Identifier Management in EBM 2024

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1 Background

The identifier management in EuroBoundaryMap is realized with the core attributes *inspireId* and the corresponding *beginLifespanVersion*. The identifier refers to INSPIRE regulations and best practices. However, as INSPIRE objectives refer data exchange only the maintenance and management of unique INSPIRE identifiers is out of INSPIRE scope. This document serves as reference for the implementation within EuroBoundaryMap.

2 Relevant INSPIRE references for EuroBoundaryMap

As stated in the EBM Specification (sections 2.3 Normative references and 5.2.3 INSPIRE compliancy) we are referring to "INSPIRE Data Specifications, especially D2.8.I.4 INSPIRE Data Specification on Administrative units – Guidelines v3.1". The currently valid version (v.3.2.0, retrieved on 05.07.2024) is available at https://inspire-mif.github.io/technical-guidelines/data/au/dataspecification_au.html. In this document the identifier management is further described in section "5.2.5 Identifier management".

Furthermore, in this document the "INSPIRE Generic Conceptual Model" is referenced, which underlines the four requirements for unique object identifiers:

D2.5: Generic Conceptual Model, Version 3.4 (https://knowledge-base.inspire.ec.europa.eu/document/download/bb551703-c8ab-4fbd-a556-f7cf75feabe3_en?filename=d2.5_v3.4.pdf, retrieved on 05.07.2024)

Uniqueness: No two spatial objects of spatial object types specified in INSPIRE application schemas may have the same external object identifier, i.e. the identifier has to be unique within all the spatial objects published in INSPIRE.
[…]
Persistence: The identifier has to remain unchanged during the life-time of a spatial object. The life-cycle rules vary from data provider to data provider and as a consequence no fixed rules will in general be specified in INSPIRE data specifications.
Traceability: Since INSPIRE assumes a distributed, service-based SDI, a mechanism is required to find a spatial object based on its identifier. I.e. the identifier has to provide sufficient information about the source of the spatial object so that arrangements can be made that allow to determine the download service(s) that provide access to data from that source.
Feasibility: The system has to be designed to allow that identifiers under existing national identifier systems can be mapped.

3 Implementation of inspireIds in EuroBoundaryMap

EuroBoundaryMap is a complex product with a harmonised data model including external and internal identifiers. The data contributions by the NMCAs are transformed from the original data model into the data model of EBM.
The basic geometry of EuroBoundaryMap is stored in EBM_A representing the lowest level of the administrative hierarchy of the delivered country. The national data delivery contains the basic geometries and the corresponding data table EBM_NAM reflecting the administrative hierarchy. The layers AdministrativeUnits are derived based on the EBM_A and the structure given in EBM_NAM. Furthermore, LAU and NUTS layers are derived by the EBM_A in combination with the table EBM_NUTS and in some cases additional data provided (e.g. Greece). The technical guidelines for data producers contain following information on providing the inspireIds in EBM_A:

"*NMCAs are asked to provide this information* (inspireIds based on national ids*), if maintained in the national data source. This concerns first basically feature class EBM_A. BKG will populate all missing attributes, especially for derived feature types.*
[…]
Examples:

- *Object in feature class EBM_A with inspireId populated by NMCA:*
  - *inspireId = _EG.EBM:DEBKGDL20000BRJA*
- *Object in feature class AdministrativeUnit_1 with inspireId populated by BKG:*
  - *inspireId = _EG.EBM:AU1.DE0000000000000.2*

"

Currently (EBM 2024) only Germany is providing inspireIds populated and kept constant by the NMCA. All other country inspireIds are derived by the SHN code.
The specification states for the SHN code:

"*The SHN code indicates the administrative unit to which the area belongs. SHN is a strictly hierarchically built identifier for all administrative units on each administrative level. In general, SHN corresponds to the national administrative code.*"

Hence, all significant changes in administrative structure, which is reflected in the SHN code, leads to new inspireIds, even though no geometrical changes may happen. We refer here to the SHN code as key attribute in our inspireId lifecycle management. We therefore consider these inspire ids to be compliant with the inspire regulations.
All derived layers (AdministrativeUnit_x, LAU and NUTS_x) which are derived by the production management on European level are based on key attributes (SHN, NUTS and LAU codes). As those features are not delivered by the NMCAs in the standard procedure and the geometrical objects are constructed based on the EBM_NAM and EBM_NUTS tables the key attributes are used to enforce the inspireId requirements with our approach of lifecycle management, which already has been explained (i.e. administrative hierarchy changes lead to inspireId changes).

For this implementation approach it is important that LAU, NUTS and SHN codes are not reused for different spatial objects to maintain the persistence of the spatial object. In the majority of changes this is the case. However, if a NMCA decides to redistribute the former key codes this leads to an inspire compliant product, if the version is regarded as only valid product. However, regarded as successor to previous version of EBM this special case is not in line with the persistence requirement (e.g. LAU units in Greece from EBM 2023 to EBM 2024).