

THE SARDINIA RADIO TELESCOPE: e-VLBI prospects in Sardinia

Nichi D'Amico & Ignazio Porceddu

National Institute for Astrophysics

Cagliari Astronomical Observatory

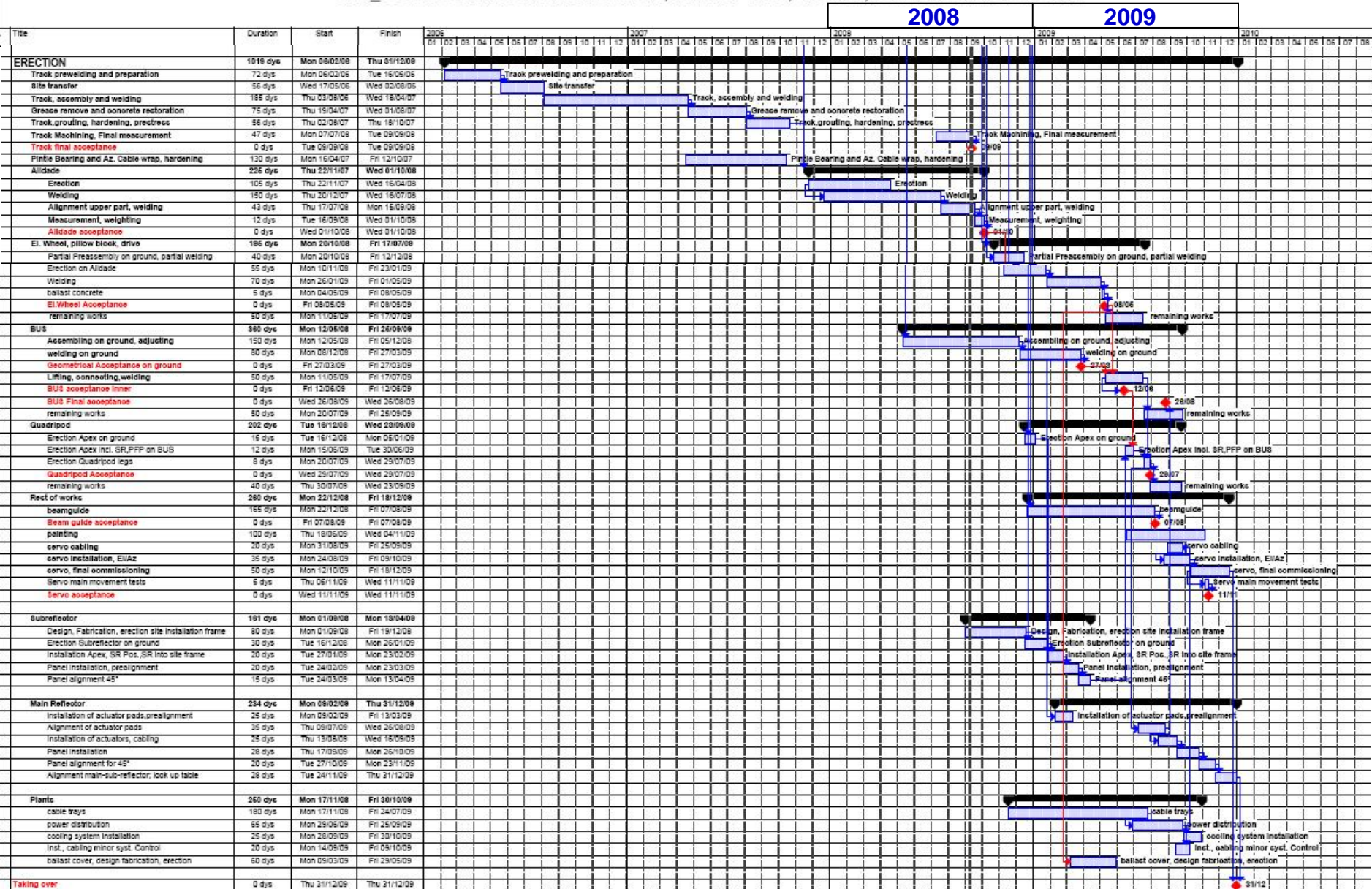
Talk outline:

- a) Status of the radio telescope construction
- b) Instrumentation development
- c) e-VLBI infrastructures

