
Midterm Review:

- Positive comments on the goal-based approach (CGBA) as a unique contribution ConnectinGEO
- Also commented for the approach to gap analysis synthesized by ConnectinGEO
- Urged to apply both the goal-based approach and the gap analysis thoroughly to SDGs
- Encourage to publish the results in the GEOSS KB/SEE-IN KB
- Also encourage to promote the goal-based approach and the gap analysis in GEO

Assessment of Gap Analysis Outcomes and Integration of Gap Analysis into the SEE-IN KB

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Methodology

GEO STC

Geographic

Observational

Structural

Qualitative/Quantitative

Capacity

ConnectinGEO

Observation

Processing

Discovery and Access

Knowledge & Information

GAIA-CLIM

Coverage

Vertical Resolution

Measurement Uncertainty

Comparator Uncertainty

Technical

Governance

Parameter

Concepts & Processing

Prioritization
Recommendations

Community
Feedback and
Reviews

ConnectinGEO

TDT1:
Goal-Based

TDT2:
International
Programs

BUT1:
Community/
Expert-Based

BUT2:
Discovery and
Access Broker

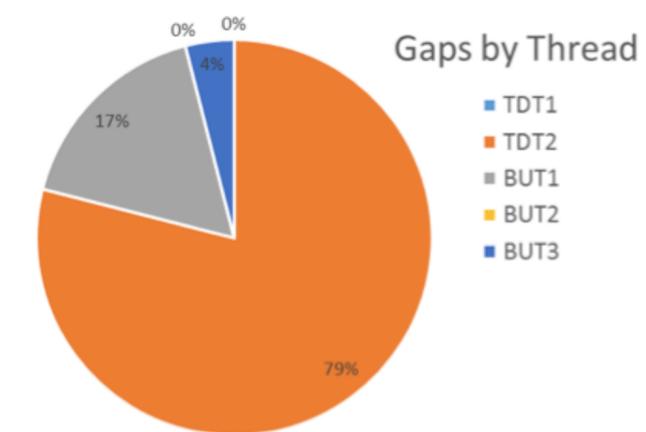
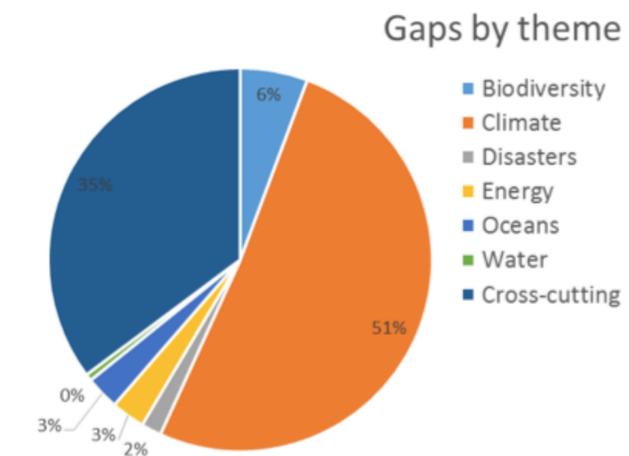
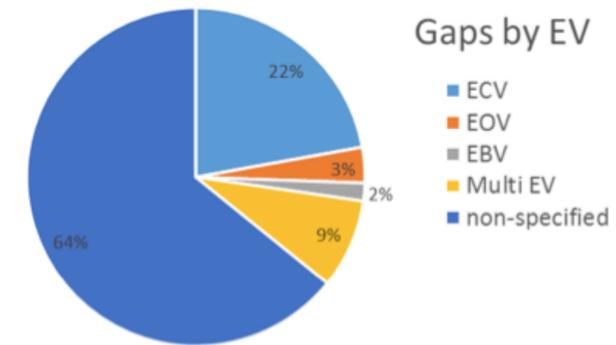
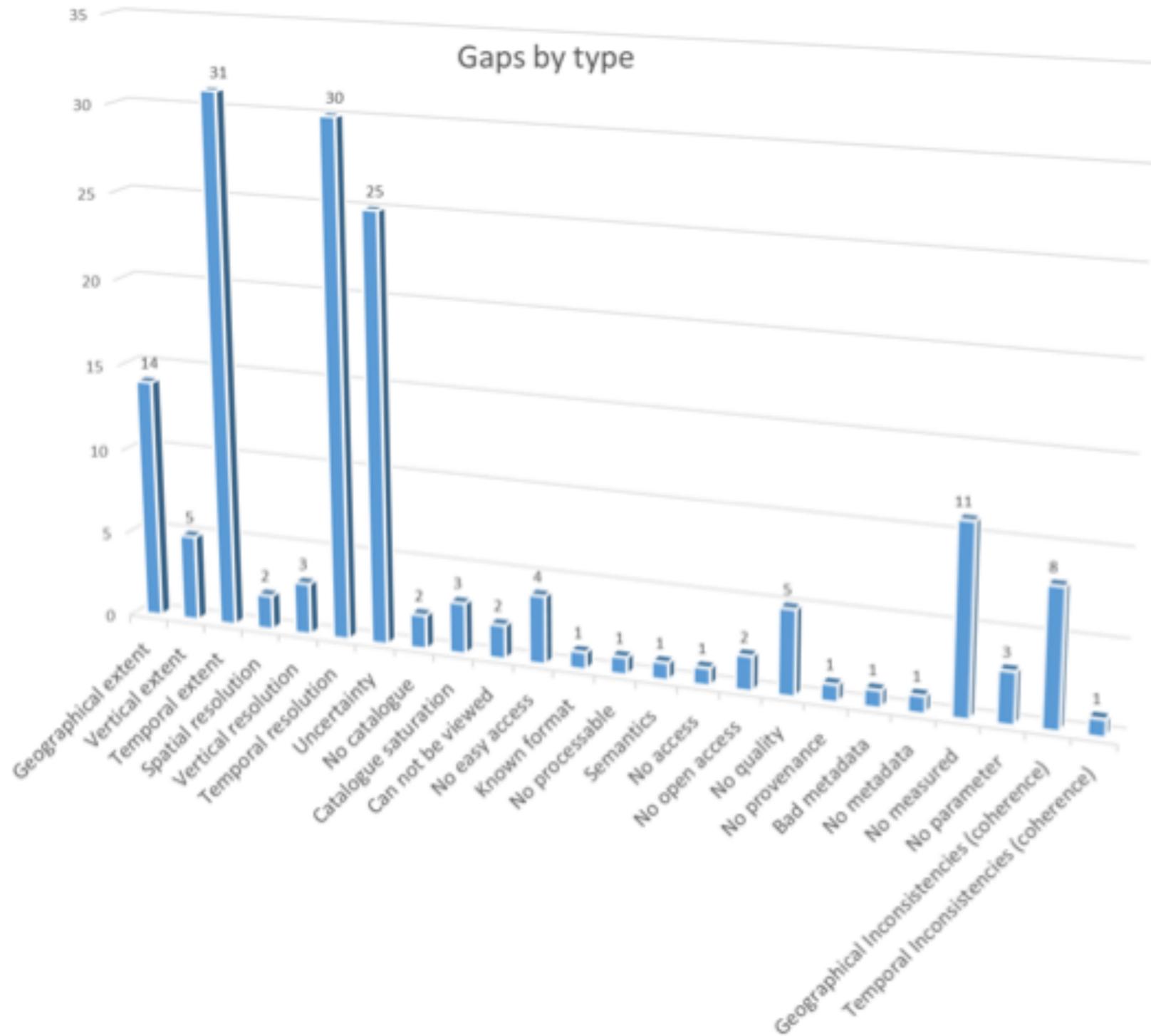
BUT3: Industry
Challenge

