



Committee on Earth Observation Satellites

# WGD Session: Ideas from ESA about new WG activities

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## Idea 1: Enhance access & use of EO data for Post-Disaster Needs Assessment (PDNA)

- ✓ Immediate response phase: rapid damage mapping (Charter, Sentinel Asia, Copernicus ~EMS)
- ✓ PDNA: detailed damage assessment (housing, transportation, etc); supports recovery, rehabilitation & reconstruction; high level of labour (image analysis primarily VHRO), challenging deadlines, etc.

Goal: ease burden of image analysts involved with detailed damage mapping (and save time).

- Ability to ingest and process 30+ EO missions data (visualization, handling assets based on Common Band Name, STAC & COG method, on-demand VA processing)
- Integrate or enhance on-line EO services to support more sensors thanks to CEOS member agencies (e.g. DInSAR for earthquake response with multiple SAR missions not just Sentinel-1)
- Enhanced characterization of damage using Big Data (e.g. proxy maps using coherence imagery)
- Some GIS functions to support image analysis (post processed images downloaded at some point)

ESA could adapt the Charter Mapper to test the idea; Proposed format: a pilot (mCube prototype).

Requires at least two CEOS WGD members to define a collaboration plan.

Risks: following such a pilot, how to access large VHRO data collections? Availability of VA providers?

**Idea 2: increase acceptance & adoption of on-line services for Disaster Risk Reduction.**

Focus on users from countries that do not use space technology and provide access to a multi-thematic processing environment to observe & assess hazards and risks.

- Theme by theme with dedicated EO processing chains (incl. advanced services e.g. incorporate PSI chains of the GEP, etc) global auxiliary datasets (e.g. CopDEM, DLR's WSF, JRC's GSWO, etc) and in-situ data (dependent upon ) for exploitation with EO data,
- Implement novel analytics techniques (e.g. AI): generalization of VA process over wide areas, improved VA using time series, etc.
- Develop capability that will also serve disaster response (grow rapid mapping community)

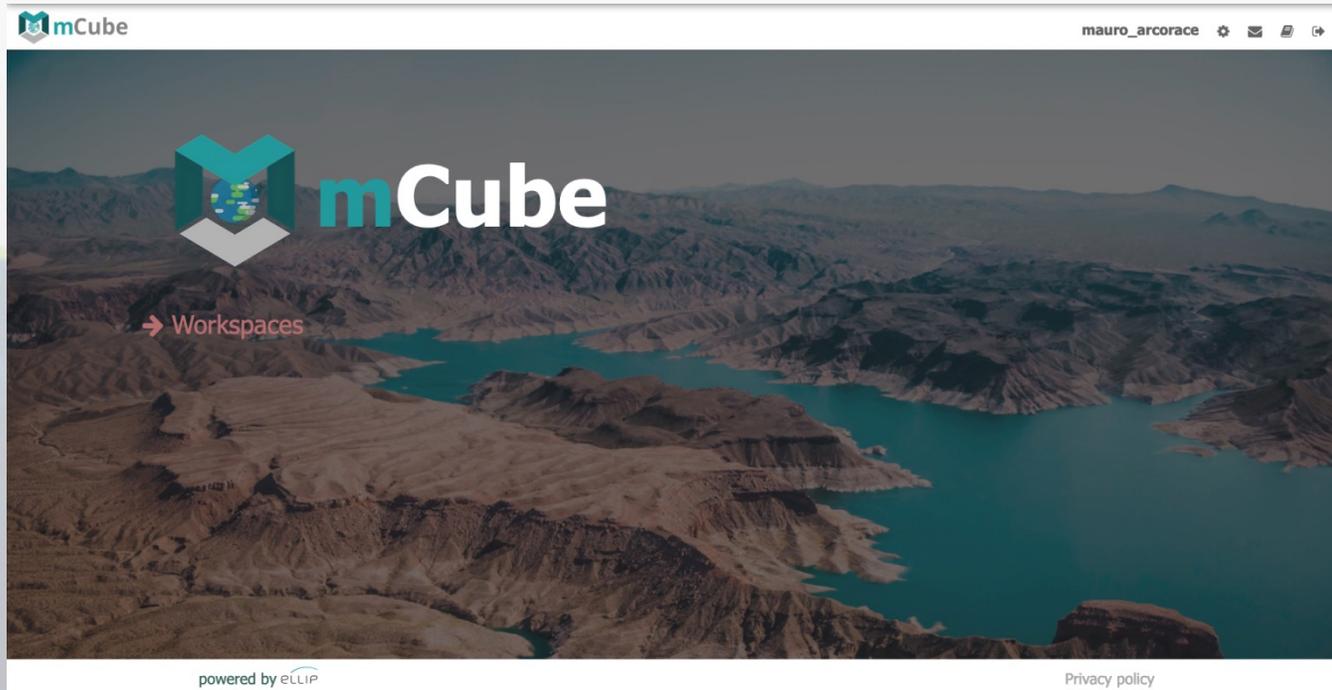
Proposed format: a Demonstration. ESA may consider making available the light version of the Charter Mapper (mCube) to mandated organization in charge of risk assessment: trial period and feedback process (on-line + international conferences e.g. GFDRR UR event, UN conferences, etc).

Requires at least two CEOS WGD members to define a collaboration plan.

Risks: managing a diverse and scattered user group, multiple facets, interference with on-going CEOS WG activities.



The **mCube** framework allows the deployment of cloud-based environment for effective exploitation of multi-mission and multi-sensor satellite imagery data resources, i.e. a collaborative, virtual work environment providing access to EO and value-added products, and the tools, processors, and ICT resources required to work with them, through one coherent set of interfaces. <https://docs.mcube.terradue.com/missions/supported-missions/>



mCube supports a broad range of radar and optical data products of **44 satellites (33 EO missions)** from **20 space agencies** and data distributors.



<https://docs.mcube.terradue.com/missions/supported-missions/>

## ESA Charter Mapper Service portfolio

mCube identical (but not linked to COS-2)  
Under development

#	Service name	Flood large	Fresh flood	Tsunami	S & H rural	S & H urban	Earthquake	Landslide	Wildfire	Volcano
7	Geometric Co-registration	x	x	x	x	x	x	x	x	x
9	Multi-sensor Change Detection MAD	x	x	x	x	x	x	x	x	x
10	Coherence and Amplitude Composite			x	x	x	x	x		x
12	Flood Extent Mapping (HASARD)	x	x	x	x	x				
13	DInSAR Displacement Mapping (DIAPASON)						x			x
14	DInSAR Displacement Mapping (SNAP InSAR)						x			x
16	PCA Classification								x	x
18	Change Detection Analysis (IRIS)	x	x	x	x	x	x	x	x	x



Available services



**Flood Delineation (HASARD)**  
developed by [LIST](#)



**Change Detection Analysis (IRIS)**  
developed by [NHAZCA S.r.l](#)

More information about the Charter Mapper service portfolio is available at: <https://docs.disasterscharter.org/services/intro/>

- Data access management (authorizations, dashboard): free data + commercial data (30+ EO missions supported)
- Calibrated EO data calibrated & converted into assets with common band names
- On-demand/systematic EO processing chains from 3<sup>rd</sup> Party service owners (INGV, AUTH, NHAZCA, CNRS EOST, CNR IREA, etc.)
- Functions: filter collections; adjust histograms; interactive comparison with slider; crop; GIS functions (basic), etc.



Thank you

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