Ode to the PST

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Thanks, sir; all the rest is mute.
— William Shakespeare, *All's Well That Ends Well*

1 Welcome to the PST

1992! Internet in Germany was in its infancy, object oriented programming wasn't well-known yet, and even the European Union, which has funded so many of our research efforts lately, had not been formed.

Computing was certainly not mainstream when Martin Wirsing took the post of full professor at the Ludwig-Maximilians-Universität München in that year. The chair for Programming & Software Engineering (*Lehrstuhl für Programmierung und Softwaretechnik, PST*) was created along with his appointment. Indeed, the first *Diplom* course of studies in Computer Science (*Informatik*) at LMU had been created only the year before. The institute was still situated in the Leopoldstraße in Schwabing, only moving to the *Institute am Englischen Garten* in the Oettingenstraße in 1996 (Figure 1) — a beautiful location set right in the English Garden in Munich, five minutes away from one of the main tourist spots, the *Biergarten am Chinesischer Turm*. And with a history — the building was the site of the former *Radio Free Europe* [28], a radio station funded by the U.S. Government with its own history (including a bomb attack in 1981 on the very building where PST is now located).

Fast-forward to 2015, where all of us are pretty much dependent on the computers in our pockets — and where it is clear that computing has had, and will have in the future, a tremendous influence on our society and our way of life. It certainly has been an interesting time for computer scientists!

This development forms the framework for a personal story — 24 years in which Martin has headed the PST group at LMU; 24 years in which he has supervised over two dozen doctoral theses, participated in over nearly 40 research projects, and taught countless students; and 24 years in which he has organized a *tiresome* number of hikes in the Bavarian alps...

In this short expression of thanks/collection of travel notes/feeble summary attempt (delete to taste) we shall revisit the PST history in the fields of science and education (Section 2), research projects (Section 3), supervision of doctorates and habilitations (Section 4), and the PST as a fun place to work (Section 5). We invite you to come with us on this journey!

Fig. 1. Institute am Englischen Garten

2 Science and Education

You would expect a certain affinity for mathematics and logic from somebody who started his scientific career with a dissertation called "Das Entscheidungsproblem der Prädikatenlogik 1. Stufe mit Identität und Funktionszeichen in Herbrandformeln" (The Decision Problem of First-Order Predicate Logic with Identity and Function Symbols in Herbrand Formulae) that was supervised by the eminent Munich logician Kurt Schütte. And indeed, Martin's desire to use algebraic and logical methods to improve the development of software has remained one of the constant factors throughout his career until today.

Before arriving at LMU, Martin had mostly worked in the areas of programming languages, abstract data types and algebraic specifications, and written the definitive handbook chapter on one of these areas [29]. However, recognizing the increasing importance of developing for large systems as well as the (at that time) emerging trend towards mobile computing, he successfully broadened the research areas pursued at PST in different directions: formal approaches to engineering object-oriented systems [34]; a reference model for multimedia and hypermedia applications [16]; global computing [5]; mobile systems and software agents [18, 17, 15]; physiological computing [27]; service-oriented computing [30]; and, in the last few years, software engineering for autonomic ensembles, i.e., distributed systems operating in open-ended, non-deterministic and non-predictable environments [11, 33, 13]

Martin also remained active in research areas closer to his academic roots. For example, he co-authored one of the first proposals for a formal semantics of multi-threaded Java code [6, 7], and a novel, heterogeneous approach to UML semantics [8]; he also co-developed an abstract framework for developing new sys-

tems of program synthesis by adapting proofs-as-programs to new contexts [20] and a system of soft constraints that can deal with lexicographic orders of preferences [10].

For the members of PST this offered many exciting possibilities to work in new and emerging areas of software engineering research. For many of us, the possibility to interact with colleagues working on a broad range of topics but centered around the common core of using formal techniques for software development was a particularly pleasant aspect of working in Martin's group. Not unsurprisingly, this also led to occasional exclamations of "We're supposed to be working on *what*?" invariably followed, after a short discussion, by "The deadline is *when*?!?"

Altogether, Martin's scientific work has so far resulted in more than 200 publications with almost 230 co-authors, which were cited more than 5300 times.

In addition to these more visible scientific activities, Martin's expertise and foresight were in high demand from other scientific institutions and the European Union: Among many other activities he was speaker of the section on "Specification and Semantics" of the German Gesellschaft für Informatik and president of INRIA's scientific advisory council; he has been the coordinator of the advisory board of the "Computer Science and Applications" research area of the Institute for Advanced Studies in Lucca, and last year he has joined the Comité Stratégique of the Université de Bordeaux.

