Preface

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In May 2014, shortly after Bernd Krieg-Brückner's 65th birthday, and shortly before he was going to retire as a professor at Universität Bremen, Prof. Lu Ruqian proposed us to prepare a special issue of the *International Journal of Software and Informatics* for this occasion. However, this could not be done within just four months. Fortunately, it turned out that there would be a still better occasion to prepare such an issue: In September 2015, Bernd will finish the last international EC-funded project that he directed for three years, and will enter the life of a proper *professor emeritus* who has no administrative obligation any more, but can still occupy himself with whatever he finds interesting. Also, and maybe even more important: Bernd has now reached the age of sixty-six, which is, by far, a better number than sixty-five, as Prof. Lu explained to us, because of the Chinese saying

<p style="text-align:center; font-size:2em;">六六大顺</p>

<p style="text-align:center;">(With sixty-six, everything will go smoothly.)</p>

So the three of us accepted Prof. Lu's generous proposal to compile this issue.

This special issue of the International Journal of Software and Informatics (IJSI) pays tribute to Bernd Krieg-Brückner on the occasion of his 66th birthday, which gave reason to his friends, former and recent students, and colleagues to honor his career as a scientist who has contributed to many diverse fields.

It has been a great pleasure to compile this issue, and we are very grateful to the authors contributing to this special issue, and to the reviewers providing their comments readily on time. The articles reflect the development of Bernd's research interests over the many years of his professional live.

Throughout his academic career, Bernd has always been interested in all sorts of languages, like programming languages, formal specification languages, and (formal) ontologies.

As a research assistant of F.L. Bauer at the TU Munich, he got involved in the national CIP-project ("computer-aided, intuition-guided programming"). The objective of the project was to develop an integrated environment for the

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construction of correct software based on a "particular life cycle of transformational program development"; a topic which should keep him occupied during his entire academic life. After receiving his Ph.D. in 1978, he joined the (winning) "green" team of Jean Ichbiah at Honeywell Bull, one of four groups which competed for the design and formal definition of the later programming language Ada. After staying at the Universities of Stanford and Berkeley in 1979/80, he returned to Munich and accepted an offer for a position of a professor at Bremen University shortly afterwards. In 1985, program transformation was again the subject of a large project called PROSPECTRA ("Program Development by Specification and Transformation", 1985-90), this time funded by the European Union and coordinated by Bernd himself. The result of this work (and the work in the following BMBF-project KORSO, 1991-94) was a wide-spectrum specification and programming language covering all stages of the software development process.

Bernd has been always active in forming European community: he was coordinator of the COMPASS ("Comprehensive algebraic approach to system specification and development", 1989-96) working group. Within COMPASS, the need became obvious for a unification of the various existing specification languages, resulting in the formation of an open initiative for a common framework (CoFI, 2001–) that brought together various research groups from all over Europe. Bernd, in his role as the chairman of the CoFI language design task, played a prominent role in arriving at an agreement on a common design: the Common Algebraic Specification Language (CASL) providing both, a specification language and a variety of tools to foster its application.

Another focus of his work is cognitive robotics. In 1990 he joined the interdisciplinary priority program "Cognitive Autonomous Systems" and became one of the founding members of the Bremen Center for Cognitive Science (ZKW), where he chaired a DFG Graduate College. In the center, the aim was to model cognitive processes of insects and lower animals with the help of neural networks. However, when members started to experiment with monkeys, Bernd decided to leave the center. Within the DFG Graduate College, the notion of an autonomous wheelchair "Rolland"[1*] was coined. From then on, generations of Rollands have been developed, incorporating Bernd's design of a *Route Graph*, denoting a layered representation for navigational knowledge.

In 2007, Bremen became a new branch of the German Research Center of Artificial Intelligence (DFKI) and Rolland got a new home: the *Bremen Ambient Assisted Living Lab* (BAALL), which constitutes a vivid environment for experiments and demonstrations in the area of Smart Homes. Bernd has always been interested in ontologies as light-weighted formal specifications, and their usage in various application domains, ranging from e-learning to cooking nowadays. Step by step, all aspects of daily living (food, clothes, etc.) have now been formalized with ontologies in BAALL.

Bernd has had major impact on our lives.

Back in 1982, Bernd recruited me, Berthold, as a research assistant when he became a professor at Universität Bremen while I was about to finish my PhD at

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[1] A word play combining the verb "to roll" with Bremen's famous statue, the Roland, who represents the liberty of the city.

TU Berlin. What started with a three-year contract, continued with me managing a big ESPRIT project directed by Bernd (PROSPECTRA, 1985-1990), and then turned into a co-operation for a considerable part of our professional lives. As a manager of Bernd's growing research group, and some of the many research projects he initiated and directed over the time, I learned to appreciate his kindness, generosity, sense of humor, and creativity – not only for research, but also for cooking and – last but not least – optimal management of his many funds.

At the end of the last millennium, I, Dieter, was engaged in developing the notion of development graphs to maintain proof obligations arising from structured specifications in order to ease the reuse of verification work. Looking for appropriate applications, we stumbled across the CoFI initiative that was searching for exactly these tools. Joining one of these CoFI-meetings I become acquainted with Bernd. This started long and fruitful discussions on the issue of change management. In 2001, we started a first common project concerned with new media in education and in 2005, Bernd started an initiative to decoy the DFKI to open up a new branch in Bremen and to decoy me and my family to Bremen. He succeeded in both.

I, Shi, joined Bernd's group as a doctoral student in 1990. At that time, Bernd led a young team with eight researchers and doctoral students, and I was one of three PhD students from China. The lively discussions in the weekly doctoral seminar he guided and the freedom of choice of individual research direction he offered opened me a totally new prospect for my research. After finishing my PhD in 1994, he offered me a position as research and teaching assistant, which I accepted willingly. In the span of 25 years in his group, I got many opportunities to join various research projects funded by the European Union, the German Federal Ministry of Education and Research, and the German Research Foundation. We jointly published a number of papers on formal methods, spatial cognition and ambient-assisted living. I appreciate especially his continuous efforts for facilitating Chinese scientists to join his group.

Throughout all the years, Bernd has been a constant source of inspiration, friendship and humor. In presenting Bernd this special issue we hope that he will enjoy reading it, and wish that the Chinese saying will come true: From sixty-six onwards, everthing shall go smoothly for Bernd.

Guest Editors:

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