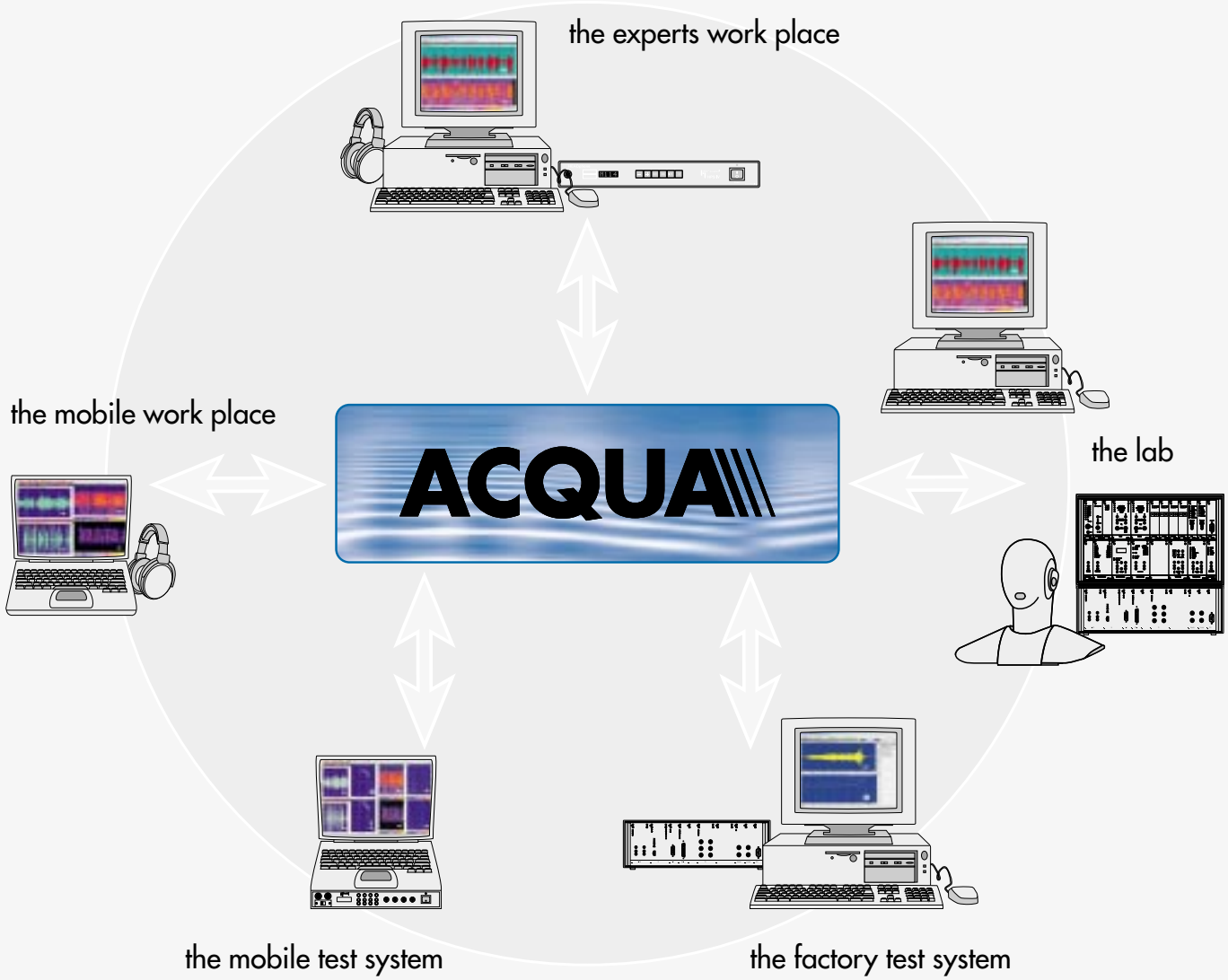
HEAD acoustics®

ACQUA

The New Concept
for Communications Testing

Advanced Communication Quality Analysis



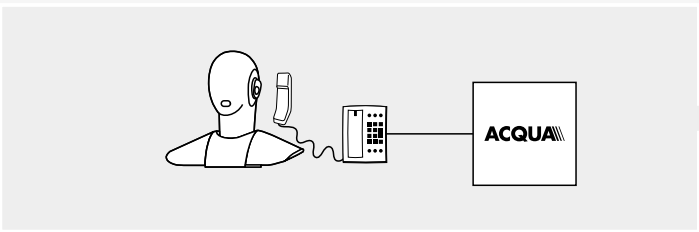
Communication products companies rely on the ACQUA analysis system to evaluate and improve the speech and audio quality of their products.

