

```
1  /**
2  * Author: Technikon Forschungs- und Planungsgesellschaft mbH
3  * Description: 5G Technology for the Railway Domain -
4  * Master's Degree Graduation Project
5  */
6
7  var qualifications;
8
9  function getJob ( qualifications ) {
10   if (
11     qualifications.includes ( 'affection-for-wireless-connectivity' ) &&
12     qualifications.includes ( '4G-5G-know-how' ) &&
13     qualifications.includes ( 'out-of-the-box-thinking' ) )
14   {
15     sendJobApplication ( 'jobs@technikon.com' );
16     return true;
17   }
18   else
19   {
20     openURL ( 'https://www.technikon.com/jobs' );
21     return;
22   }
23 }
```

# 5G Technology for the Railway Domain

Master's Degree Graduation Project

## var motivation;

Our research project Safe4RAIL focus on the technical solutions for the next generation of so-called Train Control and Monitoring Systems (TCMS). Acting as the brain and backbone of the train, the TCMS represents the core part for train communication.

We investigate new functionalities and research the technical framework for novel wireless connectivity with LTE/5G. Goals are seamless coupling, enhanced performance, reliability and interoperability.

We research the applicability of LTE/5G and their seamless integration in future railway systems.

---

## function project\_description () {

- % You will work on future wireless communication scenarios (LTE/5G) with respect to next-generation train control and monitoring systems (TCMS) and its technology readiness and completeness.
- % You will perform research in 5G and beyond 5G, such as channel coding, intrinsic security do this together with Europe's leading telecommunication companies.
- % You will research and evaluate the options of wireless communication (5G) for TCMS.
- % You will be able to get insights of a leading-edge international research projects. This includes the steps from the idea, over the specification of use-cases and application scenarios, towards the demo implementation on a wireless communication interfaces.

Your work will result in a research report or scientific paper. Coincidentally, the project fit for a graduations project (Master's degree) as well as semester abroad projects of about 5 months (1 semester). Our staff will provide technical guidance.

Candidates can drive on scientific guidance provided by several leading partners in the communication and railway domain.

In detail, the following graduation project is open for application:

**Applicability of 5G in the railway domain in connection with the Train Control and Monitoring System (TCMS) including novel solutions on emerging on-board radio links by taking advantage of LTE/5G connectivity.**

}

## function getJob () { return ( '€' )

We consider a gross payment sum of EUR 10.000,00 for each project assuming that the candidate is eligible for receiving payments either as "Werkstudent" or "Student" under the Austrian law for employment.

}

---

## environment.includes (

You will be working for the research department of TECHNIKON and become part of the **Safe4RAIL project team**. You will be granted access to our laboratory equipment and security hardware.

)

---

## if ( qualifications ) {

- % Interest on the evaluation and development of novel connection concepts and interfaces for the future train environment
  - % Knowledge on and experience in terms of wireless connectivity (LTE/4G and 5G) and embedded systems
  - % Background on wired and wireless interoperability interfaces and communications backbone
  - % Well-founded English proficiency, capacity for teamwork as well as personal commitment and sense of responsibility
- 

## } return contact;

Attracted your interest? Send your questions or even better your application to:  
**Mr. DI Mario Muenzer** at [technikon@safe4rail.com](mailto:technikon@safe4rail.com).

