



# INSPIRE Directive as an instrument providing access to spatial information for sustainable spatial planning in the Carpathians”

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PROJEKT WSPÓŁFINANSOWANY PRZEZ SZWAJCARIĘ W RAMACH SZWAJCARSKIEGO  
PROGRAMU WSPÓŁPRACY Z NOWYMI KRAJAMI CZŁONKOWSKIMI UNII EUROPEJSKIEJ

Lider projektu



Partnerzy



# What is the INSPIRE?

- UE Directive on development and implementation of SDI

***IN**frastructure for **SP**atial **Info**Rmation in **E**urope*



*aiming to support implementation of the environmental policies in EU through enabling broad access to geospatial information*

# INSPIRE principles

1. **Data** should be **collected only once** and kept where it can be maintained most effectively.
2. It should be possible to **combine** seamless **spatial information from different sources** across Europe **and share** it with many users and applications.
3. It should be possible for information collected at one level/scale **to be shared** with all levels/scales;

# INSPIRE principles

4. Geospatial information **needed for good governance** at all levels should be **readily and transparently available**.

5. **Easy to find what geographic information is available**, how it can be used to meet a particular need, and under which conditions it can be acquired and used.

Loads of data,  
lack of interoperability



INSPIRE Implementing  
rules



Standards (IR)

Data available through  
the web services (WMS)

Metadata: information on  
What?  
Where?  
Who?  
How?



## Data Specifications

Legislation

Who

Consultations

Testing

Roadmap

Library

News

Themes

Data Models

### ANNEX I

- 1 Coordinate reference systems
- 2 Geographical grid systems
- 3 Geographical names
- 4 Administrative units
- 5 Addresses
- 6 Cadastral parcels
- 7 Transport networks
- 8 Hydrography
- 9 Protected sites

### ANNEX II

- 1 Elevation
- 2 Land cover
- 3 Orthoimagery
- 4 Geology

### ANNEX III

- 1 Statistical units
- 2 Buildings
- 3 Soil
- 4 Land use
- 5 Human health and safety
- 6 Utility and governmental services
- 7 Environmental monitoring Facilities
- 8 Production and industrial facilities
- 9 Agricultural and aquaculture facilities
- 10 Population distribution and demography
- 11 Area management / restriction / regulation zones & reporting units
- 12 Natural risk zones
- 13 Atmospheric conditions
- 14 Meteorological geographical features
- 15 Oceanographic geographical features
- 16 Sea regions
- 17 Bio-geographical regions
- 18 Habitats and biotopes
- 19 Species distribution
- 20 Energy Resources
- 21 Mineral Resources

22-24 October, Kluszkowce

# *Karkonosze in the INSPIRE common GIS for the nature protection*



Project Partners:



United Nations Environment Programme  
**GRID** Warszawa  
Global Resource Information Database

# Background information

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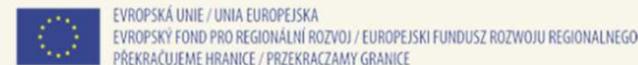
## *Karkonosze in the INSPIRE – common GIS for the nature protection (2011-2013)*

Project is co-financed from the European  
Regional Development Fund  
**CZ.3.22/1.2.00/09.01541**

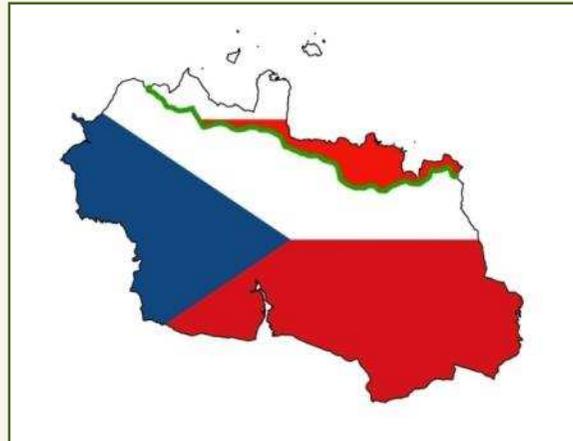
Leader: Krkonoše Narodny Park  
Partners: *Karkonoski Park Narodowy*  
*UNEP/GRID-Warsaw Centre*



Project Partners:



# Main project goal



Development of the basis for **common management system** in Bilateral Biosphere Reserve Karkonosze/Krkonose, so that the Karkonosze could become a transboundary area **seen as a whole** in terms of ecological planning and management

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# Project results

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- Development of spatial data infrastructure supporting environmental management in both Parks
- Harmonised geospatial resources
- Data broadly available and accessible
- Developed procedures on data maintenance and new data acquisition for the scientific purposes



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# Key activities

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- 1) Development of the **harmonised** database
  - translation of Polish and Czech classifications, and existing standards
  - methodology of creating thematic maps in both countries: symbology, legends
  - Data modeling in UML.
- 2) Development of the Geoportal and dedicated applications for public use which will ensure access to up- to- date spatial information on the resources of the Karkonosze



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# Harmonisation stages

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1. *Thematic harmonisation - adjustment according to the scientific criteria recognised and developed by Polish and Czech experts;*
2. *Data modeling in UML in line with INSPIRE IR and identified requirements (national standards) in order to translate results of the thematic harmonisation to database „language”*

*10 subjects to be analysed  
and harmonised*



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**Result: common database and seamless visualisation for whole Karkonosze**

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## What kind of problems have been recognised and solved thanks to INSPIRE?