a) Status of the radio telescope construction

SRT_ SCHEDULE PLAN FABRICATION, TRANSPORT, Erection, Panel Installation & Plants

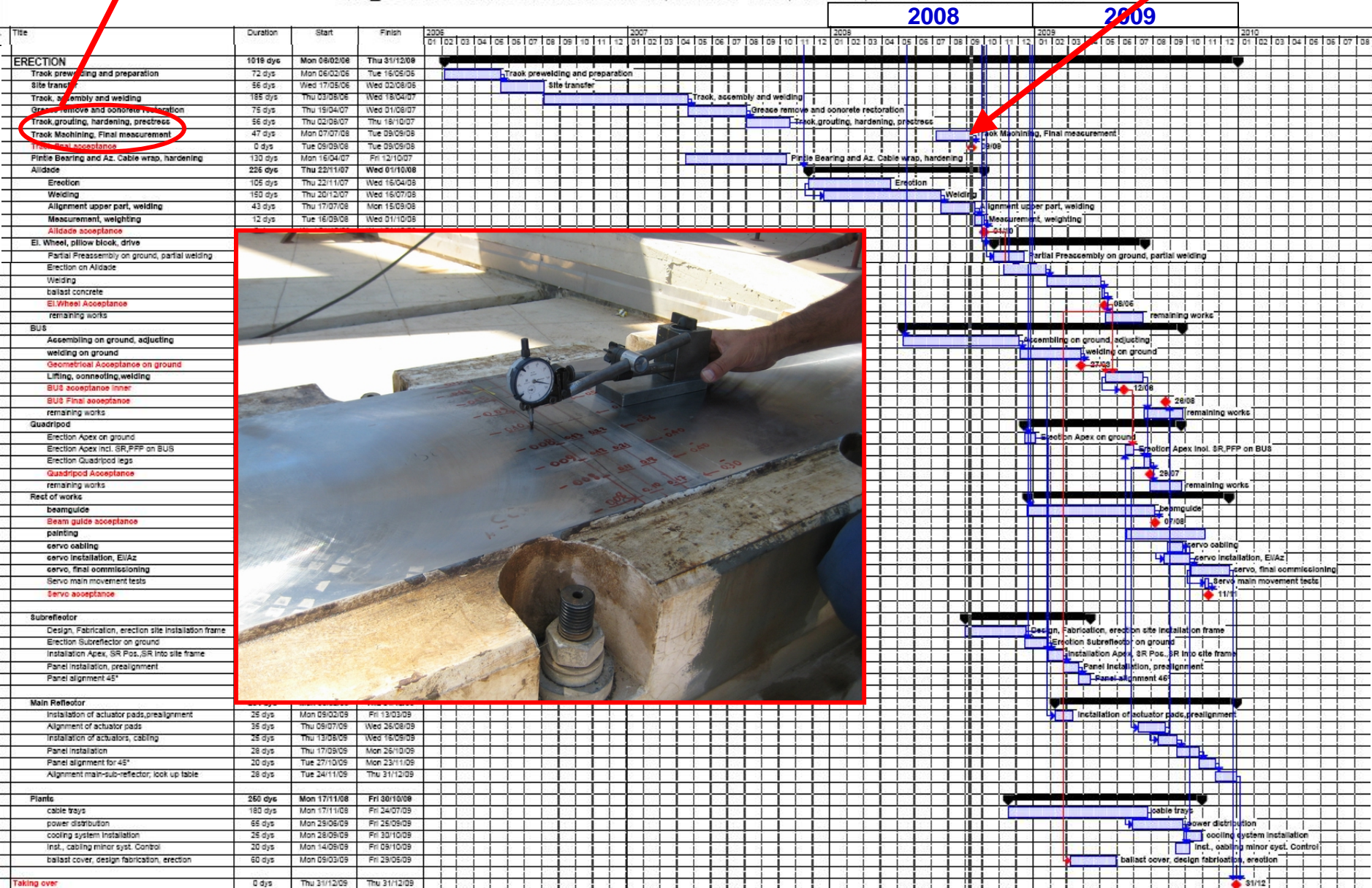
SRT-PI



Az Track final measurements: Due by the end of September 2008 --Ok!

SRT_ SCHEDULE PLAN FABRICATION, TRANSPORT, Erection, Panel Installation & Plants

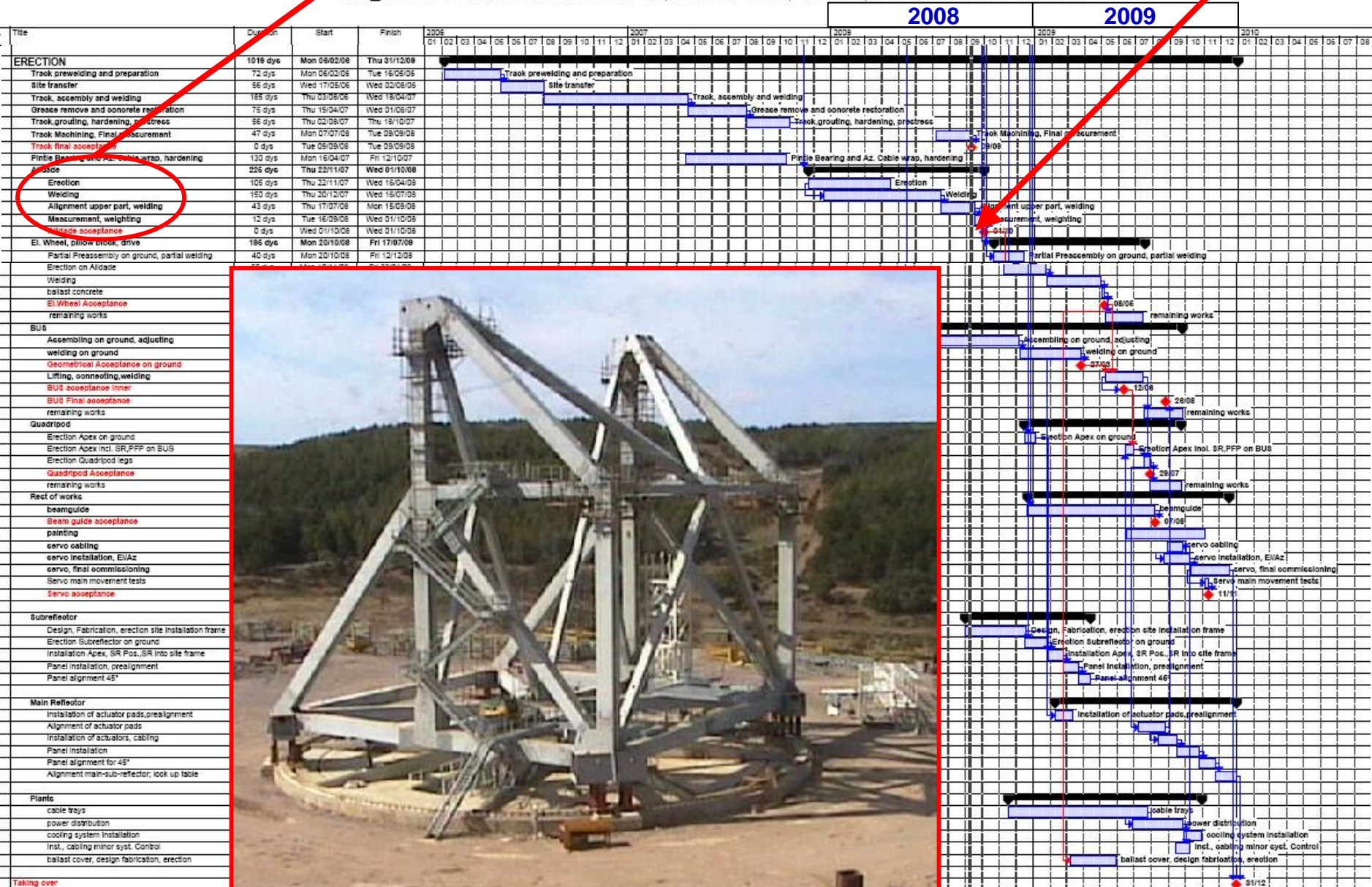
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Alidade assembling and welding : Due by October 2008 -Ok!

