



Ericsson Trace Compass update

Matthew Khouzam

Agenda

- Recap of Ericsson's involvement with the project
- The team
- The tracing ecosystem
 - Trace Compass
 - Theia Trace Extension
 - CDT-Cloud!
- Future work
 - Roadmap
 - Where can you help?
- Thank you
- Cool story, time permitting.



Recap (Jan 2022)



The goal of this talk is **STILL** to explain where we are coming from to explain our decision making process

Ericsson has been an industrial partner in the research project for over 12 years

We develop and use tools such as LTTng and Trace Compass in the company to solve timing issues and hard to debug problems

Ericsson contributes to and maintains Trace Compass

The Montreal Team has been closely collaborating with the academic and industrial partners. Austin team is ramped up!

We have more members in our team, and they are contributing at full efficiency!

Recap (May 2022)



The goal of this talk is **STILL** to explain where we are coming from to explain our decision making process

Ericsson has been an industrial partner in the research project for over 12 years

We develop and use tools such as LTTng and Trace Compass in the company to solve timing issues and hard to debug problems

Ericsson contributes to and maintains Trace Compass

The Montreal Team has been closely collaborating with the academic and industrial partners. Austin team is ramped up!

We are working towards having the entire team working at their peak efficiency.

About The Team (May 2022)



Bernd Hufmann – Technical Lead

Patrick Tasse – Employee (Internal Lead)

Marco Miller – Open Source developer, internal Scrum Master (Linux Lead)

Rodrigo Pinto – FE Expert

Hoang Pham – FTrace + UI (FE+BE)

Elena Giovannetti – Director

Georges Bourret – Line Manager

David Bainbridge – Strategic Product Manager

Matthew Khouzam – Digital Product Owner

Austin +Sweden teams – Developing internal use cases in open-source way

The Ericsson Tracing Ecosystem (no change)



- At Ericsson we have very intricate products offered to the public
- At a high level we trace many individual components
- One of the goals of Trace Compass is to provide a unified troubleshooting experience
- **This did not change, there are just more users and more use cases.**

Traces

- LTTng
- Other Linux Tracers
- CTF Hardware
- Chromium style
- Open Tracing

Logs

- HTTPD
- SSH
- Java (GC)

Trace Compass



- 7.3 Released, 8.0 SOON (tm)
 - Add warning about data privacy
- Fixed release signing
- CTF Fix
- Function duration statistics per PID
- Density viewer performance improvements per experiment
- Segment table limited to 64k entries
- In state system, allow double (fp64) increments.
- Have Statistics handle double

Trace Compass Incubator

- FTrace Fixes
- ROS: legally use ROS logo!
- OTF2 improvements
- Server improvements
- In and Out analysis merged
- Random improvements

Bold are external contributions from people attending, thank you!



CDT.Cloud Trace Compass



- CDT.Cloud Blueprint is a template tool for building custom, web-based C/C++ tools.
- It is basically a demo application of Theia for embedded development.
- Trace Compass front end and TSP to be hosted in it.
- **Clear way forward to being committers.**
- Collaboration between EclipseSource, Ericsson and more!

Theia Trace Extension (TC.Cloud frontend)

