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**INNOVATIVE
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OF RAILWAY
TRACKS
DURING
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CROSSINGS**

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INNOVATIVE MONITORING OF RAILWAY TRACKS DURING TRENCHLESS CROSSINGS

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ABSTRACT: Railways authorities around the world are aware of the subsidence risks of underground crossings by micro-tunneling, HDD or other techniques such as auger boring etc. It has therefore become very important to provide accurate and consistent monitoring of railway tracks as crossings take place.

The existing state of the art in monitoring technologies is not fail proof. The most commonly used technology are motorized total stations. These provide measurements in the three dimensions. Unfortunately, in some circumstances, weather conditions can cause their operation to become unreliable. Whenever there is rain, snow, fog, moisture, frost, high temperatures, or a physical obstruction between the total station and the points to be measured, then the measurements cannot be trusted, if they are at all available.

Two monitoring innovations have been developed specifically for the safety of rail transport.

LYNX Ariane is independent of weather conditions, has a high accuracy and a fast measuring frequency, measuring all required parameters (x,y,z). It is based on a reference line parallel to the rails with both ends anchored outside of the crossings' influence zone. This line runs through specific sensors fixed to the rails at set distances. Any deformation of the rails causes a corresponding displacement of the sensors relatively to the reference line, which is data logged and if necessary an alarm can be raised.

LYNX Boogie is intended to monitor the deflection of the rails as a train passes. This dynamic system is used as a maintenance tool to indicate where ballast is failing. It can also bring useful and additional data to LYNX Ariane since the rail deformation reaches its peak as a train passes.