

# CSN2 LNF

- situazione finanziaria
- km3
- review
- TT
- PAQ
- workshop BB LNGS

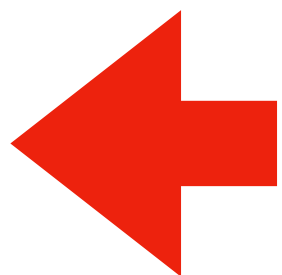
# Review dei 4 pillars della CSN2

MONDAY, 12 APRIL

09:00 → 10:00 Sessione chiusa

10:00 → 16:00 Sessione aperta



- 10:00 **Review sullo stato delle ricerche dirette di materia oscura** (45m)  
Speaker: Giovanni Mazzitelli (INFN)  
wimps.pdf
- 10:45 **Aggiornamento XENON** (30m)  
Speaker: Marco Sefri (pc)  
XENON-CSN2-2021...
- 11:15 **Pausa** (15m)
- 11:30 **Review sullo stato delle ricerche indirette di materia oscura** (45m)  
Speaker: Elena Vannuccini (r)  
DM-Indirect-Vannuc...
- 12:15 **Review su esperimenti di ricerca assioni e su fondamenti di QM** (45m)  
Speaker: Antonello Ortolan (INFN)  
AxionSearches.pdf
- 13:00 **Pausa pranzo** (1h 30m)
- 14:30 **Materia Oscura: direzioni teoriche recenti** (45m)  
Speaker: Marco Cirelli (LPTHE CNRS Jussieu Paris)  
4DMcandidates\_CS...
- 15:15 **Review sullo studio del CMB** (45m)  
Speaker: Silvia Masi (ROMA1)  
20210412\_Review\_b...
- 16:00 **Prospettive cosmologia** (40m)  
Speaker: Alessandro Melchioni (ROMA1)  
CSN2\_info\_april.pdf
- 16:40 **Pausa** (40m)
- 17:00 **Review su onde gravitazionali ed esperimenti sulla gravità** (45m)  
Speaker: Luca Natocchioni (INFN Roma2)  
Natocchioni-Review...
- 17:45 **Fisica fondamentale e cosmologia con Einstein Telescope** (45m)  
Speaker: Michele Maggiore (Genova University)  
210412-michele-m...
- 19:00 **Fine giornata** (1m)



TUESDAY, 13 APRIL

09:00 → 16:30 Sessione aperta


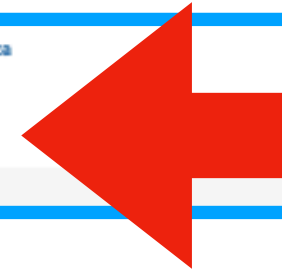
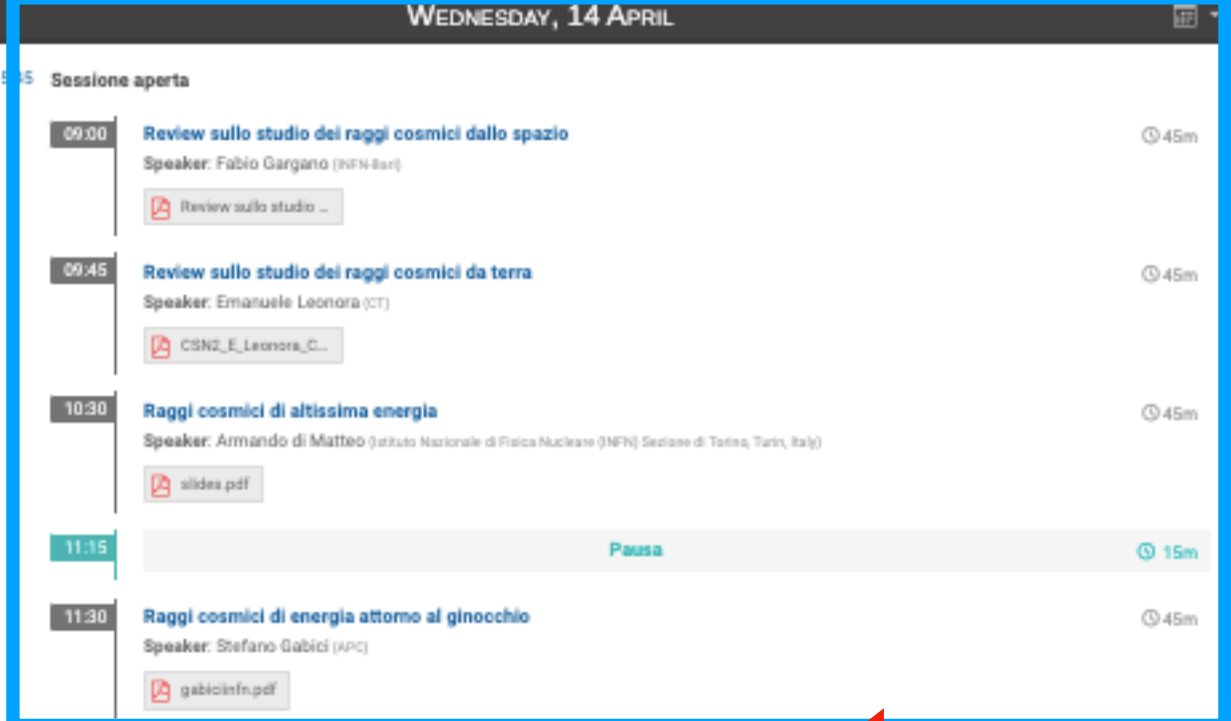
- 09:00 **Review sulla fisica dei neutrini** (45m)  
Speaker: Andrea Longhi (Padova University and INFN)  
Longhi\_review\_ne...
- 09:45 **Review sulle proprietà dei neutrini** (45m)  
Speaker: Fabio Bellini (ROMA1)  
neutrino\_properties...
- 10:30 **Aggiornamento ICARUS** (30m)  
Speaker: Alberto Guglielmi (pc)  
CSN2\_April\_13\_202... CSN2\_April\_13\_202...
- 11:00 **Pausa** (30m)
- 11:30 **Fenomenologia della fisica del neutrino** (45m)  
Speaker: Eligio Lisi (BA)  
Lisi\_CSN2\_2021.pdf
- 12:15 **FAQ update** (45m)  
Speaker: Luca Latronico (TO)  
FAQ-CSN2-deploy-2...
- 13:00 **Pausa pranzo** (1h 30m)
- 14:30 **Premio "Bruno Rossi" 2020: presentazione dei vincitori** (45m)  
Speaker: Nicolo' Crescini (INFN)  
nresceni\_brunoRos...
- 15:15 **Premio "Bruno Rossi" 2020: presentazione dei vincitori** (45m)  
Speaker: Odysse Halim (Istituto Nazionale di Fisica Nucleare)  
20210413BrunoRos... 20210413\_Bruno\_r...
- 16:00 **Pausa** (30m)
- 16:30 → 19:00 Sessione chiusa
- 16:30 **Comunicazioni dalla Giunta Esecutiva** (1h)  
Speaker: Marco Pallavicini (pc)
- 17:30 **Sbloccati sub-judice e nuove assegnazioni** (1h 30m)
- 19:00 → 19:01 **Fine giornata** (1m)