SRT_ SCHEDULE PLAN FABRICATION, TRANSPORT, Erection, Panel Installation & Plants

SRT-PI

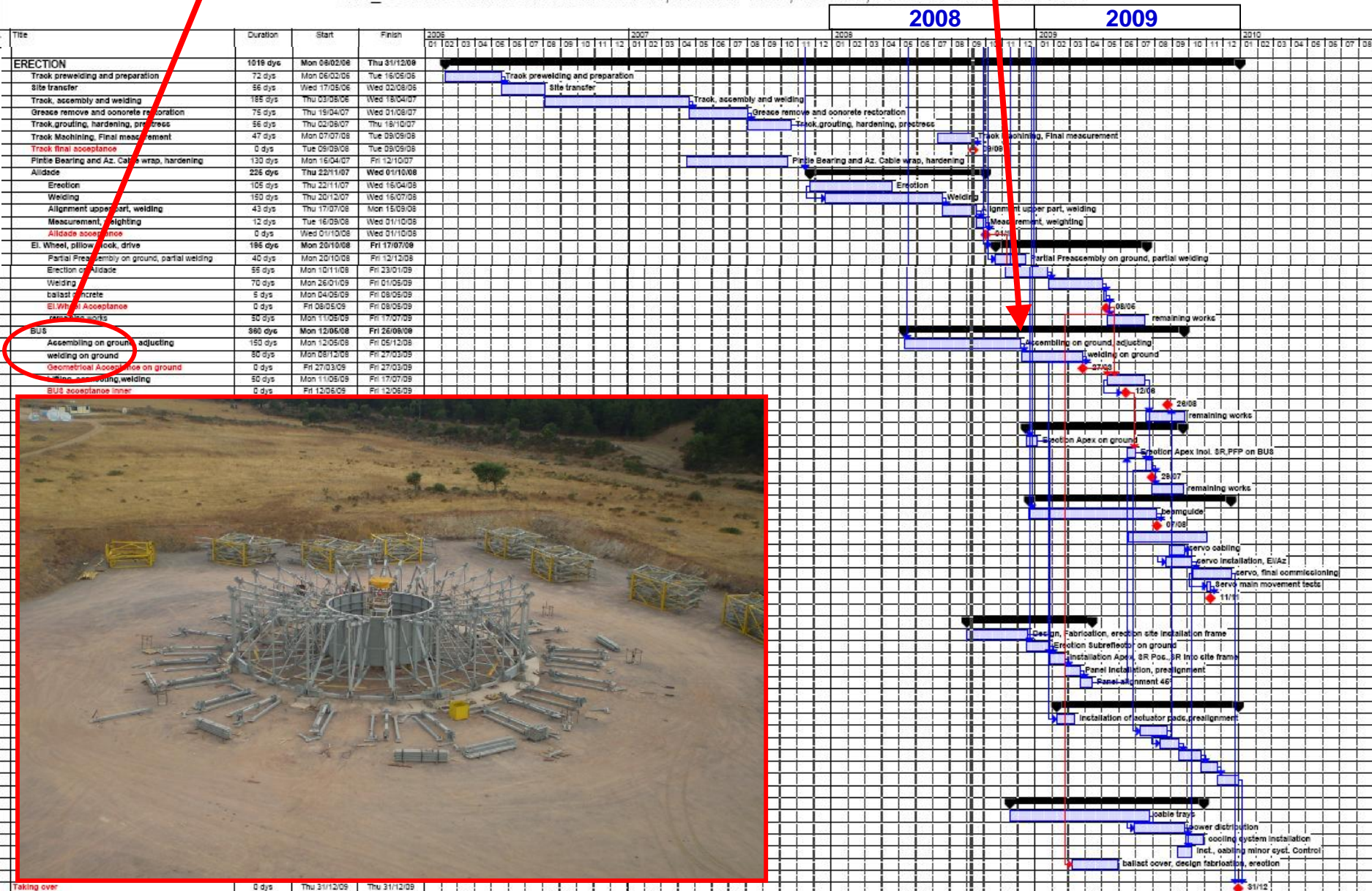


Taking over

Bus assembling on ground: June – December 2008 –timeline --Ok!