- Inconsistent classifications,
- Need for data update,
- Lack of data in one of the national park (e.g. geomorphology, soils)
- Multirepresentation of the features on both sides of state border,
- Differences of the quality and accuracy of the georeference data (vegetation, peatbogs ecosystems)

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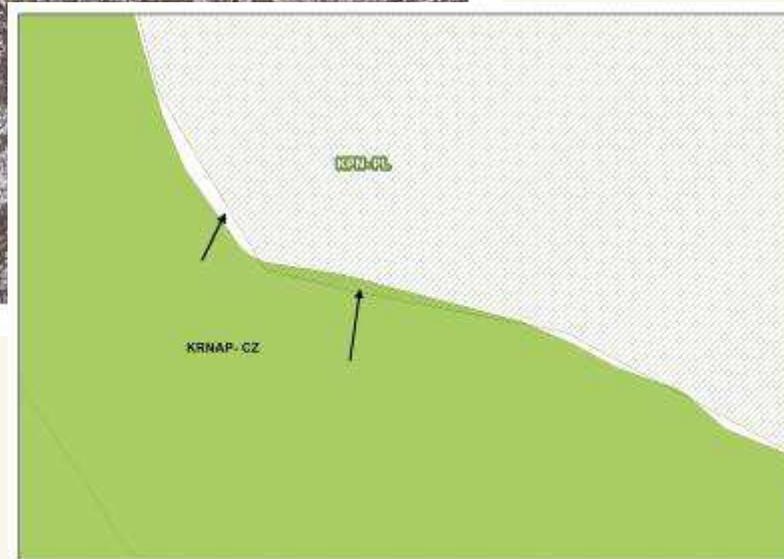


# Some examples

## 1) lack of data consistency - multirepresentation



State border = KPN border  
KRNAP= border – which is  
reference one?



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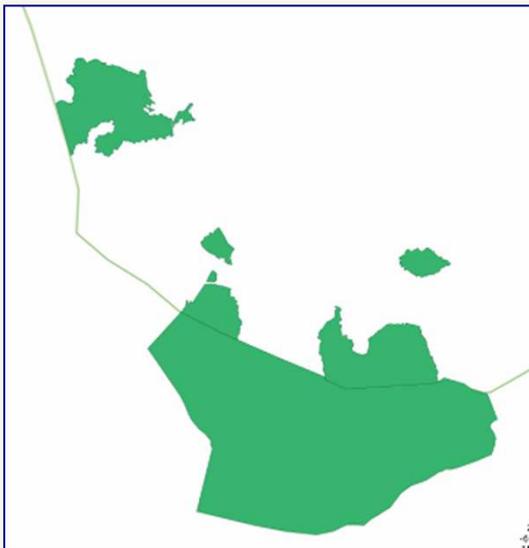
KA  
ROZWOJ / EUROPEJSKI FUNDUSZ ROZWOJU REGIONALNEGO  
RACZAMY GRANICE

## 2) Different quality of source data: scale, level of details, various methods of data acquiring

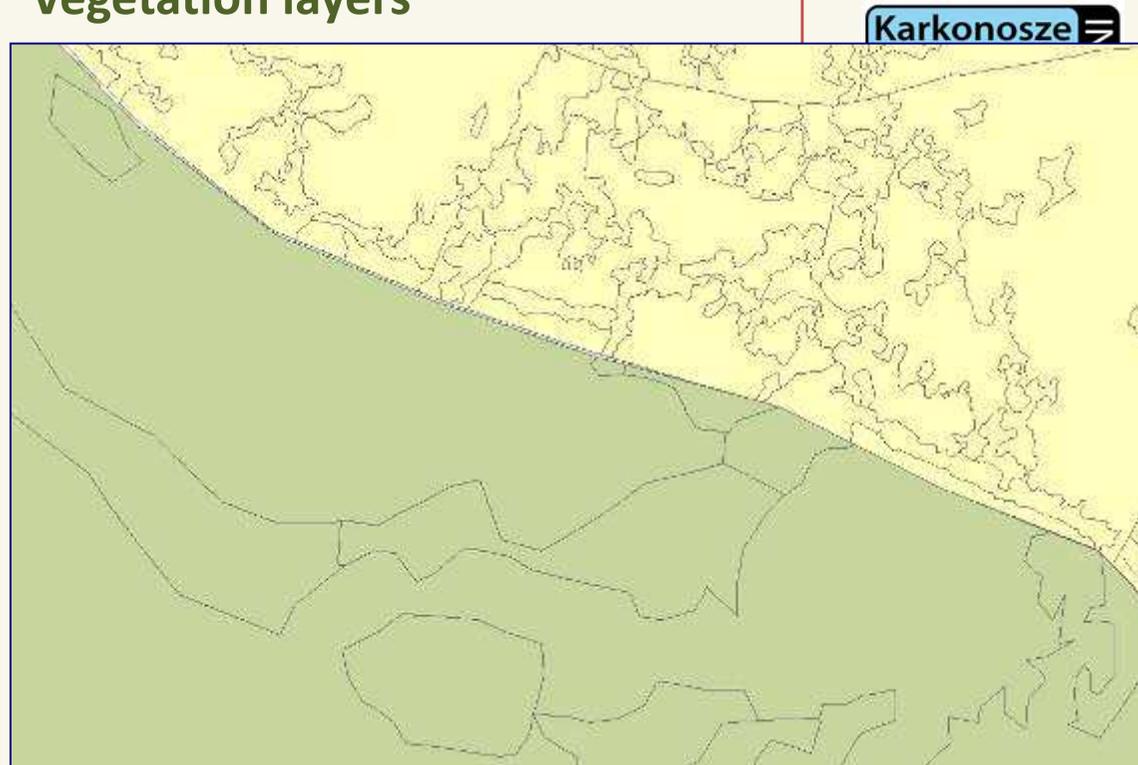
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**PL:** non forest ecosystems:  
mapping with use of  
orthophotomap 1:2 000

