

# Phase2 ObsPrep

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the ObsPrep team

# Agenda

- History
- Motivation
- Architecture
- Features
- Future developments

# History

## ■ Phase 2:

- P2PP
  - v2: until 2007 (Paranal), 2019 (La Silla)
  - v3: 2007-2018 (Paranal only)
- Web based p2: 2018 (Paranal), 2019 (La Silla)

## ■ Observation preparation:

- Dedicated versions of TCL/TK based GuideCamTool (VIMOS, PILMOS) until 2015
- Unified GuideCamTool: (2015-2019)
- Web based ObsPrep: 2019

# Motivation

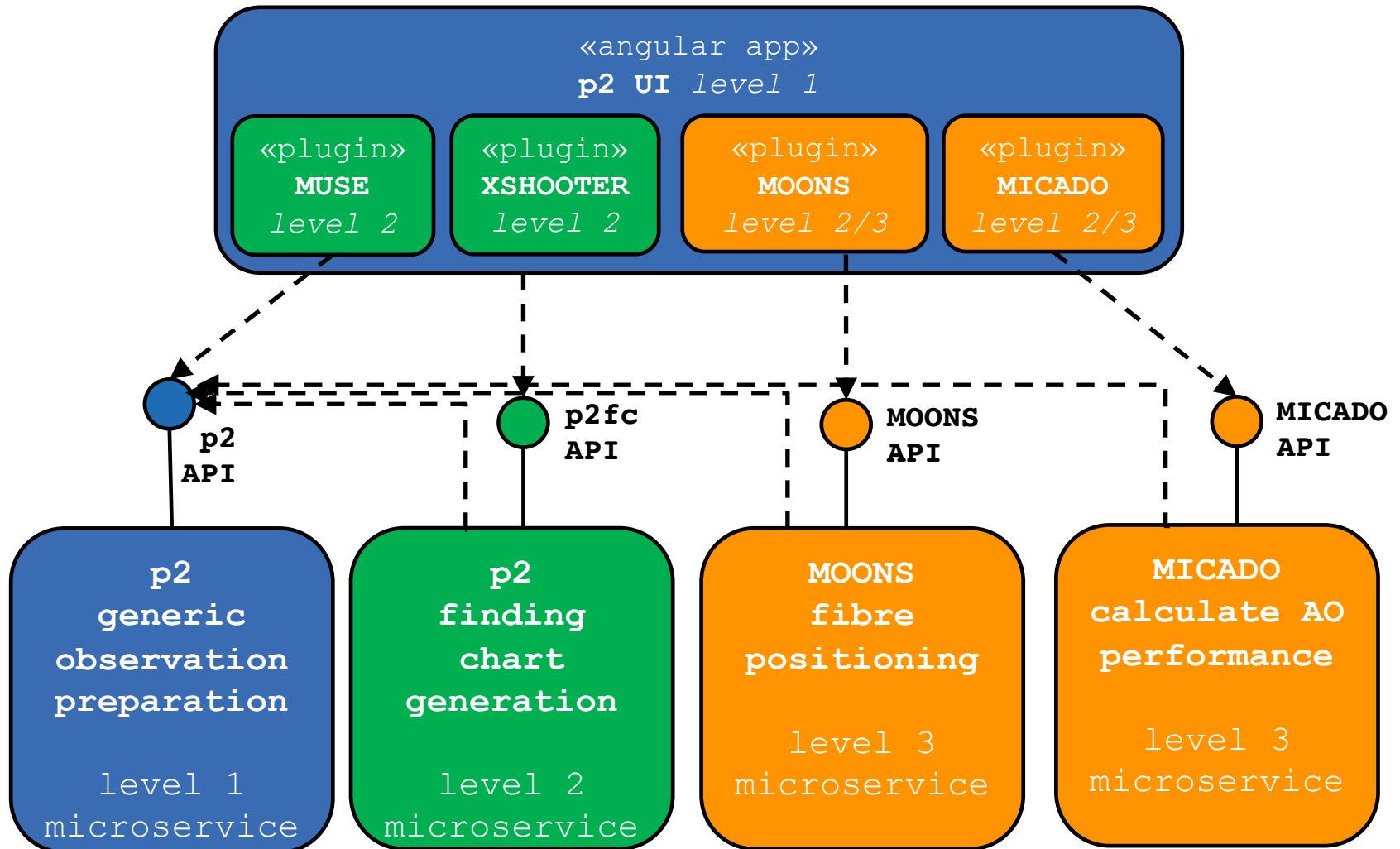
## ■ For the desktop tool:

