Open-Source Wireless 3D Printed Digital Stethoscope.

The situation

The high cost of modern stethoscopes remains a significant barrier to physicians and allied health professionals practicing in low- and middle-income countries, where few affordable high-quality options exist. Stethoscopes in general are hard to sterilize resulting in a use model where cheap stethoscopes are acquired by the hospital/clinic and one is assigned to each patient, with every professional who works with that patient using the same stethoscope. This can result in cross-contamination as someone touches many stethoscopes. Cheap stethoscopes also wear out quickly and have short hoses, resulting in professionals getting physically closer to the patient than necessary, particularly if they have to put their arm around the patient and listen to positions on the back.

The objective

The objective is to be able to limit the prolonged contact of the nursing staff with the patient and to have a device which can be placed by the patient but interpreted by the practitioner.

The solution

3D technologies have recently proven their efficiency and speed in the medical sector, allowing many projects to see the light of day during the COVID-19 crisis. Faced with the shortage of certain medical equipment and devices, makers, manufacturers, services and players in the 3D printing sector have mobilized to 3D print respirators, protective visors, swabs and connected devices to facilitate medical teleconsultations. **In line with this new paradigm, we propose to design an open-source wireless 3D printed Digital Stethoscope.**

The materials

- Arduino uno
- Lm393 module
- Bluetooth module
- Connecting wires
- Android Phone
- Omnidirectionnal Microphone Controller
- TRRS Microphone Cable
- Lightning Headphone Jack Adapter
- CTIA OMTP Converter
- Bluetooth airpods
- PLA filaments