
NETWORKED INFORMATION TECHNOLOGIES

Diffusion and Adoption

IFIP – The International Federation for Information Processing

IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is less rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is in information may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly, National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.

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*IFIP TC8 / WG8.6 Working Conference on the
Diffusion and Adoption of Networked Information Technologies
October 6–8, 2003, Copenhagen, Denmark*

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KLUWER ACADEMIC PUBLISHERS

NEW YORK, BOSTON, DORDRECHT, LONDON, MOSCOW

eBook ISBN: 1-4020-7862-5
Print ISBN: 1-4020-7815-3

©2004 Kluwer Academic Publishers
New York, Boston, Dordrecht, London, Moscow

Print ©2004 Kluwer Academic Publishers
Boston

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Editors' preface

For the seventh time in the ten years the working group has existed people from different parts of the world gathered to discuss issues related to the Transfer and Diffusion of Information Technology. The theme of the 10th anniversary IFIP 8.6 working group event was "The Diffusion and Adoption of Networked Information Technologies". Once again researchers and practitioners met and discussed if and how we can understand and model diffusion and adoption of technological innovations.

The conference attracted 23 submissions. All submissions were double-blind refereed by members of the program committee. Eleven submissions were accepted corresponding to a 48% acceptance rate. Four panels with themes defined by the organizers were solicited. Members of the program committee reviewed the proposals for panels too.

These proceedings reflect a journey from the conceptualisation of diffusion of innovations to the implementation of technological innovations. The eleven papers and four panels included in the proceedings represent four themes, which were scheduled in four sessions during the event. The themes are not distinct nor are they exclusive. However, the four groups of papers have some communality with respect to research theme, type of innovation or realm of investigation. The four panels do in some sense serve as the glue of the four paper sessions. The editors have decided to publish the descriptions of the panels along with the eleven papers presented at the event. The objective of publishing the panel descriptions too is to provide insights in the wealth of topics undertaken in the IFIP 8.6 working group.

The first panel "IFIP 8.6 past and future", provided insights into what, where and who are involved in the IFIP WG 8.6 during the first ten years of its existence. The panel intended to be a means for setting the scene for the

event with respect to fruitful discussions related to adoption, diffusion and implementation of IT. The panellists provided different perspectives on theoretical and in particular methodological achievements and challenges of the IFIP 8.6 group. Having the panel at the opening of the event set the ideal scene for the further discussion of diffusion and adoption of IT with respect to the multiplicity of theories and methods applied by the participants.

The second panel offered at the event had the title “The role of network in the diffusion and adoption of software process improvement (SPI) approaches”. This panel addressed from several angles the importance of social networks in the diffusion and adoption of software process improvement. The panel presented and discussed visual examples of SPI networks and identified their key characteristics and role players in these emergent and overlapping networks. It also showed how the network was transformed when one of the focal players left.

“Open Source software: Placebo or panacea” was the title of the third panel. Open source software receives growing attention by academics as well as by businesses. The panel addressed open source from a paradoxical angle. For example, that the source code which is considered the ‘crown jewels’ for many proprietary software companies should be provided freely to anyone in open source community. Another interesting aspect raised was the tension between collectivism and individualism in the management of open source communities. The panellists provided insight into these controversies from both an academic and participant point of view.

The fourth and final panel had the title “The diffusion and adoption of mobile computing”. This panel explored the evolution of mobile Internet and telephony as driven by the interplay of three major forces: market needs, technological innovation, and regulatory intervention. Consequently the panel consisted of three distinct perspectives of standardization and mobile Internet diffusion. Firstly how mobile telephony standardization has been driven by and enabled by the different institutional configurations that govern the relationships between markets, innovation system and regulatory bodies. Secondly how wireless Internet standardization efforts embed designs can be interpreted in the light of theories of design and implementation. And finally what factors in the market may influence the adoption and diffusion of such technologies and what are the important inhibitors to the diffusion and adoption of mobile Internet?

Paper Session 1: Non-classical approaches to diffusion and adoption of IT. This Session included three contributions, which used other approaches than Rogers or other more traditional factor oriented diffusion theories to interpret data and explain adoption and diffusion. These three contributions are:

The Socio-Political Construction of CareSys: How Interest and Values Influence Computerization by Karin Hedström from Orebro University. The paper describes an analytical framework, which can be used for comparing how different groups experience the value of IT. As the actors' interests and values are uncovered the framework illuminates the socio-political process of computerization.

Information and Communication Technologies Diffusion in Industrial Districts: An Interpretive Approach by Caterina Muzzi from Luiss Guido Carli School of Management and Karlheinz Kautz from Copenhagen Business School. The paper reviews the diffusion of network technologies in the Italian industrial districts by applying an interpretive process framework. The authors demonstrate that the social process and the context characterise the district as a peculiar socio-economic reality. Based on empirical findings the authors argue that the different trends in diffusion depend both on technological/economic reasons and socio-cultural issues.

Where is the Innovation? The Adoption of Virtual Workspaces by Kristian Billeskov Bøving and Keld Bødker from RUC – Roskilde University. The paper describes a case study of the introduction of a web-based groupware application – Lotus QuickPlace™ – in a large European financial organization. The study challenges the commonly held assumption in DOI research that “all use is equal” in the process of adoption of technologies. The authors argue that underlying problem is that in order to understand the diffusion of groupware, it is necessary to distinguish between two separate innovations. The first is directly related to the DOI “innovation-decision process” – centred on the technology as the innovation, whereas the second innovation is more related to how the technology is put to use.

