Interview with John Hammersley

John Hammersley, Paulo Ney de Souza

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Paulo Ney de Souza (PN): Hello everyone, good morning or good afternoon, John.

I'd like to introduce you all to John Hammersley. He's a founder and CEO of Overleaf. I'd like also to invite all of you for a conversation. Overleaf is new to most of us that have used TEX in other forms, in other ways, and so you're welcome to join and make this interview a joint conversation with everybody.

The first thing I'd like to say is that Overleaf is a financial supporter of the TUG conference. They don't have any editorial relation to us and John has not seen any of the questions that I'm going to ask him here today. Is that correct, John?

John Hammersley (JH): That's correct, yes. I'm flying blind!

PN: So, welcome to our conference and hope you can join us here in the future.

I'd like to ask you first, how did you get interested in TEX? Was it through mathematics, was it through something else?

JH: Yeah, yeah, so I did a mathematics and physics undergrad degree, and that was where I first came across TEX. I think we used it for one of our group projects in like the third or fourth year. And that was kind of how I first came across LATEX. At the time it was just a nice, ... I think someone else had used it, and so we just used it. It was just a nice way to write up the reports that we were doing, and I didn't really think much more of it in a way. But then I did go on to do a PhD in mathematics at Durham in the UK, and it's you know, what everyone uses in mathematics, and so I used it for my papers and thesis and it was very much just [something I] picked up. I installed MiKTEX, got going; my supervisor I think probably shared some files, and so I had some templates to go on and stuff, and I used LATEX for writing my papers. I liked it, and I did my CV in it as well then, after deciding to leave academia.

I had used it for things slightly outside of papers, and I was lucky enough to go into a job then, working for a company that was working on driverless taxis, where we were in a research group. The company itself had spun out of the University of Bristol's engineering mathematics department and so again, we were still using LATEX internally and... I'm running ahead in a way, that's kind of where Overleaf came out of, that research group.

So essentially I got into it at university :)

PN: So you *were* involved with other technology projects before Overleaf?

JH: Yes, I guess in terms of my career as it were. So I left after my PhD and decided that I kind of wanted to move into industry because I just, I didn't really feel like staying in academia. I felt there were lots of people doing really great stuff in academia and so many papers coming out. I guess I didn't feel like I could maybe make much of a difference there. And so my now-wife was moving to Bath in the UK to do a teacher training course, so I moved with her and looked for jobs in the area. And there was this company doing driverless taxis, and they were building the world's first system at Heathrow Airport, and...

I see someone spotted the LEGO sets in the background; I guess I'll get on to that in a second.

But yes, so I was working at this company doing driverless taxis, and it was in a way before driverless cars became cool! It was a few years ago, and the group there, we were doing a lot of research into empty vehicle management. There was a lot of queueing theory involved in vehicle redistribution and how you in a network make sure that you don't have a surplus of empty vehicles where you don't need them, and how can reroute them as needed without making too many trips, because a lot of the ideas behind driverless vehicles was to minimize wasted journeys, and try and optimize the network and things. So we were doing a lot of research and publishing it, and actually, we were starting to work... so, when I'd written my papers at uni, I was just working either with myself or with other mathematicians, and so everyone knew LATEX at a reasonable level, whereas we were now writing papers with people from other fields and other disciplines that were more used to Word and also writing for conferences or for journals where Word was the requirement to submit. You

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know there perhaps wasn't an opportunity to submit in LaTeX and, and so we were then both, like I say, trying to work with people who hadn't used LaTeX before, and I think as we all know, if you email someone a LaTeX file and they've not used it before, there's quite a barrier then, for them to be able to collaborate, and so that was really, I think, where the original motivation for WriteLaTeX, as we were called back then, came from. And it was [built by] John Lees-Miller; he is far more a programmer than I am. We're both mathematicians by background, but John is a computer scientist as well, and a systems engineer, and he — over one weekend — developed the prototype for WriteLaTeX.

[It came about] basically because Etherpad had recently come out and we were using it, and Etherpad was this great way to collaboratively write notes. And we'd actually used it for writing LaTeX documents, but the problem was you couldn't compile it, and so you had to then take it to... you know, move it locally to do a compile, and so really the first version of WriteLaTeX was taking that idea of just a collaborative notebook and adding a button to compile a PDF. And then things obviously grew on and out from there.

I guess I might just take a tangent to pick up on Sam's [samcarter] comment in the chat about LEGO sets, just because, you know, I do quite like having this background [leans to show shelves], and clearly... [waves hand at camera] the resolution is good enough that you can see lots of classic space LEGO. You can see classic space LEGO there as well, and some M-Tron and Blacktron and bits and bobs around. You can't see over there, where there's Star Wars LEGO and many other things. I blame lockdown for this!

