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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 (focusing on testing) and Miller-Calder-Donaldson (focusing 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.

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