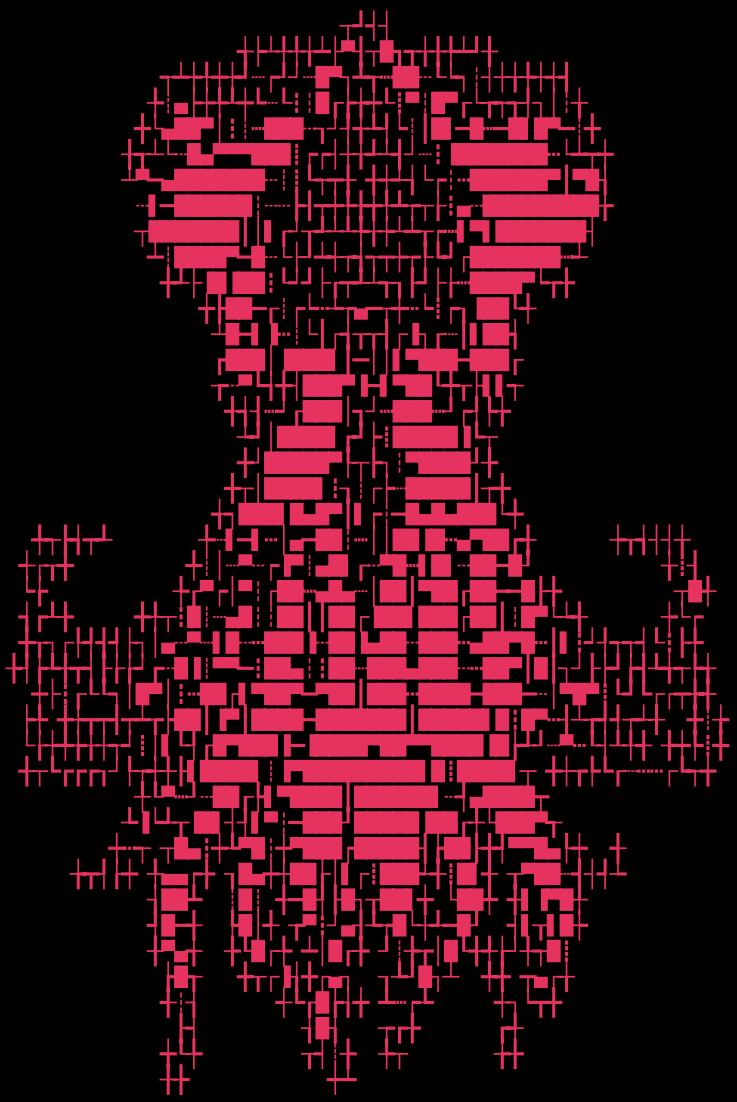
NOT just think it, make it happen

NOT _drone
HUSH _stack
Ohm _transducer
Waste _not

NOTED



Design Portfolio

2025-2026 Lineup

The NOT Engineering Design's Engineering Team

Abstract

The NOT Engineering Design Portfolio presents the company's commitment to engineering and design through projects that span throughout the physical and the digital stack; the reader will find that the portfolio is divided into five sections: (i) Full Stack section, where all departments were involved, creating a complete product; (ii) Electrical and Electronics; (iii) Software and QA; (iv) Mechanical and Manufacturing and (v) AI and Machine Learning. We sincerely hope that you enjoy this document.

Bio

NOT ED

Figure 1: About Us

NOT Engineering Design is a company fully dedicated to engineering design and product development, born from the core mission of transforming 0s into 1s; ideas into reality. As will the reader notice, we are a team of multidisciplinary engineers with diverse expertise areas, from automotive to biomedical. In the present document, we present to the reader a series of projects that showcase our expertise in (i) a full product development; and (ii) individual engineering are projects, where we will focus in particular fields completely.

Below, you will find the NOT Engineering Design's Project 2025-2026 Timeline for current and upcoming projects; stay tuned for more and be sure to check out our socials.

