

New in the Trace Compass Incubator...

Progress Report Meeting,
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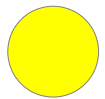
New in the Incubator [or soon to be]

- Compile a complete RCP from source
- Run a script from command line
- Compare data within or between traces (UX ideas wanted)

Feature legend:



Available in master

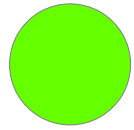


Still under development, but clear path to productification



Prototype or future work

Compile Incubator RCP



- Compile and run a complete version of the Incubator from sources

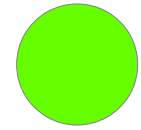
```
$ mvn clean install -Dmaven.test.skip=true
```

```
$ rcp/org.eclipse.tracecompass.incubator.rcp.product/target/products/  
org.eclipse.tracecompass.incubator.rcp/linux/gtk/x86_64/trace-compass/tracecompass
```



- => No need to setup development environment in Eclipse
- => Can use a favorite source code editor to edit files, then compile and run
- => No need to get the Trace Compass sources if only interested in the incubator

Run Script from Command Line



- Automatically run open trace(s) and run a script from command line. Or let the script do all the job!

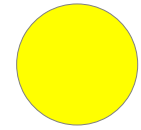
=> After installing the “Trace Compass Scripting (Incubator)” features, or with the Incubator RCP compiled previously.

```
$ ./tracecompass --cli --open myTrace [/path/to/script] --script /path/to/script
```

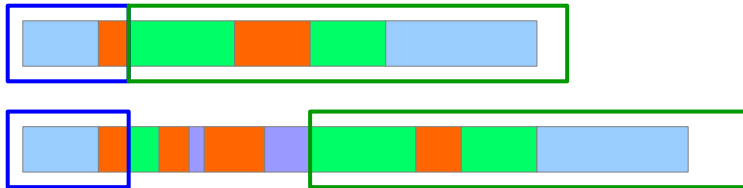
[path/to/script] will add the script file to the workspace, as if it was a trace, so you can edit it.

```
$ ./tracecompass --cli --help
usage: How to use the command line options:
-h,--help           Shows the help.
-l,--list           List capabilities.
-o,--open <path>   Opens the specified trace.
-s,--script <script> Run a script once the workspace is ready
```

Compare [Portions of] Traces



- What to compare?
 - Sequences?



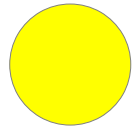
```
T1: ev1 ---- ev2 -----ev3
T2: -- ev1 ----- ev2 ----- ev3 ----- ev4
```

```
T1: ev1 ----- ev2 -----ev3
T2: -- ev1 --- ev2 ----- ev3 ----- ev4
```

