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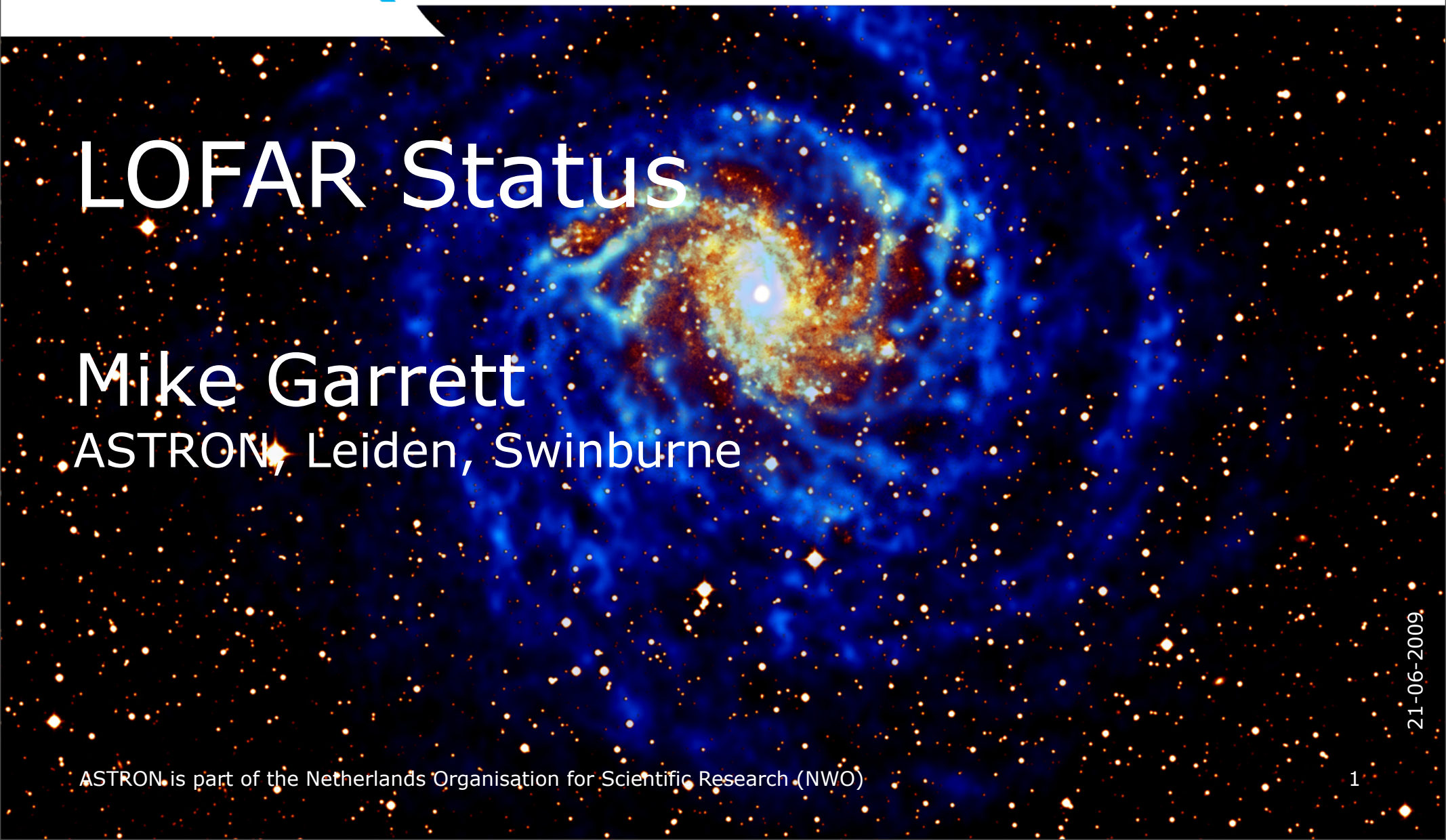
Netherlands Institute for Radio Astronomy



LOFAR Status

Mike Garrett

ASTRON, Leiden, Swinburne

21-06-2009

LOFAR Telescope - the basics

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LOFAR = Low Frequency Array

- 30-80 MHz (LBAs) & 120-240 MHz (HBAs)

Based on aperture array concept.....

