Round Trip Engineering with INNOVATOR®and SNiFF+

Object-oriented Modeling with INNOVATOR®

INNOVATOR® supports project description using the standard method of UML (Unified Modeling Language). The utilities provided by UML for representation allow both project requirements and static and dynamic aspects to be represented and structured completely. The J-I-V (Jump-Input Aid-Verify) features help to achieve a high integration of individual model components and development phases.

The INNOVATOR® Online Repository supports optimized teamwork. Every project member always works on the most current project version, avoiding what would otherwise require significant consolidation time.
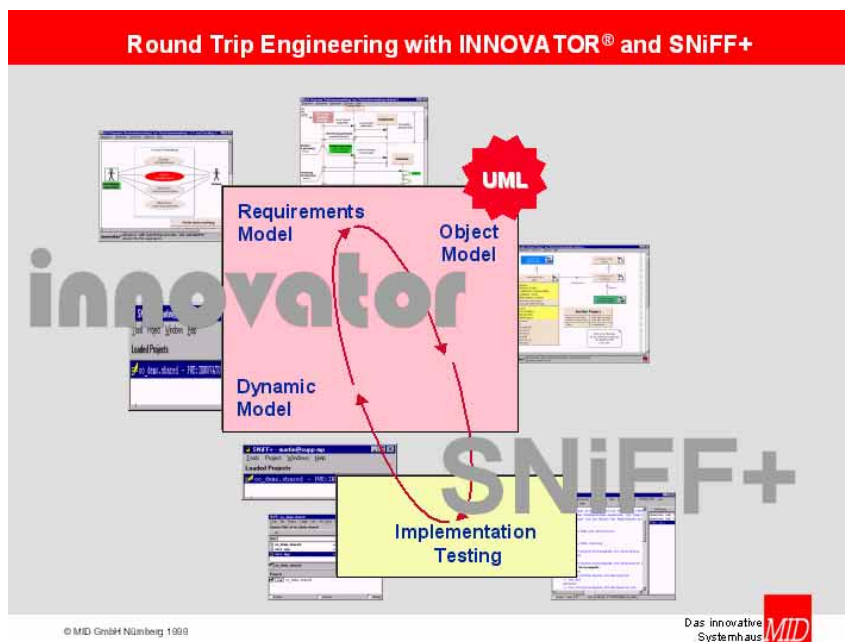

Figure 1:
The complete solution for
the entire software life cycle

The repository contains, in addition to model descriptions, complete implementation information. In INNOVATOR®, in addition to the technical names, implementation names in the languages supported (C++, Java, CORBA IDL, Smalltalk, Forté, Object COBOL, etc.) can also be specified for classes, attributes and methods.

Modeling with INNOVATOR® – Implementation with SNiFF+

INNOVATOR® concentrates on the core functions that occur within the process of software development. Powerful and convenient development environments are available that can be linked to INNOVATOR® for implementation with object-oriented programming languages, based on its general ability to link external tools. This option allows the INNOVATOR® user to apply the development environment of his or her choice. Links are available for all conventional development environments; in principle, any development environment can be used with INNOVATOR®.

To cover all of the areas of software development, we have designed some especially tight-knit links for certain, complementary products from other manufacturers. The integration of the SNiFF+ development environment, developed by TakeFive Software, a MID Connect partner, is part of this strategy. SNiFF+ provides tools for editing, compiling and testing source code. Like INNOVATOR®, SNiFF+ places great importance on teamwork.

With the availability of both SNiFF+ and INNOVATOR® on various operating systems and interfaces, teamwork is also supported on heterogeneous networks.
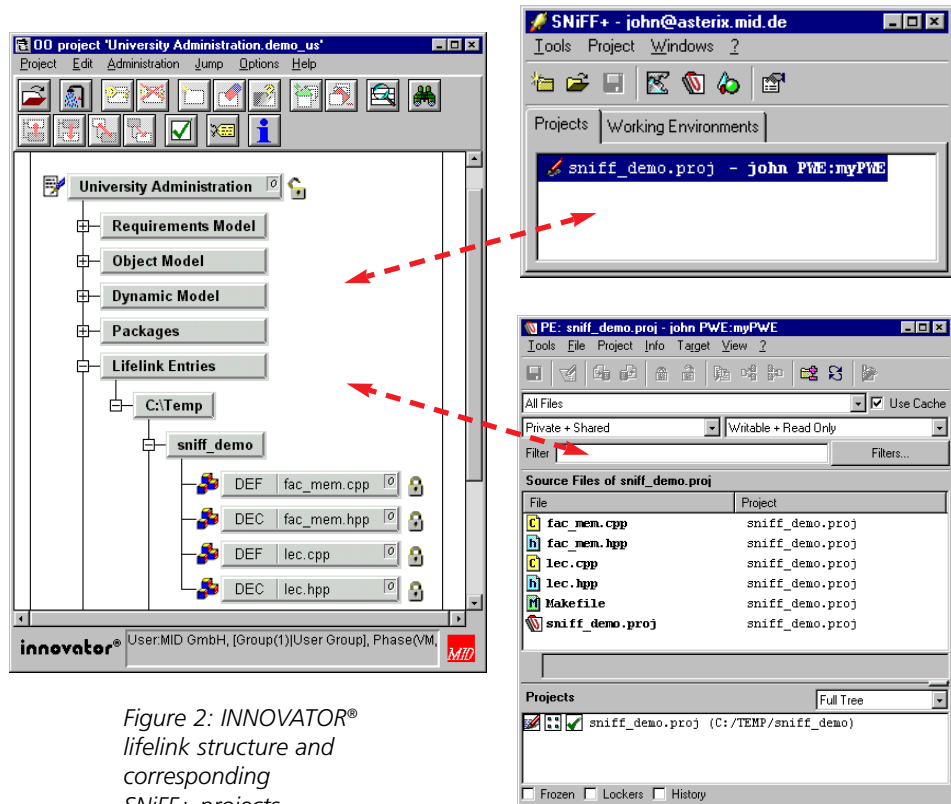

