1. Einleitung und Motivation

1.1 Management Summary (english)

This thesis describes the development of the telecommunications business, culminating in the current innovation which is Unified Communications (UC). It sets the changes in this business in the context of the innovations resulting from the growth of the Internet as the fifth “long wave” of technological business cycles. Under the consideration of the changes in the business models of related industries, the evolution of the manufacturer of communication systems is discussed.

In Section 2.1, the market for telecommunications equipment from companies is reviewed, beginning with the definition of the terms information and communication and a description of the models of communication. Business successes or failures are based on the unequal distribution of information in enterprises and society, so that information and communication technology can bring competitive advantages.

In Section 2.2, the development of the telecommunications business over more than a century is described from both the direction of the technology and the view of the providing companies. The necessary investment in the development of digital communications technology in the 80s led to a consolidation in the market, with the number of major manufacturers being reduced from 27 to six. These are now taking key positions in the world, in addition to their strong national home markets: Alcatel, AT&T, Ericsson, NEC, Nortel and Siemens. The same picture can be seen looking at the market in 2005, despite all the technological and economic changes in between. It is shown that the traditional manufacturers have completely assimilated VoIP technology. Changes are caused only by merger and acquisitions and by the new competitor, Cisco, having established itself in the voice communication market during the VoIP deployment.

Section 2.3 presents the innovative concept of Unified Communications (UC) and its implications. Because of the progress in technology and the demands of the global market, the users of communication technology experience a complex and fragmented communications environment with a variety of devices and media. A study names three top “Pain Points” of the users, which UC should improve: waiting for information, unintentional communication and ineffective team coordination. Summing up the different definitions and views of UC, it can be seen that UC includes, on one hand, three functional objectives, and on the other hand, three elements and components. The first objective is the improvement of the communication and collaboration of people by integrating all types of synchronous and asynchronous media. The second objective is to create a single, unlimited user experience and control over different devices, including mobility. And the last objective is the provision and use of presence information and the integration of communications functions in groupware and business applications. The first element of UC is real-time communication, consisting of telephony, video and instant messaging, with options for Web, video and voice conferencing. The second is asynchronous communication via e-mail messaging, voice mail
and fax; the third is the extension to mobile devices and integration with the desktop and typical business applications (= CEBP Communications Enabled Business Processes).

A number of studies and questionings have indicated the real challenges for companies in using modern communication technologies. The manufacturers of UC calculate a company value of UC from overcoming these challenges, often based on theoretical models. Because not many companies have fully implemented the concept of UC until now, there are few studies about the improvement achieved in reality. It is shown that these first studies indicate positive consequences. The questioning of a pilot-user group of 300 sales employees of a manufacturer of communication systems first presented its results. It confirmed that the early users of UC experience an effect on everyday work and a positive leverage on personal productiveness. The integration of UC in the business processes of the companies promises further potential. The implementation of UC can create a real differentiation and the companies can realize a competitive advantage if they reach the necessary behavioral changes of the users – besides the challenges of technical integration. Therefore the traditional manufacturers in the communications market, as well as Cisco, see in UC an essential argument for selling their new generation of communication systems.

Section 3.1 provides an overview of the state of innovation management and describes the theory of business cycles, based on technological changes. The use of the concept of “innovation in the strict sense” is defined, and it is considered in terms of the historical development through Adam Smith and Schumpeter. The growth of innovation is discussed by presenting the models of diffusion, Moore’s stage model and the hype cycles by Gartner. The “Disruptive Innovation Theory” of Christensen is shown, with the differentiation of “sustaining” and “disruptive” innovation. The concept of business models and the development of innovations from the core to the context are explained. The model of business cycles by technological development is presented. The Information and Communication (I&C) technology is founding such a long wave, where the adjustment process of economy and society can still continue for more than a decade.

Section 3.2 examines the drivers of the changes caused by the evolution of I&C by reviewing the technology development, social development and development of business models. The technology development shows that the three key indicators – computing power, storage capacity and network capacity – have doubled every 18 to 24 months over the last 50 years, causing related costs to halve every 18 to 20 months. This trend is to be continued for at least the next decade and shows further potential for changes. Considering social development and the evolution of business models by the usage of New Media, major changes in the enterprises are still to come. The impact on the economy will become apparent by the “Digital Native” generation growing up and coming into the enterprises and they will be driven by further innovations in the Internet in the future.

A characteristic of many business models of the Internet is the network effect. This enforces low entry cost into new business models and encourages business models which are free for the user. The new business models of the Internet are governed by the laws of market economy, and are overlaid by the monetary, not directly measurable, values of “attention” (traffic) and “recognition” (number of links, “friendships”, “followers”). These values are