



FP3-IAM4RAIL Cluster B

Workshop on Data Analytics

Genova, Hitachi's premises and Laboratories



On May 23rd Cluster B held a Workshop dedicated to the application of DevOps paradigm within the context of WP3&WP4 with the goal of supporting the development of Data Analytics and Machine Learning applications.

The meeting was held in Genova, in the laboratories and facilities of Hitachi Rail STS and saw the participation of all WP3 partners, both connected remotely and present physically.



Cluster B members around Genova

The goal of the workshop was to present how DevOps methodologies can be applied to the world of data analytics & machine learning and what are the benefits in the context of a smoother and more agile development process.

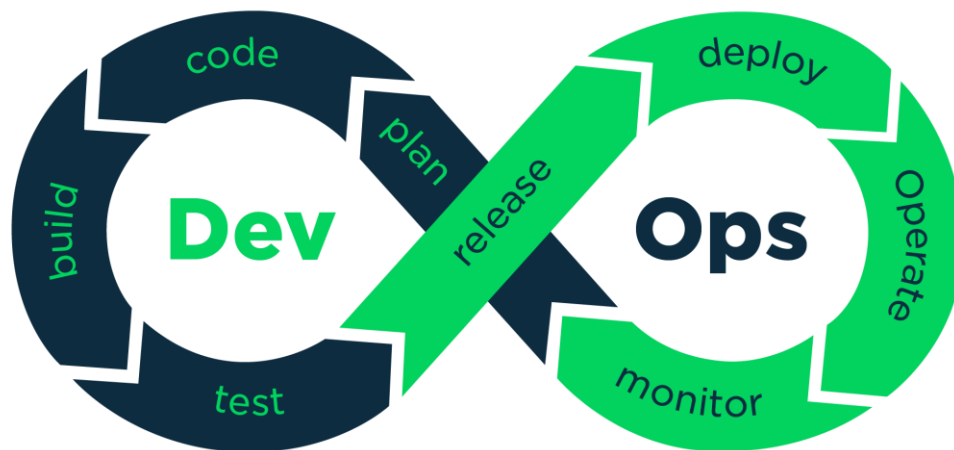
Data and Machine Learning have a central role in the development of the Railway domain, to enable innovative functions such as anomaly detection, traffic forecasting and optimized route planning. However, unlocking their full potential is often complicated: data is heterogenous, produced every second and from a huge number of systems or devices.



Additionally, ML application need constant monitoring, fine tuning and training to be effective and precise. All these requirements highlight the need to a structured methodology to tackle these issues and here DevOps comes to the rescue.

DevOps is a combination of practices, tools, and a cultural philosophy that aims to bridge the gap between software development (Dev) and IT operations (Ops) teams. It emphasizes collaboration, automation, and faster software delivery. Its principle can be visualized as an iterative process (DevOps cycle) that emphasizes continuous improvement and feedback throughout the software development lifecycle.

DevOps aims to break down the Dev and Ops silos and get both teams working together throughout the entire software development lifecycle, to improve collaboration and the automation of repetitive tasks.



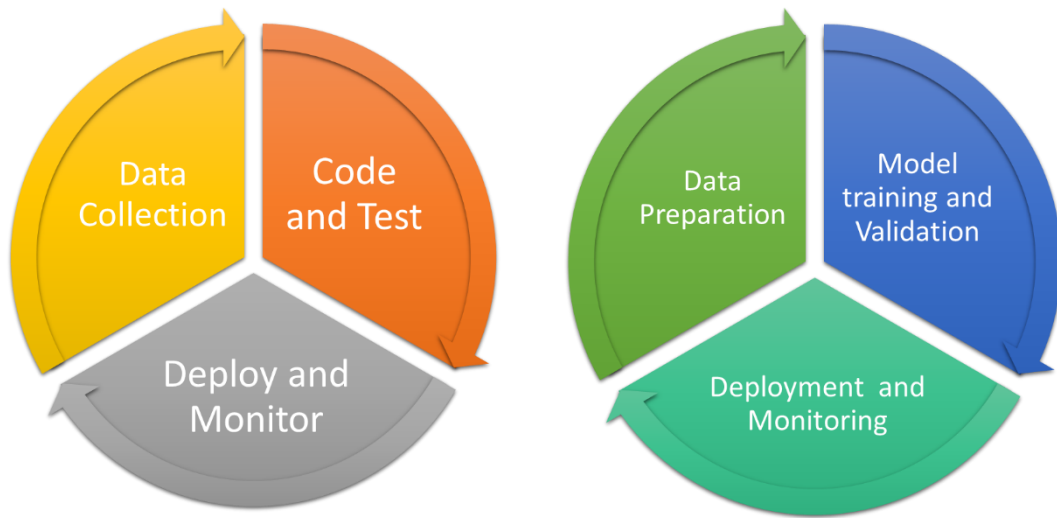
DevOps Cycle

We can take the key principles of DevOps and apply them to the world of data analytics and machine learning, to derive the definition of DataOps and MLOps.

DataOps extends DevOps principles to data management, focusing on delivering reliable, high-quality data to support analytics and ML initiatives. It aims to bridge the gap between data engineers and data consumers.

MLOps instead builds upon DataOps practices to manage the entire ML lifecycle, from model development to deployment and monitoring in production. It aims to ensure that ML models are reliable, scalable, and aligned with business objectives.

Both applications are then divided into different stages that are reminiscent of the DevOps steps and are defined in the image below.



Application of DevOps to DA and ML

Integrating DataOps and MLOps is crucial to effectively manage data and ML in the modern data era: DataOps provides the foundation for reliable and high-quality data, while MLOps ensures the effective development, deployment, and management of ML models that leverage this data.

Cluster B can benefit from the application of these paradigm to streamline the data analysis and ML processes, in order to promote collaboration among the different stakeholders and partners involved. To achieve this, Cluster B and specifically WP3 has the crucial task of identifying the use cases that we want to study, defining the assets/systems involved, the methodology and the role of each partner.



Live Demo of previous Shift2Rail activities



The project is supported by the Europe's Rail Joint Undertaking and its members.



The workshop also included a tour of the Hitachi's laboratories where all Cluster B members had the opportunity to see a live demonstration of the IAMS platform developed by Hitachi during the previous Shift2Rail programme, specifically within the context of IN2SMART2.

In the next months, Cluster B will focus on the application of the methodologies presented during the workshop on the specific Use Cases defined and this will pave the way for the work that WP4 will carry out in 2025 and that will culminate with the implementation of the IAMS demonstrator.

Big and exciting news awaits Cluster B in the future, stay tuned to learn more!



See you soon!



Founding Members



“Funded by the European Union. Views and opinion expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Europe’s Rail Joint Undertaking. Neither the European Union nor the granting authority can be held responsible for them. This project has received funding from the European Union’s Horizon Europe research and innovation programme under Grant Agreement No. 101101966.”



The project is supported by the Europe’s Rail Joint Undertaking and its members.