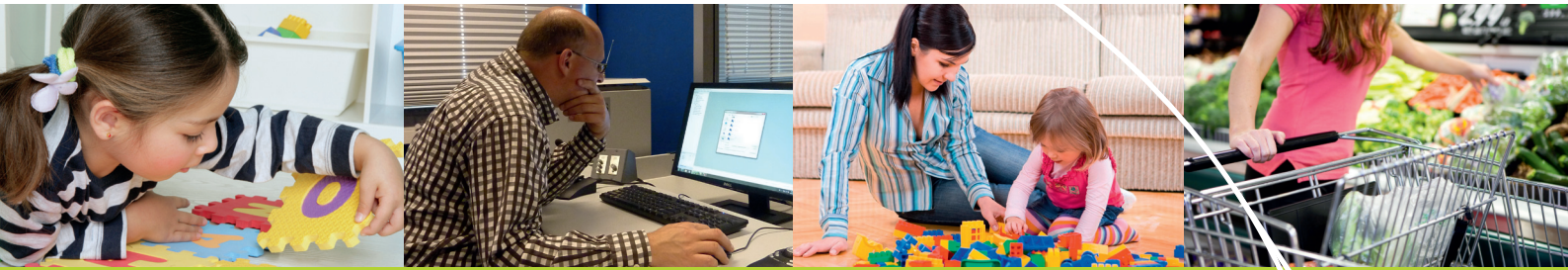# Noldus
Information Technology

Innovative Solutions for Human Behavior Research

2012/2013 Catalog

Dear customer,

It is a great pleasure to present to you our new catalog of products and solutions for human behavior research. Our portfolio includes a wide range of software tools, hardware products, and services that support the needs of scientists around the world. Our systems have found their way to more than 5.500 universities, research institutes, and companies in over 75 countries. Since the publication of the previous edition of this catalog, several new products and solutions have been released. You can read about these in the current edition.

This catalog presents an overview of all our products and integrated solutions, as well as examples of applications for which they can be put to use. We have done our best to make this catalog as complete as possible. Yet it is possible that you cannot find what you are looking for. In that case, please let us know too. It may be under development or we may consider your suggestion for future development.

Our team of 110 enthusiastic professionals, based in seven countries, and our network of international distributors are ready to help you. If you have any questions, comments or suggestions, please contact us. Or simply keep in touch with our endeavors by subscribing to our digital newsletter.

Lucas P.J.J. Noldus, Ph.D.
President

How to use this catalog

This catalog is divided into three major sections describing our products, hardware, and services, preceded by an introduction to our company. In the back you can find our contact information and a convenient list of keywords. The sections are:

Software and Solutions	Describing the benefits and features of our software and complete solutions. There are different solutions available for a wide variety of research areas. In a guide to find the best Noldus solution for you, we give a description of important application areas and common practices.
Hardware products	The hardware section comprises of thorough descriptions of the benefits and features of our hardware products.
Services	This section lists the many services we offer, such as installation, training, rental and consultancy, and continued support after you start using your products.

I greatly appreciate the willingness of my Noldus representative to work with me and provide price quotations under extremely tight (and stressful) time constraints.
[Paula Mitchell - USA]

Do you have any questions? There are many ways to contact us. Please refer to the last pages of this catalog for contact details of all our offices.
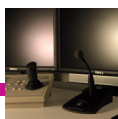
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NOLDUS INFORMATION TECHNOLOGY

Noldus Information Technology was established in 1989 by Lucas Noldus, who has served as president of the company since then. Lucas holds a Ph.D. degree in animal behavior from Wageningen University. During his research on the behavioral ecology of parasitoid wasps, he developed the first version of what later became The Observer® software package. The program was unique in that it offered a general-purpose tool for behavioral recording and analysis, independent of the organism being studied. This tool attracted the attention from researchers within and outside entomology and triggered the start of a company for the development of software tools for behavioral research.

The Observer, launched in 1990, was the first in a series of successful software products, including Etho-Vision®, UltraVox™, MatMan™, Pocket Observer, Theme™, uLog™, CatWalk™, and FaceReader™. The introduction of the PhenoTyper® product line in 2004 marked our debut as a hardware manufacturer. Over the years we have evolved from a software vendor into a provider of integrated systems and solutions, comprising of software, hardware, and services. Danio-Vision™ is the latest addition to our product range. We can now supply complete observational lab set-ups or multi-room research facilities. But of course you can also come to us for a single software license or handheld computer.

HEADQUARTERS AND REGIONAL OFFICES

Our headquarters are located in Wageningen, The Netherlands, hometown of Wageningen University and numerous research institutes famous for their expertise in life sciences, food, nutrition, and health. This places us amidst leading experts in neuroscience, consumer behavior, sensory science, and marketing research. In

Our North American headquarters.

2005, we completed the construction of our own office building, constructed on a 5.500 m² plot in the Wageningen Science Park. This three-storey building with 2.000 m² (21.500 sq ft) floor space offers superb facilities for employees and customers alike. State-of-the-art electronic engineering, mechanical engineering, and usability labs and test facilities enable us to further professionalize our product development. As a customer, supplier, or development partner, you will enjoy the new demonstration facilities and modern seminar, training, and meeting rooms. In 1996, we opened our first foreign subsidiary in Virginia, United States, which was followed by branch offices in North Carolina, Massachusetts, and Washington state. In Europe our international expansion started in Germany, followed by offices in France, Spain, and Hungary. In early 2009 we opened our first Asian branch office in Beijing, China.

