Work Package 4’s first deliverable, which contained a comparison of governance and legal models and the lessons learned from existing research facilities. It also extends the study by adding three more models to the comparison (section 2.2). Section 2.3 presents possible characteristics for the long-term governance in the form of a list of priority governance items that could be used to draft an implementation agreement. This section also describes some of the issues that need to be solved in order to reach such an agreement. Section 3 presents several options for a legal entity that would be suitable for the SKA governance in the pre-construction phase. Finally, we suggest a checklist based on all this information and present our conclusions, in Section 4.

2. Governance models for the full SKA

2.1 Best practices of governance and legal framework

The first deliverable of Work Package 4 presented a comparative study of different models of governance and legal frameworks of large international science facilities. The facilities were selected based on shared characteristics with the SKA project or interesting components such as the organisational structure or specific rules for participation. The selected facilities represented Intergovernmental Organisations, different types of national legal entities and combinations of the two. The longlist of 17 facilities was reduced to a shortlist based on more detailed requirements for the SKA facility provided by the technical work packages of PrepSKA and the SPDO. For a full description of these characteristics we refer to the first deliverable, which can be found [here](#), but in summary they are:

Characteristics of the SKA Project (first deliverable)

- a legal personality and authority to act in all territories where the SKA project is active
- a robust structure
- a large degree of autonomy
- the safeguarding of investments
- privileges and immunities
- full tax exemptions
- site protection
- staff requirements

When grouping the inventory of existing facilities by their legal models, five categories emerged:

Models for the SKA Organisation

- Treaty
- National legal entity
- Convention with national legal entity
- Agreement

When submitting these five models to a detailed analysis of strengths, weaknesses, opportunities and weaknesses, the following conclusions can be drawn.

Due to the high level of commitment on a governmental level, the choice for an Intergovernmental Organisation, such as a convention, would offer the SKA organisation the required robust structure. Compared to other legal models, it provides a large degree of autonomy, as it is independent of the national law of the SKA member states. In addition, the convention provides maximum flexibility for procurement procedures, immigration of staff and users, and tax exemptions. Moreover, the long-term character of an Intergovernmental Organisation will guarantee the protection of the SKA antennae and its central office for the estimated lifecycle of the SKA telescope (~50 years).

The downside is that a convention requires ratification by the government; hence the negotiation process is lengthy (> 5 years). This is a particular threat for the progress of the project. The length of such a procedure will be challenging with respect to the current timeline for the project. It is important to note that the robustness of a convention implicates that once it has been set up, it will be difficult to change. A convention should therefore be defined in such a manner that it is flexible enough to serve future needs.

With respect to timing, a national legal entity is more qualified to fit the SKA organisation as it is relatively fast to set up. However, the national legal system depends on the laws passed by the government. This reduces the amount of autonomy for the SKA organisation to design its own procedures and regulations. Furthermore, this model is vulnerable with respect to a long-term duration, as it will be subject to domestic legislation.

A combination of the two models, a convention with a national entity, combines the best of both options and reduces their weaknesses. Although the start-up process is still lengthy it produces a flexible organisation with a guaranteed long-term commitment.

The remaining models are the agreement and the MoU, which both have a quick start-up process. However, the main drawback for both models is the lack of a legal personality, which makes them ill-suited for the purposes of the SKA organisation. It is possible, though, to use an MoU as a first step towards a more binding structure, as it can focus commitment for specific goals.

An important lesson from this comparison is that many things can be arranged at a later time, but it is very important to guarantee sustainability from the start. This and other lessons have been developed into a checklist, which can be found in Section 4.

2.2 A forward-looking analysis for the long-term governance of the SKA

In light of the long-term SKA governance Work Package 4 approached an external law firm, Clifford Chance, for a forward-looking analysis on alternative structures for the Intergovernmental Organisation. The main differences of this study compared to our work for the first deliverable are 1) that it follows the OECD approach and 2) that it includes sustainable models that are not per se related to science, but for example to industry or the

social sector. The reasons for this approach was to see whether structures without an intergovernmental agreement showed sustainability and to find aspects of those structures that could be useful for the SKA.

The long-term organisation of the SKA project requires some entity that will build and operate the SKA facility, accommodate the administrative headquarters and coordinate relationships with regional data centres. The entity will also have to be able to raise funds, employ staff, enter into contracts and perform public procurement. We assume that there will be an operational legal entity on site, an administrative headquarters inside or outside the host country and regional data centres connected to the SKA Organisation by contractual arrangements (e.g. Service Level Agreements).

