

L_AT_EXpedia: the future of L_AT_EX documentation

Lapo Filippo Mori

Email mori@northwestern.edu
Website <http://www.lapomori.com/>
Address Evanston, IL

Abstract Software documentation is a very important success factor for open source software because it bolsters its diffusion. People who start learning L_AT_EX and even intermediate users often complain about L_AT_EX documentation: it is hard to find an updated, complete and well structured resource. This article evaluates advantages and disadvantages of the different sorts of resources for L_AT_EX documentation available and proposes a new kind of documentation source: a free-content, web-based encyclopedia, L_AT_EXpedia.

1 Introduction

Software documentation is very important, especially for open source software. It influences the way software circulates and is further developed, in one word its success. If the best software available has a weak documentation, people are not attracted to it and the number of developers remains small.

I am often asked for the best guide or book to learn L_AT_EX; since I am never able to give a unique answer, there might be a problem about L_AT_EX documentation and, if this is the case, a solution must be found. Being an administrator of the forum of G_UT (Gruppo Utilizzatori Italiani di T_EX) and the author of two guides [33, 34], I matured over the years a personal idea of the weaknesses and the strengths of the information sources available on L_AT_EX but up to now I had never come up with a solution.

In this paper I analyze what is now available and why it does not work to propose a new solution to this relevant problem: L_AT_EXpedia.

2 The problem

2.1 Too many resources

While working on the references of an intermediate guide on writing a thesis with \LaTeX [33, 34], I realized how many resources are available.¹ The beauty of \LaTeX , as other open source softwares, is that many people have written guides about it. For an advanced user this means that, whenever a new problem arises, he can rely on a huge literature and find the solution to the same or a similar problem in a few minutes. For a beginner this means that, besides the difficulties intrinsic in learning a new language, it is also difficult to find out good resources to learn from: an experienced eye can quickly understand if a guide is worth reading but to the beginner they all look the same.

2.2 Obsolescence

Not only are there too many resources, but they are in conflict too. Some of them were written several years ago and the information they provide is obsolete and in contrast with newer guides. \LaTeX , being an open source software, is constantly updated and dozens of new packages are written every year. Since there is little coordination between the people that develop the software, sometimes packages are in conflict between themselves (of course, in this scenario it is very important that guides are regularly updated).

How can a beginner know what the correct answer to a problem is if he cannot identify bad resources?

2.3 The need for a new type of resource

The real problem is that none of the available resources is perfect. To understand what we need and what we must avoid in devising a new kind of resource let's have a look at each type of existing ones.

1. See for example the references reported in par. 2.3.1 and 2.3.2.

2.3.1 Books

Books [3, 11, 18–21, 24, 25, 27–29] are an excellent starting point to learn L^AT_EX because they are meant to be complete. Unfortunately, beginners usually approach the new language reading the guides that are available for free on the net. Books are often bought by intermediate users: after they have learned the basics on a guide and found L^AT_EX suitable for their goals, they decide to study the subject more systematically and buy a book.

A book is usually written by just a few people and, usually being long, requires a big nominal effort (effort per author). As a consequence the time-to-market is at least one year and the number of new releases is usually very limited thus they are all bound to be obsolete before too long.

In theory a single book could become the only resource for L^AT_EX with a solution to all L^AT_EX problems. However, the number of authors must be small in order to avoid coordination problems and hence such a project would require years to be completed and by the time the project reaches the end, most of the material would already be outdated.

Suggestions for L^AT_EXpedia. The new resource type needs:

1. to **be free** so that it will be used by beginners;
2. **a lot of people** working on the project and also to **be released in parts before its completion** (otherwise the time to market is huge and obsolescence will kill most of the work done).

2.3.2 Guides

Among the resources, guides are by far the most numerous. Both generic guides for beginners [2, 16, 23, 37, 41, 43] and guides focused on specific topics are available on the net (tables [6, 8, 15, 35, 45], figures [8, 10, 26, 39, 45], fonts [7, 31], mathematics [1, 44], how to create a PDF file [38, 40], just to cite a few). These are the references that I usually suggest when people ask me; a quick search on the net would, however, provide many more [4, 5, 9, 12, 13, 17, 22, 30, 32, 36, 42, 46, 47].