- Reduce the number of tools needed by the user
- Harmonize observation preparation
- Hide the specifics of the different instruments to the user

## ■ For the web tool:

- Improve user experience:
  - Integrated into p2, no need to go back and forth between two different tools
  - Homogeneous controls and conventions
- No need to download desktop tools
- We can transparently deploy new features and bugfixes

# Architecture





# P2: main interface

localhost:4200/home/ob/2605843

Phase 2 2.2.16 | Overview | Schedule | Execution Sequence | Help | UT: 15:28:52 - LST: 14:09:13 | Phase 1/2 Tutorial Account

Check | Certify | Revise | Edit | Import/Export | Delete | Refresh OB

60.A-9003(I) · MUSE · **OB** 2605843 No Name | Exp. Time: 00:00:00 · Exec. Time: 00:00:00 | [Partially Defined]

Obs. Description | Target | Constraint Set | Time Intervals | Finding Charts | Ephemeris | Target Visibility | ObsPrep

Obs. Description: No name | tpl size: normal small | tpl/row: 1 2 3 4 5

Observing Description Name: No name | User Comments:

**MUSE\_wfm-ao\_acq\_movetopixellGS**  
#1 acquisition 1775414

Integration Time (seconds): 1

Perform acquisition with TTS:  yes

Start slow-guiding?:  yes

Alpha offset for the target (arcsec): 0

Delta offset for the target (arcsec): 0

Get Guide Star from: CATALOGUE

RA of guide star: 00:00:00.000

DEC of guide star: 00:00:00.000

RA of TT star 1: 00:00:00.000

DEC of TT star 1: 00:00:00.000

R magnitude of TT Star: 12

RA for alternative TT Star: 00:00:00.000

DEC for alternative TT Star: 00:00:00.000

R magnitude of alternative TT Star: 12

Position Angle on Sky (deg): 0

**MUSE\_wfm-ao\_obs\_genericoffsetLGS**  
#2 science 1775962

Number of offset positions:

Number of exposures per offset position: 1

Observation type list, O/S: 0

Offset coordinate type selection: SKY

List of relative offsets in position angle (deg):

List of relative offsets in RA or X (arcsec):

List of relative offsets in DEC or Y (arcsec):

Return to origin?:  yes

List of UITs:

Delete | Duplicate

Your Observing Runs

- 60.A-9003(A) · KMOS (2)
- 60.A-9003(B) · FORS2 (3)
- 60.A-9003(C) · CRIRES (0)
- 60.A-9003(D) · FLAMES (1)
- 60.A-9003(E) · UVES (1)
- 60.A-9003(F) · XSHOOTER (6)
- 60.A-9003(G) · SPHERE (2)
- 60.A-9003(H) · VISIR (2)
- 60.A-9003(I) · MUSE (10)
  - New Folder (2)
  - New Folder (0)
  - New Folder (1)
  - MHIdemo (4)
  - New Folder (1)
  - New Folder (0)
  - 2605840 · No Name
  - 2605843 · No Name
  - New Folder (1)
  - bulwazy (3)
  - OB CB Fld
- 60.A-9003(J) · HAWKI (2)
- 60.A-9003(K) · ESPRESSO (4)
- 60.A-9003(L) · GRAVITY (1)
- 60.A-9003(M) · MATISSE (1)
- 60.A-9003(N) · PIONIER (0)

# P2: ObsPrep UI

Obs. Description
Target
Constraint Set
Time Intervals
Finding Charts
Ephemeris
Target Visibility
★ ObsPrep

Pointing
Blind Offset
Observing Offsets
AO Stars
VLT Guide Stars

i Field Center coordinates are not editable: enter the target coordinates in the Target tab.  
If needed, fine-tune the pointing by changing the position angle and/or drag the field on the sky image.