KEY BENEFITS OF NOLDUS SOLUTIONS

Our tools facilitate and accelerate the collection, analysis, and presentation of behavioral data. With Noldus tools, behavioral studies become more efficient and cost-effective. Our solutions are designed to offer you the following key benefits:

Noldus creates outstanding software packages which enable speedier and more accurate behavioral data collection.
[Neville Pillay - South Africa]

- *Enhanced quality* – Our advanced technology allows more accurate measurement of behavior and therefore a higher quality of collected data. Due to the use of non-invasive sensors and observational methods, behavior can be studied in naturalistic settings.
- *Increased productivity* – Automated systems replace manual work and allow you to do more in less time. By letting computers do the tedious routine work you can focus on more interesting tasks.

COLLABORATION

Tools for science cannot be made without active involvement of scientists, the ultimate users of our tools. Scientists play a crucial role during the requirements specification of new products, and during practical testing and scientific validation of prototypes. This is especially important for our automated measurement systems, which we only release onto the market after their reliability and validity has been proven in independent studies.

I appreciate your help and quick response. This is the best response time and overall support I have received through a software company. [Ammar Hawasli - USA]

Several of our current products have their roots in academia and were developed in partnership with the original inventor. If you are an inventor yourself and would like to know if

The beginning of an international collaboration.

your invention might become a commercial product in the Noldus portfolio, please let us know. We strongly believe in the added value of interdisciplinary contacts and collaboration. Therefore, we actively participate in national and international collaborative projects, together with leading universities and research institutes. If you are building a project consortium and think that Noldus might be a valuable partner, don't hesitate to contact us.

TECHNOLOGY AND TOOLS COMING TO YOU!

Throughout the year we demonstrate our products at conferences and tradeshows around the world, from the large international meetings to small regional work-shops and symposia. Next time you attend a conference, please stop by at the Noldus booth. And if we are not there but you think we should come next time, please let us know.

A lively discussion at a Hungarian user meeting.

Besides conference exhibits, we frequently organize user meetings and technology seminars. These are great opportunities to learn from each other and discuss product improvements and requirements for new products and services.

THE *MEASURING BEHAVIOR* CONFERENCES

A unique event on our calendar is the biennial *Measuring Behavior* conference. This meeting, entirely devoted to methods and techniques in behavioral research, brings together scientists, inventors, and students from a wide range of research fields. Our company has invented the formula and is the organizer and main sponsor, but the conference program is established by an independent Scientific Program Committee. Since the start in 1996, this conference has grown enormously in popu-larity, attracting hundreds of delegates from all over the world.

Stay updated on the latest news and visit www.measuringbehavior.org regularly for more information, like us on www.facebook.com/MeasuringBehavior or join the *Measuring Behavior* group on LinkedIn.

OUR CORPORATE VALUES

OUR CUSTOMERS

The customer comes first! It is you we make our solutions for, so you deserve our attention and respect. You ultimately determine what we produce, so we strongly believe in user-centered design of products and services. Your ques-tions, either before or after sales, are answered within a working day. When you call us, you get to speak to a person, not a computer. In an increasingly automated world, we cherish the personal relationships with our customers.

OUR PEOPLE

Our human capital is our greatest asset. Therefore, we strive to create a pleasant and challenging working environment for our employees, in which each person can reach his or her maximum potential.

QUALITY

Our products are designed to be best in class, manufactured to high-quality standards. Our product creation, production, and support processes are the result of 20 years of continuous improvement. Our quality system complies with the model of the European Foundation for Quality Management (EFQM). We are also a Microsoft Gold Certified Partner. Periodic evaluation involves all stakeholders in the value chain: customers, suppliers, and employees.

KNOWLEDGE

Profound technical knowledge and a thorough understanding of the scientific domains in which our customers operate are prerequisites for the successful design, development, marketing, sales, and support of our products.

CREATIVITY

For an innovative company, creativity is a lifeline. Throughout our organi-zation, employees are encouraged to develop new ideas and think outside the box. This leads to original products and services, meeting the needs of scientists and practitioners, today and tomorrow.

INTEGRITY

Count on us for honest communication, transparent pricing, and fair trade policies.

RELIABILITY

Promise is debt. If we offer a product or service, you will get it. Inter-nally, keeping your word is what the company expects of its employees and what they can expect of the company.

SOCIETY

Our products support applications with a high value to society. Our customers use our tools in their search for new drugs to cure diseases, to support medical diagnosis and therapy, to improve educational systems, to enhance animal welfare, to develop environmentally sound pest control solu-tions, and to create more usable products and safer work environments.

SUSTAINABILITY

Our processes are organized in such a way that reuse of materials is maxi-mized and waste is minimized. We strive to carry out all our operations in an ecologically sustainable manner.

DESIGN PHILOSOPHY

YOUR RESEARCH: OUR PRIORITY

At our headquarters, product managers set the priorities for product development and improvement. This includes the features of the next release of our software products as well as the instruments needed by human behavior scientists in the future. We consult with the leading experts in the field and monitor relevant

TECHNICAL SUPPORT

If you run into a problem of any kind, our support engineers are there to assist you. Our helpdesks guarantee a response within a business day and, when necessary, your question is passed on to a trainer or engineer for expert advice. We can even use the latest internet technology to remotely solve problems on your own computer. Furthermore, our online 24/7 Technical Support Knowledgebase is created from genuine support questions. Your product-related comments are forwarded to the product manager, thus closing the user-centered design cycle.