SRT_SCHEDULE PLAN FABRICATION, TRANsPORT , Erection, Panel Installation & Plants

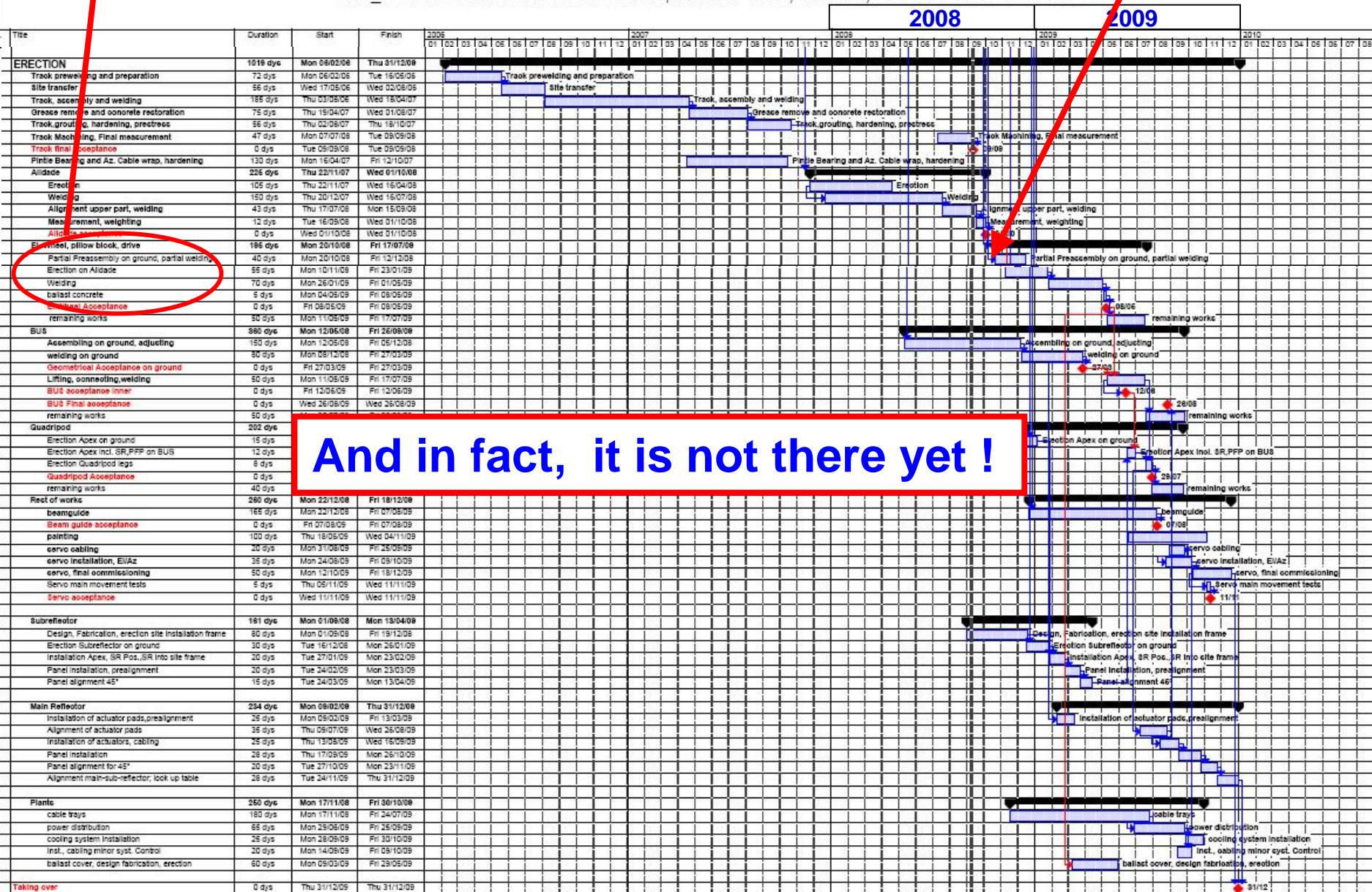
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El Wheel assembling on ground : Due to begin on October 21st 2008

SRT_ SCHEDULE PLAN FABRICATION, TRANSPORT, Erection, Panel Installation & Plants

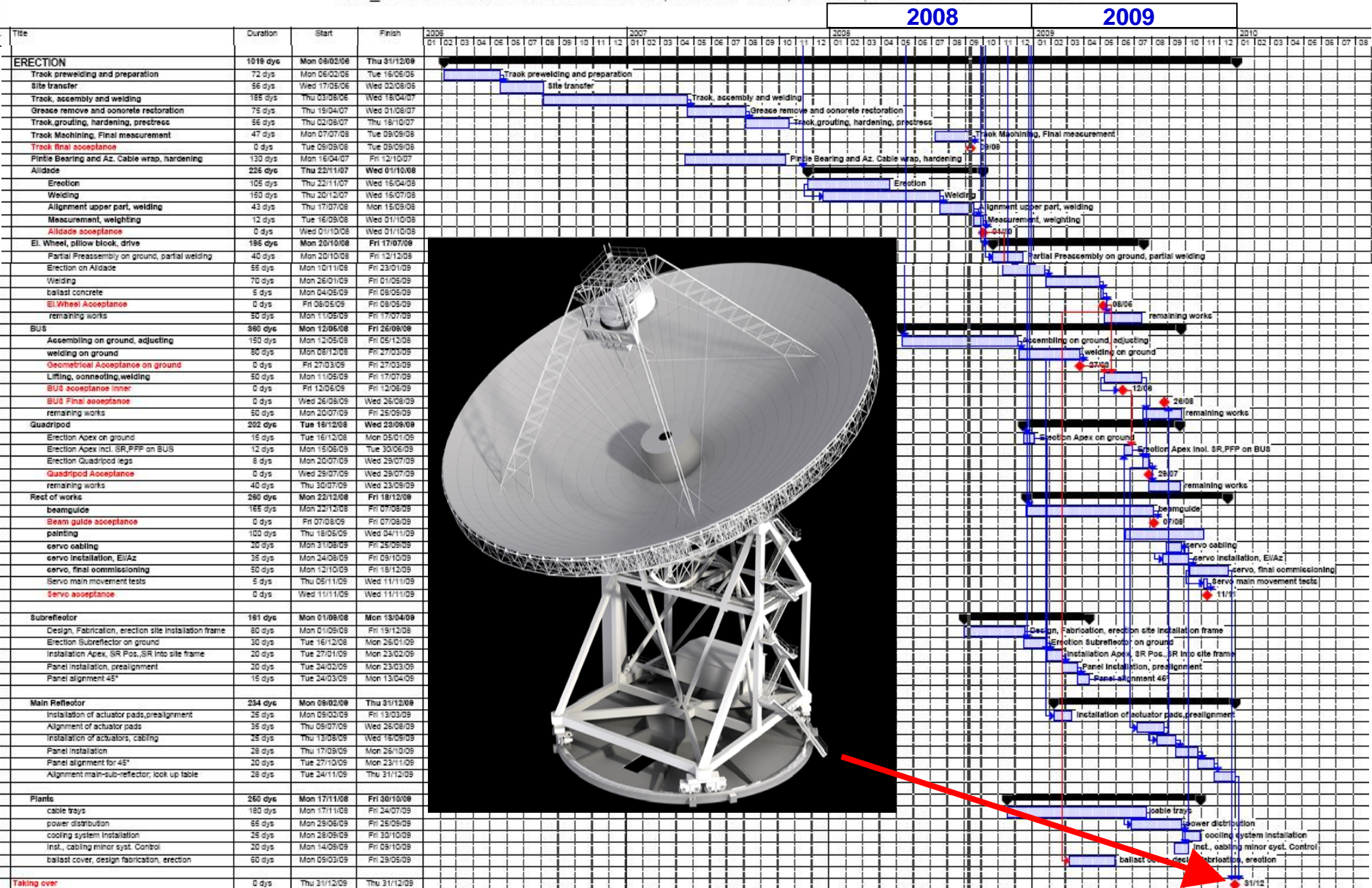
SRT-PI



And in fact, it is not there yet !

