

**SME Development Fund (SDF)/
Dedicated Fund on Branding, Upgrading and Domestic Sales (BUD Fund)
(Organisation Support Programme) (OSP)**

Final Report on Approved Project

Project ref. no. : D14 002 002
Project title : Mobile Applications (Apps) Test Competency
Knowledge Enhancement (MATeCE)
Period covered : From 01/01/2015 to 31/12/2015
(dd/mm/yy) (dd/mm/yy)

1. Project Details

(Please mark with "*" if any of the following project details is different from that in the project proposal appended to the project agreement.)

Project Summary (in about 150 words)

This project aims to support a thriving ICT industry, through developing, training and nurturing ICT SME talents in mobile apps testing. We offer (1) a project website, (2) a toolkit set including PPT and videos (3) free mobile app testing seminars and training workshops on mobile apps development to SME. The seminars and training workshops are tailored to local pressing needs based on our industrial survey conducted in April 2015. The seminars and workshops provide testing methodology and knowledge of test tools to enhance mobile app quality and promoting Test Maturity Model integration (TMMi) for apps testing management.

Project Objective(s) (in about 80 words)

We conduct industrial research and introduce free, shareware or open source testing tools for mobile apps testing to our local industry. We put emphasis on tools installation, setup tricks, applications of test tools and their use-cases. In addition, introducing TMMi to manage software-testing process to participants. The seminars are for managers and practitioners of apps development SME while the workshops are for testers and practitioners.

Grantee/Collaborating Organisation/Implementation Agent

Grantee : Hong Kong Polytechnic University
Collaborating Organisation(s) : Hong Kong Computer Society
Implementation Agent(s) : Nil

Key Personnel

	<u>Name</u>	<u>Company/Organisation</u>	<u>Tel No. & Fax No.</u>
Project Co-ordinator	: <u>Hareton LEUNG</u>	<u>Hong Kong Polytechnic University</u>	<u>(852) 2766-7252</u> <u>(852) 2774-0842</u>
Deputy Project Co-ordinator	: <u>William KWAN</u>	<u>Hong Kong Computer Society</u>	<u>(852) 2834-2228</u> <u>(852) 2834-3003</u>

Project Period

	<u>Commencement Date</u> (day/month/year)	<u>Completion Date</u> (day/month/year)	<u>Project Duration</u> (No. of months)
As stated in project agreement	<u>01/01/2015</u>	<u>31/12/2015</u>	<u>12</u>
Revised (if applicable)	<u> </u>	<u> </u>	<u> </u>

2. Summary of Project Results

Project Deliverables

(Please list out the project deliverables as stated in the project proposal appended to the project agreement and provide details related to the actual result achieved for each of them.)

	Project deliverable	Quantifiable target number (e.g. 100 participants)	Actual result achieved (e.g. 90 participants)	Reasons for not achieving the target, if applicable (e.g. The total number of registered participants was over 120. However, some of them did not show up eventually. Will strengthen promotion and try to make up for the shortfall in the following two seminars.)
1)	To conduct research and trial on free test tools, shareware and open source software for mobile apps testing. To install and set up selected test tools on different mobile devices to form a multi-platform testing environment for training purposes.	N.A.	Research and trial on free test tools, shareware and open source software for mobile apps testing has been conducted. Test tools on different mobile devices have been selected to form a multi-platform testing environment for training purposes.	N.A
2)	To conduct seminars and workshops for owners, managers and practitioners of apps development SMEs.			
a)	Two similar half-day seminars for owners or senior managers of apps development SMEs	20 - 30 per session	108 in total	N.A. Very good participation rate for half-day seminars!
b)	Two similar one-day "Introduction to TMMi® and Testing Basics" seminars for project managers of apps development SMEs	40 - 50 per session	80 in total	N.A.
c)	Six similar one-day workshops (three for elementary level and three for intermediate level) on mobile apps testing and TMMi® for ICT professionals of apps development SMEs	80 - 100 per session	160 in total	Total registration is 297. Many participants did not attend the workshops even we have sent reminders several times. Some feedback indicated that technical staff cannot attend because they not able to take one day off. A half-day workshop should attract more participants. We also invited Hong Kong Computer Society, HKSPIN, and

