

A Mobile Computing and Commerce Framework

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INTRODUCTION

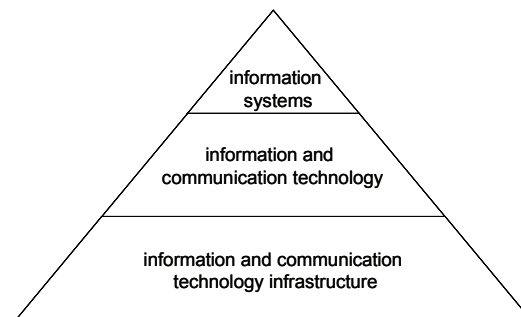
This encyclopedia on mobile computing and commerce spans the entire nexus from mobile technology over commerce to applications and end devices. Due to the complexity of the topic, this chapter provides a structured approach to understand the interrelationship in-between the mobile computing and commerce environment. A framework will be introduced; the approach is based on the Fribourg ICT Management Framework, elaborated at our institute with input from academics and practitioners, which has been tried and tested in papers, books, and lectures on ICT management methods. For published examples, please consult Teufel (2001, 2004), Steinert and Teufel (2002, 2004), or Teufel, Götte, and Steinert (2004).

THE MOBILE CONVERGENCE CHALLENGE

The information revolution has drastically reshaped global society and is pushing the world ever more towards the information-based economy. In this, information has become a commodity good for companies and customers. From an economical perspective, the demand for information at the right time and place, for the right person, and with minimal costs has risen. The transformation towards this information-driven society and economy is based on the developments of modern *information and communication technology (ICT)*. Different industries are able to generate enormous synergy effects from the use of ICT and the *information systems (IS)* building on these technologies, especially the Internet. It is a possible instrument to change the structure and processes of entire markets.

As shown in Figure 1, information and communication technology can be differentiated in its infrastructure, the technologies themselves, and the information systems running on these technologies. In general, the infrastructure consists of

Figure 1. Information and communication technology, infrastructure, and systems



all hardware- and software-related aspects as well as human resources. Consequently, the technologies themselves enable the collection, storage, administration, and communication of all data. These data can be used to synthesize information in respective systems, supporting the decision process and enabling computer-supported cooperative work.

The term information and communication technology (ICT) appeared in recent years. Due to the harmonization of *information technology (IT)* and the digitalization of the *telecommunications (CT)* infrastructure and the liberalization of the latter business sector, the ICT market established itself (see Figure 3). Consequently, the development and convergence of ICT became increasingly complex. Figure 2 illustrates the associated technology convergence.

Nowadays, a new aspect has entered the arena: mobility. Mobility is perhaps the most important trend on the ICT market. The fundamental characteristic of mobile technologies is the use of the radio frequency band for (data) communication, which is often referred to as “wireless.” The “wireless trend” has influenced not only the telecommunications and IT sector, but also most traditional markets, in the same way wired ICT did before. In addition, a convergence of wired and wireless, respectively fixed and mobile ICT can be observed.

Figure 2. Technology convergence (Teufel, 2004, p. 17)

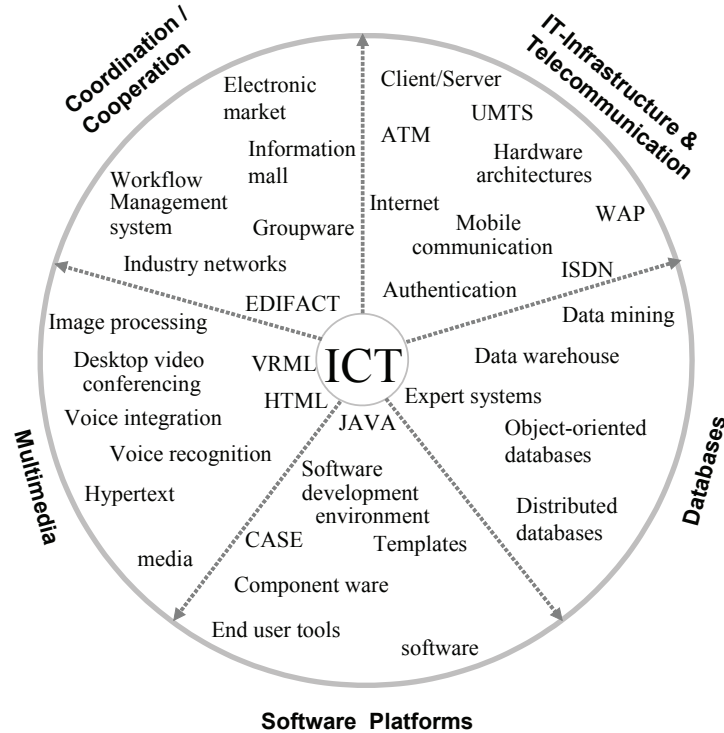
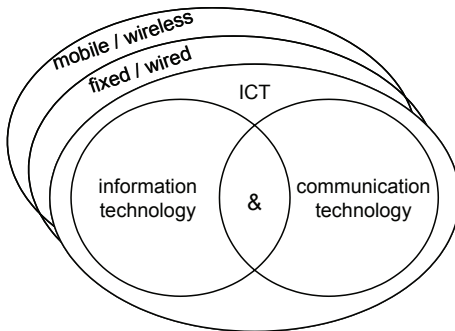
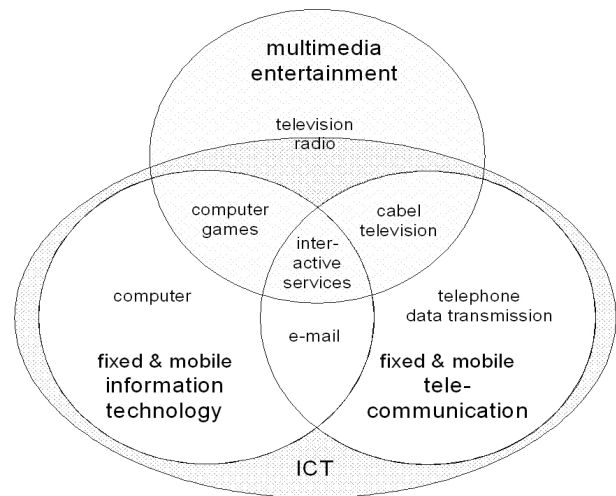


Figure 3. Mobile and fixed-line ICT convergence



As shown in Figure 3, the convergence of information technology and communication technology to ICT can be seen as the first phase of convergence. This was caused by the digitalization and liberalization in the telecommunications sector. The next phase of convergence was the success of mobile ICT, initializing a competition between wireless and fixed ICT. Meanwhile, information and communication as well as mobile and wired technologies have not only co-existed; they have merged, generating enormous synergy effects for both business and customer. In addition, another not just technological convergence can be observed. The

Figure 4. ICT and multimedia entertainment convergence (Teufel, 2004, p. 14)



entertainment and multimedia branch has entered the ICT market and vice versa, as illustrated in Figure 4.

The trend shown in Figure 4 becomes obvious when looking at the boom in interactive games or home cinema computerized equipment—again accelerated by the digitalization in a sector, this time the television (DVB) and radio

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