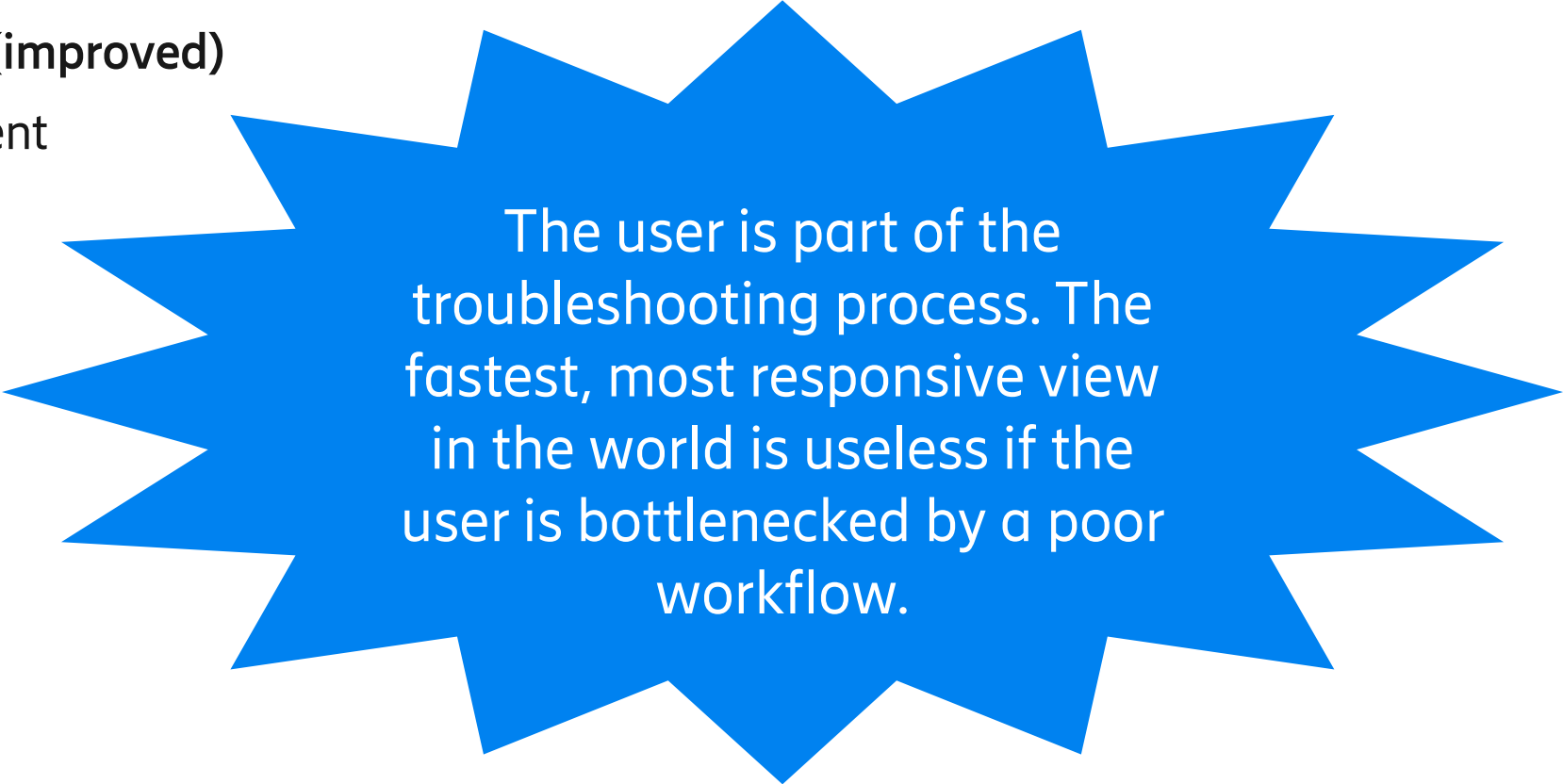


- UX fixes. *Note: Erica opened UX bugs, they are still getting fixed. (HINT HINT)*
- Most improvements are UX related as Theia is a UI shim over Trace Compass's core logic.
- Highlights:
 - Moved to CDT.Cloud
 - Technical debt reductions (Making the implementation match the documentation)
 - Performance improvements
 - XY Chart improvements again (Rodrigo)
 - ADRs
 - Jest Tests
 - Security fixes

//TODO No change, but progress!



- We need to make sure all the extras are handled. **(Improved WOW)**
- Better inter-view interactions **(improved)**
- Make view navigation consistent
- More user profiling (UX)
- Better file handling
- Flatten learning curve
- Filtering
- Actions on filter

A large, blue, multi-pointed starburst or explosion shape that serves as a background for the text.

