

Prova orale 1

1. Le spese di personale previste nei progetti PRIN.
2. Il financial report nei progetti europei
3. Gli organi di governo del dipartimento di Elettronica, Informazione e Bioingegneria

Testo in inglese (da leggere e tradurre):

The wind industry is developing **wind turbines and airborne wind energy devices** which span altitudes well above the well-studied surface layer. A full understanding of the unsteady inflow conditions which drive loads and performance at these altitudes is lacking. MERIDIONAL will provide a comprehensively validated tool chain based on an open-source platform which will draw on an integrated knowledge and data hub to allow the efficient and accurate **assessment of the performance and loads experienced by onshore, offshore, and airborne wind energy systems.**

This tool chain can be used for component, device and plant level planning and operation. It will consist of **models which can capture the unsteady time-resolved inflow structures which drive performance and loads within the wind plant, incorporating inter and intra farm turbine interactions.** Inflow conditions will be analyzed and modelled beyond the surface layer to capture the conditions within and above the atmospheric boundary layer. This is critical to a full understanding of the loads and performance of wind farms and airborne wind energy devices.

Prova Orale 2

1. Gli organi di supporto del dipartimento di Elettronica Informazione e Bioingegneria
2. Il grant agreement nei progetti europei
3. Le spese generali nei progetti PRIN

Testo in inglese (da leggere e tradurre):

Every day we generate, process and use a massive amount of data. Searching a keyword on the internet, choosing a movie for the weekend and booking our next holiday are just a few simple actions that rely on data-intensive algorithms in the cloud, such as data search, recommendation and page ranking. The energy cost of computation is high: it has been recently reported that **training a relatively large neural network produces the same carbon dioxide of 5 cars in their whole lifetime**. Data centres use an estimated 200 terawatt-hours each year, corresponding to 1% of the global demand. With the spectre of an energy-hungry future, it is essential to identify novel concepts, novel algorithms and novel hardware for streamlining the computing process.

Preliminary researches have shown that **computing energy requirements can be reduced by closed-loop in-memory computing (CL-IMC)** that can solve linear algebra problems in just one computational step. In CL-IMC, the time to solve a certain problem does not increase with the problem size, in contrast to other computing concepts, such as digital and quantum computers. Thanks to the size-independent computing time around 100 ns, CL-IMC requires **5,000 times less energy than top-class digital computers at the same bit precision**. These preliminary results show that CL-IMC is a promising new computing concept to reduce the energy consumption of data processing.

Prova orale 3

1. Contenuto e forma del time-sheet nella rendicontazione dei costi di personale
2. Le competenze del dipartimento
3. Altri costi di esercizio nei progetti PRIN

Testo in inglese (da leggere e tradurre)

Technological advances in the field of **AI** and **robotics** are being made at a breathtaking pace – and the **healthcare sector** is not spared from these developments. Yet it goes without saying that new medical devices and procedures must first prove their safety and usefulness before they can be adopted in clinical practice. In the European Union, the areas of AI and robotics, which are set to have a far-reaching impact on the healthcare sector, especially have to meet high quality requirements, but there is still a lack of testing infrastructure for developing standards, validating innovations, and certifying new products.

This is precisely where the **Testing and Experimentation Facility for Health AI and Robotics (TEF-Health)** comes in. The new project, supported by the EC and national funding agencies with a total of about €60 million, aims to **facilitate and accelerate the validation and certification of AI and robotics in medical devices**. In total, 51 academic and private partners from 9 European countries are involved in the project, integrating existing infrastructures as well as building new ones.

TEF-Health will mainly test **novel AI approaches in real-world scenarios**. This includes new software used in areas such as patient care and diagnostics, as well as devices controlled by artificially intelligent programs, some of which are designed for direct use on humans – such as surgical and nursing robots. The consortium will evaluate how to **facilitate market access and acceptance of these smart technologies**.

PROVA 1

1. Il candidato descriva le principali voci di budget nell'ambito dei progetti europei.
 2. Il Candidato descriva gli Organi del Dipartimento di Elettronica, Informazione e Bioingegneria.
 3. Il candidato descriva le spese di personale previste nei progetti PRIN.
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PROVA 2

1. Il candidato illustri, secondo quanto previsto dall'Annotated Model Grant Agreement, la differenza tra costi diretti ed indiretti, specificando quali categorie e forme di costo rientrano in un budget. Si facciano alcuni esempi.
2. Il candidato descriva le spese ammissibili nei progetti PNRR M4C2- (criteri generali e voci di costo).
3. Il candidato descriva la posizione contrattuale delle parti terze nei progetti europei, ne fornisca altresì una definizione e ne specifichi le regole di rendicontazione e formalizzazione della relazione con il coordinatore e/o con i beneficiari.

PROVA 3

1. Il candidato indichi i finanziamenti esclusi dai prelievi sulle entrate previsti dal regolamento prestazioni conto terzi.
2. Il candidato descriva le PROCEDURE PER LA RENDICONTAZIONE DELLO STATO DI AVANZAMENTO DELLE ATTIVITÀ E DELLE SPESE dei progetti PNRR M4C2.
3. Le Terze Parti nell'ambito di una azione HE. Partecipazione di soggetti terzi all'attività del progetto Europeo. Il candidato descriva tipologie e differenze, evidenziandone le caratteristiche, i criteri di ammissibilità dei costi ai fini della rendicontazione e la relazione con il beneficiario di riferimento.