

# The Power of Open Digital Earth Globes

*connecting countries, business, and citizens to address shared challenges*

Societies today face increasing challenges at the interface of human activities and the environment, and more integrated knowledge and tools that cross disciplines and scales are needed to engage communities and to support planning and decision-making. Many of these challenges, including increasing climate hazards, urbanisation, resource depletion, large scale people movements, and growing inequity, have a spatial dimension. Emerging geospatial technologies offer valuable capabilities that can (i) help diverse groups of people to better understand risks and options, (ii) open opportunities from global trends in the internet and space science, and (iii) spur innovation for problem solving and for development.

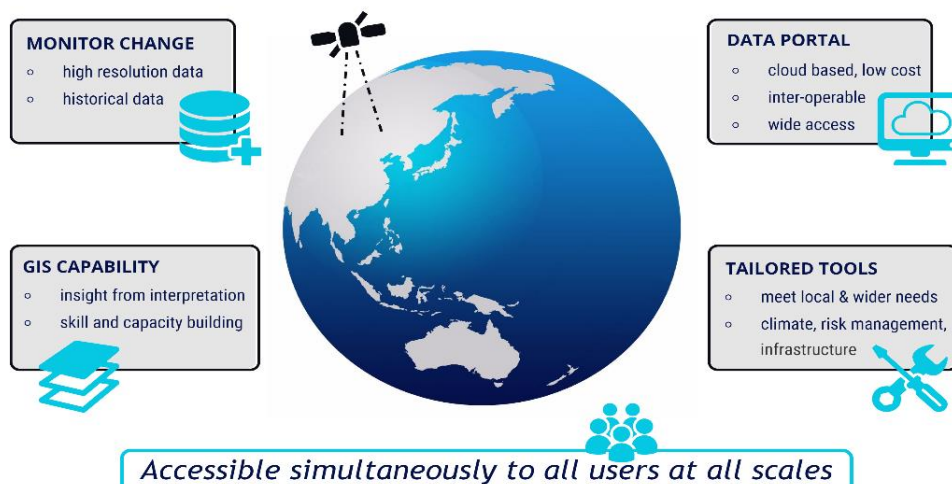
## Why open digital earth globes?

Open digital earth globes enable the visualisation and analysis of environmental, social and economic information in its geographic context. By placing these diverse themes together, globes can deliver valuable insights to users ranging from non-expert communities to specialized expert decision-makers. The benefits of globe applications can include:

- A seamless shift across global, regional and local scales. Addressing many current challenges requires analysis across scales, for example to understand the drivers of change, to identify likely future pressures, and to analyse the wider consequences of interventions.
- Cost-effective monitoring of change. Understanding spatial change is critical for many environmental, resource management, land use planning, disaster recovery, and infrastructure decisions.
- Powerful integration capacities. The growth of available data and information is exponential, and so much could be better harnessed and utilised. Globe tools can readily be designed to integrate and present related data.
- Visualisation. Brain researchers estimate that around 65% of people learn from visual cues. Spatial tools such as globes can enhance learning, communication and knowledge uptake across diverse groups.
- A capacity to harness data from space. In coming years satellite data will dramatically improve in resolution and in automated analytics. Engaging in these emerging capabilities will contribute to future knowledge industries and productivity.
- Enhanced open data, much of which is spatial, which is an emerging economic resource in its own right that can improve efficiencies and stimulate innovation. Open access also enables wide and simultaneous use across communities and institutions.

## VIRTUAL GLOBES

*Powerful platforms for delivery of information and tools*



## Globe applications

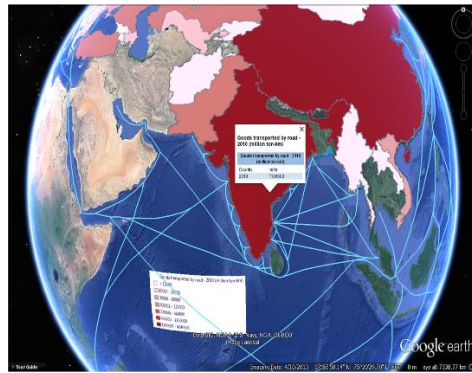
Digital earth globes are new tools with considerable untapped potential. For example, recent applications of globes include the real-time rate and direction of cyberthreat (<https://cybermap.kaspersky.com/>), and the social and economic devastation caused by natural disasters over the last 115 years (see <http://globalriskmap.nicta.com.au>).

The 2014 Queensland G20 Globe spatially linked the resources of the State, through economic, trading and goods transport pathways, with dozens of countries and many thousands of enterprises around the world. Through the G20 Globe, data on agriculture, construction, resources, tourism, science and innovation, and education and training, sectors are represented geographically. Also in Queensland, the Queensland University of Technology<sup>1</sup> has developed The Cube, a two-storey high cinematic screen and the world's largest touch and display screen, to help researchers and students visualise and study complex systems.

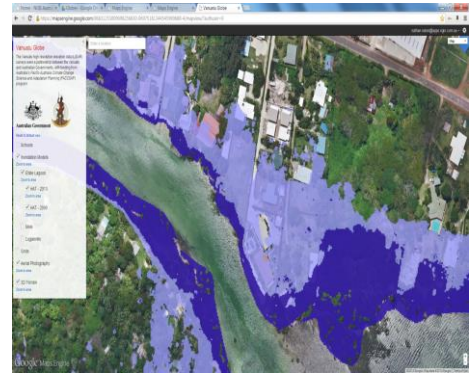
The Vanuatu Globe, developed by the CRCSI with funding from the Australian Government, drew on high resolution elevation data for inundation modelling, and was used by international aid and recovery agencies, the Government of Vanuatu, and communities in the recovery from Cyclone Pam. Having an open Vanuatu Globe enabled a rapid geographic Crisis Map that could be accessed simultaneously by users at all scales to ensure that recovery efforts were efficient, well targeted, and engaging of communities.



The Cube, QUT<sup>1</sup>



ODEF Globe based on G20 Globe



Vanuatu Globe

## The Open Digital Earth Foundation (ODEF)

The ODEF aims to build collaborative partnerships to support the application of progressive and innovative digital earth globe technologies for societal benefit. The Foundation is a not for profit corporation that values open data and approaches, research excellence that delivers measurable benefits for ready to use applications, and building capacity in developing countries (see [www.digitalearthglobe.org](http://www.digitalearthglobe.org)).

The Foundation has core partnerships and capability spanning:

- The Australia and New Zealand Cooperative Research Centre for Spatial Information (CRCSI) with more than 100 partner agencies from industry, research and government, which delivered the 2015 UN *Momentum for Change* award-winning Vanuatu Globe
- The innovative 2014 G20 Globe, gifted from the Queensland Government, which targets trade and investment through charting supply chains across six economic sectors in an open data partnership between government and industry
- Cr8Global, an international innovation, knowledge and investment company with a vision to bring great innovations to global markets to improve health and happiness
- The Survey of India, with a 250 year long record of cartographic services
- World-class Science Advisors, Professor Nick Chrisman (USA) and Professor Manfred Ehlers (Germany)