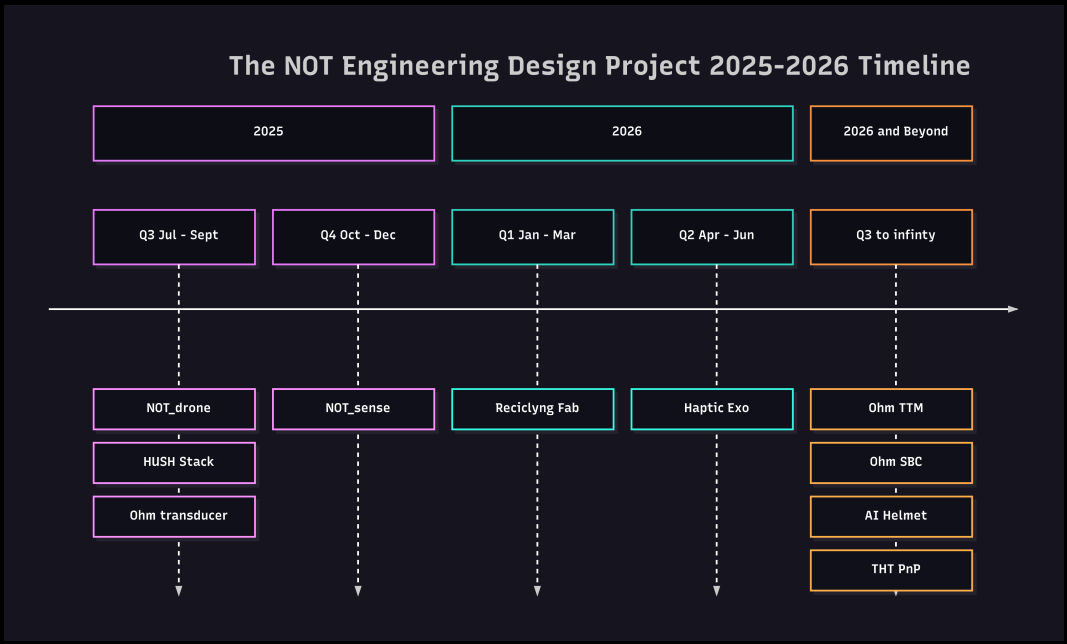


Figure 2: The NOT ED's 2025 Timline. Naime, R. [Diagram] Own authorship diagram.

Contents

List of Figures

Full Stack Projects

The NOT Engineering Design's Full Stack projects section showcases the projects that involve all areas of the physical and digital stack: mechanical, electrical, and software design. These projects demonstrate our expertise in bringing to life ideas into real-world products. If you can think of it, we can make it happen.

The NOT_waste Machine V1

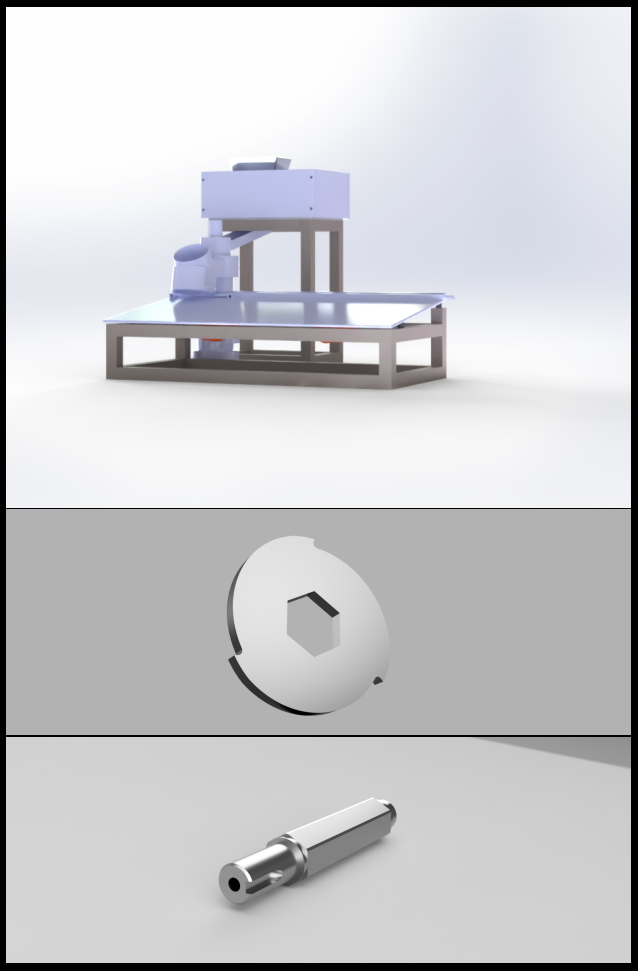


Figure 3: Top: Mechanical assembly of the grinding stage. Middle: Grinding teeth render. Bottom: Axis render.

