Selezione pubblica, per titoli ed esami, per l'assunzione di una unità di personale appartenente alla categoria D – Area tecnica, tecnico-scientifica ed elaborazione dati con contratto di lavoro subordinato a tempo pieno e indeterminato, per le esigenze dell'Istituto di Intelligenza Meccanica della Scuola.

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QUESITI PROVA ORALE BUSTA N.2

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Domanda sulla gestione amministrativa connessa alle attività scientifiche dei progetti di ricerca, sulla comunicazione integrata, organizzazione e gestione di eventi, workshop, convegni in ambito scientifico, organizzazione di seminari didattici, percorsi formativi, corsi Master e seminariali, sulle conoscenze nell'ambito della comunicazione integrata e gestione del trasferimento tecnologico nella robotica e nelle sue applicazioni in campo sanitario, industriale e di sistemi di Realtà Virtuale per la valorizzazione dei Beni Culturali e altri campi applicativi;

La gestione amministrativa dei progetti conto terzi

<div align="center">

Domanda sulle fonti interne della Scuola

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Funzioni e modalità di elezione del Rettore della Scuola Sant'Anna

<div align="center">

Domanda volte all'accertamento delle conoscenze informatiche

</div>

Servizi ed applicativi per la condivisione di file e dati di grandi dimensioni

<div align="center">

Lettura e traduzione di un capoverso di testo tecnico (tratto da articolo scientifico o bando di ricerca) in lingua inglese, messo a disposizione dalla Commissione stessa;

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of the user, the models will contribute to the general understanding of the environments and users' knowledge, preferences, believes, abilities, intent and goals.

- Demonstrate the adaptation and generalisation of the eXtended Reality models, including through the integration of structured knowledge, by developing solutions capable of carrying genuine human-like interaction before, during and after an eXtended Reality experience.

- Integrate the solutions into several eXtended Reality use-cases scenarios, such as media, collaborative telepresence, learning, personal assistants or information retrieval.

Beyond supporting a large set of languages and modalities, the work will focus on enabling new forms of interactions, avoiding bias, whilst ensuring accessibility, privacy, transparency and explainability.

To compensate the increase of model complexity, the proposed solutions should be energy efficient thanks to optimised protocols and algorithms with equivalent performance during both training and implementation.

The project will ensure reproducibility and repeatability of the research results, promote an open data and interfaces standardisation, avoiding narrow de-facto standards and demonstrate clear and efficient integration paths for the European industry take up.

To further extend the application domains, address sector specific constrains, ensure reproducibility and demonstrate their integration paths, projects are expected to organise a number of competitive calls with financial support to third parties (FSTP) and further extend the use-cases. At least 20% of the funding should be dedicated to FSTP. To that aspect, the consortium will provide guidelines and technical support in engineering integration, testing and validation to support the development of such use-cases.

HORIZON-CL4-2021-HUMAN-01-14: eXtended Reality for All – Haptics (RIA)

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of around EUR 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 6.00 million.
Type of Action	Research and Innovation Actions
Technology Readiness Level	Activities are expected to start at TRL 5 and achieve TRL 7 by the end of the project – see General Annex B.

Expected Outcome: Projects are expected to contribute to the following outcomes:

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QUESITI PROVA ORALE BUSTA N.7

Domanda sulla gestione amministrativa connessa alle attività scientifiche dei progetti di ricerca, sulla comunicazione integrata, organizzazione e gestione di eventi, workshop, convegni in ambito scientifico, organizzazione di seminari didattici, percorsi formativi, corsi Master e seminariali, sulle conoscenze nell'ambito della comunicazione integrata e gestione del trasferimento tecnologico nella robotica e nelle sue applicazioni in campo sanitario, industriale e di sistemi di Realtà Virtuale per la valorizzazione dei Beni Culturali e altri campi applicativi;

L'offerta formativa post-laurea: master e PhD

Domanda sulle fonti interne della Scuola

L'affiliazione alla Scuola da parte di collaboratori esterni

Domanda volte all'accertamento delle conoscenze informatiche

I principali sistemi operativi per PC e dispositivi mobili

Lettura e traduzione di un capoverso di testo tecnico (tratto da articolo scientifico o bando di ricerca) in lingua inglese, messo a disposizione dalla Commissione stessa;

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minimum of 70% of the total requested EU contribution should be allocated to financial support to the third parties.

