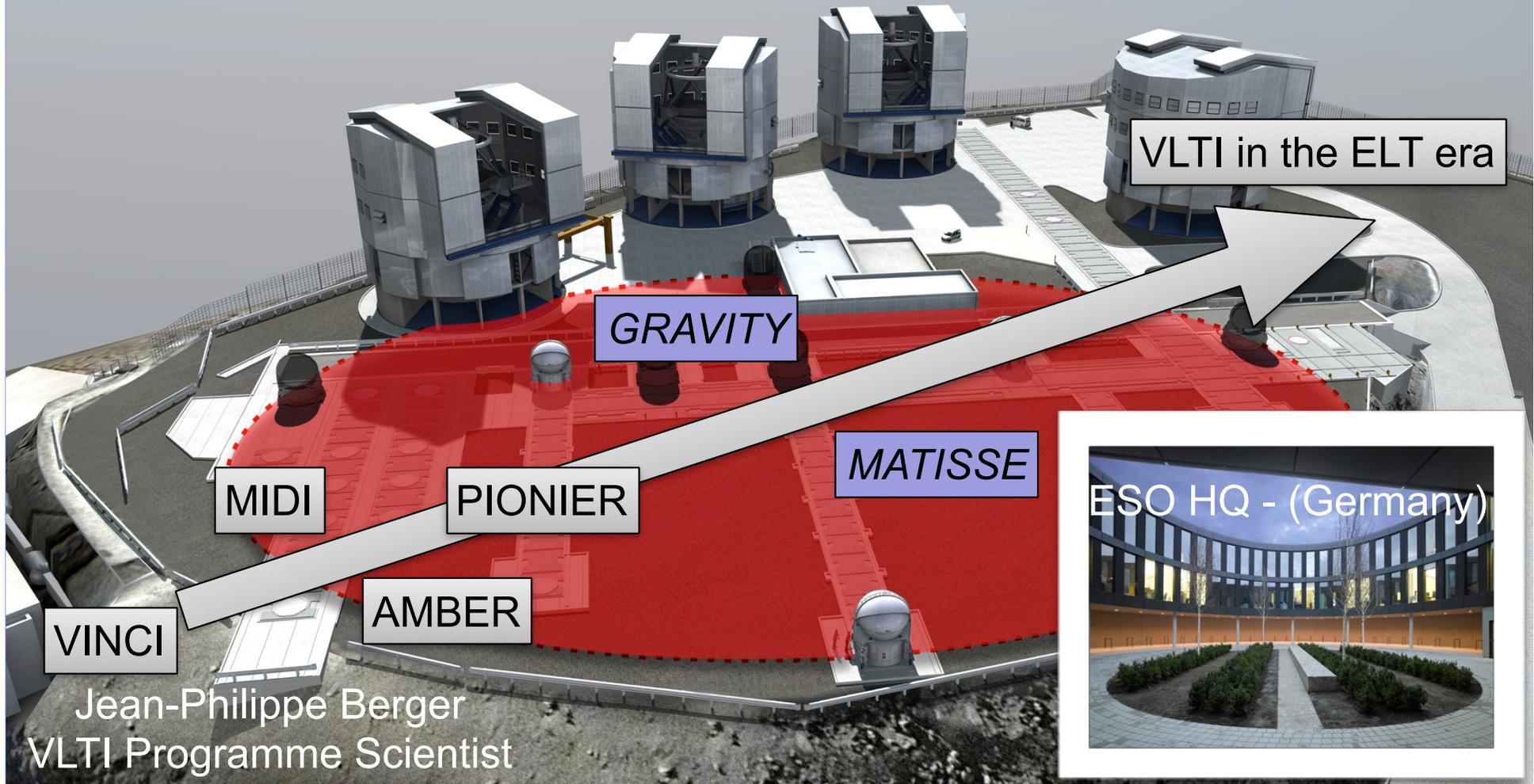




VLT in the next decade

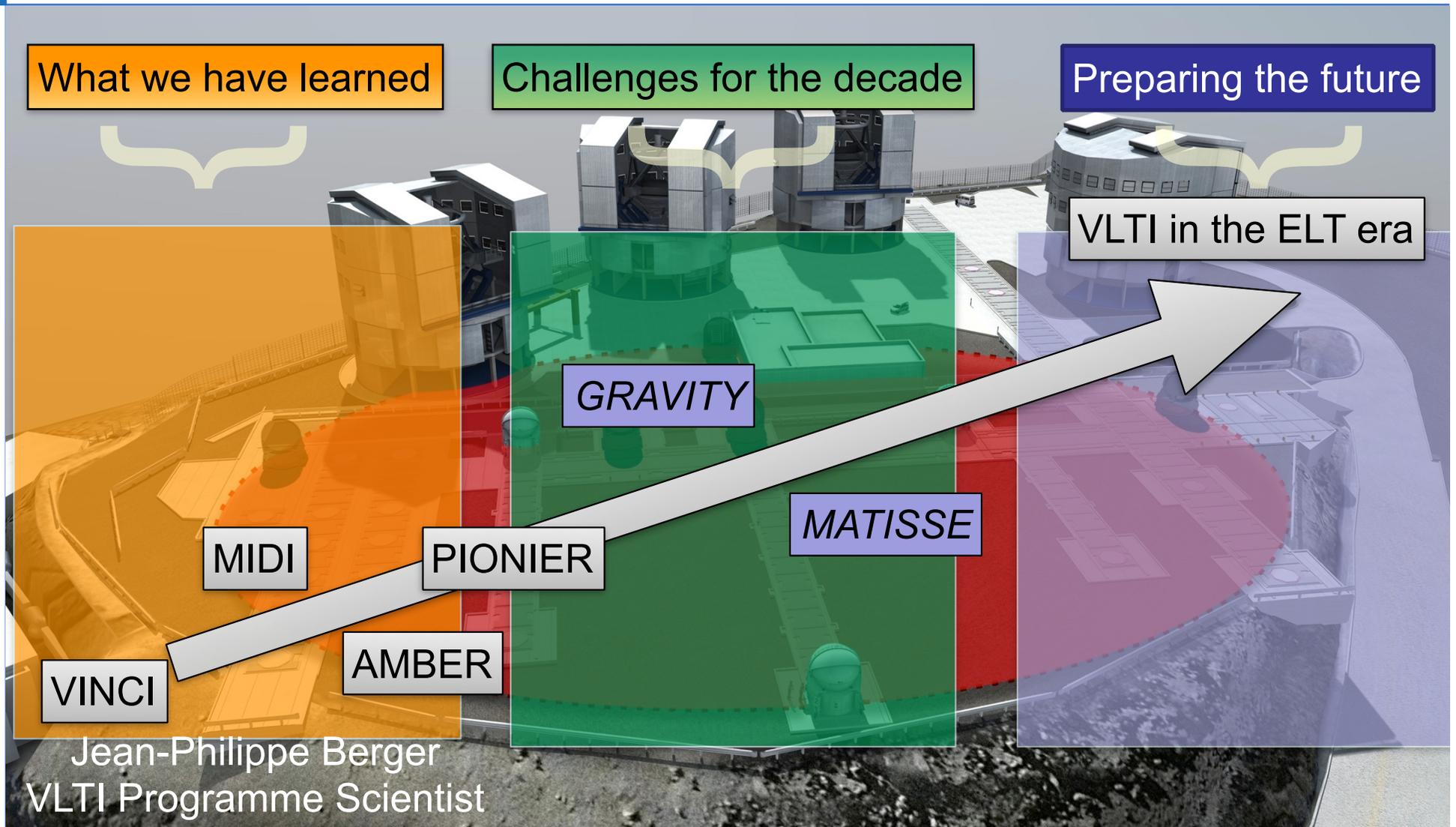
ESO Paranal (Chile)



Jean-Philippe Berger
