

IRA-INAF FUNDING PROPOSALs

A. ORFEI

THREE FUNDING SOURCES

1. FP7 European Union
2. UIT Ufficio Innovazione Tecnologica
3. ASI Italian Space Agency

FP7 (ALL EUROPEAN PARTNER INVOLVED):

1. JRA = JOINT RESEARCH ACTIVITY
2. TNA= TRANSNATIONAL ACCESS ACTIVITY
3. NA= NETWORKING ACTIVITY

ASI (ALL ITALIAN INSTITUTIONS INVOLVED):

TECHNOLOGICAL DEVELOPMENT FOR SPACE

UIT (ALL ITALIAN INSTITUTIONS INVOLVED):

TECHNOLOGICAL DEVELOPMENT (RESEARCH
MINISTRY OFFICE)

FP7 (to RADIONET): may be 12.5Meuro TOTAL

NA 15% 5.3M REQUESTED

TNA 45% 12.2M REQUESTED

JRA 40% 15.2M REQUESTED

*Financing rule: 75%*FTE, 100%*Travel, 100%*Management*

UIT: 6Meuro TOTAL

Financing rule: 85% from UIT, 15% co-financing

ASI: 30Meuro TOTAL

Financing rule: 80% from ASI, 20% co-financing

APRICOT (FP7-Joint Research Activity)

All-Purpose Radio Imaging Cameras On Telescopes

- Participating Institutions: UManch., MPIfR, IRA, OAN, TCfA
- Provide receiving building blocks for Dense Cryogenic Multifeed System (10s-100 horns)
- Band of interest: 30-50GHz
- For polarisation, continuum and spectroscopic observations
- Entire RF bands sent to detectors after splitting into a few sub-bands PLUS...
- ...IF bands (≈ 2 GHz wide)
- Receiver architecture for removing $1/f$ noise and atmospheric fluctuations
- Goal: all-MMIC receiver
- Building blocks: low cost, mass production of wide band
Passive parts, LNAs, Mixers, Filters, Square Law Detectors, LO generation and distribution,.....
- Strategic role: MMIC development (InP, mGaAs, with European foundries as partners)
- Total Amount requested for EC funding: 1980k€
- Duration: 4 years
- INAF Representative: A. Orfei
- PI: P. Wilkinson (UManch.)

	UManch	MPIfR	IRA	OAN	TCfA
FTEs	7.5	6.6	5.7	3.6	2.1

S-WAVE (FP7-Joint Research Activity)

Shortest-Wavelength VLBI in Europe

- Participating Institutions: MPIfR, IRAM, OAN, IRA, TUO, JBO, MRO, OSO, (HST)
- Enhance VLBI at millimeter wavelengths
 - a) improving VLBI at 7 and 3mm in the EVN
 - b) developing VLBI above 100GHz (2, 1, 0.85mm)
- Antenna and receiver enhancements for mm-VLBI in Europe
(study EVN antennas upgrade and dual frequency observations)
- Improving the data product during observation
(calibration and correcting for atmospheric effects)
- Enhanced fringe signal detection and post correlation software
- Pushing VLBI to higher frequencies and sensitivities
(pilot studies above 100GHz, phasing local mm-arrays, develop high bit rate recording up to 16Gb/s)
- Total Amount requested for EC funding: 2106k€
- Duration: 4 years
- INAF Representative: A. Orfei
- PI: W. Alef (MPIfR)

	MPIfR	IRAM	OAN	IRA	TUO	JBO	MRO	OSO	(HST)
FTEs	6.3	4.5	3.2	2.5	2.3	1.2	1	0.9	(4.0)

UniBoard (FP7-Joint Research Activity)

A Multi-purpose Scaleable Computing Platform for Radio Astronomy

- Participating Institutions: Astron, JIVE, OAA, Bordeaux, UManch, Orleans, MPIfR
- FPGA development for Digital receivers, Spectropolarimeter, Pulsar machine, Correlator
- Up to 8GHz input bandwidth
- Usable for single input and multibeam receivers

- Total Amount requested for EC funding: 1579k€
- Duration: 4 years
- INAF Representative: G. Comoretto (OAA)
- PI: A. Szomoru (JIVE)