WEDNESDAY, 14 APRIL

09:00 → 15:55 Sessione aperta

- 09:00 **Review sullo studio dei raggi cosmici dallo spazio** (45m)  
Speaker: Fabio Gargano (INFN Bari)  
Review sullo studo...
- 09:45 **Review sullo studio dei raggi cosmici da terra** (45m)  
Speaker: Emanuela Leonora (CT)  
CSN2\_E\_Leonora\_C...
- 10:30 **Raggi cosmici di altissima energia** (45m)  
Speaker: Armando di Matteo (Istituto Nazionale di Fisica Nucleare (INFN) Sezione di Torino, Turin, Italy)  
slides.pdf
- 11:15 **Pausa** (15m)
- 11:30 **Raggi cosmici di energia attorno al ginocchio** (45m)  
Speaker: Stefano Gabici (APC)  
gabiciinf.pdf
- 12:15 **Dinamiche in atto nel processo di trasferimento della conoscenza** (45m)  
Speaker: Francesco Cino Matarotta (AC)  
cns2\_14\_april.pdf
- 13:00 **Pausa pranzo** (1h 30m)
- 14:30 **The First Fermi-LAT Solar Flare Catalog** (15m)  
Speaker: Pece-Rolins Melissa (INFN)  
CSN2\_CatalogoSol...
- 14:45 **Observation of a Giant Flare from a Magnetar in NGC 253** (15m)  
Speaker: Bissaldi Elisabetta (BA)  
INFN-CSN2\_Magne...
- 15:00 **0νββ Search Results from One Tonne-Year of CUORE Data** (45m)  
The Cryogenic Underground Observatory for Rare Events (CUORE) is a large bolometric experiment searching for neutrinoless double beta decay (0νββ). The detector consists of an array of 988 TeO2 crystals arranged in a compact structure of 19 towers, hosted in the biggest crystal ever built to operate at 10mK. In this seminar we report the results of 0νββ decay analysis in 130Te and the measurement of the background index in the region of interest with the data from a tonne-year of exposure, acquired from Spring 2017 to Fall 2020. This result attests the use of cryogenic calorimeters as one of the most competitive techniques in the current 0νββ decay search international scenario.  
Speaker: Laura Marini (GGSI)  
2021\_CUORE\_0nb... LNGS BC LNGS\_Seminar\_CU... Zoom link
- 15:45 → 16:00 **Pausa** (15m)
- 16:00 → 19:00 Sessione chiusa
- 19:00 → 19:01 **Fine riunione** (1m)