SRT_ SCHEDULE PLAN FABRICATION, TRANsPORT , Erection, Panel Installation & Plants

SRT-PI



b) Instrumentation development

Receivers

Back-ends

Metrology

Site Monitoring

VLBI capabilities

Software correlator

b) Instrumentation development

Receivers

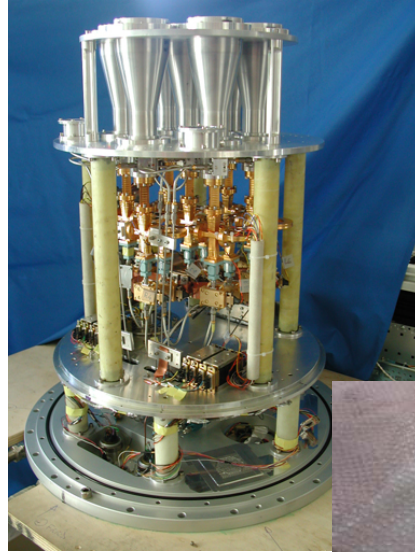
Back-ends

Metrology

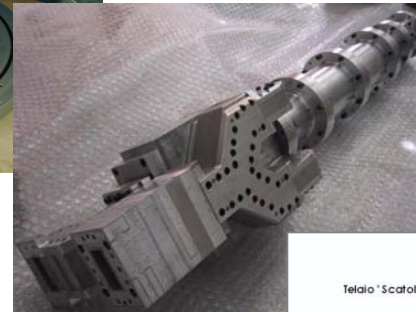
Site Monitoring

VLBI capabilities

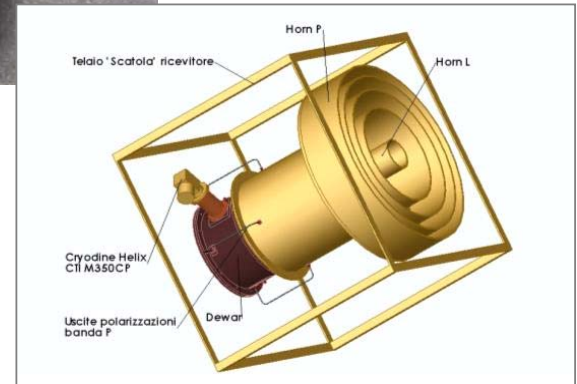
Software correlator



22 GHz multibeam receiver



6.7 GHz mono feed receiver



Dual frequency (300 MHz / 1400 MHz) coaxial receiver

...and higher frequency receivers are on the agenda !

