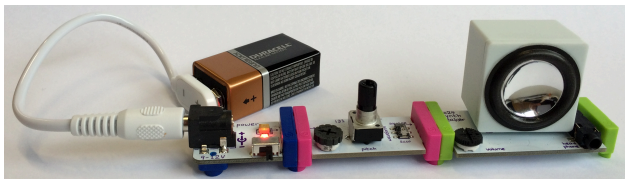
littleBits Synth Kit

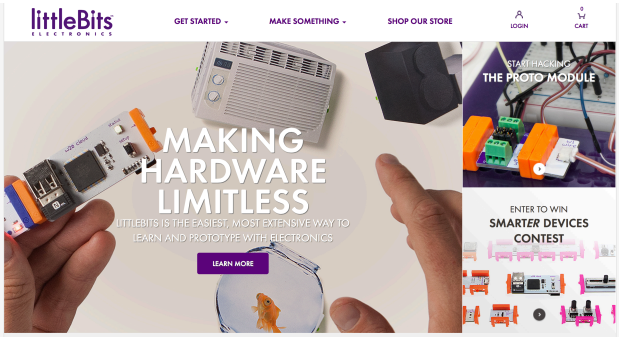
as a physically-embodied, domain specific,

functional programming language

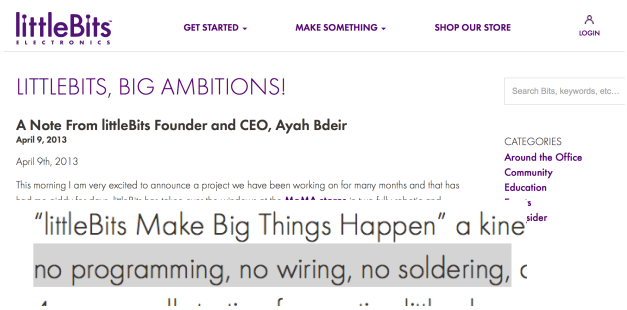
James Noble & Timothy Jones
Victoria University of Wellington
New Zealand



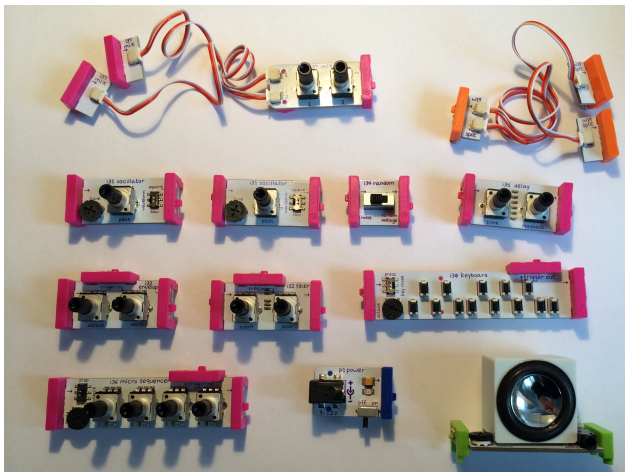
littleBits.cc



"no programming"



"no programming"



Cognitive Dimensions

- **Medium:** circuit elements, "bits"
- **Activities:** exploratory design, modification, incremental construction.
  transcription?
- **Visibility:** general structure high, element settings low
- **Diffuseness:** compact, small size
- **Viscosity:** low viscosity, easy to change
- **Secondary Notation:** labels, colours, position

Cognitive Dimensions

- **Hidden Dependencies:**
  intermodule dependencies *explicit*,
  parameter dependencies *hidden*
- **Role Expressiveness:** geeks not folkies…
- **Premature Commitment:** easy to change
- **Progressive Evaluation:** delay to reorganinse,
  parameter changes instant
- **Provisionality:** can move disconnected modules
- **Abstraction:** none

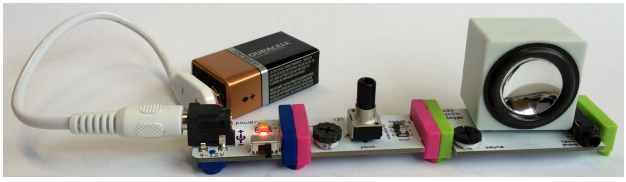
But is it Haskell?

