

## 1. Project goal

“Data over audio” is an emerging technology already used by companies like Lisnr and Google. However, it bears numerous security and privacy concerns. Sound and especially the inaudible frequencies (ultrasound) can be used as a side channel to track internet users and their behavior across different devices without their knowledge.

SoniControl aims at the privacy protection of end users and represents a first means to effectively prevent ultrasonic tracking. SoniControl can detect ultrasonic signals and enables to efficiently block them. SoniControl 2.0 adds novel functions for sharing detections with other users for improved security and advanced diagnostic features (message visualization, sonification, recognition) to give users more intuitive and understandable feedback.

The project was pursued by Matthias Zeppelzauer, Alexis Ringot and Florian Taurer at the Media Computing Group of the University of Applied Sciences in St. Pölten. Our motivation is the protection of end users’ privacy against acoustic tracking.

## 2. Final project results

1	Intermediate project report	CC-BY SA 3.0	<a href="https://netidee.at/sonicontrol-20">https://netidee.at/sonicontrol-20</a>
2	Final project report	CC-BY SA 3.0	<a href="https://netidee.at/sonicontrol-20">https://netidee.at/sonicontrol-20</a>
3	Developer Documentation	CC-BY SA 3.0	<a href="https://netidee.at/sonicontrol-20">https://netidee.at/sonicontrol-20</a>
4	User Documentation	CC-BY SA 3.0	<a href="https://netidee.at/sonicontrol-20">https://netidee.at/sonicontrol-20</a>
5	Project OnePager (i.e. this document)	CC-BY SA 3.0	<a href="https://netidee.at/sonicontrol-20">https://netidee.at/sonicontrol-20</a>
6	External Communication Documentation	CC-BY SA 3.0	see final project report under: <a href="https://netidee.at/sonicontrol-20">https://netidee.at/sonicontrol-20</a>
7	SoniControl 2.0 Application	GPLv3	<a href="https://github.com/fhstp/SoniControl">https://github.com/fhstp/SoniControl</a>
8	Specification Concept for iOS implementation	CC-BY SA 3.0	<a href="https://netidee.at/sonicontrol-20">https://netidee.at/sonicontrol-20</a>

## 3. Planned activities after netidee project end

We plan a number of extensions and further development of SoniControl that shall be subject of follow-up projects and master theses at our university (e.g. porting to other platforms, reduce energy consumption, improve detection of especially short signals, keep the firewall up to date with evolving data-over-sound technologies and integrating SoniControl into the SoniTalk protocol, see: <https://sonitalk.fhstp.ac.at/>).

## 4. Ideas for further development by third parties

We primarily focus on further development of SoniControl by the open source community. The source code is available on GitHub and we welcome support from developers motivated to contribute extending the firewall (see “Planned activities” above). We are also looking for companies interested in integrating SoniControl into security related applications such as firewalls or virus scanners.