

Use of Mobile Technology and Intelligent Interfaces to assist Contact Centres and Field Technicians

Work-in-progress Paper

Allan Lee Son, André P. Calitz

Department of Computer Science & Information Systems

Nelson Mandela Metropolitan University

PO Box 77000, Port Elizabeth, 6031

Tel: (041) 504 2323 Fax: (041) 504 2831

Email: Allan.Leeson@nmmu.ac.za, Andre.Calitz@nmmu.ac.za

Abstract

The mobile technology market has experienced enormous growth and has many applications in industry. One such application is contact centres that dispatch technicians who utilise mobile technologies such as cellphones and pocket pc's to assist them in their maintenance tasks. The purpose of this research is to design a model for intelligent mobile interfaces for field technicians.

Keywords – intelligent user interfaces, mobile applications and services, contact centres, GPS, mobile technology.

I. INTRODUCTION

The market for mobile devices has become increasing popular over the last few years. Mobile technology has experienced a 20% annualised growth and this is expected to continue for the next five years [1]. Many European countries have a mobile penetration rate approaching 100% [2]. In most developing countries, the popularity of mobile phones far exceeds computer popularity [3]. The popularity of mobile devices can be attributed to their ubiquitous nature – computing that is available at anywhere and at any time [4]. This popularity is also brought on by the new services and abilities made available to the user.

Mobile technology has significantly impacted people's lives and is changing the way businesses operate. The use of mobile technology has become increasingly important to businesses as they assess the potential productivity gains, cost savings and competitive advantages that can result from the use of mobile workers.

Contact centres fall into this category due to their employment of field technicians (mobile workers) as more and more businesses utilise contact centres to address their customers' problems. They make use of and dispatch field technicians when problems occur that cannot be solved within the contact centre.

This paper will provide a brief summary on contact centres and their use of field technicians. More specifically, focus will be placed on some of the problems currently experienced by contact centres and specifically, problems facing field technicians. Brief summaries of mobile workers, mobile devices and displays, global positioning system (GPS) technology and intelligent interfaces will subsequently be provided. Suggestions on how these problems can be overcome with the use of mobile technology and intelligent interfaces will then be discussed.

II. CONTACT CENTRE PERSPECTIVE

The role of contact centres together with a brief description will be provided before looking at the problems experienced by contact centres in relation to its technicians.

A. Contact Centres

The forefront of most organisations is the contact centre. Contact centres are important as they assist customers and solve their problems. The effectiveness of the interaction between the customer and contact centre sets the baseline for the company's customer satisfaction, loyalty and ultimately long-term success [5]. Initially, contact centres were not very popular but providing satisfactory service has since been realised by organisations and this has led to the increased use of contact centres [6].

B. Contact Centre Problems

The most prominent problems currently facing contact centres include locating and communicating with the field technicians effectively. At present, contact centres use telephonic means as a way of communicating with the technicians [7]. Telephonic means is also the only method that can be utilised to locate technicians by the contact centre.

III. FIELD TECHNICIAN PERSPECTIVE

A definition of mobile workers will first be explored in order to gain a better understanding of mobile workers. Field technicians and their problems will be discussed further.

A. Mobile Worker

Workers in an organisation that work outside the corporate premises are known as mobile workers [4]. Examples of these workers are salespeople in the field, travelling executives, telecommuters and technicians who work at customers' sites. These types of workers require access to the same corporate data available to onsite employees.

B. Field Technician Problems

Field technicians are facing challenges involving how data can be uploaded and downloaded from the system with less hassle and effort. Another main problem is the utilisation of smaller mobile devices to perform the maintenance tasks.

The mobile device should be fairly compact so as not to obstruct the technician. It must also possess sufficient processing power and storage space so that diagnostic and other maintenance software can be stored on the mobile device and executed at the remote location if required.

IV. GPS TECHNOLOGY

GPS (Global Positioning System) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit around the earth [8]. A GPS tracker is a device that makes use of GPS to determine the precise location of a vehicle or person, or other asset it is attached to and record the position of the asset at regular intervals [9]. Furthermore, this technology can be accessed anywhere in the world at anytime and in any weather conditions.

V. INTELLIGENT USER INTERFACES (IUI)

IUIs can be seen as the next evolution of interfaces providing a host of new benefits to users, including adaptivity, context sensitivity and task assistance. They attempt to make the interface as intuitive and helpful as possible [10]. This is done by providing aid to the user in various ways such as catering for different modes of interaction between the system and the user. Unlike traditional human-computer interfaces, intelligent interfaces are those that represent and reason about the user, domain, task, media and situation [11].

VI. MOBILE DEVICE TYPES AND DISPLAYS

Designing effective and intuitive interfaces is becoming increasingly difficult as old design knowledge has become limited [12]. Another important aspect, such as the device type has also improved the complexity of designing mobile interfaces. Knowing the type of device, determines the type and physical size of the display as well as the type of interaction. For example, the type of screen found on a pocket pc is touch-based and interaction with the device is usually done through a stylus.

VII. PROPOSED SOLUTIONS

This section will propose solutions to the problems highlighted in Sections II and III. The use of mobile technology and devices solves the problem of staying connected whilst travelling. Mobile technology and devices is also a tool that can be used in assisting field technicians in maintenance tasks. An example of mobile technology being applied in the field can be found in Canada. The field technicians working for Bell Canada is currently making use of mobile technology in the form of wearable devices to assist them in maintenance tasks [4].

IUIs take into account the user and the context; incorporating the use of IUIs into mobile devices will more effectively improve interaction with mobile devices and assist the technician in more effectively communicating with the contact centre. Other mobile technologies such as GPS will assist contact centres in accurately establishing the locations of field technicians at any given time.

VIII. CONCLUSION AND FUTURE WORK

Solutions to most of the problems currently experienced by contact centres and field technicians can be found by employing the use of mobile technology. By employing IUIs in mobile interface design, interaction between mobile devices and contact centre systems can be improved. Further work will consist of research into IUIs and mobile interfaces and will provide the foundation for the development of a model for mobile intelligent interfaces to assist and locate technicians.

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Allan Lee Son received his BCom degree in 2004 at the University of Port Elizabeth and his BCom(Hons) degree in 2005 at the Nelson Mandela Metropolitan University. He is currently doing his MCom in Computer Science and Information Systems at the Nelson Mandela Metropolitan University.