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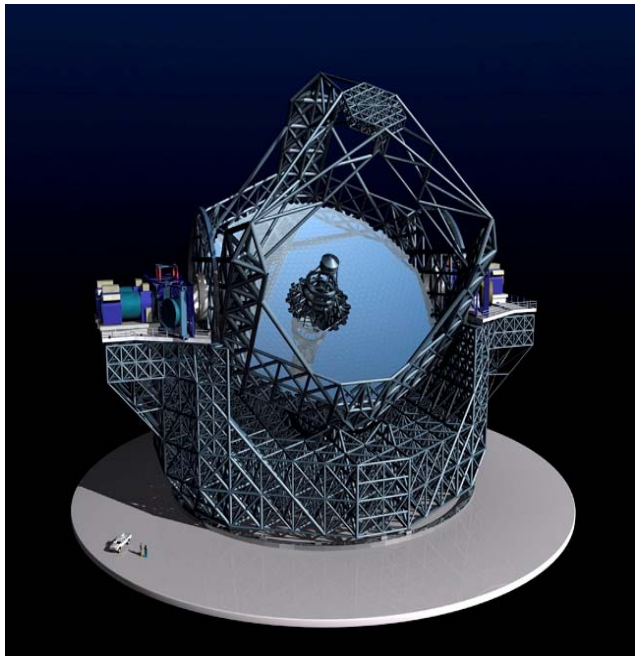
SEVENTH FRAMEWORK PROGRAMME

Introduction to the Workshop

Isobel Hook

- Summary of Science WG and DRM work so far
- Goals of the Workshop



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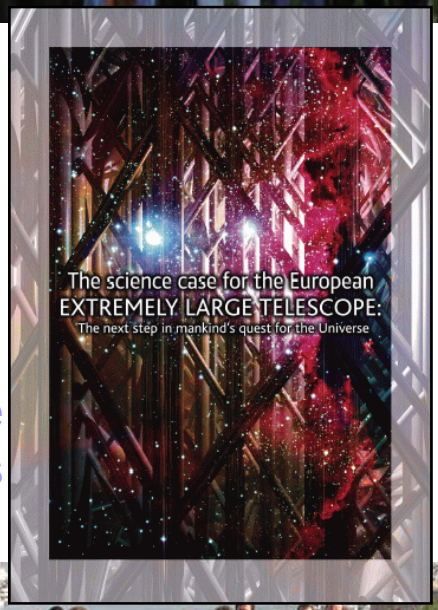
ELT science case development in Europe

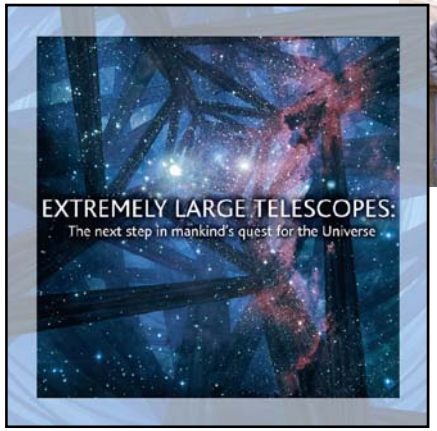
Florence 2004

OPTICON



Science case documents

Marseilles 2003



Marseilles 2006

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E-ELT Science Working Group

Marijn Franx (co-Chair)
Isobel Hook (co-Chair)
Bruno Leibundgut
Mark McCaughrean
Eline Tolstoy
Andrea Cimatti
Hans-Uli Kaeufl
Rafael Rebolo
Didier Queloz
Vanessa Hill

Stephane Udry
Fernando Comeron
Jacqueline Bergeron
Wolfram Freudling
Markus Kissler-Patig
Hans Zinnecker
Arne Ardeberg
Piero Rosati
Martin Haehnelt
Raffaele Gratton

With thanks to previous members

Peter Shaver
Bob Fosbury
Willy Benz
Magda Arnaboldi

- Produced first report April 2006
- Provides scientific input to the Project
- Provides a link with the community
- Has begun work on a DRM

OPTICON

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European ELT SWG "Prominent" Science Cases

- Exo-planets
  - Direct detection
  - Radial velocity detection
- Initial Mass Function in stellar clusters
- Stellar disks
- Resolved Stellar Populations
  - Colour magnitude diagrams
  - Abundances
  - Detailed abundances and kinematics
- Black Holes
- The physics of galaxies
- Metallicity of the low-density IGM
- The highest redshift galaxies
- Dynamical measurement of the Universal expansion

- Used as input to DRM
- Selected from a larger set of cases
- Not complete
- Covers parameter space