PN: Wow!

JH: And then going over to my parents' house and digging up my old LEGO sets, and then coupled with eBay, which is a source of cheap old LEGO :) ... errm, this room is a tip... I could try and turn the camera a bit without breaking things. Let me see if we can show it over there. [Moves camera.] So you've got the Death Star up at the top, the International Space Station and the Saturn V, that's about it, loads of LEGO up there...

PN: You're a hardcore technologist.

JH: Something like that. I mean, I guess. You probably saw the Saturn V. I think it was actually the space race that got me into science and innovation and stuff because it happens that my sister was born on the day that Neil Armstrong and Buzz Aldrin set foot on the moon. And so, every year, obviously with my sister's birthday, we also have the anecdotes in the family that it was the same day, you know back in 1969 when man first set foot on the moon. So growing up, I was very much into space and space exploration. And we got to go, luckily, with my parents we took a trip over to Cape Canaveral and saw the Kennedy Space Center, and saw the, you know, they've got a Saturn V rocket on its side, I think, or part of the section. Yeah, we should definitely have a LEGO Ti*k*ZLEGOs package... I think that's an excellent idea.

PN: [laughs] Don't give ideas to samcarter or she'll get to work!

JH: Yeah, I grew up being interested in technology in general and, and I think the idea, like the pioneering nature of what they've done on the space race. I think that's one reason why working on driverless cars was quite attractive after uni, because it really felt like it was something that was, yeah, like something that could change the world.

And then actually, with the WriteLaTeX prototype, one day John Lees-Miller came round and we were chatting and he was saying, you know, people are using WriteLaTeX, it's starting to cost a bit of money with the servers, and so maybe we, maybe it would be a good idea if we looked at it more seriously and decide whether we could turn this into something. Neither of us had kids at that point, and so we could actually consider doing a startup and consider doing this crazy thing of quitting our jobs, you know, on driverless taxis and working on LaTeX stuff full time, at least for a bit. And yeah... I've always been interested in new things, not in the "oh, it's shiny and new" sense, but [in the pioneering sense]. I've got a book on my desk, the recent one *Liftoff*, about SpaceX, and what they've been doing, which is amazing, and I think it's amazing, all of this inspirational stuff that's happening right now.

PN: So that was about, what was that, about ten years ago, John, when you guys got out of driverless taxis?

JH: Yeah, it was about eight or nine or ten years ago, yeah, I think the very first prototypes that John put together were in late 2011, and then 2012, late 2012, is when me and him decided to quit our jobs at the time, and go for it full time. Yeah, I know. Crazy! I feel like it makes me start to feel old now. Ten years ago.

PN: So, your other job now is kids; you guys have kids now. How do you, how do you balance those

two things you know, pre-pandemic, post-pandemic, if there will ever be a time, how do you find time?

JH: Yeah, I mean, I mean I love... So I've got two daughters, Julia, who's five and three-quarters, and Annabelle, who's three and three-quarters, and obviously, the three-quarters is quite important when you're in single digits, and... I've found it amazing! First of all, I think we never would have started WriteLaTeX if we had young children around. I think... it would have seemed like a crazy idea! So I think it was good that we started WriteLaTeX, which is now Overleaf, [when we did]. And in many ways that has been described as like the first child, in a sense, because you are looking after this startup in many ways in a similar way to a kid, and it's very dependent on you in its early days: it needs looking after, it needs a lot of attention. So now having had kids, I can see that the amount of hours that John and I put into WriteLaTeX in the early days — it's not in the same way like kids — but you certainly have to have that time free to dedicate to it. But no, overall I think it's been brilliant.

I mean, hey, it's given me a legitimate reason to have LEGO all around the house, um, because you know, kids like LEGO! That's, that's why we have LEGO there! And [with the] pandemic, I think that we're lucky in that our kids are young enough, and John's is young as well, in that they didn't really notice so much. They have a bit, but they're too young to... Secondary school kids I think have had it much harder in sense of not being at school and things, whereas, yeah, we were okay, and with Liz being... Liz, my wife, is a teacher, was previously a teacher, and so when it came to homeschooling, we did all right there as well, because Liz was able to pick that up.

PN: Cool, cool, cool. So I guess you know when I, when I... If you could switch a little bit to Overleaf and some technical things. When people look at it, they see a lot of different things. I mean the ability to work with it, without having to do installations, the ability to work everywhere, the ability to share a file with somebody or even a large group all over the world is just superb. Somebody's seen that, we've been looking for this everywhere over the last, you know, 30 years. You know, I guess, since webdev started in the mid '90s, people start sharing LaTeX files and doing development together and so forth. This is just great that this now has formed into a solid solution for all of us.