**CZ:** field mapping in scale  
1:5 000,  
No generalisation rules for  
PL  
RAMSAR peatbogs



Vegetation layers

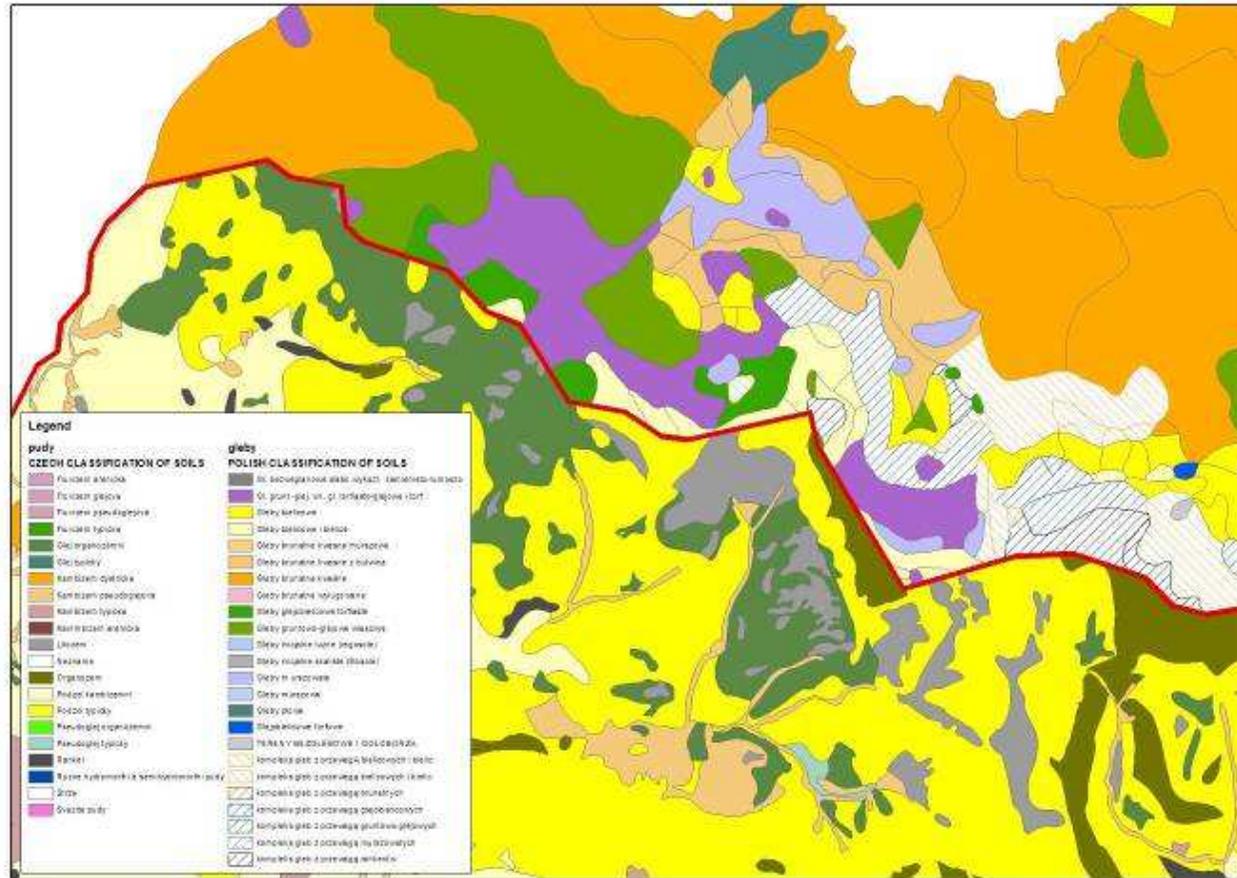


UNEP GRIND Warszawa  
Global Resource Information Database

Generalisation rules to be developed

### 3) Inconsistent classifications (soils and geology)

