The THESEUS mission, proposed to the ESA M5 call, is designed to vastly increase the discovery space of the high energy transient phenomena over the entirety of cosmic history. Its primary scientific goals will address the Early Universe ESA Cosmic Vision themes “How did the Universe originate and what is made of?” and will also impact on “The gravitational wave Universe” and “The hot and energetic Universe” themes. This is achieved via a unique payload providing an unprecedented combination of: 1) wide and deep sky monitoring in a broad energy band (0.3keV - 20 MeV); 2) focusing capabilities in the soft X-ray band providing large grasp and high angular resolution; and 3) on board near-IR capabilities for immediate transient identification and redshift determination. The THESEUS consortium is led by Italy, UK, France, Germany, Switzerland, and includes several other ESA countries. Potential international partners include USA, China and Brazil.

Main scientific goals of the THESEUS mission:
(a) Explore the Early Universe by unveiling a complete census of Gamma-Ray Burst (GRBs). Specifically THESEUS will:
- Perform unprecedented studies of the star formation history of the Universe up to z ~ 10 and beyond;
- Detect and study the primordial (pop III) star population; how did the earliest pop III and pop II stars influence their environments?
- Investigate the re-ionization epoch, the interstellar medium (ISM) and the intergalactic medium (IGM) up to z ~ 8 - 10: how did re-ionization proceed as a function of environment and was it due to star formation? How did cosmic chemical evolution proceed as a function of time and environment?
- Investigate the properties of the early galaxies and determine the galaxies global star formation rate in the re-ionization era.

(b) Perform a deep X-ray transient Universe monitoring in order to:
- Locate and identify the electromagnetic counterparts to sources of gravitational radiation and neutrinos, which may be routinely detected in the late 20s / early 30s by next generation facilities like aLIGO/aVirgo, eLISA, ET, or Km3NET;
- Provide real-time triggers and accurate (~1 arcmin within a few seconds; “1” within a few minutes) locations of (long/short) GRBs and high-energy transients for follow-up with next-generation optical-NIR (E-ELT, JWST if still operating), radio (SKA), X-rays (ATHENA), TeV (CTA) telescopes

The superb capabilities of THESEUS for multi-messenger astrophysics. As an example, for GW events produced by NS-NS mergers (as GW170817), THESEUS will be capable to detect, localize (from a few arcmin to arcsec) the associated short GRB (left-top, from LVC), the possible soft X-ray emission (left-middle: colored regions indicate ranges of fluxes and time scales from different model) and the kilonova emission (left-bottom: real data from KN170817, lines show THESEUS imaging and spectroscopy sensitivities)