

Digital Earth in a transformed Society

Unlock and Use EO/Geospatial Data for SDG by Empowering Stakeholder Engagement in a Transformed Society

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Content

- Setting the Scene and Evolution of the MFTTT WG4SDG
- The Emerging Landscape of the SDG-related Stakeholders and Engaged
 Actors in Hungary from Academia to Space Industry
- O Strengthen Stakeholder Engagement and Capacity Building
- O Progress in a Transformed Society with Relevance to SDG
- Conclusions



Setting the Scene

- The UN Agenda 2030 and the SDGs and the established targets and indicators
- O Role of EO/geospatial data in monitoring and reporting
- From interdisciplinary collaboration to trans-disciplinary approach
- Stakeholder engagement and capacity building from local to global
- Importance of exploitation of Digital Earth vision and technologies to support informed decisions in SDG-related issues
- Mission goal of MFTTT WG4SDG: promote and facilitate by sharing information



Promote Engagement, Trans-disciplinary Cooperation and

Collaboration

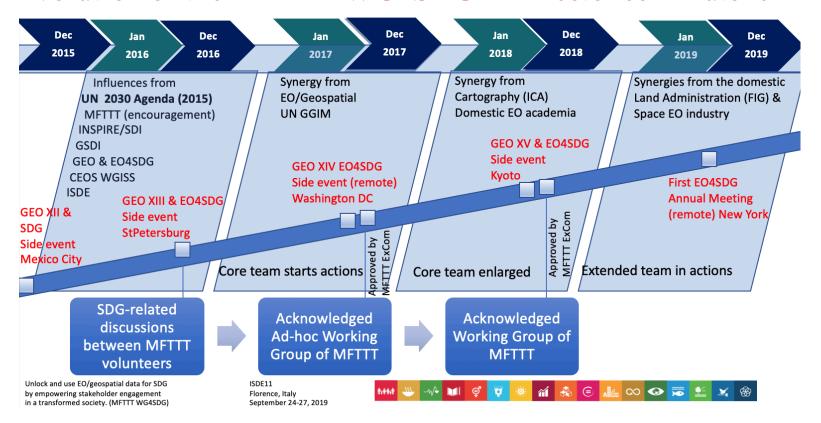
The inter- and trans-disciplinary cooperation and collaboration among stakeholders on domestic level is guided by

- Othe national strategy on SD and
- International communities and strategy documents

Uptake of the stakeholders' engagement is supported by

- GEO EO4SDG Strategy Implementation Plan
- **CEOS/ESA** guide on Earth Observation for SDG
- Good practices in capacity building and curricula development (Sustainable Development Solution Network-SDSN)
- Recommendations on the integrated use of geospatial information and statistical data for indicator monitoring and reporting (UN-GGIM Secretariat, EFGS)
- CEOS Ad-hoc WG on SDG
- The recently established **FIG WG on SDG**
- UN-GGIM regional and thematic networks
- ODocuments of the UN HLPF on SDG
- **ISDE11**'s SDG-related documents and messages

Evolution of the MFTTT WG4SDG – milestones in nutshell



Progress in a Transformed Society with Relevance to SDG

Ongoing developments:

Institutional capacity building (2018-2019)

Ministerial Commissioner responsible for supervising space activities has been appointed at the Ministry of Foreign Affairs and Trade (MoFAT)

Department of supervision of space research and activities has been set up at MoFAT (actually operating as the Hungarian Space Office - HSO)

- It is anticipated the global policy issues including SDGs will be addressed in the **coming National Space Strategy**.
- The advisory board 'Scientific Council on Space Research' will be reset by end of 2019



The Directory in English





Progress in a Transformed Society with Relevance to SDG Ongoing developments:

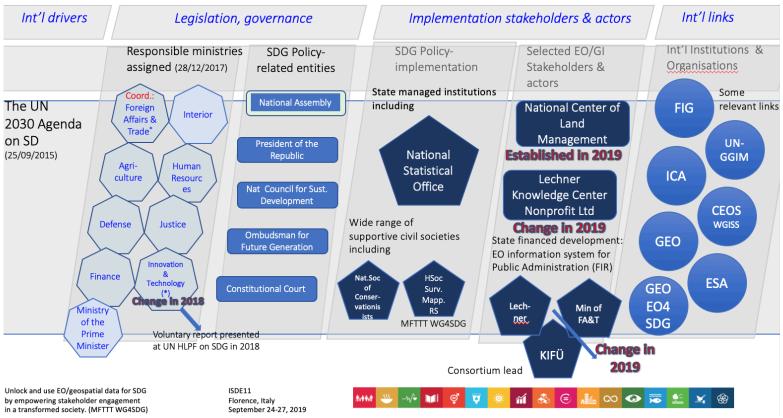
Institutional capacity building (2019)