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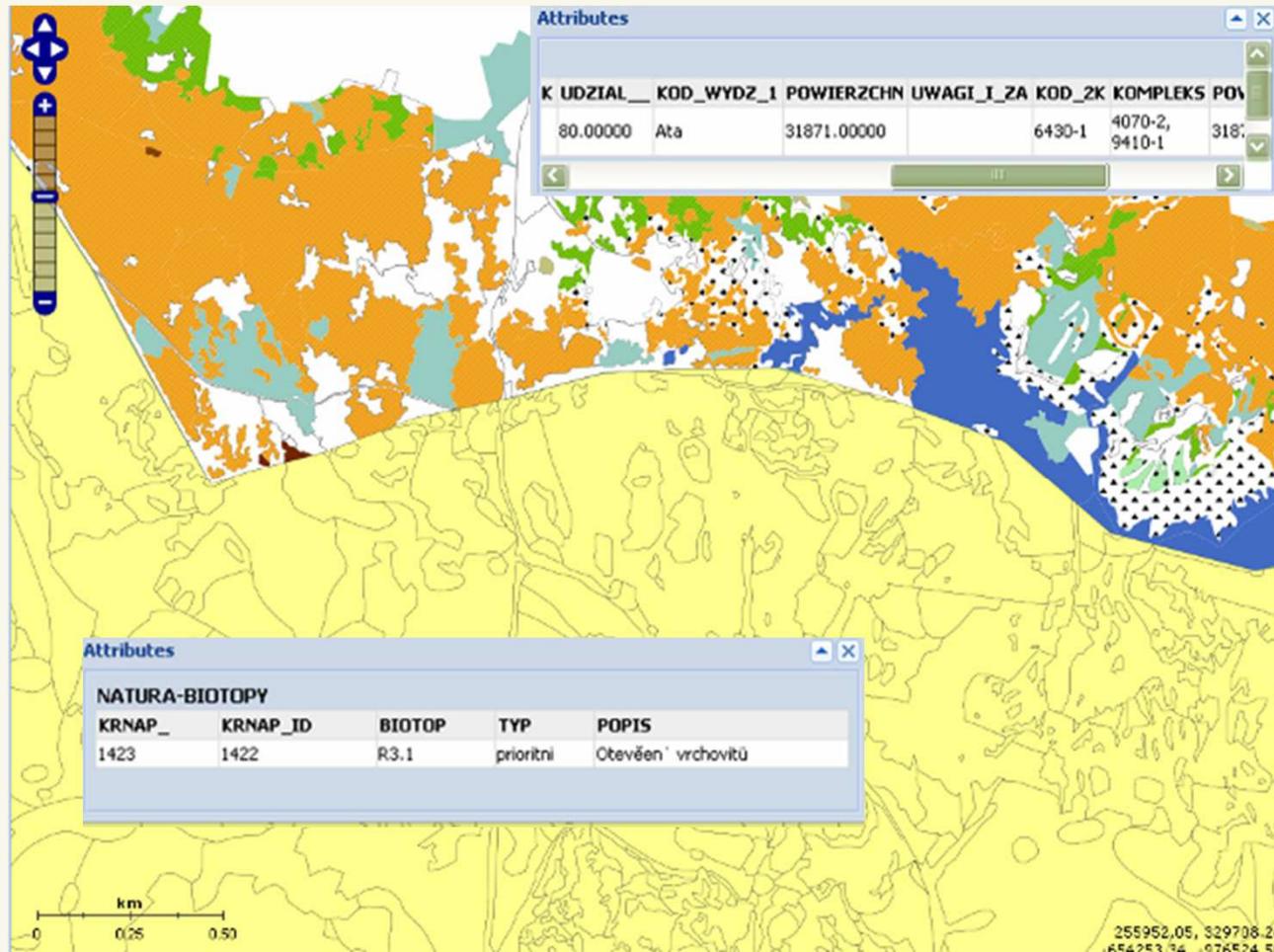
Project Partners:



**PL:** Too detailed classification – translation to WRB units,  
**CZ:** Data obtained from national resources (CENIA) - data too general – translation of the resources to WRB units and, new data acquisition

