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ANALYSIS AND IMPLEMENTATION OF APPLICATION SCHEMAS FOR THE INSPIRE THEME BUILDINGS

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Abstract. During Implementation of INSPIRE directive, various data themes are transformed one by one into structure and content given by Data Specifications published by Joint Research Center (JRC) of the European Commission. Data shall be then published in the GML 3.2.1 format, that is standard of Open Geospatial Consortium (OGC). Structure and validity of data are ensured by validation against XSD schemas. These schemas are usually provided by JRC as well, but not neccessarily for all application schemas of all INSPIRE themes.

Currently implemented theme Buildings has defined six application schemas, but XSD schemas are available for only three of them. All application schemas were analysed and it was found, that the most suitable data model responds most closely to the application schema BuildingsExtended2D. Its XSD schema was not provided by JRC in the current version. Moreover, abstract XSD schema BuildingsExtendedBase, needed for usage of previous schemas, neither. There appeared a need of creation of these missing XSD schemas.

Besides suitable application schema, analysis showed data sources needed for implementation, presumed links to features of other INSPIRE themes, default portrayal and ways of data publication. During implementation, data were transformed from original databases into tables in publication database, then it was shaped into INSPIRE data structure given by Data Specification and published in GML format, valid against newly created XSD schemas.

Keywords: INSPIRE, Buildings, XSD schema, GML format, web service.

1. Introduction to INSPIRE

Infrastructure for Spatial Information in Europe (INSPIRE) is the directive of European Commission and Council, which was created to standardise spatial information in member countries of EU and enable the sharing of information among public sector organisations. Its implementation has begun on 15th May 2007 by coming directive into force. It is planned to be implemented at various stages, with full implementation required by 2019. In the Czech Republic it was transposed into legislation by the amendment to the Act no. 123/1998 Coll., on the right to access information about environment, which came into force on 23th October 2009.

Implementation of INSPIRE is in Czech Republic coordinated by Czech information agency of environment (CENIA). On 4th November 2010 was found Coordinating Comitee for INSPIRE (KOVIN) as an advisory body of the Ministry of environment. Its tasks are the implementation of INSPIRE, evaluating progress in promoting the implementation of INSPIRE, analysis of results of the implementation and coordination of data providers. This is done through technical working groups focused on partial implementation steps, such as metadata, services, strategy, legislation i.e. [**?**]

Since the beginning of 2014, the implementation is documented and directed by the national strategy of the implementation of INSPIRE [**?**]. Main target of the implementaion according to the strategy is creation, maintenance and developing of the infrastructure of spatial information in the Czech Republic as a part of European infrastructure.

Directive devides spatial data into themes. Each theme is described by Data Specification document published by Joint Research Center (JRC). Implementation is set on the level of countries. Every theme has national coordinator, that is usually an organisation administering the data. Coordinator is responsible for proper implmentation. Each theme can have more participators, but only one coordinator. At the time of writing this paper there is more than eight themes already implemented in the Czech Republic. All of the themes are coordinated either by Czech Office for Surveying, Mapping and Cadastre (CUZK), or Land Survey Office (ZU). Some other themes have their coordinator as well, but were not implemented yet.

2. Analysis of the INSPIRE theme Buildings

In this section, we show that

$$\begin{aligned} 300 = {} & 1+2+3+4+5+6+7+8+9+10 \\ & +11+12+13+14+15+16+17 \\ & +18+19+20+21+22+23+24, \end{aligned} \tag{1}$$

The first column of this very wide table	The second column of this very wide table
Foo	Bar
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TABLE 1. Wide table.

FIGURE 1. Wide figure [**?** **?**].

which can be written as

$$\begin{aligned} 300 = {} & 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 \\ & + 10 + 11 + 12 + 13 + 14 + 15 + 16 + 17 \\ & + 18 + 19 + 20 + 21 + 22 + 23 + 24. \end{aligned} \quad (2)$$

More details can be found in Section 3. Ut quis lorem nisi. Maecenas blandit pharetra odio vitae facilisis. Suspendisse egestas porta ligula non blandit. Morbi posuere leo scelerisque nunc tempor dignissim. Vivamus tristique sagittis faucibus. Nullam placerat, dolor ut rhoncus pellentesque, nisl neque aliquam sem, ut aliquam enim est vel risus. Maecenas congue molestie sem in consectetur. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Mauris enim massa, lobortis sit amet convallis id, sollicitudin a neque. Aliquam erat volutpat. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean hendrerit dictum lectus, vel dictum lacus iaculis non. Nullam ornare, arcu vehicula tempor hendrerit, dui neque consectetur eros, vitae adipiscing ipsum metus a enim. Nullam risus erat, eleifend ut volutpat at, varius quis eros. Integer magna nisl, sodales a auctor mollis, luctus accumsan dolor.

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4. Conclusions

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List of symbols

ϱ Liquid density $[\mathrm{kg\,m^{-3}}]$
p Liquid pressure [Pa]

Re Reynold's number

Acknowledgements

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LaTeX class errors and warnings

- **Warning:** Text of 'abstract' is 491 characters too long

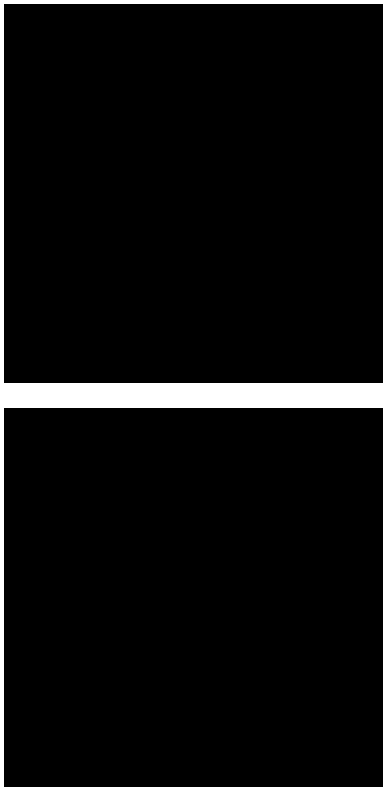

Figure 2. Our results: black box (top) and black box (bottom).