

**Catania Alerts meeting December 2019**

**The current  
H2020 Contract  
and the next  
PILOT**

**OPTICON**

# OPTICON

## EC Optical InfraRed Coordination Network for Astronomy

- **FP5 (2000-2004) Start-up networking**
- **FP6 (2004-2008) 47 partners €19M (5 years)**
- **FP7-1 (2009-2012) 30 partners €10M (4 years)**
- **FP7-2 (2013-2016) 26 partners €8.5M (4 years)**
- **H2020 (2017-2020) 32 partners €10M (4 years)**
- **H2020 (2021-2024) PILOT project with RadioNet (4 years)**
- Partners: funding agencies, hardware R&D groups, observatories, industrial partners
- Activities: observing access, technology R&D, networking / community development

Coordinator: Prof Gerry Gilmore

Project Manager: Dr Gudrun Pebody

Project Scientist: Dr John Davies (ATC Edinburgh)

# OPTICON H2020

**Adaptive  
Optics**  
€ 500,500

**Fast Cameras**  
€ 1,000,000

**Fast Detectors**  
€ 400,000

**Freeform  
Mirrors**  
€ 600,000

**Additive  
Manufacturing**  
€ 849,957

**Astrophotonics**  
€ 529,989

**Light Sensitive  
Materials**  
€ 500,000

**Next  
Generation  
Instruments**  
€ 550,625

**Management**  
€ 800,131

**Adaptive  
Optics  
Network**  
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**Interferometry  
Network**  
€ 250,000

**Training  
Schools**  
€ 429,527

**Time Domain  
Astronomy**  
€ 600,000

**Technology  
Foresight**  
€ 124,416

**Community  
Sustainability**  
€ 100,000

**Transnational  
Access**  
€ 2,265,355

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# JRAs

[JRA 1]

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instruments

**Jean-Luc Beuzit**

CNRS

€ 500,500

[JRA 2]

(CMOS) Fast Detectors  
and Cameras for Laser  
Guide Stars

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[JRA 3]

(APD) Emerging Fast  
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[JRA 4]

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STFC

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for AIP

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[JRA 8]