# 4) Different implementation of EU Directive – Natura 2000 habitats

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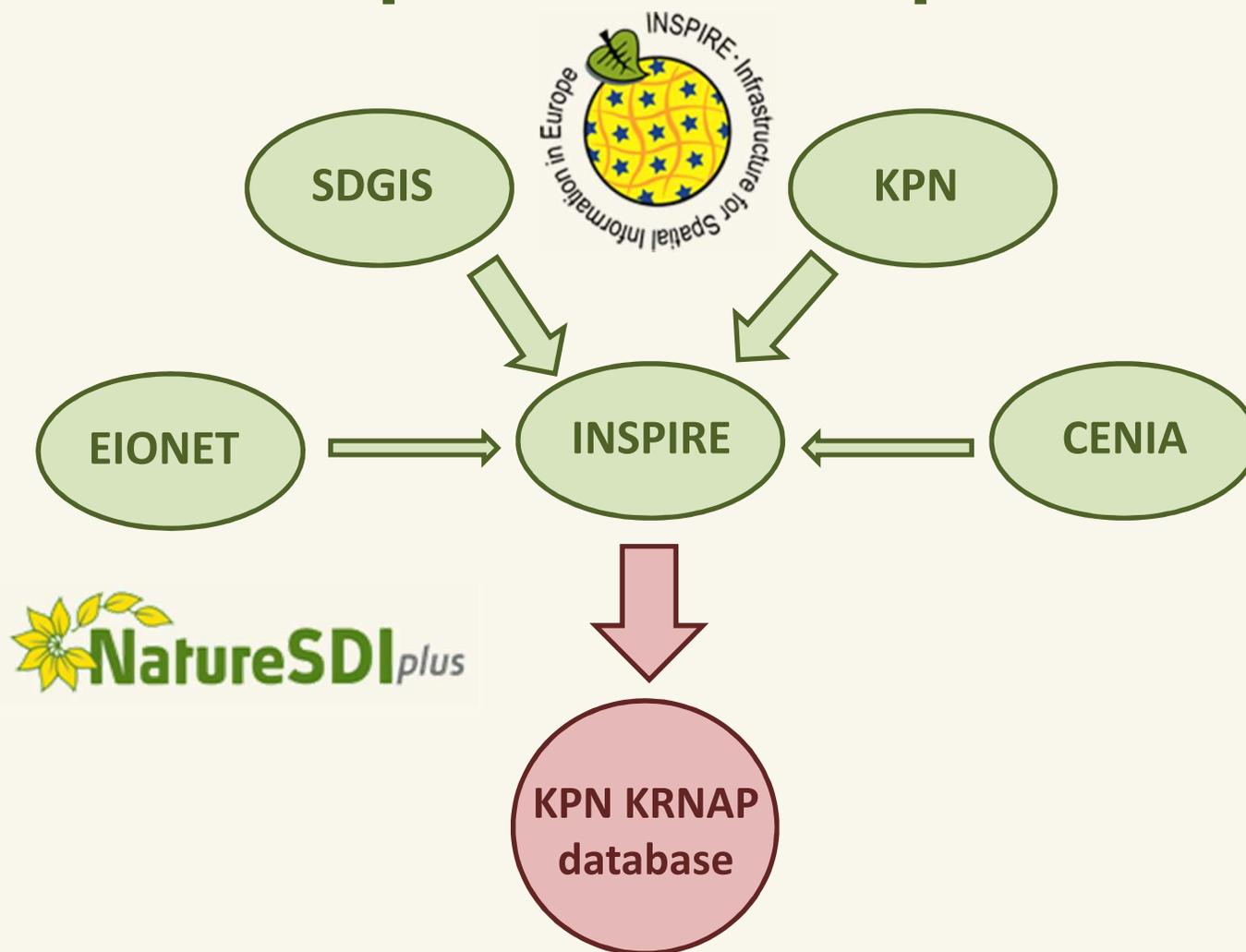
Project Partners:



