##### Final Project Report

GVSC # [place the project number in here]

**Principal Investigator,**

**Please delete the [highlighted text in brackets] everywhere in your report before submission**

*\*File name suggestion: GVSC\_Project[#]\_Final\_Report\_YYYY.docx*

**Project:** [Project Title]

**Principal Investigator:**

[Name, Title, Affiliation, Email]

**Co-Principal Investigator(s):**

[Name, Title, Affiliation, Email]

**Your University or Your Company Employee Project Members:**

[Name, Degree, Position, Affiliation, Email]

**Student(s) and Postdoc Fellow(s):**

[Name, Education Degree-in-Progress, Affiliation, Email]

**GVSC QUAD Members:**

[Name, Degree, Position, Affiliation, Email]

**Industry QUAD Members:**

[Name, Degree, Position, Affiliation, Email]

**Reporting Period:** [Project Start Date - Project End Date]

**Report Date:** [Date this final report submitted to AVMI]

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**Guidelines to write the quarterly report [IMPORTANT]**

* **Text:** All running text is single-spaced and in Times New Roman, 11 fonts.
* **Section and Subsection Numbering:**
* Use the format <Table of Contents Number>. <Section>.<Subsection>.<Sub-subsection> (omit trailing levels if you don’t use them).
  + Please look at the example provided in the Table of Contents, Chapter 4.
* Example for Table of contents number 4:
  + 4.1 (Table of contents number 4, Section 1)
  + 4.1.1 (Table of contents number 4, Section 1, Subsection 1).
* Use Word Heading styles or LaTeX \section/\subsection and cross-references rather than typing numbers by hand.”
* **Figure/Table/Equation Numbering**
* Figures/Tables: Use the format <Table of Contents Number>.<Figure/Table Number>.
  + - Example for Table of Contents 4 (Don’t use subsection numbering while numbering figures/tables, such as 4.1.1; use only the table of contents/chapter number as shown below)
      * Fig. 4.1. Description of the figure/table (*first word in the caption title should be capitalized*)
      * Fig. 4.2. Description of the figure/table (*first word in the caption title should be capitalized*)
    - Please use Fig. (4.1) format in text when referring to the figure.
* Equations: Use the format <Table of Contents Number>.<Equation Number>. Please use parentheses.
  + - Example for Table of Contents 4 (Don’t use subsection numbering while numbering equations such as 4.1.1; use only table of contents/chapter number as shown below)
      * A = b + c (4.1)
      * D2 = E2 + G2 (4.2)
    - Please use Eq. (4.1) format in text when referring to the equation.
  + If you use Word or LaTeX, add labels (cross-references) so figures/tables/equations update automatically.

**Section Details [IMPORTANT]**

1. **Executive Summary**

* Provide an overview of the project’s goals, methods, results, and benefits for the GVSC and industry, as well as collaboration with other projects and contribution to the DE Ecosystem and Simulator. Write in plain language so that technical and non-technical readers can understand.  
  Text is Times New Roman 11 pt, single-spaced. Paragraphs are separated by one blank line.

1. **List of Notations**

* Provide all mathematical symbols used in a two-column format.
* Symbols should be listed alphabetically within each group (Latin, then Greek).

|  |  |
| --- | --- |
| **Symbol** | **Definition/Description** |
| *Latin symbols* |  |
| m | Mass (kg) |
| F | Force (N) |
| *Greek* symbols |  |
| β | Sideslip angle (rad) |

1. **List of Abbreviations**

* Provide acronyms used in a two-column format.

|  |  |
| --- | --- |
| GVSC | Ground Vehicle Systems Center |
| AVMI | Autonomous Vehicle Mobility Institute |

1. **Project Motivation, Background, and Objectives**

* Provide the state-of-the-art and background.  Why is this project needed from the science and technology development point of view, and the project’s contribution to the Ecosystem and Simulator?
* Describe the fundamental research questions (if any), applied research, and technology development questions. Describe the research objectives of the project.

Notice: While this information was provided in the original proposal, a brief recap is needed for future report readers.

* Has the project scope, as stated in the proposal, been changed or advanced? If yes, explain why and provide new motivation and objectives.

1. [**Project Tasks and Timeline Schedule**](#_TOC_250019)

* Summarize research tasks and their timeline across the project.
* Compare planned versus actual schedules, noting key milestones, deliverables, and any deviations with justification.
* Highlight how task execution supported project objectives and long-term goals.

1. [**Research Approach & Methods**](#_TOC_250019)

* Describe challenges, opportunities, and directions, as applicable.
* Has the research approach, as stated in the proposal, been changed? If yes, explain why and provide a new approach.
* List any dependencies your work has with other ARC/GVSC projects.