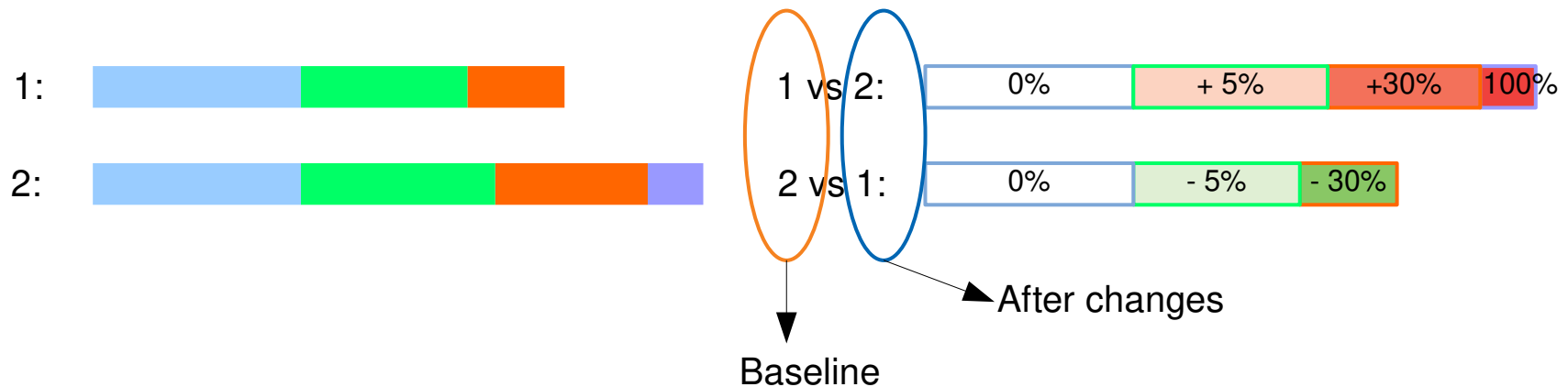
=> **NO**, not currently

- * More or less random
- * How to match similar sequences?
- * Could be done with heuristics at best, or Machine Learning
- * Specific to use cases

Compare [Portions of] Traces



- What to compare?
 - Statistics? Aggregations?

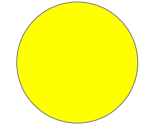


=> **Yes!!**

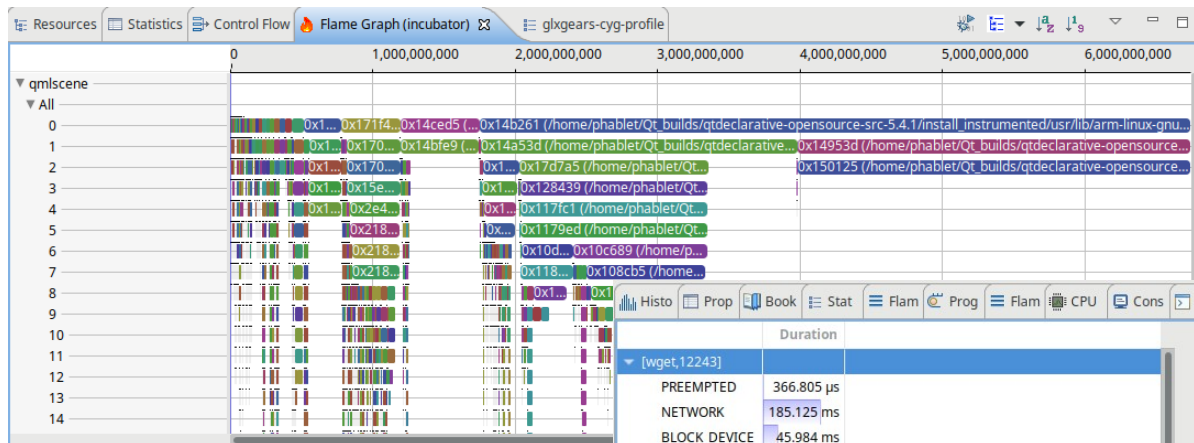
- * Easy to represent with a common data structure (weighted tree)
- * This data structure is context-agnostic ie what the data represents is not relevant
- * Scales better with the size of the trace

=> Differential flame graphs, based on Brendan Gregg's algorithm
(<http://www.brendangregg.com/blog/2014-11-09/differential-flame-graphs.html>)