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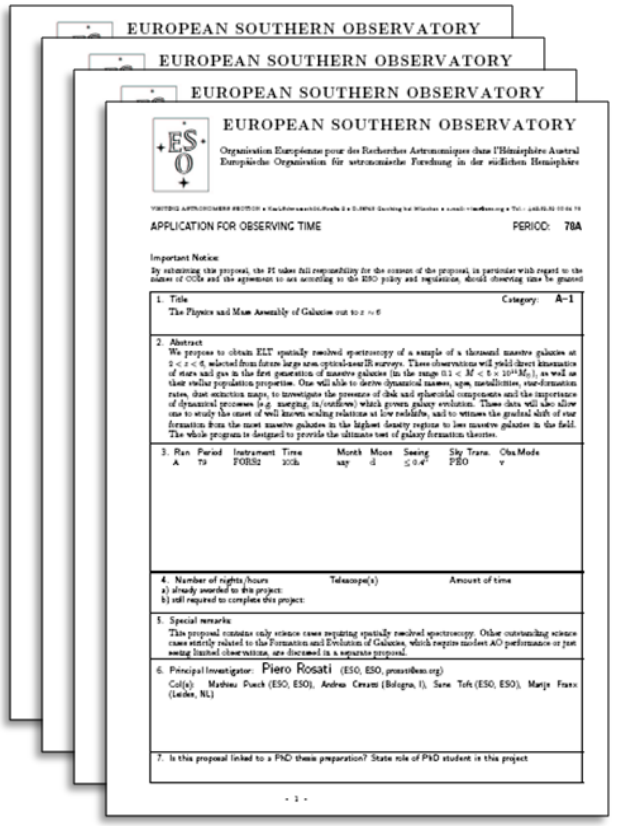
EUROPEAN SOUTHERN OBSERVATORY

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APPLICATION FOR OBSERVING TIME PERIOD: 78A

SWG has produced proposals (with community input)
3 Demo cases were selected to start things off...

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SEVENTH FRAMEWORK PROGRAMME

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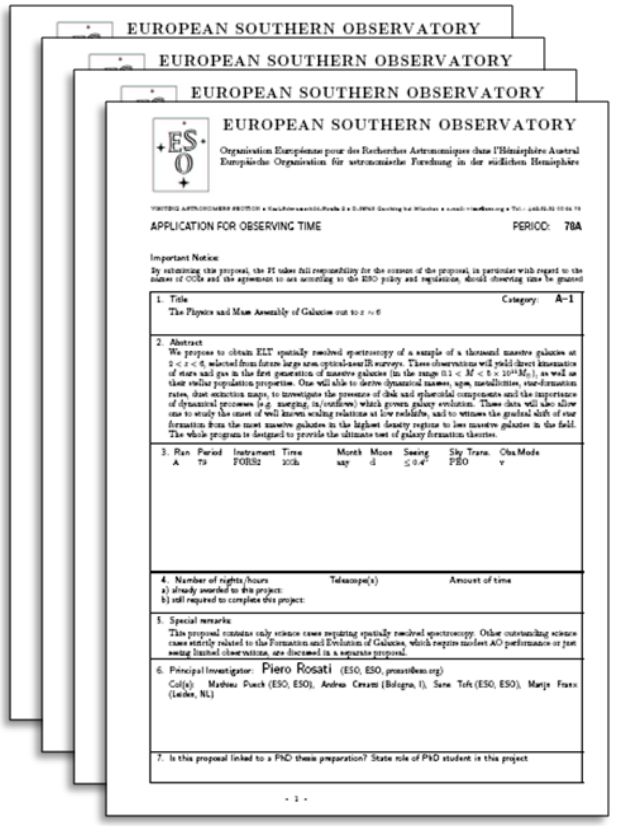
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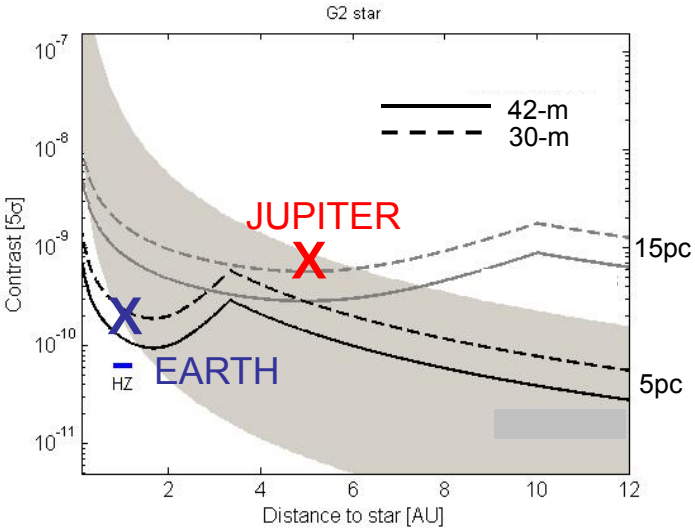
The Design Reference Mission (SWG + ESO)