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VLT Interferometry

**Jörg-Uwe Pott**

MaxPlanck

€ 550,625

# Networks

**[NA 1]**

**Adaptive Optics  
Community Network**

**James Osborn**

**UDUR**

**€ 499,500**

**[NA 3]**

**Enhancing Community  
Skills – Integrating  
Communities**

**Heidi Korhonen**

**UCPH**

**€ 429,527**

**[NA 5]**

**Technology and  
Innovation Network**

**Ruben Sanchez-Janssen**

**STFC**

**€ 124,416**

**[NA 2]**

**VLTI Expertise Centres  
Network**

**Paulo Garcia**

**UPORTO**

**€ 250,000**

**[NA 4]**

**Time-Domain Astronomy**

**Lukasz Wyrzykowski**

**UNIWARSAW**

**€ 600,000**

**[NA 6]**

**Long-term Strategic  
Planning**

**Gerry Gilmore**

**UCAM**

**€ 100,000**

# TNA

REM

AAT

LT

OHP  
120

NOT

CAHA  
2.2

CFHT

INT

17 Infrastructures  
€ 2,105,354  
John Davies  
STFC/UKATC

TBL

OHP  
193

TCS

MPG  
2.2

LCOGT

TNG

CAHA  
3.5

WHT

Aristar  
chos





# OPTICON

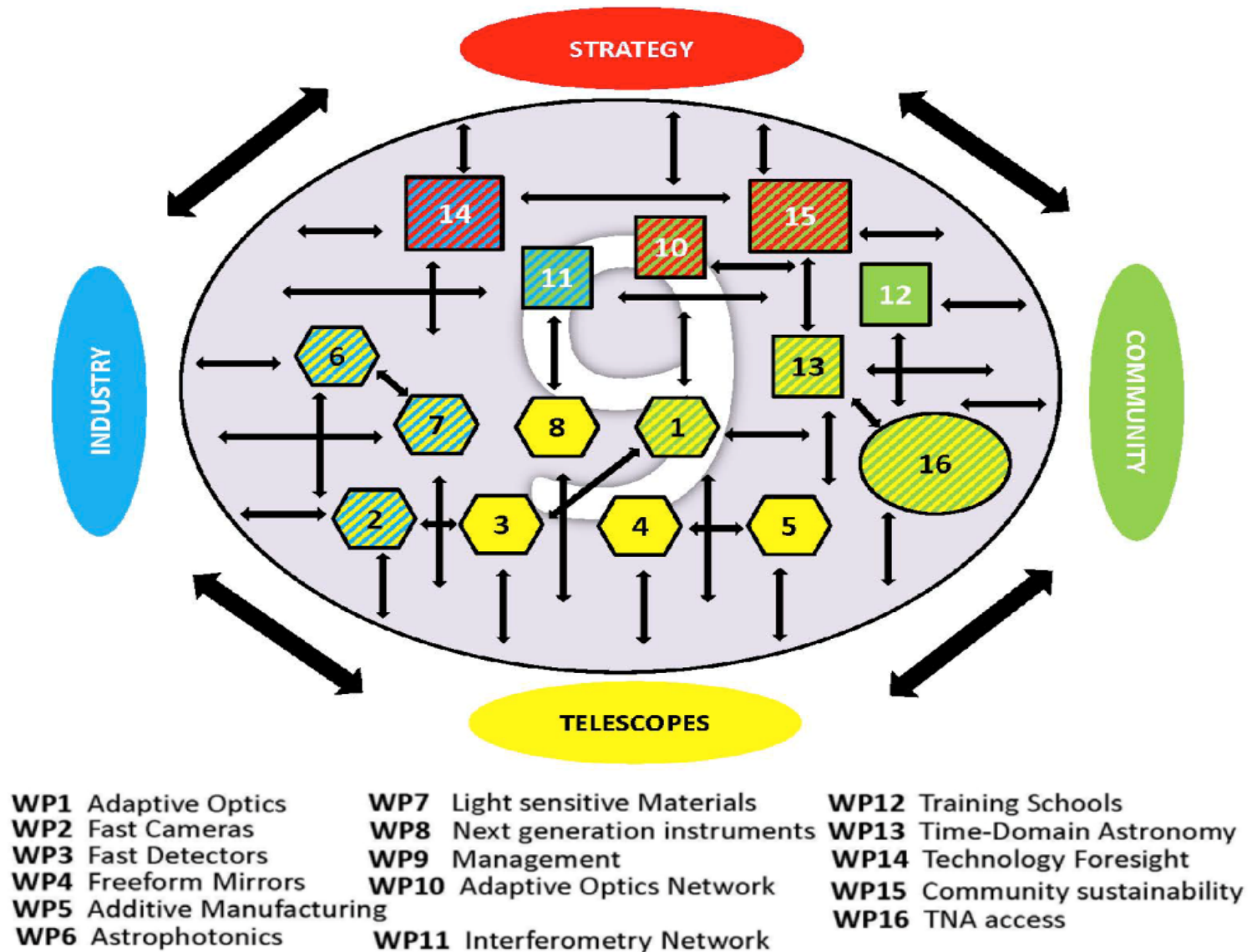
## Trans-national Access Programme



[www.astro-opticon.org](http://www.astro-opticon.org)



# Our ambition: a culture of co-operation and synergy – discovering, delivering and disseminating new ideas, ambitions and projects for the future of the optical infrared community





