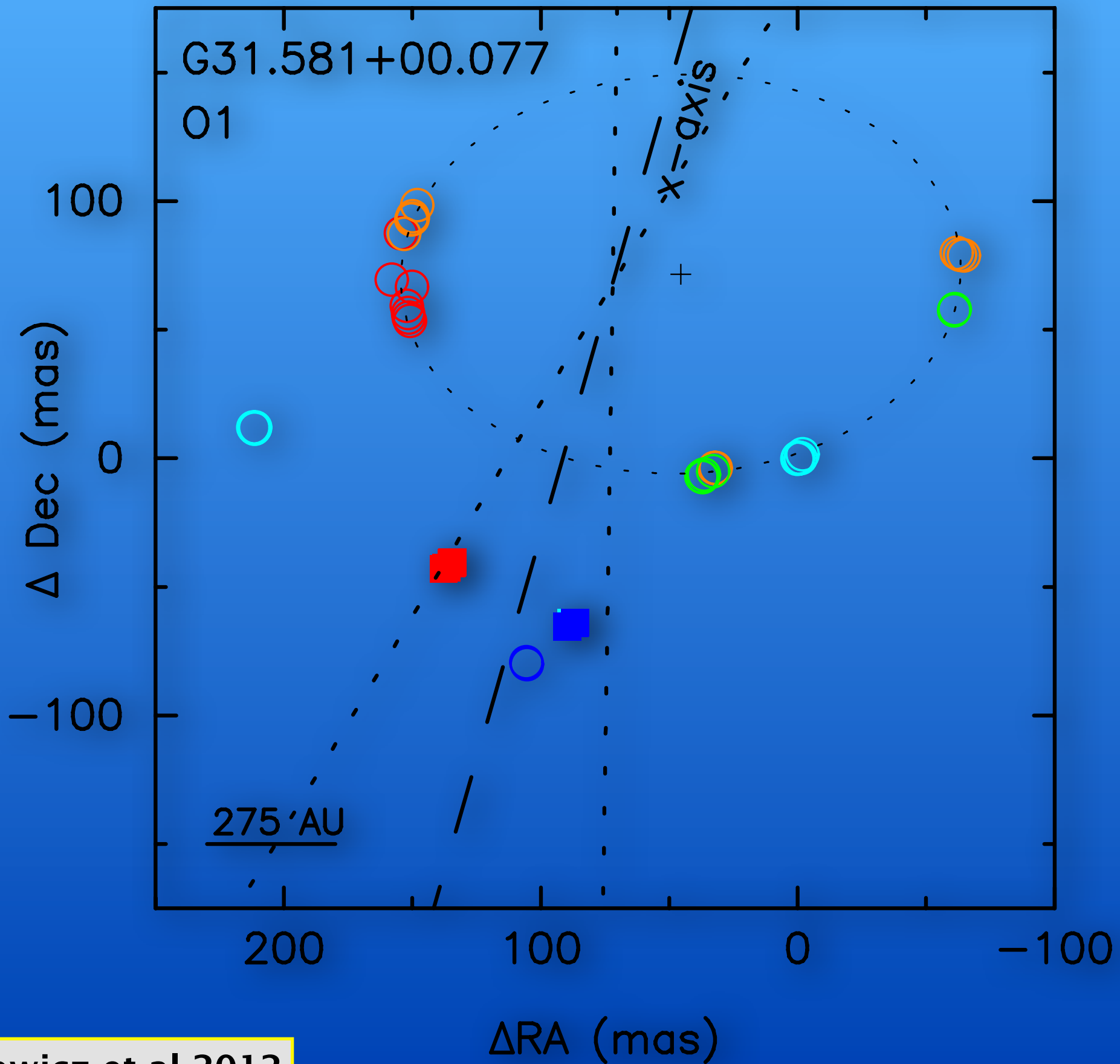


JIVE: what's next?