- at least 36 stations in the NL
  (18 stations < 2 km + 18 stations < 100 km)

- at least 8 additional EU stations in DE, SE, FR, UK, ++

Large field of view - 8 simultaneous beams possible

Unprecedented resolution and sensitivity at this λ

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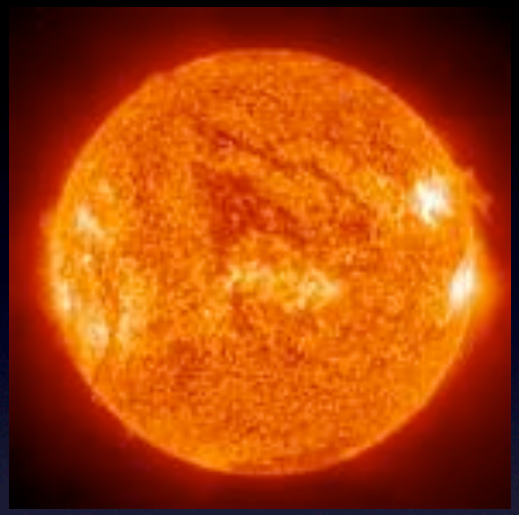
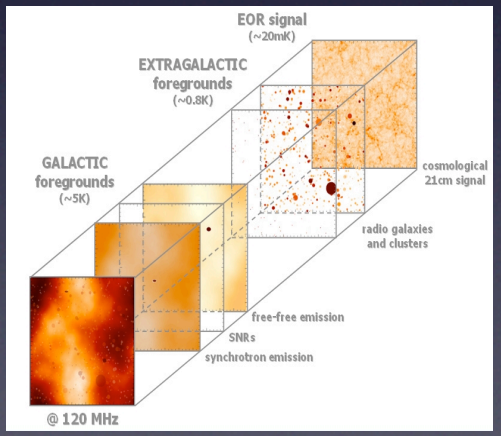
LOFAR Science Case

