

ArcStyler 3.1 from Interactive Objects uses MDA to encourage code re-use. **Ian Murphy** explores the benefits of a tool that can generate applications in different languages from fully-validated architectural models

Interactive Objects does IT in Style

ANYONE WITH MORE THAN A couple of years experience in development will know that more models and methodologies abound for writing software than makes sense. Some of these approaches focus on niche markets, but as the number of programmers and developers has rocketed over the last 20 years, so has the number of gurus who believe that they have the perfect answer to how software should be developed.

Some of those approaches, such as computer aided software engineering (Case), had vast sums invested in them. So when they failed, that failure was seen as catastrophic. Others couldn't gain sufficient support to sustain the methodology. To further confuse matters, the vendors who produce programming languages and operating systems like to change the goalposts for developers because it helps to sell more hardware, software, training and consultancy.

A more structured approach

However, reality has started to bite. Over the last few years, we have viewed software development as a more structured discipline. As we move forward into a loosely-coupled world using web services and distributed architectures, structure and engineering will be central to the effective delivery and management of software.

Few companies can be happy with the amount of time spent reinventing their software, especially following numerous attempts at component re-use. To reach that utopia, we need to stop seeing each development as a discrete project and start dealing with software from a perspective where the architecture supports and even demands re-use. It is this approach where Interactive Objects believes its flagship product ArcStyler will benefit developers.

ArcStyler is a development tool designed to support the Object

Management Group's Model-Driven Architecture (MDA), a long-term initiative to encourage the creation of platform-independent computing models that can then be used to create platform-specific implementations. The focus of MDA is on application re-use, and the OMG has said that such an umbrella concept should future-proof companies against the introduction of new technologies for the next 20 years.

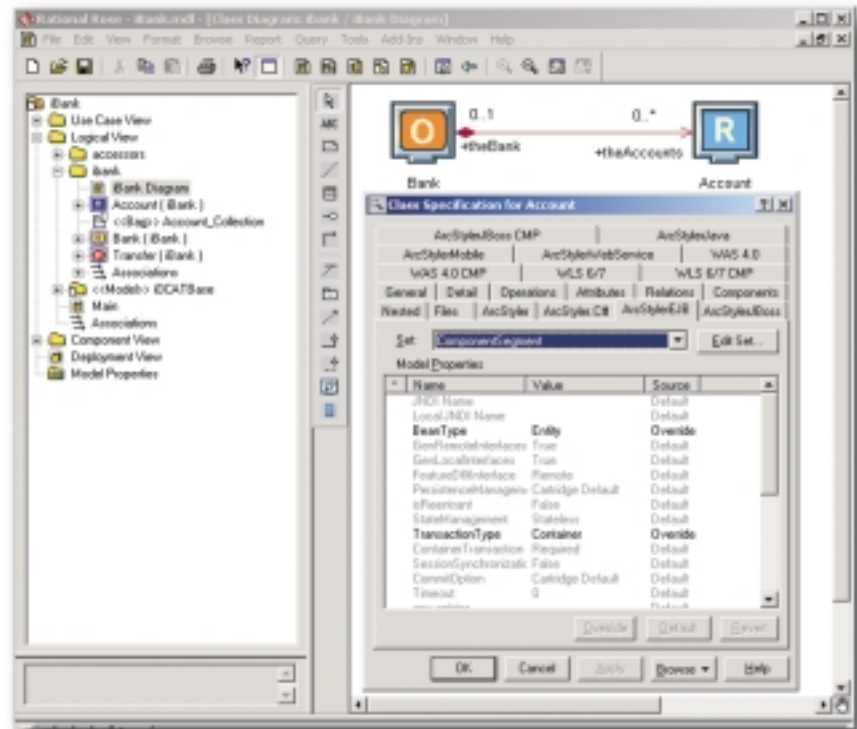
The product comes in three flavours: the Web Edition, which is focused solely on the development of web-based applications, the Enterprise Edition that allows for development of multi-tier applications, and the Architect Edition, which is required to develop specialised components. Interactive Objects estimates

that a team of 20-30 developers will generally use one or two copies of the Architect Edition, with all the other developers using the Enterprise Edition.

The company does not yet support the concept of floating licences. This is something that should be looked at as organisations abandon large development teams in the same physical location in favour of virtual development. Like most software vendors, Interactive Objects offers a 30-day trial of ArcStyler from its web site, but it also has a free, time-limited licence for registered students.

Getting started with ArcStyler requires some planning, pre-installation of Rational Rose and a willingness to work through the tutorials and read the documentation. This is not a product to hand to inexperienced developers because of the steep learning curve, although analyst programmers with experience of multiple languages should feel comfortable reasonably quickly.

Richard Hubert, CEO and founder of Interactive Objects, likens the ArcStyler learning curve to changing your development team's programming language. The point is well made, although I have some concerns about how much time developers will be given to make the transition. There is also a real need to ensure that the developers are given time to understand MDA, which is



Each installed cartridge is recognised by Rational Rose allowing you to determine default behaviour or override as necessary

a complex concept encompassing various strands of OMG activity, from UML through to the Meta-Object Facility (MOF). While there is an increasing wealth of materials available online, there are very few professional training courses covering the subject.