The user is part of the troubleshooting process. The fastest, most responsive view in the world is useless if the user is bottlenecked by a poor workflow.

Future Work

Roadmap out. Next one in progress

The following slides are a TENTATIVE roadmap.

There is no guarantee.

The following is for illustrative purposes only



Road Map



- Be a good Ericsson Citizen – Ongoing
- Expand community – Poly committers?
- Open-Source Activity and Leadership (General) - Ongoing
- ~~Migrate front-end to eclipse repo (CDT.Cloud) – Q2 2022~~
- Trace Compass Releases (Eclipse) - Ongoing
- Open-Source Features to support internal implementation of trace viewer (Theia) - Ongoing
- Open-Source Trace Compass Cloud MVP (LTTng)
- Continue to support internal hardware team
- Continue to support internal Linux teams
- Tentative: Session rotation support (Merge experiments per Host ID) Work with Ivan G.

Trace Compass



- New Trace Compass Cloud Project – Done
- In and Out use case – In review
- Internal Support – Ongoing
- **Performance improvement – On demand**

Theia Based Front End



- Most of the development happened here
- Open-Source Features to support of internal trace format (Theia) - Ongoing
- Open-Source Trace Compass Cloud MVP – Done, but more work in that direction
- UX Design – Participate in UX workshops - Ongoing
- UX Design – Limited Prototypes of UX – More improvements coming!
- Common – Migration to VsCode plug-in - (Low Priority) ~~Q3-2021~~ In question
- Nano-second support for LTTng – Done
- **Performance Improvements – Ongoing**
- **Improve XY Charts, D3**
- We are not at a numbered version yet, working on the internals

Command Line/Headless



- CLI: No recent development... YET

Immediate (concrete) future work

- Trace Compass Core:
 - More back-end work (less UI, but may include new analyses)
 - Improve performance
- Trace Compass Incubator: Support and Encourage community:
 - OTF2
 - ROS
 - Etc...
- Trace Server: add features to views (e.g. Filters and styles)
- Theia Trace Front-end:
 - Improved views
 - Experience Parity w/ Trace Compass Classic
 - More features only possible in web (e.g. shared contexts)



