Preface

This volume contains the papers presented at WS-FM 2007, the 4th International Workshop on Web Services and Formal Methods, held on September 28 and 29, 2007 in Brisbane, Australia.

Web service technology aims at empowering providers of services, in the broad sense, with the ability to package and deliver their services by means of software applications available on the Web. Existing infrastructures for Web services already enable providers to describe services in terms of structure, access policy and behaviour, to locate services, to interact with them, and to bundle simpler services into more complex ones. However, innovations are needed to seamlessly extend this technology in order to deal with challenges such as managing interactions with stateful and long-running Web services, managing large numbers of Web services each with multiple interfaces and versions, managing the quality of Web service delivery, etc.

Formal methods have a fundamental role to play in shaping innovations in Web service technology. For instance, formal methods help to define and to understand the semantics of languages and protocols that underpin existing infrastructures for Web services, and to formulate features that are found to be lacking. They also provide a basis for reasoning about Web service behaviour, for example to discover individual services that can fulfil a given goal, or even to compose multiple services that can collectively fulfil a goal. Finally, formal analysis of security properties and performance are relevant in many application areas of Web services such as e-commerce and e-business.

The International Workshop on Web Services and Formal Methods aims to bring together researchers interested in the application of formal methods and reasoning techniques to Web service technology, and in formal theories inspired by developments in the field of Web services. The scope of the workshop is not purely limited to technology aspects. It also covers approaches to analysing and designing systems based on Web service technology, including service-oriented enterprise modelling and business process modelling.

This fourth edition of the WS-FM workshop featured 9 regular papers selected from a pool of 22 submissions after a rigorous review process. Each submission was reviewed by at least three programme committee members, and in many cases four. In addition to regular paper presentations, the workshop’s programme also featured two invited talks. In the first invited talk, Jianwen Su gave a survey of research in the area of formal analysis of Web service interactions with an emphasis on the relation between global models capturing all interactions between multiple services at once, versus local models that focus on one service at a time. The second talk by Jörg Desel proposed a formal theory that aims at unifying several notions of soundness and controllability of Web service
protocols. After the workshop, the authors of these invited talks kindly agreed to prepare a full invited paper for inclusion in these proceedings.

The workshop was held in conjunction with the 5th International Conference on Business Process Management (BPM). This was the second time that the workshop was co-located with the BPM conference, and this arrangement is expected to continue in the future.

We owe special thanks to all members of the Program Committee of WS-FM 2007 and their sub-referees for their work. We are also very grateful to the numerous people who were involved in the organisation of the BPM conference for lending their support to the workshop organisation.

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Marlon Dumas
Reiko Heckel
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