Figure 2: INNOVATOR® lifelink structure and corresponding SNiFF+ projects

Complementary Cooperation between INNOVATOR® and SNiFF+

Classes, methods and attributes are already entered in INNOVATOR® in the desired programming language. The so-called lifelink concept is applied to define how classes, methods and attributes are assigned to implementation files of the corresponding language and how these are embedded into the directory structure (see Figure 2).

INNOVATOR® can distribute the implementation files to any number of directory levels. SNiFF+ assumes, however, that the project files are all located in one directory. To achieve tight integration, every directory of the INNOVATOR® lifelink structure is managed as a separate project in SNiFF+.

If SNiFF+ is configured as an implementation tool, the INNOVATOR® user can switch directly to SNiFF+ from within the project overview tree and the class diagram. When doing so, the SNiFF+ editor is positioned exactly on the element (class, method, attribute, module) that was selected in the INNOVATOR® component. To ensure the same, efficient communication in the other direction, the user can add command to SNiFF+ menu bars which make it possible to jump to the INNOVATOR® representation of the element being edited. Both of these features are illustrated in Figure 3.
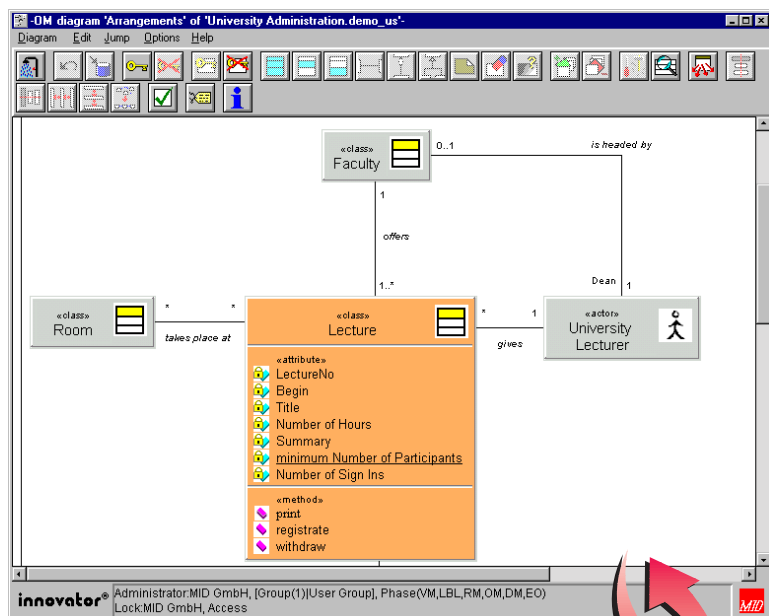
Figure 3:
Switching between
INNOVATOR® and SNiFF+

Cooperative Round Trip Engineering

After being successfully modified in SNiFF+, source files can be stransferred back into the INNOVATOR® repository. Doing so not only imports the source code but also interprets it. As necessary, the static model is updated. This procedure can both add new classes, attributes and methods to the implementation and make changes to elements that already exist in the model. This so-called Round Trip method ensures that both the modeler and the implementer are always working on the same, consistent stock of data while their modifications are continually being integrated into the entire project system.

The process is further complemented by the ability to import source code files into the INNOVATOR® repository that have been created completely independently, that is, without any reference to a model. This method of Reverse Engineering makes it possible to generate visual documentation of existing object-oriented programs applying the means of UML to generate a separate model or to compliment an existing one.

Technical Implementation

TCL scripts are applied to implement importing, exporting and opening source files. These scripts use the INNOVATOR® API to read and modify repository data. SNiFF+ is addressed by means of the convenient SNiFF-access interface, to which information such as project name and current selections are transferred.

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Require Strong Solutions

The expectations of practical software development solutions are increasing constantly. Business processes have to be mapped into the IT system, existing applications must be integrated as well as possible and the project has to be as transparent as possible and planned and executed reliably.

INNOVATOR® BPE&CASE Workbenches support the entire software life-cycle and, through horizontal and vertical method integration, allow object-oriented and structured technologies to be applied in business process modeling and software engineering.

Yet the complexity of the requirements demands flexibility in the solution: the open architecture of INNOVATOR® BP&CASE Workbenches and intelligent interface design make individual customization very comfortable. INNOVATOR® allows reverse and round-trip engineering with conventional complementary tools and systems.

MID and the Connect-Partner, with an intensive exchange of information, are producing optimized solutions to perfect demanding projects and allow the generation of high-performance applications.

Further
Information

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