



Graduation project

**M** MOTT  
**M** MACDONALD

## Beyond ERTMS: Train Positioning with GPS

<b>Location</b>	Arnhem HQ and Utrecht office
<b>Level</b>	Master graduation (final year)
<b>Hours</b>	full-time (40 hours weekly)
<b>Contract</b>	5-6 months
<b>Salary</b>	350 euros monthly (gross) + NS Business Card



### Working at Mott MacDonald

Mott MacDonald is a global multidisciplinary engineering, management and development consultancy, with over 16,000 employees active in 140 countries. Our employees are inspiring, highly-motivated and quality-driven people that collaborate closely with our clients to develop the best possible solutions. Mott MacDonald provides excellent opportunities for cutting edge and out-of-the-box research in combination with personal development while working in an international context.

### Project Description

Under ERTMS trains use balises at fixed positions in the tracks to calibrate their position and calculate the remaining safe distance within the movement authorization. Under ERTMS Level 3 (or higher) trackside train detection is no longer present, so the train needs to report its position and its integrity (meaning that the train is still in one piece) as safety relevant information. In case of major system failure, train position information could be lost, which leads to a cumbersome, and potentially dangerous, operational recovery procedure. However, train positioning under ERTMS has never yet dared to rely on public positioning systems, particularly GPS, because they are not fail-safe. Your task is to go beyond ERTMS and evaluate how GPS (or other such systems) could be deployed safely for train positioning.

### What we offer you

- Work at the cutting edge of ERTMS development and innovation, investigating unexplored concepts;
- Gain wider knowledge and experience from experts nationally and internationally;
- Visit, and learn from, our many projects in the field, whether they are ERTMS related or not;
- Work within a dynamic and inspiring team eager to teach, develop and collaborate.

### Interested?

For more information please contact Dr. Eelco Schrik at [eelco.schrik@mottmac.com](mailto:eelco.schrik@mottmac.com) or 06 12 50 08 43.

A selection procedure applies for this challenging graduation project / internship. If you wish to apply, please submit your résumé and motivation. An application interview will be part of the procedure.