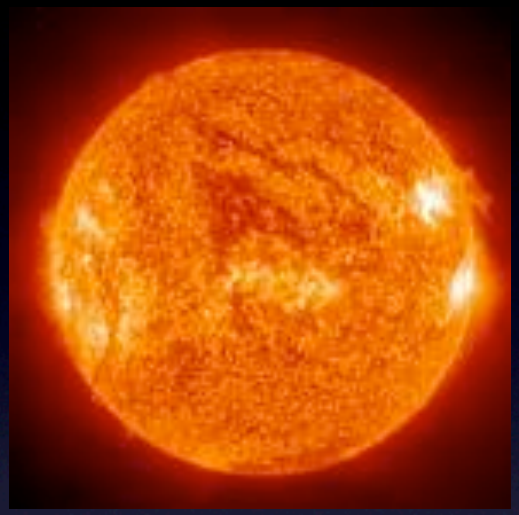


Solar System

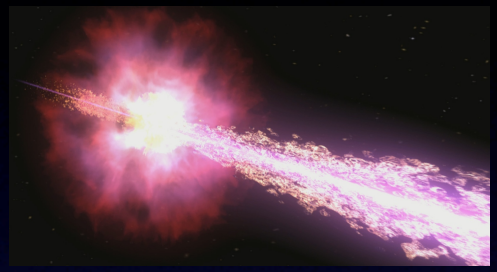


Epoch of reionisation

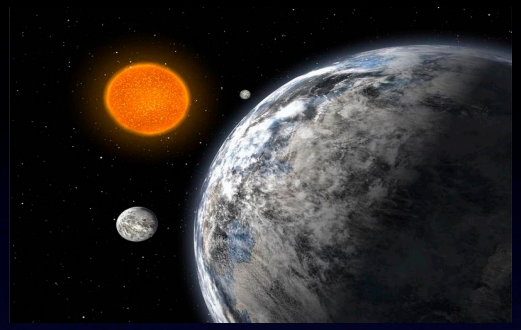
LOFAR Science Case



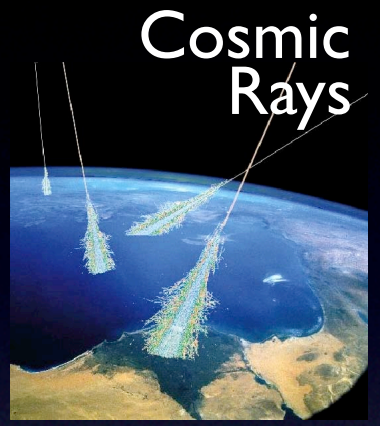
Solar System

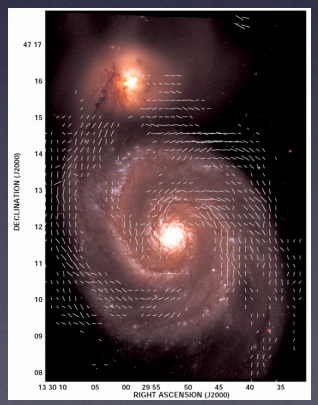


Transient sky

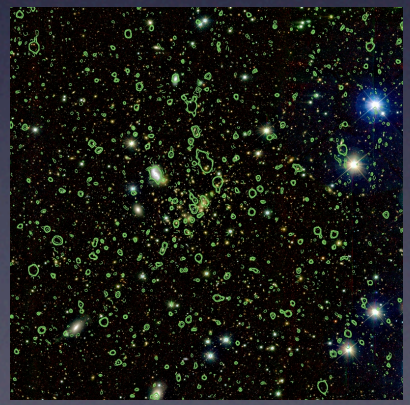


SETI/Exoplanets

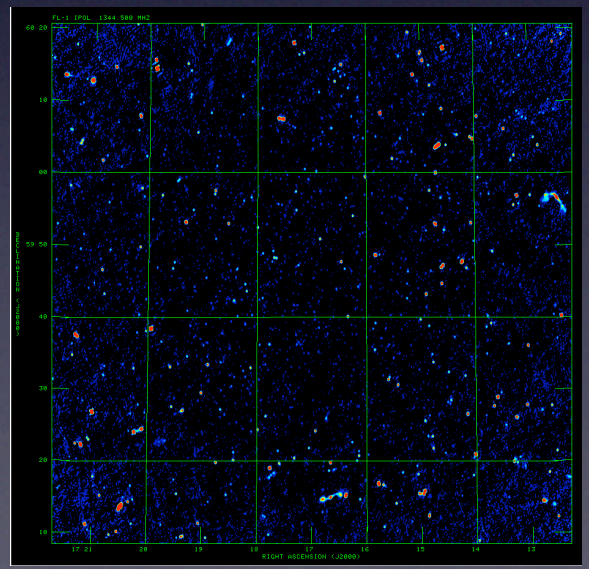




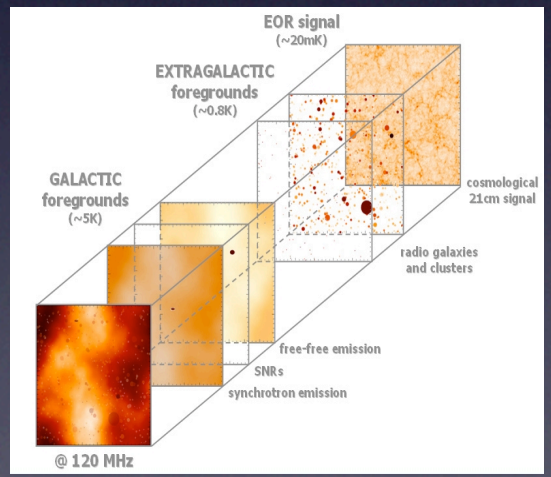
Cosmic Magnetism



LSS + Lensing



Deep Surveys



Epoch of reionisation

LOFAR Status

Now in roll-out phase.....

Various delays:

- bird breeding season

- wet and cold winter: problems flattening station fields

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LOFAR Status

Now in roll-out phase.....

Various delays:

- bird breeding season

- wet and cold winter: problems flattening station fields

- more recently fires!

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LOFAR Status (cont)

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At the end of the year we had to stockpile antenna hardware:

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LOFAR Status (cont)

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We also decided to start populating the electronic cabinets

LOFAR Status (cont)

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LOFAR Status (cont)