Paper Session 2: Diffusion and adoption of IT in public sector institutions. Submissions to the event reflected the ongoing developments in the IS research community. One of those topics, which has caught attention in the IS community recently is eGovernment and the significance of IT in the public sector. Three contributions related to IT in the public sector were included in this session:

Management and Co-ordination of eGovernment by Pål Sørgaard from Telenor R&D. The author argues that eGovernment is a move towards more use of networked information technologies in governments' services to citizens and companies. It is claimed that there will be strong expectations that these services are well co-ordinated and interoperable with the applications of citizens and companies. IT co-ordination is difficult, expensive and risk prone. The wide range of products and services in government makes co-ordination even harder. It is therefore suggested that co-ordination of eGovernment should be carefully prioritised and the ambitions should be set at a reasonable level.

Translations in Network Configurations: A Case Study of System Implementation in a Hospital by Agneta Nilsson from Department of Informatics, Göteborg University, Miria Grisot from Department of Informatics, Oslo University, and Lars Mathiassen from Computer Information Systems, Georgia State University. This paper reports from an interpretive case study of a hospital where the replacement of paper based order forms for radiology examinations with web based order forms is observed. The aim of the study is to contribute to a better understanding of the implementation of networked technologies in healthcare. The case shows how the implementation of network technology imposes a configuration in the actor-network and illustrates the importance of small steps and translations involving many different actors in the process leading to a new stabilized configuration.

MIS and the Dynamics of Legitimacy in Health Care by Kåre Lines from Nord-Trøndelag University College, Kim Viborg Andersen from Copenhagen Business School, and Eric Monteiro from Norwegian University of Science and Technology. The authors combine actor-network and neo-institutional theory, for reconstructing the MIS development and use in a Norwegian local public health care organization. Rooted in research of governmental IT and the corresponding implementation at the municipality level, the paper focuses on how the MIS project must be recognized both as an expression of institutionally infused change and as an actor-shaped change effort. More specifically, through a historical reconstruction of the years 1987-2000, it is spelled out how the MIS project legitimizes – and is legitimized by – the different types of logic at play: administrative, professional and democratic.

Paper Session 3 “Stakeholders in the diffusion and adoption process” focused on different levels and types of stakeholders. Two of the submitted papers were assessed to fit to this theme.

Role Model for the Organisational IT Diffusion by Jan Pries-Heje from The IT University of Copenhagen. In this paper it is argued that organisational IT diffusion is a complicated process. Certain roles have to be filled and enacted to ensure success. However, in diffusion and adoption projects it is often forgotten to fill the roles appropriately. Based on an empirical study in a Scandinavian company this paper presents a model to be used for filling and handling the primary roles in an organisational IT diffusion process. The model was developed using action research with three cycles of diagnosis-action and learning. The main sources of the model were change management theory, diffusion of innovation theory and soft systems methodology.

Should Buyers Try to Shape IT-Markets through Non-Market (Collective) Action? Antecedents of a Transaction Cost Theory of Network Effects by Kai

Reimers and Mingzhi Li from School of Economics and Management, Tsinghua University. The authors of this paper develop a transaction cost theoretic model of network effects and apply it to assess the chances of user groups to influence the range of technological choices available on the market. The theoretical basis of the model is formulated by a number of empirically refutable propositions, which overcome some conceptual and empirical difficulties encountered by the traditional interpretation of network effects as (positive) network externalities.

Paper Session 4: Expanding the diffusion area. The element of expansion refers to two aspects both the domain of adoption and diffusion and the reach of the diffusion and adoption concepts.

Exploring Application Service Provision: Adoption of the ASP concept for provision of ICTs in SMEs by Björn Johansson from Department of Informatics, Jönköping International Business School, Jönköping University. The paper provides an exploratory empirical survey of Application Service Providers (ASPs) and their clients. The research focuses on what Small and Medium-sized Enterprises (SMEs) base their decision on when adopting the ASP concept. The study identifies three main reasons for clients to adopt the ASP concept: core competence, a lack of skilled personnel and the organizations overall strategy.

A Framework for the Investigation of the Institutional Layer of IT Diffusion: Using stakeholder theory to analyse electronic commerce diffusion by Anastasia Papazafeiropoulou from Department of IS and Computing, Brunel university. The author states that information technology diffusion is a complex process that has been studied from various perspectives and levels of analysis. Most studies have been done at firm level seeking to find the ways a technical innovation is introduced and used by a company. In this paper focus is at the institutional layer of IT diffusion by investigating the interaction between actors in the demand and supply side of the diffusion process. It is argued that stakeholder analysis is a useful tool for the examination of such interactions and a framework for the investigation of the diffusion of electronic commerce is proposed.

Taking Organizational Implementation Seriously: The Case of IOS Implementation by Jukka Heikkilä and Hannu Vahtera from Department of Computer Science & IS, University of Jyväskylä and Pekka Reijonen from Laboris, University of Turku. The authors claim that despite of the rapid technical development, failures in information systems implementation are common and it seems obvious that the implementation of inter-organizational systems (IOS) include all the same possibilities for failures as intra-organizational systems – and unfortunately even some more. In this paper some empirically proven means for avoiding problems during the implementation of IOSs are presented.

The organizers would like to thank all participants for active and enthusiastic involvement in the activities that took place during the conference. This involvement provided fruitful discussions, which hopefully animated the members of IFIP WG8.6 to continue their work on the diffusion of IT but in particular also gave potential members an appetite on the theme as a future path for research. Thank you to the general chair, Kalle Lyytinen, and a special thanks to Professor M. Lynne Markus and vice-president of sales Peter Lund from Bluetags.com, who shared their insights on diffusion of innovations in their keynotes at the event. Finally, we would like to use this opportunity to thank FUHU – The Danish Society for the Advancement of Business Education – for the grant, which made it possible to organize a memorable conference dinner at the Kronborg Castle.

Jan Damsgaard and Helle Zinner Henriksen
Co-organizing chairs and editors