Compare [Portions of] Traces

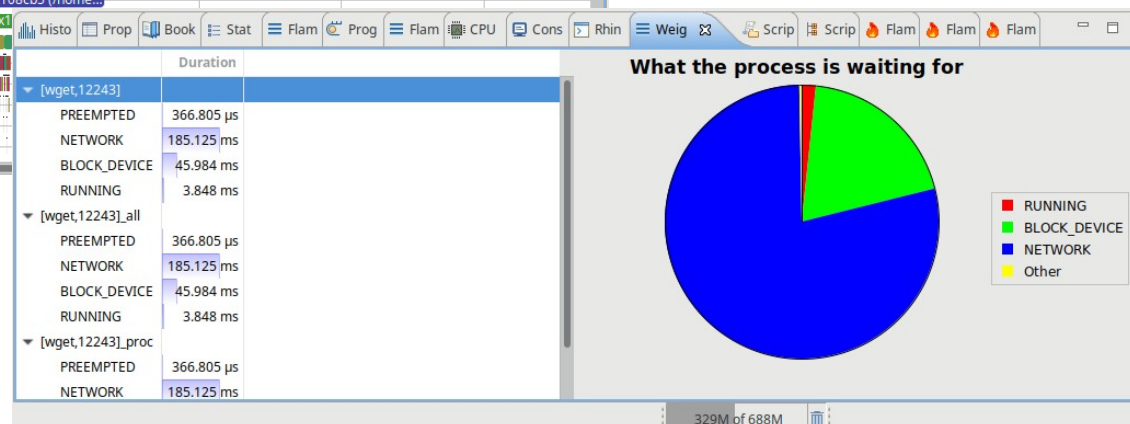


- Current status of the feature
 - Some patches already in the incubator, many patches on gerrit
 - Weighted Tree API under development, work in progress
 - Current implementations of weighted trees (ie, structures that can be compared using the current algorithm):

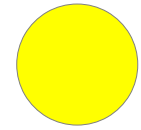


Flame Graph

Critical Path (aggregated)



Compare [Portions of] Traces



- Current status of the feature
 - Functionality is available through scripting for now

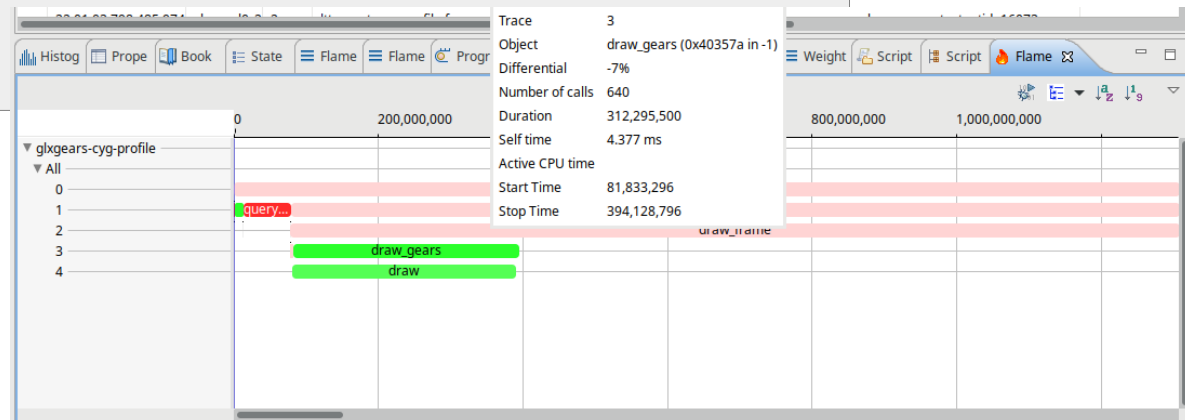
```
...
var analysis = getTraceAnalysis(trace1, <analysisId>);
var analysis2 = getTraceAnalysis(trace2, <analysisId>);

var treeset = analysis.getTreeSet()
var treeset2 = analysis2.getTreeSet()

var diffTree = diffTreeSets(analysis, treeset, treeset2);

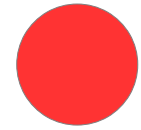
var fgProvider = getFlameGraphDataProvider(trace1, diffTree, "myFg");

if (fgProvider != null) {
    openFlameGraphView(fgProvider);
}
...
```

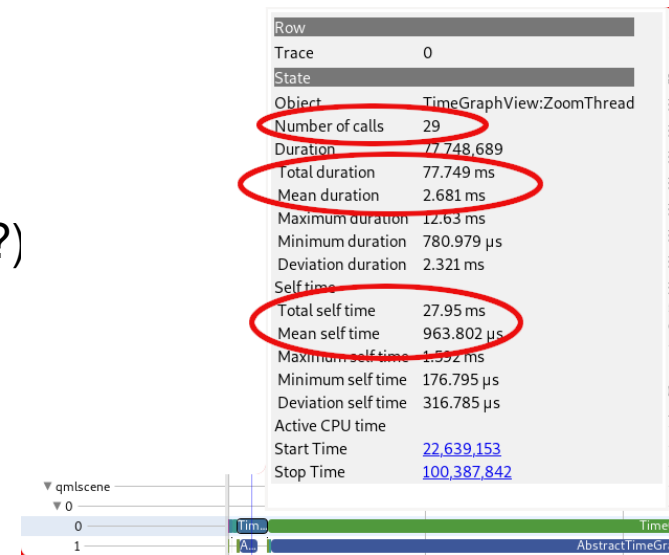


Feedback
Welcome!!