VLTi Programme Scientist



Science vision for the VLTi





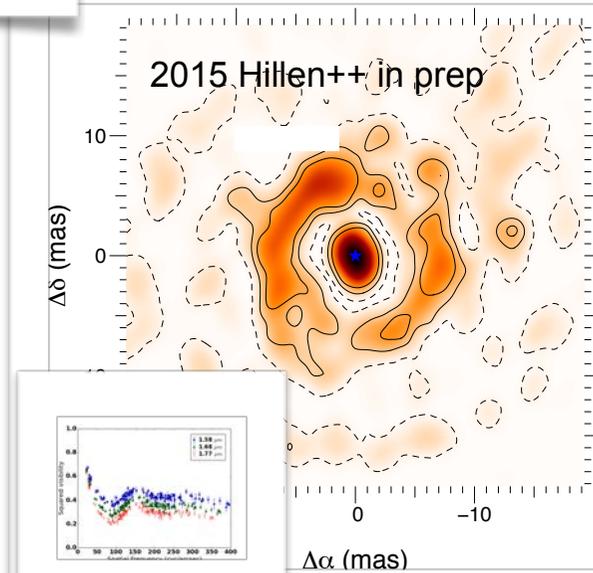
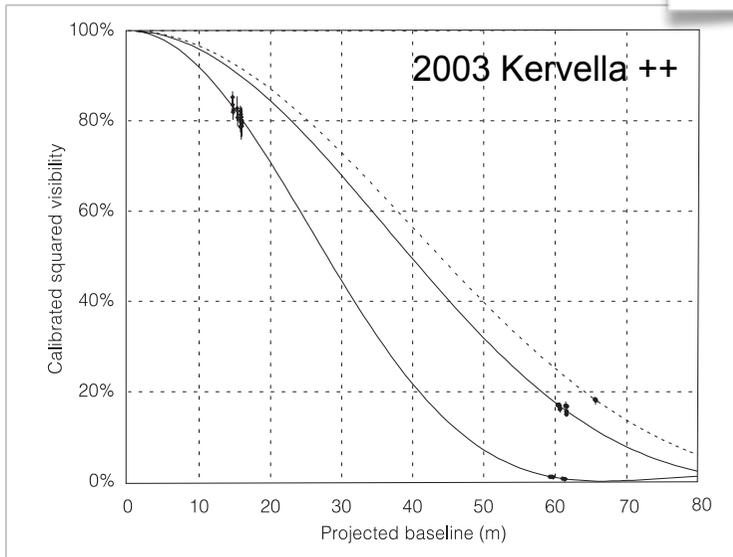
WHAT WE HAVE LEARNED

