



Lean Maintenance Optimizer

Optimization of Maintenance Activities based on Lean Philosophy

Integration of information is the key for further growth of railway transport volume. Decision makers will be able to make better decisions once they have the right information at hand about their own processes and about the processes of their partners in business. InteGRail is the project that developed the enablers. Technology enabling universal access to existing information systems be it databases, monitoring systems or existing user applications. For this purpose InteGRail defined a standard approach for architecture and communication. Using this standard approach a number of example applications were developed. One of these applications is the Lean Maintenance Optimiser that is intended to allow the final user (Operational Maintenance Department and/or Maintenance Management System) to performing an added-value processing of maintenance tasking and organisation information. Considering the situation of the fleet and of available depots, the LMO tries to apply lean concepts in order to suggest the best decisions for optimised maintenance.



What is Lean Maintenance Optimizer?

The Lean Maintenance Optimizer enables unified access and analyses maintenance process data related to fleets and depots in order to optimise activities and mainly reduce wastes in accord with the lean maintenance concepts. The final goal is then refining the available planning of maintenance activities in order to optimise them against structured efficiency criteria. The Lean Maintenance Optimiser allocates the actions coming from the Unplanned Event Manager (UEM) in the current planning of the maintenance depot, prioritising the maintenance interventions.

Who can benefit?

The Lean Maintenance Optimizer is the interface of InteGRail towards maintenance legacy systems (MMS) and therefore the main benefits of such applications are directed towards the Maintenance Department of railway companies (Operational and Depot).

Which benefit?

In the present situation, the Maintenance Plan is mainly based on the scheduled maintenance defined by manufacturers, maintenance dept. and operators. Also condition based maintenance is done but modification of the maintenance plan is not an easy task because there are several levels of responsibility and not each of them have all the necessary information in the right time. The Lean Maintenance Optimizer will reduce the time and effort needed for this information retrieval and analysis, also considering the "incipient fault" information coming from UEM and PMS. It will also apply lean concepts which will bring a saving in maintenance cost and time.

Present status, availability and future possibilities

The first prototype of the Lean Maintenance Optimiser is available. The prototype performs maintenance costs and interval calculation, tasks' packaging and maintenance plan update based on data provided by the UEM. No legacy MMS is actually available for interfacing and the train / vehicle / warehouse / resources / logistics data-bases will be simulated. In the future this faked information will be replaced considering the real databases.

Other results of InteGRail

Architecture definition of integrated information systems: IGRIS

Semantic data structure of the railway domain, the InteGRail ontology

Example user applications: ODSS for on-line operational decision support, IAC for on-line infrastructure availability, IDT for on-line vehicle maintenance information

Description of interdependence of performance of railway processes: the railway KPI tree, and a tool to assess and visualise performance

InteGRail - Facts and Figures

InteGRail started on 1/1/2005 and ends on 31/12/2008

Total project budget:
20 million Euros

EC funding : 11 million Euros

Total effort over 125 person-years

39 partners from 11 countries

Partners of InteGRail:

UNIFE • Alstom Transport • AnsaldoBreda • Bombardier Transportation • Siemens Mobility • UIC • Trenitalia • D'Appolonia • TSB-FAV • DeltaRail • ATSF • CAF • Nortel Networks • Laboratori Guglielmo Marconi • FAR Systems • MER MEC • Italcertifer • ATOC • České dráhy • MAV • UNICONTROLS • Strukton Railinfra • Deuta-Werke • Heriot-Watt University • IMEC • OFFIS • Televic • Seebyte • Kontron • University of Chile • INRETS • Wireless Future • University of Birmingham • ADiF • RFF • ARGE Corridor X • Network Rail • ProRail • SNCF

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