**Field Center**

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Right Ascension

Declination

**Position Angle**

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159.1

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16 41 41.630 +36 27 40.71

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# Features - Background

- Defined in the instrument configuration, can depend on the filter defined in the OB
- Standard surveys: DSS2, 2MASS
- Images from the ESO science portal
- Image generated from the GAIA DR2 catalog
- Image loaded from local disk



# Background

Background image:

- Default background (2MASSH)
- Background generated from GAIA catalog

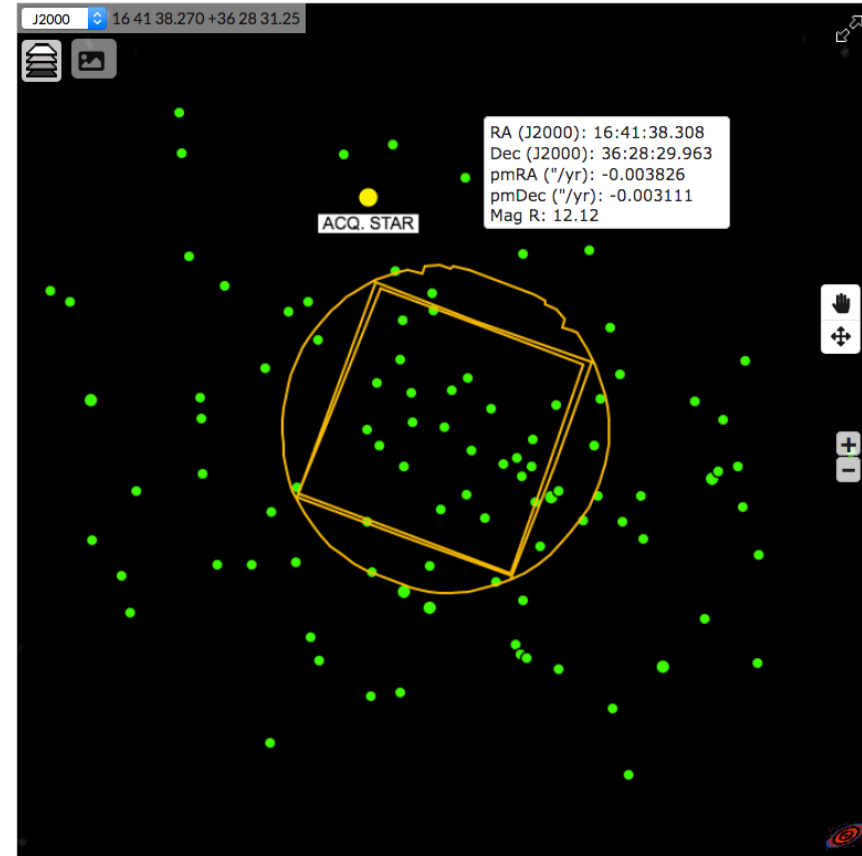
Central $\lambda$	Image quality	Filter	Instrument	FoV
<input type="radio"/> 2144.5nm	0.3"	Ks	HAWKI	6.51'
<input type="radio"/> 1619nm	0.3"	H	HAWKI	6.4'
<input type="radio"/> 2144.5nm	0.3"	Ks	HAWKI	12'
<input type="radio"/> 1619nm	0.3"	H	HAWKI	11.9'
<input type="radio"/> 1258nm	0.4"	J	HAWKI	6.4'

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ACQ. STAR

# Object selection

- Stars (TTS, NGS, acquisition star...) can be selected from a catalog
- GAIA DR2 is currently used for all queries
- Magnitude ranges are instrument and OB dependent



# Proper motion

- All coordinates (Target, TTS, NGS...) are corrected with the proper motion, if present.
- The coordinates are calculated at the middle of the planned observing period.
- The tool saves the corrected coordinates, and calculates all the offsets based on them.

# Blind offset

Obs. Description
Target
Constraint Set
Time Intervals
Finding Charts
Ephemeris
Target Visibility
ObsPrep

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Optional. If your target is too faint for direct acquisition, select one acquisition star from the candidates shown in the sky view. The offsets in RA and Dec to your target will be calculated and automatically inserted in the acquisition template (Obs. Description tab). For some instruments also the Target tab is automatically updated with the acquisition star coordinates.