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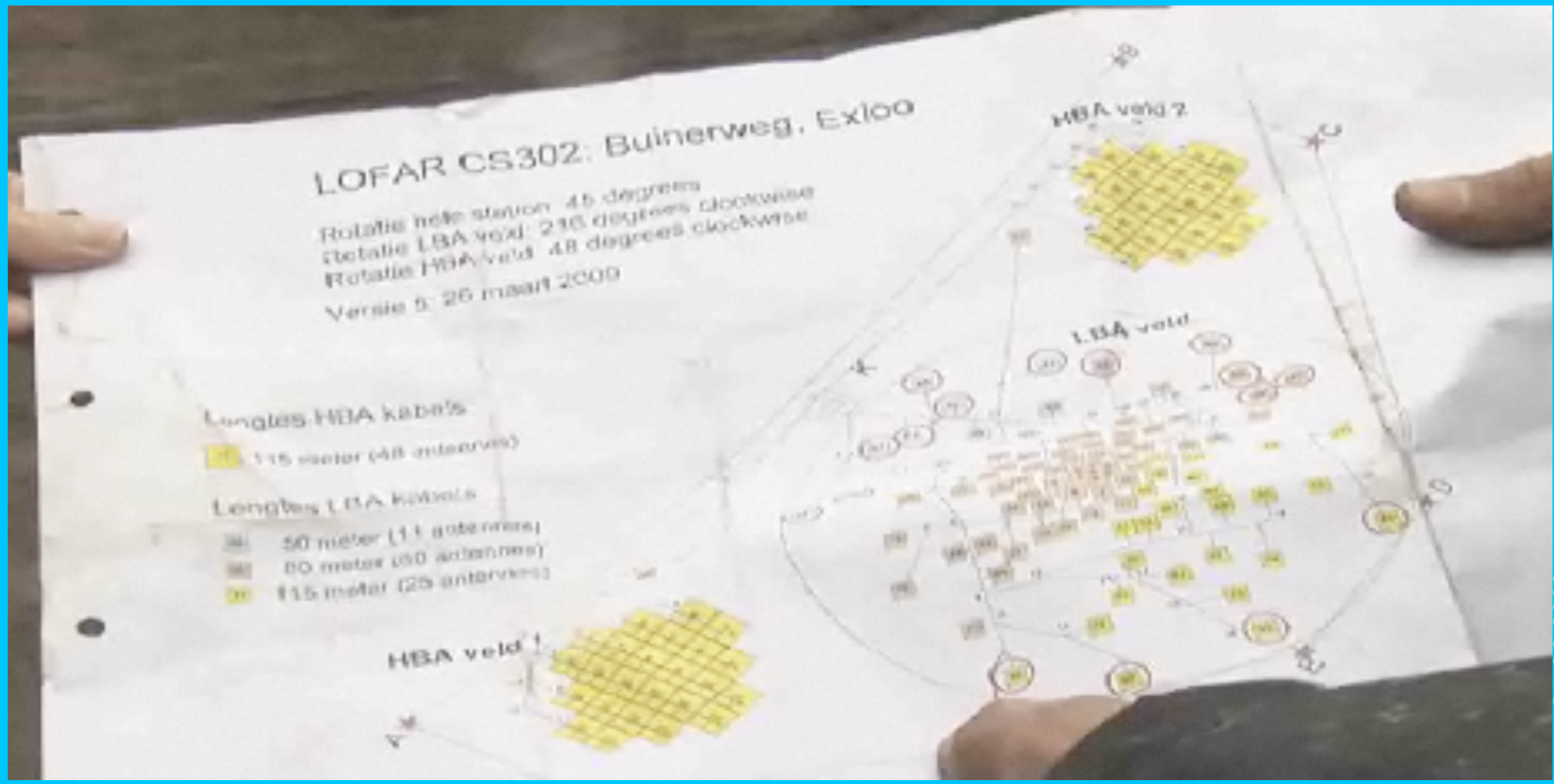
ASTRON staff
in-situ for
cabinet tests

CS302 - the first station!

First you need a vision and the plan:



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CS302 - the first station!

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Then you need to prepare the station fields:

CS302 - the first station!

ASTRON

Then you need to prepare the station fields:

CS302 - the first station!

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Lay the cables:

CS302 - the first station!

then the cabinet foundations:

CS302 - the first station!

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Then the cabinet itself is installed:

21-06-2009

CS302 - the first station!

21-06-2009

CS302 - the first station!

CS302 - the first station!

21-06-2009

CS302 - the first station!

Marking out the position of the antennas:

CS302 - the first station!