Improved workflow for an existing use case



Improved workflow for an existing use case



MISSING IMAGE

A creative commons

IN and OUT licensed photo
would be welcome

Improved workflow for an existing use case



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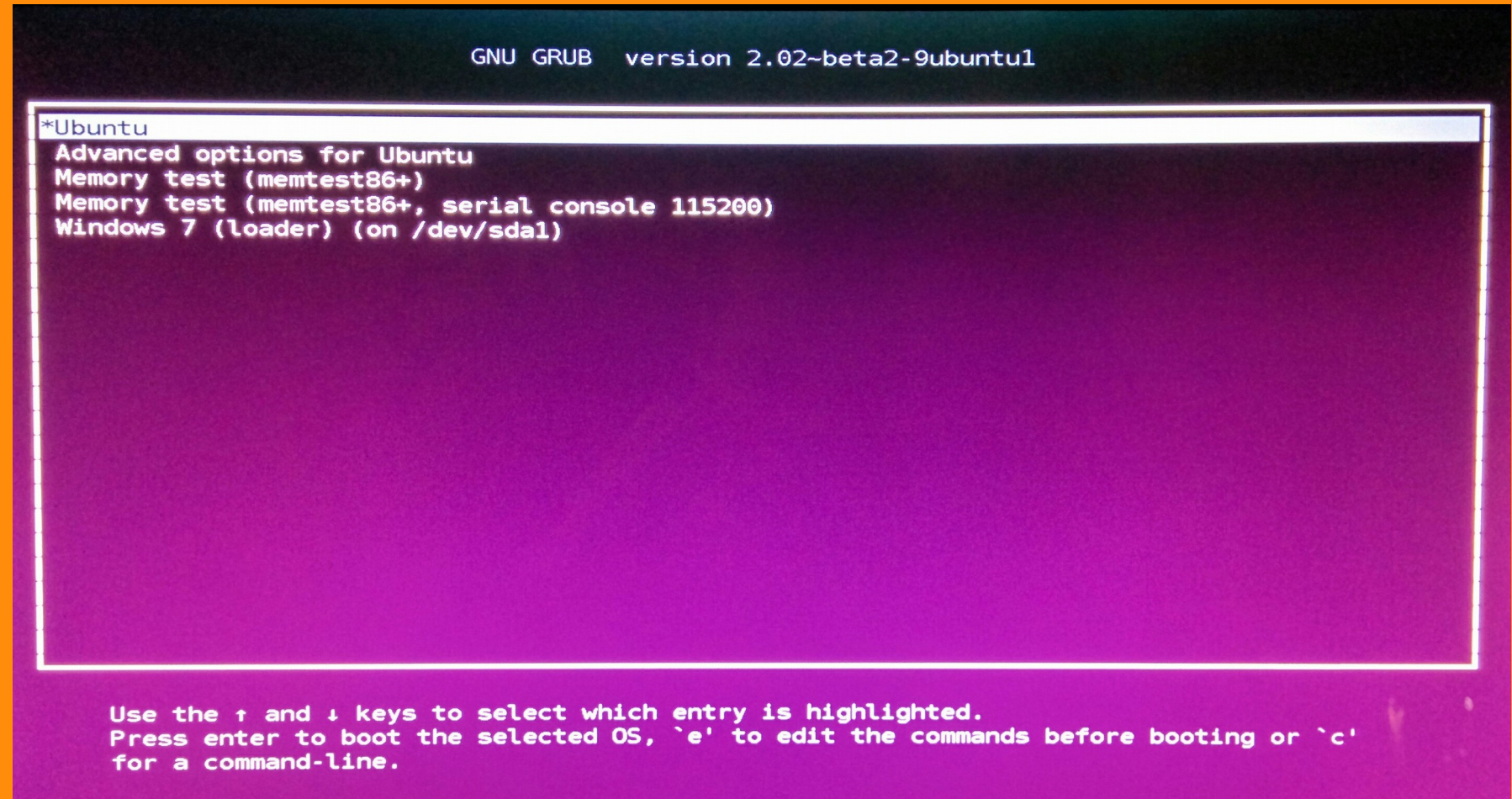
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licensed photo
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Video