The VLTI went from snapshot to imaging

SNAPSHOT



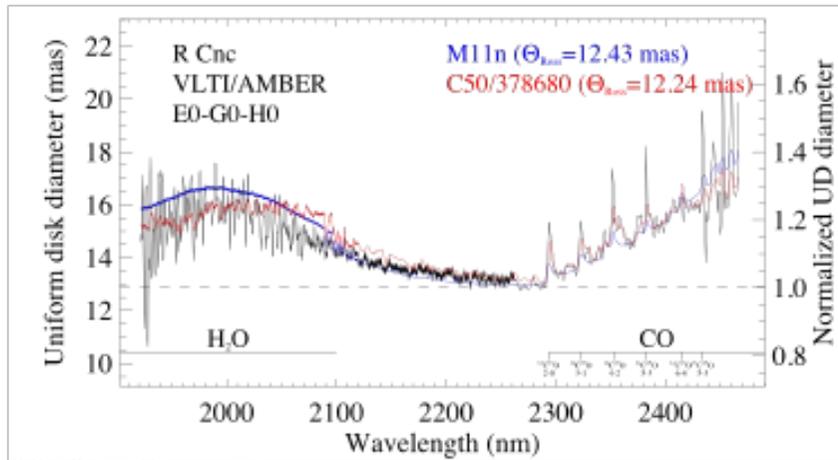
IMAGING



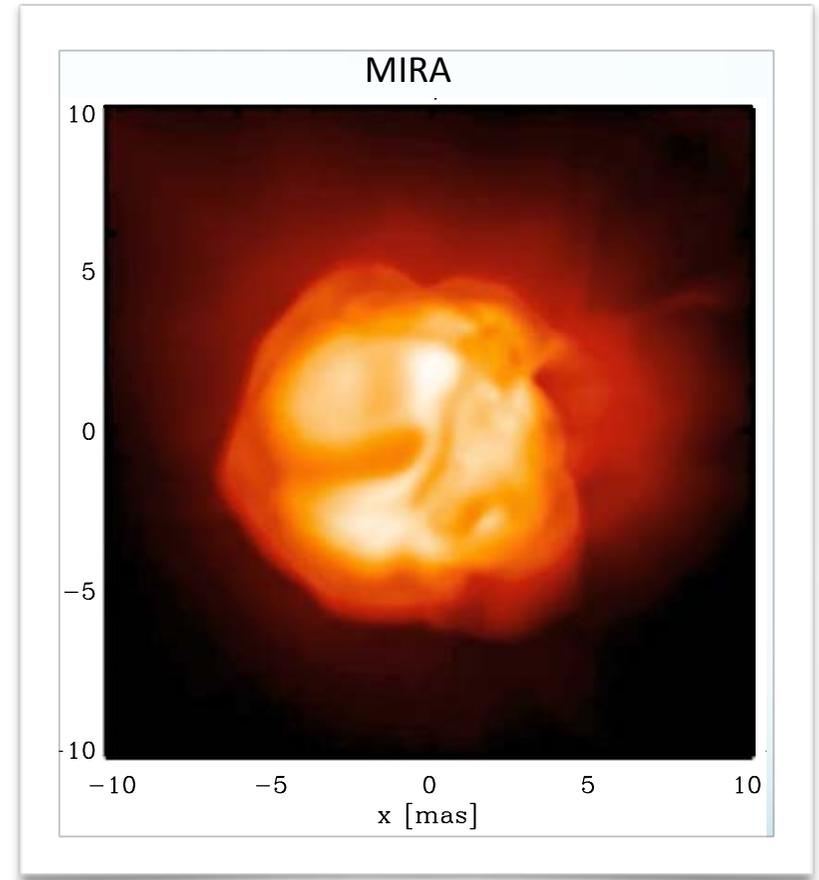
- Both have their scientific interests: **scheduling and operations heavily affected**
- Temporal monitoring not so easy at VLTI
- Not many surveys until PIONIER.