b) Instrumentation development

Receivers

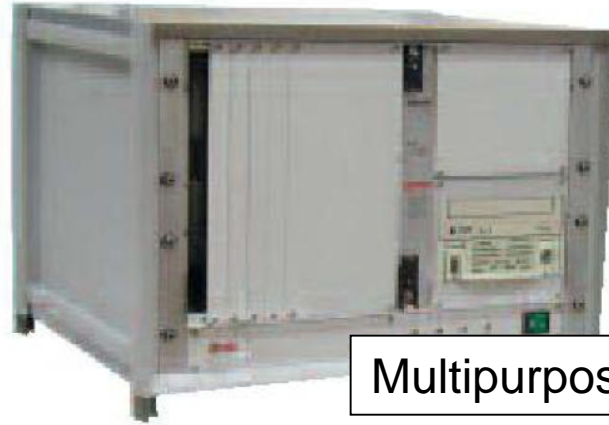
Back-ends

Metrology

Site Monitoring

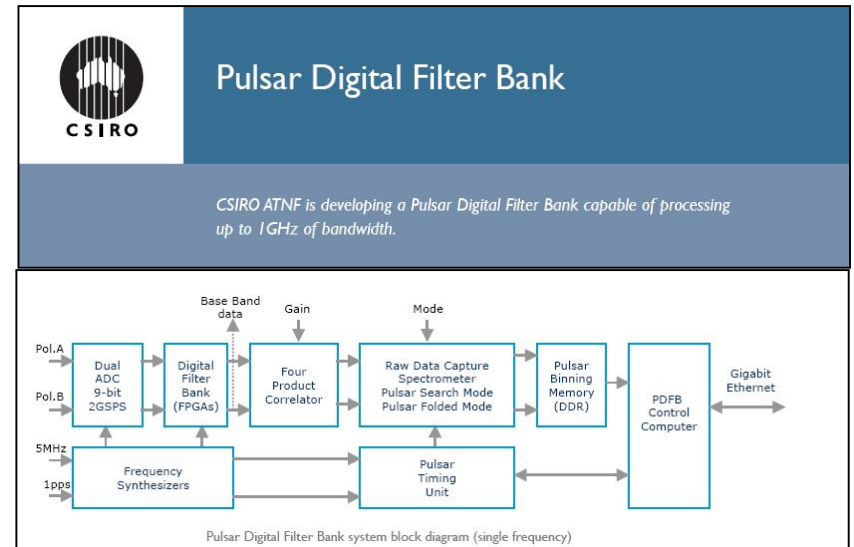
VLBI capabilities

Software correlator



Multipurpose digital spectrometer

ATNF Pulsar Digital Filterbank



b) Instrumentation development

Receivers

Back-ends

Metrology

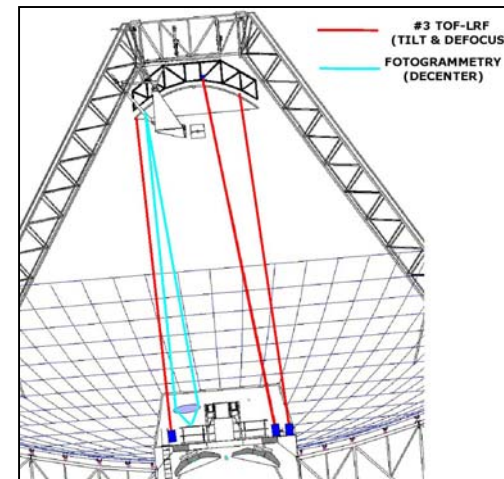
Site Monitoring

VLBI capabilities

Software correlator



Main reflector: 1000 actuators



Sub reflector tilt control system

b) Instrumentation development

Receivers

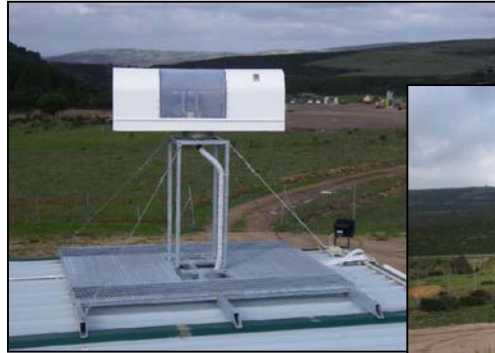
Back-ends

Metrology

Site Monitoring

VLBI capabilities

Software correlator



Transparency at high frequencies
monitored with GPS and radiometers



RFI monitoring

b) Instrumentation development

Receivers

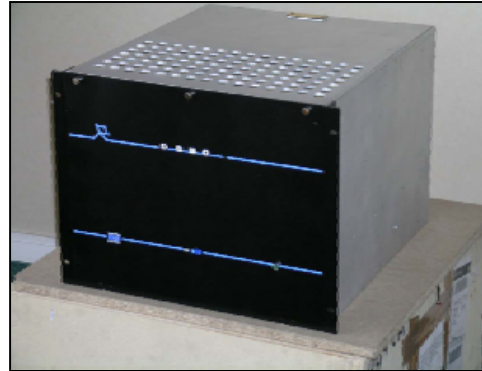
Back-ends

Metrology

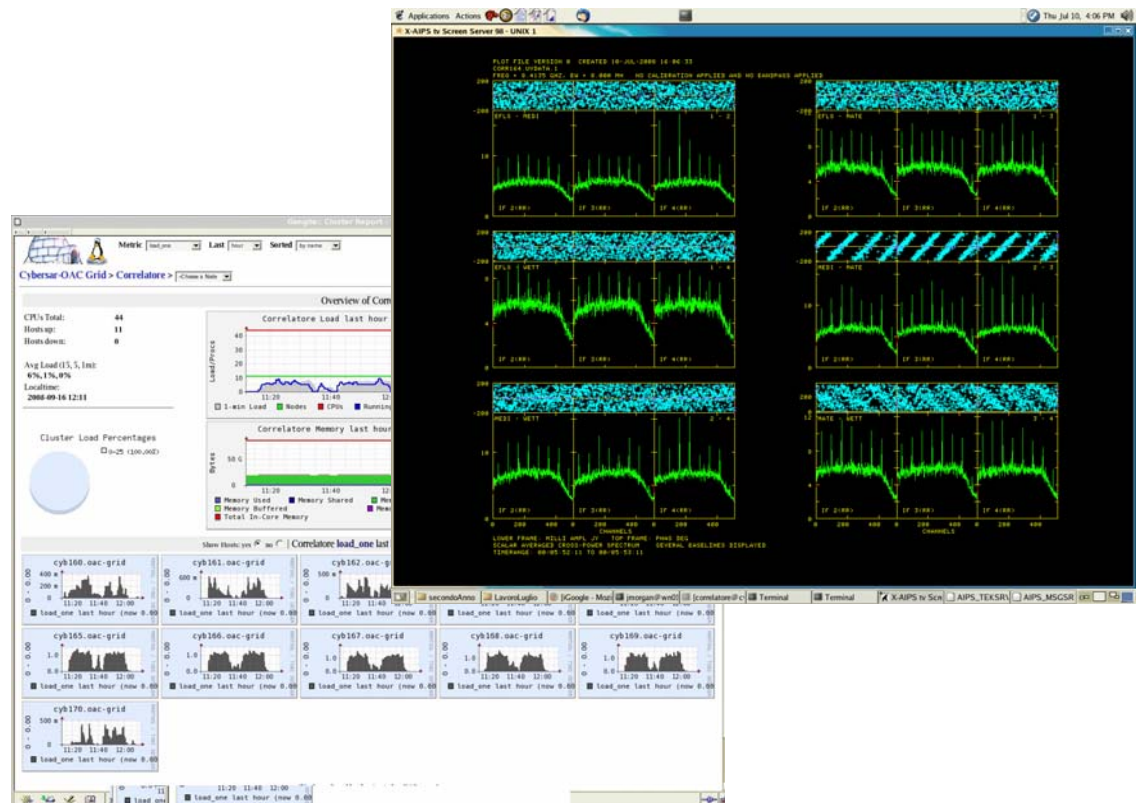
