



WP9 – Capacity for VLBI in Africa

Rob Beswick - UMAN
JJ-Kickoff meeting Feb 2017



HORIZON 2020



Background & Objectives

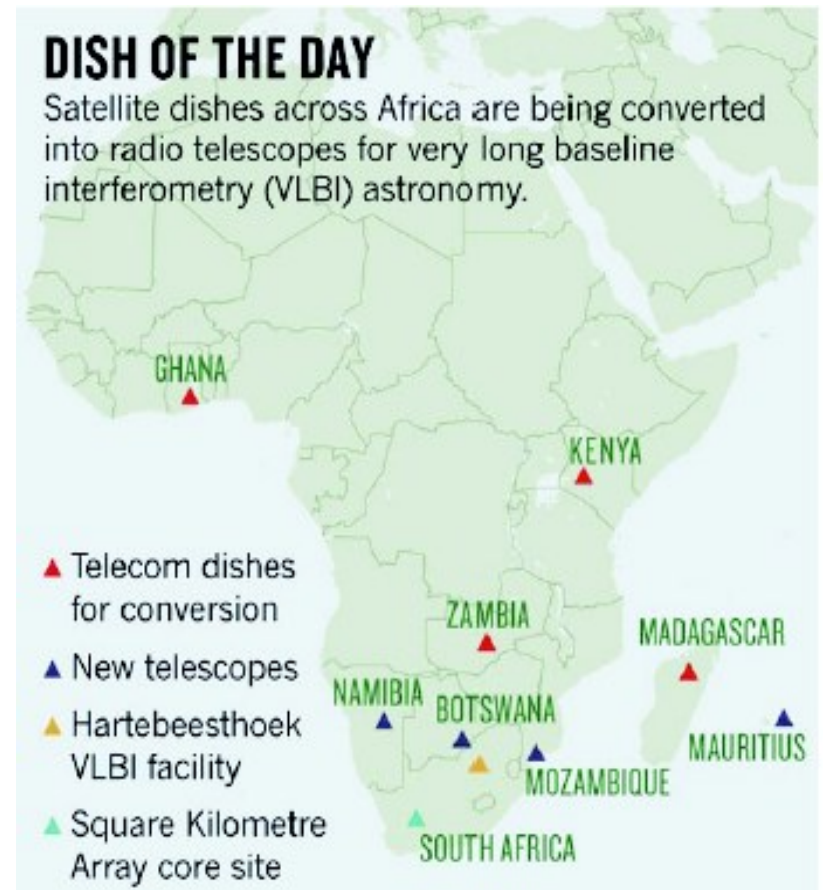


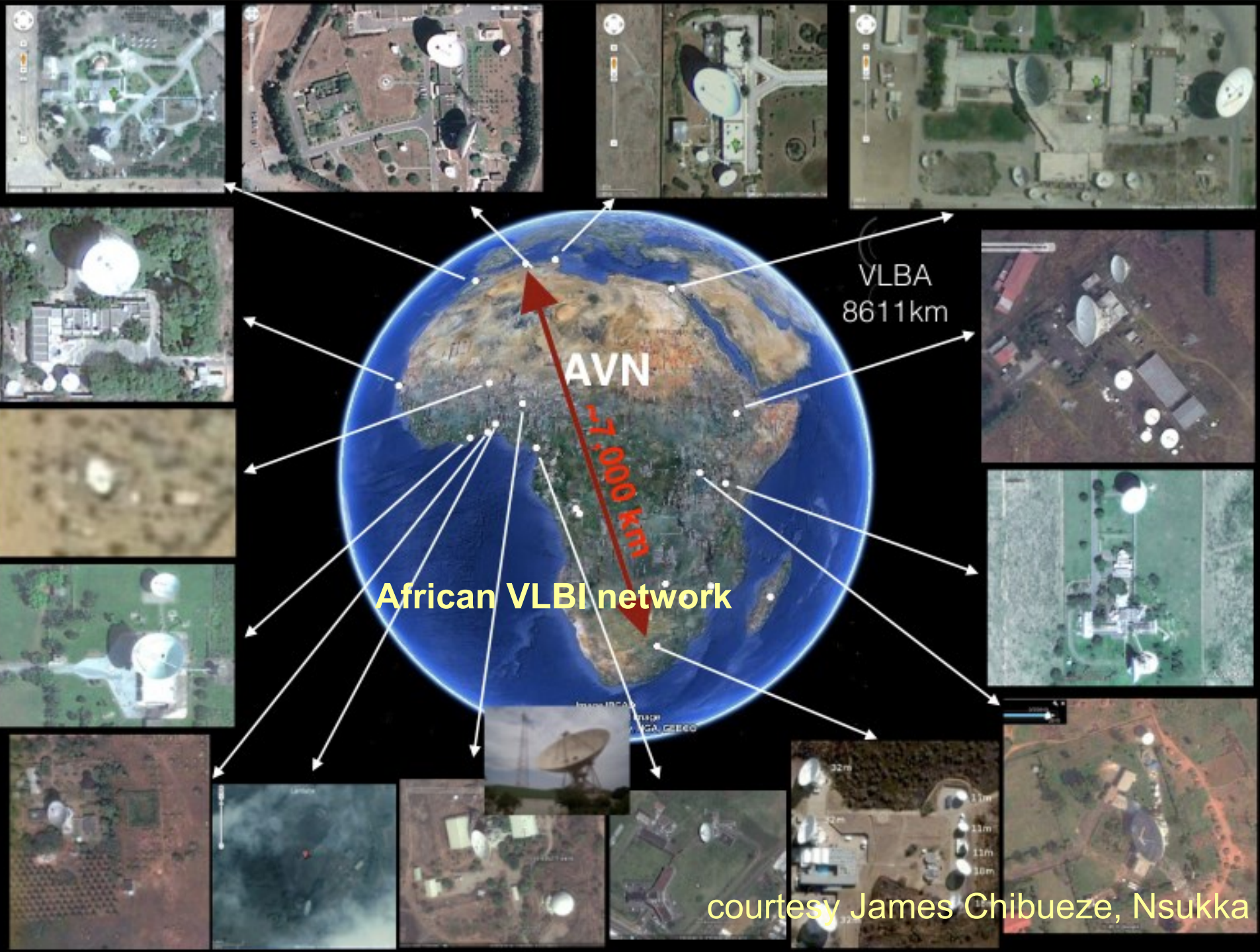
- 'enhance and develop' capacity of VLBI in Africa
- Support development of AVN and associated people
- Add value (from EU expertise) to existing programmes (DARA) via close coordination
 - Mutually beneficial arrangements

African VLBI Network Preparation



- Development in Africa with Radio Astronomy – started 2015 **expanded 2017**
 - Support incl. UK Royal Society & STFC Newton Fund
 - PI: M. Hoare (Leeds), plus Manchester, Herts, Oxford (+ UCLAN, Bristol now)
 - SKA South Africa
 - Ghana Space Science Institute
 - Technical University of Kenya
 - University of Namibia
 - The University of Zambia
- Now additional support from Jumping JIVE Horizon 2020
- NRAO NINER initiative