Tech Specs:

- System production: 100kg/h.
- Energetic efficiency (grinding stage): 32.06kg/kWh.
- Crushing torque (per teeth): 1.024Nm.
- Custom design.
- Hydraulic metal separation.

Description:

As one of our full-stack projects, NOT ED undertook the challenge of designing, prototyping, and assembling a PCB and eWaste processing machine on the mechanical, electrical, and software fronts, as well as the necessary documentation, permissions, and requirements of the locality where the machine was to be located. This tiny process plant is capable of crushing and grinding electronic waste in two stages; it then undergoes a hydraulic separation stage in which the resulting dust is separated into metallic and nonmetallic materials by density and vibration.

The NOT_drone

Tech Specs:

- Effective chassis area: 10x10cm.
- Main board area: 36x29mm.
- Sensor interface: Magnetometer, barometer, ToF, 6DoF IMU.
- PMIC and battery charging.
- USB-C power and data.
- MIPI CSI-2 camera interface.
- nRF54L15 RF frond end for wireless operation and data transmission.
- PX4 software framework and control.
- TinyML human recognition algorithm.

Description:

The NOT_drone is the first embedded full-stack project by NOT ED; it is a fully insider project with the objective of demonstrating our expertise in the field. Consisting of an ultra-compact, AI vision drone. Having the end user in mind, the NOT_drone is capable of operating with the sole actuation of a button, carrying out take-off, human recognition, image capturing and processing, to then landing in the same area where it took off; this is achievable thanks to the combination of aerodynamics, sensor fusion, a TinyML algorithm and control, The drone has an effective area of 10x10cm, with an even tinier main board (36x29mm) that encompasses the battery charging capabilities, camera, high current supply, sensor interface and wireless operation; furthermore, the main board has an STM32N6 SoC to enable AI processes and advanced communication interfaces such as the USB and MIPI CSI-2 camera interfaces. The main board communicates with 4 motor control units located below each motor, creating a multi-board design for full flight operation.

Figure 4: Top: Complete assembly of the drone. Bottom: Main controller board, top component layer.

Electrical & Electronics

The Electrical and Electronics section presents NOT Engineering Design's expertise in this field, showcasing planning, component selection, project segmentation (Audio, Biomedical, Sports, Industrial, etc.) and implementation of innovative solutions for various applications. We possess extensive experience in PCB design, EMI, and electrical and electronic simulation in the specialized segment of audio and biomedical devices.

Audio Board 1

Tech Specs:

- BLE Audio.
- Speaker/AMP interface.
- USB C.
- PMIC.
- Battery charging.
- MEMs microphone.
- On-board debugger.
- Volume control.