# highlight (personale impressione)

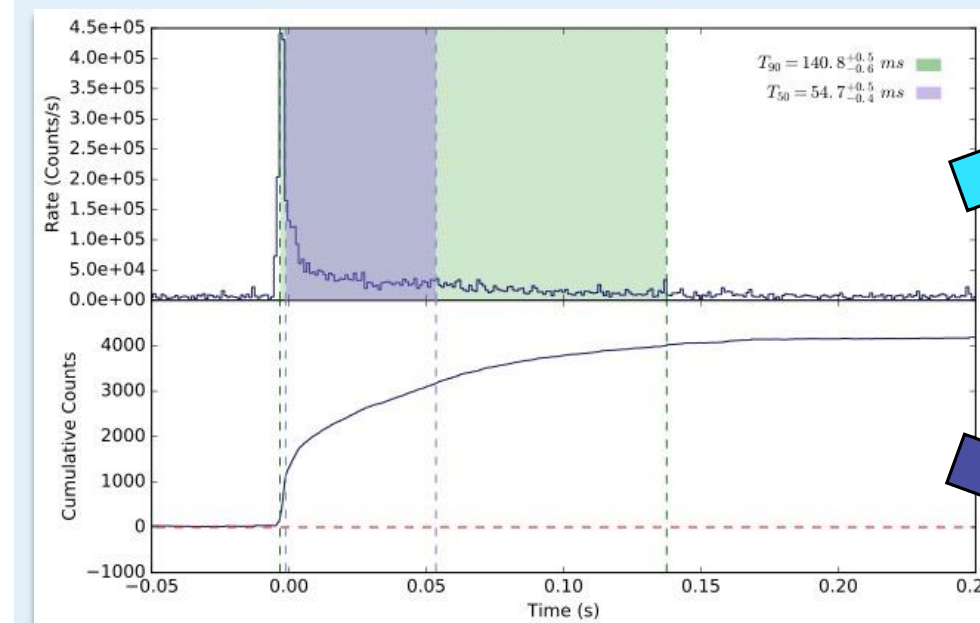
## Summary

- CUORE has now exceeded 1 tonne year of exposure and continues to stably collect data
- We observe no evidence of  $0\nu\beta\beta$  decay of  $^{130}\text{Te}$  with an analysis of **1038.4 kg yr** of data
  - Bayesian 90% CI exclusion limit:  $T_{1/2} > 2.2 \times 10^{25}$  yr
  - Frequentist 90% CI exclusion limit:  $T_{1/2} > 2.6 \times 10^{25}$  yr
  - Effective Majorana mass limit:  $m_{\beta\beta} < (90-305)$  meV
- This is the highest sensitivity search for  $0\nu\beta\beta$  decay of  $^{130}\text{Te}$  to date
  - Median 90% exclusion sensitivity:  $T_{1/2} > 2.8 \times 10^{25}$  yr
- Look forward to other analyses from this data in the future!

$0\nu\beta\beta$  Search Results from One Tonne-Year of CUORE Data 48

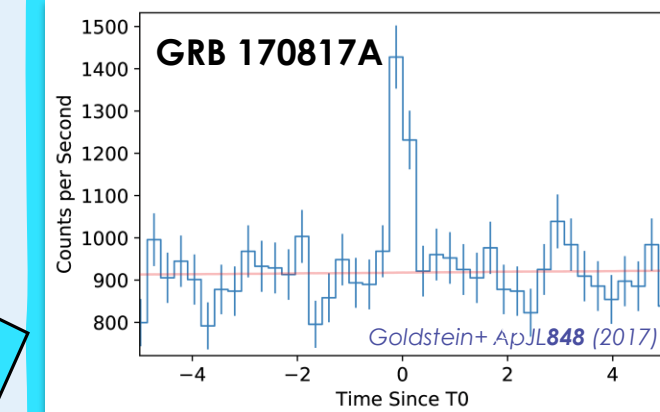
## Fermi Highlights 2020: Observation of a Giant Flare from a Magnetar in NGC 253

### GRB 200415A

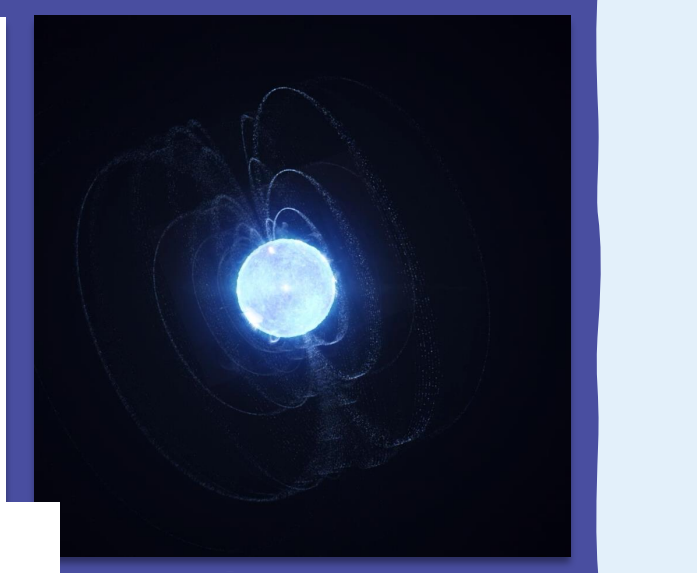
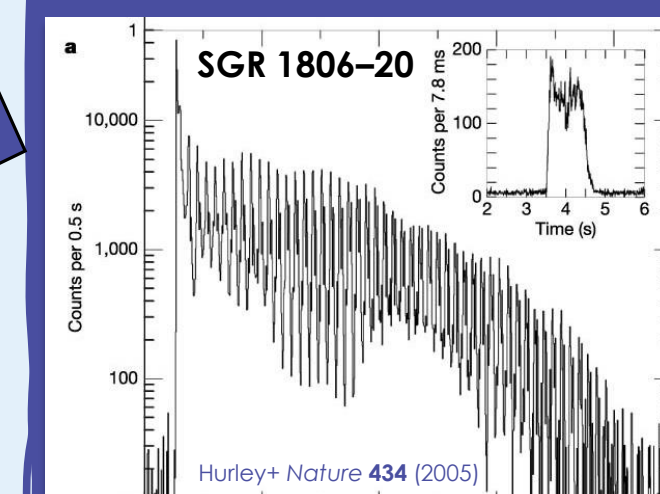