**PL:** codes for Natura 2000 in line with INSPIRE, EIONET (6430-1)  
**CZ:** biotopes codes instead of Natura 2000 codes (R3.1)

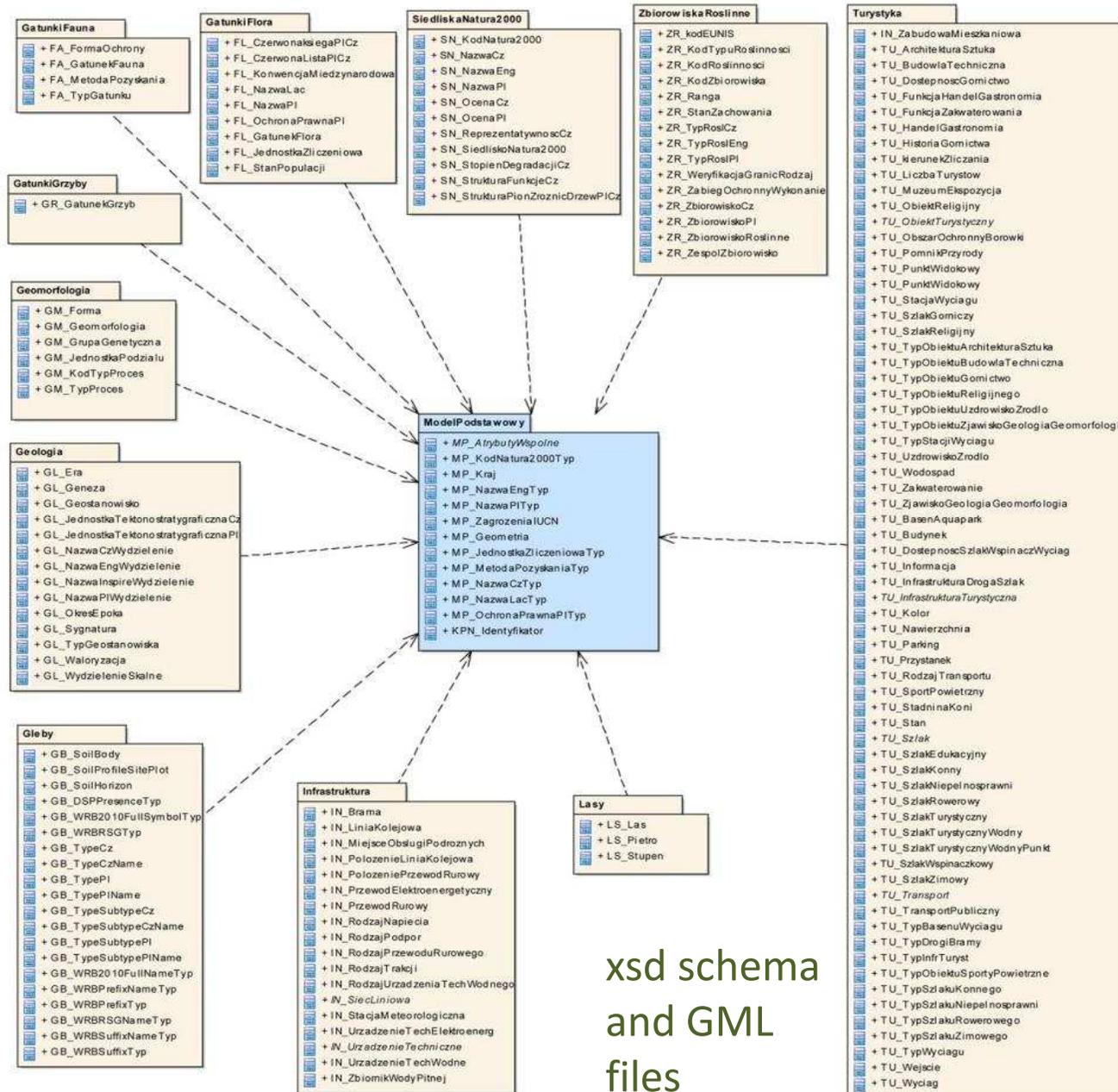
# Identification of feature classes and development of conceptual model

