

- **Regan Robertson** Mod • 15 days ago

Good Morning,

The video will start on this page at 10:30am. As a reminder this site works best in a Chrome Browser. You can write in comments through this feature to continue the conversation or ask questions.

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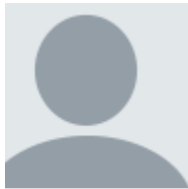
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Carl Nerup • 15 days ago

Good Luck

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Lenny Elliott Carl Nerup • 15 days ago

Thanks Carl!

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Ryan Craven • 15 days ago

So what does the session chair do when there's no zoom and the talks are all pre-recorded? Want to make sure Doug earns his keep :-P

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Renato Levy Ryan Craven • 15 days ago

he can help answer some flow questions, and moderate the Q&A if people ask "odd" questions...

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Douglas Schafer Ryan Craven • 15 days ago

Ha! I just got the chat to work and now this?

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Renato Levy Douglas Schafer • 15 days ago

They want to put you to work, man!

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Renato Levy • 15 days ago

curiosity: Have you notice that you can see how many people are in the talk by looking at person icon on the screen?

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Regan Robertson Mod Renato Levy • 15 days ago

Yes it looks like it will show how many people are currently viewing at the top left of the presentation screen.

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Lenny Elliott • 15 days ago

Greetings from Michigan everyone! I hope you enjoy my presentation and glad to receive any questions/comments

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Renato Levy Lenny Elliott • 15 days ago

Welcome Lenny!



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Renato Levy • 15 days ago

Don't forget to tap to unmute...or it will be a very silent talk

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Noah Evans • 15 days ago • edited

Lenny Elliott can you give some background on your hardware/real time requirements? e.g. how capable are the systems you are looking at and how strict are your real time deadlines?

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Lenny Elliott Noah Evans • 15 days ago

Our requirements don't seem to be derived from a single source, generally it is determined on a program by program basis, often an external safety board is involved and the requirement derives from the need to mitigate risks and are related to the severity and probability of a mishap

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from some related work that DornerWorks did on ARM and x86 that I could point you towards that might help.

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[Noah Evans](#) Lenny Elliott • 15 days ago

Lenny, I'd love that. Thank you.

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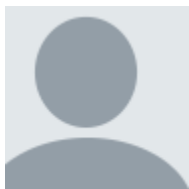


[Renato Levy](#) • 15 days ago

I'm looking forward for these contributions to the CoE repository

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Lenny Elliott Renato Levy • 14 days ago

Good morning Dr. Levy! I am looking forward to collaborating on this too it would be good to talk at some point about features we are working on an whether they are candidates for the CoE

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Robbie VanVossen • 15 days ago

Our blog on the release of the features that Lenny mentioned: <https://dornerworks.com/blo...>
This includes links to our repos where you can use these features now, but it is on an older version of the codebase. Like Lenny said, we are working with Data61 to get these mainlined.

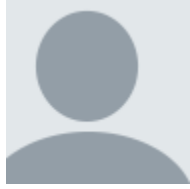
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Olin Sibert • 15 days ago

Did you have tools or defined processes for creating the additional "change documentation" you made for reviewers? The "journal article vs. git diff" issue is something that many organizations will face, and building on someone else's successful approach would probably be helpful.

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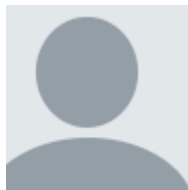


Lenny Elliott Olin Sibert • 15 days ago

We have a process, that is used within our group, we make use of some git and python scripts to generate the artifacts, however the verification process is still manual at this point

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Olin Sibert Lenny Elliott • 15 days ago

By "verification" here, do you mean your release review process? I'd expect that to be manual, but preparing a package of artifacts comprehensible to the reviewers seems like a big part of the battle. Thanks.

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Lenny Elliott Olin Sibert • 15 days ago

Hi Olin, yes the review/verification process is the manual part. The script generates the code diff artifacts, and I do a separate companion write-up which characterizes the features of the software and give guidance to the

reviewers about what types of information to be looking for (e.g. ITAR, crypto, etc.)

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Carl Nerup · 15 days ago

We should collaborate - we are working cross domain right now. No reason to do the same thing twice

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Ihor Kuz Carl Nerup · 15 days ago

We've also done some cross domain work - <https://ts.data61.csiro.au/...>

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Paul Pazandak Douglas Schafer • 15 days ago

Hi Doug, FYI, we have a contract to implement software-defined MLS over DDS for a USAF end customer. Let me know if you'd like to discuss.

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Douglas Schafer Paul Pazandak • 15 days ago

Awesome! Great to hear, yes, would love to.

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Lenny Elliott Douglas Schafer • 14 days ago

Good morning everyone, I can see there is a lot of interest, expertise, and current work that could be leveraged on this subject. The ground vehicle community treats CDS with great sensitivity, which probably hampers collaboration. I'm going to follow-up with you individually and at the same time see if the CoE, or my PoCs with the other services can help find a way to tackle this more cooperatively.

