EGU22-3508, updated on 30 Nov 2022
https://doi.org/10.5194/egusphere-egu22-3508
EGU General Assembly 2022

Immersive technologies to proactively prepare for and effectively respond to natural disasters

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Natural hazards and climatic risks are considered as main issues for the resilience of the built environment. Recent projections also indicate that the frequency and intensity of extreme climatic events will substantially increase [1], posing a significant threat for building disaster resilient societies. Emerging technologies can support preparedness and response to disasters; however, there is limited understanding on how to implement them effectively and in the majority of the cases they do not provide timely and advanced information in case of natural hazards to both citizens and protection authorities.

This study presents the development and application of a crowdsourcing solution, aiming to enable timely information to enhance preparedness and response phases to disastrous natural hazard events. The design process of the crowdsourcing solution places at the centre both relevant authorities and vulnerable citizens, aiming to deliver tools customised to their needs enhancing inclusivity and knowledge generation and exchange. The tool is built to directly disseminate early warnings, to offer real-time interaction between experts and vulnerable communities through targeted campaigns, to communicate effectively climatic risks to citizens, and finally, increase their disaster preparedness. It is coupled by Augmented Reality (AR) technology, which seamlessly blends real environments and virtual objects, in a user friendly, accessible, and easy-to-digest format, aiming to deliver a useful tool to citizens and CPAs [2]. The proposed solution empowers participation, enhances learning through virtual education material focused on climatic risks (e.g., flood related hazards, forest fires), and effectively communicates climatic risks to relevant authorities allowing for precautionary action to be employed in areas of concern. The developed solution has the potential to lead to improved understanding of climatic risks between CPAs and citizens, enabling to improve the anticipation of natural hazards towards building climate resilient societies.

Acknowledgments:

This research has been financed by European Union's Horizon 2020 research and innovation programme under Grant Agreement No 101019707, project RiskPACC (Integrating Risk Perception and Action to enhance Civil protection-Citizen interaction). For more information about the RiskPACC project visit the website https://www.riskpacc.eu/.

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