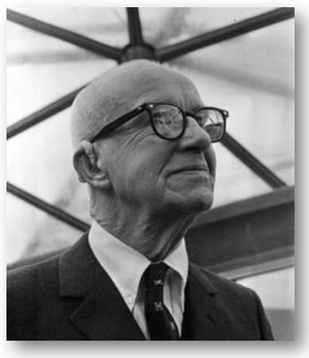
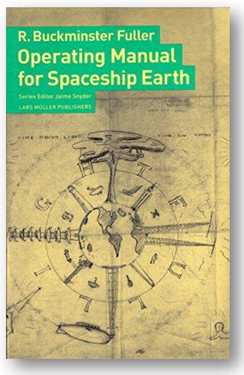
Research Group for the Design of Future Earth and Society

Background



Buckminster Fuller (1895-1983)

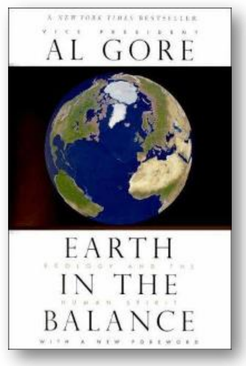
・Emphasized the importance of interdisciplinary approach
・Specialized areas create potentially unifiable technological and economic benefits

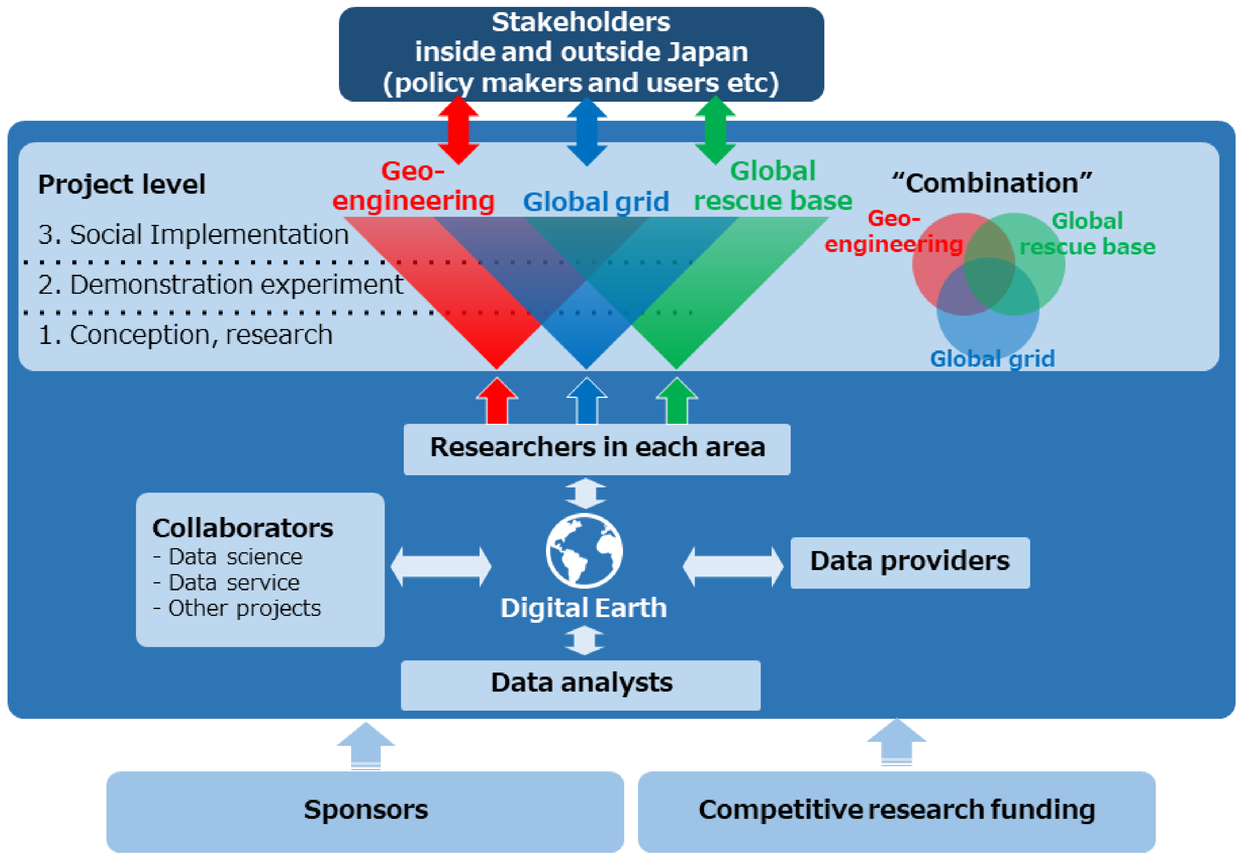


Al Gore (1948 -)