Assessment

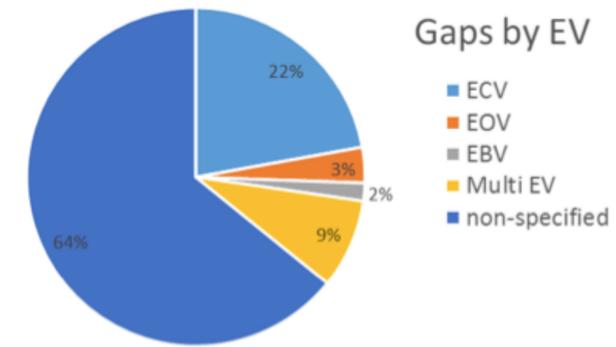
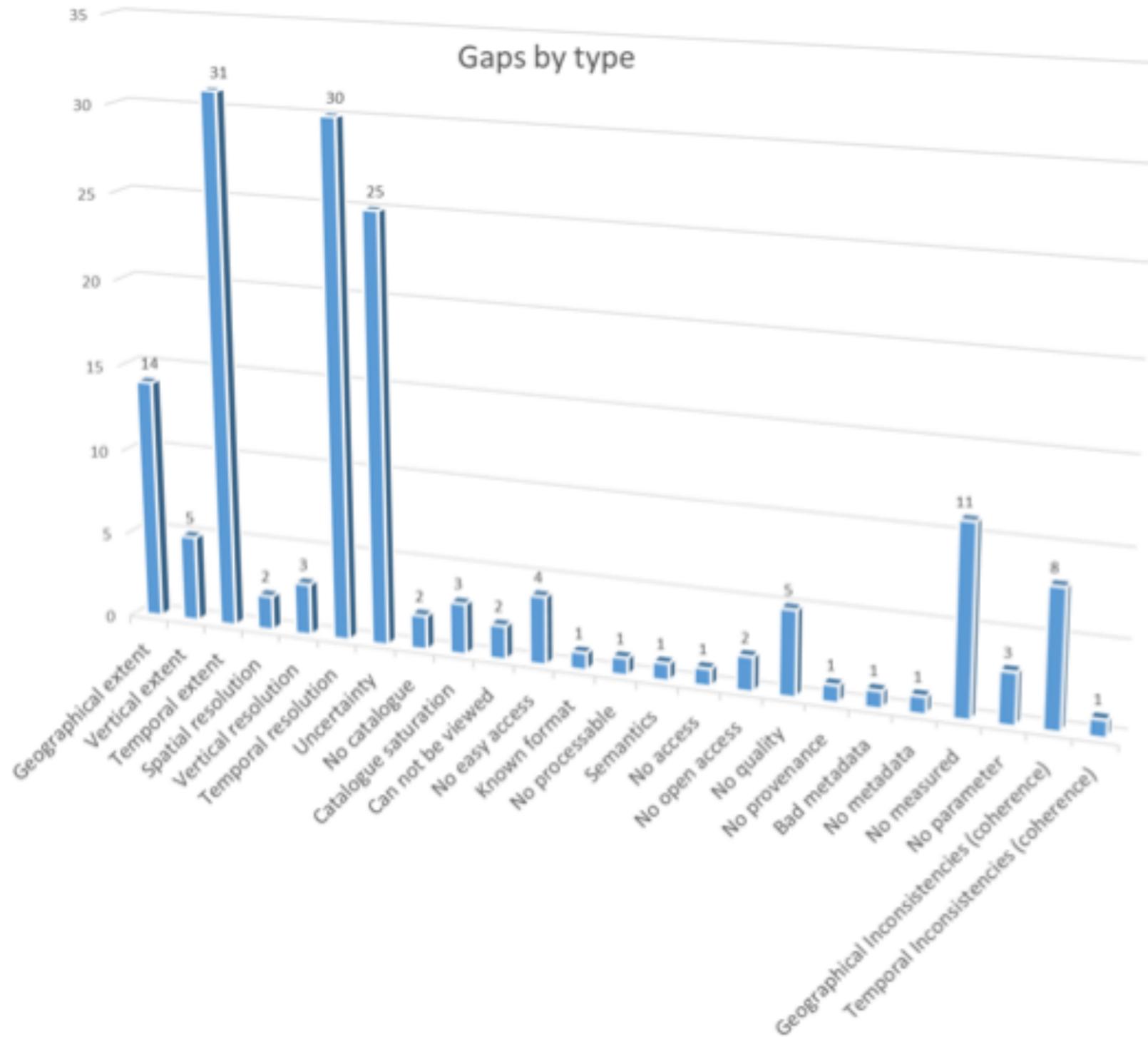
Current Status:

- Preliminary Gap Analysis Results in the ConnectinGEO Gap Table (CGT): more than ... gaps.
- Currently 146 EVs, not including those derived from applying CGBA to SGDs and Global Boundaries
- Some inconsistency in referencing EVs and source documents in the CGT
- Reviewing and prioritization of CGT contents still pending
- SEE-IN KB under development
- Gap model in SEE-IN KB fully developed and partially implemented
- Interface to upload CGT content into SEE-IN KB fully developed (as part of writing D6.2).

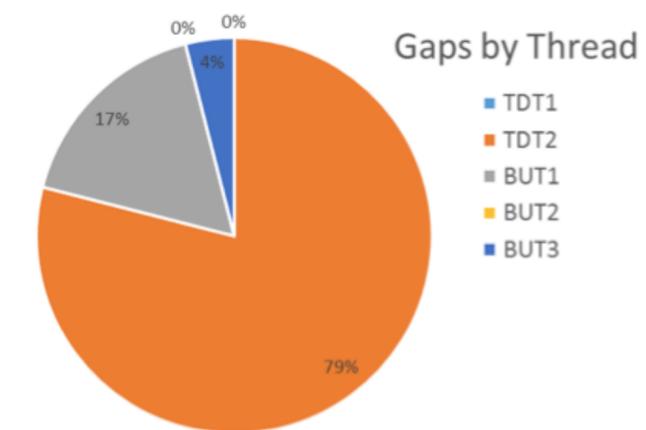
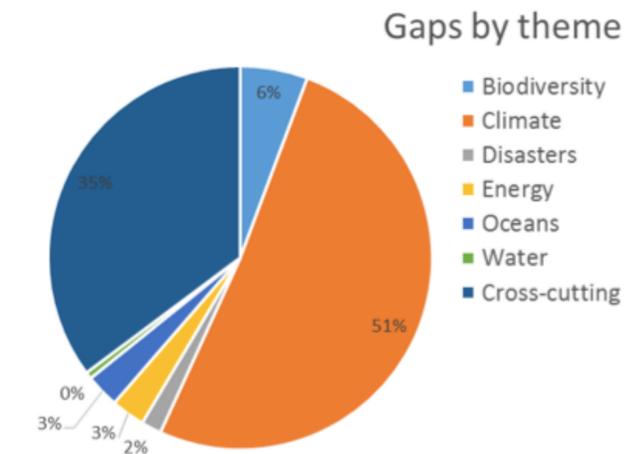
Assessment



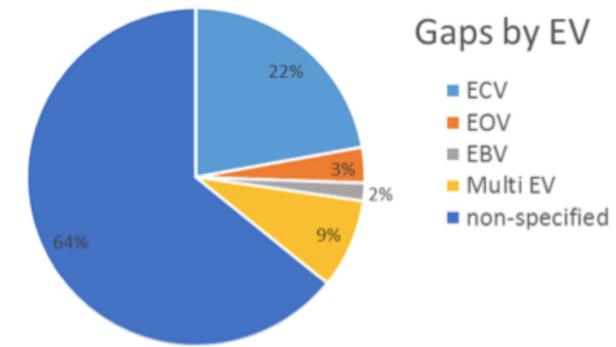
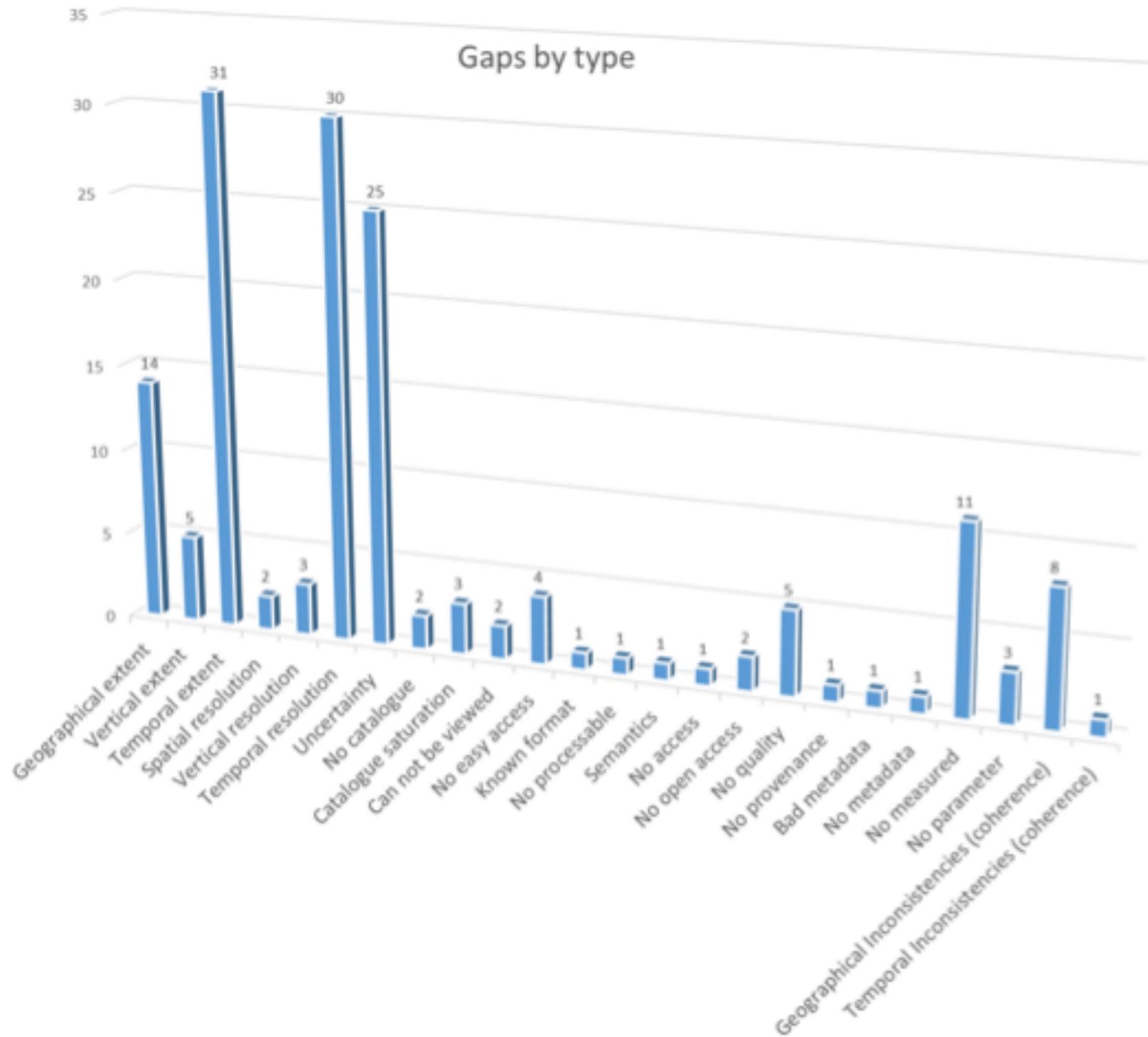
Assessment



