



Received degree in Civil Engineering in 2004, at the University of Porto and Post Graduation degree in Transportation in 2006, at the Technical University of Lisbon. Main research interests: railway infrastructure

Planning Logistics for Heavy Maintenance Interventions in High Speed Railways

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MIT-Portugal associated research project: Development of Tools for HSR Lifecycle Cost Estimation for Track Design and Maintenance (LCC)

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Objectives of the PhD

Find an efficient method to perform maintenance planning concerning high-speed railways (HSR), focusing on the solution of the logistical problem in moving the machinery and crews departing from maintenance yards

Work plan

- Execute a reliable generation of the quality of the infrastructure addressing the course of time and sections of track, defining also the generation of criteria for intervention (Fig.1). In this way, complex degradation phenomena and the maintenance criterion are overcome, focusing on the logistic problem
- Attribute a continuous value (cost) for the infrastructure quality ("online" value), required to solve the optimum logistical problem (Fig. 2), adding other costs as: use of machinery (individual and joint), crews and yards
- Optimize maintenance works schedule, dealing with the costs to intervene in a certain stage of the infrastructure, in a certain quantity of sections, using a certain set of machinery and crews, allocated in a certain maintenance yard, and using a certain route to the intervention zone
- Define a method to evaluate the optimum number and location of yards and assigned machinery and crews to deal with the required demands
- Adopt a railway track layout (adequate length) for methodology application

Results

Create a methodology to deliver proper (cost efficient) solutions to plan the logistic problem for the intervention of heavy machinery in HSR. The methodology could support a comprehensive planning software to assist railway maintenance managers

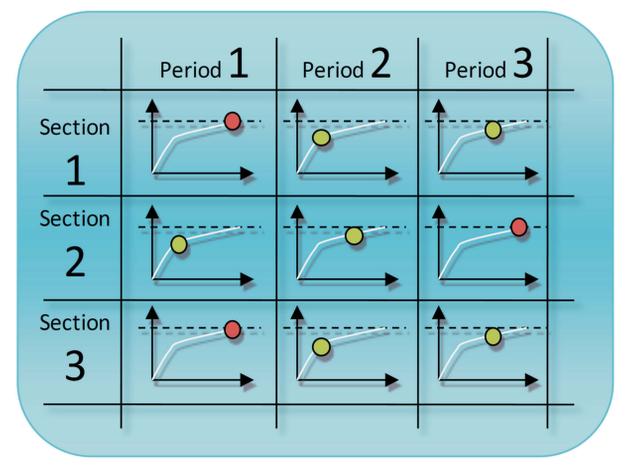


Fig. 1 - Matrix time vs infrastructure sections, pointing their degradation level in the life cycle process. Red points demand for intervention

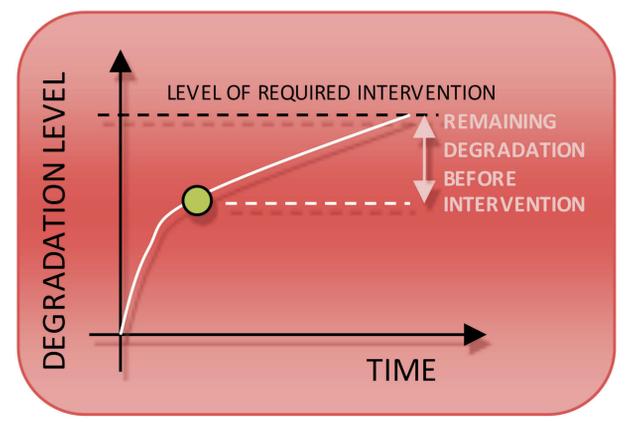


Fig. 2 - Assignment of the section's "online" value based on the remaining degradation quantity