
DANTE e.V. 2015 meeting reports

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Editor's note: DANTE e.V. (www.dante.de), the German-speaking T_EX user group, holds regular meetings, both large and small. Stefan offered to report on two major ones this year, and we were pleased to accept, following his report on TUG'15. These were originally posted on latex-community.org by the author; edited for *TUGboat*, with permission.

DANTE spring meeting 2015

From April 16th to April 19th, 2015, the spring meeting of the DANTE e.V. took place at the University of Applied Sciences in Stralsund, Germany.

The director of the economic research institute opened the meeting with a few words, Herbert Voß then spoke for DANTE. We were sitting in a big lecture room, with WiFi and power sockets provided. There was another room for coffee breaks, where we could find delicious cake and nice talks at bar tables.

Dominik Wagenführ gave the first talk. He spoke about producing e-books in EPUB format from existing L^AT_EX documents. He showed several tools for conversion, such as `latex2rtf` and `tex4ht`. His conclusion was that existing conversion methods are not perfect, but it's doable with some manual effort.

Walter Entenmann followed with a presentation about T_EX and Perl working together. Perl is a very capable scripting language with particular strengths in string processing. He demonstrated a workflow where Perl works on a data set and generated a T_EX file, which is then processed by pdfL^AT_EX to produce a PDF file.

Martin Schröder spoke about T_EX in the third millennium. His presentation is nearly a tradition, as he has made similar talks during other meetings, and they develop as T_EX and friends develop.

Dominik Wagenführ ended the first day's session with a talk on his own template for job applications.

The evening meeting was in the Spanish restaurant Bodega at the new market place. I came a bit late and it was harder to find a place than in the lecture room. But I was lucky and arrived at a nice table with interesting talks. I bet the other tables would tell the same.

Shortly before 9 pm we challenged the restaurant by all paying at the same time, and went on a tour at 9 with a "nightwatchman" through the old town.

At the second day, we started at 9:15 with the formal meeting. It was opened by Herbert Voß. He went first to association internals such as revenues and expenses, elections, and a change in the rules of the user group. Then it presented DANTE's

participation in events such as open source meetings and in project funding. When we talked about projects, I briefly mentioned the T_EX projects I currently maintain, such as the T_EX Internet forums latex-community.org, texwelt.de and golatex.de, and we talked about possible support by DANTE for the server operation.

Martin Kraetke of the company le-tex started the afternoon program. He presented the program `docx2tex`, software to convert Word documents to L^AT_EX. It is a command-line tool that generates XML as an intermediate format and at the end also outputs a L^AT_EX document. Using a sample document, he demonstrated the functionality and came to a pretty good result.

Joachim Schrod discussed the state of CTAN and explained the services it provides. He also gave this presentation at this year's TUG meeting, and I wrote about it in the proceedings issue of *TUGboat*.

After a coffee break, Till Tantau presented his graphics package `TikZ`. This is the front-end for the graphics language PGF, which he developed over more than a decade. PGF stands for Portable Graphics Format. Impressively, it works with all T_EX engines (pdfT_EX, X_YL_AT_EX, LuaT_EX, ConT_EXt, T_EX in DVI mode), which allows for flexible usage. This is one reason for its success. The (also excellent) PSTricks package, on the other hand, has had a harder time since PDF output has become dominant and working via PostScript has been, for some users, still a hurdle. The other advantage, in my opinion, is the comfort of the graphics description languages at the front end. For the development of `TikZ`, Till Tantau received this year's honorary prize of DANTE e.V., together with the co-developers Vedran Miletic, Mark Wibrow and Joseph Wright.

Returning to Till's lecture, at first he showed that even the huge `TikZ` package with (today) 4080 files and an 1165-page manual started small: it originally came with 22 files and 27 pages of documentation. This was version 0.62. He wrote it to use for ten images in his doctoral thesis.

Then he showed some special points of his package. First, he demonstrated his passion for detail with arrowheads. With `TikZ`, they are adjustable in many ways, and can even automatically bend when an edge is bent. Then, he demonstrated the automatic generation of graphs: one defines some nodes and certain edges relationships, plus certain desired characteristics, then PGF/`TikZ` constructs a tree or a graph. It does this meeting requirements such as avoiding overlaps, having the fewest intersections, maximum symmetry, minimal variations of the edge lengths from a preset length, and minimal variance of

the angles. The result should have a pleasing appearance to the eye. And that's usually what we want: graphics for best visual understanding by humans.