What we have learned

Spectro interferometry was enabled



2013 Wittkowski ++



But was severely limited because the VLTI lacked robust phasing

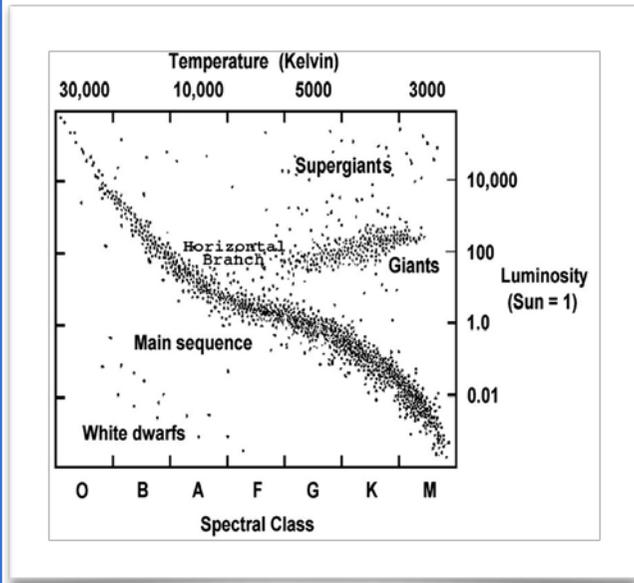
What we have learned



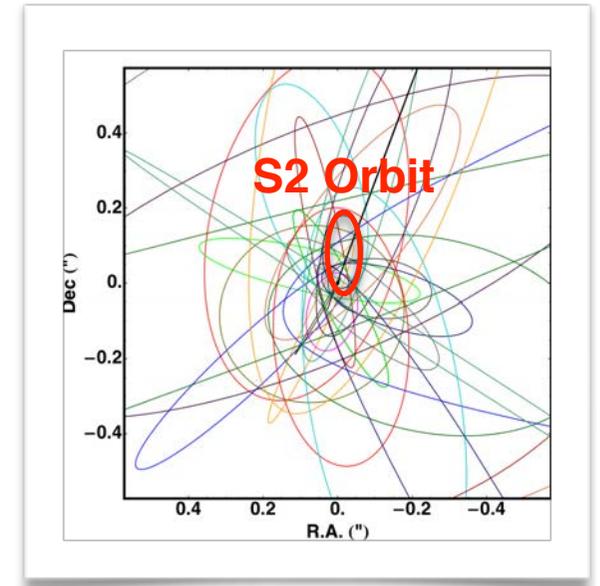
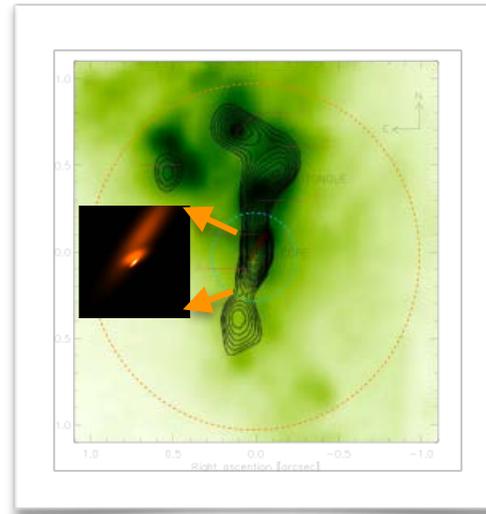
CHALLENGES FOR THE DECADE

The scientific ambition is multiple

Understand the structure of AGN nuclei



Understand how stars evolve and interact with their environment



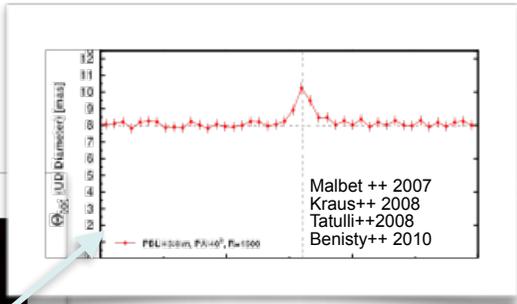
Understand GRAVITY

Combination of surveys, monitoring and detailed imaging & astrometric campaigns

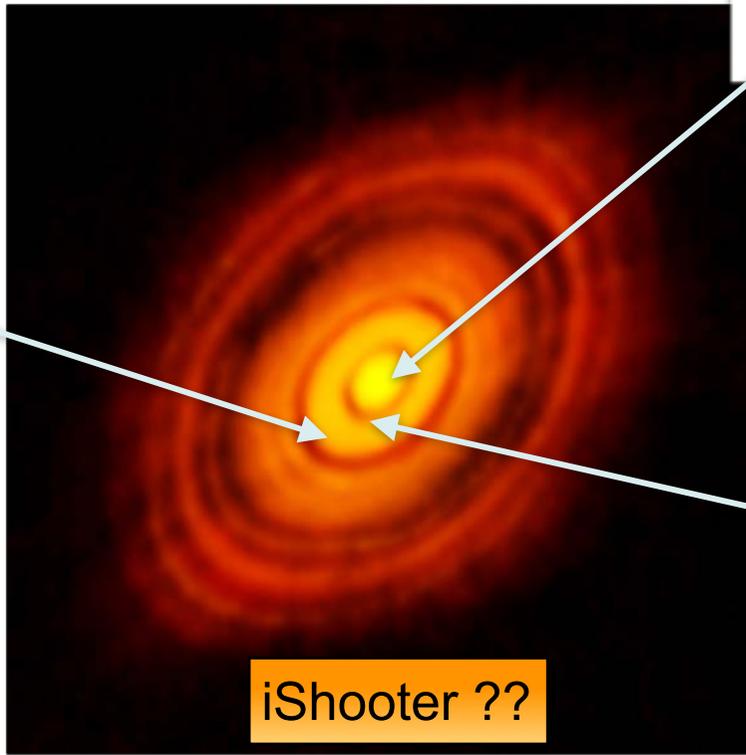
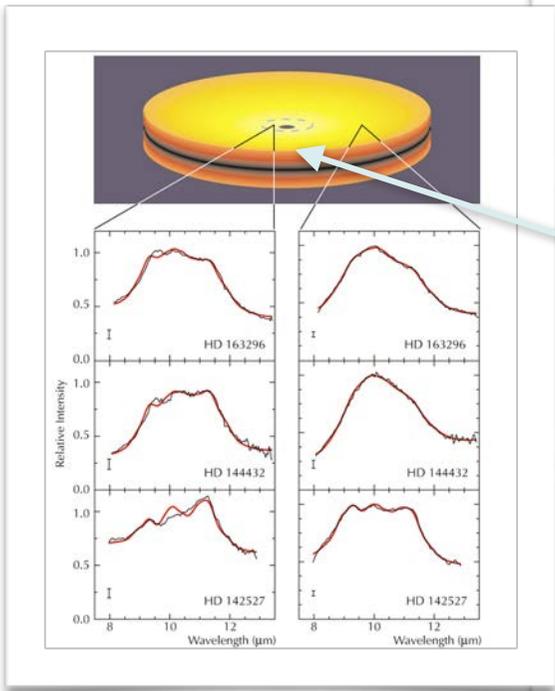
Challenges for the decade