Roberts+ Nature 589 (2021)

### Short Gamma-ray Burst (sGRB)



### Magnetar Giant Flare



Link to the **IPN paper**: <https://www.nature.com/ar@cles/s41586-020-03076-9>

Link to the **GBM/GUANO paper**: <http://doi.org/10.1038/s41586-020-03077-8>

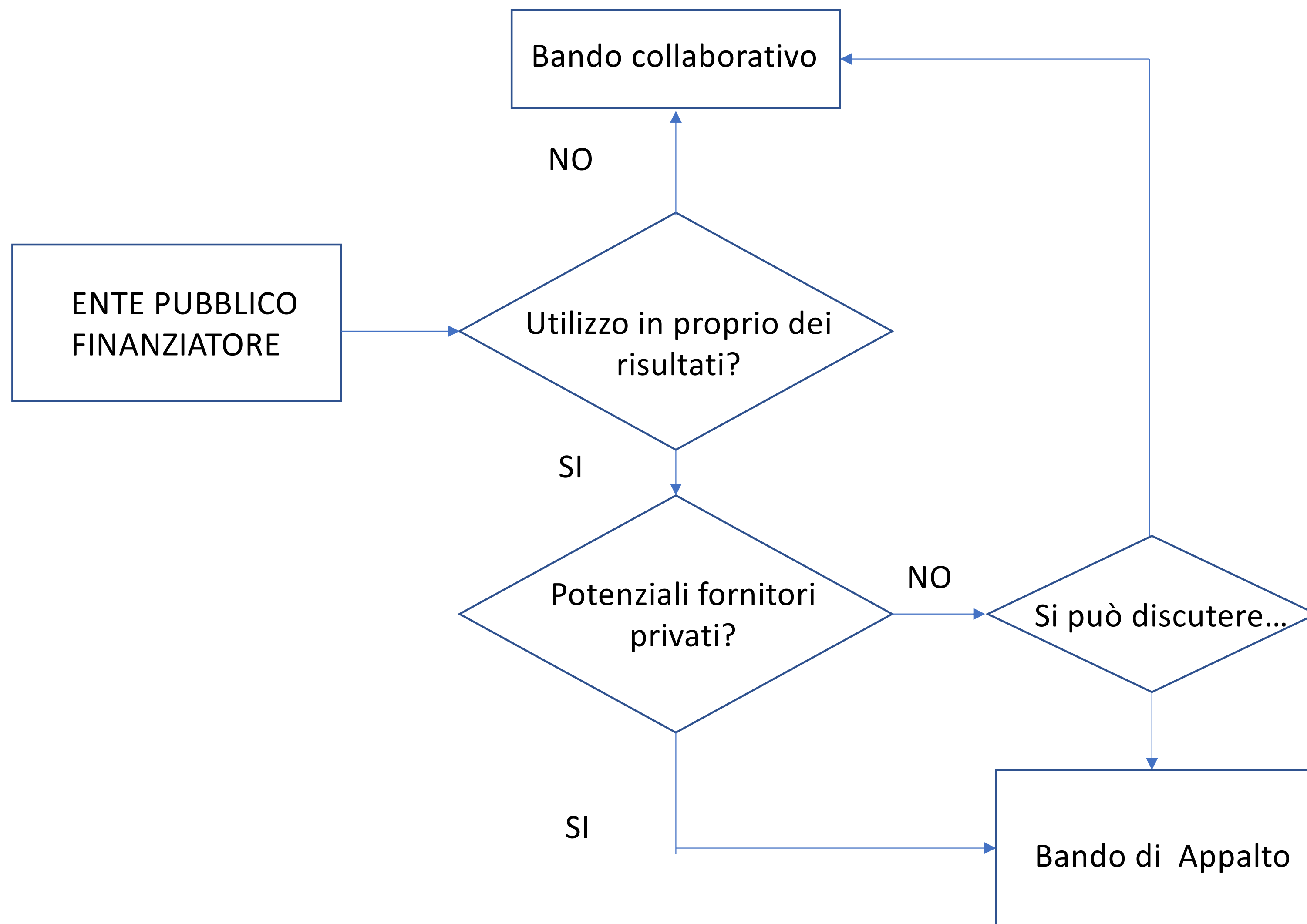
Link to the **LAT paper**: <http://doi.org/10.1038/s41550-020-01287-8>

Link to **Populations paper**: <https://iopscience.iop.org/ar@cle/10.3847/2041-8213/abd8c8>

Link to the **NASA press release** (with video):

<https://www.nasa.gov/feature/goddard/2021/nasa-missions-unmask-magnetar-erup@ons-in-nearby-galaxies>