ORDER DELIVERY: AT YOUR SERVICE

When you place an order, we get it to you as quickly as possible. Software-only orders are usually shipped the same or the next business day. Integrated systems are assembled and tested prior to delivery. We can come to your lab to install the entire system and provide training for you and your colleagues. Later on, you can benefit from our refresher or advanced training courses. In addition, a variety of service contracts are available to guarantee peace of mind and to ensure that the solution will be kept up-to-date and works well in the coming years.

products and services
designed for
your
research

OUR SALES FORCE: ALWAYS NEAR YOU

In order to be close to you, the network of Noldus offices and distributors is growing. Our knowledgeable representatives speak your language! With their academic background and expertise in human behavior research, our sales people can advise you on a wide range of application questions. Whether you are setting up an entire behavioral research lab or just have a quick question, their expert advice is free. They will also be glad to visit you for an on-site demonstration. In the sales process, we translate your research requirements into a tailored solution, fitting your needs and budget.
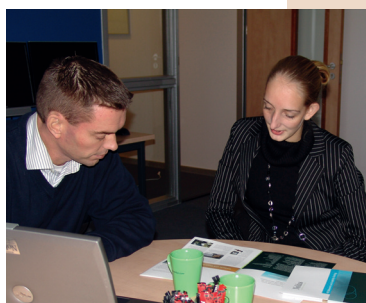
technology trends. Last but not least, we listen to you: beta tests, technical support questions, user questionnaires, and customer satisfaction surveys are invaluable sources of information in our product planning process.

Noldus Information Technology follows a user-centered design philosophy. Our entire business process is centered around you, the user of our products or services. In each step of product development, marketing, sales, delivery, and support, your needs and requirements are a driving force. Customer feedback fuels product improvement and the development of new products.

RESEARCH & DEVELOPMENT

Once a product plan has been approved, a project team sets out to create it. This often starts with technical research in sensor technology, computer vision, or mathematics, leading to new data acquisition and analysis solutions. Our modern mechanical and electronic engineering facilities support in-house hardware design and prototyping. Interaction designers and software engineers create a high-quality system architecture, functional design, user interface, and robust program code. We pride ourselves in superior user documentation, in the form of comprehensive reference manuals, quick start guides in multiple languages, sample projects, and online video tutorials (see page 67 for more information).

TESTING: QUALITY WITHOUT COMPROMISE

Our systems meet the highest possible standards of quality and reliability, and product testing forms an integral part of the development process. In each design cycle, testing takes place at several levels, carried out by independent test teams. Technical tests verify that the tool's functionality and performance is in accordance with the design specifications. Usability tests (in our dedicated experience lab and on-site) help us to optimize the software for you to use it effectively and efficiently. Validation studies are carried out prior to a new release to ascertain that the data output is correct.

COMMUNICATION: SEEING IS BELIEVING

We do our best to inform you about our products and solutions as well as possible. Besides this catalog, extensive product information is published on our website. We attend numerous scientific events on which we demonstrate our systems to you and your colleagues. One of the highlights is the biennial *Measuring Behavior* conference.

Use case

Testing game pads

The eMotion Laboratory of Glasgow Caledonian University (Scotland, UK) is a unique facility, developed to capture the subtle palettes of human emotion. Typical beneficiaries of conducted work include leisure-based software developers, gamebased education instructors, those building motion-contingent business applications, and health technology professionals. When evaluating the emotional impact of video games, a number of measurements during interaction is recorded. Two measurements are collected from the game pad: accelerometers record game pad motion, and the game pad buttons provide data regarding the pressure applied during play. Published studies have shown that such data can indicate points of player arousal. The recorded data are stored in The Observer compatible files. This enables the researchers to annotate video captured during evaluation sessions. Peak arousal points are analyzed in The Observer, applying Ekman's Facial Action Coding System (FACS) to determine the elicited emotion expressed in the face. An eye-tracker system allows the recording of both the fixation point of the user's gaze and pupil dilation. Pupil dilation, button pressure, and accelerometer data are recorded and imported into The Observer to provide a further indication of arousal. The eMotion Laboratory is perfectly suitable to support the development of affective software, in which user emotions are intrinsic to the application's success. Examples include experience-dependent video game development, high-stress decision support systems, education tools, and applications to support engagement with our health.

Clients

A shortlist

Beijing University	Rabobank
BAE	Radboud Universiteit
Charleton University	Simon Fraser University
Chang Gung University	Technische Universität Chemnitz
China Mobile	Technische Universiteit Eindhoven
Decathlon	Universidad Politécnica de Valencia
EURISCO	Università di Milano-Bicocca
Fujitsu Ten Limited	University of California
Glasgow Caledonian University	University of Cambridge
Hebrew University of Jerusalem	University of Copenhagen
Humboldt-Universität zu Berlin	University of Minnesota
India Institute of Technology	University of Padova
Kookmin University	University of Pittsburgh
Leapfrog	University of Sydney
Middle East Technical University	University of Reading
National College of Ireland	University of Warsaw
Nissan Motor Co., Ltd.	University of Wien
Philips	And many others…

Noldus
Information Technology

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In this section you will find

Use case

The courtship dance

In interactions between strangers it is assumed that courtship occurs in all situations where a suitable mate of the other sex is spotted. If there is a need to hide intentions, it is best to communicate interest on a level where it is not obvious but still perceivable. An experiment was conducted by researchers at the Ludwig Boltzmann Institute for Urban Ethology, Austria, to study interactions between strangers of the opposite sex in a waiting room. The interactions were video-taped through a one-way screen and coded frame by frame by an observer. After the encounter both participants were asked to fill out a questionnaire to albassess interest in the partner.