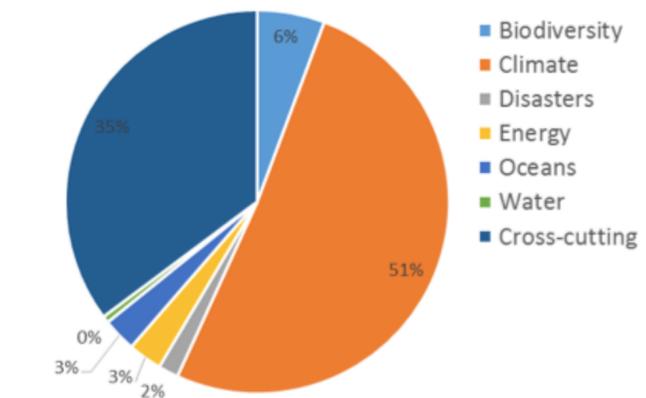
Gaps by EVs:
Many unspecified



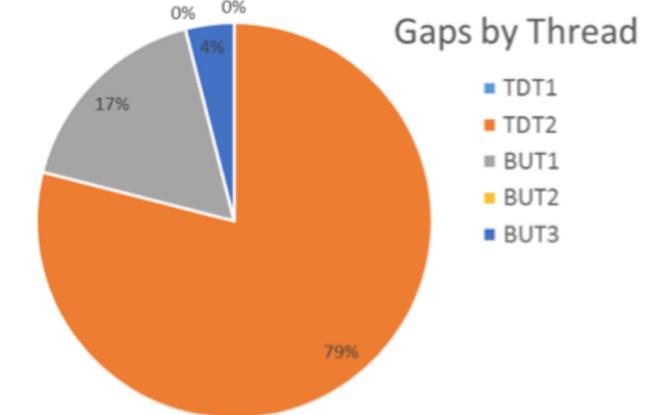
Assessment



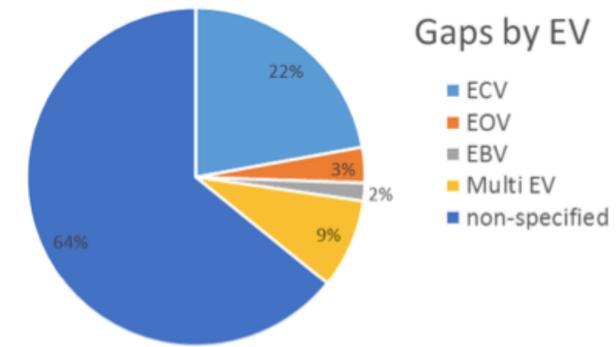
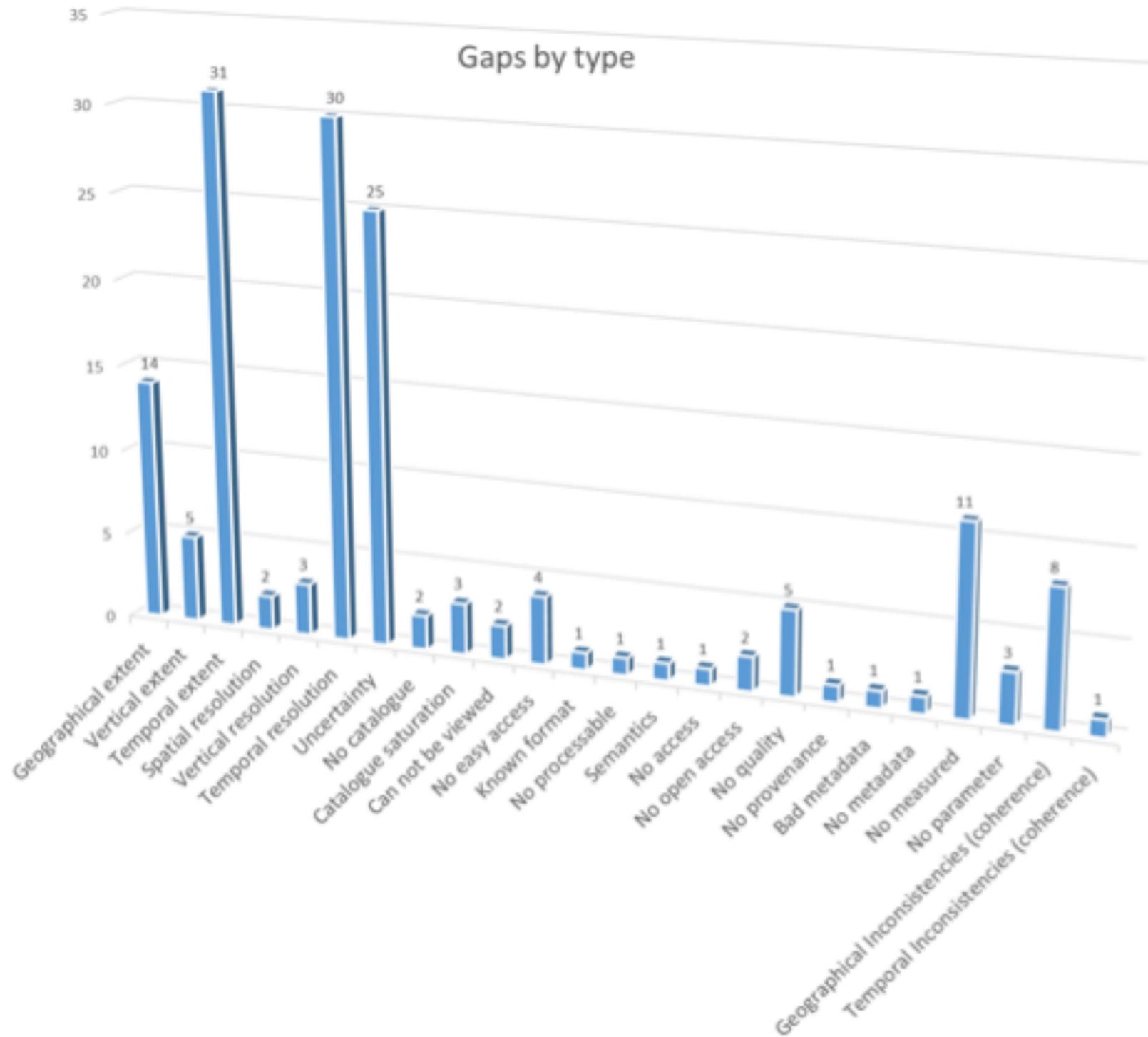
Gaps by EVs:
Many unspecified