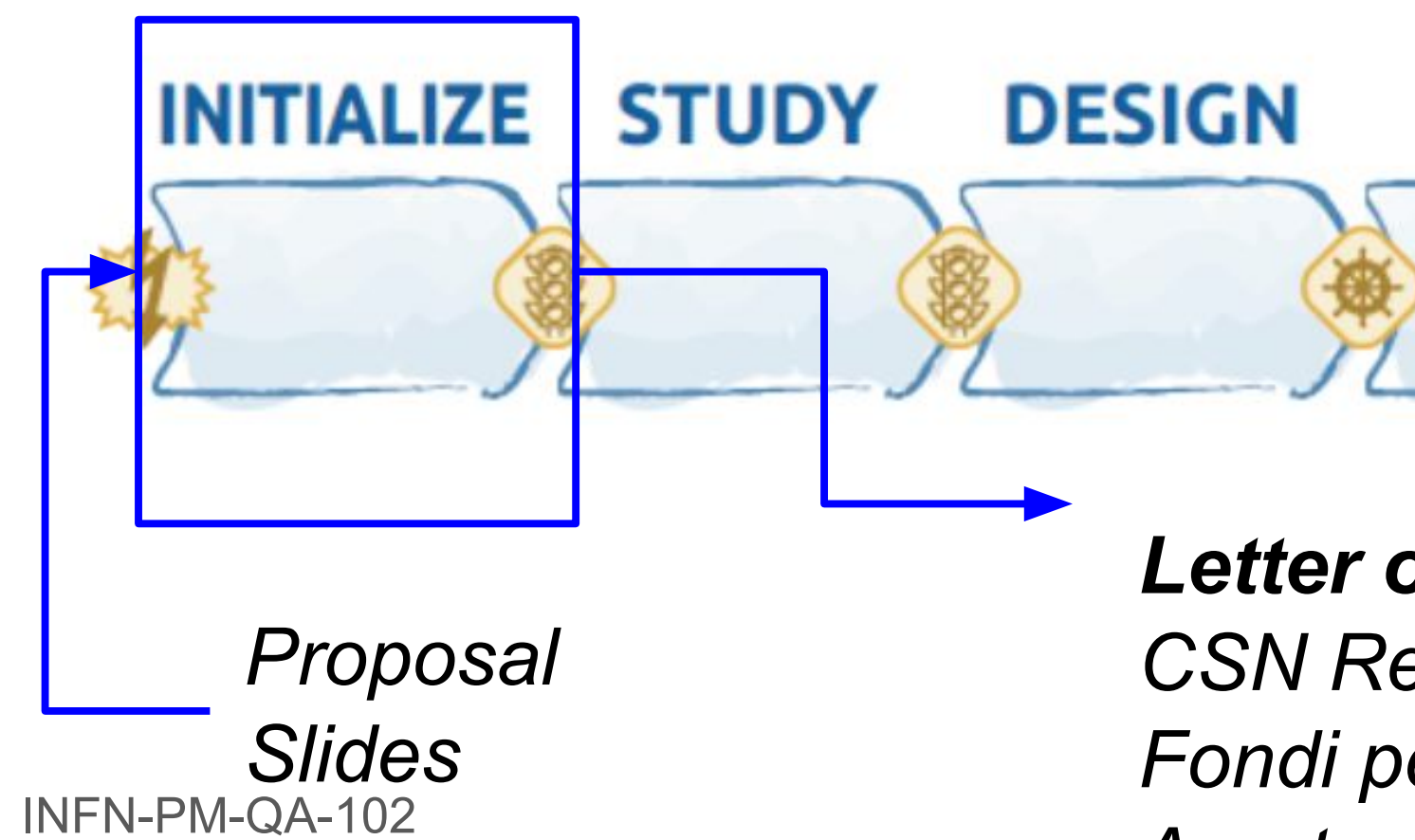




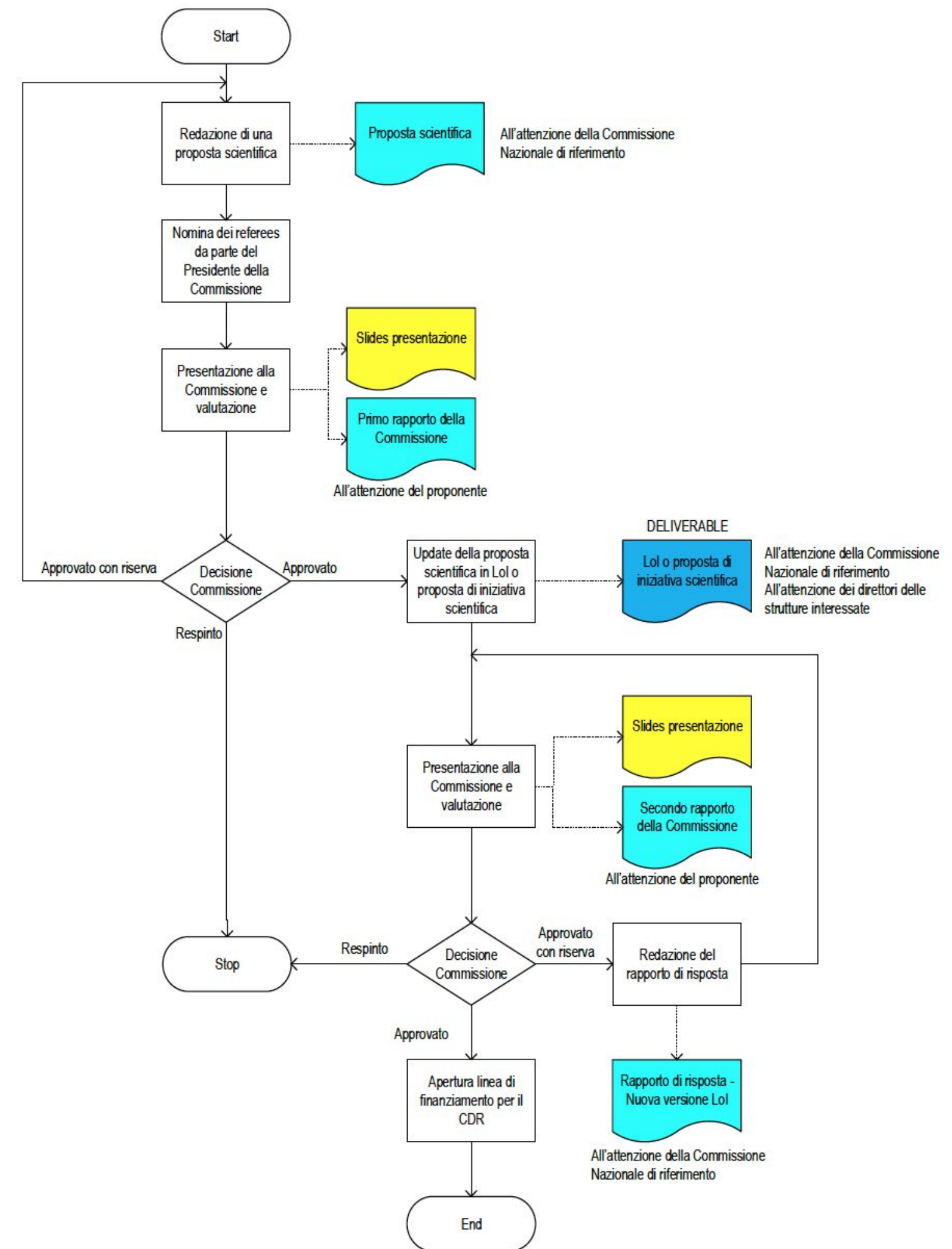
# PAQ

## Progetto CSN - Lol

- Prima proposta interna CSN
