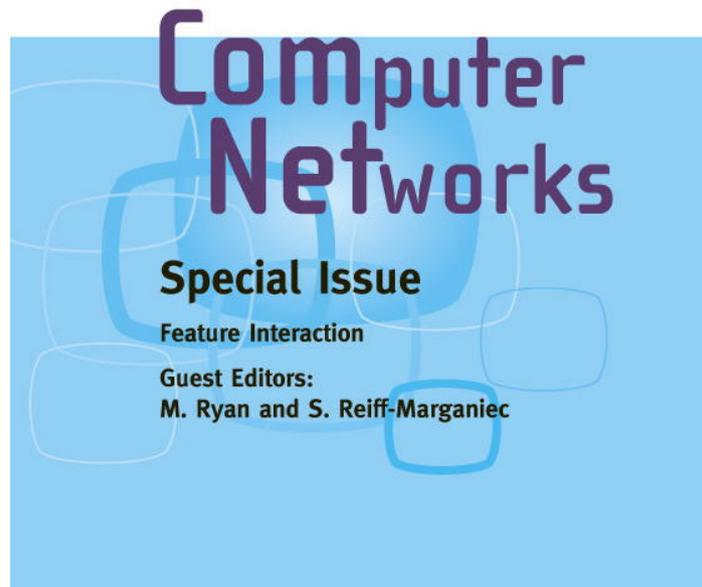




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Guest Editorial

Features are new services or options added to an existing base system. Feature interaction occurs when one feature modifies or subverts the operation of another one. Although the phenomenon was first studied in the domain of services added to telecommunication systems, it is not unique to that area, and can occur in any software system that is subject to change. Indeed, interactions among classical telephony features are now fairly well understood, but the feature interaction problem presents new challenges in emerging types of systems based on policies, dynamic services including Web services, mobility, or new telephony architectures such as VoIP, 3G, or SIP. Features may also arise in distributed systems architectures including CORBA, .NET, GRID and active networks. The proliferation of players and software/service engineering techniques coupled with the constant pressure for the rapid introduction of new services and applications leads to undesirable interactions that jeopardize the quality of the products delivered as well as the satisfaction of the users. Detecting, solving, managing, and preventing, such interactions at different stages of the development process are important problems that need to be addressed with cost-effective techniques and tools. Techniques successfully applied to conventional telecommunications systems are still useful in many cases, yet they may no longer be able to cope with the complexity of emerging systems.

The present special issue of *Computer Networks* highlights developments in the field, many of which were first announced at the *International Conference on Feature Interactions* (ICFI) which took place in

June, 2005 in Leicester. ICFI included papers on feature interactions in computer security, protocol design, middleware, appliance development, product line development, and business flow management. That conference itself arose from a series of workshops, the first of which was held in St. Petersburg, Florida, in 1992. Subsequent ones were held in Amsterdam (1994), Kyoto (1995), Montreal (1997), Lund (1998), Glasgow (2000) and Ottawa (2003).

The papers in this issue reflect the diverse nature of the field. There are papers dealing with features in emerging domains, namely, the papers by Weiss-Esfandiari-Luo and Crespo-Carvalho-Logrippo, focusing specifically on the Internet-Web domain, and by Shehata-Eberlein-Fapojuwo, providing a taxonomy for interactions in software systems. There are also two papers concerning aspects of interaction detection techniques, by Chi-Hao (focussing on testing) and Miller-Calder-Donaldson (focussing on model checking). Next are two papers about languages for describing features: the paper by Schobbens-Heymans-Trigaux-Bontemps concerning feature diagrams, and the one by Leung about new constructs called feature language extensions. Finally, three papers address aspects of call control in emerging architectures for telephony, by Turner-Blair, Wu-Schulzrinne, and Kolberg-Magill.

We are grateful to many colleagues who kindly helped in preparing this special issue: the authors for their fine submissions and revisions and the reviewers for their care and suggestions. We hope that you, the readers, will enjoy and profit from the work presented here.



Stephan Reiff-Marganiec was working in the computer industry in Germany and Luxembourg for several years. He obtained a BSc (hons) degree in Computing Science from the University of Wales, Swansea, in 1998. From 1998 to 2001, he was working as a Research Assistant on the EPSRC HFIG project at Glasgow University, while at the same time reading for a PhD in Computing Science. The work performed at Glasgow investigated hybrid

approaches to the feature interaction problem, and the thesis presents one such approach. From 2001 to 2003, he worked as a Research Fellow on the ACCENT project at the University of Stirling, investigating policies, emerging features and associated conflict resolution techniques. Since 2003 he is a lecturer at the University of Leicester, pursuing research on telecommunication and web services, particularly considering component based and reconfigurable/self-configuring systems in the context of rapid market changes and complex legacy products.



Mark D. Ryan (b. 1962) received his BA from University of Cambridge and PhD from Imperial College, London. He was invited professor at Lisbon University in 1993–94, and has been faculty member at University of Birmingham since 1995, where he currently holds the post of Reader. His research is in applications of logic, and he is co-author (with Michael Huth) of a successful textbook on that subject. Currently, he works on verification of systems, particularly security systems.

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