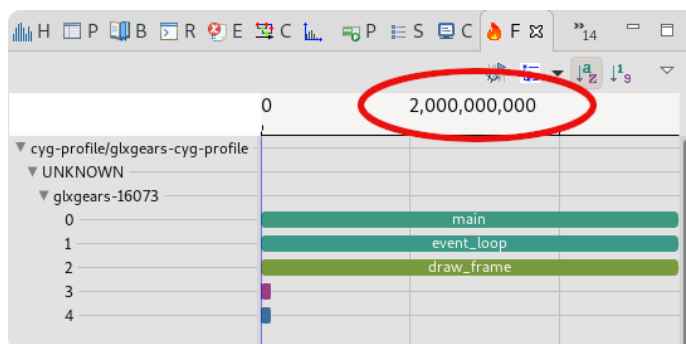
Compare [Portions of] Traces



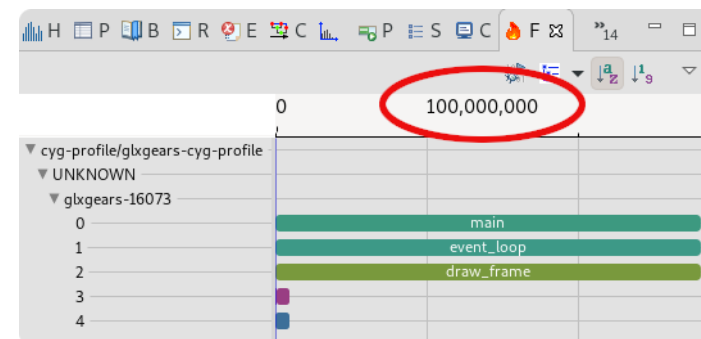
- Coming: Parameterization of the comparison
 - Which metric to use as base
 - Duration (main metric, mean, average?)
 - Self time (mean, average?)
 - Nb of calls



- Absolute (the value itself) or Relative (values are percentages of the total) ?



VS



Demo

```
$ git clone https://github.com/tahini/org.eclipse.tracecompass.incubator.git
$ git checkout diffFlameGraph
$ mvn clean install -Dmaven.test.skip=true
$ rcp/org.eclipse.tracecompass.incubator.rcp.product/target/products/
org.eclipse.tracecompass.incubator.rcp/linux/gtk/x86_64/trace-compass/tracecompass
--cli --open <path/to>/baseline <path/to>/unary_cache <path/to>/diffFlameGraph.js
--script <path/to>/diffFlameGraph.js
```

Get the traces and scripts: <https://secretaire.dorsal.polymtl.ca/~gbastien/traces/diffFlameGraph.tgz>

Description of the Use Case:

Patches in Trace Compass, changing the state system query algorithms, are supposed to improve performances of fetching the data. We have traced SWTBot navigations of a few sample traces to compare the runs and see the differences.

Questions?

Resources

- Complete Trace Compass + Incubator RCP is available at:
<https://download.eclipse.org/tracecompass/incubator/master/rcp/>
- When Trace Comparison feature is ready, look at
<https://github.com/tahini/tracecompass-ease-scripting> for examples using it
- Traces, scripts and analyses used in this demo:
<https://secretaire.dorsal.polymtl.ca/~gbastien/traces/diffFlameGraph.tgz>
- My personal blog on new features: <http://versatic.net>
- Twitter: [@genbastien](#) and [@tracecompass](#) !!