1. [**Accomplishments & Technical Results**](#_TOC_250017)

* Start with promised investigations and provide a brief statement about accomplishments. Highlight any important findings beyond what was promised and explain the reasons for any deviations or partial successes. Use a bullet list as shown below.

Q1 Tasks:

Q1 Accomplished & Results:

Q2 Tasks:

Q2 Accomplished & Results:

Q3 Tasks:

Q3 Accomplished & Results:

Q4 Tasks:

Q4 Accomplished & Results:

1. **Major** [**Milestones and Deliverables since Project Start**](#_TOC_250019)

* List all significant scientific accomplishments since the start of the project.
* For tech transfer, include any specific benefits or impacts to the military and/or industry that you can describe - a changed process, improved design, reduced cost/weight, increased reliability or performance of a specific part in a vehicle, etc.
* Delivered code/models/software must be archived in the AVMI software repository. Contact Dr. Lee Moradi, Dr. Valdimir Vantsevich, or Dr. Parth Y. Patel for the repository.

1. **Technical Content of the Project**

* This section is the main body of the report. It should present detailed descriptions of the technical work completed, organized into subsections that align with the project objectives and tasks.
* Include theoretical formulations, computational models, experimental setups, results, and data analysis to make the report a self-sustained document.

1. **Contribution/Integration to the DE Ecosystem and Simulator**

* This section should clearly describe how the project’s technical output (e.g., models, algorithms, datasets, experimental findings, or prototype tools) contributes to and integrates with the GVSC/ARC Digital Engineering (DE) Ecosystem and simulator environments.
* PIs should explain how their work connects to the desktop simulator, DiM simulator, cockpit, or other DE platforms, and highlight the pathways for integration (e.g., model interfaces, APIs, file formats, or workflows).

1. **ARC/GVSC/Industry Benefits**

- The project needs to have demonstrated added value in at least one of the following areas:

* 1. Interactions with and benefits to another ongoing ARC research
  2. Interactions with and benefits to ongoing GVSC work
  3. Interactions with and benefits to ongoing work at the industry partner
* Report accordingly (including participation in Case Studies (Year), ARC Seminars, or other significant GVSC or industry interactions).

1. **Publications, Presentations, Patents, Software Codes, and other Tech Transfer**

* Provide a list of scholarly work, including material for training and education, produced in this project. Clearly separate output originating from previous projects (e.g., if the project start date is 2024, it will be questioned if a 2022 paper is attributed). The use of linked URLs should be minimized, but can be used if they demonstrate major efforts.
* Publication acknowledgement is *“The authors wish to acknowledge the technical and financial support of the Automotive Research Center (ARC)/ Ground Vehicle Systems Center (GVSC) in accordance with Cooperative Agreement [Agreement number] U.S. Army CCDC Ground Vehicle Systems Center (GVSC) Warren, MI.”*
* Investigators should file invention reports for models and codes created with their respective schools’ technology transfer offices. This will significantly enable sharing with industry when the opportunity occurs and comply with the ARC/GVSC contractual requirement for invention/patent reporting.

Papers: PIs should provide PDF copies of the publications to share with GVSC and post them at the AVMI e-library.

Presentations: PIs should provide PPT copies of the presentations to share with GVSC and post them at the AVMI e-library.

Students: ARC/GVSC-funded students, year graduated or estimated graduation. Also, add the job placement after graduation.

Others

## Honors, Awards, Keynote/Plenary and Named Lectures, Special Memberships

* List recognitions (title, year, etc.) during the funding period.

1. **References**
2. (\*for Book) Last Name, First Name. *The Name of the Book*, 2019
3. (\*for Book Chapter) Last Name, First Name. “Title of the Chapter.” In Book Title, edited by First Name Last Name, pp. XXX–XXX. Publisher, Year.
4. (\*for Journal Paper) Last Name, First Name, and Last Name, First Name. “Title of the Journal Article.” *Journal Name*, vol. XX, no. XX, pp. XXX–XXX, Year. DOI: XXXXX.
5. (\*for Conference Paper) Last Name, First Name, and Last Name, First Name. “Title of the Conference Paper.” In *Proceedings of the Conference Name*, Location, Month, Year, Paper No. XXXX. DOI: XXXXX
6. (\*for Technical Report) Organization/Author. *Title of the Report*. Report Number, Institution, Location, Year.
7. (\*for Thesis or Dissertation) Last Name, First Name. “Title of the Thesis/Dissertation.” Degree type (M.S./Ph.D.), Department, University, Year.
8. (\*for Website) Organization/Author. “Title of the Webpage.” Website Name, Year. Available: URL. [Accessed: Month Day, Year].