The data collected from the videotapes were analyzed with Theme to detect and analyze repeated occurrences of hierarchically composed, temporal patterns in interactions. The results showed that synchronization is initially absent in opposite-sex dyads compared to same-sex dyads. But as soon as the female showed interest in the male, the time structure of the interaction became much more elaborate. More complex and more stereotypical, longer patterns appeared, independent of the behavioral content. This could indicate that only females synchronize their behavior in response to the males' behavior and thereby communicate interest.

Human behavior studies are remarkably widespread and diverse. So are our solutions. This section describes important application areas and common practices. In the table at the end of this section, you will find our solutions for each area. Use it as a rule of thumb; even within one research field you may find a wide variety of methods and solutions.

PARENT-CHILD INTERACTION

Interaction between children and their parents is a classic study object in developmental psychology, pediatrics, and child psychiatry. Numerous researchers record video and use The Observer® XT for analysis. Some observe and record behavior in an Observation Lab, while others record behavior on-site with a Portable Observation Lab. Other researchers use only a camera to record videos that are then analyzed with The Observer XT. They often combine behavioral parameters with other information such as parental reports, rating scales, and questionnaires.

AUTISM

The early detection of autism is the cause of much discussion amongst scholars from different disciplines. Researchers use The Observer XT research software to collect and analyze behavioral data. Some are interested in repetitive behaviors in early development stages while others look at how infants and toddlers interact with familiar and unfamiliar adults. Researchers observe test participants for several minutes while they perform a task or are confronted with changing circumstances. Examples of such scenarios include presenting infants with novel objects, asking toddlers to finish different tasks, and bringing young children into contact with adults. Another research approach is to use FaceReader™ facial expression analysis software in self-learning tests. The test participant receives valuable feedback from FaceReader about emotions shown.

Research is often done in an Observation Lab in order to observe subjects unobtrusively. In a home environment researchers can use Pocket Observer, scoring behavior on a handheld device. By observing the behaviors of infants, toddlers, and older children scholars gain greater insight into specific behaviors. With The Observer XT it is easy to compare different observations.

INFANT STUDIES

Studies aimed at learning more about speech behavior, maternal sensitivity, or learning behavior in infancy are often carried out using The Observer XT. The reaction to certain stimuli is captured on video. In infancy it is possible to observe an explosive growth in child development, and many researchers therefore choose to focus solely on this age group. Research is often performed in observation labs. In such a controlled environment it is possible to accurately measure for instance number of actions, such as exploratory gaze behavior: by using eye tracker data in conjunction with video, researchers can accurately capture the directional gaze of an infant.

CLASSROOM OBSERVATION

Educating people is essentially a social interaction process. It relies heavily on communication skills and group dynamics, both of which can be studied with The Observer XT. This type of research is typically video based and carried out in real life situations. A portable lab allows video recording from different viewpoints.

The Observer XT is used to code the video and analyze data. With this program researchers are able to combine continuous and instantaneous sampling, allowing them to continuously track the behavior of the teacher as well as instantaneously sample student behaviors at specific moments to better understand how the teacher and students react to one another.

PSYCHIATRIC RESEARCH

Behavioral observations are important tools in psychiatric research, particularly in relation to patients who do not or cannot speak. Research often takes place in a lab, in standardized trials with video recordings that can be analyzed with The Observer XT and Theme™. Researchers often work in multidisciplinary teams in which each member contributes his own expertise. Behavioral parameters are often combined with other information such as rating scales and information from medical files.

DOCTOR-PATIENT INTERACTION

Communication between doctor and patient is a key success factor in medical treatment, which makes it a popular study object. Trials usually take place in a lab, which may or may not be a permanent facility. Research in hospitals or nursing homes is common, however researchers often observe patients receiving in-home treatment. Regardless of setting, doctor-patient behavior can be recorded and analyzed with The Observer XT and Theme.

Patients sometimes feel anxious when entering the consultation room. Researchers monitor physiological data streams along with the video to assess the patient's emotions in their behavioral context. Language use in a clinical interview is also studied in relation to behavior. The Observer XT is used to keep this data in sync. This software tool is especially designed to synchronously record and play multiple modalities, such as video, audio, and physiological signals.

BEHAVIORAL ASSESSMENT

Video is a very common tool in behavioral assessment. Live scoring and comment recording adds an extra dimension, making it much easier to retrieve individual, relevant episodes within the video. Many researchers use The Observer XT to code behavior and make clips of those parts of video that are of interest to them. Significant environmental and individual factors can be identified on video. Problem behavior can thus be addressed directly.

Contrary to pen-and-paper scoring, video observation techniques offer a reference to the original material, thereby facilitating discussion among clients and colleagues. This type of research is typically carried out in a lab or on-site with a portable lab. The Observer XT is at the core of every Noldus lab.