But then there's a couple of things that people don't see right away, and I was recently shown, told by people, how much they like that. One of them is the automated processing. The automated processing is just like fantastic, you don't have to worry about what kind of indexes you are using, how you're post-processing them, or if you're using BibTeX, or if you're using `biblatex`, or if this paper is in this framework or this other paper in this framework, and everything. It's taking care for you. I think that can make, I mean, that has made a few of my co-authors lazy. [Laughs.] They no longer take care of their own indexes, and so forth. They just wait for the thing to be ready for them. The other one is one that I have met about four years ago, which is a continuous submission process into a journal, in which ways, you can not just submit, but you can let the author work with you as it's going through the processing within the journal production, as it's going through the book production. And they just love that and my question is, how much up the sleeve you have? What are we going to see?

It's this many features. I mean mathematicians are waking up now to the fact that, that they can do submissions via Overleaf and they're just discovering that. You know 99% of the mathematicians you talk about there, you talk with them and they don't know about that feature, they don't know about the journals which are in and the journals which are not in yet. But tell us, what's coming our way.

JH: Yeah. So that's great, and it's a great lead-in to things, and I think... taking it back to the main benefits, certainly the one that it was built for was collaboration, and actually lowering the barrier by meaning you didn't have to install anything was a slight byproduct of that. The main reason for us to use it was to collaborate, but then, of course, as soon as it's there as an online compiler... if you are a student who's just been told, "we need to use LaTeX", and you search for trying to install LaTeX, [but find] you can just try it out in the browser without installing; for a lot of students who are very new to it, I think that really let them try it out for the first time, and I think that's what having an online, accessible through the browser, TeX compiler has done: it's just meant that people who have never used this before can immediately see the results.

I think we've done a lot to try and lower the barriers for new users while still keeping... I'll say the full power of LaTeX — it's not, clearly there are things you can't do on Overleaf — but it's still a LaTeX editor, so you can edit the full source and everything. It's very much focused on providing a really great LaTeX editor as far as we can, within the boundaries of what we can do with online compiling.

There's hundreds and hundreds of things on the

wish list. Overleaf's usage has grown, and quite a lot of time is spent on just maintaining that level of service and trying to keep improving it. We did the big integration with ShareLaTeX a few years ago now. I think that was one where we tried to definitely keep it as smooth as possible for the users who are using both platforms, the original Overleaf and the new [to us] ShareLaTeX, and tried to make that merge happen with the minimum number of road bumps for the users, which has meant that behind the scenes we've had to do quite a bit of cleaning up work then to tidy up the systems, and to make it all, bring it all back together again into something that we can take on.

I think we've got a few things that we were trying to do, I guess, picking up on the question of publishers. A few years ago we have put a lot of effort in with various publishers, and I don't think we actually got as far as we hoped. I think we had hoped that by this point, we would have a... you know, you submit to a journal, and then editors and reviewers can then leave comments, or propose changes, or however, depending on the journal and the particular sort of process, and then take it all the way through. And then the journal could then take the LaTeX on, or could run the LaTeX through an XML compiler and get the XML out for the website, and we ran into some challenges there; it's just that it is a very complicated process and all the different journals use a lot of different systems. And also, you know, most journals accept LaTeX, and Word, and so are looking ideally for a solution which works for both, and I think for us as being very focused on the LaTeX world it was then difficult to take it all that way. So where we got to with a lot of them is trying to help make sure the templates that they had, their LaTeX templates, were up to date and trying to provide a good way for authors to get going and then just trying to make sure authors had the files they needed to take into the submission systems.

I think we've done a few notable exceptions where it did work really nicely; the best integration we had for a long time was with F1000Research, where their editorial team did leave comments and track changes for the authors in Overleaf, who then could come in and accept those or make further changes and then could go through that editorial process as needed. And even that integration was a very early one, it was one of the first ones we did I think, and even with that there are many things we could have improved on it. So, I think with the publishing world, where we've struggled a bit is trying not to add an extra complication, not somehow make the workflow more complicated in a route to making it less complicated! And so, now, we generally focus on trying to make it as easy as possible on the authoring side and then on the submitting side. There was a talk from Heinrich [Stamerjohanns] earlier on, who talked about the LaTeX to XML conversion that we looked into as well, and again, ideally it was something that we were hoping to incorporate into Overleaf so you could hit a button and get an XML output, as well as getting the PDF output. I think we made a lot of progress, and Heinrich has made a lot of progress there with that, and obviously [others have] with LaTeXML as well, and all of the other work in the ecosystem that's improved out there... [but] again it's still something that we haven't quite worked out how it best fits in, in a way.

