

Augmented reality for volcanic and seismic risk communication

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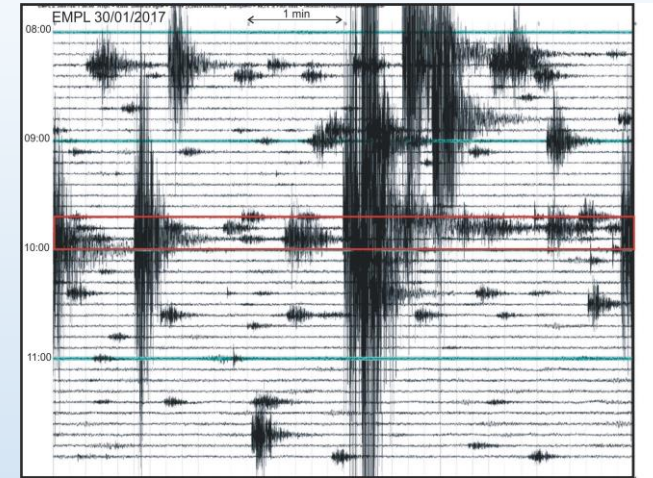
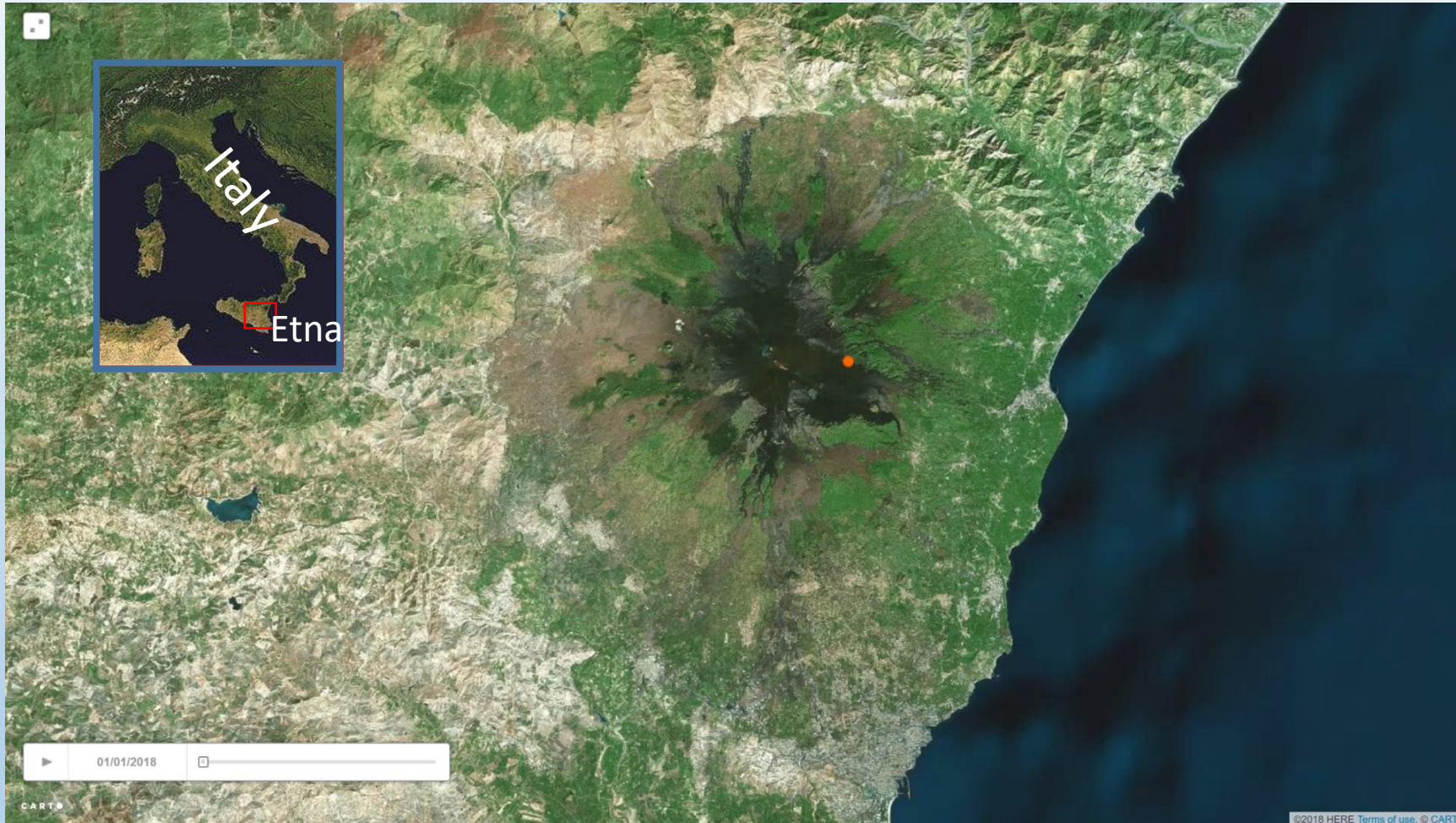
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Mt. Etna: not only eruptions!



