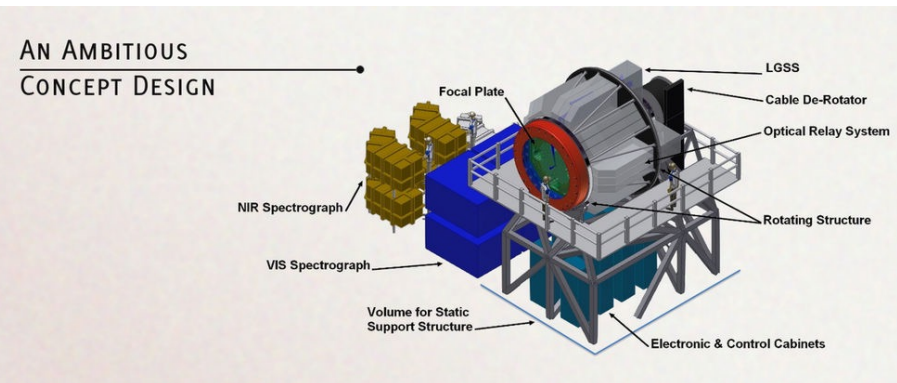
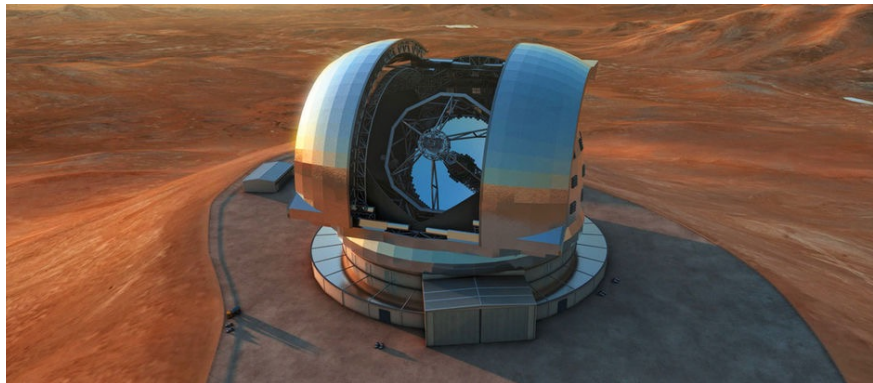


