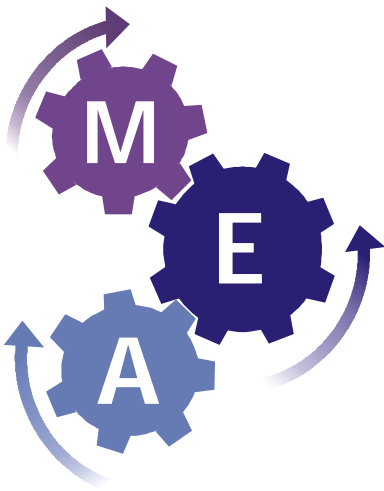


Model Execution Architecture

The common enemy: complexity

The software industry now recognizes the power of models in the battle against complexity in large enterprise systems. By capturing as much information as possible about a business domain in a model, rather than in code, applications become easier to understand, development projects easier to manage, and brittle, tightly-coupled systems are replaced by clearly ordered structures that are easier to change as the business landscape shifts. This emerging approach is, however, itself hampered by a lack of coherent tools and procedures. In particular, once models have been designed and coding has started the models are frozen into static documents, and much of their value is lost.

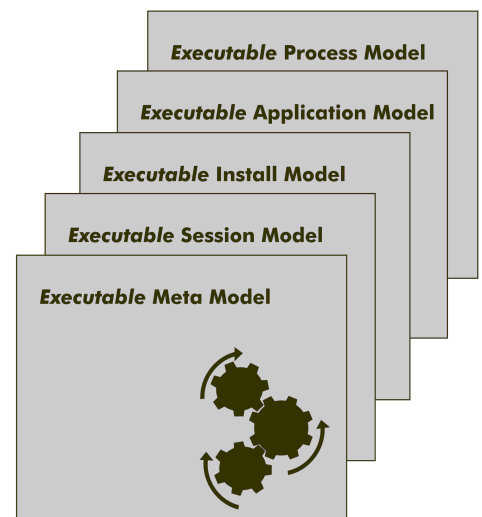


The solution: executable models

Thinkingcap, a new software platform, addresses these issues by retaining design models throughout the lifetime of an application. This approach has been long awaited. In Thinkingcap, the model is not just an artefact of the design process, it is the very core of the application. It does not simply form a blueprint of the application, instead it becomes the DNA of the system as the *model itself* is executed by the Thinkingcap runtime engine. Applications can then be evolved to meet changing requirements by modifying the model at the core of the running application. This approach takes Model Driven Architecture one stage further and is called Model Execution Architecture (MEA).

Thinkingcap separates an application into a number of cooperating models:

- The business process model describes the high-level functionality of the enterprise system
- The application model holds the details of how those goals are realised, along with the business data
- Details of the deployment and configuration of the application onto hardware and software platforms (e.g. interfaces to external databases) are held in another model, the install model
- A fourth model, the session model, holds details of current processes, user activity and sessions.



Thinkingcap is entirely model-based – the platform itself is built from an underlying metamodel, constructed and accessed using the same core technology as all other models. Thinkingcap is, in essence, a model driven server written in Java with facilities to build and maintain enterprise applications.

Benefits in development and operation

Model Execution Architecture provides the application architect with unparalleled scope to refine and optimise an application. Key features are:

Traceability

Because the model is always live (and so by definition, up to date) it can be dynamically queried within the application. This brings great power in processing and reporting data seamlessly across the multiple components that comprise a modern enterprise application, and also allows the impact of any change on the application or its environment to be clearly visualised.

Flexibility

MEA applications are evolved by changing the model at the heart of the application. As the model is always live, the Thinkingcap runtime platform is able to support genuine round-trip development. Indeed applications can be evolved *while they are running*, without the need to shut them down. Thinkingcap MEA makes iterative development easy, with applications usable at every stage, facilitating a genuinely agile IT strategy. The decoupling of the application model from the infrastructure models also brings great flexibility: deployments and configuration can be changed without compromising the core application, and the business functionality can be evolved without the need to tear down and rebuild the existing hardware and software infrastructure.

The business payoff

Business users and software vendors benefit from MEA in many ways including:

- The ability to deliver a low cost prototype very quickly
- An easy, iterative and interactive development approach
- The low cost development of a full solution and further cost savings over the whole application lifecycle
- Easy maintenance and enhancement
- Easy linkage to legacy systems and hence the ability address integration problems
- The ability for software vendors to enter new markets quickly and cheaply by building suites and horizontal applications

Thinkingcap's Model Execution Architecture has been used for the rapid development of custom applications for investment banking, enterprise-wide reporting, and financial analysis.

For further details of Thinkingcap's Model Driven Architecture, please contact:

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Business driven software