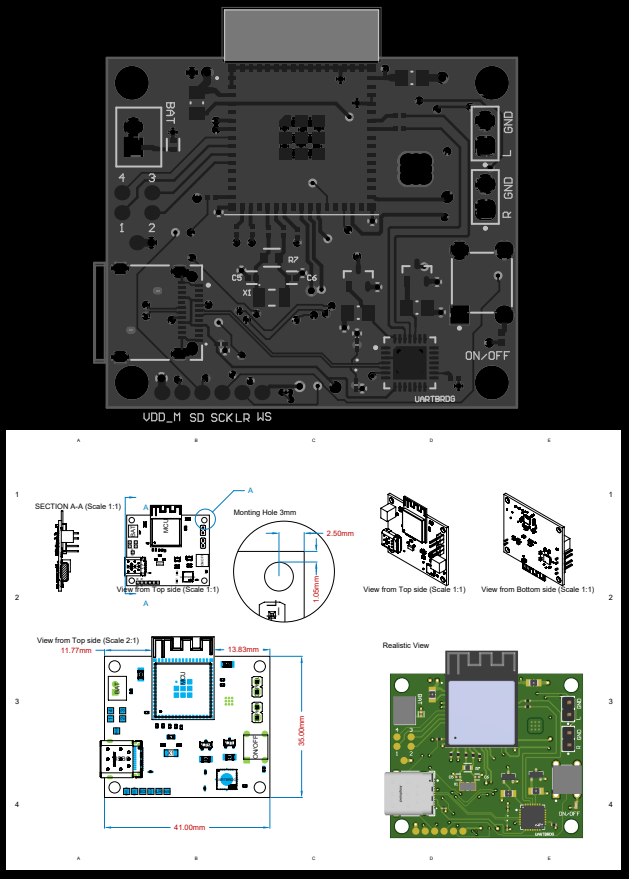


Figure 5: Top: Figure depicting the top component layer of the Audio Board 1. Bottom: PCB documentation blueprint for the Audio Board 1, depicting dimensions, notes and layer stack.

Description:

The first Audio Board based on an ESP32-S3-MINI MCU chip, this board is aimed at audio applications on a low budget; it includes capabilities for sensor interface and reading (I2C, I2S, UART), USB C 2.0 OTG, USB C, 3.5mm Jack, UART bridge, amplifier, DAC, PMIC and transistors, USB C debbug and programming (C language), 5V to 3.3V LDO, ESD protection, tuned external crystal oscillator circuitry, added pins for connection to speaker left and right diaphragm, and external MEMS for microphone and noise cancellation; dimensions: 40 mm x 35 mm, SMD and THT components. Designed in 6 layers (SIG, GND, SIG, GND, GND, SIG) along with surface finish, blind vias, impedance control at 50 ohms and 90 ohms.

Audio Board 2

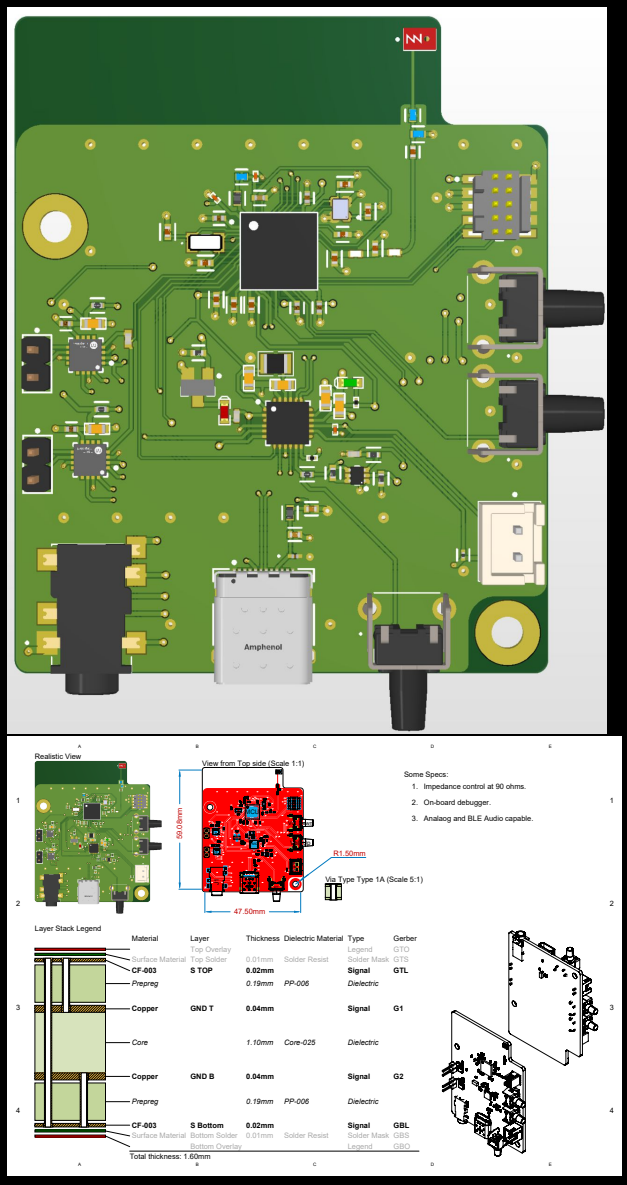


Figure 6: Top: Figure depicting the top component layer of the Audio Board 2. Bottom: PCB documentation blueprint for the Audio Board 2, depicting dimensions, notes and layer stack.

Tech Specs:

- BLE Audio.
- Speaker/AMP interface.
- USB C.
- PMIC.
- Battery charging.
- MEMs microphone.
- On-board debugger.
- On/Off control.
- Volume control.

