

# Suggested Changes to GTM<sup>alpha</sup>

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**Abstract.** The paper “GTM<sup>alpha</sup> – Towards a Graphical Notation for Topic Maps” [1] presents an appealing level 0 graphical representation for Topic Maps. This short text suggests one change to GTM<sup>alpha</sup> in order to make the graphical representation closer to the semantics that the Topic Maps hold.

A topic map encompasses semantics within it. These semantics are presented in the different relations between the Topic Maps constructs. For example, certain person, e.g. Bach, might be an employee of a certain entity e.g. Thomasschule. This will be represented in the topic map by associating the topic representing Bach with the topic representing Thomasschule. In such association, the roles types and the association type will define how the two topics are associated – Bach is the *employee*, *employed-by* the *entity* Thomasschule.

There are different things we can learn from this association. The main statement is that Bach was employee of the entity Thomasschule. But there are other things we can learn:

- Bach was an employee.
- Thomasschule was an entity.
- Bach and Thomasschule were related through employed-by relationship.

These three extra semantics are related directly to each of the types in the association – the types of the two roles and the type of the association itself.

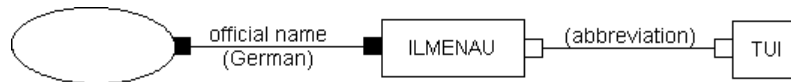
However, we usually can assume that the two players in this association will be semantically closer to each other than two topics which play the same kind of role in different associations in the topic map. For example, Carl Friedrich Goerdeler who was employee of the city Leipzig hundreds of years later has small relationship to Bach, although both of them were *employees*.

This difference in the semantic distance between topics in Topic Maps suggests that there are semantic distance levels. In most, if not all, the Topic Maps browsers, the user is presented with the highest level of the semantic relations. The browser allows browsing from one player to another through the association in which they are playing a role.

In  $GTM^{alpha}$ , the "everything is a topic" principle is stressed in order to visually demonstrate that the types of roles, associations, occurrences and names as well as scopes are all topics. This leads to a representation that includes graphical links between for example, roles of different associations to the same topic. As a result, the reader of the graphical representation gets a picture where the most important relationships in the topic map are no longer visually distinct.

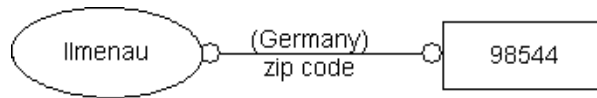
Therefore, we suggest in this paper to avoid from marking an association type, role type, occurrence type, name type or a scope by linking those to the actual topic with a line. Instead we suggest having a text above or below the line, and that text *refers* to the typing topic. If it is a scope, we suggest having that text with a bracket around it.

The figures below, which are based on the figures from [1], demonstrate this idea. In Figure 1, we can see a topic name "ILMENAU" which is of type "official name", in the "German" scope, and which has a variant in the scope "abbreviation".



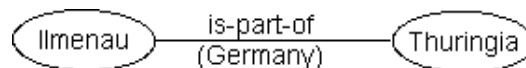
**Figure 1 – Name and variant**

In Figure 2, the occurrence "98544" is typed by "zip code" and scoped by "Germany".



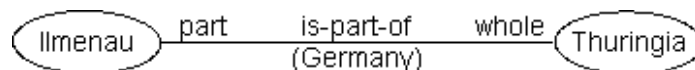
**Figure 2 - Occurrence**

In Figure 3, the two topics "Ilmenau" and "Thuringia" are associated in association of type "is-part-of", and this association is scoped by "Germany".



**Figure 3 - Association**

In Figure 4, the roles in the last association are also mentioned.



**Figure 4 - Association roles**

The comparison below demonstrates the difference between the two suggested approaches.

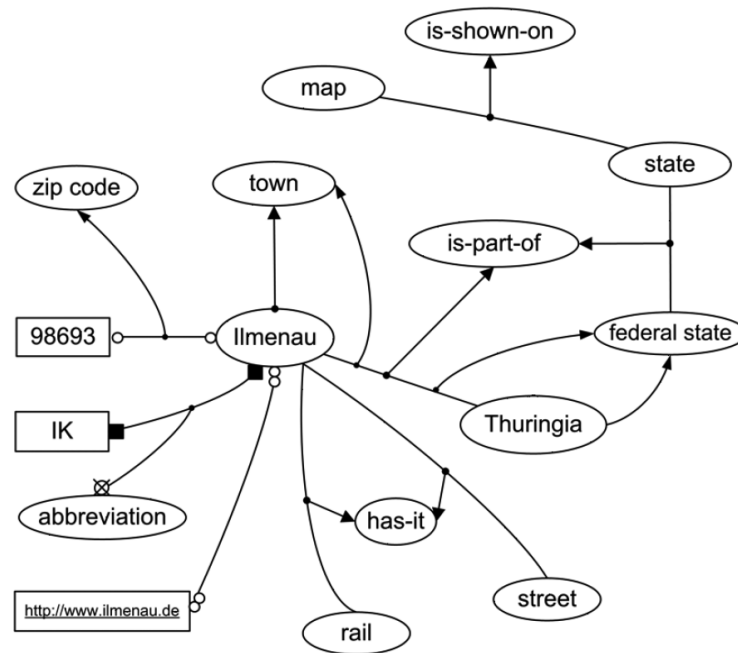


Figure 5 - domain view of the topic map draft in GTM<sup>alpha</sup> (taken from [1])

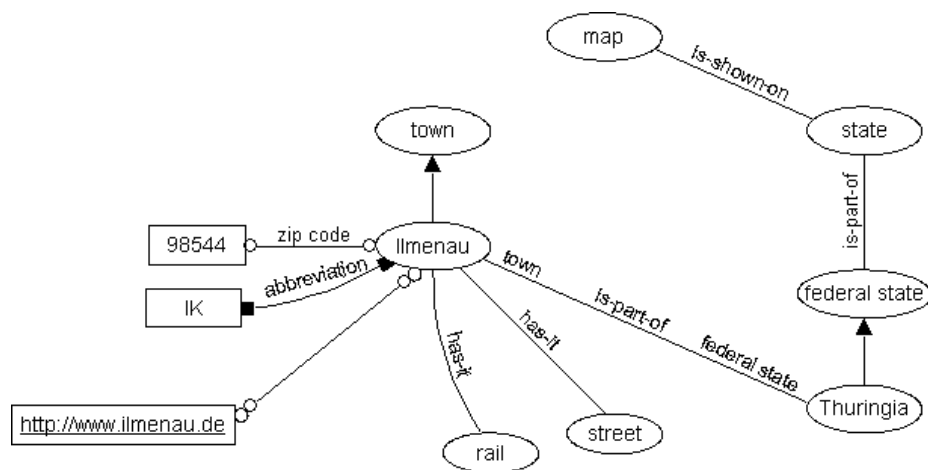


Figure 6 – The same domain view in GTM<sup>alpha</sup> with the suggested change

Because the visual representation in Figure 6 reflects better the semantic distances, the meaning of the relationships in this representation is clearer.

Especially for the novice users who are barely familiar with Topic Maps, the “everything is a topic” principal or GTM, this kind of representation is less confusing. We believe that a main usage of GTM will be to communicate ideas to domain experts who are not familiar with Topic Maps. For those users, a simple line between two ovals is translated almost naturally to an association between two topics.

Other reason to support this suggestion is that it prevents the situation where scopes and topics which type associations, roles, occurrences or names become graphical “hot spots” (that is, many lines go out of those topics – such as “is-part-of” or “has-it” in Figure 5). I believe that usually the user is more interested in topics that are players in associations and are “hot spots” (such as “Ilmenau” in Figure 6).

- 1 Hendrik Thomas et al.: *GTMalpha – Towards a Graphical Notation for Topic Maps*, in , Maicher, L.; Garshol, L. M. (eds.): *Subject centric computing, Fourth International Conference on Topic Maps Research and Applications, TMRA 2008, Leipzig, Germany, October 16-17, 2008*, Revised Selected Papers. (Leipziger Beiträge zur Informatik: XII) - ISBN 978-3-941152-05-2