In 2019 majority of **ex-FÖMI** (former flagship institutions in Geodesy, Cartography and Remote Sensing) **joined Lechner Non-profit Ltd**, the acknowledged knowledge center for construction planning The fusion has the anticipated advantages:

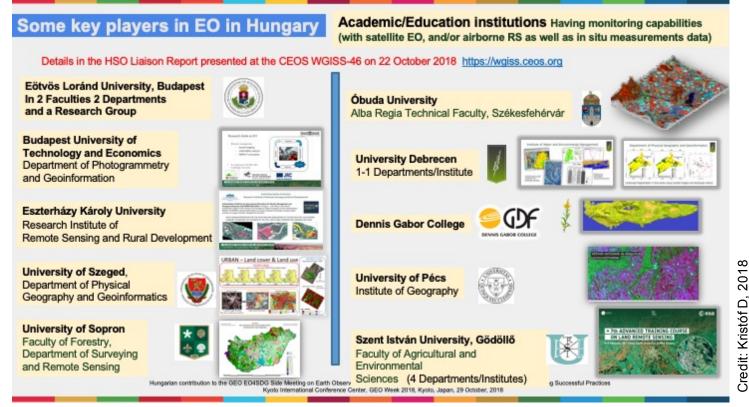
- Concentration of highest volume of geospatial, EO data (sat, airborne), and
 information of the built environment (including buildings, constructions and utilities)
- Concentration of competences from urban/regional planning to surveying and land registry, from GIS to EO developments and applications. http://lechnerkozpont.hu
- Related tasks are under the supervision of the Prime Minister's Office



The Emerging Landscape of the SDG-related Stakeholders



The Emerging Landscape of the SDG-related Stakeholders and Engaged Actors from **Academia**



The Emerging Landscape of the SDG-related Stakeholders and Engaged Actors from the Space Industry Cluster HUNSPACE

HUNSPACE

The Hungarian Space Cluster

- Established in 2014
- 37 members (as of April 2019)
- Annual General Meeting
 - SME4SPACE membership Cluster Committee with
 - representatives of each section of the cluster:
 - Satellite components
 - Electronics,
 - Earth Observation
 - Educational Research and Dissemination

EARTH OBSERVATION AIRBUS DS GEO HUNGARY

Agriculture
 hematic
 Verde: e

HUNSPACE

P.Hargitai,

- · Verde: extraction of biophysical information
- Farmstar: supporting the daily farming decision making
- Starling: for organisiations committed to no deforestation
- · Grassland Production Index
- · Monitoring Services for Oil, Gas, Mining and Energy
- Monitoring Services for Maritime
- Land Administration Services
- GIS Data Capture from scanned maps, plans, or other spatial data
- · Managing and supporting organisational change

EARTH OBSERVATION GEODATA SERVICES LTD.

- Satellite Images Services
- High precision, multispectral data, 30cm geometrical resolution
- Sensors: KOMPSAT, Wordview, GeoEye, IKONOS, QuickBird, SkySat
- Remote Sensing Services
 - State administration, disaster recovery, environmental protection
 - Supporting both agriculture and industry with the most advanced technology
- Developmen
- The development activities are to share the benefits with the participating partners, that can solve their tasks more efficiently
- T-BEA: agricultural biomass monitoring (applied research, EUREKA)





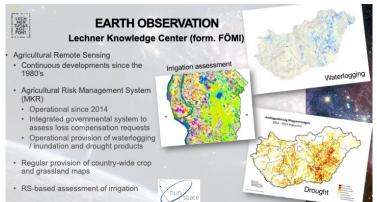
The first Space Industry Catalog 2014

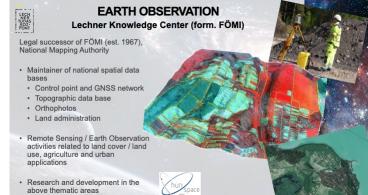
HUNSPACE-HUNAGI MoU April 7, 2010





The Emerging Landscape of the SDG-related Stakeholders and Engaged Actors from the Space Industry Cluster HUNSPACE FÖMI





Institute of Geodesy, Cartography and Remote Sensing incl. RS Directorate & Satellite Geodesy Observatory 2017

BFKH FTFF

Budapest Capital Government Office Dept of Surveying, Geo-informatics and Land 2019

