

RESEARCH ESSAY

Computer Aided Planning for Wireless Systems

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ABSTRACT

Information and communication technology (ICT) managers in the modern enterprises face a bewildering array of decisions regarding planning of new systems, integration of new systems with existing ones, securing the ICT assets, and administrating the resulting complex ICT systems. The rapid introduction of wireless systems (mobile computing and wireless communications) in the business and government settings is further exasperating the situation, particularly in the developing countries. A Computer Aided Planner (Planner), part of the UN eNabler Toolset, has been developed to quickly and effectively produce detailed strategic plans for a wide range of egovernment services with particular attention to wireless systems. This paper presents a high level overview of this effort.

Keywords: *Computer Aided Planner, eGovernment Services, Information and Communication Technology (ICT), Mobile Computing, Wireless Communications*

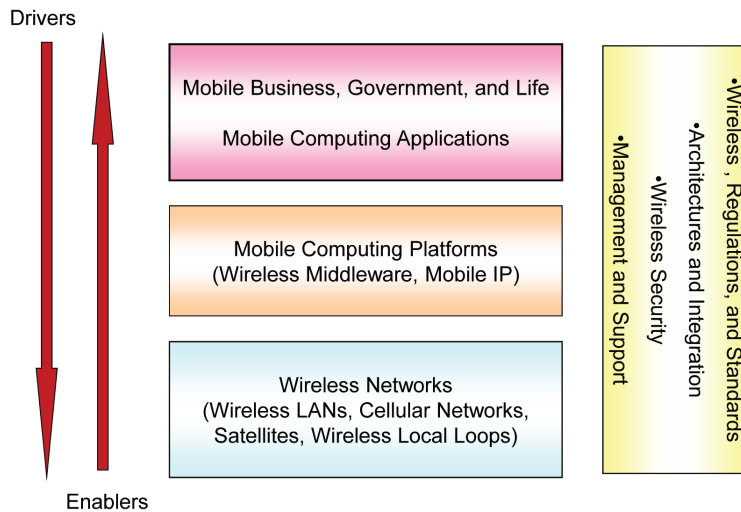
INTRODUCTION

Mobile computing and wireless communications, collectively termed as “wireless systems”, have opened many new avenues for business, government and life in general but have also introduced several challenges. Specifically, given a wireless project (e.g., planning of a city or state-wide mobile health initiative), a wireless planning process identifies the main alternatives and the key business/technical issues involved in each alternative, and helps in evaluation and selection of the most viable alternatives *before* initiating the project. Computer aided planning, as compared to the manual planning process, offers significant benefits especially to the developing countries because it can:

- Accelerate the development processes by quickly generating plans (hours instead of weeks or months)
- Hide technical details and thus can be used by people with different backgrounds
- Introduce and enforce the same standards and best practices quickly and uniformly across all users
- Be accessed by people living anywhere and thus level the playing field between developed and developing countries
- Support what-if analysis of different planning scenarios
- Be used as a training and educational tool

Computer aided wireless planning can be of great value to the developing countries because most of the developing countries (more than 100 countries are in this category) are re-inventing

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Figure 1. Framework for discussion – levels of issues

the wheel in their efforts to launch mobile services initiatives in healthcare, education, economic development, supply chains for food distribution, and emergency services. We have been working with the United Nations GAID (Global Alliance for ICT Development) to build a Computer Aided Strategic Planner (Planner) to accelerate the pace of eservices and mservices in developing countries. This Planner is based on previous research (Umar, 2005, 2007, 2008, 2009a, 2009b, in press) that has resulted in a planning, integration, security and administration (PISA) environment that is currently being used for small to medium businesses (SMBs). This paper gives an overview of the challenges faced, methodology used, and the patterns-based approach used by the Planner.

CHALLENGES IN WIRELESS PLANNING

Deployment of wireless systems involves several levels of issues that include wireless networks, wireless middleware services, mobile applications and mobile services. These issues are cast into a framework, shown in Figure 1 that will guide this discussion:

- At the highest point in the chain are the business and social services such as mobile business, mobile government, and mobile life. Most of these “m” services are the next stage of “e” initiatives such as e-business, e-government, and e-life. These provide the main impetus for widespread use of wireless systems in the business, government, and personal life settings.
- The mobile computing applications that support m-business, m-government and mobile life. These applications range from mobile version of those currently available on the wired Internet (including banking, book purchasing, email, news, and travel) to fundamentally new services designed specifically for mobile consumers (apps that find the nearest store, for example, or the automatic notification to nearby employees). These applications use wireless technologies to support mobility of business activities, customers, suppliers, employees, managers, and other players in the corporate world. In addition, these applications support other activities in our life such as health, entertainment, and social contacts.

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