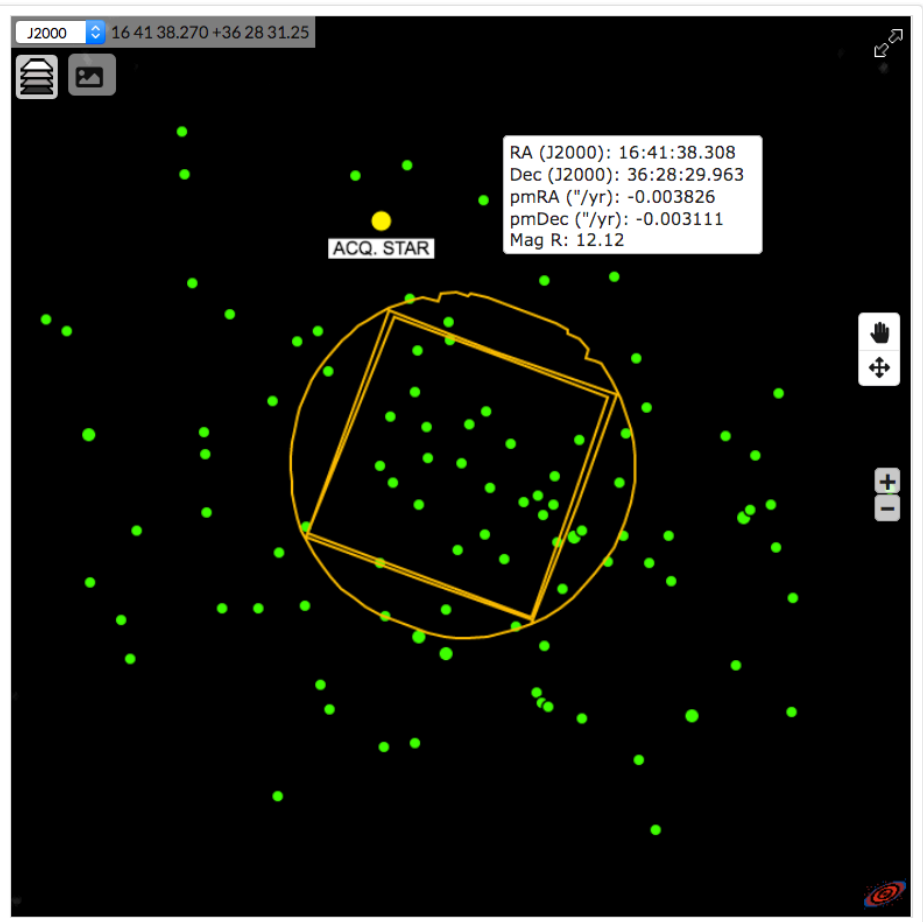
### Acquisition Star

Right Ascension	Declination	Mag
<input type="text" value="16:41:43.363"/>	<input type="text" value="36:28:44.748"/>	<input type="text" value="12.6"/>

### Blind Offset

<input type="text" value="20.903"/>	<input type="text" value="64.034"/>
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[Clear acquisition star](#)



# Observing Offsets

Obs. Description
Target
Constraint Set
Time Intervals
Finding Charts
Ephemeris
Target Visibility
ObsPrep

Pointing
Blind Offset
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i Optional. Select a science template to visualize and specify observing offsets. Updated offsets are automatically inserted in the corresponding science template.

Sky coordinates
 Detector coordinates

RA	Dec	Rotation	Type	
<input type="text" value="-11.155"/>	<input type="text" value="5.628"/>	<input type="text" value="0"/>	<input type="text" value="O"/>	✕
<input type="text" value="50.317"/>	<input type="text" value="9.115"/>	<input type="text" value="45"/>	<input type="text" value="S"/>	✕
<input type="text" value="-52.002"/>	<input type="text" value="53.021"/>	<input type="text" value="45"/>	<input type="text" value="O"/>	✕
<input type="text" value="-58.763"/>	<input type="text" value="-5.412"/>	<input type="text" value="45"/>	<input type="text" value="O"/>	✕
<input type="text"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="O"/>	+