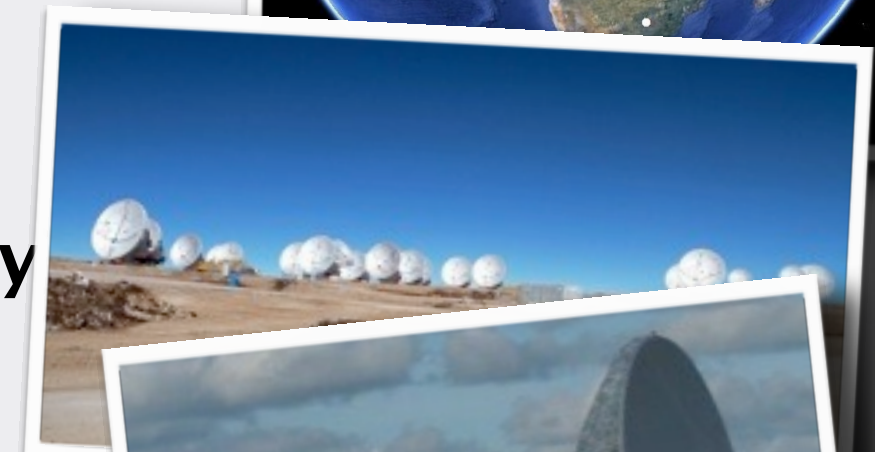


Huib Jan van Langevelde

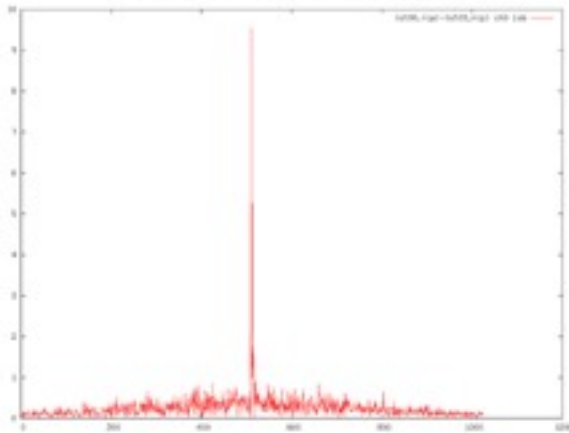


Opportunities for VLBI

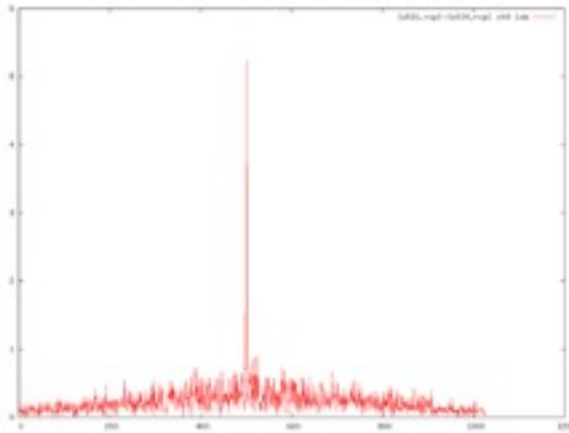
- **Science case is in good shape!**
 - **Extremely broad**
 - Fits to almost all themes that they can come up with
 - **Can do unique science**
 - Especially at global baselines
 - With very many telescopes
- **Constantly improving capabilities**
 - **Increasing number of stations**
 - Must merge operational procedures
 - Use of ALMA for VLBI
 - **African VLBI Network especially promising**
 - EC Written Declaration 45 on science collaboration
 - **With better sensitivity, more digital bandwidth**
 - More flexibility, tailored to user needs
- **Science synergy with new technology (survey instruments)**
 - SKA pathfinder in South Africa
 - LOFAR, Apertif
 - eMERLIN, EVLA
 - Eventually observe with SKA elements in Africa



5 cm Ef-Nt fringe (N12M1)



X band Ef-Nt fringe (F12X1)



JOINT INSTITUTE FOR VLBI IN EUROPE



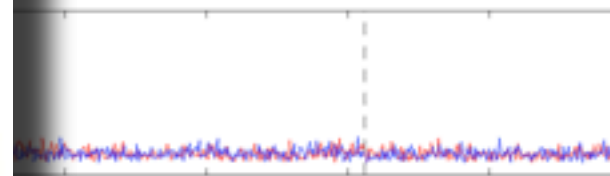
EUROPEAN VLBI NETWORK

Welcome back Noto!!!



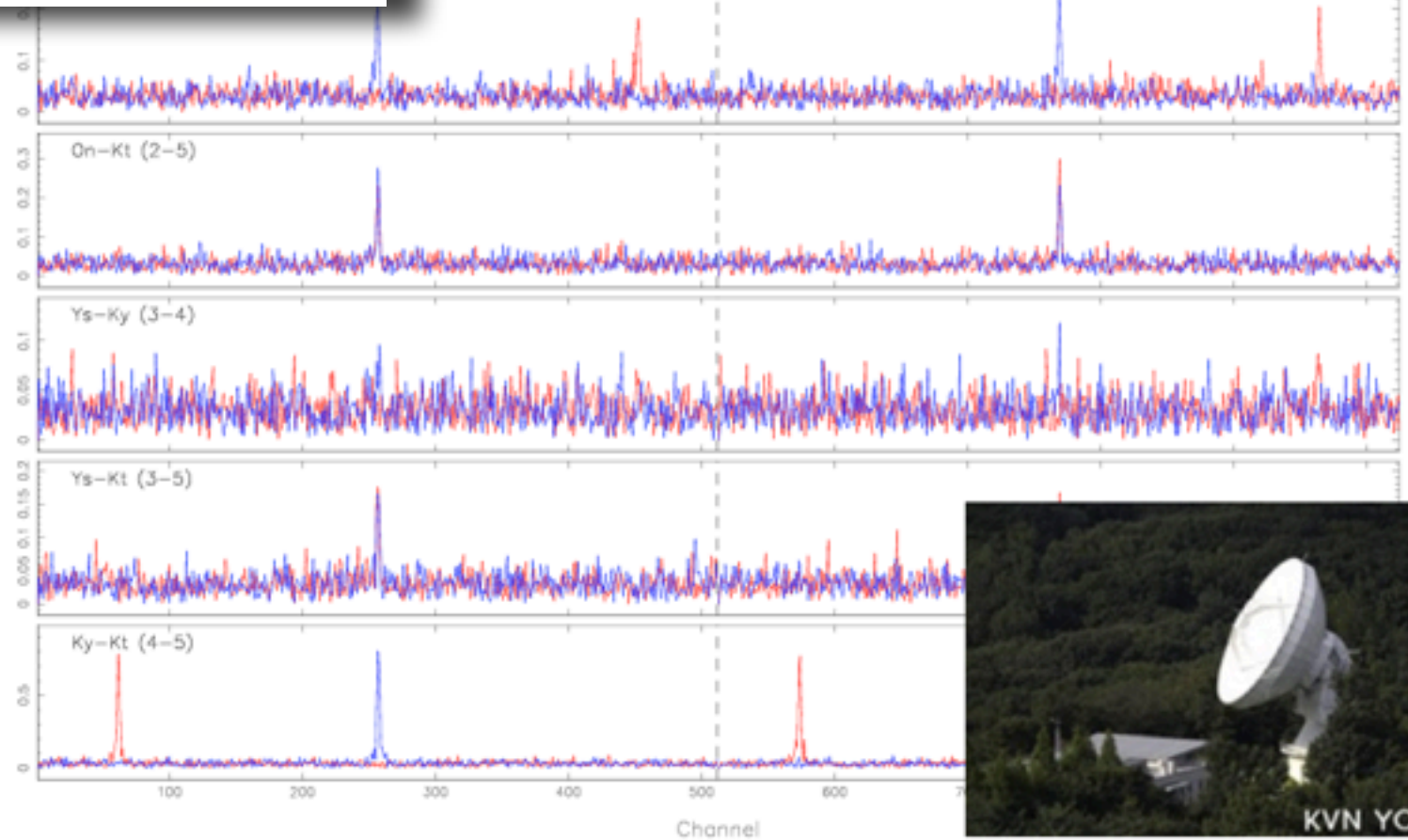
Noto, Sicily, antenna repaired and now on-line