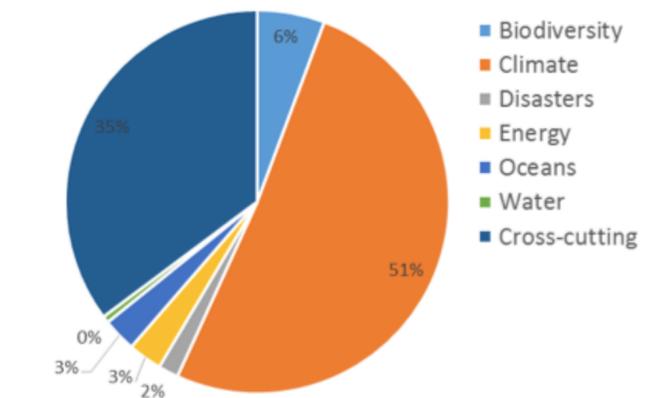
Gaps by Themes:
Climate 51%
Crosscutting 35%



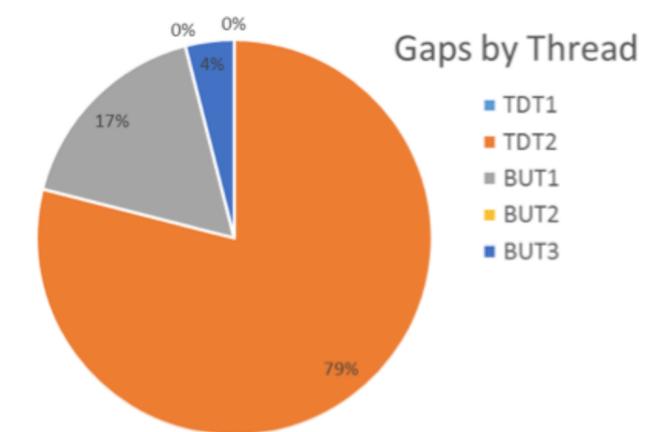
Assessment



Gaps by EVs:
Many unspecified



Gaps by Themes:
Climate 51%
Crosscutting 35%



Gaps by Thread:
TDT2: 79%
TDT1: not included
BTU2: not included

Assessment

Name	Description	ExpDomain	GeoSystem
Water Supply Services	Availability of water supply services	EXPD-PubSER	GS-BuildEnv
Electrical power services	Availability of electrical power supply services	EXPD-PubSER	GS-BuildEnv
Sewage Services	Availability of sewage services	EXPD-PubSER	GS-BuildEnv
Transportation Services	Availability of public transportation services	EXPD-PubSER	GS-BuildEnv
Internet Services	Availability of Internet services	EXPD-PubSER	GS-BuildEnv
Mobile Phone Services	Availability of mobile phone services	EXPD-PubSER	GS-BuildEnv
Landline Phone Services	Availability of landline phone services	EXPD-PubSER	GS-BuildEnv
Public Health Services	Availability of public health services	EXPD-PubSER	GS-BuildEnv
Internet Phone Services	Availability of internet phone services	EXPD-PubSER	GS-BuildEnv
Population Migration	Information on migration	EXPD-Demography	GS-Population
Land cover vegetation		EXPD-LandCover	GS-Surface
Malaria infection potential		EXPD-InfectDisease	GS-Surface
Malaria infections	Number of infections over a given time interval per a given number of people	EXPD-InfectDisease	GS-Surface
Productivity of Forests		EXPD-Forestry	GS-Surface
Productivity of Farms	Including crop area and crop yield	EXPD-Agriculture	GS-Surface
Sustainability of agriculture		EXPD-Agriculture	GS-Surface
Irrigation level of agriculture		EXPD-Agriculture	GS-Surface
Fertilizer usage of agriculture		EXPD-Agriculture	GS-Surface
Drought indicator		EXPD-Climate	GS-Surface
Flood level		EXPD-Climate	GS-Surface
Productivity of Pastures		EXPD-Agriculture	GS-Surface
Surface water quality	Quality of surface water on the land surface	EXPD-Water	GS-Surface
Water stress	Water stress in terms of demands compared to availability	EXPD-Water	GS-Surface
Land use	Index for land use groups	EXPD-LandCover	GS-Surface
Particulate matter PM2.5	Particulate matter in the atmosphere with radius up to 2.5 micrometers	EXPD-AirQuality	GS-Troposphere
Particulate matter PM10	Particulate matter in the atmosphere with radius up to 10 micrometers	EXPD-AirQuality	GS-Troposphere
Nitrogene flux	Flux of Nitrogene into or out of an area	EXPD-Agriculture	GS-Surface
Coastal ecosystems	Aggregation of coastal ecosystems	EXPD-Ecosystems	GS-Surface
Wetlands	Wetland ecosystems	EXPD-Ecosystems	GS-Surface
Ocean acidity	Ph of the ocean water	EXPD-Oceans	GS-Oceans
Fish stock	Fish stocks for commercial and non-commercial fish	EXPD-Oceans	GS-Oceans
Protected area index	Index for the protection status of a location	EXPD-LandCover	GS-Surface
Forest area index	Index indicating type of forest	EXPD-LandCover	GS-Surface
Forest status index	Index indicating the quality and healthiness of forest	EXPD-LandCover	GS-Surface

Name	Description	ExpDomain	GeoSystem
Surface Ozone	Atmospheric ozone contents close to the Earth surface	EXPD-Air-Quality	GS-Troposphere
Aerosol	Atmospheric content of aerosols close to the Earth surface	EXPD-Air-Quality	GS-Troposphere
River runoff	Runoff in rivers	EXPD-Hydrology	GS-Terrestrial-Hydrosphere
Land water storage	Storage of water in all land-based reservoirs including groundwater	EXPD-Hydrology	GS-Terrestrial-Hydrosphere
Mountain Green Cover Index	Index for the land cover of mountainous areas	EXPD-LandCover	GS-Surface
Invasive species index	Index for invasive species	EXPD-Biodiversity	GS-Surface
Biodiversity index	Index for biodiversity	EXPD-Biodiversity	GS-Surface
Ecosystem service index	Index for ecosystem services	EXPD-Ecosystems	GS-Surface
Carbon dioxide emission	Emission of CO2 per area	EXPD-AirQuality	GS-Troposphere
Precipitation	Amount of precipitation over certain time intervals	EXPD-Weather	GS-Troposphere
Air Surface Temperature	Temperature of the air close to the Earth surface	EXPD-Weather	GS-Troposphere

Essential SDG Variables:

- Many related to the built environment
- List is still very preliminary and incomplete

Assessment

SDG	Target	Indicator	EV
SDG-1	SDG-1 Target 1.4	SDG Indicator 1.4.1	Water Supply Services
SDG-1	SDG-1 Target 1.4	SDG Indicator 1.4.1	Internet Services
SDG-1	SDG-1 Target 1.4	SDG Indicator 1.4.1	Electrical power services
SDG-1	SDG-1 Target 1.4	SDG Indicator 1.4.1	Public Health Services
SDG-1	SDG-1 Target 1.4	SDG Indicator 1.4.1	Transportation Services
SDG-1	SDG-1 Target 1.4	SDG Indicator 1.4.1	Internet Phone Services
SDG-1	SDG-1 Target 1.4	SDG Indicator 1.4.1	Landline Phone Services
SDG-1	SDG-1 Target 1.4	SDG Indicator 1.4.1	Mobile Phone Services
SDG-1	SDG-1 Target 1.4	SDG Indicator 1.4.1	Sewage Services
SDG-1	SDG-1 Target 1.5	SDG Indicator 1.5.1	Population Migration
SDG-2	SDG-2 Target 2.1	SDG Indicator 2.1.2	Drought indicator
SDG-2	SDG-2 Target 2.1	SDG Indicator 2.1.2	Flood level
SDG-2	SDG-2 Target 2.3	SDG Indicator 2.3.1	Productivity of Forests
SDG-2	SDG-2 Target 2.3	SDG Indicator 2.3.1	Productivity of Farms
SDG-2	SDG-2 Target 2.3	SDG Indicator 2.3.1	Productivity of Pastures
SDG-2	SDG-2 Target 2.4	SDG Indicator 2.4.1	Sustainability of agriculture
SDG-2	SDG-2 Target 2.4	SDG Indicator 2.4.1	Irrigation level of agriculture
SDG-2	SDG-2 Target 2.4	SDG Indicator 2.4.1	Fertilizer usage of agriculture
SDG-2	SDG-2 Target 2.5	SDG Indicator 2.5.2	Land cover vegetation
SDG-3	SDG-3 Target 3.3	SDG Indicator 3.3.3	Malaria infection potential
SDG-3	SDG-3 Target 3.3	SDG Indicator 3.3.3	Malaria infections per population
SDG-3	SDG-3 Target 3.3	SDG Indicator 3.3.3	Precipitation
SDG-3	SDG-3 Target 3.3	SDG Indicator 3.3.3	Air Surface Temperature
SDG-3	SDG-3 Target 3.9	SDG Indicator 3.9.1	Carbon dioxide
SDG-3	SDG-3 Target 3.9	SDG Indicator 3.9.1	Methane
SDG-3	SDG-3 Target 3.9	SDG Indicator 3.9.1	Surface water quality
SDG-3	SDG-3 Target 3.9	SDG Indicator 3.9.1	Water stress
SDG-3	SDG-3 Target 3.9	SDG Indicator 3.9.1	Aerosol
SDG-3	SDG-3 Target 3.9	SDG Indicator 3.9.1	Ozone
SDG-4	SDG-4 Target 4.a	SDG Indicator 4.a.1	Water Supply Services
SDG-4	SDG-4 Target 4.a	SDG Indicator 4.a.1	Public Health Services
SDG-4	SDG-4 Target 4.a	SDG Indicator 4.a.1	Sewage Services
SDG-4	SDG-4 Target 4.a	SDG Indicator 4.a.1	Electrical power services
SDG-4	SDG-4 Target 4.a	SDG Indicator 4.a.1	Transportation Services
SDG-4	SDG-4 Target 4.a	SDG Indicator 4.a.1	Mobile Phone Services
SDG-4	SDG-4 Target 4.a	SDG Indicator 4.a.1	Landline Phone Services