- Finanzia fase di studio



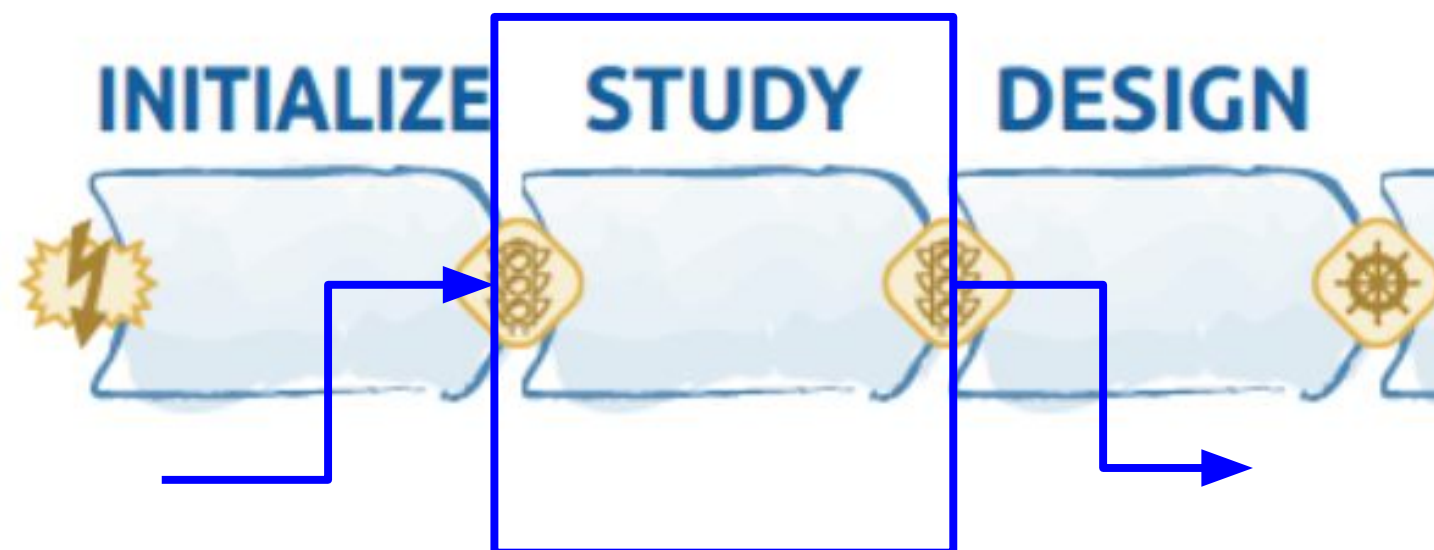
**Letter of Intent  
CSN Report  
Fondi per CDR  
Apertura sigla**



# PAQ

## Progetto CSN - CDR

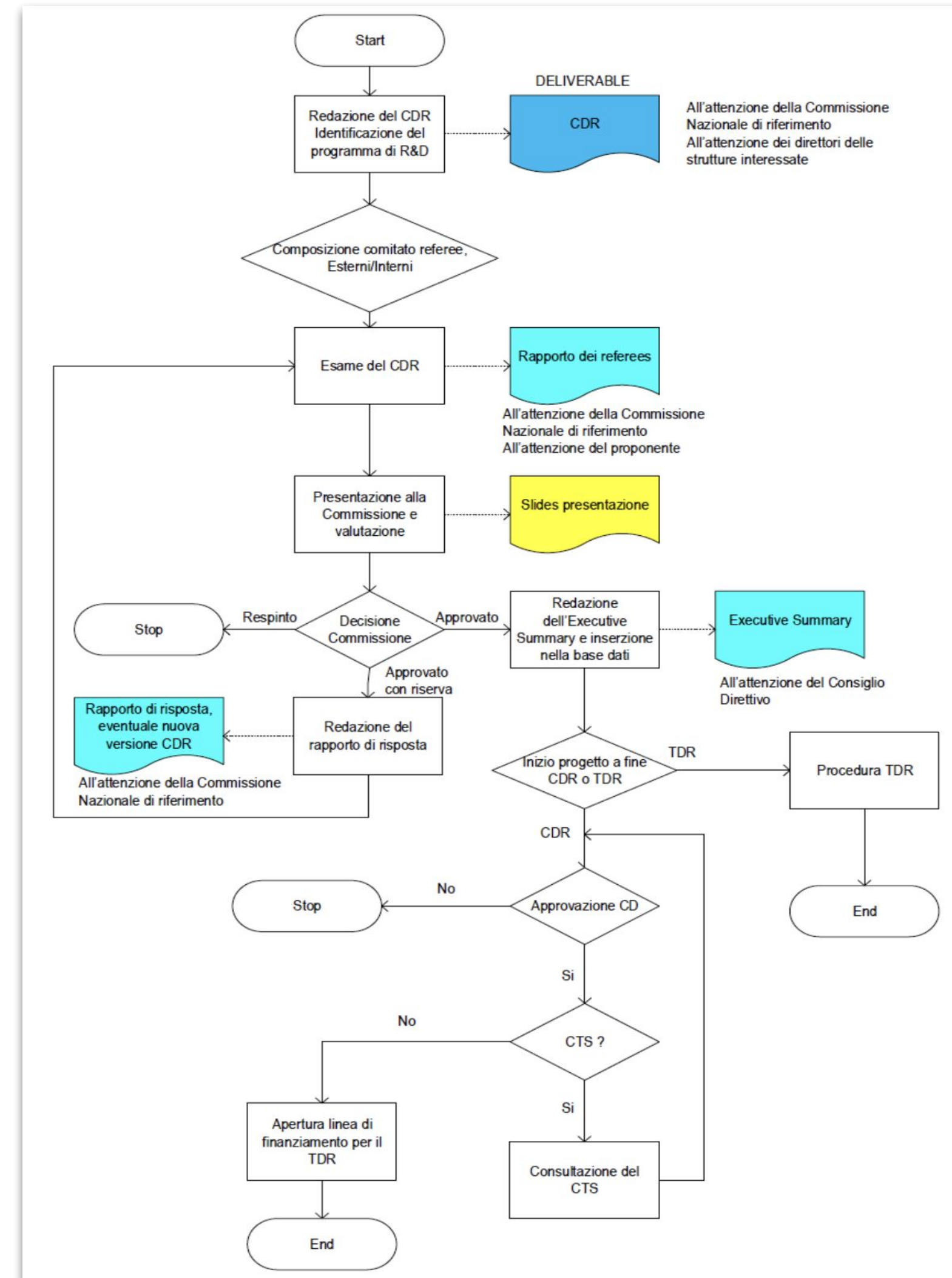
- Finanzia fase di design e quindi studio di fattibilità → progetto approvato
- Approvazione formale CD / CTS sulla base di executive summary



**Conceptual Design  
Report  
Slides**

INFORM-PA-102

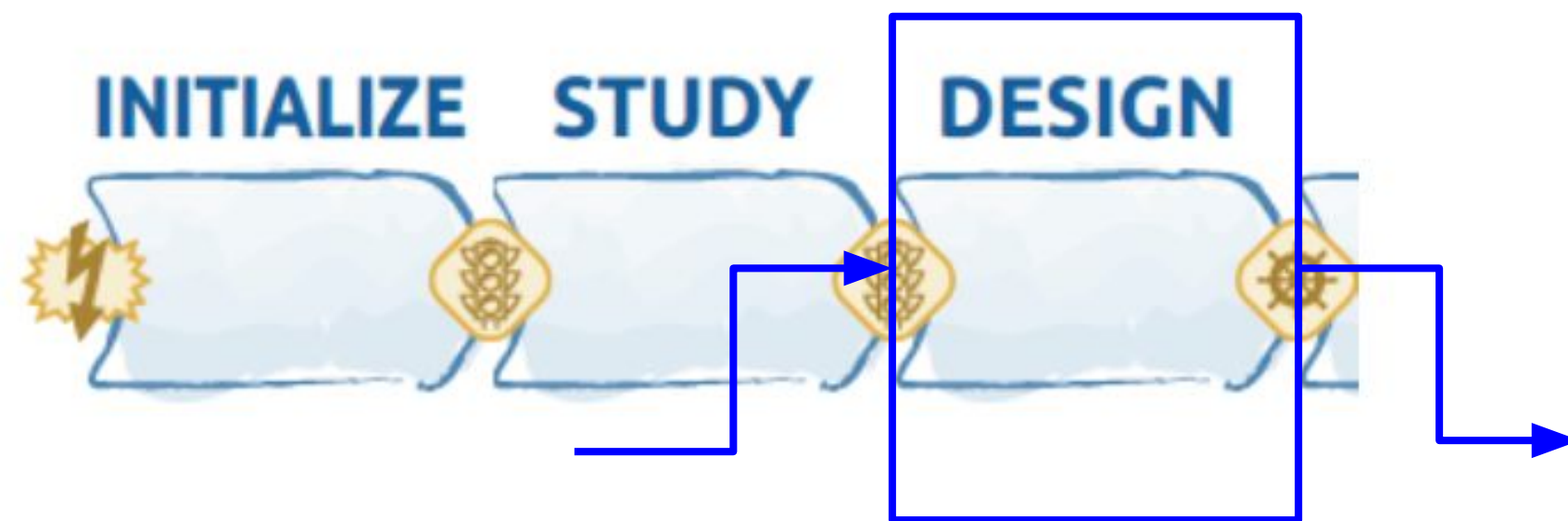
**CSN Report  
Fondi per TDR  
Executive Summary**



# PAQ

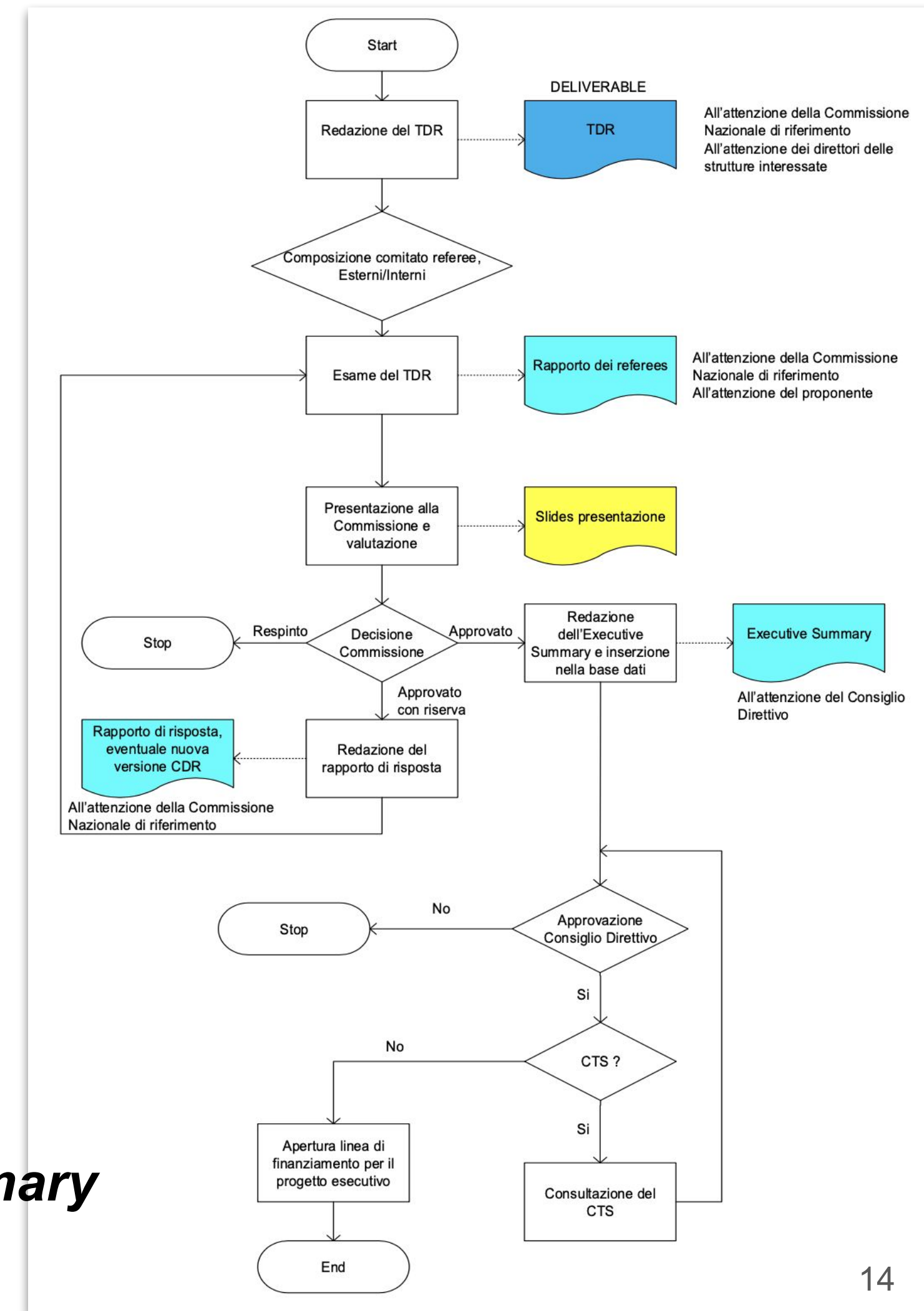
## Progetto CSN - TDR

- Approvazione finale formale CD / CTS sulla base di executive summary
- Fornisce i risultati degli R&D necessari per dimostrare la fattibilità
- Finanzia esecuzione progetto



**Technical Design Report**  
**Project Management Plan**  
**Slides**  
INFN-PM-QA-102

**CSN Report**  
**Executive Summary**  
**Avvio progetto**



# PAQ

## Documenti di gestione - templates da adottare in CSN2

- Lol / EoI - INFN-PM-QA-502
- CDR - INFN-PM-QA-503
- TDR - INFN-PM-QA-504
- Progress Report - INFN-PM-QA-510
- Executive summary - INFN-PM-QA-511

