

Preface

Service-oriented architecture (SOA) and service technology is established in practice: many commercial products supporting service-based applications are available and in production use since years, many projects in companies have been successfully completed, and the results of these projects help people to ease solving their business problems. A plethora of standards (aka Web Services standards) have been specified to ensure interoperability of service-based solutions, and many of these standards are implemented in commercial products. Last but not least, a large number of research projects have been completed or are on their way that explore the advanced use of services and extend the corresponding concepts and technologies where needed.

Historically, service technology has been developed to solve several problems in integrating platforms and applications. Thus, services are typically realized by programs. More and more services are used to immediately support and represent real-world business activities. This results in the requirement to support services that are not realized by programs but directly by the work performed by human beings. For example, Amazon's Human Intelligence Tasks (aka Amazon Mechanical Turk) provides the use of human work rendered as Web services.

As a result of this demand, a standard around the support of requesting work of human beings via Web services has been created, namely WS-HumanTask. Historically, workflow systems have been the originator of requests for human work as well as the consumer of the results of such work; consequently, WS-HumanTask has been used by the BPEL4People standard to support human work in business processes that are specified using BPEL. Furthermore, BPMN 2.0 references WS-HumanTask to model human work in BPMN-based business processes.

But humans often interact much more dynamically, in unforeseen manners, i.e., the modeling of such interactions via process models is not possible. The collaborators in such dynamic interactions often do not know each other from the outset; thus, trust between the collaborators must be established (ideally automatically), especially in cases where the interactions correspond to business activities. Also, services provided by human beings and (programmed) services need to interact resulting in mixed service environments.

This book is about this new and thrilling subject of *mixed service environments*. The authors have pioneered this area; thus, the readers of this book will get first-hand information on this subject: researchers will get a plethora of stimulations for their own research, practitioners will be enabled to judge about the relevance of this area in their domain, and developers of corresponding middleware will get ideas about potential extensions of their systems.

I had a lot of fun while reading this book and learned a lot. My hope is that this book will find a lot of readers who will similarly benefit from reading it. I am quite confident that the area of mixed service environments is just at the beginning, i.e., looking into this area is relevant and important.

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Socially Enhanced Services Computing

Modern Models and Algorithms for Distributed Systems

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