Couple imaging and spectroscopy and use **simultaneously** the VLT instruments

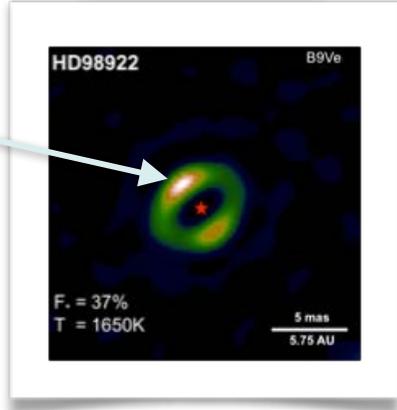
GRAVITY



Leinert ++ 2004
Van Boekel ++ 2003



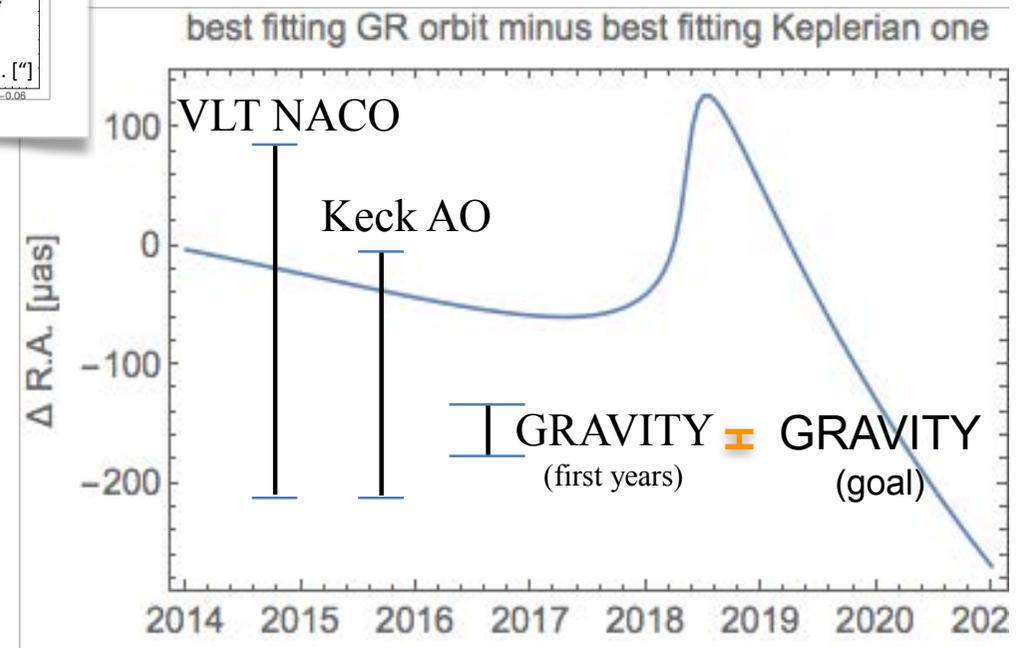
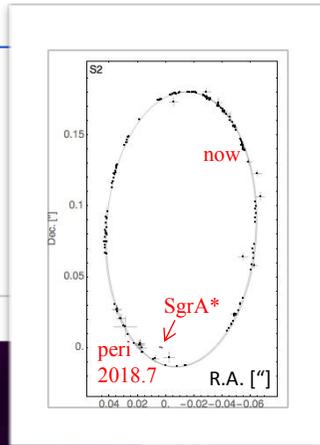
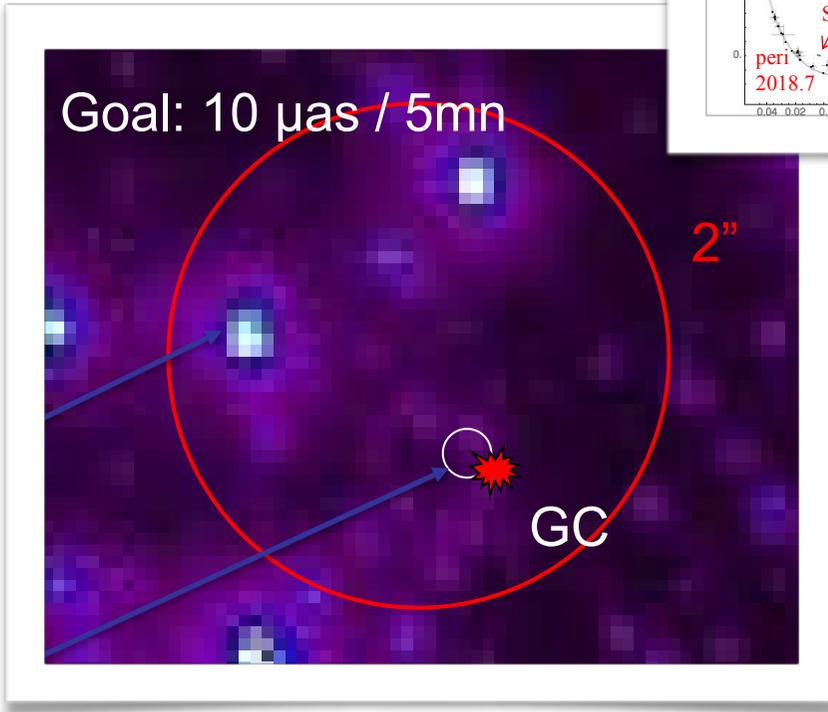
PIONIER