Amplitude for kvn.2sbL



KVN TAMNA

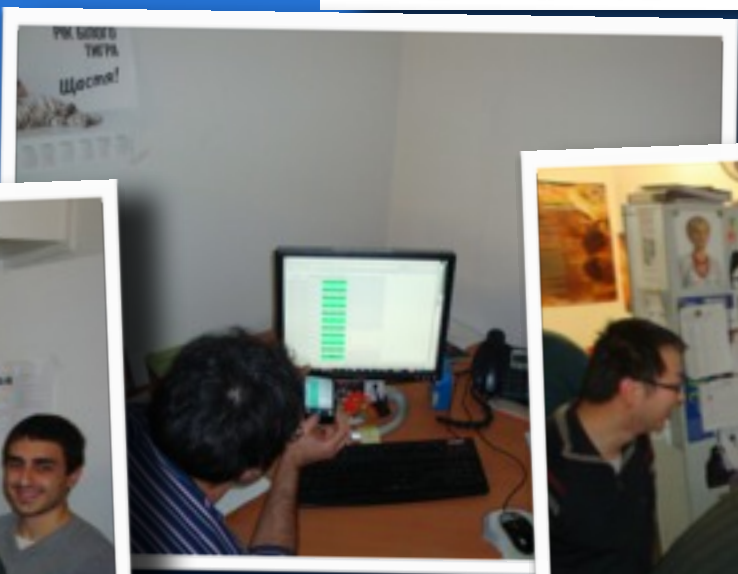
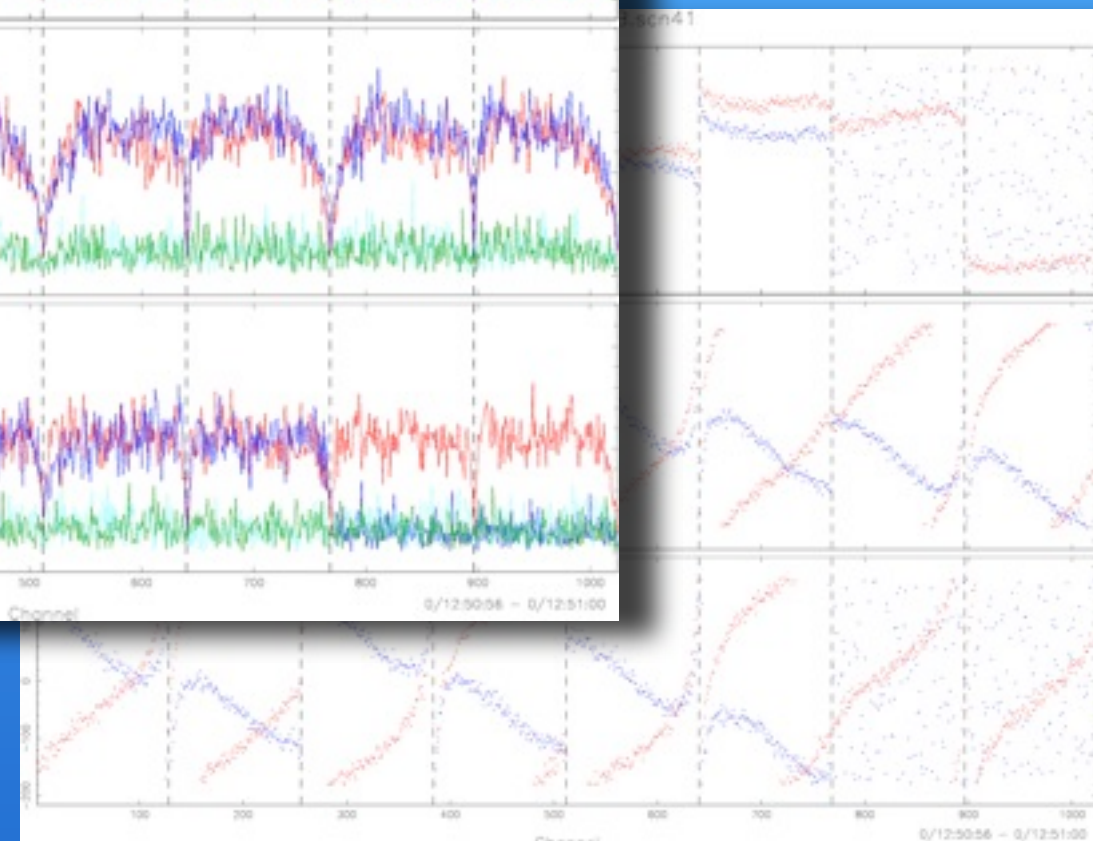
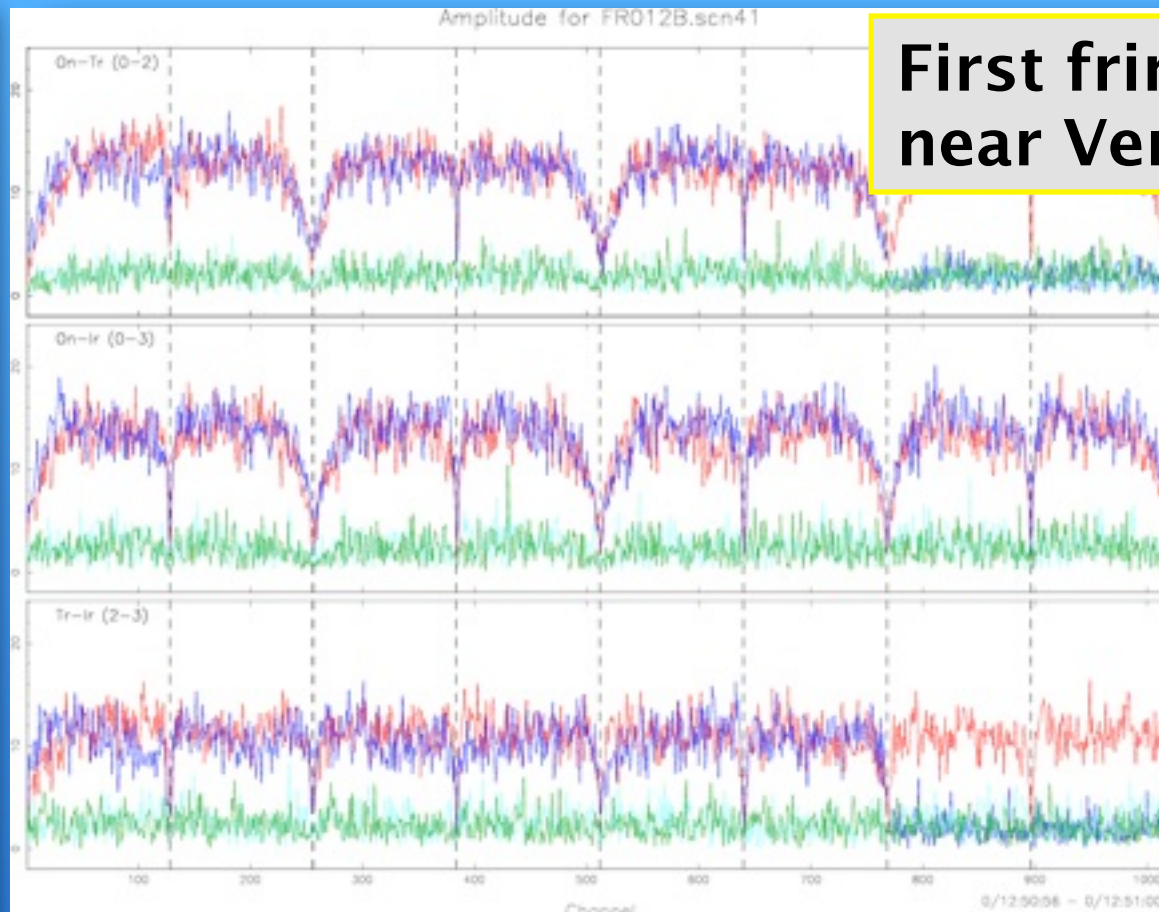
Successful tests done with Korea



