

McMASTER UNIVERSITY

CAS 4ZP6 TEAM 9 CAPSTONE PROJECT 2013/2014

PORTER SIMULATION

Test Plan Revision 0

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1 INTRODUCTION

This document is designed to outline testing methods and techniques that are to be used during and after development of the Porter Simulation. Below listed in detail are the main test factors and the rationale for choosing them. Following the main test factors is a comprehensive list of specific system tests including information about the Test's factor, life cycle phase, type, whether it is static or dynamic, manual or automated, and the specific techniques used to conduct the test.

2 TEST FACTORS AND RATIONALES

2.1 RELIABILITY

Rationale: Since the simulation software is to be used by a non-technical staff, consistent execution and termination of the program is required. Individual simulations could run for long periods of time without requiring user interaction, and are expected to terminate and store results without user supervision.

2.2 EASE OF USE

Rationale: End users are non-technical so any interaction with the program, whether input or output, should contain a minimal amount of technical information.

2.3 PORTABILITY

Rationale: Control of the systems that the simulation will run on is left to the end users, so the implementation will be designed to function on a wide variety of industry-popular operating systems.

2.4 CORRECTNESS

Rationale: Since the simulation will be reporting statistical data, the simulation must be correct in managing and manipulating that data.

3 SPECIFIC SYSTEM TESTS

3.1 TEST 1

a **Test Factor:**

b **Life Cycle Phase:**

c **Type:**

d **Dynamic/Static:**

e **Manual/Automated:**

f **Technique:**

i **Initial State:** Simulation event list is generated

ii **Input:** Event List

iii **Description:** Event should be popped from the list then executed

iv **Expected Output:** Event list with one less element

3.2 TEST 2

a **Test Factor:**

b **Life Cycle Phase:**

c **Type:**

d **Dynamic/Static:**

e **Manual/Automated:**

f **Technique:**

i **Initial State:** Existing event list

ii **Input:** Single Event (Any)

iii **Description:** The execution of an event triggers a state change in the system

iv **Expected Output:** State Change (Any)

3.3 TEST 3

a **Test Factor:**

b **Life Cycle Phase:**

c **Type:**

d **Dynamic/Static:**

e **Manual/Automated:**

f **Technique:**

i **Initial State:** Porters and Events exist

- ii **Input:** Porter (Pending State), Event
- iii **Description:** The available porter is linked to the event
- iv **Expected Output:** Porter (Dispatched State)

3.4 TEST 4

- a **Test Factor:**
- b **Life Cycle Phase:**
- c **Type:**
- d **Dynamic/Static:**
- e **Manual/Automated:**
- f **Technique:**
 - i **Initial State:** No porters with "Available State"
 - ii **Input:** Event
 - iii **Description:** An event that cannot be assigned to any porter is put into a Task Pool
 - iv **Expected Output:** Task Pool with Event

3.5 TEST 5

- a **Test Factor:**
- b **Life Cycle Phase:**
- c **Type:**
- d **Dynamic/Static:**
- e **Manual/Automated:**
- f **Technique:**
 - i **Initial State:** Simulation Finish
 - ii **Input:** State
 - iii **Description:** After reaching end condition simulation ends
 - iv **Expected Output:** Output file

3.6 TEST 6

- a **Test Factor:**
- b **Life Cycle Phase:**
- c **Type:**
- d **Dynamic/Static:**
- e **Manual/Automated:**
- f **Technique:**
 - i **Initial State:** Uninitialized Simulation State
 - ii **Input:** Simulation Input File
 - iii **Description:** Input file will change the values of the simulation
 - iv **Expected Output:** Initialized Simulation

3.7 TEST 7

- a **Test Factor:**
- b **Life Cycle Phase:**
- c **Type:**
- d **Dynamic/Static:**
- e **Manual/Automated:**
- f **Technique:**
 - i **Initial State:** Uninitialized Simulation State
 - ii **Input:** Simulation Input File
 - iii **Description:** Input file will change the values of the simulation
 - iv **Expected Output:** Initialized Simulation

3.8 TEST 8

- a **Test Factor:**
- b **Life Cycle Phase:**
- c **Type:**

d **Dynamic/Static:**

e **Manual/Automated:**

f **Technique:**

- i **Initial State:** 'Gold copy' set of events
- ii **Input:** A modified version of the simulation code
- iii **Description:** Using a 'gold copy' of a set of events, any code changes are retested using the 'gold copy' to ensure consistency
- iv **Expected Output:** A difference file comparing 'gold copy' statistics against the newly tested code outlining the inconsistencies between them

4 EXECUTIVE SUMMARY

5 SCHEDULE