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Authors (Institutes)	Michael Garrett (UMAN)

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1 Introduction

The SPOOR networking activity – RadioNet Strategy & Policy forum – addresses the high-level strategic/policy matters that are relevant to the coordination, development and funding of radio astronomy on the European scale. A good summary of the scope of the activity is included in the previous 18-month progress report (D4.1).

Given that RadioNet will not be funded again in its current form, the main activity of the SPOOR core Group has been to focus on the various options that would permit us to continue to organise (and fund) activities that were hitherto supported only via RadioNet. In general, we wish to agree a vision which will ensure European Radio Astronomy (in its broadest form) can be coordinated through the next decade and beyond.

The SPOOR Core Group has had two face-to-face meetings (see details below) during the period of this report (1 July 2018 - 31 December 2019) and its activities were also associated with XX telecons. All our activities have been reported directly to the RadioNet Board at their face-to-face and teleconference meetings.

2 SPOOR Meetings

2.1 SPOOR meetings in 2018

Two SPOOR telecon meetings¹² were held on the 30th of July and 4th of September 2018 to discuss the new PILOT project. From meetings attended by the RadioNet coordinator, it was clear that the PILOT would focus on the provision of sustainable Transnational Access to both radio and optical facilities. The various Networking Activities previously organised by RadioNet would have to be facilitated in another way. The strong focus of the PILOT on TNA (rather than NA and indeed JRA activities) would also require the broader European Radio Astronomy collaboration to be supported via another structure.

With a good understanding of how the PILOT project would contribute to European Radio Astronomy, the SPOOR core group met face-to-face in Granada³, during the European VLBI Network Symposium. Unfortunately, three key members of the panel (including the SPOOR chair) were unable to attend due to unforeseen circumstances, and several externally participating members suffered from very poor connections. The meeting was chaired by T. Venturi (INAF), and it was felt that a follow-up videocon was required as soon as possible to properly explore some of these newly emerging themes.

A videocon was organised on the 15th of November⁴ 2018. Several members of the core group presented some initial thoughts about how various joint European Radio Astronomy (hereafter ERA) activities could be organised – notes from the meeting are available at: <https://events.mpifr-bonn.mpg.de/indico/event/98/>. Many SPOOR core group members were prepared to make some personal statements about the kind of construction they might envisage in order for progress to be made. Some of these included an expanded role for JIVE, others looked towards the creation of a lighter organisation based on an MoU level agreement with a low-barrier for membership. These very preliminary thoughts, were reported to the RadioNet Board telecon that occurred a few days later.

¹ <https://events.mpifr-bonn.mpg.de/indico/event/82/>

² <https://events.mpifr-bonn.mpg.de/indico/event/99/>

³ <https://events.mpifr-bonn.mpg.de/indico/event/94/>

⁴ <https://events.mpifr-bonn.mpg.de/indico/event/98/>

2.2 SPOOR meetings in 2019

A face-to-face SPOOR Core Group meeting was held on the 7th of February 2019 in Berlin⁵. The personal visions of several members were further expanded, and the discussion was frank but constructive. The discussion recognised that a good deal had changed on the ERA scene even since the start of the current RadioNet4 contract. In particular, the SKA was now a much more tangible entity than before, and JIVE was now fully established as a European Research Infrastructure (ERIC). LOFAR also had ambitions to establish its own ERIC for low-frequency RA. In addition, the way in which radio astronomy research was being conducted was also changing (larger and more complex data sets, bigger collaborations, regional data centres, science-ready data products, higher community expectations etc). The fact that RadioNet would no longer be funded in its current form was also a major new feature of the ERA landscape, that would now include the PILOT project (including a subset of the current RadioNet partnership). Several Core Group members envisaged a much closer relationship between the EVN and JIVE, also at the governance level (Exec v Council). It was recognised that much of the flux surrounding these discussions related to the way cm and metre wave RA was organised, and what impact the SKA would have on the various ERA instruments once it became operational, including the role of SKA Regional Data Centres. It was also widely appreciated, that a successor to RadioNet would also need to deliver across the broad radio astronomy spectrum, i.e. m/cm/mm/sub-mm wavelengths.

