

European Extremely Large
Telescope:
unde et quo

Florence, november 2004

US - ELT

- Much planning effort in US, leading to Decadal Review recommendation for a US national 30-m class facility -- 2001
- Public/private histories continue;
- Keck partners → CELT
- Other private groups → GMT (20m)
- AURA → GSMT (30m, post-Gemini)
- LAT: Cornell/Caltech 25m for far-IR, near ALMA
- Money a challenge for all groups?
- MATCH JWST a driver → 2015?

Canada - ELT

- Serious plans and study post CFHT
- → VLOT ideally a 20m fast

- Built a national community (ACURA) and have political support for serious funding

- Realise they need partners to be viable
- → TMT involvement

TMT/GSMT/GMT status

- TMT partnership (Univ Calif, Caltech, ACURA/Canada, AURA) working on a detailed design for a 30m Keck-like.
- Design study partly funded
- Challenge is to merge CELT, GSMT and VLOT studies into a coherent TMT
- Goal is 2015 operations
- Most capital, all operations money still to be identified, NSF presumed
- → US national facility in part?

TMT/GSMT/GMT status ctd

- **GMT partners** (Carnegie, Harvard, MIT, SAO, Texas A+M, UT Austin, U Arizona, U Mich) **post-Magellan, LBT-style**
- **Design fixed: 7 x 8.4m mirrors = 21.5m**
- **Goal is 2015 operation**
- **Detailed design underway**

- **All partners have a history of success on this scale: they will probably build this**

Japan - ELT

- Japan is interested, and expect ELT involvement soon:
- No detailed plans as yet
- National agency reorganisation makes large-project funding less complex than previously
- [various other countries interested, none has much money yet]

European -ELT

- There is a long history, with many active people and ideas in most European countries, starting around the time the VLT was being built:
- Two were dominant in pushing Europe forward
 - Euro-50 group at Lund (Sweden)
 - OWL group at ESO

European –ELT ctd

- Realisation in several national communities and OWL group we had to get active: major meetings started
- Sci case workshops: Backagsog series, Edinburgh 2000, Leiden 2001, Oxford 2003, Marseille 2003, Berlin 2004 (with US), Florence 2004...
- Politics: Bologna 2002 → single FP6 DS
- ESO Council Strategy group → focus