Life at a university is not all about research, however. Teaching and administrative work play a large part as well, and in Martin's case they are more closely entwined than for most other professors: in addition to editing or authoring more than 15 scientific books, he has written two textbooks [2, 12], and he was instrumental in establishing the Elite Graduate Program "Software Engineering" which is taught jointly by the University of Augsburg, the Technical University Munich and Ludwig-Maximilians-University Munich. Given his combination of scientific excellence, administrative skills and dedication to teaching, it is no wonder that he quickly became indispensable in LMU's boards: first as *Dekan* and, after a reorganization, as director of the faculty for Mathematics, Computer Science and Statistics, then as senator, as member of the *Hochschulrat*, and finally in his current position as vice-president of the LMU responsible for academic studies and teaching.

However, despite his calendar being filled to the brim Martin always managed to find time for discussions about PhD theses and organizational things, and providing an open ear to questions and suggestions.

3 Research Projects across Europe

Martin acted out his research interests in almost 40 German and European funded projects. He preferred those funding opportunities where he could introduce formal methods in the software engineering process in very different but always exciting and challenging domains, such as electronic product catalogues (EPK-fix) [24], architectures for mobility (AGILE) [1], service-oriented archi-

tectures (SENSORIA) [31], and adaptive and autonomous systems (ASCENS) [32].

In addition, due to his research excellence he was invited to participate in amazing projects like the Responsive Flexible Collaborating Ambient project (REFLECT) [26], in which psychologists, car engineers and software engineers developed a mood player that selects the music according to the users emotional state and a car assistance prototype which configured the vehicles performance according to the emotional, cognitive and physical drivers condition.
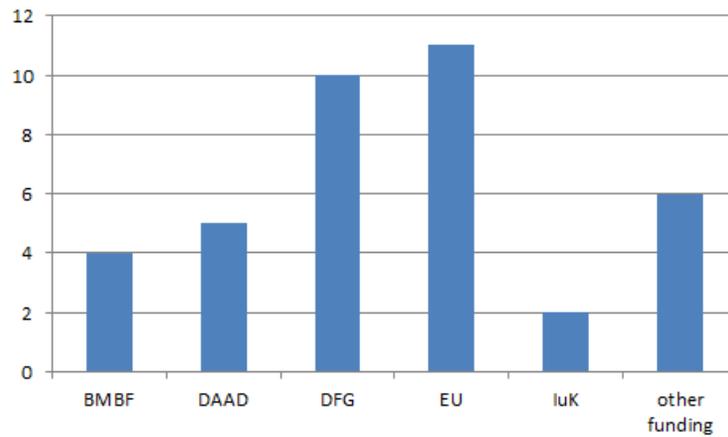

Fig. 2. Number of funded projects

Martin started with small budget German DFG and BMBF projects, such as SPECTRUM and KORSO to end up with the coordination of huge EU IP projects in the FET Proactive initiative like SENSORIA and ASCENS with budgets around eight million Euros (Figure 2). All of them addressing innovative issues like the modularization, reuse and correctness of specifications in the beginning of the nineties, and the behaviour of autonomic service-component ensembles twenty-five years later. Martin also supported non-funded projects of enthusiastic researchers; some of them curiously have male or female acronyms such as HUGO/RT (UML model translator for model checking, theorem proving, and code generation) [23], UWE (UML-based Web Engineering) [14], and HELENA (Handling massively distributed systems with ELaborate ENsemble Architectures) [9].

He managed and participated in EU projects of different type and challenges: Integrated Project (IP), Specific Targeted Research Project (STREP), Coordinated Action (CA) and Network of Excellence. Regarding personnel resources these projects funded the research activities from one PhD student to the work of more than 50 researchers belonging to a set of up to 18 partners. Martin cre-

ated consortia with impressive experts of the computer science community, such as Marco Dorigo, Joseph Sifakis, Ugo Montanari, and Franco Zambonelli.

In his projects, Martin has collaborated with people from an amazing number of places — over 60 cities in 18 countries all over Europe, as the impressive map in Figure 3 shows!

Fig. 3. Project Partners all over Europe

The first hurdle of every project is to get the proposal approved, which requires novelty and a perfectly written document. How did Martin achieve the high quality that characterized the proposals he submitted? On the one hand a sixth sense regarding the team and partners he selected to work with, together with the ability to describe how these project members would complement each other. He managed not only to convince the European commission, the proposal reviewers but also the future partners about the complementary skills of them. And it worked! On the other hand, Martin's proposal management style was open for discussion and suggestions but each decision had to be thoroughly founded. He personally revised every detail and spent many nights in the production of successful proposals. We as the writing team learned from his precise feedback

and new ideas about how to improve a proposal in long brainstorming meetings and several iterations. Very often these improvements took place during the last days and nights before the deadline!