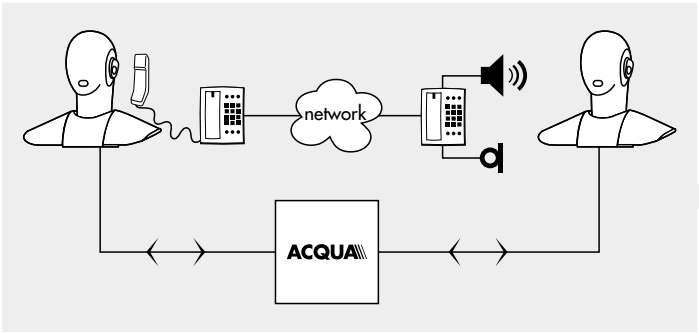
ACQUA features

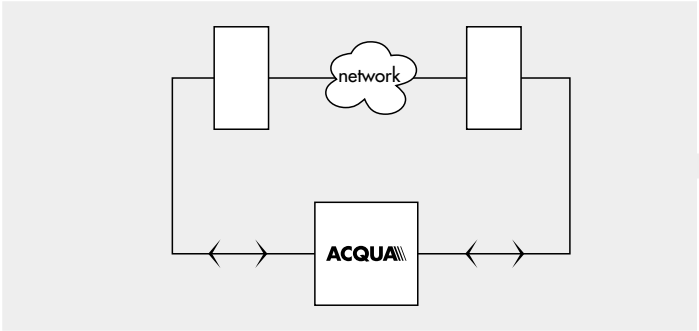
- automated measurements to national and international telecommunications standards
- integrated 'workplace concept' that provides access to standards test results and measurement data from any computer on a network
- database management of measurement objects, measurement results, and measurement standards
- native Microsoft® WINDOWS 2000 application provides familiar WINDOWS environment and Microsoft® WORD based report generator
- integration with HEAD acoustics Measurement Frontends (MFE), Head and Torso Simulators (HMS), and Playback Systems (HPS) for testing a wide range of products
- unique standards from HEAD acoustics and custom standards defined by the user
- extensive suite of analysis tools: signal generator/editor, real-time interactive filters, spectral analysis, psychoacoustics, and advanced time-frequency methods
- 'hear what you see' – improved objective assessment of data using the simultaneous listen-analyze-filter feature
- COM interface for using ACQUA features within own applications

You will find ACQUA easy to operate whether you are solving problems, or setting up complex measurements and test configurations.

The application







ACQUA provides comprehensive speech quality investigations for:

- standard terminals (analog, digital)
- mobile phones (UMTS, GSM, CDMA, TDMA ...)
- wireless phones (DECT ...)
- hands-free and conference terminals (office, vehicle ...)
- multimedia terminals (VoIP-Systems ...)
- network components (echo canceller, DCME ...)

ACQUA can be used

- in complex network configurations (PSTN, IP ...)
- in network attachment requirements (TBR21, TBR 37 ...)
- for quality control

Standards measurements made easy

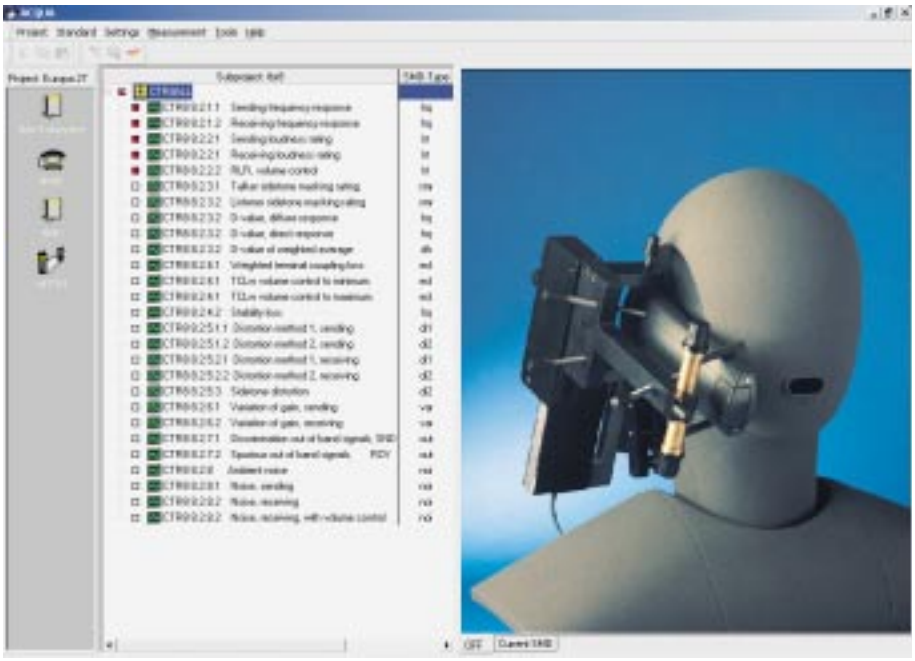
To run a measurement according to a Standard Test, simply select the desired measurement and press one button to initiate the test sequence. For calibration and reference measurements, a wizard is provided.