MOSAIC

Italian participation to the science team



BREAKTHROUGH SCIENCE



Elena Pancino

Napoli – ELT meeting – May 2026

Science Team

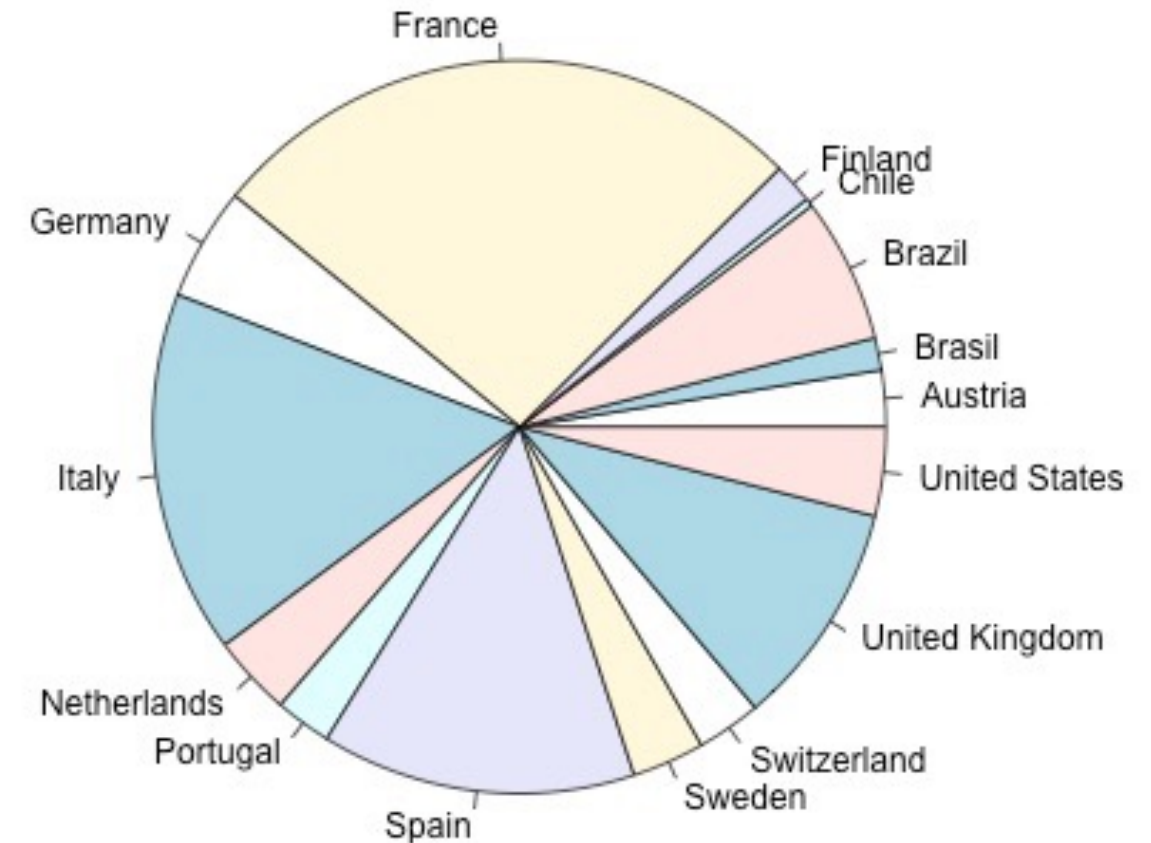


Structure

- The PS team (PS, co-PS, [France/Spain](#))
- Two Channel scientists (NIR, VIS)
- Six SWGs (the last recently created)
- Each with three co-leads

Statistics

- Sci team members: 281 (+10 pending)
- [Italians 45 or 16%](#)
 - 39 from INAF + 6 associated
- SWG4&5 – [Italian leadership](#)



Activities



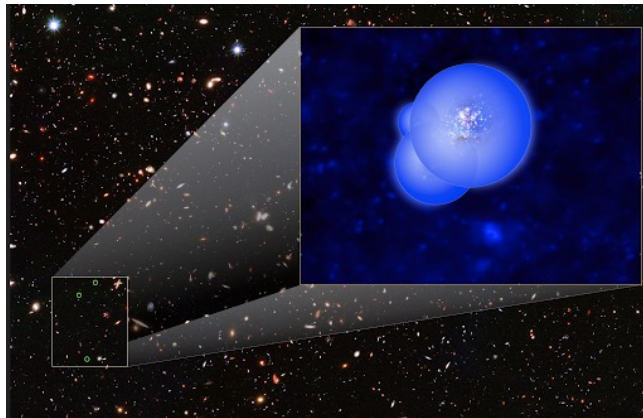
Provide **feedback** in the finalization of the **instrument requirements** and choices

- Through dedicated meetings presenting the choices, followed by polls
- Discussions with the respective SWGs to make informed decisions

Prepare the **SRPs (science reference programmes)** and material for pptx, web...

- Periodically updated to remain in touch with scientific progress
- Now reopened for the preparation of the redbook
- In between a science case and a short observing proposal
- Basis for a later decision on the organization of the GTO time

Science WGs (1,2,3)

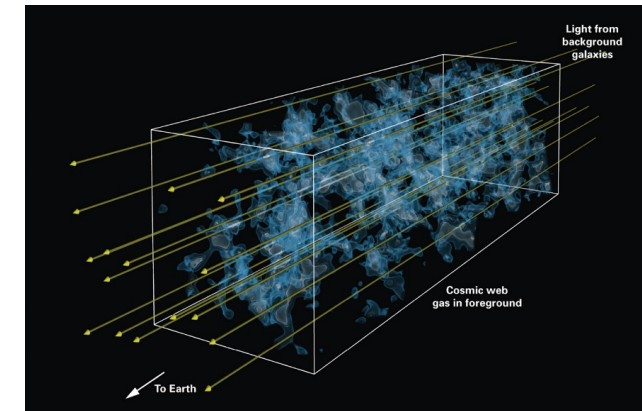


SWG1. First light – studying the very first galaxies (*25 Italians*)

SWG2. Inventory of matter – dark matter profile using galaxies as probes ($z \sim 3$) (*8 Italians*)