Common features. As can be easily imagined, being so numerous, guides vary a lot in terms of content, style, length, and level of detail. However, they have some common features. Being shorter than a book, they either cover a lot of topics with few details or cover few topics with greater detail. This means that, unlike a book, it is unlikely that only one guide can cover all the information needed to work with L^AT_EX. On the other hand guides require a smaller nominal time effort than books (this is the main reason why they are so numerous). Like books, however, they have the tendency to become outdated.

Everyone uses L^AT_EX to do different things and it is unlikely that a guide written by a few people can deal with everyone else's problems. When I wrote a guide [33–35], I always emphasized the problems that I had found using L^AT_EX up to that point; some users encounter the same problems but many others have different needs and therefore the bigger the number of people who contribute to the guide, the better. However, it is very hard to manage the writing of many authors: coordination would take more effort than the writing itself.

Suggestions for L^AT_EXpedia. The new resource type needs:

1. to **cover many topics with enough detail** so that it can be used to learn L^AT_EX without the need of other resources.
2. to **be written by many people** so that it is more likely that many topics in different areas are covered.

2.3.3 Forums

Recently, as the use of the internet has increased, online forums have become very popular. As far as regards L^AT_EX, the Usenet's L^AT_EX group², the texhax mailinglist³, and G_UI_T's forum⁴ need to be mentioned.

Bad news. When the number of skilled users is high enough, the answer to a topic is usually very quick and the forum works like a help center. The main problem of forums is that skilled L^AT_EX users usually spend most of their time

2. <http://groups.google.com/group/comp.text.tex>

3. <http://www.tug.org/pipermail/texhax/>

4. <http://guit.sssup.it/phpbb/index.php>

answering to basic questions that often have already been answered in a similar topic. The staff of GJIT's forum has defined some conduct rules (*netiquette*) to change this trend. Despite a good search engine and a database of over two thousand topics, new users continue to ask the same questions and the administrators continue to refer them to existing topics or, even worse, to give the same answers.

When a problem has already been addressed, people are redirected to previous topics. Unfortunately, often the answer is not found in one old topic but is spread over a few of them.

Another problem of forums is that the information can be huge but is not structured. This is in my opinion the major drawback of forums: they cannot be used as a learning tool because the information is so spread that it would take more time to find the topics of interest than to study them.

Good news. On the other hand, a forum is probably the most up-to-date source of information since users can comment on new packages and new features almost in real time: each user can create a new topic in just a few minutes and it is readily available to the whole community.

Another unique feature of forums is that users usually get involved and participate in the production of knowledge. When a user finds a forum helpful, he is likely to help other users in the future. In this way knowledge is not created by a few experienced people but by an ever increasing basis. Of course skilled users, who are usually administrators, make sure that the information provided by the others is correct.

Suggestions for L^AT_EXpedia. The new resource type needs:

1. to **let intermediate users contribute** to the development of the project otherwise the growth is too slow and the experts spend their time in low level activities instead of in coordination.
2. to **be structured** so that it can be used by beginners and intermediate users to learn.

2.3.4 FAQ lists

Numerous FAQ (Frequently Asked Questions) lists are available on the net. They contain a certain number of questions that can arise while using L^AT_EX and the

corresponding solutions. Usually the material is not structured and so it can hardly be used by a beginner who needs to be guided through the new subject. FAQs are usually developed according to the feedback from the users; however the number of people that maintains the list is usually small and so it grows and is updated slowly; the main drawback of a FAQ, as opposed to a forum, is that the user cannot ask directly a question and the feedback process is much slower.

