SOFISMO

Your data pilot

GMODEL: ENTERPRISE DATA & MODEL MANAGEMENT

With the universal availability of computing power and the internet as a ubiquitous information source, the sheer volume of data is overwhelming. Making sense of this flood of raw data, and translating it into relevant information requires powerful mechanisms for filtering, structuring, modelling and aggregation. The number of tools to support the attempt of transforming data into valuable know-how is endless. Tools vary in their degree of formalisation, in basic concepts and in representation formats. When immersed in the world of data and representations, it quickly becomes apparent that individual tools can be very useful, but that often there either is no – or only insufficient support for exchanging semantic information between tools. This is where the Gmodel enterprise data and model management technology comes into the picture, **as a semantic interoperability platform for any number of tools in any number of domains.**

Mathematical Foundation

Gmodel was designed from the ground up without any consideration for popular software modelling paradigms or modelling languages. The Gmodel kernel provides a universally and recursively applicable module concept which completely shields the user from the technical details of implementation technologies like traditional databases, file systems and programming languages. It is open-source and can be extended in a shell-like manner with an arbitrary set of complementary domain-specific modelling languages. The implementation of this kernel is based on a small number of language elements that have their origin in model theory and denotational semantics and exploit proven mathematical theorems and transformations. Furthermore, the design of Gmodel guarantees that a large number of best practices for the construction of modular and scalable models are automatically enforced, not only by the kernel, but also by all the user-defined extensions of it:

- The domain to be modelled is partitioned into well-defined areas of knowledge, each of which relates to exactly one role.
- All work products (= artefacts) are based on information produced by a specific role as a result of a specific event.
- Each category of work products is expressed in a dedicated modelling language.
- Conversely, every modelling language defines exactly one category of work products.

- Variants of modelling-language definitions and model instances are expressed as extensions of a common category.
- Work products are the granularity at which versioning and locking is applied.
- Language definitions (category models) are treated as work products as well.
- Circular or bi-directional dependencies between work products are not possible.
- Work products always contain a reference to their corresponding language definition (category model).
- Powerful work-product modularisation and search mechanisms guarantee maintainability, even in geographically distributed organisations with millions of work products.

Advantages of Solutions Based on Gmodel

Gmodel is the foundation of an enterprise-wide modelling philosophy with unique features:

- No limit to the levels of abstraction.
- Any model instance can be used in the role of a language definition again (multi-instantiation).
- No limits to the number of user-defined notational styles and jargons.
- Interoperability with any database or modelling standard (as long as the formal specification of the standard is available).
- Referential integrity across all modelling languages and work products.
- Precise definition of commonalities and variabilities in product lines.
- Unlimited scalability of work products.
- Explicit scope management across all work products that are managed by the Gmodel repository.
- Universal enterprise content-management functionality that also extends to traditional file-based work products.
- Highly portable kernel based on a minimal Java implementation.
- Implementation/generation of derived work products (for example program code) on any technology stack.
- Adaptable to any business domain and any IT organisation.
- All work products are managed in a repository implemented with relational database technology (or alternatively, cloud-database technology).
- Web-based visualisation with multiple interface styles.
- Out-of-the-box integration with Eclipse.
- Open-source kernel with flexible licences for extensions.

Since any data technology and any modelling language can be emulated in Gmodel with very little effort, it is a universal base for interoperability between databases, data-warehouse solutions and modelling tools.