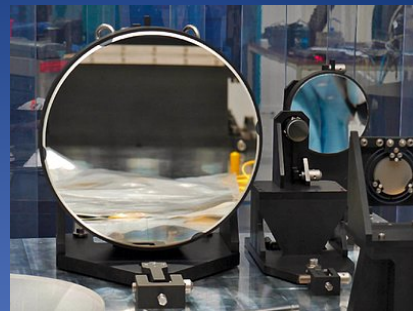
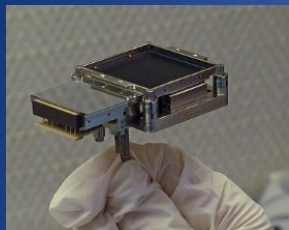
**TNA**

**NETWORK – STRATEGY  
TRAINING**

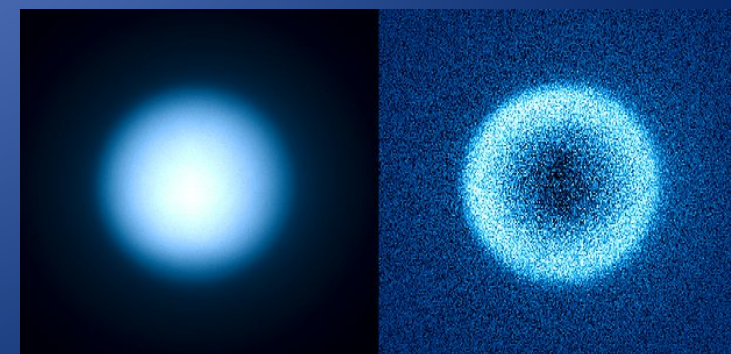
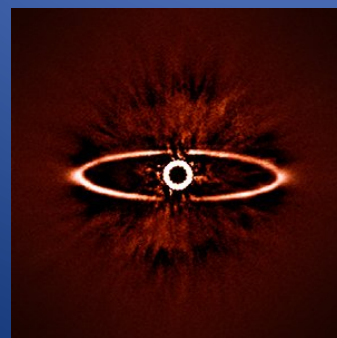
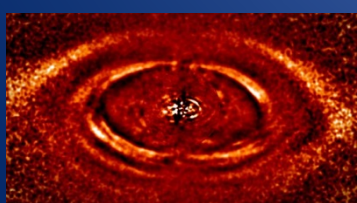
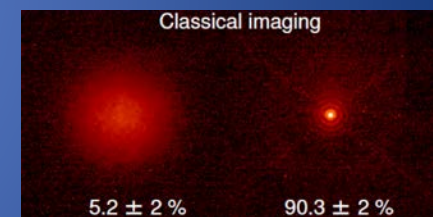
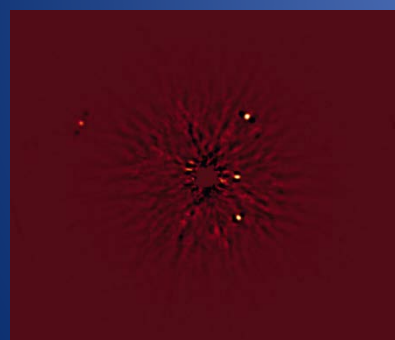
**JRA/RTD**