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xsd schema  
and GML  
files

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Project Partners:



United Nations Environment Programme  
**GRID** Warszawa  
Global Resource Information Database

# Results of the harmonisation stages

*Core result:*

*Unified and harmonised attributes and classification schemas for geospatial resources for whole Karkonosze*

*Examples of common datasets for  
Soils, Geomorphology*

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# SOIL dataset: common database structure for PL and CZ resources

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Table - Karkonosze\_soils\_CZ\_12\_2012\_regionKrov

Karkonosze\_soils\_PL\_12\_2012\_region92

FID	SO	WRB	RSG	PREFIX1	PREFIX2	PREFIX3	SUFFIX1	SUFFIX2	FULL SYMBOL	TYPE PL	PL	TYPE CZ	CZ	RSG NAME	NAME	NAME0	NA	NA	NA	FULL NAME	PL NAME	
0	1	TC	ek						ek TC	AU	AUI	AN	ANu	Technosols	Ekranic					Ekranic Technosols	Gleby przemysłowe i urbaniczne	Gleby przemysłowe i urbaniczne
1	2	TC	ek						ek TC	AU	AUI	AN	ANu	Technosols	Ekranic					Ekranic Technosols	Gleby przemysłowe i urbaniczne	Gleby przemysłowe i urbaniczne
2	3	TC	ek						ek TC	AU	AUI	AN	ANu	Technosols	Ekranic					Ekranic Technosols	Gleby przemysłowe i urbaniczne	Gleby przemysłowe i urbaniczne
3	4	TC	ek						ek TC	AU	AUI	AN	ANu	Technosols	Ekranic					Ekranic Technosols	Gleby przemysłowe i urbaniczne	Gleby przemysłowe i urbaniczne
4	5	TC	ek						ek TC	AU	AUI	AN	ANu	Technosols	Ekranic					Ekranic Technosols	Gleby przemysłowe i urbaniczne	Gleby przemysłowe i urbaniczne
5	6	TC	ub						ub TC	AU	AUI	AN	ANu	Technosols	Urbic					Urbic Technosols	Gleby przemysłowe i urbaniczne	Gleby przemysłowe i urbaniczne
6	7	CM	sk	dy					dy sk CM	BR	BRk	KA	KA	Cambisols	Skeletal				Dystric	Dystric Skeletal Cambisols	Gleby brunatne	Gleby brunatne kw.
7	8	TC	ub						ub TC	AU	AUI	AN	ANu	Technosols	Urbic					Urbic Technosols	Gleby przemysłowe i urbaniczne	Gleby przemysłowe i urbaniczne
8	9	LV	ha						ha LV	P	Pw	HN	HNm	Luisols	Haplic					Haplic Luisols	Gleby płowe	Gleby płowe wlasne
9	10	TC	ub						ub TC	AU	AUI	AN	ANu	Technosols	Urbic					Urbic Technosols	Gleby przemysłowe i urbaniczne	Gleby przemysłowe i urbaniczne
10	11	CM	dy						dy CM	BR	BRk	KA	KA	Cambisols	Dystric					Dystric Cambisols	Gleby brunatne	Gleby brunatne kw.
11	12	CM	sk	dy					dy sk CM	BR	BRk	KA	KA	Cambisols	Skeletal				Dystric	Dystric Skeletal Cambisols	Gleby brunatne	Gleby brunatne kw.
12	13	CM	dy						dy CM	BR	BRk	KA	KA	Cambisols	Dystric					Dystric Cambisols	Gleby brunatne	Gleby brunatne kw.
13	14	LV	ha						ha LV	P	Pw	HN	HNm	Luisols	Haplic					Haplic Luisols	Gleby płowe	Gleby płowe wlasne
14	15	LV	ha						ha LV	P	Pw	HN	HNm	Luisols	Haplic					Haplic Luisols	Gleby płowe	Gleby płowe wlasne
15	16	TC	ub						ub TC	AU	AUI	AN	ANu	Technosols	Urbic					Urbic Technosols	Gleby przemysłowe i urbaniczne	Gleby przemysłowe i urbaniczne
16	17	HS	fi	dy					dy fi HS	T	Tw	OR	ORf	Histosols	Fibric				Dystric	Dystric Fibric Histosols	Gleby torfowe	Gleby torfowe torf
17	18	CM	sk	dy					dy sk CM	BR	BRk	KA	KA	Cambisols	Skeletal				Dystric	Dystric Skeletal Cambisols	Gleby brunatne	Gleby brunatne kw.
18	19	CM	sk	dy					dy sk CM	BR	BRk	KA	KA	Cambisols	Skeletal				Dystric	Dystric Skeletal Cambisols	Gleby brunatne	Gleby brunatne kw.
19	20	LP	li						li LP	IS	IS	LI	LIm	Leptosols	Lithic					Lithic Leptosols	Litosole	Litosole
20	21	CM	dy						dy CM	BR	BRk	KA	KA	Cambisols	Dystric					Dystric Cambisols	Gleby brunatne	Gleby brunatne kw.
21	22	CM	sk	dy					dy sk CM	BR	BRk	KA	KA	Cambisols	Skeletal				Dystric	Dystric Skeletal Cambisols	Gleby brunatne	Gleby brunatne kw.
22	23	CM	eu						eu CM	BR	BRw	KA	KA	Cambisols	Eutric					Eutric Cambisols	Gleby brunatne	Gleby brunatne wj.
23	24	CM	sk	dy					dy sk CM	BR	BRk	KA	KA	Cambisols	Skeletal				Dystric	Dystric Skeletal Cambisols	Gleby brunatne	Gleby brunatne kw.
24	25	CM	dy				au		dy CM au	BR	BRk	KA	KAd	Cambisols	Dystric			Alu		Dystric Cambisols (Alumic)	Gleby brunatne	Gleby brunatne bie
25	26	CM	dy						dy CM	BR	BRk	KA	KA	Cambisols	Dystric					Dystric Cambisols	Gleby brunatne	Gleby brunatne kw.
26	27	CM	dy				au	ar	dy CM au ar	BR	BRk	KA	KAd	Cambisols	Dystric			Alu	Epi	Dystric Cambisols (Alumic, Epial)	Gleby brunatne	Gleby brunatne bie
27	28	CM	sk	dy					dy sk CM	BR	BRk	KA	KA	Cambisols	Skeletal				Dystric	Dystric Skeletal Cambisols	Gleby brunatne	Gleby brunatne kw.

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Karkonosze\_soils\_PL\_12\_2012\_region92

Karkonosze\_soils\_CZ\_12\_2012\_regionKrov

FID	SO	WRB	RSG	PREFIX1	PREFIX2	PREFIX3	SUFFIX1	SUFFIX2	FULL SYMBOL	TYPE PL	PL	TYPE CZ	CZ	RSG NAME	NAME	NAME0	NA	NA	NA	FULL NAME	PL NAME	
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105	10	CM	dy						dy CM	BR	BRk	KA	KA	Cambisols	Dystric					Dystric Cambisols	Gleby brunatne	Gleby brunatne kw.
116	11	CM	dy						dy CM	BR	BRk	KA	KA	Cambisols	Dystric					Dystric Cambisols	Gleby brunatne	Gleby brunatne kw.
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390	39	CM	sk	dy					dy sk CM	BR	BRk	KA	KAd	Cambisols	Skeletal				Dystric	Dystric Skeletal Cambisols	Gleby brunatne	Gleby brunatne kw.