Lechner Nonprofit LLCompany



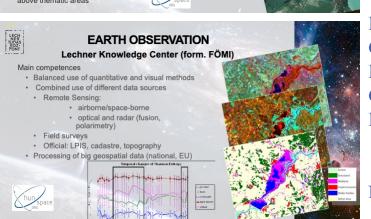
Lechner Knowledge Center (form. FÖMI) Land cover mapping and monitoring

Credit: D.Kristóf, G.Maucha of Lechner NP LLC (April, 2019)

- · Key role in European land monitoring
- Cooperation with EEA (European Environment)
- · Member of European Topic Centre Urban, Land and Soil systems (ETC-ULS)

EARTH OBSERVATION

- · Technical coordination of European CLC2018 update
- · Quality Assessment and methodological developments
- National Reference Center for land cover
- · National land cover / land use monitoring
- · Country-wide mapping and status assessment of ecosystem services
- In the frames of state nature conversation programme · Project led by the Ministry of Agriculture (KEHOP
- 4.3.0)
- · Contribution from various R&D and operational



11th International Symposium on Digital Earth (ISDE 11), 24 – 27 September 2019, Florence (Italy)

Strengthen Stakeholder Engagement and Capacity Building Activities of MFTTT's ad-hoc WG4SDG – Talks on domestic fora in 2017

Day of the European Surveyors and Geoinformation

Budapest, 22 March 2017
Surveyors, GI experts policy makers, market players, professors, students, members of civil societies

GIS Open 2017 Székesfehérvár, 11-13 April 2017

Land Administration, experts in surveying, mapping, remote sensing, geoinformatics; professors, students, researchers

18th Meeting of Transylvanian Surveyors, EMT

Tusnádfürdő, 18-21 May 2017 A cross-border event. Geodesists, surveyors, experts in cadastre and geo-informatics, private sector of Transylvania and Hungary

7th GIS Conference and Exhibition

Debrecen, 25-26 May 2017/ (Palya et al, 2017)

Experts in geoinformatics and remote sensing, civil servants, professionals of higher education, policy makers

31st Bi-annual Roving Conference of MFTTT

Szekszárd, 6-8 July 2017 Experts in land administration, surveying, mapping, remote sensing, geoinformatics; Policy makers, members of civil societies'

Mini Conference, 70th Anniversary of Prof. B. Márkus

Székesfehérvár, 11 July 2017 Experts in geoinformatics from universities, students, private sector, governmental agencies and civil professionals

Fény-Tér-Kép (Light-Space-Image) Conference

Gárdony, 12-13 October 2017 Experts in *photogrammetry*, remote sensing, Earth Observation, image processing and geoinformatics

Meeting with SD representatives of the National

University of Public Service

Budapest, 7 November 2017 Expert in *Good State/Governance*, and efficiency indicators

8 events, 950 expert attendants!

Strengthen Stakeholder Engagement and Capacity Building Outreach activities of MFTTT's ad-hoc WG4SDG – Talks on GI/EO4SDG in 2018

Day of the European Surveyors and Geoinformation

Budapest, 21 March 2018 Surveyors, experts in EO and geoinformatics; market actors, students, professors, students, members of civil societies



Szabolcs Mihály lead of the MFTTT WG4SDG Team

7th Conference of the Zielinski Szilárd Civil Engineering College Budapest, 4 May 2018 Students of Civil Engineering

Students of Civil Engineering Faculty, Budapest University of Technology and Economics and

faculty professionals, staff members, college students



Tamás Palya, member of the MFTTT WG4SDG Team

E-mail contribution to the **2nd Nexus Conference on Climate-Water-Food Security-Energy**/ Chapel Hill 16-18 April 2018

Interventions at the InterCarto-InterGIS
Interdisciplinary Conference on Geoinformation and Sustainable Development
Bonn, 24-28 July 2018.

European Forum on Geography and StatisticsHelsinki 16-18 Oct 2018

Hungarian GIS Data for the Sustainable Development Goals

Awareness raising campaign of Hungarian Society of Surveying,



EFGS 2018 conference, Helsinki, October 16-18, 2018



Strengthen Stakeholder Engagement and Capacity Building Outreach activities of MFTTT's ad-hoc WG4SDG on int'l fora in 2018

7th International Conference on Cartography & GIS, Sozopol, Bulgaria 18-23 June 2018

GEOSPATIAL DATA AND SERVICES TO SUPPORT THE UN AGENDA 2030 IMPLEMENTATION: HUNGARIAN ACTIVITIES





SDI Days, 14th International Conference on Geo-information and Cartography Zagreb, 27 September 2018.