Etna is located in southern Italy. It is a persistently active strato-volcano with basaltic lava effusions. Earthquakes are mainly shallow (< 5 km), with magnitude rarely exceeding ML 5. Despite the magnitude, the surficial foci can yield structural and non-structural damage.



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Click on the image to see the epicentral distribution of earthquakes occurred from January to November 2018



S. Michele (S. Venerina)

29-10-2002 M_w 4.7



Crollo di un tramezzo all'interno di un edificio in cemento armato



Collapse of a partition wall inside a reinforced concrete building

The social and economic impact of earthquakes and eruptions affects a quite large population which lives along the flanks of the volcano, even though at distance of tens of kilometers from the active craters.

This requires the adoptions of effective measures of education and communication to increase the resiliency of the population and reduce seismic and volcanic risk.



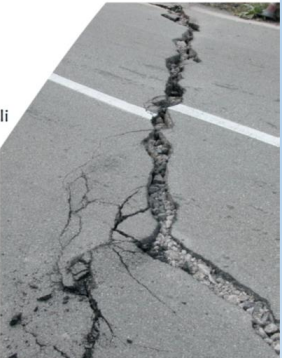
Photo credits: Marco Neri

(From Azzaro et al., 2016)

KNOW YOUR RISK Know your city Reduce seismic risk through non-structural elements

Terremoti Etnei rischio sismico di elementi non strutturali

Etnean Earthquakes seismic risk of non-structural elements



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TÉCNICO LISBOA

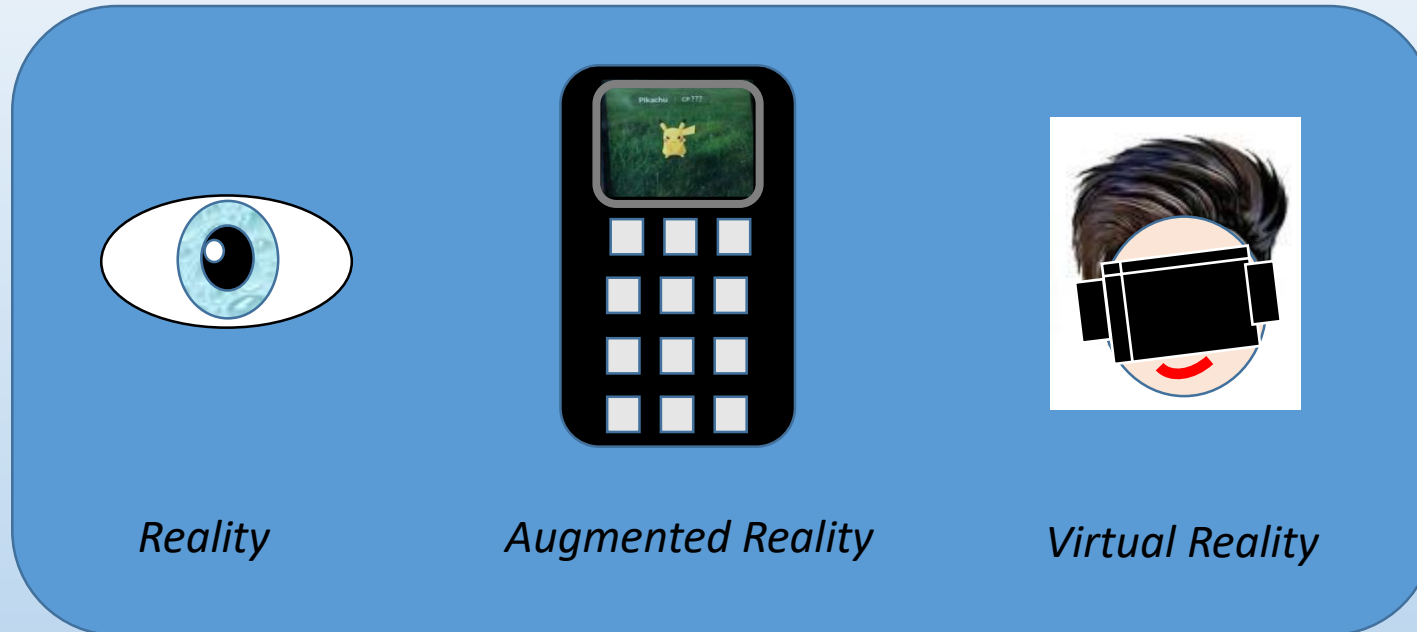
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Augmented Reality (AR) and Virtual Reality (VR) are well known by Native Digital and can be used by lower-level and university students to promote their understanding of natural risks.



3DTeLC is a three-year trans-European project funded by the Erasmus+. The main goal of this project is to help young students to become highly-skilled professionals in the field of environment and geosciences, gaining knowledge in image and 3D-spatial analysis, data management and informatics, and strengthening their mathematical and numerical skills in Earth observation and data analysis.