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16 41 40.840 +36 28 8.34

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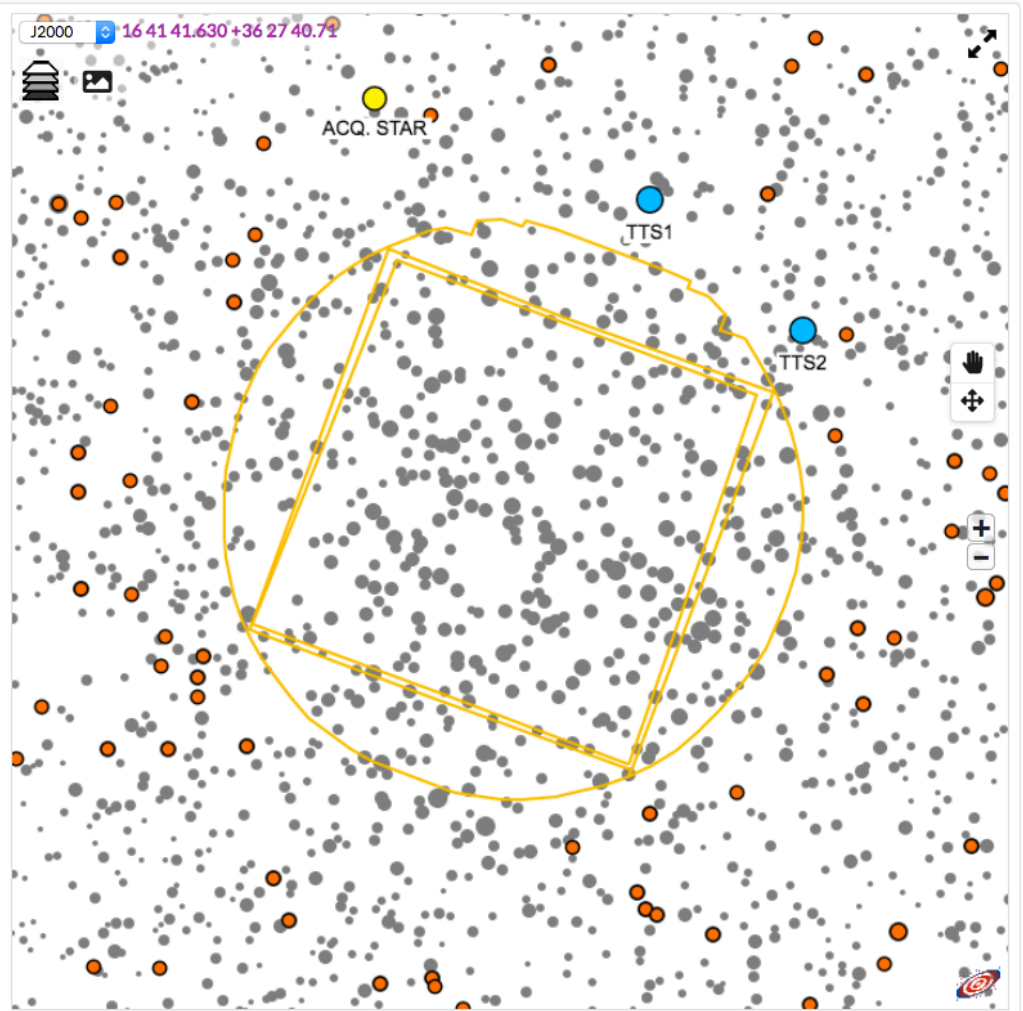
# Adaptive optics

Obs. Description
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**i** Select one or two TTS stars from the candidates shown in the sky view.

RA	Dec	Mag R	
16:41:39.827	36:28:29.027	11.67	✘
16:41:37.847	36:28:08.829	12.46	✘



