Project for a PR/Bachelor's Thesis

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Searching in / Querying Event Streams / Traces

REMINDS (http://mevss.jku.at/reminds) [1] is a tool-supported framework for monitoring systems of systems at runtime. It comprises a flexible runtime monitoring infrastructure providing support for different roles and a requirements monitoring model covering the requirements to be monitored, the constraints checking adherence of a system's behavior to its requirements, the events and data produced by systems at runtime, and the probes instrumenting systems to intercept events and data at runtime.

In practice, besides monitoring the system at runtime, engineers are also interested in searching and querying current and archived events, data, as well as constraint violations, e.g., live from the event queue, from databases, or from event traces recorded as files.
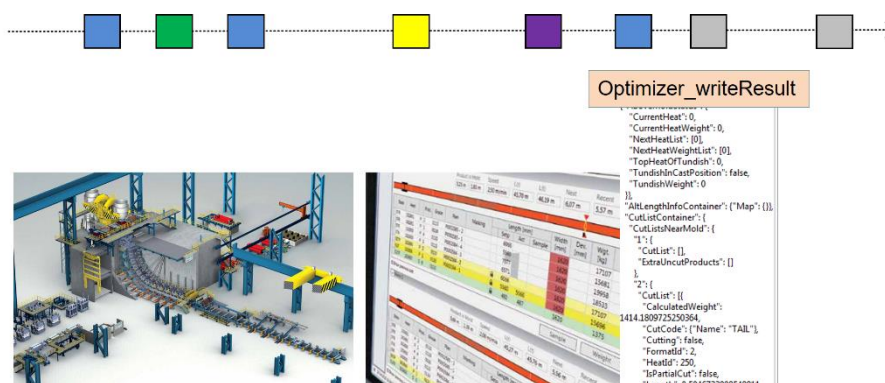
The goal of this project is to

- Explore different tools (libraries/frameworks) for searching in event streams and querying event traces
- Develop a prototype that supports searching in/querying event streams (at runtime) as well as event traces
- Capabilities
  - Intelligent search in events/data considering all possible attributes
  - Dynamic search
  - Building and storing complex queries
    Examples:
    - "find all archiving events with attached data exceeding 1Kb"
    - "find all events that triggered constraint checks that led to a violation"
  - Rank results, provide them as list together with relevancy information
- Integrate searching/querying capabilities in REMINDS
- Demonstrate the capabilities you developed based on searching/querying scenarios on different event streams/traces we provide
- Create a showcase and a brief (user as well as developer) documentation

[1] M. Vierhauser, R. Rabiser, P. Grünbacher, K. Seyerlehner, S. Wallner, and H. Zeisel, "ReMinds: A Flexible Runtime Monitoring Framework for Systems of Systems" Journal of Systems and Software, 2016 (http://dx.doi.org/10.1016/j.jss.2015.07.008).