Site Monitoring

VLBI capabilities

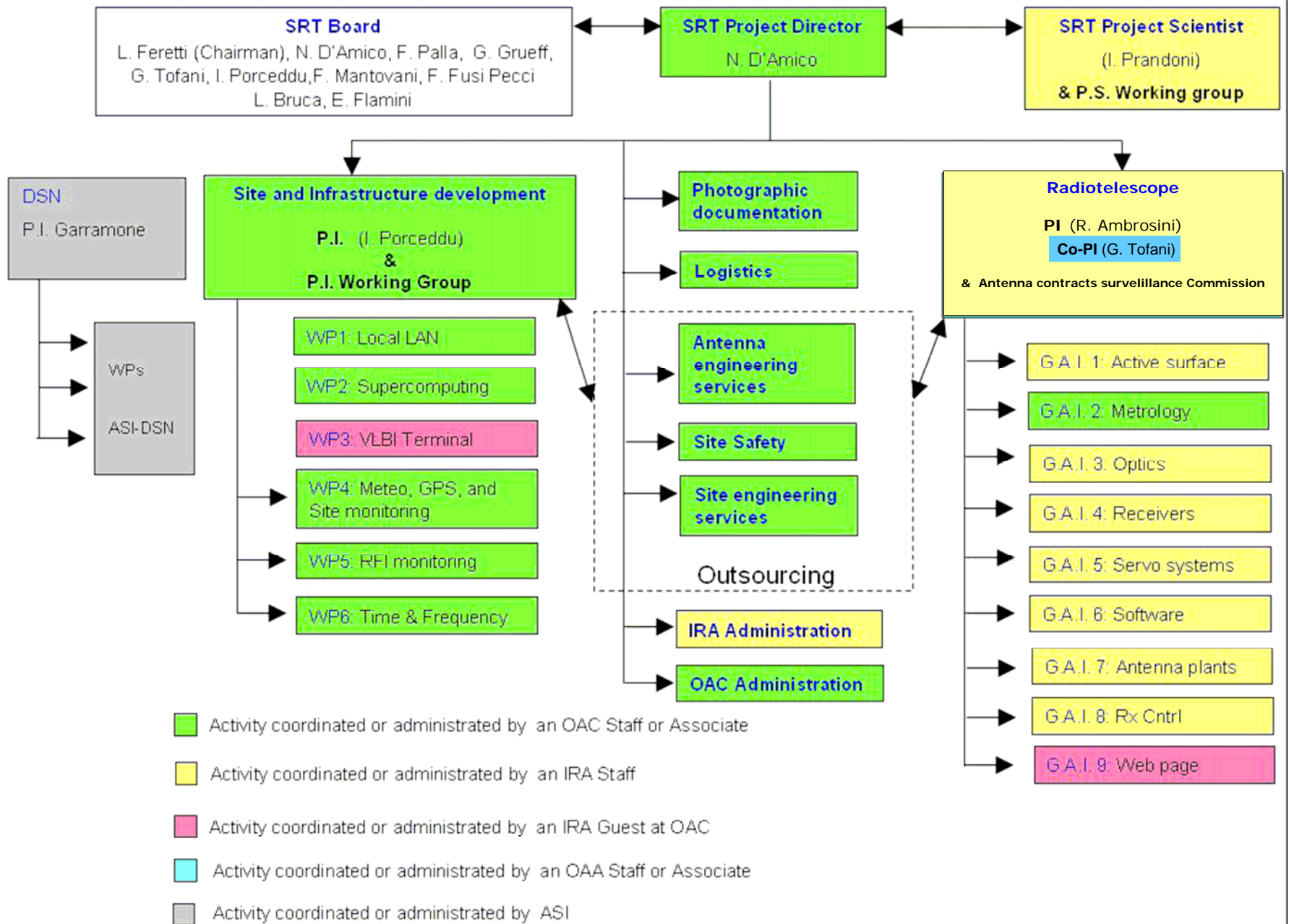
Software correlator



DBBC system
+ MARK 5 C



DiFX running on the HPC Cluster
at Cagliari Astronomical Observatory



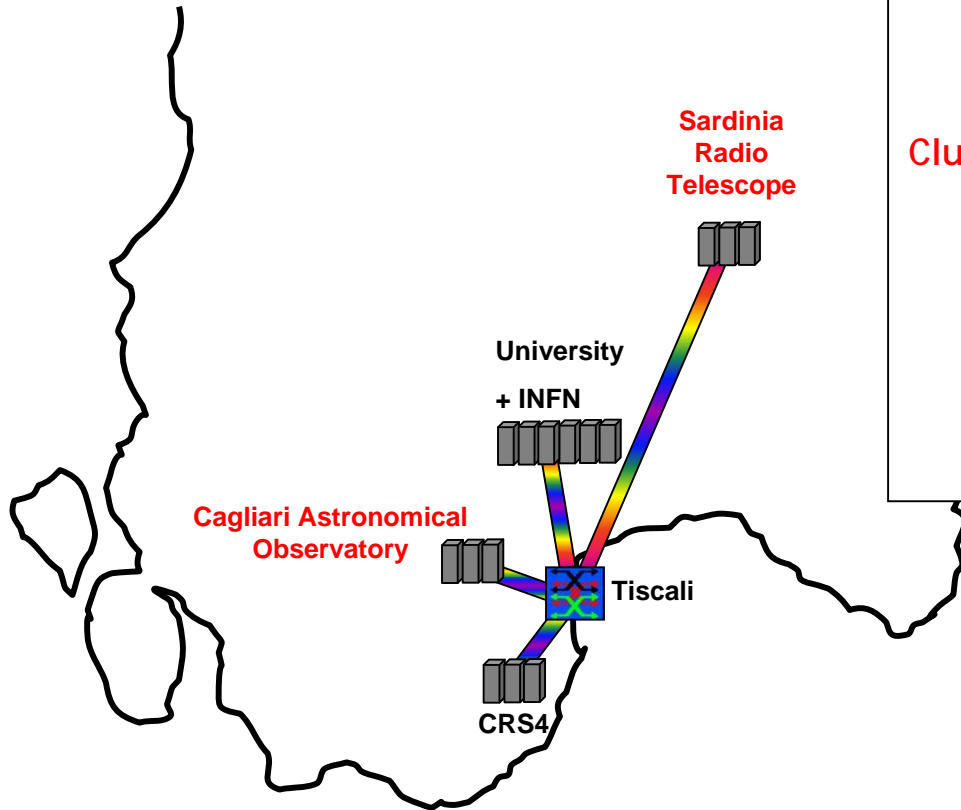
c) Prospects of the e-VLBI infrastructures

In 2005, the Consortium “COSMOLAB” was created in Sardinia, including:

- Local Universities
- Local section of the National Institute for Nuclear Physics
- INAF-Cagliari Astronomical Observatory
- Regional Research Center “CRS4”
- Tiscali Company
- Nice Srl Company

COSMOLAB obtained a major research grant from the Ministry of Research (9 M€) in order to build, operate and use a [regional supercomputing network](#) dedicated to scientific research.

In response to this successful application, the Local Regional Government decided to supply [dedicated dark fibers](#) to the network.