With this in mind, Clifford Chance provided a high level overview outlining the main legal aspects of possible structures that can be set up for the long-term governance of the construction and operational phases of the SKA project. The structure charts were taken from the websites of the organisations, and show the structures as they were made available on-line in 2010. The analysis focuses on four structures that may be suitable: the multinational enterprise, the foundation structure, the Intergovernmental Organisation, and a hybrid structure of a convention plus a national legal entity. This selection was based on discussions within the Work Package 4 Core Group. The outcome has been incorporated in our checklist (see Section 4.2)

The overview also comprised a list of issues for consideration in the process of developing the long-term governance structure of the SKA.

The analysis and comparison is focused on the following main characteristics of the SKA project:

Characteristics of the SKA Project

- Governance structure, a clear line of authority
- Relation of the operational entity and headquarters ; separate entities and multiple jurisdictions
- Possibility to undertake activities in other countries (remote nodes of the facility)
- Ownership of the telescope facility (core and remote stations)
- Tax considerations
- Sustainability of the structures
- Duties of the investors; and
- Ratification or governmental clearance of agreements by the investors/states.

We refer to the memo “Project SKA –corporate structures” (see Annex A) for an extended overview of the legal aspects and summarise the main observations below.

Examples of models

- Multinational enterprise : British Petroleum
- Foundation: the International Red Cross
- Intergovernmental Organisation: European Southern Observatory (ESO)
- Hybrid structure: European Synchrotron Radiation Facility (ESRF)

2.2.1 The models

Multinational enterprise

The multinational enterprise represents efficient and straightforward (top-down) governance in a multi-national playing field. British Petroleum PLC (BP) was chosen as an example for such a structure.

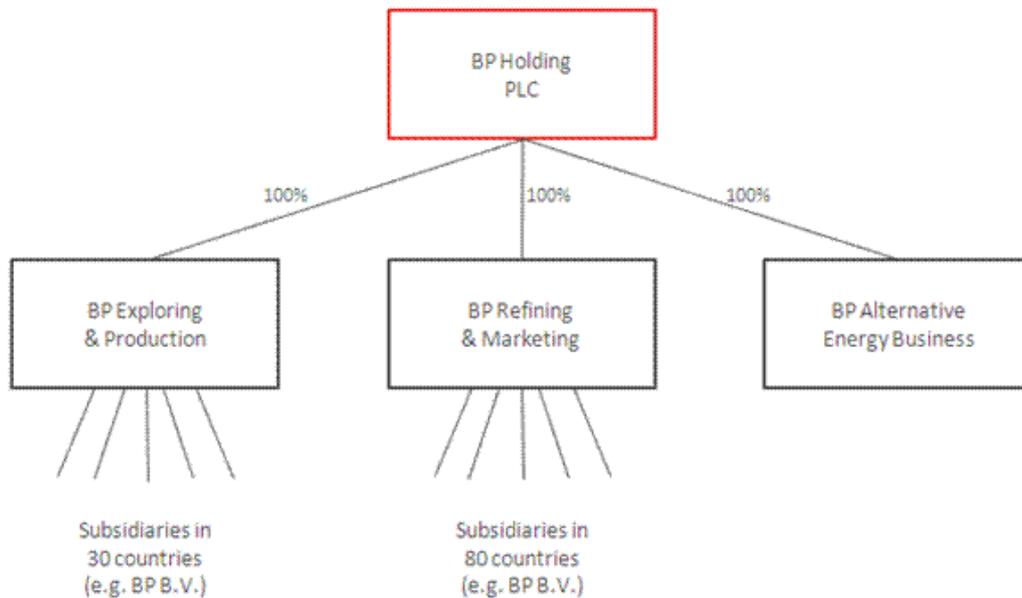


Figure 2 - Structure chart of BP

Although possible and suitable from the perspective of governance, ownership, and duties of investors, the structure of a multinational enterprise is in not the best alternative structure for the Project. This is mainly because of the possible tax burdens and the administrative complications it implies; especially taking into account that one of the key requirements for the Project is a tax efficient structure.

Foundation

Under a not-for profit foundation structure, the Project may benefit from tax exemptions, and matters regarding ownership and the use of local branches can be relatively easily arranged. The International Committee of the Red Cross (Red Cross) was chosen as an example for such a structure.

