##### Quarterly Progress Report

GVSC # [place the project number in here]

*\*Note:*

*- Submit monthly reports for months 1 & 2 of the quarter. For month 3, submit this Quarterly Report (do not submit an additional monthly report that month).*

*- Do not submit a quarterly report for the last quarter. Instead, submit the Final Report using the provided Final Report Template.*

*\*File name suggestion: GVSC\_Project[#]\_Quarterly\_Report\_Q[1|2|3]\_YYYY.docx*

**Project:** [Project Title]

**Quarter:**

Q[1|2|3] YYYY (Dates: mm/dd/yyyy - mm/dd/yyyy)

**Deliverable Number & Description:**

[e.g., 5.2 - Preliminary Sensor Fusion Model Design Document]

**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]

**Report Date:** [Date this quarterly 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 the 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, key results this quarter, major risks/mitigations, and the expected deliverables for the next quarter. Explain the benefits to GVSC and the industry, as well as any collaborations. Write in plain language so both technical and non-technical readers can understand. (Times New Roman 11 pt, single-spaced; max 1 page.)

# 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) |

# List of Abbreviations

* Provide acronyms used in a two-column format.

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

# 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, Timeline, and Quarterly Progress (including Milestones & Schedule Variance)**

* Summarize the project workplan, show how tasks progressed this quarter, and report milestone status and any schedule variances.
* Provide an overview of the full project timeline and key milestone dates, then report what was planned for this quarter and what was actually done. For each task list, planned vs. actual schedule, status, owner, and links to any submitted deliverables or files.
* For milestones, indicate planned vs. actual dates, variance in days, and a short explanation of cause and mitigation.
* Keep entries concise and factual so reviewers can quickly assess schedule health and how task execution advances project objectives.

# Research Approach & Methods

* Describe the technical approach and methods used this quarter.
* Summarize the overall research strategy and list the concrete methods, models, algorithms, experiments, or analyses performed.
* Clearly state any changes to the approach from the original proposal (with rationale), and identify challenges, opportunities, and next methodological steps.
* Finally, list dependencies on other ARC/GVSC projects, vendors, or external resources and describe how those dependencies affect your work.
* Keep text concise and technical; include brief tables for methods and dependencies where helpful.

1. **Accomplishments and Technical Contents with Results**

* Summarize the quarter’s accomplishments and present the detailed technical content with results that support those accomplishments. Start with a concise list of major accomplishments (what was delivered or achieved), then provide the technical evidence: models developed, algorithms implemented, experiments conducted, data collected, and analyses performed. For each item, state the finding, its technical significance, and where the underlying data/code are stored. Keep text factual and focused on what was achieved and why it matters.
* 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. **Contribution/Integration to the DE Ecosystem and Simulator**

* Describe how the project’s technical outputs (models, algorithms, datasets, experimental findings, or prototype tools) contribute to and integrate with the GVSC/ARC Digital Engineering (DE) ecosystem and simulator environments (desktop simulator, DiM50 simulator, cockpit, or other DE platforms).
* Explain the integration pathway (interfaces, APIs, file formats, workflows), provide artifacts and acceptance criteria, and summarize integration testing and validation performed this quarter.
* Include filenames and repository locations for all integration artifacts and list any outstanding actions or dependencies required to complete integration. Planned activities next month (concrete & timeboxed)

# Plans for Next Quarter

* List the major tasks, experiments, simulations, and deliverables planned for the upcoming quarter. Each plan item should be concise and specify the person responsible and the target date.
* Highlight any known risks that may affect completion and provide brief mitigation strategies. Use either short bullets or a compact table for clarity.

# Personnel, Collaborations, and Resources

* Note any changes in project personnel (new staff hires, departures, role changes) and describe major collaborations with other ARC/GVSC projects, universities, or industry partners.
* Identify any external dependencies on other GVSC/ARC groups and summarize their impact.
* List resource needs such as new equipment, test facilities, or computing allocations.
* If a subcontractor, collaborator, or external group produced deliverables this quarter, list those deliverables and associated filenames.

# 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).

# 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.

# References

1. (\*for Book) Last Name, First Name. *The Name of the Book*, 2019
2. (\*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.
3. (\*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.
4. (\*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
5. (\*for Technical Report) Organization/Author. *Title of the Report*. Report Number, Institution, Location, Year.
6. (\*for Thesis or Dissertation) Last Name, First Name. “Title of the Thesis/Dissertation.” Degree type (M.S./Ph.D.), Department, University, Year.
7. (\*for Website) Organization/Author. “Title of the Webpage.” Website Name, Year. Available: URL. [Accessed: Month Day, Year].