

CASE STUDY: Clever Age



“PostSharp helped us reduce our code base from 98 to 74 KLOC for the same features: a 24% improvement.”

Guillaume Chaffarod

Software Developer and Project Manager
Clever Age

The IT consulting company uses PostSharp to develop application for the French space agency and achieves 24% code reduction.

About Clever Age

Clever Age is a French-based IT consulting company with a \$30M yearly revenue and about 250 employees located in 10 offices on 3 continents. Since 2001, Clever Age has designed and delivered software and services to companies including Manpower, Sony, Volkswagen, Saint-Gobain, Mozilla, Paris Aéroport, and Ceilo.

<https://www.clever-age.com/>



A satellite modelling application

In the space industry, Clever Age is widely known as the developers of IDM-CIC. The application, developed for the Centre national d'études spatiales (CNES, the French space agency), allows scientists and engineers to model satellites or satellite constellations. The application generates 3D views that can be displayed in real time in the 3D modelling program SketchUp. It also performs sophisticated computations like mass repartition, gravity center, power consumption, or power dissipation. IDM-CIC is a multi-user application, with real-time synchronization over the network, enabling an entire team to work on the same model simultaneously. The tool is used by several companies and faculties in the French space industry. Under the hood, the core of IDM-CIC is implemented with C# and .NET Framework. The application exposes a COM API that can be consumed in different languages, such as Ruby for the SketchUp plug-in.

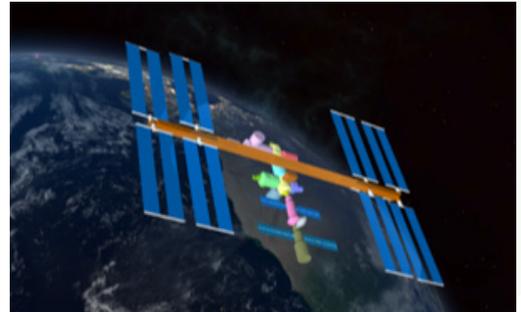
The initial version of IDM-CIC was developed organically by space engineers and scientists, implemented in Visual Basic for Excel (VBA). In 2007, the CNES recognized the importance of the application for the entire industry and hired Clever Age to rewrite it from scratch in order to



improve its performance, reliability, and maintainability.

Team uses PostSharp and saves 24% of code

One of the challenges the team faced was to build the real-time 3D viewer. This feature required the core application to signal changes in any property of any object to the COM API, so that the SketchUp plug-in could refresh the 3D view immediately upon any change of the model. With potentially hundreds of model properties, this would have been a nightmare of boilerplate code. The team identified other patterns, such as extensive low-level logging, that could also greatly benefit from automation.



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The team looked for a tool that could automate the implementation of code patterns and selected PostSharp based on a successful evaluation, excellent reviews, and a highly effective team.

After using PostSharp for a couple of months, the team learned to use aspects to automate any repeating code pattern. Today, PostSharp is used for the following features:

- Logging: detailed logging of all method calls.
- Change notification: changes in any model property are published to a public event.
- Caching: the result of expensive computations is transparently cached to improve performance.
- COM Interop: an aspect automatically sets the GUIDs and DispIDs of all ComVisible classes and methods.
- Modification date tracking: the last modification date of any model object is updated when any field has changed.
- Exception handling: to handle exceptions during user calls and display error messages in a specific form.
- Architecture validation: to check the consistency of the model and raise build-time error if necessary.

“We estimate PostSharp helped us save about 24,000 lines of code for the entire solution out of about 98,200 lines of hand-written code,” says Guillaume, the project manager for the IDM-CIC project.

“We asked some questions and reported bugs to the PostSharp team and always received very good support and care from them,” Guillaume continues. “Installing PostSharp into Visual Studio projects is very simple, and the documentation provided is perfect.”

Summary

PostSharp has helped Clever Age reduce the code size of IDM-CIC by about 24% and maintain its focus on the features that the space engineers and scientists really need.

“The license price is really low compared to the benefits,” says Guillaume. He concludes, “We really advise all C# developers to take a look at the PostSharp technology. We’re sure that they will be convinced that this technology should be used on every project and can save a lot of time and effort.”

“Compared to the benefits of using PostSharp, the license cost is really low.”

Guillaume Chaffarod
*Software Developer and
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About Guillaume Chaffarod

Guillaume Chaffarod is a software developer, project manager, and product owner of Clever Age, and he manages the IDM-CIC project.



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