KVN YONSEI

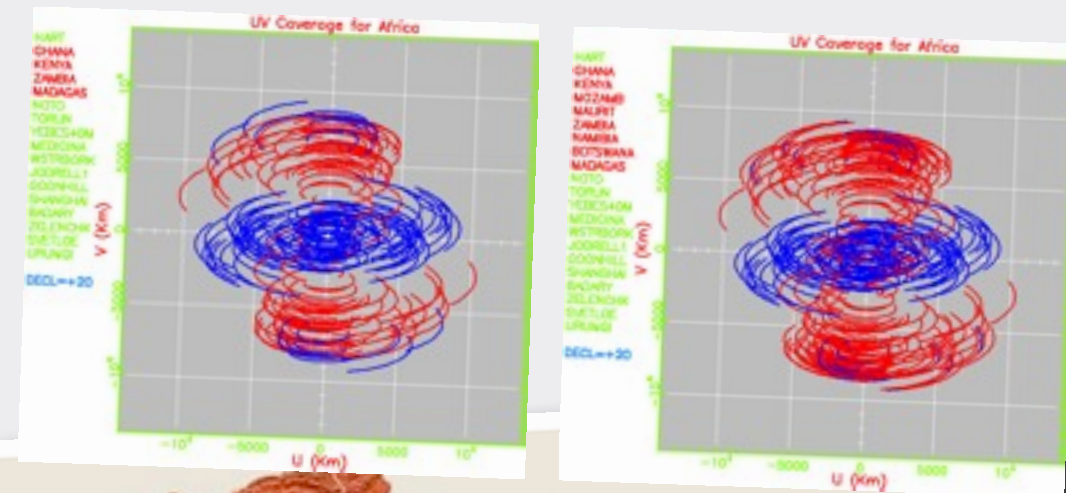
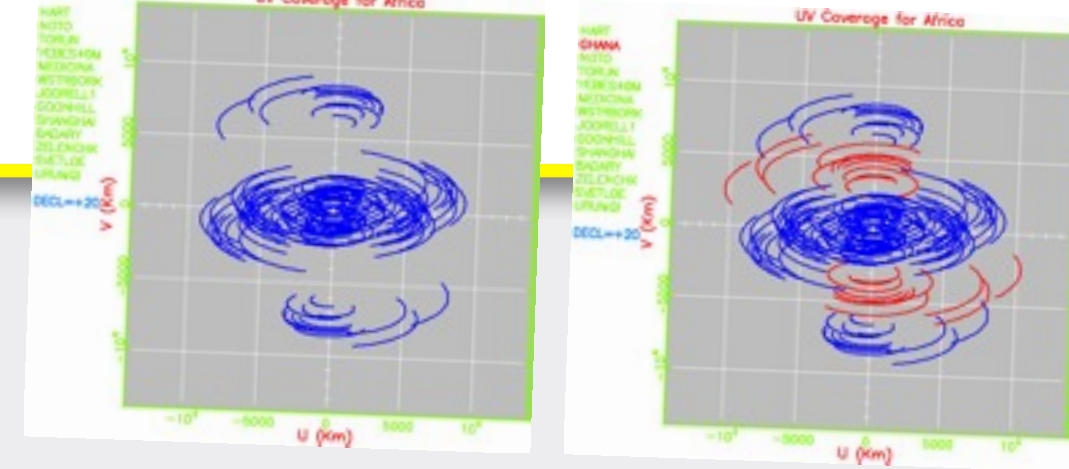


First fringes to Irbene,
near Ventspils, Latvia



African VLBI Network

- **Based on abandoned communication dishes**
 - Large commitment by South Africans
 - Huge engineering task in various countries
- **Interesting for capacity building**
 - In relation to African SKA
- **Very interesting for EVN**
 - Essential baselines
 - But will require some patience
 - And some commitment
- **Looking for EC support**
 - Politics seem favourable
 - MEP's using the word 'VLBI'