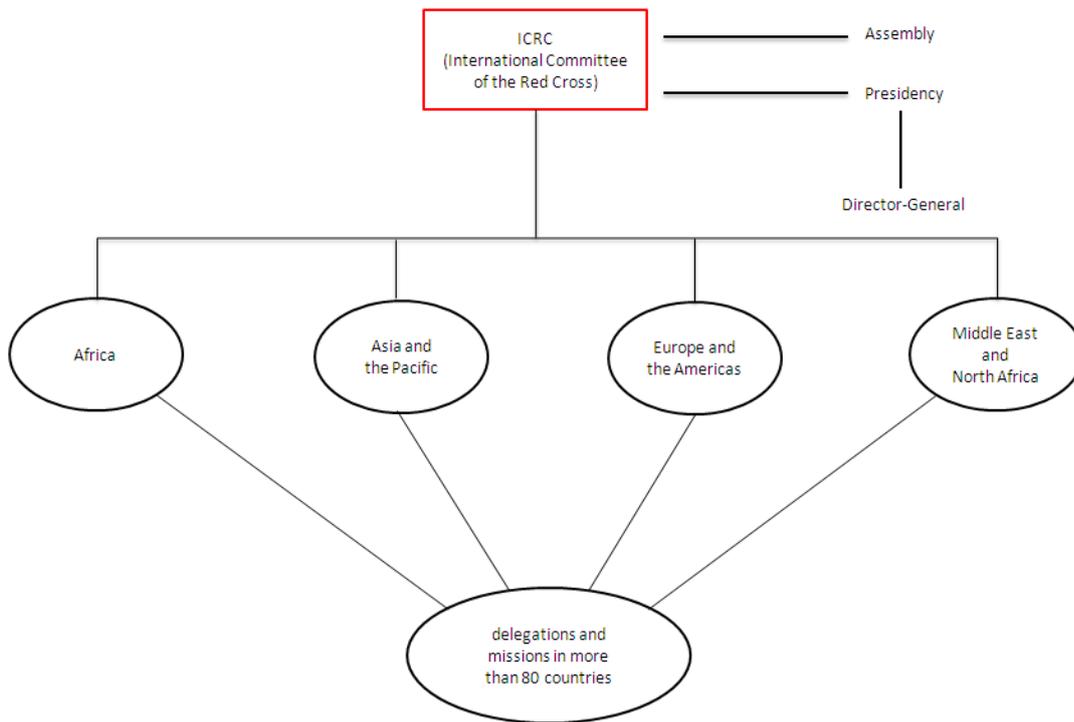


Figure 3- Structure chart of the Red Cross

As the setting up of the foundation is relatively easy and fast, this is a clear advantage compared to an Intergovernmental Organisation or hybrid structure, but as the same applies to the possibility of unwinding the foundation, its sustainability may be less compared to a convention.

The Foundation structure allows a clear governance structure to be set up in various countries via contractual agreements. The disadvantage of this option is that for each new participant, new arrangements need to be concluded, which are based on various applicable jurisdictions. Whereas this procedure is more complex than for structures such as the multinational enterprise, it is less complicated than, for example, participation in a convention of an Intergovernmental Organisation.

Intergovernmental Organisation

The European Southern Observatory (ESO) was chosen as an example for an Intergovernmental Organisation, as this is considered an example of a solid structure for the purposes of establishing a multi-national scientific research infrastructure.

