

Introduction To Monte-Carlo Simulation For Collision Risk and Safety Assessment

→ **Aim**

To give a basic understanding of the use of Monte Carlo methods for practical collision risk safety assessment in air traffic management.

→ **Who Should Attend?**

Safety managers, assessors and analysts who need to understand :

- The benefits of Monte Carlo simulation for collision risk assessment
- The principles involved in Monte Carlo simulation methods
- How Monte Carlo simulation can be used in safety risk assessments

→ **Course Content**

The first two modules introduce the basic accident and safety risk concepts needed to understand the value and possibilities of using Monte Carlo simulation to collision risk safety assessment and its advantages with respect to other probabilistic approaches. The third and fourth modules introduce the principles of Monte Carlo simulation methods and how they can be used in a practical safety risk assessment methodology.

Module	Content
<i>Basic accident concepts</i>	<ul style="list-style-type: none"> - Accidents as sequences of events - Working backwards - from accident to event sequence - Working forwards – from events to accidents
<i>Basic risk concepts</i>	<ul style="list-style-type: none"> - Risk from event sequences - Simple probabilistic approaches to risk
<i>Monte Carlo approach</i>	<ul style="list-style-type: none"> - What is a Monte Carlo method? - Why use Monte Carlo? - A model for Monte Carlo calculations - Practical calculations for low risk situations
<i>Risk assessment using Monte Carlo</i>	<ul style="list-style-type: none"> - Monte Carlo in the safety risk assessment process - TOPAZ safety risk assessment methodology (Traffic Organization and Perturbation AnalyZer)

The course

- Focuses on concepts
- Builds up from simple to more complex
- Includes hands-on exercises to reinforce key learning points
- Introduces TOPAZ as a safety risk assessment methodology using Monte Carlo simulation

→ **Duration**

2 days (and an optional 3rd day for hands on experience with TOPAZ toolsets)

→ **Cost**

TO BE DECIDED