				<u>SME Global Alliance to promote the workshops and seminars.</u>
3)	To develop seminar and workshop kits to be used in the seminars and workshops. A set of teaching material (e-version) includes presentation PowerPoint, cases and examples, learning notes and the seminar and workshop kits and a user guides (e-version) with general advise on testing and doing automated testing and how to use the shortlisted test tools for mobile apps testing will be developed and uploaded to the project website for free access.	Seminar and workshop kits: 680 copies.	Seminar and workshop kits: 680 have been produced. A set of teaching material has been produced and can be freely downloaded in the project website.	N.A.
4)	To develop a website to promote the testing concept and process of TMMi®	N.A.	The project website has been delivered at www.mobaptest.org .	N.A.
5)	To place advertorials in local media, professional and trade magazines such as Computer World Hong Kong, ITPro, etc. to promote the project deliverables.	N.A.	Advertorials have been placed in IT Pro on Aug 10, 2015, Sept 10, 2015, Oct 10, 2015.	N.A.

Details of the deliverables (e.g. date, duration, venue, speaker, topic discussed, etc.)

(Please list out in table format if necessary.)

- 1) Research and trial on free test tools, shareware and open source software for mobile apps testing has been conducted. Test tools on different mobile devices have been selected to form a multi-platform testing environment for training purposes.
 - 2) A series of seminars and workshops have been conducted for owners, managers and practitioners of apps development SMEs:
- a) Two similar half-day seminars have been conducted for owners or senior managers of apps development SMEs. Details as follow:

Session 1: Importance of Mobile Apps Testing

Venue: PQ703, Hong Kong Polytechnic University

Date: 2:00PM - 5:00PM, 28 Aug 2015

No. of enrolment: 48

No. of participants: 35

Session 2: Importance of Mobile Apps Testing

Venue: Y304, Hong Kong Polytechnic University

Date: 2:00PM - 5:00PM, 11 Sept 2015

No. of enrolment: 117

No. of participants: 73

In these sessions, a brief introduction to mobile application testing was given to the audience and below topics were covered:

- Architecture of the mobile application.
- The result of the industrial survey on the mobile application testing tool usage in Hong Kong
- Different types of mobile application testing tools was discussed including unit testing, GUI testing, user acceptance testing, performance testing, usability testing and power consumption testing.
- Testing tools for different types of mobile application testing were introduced.

- b) Two similar one-day “Introduction to TMMi® and Testing Basics” seminars have been conducted for project managers of apps development SMEs, details as follow:

Session 1: Introduction to TMMi and Testing Basics

Venue: QR404, Hong Kong Polytechnic University

Date: 9:15AM – 5 :00PM, 29 Aug 2015

No. of enrolment: 62

No. of participants: 38

Session 2: Introduction to TMMi and Testing Basics

Venue: Y304, Hong Kong Polytechnic University

Date: 9:15AM – 5 :00PM, 12 Sept 2015

No. of enrolment: 88

No. of participants: 42

In these sessions, a brief introduction to software testing was given to the audience and below topics were covered:

- The general structure of the testing maturity standard TMMi
- 5 levels of processes of TMMi model
- Different testing documents and testing strategies
- Metrics of measurement and defect of the testing processes

- c) Six similar one-day workshops (three for elementary level and three for intermediate level) on mobile apps testing and TMMi® have been conducted for ICT professionals of apps development SMEs, details as follow:

Session 1: Power Consumption Monitoring, Performance Testing & GUI Testing with Tools

Venue: PQ604B&C, Hong Kong Polytechnic University

Date: 9:15AM - 5:00PM, 11 Oct 2015

No. of enrolment: 49

No. of participants: 33

Session 2: Usability Testing and Advanced GUI Testing with Tools

Venue: PQ604B&C, Hong Kong Polytechnic University

Date: 9:15AM – 5 :00PM, 18 Oct 2015

No. of enrolment: 51

No. of participants: 30

Session 3: Power Consumption Monitoring, Performance Testing & GUI Testing with Tools