Most of his proposals for EU funded projects were selected for the hearing in Brussels, where he was able to provide convincing arguments for getting the funding. We think he will remember quite well the ASCENS hearing presentation in Brussels, where some technical problems made him suffer a little bit. Hearing presentations are structured in a such a way that the presenter has assigned a fixed, very limited amount of time before questions start. The time Martin spent starting the notebook after it went off was counted as presentation time! The proposal was accepted anyway within the FP6 funding programme, the fourth in a row following Customer Care and Relationship Support Office (Caruso) [3], AGILE, and SENSORIA.

Successful proposals led to successful projects, most of them with the review mark "excellent" in each reporting period. On several occasions, EU project officers mentioned that the projects delivered results that went further than expected when compared to the description of work provided in the technical annexes. Successful projects led to follow-up projects such as in the case of the DFG-funded MAEWA I/MAEWA II [4] and PUMA/PUMA-2 [21], which allowed for interesting research results over many years in the field of model-driven web engineering, and program and model analysis.

Project meetings were characterized by Martin's constructive comments and strong recommendations to try to improve and integrate results as well as to promote collaboration among the teams and partners. He promoted cultural and culinary activities in conjunction with the project meetings and surprised us at every dinner speech with entirely unexpected relationships between the event location and project issues.

4 Promoting the future: PhDs, Habils, and Junior Professors

Martin's achievements are not limited to his direct scientific contributions. Under his supervision, a total of so far 27 doctoral theses and four habilitation theses were successfully completed at the university of Passau and at the Ludwig-Maximilians-University of Munich. Of these doctoral students, 13 have remained in academia, and 14 have entered industry or civil service. All of the habilitands have stayed in academia.

His ideas and vision therefore are not only continuously refined and pursued in research, but have a significant impact in industry as well, ranging from product-oriented software companies (such as Celonis GmbH), consulting and software solutions companies (such as NTT DATA), to even game developer studios (such as EA Digital Illusions CE). Martin's scientific offspring in research are also distributed over the globe. While most of them can be found working in Germany (11 out of 16), some of them are pursuing their research in the UK, in Greece, Denmark, Austria, and Australia.

The area of contributions of the theses completed under Martin's supervision is very varied. They range from purely theoretical contributions in the domain of coalgebras [19] to the exploration of hands-on application domains such as connected information management [22] and the application of theoretical results to entirely different domains such as physiological computing [25]. The variety of theses topics is extremely broad, and shows that Martin has remained open and curious over the years, regularly willing to embrace and work on new topics. He is always ready to listen and discuss research topic proposals, even risky or exotic ones.

Even though the research topics feature a great variety, their scientific contributions are always formally founded: Each of the theses includes a clear, deep, and sound mathematical section. This formal work is one of the main pillars required for the scientifically sound and methodological development of the thesis. The mathematical treatment of the topic to study helps students with the development of a clear language, making the underlying concepts graspable and workable.

Martin's exceptional network of top researchers within and outside of Europe benefits PhD students as well. Martin has been providing and still is providing unique collaboration opportunities with top researchers to his doctoral students, such as Carolyn Talcott and José Meseguer at the SRI in California, USA, Rocco De Nicola at the IMT in Lucca, Italy, Ugo Montanari in Pisa, Italy, and Stefan Jähnichen in Berlin, Germany. There are also many collaborations with researchers working with those mentioned.

Throughout the whole research and writing process that encompasses a thesis project, Martin is unanimously found to be supportive and respectful, even in difficult times, when teaching duties grow overhead or paper deadlines seem infeasible. Instead of applying pressure, he always stays supportive and constructive, and aims at bringing each of his students to their full potential.

5   The Social Framework: It's a group thing!

Martin was always placed great emphasis on a relaxed and social atmosphere in the PST group. Our meeting room — equipped with an industry-strength automatic coffee dispenser, lovingly maintained by Anton Fasching — saw many rounds of discussions on research topics, and the two white boards were interchangingly filled with math, UML diagrams, algorithm sketches, and even code. On special occasions, such as a PhD defense, the meeting room would be transformed into a party location, filled with the smell of *Leberkäs*, the clinking of champagne glasses, and cheers to whomever was the focus of the event. In winter, we always had an advent wreath provided my Mrs. Wirsing.