DARA past, present & future



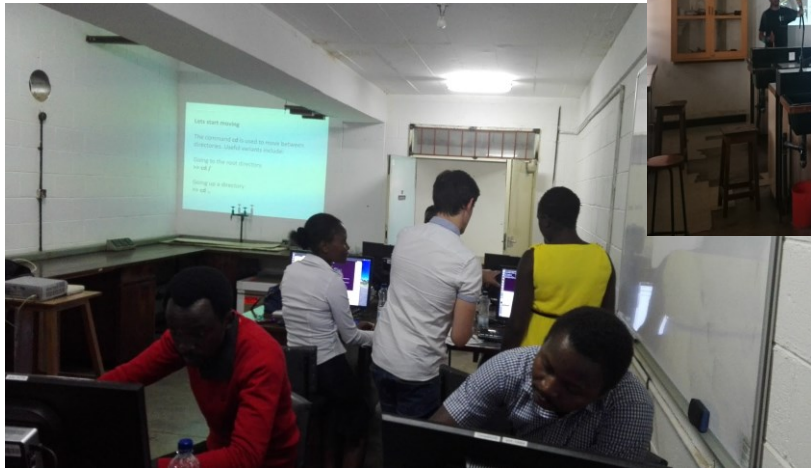
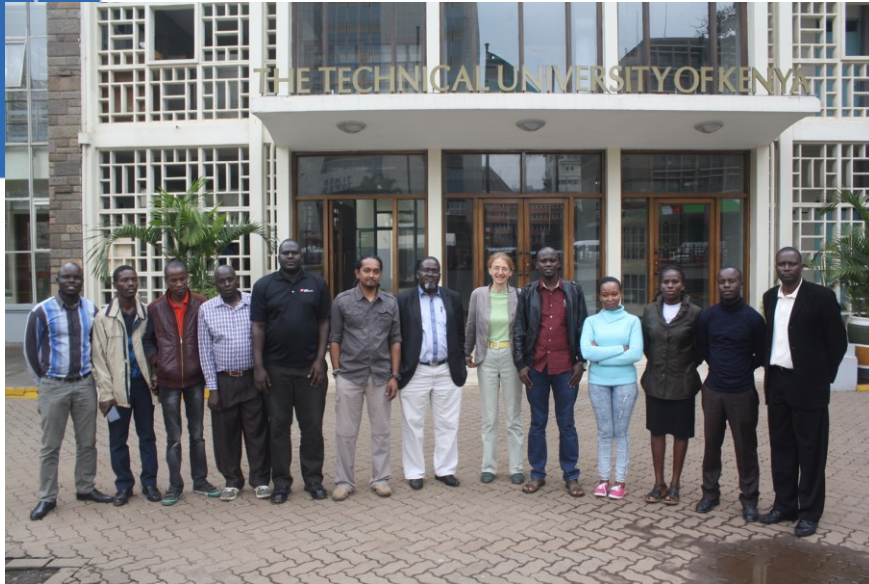
Initial DARA programme, alongside RS projects, funded from ~2015

- UK/SA Newton funded programme utilising ODA funding
- Involved training in Zambia/Kenya/Namibia + Ghana (Roy. Soc funded)
- Development of well structured course covering basic astronomy → technology/observing → VLBI
- Annual network meetings etc
- Included an advanced training module to support African Postgraduates in UK

Extended DARA programme (4yr programme) due to start Apr 2017

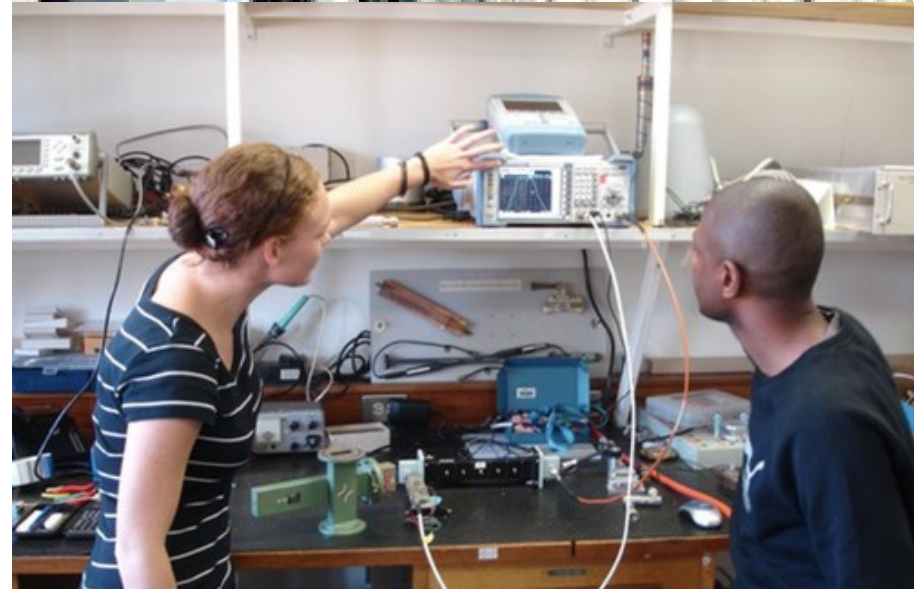
- Significant expanded funding from UK
- Significantly expanded scope and training countries, and participants
 - → Ghana/Zambia/Kenya/Namibia/Botswana/Madagascar/Mozambique
 - Targeting 4 unit course per year per country each with 10 people per course
ie Total ~ 60 trainees/yr
- Advanced training (PhDs/MScRs etc)
- **DARA programme to work in tandem with JJ WP9 with close collaboration and sharing of knowledge/resources.**