Hartebeesthoek a very valued member of the EVN

- Now with 2 antennas on site
- North-south sensitivity on long baselines



South-Africa's NRF joined JIVE foundation on May 10

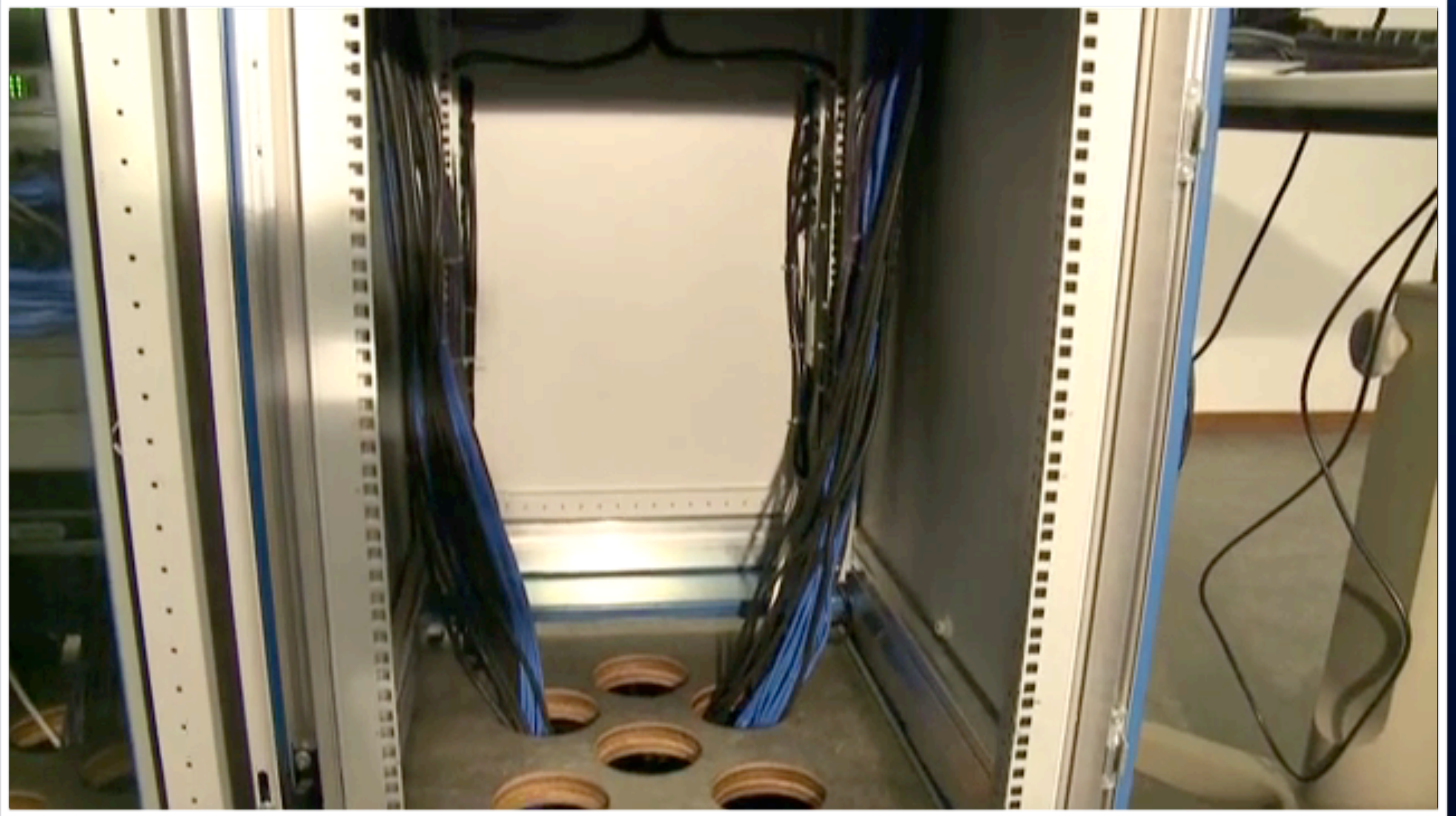


Recognizing a joint interest:

- VLBI with KAT7 and MeerKAT
- The potential of the AVN
- Human capacity building

- **Square Kilometre Array**
 - ESFRI listed, global facility
- **Important progress in 2012**
 - Company with country members
 - Site selection split
 - Low frequency components in Australia
 - Dish arrays in South Africa
- **eEVN recognized as an SKA pathfinder**
 - Complements SKA-1
 - with sensitive long baselines
 - Essential part of a global network
- **Aiming at European SKA success**
 - Technology development
 - Digital equipment
 - Processing techniques
 - Maybe even cheap dishes
 - Training & Outreach
 - Operations and user support





NEXPRes

*Novel EXplorations Pushing
Robust e-VLBI Services*

- Owns the e-VLBI operations and outreach
- Also some LOFAR transport and storage issues
- And link to SKA development

NEXPRoS

*Novel EXplorations Pushing
Robust e-VLBI Services*

- Owns the e-VLBI operations and outreach
- Also some LOFAR transport and storage issues
- And link to SKA development