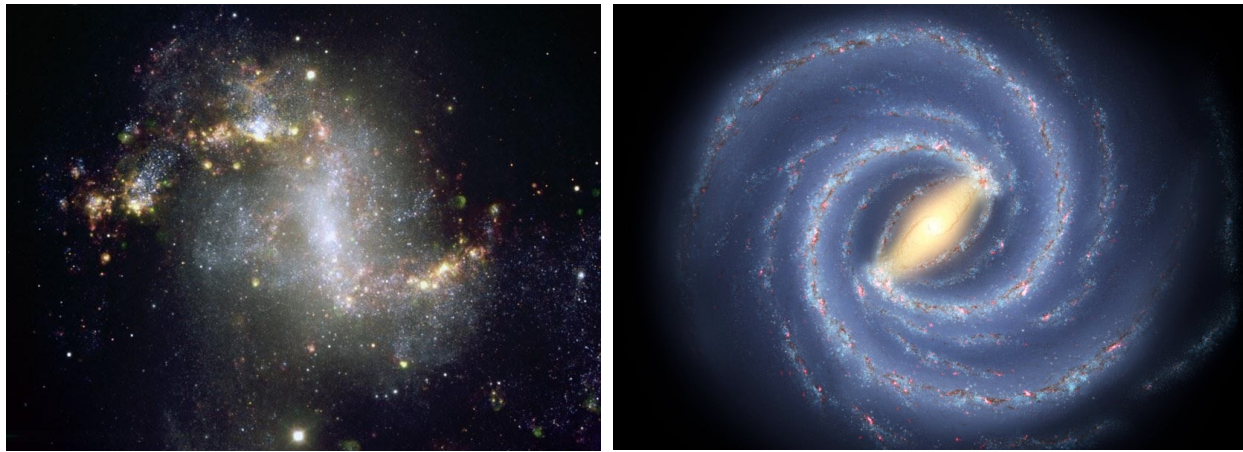


SWG3. Mass assembly of galaxies – hundreds of thousands of galaxies ($z \sim 2-4$) (*25 Italians*)



See Laura's talk!

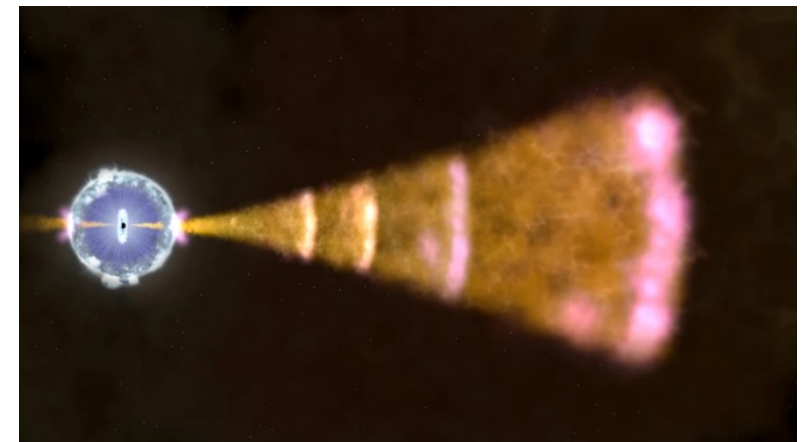
Science WGs (4, 5, 6)



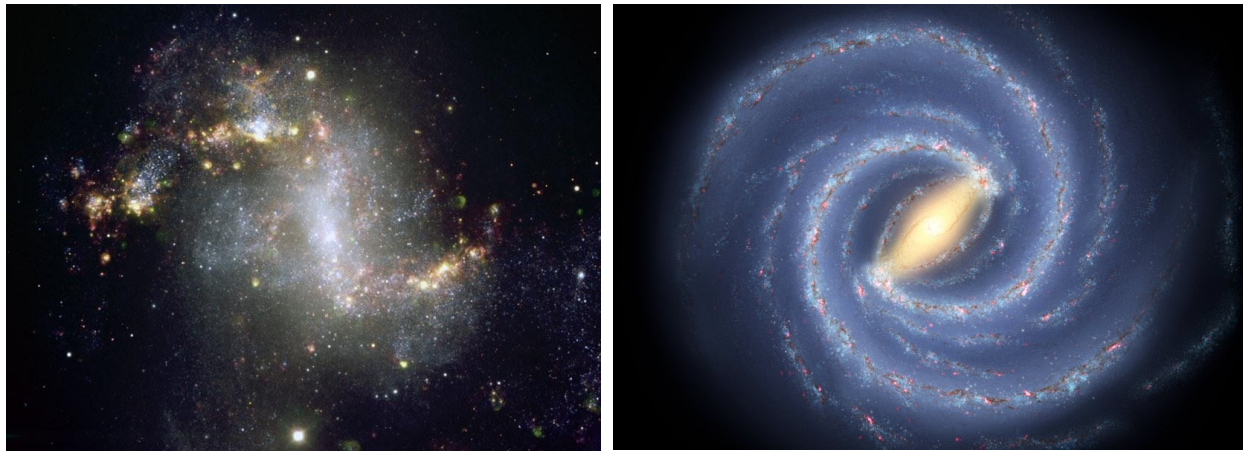
SWG4. Resolved stellar populations – in the LG and beyond (*11 Italians*)

