NLR is using the most advanced fast-time simulation platforms for airspace and airport research and development. These platforms provide a comprehensive capability to investigate air traffic management and airport operations using present and/or future scenarios and concepts. Fast-time simulation is an excellent way for verification and validation of requirements against applicable regulations and standards.
The fast-time simulation platforms used by NLR are TAAM™ and AirTOp™, currently the industry standard. Both tools are capable to simulate aircraft operations in every possible detail, on the ground as well as in the air. These ‘gate-to-gate’ simulations include stand management, pushback, towing movements, taxiing, runway scheduling and usage, and the full airborne flight operations, taking into full account all operational procedures.

The fast-time nature of these simulations facilitates the evaluation of various concepts, procedures and infrastructures within a short time period. New operational procedures and system concepts can be assessed quickly in terms of benefits, so that the most promising ones can be selected for further evaluation. In the design phase of projects, bottlenecks can be identified at an early stage, allowing the design to be improved before realisation of the project, thus avoiding high and unnecessary costs. Furthermore, data resulting from fast-time simulations can easily be transferred to other NLR expert areas e.g., for noise load, emission or safety analyses.

Within the validation process, NLR’s fast-time simulation services allow for a smooth transition of scenarios to NLR’s real-time radar and tower simulators for highly realistic hardware and human-in-the-loop evaluations.
NLR uses fast-time simulation platforms to achieve the highest possible degree of accuracy in illustrating the flow and handling of aircraft at airport and in airspace. Additional flows of traffic such as towing movements, ground handling vehicles, and passengers can be added to a simulation model, including the applicable rules and procedures. Hereby achieving an accurate model of the airport and airspace environment that can be used for profound research and development.

NLR offers a variety of services with regard to simulation and analysis of airports and airspace design and operations, including, but not limited to, the following:

- Design and capacity analysis
- Performance analysis
- Master plan development support
- Workload analysis
- Bottleneck identification
- Evaluation of service quality
- Assessment of operational concepts and procedures
- Development of alternative operational strategies
- Optimisation of traffic flows
- Advising on operations management
- Verification and validation against regulations and standards
- Reporting and visualisation
NLR has gained in-depth knowledge and experience in fast-time simulations by conducting simulation projects for national and international customers representing Air Navigation Service Providers, Airport Operators, Airport Designers/Planners, Airlines and Government Organisations. Fast-time simulation support covers visualisations, analyses and evaluations of aircraft operations in the broadest sense. Its broad experience and expertise allows NLR to fully understand the problems and needs of the customer. Customer satisfaction is a top priority, obtained by rapid reaction, customer co-operation and involvement, and on-site support.