New project: NEXPRoS



- Aims for

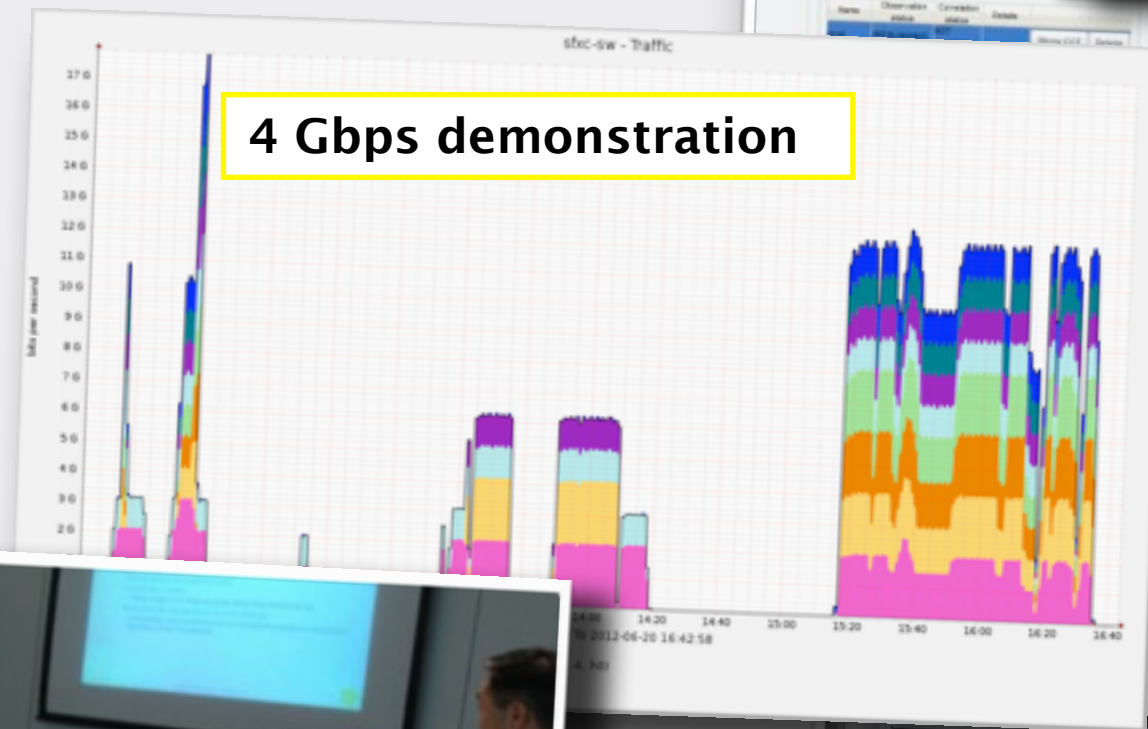
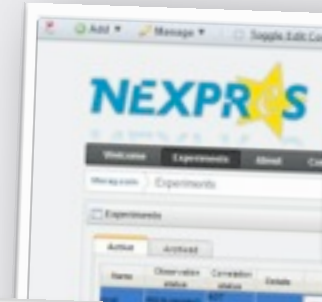
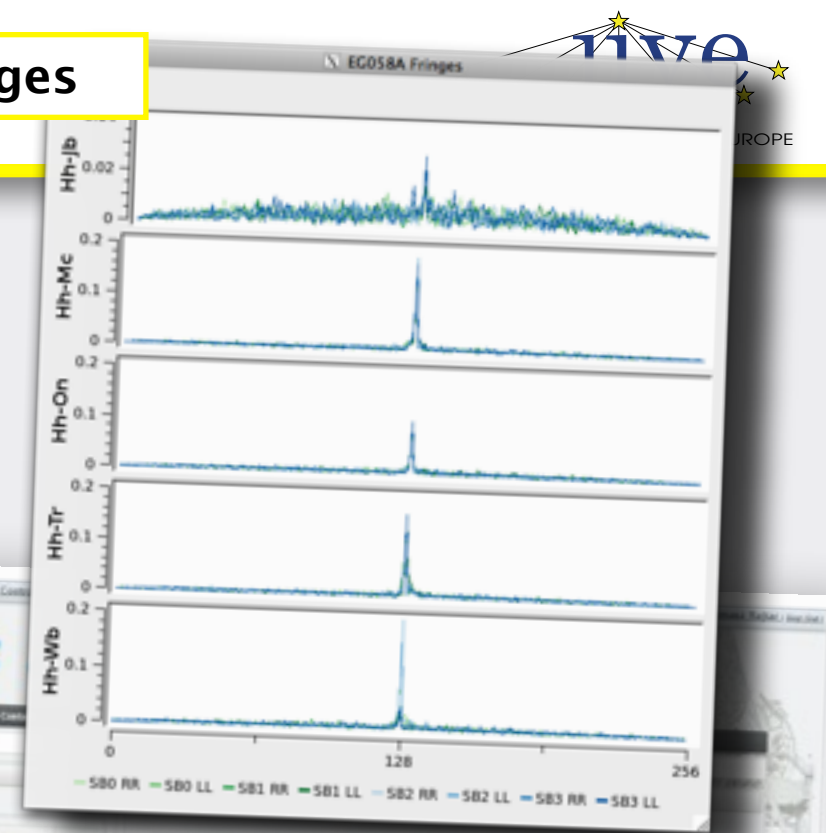
- Correlate in real time what you can,
- Correlate later what you need

- Allow multiple correlator passes
- Buffer for more reliable operations
 - addressed by simultaneous recording
- Be more sensible about resource allocation
 - Bandwidth on demand, limit physical shipping
- Reach for higher bandwidths (10 - 40 Gbps)
- But also:
 - Continue to connect more telescopes
 - NEXPRoS maintains expertise
 - Collaborations with NRENs
 - 'owns' the e-VLBI operations and outreach
 - Also some LOFAR transport and storage issues
 - And link to SKA development

'Excellent' progress

First e-VLBI fringes

- Made most deliverables
 - Enhancing correlator interfaces
 - Software correlator
 - Make ready for e-VLBI
 - Distributed topology
 - On-demand connections
 - Storage methods