Vice President Gore's 1998 vision to create a "Digital Earth" will enable people to explore our planet in its infinite variety

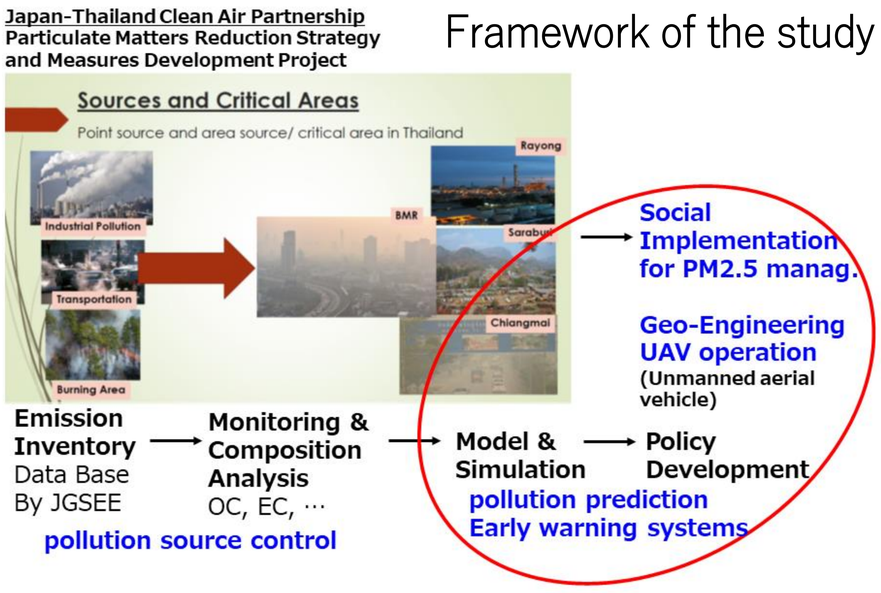
Al Gore Launches Digital Earth Initiative

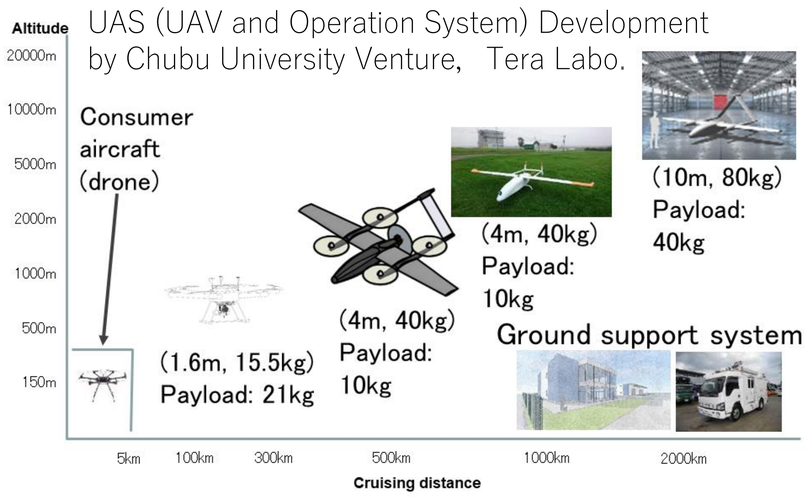




Group 1. Geo-engineering

Framework of the study



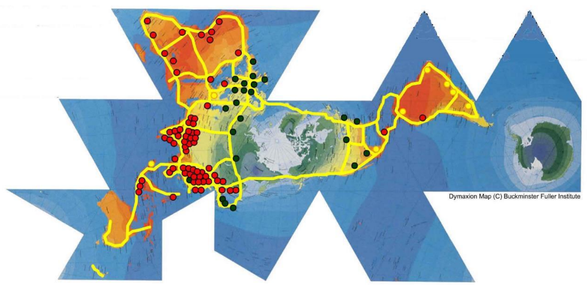


Group 2. Global Grid

Fuller suggested to create a peaceful world without worry of resource energy in the construction of the electricity transmission network of the world.
Two technologies have potential to achieve it.