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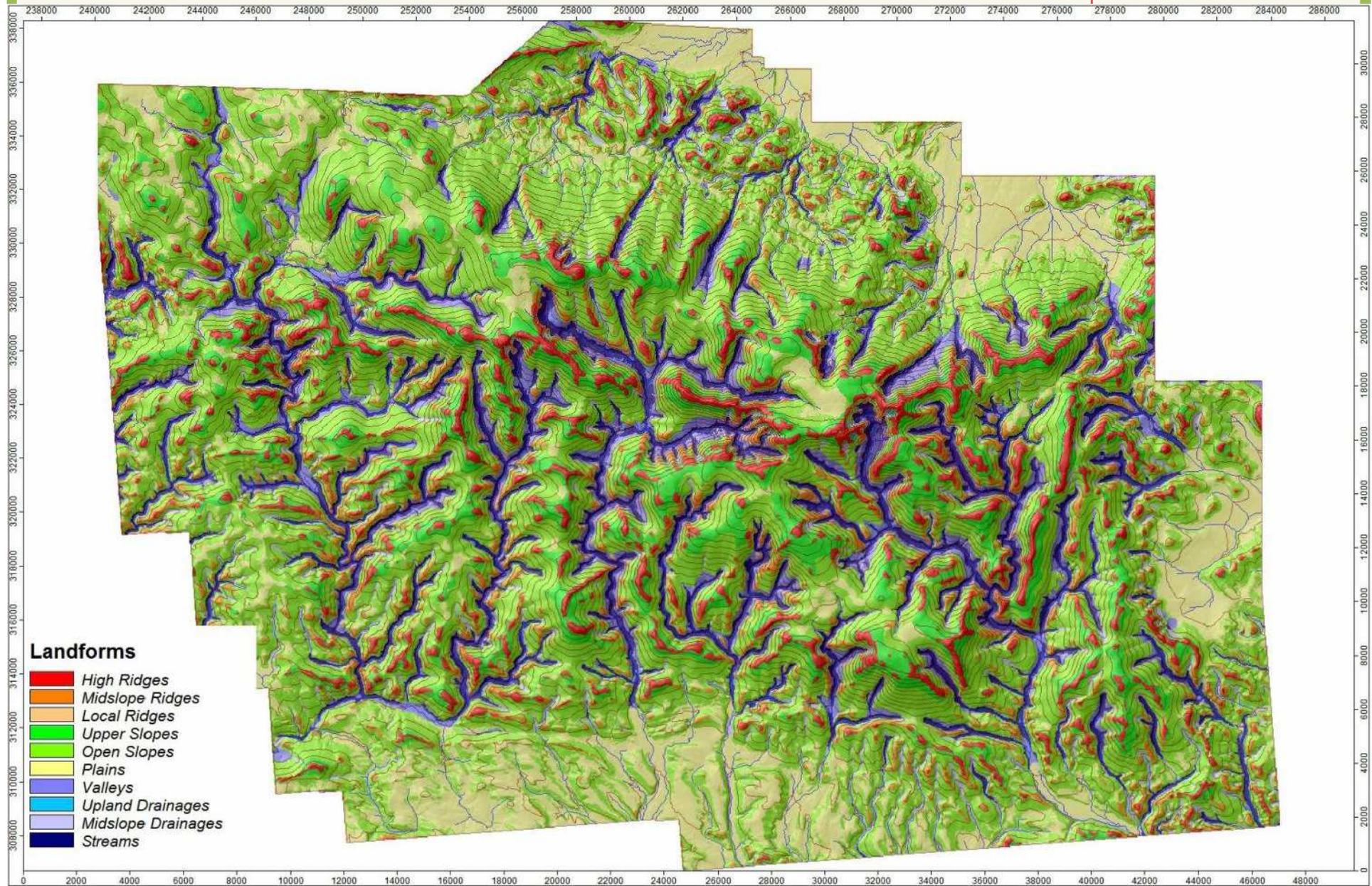
Karkonosze\_soils\_CZ\_12\_2012\_regionKrov



# Complex harmonization !

Morphometry mapping supported by GIS analyses

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# Making data accessible

- 1) Harmonised layers uploaded on GIS servers but the data will stay by the owner (INSPIRE rule)
- 2) Each park is responsible for data management, keeping them up to date and maintain the database in accordance with INSPIRE rules
- 3) Harmonised and integrated data sets are served via *web-services*, and GEOPORTAL together with metadata

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gis.kpnmab.pl/pl

Aplikacje Dofinansowanie ze ś... SC5-07-2015 Blitzortung.org eENVplus - Consorti... Manager OVH GeoPanel SDI - Hosting Radar dane viewer - ... greenAlps

# GEOPORTAL

## Karkonoszy



### ■ O geoportalu

Geoportal Polskiego Karkonoskiego Parku Narodowego oraz Czeskiego Krkonošského národního parku to wspólny polsko-czeski portal mapowy, na którym prezentowane są zharmonizowane **dane przyrodnicze dla całych (Polskich i Czeskich) Karkonoszy**. Harmonizacja danych polegała między innymi na:

- przetworzeniu zapisanych w różnych systemach klasyfikacji zbiorów danych polskich i czeskich do jednolitej struktury;
- opracowaniu wspólnych, jednolitych reguł wizualizacji danych oraz legend opisujących



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Results of the project could be inspiring source of experience for other transboundary regions in which activities will focus on harmonisation and presentation spatial data for public use.



Project Partners:



# INSPIRE and Spatial Planning

## III Annex: Land use theme

- Cover spatial data describing Existing and Planned land use
- Using the HILUCS classification of land use
- Referenced to local spatial planning

# How Carpathian stakeholders should benefit from INSPIRE?

*Be fully aware and demanding users of national SDI*

- National SDI implementation – obligation for EU members (up to 2019)
- Share data with respect to INSPIRE rules: geospatial web-services
- Integrate data from various sources (various web-services) than to collect them
- Create metadata – make use of metadata catalogues