The Commission considers that proposals with an overall duration of typically xx months would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other durations. For ensuring focused effort, third parties in type ii will be funded through projects typically in the EUR 250 000 to 500 000 range per project, with indicative duration of 12 to 15 months.

[i] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0784

HORIZON-CL4-2021-HUMAN-01-28: eXtended Reality Ethics, Interoperability and Impact (CSA)

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of around EUR 2.50 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.50 million.
Type of Action	Coordination and Support Actions

Expected Outcome: Projects are expected to contribute to the following outcomes:

- A strong and competitive ecosystem, with European companies playing a leading role in the wider deployment, adoption and acceptance of eXtended Reality technologies.

- Improved quality of eXtended Reality experiences and applications, combining human-machine interactions and real, mixed, augmented and virtual environments and ensuring ethics, privacy, security and safety.

Scope: New ethical risks, security and privacy concerns arise as experiences based on eXtended Reality (XR) become more realistic and immersive, blurring the line that separates them from the real world.

Although the applications investigated and developed to date aim to provide benefits to individual and society, eXtended Reality technologies may also have harmful physical, emotional and cognitive after-effects.

The potential amount and type of information collected, processed and stored by applications based on eXtended Reality technologies may put individuals at high privacy and security risk.

Interoperability and safety are another major concern for the uptake of eXtended Reality technologies. The lack of widely accepted standards slows down the development process and increases design and testing costs. Several initiatives are trying to devise the industry

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QUESITI PROVA ORALE BUSTA N.1

Domanda sulla gestione amministrativa connessa alle attività scientifiche dei progetti di ricerca, sulla comunicazione integrata, organizzazione e gestione di eventi, workshop, convegni in ambito scientifico, organizzazione di seminari didattici, percorsi formativi, corsi Master e seminariali, sulle conoscenze nell'ambito della comunicazione integrata e gestione del trasferimento tecnologico nella robotica e nelle sue applicazioni in campo sanitario, industriale e di sistemi di Realtà Virtuale per la valorizzazione dei Beni Culturali e altri campi applicativi;

Strategie e strumenti per il trasferimento tecnologico dei risultati della ricerca

Domanda sulle fonti interne della Scuola

Offerta didattica e titoli rilasciati dalla Scuola Sant'Anna

Domanda volte all'accertamento delle conoscenze informatiche

Le principali applicazioni di servizio on-cloud: funzionalità e differenze

Lettura e traduzione di un capoverso di testo tecnico (tratto da articolo scientifico o bando di ricerca) in lingua inglese, messo a disposizione dalla Commissione stessa;

-TESTO ALLEGATO SU FOGLIO SEPARATO-
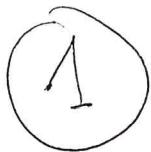
HORIZON-CL4-2021-HUMAN-01-13: eXtended Reality Modelling (RIA)

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of around EUR 4.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 14.50 million.
Type of Action	Research and Innovation Actions
Technology Readiness Level	Activities are expected to start at TRL 2 and achieve TRL 5 by the end of the project – see General Annex B.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Large-scale creation of eXtended Reality models with increased levels of interaction, context awareness, explainable autonomous decisions, human control, privacy and accessibility.

- Methodologies, tools and processes to build eXtended Reality services based on these models.

- Improved human to human and human to computer eXtended Reality interaction, in both offline and real-time context.

Scope: Recent advances in the field of Artificial Intelligence (AI) giving machines the ability to understand and derive meaning from human languages, have shown that automatic systems can exhibit human-like performance. Machine translation, speech recognition or personal assistants are now part of our daily lives. Recent progress in AI has also enabled systems to generalise from one task to another, from one language to another, from one modality to another. Large pre-trained multilingual language models can handle different languages, even with little or no training data. The same models can cover completely different language-related tasks, such as text translation or summarisation, speech transcription, or sentiment analysis. Natural language Understanding and Natural Language Generation state-of-art techniques are expected to take advantage of the latest advances in research. Advances in user and environment modelling and progress in data analytics allow systems to be increasingly context-aware and efficiently support users in their decisions.