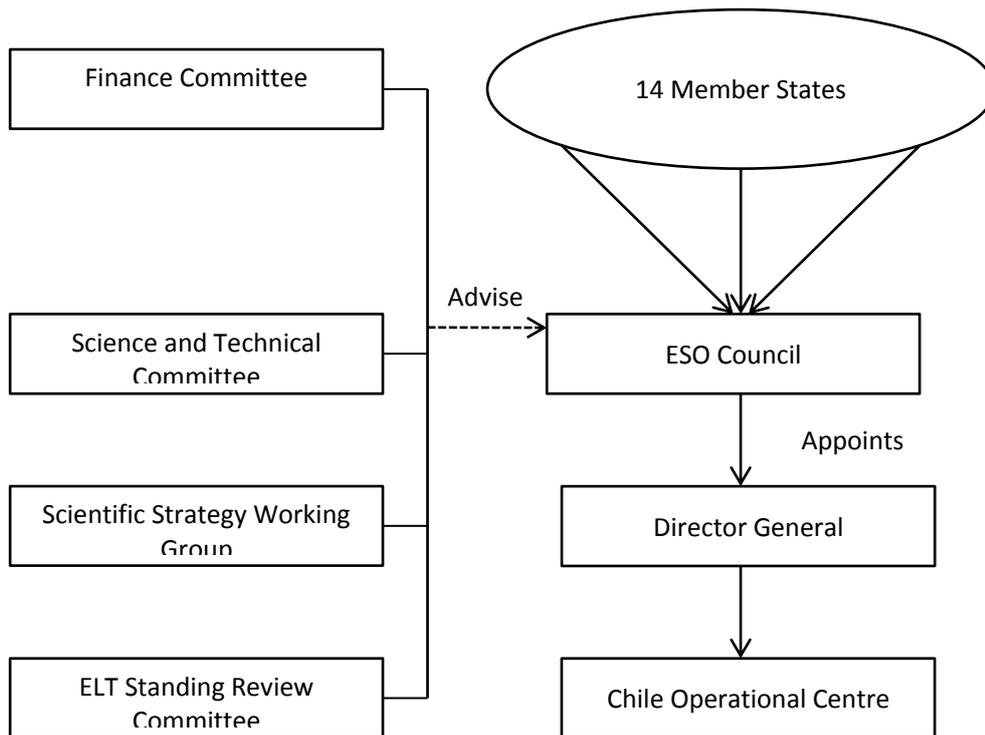


Figure 4 - Structure chart of ESO (based on public information available on the ESO website)

In an Intergovernmental Organisation, everything can be arranged between the members, but the disadvantage is that everything must be arranged and negotiated in quite a detailed manner and is subject to rather elaborated ratification procedures. On the other hand, once concluded, a convention imposes strong obligations on the participating members, taking into account the number and time span for all formal parliamentary steps to be concluded.

Hybrid structure: convention plus a national legal entity

The final structure under consideration here is a hybrid structure of a convention and a national legal entity. The European Synchrotron Radiation Facility (ESRF) was chosen as an example.

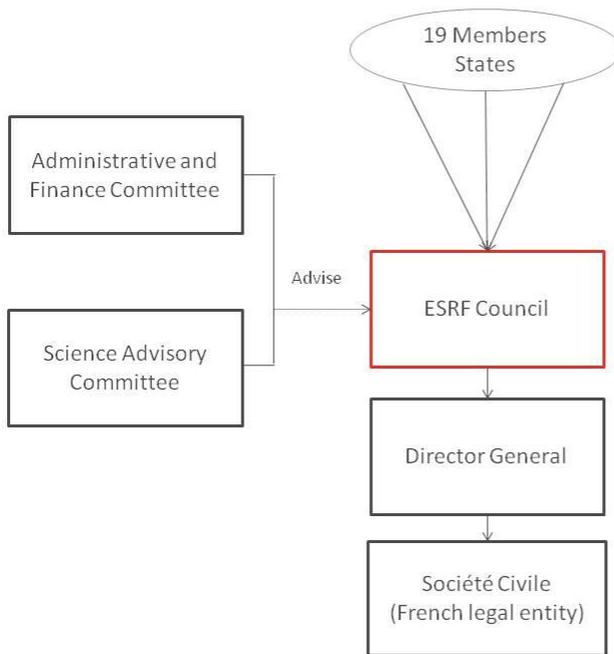


Figure5 - Structure chart of the ESRF

The desired agreements on the participants’ duties, the governance and the taxation can be included in the convention. In addition to that, one or more separate legal entities will be established in various jurisdictions, under which the Project can be performed in a way comparable to a "normal" not for profit company. The hybrid structure provides a compromise between a sustainable top-layer at the international (state) level (accompanied by international imbedded approval procedures), and the advantage that several important matters (such as ownership, tax treatment and duties of investors) can be settled at the level of the local entity. The hybrid structure provides more flexibility and progress when it comes to the "ordinary course" and can as such be an advantage compared to an Intergovernmental Organisation.

The intergovernmental arrangements must still be concluded at the intergovernmental level, which can be a lengthy process. On the other hand, once concluded this imposes strong obligations on the participating states and increases the sustainability of the organisation.

2.2.2 Comparison

State participation

Intergovernmental agreements are generally subject to some sort of parliamentary control and in such manner ensure a long-term commitment, taking into account the number and time span for all formal parliamentary steps to be concluded, by their nature imposing strong obligations on the participating member states.