One of the challenges we have sometimes is that Overleaf is being used by a lot of people for a lot of different things, and in the publishing world getting the XML output out is useful, and it's useful in certain workflows. For others of our users, let's say students writing group projects, they have no need for the XML and it's something that's almost unnecessary. So we have to try — with the development team and the product team that we have — to work out where can we try and add the most value to the most users, or which bugs do we need to prioritize fixing, or how do we keep Overleaf up to date with the new TeX Live releases that come out, and the new developments there.

I see there's a question in the chat about "why is there is still no Overleaf app for mobile devices?", and this is a good question because we've already looked at this.

PN: I'd like to precede that question which, with a preamble... it's a question that I have asked the other two interviewees in this conference.

Right now, Overleaf is the only decent TeX that we can run on just about 80% of machines out there in the world. And a lot of people say, I do not need to run LaTeX on my car player, or my car dash, or whatever, but there are a lot of very powerful tablets which are straightly replacing desktops right now, and Chrome OS is the dominant operating system distributed in the world right now, and the only way that we have to achieve a decent and complete distribution of LaTeX is with Overleaf.

I even go as far as saying that it's important for me to have it on my phone. Sometimes I am at, not during the pandemic, but with people and that the only thing I have in my hands is my phone and I wanted to be able to share a result, to be able to share a display of a PDF that has been just produced by Overleaf. And I think that's very important, but

the problem is, the controls of a web browser within a phone are very difficult, so when are these apps coming? Are these apps ever coming?

JH: That's a great question. I think we first looked into doing an app probably in 2013 [laughs], which is a long time ago now, it was in the first years that we were really getting going. I think for a long time, for a good few years, because tablets were used, and people would use the browser... really it became a question of, for an app, there's two use cases. There's either like you say, "I want to be able to get maybe the PDF or get projects", "see my list of projects", but not necessarily edit, but be able to have access to certain things. Or there is the wanting to be able to edit whilst offline, because if you're on a tablet and you're online, then using a decent web browser is generally, has generally, been okay. And so what the Overleaf app to us needed to coincide with was being able to use Overleaf offline in some sense: an offline mode. We looked at this ages ago, and I think we were... it was something that we were considering in 2016, 2017 and then that was when we merged with ShareLaTeX and we kind of moved into the integration project that was bringing the two platforms together. And, like I say, we're still unpicking some of the stuff there and we're very close to having completed a lot of that work, and then that does unlock making an offline mode of Overleaf available. That is still very much in the realm of to be determined exactly what that means, but the ability to see projects, [edit projects], and at that point an app starts to make sense, because at that point you have things you could usefully use an app for... so I guess that was a little bit of a waffley answer, in that it's certainly not going to be in 2021. I think looking at an offline mode for Overleaf is something that we might want to look at next year, and whether that involves an app as well, that's the kind of related question, but it becomes much more realistic next year.

And I guess, whilst I'm looking at the questions, so Vít's asked about Git and continuous integration and the fact that that makes it easy to collaborate, and does this diminish the value of Overleaf as a service?

It is interesting because I remember in the early days when WriteLaTeX first came around, there were quite a few people that said well, "why do you need Overleaf or WriteLaTeX? You've got Subversion or you've got Git, you can use a local editor and you can collaborate with others and it works", and I think that's true for people who are familiar with that, it does, it *is* very possible, and certainly GitHub has made it easier to collaborate on that kind of repository style way. Overleaf just offers it in a different way, I think, and for people who are just getting into this and, not necessarily computer scientists getting into this, just anyone getting into writing a technical document online, Overleaf and just that "going to a browser and being able to use LaTeX" I think helps more, or is an easier path in, than perhaps if you've never used Git or GitHub before. If you've used GitHub or Git before then I agree, then that workflow works for you, but if you've never used Git or GitHub before I think Overleaf probably offers a lower barrier in.

I should say actually that I went to a talk given by Vince Knight — who [incidentally] recorded loads of Overleaf videos ages ago, before we ever got around to making some intro videos he did a load of nice snippets — he's at Cardiff University and he's been heavily involved in the open science work there. He gave a nice talk about Overleaf, and the way he put it was that there's this nice sort of triangle of ways of using Overleaf so you can either edit online in Overleaf in the LaTeX source mode, [or] if you've never used LaTeX before and you don't necessarily really want to use it, you have the Rich Text mode, which is still in beta in Overleaf; it's been in beta for a long time, but you can hide some of the code away and just edit the text if you're not looking to do that. But equally, if you have a preferred editor offline, like if you're already set up with all of that, then you can collaborate using Git, using the Git bridge, or GitHub to then push and pull things and sync with people who are using the online interfaces. And I know, none of these are perfect... there's things we'd like to improve in the LaTeX source editor, there's definitely things we'd like to improve in Rich Text, and there's stuff we'd like to improve with the Git bridge, but it does mean that it makes collaboration easy between people with different levels of experience and different levels of comfort with technology and with collaboration.