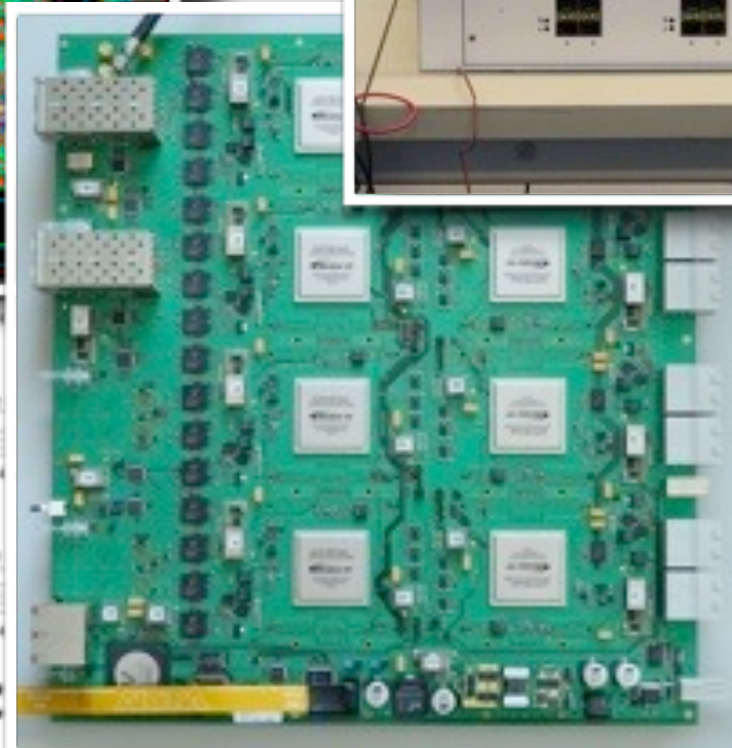
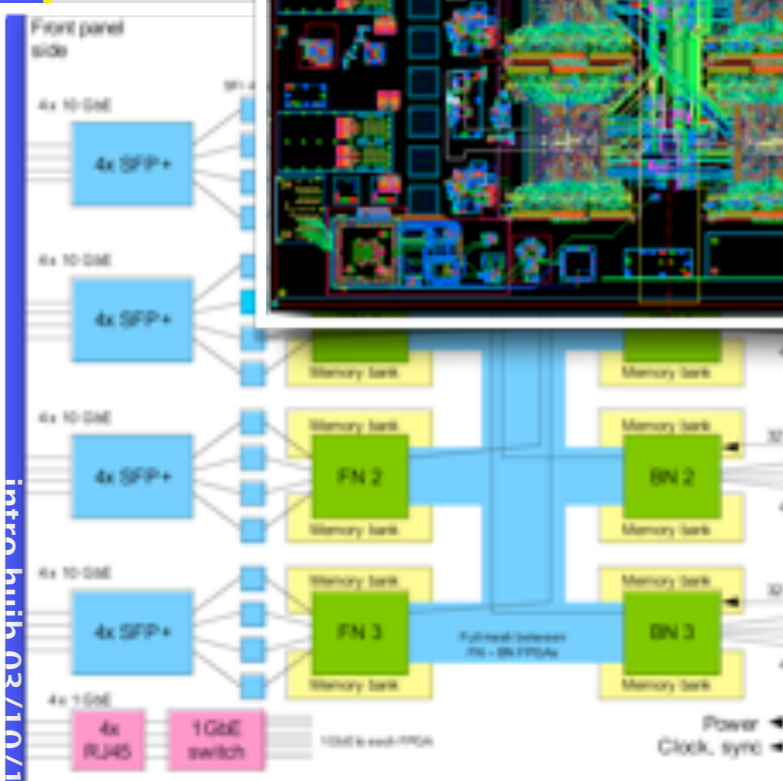
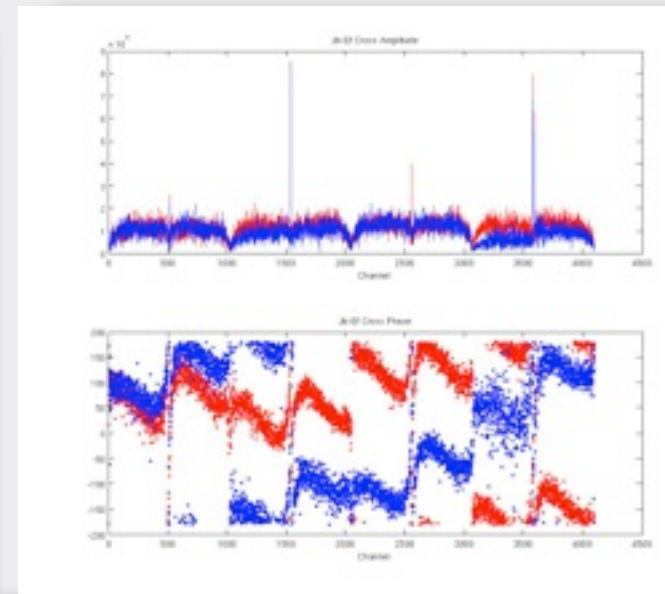
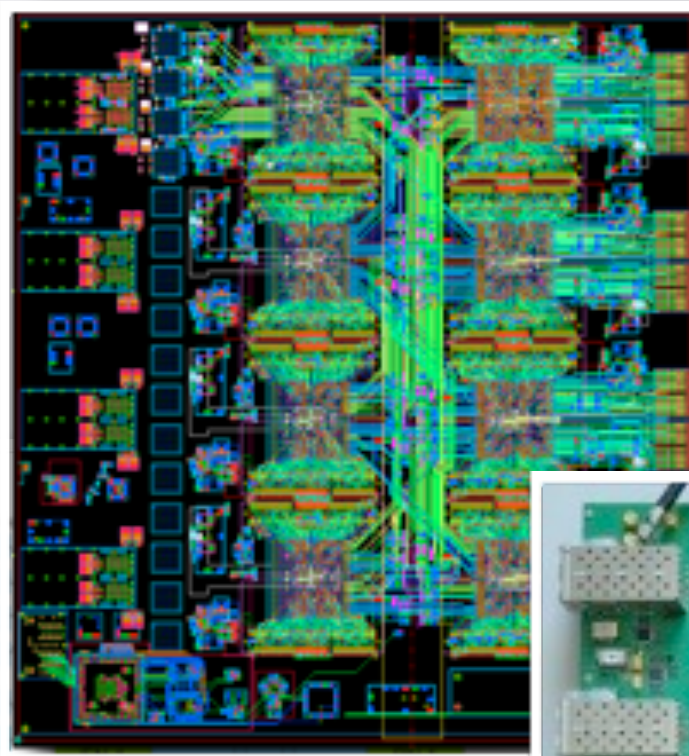
NEXPreS impact on EVN

- **Continuity in development programme**
 - Essential in keeping local expertise
 - Vital for keeping in touch with NRENs
 - Continued effort in outreach/dissemination
- **NEXPreS upgrades e-VLBI**
 - Upgrades of equipment
 - Notably Mk5Cs at JIVE
- **Step towards all EVN in e-VLBI**
- **Raise level of availability**
 - Culture change on-going
 - New requests for (new) observing types
 - RadioAstron telescope in orbit
 - Observations of spacecraft (planetary/fundamental)
 - Monitor programmes/astrometry/joint observations
 - Triggers set by other observatories (link with LOFAR)
- **Must offer new services**
 - Offer tailored arrays? More e-VLBI days



Needed: next generation correlator

- Aiming for 32 station 10+ Gbps Next Generation Correlator
 - Flexibility of software correlator
 - Power consumption should be much better
- Feeding into the SKA programme
 - As well as being used for EVN, LOFAR, WSRT, Effelsberg



- **Trans National Access funds**
 - EVN as an open facility
 - And many others (up to millimetre)
- **R&D programs:**
 - Joint correlator programme
 - Joint data processing effort
- **Capacity building**
 - Engineering platform, science meetings, governance discussion, outreach, training, frequency protection
- **JIVE in management**
- **Lead in Governance/Outreach**
- **Link to SKA programme**
 - LOFAR en eVLBI are European pathfinders
 - Previously: SKADS, PrepSKA
 - Representing Europe



- **Keep EVN on the forefront of VLBI**

- Deliver the best possible science
- Help the EVN to upgrade to 4 Gbps
- Push e-VLBI into next level
- Position for attracting FP8 EC financing (ERIC?)
- Accommodate space programmes

Short term: 5 yr

- **Global baselines and high frequency**

- Needs a big correlator
- Implement large-scale VLBI programmes (monitor, survey)
- Various easy interfaces for data stream
- Stimulate new programmes, like African Network
 - Japan, Korea, Ukraine, Australia, New Zealand, US, Brazil
- Cheap antennas for new members?