However, for the examples of a multinational enterprise and foundation structure, entities without any state participation or state contribution have also proven to be of a rather sustainable nature, especially when there is a clear top-down holding structure in place pursuant to which the branches or subsidiaries operate under a clear line of authority. In this manner the ultimate “parent entity” obtains a certain level of control, including regarding the lifespan of the Project and any "subsidiaries", where applicable.

Tax considerations

To benefit most from tax exemptions the structures should be based on not for profit entities. Leakage of funds by distribution of profit or by taxation of the profit should be prevented. Relevant regulation should be properly analysed. The multinational enterprise, with a purpose to generate profit, impairs the risk of losing potential tax benefits and may eventually result in a loss of funds available to the Project as a result of such taxation.

Sustainability of the structures

The analysis shows that non-science and non-treaty structures are sustainable if the founding parties have a majority or 100% authority in the Organisation and can set the policy for the overall structure.

The sustainability of the organisation depends not so much on the model of the legal framework but more on the sustainability of the authority with the original/founding parties.

In conclusion, it is clear that sustainability of the structure can be realised by installing a clear line of authority, a high level of participation and a certain degree of flexibility.

2.2.3 Conclusion

From the comparison of the different characteristics of the entities set out above, it can be concluded that, besides the traditional Intergovernmental Organisation, the foundation and the hybrid structure are equally viable alternative option for the purposes of the SKA Project.

The final outcome of the best alternative structure for the SKA Project depends on the weighing of interests between sustainability and progress, where the foundation is considered to be the most straightforward to establish on the one hand, but less sustainable on the other hand when compared to e.g., an Intergovernmental Organisation or a hybrid structure.

There is no black and white when it comes to the decision on the exact features of the chosen entity. It is eventually up to the potential SKA members which interest should have the highest order of precedence and which entity is to be chosen accordingly, although some "cross-breeding" of all four entities set out above can be arranged for and can be implemented into the structure eventually chosen.

2.3 Priority items for a Joint Implementation Agreement

This section presents possible characteristics for the long-term governance of the SKA. Work Package 4 has been leading a Tiger Team, which was installed by the Agencies SKA Group (ASG) on 9 July 2009 with the objective to provide input for the discussion in the ASG towards a Joint Implementation Agreement (JIA) for the SKA. This Tiger Team has developed a strawman governance, constructed a list of priority items relevant for the JIA, and discussed the possible content of these items in the Tiger Team and the Core Group of Work Package 4. The results are described in this section.

2.3.1 Priority items of the Skeletal Draft of a full operational SKA (Phase I and Phase II)

1. Establishment of the SKA Organisation
 - a. location of Headquarters and regional centres
2. Purposes and function of the SKA Organisation
 - a. Research
 - b. Construct, maintain, operate and decommission SKA facility
 - c. Societal impact
3. Members of the SKA Organisation
 - a. States or institutions and Organisations
 - b. Contribution (cash/in-kind)
 - c. Voting procedure; weighted voting
4. Legal Personality
 - a. Legal capacity and appropriate recognition enabling to act in all territories where SKA is active
5. Board
 - a. Decision making authority (subjects and voting procedure)
 - b. Relationship with General Director (tasks and responsibilities)
 - c. Chairman, vice chairman and secretariat;
 - d. Procedures: procurement, recruitment, accession, withdrawal, contingency, additional resources, decommissioning
6. Advisory Committee (specialists)
 - a. Science policy
 - b. Financial audit; budget control
 - c. Procedure: appointment, tasks and responsibilities

7. The General Director and the Staff
 - a. Relationship with Board (tasks and responsibilities)
 - b. Authority for all activities of SKA
 - c. Management of regional centres
8. Resources of the SKA Organisation
 - a. Funding: public and or private
 - b. Long term/short term
 - c. Additional resources
 - d. Minimum amount of funding for full membership
9. Procurement
 - a. Tender procedure; global competitiveness
 - b. Juste retour
 - c. Privileges and Immunities
 - d. Tax exemptions; VAT, income, import/export
10. Staffing conditions
11. Access to the facility
12. Access to the data

The full list of 27 items can be found in Annex B.