MATISSE

Challenges for the decade

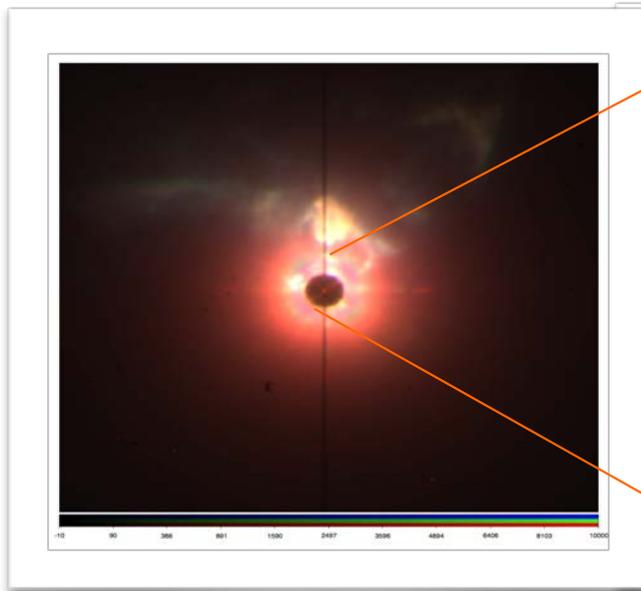
Enable astrometry



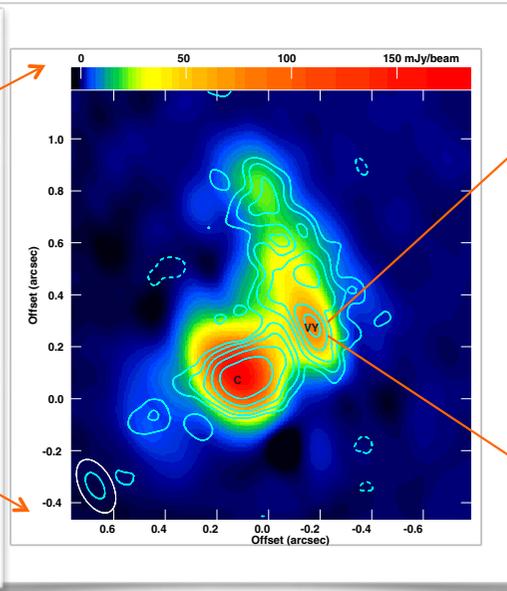
Challenges for the decade

Expand the user base and join synergies

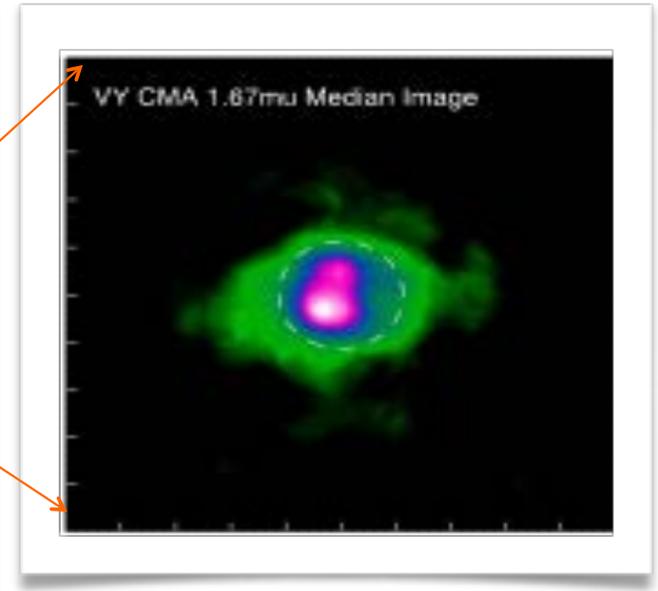
Develop VLTI expertise centers: Provide VLTI users with support in preparing their proposals, reducing their data and reconstructing images



SPHERE



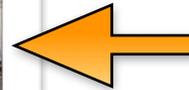
ALMA



PIONIER

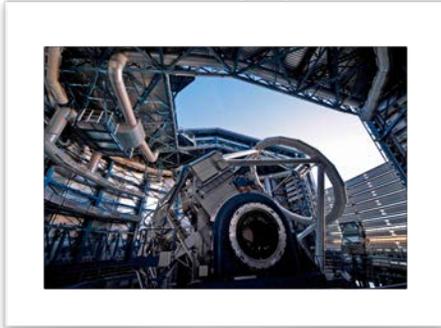
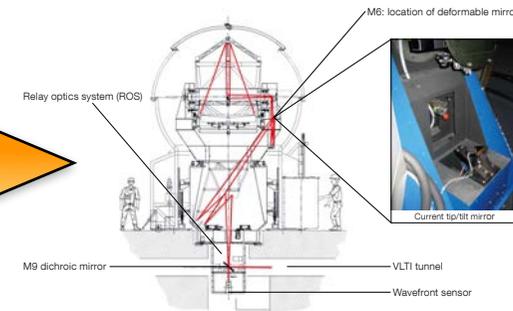
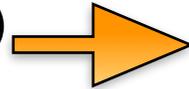
Challenges for the decade

