LES PAUL SOUND ON SOUND

In the 1940s, Les Paul created a recording method called "sound on sound," which let him layer multiple performances onto a single track. He did this by recording onto a disc, playing it back, and recording a new part onto a second disc. By repeating this process and switching between discs, he built full songs by himself This process laid the foundation for what we now know as multitrack recording!

WHAT IS THE GOAL?

This project is designed to be an interactive museum exhibit, allowing visitors to experience Les Paul's groundbreaking sound-on-sound technique firsthand. By recording and layering their own sounds, guests can explore the roots of modern music production in a hands-on, creative way.

THE DAISY POD MICROCONTROLLER

We replicated Les Paul's process using modern tech. Why did we choose Daisy Pod?

- It is designed for real-time digital signal processing
- It has a ARM Cortex-M7 processor which is good for audio applications
- It has on-board audio inputs and outputs.
- It includes 2 Buttons, 2 RGB LEDs, and rotary encoder with push button.
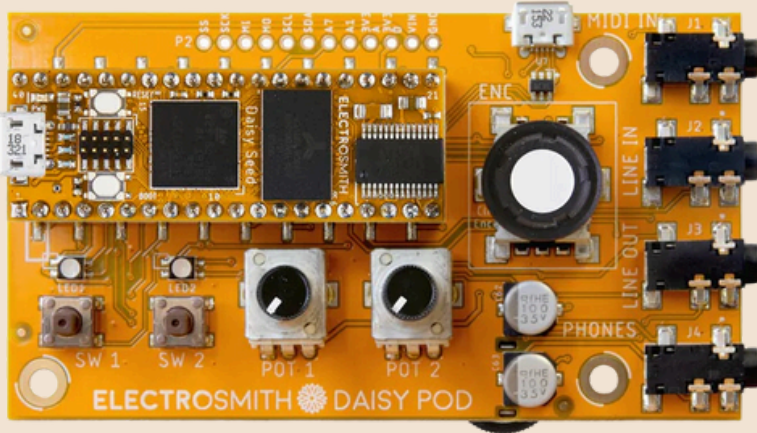
HOW OUR CODE WORKS

1. **Record** - The user records their voice or instrument. Its then stored in the boards memory. This is initiated by pressing SW1 Button on the daisypod.
2. **Playback + Record** - The previously recorded layer plays back while the system waits to begin recording the next layer. Pressing SW2 begins the recording process exactly when pressed.
3. **Loop & Layer** - The new track is the next playback layer. Again, it indefinitely loops until SW2 is pressed.
4. **Reset** - Pressing both SW1 and SW2 at the same time resets the buffer. This restarts the process allowing for a new recording.

For a more detailed look at the code, please see the video after this infographic!

POTENTIAL GOALS FOR THE FUTURE

- **Design a Full Kiosk** - Build a museum-ready enclosure with an interface, clear labeling, and accessible design.
- **Custom Button & Control Layout** - Create physical controls that are intuitive and visually connected to the layering process. These could be soldered directly to the daisy pod switches.
- **Add Visual Feedback** - Use a visual element to show layers being played or recorded. This could be a physical record that spin when recording/ playback is in process.
- **Loop Sync & Timing Tools** - Currently, it can be difficult to align layers when looping. A process could be implemented that imporces alignment and layering.
- **Save & Share Recordings** - Allow users to save their layered tracks or send them to a device by email.
- **Auto-Playing Demo Track** - Include a pre-recorded loop that plays when the exhibit is idle. This could be used to give further contexted before they interact.
- **Playback Speed Control with Potentiometers** - Use the built-in pots on the Daisy Pos to let users change playback speed or pitch.