# SPHERE



**SPHERE @ VLT: OPTICON RTD provided ~30% of the AO technology**

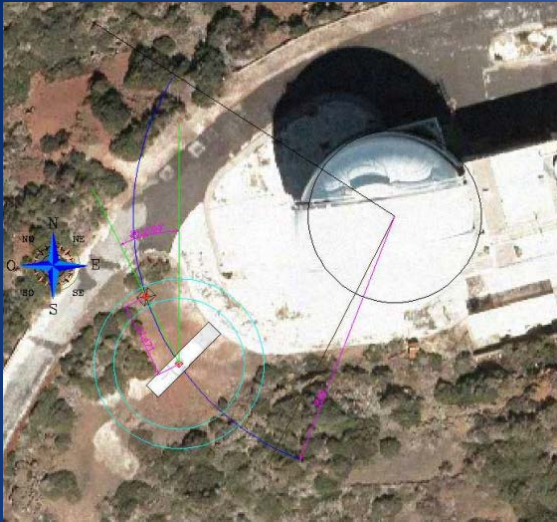






# Canary

adaptive optics testbed

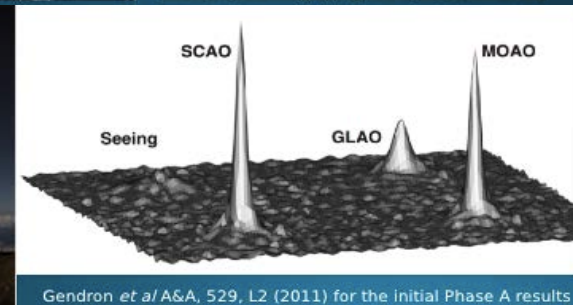


## CANARY: Phase A to Phase C2

2010

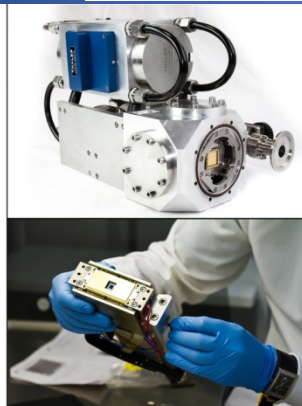


2015



Gendron *et al* A&A, 529, L2 (2011) for the initial Phase A results

# Ocam



Novel optical manufacturing processes using an ultrafast laser inscription process developed for OPTICON Astrophotonics



# Networks FP7 deliverables

## Interferometry data processing cookbook – 80pp

### Strategy White paper – 130pp

#### Future of optical-infrared Interferometry in Europe

*A report on the Scientific exploiting of the 2nd generation  
instruments and science drivers to develop future  
instrumentation for optical-infrared interferometry*



#### RECONSTRUCTION TEST REPORT AND DATA PROCESSING COOKBOOKS

##### OPTICON FP7-2 Report (JRA.4 DELIVERABLE)



##### Authors:

Joel Sanchez-Bermudez (Max-Planck-Institut fuer Astronomie -MPIA-, Heidelberg, Germany)

Eric Thiébaud (Centre de Recherche Astrophysique de Lyon, Lyon, France)

Gilles Duvert (Observatoire de Grenoble and IPAG, Grenoble, France)

Guillaume Mella (Observatoire de Grenoble and IPAG, Grenoble, France)

John Young (Univ. of Cambridge, Cambridge, United Kingdom)

J-Uwe Pott (Max-Planck-Institut fuer Astronomie -MPIA-, Heidelberg, Germany)

Nuno Gomes (Universidade do Porto - Faculdade de Engenharia, Departamento de Engenharia Física -CENTRA-, Porto, Portugal)

Paulo J. V. Garcia (Universidade do Porto - Faculdade de Engenharia, Departamento de Engenharia Física -CENTRA-, Porto, Portugal)



December, 2016  
Heidelberg, Germany





## Training schools & workshops

- Observing
- Archive data analysis
- Instrumentation
- Photonics
- Interferometry
- Adaptive Optics technology

Awareness conference on European Astronomy in the Optical and IR domain:

An ESO / Opticon / IAU summer school  
on modern instruments, their science  
case, and practical Data Reduction

Brno, Czech Republic  
01-11 September 2015

The summer school aims at training advanced MSc's, PhD students and postdocs on how to make use of the cutting edge facilities offered by institutions like ESO or other observatories available through the OPTICON access program (CAHA, La Palma, OHP, TBL, and so on)

The main part of the school will be a scientific project with real data. It will be accompanied by lectures given by experienced astronomers from different areas of astrophysical research.

Local costs will be covered by the school. A contribution to travel expenses can be envisaged on a duly justified case by case basis.

