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**Changing Dynamics of Global Computer Software
and Services Industry:
Implications for Developing Countries**



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PREFACE

The computer software industry has the potential to become one of the most internationally dispersed high-tech industries; the last two decades saw high growth rates of this sector and a dramatic increase in the spread of computer software and services world-wide. This paper explores the issues surrounding the development of the computer software and services industry; examines how intellectual property rights affect their establishment and growth in developing countries, and discusses the implications from that for policy formulation.

With the growing importance of knowledge-based industries such as computer software, the importance of intellectual property rights (IPRs) is at the same time being enhanced. The actual role and impact of IPRs, however, is being debated especially in relation to the process of developing domestic technological skills and capabilities in a globalized economy. On the one side of the debate, there are those who believe that the impact of IPRs is determining the sectoral economic performance while on the other side of the debate, others perceive the impact of IPRs as a hindrance to indigenous technological development. This study reviews the debate in the context of computer software development in developing countries, with a view to expanding the economic opportunities of developing countries in this sector. The overall aim of this paper is to inform developing countries of new trends in this sector and their relevance to policy-making and future international negotiations on related issues. The paper demonstrates the growing importance of computer software by reviewing recent global trends in copyright-based industries, especially the associated growing demand for all information-based industries since the mid-1980s and the potential for developing countries to enter global markets in this area.

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ABBREVIATIONS AND ACRONYMS

AISI	African Information Society Initiative
AOL	America Online
BSA	Business Software Alliance
DVD	Digital Video Disk
EC	European Commission
ERP	Enterprise Resource Planning
EU	European Union
FM	Facilities Management
GATT	General Agreements on Tariffs and Trade
GDP	Gross Domestic Product
HTTP	Hyper Text Transport Protocol
ICC	International Chamber of Commerce
ICT	Information and Communication Technology
IDC	International Data Corporation
IDSA	Interactive Digital Software Alliance
IIPA	International Intellectual Property Alliance
ILO	International Labour Organization
IPC	Intellectual Property Committee
IPR	Intellectual Property Right
ISP	Internet Service Provider
IT	Information Technology
NAFTA	North American Free Trade Agreement
NASSCOM	National Association of Software and Service Companies (India)
NC	Network Computer
NGO	Non-Governmental Organization
NIC	Newly Industrialized Country
OECD	Organisation for Economic Co-operation and Development
OS	Operating System
PC	Personal Computer
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
USPTO	United States Patent and Trademark Office
WIPO	World Intellectual Property Organization
WT	Windows Terminal
WTO	World Trade Organization
WWW	World Wide Web

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INTRODUCTION

Countries around the globe have become more information and knowledge-intensive, giving rise to the phenomenon of the knowledge-based economy. The increasing importance of knowledge to economies is a truly international trend which affects all levels of development. In major Organisation for Economic Co-operation and Development (OECD) countries, an increasing proportion of Gross Domestic Product (GDP) is now attributed to knowledge-based industries, telecommunications, computer and information services, finance, insurance, royalties and other business services (OECD, 1998a). Knowledge-based industries are not only growing faster but also account for an increasing proportion of trade in most developed economies. Policy makers have therefore come to recognize the growing importance of knowledge and intellectual assets as principal sources of value, productivity and growth, where global interaction is increasingly in the form of knowledge exchange. Although countries recognize the growing importance of knowledge-based activity and exchange in their economic and social well-being, there are nevertheless, major gaps between developed and developing countries in abilities to generate, harness and trade knowledge-based goods and assets.

The computer software and services industry is a key example of knowledge production, as the value of what a software company produces is almost entirely in the knowledge embodied in its products and services. It is a fast growing industry producing high value services for its customers. Although it is dominated by firms based in major industrialized countries of the world, it continues to offer great prospects for economic growth and industrial development within developing economies. Indeed, the software industry has become a leading source of employment creation and economic growth in the world (Schware, 1995).

In addition, software has become a key facilitating technology making it a major strategic technology for growth and development. Software and computer services centrally underpin the actual creation, but also the efficient utilization of core aspects of modern manufacturing and the physical products that are produced (Alic, 1994). Few areas of production, engineering or education do not include software as an important and increasingly complex component (Schware, 1990). Moreover, new small firms with relatively few tangible assets can still prosper and grow rapidly and with the rise of the Internet, where these firms are physically based is becoming less important. However, because of the unique way that knowledge is generated and traded in the software industry (and other knowledge-intensive industries), protection of intellectual property forms a fundamental element as to how the sector has grown and developed. The objective of this paper is to provide an exploration of the issues surrounding the

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