Open issues of the JIA priority items

During the discussion of the twelve priority items it became clear that, at that point, many aspects of the SKA project were not mature enough for detailed discussion. It is important that these issues have now been identified so that they can be addressed at the appropriate time. Therefore, we provide an overview of the discussion below; for the full description of the 12 JIA items, we refer to the document “Items for a draft Joint Implementation Agreement”, which can be found on the PrepSKA wiki page of Work Package 4 [here](#).

Contribution – Related questions are: What does an investment in the SKA buy for the investor? Will the degree of access (telescope time) depend upon the investment made? Does the investment determine the economic return (during the design and construction phase) or simply buy influence (through weighted voting)?

Voting procedure – Weighted voting seems necessary for matters that have a direct financial impact on the investors. The advantages are that it can serve as a device to limit the size of the Board (as head count is no longer important) and that it protects the vested interest of the Member.

Government involvement – This becomes important when the contribution level determines access and telescope time. The question is whether national governments should coordinate and assume responsibility for all contributions from that particular country? This is an interesting idea, but it maybe not practical everywhere.

Shares – Related questions are: What is the benefit of having a larger share or the penalty of having a smaller share? How are the shares determined? It is possible to take the integral over

design, construction and operation contributions, but this is complicated due to inflation and unanticipated cost increases. There clearly is a need for a formal accounting mechanism for Member contributions.

Access - A hotly debated topic. Will the SKA be an open skies facility or will telescope time be partly reserved for Members? Who designs the time allocation procedure and who allocates the time? Should the SKA archive be made accessible for the entire community? It is important to resolve these questions soon, as vesting one's interest is a compelling argument to use in fund-raising activities.

3. A pre-construction phase entity

The legal framework and governance can be realised if certain governance principles are taken into account. With this in mind, we have worked backwards to see which legal framework would be suitable if the starting point for the long term would be the ESRF model: a national legal entity at site plus an international convention.

Considering an operational legal entity at site in either South Africa or Western Australia and remote sites in other jurisdictions, we have investigated which legal framework for the pre-construction phase would be most suitable and whether this long term model would create certain constraints for evolution from the pre-construction into the long term governance of SKA.

In this context external advice was gathered to study the options for the start-up process and the possibility for evolution to a long-term arrangement. This section describes the advice and its outcome. The full text can be found in Annex C.

3.1 A suitable entity for the SKA Project

The international law firm Clifford Chance was approached for an analysis of the suitability of four different governance models for the full SKA Organisation as well as the start-up phase. Special attention was given to the following criteria:

Criteria

- Timeliness, no delay in set-up
- Flexibility, including migration or conversion of the entity
- Tax efficiency, corporate income, VAT, excise duties
- Participation, membership
- Limitations of liability, directors, participants
- Flexible procurement with a form of *juste retour*

Clifford Chance provided an analysis of various types of legal entities and advised which of these entities would be most suitable for the pre-construction phase, keeping in mind the full SKA Organisation in the construction and operational phases. The advice was based on working assumptions on procurement and funding with the focus on the ESRF model (i.e., a national legal entity with an intergovernmental agreement). The four following models were analysed (the italic terms in brackets will be used for further reference):

Models for the SKA Organisation

- European Research Infrastructure consortium (*ERIC*)
- UK limited liability with guarantee (*limited liability*)
- Dutch stichting (*foundation*)
- US not for profit corporation in three different states (*corporation*)

From the analysis it was clear that the limited liability, the foundation, and the corporation are all equally suitable for the purposes of the pre-construction phase. They can be set up in a timely manner and the not-for-profit activities of the SKA Project would qualify for tax exemption in all EU jurisdictions as well as in the US. The ERIC may not be appropriate for a global collaboration because there are clear restrictions with respect to the number of EU members. It may well be an appropriate entity for a European centred collaboration, but this needs further analysis. The most suitable entity will eventually depend on the location where the key coordinating activities will take place.

An important conclusion from the advice was that it is very complex to convert the national legal entity of the pre-construction phase into a governance structure for the full SKA when the host site will be chosen. The criterion of conversion and migration should not be given high priority, as it may be possible to avoid a complex and time-consuming migration by setting up a new entity in the potential Host State or to conduct certain activities from a local branch of the entity in the Host State. After the site selection process has been completed, it will be necessary to further investigate this to find out what would be the most efficient way to coordinate the project in preparation of the long term. It is, therefore, important that the national legal entity for the pre-construction phase has a pre-construction mission and a clearly defined purpose for the pre-construction period.