Venue: PQ604B&C, Hong Kong Polytechnic University

Date: 9:15AM - 5:00PM, 8 Nov 2015

No. of enrolment: 52

No. of participants: 31

Session 4: Usability Testing and Advanced GUI Testing with Tools

Venue: PQ604B&C, Hong Kong Polytechnic University

Date: 9:15AM – 5 :00PM, 15 Nov 2015

No. of enrolment: 48

No. of participants: 23

Session 5: Power Consumption Monitoring, Performance Testing & GUI Testing with Tools

Venue: PQ604B&C, Hong Kong Polytechnic University

Date:9:15AM - 5:00PM, 5 Dec 2015

No. of enrolment: 47

No. of participants: 21

Session 6: Usability Testing and Advanced GUI Testing with Tools

Venue: PQ604B&C, Hong Kong Polytechnic University

Date: 9:15AM – 5 :00PM, 12 Dec 2015

No. of enrolment: 50

No. of participants: 22

The six workshops were divided into two topics including (1) Power Consumption Monitoring, Performance Testing & GUI Testing with Tools and (2) Usability Testing and Advanced GUI Testing with Tools. Workshops were conducted in laboratory tutorial type of style. Computers and mobile emulators were provided for the participants. Participants follow the instructions of the lecture notes to perform simple setup and tasks. They were later guided to perform some practical exercises, before tackling some more complex problems that were close to real life application.

In workshop session 1,3 and 5, a total of four testing tools were discussed and there were several learning objectives:

- Follow the guide in the Powerpoint lecture notes to install the software involved
- Load testing with JMeter
- Use of VirtualBox to create virtual machines
- Record a test plan using JMeter
- Execute the recorded test plan with distributed JMeter network
- GUI testing with Robotium Recording and TestDroid Recorder

In the second workshop session, a total of four testing tools were discussed and there were several learning objectives:

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- Use either emulators from their computers or the real devices to record test case
 - Use power consumption tool Battery Historian
 - Application of the tool to test the power consumption of sample application

In workshop session 2,4 and 6, a total of four testing tools were discussed and there were several learning objectives:

- Learn to configure Apptimize which is an A/B testing tool
- Configure the source code of a sample application to use Apptimize
- Install and perform basic tasks with Apptimize
- Produce two or more versions of the same application using Apptimize
- Learn Lookback and XSort which are usability testing tools.
- Learn the GUI testing tool Sikuli
- Learn the functions of the tools
- Application of Sikuli by some exercises for the participants to get familiar with the tool

3) Seminar and workshop kits (680 copies) have been produced to be used in the seminars and workshops. A set of teaching material (e-version) includes presentation PowerPoint, cases and examples, learning notes and the seminar and workshop kits and a user guides (e-version) with general advise on testing and doing automated testing and how to use the shortlisted test tools for mobile apps testing have been developed and uploaded to the project website for free access.

4) The project website has been delivered at www.mobaptest.org.

5) Advertorials have been placed in ITPro on Aug 10, Sept 11, and Oct 13, 2015.

Milestones (in chronological order)

(# Please indicate if the milestone is completed (C), deferred (D) or not achieved (N). If it is deferred, please indicate the revised completion date. For those milestones which are deferred or not achieved, please also provide the reasons under item 2.4.)

<u>Milestone</u> (as set out in the approved project proposal appended to the project agreement)	<u>Original target completion date</u>	<u>Revised completion date</u> (if applicable)	<u>Status</u> (C/D/N) #
(a) Initial survey of existing test tools and mobile devices	28 Feb 2015		C
(b) Coding and testing of test tools	31 Jul 2015		C
(c) Website development	31 Jul 2015		C
(d) Promote the training and its offerings	30 Nov 2015		C
(e) Prepare seminars / workshops	31 Jul 2015		C
(f) Prepare training material and user guides	31 Aug 2015		C
(g) Conduct seminars / workshops	31 Dec 2015		C

Future Plan for Promoting the Project Deliverables (Nil if not applicable)

N.A.
