



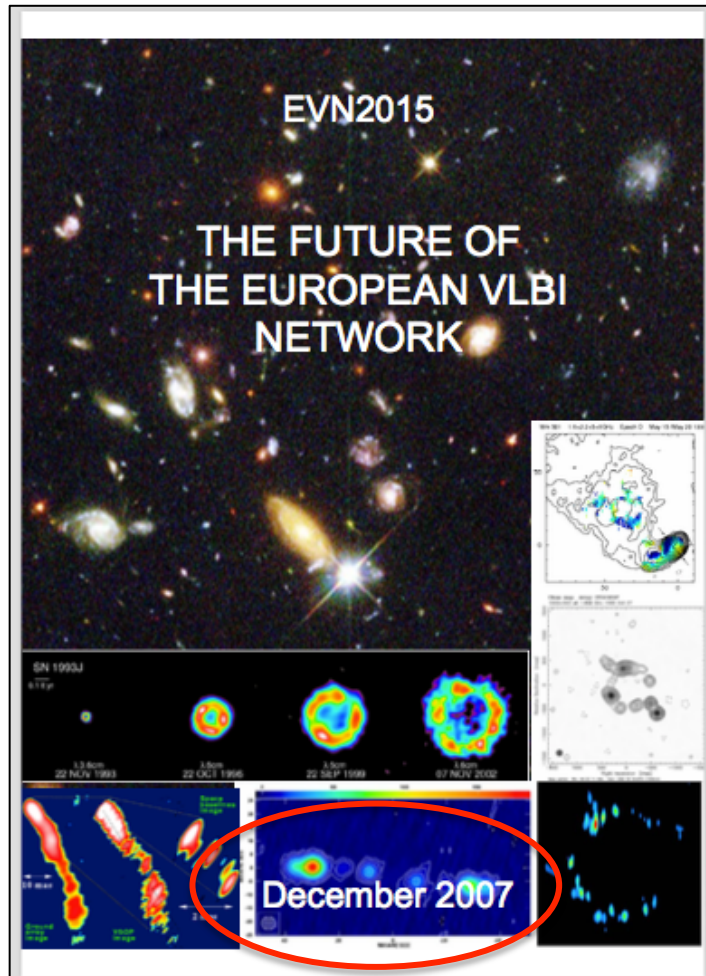
The Future of VLBI

A roadmap for the next decade

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



WP7 in the context of the EC-H2020 JUMPINGJIVE project



Time to revise the VLBI Science case for many different reasons

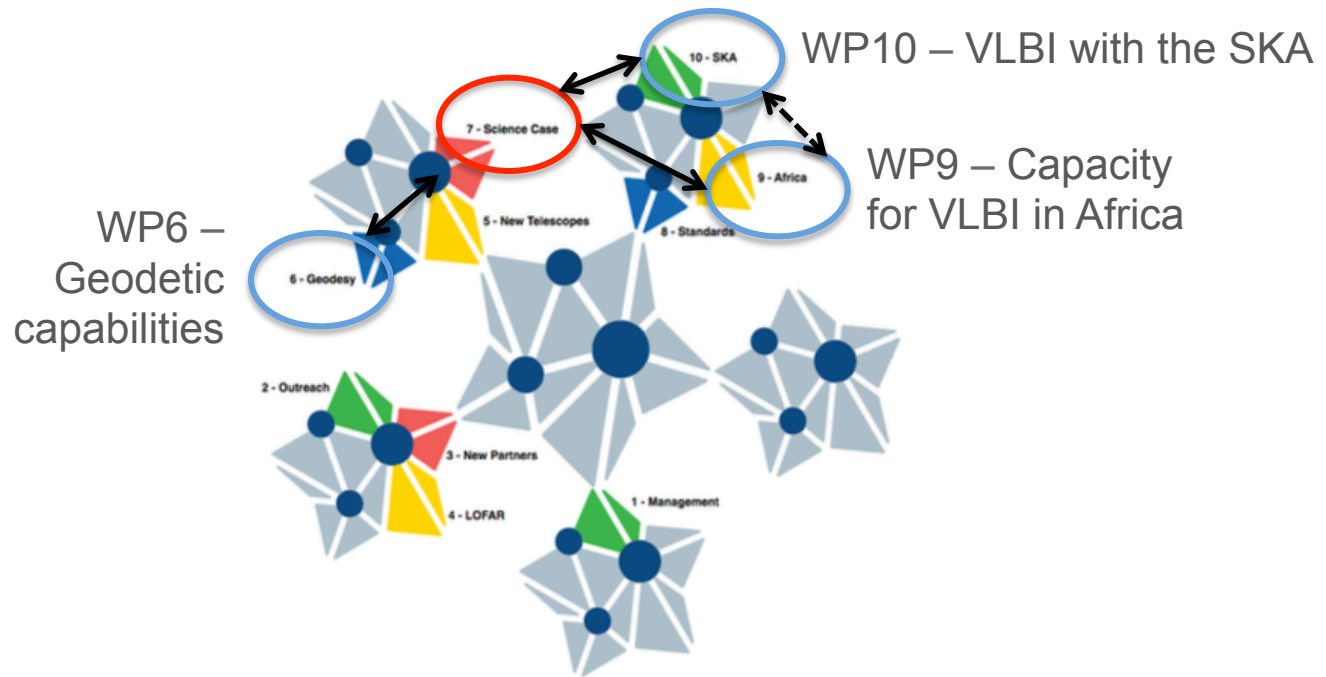
- Role and potentials of VLBI in the new astrophysical challenges
- Role, potentials and added value of VLBI in the SKA era
- Define key science areas and observational needs to have a roadmap for the technological development
- White book in support of funding requests to national agencies and ministries



