

Snapshot Assessment of Asia Pacific BWA Business Scenario

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INTRODUCTION

The world is moving forward at a soaring rate. Within this change wireless technology is rapidly evolving and is playing an increasing role in the lives of people throughout the world. The people of today demand hassle-free and compact products, which can be used at anytime and anywhere with “always-best-connected” network solutions (Wong, Tan, & Hiew, 2005b). Wireless technology is a possible solution to meeting the immediate needs of society in the case of high-speed data delivery.

This article is devoted to assessing the deployment of wireless networks in the Asia-Pacific region, with special focus on the existing Wi-Fi and the emerging WiMAX solutions. Further, the overviews of wireless technologies as used in different business environments are given. The article is categorized into two sections: logistics, and retail and distribution. Each section discusses an example of a wireless solution adopted in the Asia-Pacific region.

This article offers a compilation of wireless solutions in the Asia-Pacific in order to map possible future scenarios on the use of wireless technologies in this region. The article serves as a foundation for further studies concerning the use of wireless technologies to improve quality of life.

BACKGROUND

The wireless local area network (WLAN) based on the IEEE 802.11 family of standards has demonstrated great efficiency and received positive responses for delivering broadband services. On the other hand, IEEE 802.16 (WiMAX), is a new wireless standard for broadband wireless access (BWA). WiMAX,¹ an acronym that stands for Worldwide Interoperability for Microwave Access, is a certification mark for products that pass conformity and interoperability tests for the IEEE 802.16 standards (Marks, 2006). It further extends

the performance of IEEE 802.11 (Wi-Fi²) in terms of capacity, coverage range, quality of service (QoS), and mobility (with 802.11e-2005).

Technological revolution in communications is taking place in logistics. The industry is advancing significantly, adopting wireless technologies to secure its assets and improve services. The benefits accrued using wireless solutions in logistics include lowered insurance premiums, instant notification of security breach, flexible and secure handling of high-security cargo by authenticated personnel, data access through a wide range of mobile devices, and so forth.

In addition, wireless solutions have the fastest returns on investment in the back office and supply chain functions of retail environments. Wireless applications in retail and distribution make workers more productive, streamline operations, help goods flow faster, and provide access to real-time data and inventory. As a result, productivity increases with the reduction in errors, which ultimately improves the customer's experience. Businesses in other sectors have embraced the information revolution to reduce costs and improve productivity (Frist & Clinton, 2004). They use information technologies not as an end, but as a means to innovate and improve.

Problem Description: Logistics Industry

Today transportation companies are experiencing unprecedented upheaval (Baracoda, 2005). Amid growing customer demands and soaring costs, the logistics industry struggles to develop successful business models that can drive profitable results and achieve customer loyalty. Managing logistics business in the Asia-Pacific is very challenging and highly complex due to multiple countries, currencies, languages, and customs; varying technologies and logistics infrastructure; and multi-modal transportation (The Logistics Institute-Asia Pacific, 2002). Other problems faced by the logistics industry include security breaches, theft, high insurance premiums, and inability to track goods delivery in real time.

Retail and Distribution

The common problems faced in retail and distribution include the time taken in filling out and sending order forms, as well as printing of customers' orders and receipts, failure to provide one-to-one effective marketing due to the inability to access customer and product data at all times, the hassle to retrieve an up-to-date product catalog, and so forth. The increasing general enthusiasm on mobile technologies such as Bluetooth and radio frequency identification (RFID) has a positive effect on the acceptance of new mobile applications and services in retail and distribution (Ondrus & Pigneur, 2004). This would explain the reasons why wireless point of sale (POS) solutions are adopted by retailers. Wireless payments and ticketing are becoming a new trend for quick-service-oriented industries such as toll booths (e.g., Smart Tag in Malaysia).

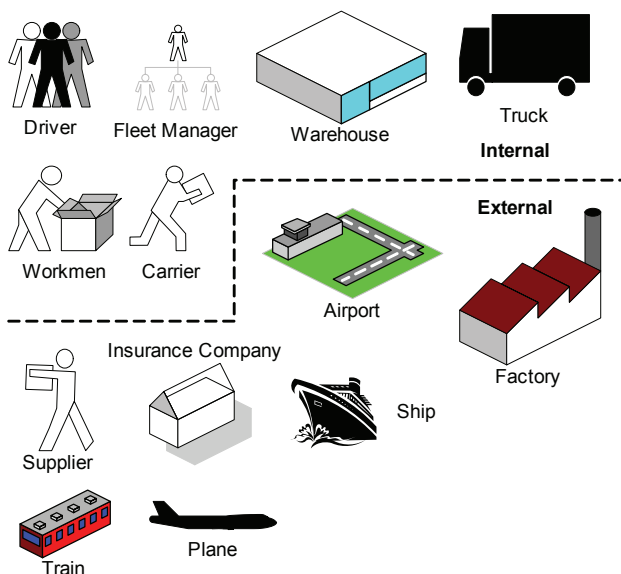
VIEWS OF ENVIRONMENT AND PROCESSES: LOGISTICS INDUSTRY

The cargo transportation industry is advancing significantly adopting wireless technologies to secure its assets and improve services (Nithyasree, 2005). Figure 1 shows the business environment of wireless applications used in the industry.

Uses of Wireless Solutions in Logistics Industry

- **Asset/ Cargo Tracking System:** A satellite-based vehicle tracking system using global positioning system

Figure 1. Business environment for the logistics industry



(GPS) with satellite communications, geofencing³, and cellular communication technologies allows fleet managers to remotely monitor, track, and communicate with their drivers in real time (Nithyasree, 2005).

- **Electronic Seals and RFID:** RFID technology is effectively utilized in the shipping and railroad industries alike. Electronic tracking tags and seals attached to a rail or ship create a WLAN that automatically informs the driver or a central control station of a broken seal (Nithyasree, 2005). These tags can also send vital information about the shipments such as the current status, whether tampered prior to destination, and so forth.

Example of Cargo Tracking System

When the workmen pack goods to be delivered onto a truck, the fleet manager checks his personal digital assistant (PDA) for a list of guards on duty. He can see on his PDA the whereabouts of the security guards, and he makes sure that there is no sign of intrusion. Elsewhere, at a seaport, another fleet manager checks his PDA for information on each container, including its physical location based on GPS, parameters such as temperature and humidity, and whether there is any sign of intrusion. The information gathered can be connected to centralized databases. A service-oriented infrastructure allows the staffs to instantly share information. At the same time, a customer checks the location of his goods using his laptop at a hotspot (Wi-Fi). He is pleased that the goods will arrive on time. Once the goods are safely delivered to the customer, the driver enters details into his PDA to notify the fleet managers instantly. An example of a cargo tracking system deployed in the Asia-Pacific region is Kwikfleet (<http://www.kwikfleet.com/>).

Kwikfleet is a Malaysian company offering products and services either fully or jointly developed in Malaysia. With mobile data terminals (MDT), ruggedized portable computers, and wireless modems in their vehicles, fleet managers and their drivers in the field can take advantage of two-way computer-aided dispatching to stay connected while maintaining optimized scheduling and lowest time to destinations through advanced matching and dispatch algorithms. On-the-fly route planning technology will allow dynamic route planning algorithms to be run remotely on the MDT or locally on the intelligent vehicle location system server to serve portable data terminals (Kwikfleet, 2005). By using a geographic information system (GIS) and GPS, fleet managers are able to track a vehicle's location, speed, route traveled, as well as fuel level and so forth.

Business Processes

The logistics industry-related business processes involved in the cargo tracking system example are:

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