The resulting graph can be determined in even more detail: it can take format specifications, be power-based by edges which work like springs and react to pressure and pull, nodes having charges that can repel, having important nodes with gravity, or magnetism with alignment tendency at certain lines. At the end, we would release those nodes and edges, wait and see what we may get as an equilibrium state according to our definitions. Sounds complicated, but it is a smart thing: we start with certain node relationships plus some meaningful internal properties, and *TikZ* delivers to us a useful graph which matches our logical specification.

Here, we combine three languages: \LaTeX for the document, *TikZ* for the graphics, and a DOT-like language for describing the graphics with an concise and powerful syntax. In addition, there's Lua for programming the underlying algorithms, as \TeX does not suit the job here. That's worth knowing, because we need to compile such graphs with $\text{Lua}(\LaTeX)$.

In the following discussion, Dominik wanted to know why the graph algorithms have been implemented in Lua, instead of using existing *GraphViz* libraries. They could be called externally. Till explained: the graph generation happens in the middle of the \TeX run, with sizes and node contents developing at runtime. It is quite difficult to generate C++ class objects for such external libraries, to pass them and then to process the results. Therefore, a direct implementation is a natural decision, and it avoids dependencies. $\text{Lua}\TeX$ is sufficient and already comes with \TeX . We don't have to get C++ libraries running on different systems.

One more interesting point: Till used a PDF shading function to generate a scalable Mandelbrot set image. It's unusual for PDF as a fairly rigid page description language to be able to calculate iteratively or recursively like PostScript. It's especially notable because by using a shading function he exploited a leak in PDF.

I was interested in what news we can expect in the near future for *TikZ*. Of course nobody can know for sure, as everything depends on time and interests, but Till Tantau showed clear interest in the use of SVG format as an additional output format. This format allows, for example, animations, and it is very portable. Modern web browsers can handle SVG.

The last presentation for the day was by Uwe Ziegenhagen. It was about the Org mode of emacs. This turns Emacs into a tool for outlining texts, for collecting notes, for creating todo lists and project

planning. It can output in various formats: \LaTeX , ODT, HTML and DocBook, for example. Uwe explained the installation and demonstrated the usage with a sample document. Finally, he explained how you can configure the export, for example, which \LaTeX packages should be used and which macros would be assigned.

After so much time in the lecture room, many of us chose not to take the bus but rather walked back from the university into the old town. That was a nice walk along the waterfront, taking almost an hour, with pleasantly sunny but cold weather. Again, it was a good opportunity to chat.

For the evening, there were tables booked in the Golden Lion restaurant in the Old Market. That was a short walk through the old town area, near our hotel. A soup was served at the table, then we could select from a very rich and very good buffet. We had good discussions, so the evening passed by quickly. After midnight, our remaining small group walked back to the hotel.

On the third day, Günther Partosch presented two talks. One was about making PDF documents following archival standards, and the additional work required. Such documents should survive changes in operating systems and technologies and should be reproducible in the same way on different systems. So, a basic requirement is embedding all fonts, images and color information in the file itself. He used the *hyperxmp* package for embedding metadata, and *hyperref* with the *pdfa* option to generate a (mostly) PDF/A compliant document. *glyphtounicode.tex* was used to map glyphs to Unicode characters, as required by PDF/A. Compression needs to be switched off.

In the second talk, he demonstrated how to generate a glossary, a list of acronyms and a list of symbols, all using the *glossaries* package. He did it using real code examples.

Doris Behrend showed us examples of school-work and exams of the last fifty years. We could see how aesthetics and aspirations developed over time.

Then there was barbecue at the campus. One more tourist highlight followed: a visit of the Ozeaneum Stralsund, a huge aquarium and sea museum.

With the interesting talks, the many chats in the breaks, and the outside program, the meeting was a great experience. Many thanks to DANTE and the organizers, especially to Christina Möller, Silke Krumrey, and the university of Stralsund.

