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Vehicle Systems Engineering and Integration (RT 26)

Interim Quarterly Report: SERC 2011-TR-015-3 for the period ending December 31, 2011

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RESEARCH TOPIC DESCRIPTION

TARDEC's mission is to conduct full service life cycle engineering support to the TACOM Life Cycle Management Command and the Program Executive Offices associated with it, for all DoD ground vehicle system acquisition and life cycle management. The TARDEC Systems Engineering Group is constantly looking for systems engineering methods, tools and procedures (MPT) to support this mission. TARDEC has found that many systems engineers from the automobile industry have significant experience in systems engineering (SE), but lack experience in some of the competencies deemed critical to systems engineering in the DoD workforce. This research will identify the differences between education needs of system engineers in both industry and the DoD workforce, and develop methods, processes and tools to address the shortfalls in educating SEs in the DoD workforce.

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1/19/12

DO 002, TO 002, RT 26

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TABLE OF CONTENTS

Research Topic Description	3
Table of Contents	5
Figures.....	6
1 Introduction	7
2 Project Status	7
2.1 Task 1: Identify TARDEC SE Needs	7
2.2 Task 2: Identify SE Education Gaps	7
2.3 Task 3: Case Studies	7
2.3.1 Requirements Definition for Versatile Ground Vehicles	8
2.3.2 Case Study No. 2: Application of SE to S&T Projects	8
2.4 Task 4: Dissemination Packaging	8
3 Project Plans	9
3.1 Task 1: Identify TARDEC SE Needs	9
3.2 Task 2: Identify SE Education Gaps	9
3.3 Task 3: Case Studies	9
3.4 Task 4: Dissemination	9

Appendices

1. Appendix A: for 2.3 Task 3 – Draft Case Study No. 2	10
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FIGURES

1 INTRODUCTION

This report documents fifth quarter progress and sixth quarter plans for project RT26. Fifth quarter activities focused on the second case study of Task 3, the application of SE processes to Science and Technology (S&T) projects. The details of these developments are described in Section 2, Project Status. Plans for the next quarter are described in Section 3, Project Plans.

2 PROJECT STATUS

2.1 TASK 1: IDENTIFY TARDEC SE NEEDS

No activity. This task was completed in the first quarter.

2.2 TASK 2: IDENTIFY SE EDUCATION GAPS

No activity. This task was completed in the first quarter.

2.3 TASK 3: CASE STUDIES

In coordination with TARDEC, we are conducting two case studies. The first case study on requirements definition for versatile ground vehicles was previously completed and delivered. The second case study applying SE to Science and Technology (S&T) projects is in progress. The objective products of the second case study are snapshots of the RDECOM "Project Plan" at several points during the execution of a project. The Project Plan is RDECOM requirement (OPORD 10-065) that replaces the requirement for a Systems Engineering Management Plan. The Project Plan combines the Project Management Plan and the Systems Engineering Management Plan. In the current quarter, we completed drafts of the Project Plan as of the Stakeholder Needs Review, the System Requirements Review, and the Critical Design Review (we previously completed a draft Project Plan as of the Preliminary Design Review). We reviewed and discussed these drafts with TARDEC in a series of meeting. The draft Project Plan snapshots completed this quarter are attached as appendices.

2.3.1 REQUIREMENTS DEFINITION FOR VERSATILE GROUND VEHICLES

A presentation and draft report on the first case study were completed and previously delivered. The case study was presented and discussed at the SERC Annual Review.

2.3.2 CASE STUDY NO. 2: APPLICATION OF SE TO S&T PROJECTS

In coordination with TARDEC, we are conducting two case studies. The first case study on requirements definition for versatile ground vehicles was previously completed and delivered. The second case study applying SE to Science and Technology (S&T) projects is in progress. The objective products of the second case study are snapshots of the RDECOM "Project Plan" at several points during the execution of a project. The Project Plan is RDECOM requirement (OPORD 10-065) that replaces the requirement for a Systems Engineering Management Plan. The Project Plan combines the Project Management Plan and the Systems Engineering Management Plan. In the current quarter, we completed drafts of the Project Plan as of the Stakeholder Needs Review, the System Requirements Review, and the Critical Design Review (we previously completed a draft Project Plan as of the Preliminary Design Review). We reviewed and discussed these drafts with TARDEC in a series of meeting. The draft Project Plan snapshots completed this quarter are attached as appendices.

2.4 TASK 4: DISSEMINATION PACKAGING

A presentation and draft report on the first case study were previously delivered. The draft report from the second case study is attached in Appendix A.

3 PROJECT PLANS

This section describes project plans for the second quarter.

3.1 TASK 1: IDENTIFY TARDEC SE NEEDS

This task has been completed. No activity is planned.

3.2 TASK 2: IDENTIFY SE EDUCATION GAPS

This task has been completed. No activity is planned.

3.3 TASK 3: CASE STUDIES

At the end of the fifth quarter TARDEC provided significant guidance regarding the content and level of detail desired in the Project Plan snapshots. In the following quarter we will begin to address this level of detail.

At the end of the fifth quarter, TARDEC decided that they wanted to change the type of project addressed in the Project Plan case study. At the initial topic selection, TARDEC said that the Project Plan should apply to SBIR projects, and that an SBIR project would be suitable for the case study. New participants from TARDEC observed that, despite prior statements, Project Plans were only going to be prepared for ATO(D) projects, and that the case study should address an ATO(D) project in order to be relevant. The RDECOM OPORD requires that Project Plans be prepared for ATO(D) projects beginning in FY11. While it recommends Project Plans for other types of projects and makes a statement about future extension of the requirement, at the present time, Project Plans are only required for ATO(D) projects. ATO(D) projects are substantially different from SBIR projects. TARDEC requested that we change the focus. This will require significant re-work of the draft Project Plan snapshots previously submitted. This work will begin in the sixth quarter.

3.4 TASK 4: DISSEMINATION

At the end of the fifth quarter, we plan to deliver illustrations of the S&T Project Plan and associated SE artifacts as it would be at additional technical review points, for the second case study.