(A) Superconductivity

Chubu university is actively developing superconducting direct current power transmission system which would contribute to realize more sustainable society



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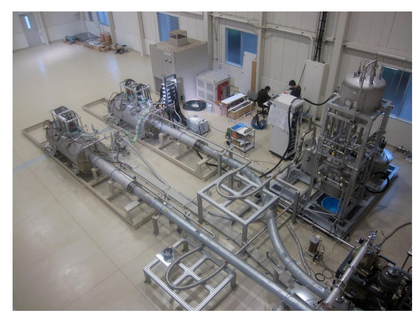
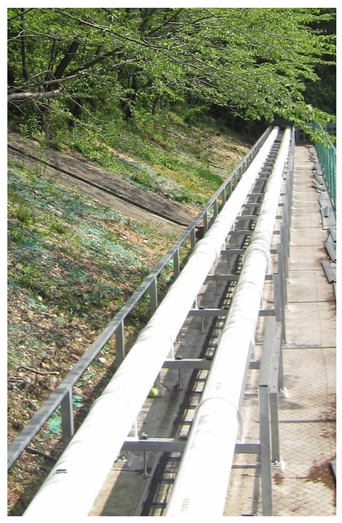


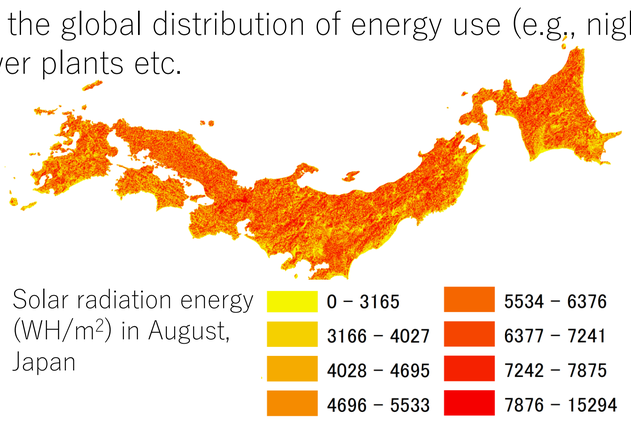


Laboratory of superconductivity

(B) Geoinformatics

Geoinformatics techniques enable to estimate the global distribution of energy use (e.g., night lights) and land suitability for photovoltaic power plants etc.

DMSP (distribution of night lights)



Group 3. Global Rescue Base against Disasters

(A) Large area disaster prediction technology for inundation situation and flood simulation

