`boost::statechart` visualisation

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Meeting C++ 2019

About me

Hello!

- My name is Anton.
- I work at BMW.
- I do software which runs in cars.
- I mostly code in C++.
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What is boost::statechart?

'The Boost Statechart library is a framework that allows you to quickly transform a UML statechart into executable C++ code.'

https://www.boost.org/doc/libs/1_71_0/libs/statechart/doc/tutorial.html

Example

```
struct StopWatch : sc::state_machine< StopWatch, Active > {};
struct EvStartStop : sc::event< EvStartStop > {};

struct Active : sc::simple_state< Active, StopWatch, Stopped > {
    using reactions = mpl::list<
        sc::transition< EvReset, Active >,
        sc::custom_reaction< EvPlayMusic >,
        sc::deferral< EvTerminate > >;

    sc::result react(const EvPlayMusic &ev);
};
```

Problem statement

Let's have a look at these common use cases:

- New feature. State machine must be modified.
- Code review. Someone modified a state machine.
- Bug analysis. State machine misbehave.
- Learning. You are new to the code base.

These tasks require you to have an overview of the state machines.

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It is relatively hard to get an overview of `boost::statecharts` by just looking at C++ code:

- No explicit transition table.
- Notation is quite verbose.
- Implementation can span multiple files.

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Bosce, or `boost::statechart` extractor, is a command line tool to extract information about `boost::statecharts` from an arbitrary binary with debug symbols and transform it to a user-friendly form, e.g. UML diagrams.

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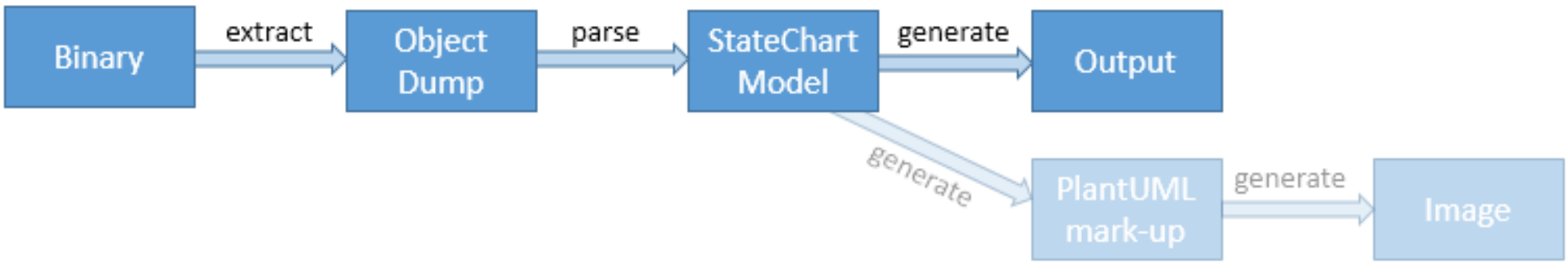

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```
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$ bosce demo -l
Available state-machines:
    StopWatch

$ bosce demo -s StopWatch > uml.pu
$ plantuml uml.pu
$ xdg-open uml.png
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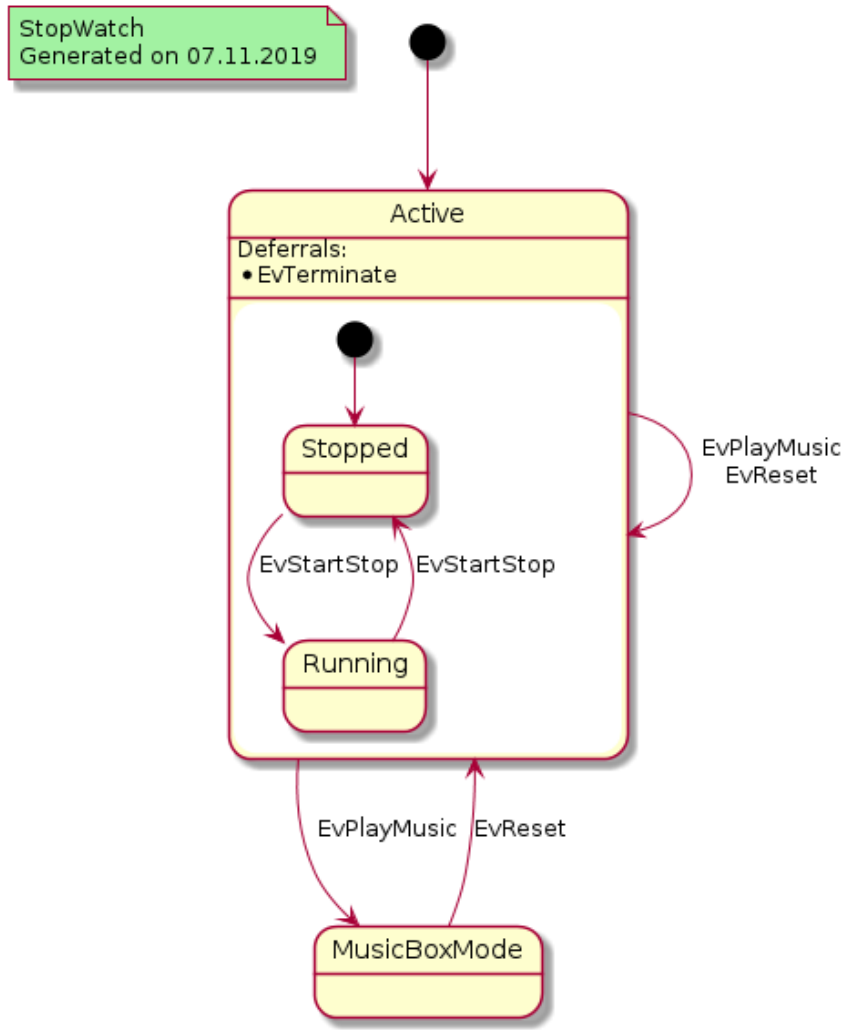

Thank you!