OPTICON ELT meeting

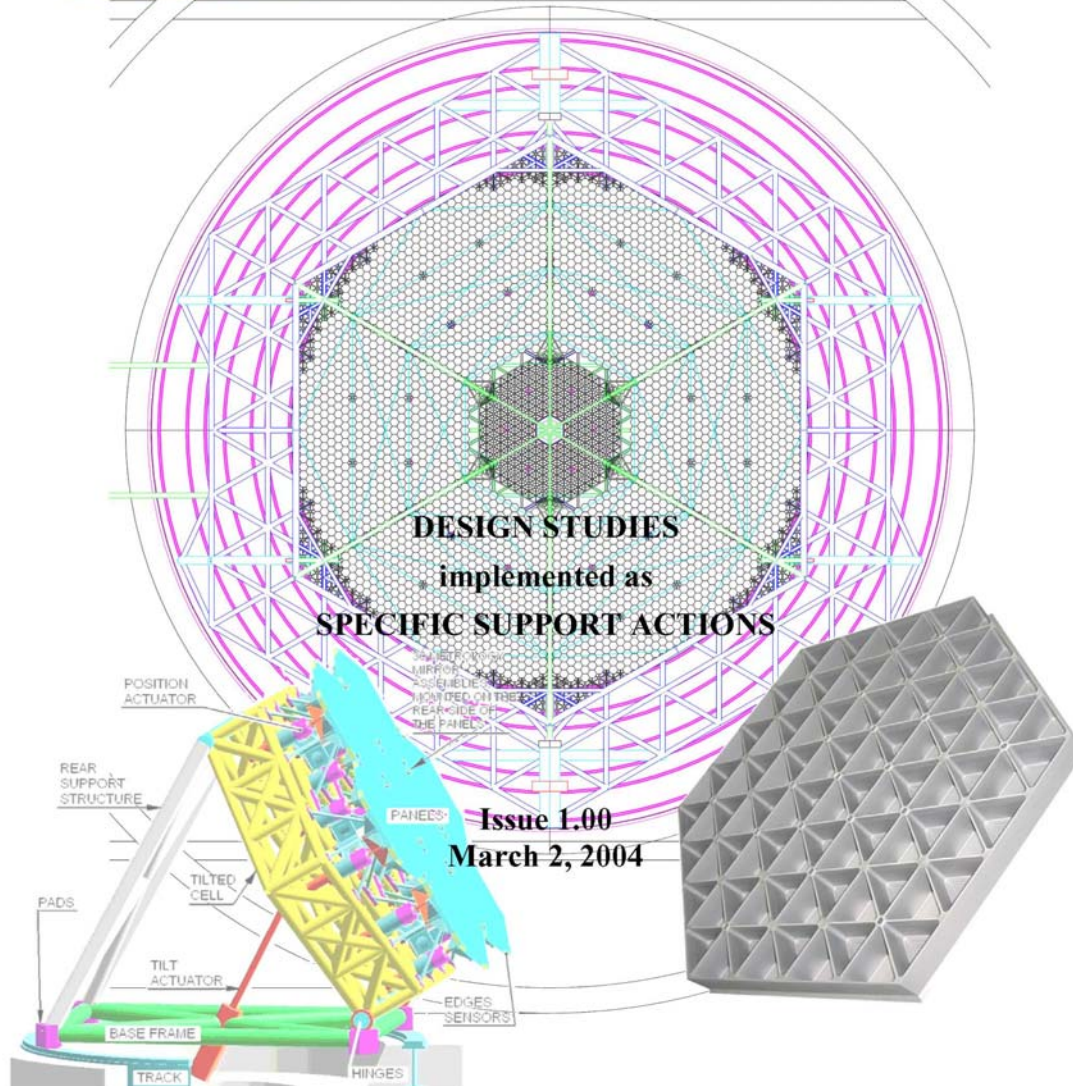


Collaboration within Europe: The FP6 proposal

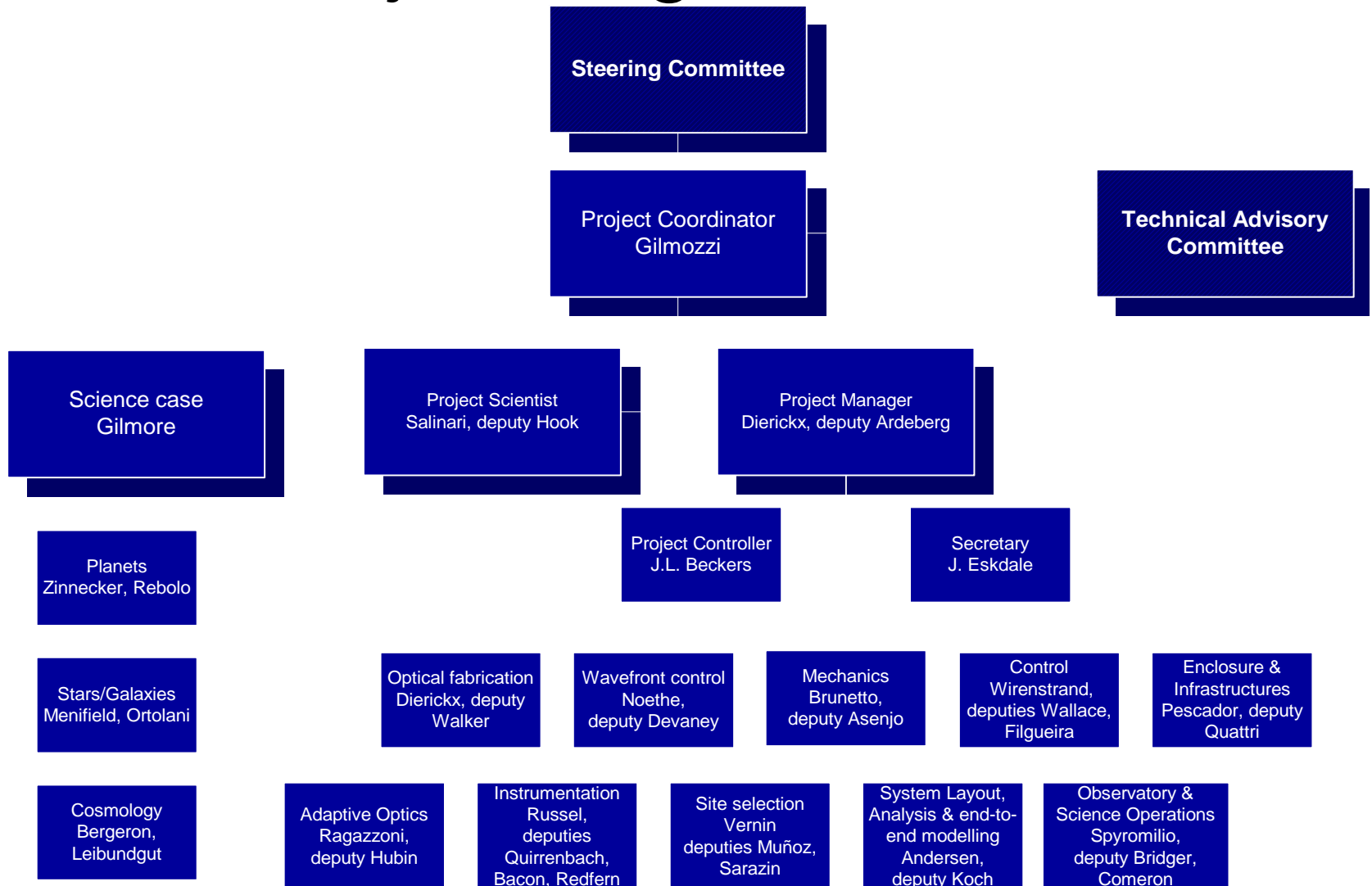
- Foster support and involvement from community
- Expanded community (not 'just' ESO)
- Industrial readiness for an ELT
- Explore more options (R&D with Industry)
- Breadboards, enabling experiments
- Design independent
 - To allow final design to adapt to available technology
 - OWL-specific studies conducted in-house
 - 'OWL' PDR late 2005
- Allows shorter/cheaper Phase B