Registration is open until 8 May 2015 (13:00 CET)

Summer school webpage with registration form can be found under:

<http://awareness2015.physics.muni.cz>  
[http://www.iap.fr/opticon/conferences/AW\\_Brno2015.html](http://www.iap.fr/opticon/conferences/AW_Brno2015.html)

[awareness2015@physics.muni.cz](mailto:awareness2015@physics.muni.cz)

Organizing partners:  
Academy of Sciences of Czech Republic  
European Southern Observatory  
IAU  
Masaryk University, Brno  
OPTICON







# TRAINING SCHOOLS FP7-2

## Astrophotonics

- Durham (UK) 21-25 September 2015

## Interferometry

- Barcelonnette (FR) 9-21 September 2013
- Cologne (DE) 6-13 September 2015

**Durham University**  
**Summer School in Astrophotonics**  
 Astrophotonics and Adaptive Optics  
 for precision spectroscopy

*Aimed at young researchers wishing to harness the power of  
 Astrophotonics and Adaptive Optics for exoplanet science and  
 other fields requiring the ultimate in spectroscopic precision*

**Durham University, United Kingdom**  
**21-25 September 2015**

**First announcement**

sites.google.com/site/astrophotonica/summer-school

Scientific Organising  
 Committee:  
 Joss Bland-Hawthorn, Roger  
 Hayes, Richard Myers, Hugh  
 Jones, Robert Thomson, Jeremy  
 Allington-Smith

**Precision spectroscopy**  
 Requirements and principles  
 Recent results on exo-planets

**Astrophotonics**  
 Requirements and principles  
 Recent results in integrated spectroscopy  
 Enabling technology

**Adaptive Optics**  
 Requirements and principles  
 Results from testbeds  
 Challenges posed by ELTs

**Integrated approach to exoplanet science**  
 Astrophotonics for wavefront sensing  
 Astrophotonics and fibre-based calibration

International PhD School "F. Lucchin" - XIV Cycle II Course

**Science and Technology with E-ELT**  
 Erice, Sicily, 8-20 October 2015

School Directors:  
 G. Bono (Univ. of Rome Tor Vergata)  
 I. Hook (Lancaster University)  
 S. Ramsay (European Southern Observatory)

[http://www.eso.org/sci/meetings/2015/EELT\\_EriceSchool2015.html](http://www.eso.org/sci/meetings/2015/EELT_EriceSchool2015.html)

Logos: ESO, European Union, and others.

**THE 2013 VLTI SCHOOL**

**HIGH-ANGULAR RESOLUTION FOR  
 STELLAR ASTROPHYSICS**

PROGRAM AND REGISTRATION AT  
[HTTP://VLTISCHOOL.SCIENCESCONF.ORG](http://VLTISCHOOL.SCIENCESCONF.ORG)

**BARCELONNETTE, FRENCH ALPS**  
**9-21 SEPTEMBER 2013**

Logos: ESO, European Union, and others.

The 8th VLTI Summer School, Cologne, 6 – 13 September 2015

**High angular resolution in astrophysics:  
 optical interferometry from theory to observations**

[www.astro.uni-koeln.de/vltischool2015](http://www.astro.uni-koeln.de/vltischool2015)

SCIENTIFIC ORGANISING COMMITTEE:  
 Peter Amaro (University of Cambridge, UK)  
 Yoon Hwang (Korea Astronomy and Space Science Institute, Korea)  
 Jean-Marc Brice (Observatoire de Paris, France)  
 Peter Garmire (University of Arizona, USA)  
 Michael Hogg (University of Cambridge, UK)  
 Ralf Koppelman (University of Cologne, Germany)  
 Tobias Krichbaum (University of Cologne, Germany)  
 Lucien Labadie (University of Cologne, Germany)  
 Roman Knigge (University of Cologne, Germany)  
 Alexander Richter (University of Cologne, Germany)  
 Andrius Stasiulis (University of Cologne, Germany)  
 Kaye Smith (University of Cologne, Germany)

LOCAL ORGANISING COMMITTEE:  
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 Andrius Stasiulis (University of Cologne, Germany)

Logos: ESO, European Union, and others.