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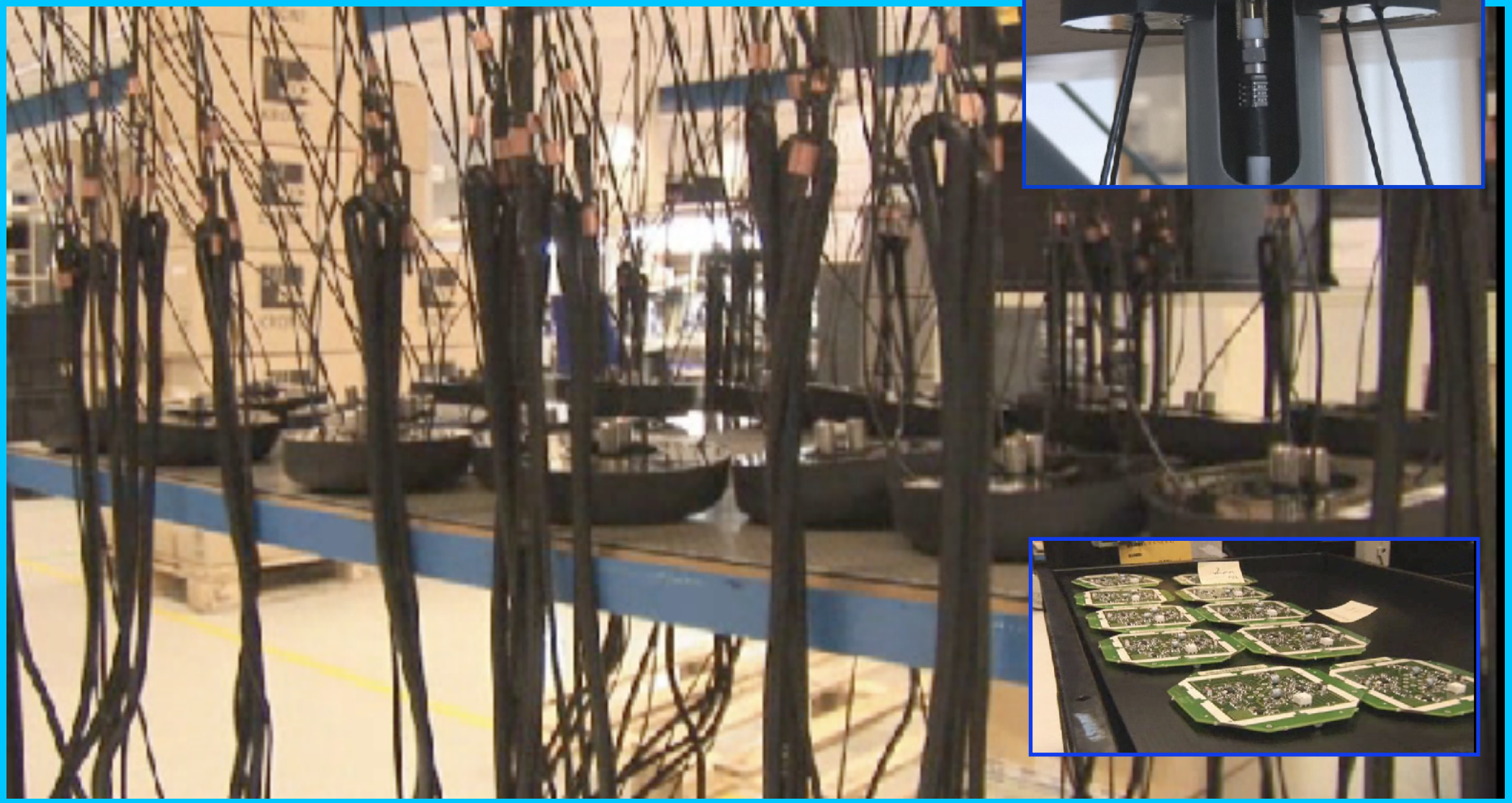
LBA co-axial cable and ground plane:

CS302 - the first station!

ASTRON

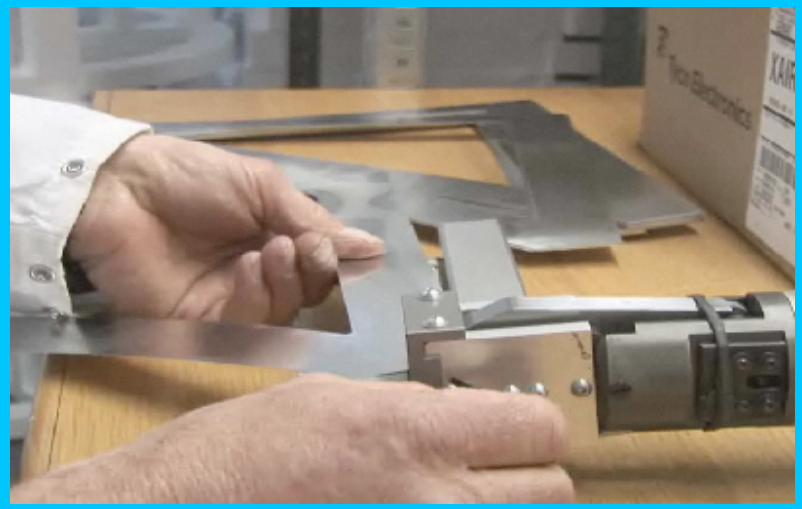
LBAs under construction at Neways BV:



CS302 - the first station!

ASTRON

HBAs under construction at AutoNational:



CS302 - the first station!

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HBAs on route to CS302:

CS302 - the first station!

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Deployment of LBAs:






CS302 - the first station!

ASTRON

And before you know it, a sea of LBAs:

CS302 - the first station!