Among \LaTeX FAQs, the “UK List of \TeX Frequently Asked Questions” should be mentioned. It is maintained by the UK TUG and it is available both as HTML⁵ and PDF [14]. It contains a lot of information, it is somewhat structured, and it is updated regularly. Besides these merits, it cannot be used by a beginner and its update process is much slower than a forum.

Suggestions for \LaTeX pedia. The new resource type needs:

1. to **be updated quickly** based on the feedback of its users;
2. to **be well structured** as a book so that it can either be used to find a particular topic (like a FAQ or a forum) or read from the beginning to the end (like a book or a guide);
3. to **be available both in HTML and PDF**.

3 The solution

The solution is an encyclopedia about \LaTeX based on a Wiki engine⁶ to which anyone can contribute; the natural name for the project is then \LaTeX pedia.

The idea of an encyclopedia about \LaTeX is not new. Denis Roegel created “ \LaTeX Navigator: A \LaTeX Encyclopedia”⁷ which is hosted by LORIA.⁸ However here we propose to go much further: we propose to follow the Wikipedia example.

Wikipedia⁹ is a multilingual, Web-based, free-content encyclopedia project that was launched on January 2001 by Larry Sanger and Jimmy Wales. Wikipedia

5. <http://www.tex.ac.uk/cgi-bin/textfaq2html>

6. http://en.wikipedia.org/wiki/Wiki_software

7. <http://tex.loria.fr/index.html>

8. Laboratoire Lorrain de Recherche en Informatique et ses Applications.

9. <http://www.wikipedia.org/>

was thought to be the complement to the expert-written and now defunct Nupedia¹⁰. Nupedia died because it was written only by a few number of experts (many orders of magnitude smaller than the number of participants in the mature stages of Wikipedia) and because the review process of each article was very complicated: these two key aspects made the growth of the encyclopedia be too slow. Wikipedia uses a markup engine¹¹ that allows to write mathematics with the syntax of \LaTeX : this would certainly help authors to provide examples. Possibly this could also be used to automatically convert the whole encyclopedia into a \LaTeX file and from there periodically release a PDF version of \LaTeX pedia.

For sure building an encyclopedia takes a lot of effort, but also the maintenance of a forum requires a lot of work from the administrators. This work would certainly be a better investment if spent in a long lasting, far reaching, and readily available project like \LaTeX pedia.

3.1 Advantages

\LaTeX pedia incorporates the advantages of each resource type and introduces new ones. Let's recall the the ten most interesting ones:

1. **The number of people that contribute is unlimited.** Wikipedia experience teaches us that often users who benefit from the encyclopedia contribute to the project and so the number of people working on it is increasing all the time.
2. **The variety of discussed topics is enormous.** Unlike any other resource (except forums), the number of users contributing to \LaTeX pedia is expected to be huge and each of them can bring up the problems found in his \LaTeX user experience. On the other hand, when the number of authors is small, the content of the resource cannot cover every possible application of \LaTeX .
3. **The work is distributed between users with different skills.** All other resources are developed only by skilled and experienced users, while intermediate and beginners only benefit from their work. With \LaTeX pedia everyone can contribute and hence experts can focus their effort in revising

10. <http://en.wikipedia.org/wiki/Nupedia>

11. [http://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style_\(mathematics\)](http://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style_(mathematics)) and <http://meta.wikimedia.org/wiki/Help:Formula>

the work done by others and in giving to project a well thought structure. A better distribution of effort makes the project grow much faster.