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Nathan Studer Douglas Schafer • 15 days ago

DornerWorks has done some work here as well. The Raise the Bar standard has made creating a new CDS difficult, but it would be nice to have a more open alternative to the usual offerings from the entrenched vendors.

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Lenny Elliott Ihor Kuz • 15 days ago

Thanks for this Ihor! I was aware some work had been done by the Australians but was not sure about the details nor was I aware of the video composition aspect of it

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Stuart Card • 15 days ago

I'd love to learn more about your secure boot work. We did a capability-based secure/trusted loader on x86 w/TPM but are moving to RISC-V, starting w/Microchip PolarFire SoC, as will be described in our talk tomorrow...

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Lenny Elliott Stuart Card • 15 days ago

Hi Dr. Card, I remember your presentation in 2018 I will be staying tuned for your presentation tomorrow, it would be good to have more discussion after

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Jason H Li • 15 days ago

Lenny - do you have plans for other architecture or Intel would be the chosen one?

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Lenny Elliott Jason H Li • 15 days ago

We are interested in ARM, Intel, and also RISC-V



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Todd Carpenter Lenny Elliott • 15 days ago • edited

Nicely done, Lenny, it is great to see all the progress that you are making. I was particularly interested to see that you are running mixed-criticality VMs on Intel multi-core. Intel (and other) multi-core processors are vulnerable to micro-architectural attacks, such as the Meltdown and Spectre families. Does your approach mitigate against those attacks, or is that work for the future?



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Lenny Elliott Todd Carpenter • 15 days ago

Thanks Todd, we are aware of and have addressed some of the multi-core issues that you identified with some of the other work we have done, but have not yet addressed them in an seL4 context, in my presentation I mentioned some work with safety-boards and these kind of considerations would fall under that for the near future

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Todd Carpenter Lenny Elliott • 15 days ago

Lenny, thank you for your response, it's good to know these issues are under consideration. Followup related question: Can you comment on whether you are using temporal partitioning such as the seL4 domain scheduler or the new Data61 Mixed Criticality Systems (MCS) scheduler?

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Lenny Elliott Todd Carpenter • 15 days ago

Hi Todd, our work is being done with code from the MCS branch however we have not gotten into the nitty-gritty of temporal partitioning.

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Douglas Schafer • 15 days ago • edited

Lenny, how has your conversations with PEOs gone in terms of drafting and including requirements in acquisition?

And then verifying during procurement?

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Nathaniel Husted Douglas Schafer • 15 days ago

I would also be interested in this -- especially the language used.

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Lenny Elliott Douglas Schafer • 15 days ago

Hi Doug you hit a nerve! It has been a challenge to getting our PMs to give us detailed requirements in this context. Currently the way we have it setup is that the PEOs/PMs are "transition partners" and CCDC-GVSC is doing research on capabilities that they sponsor, part of the research is to identify/draft requirements for them. If the technology/research does not have a sponsor then it is killed off. Our seL4 work falls under several programs which have transition partners.

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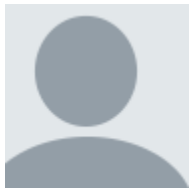
Carl Nerup • 15 days ago

Great presentation. Though provoking. Why the need for cross domain - is there a use case you are trying to solve?

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Lenny Elliott Carl Nerup • 15 days ago

Thanks Carl! We have some systems are sensitive and some that aren't and we would like to provide a level of integration between the two

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Carl Nerup Lenny Elliott • 15 days ago

Sure - I hear this mostly as a NIPR/ SIPR thing when people call me on Mobile.
Thanks Lenny -

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Paul Pazandak • 15 days ago

Do you have plans to run any applications in seL4 user space, or will all of the Army applications run in VMs?

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Lenny Elliott Paul Pazandak • 15 days ago

I think we will ultimately be trying to run not in Linux for higher assurance application

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Lenny Elliott Paul Pazandak • 15 days ago

Hi Dr. Pazandak, Good to talk to you again, to clarify I do anticipate that some applications will be running in seL4 userspace, for example the I/O processing partition in my hypothetical deployment slide

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Jerry Dussault • 15 days ago

I liked your flow chart on p. 12, and would like to discuss your views on how we can help operationalize that across multiple DoD organizations.

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Renato Levy Jerry Dussault • 15 days ago • edited

Every presentation has its own page with discussion. The links at the bottom of the page
Next talk starts at 11:00am

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Aleksey Nogin • 15 days ago

Leonard, I have a question that is a little too sensitive for this chat - I just sent you an email; please let me know if you do not get it (I used an email address from a few years back).

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Lenny Elliott Aleksey Nogin • 15 days ago

Aleksey, good to hear from you again! I will keep my eyes open for an e-mail

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Regan Robertson Mod • 15 days ago

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