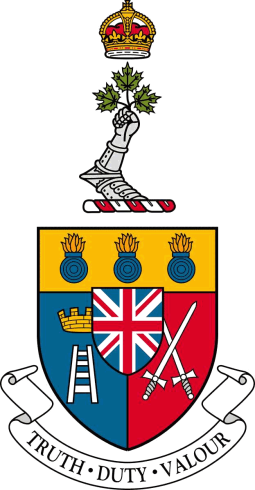
Royal Military College of Canada

Department of Electrical and Computer Engineering

EEE455/7 Electrical and Computer Engineering Design Project



DID-03 – Statement of Requirement

**Presented by:**

OCdt Lefrançois

NCdt Viscardi

**Presented to:**

Dr Roberge

Sept 21, 2017

# Table of Contents

Table of Contents 2

1 Introduction 3

1.1 Document purpose 3

1.2 Background 3

1.3 Aim 3

1.4 Scope 3

2 Requirement Definition Activities 4

3 Product Requirements 4

3.1 Functional Requirements (FR) 4

3.2 Performance Requirements (PR) 5

3.3 Interface Requirements (IR) 5

3.4 Simulation Requirements (SimR) 5

3.5 Implementation Requirements (ImpR) 6

3.6 Schedule Restrictions (SchR) 6

4 Risk Assessment 6

5 Conclusion 7

References 8

# 1 Introduction

## 1.1 Document purpose

The purpose of this document is to define the requirements for the Graduate Attribute Management System (GAMS), to summarize the benefits of meeting the said requirements and to identify the constraints that the requirements impose on the product.

## 

## 1.2 Background

A few years ago, the Canadian Engineering Accreditation Board (CEAB) added new criteria to the evaluation of undergraduate engineering programs. In addition to evaluating the resources invested in programs, they now assess 12 attributes students must develop during the completion of their undergraduate studies. Each attribute is assessed using several indicators throughout the program. The definition and management of these indicators is left to the university, which must implement a system of self-evaluation in order to continuously improve their programs. Also, the university must be able to provide reports to the CEAB. As of right now, our department is using an Excel spreadsheet based system which is confusing and requires a lot of effort to maintain. Plus, other engineering departments across Canada are facing similar complications. Thus, this project addresses a real and widespread problem, hence its formulation.

## 1.3 Aim

The aim of this project is to design, implement and test a software system which would automate the management of graduate attributes within the department of electrical and computer engineering while allowing ease of use to all parties involved in the process of evaluating those attributes.

## 1.4 Scope

We will limit our solution to the Electrical and Computer Engineering Department (ECE Dept.). Thus, once our platform is operational, we will deploy it on a server inside the ECE Dept. and because of the Royal Military College of Canada’s network security already in place, it will only be accessible from an ECE Dept. workstation.

# 2 Requirement Definition Activities

The requirement were defined in collaboration with the client. First, a document outlining the current system was provided to us [1]. From this document, we derived the major function requirements of the GAMS. Then, we initiated a dialogue with the client which took the form of a series of meetings. During those meetings, the finer details of what the system should accomplish were discussed. This gave us the opportunity to extend, revise and finalize the requirements for the GAMS in collaboration with the client.

Use case

Describe the activities carried out to develop the requirements in Section 3. Most likely your main source of information was a series of meetings with your supervisor. Also, make sure to discuss how you used the items listed in your References section. Describe the trade-offs, prototypes, risk assessments, and user preferences considered.

# 3 Product Requirements

This is the most important section in the document. These requirements will be used throughout your project to guide the development of your system and ***to validate your solution***.

Requirements should be listed by category. Examples of possible categories include:

* Function Requirements
* Performance Requirements
* Interface Requirements
* Simulation Requirements
* Implementation Requirements
* Scheduling Requirements
* Miscellaneous Requirements

Each requirement should describe what the system must do, represent a single idea, and be measurable. A requirement should also be necessary, concise, implementation-free, attainable, complete, consistent, unambiguous, and verifiable. Pay careful attention to ensure you do not describe a solution. Some common categories are presented in the following subsections.

## 3.1 Functional Requirements (FR)

A Function Requirement describes an action, behaviour, calculation, process or other specific functionality that the product must accomplish. Typically a functional requirement is described as a set of inputs, the behavior, and outputs. For example:

FR-01: Identifies Users – Every user can access the system with a unique ID and password.

FR-02: Privilege Levels – The system must allow for two types of accounts:

1. administrative accounts; and
2. teacher accounts.

FR-03: Teacher Account – the teachers must be able to perform the following tasks:

1. view the classes they are associated with;
2. view a description of the indicators they are associated with including their grading schemes; and
3. submit student grades to the system for the relevant indicators.

FR-04: Administrative Account Privileges – the administrators must have a broader access to the system:

1. add/remove/modify teachers;
2. add/remove/modify classes;
3. add/remove/modify graduate attributes;
4. add/remove/modify indicators; and
5. change content and dates of automatic emails (See FR-05).

FR-05: Automatic Emails – The system must automatically send emails teachers evaluating indicators:

1. at the beginning of the semester; and
2. at the end of the semester.

## 3.2 Performance Requirements (PR)

PR-01: Archived Data – The GAMS must be capable of storing 20 years of data.

PR-02: Backup – The GAMS must perform backups every week and keep them for 6 months.

Restore Backup.

PR-03: Simultaneous Access – The system must allow simultaneous access. Demonstration using 4 users.

PR-04: Reaction time – The system must have a reaction time of less than 1 second to provide a good user experience.

## 3.3 Interface Requirements (IR)

IR-01: Access – The GAMS must accessible from any ECE work station on the Royal Military College of Canada Campus.

## 3.4 Simulation Requirements (SimR)

Simulation Requirements describe the conditions which will be used to simulate the product or its environment as part of the development. This would be necessary if the operational environment is unavailable. For example:

SimR-01: Vehicle Load – The vehicle platform will not be available during the development phase. The loading of the vehicle motors shall be simulated by two 50K-Ohm resistors.

SimR-02: Network Response – Since the system cannot be connected to the network during development, network response shall be simulated using … etc.

## 3.5 Implementation Requirements (ImpR)

ImpR-01: Host Server – The system will be hosted on a Linux machine connected to the ECE network.

## 3.6 Schedule Restrictions (SchR)

Describe any scheduling restrictions imposed by the customer or other stakeholders. For example:

SchR-01: First Prototype – The first functional prototype shall be available for Beta testing no later than 1 Dec 2017.

# 4 Risk Assessment

Dynamic database: risk of loosing/inconsistent data.

Always incorporate applicable process solutions (“backup plan” or “plan B”). The question you want to address here is, “What is likely to prevent us from completing the project on time and on budget?” For each item that you identify, also identify how you intend to minimise or prevent it from affecting your project. Your lack of time and knowledge are not risks. Your supervisor will ensure your project can be accomplished in the time allocated and is of sufficient complexity to satisfy the course requirements.

# 5 Conclusion

Summarize the contents of the document and describe how this will link to the next deliverable (the Preliminary Design Specification).

# References

[1] F. Okou, R. Beguenane, V. Roberge. Gradutate Attributes. [power point]. Unpublished.