SDG-4	SDG-4 Target 4.a	SDG Indicator 4.a.1	Internet Phone Services
SDG-5	SDG-5 Target 5.b	SDG Indicator 5.b.1	Mobile Phone Services
SDG-6	SDG-6 Target 6.1	SDG Indicator 6.1.1	Water Supply Services
SDG-6	SDG-6 Target 6.1	SDG Indicator 6.1.1	Sewage Services
SDG-6	SDG-6 Target 6.3	SDG Indicator 6.3.1	Surface water quality
SDG-6	SDG-6 Target 6.3	SDG Indicator 6.3.2	Surface water quality
SDG-6	SDG-6 Target 6.3	SDG Indicator 6.3.2	Water stress
SDG-6	SDG-6 Target 6.4	SDG Indicator 6.4.1	Water stress
SDG-6	SDG-6 Target 6.4	SDG Indicator 6.4.1	River runoff
SDG-6	SDG-6 Target 6.4	SDG Indicator 6.4.1	Land water storage
SDG-6	SDG-6 Target 6.4	SDG Indicator 6.4.2	Water stress
SDG-6	SDG-6 Target 6.4	SDG Indicator 6.4.2	Wetlands
SDG-6	SDG-6 Target 6.6	SDG Indicator 6.6.1	Ecosystem health
SDG-9	SDG-9 Target 9.4	SDG Indicator 9.4.1	CO2 Emission
SDG-9	SDG-9 Target 9.c	SDG Indicator 9.c.1	Mobile Phone Services

SDG	Target	Indicator	EV
SDG-11	SDG-11 Target 11.3	SDG Indicator 11.3.1	Land use
SDG-11	SDG-11 Target 11.6	SDG Indicator 11.6.2	Particulate matter PM2.5
SDG-11	SDG-11 Target 11.6	SDG Indicator 11.6.2	Particulate matter PM10
SDG-13	SDG-13 Target 13.1	SDG Indicator 13.1.1	Population Migration
SDG-14	SDG-14 Target 14.1	SDG Indicator 14.1.1	Nitrogene flux
SDG-14	SDG-14 Target 14.2	SDG Indicator 14.2.1	Coastal ecosystems
SDG-14	SDG-14 Target 14.3	SDG Indicator 14.3.1	Ocean acidity
SDG-14	SDG-14 Target 14.4	SDG Indicator 14.4.1	Fish stock
SDG-14	SDG-14 Target 14.5	SDG Indicator 14.5.1	Protected area index
SDG-15	SDG-15 Target 15.1	SDG Indicator 15.1.1	Forest area index
SDG-15	SDG-15 Target 15.2	SDG Indicator 15.2.1	Forest status index
SDG-15	SDG-15 Target 15.4	SDG Indicator 15.4.2	Mountain Green Cover Index
SDG-15	SDG-15 Target 15.8	SDG Indicator 15.8.1	Invasive species index
SDG-15	SDG-15 Target 15.9	SDG Indicator 15.9.1	Biodiversity index
SDG-17	SDG-17 Target 17.8	SDG Indicator 17.8.1	Internet Services

Linking SDG to ESDGVs:
 - List is still very preliminary and incomplete

Assessment

Gaps table

- If you are a member of the [ConnectinGEO](#) project and have a user in the [ConnectinGEO](#) twiki, please use the [Edit] button bellow this table to add or modify gaps
- If you are not a member of the [ConnectinGEO](#) project but you want to inform us about a gap in Earth observation please go to <http://www.connectinGEO.net/gaps>
- To add feedback about a gap, click on the ID of the gap, fill the form and use **geoviqua_user** and **pub@geoviqua** as a user and password when requested
- To query for feedback about a gap you can use the following URL template substituting {ID} by the gap ID: http://geoviqua.stcorp.nl/api/v1/feedback/items/search?target_code={ID}&target_codespace=http://www.connectingeo.net/gaps&format=text&view=full

Add	View	Gap ID	Gap type	Theme	EV	Gap description	Thread	RS/In-Situ	Editor	Ambassador	Traceability
Add	View	001	1.1	Climate	ECV: Temperature (Atmosphere upper-air)	The scarce of microclimatic data (air temperature) from the beneath of trees.	3		Guillem Closa		Pieter De Frenne a
FeedBk	FeedBk										
Add	View	002	2.3	Climate	ECV:Aerosols (aerosol mass, size distribution (or at least mass at 3 fraction sizes: 1, 2.5 and 10 micron), speciation and chemical composition, Aerosol Optical Depth (AOD) at multiple wavelengths, AAOD, water content, ratio of mass to AOD, vertical distribution of extinction).	Daily monitoring of inorganic compounds in precipitation	2		Guillem Closa		EMEP PROGRESS Level 1
Add	View	003	2.3	Climate	ECV:Aerosols (aerosol mass, size distribution (or at least mass at 3 fraction sizes: 1, 2.5 and 10 micron), speciation and chemical composition, Aerosol Optical Depth (AOD) at multiple wavelengths, AAOD, water content, ratio of mass to AOD, vertical distribution of extinction).	Daily/weekly monitoring of heavy metals in precipitation	2		Guillem Closa		EMEP PROGRESS Level 1
Add	View	004	2.3	Climate	ECV:Aerosols (aerosol mass, size distribution (or at least mass at 3 fraction sizes: 1, 2.5 and 10 micron), speciation and	Daily monitoring of Inorganic compuns in air	2		Guillem Closa		EMEP PROGRESS Level 1
Add	View										
FeedBk	FeedBk										

Assessment

Gaps table

- If you are a member of the [ConnectinGEO](#) project and have a user in the [ConnectinGEO](#) twiki, pl
- If you are not a member of the [ConnectinGEO](#) project but you want to inform us about a gap in E
- To add feedback about a gap, click on the ID of the gap, fill the form and use **geoviqua_user** and
- To query for feedback about a gap you can use the following URL template substituting {ID} by th
[{ID}&target_codespace=http://www.connectingeo.net/gaps&format=text&view=full](#)

Code	EV Domain	EV Name
1	EBV	Genetic composition (Co-ancestry, Allelic diversity, Population genetic differentiation, Breed and variety div.)
2	EBV	Species populations (Species distribution, Population abundance, Population structure by age/size class)
3	EBV	Species traits (Phenology, Body mass, Natal dispersion distance, Migratory behavior, Demographic traits, Physiological traits)
4	EBV	Community composition (Taxonomic diversity, Species interactions)
5	EBV	Ecosystem function (Net primary productivity, Secondary productivity, Nutrient retention, Disturbance regime)
6	EBV	Ecosystem structure (Habitat structure, Ecosys. extent and fragmentation, Ecosys. composition by functional type)
7	ECV	Air temperature (Atmosphere surface)
8	ECV	Wind speed and direction (Atmosphere surface)
9	ECV	Water vapour (Atmosphere surface)
10	ECV	Pressure (Atmosphere surface)
11	ECV	Precipitation (Atmosphere surface)
12	ECV	Surface radiation budget (Atmosphere surface)
13	ECV	Temperature (Atmosphere upper-air)
14	ECV	Wind speed and direction (Atmosphere upper-air)
15	ECV	Water vapour (Atmosphere upper-air)
16	ECV	Cloud properties (Atmosphere upper-air)
17	ECV	Earth radiation budget, including solar irradiance (Atmosphere upper-air)
18	ECV	Carbon dioxide (Atmosphere composition)
19	ECV	Methan, and other long-lived greenhouse gases (Atmosphere composition)
20	ECV	Ozone and aerosol, supported by their precursors (Atmosphere composition)
21	ECV	Sea-surface temperature (Ocean surface)
22	ECV	Sea-surface salinity (Ocean surface)
23	ECV	Sea level (Ocean surface)