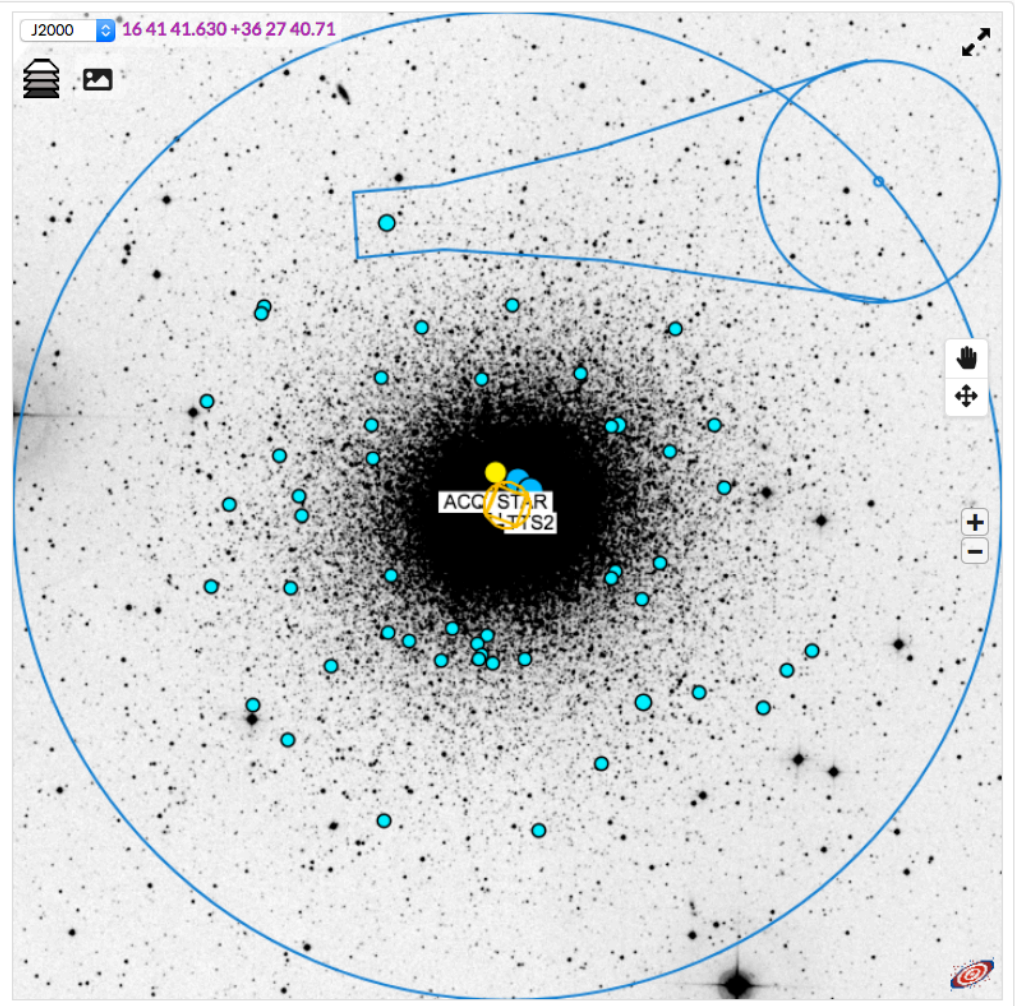
# VLT guide stars

Obs. Description
Target
Constraint Set
Time Intervals
Finding Charts
Ephemeris
Target Visibility
ObsPrep

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Optional. Select one VLT guide star from the candidates shown in the sky view. Make sure your science field is not vignettted by the guide probe arm (change position NEG to POS if needed).

RA	Dec	Mag R	Position
16:42:01.064	36:36:50.491	11.43	NEG



# Validation

## ■ The tool verifies that:

- The blind offset is compatible with the VLT GS
- The observing offsets are compatible with the VLT GS
- The observing offsets (object) are compatible with the TTS/NGS

● Sky coordinates      ○ Detector coordinates

RA	Dec			
50.317	9.115			
-57.539	-3.827	0	○	✘ !
-57.468	-36.001	0	○	✘
28.425	107.403	0	○	✘ !
		0	○	+

Offset not compatible with TTS #1  
Offset not compatible with TTS #2

Pointing    Blind Offset    **!** Observing Offsets    **!** AO Stars    VLT Guide Stars

Select    TTS not compatible with offset #2 in template #1  
TTS not compatible with offset #4 in template #1

RA			
16:41:39.827	36:28:29.027	11.67	✘ !
16:41:37.847	36:28:08.829	12.46	✘ !



# Customization

- The vast majority of parameters is configurable and can depend on the Instrument/OB/template:
  - Magnitude to be queried for TTS/NGS/acquisition stars
  - Search radius (area) for TTS/NGS/acquisition stars
  - Offset conventions
  - Template keywords
  - ...
- There is no concept of instrument mode
- Instrument specific features can be added in dedicated tabs:
  - MOONS: fiber positioning
  - MICADO: AO performance

# Supported instruments

- **MUSE**
- **HAWK-I**
- X-SHOOTER
- ESPRESSO
- UVES
- **VISIR**
- CRIRES+ (commissioning)

# Future developments

## ■ 2020:

- Finalize CRIRES+
- Add support for ERIS
- Implement the microservice infrastructure and integrate it with the tools from the consortia (MOONS)
- Improve usability (user testing)

## ■ 2021+:

- Support for more VLT instruments (MOONS...)
- Support for ELT instruments

<https://www.eso.org/p2demo>