**2019 INFORMS O.R. & Analytics Student Team Competition – ENTRY FORM**

Carefully review the Entry Instructions and Judging Criteria before completing this form and submitting your entry. Use this MSWord form as a template, maintaining the section headings and replacing the explanatory text with your presentation. Use the same font style and size, margins and line spacing as used in the form. Figures, visualizations, appendices etc. should be embedded in this form, not provided as separate files. Do not exceed 30 pages, including all figures and appendices. Other editing tools, such as LaTex, are allowed as long as you follow the structure in this Word template.

***Caution: do not include any identifying information (e.g., university name, student names, etc.) in this entry form or any other materials you are submitting.***

**Team Entry Number:**

**Executive Summary (not to exceed 2 pages)**

In this section, provide an executive summary for General Motors executives. Your summary should briefly address your understanding of the business problem and how you approached solving it, covering not only the technical decisions and analysis but also the process your team used. The summary should also briefly describe your recommendations to General Motors.

**Team Makeup & Process**

Without providing the names of individuals, describe the makeup of your team and the process your team used in working on the problem. This may include team members’ background and experience, particularly as they may relate to the role each member played in the project. In addition, describe the process your team used, including elements such as how the work was allocated, how the team demonstrated the value of team members’ ideas, how work from individuals was synthesized into the final analysis. You can also address any challenges and learnings from the team experience.

**Framing the Problem**

Describe your understanding of the business problem presented by General Motors through the written problem statement, the webinar and other interaction with company executives, and their answers to questions posed by teams. Then explain how your team analyzed the requirements and determined the goal of the analysis. This may include determining which constraints to analyze, as well as defining a set of assumptions and key metrics of success.

**Data**

Data for the problem was provided by General Motors. If you used other data or sources, please define them here. Describe any work your team may have done with the data itself, such as rescaling, cleaning, identifying relationships, etc. If your analysis of the data helped to refine your understanding of the business and/or analytics problem, describe that here.

**Methodology Approach & Model Building**

In this section, describe the decision-making process for selecting an analytics methodology(ies). What other methodologies did your team consider and what were the reasons for the final selection? You may want to include discussion and considerations -- such as the assumptions that were made, the scope and early considerations—to provide a useful framing for your selection. You must list any changes to or deviations from costs, business rules, or assumptions that were provided, and provide an explanation. Describe and document the chosen methodology and model in sufficient detail and clarity that it can be understood and evaluated. Your selection of software should also be addressed here. Given the multi-disciplinary nature of the problem, background information may be useful to include or reference. You may want to discuss the scalability of the model as the number of plants, dealers increase You may want to explain applicability of parallelization, that is, how effectively can an increased number of processors be used for larger problems.

**Analytics Solution and Results**

In accordance with your methodology and model, present your analytics solution and results using **three forms:**

* Network Performance Summary: Present the network performance summary in this section. You may supplement your analysis with additional charts, diagrams and/or other visualization; these supplements must be incorporated into this section of the Entry From.

**2015-01-01 to 2016-12-31 Network Performance Summary**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Total Cost ($) | Logistics Cost  ($) | VDC Cost  ($) | Lead Time Cost  ($) | VDCs Added  (#) | Lead Time Avg  (Day) | Lead Time St Dev (Day) |
| Static / No AV |  |  |  |  |  |  |  |
| Static / AV |  |  |  |  |  |  |  |
| Dynamic / No AV |  |  |  |  |  |  |  |
| Dynamic / AV |  |  |  |  |  |  |  |

* Results Template: Populate and submit your solution and results using the Results Template in CSV. The template is provided as separate files on the Competition download site. Refer to the problem statement for descriptions of the result files.
* Model Performance: Present the performance statistics of your algorithm in this section. Envision your solution to be run in practice by GM.  Indicate in the table below the recommended frequency of running your model (daily/weekly/monthly/...), how long it takes to compute a solution, as well as specifications regarding the computing architecture.

**Model Performance**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Computing Platform | Running Time (minute) | Running Time on Standard PC (minute) | Recommended Decision frequency | Decision Time (minute) |
| Static / No AV |  |  |  |  |  |
| Static / AV |  |  |  |  |  |
| Dynamic / No AV |  |  |  |  |  |
| Dynamic / AV |  |  |  |  |  |

**References**

Please follow guidelines in the *Chicago Manual of Style,* 16th Edition. Here are examples:

* Journal article: Flynn J, Gartska SK (1990) A dynamic inventory model with periodic auditing. *Oper. Res.* 38(6):1089–1103.
* Book: Makridakis S, Wheelwright SC, McGee VE (1983) *Forecasting: Methods and Applications*, 2nd ed. (John Wiley & Sons, New York).
* Edited Book: Martello S, Toth P (1979) The 0-1 knapsack problem. Christofides N, Mingozzi A, Sandi C, eds. *Combinatorial Optimization* (John Wiley & Sons, New York), 237–279.
* Online reference, fictional example: American Mathematical Institute (2005) Better predictors of geospatial variability. Retrieved June 14, 2005, [www.mathematicsinstitute](http://www.mathematicsinstitute).