Description:

The second board in the Audio Board series, based on the nRF52833 SoC, is aimed at hi-fi audio applications on a low-mid budget. It includes USB-C for power and data lines, 3.5mm Jack, PMIC (nPM1300) and battery charging capabilities, dual amplifier array for stereo audio and speaker interface, on-board debugger header, volume control, on/off control, RF antenna for BLE Audio, tuned dual crystal oscillators to optimize performance and timing, Zephyr OS capable. This board was designed with a 4-layer stack up (SIG, GND, GND, SIG), blind vias, impedance control at 50 ohms and 90 ohms.

ECG Board

Tech Specs:

- USB-C power.
- LDO (+3V3 and +2V8).
- 128Mb dual flash memory.
- FPC to display with brightness control.
- ECG instrumentation circuit.
- Capacitive touch.
- BLE secure connection and authentication.

Description:

Bio-sensing coprocessor board, based on the RP2350B MCU as the main processor, while offloading BLE secure connection and authentication (ATTEC608A) to the nRF8211 SoC. The signal processing circuit is designed to accommodate ECG signals in a small size (70x50mm). The board has BOOT, RUN buttons, and a capacitive pad to start signal recording without the need of additional physical buttons and is achieved thanks to the AT42QT1011 touch sensor, on-board SWI debug interface, tuned crystal oscillators, RF antenna, and matching network. Operation is to be displayed on an OLED display thanks to an FPC connector; brightness is controlled via a brightness control circuit. This board was designed with a 4-layer stack up (SIG, GND, GND, SIG), impedance control at 50 ohms and 90 ohms.

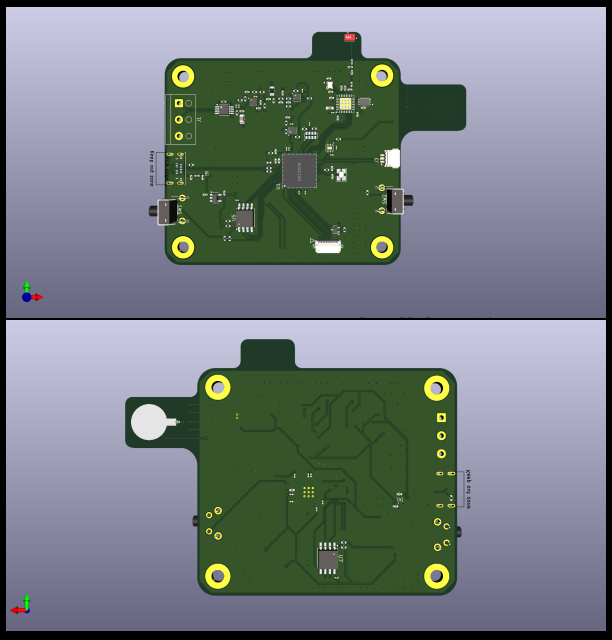


Figure 7: Top: Figure depicting the top component layer of the ECG Board. Bottom: Figure depicting the bottom component layer of the ECG Board.

OHM Audio Transducer

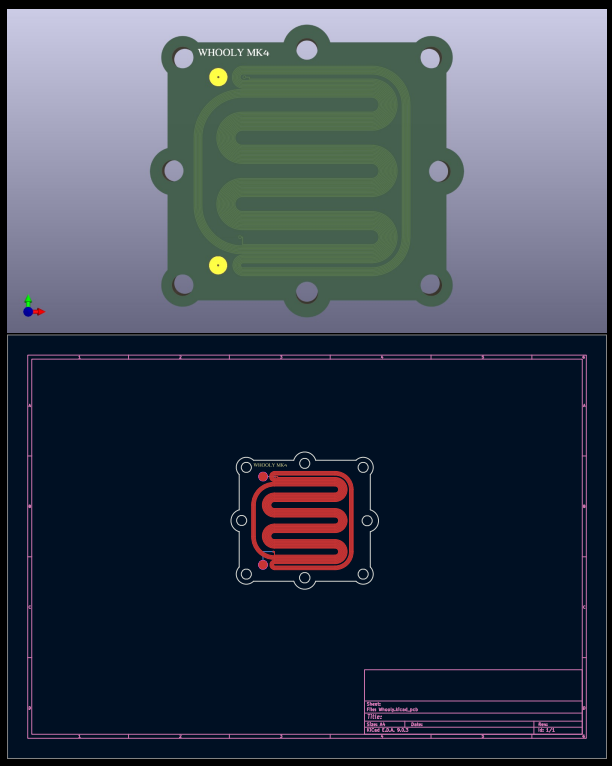


Figure 8: Top: Figure depicting the 3D render of the transducer PCB. Bottom: Transducer design and PCB outline blueprint.