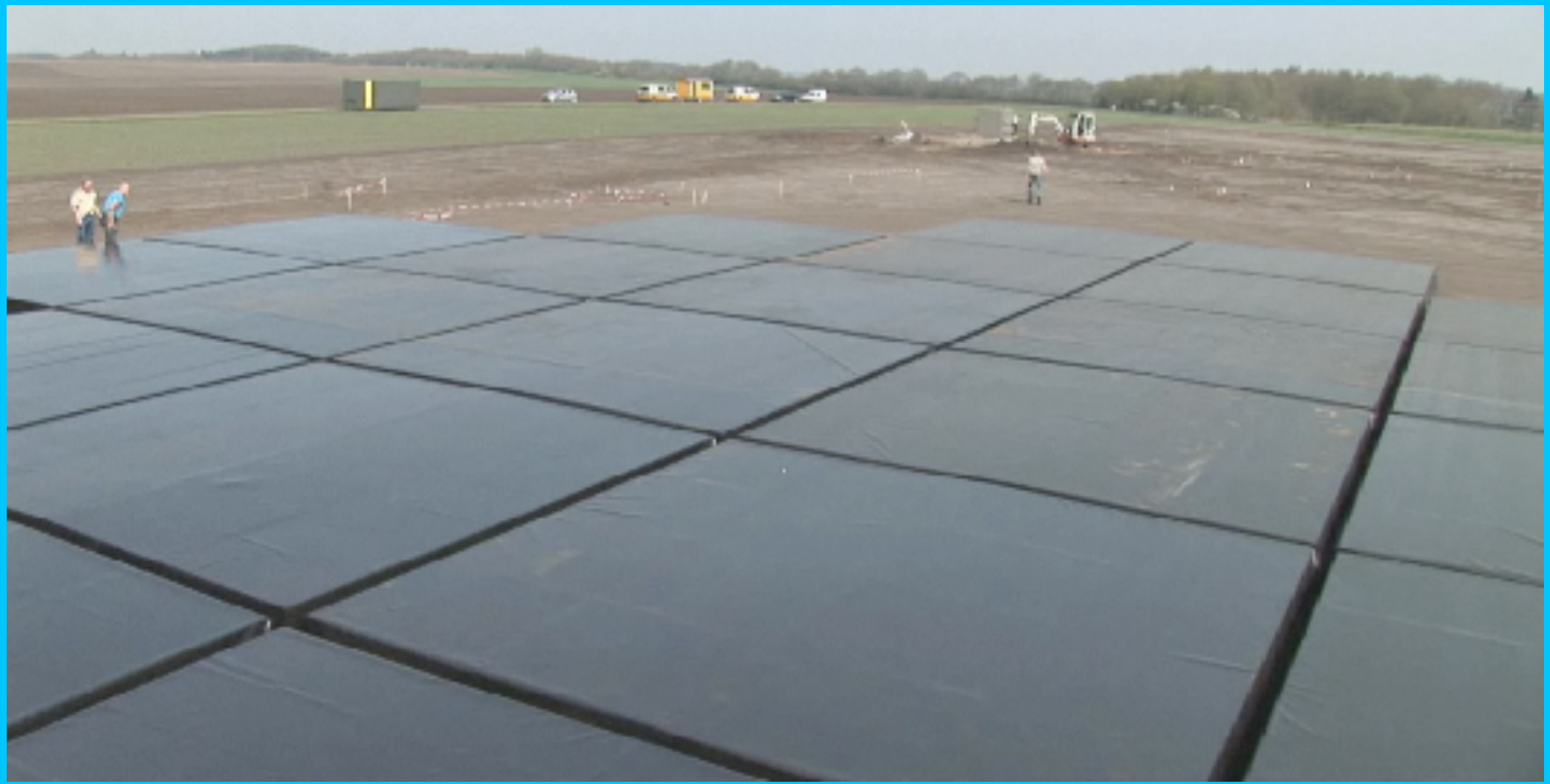
ASTRON

HBA deployment is a bit more tricky.....

CS302 - the first station!

ASTRON

And before you know it, a sea of HBAs too:



First LOFAR station complete - April 2009

First light on CS302

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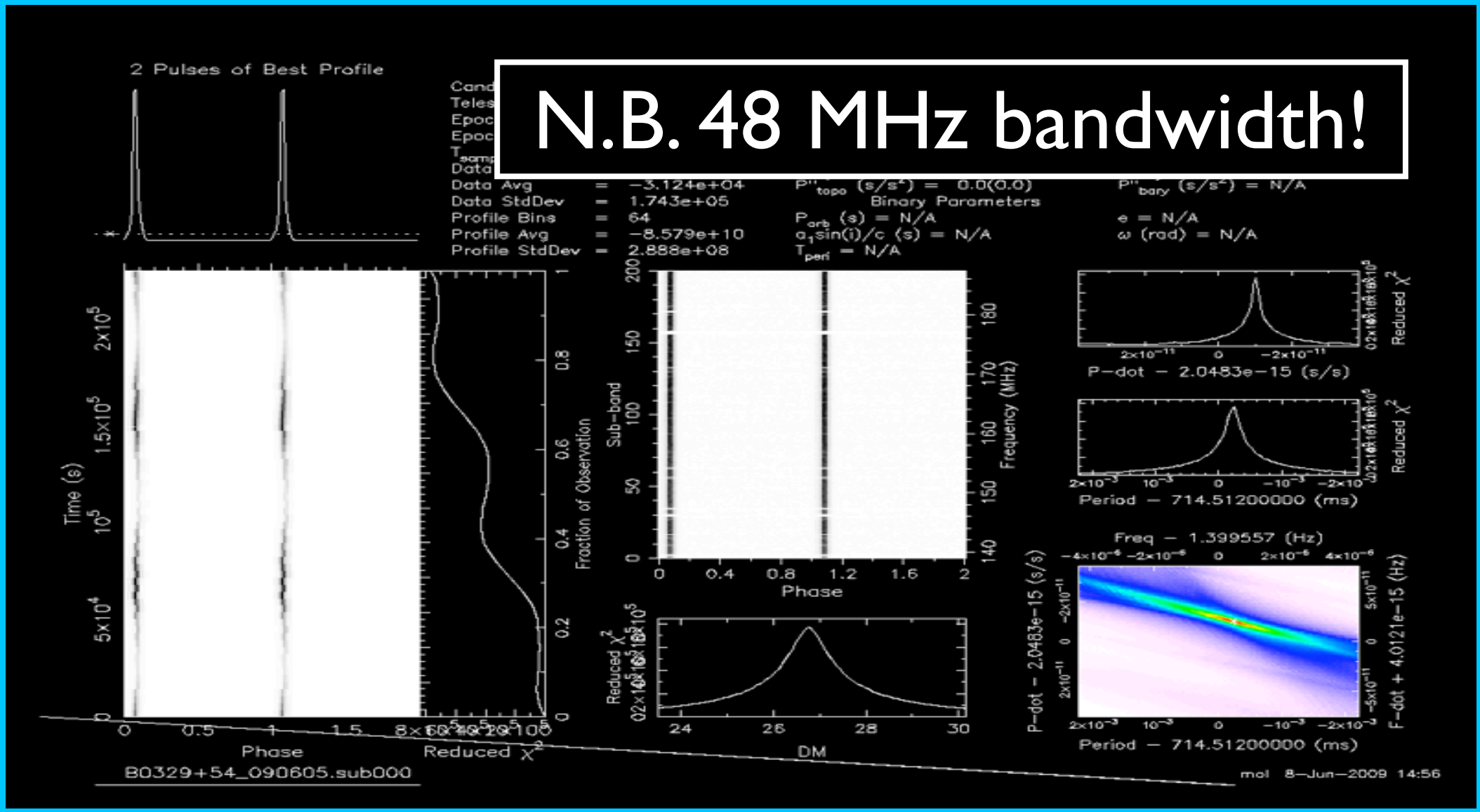
Pulsar observations with CS302 (courtesy Jason Hessel):



Rollout schedule

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Currently:

- 3 stations complete (CS302, RS307, RS503)
- 2 stations partially complete (RS106, CS301)
- Next in line:CS30, RS208, RS306

Expectation:

- 10 stations complete mid-July 2009
- 20 stations end of the year (weather dependent)
- 5 European stations also complete

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Rollout schedule (cont)

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Effelsberg, Tautenburg, Garching now have LBAs deployed.

Effelsberg preparing for HBA installation (July)

Nancay next

Chilbolton - planning permission

Juelich & Onsala later

Rollout schedule (cont)

Rollout schedule (cont)

ASTRON

Superterp:

- first cables in the ground (fibre)

- deployment of 6 stations to begin mid-August

Rollout schedule (cont)

Directievoering:

oranjewoud

Aannemer:

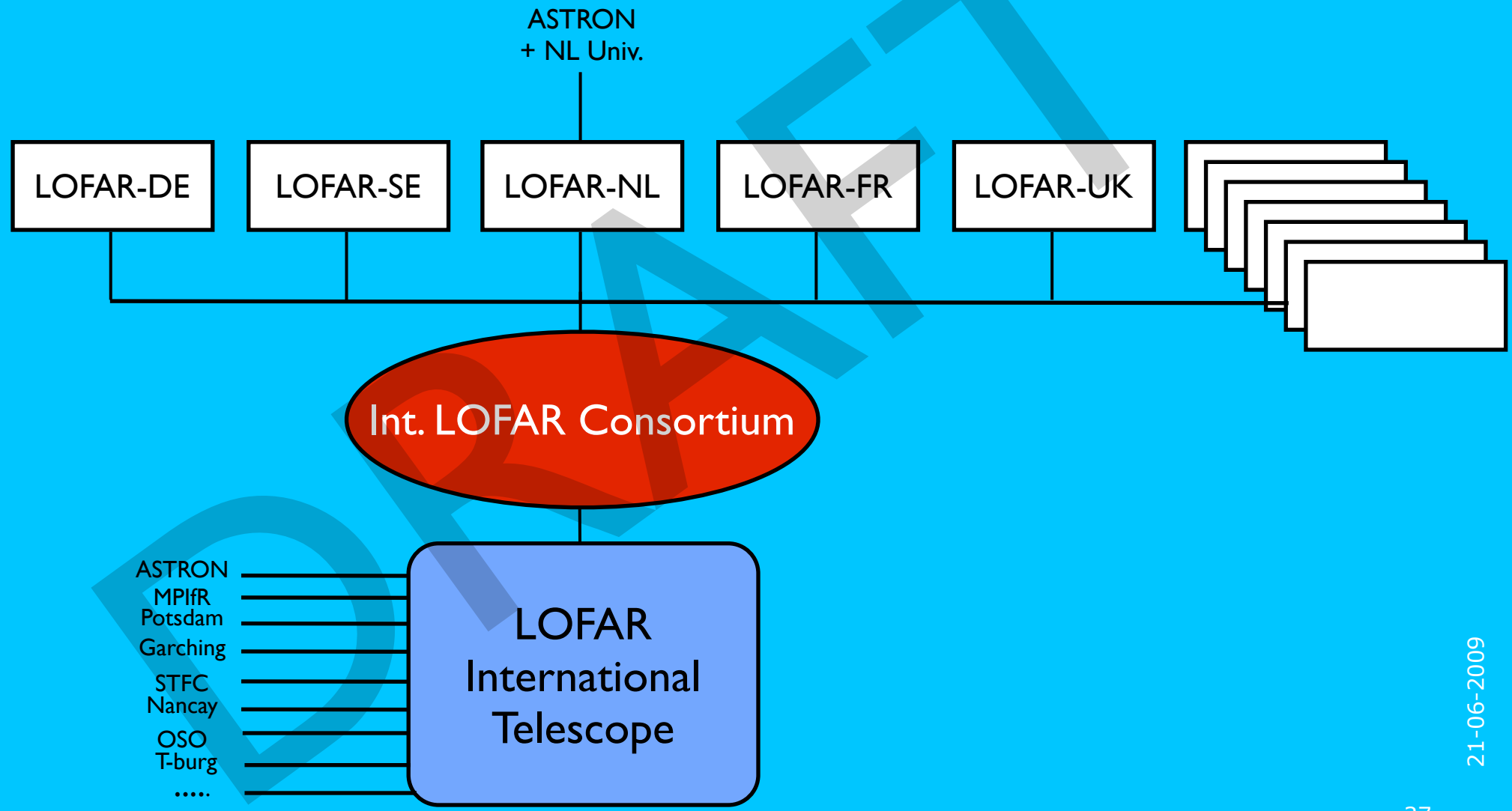
OOSTERHUIS BV
LOONBEDRIJF
AANNEMERSBEDRIJF GWW
LANDSCHAPSWERK

Opdrachtgever:

ASTRON

LOFAR

Operating LOFAR - overall governance structure



LOFAR - operational phase

ASTRON

Observing time allocation:

- national contributions will be rewarded with reserved access

- National consortia will distribute acquired rights (e.g. to KSPs)

- international contributions will be fully realised

- projects (e.g. KSPs) may obtain (multiple) national sponsors

- Independent Programme Committee (PC) will review all projects (advice to Nat. Consortia; binding for Open Time).

LOFAR - operational phase

ASTRON

- There will be Open Time!

- Open Time will be open to all, including KSPs

- *Minimum* open time set by RadioNet FP7 TNA committment:

2009 - 46+ hours
2010 - 121+ hours
2011 - 224+ hours

- Review of future Open Time fraction in 2010/11.

21-06-2009

LOFAR - Announcement of Opportunity

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LOFAR
Announcement of Opportunities
for Early Access:

Participation in Commissioning
&
Scoping Out Reserved Access

Submission Deadline 30 September 2009

The novel character of LOFAR requires a careful preparation and organisation of the science programme. Opportunities for two steps are now announced:

1. *Experienced radio astronomers are invited to participate in the coordinated astronomical commissioning period.* More information can be found here.

2. *All science groups affiliated with national consortia participating in LOFAR are invited to specify their science goals and observing resources for which they aim to use the reserved access shares, in the years following commissioning.* More information can be found here.

Astronomy ∝ 1/line speed

Astronomy $\propto$ 1/line speed

EVN and LOFAR = a good combination

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