

# IRBAI AUDIT - DATA (AOM-T1)

The International Regulatory Body for AI (IRBAI) has developed a framework to ensure transparency, accountability, and the responsible use of data in AI systems.

## Performing the Audit:

This document outlines the specifications for conducting an audit on optimization models to ensure their effectiveness, efficiency, and compliance with relevant standards. The purpose of this audit is to evaluate the optimization models used in various applications and identify any potential flaws, inaccuracies, or limitations.

### Questionnaire

The person responsible for the training models must complete a questionnaire to provide essential information for the audit. The questionnaire should include the following indicatives and corresponding answer options:

	Indicatives	Answer Options
Problem Formulation	How is the optimization problem formulated? Is it a linear programming, integer programming, quadratic programming, or another type of problem?	[Linear programming, Integer programming, Quadratic programming, Nonlinear programming, Other]



Objective Function	What is the objective function of the optimization model? What are you trying to maximize or minimize?	[Maximization, Minimization]
Decision Variables	What are the decision variables in the optimization model? What are you trying to determine or optimize?	[Continuous variables, Binary variables, Integer variables, Mixed variables, Other]
Constraints	What are the constraints of the optimization model? Are there any limitations or restrictions on the decision variables?	[Linear constraints, Nonlinear constraints, Equality constraints, Inequality constraints, Other]
Model Complexity	How complex is the optimization model? Does it involve a large number of decision variables or constraints?	[Simple, Moderate, Complex]
Solving Techniques	What solving techniques are used to solve the optimization model? Are you using mathematical programming solvers, metaheuristic algorithms, or other methods?	[Linear programming solvers, Genetic algorithms, Simulated annealing, Particle swarm optimization, Other]
Performance Evaluation	How is the performance of the optimization model evaluated? What metrics are used to assess its effectiveness and efficiency?	[Objective function value, Convergence speed, Solution



		quality, Computational time, Other]
Scalability	How scalable is the optimization model? Can it handle larger problem instances or datasets efficiently?	[Highly scalable, Moderately scalable, Not scalable]
Robustness	How robust is the optimization model against uncertainties or variations in the input data or problem parameters?	[Highly robust, Moderately robust, Not robust]
Sensitivity Analysis	Is sensitivity analysis performed on the optimization model? How are the model's solutions affected by changes in the input parameters or constraints?	[Yes, No, Partial]
Implementation Complexity	How complex is the implementation of the optimization model? Does it require extensive coding or integration with other systems?	[Simple, Moderate, Complex]
Computational Resources	What computational resources are required to solve the optimization model? Does it demand significant memory, processing power, or specialized hardware?	[Low resource requirements, Moderate resource requirements, High resource requirements]



User-Friendliness	How user-friendly is the optimization model? Is it easy for users to input their problem data and interpret the results?	[Highly user-friendly, Moderately user- friendly, Not user- friendly]
Documentation	Is the optimization model properly documented, including problem formulation, algorithmic details, and usage instructions?	[Well-documented, Partially documented, Not documented]
Reproducibility	Can the optimization model and its results be reproduced? Are code, data, and configurations properly version-controlled and shared?	[Reproducible, Partially reproducible, Not reproducible]
External Dependencies	Does the optimization model rely on external dependencies (e.g., specific libraries, solvers) that may impact its implementation or deployment?	[Yes, No, Not applicable]
Optimization Performance in Real-world Scenarios	How well does the optimization model perform when applied to real-world scenarios or unseen data?	[High performance, Moderate performance, Low performance]
Interpretability of Results	How easily can the results of the optimization model be interpreted and explained to stakeholders?	[Level: 0-10]



#### Evaluation

Once the data, training models and optimization models are accessible by the IRBAI OM Audit system, they will undergo an independent evaluation. The evaluation process will be conducted in an objective and impartial manner.

### Audit Report and Publication

After completing the audit, a comprehensive report will be generated, detailing the findings, recommendations, and any identified issues related to the AI system. The report will be published to the IRBAI platform and will present the transparency and if needed advise on improvements in optimization models and AI system performance. The report will include anonymized examples and statistics to support the conclusions drawn during the audit.

#### Audit Duration

The length of the audit will vary depending on the size and complexity of the data and models being audited. A timeline for the audit process will be established based on the specific requirements of each audit, ensuring sufficient time for thorough analysis and evaluation.