GEO EO4SDG Initiative' progress report prepared for *GEO Highlights* mentioned the Hungarian activities in September 2018





its <u>Volunteer National Review report</u>, this year; this included references to <u>Digital Earth Australia (DEA)</u> and <u>Open Data Cube (ODC)</u> projects using and promoting satellite data. To complement its efforts, the Australian Government organized a special side-event around EO and SDGs. The side meeting, followed by two hands-on workshops, was designed to consult with, and inspire, more governments and organizations to take action on using EO with the SDGs, while providing necessary knowledge on how and where to begin with.



Country representatives from Australia, Greece, Vietnam, Namibia, Switzerland, and Vietnam present their perspectives on EO uses for the SDGs during the Australia-led side meeting as part of the 2018 HLPF. Credit: EO4SDG

Hungary was another country that submitted its Volunteer National Review report at the 2018 HLPF. Efforts aiming to emphasize opportunities and challenges for geospatial data stakeholders in the SDG context in Hungary include activities by a committed team of volunteers mandated by the Hungarian Society of Surveying, Mapping and Remote Sensing (MFTTT) to contribute to the implementation of the SDGs by identifying and promoting the use of geospatial and EO data. These efforts, inspired partly by EO4SDG and the Global Spatial Data Infrastructure Association, have focused on enhancing multistakeholder partnerships – for instance, between the MFTTT, the Hungarian Space Office, and the Hungarian Central Statistical Office, in support of geospatial/EO integration in national SDG monitoring and implementation.

As part of UN-GGIM 8, EO4SDG worked with UN-GGIM



Strengthen Stakeholder Engagement and Capacity Building Outreach activities of MFTTT's ad-hoc WG4SDG in social and printed media

GIM International Magazine's Insider's View/ September 2017 *International community of geospatial information management*

Paper in International Scientific Journal MMM-GI
December 2017 Experts and stakeholder representatives
of EO/geospatial data and technologies

Geodézia és Kartográfia/ 2018/3 Hungarian community in surveying, mapping, geo-informatics, remote sensing and land management

https://hunagi8.blogspot.com Numerous posts on 'Sustainable Development and GI/EO' since 2006

https://www.mfttt.hu/mftttportal



Strengthen Stakeholder Engagement and Capacity Building Outreach activities of MFTTT's ad-hoc WG4SDG on CEOS/GEO WG Meetings

Hungarian efforts promoting the EO/SDI for SDGs by MFTTT were mentioned in the **GSDI's Liaison Reports** and presented for the **CEOS WGISS-44** and **WGISS-45** plenaries hosted by NASA and RADI respectively.

Presented in HSO report at the **WGISS-46 Meeting** hosted by DLR on 22 October 2018

Actions were reported to

- GEO EO4SDG Initiative in August 2017 and August 2018
- Act4SDGs.org in frame of the UN SDG Action Campaign (25 September 2018)
- GEO EO4SDG Side Event at the GEO Week in Kyoto, October2018











Strengthen Stakeholder Engagement and Capacity Building Outreach Activities of MFTTT WG4SDG – on Domestic & Int'l Fora in 2019

- WG chair's talk at GIS Open 2019 at Székesfehérvár on Capacity building aspects of EO/GI for SDG
- SDG-related activities and actors were presented in the Liaison report of the Hungarian Space Office at CEOS WGISS-47 plenary hosted by NOAA in Silver
- Talk on Sustainability of the surveyor's profession and the Agenda 2030 at the MFTTT Biannual Roving Conference Békéscsaba, June 2019 Audience: from geoscience, georelated engineering and land administration
- https://www.mfttt.hu/mftttportal/index.php/letoltes/eloadasok/doc_view/746

- GEO EO4SDG Annual Meeting, New York, 5
 Aug, 2019 Remote participation. MFTTT WG4SDG's
- **3-slide contribution**

http://eo4sdg.org/eo4sdg-annual-meeting-2019/









Strengthen Stakeholder Engagement and Capacity Building Activities of MFTTT WG4SDG – Dissemination of information in 2019

Report on the GEO Data
Technology Workshop 2019

Download: https://documentcloud.adobe.com/link/review?uri=urn%3Aaai

 $\underline{d\%3Ascds\%3AUS\%3A157fb21-a12c-4450-9393-366309f61df6}$







EO4SDGs Strategic Implementation
Plan 2020-2024 and <u>AGU 2019</u> IN024
SDG session on Connecting Water,
Energy, Land Use & Food Security

