

# **WG2 Summary and Plan**

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# This Presentation

In this presentation we will

- ▶ Revisit what we promised in the Memorandum of Understanding (MoU)
- ▶ Discuss what has been done with respect to this
- ▶ Discuss what the current plans are for the rest of it

Meet **Dmitriy Traytel** who has agreed to take over as sub-leader

Giles presents his apologies for not being able to attend

## WG2: Standardization, benchmarks, tool interoperability

Among the activities of this working group are the following:

- ▶ Enriching of the taxonomy of runtime verification concerns identified in WG 1 to classify tools and problems.
- ▶ The design of common representation formats for inputs to monitoring tools. [ . . . ]
- ▶ The implementation of the interfaces in the common format for different programming languages and formalisms to enable that different RV tools can be attached to a variety of different programs and systems.
- ▶ The creation and maintenance of a collection of examples in the form of benchmarks, classified according to the taxonomy and expressed in the languages in the common format.
- ▶ The coordination of periodical activities for comparing tools against some of the benchmarks. This can take the form of a tool competition.

## Enriching of the taxonomy of runtime verification concerns identified in WG 1 to classify tools and problems.

- ▶ This taxonomy does not exist yet
- ▶ Nothing seems to have happened with respect to it since our first discussions in Malta
- ▶ It is not clear who should take the lead on this
- ▶ Reminder: in Malta we discussed whether it should be
  - ▶ top-down i.e. starting with the obvious concepts
  - ▶ bottom-up i.e. starting with concrete examples

## The design of common representation formats for inputs to monitoring tools.

- ▶ Initial discussion on common trace formats; proposal draft exists but is still pending
- ▶ Some research carried out comparing languages
- ▶ More things planned (see later)
- ▶ Note that it also says

*The common language will not be a one-size-fits-all approach, as, for example, the definition of event and its data contents, and the dependence between a trace and the system that generates the trace varies widely. Instead, the outcome will be more a small family of suitable languages, following the taxonomy developed by WG1*

**The implementation of the interfaces in the common format for different programming languages and formalisms to enable that different RV tools can be attached to a variety of different programs and systems.**

- ▶ Initial discussions started but very little input
- ▶ It was not clear that people felt that this was actually useful
- ▶ We need buy-in from multiple tool developers to produce something that is of any significance
- ▶ Reminder: the idea was to create common interfaces so that RV tools were 'swappable' and portable
- ▶ One barrier was that this depends on a complete separation of monitoring and instrumentation but for various reasons (efficiency, legacy) there is resistance

The creation and maintenance of a collection of examples in the form of benchmarks, classified according to the taxonomy and expressed in the languages in the common format.

- ▶ Clearly dependent on some things that do not exist
- ▶ Nonetheless, we are starting to do this via the competition
- ▶ There is also a broader plan (discussed in Iceland) for something more general (see later)

The coordination of periodical activities for comparing tools against some of the benchmarks. This can take the form of a tool competition.

- ▶ The main thing that has actually happened
- ▶ Although with decreasing success - discussed later



# More Generally

## Objectives

- ▶ the development of a common infrastructure that enables the development of a collection of runtime verification problems and benchmarks for the comparison of algorithms and tools, and to increase their collaboration

## Outcomes

- ▶ a taxonomy of existing tools
- ▶ a common family of input languages for describing problems and solutions
- ▶ a collection of benchmarks that allows to compare the different tools

We are on track to meet these given the current plans

## Planned Activities

- ▶ A year off from the competition to review (see later)
- ▶ A workshop in conjunction with RV 2017 to discuss the competition etc (see later)
- ▶ An online collection of tool overview papers
- ▶ Dagstuhl Seminar on specification languages
- ▶ A report recommending a shared standard for trace formats
- ▶ A second consultation about monitoring interfaces
- ▶ A crowd-sourced benchmark repository (see later)

## The Last Three Years of the Competition

Participation has been decreasing. In 2016 the C track did not run due to lack of interest.

| 2014 |      |         |
|------|------|---------|
| C    | Java | Offline |
| 3    | 4    | 4       |
| 2015 |      |         |
| C    | Java | Offline |
| 2    | 2    | 4       |
| 2016 |      |         |
| C    | Java | Offline |
| 1    | 3    | 2       |

In 2016 previous participants and many new tools were contacted. The competition in its current form is not appealing enough. We will not revisit the reasons now.

# This Year: RV-CuBES

- ▶ See <http://rv2017.cs.manchester.ac.uk/rv-cubes/>
- ▶ A (kind of) workshop held in conjunction with RV 2017
- ▶ With two aims
  - ▶ Take a census of active existing RV tools via submission of overview papers
  - ▶ Encourage discussion of the competition etc via position papers
- ▶ Tool overview papers will form a library of existing tool descriptions that will be maintained
- ▶ Actual activity will involve the following *integrated* into RV
  - ▶ Poster session to present tool overviews
  - ▶ Discussion panel to discuss position papers
- ▶ Submission **does not** require attendance
- ▶ The plan is still to hold a RV competition in 2018

# Benchmark Repository

- ▶ The initial idea is to dump everything we have into a common repository and start organising it
- ▶ A top-down approach where we organise things first has too much overhead
- ▶ Use a Wiki + git for files, hosted on the [rv-competition.org](http://rv-competition.org)
- ▶ Included programs, traces, properties
- ▶ Start with the contents of the RV competition
- ▶ Then start adding more from other projects/papers
- ▶ Long term vision:
  - ▶ RV competition uses these benchmarks directly
  - ▶ There is an expectation that papers at RV add their benchmarks to this