Add	View	Gap ID	Gap type	Theme	EV
Add	View	001	1.1	Climate	ECV: Temperature (Atmosphere upper-air)
FeedBk	FeedBk				
Add	View	002	2.3	Climate	ECV:Aerosols (aerosol mass, size distribution (or at least mass at 3 fraction sizes: 1, 2.5 and 10 micron), speciation and chemical composition, Aerosol Optical Depth (AOD) at multiple wavelengths, AAOD, water content, ratio of mass to AOD, vertical distribution of extinction).
Add	View	003	2.3	Climate	ECV:Aerosols (aerosol mass, size distribution (or at least mass at 3 fraction sizes: 1, 2.5 and 10 micron), speciation and chemical composition, Aerosol Optical Depth (AOD) at multiple wavelengths, AAOD, water content, ratio of mass to AOD, vertical distribution of extinction).
Add	View	004	2.3	Climate	ECV:Aerosols (aerosol mass, size distribution (or at least mass at 3 fraction sizes: 1, 2.5 and 10 micron), speciation and
FeedBk	FeedBk				

Assessment

ID	NAME	DESCRIPTION	COMMUNITY
CG-EV-001	Temperature (Atmosphere upper-air)		Climate
CG-EV-002	Undefined	Aerosols (aerosol mass, size distribution (or at least mass at 3 fraction sizes: 1, 2.5 and 10 micron), speciation and chemical composition, Aerosol Optical Depth (AOD) at multiple wavelengths, AAOD, water content, ratio of mass to AOD, vertical distribution of extinction).	Climate
CG-EV-003	Undefined	Reactive Gases, Trace gases (incl GHG), Ozone Precursors (Total ozone, profile ozone, surface ozone, NO, NO2 (surface, column, profile), PAN, HNO3, NH3, CO, VOC (isoprene, terpenes, alcohols, aldehydes, ketones, alkanes, alkenes, alkynes, aromatics), SO2 (surface and column), CH4, CO2, N2O, HCHO, HOx, Clx, ClO, BrO, OClO, ClONO2, HDO, CFCs, HCFCs, HFCs, Rn, SF6)	Climate
CG-EV-004	Undefined	All Global Numerical Weather Prediction (NWP) variables?(e.g., PBL + Tropopause height) and others yet to be determined by WMO/GAW.	Climate
CG-EV-005	Undefined	Land use, Land cover (Renewable energy)	Energy
CG-EV-006	Soil moisture (Land)		Climate
CG-EV-007	Undefined	Multiple (specified in the gap description)	Disasters
CG-EV-008	Undefined	Ecosystem function (Net primary productivity, Secondary productivity, Nutrient retention, Disturbance regime)	Biodiversity
CG-EV-009	Sea Level (Physical surface)		Oceans
CG-EV-010	Sea Ice (Physical surface) and EOY: Sea Level (Physical surface)		Oceans

- Information on EVs is not using the EV codes

Assessment

Traceability	Purpose	Date	Review	Remedy	Feasibility	Im
Pieter De Frenne and Kris Verheyen "Weather stations lack forest data"	Find out how temperatures are changing beneath the trees	2016/01/15				
EME PROGRESS IN ACTIVITIES IN 2009-2019 AND FUTURE WORK. Level 1	Monitoring of inorganic compounds in precipitation (SO ₄ , NO ₃ , NH ₄ , H ⁺ (pH), Na ⁺ , K ⁺ , Ca ²⁺ , Mg ²⁺ , Cl ⁻)					
EMEP PROGRESS IN ACTIVITIES IN 2009-2019 AND FUTURE WORK. Level 1	Monitoring of heavy metals in precipitation As, Cd, Ni, Cd, Pb, Cu, Zn					
EMEP PROGRESS IN ACTIVITIES IN 2009-2019 AND FUTURE WORK. Level 1	Daily monitoring of inorganic compounds in air. SO ₂ , SO ₄ , NO ₃ , HNO ₃ , NH ₄ , NH ₃ , HCl, NA ⁺ , K ⁺ , Ca ²⁺ ,					

Assessment



r Traceability	Purpose	Date	Review	Remedy	Feasibility	Im
Pieter De Frenne and Kris Verheyen "Weather stations lack forest data"	Find out how temperatures are changing beneath the trees	2016/01/15				
EME PROGRESS IN ACTIVITIES IN 2009-2019 AND FUTURE WORK. Level 1	Monitoring of inorganic compounds in precipitation (SO ₄ , NO ₃ , NH ₄ , H ⁺ (pH), Na ⁺ , K ⁺ , Ca ²⁺ , Mg ²⁺ , Cl ⁻)			- Document/source references are often incomplete		
EMEP PROGRESS IN ACTIVITIES IN 2009-2019 AND FUTURE WORK. Level 1	Monitoring of heavy metals in precipitation As, Cd, Ni, Cd, Pb, Cu, Zn					
EMEP PROGRESS IN ACTIVITIES IN 2009-2019 AND FUTURE WORK. Level 1	Daily monitoring of inorganic compounds in air. SO ₂ , SO ₄ , NO ₃ , HNO ₃ , NH ₄ , NH ₃ , HCl, Na ⁺ , K ⁺ , Ca ²⁺ ,					

Assessment

ID	DESCRIPTION
CG-Ref-001	Pieter De Frenne and Kris Verheyen "Weather stations lack forest data"
CG-Ref-002	EMET PROGRESS IN ACTIVITIES IN 2009-2019 AND FUTURE WORK. Level 1
CG-Ref-003	EMET PROGRESS IN AC. Monthly monitoring
CG-Ref-004	EMET PROGRESS IN ACTIVITIES IN 2009-2019 AND FUTURE WORK. Level 2
CG-Ref-005	EMET PROGRESS IN ACTIVITIES IN 2009-2019 AND FUTURE WORK. Level 3
CG-Ref-006	CA-01. GEO 2016 WORK PROGRAMME
CG-Ref-007	CA-06. GEO 2016 WORK PROGRAMME
CG-Ref-008	GEO 2016 WORK PROGRAMME. CA-027. Foster Utilization of Earth Observation Remote Sensing and In Situ Data for All Phases of Disaster Risk Management
CG-Ref-009	GEO 2016 WORK PROGRAMME. CA-028 Global Flood Risk Monitoring
CG-Ref-010	GEOBON- Global Biodiversity Observation
CG-Ref-011	ECOPotential WP2 meeting. Cited Henrique Pereira
CG-Ref-012	Sentinel- 3 Mission Objectives
CG-Ref-013	O'Connor et al. (2015)
CG-Ref-014	Geijzendorffer et al. (2015)
CG-Ref-015	GI-16. GEO 2016 WORK PROGRAMME. GEO-DARMA = Data Access for Risk Management
CG-Ref-016	http://www.iagos.fr/web/images/map/map_iagos.png
CG-Ref-017	Aichi targets Compilation. Target 19
CG-Ref-018	IEA Solar Heating and Cooling Program, Tasks 36 and 46. GEO Task US-09-01a
CG-Ref-019	ConnectinGEO . Exchanges with companies in various occasions, including Copernicus events
CG-Ref-020	GCOS-195 Report
CG-Ref-021	GCOS-195 Report, Reynolds & Chelton, 2010
CG-Ref-022	GCOS-195 Report, JCOMMOPS (http://www.jcommops.org/board?t=Argo)
CG-Ref-023	Statistics from Coriolis Global Data Assembly Center (GDAC)
CG-Ref-024	http://www.argo.ucsd.edu/About_Argo.html
CG-Ref-025	Durack et al., 2016
CG-Ref-026	Lagerloef et al, 2015 (available at ftp://podaac-ftp.jpl.nasa.gov/allData/aquarius/docs/v4/AQ-014-PS-0016-_AquariusSalinityDataValidationAnalysis_DatasetVersion4.0and3.0.pdf) and Ballabrera, 2015 (available at http://www.euro-argo.eu/content/download/91862/1123452/version/1/file/E-AIMS_D4.443-V2.pdf)