## E-ELT science

- Erice (IT) 8-20 October 2015

## Adaptive Optics



# TRAINING SCHOOLS H2020

## WP 12

### NEON (Observation)

- 2017 • 3-17 September • La Palma
- 2018 • 9-22 September • Asiago
- 2019 • 15-29 September • Rozen & Sofia
- 2020 • TBD

### Instrumentation / Proposal writing

- 2017 • 3-12 July • Copenhagen
- 2018 • 18 February – 2 March • La Silla & Santiago [ESO co-funded]
- 2019 • 17-27 June • Stará Lesná
- 2020 • TBD?



**TNA**

**NETWORK – STRATEGY  
TRAINING**

**JRA/RTD**



STRATEGY

OPTICON

TNA

RadioNet

TRAINING

JA



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€ 100,000

**Transnational  
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€ 2,265,355

# PILOT

Adaptive  
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€ TBD

Fast Cameras  
€ TBD

Fast Cameras  
€ TBD

Manufacturing

Astronomical  
€ TBD

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INAF

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[JRA 8]

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MaxPlanck

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# PILOT

[JA / TA]  
Calibration and test tools  
for adaptive-optics  
instruments  
**Canary collaboration**

URA 41  
University of  
Freeform of Astro-  
nomical Observation  
**Ministry of Science**

URA 42  
European  
29,5

URA 21  
(C... and Laser  
P...  
1,000,0

URA 51  
A...  
Integrated Element  
Ma...  
H...  
849,95

[JA 3.1]  
Innovative Photosensitive  
Materials for Diffractive and  
Reflective Optical Elements  
**Andrea Bianco**  
INAF  
€ 200,000

URA 22  
(A...  
A...  
100,0

[JA/TA ]  
Instruments for VLT  
Interferometry  
**Sebastian Hoenig**  
**EII Collaboration**

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Time-Domain Astronomy

**Lukasz Wyrzykowski**

UNIWARS AW

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[NA 6]

Long-term Strategic  
Planning

**Gerry Gilmore**

UCAM

€ 100,000

# Current Networks are basis of PILOT

[TA/JA]  
Adaptive Optics  
experiment Community  
**James Osborn**  
UDUR

[JA 4]  
Enhancing Community  
Skills – Integrating  
Communities  
**Heidi Korhonen**  
UCPH

[JA1.4]  
Technology and  
Innovation Network  
STFC



[TA/JA]  
VLT Expertise Centres  
Network  
**European Interferometry**  
UPORTO

[TA/VA/JA]  
Time-Domain Astronomy  
**Lukasz Wyrzykowski**  
UNIWARSAW

[JA 1]  
Long-term Strategic  
Planning  
**Gerry Gilmore**  
UCAM



# OPTICON-RadioNet PILOT: 2021-2024

Submission deadline: March 17 2020

**Budget per community:** 7500Keuro

**Restriction:** 60% (4500K) to be allocated to “access”

**New labels:** Access TA/VA; training = schools; Joint Actions = everything else

**Agreed structure:**

**Formal coordinator** = Anton Zensus MPIfR (limited role)

OPTICON management team will continue to coordinate OPTICON-led activities  
Ditto for RadioNet.

**Collaboration** - not a take-over.

Single Board of all partners, limited role

Executive Board of national agencies and international facilities

Twin management teams

# PILOT



TA 1

TA 2

TA 3

TA 4

Total budget  
**€15M**

JA 1

Training

Management

JA 2

JA 3

Management





# Trans-National Access TA/VA

## **TA1:**

Primary  
transnational/virtual  
access to Europe's  
leading optical and radio  
facilities

## **TA2:**

Expanded user support to  
the complex observing  
facilities and systems  
ALMA and VLTI

**Total budget  
4,500Keuro**

**This is for this meeting**

## **TA3:**

Time-Domain-Multi-  
wavelength astronomy

## **TA4:**

Instrument and Adaptive  
Optics test facility access.  
Some aspects will be  
classic TNA access, some  
VA, complemented by a  
Joint Action under JA2.