SWG5. Galactic archaeology – reaching the faintest populations in the MW (*9 Italians*)

SWG6. Time domain –
transients and multi-messenger
astrophysics (*1 Italian*)



SWG4&5 situation



SWG 4 & 5. Resolved stellar populations in and beyond the MW

Co-leaders:

Søren Larsen, Elena Pancino, and
Nicolas Nardetto (was B. Lemasle)

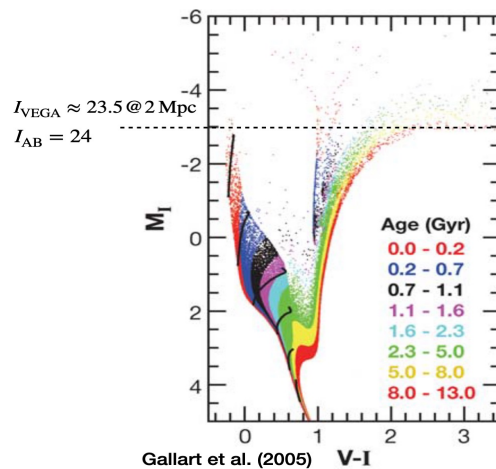
- Only SWG with an Italian (INAF) coordinator
- Only SWG which is the combination of two SWGs
- The SWGs were split again recently and for the redbook

SWG4 science cases

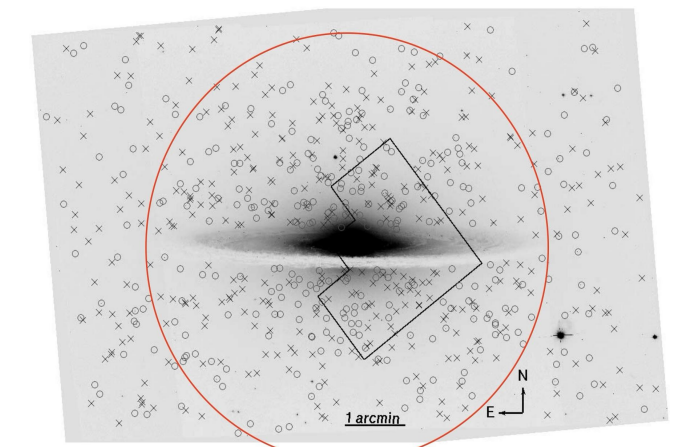
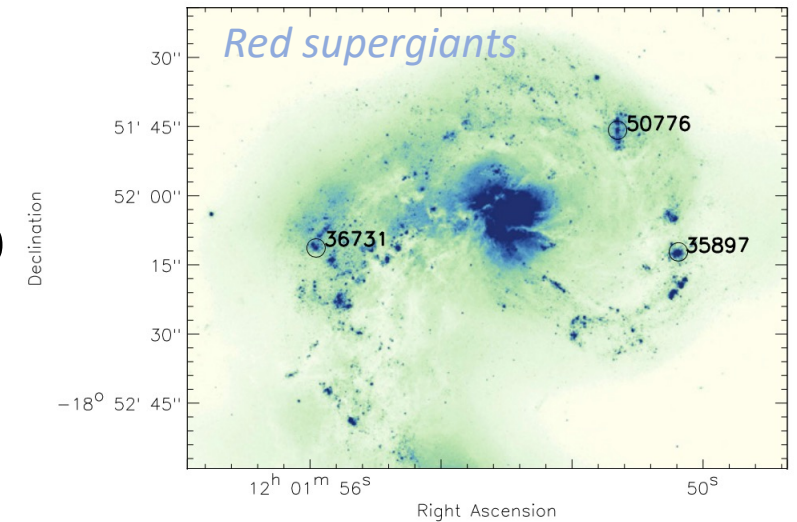
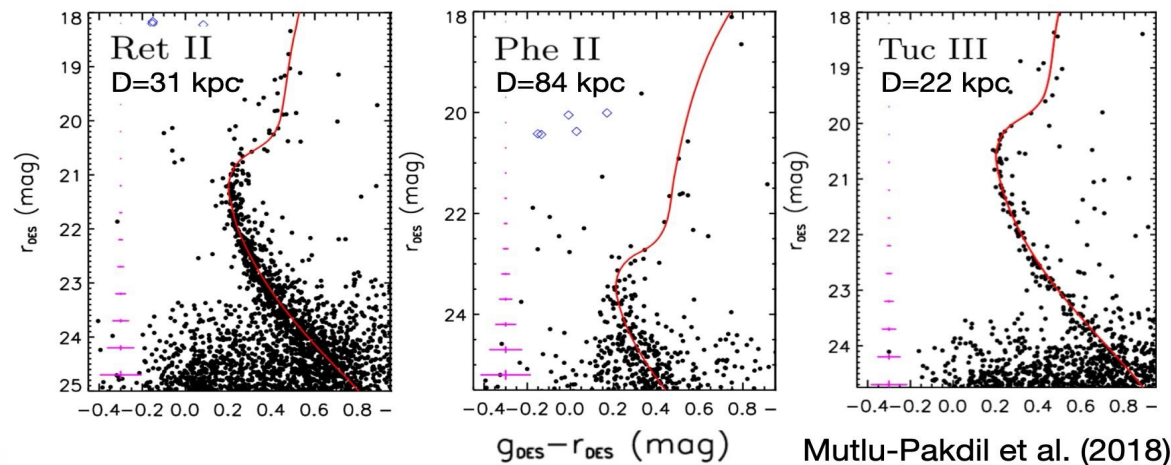