CONSUMER RESEARCH

Observational research is becoming increasingly important within the field of consumer research, with methodology ranging from unobtrusive naturalistic observations in shops to advanced multimodal lab studies, from sensory research to marketing studies. A wide range of solutions is available, from handheld observation systems to custom labs. Researchers can, for instance, follow their subjects while they choose items in a store with Pocket Observer. In the Restaurant of the Future Noldus cooperated with university researchers and catering companies to create a specialized facility for studying every aspect of food selection and consumption.

NON-VERBAL BEHAVIOR STUDIES

Most human communication is non-verbal and only measurable by means of observation. Methods range from real-time live observations with a handheld device to elaborate lab studies, from video analysis with The Observer XT to automatic facial expression recording with FaceReader.

FOCUS GROUP OBSERVATIONS

Video is almost indispensible when studying group dynamics. Without video it is impossible to keep track of the full range of activities that occur when people come together. Focus group studies often take place in labs with multiple cameras, viewing the group from different angles. The Observer XT allows for highly detailed recordings of an individual's behavior that can then be analyzed within the amalgamated group dynamic. The software can also be used for qualitative annotations in order to quickly retrieve interesting episodes. Researchers can quickly and easily search through the entire store of recorded observations with the software's search function.

HUMAN FACTORS RESEARCH

Noldus tools and solutions are traditionally used for Human Factors research in the aviation and automotive industry. The Observer XT is of particular value in time and mission critical systems. It supports complex experiments and gives precise statistics, such as task completion times and error rates. It allows researchers to combine behavioral data and video with physiological signals, eye tracking, sensor readings from flight simulators, and more. This type of research is most often carried out in well-equipped labs.

USER EXPERIENCE RESEARCH

A rapidly increasing number of product manufacturers realize that the success of their products depends on user emotions. Performance, quality, and usability are not enough; the user must like the product. Researchers include physiological measurements, facial expressions, and eye tracking in their behavioral studies. They often gather additional data with questionnaires. This type of work is typically carried out in multimodal labs with synchronized recordings.

HUMAN-ROBOT INTERACTION

All social interactions, including those between humans and robots, follow the same set of basic rules. The Observer XT and Theme have a long history in these studies. The Observer XT's system integration abilities allow researchers to combine robot-generated data with manually recorded human behavior.

USABILITY TESTING

Usability testing is an essential part of user-centered design processes. It is necessary to evaluate prototypes: if designers make false assumptions or fail to meet certain requirements, a usability test is likely to reveal them. Testing can be carried out in a usability lab or on-site with a portable lab. Usability testing typically includes synchronized recording of multiple modalities: a close up image of the user, a screen capture video, speech, tasks, errors, and system events collected by uLog™. Moreover, it is possible to use uASQ to ask the test participant questions. The Observer XT is ideal to combine all these data streams. Examples of usability labs can be found on the Noldus website.

GAMING RESEARCH

Gaming research is a growing and exceedingly useful field, allowing researchers to improve the usability in educational computer games or find out how subjects react in war games. Gaming research can be challenging: games are often fast and complex, with multiple players at different locations. Capturing the action requires synchronous recording of data and screen captures and capturing user experience requires video and physiological readings. Facial expressions from FaceReader can provide useful additional information. Analyzing these different data streams requires good data management, integration, and synchronization. This type of research is often done in custom labs with special software, tapping into the data generated by the game software. Read more about two recently built game labs on page 43.

SIMULATION AND VIRTUAL REALITY

Noldus offers custom lab solutions for research in virtual environments. They include The Observer XT as the integration platform of hardware and software, video, screen captures, and data acquired with simulator software. Physiological readings can offer important extra information about emotions and mental load.

ERGONOMICS

Ergonomics deals with the relationships between human activities and strain on body and mind. The Observer XT has excellent system integration abilities, allowing for the study of physiological responses, muscle contractions, forces, and other parameters in their behavioral context. This allows researchers to identify in detail which actions and movements are potentially harmful and which are not, thus helping to improve products and procedures. Our labs allow for the synchronous recordings of video, physiology, and behavior.

SPORTS SCIENCE

Team performance depends on effective interplay of team members. Recording and quantitatively analyzing video with The Observer XT sheds light on individual player effectiveness, and on the way they interact. Measure effective interplay with The Observer XT. Researchers can observe match location, match status, and different on-the-ball behaviors. It is also possible to score live behavior with Pocket Observer. Technology has an important role in sports, whether applied to improve the equipment or the athlete's technique. In a large number of sports, a fraction of a second difference makes you a winner or loser. In such a competitive environment the only thing you can do is to get ahead and stay ahead. For many years, Noldus software tools have been used for the analysis of player behavior and team tactics. But researchers can also study technical aspects of sport using an integrated set-up to combine video and sensor hardware with software and sport-specific settings (coding scheme, screen layout, etc.).

MOVEMENT SCIENCE

Synchronization and precision are key factors in movement science. With The Observer XT you can make synchronized recordings of video, EMG, acceleration, and other parameters. In The Observer XT you can record behavioral parameters like strides, and analyze all data together. Experiments in movement science are usually carried out in custom labs with specialized measurement devices.