Technical and operational challenges



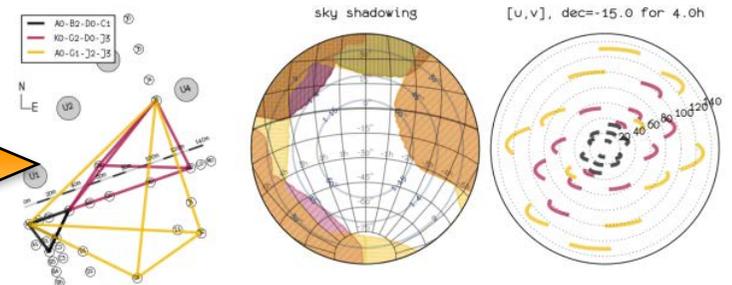
Transforming the lab

- All telescopes with star separators
- AO for the Auxiliary Telescopes (NAOMI)
- IR wavefront sensors for UT telescopes
- Baseline monitoring (astrometry)



Improve UT perf: vibes + AO

Accomodate all scientific requests:
snapshot, imaging, temporal
monitoring. **Service mode**



Challenges for the decade



PREPARING FOR THE FUTURE



An ongoing ESO-community prospective effort

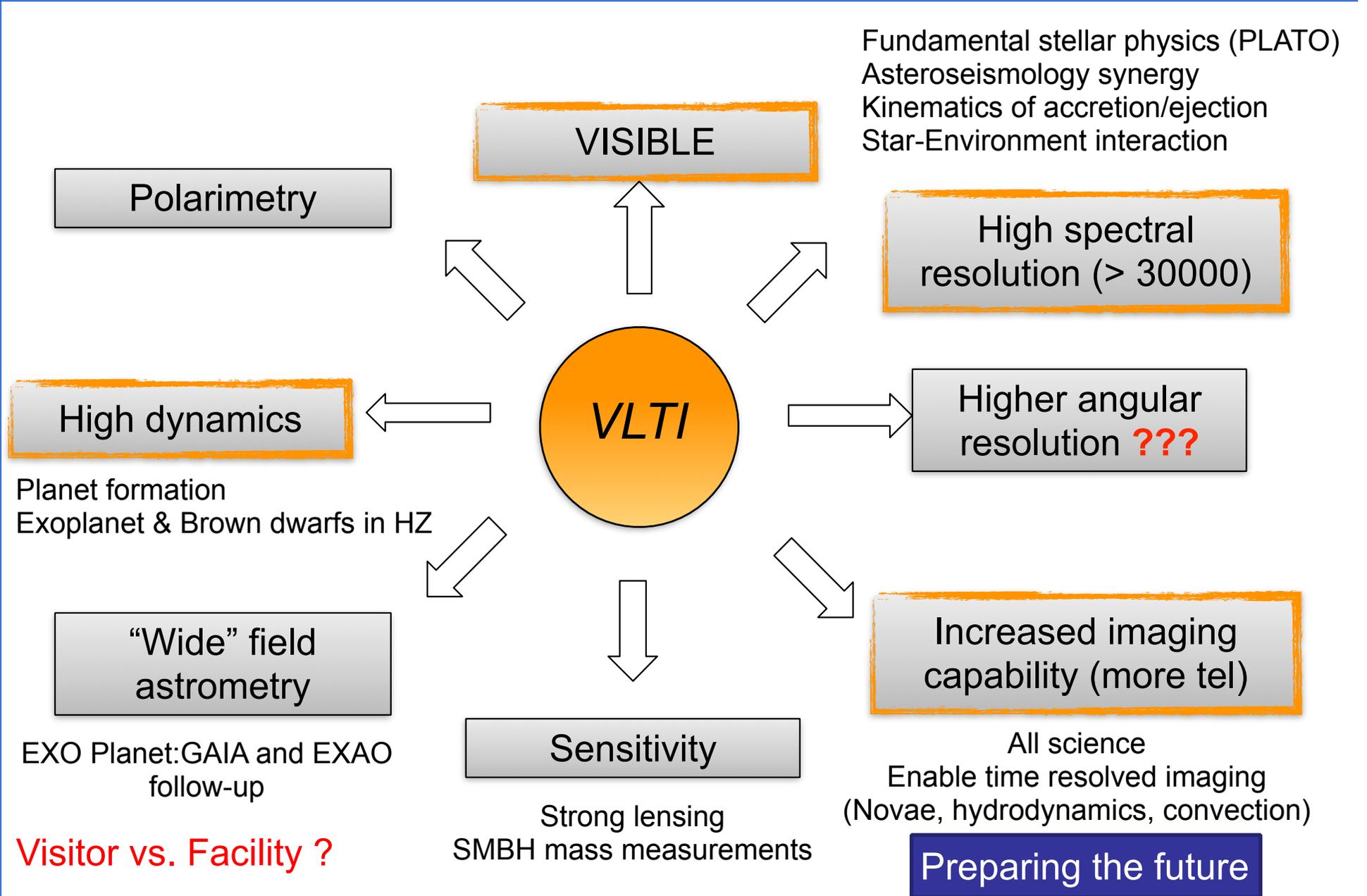
How VLTI can remain relevant in the ELT era ?