4. Conclusion and checklist

4.1 Conclusion

Based on the external advices and internal discussion with the Work Package 4 Core Group, our preliminary conclusion is that the analyses support the hybrid structure as a preferred viable model. For the full SKA governance a high level national representation is preferred for reasons of sustainability, preferably on a governmental level. Such a representation has its drawbacks on the negotiation process, which can be lengthy. However, this can be circumvented by establishing a national legal entity first and, from there, develop arrangements on an intergovernmental level by means of a convention.

In practice, a national legal entity can be set up in the host country of the core site to provide a legal framework to start construction. After the site selection, the project requirements become clearer and the SKA Organisation can be modelled along the way as the SKA Project develops. The hybrid structure is very well suited to accommodate such an evolutionary model.

The remainder of this section lists some possible steps in the development of a long-term governance for the SKA.

possible initial approach towards the evolvement into a hybrid structure

- Establish a pre-construction legal entity.
- Establish a construction and operational legal entity in the host country, after site selection.
- Decide where the headquarters of the SKA Organisation will be located
- If there is more than one legal entity, decide on the hierarchy of the SKA entities
- Strive to involve parties at the state level; national representation of governments
- Investigate whether there are arrangements that are missing. If so, investigate whether this could be solved by intergovernmental agreements

4.2 Checklist for developing viable governance

Checklist for setting up the SKA Organisation

The inventory of the existing large research infrastructures of Work Package 4's first deliverable resulted in an insightful overview of the lessons to be learned from these existing facilities. In general, guiding principles such as transparency, accountability, responsibility and a clear line of authority are important to include in the governance structure for the SKA

facility. In addition, the comparison of the models and entities has provided us with important information and several issues to be taken into consideration when further developing the governance for the SKA Project.

Combined, the analysis of the existing facilities and the models can be translated into the following checklist, which has been categorised based on the JIA priority items:

Organisation

- Full legal capacity in the host country and in the countries where SKA is active
- Long-term commitment should be guaranteed
- Possibility to expand activities
- Local law implications on e.g. use of human resources, environmental laws etc. should be properly analysed prior to the establishment of the entity

Sustainability

- The requirements for a sustainable organisation are: a clear line of authority, high level of participation and a certain degree of flexibility

Relation between different entities

- Different entities can be embedded into the long-term SKA governance as long as there is consensus on the hierarchy and the line of authority is clear: identify the parental entity of the structure at the end of the pre-construction phase
- In all models considered, the headquarters can be placed on top of the hierarchy of SKA entities: it would be practical to decide the location of the SKA headquarters before the SKA construction and operational entity in the host country is established
- Operations of the multinational enterprise in other jurisdictions can be structured through branches or subsidiary companies. The decision to set up a branch should be made by weighting and investigating the aspects of the national legislations that are relevant for the activities to be performed.

Tax considerations

- The structure of the long-term governance of the SKA Project should be based on not-for-profit entities

Quality control

- Contracts and assignments must be technically specified and valued and legally embedded in the SKA Organisation (procurement office).
- A valuation procedure must be developed to value the contracts and in kind contributions

Board and director

- Clear line of management and authority
- Central body with decision-making authority
- Control in matters of finance, technology and science
- Secured confidence between board and management
- Secured scientific background within decision-making body

Membership/ contribution

- To build a global organisation: aim for inclusiveness of all interested parties
- Return/incentive/benefit of (in kind) contributions must be defined
- Depending on the chosen entity (foundation) clearly document: how participation in the entity is governed, how investments/contributions to and withdrawals from the entity's budget can be made, and what amounts should be allocated to the specific purposes of the entity.
- The relation between voting rights and size of the contribution in the operational phase.

Finance

- National funding schemes should be given thought to
- There should be a scenario for late payment
- Risk sharing during construction

General

- IPR arrangements, working language, human resource policy and currency should be clear before the organisation is constructed
- The participation of states is, in a democracy, submitted to Parliamentary Control, which greatly affects the timeline. The procedure vary per country but the parliamentary control for contribution to a foreign entity will most likely be less strict than the procedure to enter a convention

Annexes to the document

- Annex A – Legal advice from Clifford Chance on suitable corporate structures for the SKA Project (*‘Project SKA: corporate structures’ – 15 July 2011*)
- Annex B – High-level items for a generic framework of a full operational SKA
- Annex C – Legal advice from Clifford Chance on suitable entities for the SKA Project during the pre-construction phase (*‘Memorandum on most suitable entity for SKA project’ – 14 July 2010*)