WP7 in the context of the EC-H2020 JUMPINGJIVE project

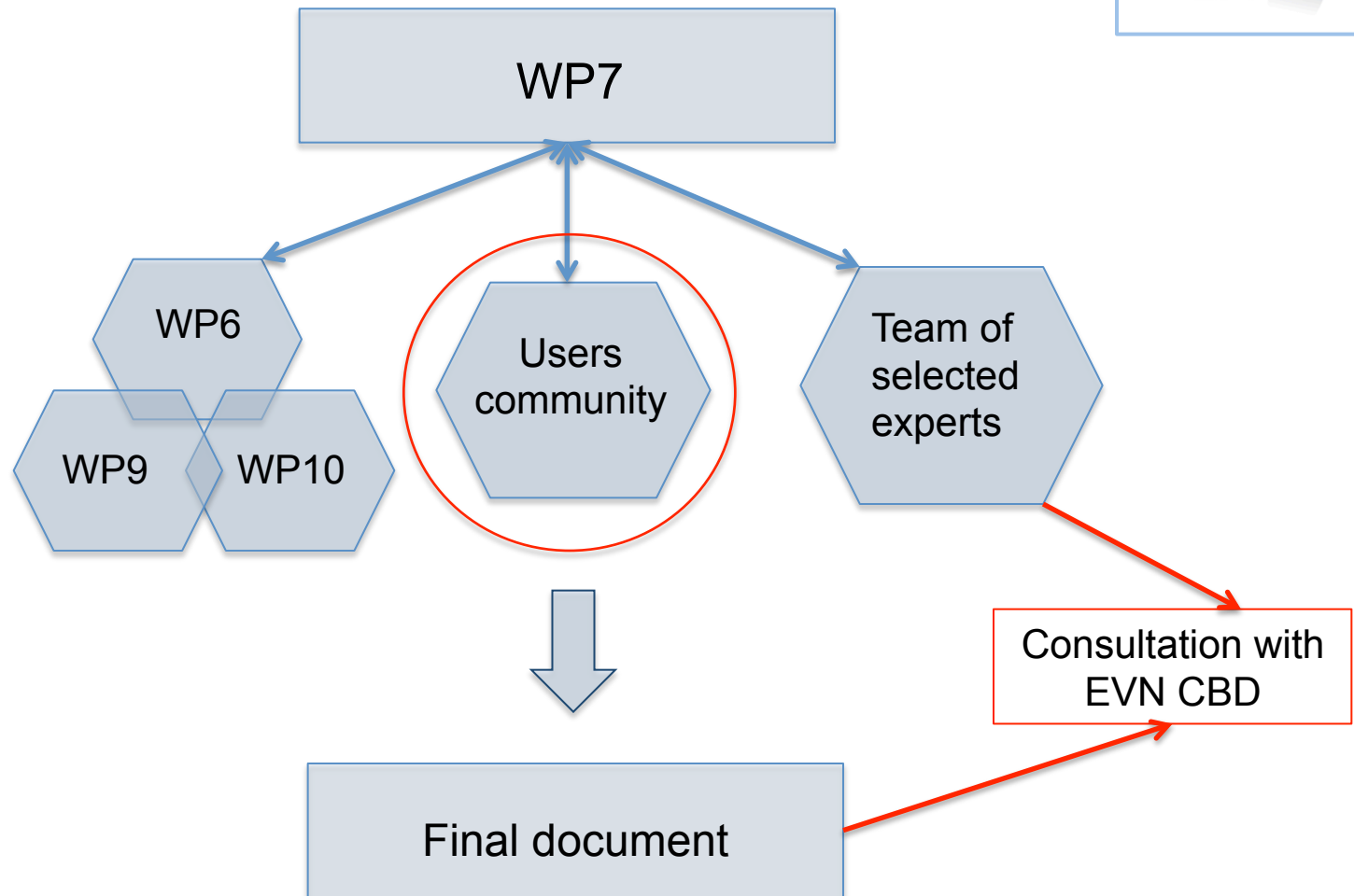


Relations to other WPs in the project Capacity for doing science





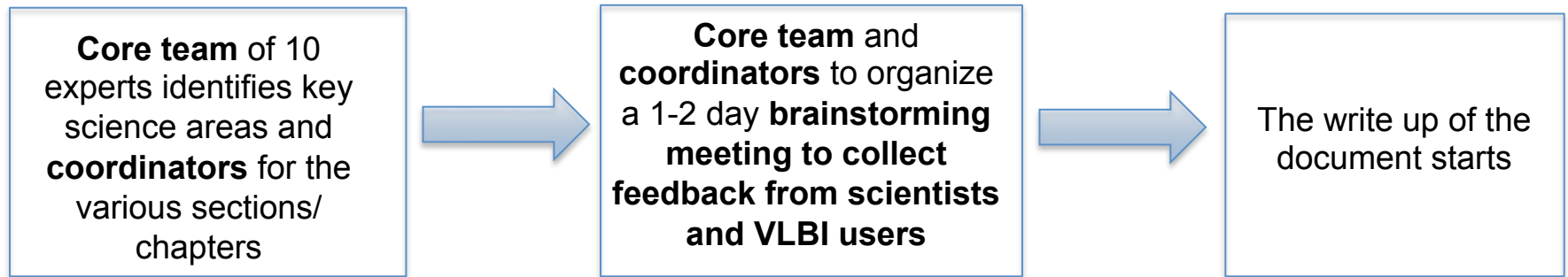
WP7 in the context of the EC-H2020 JUMPINGJIVE project





Current stage & Workplan

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

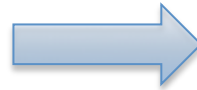


- Astronomical community at large, VLBI users in particular
- Shorter version of the document tailored for funding agencies



Current stage & Workplan

Core team of 10 experts identifies key science areas and **coordinators** for the various sections/chapters



Core team and coordinators to organize a 1-2 day **brainstorming meeting** to collect **feedback from scientists and VLBI users**

- ✧ First opportunity to introduce this effort to the radio/VLBI community at this meeting
- ✧ Special Session at EWASS 2018 – Just approved

LIVERPOOL 3-6 APRIL 2018

EWASS 2018

Welcome & News

About EWASS

Organisers

Dates

Venue

Programme **NEW**

Plenary Lectures

Travel Information

General Information

EWASS Poster


Contact



Programme Overview

Time	Monday 2nd April	Tuesday 3rd April	Wednesday 4th April	Thursday 5th April	Friday 6th April
