TR like drum sequencer

Features:

- 16 instrument (trigger) tracks
- Shuffle
- For the resolution I think 96 ppq would be OK.
- At least 32 steps per bar as maximum
- Editing while playing
- Syncable via MIDI Sync (Master or Slave); optionally DIN, tape sync, SMPTE, 16th note trigger
- Can follow a master at 1:1, 1:2, 1:3, 2:1 (other?) tempo ratios
- One trigger out per track (which makes to 16 outs)

Interface:

- A dedicated tempo pot
- At least 16 buttons with LEDs for the Steps,

I would personally prefer a solution with 32 buttons: 16 bigger ones and 16 small ones so that the machine wouldn't be blown up to much in size. It would be the first machine with direct access to 32 steps. (not the first - see below) With a shift button the step buttons could be used to select the track/instrument/voice or however you like to call it.

- Patterns could be selected also with the step buttons and another shift button, i.e. holding “pattern select” and pressing the “step 2” button would switch the sequencer to pattern 2.
- Transport buttons: Stop, Pause/Play
- A nice feature that introduced on the TR-909 is that pressing a step button doesn't just toggle the trigger for that step on/off, but will select one of two dynamic levels as well, i.e. pressing it once will set that step to a soft trigger (and its LED would come on dim), pressing it again will set it to a full-volume trigger (and the LED goes to full brightness), and pressing it again silences it (and the LED goes out).

- An open hi-hat step will overwrite any closed hi-hat on the same step, and vice-versa.

Caveats

16-step limitation

One disadvantage of the “classic” Roland TR-style sequencer is that it is generally limited to 16 steps per pattern. To make a longer pattern, multiple patterns could be selected at the same time. For example, hold “pattern select” and then press “step 5” and “step 8” buttons would cause the sequencer to play patterns 5 through 8, then start over at pattern 5. As each distinct pattern plays, the step buttons and LEDs reflect only the current 16 steps. When linking patterns in this way, the user needs to be quick with the buttons, because they will quickly change the the next 16 steps!

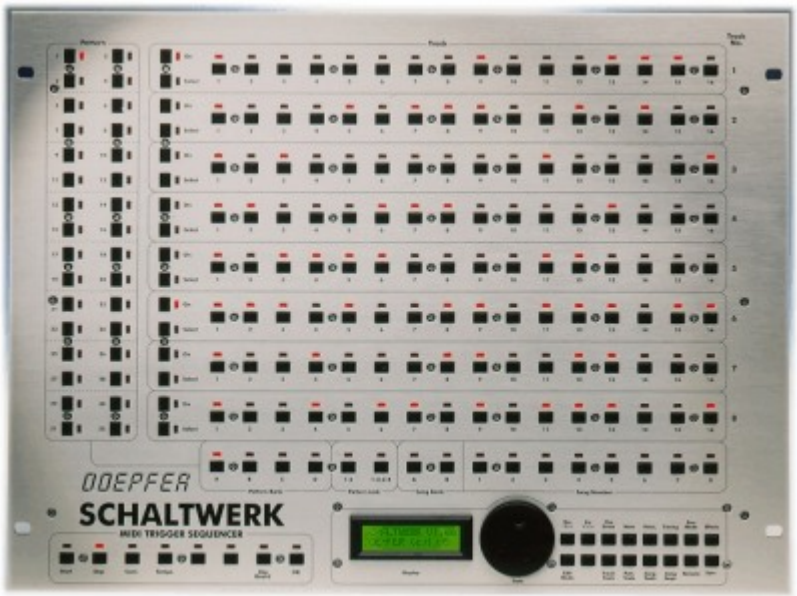
Also, on the TR-707 and 727 at least, chained patterns may not be edited whilst playing.

The Simmons SDS-6 approach (below) partially solves this by visually providing 32 steps. This enables creation of a 2-bar pattern at 1/16th note resolution, or a 1-bar pattern at 1/32 note resolution.

Another approach is found in the Korg ER-1 (below), in which a pattern is 64 steps by default, but only 16 steps are visible. While at first this sounds similar to the Roland TR series, the ER-1 does not “page flip” as the sequencer moves on to steps that aren't visible. Instead, you're able to select which 16 steps you're editing independently of the 16 steps which are playing.

Variants

Schaltwerk



- A “two-dimensional” TR-style sequencer exists/existed, the now discontinued Doepfer

Schaltwerk.
- http://www.doepfer.de/swe.htm
- There have been several posts in the forums from people craving a sequencer like this. It is essentially a TR-style sequencer, but with an actual row of buttons for each track, instead of a UI which requires you to switch the existing row to the track you want to work on.

SDS6

Image © Paul Maddox

Another variant is the discontinued Simmons SDS6 with one row of buttons for steps, but a LED matrix display of 32 steps x 8 instruments for a full view of the current pattern. A column of 8 buttons beside the display allows instant selection of the instrument for programming on the pattern buttons.

Similarly, the Roland TR-505, 626, 707 and 727, although having only one row of pattern LEDs, use a small custom LCD (non-backlit) to display the whole pattern.

Monome

A combination matrix of buttons and LEDs may be possible with lighted buttons, similar to the Monome, which is not a sequencer in itself.

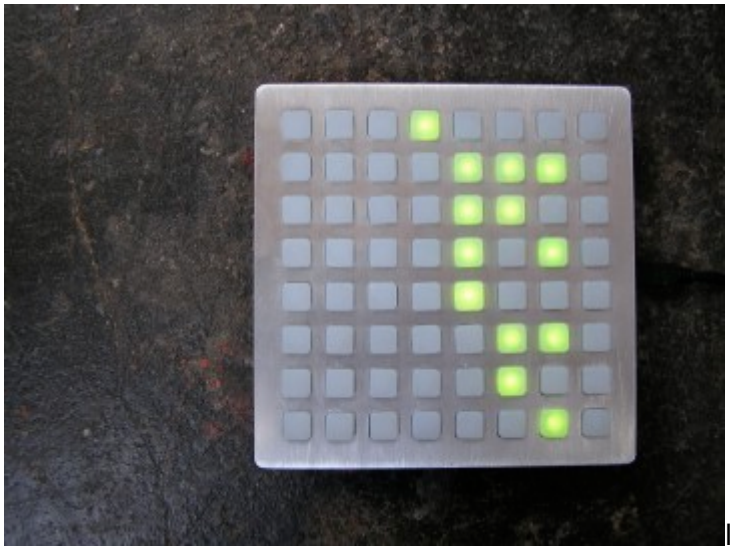


Image © monome.org

Electribe

The Electribe ER-1. Notice the LEDs just above the 16 step buttons. 4 LEDs tell you which 16 steps are currently playing, and the other 4 tell you which 16 steps you are currently editing.

Octopus

From the documentation on the genoQs web site, this appears to be the mother of all matrix pattern sequencers (with a price tag to prove it). Posted here primarily due to its pure beauty!