- Document/source references are often incomplete

SEE-IN KB Gap Analysis

Code	Name	GCC	Definition
1.1	Geographical extent	1	Incomplete geographical extent
1.2	Vertical extent	1	Incomplete coverage in vertical extent (applicable for atmosphere, geology, oceanography etc)
1.3	Temporal extent	1	Incomplete coverage in temporal extent
2.1	Spatial resolution	2	Not enough spatial resolution
2.2	Vertical resolution	2	Not resolving the vertical column sufficiently
2.3	Temporal resolution	2	Not enough temporal resolution
3.1	Uncertainty	3	Uncertainties are too large for the application. (Uncertainty budget including calibration, i.e. uncertainties intrinsic to one measurement)
5.1	No catalogue	5	Lack of tools for discovery
5.2	Catalogue saturation	5	Difficult to discovery due to catalogues has many similar products that hide it
5.3	Can not be viewed	5	Lack of tools for visualization
5.4	No easy access	5	Lack of easy download
5.5	Known format	5	Format difficult to use, not well documented, proprietary format
5.6	No processable	5	Lack of tools to process the data
5.7	Semantics	5	No clear semantics of the data
6.1	No access	6	Data is not available
6.2	No open access	6	Data policy incl. (free) data access
6.3	No quality	6	Unclear or undocumented QA/QC methodologies
6.4	No provenance	6	Traceability not documented
6.5	Bad metadata	6	Metadata is not complete or wrong
6.5	No metadata	6	Metadata cannot be found
6.6	No model or proxy	6	There is a lack of model to extract the variable from direct measurement or by a proxy
6.7	Long term data preservation	6	No long term data preservation strategy in place
6.8	No future	6	Insecure finance to continue the data acquisition activities.
7.1	No measured	7	The variable is not measured
7.2	No parameter	7	An aspect of the variable is missing

Added:

- 8.1 Conceptual n/a Conceptual gaps, e.g. lack of integration, unmatched goals
- 8.2 Educational n/a Lack of skills and relevant educational programs
- 8.3 Capacity n/a Lack of capacity to carry out a task to generate knowledge

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The SEE-IN KB replaces the GEOSS User Requirements Registry ([URR](#)). Of particular interest are those information needs that are linked to indicators defining the monitoring framework for the Sustainable Development Goals ([SDGs](#)). The SEE-IN KB uses a goal-based approach for the identification of Essential Variables (EVs). Specifically, this approach is used to identify those variables that are essential for the quantification of SDG indicators. The approach aims to be consistent with the UN's System of Environmental-Economic Accounting ([SEEA](#)). The SEE-IN KB will include rules to define the observation needs for these EVs and the SDG indicators. A first operational version of the SEE-IN KB is expected to be available on-line in October 2016.

Background

The Global Earth Observing System of Systems (GEOSS) is envisioned as a system of systems that integrates environmental and socio-economic data with models to meet the information needs of societal decision makers. The GEOSS User Requirements Registry (URR) had the goal to inform GEOSS about the information needs of societal stakeholders.

At the Ministerial Summit on Earth Observations held in January 2014, the Ministers asked the Group on Earth Observations (GEO) to focus on five priority activities, of which one was: "Develop a comprehensive interdisciplinary knowledge base defining and documenting observations needed for all disciplines and facilitate availability and accessibility of these observations to user communities." In response to this guidance, GEO included the Foundational Task GD-09 "Knowledge Base Development" in the 2016 GEO Work Programme. The key objective of GD-09 is to develop a comprehensive interdisciplinary GEOSS KB defining and documenting observations needed for all disciplines. This will allow the sharing of not just data but also of how these data can be used to address key policy or

Knowing the Users and Meeting Their Information and Knowledge Needs

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SEE-IN KB: A Collaborative Platform for Users and Providers

The best way to get to know the users and to capture and understand societal information and knowledge needs is to listen to stakeholders engaged in addressing societal tasks and challenges. An understanding how users make use of information derived from Earth observations and what type of information and knowledge they want, need and create can be developed by observed users while they access and use such observations and derived information. Therefore, the SEE-IN KB aims to become a collaborative platform where decision and policy makers can access and use Earth observations and derived information. By bringing the providers and users together on this collaborative platform, it will be possible to "learn" how decisions and policies are informed by Earth observations and derived information, how Earth observations and models are used to create practice-relevant knowledge, and where the gaps are that need to be addressed.

The design of such an collaborative platform that is of value and attractive for both users and providers and at the same time capable of learning from the activities of users and providers on this platform has to be innovative. Designing the platform is challenging. However, achieving the necessary revolution in how Earth observations are informing decision requires this innovation.

Functionality and Design of the initial version of the SEE-IN KB

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The SEE-IN KB: A Core Element of the GEOSS KB

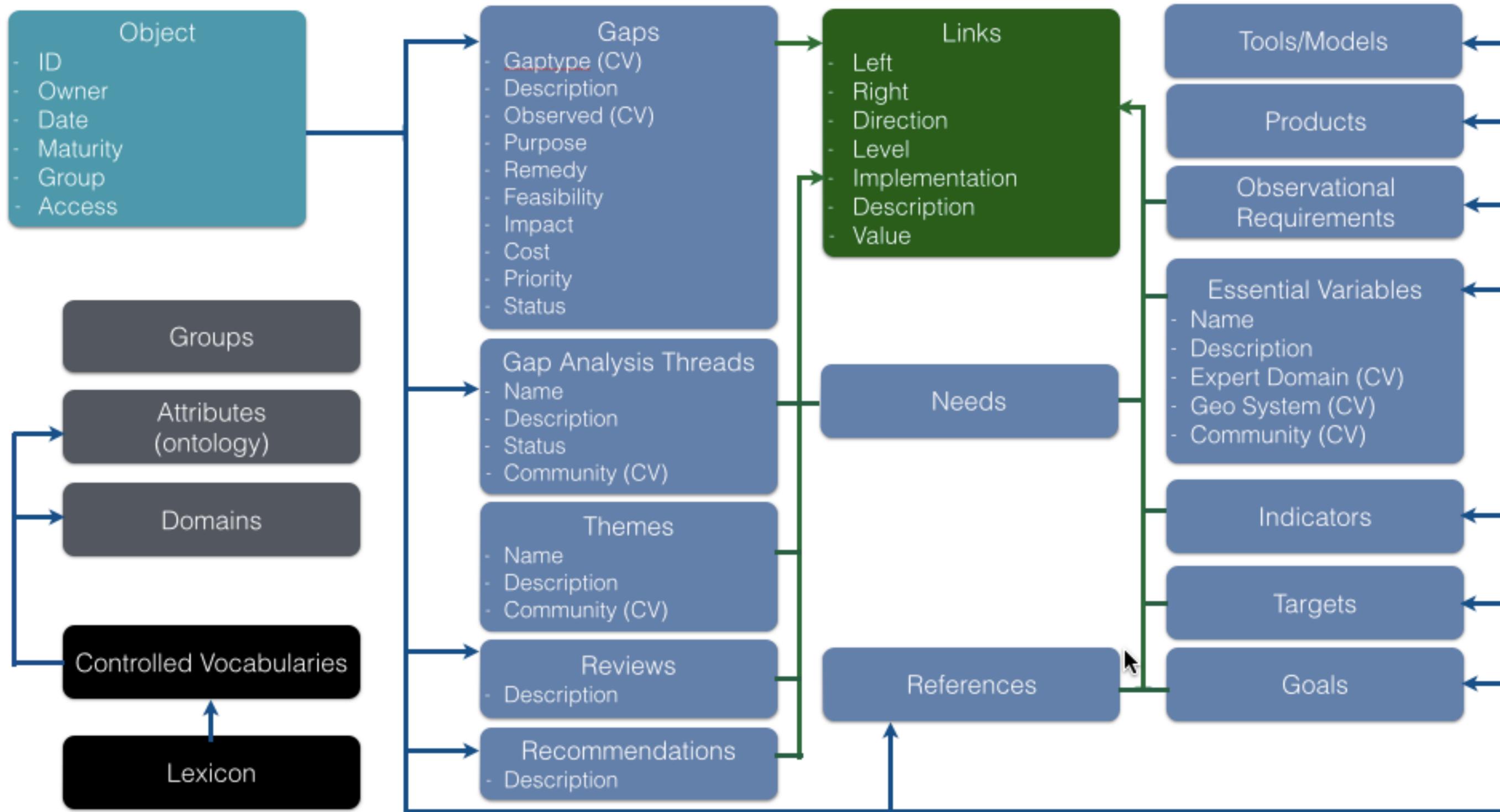
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SEE-IN KB Gap Model



SEE-IN KB Gap Model

Participant registration with different authorities:

- user
- developer
- group chair
- ...