# Trans-National Access TA/VA

TA1-a Lead author:  
**RadioNet**

TA1-b Lead author:  
**OPTICON**  
John Davies

TA2- a ALMA ARC Lead  
author: **RadioNet**  
TA2-b VLTl-arcs Lead  
author: EII team  
**OPTICON / RadioNet**

Total budget  
4,500Keuro

TA3-a PST Lead author:  
**RN**

TA3-b OPT Timedomain  
Lead author: Lukasz W.  
**OPTICON**

TA3-c multi-wave TDA  
Lead author: **RN**

TA4-a Canary-related  
Lead author: James  
Osborn **OPTICON**

TA4-b radio part Lead  
author: **RadioNet**

# Joint Activities



**JA1** - Develop and Outline  
a long-term strategy  
regarding the viability of  
relevant Research  
Infrastructures and  
activities (mandatory)

**JA2** - To coordinate,  
harmonise, and hence  
improve the services  
delivered to the broad  
research communities  
across the multiple  
infrastructures within the  
PILOT

Total available  
budget  
**2,200K**

**JA3** - Provide a  
complementary suite of  
targeted enhancements  
to the services and  
capabilities of the  
infrastructures within the  
PILOT.

**JA4**  
Training schools  
related to access  
training



# JA1 – Towards a strategic vision for the long-term

***JA1.1 - Map and analyse the access modalities across RIs & Countries***

***JA1.2 – PILOTING the PILOT: The impact of the PILOT combined activities***

***JA1.3 – Develop possible co-funding models for TA initiatives***

***JA1.4 – Explore the long-term importance of TA/VA to the community***

**Budget:** 200Keuro/partner

**Chair/lead:** Gerry Gilmore



# JA2 – Harmonising and Improving services

## ***JA2.1 – Common-Access to Research Infrastructures***

Includes new NorthStar system: budget 100K??

## ***JA2.2A: Supporting new multi-facility Science opportunities***

## ***JA2.2B: Time-Domain-Multi-wavelength Astronomy***

## ***JA2.3– Common frameworks for Data access and processing procedures***

## ***JA2.4 – Synergies between emerging and established interferometric communities***

Budget request 100K?



# JA3 – Improving and Enhancing Research Infrastructure Capabilities

## **JA3.1 – *VPH Grating Developments (200Keuro)***

Continues the opticon Milan WP

## **JA3.2 – *Enhancing the capabilities of VLTI***

Continues opticon work: 4 instrument upgrades

Budget request = 900Keuro (some to TA)

## **JA3.3 – *Supporting innovation and guest-instrument access to facilities***

AO and related programmes

## **JA3.4 – *mm-wave JRA* (RadioNet)**

## **JA3.5 new interferometric algorithms**





# JA4: Training Schools

Schools must be related to access training, not generic.

Topics include proposal preparation, hands-on infrastructure operation, data processing and analysis, new facility opportunities, including VLT and adaptive optics, understanding how instrumentation works, how to use VA archive access, and new opportunities in multi-wavelength multi-messenger and time-domain science.

Budget: 300Keuro

Other specific training to be delivered by RadioNet facilities

## Management

budget = 500Keuro, including contingency and schools secretarial support



# Budget request

## **Your request**

joint actions will improve the performance of the facilities offered during the lifetime of the PILOT.

**MOVE AS MUCH AS POSSIBLE TO TA/VA**

The point of the PILOT is exploring new forms of TNA

**VOCABULARY is the essence... BE CREATIVE**

Longer-term activity is not eligible for support in this Call – there will be another in 2021.

Thank you



Innovation – Integration – Infrastructure  
Integrated infrastructure initiatives