

## **An intrinsic approach for the detection and correction of attributive inconsistencies and semantic heterogeneity in OSM data**

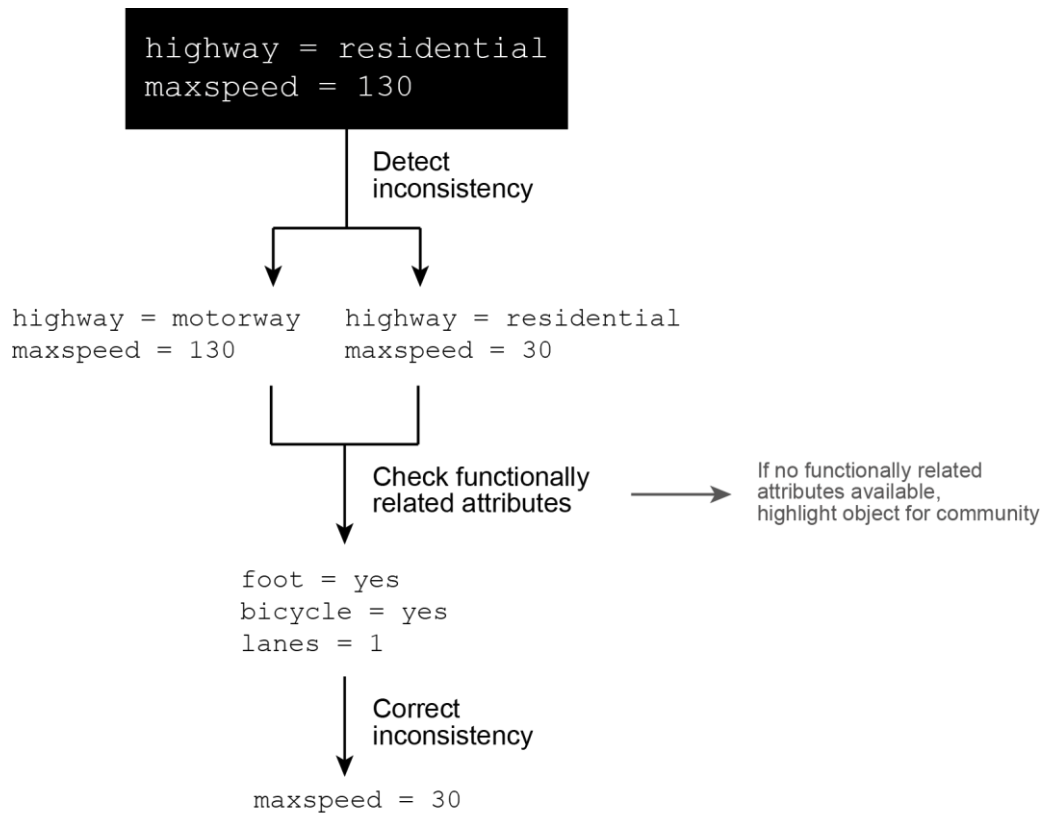
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**Abstract** Due to the extensible data model and the relative openness for individual modeling approaches, OpenStreetMap (OSM) data are especially affected by the following two quality aspects: 1. attributive inconsistencies and 2. semantic heterogeneity. While the first aspect is a common error in data capturing without strictly defined definitions and relations, the latter is not an error per se, but mirrors the various valid options to model one and the same concept.

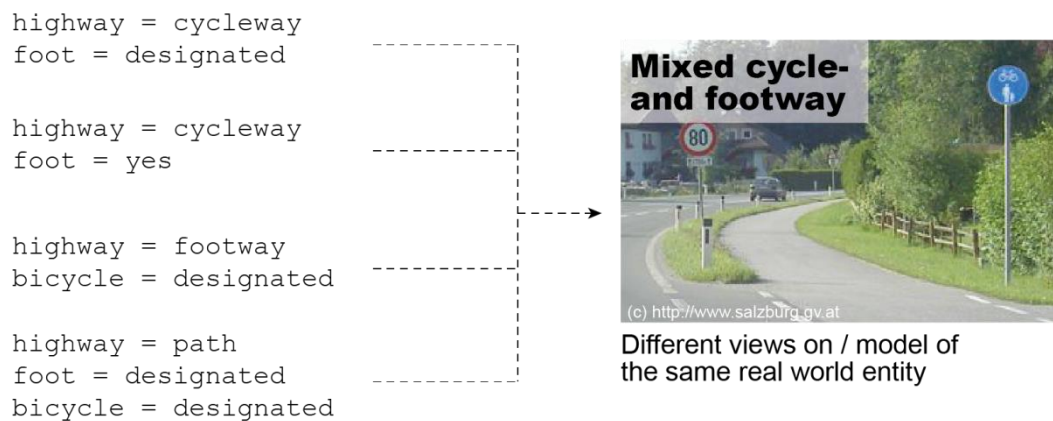
For the detection and potential correction of these implications we propose a purely intrinsic approach. We will argue that intrinsic quality assessment routines are especially valuable when it comes to attributive quality of OSM data (primarily because it cannot be taken for granted that any reference data are necessarily of better attributive quality). The proposed approach mainly relies on predefined dependency rules and subordinated attribute “containers”. This approach can be applied during active mapping sessions (through the provision of intelligent search engines and mapping tools) as well as in data post-processing. This post-processing is necessary especially when OSM is used for routing or any other spatial analysis.

The applicability of our approach is demonstrated in the context of a new data extraction and download service. This webservice allows users to download a dataset from an arbitrary worldwide geographic region which will contain corrected and homogenized attributes.

Figures, demonstrating the two implications can be found on the 2<sup>nd</sup> page.



**Figure 1** Example attributive inconsistency



**Figure 2** Example semantic heterogeneity, solved with a subordinated attribute "container"