

[French Version](#)

Editorial

We are pleased to announce in this newsletter that the RATP has entrusted Clearsy with the creation and implementation of the security system (referred to as DOF1) for the opening and closing of the platform doors to be installed on Line 1 of the Paris subway in the context of its automation program. Formal B Method will be used again for the specifications of this system and the elaboration of the security software. It was also used to submit to the call to tender, a first for Clearsy!

Additionally, to better generalize the B Method, Clearsy now offers the a B4free download.

Finally, the world map of B railway projects is available at: [B in world](#)

You are among 932 readers of our newsletter; thank you for your interest ...

Pleasant reading

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ClearSy News...

DOF1 : Device to Open and Close the Platform Doors on Line 1, SIL4

In the context of the "Paris Subway Line 1 Automation" project, the SIL4 DOF1 safety system, which is independent from the automatic train system, will command the opening and closing of the landing doors installed on all the line's platforms. This system will be used with existing trains and will be compatible with the new automatic trains that will progressively replace the current ones. DOF1 also prevents the train doors on the opposite side of the platform from opening.

DOF1 will then be disassembled when all the automatic trains are in operation on Line 1.

The DOF1 system includes an embedded portion on the train that processes the train door opening and closing commands made by the conductor and sends the command to the portion located in the platform's technical office. The command to open the door is processed and sent to the landing doors.

The train/ground link is effected via a mat installed on the rails, which creates a magnetic loop

with a sensor installed on the train's bogie.

This system is SIL4-level safe to ensure the landing doors can only be opened when the train has reached the platform. The solution is based on Siemens SIL3 automatons.

Clearys is the Project Manager and responsible for the study and manufacturing of equipment series to be installed throughout the line. It is working in partnership with TLTI, more specifically responsible for the production of equipment, mechanical and electronic parts.

Clearys adopted an **original** method to submit to the call to tender: a B model of the specifications was performed with the Composys tool, then graphically animated with the Brama tool. We were therefore able to define the needs of the RATP by transcribing our understanding of the system into a model and then validating this understanding by animating the system in various scenarios viewed on the screen. Questions could therefore be asked and a detailed response provided, as the system must be designed in only six months.

Like the [Coppilot](#) system, Clearys uses a development process that integrates the B method, from the system specifications up to the code stage. The B models developed participate in demonstrating the system's safety and the level of availability of the system that must be very high in order to ensure fluid traffic.

The animation system is available on Brama's site: www.brama.fr

[More News...](#)

Industrial Projects

Madrid Tramway and Incheon Subway Developed by Alstom: Clearys has concluded the formal validation of embedded speed control software. B is also used to develop the software that will then be translated into ADA (specific to a security filter).

Sprat Project: Clearys has started the integration of the electronic system for the military vehicle referred to as the SPRAT created by CNIM. Clearys had designed the formal model for this system with the Composys tool. This model then allowed us to prepare the integration plan for the system.

World Map of B Projects in the Rail Sector

Clearys conducted a survey of projects in the rail sector for which B was used and we are pleased to present it to you.



Clearsy Tools/Methods

Clearsy designs engineering tools and, in particular, distributes Atelier B, B4free, Brama and CompoSys. Other tools are being developed. In this letter, we provide more information on the Brama tool that is currently being developed.

Brama : A tool to assist in the graphic animation of B models realized in the context of the Rodin Project.

Animation examples are available on the new site: www.brama.fr

Workshop B: is available in Test Version 3.7.

B4free is available to the public on the new site: www.b4free.com

Our Products and Training



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