	Astron	JIVE	UManch	INAF	Bordeaux	Orleans	MPIfR
FTEs	5.2	5	4	3	2.2	1	1

SPIRIT (FP7-Joint Research Activity)

Space and Planetary Initiatives by Radio Interferometric Techniques

- Participating Institutions: JIVE, MPIfR, FG-IGN, TUO, UBordeaux, UHelsinki, IRA, UBonn,...
- VLBI tracking of planetary probes
- 100-800MHz Direct-to-Earth science and radio sounding experiments
- Phase referencing methods
- Use of VSOP2 at 22 and 43GHz for European VLBI
- Geodetic and astrometric VLBI using tracking stations

- Total Amount requested for EC funding: 2308k€
- Duration: 4 years
- INAF Representative: G. Giovannini (UniBo)
- PI: L. Gurvits (JIVE)

	JIVE	MPIfR	FG-IGN	TUO	UBordeaux	UHelsinki	IRA	UBonn	Astron
FTEs	5.4	3.2	3.1	3	2.2	2.1	1.5	1.5	1.2

PROVE (FP7-Joint Research Activity)

Phase Referencing of VLBI Experiments

- Participating Institutions: IRA, UManch, ASTRON, OPAR, JIVE
- Provide a Demonstrator system for Phase Reference Beam Focal Plane Array for VLBI
- Total Amount requested for EC funding: 1865k€
- Duration: 4 years
- INAF Representative: R. Nesti (OAA)
- PI: J. G. Bij de Vaate (ASTRON)

	INAF	UManch	Astron	OPAR	JIVE
FTEs	3.4	3.1	1.4	0.3	0.1

IRA Telescopes (FP7-Transnational Access Activity)

Single Dish

- Observers' access to Medicina, Noto and the SRT
- FTE to be defined after proposal approval

	Medicina	Noto	SRT
Telescope Time provided (h)	3600	3400	1900

- Total Amount requested for EC funding: 2466k€
- Duration: 4 years
- INAF Representative: K.-H. Mack
- PI: K.-H. Mack

EVN Telescopes (FP7-Transnational Access)

VLBI (via JIVE)

- Support of VLBI observations at Medicina, Noto and the SRT
- Money could be divided based on actually observed time
- FTE to be defined after proposal approval

	Medicina	Noto	SRT
Telescope Time provided (h)	444	444	444
Total amount requested (271k€)	76,812	56,832	137,640

- Total Amount requested for EC funding: 2490k€
- Duration: 4 years
- INAF Representative: ?
- PI: B. Campbell (JIVE)

(FP7-Networking Activity)

Science Workshops

- Participating Institutions: IRA, UOxford, IRAM
- No FTE, money shared

- Total Amount requested for EC funding: 241k€
- Duration: 4 years
- INAF Representative: T. Venturi
- PI: T. Venturi

VC-Net (FP7-Networking Activity)

Network of Visitor Centres

- Participating Institutions: IRA, MPIfR, JBO, Nancay, Yebes, Onsala
- Create a working group to define best practice for the communication of radio astronomy.
- Collaborate on an international level for the communication of radio astronomy within RadioNet:
 - a) participating in international cultural exchanges;
 - b) designing and producing educational and outreach materials;
 - c) designing and producing prototypes of new specific and ground-breaking exhibits.
- Find the best strategies for showing the collaboration of radio observatories participating in RadioNet:
 - a) web connection between webcams at the radio telescopes within RadioNet;
 - b) dedicated movies about radio astronomical issues and European radio telescopes;
 - c) public historical archive about European radio astronomy
- Total Amount requested to RadioNet: 206k€ (FTE, Travel, Outreach material, Web Connection, Archive, Movies: 96k€, 20k€, 70k€, 5k€, 5k€, 10k€)
- Duration: 4 years
- INAF Representative: S. Varano
- PI: F. Mantovani

	IRA	MPIfR	JBO	Nancay	Onsala	Yebes
FTEs	1.2	0	0	0	0	0

(FP7-Networking Activity)