	Observation Lab (p. 34)	Portable Observation Lab (p.36)	Usability Lab (p.38)	Portable Usability Lab (p. 40)	Custom labs (p. 42)
Parent-child interaction	●	●			
Autism research	●	●			
Infant studies	●	●			
Classroom observation		●			
Psychiatric research	●	●			
Doctor-patient interaction	●	●			
Behavioral assessment	●	●			
Consumer research	●	●	●	●	●
Non-verbal behavior studies	●	●			
Focus group observation	●	●			
Human Factors research	●	●	●	●	●
User experience research			●	●	●
Human-robot interaction	●	●			
Usability testing			●	●	
Gaming research			●	●	●
Simulation & virtual reality			●	●	●
Ergonomics	●	●	●	●	●
Sports science	●	●			●
Movement science	●				●

In this table you will find our solutions for different application areas. The other products we offer, such as Pocket Observer, Coder Licenses, uASQ, and FaceReader can also be used in many of these application areas. The main benefits are described in the products section.
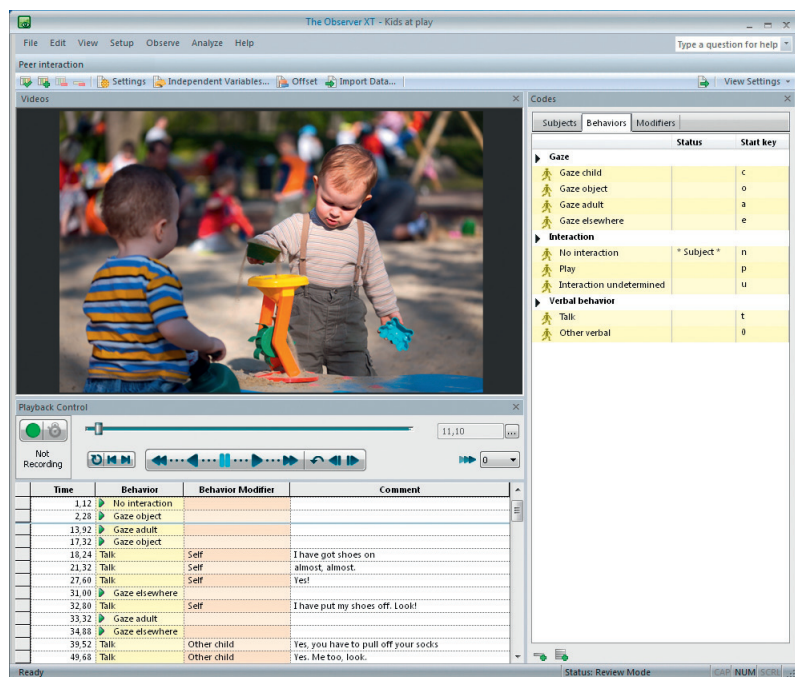
The Observer® XT is the professional and user-friendly software for the collection, analysis, and presentation of observational data. Together with its compatible lab equipment, The Observer XT is the ideal solution for behavioral research. With a 20 year track record and cited in thousands of scientific publications, it is an invaluable research tool for a wide variety of disciplines. The Observer XT combines proven concepts with cutting edge technology to help you make the most of your research.

BENEFITS

- Code and describe behavior in an accurate and quantitative way.
- Gather rich and meaningful data.
- Record time automatically and accurately.
- Combine continuous sampling with time sampling.
- Integrate video and physiology in behavioral studies.
- Calculate statistics and assess reliability.
- Make clips of parts of video and data of interest to you.
- Analyze groups of observations at once.
- Filter relevant selections of data.
- Search through your data quickly.
- Code in your language: compatible with Chinese, Japanese, and Cyrillic characters.
- Code on-the-go using a handheld device equipped with Pocket Observer.

The Observer XT's easy-to-use and flexible system guides you through your project. Rooted in manual event recording, The Observer XT contains all the essentials for behavioral research, including:

1. coding scheme building
2. data entry
3. data management
4. statistical analysis
5. inter-rater reliability analysis

Use The Observer XT to code and observe behavior live, from video, and to combine behavioral coding with data from other sources such as physiological data, eye tracking videos, user-system interaction data, and FaceReader™ data. The Observer XT turns raw behavioral codes into meaningful information, where other packages leave the translation to you.

Applications cover everything from straightforward small-scale studies to complex experi-

The Observer XT guides you through the entire workflow.

ments with hundreds of replicates, from single-user set-ups to teams with dozens of members, and from live observations on a handheld computer to integrated lab set-ups. Over time, The Observer XT grows with you, allowing you to start small and add extra modules or hardware when needed. We can tailor both the software and the hardware configurations to fit your needs and budget.

FEATURES

The Observer XT supports the entire workflow of a research project including setting up hardware and designing the coding scheme. Furthermore, it guides you through gathering, managing, selecting, visualizing, and analyzing your data. The Observer XT is the basis of all the labs described in this catalog.

SET UP
Good and thorough preparations will provide you with better quality data and will save you time in the long run.

Set up hardware
In most cases, setting up hardware involves minimal effort. You can benefit from our experience with different hardware set-ups ranging from video recording to interfacing with Data AcQuisition (DAQ) systems, or synchronized starting of other programs or systems. With The Observer XT at the core of your lab, it is possible to automate the recording of various types of data along with live behavioral coding, or to code off-line at a later time.

Designing a coding scheme
Designing a coding scheme is a crucial step in behavioral research; it is the actual measuring instrument. Choices

The coding screen of The Observer XT. In this screen you make your behavior recordings.

made at this stage determine what you can do with your data at later stages. The Observer XT is very versatile, allowing you to:

- Describe complex phenomena in a few keystrokes. The coding scheme has a powerful syntax.
- Code, edit, and add comments, even in Chinese, Cyrillic, and Japanese characters.
- Record social interactions, group processes, and other complex behaviors with a minimum of different codes for ease of learning and reduction of errors.
- Add or change codes before, during, or after an observation.

