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*Next Generation Integrated Sensing and Analytical System for Monitoring and Assessing Radiofrequency Electromagnetic Field Exposure and Health*



**NextGEM is a 4 year project** funded under the call "Exposure to electromagnetic fields (EMF) and health" (HORIZON-HLTH-2021-ENVHLTH-02-01)

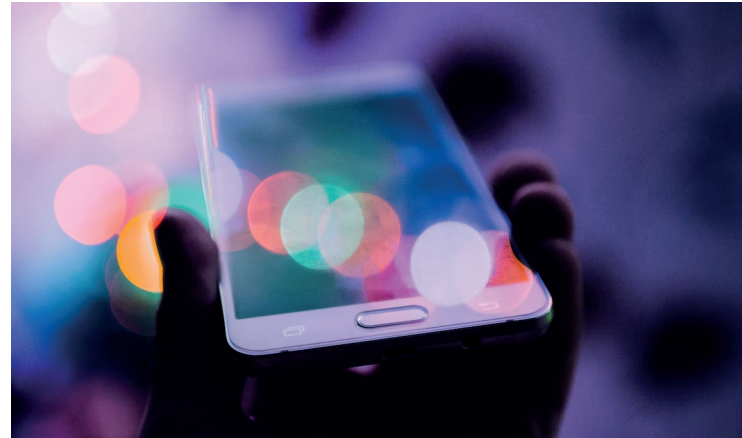
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## Consortium



## Background & Motivation

The NextGEM project's vision is to ensure EU citizens' safety when employing existing and future EMF-based telecommunication technologies. This will be accomplished by generating relevant knowledge that identifies appropriate control measures of EMF exposure in the residential, public, and occupational settings. Fulfilling this vision will provide a healthy living and working environment, under safe EMF exposure conditions, trustable by people and in line with the regulations and laws issued by the public authorities

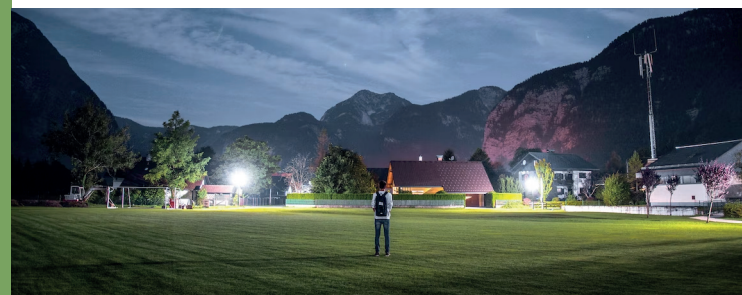


## Innovation & Knowledge Hub (NIKH)

The NextGEM Innovation & Knowledge Hub (NIKH) is a tool which will be used to:

1. Store the innovations and research outputs produced within the project
2. Include external scientific knowledge obtained from past research or synergies
3. Offer a network to EMF stakeholders
4. Enable security, trustworthiness and GDPR compliance

*While emerging wireless technologies that use radio-frequency electromagnetic fields (RF-EMF) are vital for the European way of life, particularly in telecommunications, there is an increasing consideration of their possible adverse effects on human health and the environment, which may be potentially exacerbated by aggregation of different types of EMF signals*



## Objectives

- 1** Measure and model single and multiple RF sources, in changing EMF exposure patterns, based on innovative monitoring technologies
- 2** Assess health effects and elucidate action mechanisms of different and combined EMF exposure patterns by experimental and human studies
- 3** Identify causal links and perform risk assessment regarding EMF exposure and selected health outcomes while providing FAIR (Findable, Accessible, Interoperable, Reusable) data
- 4** Develop NextGEM Innovation Knowledge Hub (NIKH) and validate it through real-life case studies
- 5** Maximise NextGEM's impact through wide dissemination, communication, standardisation, exploitation, capacity building and clustering activities

## Overall Concept

The project is characterised by the following two dimensions:



The assessment of causal exposure-outcome associations will be based on:

An integrated appraisal of the evidence provided by various horizontal research activities encapsulated in the Case Studies



NextGEM Technological Dimension

The NIKH will collect and store information on EMF measurements, research data and risk assessment presented through effective means of communication to stakeholders

## Methodology

The methodology of NextGEM is structured on the following pillars:



Sensing and data source

Data for EMF exposure assessment will be collected from literature and/or experimentally measured in different real-life scenarios through the case studies conceived and developed during the project.



Analytics and experimentation

The combination of multiple approaches from real-life case scenarios, exposure assessment and umbrella reviews of epidemiological data in combination with experimental in vitro, ex vivo, in vivo and human studies will help to elucidate possible interactions and their mechanisms between EMF and biological systems related to health effects.



Applications, tools and services

NextGEM will provide novel exposure assessment methods and protocols, and risk assessment tools that are integrated into the NIKH, representing the main key exploitable outcomes.