

# Engineering the Power of Babel through Community Engineering and Software Language Engineering

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What's really new in Model Driven Engineering approaches? This is indeed a good question... "Models" is a wrong answer. Models have been used for ages in all engineering disciplines. Informatics is no exception. Think for instance about flowcharts, pseudo code, all kinds of bubble-and-arrows (partial) descriptions of software, function-point estimates, etc. MDE is indeed misnamed. From a scientific point of view, it would have been much more accurate to put the emphasis on *metamodels* and *transformations*. The *model-metamodel-transformation* trinity could indeed be transposed to many other technical spaces and fields of research. Unfortunately terms such as "metamodel" are strongly MDE-co notated, and other communities are reluctant to use it because it does not fit in their terminologies. Alternative terms include grammars, schemas, (architectural) styles, ontologies, formalisms, and so on.

We found in the past years that considering model or metamodel as central concepts hinder the exchange between communities. We argue that it is much more productive instead to think in term of *languages*. They are plenty of arguments for that. Firstly, Language is the distinctive feature of mankind over other species. This is also one of the cornerstones of our societies. Secondly, considering Informatics in terms of languages make it possible to reuse the framework of Linguistics, that is the science of languages. This leads to the notion of *Software Linguistics*. Thirdly, *Software Languages*, as essential elements in software industry, must be considered from an engineering perspective. This leads to *Software Language Engineering*. Fourth, the notion of (Software) Language is universal. Since it is shared (at least to some degree) by all fields of Informatics, this is a very good vector for cross-fertilization and integration. Finally, supporting separation of concerns is one of the key objectives in MDE. Providing different languages for different needs and different stakeholders is one of the keys to success.

Whether we like it or not, it is time to recognize that we are in the so-called "Post-Babel era". We must act accordingly. No doubt about it software complexity is ahead. The development of Ubiquitous Computing and Ultra Large Scale systems will only be possible if many experts from many different scientific fields collaborate. This mean that they should be able to talk together but also to use their own language, the language which best suit their needs. Ubiquitous Computing will be based on Ubiquitous Languages. Ultra Large Scale Systems will be based on complex structures of languages.



This work is part of the series "From Ancient Egypt to Software Language Engineering".  
See <http://planet-mde.org/fae2sle> for more information.

Clearly there should be more languages than systems: one of the intrinsic properties of languages is that they are to be shared. New challenges for the future of Informatics will therefore include language reuse, language classification, language repository management, language composition, language extension, and all sorts of other operations on software languages. Language craft is no more possible. It is time to recognize the importance engineering the Tower of Software Languages. This task is far beyond what can be achieved by particular individuals or group of individuals. Since languages are associated with communities, and the other way around, Communities Engineering is required to avoid Babel fragmentation and language islands.

Let us face our fears of the Tower of Babel and realize the true Power of Babel. Since Babel is dividing us, we should unite through Community Engineering. Languages and Communities go together. Let us engineer them altogether.

**Bio:** Jean-Marie Favre is an Assistant Professor at the University of Grenoble. He works at the Laboratory for Informatics at Grenoble, which is one of the largest Computer Science laboratory in France. He defines himself as a Software Language Archaeologist and Software Explorer. He co-organized various international events in particular the ATEM series and the International Conference on Software Language Engineering (SLE). He co-edited of a book (in French) entitled "Beyond MDA : Model Driven Engineering". Finally he actively practices Community Engineering, Research 2.0 and XFOR.



**The Tower of Babel**

Pieter Bruegel the Elder, 1563, Oil on oak panel, 114 x 155 cm, Kunsthistorisches Museum, Vienna

The painting of Bruegel is a testimony to fears that accompany modernization at that time. The town depicted in the surroundings of the tower of Babel is Antwerp. It was in the 16<sup>th</sup> century one of the largest cities of Europe with a constant inflow of people. Many languages were spoken by traders and sailors. This certainly led to many fears within inhabitants, and confusion in the city. Babel is usually considered as a punishment, but experience has shown that dealing with multiple languages is not only necessary; this is a very powerful mean to extend our body of knowledge.