

# Why Einstein Telescope? Why now?

- LIGO and Virgo detectors/infrastructures will reach they limits around 2030
- The first and second generations have required ~15 years between the concept and the operation
- Einstein Telescope (current design: 10 km, triangle, underground, xylophone)
  - 3G: Extend by ~10x the distance of sight with respect to the “advanced detectors”
  - Extend the bandwidth towards lower frequencies (~ 2 Hz target)
  - An infrastructure able to accommodate upgrades for decades
- Similar effort in US (Cosmic Explorer) – coordination effort (GWIC-3G)
- Science targets:
  - BBH in the whole Universe
  - EoS neutron stars
  - Cosmology (dark energy,  $H_0$ , priomordial BH)
  - Multi-messenger astrophysics, GRB, kilonovae
  - Quasi-normal modes BBH, test of GR
  - Supernovae
- Unique science targets. Complementarity with LISA
- ET collaboration formed (69 from CNRS), 3 CNRS in the ET steering committee
- Application for ESFRI roadmap ongoing (February / April 2020)
- Coordination at CNRS level – role of GDR OG – ET-France mailing list

