SenseLabOnline™

- Cost effectively build and perform listening tests
- Distribute listening test via the web and collect data in multiple locations
- Increase awareness about sound and audio quality through testing
- Robust and automatic advanced statistical analysis
Web application for listening tests

Listening tests have long been a vital and integrated part of developing audio products. This is typically done either in a structured manner with extensive experimental design and analysis, or informally.

SenseLabOnline™ is a web-based application that functions as a complete listening test facility, which helps you structure the process of performing listening test in a cost-affective manner with no trade-offs between time and quality of your test [1]. SenseLabOnline™ gives you full access to a listening test tool and statistical analysis, without the need for in-house expertise and investment.

SenseLabOnline™ handles all steps included in performing a best-practise listening test:

- Test setup and randomisation
- Administration of test
- Managing multiple assessors and listening panels
- Access to external expert listening panels or consumers
- Multiple language support
- Presentation of test stimuli and gathering of data (double blind)
- Automatic statistical analysis

Once you have registered as a user of SenseLabOnline™ you can sign in and build a range of standard compliant, as well as custom listening tests.

Increased knowledge about product perception

In the audio industry listening tests are all too often performed without retrieving the maximum amount of information about product performance and characteristics. Selecting the right methodology for your hypothesis and applying appropriate statistical analysis will help you maximize the knowledge output from the effort spent.

In SenseLabOnline™ it is possible to apply a wide selection of methodologies that all include automatic statistical analysis. In this way it is ensured that all relevant information, which can be learned from a test, is retrieved.

In-house tool

SenseLabOnline™ will serve as an in-house tool for facilitating listening tests.

Because the system is built to run in a browser you can distribute a listening test across physical locations - even to departments in other countries.

All data transformation is done in Extended Secure Socket Layer (SSL), and the application is approved with industry standard code signing certificates. The server is hosted on a professional solution with 24 bit encryption.

Currently SenseLabOnline™ serves clients in the following industries:

- Telecommunication
- Audio coding
- Hearing aid industry
- Automotive industry
- Consumer products (product sound quality)
- Sound/audio branding agencies

Using your own assessors

Assessors are essential for performing a listening test. In SenseLabOnline™ one assessor will have one login/account (email address). In addition each assessor is identified in the system using an individual numerical code, which is displayed in analysis and graphs.

A panel is a collection of assessors. A panel is used for organizing assessors in groups for easy administration when running listening experiments. This is useful when administrating e.g. assessors with special listening skills or levels of training.

In SenseLabOnline™ it is possible to setup accounts for your assessors. Once you have setup an account, the assessor will receive a password for accessing the webpage.

Access to listeners when needed

If you are not interested in maintaining your own panels of listeners, you can easily request listeners from the SenseLab listening panels. Once you have built your test you can request assistance from SenseLab with one-click.

SenseLab has a well-maintained expert listening panel [2], a panel of hearing aid users (N3) [3], as well as access to larger groups of consumers (i.e. naïve listeners).

The option for requesting SenseLab listeners means that you can deliver a complete report within as little as 48 hours after building your test using external listeners.
SenseLabOnline™ provides you with automatic statistical analysis

If you are interested in running listening tests in other countries, SenseLab can assist you in recruiting listeners and setting up the test in trusted labs around the world.

The cost of running a test with external listeners depend on a number of details like listening room specifications, experts or naïve listeners, specific demographic requirements etc. Every time you request external listeners you will receive a quotation specific for your test setup.

**Automatic statistical analysis**

SenseLabOnline™ has implemented automatic statistical analysis procedures. Any time during a test you can get an instant and full statistical analysis of the preliminary results. In addition the statistical module works as a standalone feature that will allow you to run analysis on datasets, which are not collected using SenseLabOnline™.

Our statistical routines are powered by the open source engine R. R is an integrated statistical software suite, which is continuously developed and maintained by a dynamic and supportive community.

SenseLabOnline™’s automatic routines enable you to check data quality and basic assumptions before proceeding to plotting of the results. In addition you will be able to easily gauge the assessor performance and reliability.

Elementary analysis methods like 2-way Analysis of Variance (ANOVA), with associated mean values with confidence intervals, plotting of interaction between experimental variables (etc.) are always included. For more advanced test types e.g. tests with multiple test questions/attributes, you will get a complete overview of the results using multivariate data analysis methods such as Principal Component Analysis (PCA), and Hierarchical Multiple Factorial Analysis (HMFA).

When you run the automatic statistical analysis you will receive the results as jpg files (downloaded locally). In addition you always have access to the raw data files for all your experiments. In order to maintain a high level of traceability each graph is marked with a unique id that traces it back to the original test along with a time stamp.

**Any test type/methodology**

Virtually any type of listening test can be performed using SenseLabOnline™. When you register as a client you will get a start package that includes the following test types:

- ITU-R BS.1116
- ITU-R BS.1534 (MUSHRA)
- ITU-T P.835
- ITU-T P.800 ACR/CCR/DCR
- Triangle test (ISO 4120)
- Pairwise comparison (ISO 5495)
- ABX/Duo-trio test (ISO 10399)
- Multi Dimensional Scaling (MDS)
- Annoyance test
- Suitability test
- Adapted sensory evaluation methodologies (attribute testing) with any type of scaling
- Check-all-that-apply (CATA)

If you are interested in more advanced test types or custom versions of known methodologies this is easily achievable. Just contact SenseLab with your specifications and you will have a template ready within a short time.

In SenseLabOnline™ you can test as many as up to 24 systems (codecs, algorithms, etc.) in 8 different conditions (e.g. background noise scenarios, SNR etc.) with 24 different samples (source material). However, we always recommend staying within the normal recommendations regarding test duration to avoid listener fatigue. Should you need to apply Design of Experiment (DOE), it is possible to import an external experimental design for your test.
Sound player
The sound player used in SenseLabOnline™ has been developed exclusively to meet the high performance criteria specified in the international standards for audio evaluation testing.

- Wav format only (PCM)
- 16 bit
- 8 - 96 kHz
- 40 ms crossfade between up to 10 stereo files on one trial
- Runs directly in your browser
- Zoom in during playback (down to 1 second)

The sound player runs exclusively via your web browser, meaning that no additional programs need to be installed in order to build or run a test. The sound files are not streamed to your machine, but temporarily stored locally in an encrypted format while the listening test is ongoing.

When building tests in SenseLabOnline™ it is possible to adjust the playback configuration for different settings such as enabling/disabling the zoom functionality and adjusting the crossfade.

Price
In order to get access to SenseLabOnline™ you will need a company account.

For a yearly company fee, two admin users will get access to the features in SenseLabOnline™, including the statistical module.

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<tr>
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<tr>
<td>Additional admin(s)</td>
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The yearly fee will allow access to all features and updates, which are implemented during that period of time.

System requirements
- Windows 32/64 bit (XP, Vista, or 7): Chrome (latest version), Internet Explorer (7, 8, 9)
- Mac OS X: Safari (latest version), Chrome (latest version)
- Microsoft Silverlight browser plugin
- Minimum screen resolution 1280x800
- Minimum 2 GB ram

References

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