Cluster located at Cagliari Observatory site:

64 nodes, dual processor dual core (256 CPUs)

AMD Opteron based IBM X3455,

DDR2 400 8GB RAM, 3 GbE,

APC thermal control

8 nodes, dual processor dual core (32 CPUs)

AMD based IBM X3455, RAM 16GB InfiniBand

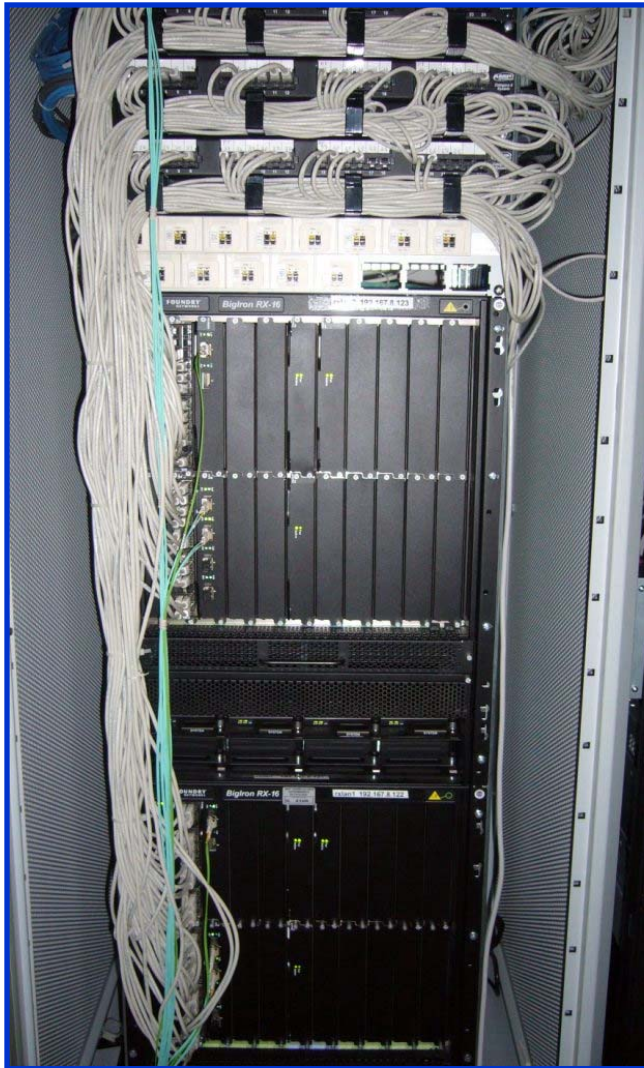
Cluster to be located at the radiotelescope site:

60 nodes, dual processor quad core (480 CPUs)

Intel Xeon based IBM X3550, DDR2 667 16GB RAM,

3 GbE, InfiniBand

Pictures of the Cagliari Observatory Computer room

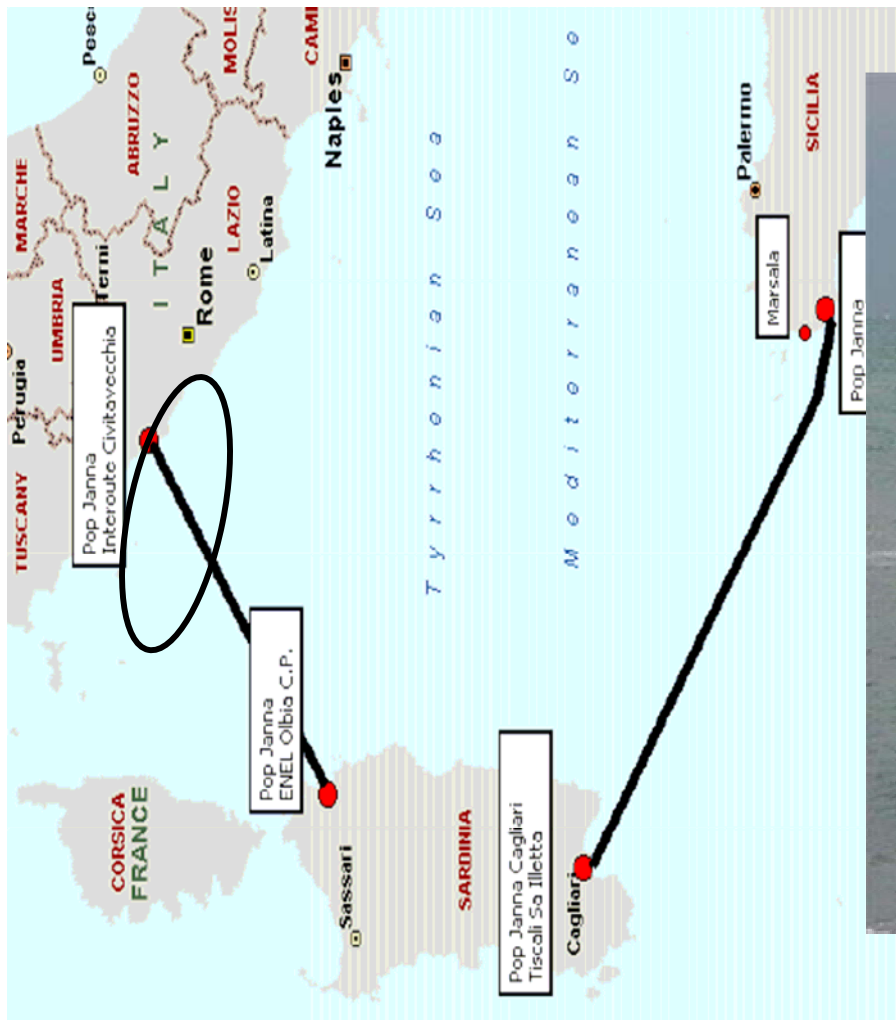


DiFX already running
on this Cluster !

GRID platforms already installed !

1. Optical fibers connecting the main Institutions already available
2. Dedicated use of these links granted by the Local Regional Government
3. Dedicated **optical fiber link to the radio telescope site** in progress...

...and... N x 10Gbs connection to Sicily and the Peninsula in progress !



So, in a couple of years, you VLBI people should find very attractive to visit Sardinia !

COME TO SARDINIA !!!

WE WANT YOU FOR ASTROPHYSICS !!!