Populating SEE-IN KB:

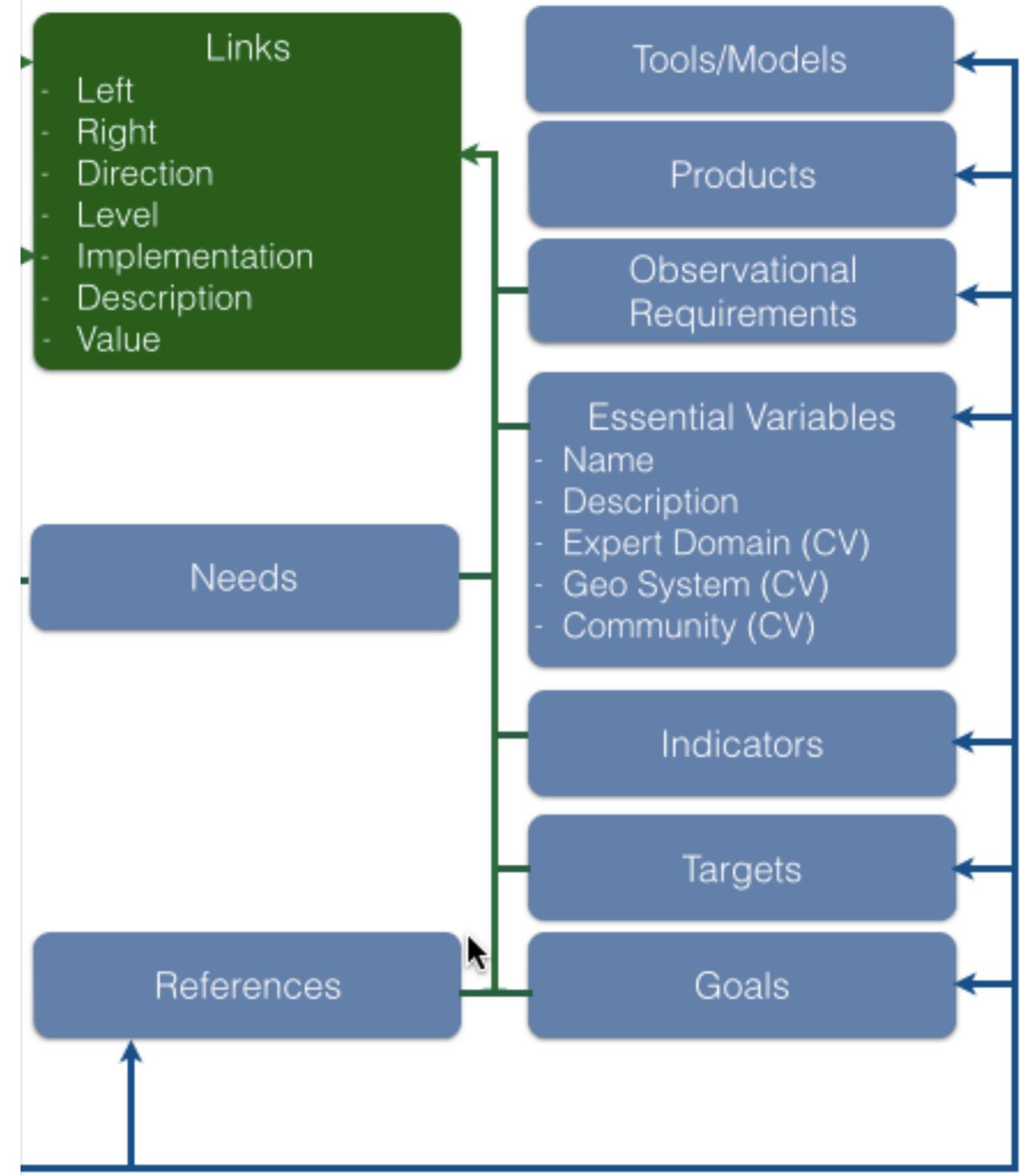
- Harvesting as much as possible existing information and knowledge bases

Example user requirements:

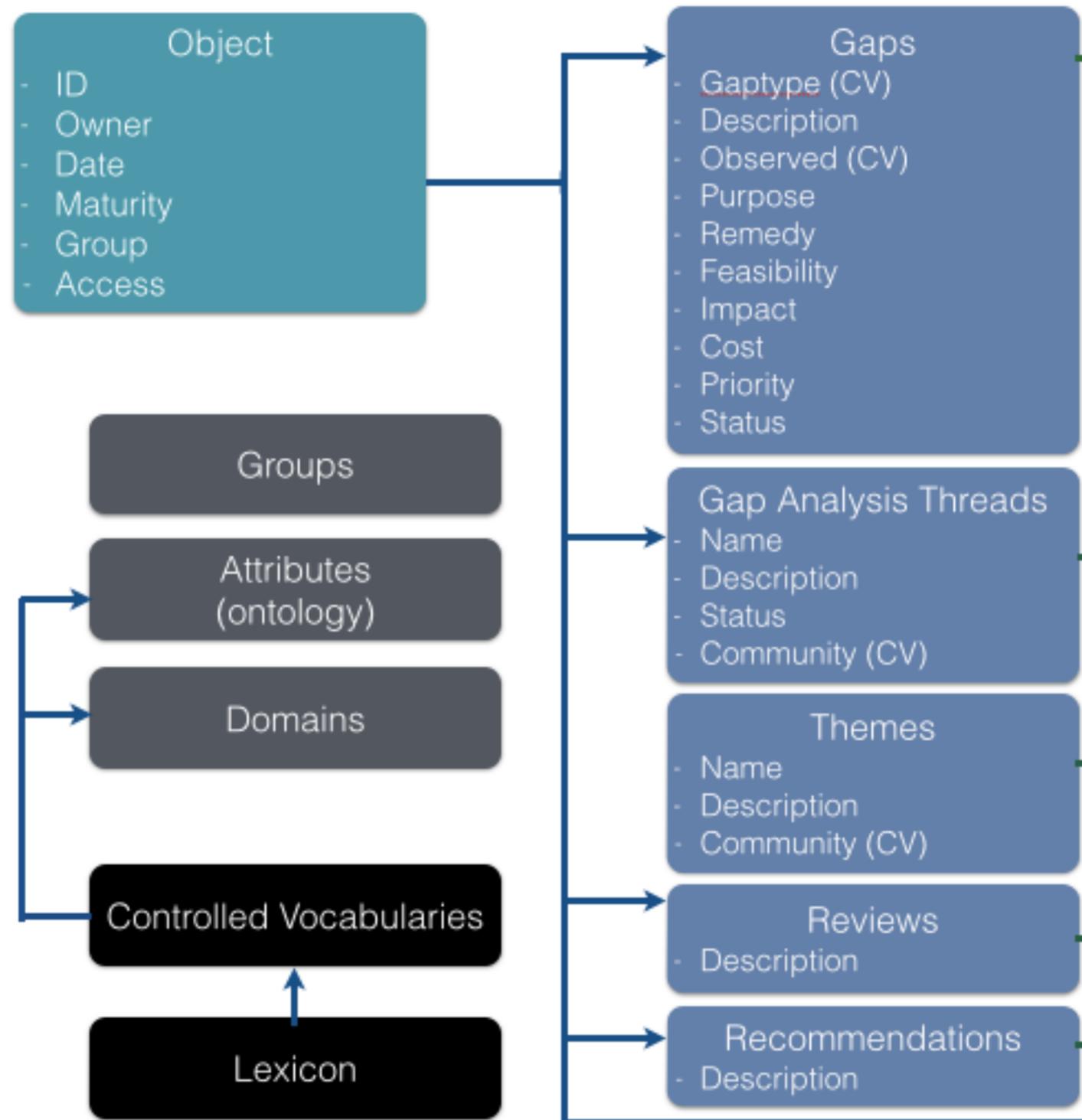
- Harvested existing registries and documents

Example References:

- Model: BibTex
- article, book, techreport, unpublished, in collection, inproceedings, phdthesis, ...
- harvested: > 13,000 journals, 9,000 publishers, > 10,000 relevant references



SEE-IN KB Gap Model



Lexicon/Controlled Vocabularies:

- harvest existing ontologies, thesaurus, controlled vocabularies

Gap analysis and prioritization:

- implement rules for ConnectinGEO threads
- feedback for prioritization
- network analysis in support of prioritization

SEE-IN KB Prioritization