Spectrum Management

- Participating Institutions: IRA, ?
- Total Amount requested for EC funding: 130k€
- Duration: 4 years
- INAF Representative: R. Ambrosini
- PI: R. Ambrosini

(FP7-Networking Activity)

E-LOFAR Network

- Participating Institutions: USouthampton, Astron, Leiden, MPIfR, MPA, IRA, UOxford, CEA, OSO
UJagiellonian, SRI, ITPA, Inst. of Astronomy
- No FTE, money shared
- Total Amount requested for EC funding: 240k€
- Duration: 4 years
- INAF Representative: G. Brunetti
- PI: R. Fender (USouthampton)

(FP7-Networking Activity)

Network for European ALMA Users

- Participating Institutions: ESO, IRA, IRAM, JBO, UBonn (+Cologne), Onsala (+DK, S), ULeiden (+Dwingeloo, Groningen)
- Funding Post-Doctoral Research Assistants (PDRAs) shared among the 6 Regional ARC-nodes
- Continuation of the Regional ALMA Forum

- Total Amount requested for EC funding: 2127k€ (PDRA, Forum: 2000, 127)
- Duration: 4 years
- INAF Representative: J. Brand
- PI: P. Andreani (ESO)

CERT (FP7-Networking Activity)

Connecting Eastern Radio Telescopes

- Participating Institutions: ASTRON, NCRA (India), CAO (Ucraina), VIRAC (Lettonia), IRA-NASU (Ucraina), PRAO (Russia), MPIfR, IRA, TAO (Polonia) OSO, JIVE, MET (Finlandia)
- Integrate Eastern Europe Institutes plus India Institute into European astronomical community
- Total FTE: 8, shared

- Total Amount requested for EC funding: 160k€
- Duration: 4 years
- INAF Representative: L. Feretti
- PI: W. Baan (ASTRON)

DoMI^{no} (UIT-SFERA)

Downconverter **M**odulare **I**ntegrato

- Partners: IRA, Ferrari BSN snc, (G&A Engineering srl, Aerospace Lab srl)
 - Development of high integration MMIC (LNA + mixer + back-end interface)
 - Development of MMIC mechanical packaging
 - Realization of a reliable industrial production process
 - Bands of interest: S (13cm), Ka (9mm), W (3mm)
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- Total Amount requested to UIT: 600 k€ (IRA, Ferrari BSN: 430k, 170k)
 - Duration: 2 years
 - IRA Representative: A. Cremonini
 - PI: A. Cremonini

VIKY (UIT-SFERA)

Realizzazione di un visore ad onde mm compatto ad alte prestazioni

- Partners: IASF, IRA, Temix
 - Goal: development of a viewer for surveillance security applications
 - IRA deliverable: development of a MMIC-LNA radiometer
 - Band of interest: Ka (9mm)
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- Total Amount requested to UIT: 590 k€ (IASF, IRA, Temix: 180k, 180k, 230k)
 - Duration: 2 years
 - IRA Representative: J. Monari
 - PI: IASF

GAUSS (ASI-Technological Development)

Ground Antennas Upgrowth for Space-VLBI and Space Debris

- Partners: IRA, Cospal Composites, Novantel
 - Upgrade Medicina 32m telescope (and Noto as well) for serving Space-VLBI VSOP2 Project
 - Band of interest: 43GHz
 - Goal: obtain max antenna performance at 7mm and best effort for 3mm
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- Total Amount requested to ASI: ≈ 1700 k€
 - Duration: 2.5 years
 - IRA Representative: A. Orfei
 - Prime Contractor: IRA

MICRA (ASI-Technological Development) Millimeterwave Integrated Chip-set Design and Realisation for Advanced Applications

- Partners: Contraves, ARES, IRA
 - MMIC development with existent European foundries technologies
 - Waveguide devices development for dense multifeed
 - Band of interest: 100GHz
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- Total Amount requested to ASI: ? k€
 - IRA Amount: 376k€
 - Duration: 2.5 years
 - IRA Representative: A. Orfei
 - Prime Contractor: Contraves o ARES

FUNDED PROPOSALS

(ci rivediamo nel 2008-2009!)