- Kinematics and chemistry of individual stars
- And of unresolved star clusters and bright tracers
- Reaching as far as the Sombrero galaxy and Sculptor group
- Plus distance tracers such as Cepheids and RR Lyrae

Giants in Sculptor



MSTO in Ultrafaint dwarfs



GCs in Sombrero

SWG5 SRP & new ideas



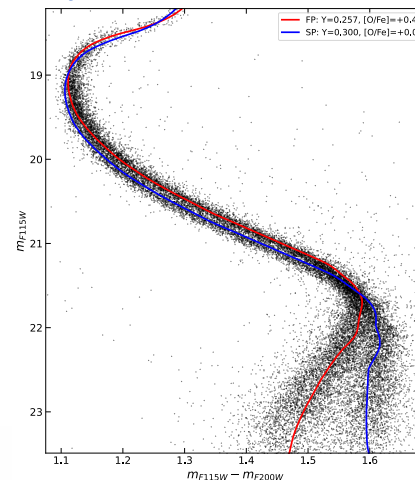
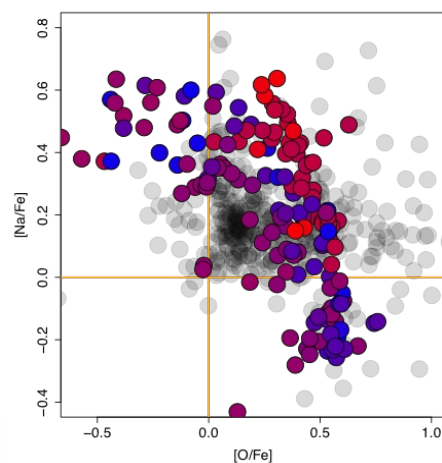
- The **Nuclear Star Cluster** in the MW
- Faint stars in **globulars**, for physical processes, and chemistry

New Ideas:

- Hunting for dormant **stellar mass BH** in star clusters
- Solving the mystery of **multiple MS** and MPs in globulars)



MPs in GCs (idea by D. Alvarez)



Stellar mass BH (idea by S. Saracino)



Conclusions



- The Mosaic science team is very active and well organized
- The Italian participation is strong and also very proactive
- Keep an eye on the Mosaic redbook which should come out next year
- For more information: <https://www.mosaic-elt.eu/>

Thank you for your attention!