Drawing on the above-mentioned recent advances, the proposed projects will:

- Develop pre-trained eXtended Reality (XR) models capable of adapting to a large variety of forms of expression, interaction, languages, domains, styles and intent. Taking into account surrounding real or virtual environments, contexts, preferences and abilities

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QUESITI PROVA ORALE BUSTA N.4

Domanda sulla gestione amministrativa connessa alle attività scientifiche dei progetti di ricerca, sulla comunicazione integrata, organizzazione e gestione di eventi, workshop, convegni in ambito scientifico, organizzazione di seminari didattici, percorsi formativi, corsi Master e seminariali, sulle conoscenze nell'ambito della comunicazione integrata e gestione del trasferimento tecnologico nella robotica e nelle sue applicazioni in campo sanitario, industriale e di sistemi di Realtà Virtuale per la valorizzazione dei Beni Culturali e altri campi applicativi;

Strumenti di comunicazione integrata della ricerca

Domanda sulle fonti interne della Scuola

Le Classi Accademiche della Scuola: composizione e funzioni

Domanda volte all'accertamento delle conoscenze informatiche

I principali applicativi per videoconferenza e le loro differenze

Lettura e traduzione di un capoverso di testo tecnico (tratto da articolo scientifico o bando di ricerca) in lingua inglese, messo a disposizione dalla Commissione stessa;

-TESTO ALLEGATO SU FOGLIO SEPARATO-

contribution per project	8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 14.00 million.
Type of Action	Innovation Actions
Technology Readiness Level	Activities are expected to start at TRL 4 and achieve TRL 6-7 by the end of the project – see General Annex B.

Expected Outcome: Projects are expected to contribute to the following outcome:

- Establishing European industry leadership in eXtended collaborative telepresence solutions, while ensuring ethics, privacy, security and safety.

Scope: This topic aims to increase the European competitiveness and innovation capacity and foster the adoption of European eXtended collaborative telepresence technologies in both professional and private spheres, taking benefit of combining real and virtual environments to improve distant human-human interactions through wearables and computer mediated technologies.

The COVID-19 pandemic has caused major disruptions to the way we work and live. Physical distancing and global lockdown, as well as pressing climate and environmental concerns, have accelerated the need for development and adoption of telepresence technologies to sustain the productivity of remote and online contactless activities, as well as maintaining social bonds. With a worldwide CO_2 emission reduction of more than 20%, the crisis has also revealed that teleworking and reduction of travel is an efficient mitigating solution. Tools supporting enhanced teleworking have become of primal importance.

However, existing collaborative telepresence tools and solutions raise concerns in terms of functionalities, interoperability, efficiency, versatility, openness, accessibility, security and privacy of personal data.

Proposals should leverage existing open standards and technologies in the domain of eXtended Reality (XR), combining human-machine interactions and all real, mix, augmented and virtual environments, accessibility, networks, security and privacy to provide low-cost and widely available eXtended collaborative telepresence solutions.

To ensure wide take-up, proposals should demonstrate their capacity to scale up by involving high numbers of end-users in tests in real environments.

The proposals are expected to address several of the following points:

- Support a wide range of networking bandwidth with adequate compression transmission of information so as to optimise end-to-end quality of service;

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QUESITI PROVA ORALE BUSTA N.3

Domanda sulla gestione amministrativa connessa alle attività scientifiche dei progetti di ricerca, sulla comunicazione integrata, organizzazione e gestione di eventi, workshop, convegni in ambito scientifico, organizzazione di seminari didattici, percorsi formativi, corsi Master e seminariali, sulle conoscenze nell'ambito della comunicazione integrata e gestione del trasferimento tecnologico nella robotica e nelle sue applicazioni in campo sanitario, industriale e di sistemi di Realtà Virtuale per la valorizzazione dei Beni Culturali e altri campi applicativi;

Le attività di terza missione: definizione, caratteristiche, campi di applicazione

Domanda sulle fonti interne della Scuola

Il Senato Accademico della Scuola Sant'Anna: composizione e funzioni

Domanda volte all'accertamento delle conoscenze informatiche

Principali piattaforme social per la comunicazione dei risultati della ricerca

Lettura e traduzione di un capoverso di testo tecnico (tratto da articolo scientifico o bando di ricerca) in lingua inglese, messo a disposizione dalla Commissione stessa;

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- Specific eXtended Reality haptics hardware able to provide affordable portable devices for instantly refreshable full-page interactive tactile displays which enable navigating, reading and editing digital content in both standard braille and tactile graphics format for the blind and visually impaired[178] and especially the deafblind for whom touch and feel are the only form of communication;

- Establish Europe as a world leader in developing accessibility solutions.