4. **Access to the project is free.** Despite the fact that L^AT_EXpedia is as complete as a book (or more), it is free and hence it is attractive even for the very beginners.
5. **A powerful search engine helps to find topics.** As in a forum, if a user is looking for a particular topic, he can use a search engine.
6. **The project is well structured.** Like a book or a guide and unlike a forum or a FAQ list, it can be read from the beginning to the end which is particularly useful for beginners. This is also helpful when an intermediate user is looking for the solution to a particular problem: if he does not know the exact topic, he would have hard time to find it with a search engine but the structure of L^AT_EXpedia can help him understand what he is looking for.
7. **The documentation becomes immediately available.** All other resources (except forums) require a certain amount of time between the beginning of the writing and the release of the first edition (from slowest to fastest books, guides, FAQ lists). In this project the material would be immediately available to the public, avoiding the risk of obsolescence. This is possible because the new material is released as soon as is produced.
8. **The project development is continuous.** As opposed to books and guides, L^AT_EXpedia project is supposed to continue as long as L^AT_EX and its packages are developed.
9. **The revision process is quick.** The revision process, done by both expert and intermediate users, is quick because everyone can operate independently whenever he has time to dedicate to the project.
10. **Both HTML and PDF versions of the project are available.** While the HTML version is updated in real time, a PDF version can be released periodically. This follows the successful example of the “UK List of T_EX Frequently Asked Questions”.

3.2 Theory into practice

3.2.1 With a forum

Since many TUGs have their own forums, they could be used to develop L^AT_EXpedia. Let me briefly explain how a forum works and how this could be adapted to develop the encyclopedia.

When a user opens a new topic on a forum and asks a question that has already been answered somewhere on the forum, the administrators or other user give him the link to the previous topic. Often the previous topic partially answers the new question and so new pieces of information are added to the previous topic. On the other hand, if the problem is new, a new discussion begins.

This scheme can be slightly modified to help the creation of an encyclopedia. When a user has a problem, he explains it on the forum. If the solution is available in L^AT_EXpedia, the administrators write the link to the relative page in the encyclopedia and close the topic. On the other hand, if the problem is new or is not completely solved in L^AT_EXpedia, the discussion on the forum goes on. When the user obtains the solution, he creates a page of L^AT_EXpedia with the description of the problem and its solution (or adds the new information to an existing page closely related to the topic). Then the administrators move the topic to a section of the forum with all the solved problems and place there a link to L^AT_EXpedia. In the mean time they also make sure that the page of L^AT_EXpedia contains the correct information and is placed in the right section (i.e. it follows the structure of the project). In this way, the user that obtains help on the forum repays the community by explaining the solution on the encyclopedia and adding examples. L^AT_EXpedia is the only documentation resource to which even beginners could contribute with valuable work.

3.2.2 Without a forum

Although the fact that a forum can speed up the process, L^AT_EXpedia can be developed also without one. When a user cannot find the solution to a problem on the encyclopedia, he creates a new page where he explains the topic. The users who know the solution modify that page by providing an example. The experts verify that the solution is correct and place the page in the right section of L^AT_EXpedia.

3.2.3 Structure of the encyclopedia

Probably the biggest challenge of this project will be to organize the contents in a well ordered structure (item 6 in par. 3.1). To address this issue it is necessary to create a group of editors that will discuss how to organize the topics during the whole life of the project. On this aspect, L^AT_EXpedia is similar to L^AT_EXbooks from which the editors can take inspiration, at least in the early stages. Of course, in the long term, the number of topics covered by the encyclopedia will be by far higher than those covered by any book and the editing process will be even more challenging. However, although the number of topics may be huge, they can be easily subdivided into a few main categories; [14] is a good example on this aspect.

4 Conclusions

One of the appealing features of Wikipedia is its multilingual nature. Articles are continuously translated from one language to another so that the growth rate of pages in each language is always increasing. L^AT_EX is already a multilingual project with hundreds of T_EX User Groups spread all over the world. The development of L^AT_EXpedia would certainly benefit from the collaboration between the TUGs and at the same time the connection between the TUGs would benefit from working on a common project. For all these reasons I would like to finish by inviting the other TUGs to join G_JIT in this new adventure.

Acknowledgments

I would like to thank all the G_JIT members who have contributed to develop this idea and have volunteered to realize it, especially Sandro Allemanni, Daniele Avitabile, Gustavo Cevolani, Massimiliano Dominici, Maurizio Himmelmann, and Emiliano Vavassori.

References

- [1] American Mathematical Society. *AMS-L^AT_EX User's Guide*, 1995. www.dd.chalmers.se/latex/Docs/PDF/amsl.doc.pdf.
- [2] M. Baudoin. *Impara L^AT_EX (...e mettilo da parte)*, 1998. http://www.mat.uniroma1.it/centro-calcolo/manuali/impara_latex.pdf.
- [3] C. Beccari. *L^AT_EX, Guida a un sistema di editoria elettronica*. Hoepli, 1991.
- [4] D. Caon. *L^AT_EX: manuale di base*, 2003. www.guit.sssup.it/downloads/man_base.pdf.
- [5] L. Carusillo. *L^AT_EX*, 2004.
- [6] L. Carusillo. *Le tabelle in L^AT_EX*, 2005. <http://www.webalice.it/lgrsll/pgl/latex/Tabelle.pdf.tar.gz>.
- [7] L. Carusillo. *I caratteri in L^AT_EX*, 2006.
- [8] L. Caucci and M. Spadaccini. *Gestione di Figure e Tabelle con L^AT_EX*, 2005. http://www.guit.sssup.it/downloads/fig_tut.pdf.
- [9] R. Cecchini. *Guida locale all'uso del L^AT_EX*, 1996. www.fi.infn.it/pub/tex/doc/latexu.pdf.
- [10] P. W. Daly. *Graphics and Colour with L^AT_EX*, 1998. <http://tex.loria.fr/graph-pack/grf/grf.pdf>.
- [11] A. Diller. *L^AT_EX Line by Line: Tips and Techniques for Document Processing*. John Wiley & Sons, 1999.
- [12] D. Dowty. *Introductory L^AT_EX Tutorial*, 2002. www.ling.ohio-state.edu/events/lcc/tutorials/intro-latex.pdf.
- [13] Electronic Publishing Unit. *Beginner's L^AT_EX*. UCC Computer Centre, 2001. 158.110.32.35/LATEX/beginlatex.pdf.
- [14] R. Fairbairns. *The UK T_EX FAQ*, 2005. <http://www.ctan.org/tex-archive/help/uk-tex-faq/letterfaq.tex>.

- [15] S. Fear. *Publication quality tables in L^AT_EX*, 2005. <http://www.ctan.org/tex-archive/macros/latex/contrib/booktabs/booktabs.pdf>.
- [16] P. Flynn. *A beginner's introduction to typesetting with L^AT_EX*, 2005. <http://www.tug.org/tex-archive/info/beginlatex/>.
- [17] G. Gonzato. *L^AT_EX for Word Processor Users*, 2003. tug.ctan.org/tex-archive/info/latex4wp/latex4wp.pdf.
- [18] M. Goossens, F. Mittelbach, and A. Samarin. *The L^AT_EX Companion*. Addison-Wesley, 1995.
- [19] M. Goossens, S. Rahtz, and F. Mittelbach. *The L^AT_EX Graphics Companion: Illustrating Documents with T_EX and PostScript*. Addison-Wesley, 1997.
- [20] G. Grätzer. *First Steps in L^AT_EX*. Springer Verlag, 1999.
- [21] G. Grätzer. *Math into L^AT_EX*. Birkhauser, 2000.
- [22] H. J. Greenberg. *A Simplified Introduction to L^AT_EX*, 2006. www.cs.usask.ca/~wew036/latex/simplified-intro/latex.pdf.
- [23] E. Gregorio. *L^AT_EX: Breve guida ai pacchetti di uso più comune*, 2006. profs.sci.univr.it/~gregorio/breveguida.pdf.
- [24] J. Hahn. *L^AT_EX for Everyone: A Reference Guide and Tutorial for Typesetting Documents Using a Computer*. Prentice Hall, 1993.
- [25] D. J. Higham and D. F. Griffiths. *Learning L^AT_EX*. Society for Industrial and Applied Mathematics, 1997.
- [26] I. Hutchinson. *Graphics for Inclusion in Electronic Documents*, 2005. silas.psfc.mit.edu/elec_fig/elec_figures.pdf.
- [27] D. Knuth. *The T_EXbook*. Addison-Wesley, 1992.
- [28] H. Kopka and P. W. Daly. *A Guide to L^AT_EX – Tools and Techniques for Computer Typesetting*. Addison-Wesley, fourth edition, 2003.
- [29] L. Lamport. *L^AT_EX: A Document Preparation System, User's Guide and Reference Manual*. Addison-Wesley, 1994.