The Core Group also focused on how a subset of the current range of key RadioNet Networking Activities could be continued – two possible vehicles were identified:

- (i) JIVE with an expanded role and/or
- (ii) the establishment of a new organisation based on an inclusive, light-weight MoU agreement.

A summary of the discussion was presented to the RadioNet Board during their telecon on the 28th of March 2019.

A face-to-face meeting of the SPOOR Core Group took place on the 28th of May 2019 at Schiphol airport⁶. A significant evolution of thinking had taken place in terms of identifying potential vehicles to support the future ERA collaboration. Thoughts on using JIVE as this vehicle were now split into short-term and long-term options – in the short-term, a so-called “JIVE+” option was already under development as the EVN and JIVE sought to operate in a much closer cooperation. A more ambitious, and clearly much longer-term option “JIVE++” was to consider how JIVE (and potentially any LOFAR2.0 ERIC) might evolve into a single ERIC for ERA. A third option (based on the light-weight MOU entity) was to create a European Radio Astronomy Consortium (ERAC) similar to APPEC in particle physics with a strategic component to its mission, including road-mapping and lobbying functions, in addition to an office taking responsibility for other key ERA activities. There was some feeling during the meeting, that perhaps all three of these options were required in order to fully address some of the problems exposed in these frank but fruitful discussions.

This evolving landscape of vehicles and options were presented to the RadioNet Board in Berlin, at their face-to-face meeting on the 16th of September 2019. The Board suggested that the SPOOR Core Group meet again in the new year, in order to make further progress that would permit an advanced draft of the WP to be presented to the Board at their September 2020 face-to-face meeting. Other suggestions included inviting the RadioNet Advisory Board and the EC officer to a SPOOR meeting in 2020, in order to obtain high-level feedback. The need for the RadioNet

⁵ <https://events.mpifr-bonn.mpg.de/indico/event/101/>

⁶ <https://events.mpifr-bonn.mpg.de/indico/event/119/>

partnership to seek resources from a range of different EC funding opportunities was also discussed.

3 Impact

It is clear that SPOOR is addressing some very important issues regarding how ERA organises itself in the coming decade. The discussions that have taken place within the Core Group have been candid and frank. There have been difficult moments but the process by which leading ERA directors have expressed their visions for the future has been an extremely healthy and very fruitful. Matters that were not always openly discussed or fully explored have received significant attention and input from all, including the RadioNet board. The ERA landscape has evolved rapidly, even over the last few years, and it is important that leaders in the field consider how best to cooperate in this rapidly changing environment. The exchange of ideas and ambitions is crucial but the time for various choices to be made is rapidly approaching. Ensuring the retention of some key RadioNet activities beyond 2020 is still to receive the full focus of SPOOR Core Group and indeed the RadioNet Board itself. The next 12 months will be a crucial period in which the overall success and impact of SPOOR may be fully judged.

4 RadioNet financial support

RadioNet has supported the organisational cost and the travel expenses of some members of the SPOOR Core Group to the face-to-face meetings. RadioNet funding has been also used to support the participation of the SPOOR WP leader to the IAU GA in Vienna in 2018.

5 Acronyms

ASTRONET Network	of European funding agencies and research organisations
ALMA	Atacama Large Millimetre/sub-millimetre Array
e-MERLIN	UK radio interferometry array
CRAF	Committee Radio Astronomy Frequencies
ERIC	European Research Infrastructure Consortium
ERO	European Radio Observatory
ESO	European Southern Observatory
ERTC	European Radio Telescope Review Committee
EVN	European VLBI Network
EWASS	European Week of Astronomy and Space Science
ILT	Int. LOFAR Telescope
IRAM	Inst. de Radio Astronomie Millimetrique
JIV-ERIC	Joint Institute for VLBI in Europe
LOFAR	Low Frequency Array
OPTICON	Optical Infrared Coordination Network for Astronomy
QueSERA	Work Package under RadioNet3
RadioNet3	EC funded project under FP7, grant Agreement 283393
SKA	Square Kilometre Array
SPOOR	Strategic & Policy Forum, activity under RadioNet
VLBI	Very Long Baseline Interferometry

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