New Tools for Earth Science: Teaching, Learning and Citizen Science promotion

Augmented Reality (AR): We promoted the development of a tool that can be easily used by common people, in particular young people, who have the smartest approach with new technologies. At this aim, we designed “the Talking poster” technique.

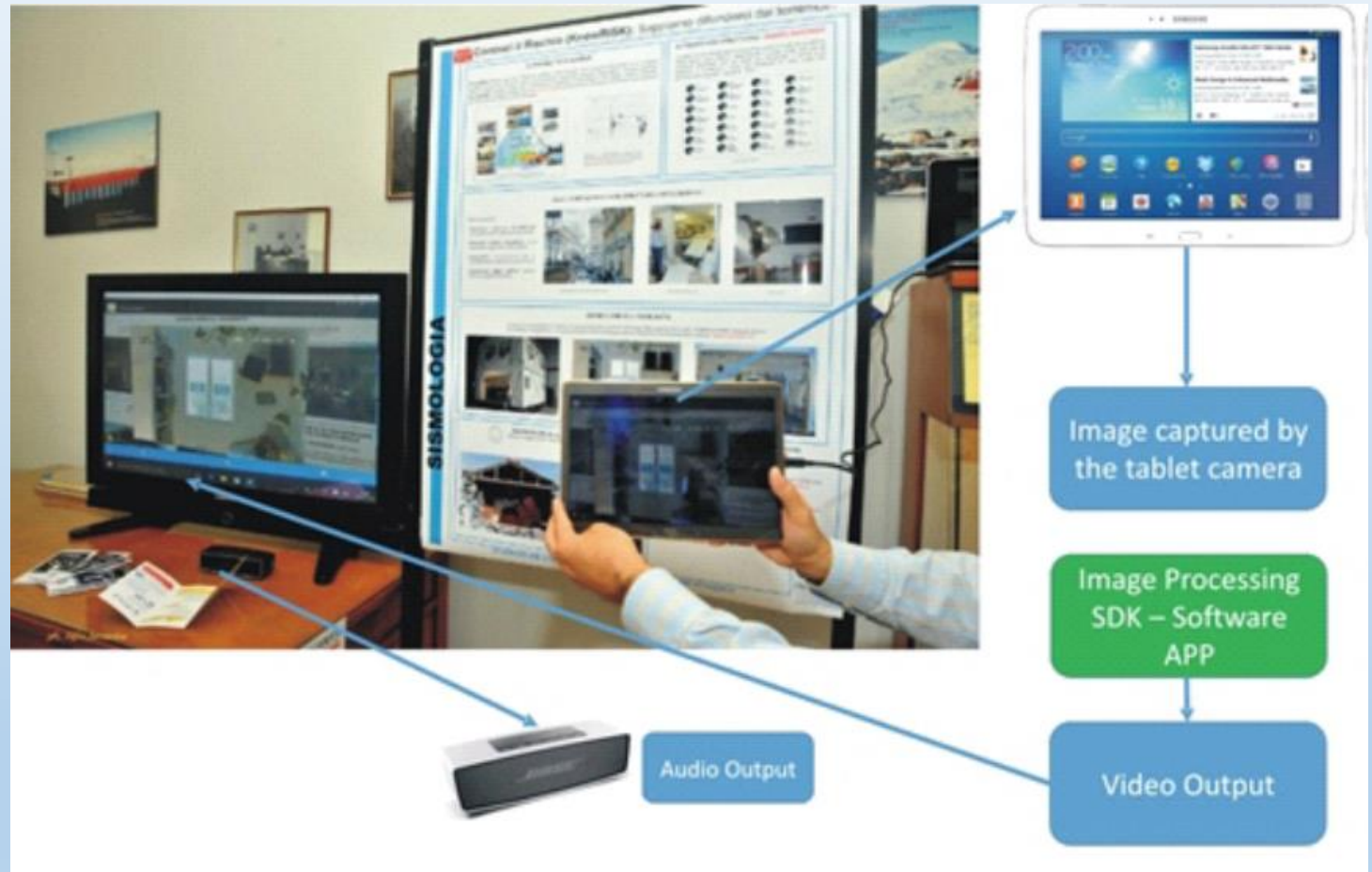
Virtual Reality (VR): 3DTeLC project promotes 3D-Virtual Tours that can be used to help students discover, study and deepen their knowledge: starting from data acquired by drone surveys, students can “surf” real landscapes even if these are distant or inaccessible. Consequently, they can explore and study geological elements as many times as they want.



The “Talking poster” based on our AR scheme

This tool has been developed for tablet/smartphones within the Wikitude™ framework. The APP is able to recognize images, users’ position and produces outputs such as videos, images, sounds, web info, etc. The prototype is easy to use, auto explicative, and providers are able to reconfigure and adapt it to new targets with little effort.

In the PICO presentation the audience would have had the opportunity to see an example of AR tools.



(From Reitano et al., 2019)



Acknowledgments

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References

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