DANTE autumn meeting 2015

DANTE's autumn meeting took place on Saturday, September 5th, 2015, at the Graz University of

Technology in Austria. Coming from Hamburg in northern Germany, I likely had the farthest journey, though it was pretty easy, as I could take a flight via Frankfurt to Graz. I must admit that it was not too difficult as I work for an airline.

At 9 am on Saturday morning, our president, Martin Sievers, started the meeting with introductory words. The local organizer Andreas Laer gave the initial welcome, and provided information about things beside the official program. We had the usual functional meeting time with talk about ongoing projects and all the things DANTE is involved with. As often happens, we had a short discussion about the usefulness nowadays of the T_EX Collection DVD. I understood that the consensus is to keep it. One factual reason is that the production is quite cheap. Furthermore, sending them to all members is easier than organizing who likes to get it and who does not. I suggested to add a simple suggestion to the cover letter: if you don't plan to use the DVD, give it as a present to friends or persons who would like to test T_EX. So it's also good for spreading the word, which probably would not be the case if it came on a USB drive. Besides that, there's an enormous cost difference in several thousand factory-made DVDs compared to USB drives. Personally, I appreciate having the DVD in the hand. I remember times travelling around without a good Internet connection, desperately searching in newsstands for computer magazines which might have a T_EX distribution included. I never found one at that time. There are many Linux versions on DVD in computer magazines, but I never saw a T_EX DVD or CD with a magazine.

Herbert Vo made the first presentation. He showed how to proceed from the commonly used pdfL^AT_EX to X_L^AT_EX and LuaL^AT_EX. Besides showing the few necessary steps, he demonstrated how to use the system fonts in Linux and Windows with L^AT_EX. A skeptical user asked, why change the engine, as there are already many high quality fonts available? Herbert's answer was clear: switching the engine and changing some lines in the preamble, which is well-documented, is much easier than integrating a new font into L^AT_EX. If a font lacks direct T_EX support, it can become difficult with pdfL^AT_EX. And there are occasions when you don't have a choice, such as when a university or company requires the use of a particular corporate typeface.

Martin Sievers followed with a talk about making historical-critical editions with L^AT_EX. He showed how to use the package (r)eledmac for this purpose.

Then we had lunch in a tavern nearby. The lunch and soft drinks were without charge; thanks

to DANTE, the budget allowed lunch and dinner free of charge for meeting attendees.

After lunch, I gave a short talk about discussion and support for L^AT_EX on Internet forums. We took a tour through some forums which I maintain, such as latex-community.org, TeXwelt.de, goLaTeX.de, and TeXnique.fr, the last of which was recently started with French T_EX friends. I demonstrated our fully automated method of adding L^AT_EX examples with output image and thumbnails, including compiling and Ghostscript conversions, to T_EX galleries, such as provided on TeXample.net and LaTeX-Cookbook.net. Following this, we had a talk about functionality and possible improvements and future plans. People were interested, as DANTE supports the server hardware which runs the forums. We spoke about data dumps of publicly accessible data, NNTP interfaces for the forum software. Furthermore, there were some interesting thoughts which could be programmed, such as a central dashboard serving several forums and sites with aggregated RSS feeds and a central panel for interested users, consolidated cross-site search, and further small improvements for convenience.

Herbert Vo then made a second presentation, this time about automated document generation. He discussed a shell script which collects weather data over time from a web site, inserts it into a L^AT_EX document, processes it with pdfL^AT_EX and copies it to a server for worldwide access.

The final talk was made by Doris Behrend. She provided an experience report about using L^AT_EX in a seminar at a secondary school. There, writing with L^AT_EX was compulsory. She talked about the challenges and results with L^AT_EX beginners at this level. There were interesting and good results shown. Of course, we cannot expect a high typographic aspiration of L^AT_EX beginners. I guess, for those people who mastered that seminar, using L^AT_EX at a university would be natural from the start.

In the evening, we met for dinner in the Glocklbrau tavern. Besides excellent spare ribs, they served an excellent local beer.

On Sunday, there was a bus excursion in the southern Styrian wine country. I did not attend since I had to return home, but I heard only good things.

Thanks to DANTE and to the sponsoring institutes of the TU Graz, especially to Andreas Laer, for organizing this great meeting.

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