The climax of each year, though, were the hut seminars (*Doktorandenseminare*). On these occasions, we traveled to a hut deep within the Bavarian alps for three days of talks, discussions, and socializing in the evening.

The first hut seminar took place in 2001 at the Dr. Erich Berger Hütte in Wildschoenau, where we stayed until 2003. After a hiatus in 2004, the seminar

Fig. 4. Alte Tanneralm

was moved to Going (and the hut of the TV 1861 Ingolstadt), where it took place in 2004 and 2005. Since 2007, the location has been the *Alte Tanneralm* near Bayrischzell (Figure 4). Hard to get to, and even harder to leave (since the trail leads uphill), the hut was a perfect place for a retreat. Each year we took advantage of the location to go on a hike to one of the nearby mountains (with the Wendelstein being a popular choice in recent years).

The numbers of participants, semmeln, beer, and other drinks consumed fluctuated over the years. We can, however, empirically establish that the only thing rising in a monotone fashion is the amount of Marillenschnäppschen (Figure 5).

Due to the remote locations of the huts, each arrival felt like the *invasion of the geeks*: Power cables and strips were laid out, projectors installed, mobile Internet antennas positioned, and (since several huts coincided with world or European championships) terrestrial TV receiving technology set up. For our screen we used a white bed sheet — and in at least one case, the weather even permitted us to do talks outside!

However, the hut seminars were not the only time in the year when we got together for social events. Each year has also seen a *Sommerfest*, which between 1997 and 2007 alternately took place at Krögers' and Wirsings', and at Wirsings' after 2007 — with honorable exceptions in 2003 (Faschings') and 2010 (Hennickers'). Martin proved on these occasions that opening a beer barrel poses no difficulties for him. It was also great to see many former members of the PST group show up for a talk about the "good old times".

Winter in Munich can get quite cold, and there have even been known cases of snow! What better way to get into the mood for Christmas than by doing
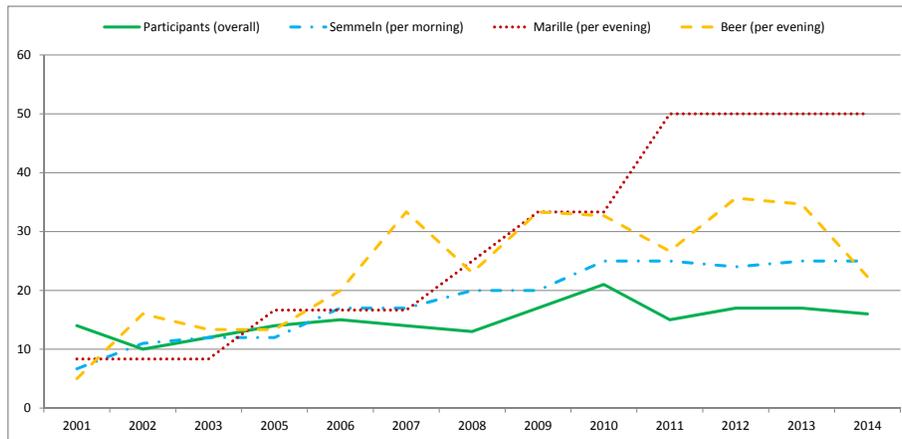
Fig. 5. Hut statistics

a hike in the snow-covered parks of Munich, concluded with a dinner at a nice Wirtshaus. These now-famous *PST winter hikes* started in 1999 with a tour through the snow-covered Nymphenburger Park, ending in a christmas coffee at the Metzgerwirt. Over the years, we have added such illustrious locations as the Aumeister, the Asam Schlössel, and the Emmeramsmühle to the list. Again, honorable exceptions from these hikes were a visit to *Kloster Fürstenfeld* in 2004, followed up by a party at Matthias Hölzls place, and going bowling in 2006 at *Bavaria Bowling*. Thus, we can honestly claim that PST social activities not only covered summer, spring and autumn, but the winter as well.

Many of the PST group members have become good friends in their private lives as well, or continued doing research together long after they left the group. We believe that Martin has succeeded in establishing an atmosphere of mutual respect, trust, and having fun at work which had an impact above and beyond the immediate working environment of the PST.

6   Closing Words

With these notoriously incomplete journey notes, we have tried to give some insights into the activities at PST in the last 24 years. So much going on! We leave it to other authors in this *Festschrift* to cover the deep plunges into the formal and technical side of things for us.

With our closing words, we would like to thank Martin for the great atmosphere he has created at the PST. We wish him every success in his continuing career and private life, and we look forward to more Marillenschnäpschen at the next hut, which we have been pleased to learn will indeed take place!

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