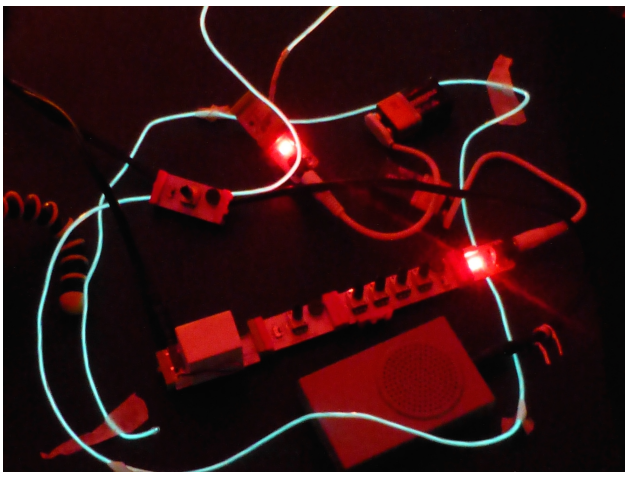
- **data** ClipState = O | P
  data LB (s :: ClipState) a
  instance Functor (LB s)
- clip :: LB s a → LB O b → LB s b
- **instance** Monad (LB O) **where** (>>) = clip

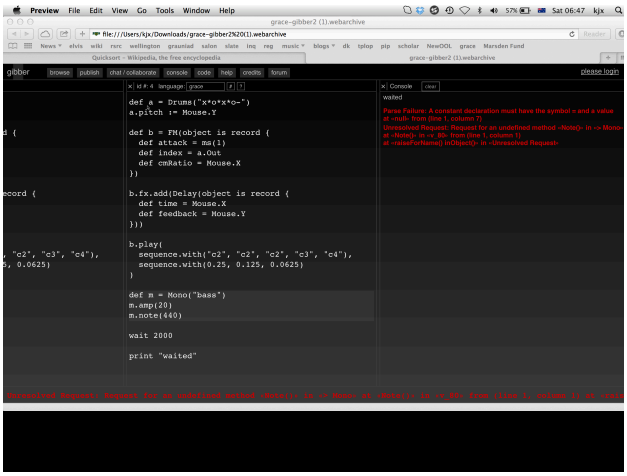
- oscillator :: Knob → Knob → LB O ()
- filter :: Knob → Knob → LB s a → LB O a
- keyboard :: Key → LB O a → LB O (LB P a)

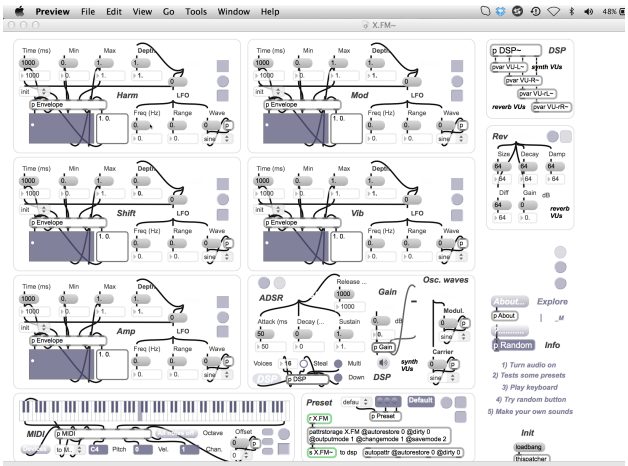
But is it Haskell?

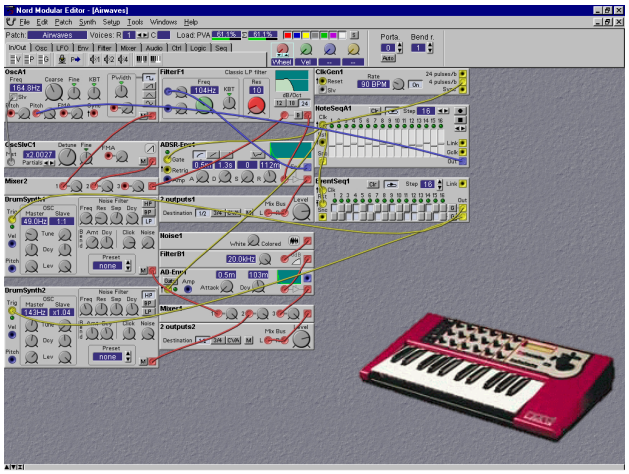
- example :: LB O ()
  example = do
    trigger ← keyboard D wire
    oscillator 20 40
    filter 80 50 trigger
    speaker







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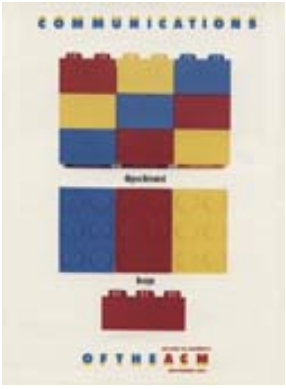
File Edit Patch Synth Setup Tools Windows Help
Airwaves
Osc1
Filter1
ClkGen1
NoteSeq1
EventSeq1
Mixer2
Noise1
Filter01
Mixer3
2 outputs1
2 outputs2
DrumSynth1
DrumSynth2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