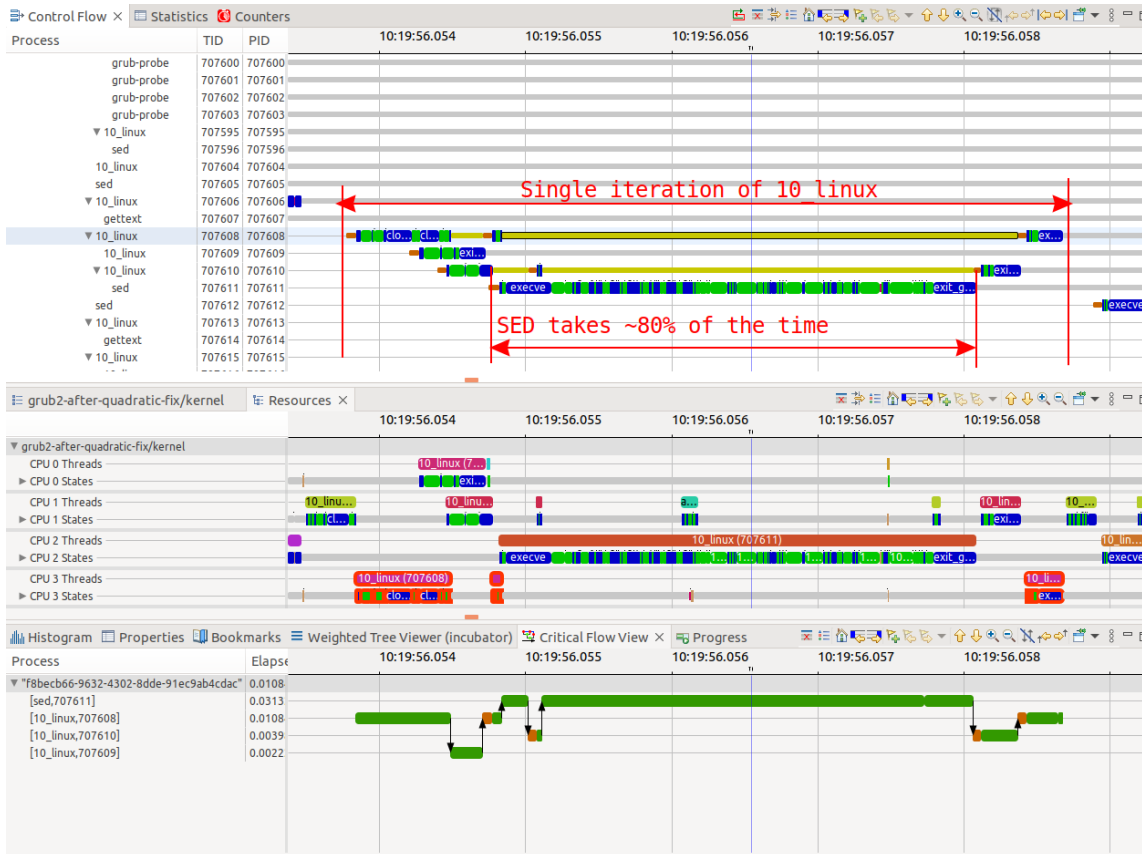
Cool Story Time



Grub2



Grub2 performance analysis in Trace Compass

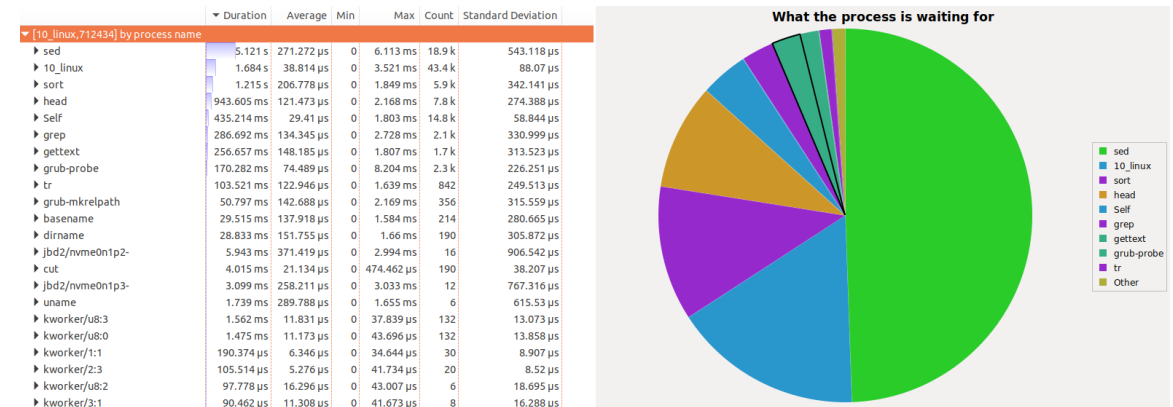


- Performance issue
- Visible in Control Flow View, but hard to understand
- Critical path explains it clearly
- Ps. 80% was a mistake, it's more like 66%

Aggregate critical path



- Shows with statistics (Not merged) that the time was spent due to too many calls
- Quadratic expansion
- Follow story
here <https://lists.gnu.org/archive/html/grub-devel/2022-05/msg00000.html>



Where can you help?

Drop a review, a bug or a feature request

Fix a bug, especially if it helps you and is not in our interest

Share use cases

We have limited bandwidth, we would appreciate code contributions

Thank You



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Code Contributors

Issue Reporters

Designers

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Enthusiasts

Steak Holders

