

# RM&HDD

(Raw Materials in Hard Disk Drive)

## A. Main topics

- Identification of **Rare Earth Elements (REE)** in a **Hard Disk Drive (HDD)**

## B. targeted audience

- 14-18 years old students

## C. Key concepts

- Preparation of the A4 format **Educational Cards (EdCa)** with the key information and figures about a chosen metal and its role in one everyday object, description of that object and a role the chosen metal plays in it, connected recycle and recovery processes;
- Importance of raw materials (focus on metals) and circular economy principles;
- Project based learning format which allows development of the research skills, scientific writing and data presentation;



## D. Experimental activity

- The trainer gives the lecture how to make an educational card (3h);
- Groups of max.4 students work together on preparation of EdCa on a metal and an object of their choice (16);
- Teams present their EdCa, questions and discussion follow (peers review) under the supervision of the trainer.

## E. Toolkit material

- Lecture on neodymium in HDD;
- Multimedia materials with demonstration how a HDD works and how to recover neodymium from a HDD;
- Examples of Educational Cards prepared by high school students.

## F. RM Tutors

Cristiano Albonetti, CNR – ISMN, [c.albonetti@bo.ismn.cnr.it](mailto:c.albonetti@bo.ismn.cnr.it)