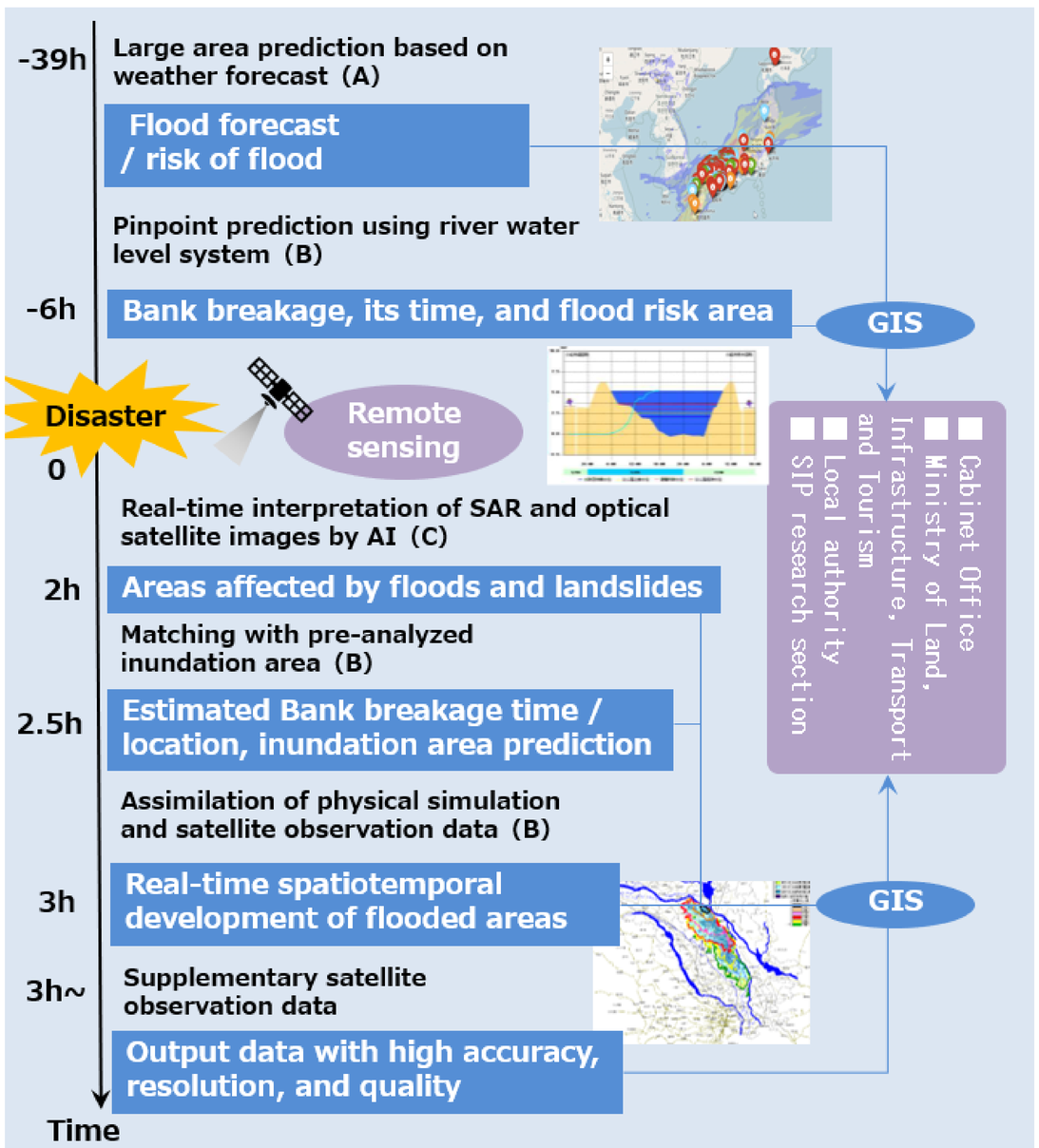
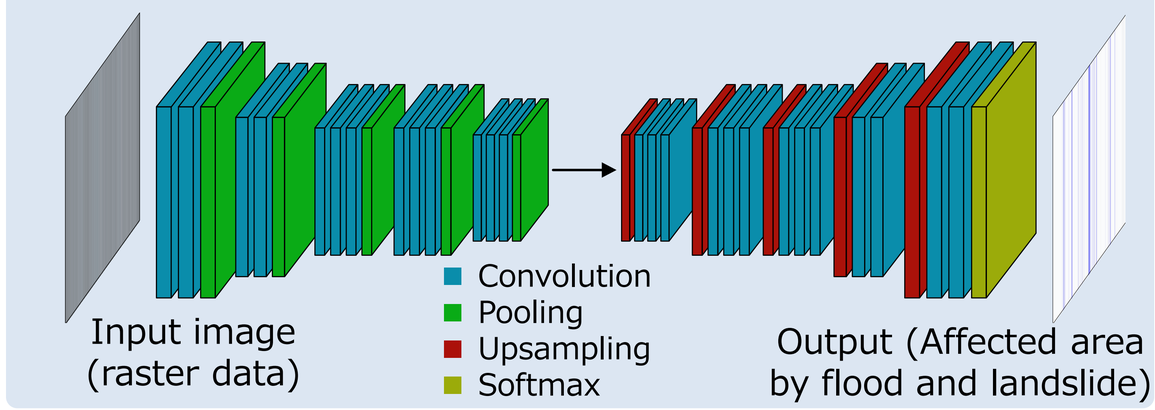


Image recognition using remotely sensed data through deep learning

(B-1) Semantic segmentation (i.e., recognition technique to identify the situation of each raster cell)



(B-2) Change detection (i.e., comparing two images before and after the disaster to identify the affected area)