PN: Wow. Any other questions for John? Do you want to join the conversation? You can unmute yourself and join us.

For me, we just recently had an experience, John, with the editorial services at the IMPA, a math institute down in Rio de Janeiro, and we did the International Congress of Mathematicians about three years ago. They, we have been working on this continuous submission process for a long time because mathematicians are not acquainted with having their proceedings ready at the first day of the conference like the physicists and the astronomers and so forth.

And so we tried to coach them in being able to work before the proceedings and have it ready for the first day, so you can walk into the meeting and have it in your hands. That requires a lot of work and fast work and during the ICM two years ago we had about, about, I would say about 80% of the people sharing their files on DropBox and participating in development, and only about 10% of them on Overleaf.

This year for the Brazilian Mathematical Congress, we had 51 authors, out of which 45 chose to do their sharing on Overleaf. It was a tremendous change in, within this two year timeframe. And people are enjoying a lot to learn about quality TEX from the editorial and production staff. You know, when the editorial production staff tells them "we're not using `eqnarray` any more", and authors are very glad to ask why and see their files changed in that way and see how it's better. So I think it's a very positive change, and this has been really great.

JH: Now that is fantastic. I see Boris has his hand up; I just want to use Paulo's comment now to highlight something else which I think really helped Overleaf over the years, and it's the fact that we have an in-house support team. So it started off with, obviously, if you have a software as a service, you have users writing in with issues or bugs, or just problems using it, which is fantastic, actually, it meant we always have a lot of feedback from people, but John and I were answering those initially. And very quickly it becomes a big part of what you're doing, and Lian Tze, who I'm sure many, many of you here know Lian Tze from a LATEX community, [well] we put out an ad for a sort of TEXpert to join the team and Lian Tze was just amazing and still is, she's still working with us now and has been fantastic. We've grown that support team over the years, we now have a really broad range of skills and backgrounds, you know, from engineers, teachers, to people who've done lots of different things. But because we have the support team in-house, it means that if you write into Overleaf with a problem, you get hold of someone at Overleaf. And, most of us, in fact all the support team, are really great with LATEX as well, you know, coming at it from different backgrounds, but often can help the users and solve their problem.

I think this was an indirect benefit of having LATEX compiling in the cloud, is that it's not just the authors that can see it, but if someone needs support on it, they can get it. And so a lot of authors who write to us and ask us for help, and are happy for us to look at their projects if we can help, we *can* fix something really quickly and that gives them a really positive experience not only of Overleaf, but of LATEX as well, and it lets them keep going. Overleaf has grown a lot, and I think it's helped people get past some of the initial issues that you have with LATEX, where you get stuck on something, and you maybe have to spend hours and hours fixing it, with the fact that you could either ask someone from Overleaf to try and fix it, or I'm sure what happens out there, with classes being taught and everything, is people asking their teacher for help, or asking fellow students for help and being able to fix and spot each other's issues.

And that was very much, if you'd like, a side effect of the collaboration, it lets someone else help you get unstuck in a way that, if you're working locally on your machine, and it's just you, and you aren't in a classroom with other people, or you don't have someone else to come and look over your shoulder, you know you've got someone there that can fix it, and you *know* that it's fixed because it's compiling on the same machine in the cloud, rather than I could send you my LATEX file and you could try and fix it, but then, if you've got a different LATEX installation running and stuff it might not look quite the same...

PN: Right, right, right.

JH: So, Boris you've had your hand up for a while and I should...

Boris Veytsman (BV): Thank you, thank you. I said this exactly a year ago at our last online conference, but I would like to repeat it now, that as a old timer, an old-time TEX user, I was completely sure I would never need an Overleaf, so I never looked at it. And, in the last couple of years, I found that it's so much enhanced my collaborations that I now can work with people who would not go through the task of installing clutter on their computers and they became... or installing version control, something like Git on their computers and now they are very productive collaborators. And the nice thing [is] that with Git I can just work on my computer and just use Overleaf as a big Git repository and they can use it for editor.

I am now convinced that what you did was one of the several most important changes in the TEX world for the last years. You probably revolutionized the ways that a lot of intelligent people are using TEX and I just wanted to say is that what you have done and what you're doing is absolutely amazing.

JH: Well, it's hard to quite know what to say to that other than thank you... and it's certainly not just me, I mean so John Lees-Miller, you know, from a

technical perspective, is very much the first name, but also James, James Allen, and Henry Oswald, who launched ShareLaTeX, and actually, though, everyone along the way that has contributed. One of the brilliant things, for me personally, is that we have such a great team at Overleaf now. And we have had people who've come and gone over the years. But it's been a really nice environment, and I think in a way, like the whole TeX community, is very friendly. There's a lot of support given for new users, and there's a lot of time put into the packages which help people, in different disciplines. And it has always been open and collaborative, and it's nice to see. I think Overleaf and this sort of cloud-based LaTeX, helping to continue it on, and I think helping LaTeX be more accessible to people, in the distribution sense of accessible.