VLTI community days (EWASS June 2015)
Interferometry white book

Preparing the future

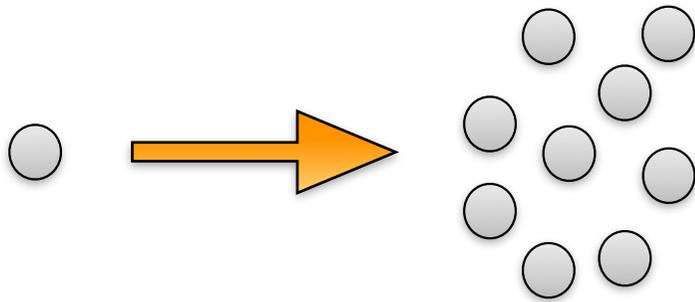
There are several possible directions





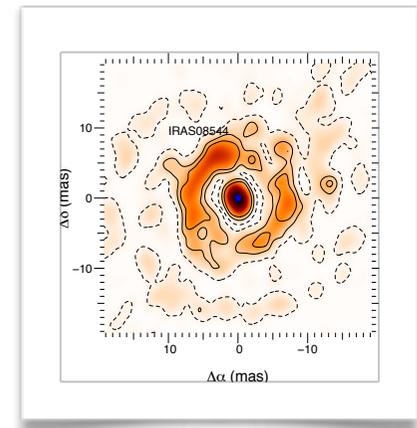
IN SUMMARY

The VLTI should reach its full potential in the next decade



Develop surveys and large programs to answer questions with statistical significance

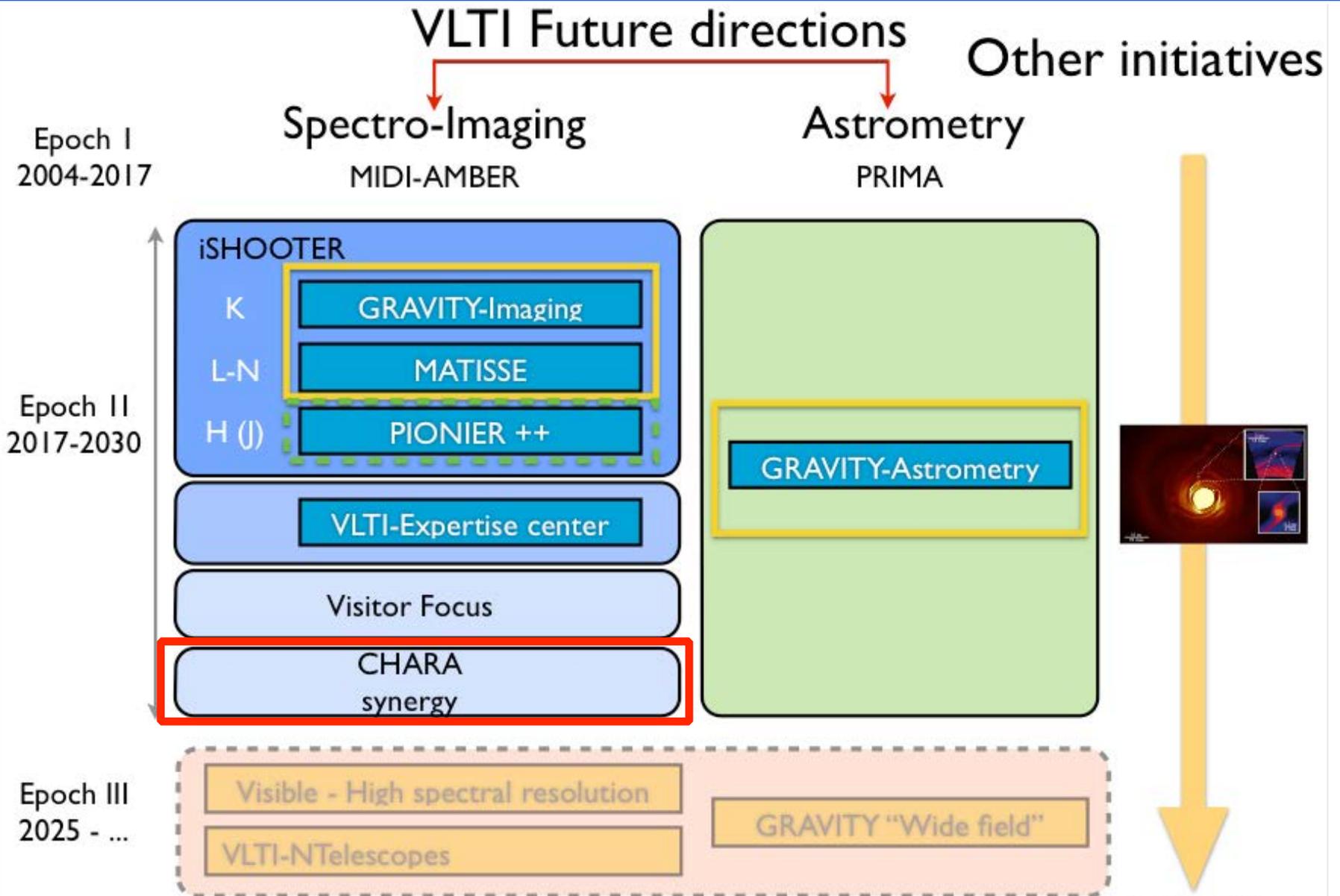
Develop spectro-imaging capability with robust fringe tracking



Expand the user base with VLTI expertise centers and develop synergies (with CHARA!!)

Very important engineering effort

VLTl timeline



Coordinated by EII: Future of interferometry working group **PFI*** Visl

*Planet Formation Imager