Tech Specs:

- Height: 68mm.
- Width: 73mm.
- Effective active area: 49.64cm^2
- Thickness: 0.7mm.
- Impedance: 45Ω.
- Dynamic range: 20-20,000Hz.
- Estimated sensitivity: 90dB/mW.

Description:

A high-quality transducer designed to reproduce sound with natural timbre and exceptional clarity. Its unique voice-coil geometry maintains symmetric pressure across the diaphragm, ensuring precise, linear motion for a detailed and lifelike presentation. It is designed on a Flex PCB and is aimed at Hi-Fi audio applications on both the professional and consumer audio devices.

Software & QA

The Software and QA section provides an overview of NOT Engineering Design's capabilities across the stack, with expertise in both front end and back end development for full control and customization for client application. Our work framework allows for the creation of fully custom solutions ranging from simple static web apps, to entire architectures based on your needs.

HUSH Financiera Stack

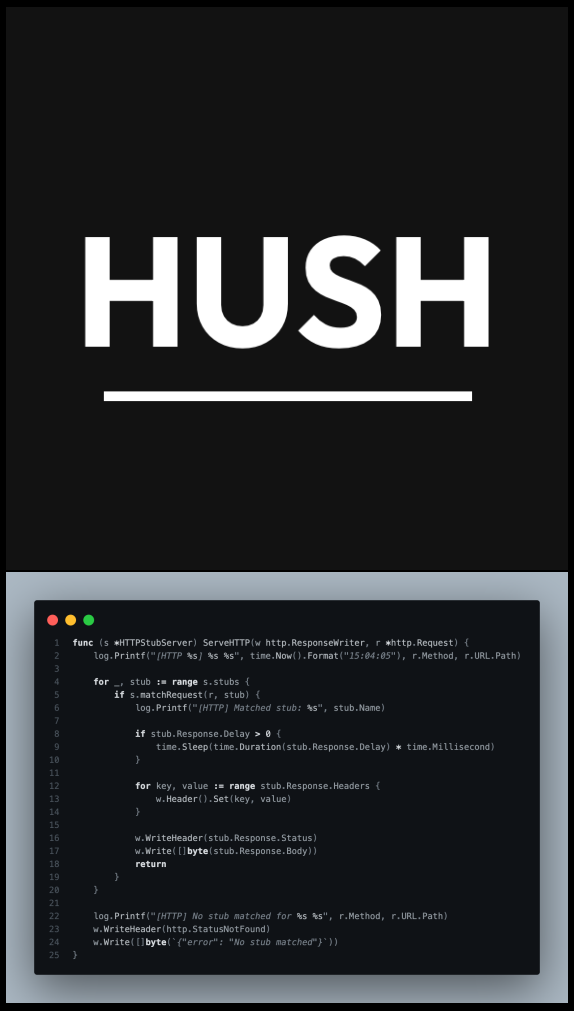


Figure 9: Top: HUSH Financiera logo. Bottom: Development snippet for the HUSH Financiera full stack software design.

Tech Specs:

- REACT framework.
- REACT 2.0.
- Next JS.
- n8n.
- Dynamic paging.
- SQL data base.

Description:

Working closely with HUSH Financiera, a Mexican financial services provider, we enabled a full-stack software framework, connecting back end operations with a sleek, modern front end web interface. The system enables the client to quickly simulate credit loans with their respective information such as interests, due dates, etc. Additionally, an n8n back-end and SQL database is implemented to securely operate as staff and oversee every movement within the system.

Mechanical & Manufacturing

Mechanical Design and Manufacturing are fundamental to product development. At NOT Engineering Design, we provide comprehensive design and prototyping services for both consumer and industrial applications. In the following section, we showcase our capabilities in industrial machinery design and our expertise in additive manufacturing, two of our core specialties within the engineering field.