I also think we were also just lucky with the timing I think in many ways, and they say this a lot, DropBox had recently come out and there was a lot of other things that people were starting to do through the browser rather than installing directly. Like I can't remember off the top my head, but things like Google Docs then came out after Etherpad, and people just became a lot more comfortable, or a lot more used to using the browser as the entry point for programs, rather than the directory of locally installed stuff, and so I think we were around at the right time. John [Lees-Miller], he's led the engineering, and he and Tim [Alby] did most of it in the early days themselves, and we have gone on since then in how we continue to build on that.

But thank you, Boris. I do appreciate that.

BV: Thank you.

PN: If you want to join the conversation, you know, have your questions come in, you can just come in online any of the panelists, or, if you want to, raise your hand.

I think lowering the bar has been absolutely, from all these features that we've seen out there and being available everywhere, it's been such a game changer.

You mentioned one thing which was the submission process, and the submission process has two faces, you know, as the face of the author has to fit to certain standards and also has the side of the production staff that receives, on the other hand, and has to make sure that what he sees is what the guy intended to write. And Overleaf bridges that divide, the divide of, you know, yes, what I have, it's here, and then the next minute, the production staff can continue to work with it and be sure that he is working on what the guy intended to, rather than you know some display of a specifically Russian font on a English manuscript that's not happening properly on page 147. That's really great.

JH: Yeah, and I guess the best one I think you know. Oh sorry.

PN: No, go ahead, go ahead, go ahead.

JH: I was just gonna say, a couple other publishers that we have worked with a lot of years are the IEEE and the Optical Society. I think, in particular, now the Optical Society uses Overleaf for compiling the submissions that come through their sites, because I think one of the benefits they found was, I think we've all been there, when submitting a paper to a particular journal, is you might upload the LaTeX files and then it tells you that it can't compile them. And it maybe gives you the error logs, but then you've got to figure it out, and probably you're submitting it because it does compile on your machine. And so you've now got to work out why, why is it saying it doesn't compile on whatever, you know, system the particular journal is using. And so what's really nice in how we've managed to get it to work with the Optical Society is if you go to there, we... well, first off, we worked with them on templates, and then we worked with them on the submission from Overleaf, so if you submitted it from Overleaf it could go straight in.

But now the way it works is if you go to their submission portal directly, which most authors do because I think it's natural, you go to the OSA and try and submit, and when you upload your LaTeX files, it sends them to us to compile and if they do compile, then that's great, PDF comes back, everything's fine you know, it's the same as it would do anyway, if it's all gone through well. But if it doesn't work, the nice thing is that you get the option to open the project in Overleaf to fix the errors and it means that you and the editorial team could both see that to fix that or... And it means that you know that if you do fix the errors here, they're definitely fixed rather than, you know, trying to fix them on your machine when, from your perspective, it already seemed okay and everything. Like you say, I think having that common view of the document is actually very valuable, not just for reducing the frustration between co-authors who have maybe got different systems installed and see different layouts and things, but also for the publishers, who know that if they know they're seeing what the author intended to submit, then they maybe avoid some of the miscommunication further online, or even having to try and get the author to fix problems which aren't due to the author's system.

One of the things I remember from, it would have been a few years ago now: on the publishing side, because we used to get questions come in from authors, or sometimes from the editorial teams, I think in a few cases we were actually able to help fix underlying issues with, let's say, the bibliography layout. I remember one where DOIs weren't visible in the references, and it was because the reference style had been designed before DOIs were used. But what the journal had been doing, because they didn't really understand exactly, necessarily understand, the details of it, they were just asking the authors to display the DOIs, and so I think each author had to keep trying to hack in a way to get the DOIs shown. And because some of those questions came into us, we were able to suggest updating their bibliography style so that it did that automatically. Then the publisher is happy because they no longer have these frustrated authors who they're trying to get to do a thing which was really a problem with the journal template itself.

I see there is now a couple of questions in the chat and Jonathan has his hands up. So Boris's question about the best address for feature requests, I would say, always sending stuff into `support@overleaf.com` is the best way to get it triaged and passed to the right person.

A question from YouTube: Are we thinking of putting Python TEX in Overleaf once again in the short term?

That is a good question. I know, I think what they're referring to is that used to work in [Overleaf] v.1, I think, and now it doesn't work. I need to double check, because it has been a long time. I don't really use Python myself, but I will take that one offline and we will follow up so if the person that responded... we'll try. Yeah, it was a question from YouTube, so I guess we might follow up there...