Kenya and Zambia



Ghana

- Nkutunse antenna conversion very advanced
 - Supported by SKA S.A.
 - 32-m, A_{eff} 0.5 at C-band
 - $T_{\text{rx}} < 125\text{K}$ now
 - Cryo upgrade to come
 - Steering work now, pointing next.
 - Training of engineers and astronomers for ops
 - Design of science goals for single dish (w. Chibueze)
 - Will be site of Basic training unit 2 in Apr/May 2017



courtesy Nkukuleke Qwabe

JJ WP9 - contributions



4 Key contributions from JJ – all complement and build on DARA:

- Mobilize EU-experts (especially technical & VLBI-expertise) from JJ partner countries to contribute to as expert tutors to contribute in country (African) training.
- Support EU-scientists to tour institutes with African countries, and in particular AVN partners to advertise, and develop interest in Radio Astronomy.
- Support a small number of short term visits/placements for African personnel at European institutes.
- Support the setting-up of an AVN technical and support forum.

JJ WP9 / DARA



4 Key contributions from JJ – all add to and build on DARA:

Starting now

- DARA – Basic training (4 units)

-- **JJ Expert contribution**

(inc. Resource support [computing, books, hardware etc] plus additional course to support students English, computing skills etc)

-- **JJ Seminar Tours in Africa
promote AVN/EVN/JJ/DARA**

- DARA – Annual Network meeting

-- **JJ - Support for short-
term placements in EU
(combine with attendance
at relevant meetings)**

- DARA – Advanced training (PhDs/MScs)

-- **JJ - Support the setting-
up of an AVN technical and support forum.**

Basic training

Indicative course structure

(element 1 on previous slide)



- Groups of 10 'students' (junior lecturers, engineers ...) – 6 countries
- Several ~fortnight-long intensive courses over ~year – Split into 4 units:

2 weeks 1. Basics of astronomy & radio astronomy – in country (~1-2 tutors per trip)

One 3 week block { 2. Technical training @ HartRAO, **Ghana** (4-8 tutors)

3. Practical single dish observing at HartRAO or Ghana dish

2 weeks 4. Hands-on interferometry data reduction – in country (~2 tutors per trip)

- Skills for AVN researchers, engineers, support scientists
- Each unit is delivered by expert lecturer/tutors from SA/UK (+ now EU via JJ)

Next Unit 2/3 training in Ghana in Apr/May 2017 → Lectures/tutors required
* let Melvin or I know if you have someone who would like to participate!!!

Call to all JJ partners



Assistance & contributions in all areas welcome.. e.g.

- Need keen staff members who are willing to undertake/contribute to basic training modules (esp welcome are technically/observing/operations orientated staff to contribute to modules 2/3, but also all other modules)
 - Aim to partner experienced and less experience tutors where possible
 - Large volumes of material already available
 - Typically time commitment - 2 week trip + ~1 week preparation
- Institutes willing to host short term visits – particularly ideal for EVN observatories, but all areas welcome.
- Staff willing to travel to provide science seminars in countries

Can all JJ partners consider identifying likely staff who may participate and indicate to WP lead?

All activities to be coordinated with DARA logistics support, no commitment at sign-up. Aim for large pool (DARA pool ~50 people now, JJ ~ 10+?) can coordinate dependent on availability of staff.



Risks / milestones

Potential Risks:

- Staff availability to cover modules (need large pool so not to overburden)
- Student recruitment – quality is variable country by country
- Selection and hosting of Africa → EU training
- Logistics of training modules
- Individual AVN site technical progress

JJ Milestones/deliverables

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS30	Minutes of telecom 1	12 - UMAN	2	Minutes of telecom 1, noted by exec
MS31	Mid-term report on training visits to African countries	12 - UMAN	23	Mid-term report on training visits to African countries, noted by exec.
MS32	Final report on exchange visits hosted in Europe	12 - UMAN	47	Final report on exchange visits hosted in Europe, approved by board

**Completed,
telecom 9th Feb**