Combine continuous recording and time sampling

In The Observer XT, you can use both time (instantaneous) and continuous sampling. Time sampling is a straightforward method that works best in live observations. You sample behaviors at predefined intervals, reducing your workload. Furthermore, it is easy to learn and suitable for the study of individuals in groups. You can adjust the system to your preferences, as you would expect from a flexible software package such as The Observer XT.
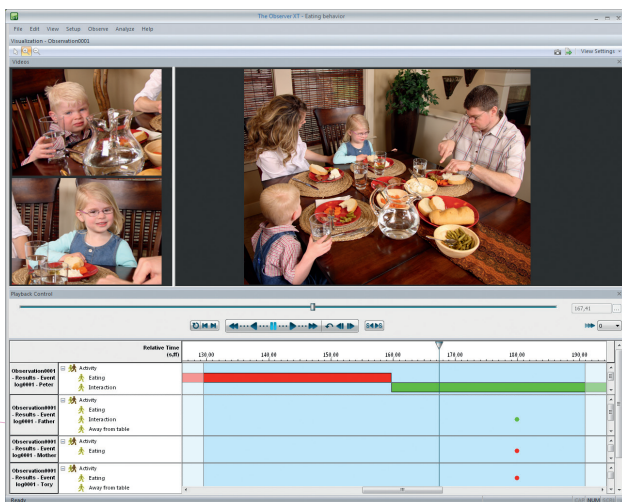
Sample behavior of a focus subject continuously and use time sampling for other subjects.

Manage and share your projects

In The Observer XT, you can save a project as a template, providing ease of use, security, and flexibility.

- Save and lock a coding scheme for others so they can contribute to a research project by coding behaviors. For example, create a coding scheme for several colleagues who work with Coder Licenses.
- As a lab manager you have defined your hardware settings. Using a template you can now reuse them every time somebody opens this predefined template. Next to hardware settings you can also save independent variables or coding scheme settings.
- As a researcher, you can spend a lot of time and effort in developing coding schemes. With the new online exchange functionality, sharing coding schemes has become easy. You can upload templates with coding schemes to share with others or download coding schemes that are already online. This can save you a lot

of time, and it is free of charge! As soon as you have downloaded one, you can find who set up the coding scheme and contact him or her directly. Feel free to modify a coding scheme in your version of The Observer XT to suit your needs.

> *The Observer has allowed me to collect data and calculate results that I could otherwise not have done - it is of primary importance in my behavioral research.*
> *[Jenni Mueller - USA]*

OBSERVE

The Observer XT allows you to collect meaningful data. Record one or multiple videos, integrate data modalities, and code behaviors accurately.

Code behaviors accurately live or from video

The Observer XT was designed to reduce researcher workload and simplify behavioral coding. You can record behavior by typing shortcut key codes, allowing you to keep your eyes on the scene, while coding at great speed. The time of each code is recorded automatically. You can let The Observer XT check for errors in the event log and correct them automatically. Work together on a research project using Coder Licenses. Coder Licenses are cost effective coding units for coding and visualization only. Read more on page 23 to see if this solution fits your needs.

Pocket Observer

Pocket Observer allows you to observe people in their natural surroundings. It combines the features of The Observer XT with the portability of a handheld computer. Read more on page 22.

Pocket Observer allows you to observe people in their natural surroundings.

uASQ

uASQ is the questionnaire tool that enables you to ask your test participant three different types of questions during a live observation. Read more on page 26.

Work with video

The use of video adds great flexibility to behavioral studies. It allows you to make detailed observations and frame accurate descriptions of fast moving phenomena. Moreover, The Observer XT is equipped with fully integrated video recording and playback functions. You can easily position the video, play it back at different speeds, play it frame by frame, and play multiple videos at the same time. Read more about video cameras on page 46. All data play in sync: when moving through the data, the corresponding video follows, and vice versa.

After the observation, you can easily create a video highlights clip for presentation purposes by using the episode selection function.

With The Observer XT, you can combine multiple video streams in your observation. The Observer XT is compatible with our new Media Recorder. This software tool combines different video signals from a wide range of different cameras. The video files can be stored separately, or combined into one video stream. It is a perfect addition to your The Observer XT solution if you are coding behaviors from video. Read more on page 32.

*Using The Observer I am only limited by my imagination.
[Richard Parker - New Zealand]*

Screen capture recording

For Human-Computer Interaction research we offer screen capture recording. You can record high-resolution screen videos using the test participants' monitor signal, without installing software on the test participant's computer. Therefore, it does not interfere with your research project. With The Observer XT at the core of your lab, you can be sure that your hardware and software work together, and that all your data play in sync. We can even build set-ups of multiple videos and DAQ systems, eye trackers, screen captures, FaceReader, and other products.

Integrate data modalities

In The Observer XT overt behavior and physiological responses can be studied together. Files from DAQ systems can be imported and then visualized along with the video, revealing the person's inner world. The software allows you to visualize and automatically synchronize multimodal data, such as physiological data. The Observer XT also enables the advanced analysis of multimodal data in relation to observational data. For example, select heart rate in The Observer XT and select the signal values (min, max, mean). You can now calculate descriptive statistics and combine the observational data with the physiological data in one export to the statistical program of your choice.