Jonathan, you've had your hand up for a while.

PN: John, one of the things that we have a hard time within the TEX community is to have an idea of how many TEX users are out there and how distributed they are around the world, and who is really using it, and so forth. I guess you have a much better bird's eye view of that action. I don't know how much of that you can share with us, but is there at least a brush that you can give us of how TEX is used and uh, and how broad...

JH: It really is used all over the world. A lot of our users are students at universities and, if you look at probably where there are technical universities or universities with big STEM undergraduate populations, you'll probably get a good... that will probably correlate a lot with the usage of Overleaf. We definitely see Overleaf, and just cloud-based LATEX, has really helped students pick up on Overleaf, and I think for the student it's particularly nice because it's a way for them to produce a report which maybe stands out, like especially if LATEX isn't necessarily always used in their group projects or something. It's a way for them to show that they've learned something — LATEX — and that they can produce this [type of document], and it's kind of a way to get ahead of things. So, yeah, I think it really is all over the world, we have a lot of users in the US, a lot of students in the UK as well, users in South America as well as users in India, and as well as, really in places all across the world... we have a lot of users in Japan and there's a Japanese community around TEX and who use Overleaf a lot, and...

I do remember, that we always seem to get — once a year — usage from the International Space Station, but then that's just the good old April the first on Google Analytics, for anyone who has ever checked their Google Analytics on April the first.

[In summary] Yeah, I think it's if you follow the student population.

PN: Uh huh, uh huh. Thank you very, very much.

JH: Jonathan still has his hand up.

Jonathan Fine (JF): Hi, John, and thank you for coming to be interviewed, and thank you for establishing Overleaf which really has made a big contribution to the TEX community, but I sort of have mixed feelings and in part it's because I'm an old timer.

And it comes down, mixed feelings have come down to this... I'm trying to find a way of saying it that causes the least offense. The TEX Users Group has got, had responsibilities, and I think still has responsibilities, and I feel as though part of our release remit has become things that the TEX Users Group or the TEX developers, the TEX community generally should be doing for themselves.

So the previous discussion of the distribution of TEX users (where are the TEX users?), that's something that sort of the TEX Users Group should know independently of the information you're kindly sharing with us. And another example is the strength of Overleaf, as you quite rightly pointed out, is that it provides a reproducible environment for the typesetting of TEX documents. But you know it's that reproducible environment, I think, is something that the TEX developers should be solving themselves and not relying on, can I say, the heavy resources of Overleaf, because that reproducible environment is hard work to maintain I am told.

And where I see this, for example, is that a PDF document now has the embedded fonts it needs, so you can send the PDF document to somebody and they can read it. And similarly a Word document, together with the Word program, has all the resources it needs, whereas I can't send a TEX document to a third party in such a way that they can readily get the resources they need to compile it the same, and I feel that that's a problem that the TEX community as developers should be dealing with because we want our TEX source documents to be archival and not rely on the massive resources of Overleaf. We'd like to be able to say, here's the secure hash that gives you the true in repository that tells you exactly what you need.

Now that's a technical thing, if you like, on one side, but those two or three things are examples I think where we're really grateful that Overleaf is solving the problem for us, but perhaps we would be better off suffering a bit ourselves and solving it ourselves, so I'm not sure who I'm talking to and whether I've offended anybody, but I hope you can accept, hope you can all accept I'm representing a significant point of view, and I'd like you to comment and give your response.

JH: You certainly haven't offended me. I think it's a very good question. Certainly, when WriteLATEX was originally created, it was to solve a problem that we had within our research group and I think it's great that it's helped — it's grown and helped — so many other people get into LATEX and use it, and this sort of helps LATEX, helps more people become aware of it. We use the TEX Live distribution on Overleaf and a lot of the new things that people enjoy in Overleaf, new things that people have created, just to pick an example from someone that's here, you know samcarter's `tikzducks` packages, people enjoy that and they like using those things, and that is through the TEX community.

From my perspective, I'm a researcher originally and I think it is important that we try both not lose sight of wanting to get new users using things, but then also like you say, things compile with certain versions, and, you know, we've had... and this is where some of the discussions around, should there be a way of saying when something compiles what it compiled with, and how you get that, how you could recreate that exact document, what exactly did it compile with. The way I look at it is that these questions are important from a certain perspective, and to certain people, and if we can help find a solution which means that a LATEX document can take with it enough information for that to be compiled that instant, then I think that would be very valuable for a lot of people. They're looking to write documents and they want to keep them, keep being able to write them, and so a lot of the work we do on compatibility... So, for example, when we release new TEX Live versions, you know, new documents use our new TEX Live version. Previous documents still continue to use the previous version they had, so that from an author's perspective, their document still compiles when they reload it. So I think a lot of the stuff we look at from that user interface and user experience perspective, is maybe something that can help with this.