Scope: eXtended Reality (XR), combining human-machine interactions and all real, mix, augmented and virtual environments, allow users to interact with real-time contextual information activated by intuitive sensory triggers. However, in order to provide eXtended Reality for all (XR4All), specific accessibility oriented development is required.

Indeed, certain categories of information such as scientific formulae, computer code, tabular data, photos and images cannot be efficiently rendered by the blind and visually impaired by using braille readers or text to speech technologies. Furthermore, the increase of distant learning and teleworking has highlighted the lack of tactile feedback possibilities and increased the gap for visually impaired accessibility.

Existing tactile solutions are limited to refreshable braille displays which are bulky and/or prohibitively expensive. They offer a limited reading experience by providing only a single line of characters at a time and their output is considerably slower than an experienced user's ability to read braille.

Drawing on the above-mentioned conclusion, the proposed project will develop an affordable, portable, usable full-page devices able to convey and input digital information in both braille and tactile graphics for people with visual impairments.

Consortium will pay attention to develop solutions that are reliable, robust, safe and meet the needs and preferences of visually impaired people. The solution need to be interoperable with other ICT devices, including other assistive technologies, provides open APIs for use by third parties and allow for back-translation of braille or tactile graphics into text or images to enable cooperation between visually impaired and sighted people.

People with visual impairments should be involved in all stages of the research and development. Their involvement in validating the solution is a minimum requirement.

HORIZON-CL4-2021-HUMAN-01-25: eXtended Collaborative Telepresence (IA - FSTP)

Specific conditions	
Expected EU	The EU estimates that an EU contribution of between EUR 5.00 and

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[178] The European Blind Union estimates that there are over 30 million blind and partially sighted persons in geographical Europe.

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QUESITI PROVA ORALE BUSTA N.6

Domanda sulla gestione amministrativa connessa alle attività scientifiche dei progetti di ricerca, sulla comunicazione integrata, organizzazione e gestione di eventi, workshop, convegni in ambito scientifico, organizzazione di seminari didattici, percorsi formativi, corsi Master e seminariali, sulle conoscenze nell'ambito della comunicazione integrata e gestione del trasferimento tecnologico nella robotica e nelle sue applicazioni in campo sanitario, industriale e di sistemi di Realtà Virtuale per la valorizzazione dei Beni Culturali e altri campi applicativi;

Le seasonal (summer/winter) school: caratteristiche e progettazione

Domanda sulle fonti interne della Scuola

Direttore di Istituto: modalità di elezione e funzioni

Domanda volte all'accertamento delle conoscenze informatiche

Principali software applicativi per la gestione di dati e calcoli su liste dati.

Lettura e traduzione di un capoverso di testo tecnico (tratto da articolo scientifico o bando di ricerca) in lingua inglese, messo a disposizione dalla Commissione stessa;
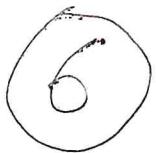
-TESTO ALLEGATO SU FOGLIO SEPARATO-

and have a potential to be consumed in new environments (e.g. self-driving cars, intermodal transport and tourism). To this end, cooperation within the media sector and across different industrial sectors will be beneficial for the creation of synergies based on the use of data applications.

Collaboration with the media data space will be encouraged already at its initiation phase, and full interoperability with and deployability on it are highly recommended. Once it will be operational, the Media Data Space deployed under the Digital Europe programme will offer the opportunity to the projects supported by this Call to test and pilot their innovative solutions.

ii. The launch of a **dedicated VR Media Lab to foster innovation and new solutions in the field of VR/AR Media**. The Lab will develop and prototype advanced solutions for the creation, distribution and consumption of new immersive VR/AR media products and foster innovation by exploring a range of uses for VR/AR technologies, and bring together skills from a variety of disciplines, including technology and the creative sector, to develop new solutions for consumers, business and society.

The VR Media Lab will support creative cooperation on projects that focus on new ways of storytelling and interacting through immersive media. The funded third party projects will focus on content for entertainment, culture and news, as well as virtual and augmented reality applications in other industries, such as tourism, and fields such as education. Solutions developed as part of the VR Media Lab could result in new business models, technological solutions, spinoff companies or partnerships.

At least 1 proposal will be funded for the innovation type i (Max Contribution of EUR 9 million).

One proposal will be funded for type ii (Max Contribution of EUR 8 million).

Financial support to third parties

For grants awarded under the type ii Innovation actions, beneficiaries should provide support to third parties. The support to third parties can only be provided in the form of grants. Each IA for type ii will support third party projects from outstanding media innovators, SMEs and other multidisciplinary actors, so that multiple third parties will be funded in collectively contributing to the innovation area. The consortium will provide the programme logic and vision for the third-party projects, ensure the coherence and coordination of these projects, and provide the necessary technical support, as well as coaching and mentoring, in order to ensure that the collection of third party projects contributes to a significant advancement and impact in the research and innovation domain. These tasks cannot be implemented using the budget earmarked for the financial support to third parties.

Beneficiaries shall make explicit the intervention logic for the area, their capacity to attract relevant top talents, to deliver a solid value-adding services to the third-party projects, as well as their expertise and capacity in managing the full life-cycle of the open calls transparently. As support and mobilising of media innovators is key to the type ii IA of this topic, a

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QUESITI PROVA ORALE BUSTA N.5

Domanda sulla gestione amministrativa connessa alle attività scientifiche dei progetti di ricerca, sulla comunicazione integrata, organizzazione e gestione di eventi, workshop, convegni in ambito scientifico, organizzazione di seminari didattici, percorsi formativi, corsi Master e seminariali, sulle conoscenze nell'ambito della comunicazione integrata e gestione del trasferimento tecnologico nella robotica e nelle sue applicazioni in campo sanitario, industriale e di sistemi di Realtà Virtuale per la valorizzazione dei Beni Culturali e altri campi applicativi;

Organizzazione di un seminario didattico e/o di ricerca scientifica

Domanda sulle fonti interne della Scuola

La Giunta dell'Istituto di Intelligenza Meccanica: Composizione e funzioni

Domanda volte all'accertamento delle conoscenze informatiche

Predisposizione di presentazioni con immagine coordinata

Lettura e traduzione di un capoverso di testo tecnico (tratto da articolo scientifico o bando di ricerca) in lingua inglese, messo a disposizione dalla Commissione stessa;

-TESTO ALLEGATO SU FOGLIO SEPARATO-

HORIZON-CL4-2021-HUMAN-01-06: Innovation for Media, including eXtended Reality (IA)

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 8.00 and 9.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 26.00 million.
Type of Action	Innovation Actions
Technology Readiness Level	Activities are expected to start at TRL 4 and achieve TRL 8 by the end of the project – see General Annex B.

Expected Outcome: Prototyping of advanced solutions for the creation, distribution and consumption of new immersive and innovative products for media. Support innovation in media, including XR innovation, through interdisciplinary cooperation, involving various professional groups (including artists, designers, journalists and media professionals, filmmakers, game designers, programmers or academic researchers). The two priorities are:

- Foster the development of advanced solutions for the creation, distribution and consumption of new media products, including extended reality, in view of the Media Data Space to be deployed through DEP.

- Foster the creation of a European VR MediaLab.

Scope: The Media Action Plan, aimed at supporting media industry recovery, has three areas: Recovery, transformation, and enabling and empowerment. **Transformation** foresees innovation actions to support transformation of media industry, and the creation of a European Virtual and Augmented Reality (VR/AR) Industrial Coalition[i].

Two key ingredients of such transformation are, among others, on the one hand, data know-how and innovation in modular open-source media components, and on the other hand, the development of immersive technologies. Both entertainment and news media have great opportunities for groundbreaking innovations and inventive business models building on the potential of new technologies, including XR.

Two types of innovation proposals are expected:

i. The **development of new modular tools, components and/or services** addressing technical, organisational, commercial and legal aspects of data management and usage for **new media applications**. The innovative solutions should be proven useful for the creation and distribution of new formats, in particular of formats that use XR technologies and that could be expandable or applicable, in addition to news media, to the media industry at large