- OUN_GGIM AcademicNet: SDG Connectivity Dilemma: Land & GI for Urban & Rural Resiliance
- G-STIC: Technologies4SDGs
 - KAF/AC Initiative: Charter for a Sustainable Digital Age
- **GEO Data & Knowledge** Week Beijing, February 2020
- **DESummit** Obninsk, May 2020
- Contribution to DE European Chapter https://documentcloud.adobe.com/link

<u>Dissemination platform:</u> https://hunagi8.blogspot.com/



Our Common Digital Future

Charter for a Sustainable Digital Age

Wednesday, September 25, 2019, 1–2:30 p.m. Konrad Adenauer Foundation, 220 East 42nd Street, Suite #3300, New York







Strengthen Stakeholder Engagement and Capacity Building Outreach Activities of MFTTT WG4SDG – at Forthcoming Fora

- The 12th European Forum for Geography and Statistics (EFGS)
 Manchester, Oct 9-11
- 25th Anniversary Assembly of HUNAGI devoted to 'Geospatial Intelligence in the XXIth Century' Budapest, Nov 8 https://hunagi.hu/hu/node/325
- New Perspectives in EO (DLR)
 Cologne, Nov 12-13 https://www.d-copernicus.de/infothek/news/news-details/news/veranstaltung-2-symposium-neue-perspektiven-der-erdbeobachtung/
- 'Fény-Tér-Kép' Conference on Remote Sensing, GIS, Image Processing and Photogrammetry Gárdony, Nov 14-15
 https://geoig.hu/2019/09/05/

feny-ter-kep-2019-konferen cia-nov ember-14-15/



Palya T (Lechner Nonprofit Ltd):

The sustainable development goals in

Hungary and the geospatial data availability

https://www.efgs.info/event/european-forum-for-geography-and-statistics-conference-2019/



Mihály Sz et al (MFTTT): *SDI4SDGs* (in Hungarian, planned contribution)



Remetey et al (MFTTT): Promote the use of EO/geospatial data and support the related ecosystem development for SDGs (accepted poster contribution)

https://documentcloud.adobe.com/link/



Remetey et al (MFTTT): Recent Advancements in EO (planned contribution)

GeolQ Imaging Kft.



Progress towards Transformed Society with Relevance to SDG

Acceleration in ICT and innovation towards digital education, digital economy and infrastructures, digital governance - Examples from Hungary

- Strategy policy on **Digital Agriculture** expected by end of 2019.
- Strength: a multi-decade legacy in digital Land Use and Land Cover
- O Precision Agriculture
 Cell-based crop assesment
 using satellite EO, UAV
 mapping,. 5G & drones, and
 Smart Farming Conferences in
 Budapest and Bábolna
- NGOs, start-ups, SMEs are forerunners (eg. <u>ACRSA</u>, <u>Cosima</u> Ltd.)

- ITU Telecom World 2019 in Budapest: discussed ICT centric ecosystem & SDGs. 130 countries
 - Copernicus-based **EO** information system (EOIS) project with KIFÜ and Lechner. Supervised by consortium incl. MoFAT responsible for space research and all space-related activities
- 3D data infrastructure project
 - AI & 5G Coalitions and IVSZ

Science)

Data Strategy Policy proposal for accelerating AI-based innovation. An NGO Proposal (Magyary Z. Soc. of e-Public Administration

- O ICT R+D for resilient, smart cities
- First 5G network operational in Győr in Spring 2019.
- ZalaZone a special roving ground & smart city zone for autonomous vehicles and ITS supported by an advanced digital ecosystem (5G, LiDAR, GNSS, IoT, V2X etc)
- Hungary joins the pre-exascale EuroHPC consortium to use the 150 PetaFlop HPC in Bologna in mid-2020 onward. Apps include AI, V2X but also computation-intensive analysis of Big Earth Data

Conclusions

- Setting up interoperable EO and geospatial data infrastructures for the benefit of the public administration and private sector supports digital governance and digital prosperity
- By support of innovation, exploitation of novel technologies, investing in broadband rollout and ICT solutions the digital ecosystem will provide synergies and opportunities and the digital economy, transformation of the society and the implementation of global policies will be accelerated (SDGs, Climate Change and Disaster Reduction as well).
- O To ensure timely implementation of the SDGs there is imperative need for inter/ transdisciplinary cooperation and collaboration among the engaged stakeholders

Acknowledgements

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Gábor Kákonyi GeolQ Ltd

Zoltán Zboray Min of Innovation & Technology



Budapest by night

Photograph taken by Oleg Kononenko on board of ISS. Image enhancement: Interspect Ltd, Halásztelek, Hungary Courtesy by Gábor Bakó