Mid term: 5 - 10 yr

- **Take a role in European SKA operations**

- Recognized European entity
- Collaborator in SKA realization
- Specialize in correlator, data curation, user software, user support

Long term: > 10 - 15 yr

**Review by expert panel in
March 2012**



**Excellent score
24/25 points**

- **JIVE report excellent**

- **24/25 score**

- 4/5 on JIVE science, but that itself is worded as excellent, implied criticism on 'outreach'

- **Impressed with breadth of science**

- **Could not be done more effectively, cannot imagine EVN without JIVE**

- **Endorses technical development programme**

- e-VLBI, SFXC implementation, UniBoard correlator, Space Programme

- 1. Continue present programme**

- Cannot imagine EVN without JIVE

- 2. Widen VLBI science**

- And go out to other astrophysics meetings

- 3. Reach out to greater community**

- 4. Keep track of science output**

- 5. Endorsed technical developments**

- Especially where relevant for SKA

- 6. Involve ESA for Space Applications**

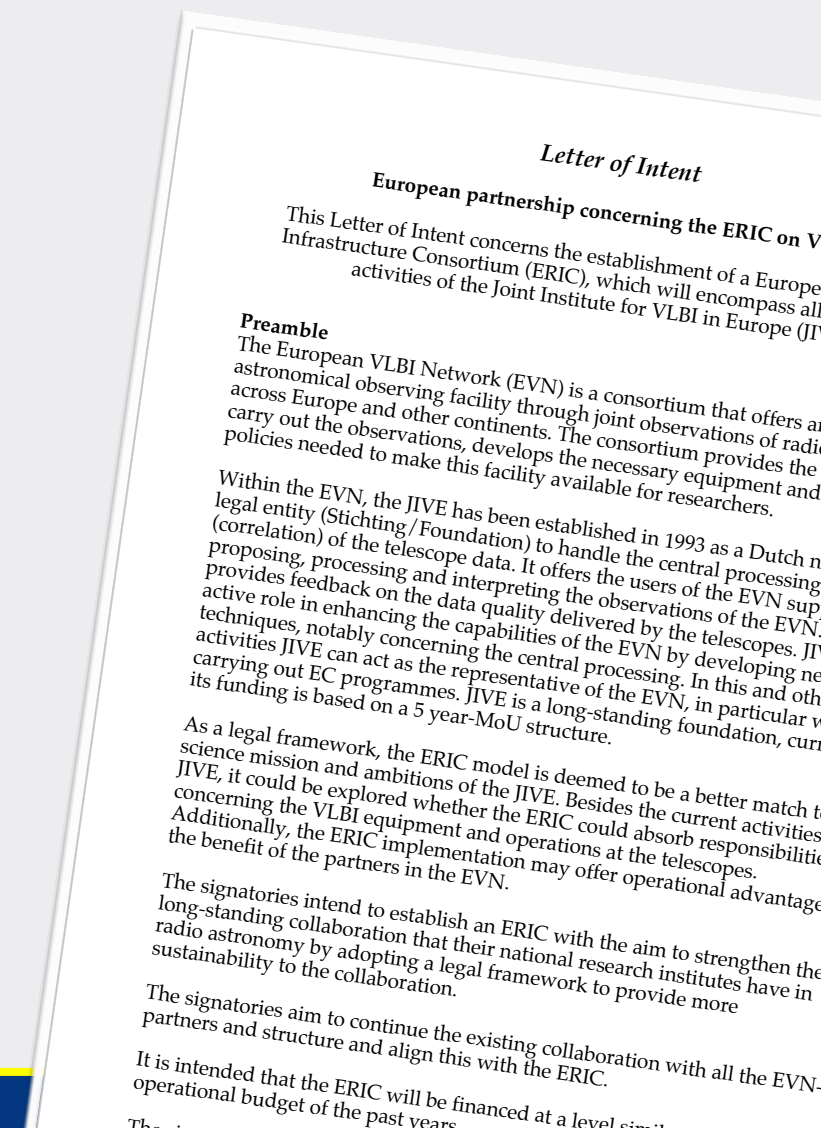
- 7. Funding is concern**

- Funding model requires a formula

- 8. Welcome the ERIC option**

- But keep all involved

- **European Research Infrastructure Consortium**
 - Legal entity in Europe established 25 June 2009
 - Addresses establishment of European scale facilities
 - Members are countries
 - Needs to be approved by EC
 - May have VAT exemption
 - Status of international, public body
- **Some obvious advantages for JIVE/EVN**
 - Personal responsibility of board members is lifted
 - No VAT on personnel, large investments
 - could include EVN equipment
 - Directly eligible for (future) EC funding schemes
 - Attractive for new prospective members
- **JIVE partners looking into this**
 - Not equally attractive to all, but best for JIVE



- **Trying to establish new funding cycle**
 - Against background of on-going reviews
 - And the economic reality
 - And SKA ambitions overshooting...?
- **Slow dance: 2 steps forward, 1 step back**
 - Not what JIVE is about!
- **Users have done a lot already...**
 - Fantastic science
 - Filling in questionnaires (participate in reviews)
 - ASTRONET, but also for the VLBA
 - Propose against oversubscription
- **What is important still:**
 - Publish your data
 - And acknowledge, so we can find it back
 - Show results at conferences (not just this one)
 - RadioNet programme for that

Before you check in for the next leg:



What's your mission?



The JIVE director @directtheJIVE

8 Oct

Astronomers from everywhere get together at schiphol. Take us to #evn12 pic.twitter.com/CgykBAiU

 Hide photo  Reply  Delete  Favorite





The JIVE director @directtheJIVE

8 Oct


Astronomers from everywhere get together at schiphol. Take us to #evn12 pic.twitter.com/CgykBAiU

 Hide photo  Reply  Delete  Favorite



my car whenever you want them :-)

 View conversation

 **UEFA Nederlands** retweeted you

8 Oct

8 Oct: Astronomers from everywhere get together at schiphol. Take us to...

 **Megan** @AstroMeg

7 Oct

[@directtheJIVE](https://twitter.com/directtheJIVE) Si ma voiture survit, pouvez-vous m'aider avec





Script by Kristine Yun