Results are archived automatically into a database. The amount of reporting is determined by the user. You have the choice of simply storing the measurement result or storing the complete measurement including the original time data. The documentation may be customized and automated using Microsoft® WORD.

ACQUA provides predefined measurements and measurement sequences for all primary telecommunications standards, which are regularly updated by HEAD acoustics.

The involvement of HEAD acoustics in the international telecom standards organizations enables HEAD acoustics to be a valuable technical resource for all areas concerning speech transmission and speech quality:

- VoIP configurations
- mobile terminals (e.g. GSM, UMTS, CDMA)
- wireless terminals (analog and digital terminals)
- hands-free, especially for mobile applications
- networks and network components



Complete test suite

Measurement description of a single measurement

ACQUA is completely automated with customizable test sequences and versatile archiving capabilities.

The integrated ACQUA workplace concept

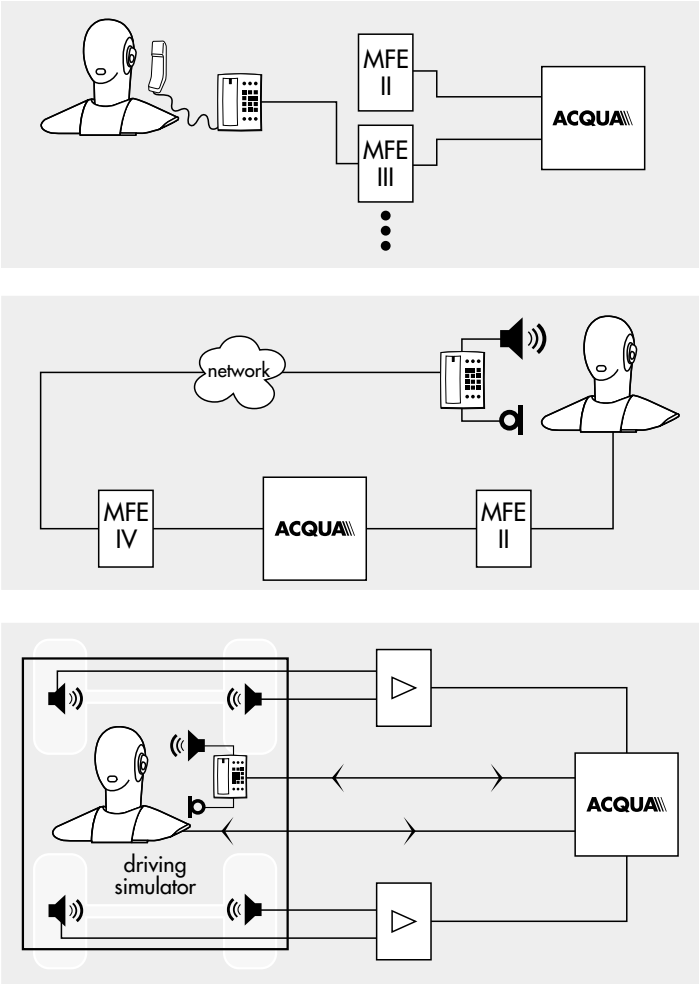
Access from any computer on a network to the analysis results and measurement standards; this is the ACQUA workplace concept.

All measurements, which have been conducted in the lab, are stored in a (central) database along with the respective standard that was used for the measurement. The user may also elect to have the complete time data acquired during the measurements included in the database. Any standard PC computer, which is equipped with the ACQUA software and connected to the network, may use these measurement results. A basic application is to simply access the test reports. In addition, it is possible to post-process any data, which have been stored for a given measurement. The user can analyze the data according to the original measurement or he can choose to run further analyses by changing the time windows and analysis parameters. The new analysis results may then be added to the database.

The system concept

The ACQUA software is the foundation of a communications analysis system, which is easily integrated with HEAD acoustics' Measurement Frontends (MFE), Head and Torso Simulator (HMS II.3), and aurally-accurate playback systems (HPS) to create a complete measurement solution. By selecting the proper frontend (MFE), you can configure a system to provide test signals and measurements both acoustically and electrically, enabling you to measure virtually any analog or digital device. The configuration and control of the frontends is completely automated and controlled by ACQUA.

The simple, flexible system concept allows ACQUA to adapt to a wide variety of applications.