Rational Rose is a prerequisite for ArcStyler, which will refuse to install if it cannot find Rose. However, this is the only restriction and for initial evaluation purposes, ArcStyler is as happy to work with the limited-time evaluation version of Rational Rose Modeller Edition as it is with a fully licensed version.

Installation

You can install other applications before ArcStyler and it will search for them during installation, provided that they install themselves into the registry. For tools that do not use the registry, or tools that are installed after ArcStyler, you must go into the configuration menu and provide the file locations. This flexibility is welcome with such a complex tool. Another welcome feature is that ArcStyler will ask during the installation if you want to check the web site for the latest version. So even if you have an old CD, you can install the latest evaluation code.

There is one known problem with the ArcStyler Enterprise Edition installation. Rational Rose only supports a limited number of icons, leading to an error message. This cosmetic problem occurs because ArcStyler provides menus and icons to Rose for integration, exceeding the Rational tool's limitations.

ArcStyler installs a lot of help documents and tutorials and these should not be ignored. Indeed, not working through some of the tutorials will cause problems in understanding the relationships between ArcStyler components. The recommended approach is to start with the Product Tour, the QuickStart Tutorial, the Accessor Tutorial and then the EJB Tutorial. There are others, which I would also strongly suggest working through.

Each tutorial is clearly documented, well presented and clear. There is no doubt that a lot of time has been spent quality checking the tutorials, and having completed several, I was not faced with a single wrong step or any confusion as to what I needed to do or what I was seeing. While tutorials should never replace classroom training, these tutorials are of the same quality as I would expect for the classroom and they are further supplemented by the materials on the

Interactive Objects web site.

Installation of the Architect Edition also ensures that a number of different cartridges are installed on the computer. Cartridges are a critical component within ArcStyler and can only be created with the Architect Edition, although they used by all editions. Cartridges are used to transform models, using either a model-to-model or model-to-code mechanism. Cartridges provided with ArcStyler include .Net, C#, J2ME, Java, Borland Enterprise Server and BEA WebLogic.

As well as mapping your model either to code or to another model such as UML, custom-built cartridges can be used to control the development environment and create simulations of highly complex models. The advantage of using cartridges is that the model can be simulated and validated before any code is produced. For a system architect, this is extremely useful because errors and functional behavior are more easily corrected in a model than in code. The saving in development time can be difficult to quantify, but the sheer size of modern code bases mean that most organisations accept that they will never have bug-free code and the vast majority of development time is spent in trying to track down errors that should have been detected during modelling.

Another advantage of ArcStyler's cartridge approach is that changes to a model by introducing or updating components can be validated before code is produced, and the cartridge can then be used to distribute the model across the entire organisation. One customer of Interactive Objects is ABB Engineering, which employs ArcStyler cartridges to model massive generators (a task that formerly required supercomputer power, given the complexity of the code). The cartridges are used to simulate code changes and behavior and then generate code across multiple sites simultaneously.

Cartridges are not just limited to defining models for use in development. Because they allow for model-to-model transformations, it is possible to deploy them to other parts of the IT infrastructure, such as security. Security is a major concern for organisations, especially where software needs to be accessed by people external to the organisation. A cartridge could be used to model the company firewalls so that when a change is needed to respond to a new security alert, it can be modelled, evaluated, verified and then deployed.

One way of starting application

development with ArcStyler is to use the Business Object Modeller along with the Pattern Refinement Assistant to create an initial UML model. Alternatively, you could build the initial model in any UML tool or use ARIS from IDS Scheer. Once you have a basic UML model, then you use the UML Refinement Assistant to tune and develop it.

If you have existing Java and EJB components, then you can use the MDA Harvester to import them into Rational Rose and a new model. The advantage of harvesting components is that you can quickly bring your existing code into MDA and begin the modelling and validation process.

One of the most powerful features of ArcStyler is its ability to apply the model to either Java or C#. Unlike other tools, the underlying model does not need to be tuned explicitly for the language because this is done when the model is passed to the generator, where it is mixed with the cartridges to create the initial code. For development teams who are currently unsure of whether to use Java or C# for their web services, ArcStyler's MDA approach should prevent development paralysis.

In the time allotted to work with ArcStyler, it would be fair to say that it was only possible to scratch the surface. Some companies may be daunted by the depth of knowledge and practice required to truly build a complex application with ArcStyler. On the other hand, the benefit of a single, fully-validated model supporting multiple languages and development environments is a real bonus. ■

ArcStyler 3.1

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Pricing:

ArcStyler Web Edition: 4,900 euros

ArcStyler Enterprise Edition: 9,800 euros

ArcStyler Architect Edition: 14,900 euros

Pros:

Powerful, integrates well, reuses existing code.

Cons:

Requires retraining of all staff and a shift in development doctrine

Summary:

A powerful product that is targeting the entire development cycle with an architectural, rather than code-driven, approach. For any development team building distributed computing and web services solutions, it should be given serious consideration.