09:00 - 09:30		Parallel Sessions	Parallel Sessions	Parallel Sessions	Parallel Sessions
09:30 - 10:00					
10:00 - 10:30		Coffee Break	Coffee Break	Coffee Break	Coffee Break
10:30 - 11:00		Opening Ceremony	Merac prize (O)	Tycho Brahe Prize	ESO Report
11:00 - 11:30		Plenary 1	Merac prize (T)	Woltjer Lecture	ESA Report
11:30 - 12:00		Plenary 2	Merac prize (NT)	STFC	Plenary 4
12:00 - 12:30		AAS Russell Lecture	Plenary 3	Community Session	Plenary 5
12:30 - 13:00					Closing Ceremony
13:00 - 13:30		Lunch	Lunch	Lunch	Lunch
13:30 - 14:00					
14:00 - 14:30		Parallel Sessions	Parallel Sessions	Parallel Sessions	Parallel Sessions
14:30 - 15:00					
15:00 - 15:30		Parallel Sessions	Parallel Sessions	Parallel Sessions	Parallel Sessions
15:30 - 16:00					
16:00 - 16:30		Coffee Break	Coffee Break	Coffee Break	Coffee Break
16:30 - 17:00	Registration (ACC)	Parallel Sessions	Parallel Sessions	Parallel Sessions	Parallel Sessions
17:00 - 17:30					
17:30 - 18:00					
18:00 - 18:30		Welcome Cocktail (ACC)			
18:30 - 19:00					
19:00 - 19:30					
19:30 - 20:00					
20:00 - 20:30			Student Reception (TBC)		
20:30 - 21:00				Conference Dinner (Anglican Cathedral)	
21:00 - 21:30					
21:30 - 22:00					
22:00 - 22:30					
22:30 - 23:00					
23:00 - 23:30					