But that was my first thought on it, and it is definitely worth thinking about.

JF: Thank you for your response. It's very helpful, and I think we're almost out of time.

PN: There's one very quick question, John, about support for ConTEXt, coming from Vít Novotný.

JH: Oh sorry, yes, working out the chat box!

So it is a good question and, and like you said, there are some interesting new things happening with ConTEXt.

It's not something we've discussed internally recently. We do support the other LATEX engines, but ConTEXt is not something that we have supported, and it's not something we've worked on recently. It is certainly something we can look at again. But I guess it's not in the short term roadmap, so it's a piece we have to look at and then take a view on and, given the number of things already on the list, I imagine it wouldn't happen immediately. But if it *is* being used a lot, and I think if it is, if there are new things with it, then maybe it's time we have another look.

I see Frank has his hand up. And I know we're nearly at the end.

Frank Mittelbach (FM): What I wanted to ask your thoughts about is something like this: when TEX originally came into life and Don wrote his book, he wrote something like, "Join the user group" as Appendix J of *The TEXbook*. And in the early days user groups were sort of essential for basically everybody who was using TEX. People got together to get things going, and that was the way to do it. And out of that the user groups evolve, by providing services to worldwide users.

By that means they became less and less visible to users. Most users these days have no idea where the services come from that they actually consume in all kinds of ways, like having CTAN run by a handful of people doing nightly jobs to keep submissions in

and so on and so forth, and the world turns and goes on. And what you did with Overleaf is, in some sense, if you like, a missed opportunity of the TEX community as a nonprofit organization to keep the whole universe going, and it's the right thing to do. And it is a step forward that we currently sort of have, to keep the whole ecosystem alive and kicking and improving.

I think it's a great step forward, but there is a foundation underneath which has or is the danger, I would think, of at least partially collapsing, and the services that you are now providing, and by this way, I think, actually largely enlarging the ecosystem in some sense, is underneath that, run through volunteers that are getting less and less possibilities to actually get this work managed financially, in other words. So what's your thought on how this is going on in the future, and how much do you think are companies that benefit from it, like Overleaf, obviously in some sense, because if that would not be there, it is not going to sort of evolve further.

How is this going to coexist and evolve together in some sense?

JH: Yeah, I think it is a really good question. I think it is worth exploring, like how we can help support some of, say, some of the initiatives and even not even the new initiatives, like CTAN which is an amazing [resource]. CTAN *is* amazing, and we make a small financial contribution, and I think we could probably do more. But equally I think we want to try and find a way to help it be sustainable in the long term as well because I think that's what's the most useful; right. It's not about short term things, it's about how, like you say, how we make sure that there is enough people coming into it, that will help continue it and how it can be sustainable. Not just from a financial perspective, but the people that are actually doing the work. We're very open to discussion on this. I know we haven't got time now, but we're very happy...

FM: It was certainly not meant as a question to resolve.

JH: Right.

FM: But it is something I think which is extremely important to sort of get a joint discussion on it in the future.

JF: I'd like to make a quick contribution to what Frank has said. The MathJax Consortium, I think that's what they call themselves, have managed very well to get funding and they're now part of the NumFOCUS group that funds a large amount of data science projects, and they get extensive funding from people who got real stakes.

I'd say that we have to look to, as a TEX community, we have to look to ourselves and the way we manage things and that TUG has an income of $100,000 a year and I don't think it's well spent and it's very hard to go begging for money when you're in that situation. That's controversial I know.

The other thing is about reproducible document compilation. The remark about ConTEXt actually made everything very, very clear.

Overleaf is providing reproducible document compilation, on a client-hub basis. On a client-hub basis we have reproducible document compilation in the same way that Subversion provides version control. There's a hub and there's clients, whereas Git is peer-to-peer, and I think the TEX community, as developers go, have got a real responsibility to develop peer-to-peer reproducible document compilation, and we do this with or without Overleaf; with Overleaf, I hope.

Yes, and that will make a lot of things much easier. It means that I can write a `beamer` presentation and send it out to people, just as a TEX file, which greatly makes, it would considerably reduce the latency of giving presentations, for example.

So I'll stop at that point.

PN: I'd like to thank John very, very much. We enjoyed this conversation and we hope to do this in the future again.

JH: Thank you for inviting me and thanks for running a great conference. I have a lot of YouTube stream to catch up on!

I do want to just highlight from the chat that `tikzbricks` already exists, apparently, and samcarter is already on it. So, if nothing else, we have inspired some LEGOTEX in the future.

It's been great to be here today, and I want to catch up on the other presentations and then continue the wider discussion on all of this, as we go.

BV: Thank you very much.