The NOT_vise

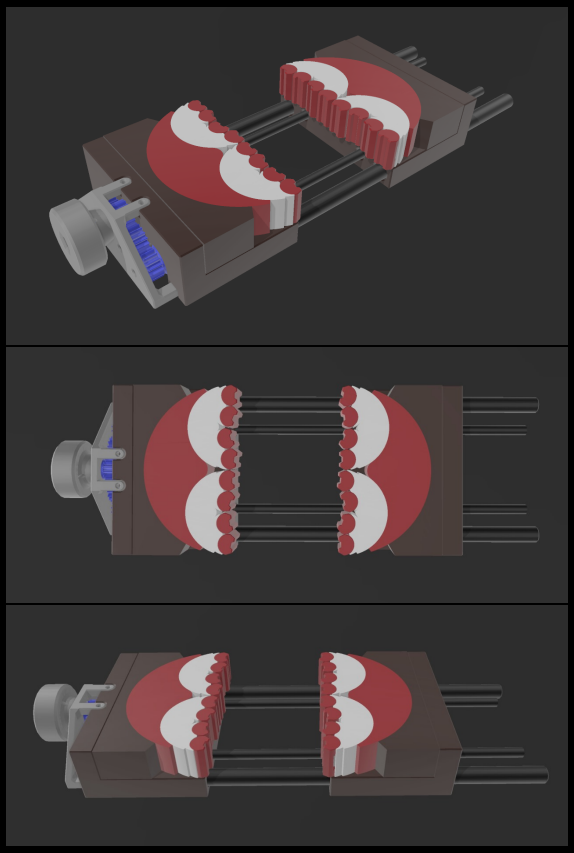


Figure 10: Top: Isometric view of the complete vise assembly. Middle: Top view of the vise assembly. Bottom: Top-lateral view of the complete vise assembly.

Tech Specs:

- Scalable.
- Linear guidance base frame.
- Gear driven rack.
- Recursive semi-circular jaw pattern.
- Minimal part count.

Description:

A fully 3D-printable fractal vise designed to securely grip irregular geometries. The vise uses a modular, recursively patterned jaw that multiplies contact points and evens the pressure distribution. A spur-gear/rack drive provides mechanical advantage. This implementation reinterprets the classical concept (cf. Heine's vise) for consumer FDM: few non-printed items (standard fasteners/shafts), short print chains, and predictable tolerances.

Additive_toolset

Tech Specs:

- Scalability for FDM printers.
- Parametric flexibility.
- Functional equivalence of standards.
- Ease of measurement.
- Artifact types:
  - Linear and Circular Accuracy Artifacts.
  - Z-Axis Stair Step Artifact.
  - Feature Resolution Artifacts.
  - Surface Texture and Overhang Artifact.
  - Label and Coordinate Identification.

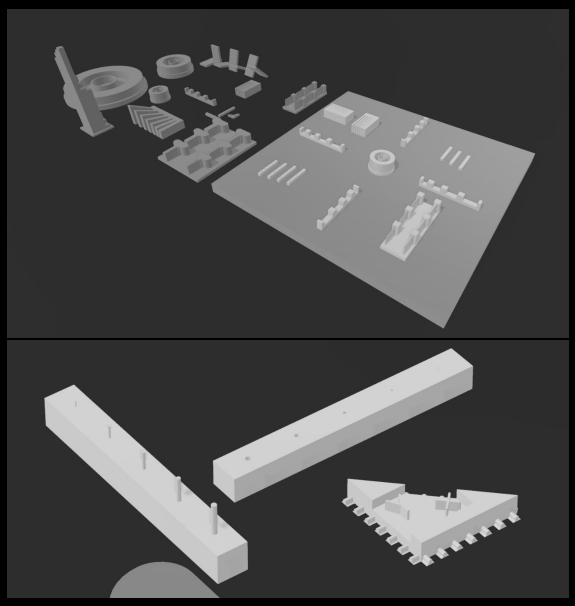


Figure 11: The description.

Description:

Design and implementation of standardized additive manufacturing (AM) artifacts based on ISO/ASTM 52902:2023. The objective was to create CAD models that replicate the functional purpose of the standard artifacts for in-house research and print-farm calibration. Each artifact was modeled parametrically to suit FDM systems while preserving the geometric intent defined by the standard. The resulting suite enables dimensional benchmarking and surface evaluation, and process comparison across multiple printers, materials, and slicing parameters.

