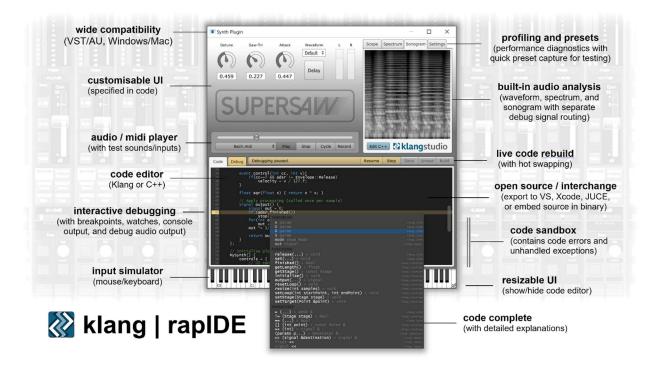# KLANG: live and expressive C++ for audio

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This workshop provides a practical introduction to two technologies developed to support C++ audio development: *klang*, a C++ dialect (language extension) that adds audio DSP semantics to modern C++, and *rapIDE* (rapid audio prototyping IDE), a complete C++ development environment in an audio plugin, supporting live code editing, recompiling, debugging, and analysis within the DAW.

Developed to improve the liveness and usability of professional DSP practices, both tools facilitate the expressive design and rapid prototyping of new synthesisers, effects, and sounds, while lowering the threshold to C++ for newcomers and learners, without compromising its expressive ceiling or performance - notably, by introducing language support for signal flow:

```
in >> lpf(mod) * gain >> out;      // wah-wah

(op2 << op2) >> op1 >> out;        // 2-op feedback FM

pluck >> string >> out;            // waveguide guitar (KS)
```

The workshop will guide participants from any background in the development of a variety of effects and synthesiser plugins to explore the Klang language and rapIDE platform.

Both technologies are free and open-source for non-commercial use and in development by nash.audio, a Bristol-based non-profit organization supporting projects in music and code.

For more information, see http://nash.audio or email klang@nash.audio.