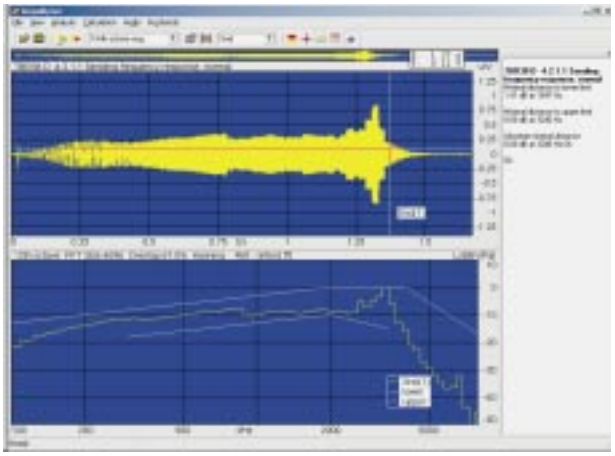


Examples for different ACQUA configurations

The measurement and analysis concept

Single measurement descriptors (SMDs) define measurement and analysis parameters and signal paths for measurements including simple loudness rating or echo measurements to more complex measurements such as TOSQA or PESQ (ITU-T P.862). Single measurements can easily be configured to complete test suites. For many standards HEAD acoustics provides complete test suites that automate the testing of complete standards.

Results from existing measurement standards may not provide you with enough information to adequately understand your product. For demanding situations such as hands-free terminals, echo cancellers or IP telephony, HEAD acoustics has developed test methodologies to provide you with a more comprehensive analysis of many attributes which affect communicational quality.

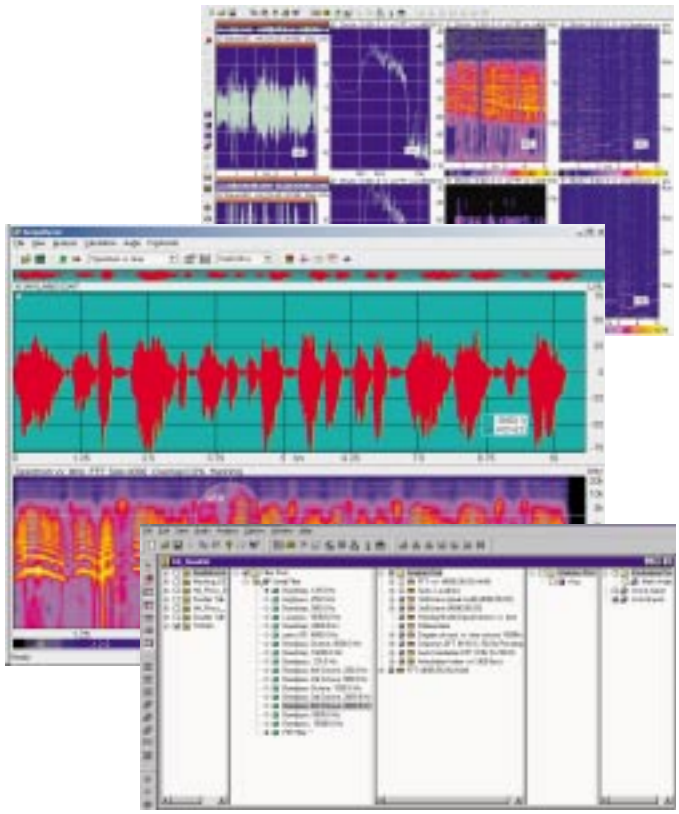


Sending sensitivity frequency response

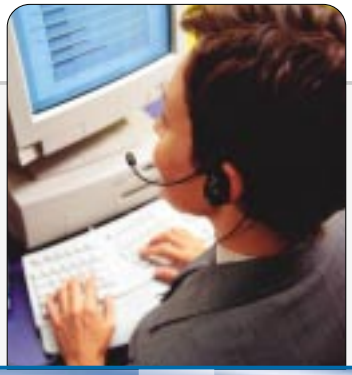
Project oriented work – advanced analysis

Standards testing is often only the beginning. For troubleshooting problems and refining products, advanced analysis capabilities are required. ACQUA's project-oriented analysis options go well beyond today's commonly used telecom test methods. From psychoacoustics, to post-processing of signals in the time or frequency domain, to statistical analysis, to preparation of sequences for subjective speech quality assessment, ACQUA provides all the tools.

ACQUA incorporates the latest software technology to enable you to develop computer programs that use ACQUA components. You will be pleased with how easy it is to create custom measurement routines using the COM interfaces in combination with software such as Visual Basic®.



Analysis possibilities and project oriented work



HEAD acoustics is a world leader in the area of acoustical measurement technology. Since 1986, HEAD acoustics has developed and produced solutions for tasks in the area of sound and vibration.

Since 1990, HEAD acoustics has provided solutions for communications testing. HEAD acoustics is actively involved in all the major standards organizations that are concerned with speech transmission and speech communication. Leading standards have been developed or influenced by HEAD acoustics. Our contributions to a variety of scientific publications demonstrate the technical commitment we place on our products and procedures. Many of the leading communication companies have discovered the benefits of using HEAD acoustics measurement technology to improve the speech and audio quality of their products.

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