Services & Capabilities

Electrical & Electronics

NOT Engineering Design and its Electrical & Electronics Department offer the following services:

- Full-stack electronics design including:
  - Project evaluation and consultation.
  - Component selection and Bill-of-Materials (BOM) creation.
  - Schematic capture.
  - Circuit SPICE simulation (if required).
  - Layer stack design and material selection.
  - PCB layout.
  - PCB routing.
  - Device testing and validation.
  - Professional documentation for all stages and final report.

NOT ED's EE Dpt. also provides each individual stage of the design as a service upon request and as a consultation service.

Important Note:

Please note that NOT Engineering Design does not provide PCB manufacturing services and device manufacturing will be outsourced with the prior consent of the customer. Customers also have the freedom to stipulate a preferred PCB manufacturer or if they only require design services.

Capabilities

The design capabilities of the EE Dpt. are as follows:

- Design capabilities up to 10+ layers.
- Rigid PCB design.
- Rigid-Flex and Flex design.
- Multi-board design.
- SPICE simulation.
- Complex high-speed design and routing techniques (CSI, USB, Ethernet PHY, etc.).
- HDI design with complex packaging (QFN, BGA, UFBGA, LGA, etc.).
- Radio frequency design for Iot and IIoT.
- Design for EMI, SI, and PI[1].
- Custom Flex Transducer Design and Capacitive Touch Sensor Design.

With regard to tools, the EE Dpt. works in a tool-agnostic way, if required by the client, we can use a design tool of preference. The EE Dpt. has certifications in the use of the Altium Designer design suite.

[1] Electro-Magnetic Interference, Signal Integrity and Power Integrity.

Software & QA

The NOT Engineering Design and its Software & QA Department offer the following services:

- Strategy and Digital Transformation:
  - Technology Strategy & Roadmapping — Choosing the right stack, architecture, and modernization plan.
  - Software Architecture Design & Review — Definition of scalable and secure system designs.
  - Product Discovery & Feasibility studies — Definition of MVP scope, validation of ideas.
- Engineering and Development:
  - Custom software (Mobile, Web, Desktop).
  - API integration and development — Connecting systems, internal tools, or third party platforms.
  - Cloud-Native Application Development (GCP, AWS, AZURE).
  - Embedded / IoT Software Development — Firmware, edge computing, actuator logic, among others.
  - Low-Code / No-Code Solutions — Rapid prototypes or internal dashboards.
  - UI/UX Design & Prototyping — Human-centered interfaces and design systems.
  - Quality Assurance & Test Automation — functional, load, and regression testing.
- Data and Intelligence:
  - Data engineering and warehousing.
  - Business intelligence (Dashboards).
  - ML and predictive analysis.
  - AI/ML — Model deployment, prompt engineering or AI integration.
- Emerging & Specialized Services:
  - AI Integration Consulting — LLMs, copilots, chatbots, and AI automation.
  - Edge/IoT Systems — Connecting hardware devices to digital platforms.
- Other services:
  - Proof of Concept (PoC) / MVP Incubation Labs.
  - Internal Tooling & Workflow Automation for Clients.
  - Vendor / Tool Selection Consulting.
  - Technical Documentation & Knowledge Management.

NOT ED's Software & QA Dpt. also provides each individual stage of the design as a service upon request and as a consultation service.

Mechanical & Manufacturing

The NOT Engineering Design and its Mechanical & Manufacturing Department offer the following services:

- Full-stack mechanical design including:
  - Project evaluation and consultation.
  - Initial prototype design.
  - Mechanical design for low volume industry.
  - Mechanical design for consumer applications.
  - Simulation of parts stress (FEA).
  - Dynamic simulation.
  - Additive manufacturing service.
  - Machine assembly and on-site workforce training.

NOT ED's M&M Dpt. also provides each individual stage of the design as a service upon request and as a consultation service.

Important Note:

Please note that NOT Engineering Design does not provide conventional manufacturing services and parts and system manufacturing will be outsourced with the prior consent of the costumer. Costumers also have the freedom to stipulate a preferred manufacturer or if they only require design services.

Your project, from the ground up