

Preface

This book is the result of 6 years of work in the Christian Doppler Laboratory “Software Engineering Integration for Flexible Automation Systems” (CDL-Flex) at the Institute of Software Technology and Interactive Systems, Vienna University of Technology.

The overall goal of the CDL-Flex has been to investigate challenges from and solution approaches for semantic gaps in the multidisciplinary engineering of industrial production systems. In the CDL-Flex, researchers and software developers have been working with practitioners from industry to identify relevant problems and to evaluate solution prototypes.

A major outcome of the research was that the multidisciplinary engineering community can benefit from solution approaches developed in the Semantic Web community. However, we also found that there is only limited awareness of the problems and contributions between these communities. This lack of awareness also hinders cooperation across these communities.

Therefore, we planned this book to bridge the gap between the scientific communities of multidisciplinary engineering and the Semantic Web with examples that should be relevant and understandable for members from both communities. To our best knowledge, this is the first book to cover the topic of using Semantic Web technologies for creating intelligent engineering applications. This topic has gained importance, thanks to several initiatives for modernizing industrial production systems, including *Industrie 4.0*² in Germany, the *Industrial Internet Consortium* in the USA or the *Factory of the Future* initiative in France and the UK. These initiatives need stronger semantic integration of the methods and tools across several engineering disciplines to reach the goal of automating automation.

We want to thank the researchers, the developers, the industry partners, and the supporters, who contributed to the fruitful research in the CDL-Flex, as a foundation for providing this book.

²Because the term *Industrie 4.0* is the name of a strategic German initiative, the term will be used in its German form, without translation to English.

Researchers who applied basic research to use cases provided by industry partners: Luca Berardinelli, Fajar Juang Ekaputra, Christian Frühwirth, Olga Kovalenko, Emanuel Mätzler, Richard Mordinyi, Thomas Moser, Jürgen Musil, Petr Novák, Marta Sabou, Stefan Scheiber, Estefanía Serral, Radek Šindelář, Roland Willmann, Manuel Wimmer, and Dietmar Winkler.

Developers, who developed and evaluated scientific prototypes: Stephan Dösinger, Christoph Gritschenberger, Andreas Grünwald, Michael Handler, Christoph Hochreiner, Ayu Irsyam, Lukas Kavicky, Xiashuo Lin, Christian Macho, Kristof Meixner, Markus Mühlberger, Alexander Pacha, Michael Petritsch, Andreas Pieber, Michael Pircher, Thomas Rausch, Dominik Riedl, Felix Rinker, Barabara Schuhmacher, Matthias Seidemann, Lukas Stampf, Christopher Steele, Francois Thillen, Iren Tuna, Mathijs Verstratete, and Florian Waltersdorfer.

Industry and research partners, who provided support and data: Georg Besau, Florian Eder, Dieter Goltz, Werner Hörhann, Achim Koch, Peter Lieber, Arndt Lüder, Vladimir Marik, Alfred Metzul, Günther Raidl, Ronald Rosendahl, Stefan Scheffel, Anton Schindele, Nicole Schmidt, Mario Semo, Heinrich Steininger, and Wolfgang Zeller.

Administrative support: Natascha Zachs, Maria Schweikert.

Guidance and financial support from the Christian Doppler Society, the Federal Ministry of Economy, Family and Youth, and the National Foundation for Research, Technology and Development in Austria, in particular: Brigitte Müller, Eva Kühn, Gustav Pomberger, and A. Min Tjoa.

Vienna, Austria
April 2016

Stefan Biffl
Marta Sabou

Semantic Web Technologies for Intelligent Engineering
Applications

Biffl, S.; Sabou, M. (Eds.)

2016, XX, 405 p. 116 illus., 40 illus. in color., Hardcover

ISBN: 978-3-319-41488-1