



# Safe journey with Sii Poland

– how to implement projects based on the Safety Integrity Level standard in the rail sector

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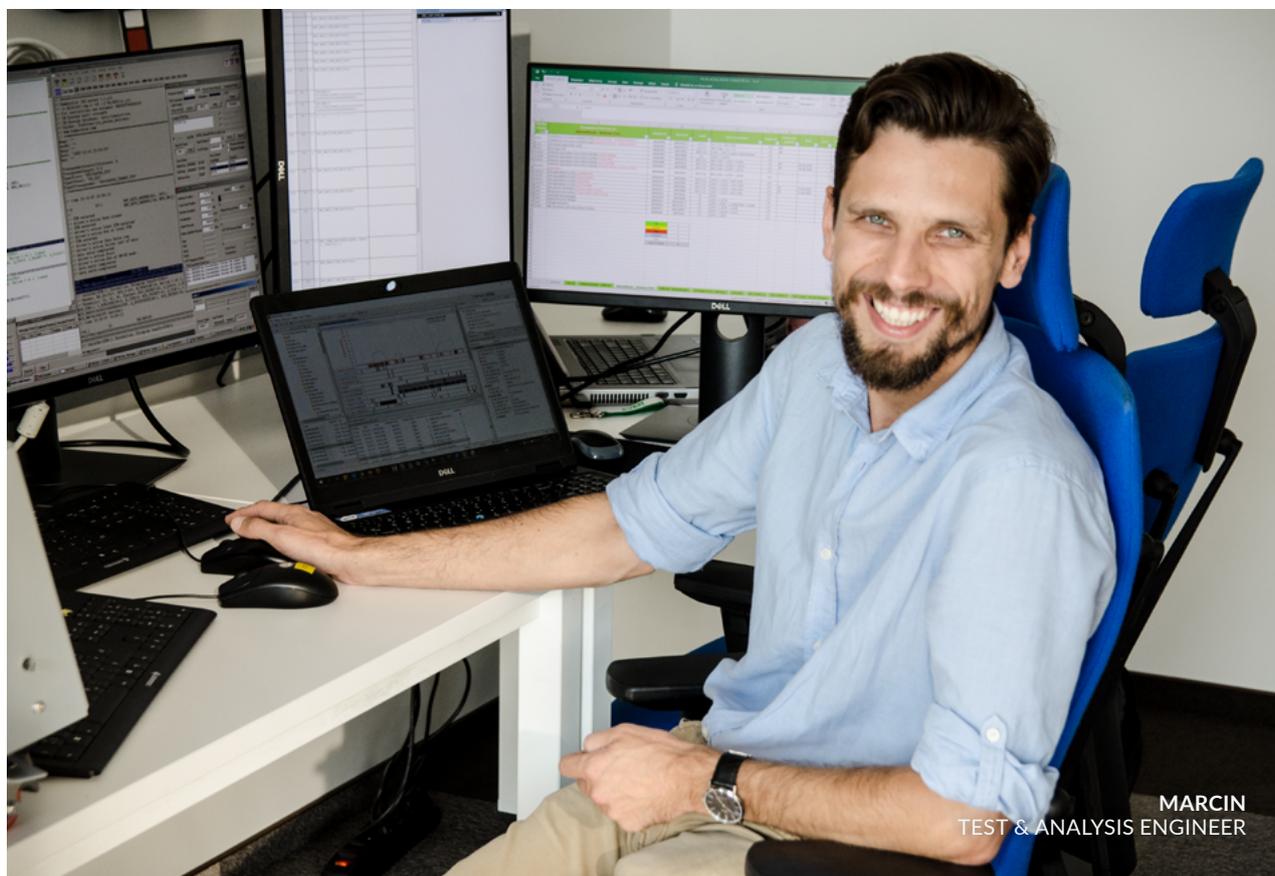
As a result of technological development and changes to regulations related to the reduction of the likelihood of situations hazardous to the health and life of passengers, safety in the rail sector has become even more important. Currently, projects based on the Safety Integrity Level (SIL) standard are implemented globally and remain one of the biggest challenges for development teams.

**In cooperation with an international provider of integrated specialist solutions for the rail sector, Si experts took part in the process of creating a modern frequency generator which considerably reduces the risk of threats.**

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## Starting point

The „Frequency Generator” project concerned an advanced element of a rail traffic control system, which also enables data transmission between trackside and on-board devices. The created frequency generator, i.e. a collection of modules which generate a signal determining the speed at which a train can move, was to reduce the risk of adverse events by more than 10 000 times. It was agreed that the project would be carried out in accordance with the EN 50128 standard, which corresponds to the highest, 4th SIL Level.



MARCIN  
TEST & ANALYSIS ENGINEER

## Organization of work in the project

The project works were performed by highly qualified specialists from the Netherlands, Great Britain, Sweden and Poland. The client was supported by an 8-person team of developers and testers from Sii Katowice, holding a SEP qualification certificate for voltages up to 1kV and – thanks to training in safety development – a programming certificate confirming the knowledge of the EN 50128 standard, awarded by the client and respected within their company. A dedicated team of automation testers from Sii Gdansk was responsible for unit testing.

– The cooperation model based on Team Leasing allowed for excellent work organization, quick knowledge transfer and effective communication between teams – Mariusz Czarnecki, Account Executive at Sii Poland, explains. – To maximize the work efficiency, the last phase of the project was carried out directly from the Sii office in Katowice, where a part of the office space was converted into a laboratory equipped with the necessary measuring equipment and conditions allowing the creation and testing of electrical sub-assemblies were provided – he adds.

## Compliance with SIL-4

Taking into account the requirements of SIL-4, and therefore the need to ensure the highest level of safety, the solutions used in the „Frequency Generator” project were based on the widely understood dual-channel strategy:

- ✓ 2 separate processors which can monitor each other,
- ✓ 2 different operating systems,
- ✓ division of roles preventing writing tests for your own code, cross-testing and independent embedded testing team at Sii Gdansk,
- ✓ MISRA-C++:2008,
- ✓ PERCEPIO tool.

## Results of cooperation

By providing programming and testing support, Sii experts helped the client create an efficient frequency generator, which is used on the Hoekse Lijn subway line in Rotterdam. The developed solution made it possible to modernize the old freight line and re-use it for commercial purposes. By using mechanisms taking into account Safety Integrity Level, the project team was able to significantly increase passenger safety.

**– Over 8 years of cooperation with the rail industry leaders allowed us to gain valuable experience and unique competences, which we shared during the development of the frequency generator – says Mariusz Czarnecki. – We are proud to be part of the project in which human health and life are put first – he sums up.**

## We have everything you need

Success in the railway business based on the delivery of reliable and safe system solutions equals building independent expert teams focused on cooperation as well as the exchange of knowledge and experience. The space that enables the efficient implementation of the project is no less important than the specialists who work on it. Entrusting Sii with the project, you can be sure that the best IT engineers in Poland will work for you and the right conditions for the performance of project works will be created.

**If you are interested in projects for the automotive and rail sectors based on the Safety Integrity Level standard, contact our expert.**

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