

Organelle Raspberry Pi 2

Organ Donor

Opus 1.2 Software

- ARM Cortex-A7 computer, ~5000 lines of Python code
- High-level application processor on top of Arduino console
- 7" 800×480 touchscreen for control and visualizations
- GUI screen interfaces built with Tkinter toolkit
- Open source libraries for MIDI operations
- 10-position rotary switch chooses major mode of operation
- Switch monitor process launches a program for each mode: visualizations, auto-play, play external devices, game mode, etc.
- Hidden setup mode speeds per-installation configuration
- Future plans: on-board automatic music composition, wifi interactivity, automatic pitch recognition, etc.

Arduino

- ATmega2560 microcontroller, 760 lines of Arduino C++ code
- Accepts MIDI input from two keyboards and the Organelle
- Handles illuminated buttons for stops and couplers
- Maps each MIDI note onto 1-6 pipes, per stops and couplers
- Creates unified MIDI stream of NOTE ON/OFF to MTP-8
- Can work standalone without the Organelle (as in Opus 1.0)

MTP-8

- PIC microcontroller, proprietary (assembly language?) code
- MIDI serial input, looks for NOTE ON/OFF messages
- Stores a mapping between note numbers and pipes
- Discrete output for each pipe valve, 64 per board