

Editorial

Digital Earth for Sustainable Societies.

Digital Earth is a global initiative aimed at harnessing the world's data and information resources to describe and digitally represent our planet, and to monitor, measure and forecast natural and human activities on earth. Digital Earth is the name referring to a concept by former US vice president Al Gore, describing a virtual representation of the Earth connected to the world's digital knowledge. In his remarkable 1998 speech, Gore described a digital future where children - indeed all the world's citizens – could interact with a computer-generated three-dimensional spinning virtual globe and access vast amounts of scientific and cultural information to help them understand the Earth and human activities.

We have come a long way since 1998, mostly along an evolutionary trajectory. More recently, though, we experienced serious disruption potentially generating a strong impulse accelerating digital transformation in general. Making the best possible use of this disruptive impulse, 'surfing' it towards a broader acceptance of integrating real with virtual worlds for the benefit of humankind and its sustainable livelihoods is the challenge, and the opportunity we are facing right now.

The University of Salzburg and its Department of Geoinformatics – Z_GIS host the 12th International Symposium on Digital Earth (ISDE12) from 06-08 July 2021. The Covid-19 pandemic required various changes to the organizers. In fact, the Covid-19 pandemic fostered the digital transition and made 'dashboards' popular to mass internet users. Surely, the underlying methods and technologies – broadly speaking: Earth Observation, GIS/Geoinformatics, positioning (GNSS) and location services – had come a long way, from technical wizardry to the ubiquitous use by the masses.

It is now safe to say – almost 23 years after Al Gore's visionary speech - that the creation of the digital society is on its way through technological development, theoretical and empirical scientific research and increasingly inclusive and seamless technology.

Talking about Digital Earth: do we consider this simply a new name for established concepts around Geoinformatics? We aim far beyond that. Anything starting with 'Geo' tends to be put into a little box together with disciplines with a long and different track record. Digital transformation of our societies, economies and all the processes driving them requires a much broader approach. It requires location, though, to connect all the relevant elements and actors. Digital Earth therefore establishes fundamental geospatial concepts all across, serving as a strong transversal approach to future-proofing an information-driven world.

ISDE12 therefore links a broad range of research areas. We are pleased to present work by researchers who actively contribute to the creation of the Digital Earth society. Next to classic research papers we created a category "Best practice papers for Sustainable Development Goals" and can now publish the 28 best papers that underwent a rigorous blind review.

The symposium hosted prominent keynote speakers who addressed the main conference topic and encouraged further discussion. Ryosuke Shibasaki, Martin Visbeck, Huadong Guo, Martin

Raubal, Karl Steinitz, Nadine Alameh, Barbara Ryan, Lawrie Jordan, Yana Gevorgyan in the plenary sessions and another key note speakers in the sub-events shared their insights into new developments in the field, and by doing so inspiring new research and cooperative initiatives.

We truly thank our partner organisations who significantly helped to make this symposium possible, particularly the Austrian Academy of Sciences – ÖAW, the State of Salzburg with its ITG – Innovations- und Technologietransfer GmbH and all industry and media partners!

Neither the symposium nor this publication would have been possible without the help of many people working in the background. We are deeply indebted to all those who contributed to the conference and supported us as editors through their work, effort, time and, above all, patience. We would like to mention the authors who underwent a rigorous review process resulting in high quality publications. We particularly thank Julia Wegmayr (University of Salzburg) who provided invaluable assistance with her competent handling of general conference affairs (from contribution registration to public relations).

We do hope that the symposium gives a wide picture of current developments in Digital Earth, that the ideas presented here encourage further research, and thus foster development of powerful methods and tools as well as effective strategies for sustainable societies.

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