Technology development programme towards a European Extremely Large Telescope



E-ELT Design Study Project Organization



Global Status

- Slowly growing acceptance inside ESO Council of need for focus and priority: very far from in place yet in ESO
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- Talk to your Council delegate!
- Clear focus on ELT, SKA and astro-particles as next big ground projects in major funding agencies and communities
- Clear desire for global coordination in major funding agencies to deliver all these efficiently

Global Status ctd

- In US, current national strategy that all major science infrastructures will be global: agree on what to build, compete in using it.
- UK-US discussions led to agreement to try to develop a global ground-based astronomy strategy
- Linear Collider model: that led to a global adoption of European technological solution!
- `who speaks for Europe'?

Global Status ctd

- First global meeting to happen Nov 22, London
- Involves the big agencies who will pay for it all, plus the larger community
- US, Canada, Japan, UK, France, Germany, Italy: ESO Council President to represent 'rest of Europe'
- We can hope for agreement to develop an (or several?) ELT(s), SKA, astroparticles, etc, etc eventually: an ELT is first on the list
- We need NOW to be ready, to ensure what we want is on the table → urgent need for a science case, SRD...

What we need now

- At least three things:
- 1) Glossy executive summary for top-level support – draft to be finalised today!
- 2) Major science case for community involvement, and for design study this mtg
- This is a community challenge
- 3) Technical `science-based requirements', derived from 2) above → project scientist team challenge

Glossy summary

- For general use, politicians, agencies...
- → no technicalities – leave them for main case
- Must summarise aspirations greater than 30m, or 30m is all we will get talked about

- Draft has three equal-length sections
- Planets + stars
- Stars + galaxies
- Galaxies + Cosmology

- Any more nice images helpful...

Main science case

- Aim #1 is to build strong community support → comprehensive, complete, ambitious, forward looking
- Aim #2 is to be technically specific, to support the design efforts
- Aim #3 is to identify what we still need to do more on : → a list of the sections not yet written? Required new simulations??

What next?

- Build support, develop the case, add ideas
- IAU Symp (at SALT dedication) Nov 2005
- Plan a special European science meeting?
- Depending on outcome of Nov 22 meeting, develop joint case with US/Canada/Japan and other partners: the science case can be inclusive
- Base it on excellence, not funding shares