"The Practicability of Taxonomies"

Interview, November 2009

Dr. Andreas Billig and Helmut Adametz, research scientists at the Fraunhofer Institute for Software and Systems Engineering ISST in Berlin, emphasize the relevance of taxonomies in the interview.

Based on their ”Praxishandbuch Taxonomie” (practice manual taxonomy), they argue that before deciding whether taxonomies or, e.g., ontologies are to be chosen in order to structure services, one should have a closer look at the requirements. On that basis, taxonomies may come out as the best option because they are both simple and structured.

The establishment of cross-organisational process chains has taken centre stage in eGovernment recently. Why?

Helmut Adametz In public administration, we all too often come upon “isolated islands of service applications”, i.e., information technology is very much adapted to the specific requirements of each single organisation. That applies to the public administration within itself as well as between public administration and businesses. But even in spite of a syntactically correct transfer of data, the use of different terms, data structures, conventions etc. often leads to misinterpretations. In regard to the necessary enhancement of efficiency and effectivity, the syntactical and especially semantic interoperability of eGovernment-related services is thus a major issue.

What is the contribution of taxonomies in this regard?

Andreas Billig Since taxonomies aim at representing controlled terminologies, they help to avoid semantic inconsistencies within transfer of eGovernment-related artefacts. Taxonomies ensure that sender and receiver use the same meaning of data, so to speak. It is evident that this is impossible without highly controlled terminological descriptions.

Is this also the reason why taxonomies are of such great importance in the context of the eGovernment projects that are coached by SEMIC.EU?

Andreas Billig Yes, taxonomies are structured and expressive enough to cover the main requirements on terminologies, and yet they are simple enough to be accepted by domain actors.

But do we need a separate taxonomy for every single application?

Helmut Adametz No, as a matter of fact the reuse of existing taxonomies is essential for the development of new taxonomies - not only to save resources but also in order to avoid mismatch to taxonomies of potential collaboration partners. Taxonomy development is an iterative process in which you learn from other domain experts who already have developed taxonomy parts.
Andreas Billig There is also another point to it: If you agree that one should rely on standard languages for representing taxonomies because many tools and methods are already available for them, then in turn exchanging and reusing existing taxonomies is simply pragmatic.

How do you assess the capacity oft he SEMIC.EU commmunity to contribute to this pragmatism?

Andreas Billig The SEMIC.EU platform serves as *the* European platform for providing taxonomies as candidates for reuse. This is already an important support. Therefore, we can highly recommend developers to start registering their project on the SEMIC.EU platform.
Helmut Adametz Generally speaking, the SEMIC.EU provides very helpful services during the whole life cycle of a taxonomy, i.e., in each step of the construction process as well as in the maintenance phase.

Some taxonomies in SEMIC.EU projects are of significant complexity. Are these taxonomies really suitable for further development?

Helmut Adametz Of course the more complex a taxonomy is, the higher the effort of inheriting and adapting parts of it. But at the end it’s all a question of cost-benefit analysis and it is obvious that in many cases the effort of developing a new one would be much higher. On the other side, taxonomic models are also relatively stable, i.e., they are intended

to provide a shared understanding of a domain for many people. Compared to highly customized applications with special functions that change over the time, the level of reusability of taxonomies is thus very high.

Taking into account that taxonomies are negotiated in collaborative processes, is it still reasonable to regard them as closed category systems?

Andreas Billig Quite the opposite! It is crucial that taxonomies are open systems. Their evolution has to reflect and adapt to the changes in the real world. This evolution is, by the way, one of the main topics in current computer science research.

But how then can we safeguard the quality of a given taxonomy?

Helmut Adametz Quality of taxonomies is a big issue. A lot of effort has been given to techniques and recommendations for developing 'good' taxonomies. Today, many tools and algorithms in prototype-state are ready to be used for problem parts. Nevertheless, we believe that over the next years, it will still be indispensable that human beings judge the quality and ensure correct taxonomic changes. Thus we recommend using the opportunity that SEMIC.eu offers. Developers should continuously publish new versions of their taxonomies and achieve passing SEMIC.EU's maturity or even conformance process in order to improve the quality.

Our last question: There is not a single conference or scientific paper that does not mention ontologies. So why do we need a manual on taxonomies?

Helmut Adametz From my point of view this question is misleading. There is definitely no rivalry between ontologies and taxonomies.
Andreas Billig That's true because they both belong to the class of controlled vocabularies besides well-known approaches like code lists and glossaries. All these languages are ordered with respect to expressivity. Of course, taxonomies are of lower expressivity but they can be seen as a pre-stage of ontologies because taxonomic structures are one essential part of ontologies. In many projects this level of expressivity is sufficient.
Helmut Adametz Above all, future ontology-based applications can still be built upon already developed taxonomies. So, no time or effort is wasted when developing taxonomies.

SEMIC.EU **Thank you**