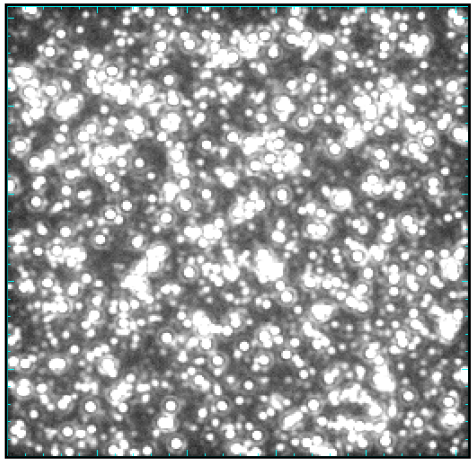
- DRM Goals
  - Produce a set of science proposals and simulations
  - Assess science output and assist with tradeoffs
- Starting with 3“Demonstrator cases” (well underway)
  - Direct Detection of Exo-planets: extreme contrast extraction
  - Stellar populations: I-K Colour-Magnitude Diagrams
  - Galaxy mass assembly: multi-IFU resolved Spectroscopy
- Then a wider set (based on prominent cases)
  - 17 observing proposals completed

DRM work areas (cont); current status

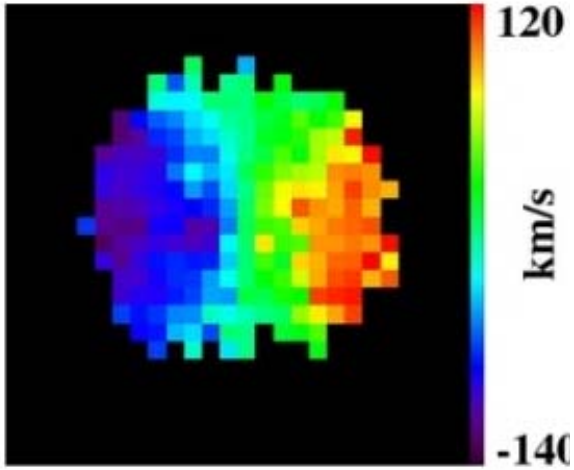
- 3 Demo cases have completed first iteration



Exo-planets
Extreme contrast detection
(EPICS team)



Stellar populations
Imaging in crowded fields
(J. Liske – ESO)



Physics of high-z galaxies
IFU observations
(M. Puech - ESO)

  - Issues remain – topics for this workshop

- Need to simulate a wide range of observations
  - Remaining ~14 proposals

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ELT "Preparatory Phase" WP04000

- The "ELT Preparatory Phase" program is been funded by EU FP7
- Includes WPs on (e.g.) financial arrangements, industrial links, international cooperation & some technical aspects for future upgrades
- Includes a WP to work on the DRM
  - WP manager : I. Hook, Deputy J. Liske
  - 2 year period: 2008-2009
  - Budget of ~ 1M Euro to fund meetings and staff

Design Reference Mission WP; Objectives

- Maintain alignment of the E-ELT project with the scientific aspirations of the community
  - Further enhance community involvement in the E-ELT project
- Build a set of simulated astronomical observations followed by scientific analysis of the results
  - an essential aid to the E-ELT Project in making critical design-related decisions
- Explore synergy between the E-ELT and other large astronomical facilities
- **Milestones:**
  - M1: 1st DRM Community Workshop (T_0 + 5)
  - M2: 2nd DRM Community Workshop (T_0 + 17)

Goals and topics for this Workshop

- Review simulation work already done
  - as part of DRM
  - by instrument teams
  - by others in the community
- Discussion
  - Are there tools/techniques that we could share?
  - Do the simulation inputs agree?
  - Are we making correct / consistent assumptions?
  - Do the results of simulations agree?
  - Are there conclusions that should be fed back to the ELT project?
- Plan future work

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E-ELT science case – next steps

- DRM development:
  - Finish Demo cases
  - Expand simulations to other cases (already started)
    - High-z galaxy imaging
    - Stellar disks
    - Inter galactic medium
  - Prepare simulations for different site parameters
- Sep 2008: JENAM – E-ELT science session
- Q2 2009: Community Call for Proposals + Workshop
- End 2009: Updated Science Case with simulations

The End