Special Sessions

- SS1 : Active galactic nuclei: environment, triggering, life cycle, and feedback**
- SS2 : Art space: using artistic media for outreach and science communication in astronomy, Solar physics and space science**
- SS3 : Astrophysical jets in the era of multi-messenger astronomy**
- SS4 : Atomic and molecular data needs for astronomy and astrophysics**
- SS5 : Complex organic molecules in the Universe: current understanding and perspectives**
- SS6 : Dust formation by evolved stars and supernovae**
- SS7 : Equity and diversity in astronomy**
- SS8 : Engaging the public with astronomy and space science research**
- SS9 : European forum of astronomical communities**
- SS10 : Exploring the high-redshift Universe in the year of JWST**
-  **SS11 : Exploring the Universe: a European vision for the future of VLBI**
- SS12 : Flares in the lower atmosphere of the Sun and stars**
- SS13 : Galaxy clusters and groups across cosmic time**
- SS14 : Gamma-ray bursts, hypernovae, and superluminous supernovae: energetic cosmic explosions 20 years after SN 1998bw**
- SS15 : Hack together day**
- SS16 : Hello, goodbye: understanding the duality of the Milky Way**
- SS17 : Making the case for European astronomy and space science: public and political engagement**

14 more special sessions at EWASS 2018



Proposed programme at EWASS 2018
&
preliminary list of topics/chapters for the
white book



- And there was light – **Cosmology**

- * Ripples in space: probing the gravitational wave background with VLBI astrometry (pulsars/quasars)
- * Gravitational lensing: probing dark matter
- * Fast radio Bursts: probing baryonic matter

- When monsters were born (**galaxy formation; AGN feedback**)

- * Merger induced starburst and (multiple) AGN activity
- * From dwarfs to giants: probing LLAGN activity
- * Outflows and the ISM: probing neutral gas in galaxies

- Towards the Horizon (**mm-VLBI, jet formation**)

- * The first blazars: probing nuclear powerhouses/relativistic outflows
- * Near the Horizon: probing the innermost regions of black holes
- * How to make a relativistic jet: probing the acceleration and collimation region



Proposed programme at EWASS 2018
&
preliminary list of topics/chapters for the
white book



- Inferno (**explosive phenomena/transients**)
 - * The zoo of stellar explosions
 - * Radio counterparts to GW events: probing progenitor models
 - * Tidal Disruptions: probing dormant (intermediate-mass) black holes
 - * Galactic transients: probing the formation of stellar-mass black holes

- Stars and life (**stars and planetary systems formation; SETI**)
 - * Sites of star formation: probing the structure of the Milky Way
 - * Massive star formation
 - * Planetary systems

- The future of European Radio Astronomy (**near-field VLBI, EVN vision**)
 - * Space exploration and VLBI
 - * The European VLBI Network: a new vision

e-MERLIN and the EVN in the SKA era – Workshop II

This session

The future of VLBI

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

12:00: Session 5: The Future of VLBI

12:00 – 12:10: Tiziana Venturi (INAF) - Introduction, welcome and overall vision

12:10 – 12:30: Michael Lindqvist (Onsala Space Observatory) - EVN present Status and future direction

12:30 – 12:45: Walter Briske (LBO) - VLBA Technical Roadmap: 2020-2035

12:30 – 12:45: John Conway (Onsala Space Observatory) - Wide-Band Single Pixel feeds and EVN technical upgrades

13:00 – 14:00: Lunch

14:00: Session 6: VLBI Science

14:00 – 14:15: Zsolt Paragi (JIVE) - VLBI and the SKA (an update from the SKA-VLBI SWG)

14:15 – 14:30: Jack Radcliffe (Groningen/JBCA/ASTRON) - What's the point in wide-field VLBI? A multi-wavelength perspective

14:30 – 14:45: Philippa Hartley (JBCA) - Investigating radio quiet quasars using e-Merlin and EVN observations of strong gravitational lenses

14:45 – 15:00: Sandra Etoka (JBCA) - Probing circumstellar structures through masers with EVN & eMERLIN

15:00 – 15:30 – Panel discussion



Request from input similar to the questionnaire distributed for eMERLIN

- Role and potentials of VLBI in the new astrophysical challenges
- Role, potentials and added value of VLBI in the SKA era
- Define key science areas and observational needs to have a roadmap for the technological development



- ✓ What do you consider as the most upcoming science advances relevant to the VLBI?
- ✓ What do you think will be the most important science areas for VLBI?
- ✓ Are there hot questions/open issues which only VLBI can answer?
- ✓ Which features/upgrades do you consider most relevant for the EVN?