- [30] L. Lamport. *L^AT_EX_{2 ϵ} : The macro package for T_EX*, 1994.
- [31] P. Lehman. *The Font Installation Guide*, 2004. <http://www.ctan.org/tex-archive/info/Typefonts/fontinstallationguide/fontinstallationguide.pdf>.
- [32] T. Love. *Advanced L^AT_EX*, 1997. people.csail.mit.edu/custo/FTP/latex_tutorial.pdf.
- [33] L. F. Mori. Scrivere la tesi di laurea con L^AT_EX_{2 ϵ} . In *Proceedings del G_JIrmeeting 2005*, pages 69–92, Pisa, Italy, 22nd October 2005. G_JIr (Italian T_EX Users Group). www.guit.sssup.it/guitmeeting/2005/articoli/mori.pdf.
- [34] L. F. Mori. Scrivere la tesi di laurea con L^AT_EX_{2 ϵ} . *Ars T_EXnica*, (3), March 2007.
- [35] L. F. Mori. Tables in L^AT_EX_{2 ϵ} : packages and methods. *The PracT_EX Journal*, (4):?, February 2007.
- [36] R. Murri. *Introduzione a L^AT_EX: Scrivere in L^AT_EX con teT_EX ed Emacs su GNU/Linux*, 2000. <http://poisson.phc.unipi.it/~battiston/murripublichtml/lpratico/lpratico.pdf>.
- [37] T. Oetiker, H. Partl, I. Hyna, and E. Schlegl. *The Not So Short Introduction to L^AT_EX_{2 ϵ}* , 2006. www.ctan.org/tex-archive/info/lshort/english/lshort.pdf.
- [38] M. Pratesi, M. Latini, and M. Antonecchia. *L^AT_EX–PDF–Howto*, 2003. <http://www.telug.it/marco/LaTeX-PDF-HOWTO/LaTeX-PDF-HOWTO-1.1.1.pdf>.
- [39] K. Reckdahl. *Using Imported Graphics in L^AT_EX_{2 ϵ}* , 1997. <http://www.ctan.org/tex-archive/info/epslatex.pdf>.
- [40] N. Talbot. *Creating a PDF document using PDFL^AT_EX*, 2004. <http://theoval.cmp.uea.ac.uk/~nlct/latex/pdfdoc/pdfdoc-a4.pdf>.
- [41] The Tutorial Team. *On-line Tutorial on L^AT_EX*. Indian T_EX Users Group, 2000. <http://www.tug.org.in/tutorials.html>.
- [42] E. Tonti. *Il L^AT_EX mediante esempi*, 1998. www.dic.univ.trieste.it/perspage/tonti/MANUALI/latex.pdf.

- [43] M. Trettin and J. Fenn. *An essential guide to L^AT_EX₂ ϵ usage: Obsolete commands and packages*, 2006. <http://www.ctan.org/tex-archive/info/l2tabu/english/l2tabuen.pdf>.
- [44] H. Voß. *Mathmode*, 2003. www.ctan.org/tex-archive/info/math/voss/mathmode/Mathmode.pdf.
- [45] H. Voß. *Rotating Text, Tabulars and Images*, 2003. <http://perce.de/LaTeX/rotating.pdf>.
- [46] J. Warbrick. *Essential L^AT_EX*, 2002. www.sci.usq.edu.au/staff/robertsa/LaTeX/Others/essential.pdf.
- [47] D. R. Wilkins. *Getting Started with L^AT_EX*, 1995. www.copernicus.org/guidelines/GSWLaTeX.pdf.