In The Observer XT you can synchronize multimodal data.

Synchronization of all data sources is guaranteed by a continuous sync signal sent from The Observer XT, making the system immune to clock differences, drift, and missing samples. For the synchronization of lab equipment that is not compatible with The Observer XT, we designed the SyncBox (page 54). The SyncBox is a piece of hardware that can receive signals from The Observer XT and can send signals to recording equipment.

ANALYZE

The Observer XT offers sophisticated data selection, clear visualization of data, powerful data analysis, and versatility through all of its export and import functions.

Clear visualization of data

The analysis of data often begins with visualizing the event log, one or more videos, and physiological data streams. The track of events is visualized as a horizontal bar in which different colors represent different active states. This way you immediately get a feel for the structure of the behavior you observed. The direct reference between video and data is a great tool for quality improvement: coding errors are shown instantly and can be corrected immediately.

- *Continuous recording* – the track of continuous scored events is visualized as a horizontal bar in which different colors represent different active states.
- *Instantaneous sampling* – samples are visualized as dots. The colors correspond with the colors of the continuous scored behaviors and can thus be compared easily.
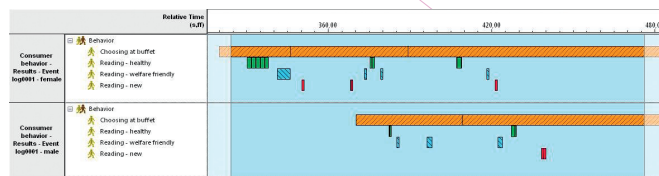
Make a snapshot of your event plot.

Present your event plot

You can now a present your event plot as a visualization of your coded events. Make a snapshot of your event plot by using the photo button and present this in your report or publication.

Find data

If you want to find a specific comment quickly, you can use our powerful find function. You can search through all or part of your observations to locate:

- comments
- subjects
- behaviors
- modifiers

The software provides you with a list of all the events that meet your criteria. You can click on the event of interest and The Observer XT leads you straight to it, or export a list of results to a spreadsheet program of your choice.
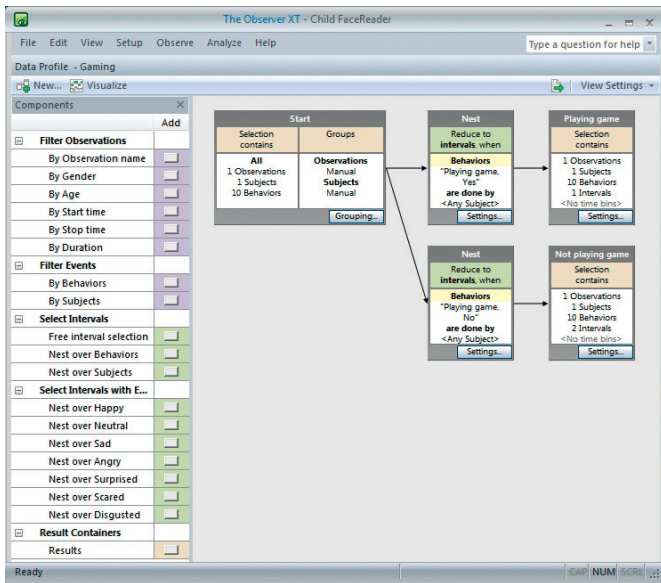
The Observer XT allows you to filter out exactly the right data.

Sophisticated data selection

You can build elaborate filters based on combinations of independent variables, behaviors, physiological data, and time criteria, such as behaviors being active, or select subjects by independent variable. The independent variables are for labeling and filtering: for example treatment, subject ID, or observer. All data in the project is available for analysis at all times. With one touch on the Visualize button, even the most complicated data selection can be visualized quick and easily.

- Extract only the relevant bits for each research question.
- Filter for relevant data with the powerful and intuitive graphical data selection tool.
- Analyze large groups of observations at once, saving a tremendous amount of time.

Powerful data analysis

The Observer XT offers descriptive statistics of the coded behaviors. Among the possible outputs are tables of frequencies, durations and other statistics, interaction matrices, and transition matrices. Next to that, synchrony and learning curves are analyzed. Moreover, with

It is the best software for analyzing behavioral data. [Guiseppe Riva - Italy]

The Observer XT you can perform a lag sequential analysis to analyze the order of events.

You can also perform latency analysis. Response latency is the time between the onset of a stimulus and the initiation of the response. This latency analysis in The Observer XT enables you to investigate the relationship between stimulus and response in depth.

Recently, the analysis of external data, such as physiological data has been added to the analysis options. This means that you can analyze your event data together with physiological data. You will now, for example, be able to calculate how many times the heart rate is above

a critical point and see exactly what your test participant was doing at that moment.

Statistics available

The Observer XT offers a range of statistics that are important to behavioral researchers. The statistics available depend on the type of analysis you are performing. If you choose behavior analysis, the following statistics are available:

For continuous sampling:
- Minimum
- Maximum
- Mean
- Total duration
- Standard deviation
- Standard error
- Rate per minute (observation)
- Rate per minute (interval)
- Rate per minute (analyzed duration)
- Total number
- Percentage (observation)
- Percentage (interval)
- Percentage (analyzed duration)
- