



The VLBI Future

A roadmap for the next decade

T. Venturi (INAF) on behalf of the working group leaders

Progress Report from the last
CBD meeting



WP7 – The VLBI Future

WP leaders

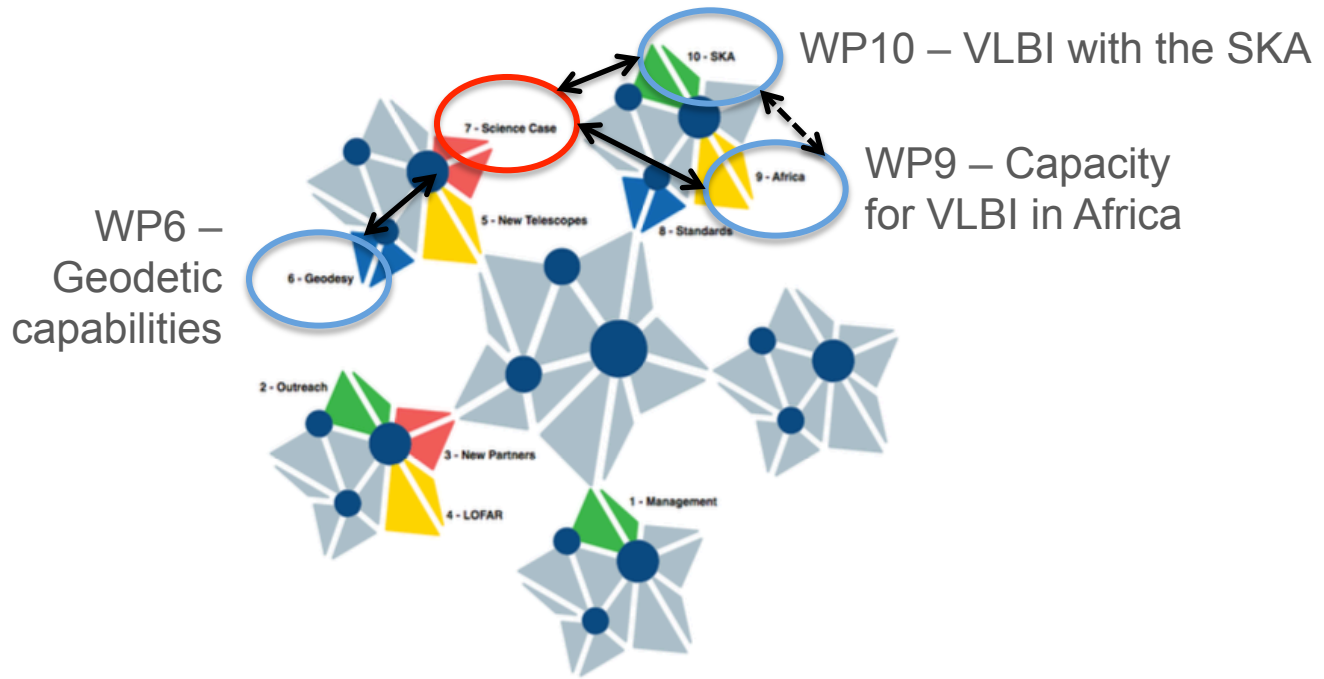
T. Venturi (INAF), M. Lindqvist (OSO), Z. Paragi (JIVE)

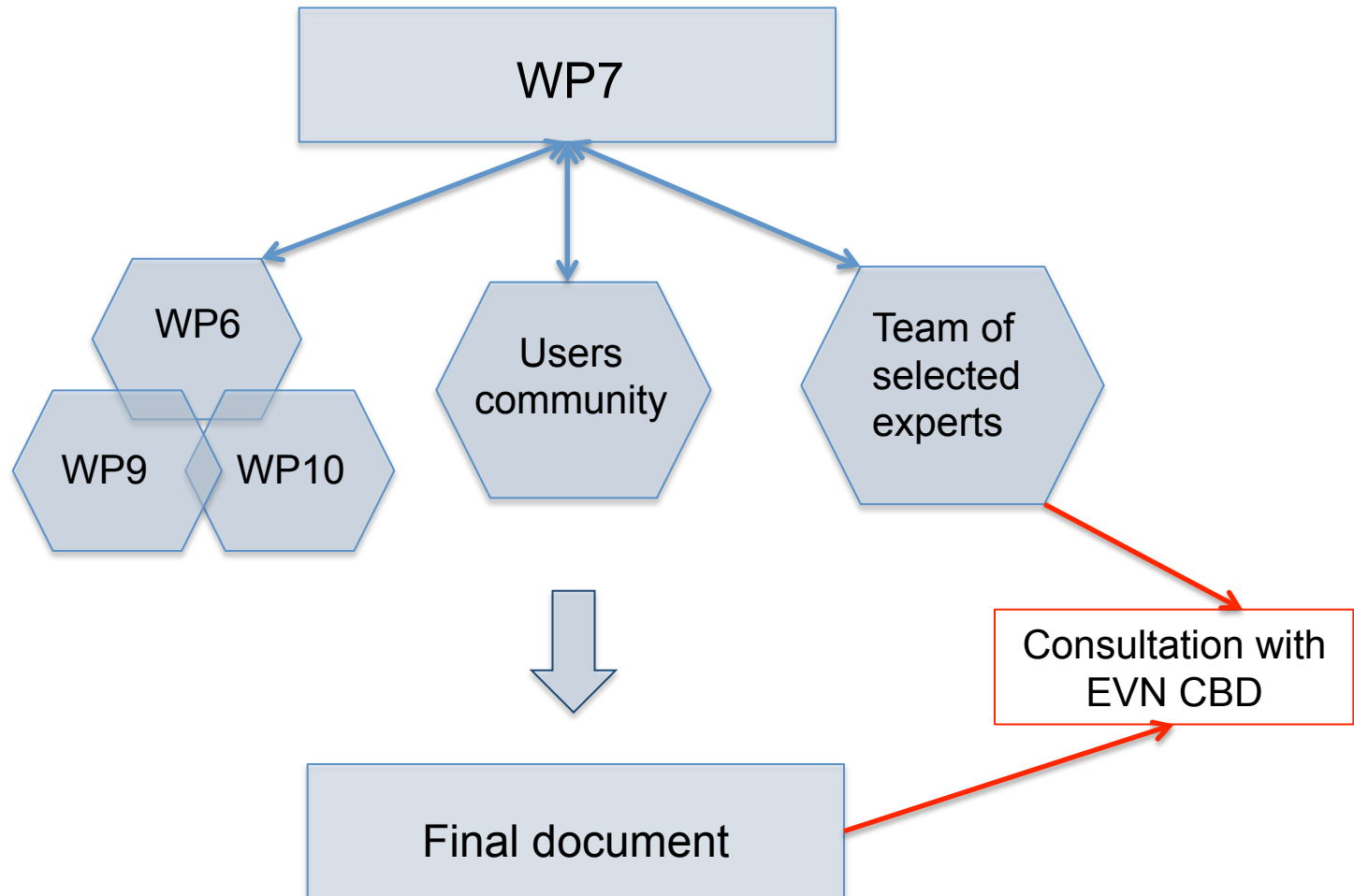
Preamble and Objectives

Because of the progress in the field of astrophysics and the changes in the radio astronomy landscape it is timely to **revisit the EVN science case**. **In consultation with the user community and global partners** we will define the most important science areas for future VLBI array.



Relations to other WPs in the project Capacity for doing science







First steps

A telecom was held among the WP leaders (D7.1)

- ✧ How to proceed - Workplan
- ✧ Core team
- ✧ Targetted audience
- ✧ Brainstorming meeting



Progress Report. I.

✓ The core team is formed. Members are:

Robert **Beswick** (UMan, JBO), Tamara **Bodganovic** (Georgia Tech, USA), Walter **Brisken** (LBO, USA), Patrick **Charlot** (Univ. of Bordeaux), **Michael Lindqvist** (OSO), Andrei **Lobanov** (MPIfr, Bonn), **Zsolt Paragi** (JIVE), Arpad **Szomoru** (JIVE), Leonardo **Testi** (INAF-OAAr & ESO), **Tiziana Venturi** (INAF-IRA)

✓ First teleconference of Core Team members took place in June 2017



Progress Report. II.

- ✓ First presentation of the project to the community at the meeting: eMERLIN and EVN in the SKA era (Jodrell Bank, 11-12 September 2017)

Meeting part 2 : The future of VLBI

(Organisers: Tiziana Venturi (INAF) /Michael Lindqvist (Onsala) /Zsolt Paragi (JIVE)

12:00 - [Introduction, welcome and overall vision](#) - Tiziana Venturi (INAF, Italy)

12:15 - [EVN present status and future direction](#) - Michael Lindqvist (Onsala Space Observatory, Sweden)

12:30 - [VLBA technical roadmap : 2020-2035](#) - Walter Brisken(LBO, USA)

12:45 - [Wide-Band single pixel feeds and EVN technical upgrades](#) - John Conway (Onsala Space Observatory, Sweden)

13:00 - Lunch

14:15 - [VLBI and the SKA \(an update from the SKA-VLBI SWG\)](#) - Zsolt Paragi (JIVE)

14:15 - [Investigating radio quiet quasars using e-MERLIN and EVN observations of strong gravitational lensing](#) - Philippa Hartley (JBCA)

14:15 - [Probing circumstellar structures through masers with the EVN and e-MERLIN](#) - Sandra Etoka (JBCA)

14:30 onwards - Discussion and Wrap-up

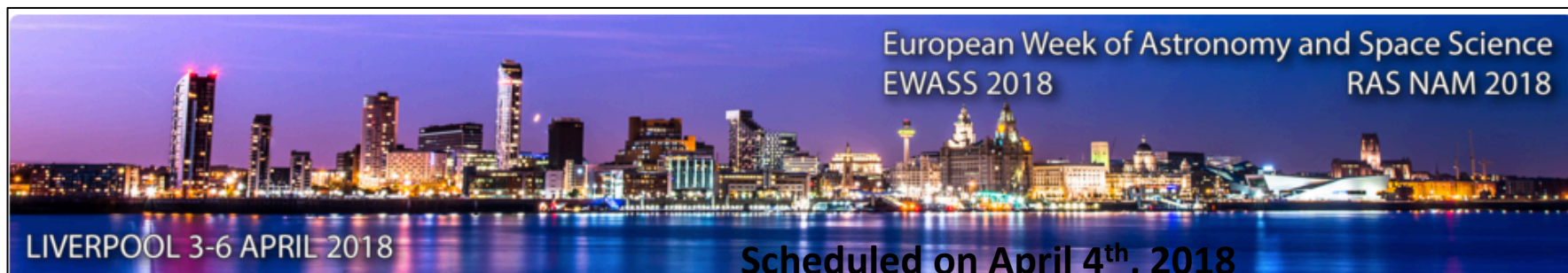


Progress Report. III.

- ✓ Proposal to have a Symposium at EWASS 2018, with the aim to **receive feedback and input from the astronomical community at large** (i.e. not only VLBIers/ radio astronomers) – We were allocated a special session (4.5 hours)
- ✓ Special Session 11 - **Exploring the Universe: A European Vision for the Future of VLBI** – April 4th, 2018
- ✓ Presentations by invitation – We have asked invited speakers: (a) to present the state of the art of their topic; (b) to highlight if and how VLBI could provide unique answers and/or allow a major step forward in our understanding of the field; (c) to define goals in the VLBI data products parameters space (required sensitivity, resolution, astrometry precision etc.) where possible.



Progress Report. III.



EWASS 2018

- Welcome & News
- About EWASS
- Organisers
- Dates
- Venue
- Programme
- Plenary Lectures
- Abstract Submission
- Registration
- Travel Information
- Accommodation
- General Information

Special Session SS11

3 – 6 April 2018 (TBD)

Exploring the Universe: a European vision for the future of VLBI

Aims and scope

The aim of this special session is to discuss and position the role of very long baseline interferometry (VLBI) at radio wavelengths in the context of the challenges and open questions of astrophysics as we approach the next decade. VLBI arrays are the only instruments capable of reaching milliarcsecond scale resolution and below, and in this special session we aim at addressing those astrophysical key areas where VLBI will prove to be crucial for a major improvement of our knowledge. This special session is part of an ongoing effort to shape the VLBI roadmap for the next decade, and will be an excellent good chance to gather many experts within and outside the VLBI community, to discuss the most fundamental astrophysical questions VLBI will be able to address, complementing the other main forthcoming astronomical facilities. The speakers have been selected, but we still accept and encourage poster submission.

Programme

SS11

- Topic 1
OBSERVATIONAL COSMOLOGY: Cosmology and Gravity; Galaxy and AGN co-evolution
- Topic 2
EXTREME PHYSICS: Towards the horizon of events; Transient events
- Topic 3
THE LOCAL UNIVERSE: Masers, stars and planetary systems
- Topic 4
THE FUTURE OF HIGH RESOLUTION RADIO ASTRONOMY IN EUROPE

Invited speakers

- Guillem Anglada-Escude Queen Mary University of London, UK
- Andreas Brunthaler MPIfR, Bonn, Germany
- John Conway Onsala Space Observatory/Chalmers University, Sweden
- Heino Falcke Radboud University, The Netherlands
- Jason Hessels ASTRON, The Netherlands
- John McKean ASTRON, The Netherlands
- Andrea Merloni MPE, Garching, Germany
- Tom Muxlow University of Manchester/Jodrell Bank Observatory, UK
- Samaya Nisanke Radboud University, The Netherlands
- Hans Olofsson Chalmers University, Sweden
- Miguel Perez-Torres IAA, Spain
- Tullia Sbarrato University Milano Bicocca, Italy

Scientific organisers

Tiziana Venturi (tventuri@ira.inaf.it), Istituto di Radioastronomia, INAF
Zsolt Paragi (zparagi@jive.eu) Joint Institute for VLBI in Europe (JIVE)
Michael Lindqvist (Michael.Lindqvist@chalmers.se) Onsala Space Observatory



Progress Report. IV.

Starting from the programme originally proposed for the Symposium at EWASS 2018, we drafted an first version of the index of the Vision Document, which broadly consists of three main sections:

Section I - The landscape of the present and future observing facilities

- Present and future VLBI arrays and radio facilities
- Present and future space and ground observatories at other wavelengths

Section II - The scientific roadmap for the next decade

- Cosmology
- Galaxy formation/AGN feedback
- Towards the horizon/jets and their formation
- Explosive/transient phenomena
- Stars, stellar evolution and formation of planetary systems
- Earth and celestial reference frames (astrometry and geodesy)
- New developments in VLBI



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Section III – A new vision for the European Very Long Baseline Interferometry

- A science-driven technological roadmap for the next decade
- VLBI and synergies in the next decade
- Summary and conclusions



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Section III – A new vision for the European Very Long Baseline Interferometry

- A science-driven technological roadmap for the next decade
- VLBI and synergies in the next decade
- Summary and conclusions

- ✧ Chapter/Section coordinators and contributors have been identified. Some of them have already agreed informally
- ✧ Most core team members agreed to contribute to one or more parts



Next steps and milestones

- ❖ All chapter coordinators/contributors we have identified will be contacted straight after the CBD
- ❖ A 1-1.5 day meeting involving the full team will take place early next year (most likely February) at JIVE
- ❖ SS11 at EWASS 2018 will take place on April 4th, 2018 in Liverpool
- ❖ First draft of the Vision Document available by the end of September 2018
- ❖ Session at the 14th EVN Symposium in Granada to collect further input from the VLBI community



We aim to deliver an **advanced draft** for minor revision and overall final reading **by Q3-2019**, as requested by the Board



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THANK YOU FOR YOUR
ATTENTION