SKA1-LOW

LOFAR

Actually LOFAR is like a cross between SKA1-LOW and SKA1-MID.

Large FoV and high resolution
=
big images
widefield effects
subtle calibration issues

Why is LOFAR a good test case for GridPP?

1. **Data size** - LOFAR data are BIG
   Not just in a general sense, but comparatively relative to other existing telescopes.

2. **Processing steps** - LOFAR data are COMPLICATED
   Most existing telescopes do not have the stringent image fidelity requirements that SKA has and therefore do not implement all of the same steps in image creation. LOFAR data do require these steps, even at the moment.

3. **Community benefit** - LOFAR data are DIFFICULT
   People have difficulty processing LOFAR data as standard. Making the processing available through GridPP would be a community service.

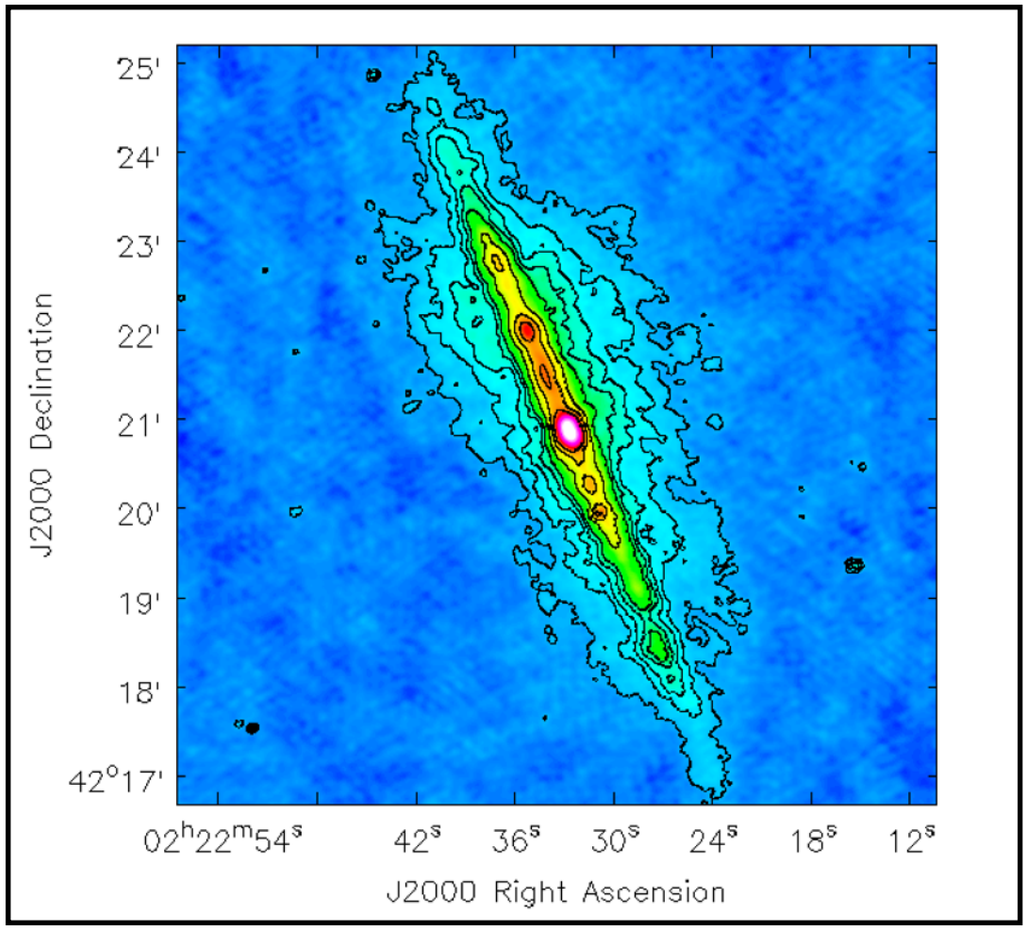
Layout of LOFAR data

A typical observation comprised of 400+ sub bands —> 200kHz bandwidth

1 subband depends on averaging
16 channels
2 sec integration time
21 GB —> 8.6TB

Potential for distributed processing

NGC891 observed with LOFAR



What has been done

Obtained a grid certificate and joined the SKA VO

- Quite a lengthy process
- If laptop lost/broken process has to be restarted

Access and setup of DIRAC

- Very straightforward thanks to great documentation

Setting up a proxy

Running of a simple job

- Again great documentation makes this straightforward

What has been done

Using the Dirac File Catalog (DFC) Command Line Interface (CLI) to create own directory in DFC skatelecope.eu

```
FC:/skatelescope.eu/user/m>ls -l
drwxrwxr-x 0 andrew.mcnab  skatelescope.eu_user 0 2016-10-28 09:26:04 andrew.mcnab
drwxr-xr-x 0 david.mulcahy skatelescope.eu_user 0 2016-11-02 17:28:06 david.mulcahy
FC:/skatelescope.eu/user/m>
```

Testing of uploading a test file to storage element

```
FC:/skatelescope.eu/user/m/david.mulcahy/tmp>add 123.txt 123.txt UKI-NORTHGRID-MAN-HEP-disk
File /skatelescope.eu/user/m/david.mulcahy/tmp/123.txt successfully uploaded to the UKI-NORTHGRID-MAN-HEP-disk SE
FC:/skatelescope.eu/user/m/david.mulcahy/tmp>ls -l
-rwxrwxr-x 1 david.mulcahy skatelescope.eu_user 4 2016-11-02 19:18:08 123.txt
FC:/skatelescope.eu/user/m/david.mulcahy/tmp>
```

testing of retrieving a file from a storage element

```
-bash-4.1$ dirac-dms-lfn-replicas /skatelescope.eu/user/m/david.mulcahy/tmp/123.txt
LFN                                                StorageElement             URL

================================================================================================================================
================================================================================
/skatelescope.eu/user/m/david.mulcahy/tmp/123.txt UKI-NORTHGRID-MAN-HEP-disk srm://bohr3226.tier2.hep.manchester.ac.uk:
8446/srm/managerv2?SFN=//skatelescope.eu/user/m/david.mulcahy/tmp/123.txt

-bash-4.1$ pwd
/home/mulcahy/tmp
-bash-4.1$ ls
123.txt
-bash-4.1$ rm 123.txt
-bash-4.1$ dirac-dms-get-file /skatelescope.eu/user/m/david.mulcahy/tmp/123.txt
{'Failed': {},
 'Successful': {'/skatelescope.eu/user/m/david.mulcahy/tmp/123.txt': '/home/mulcahy/tmp/123.txt'}}
-bash-4.1$ cat 123.txt
123
```

What has to be done

Many tests!

- Copy data directly from lta to gridpp
- Download and install LOFAR software in CVMFS
- Tests on initial calibration of LOFAR data pipeline (prefactor)
- Tests on Facet calibration (FACTOR)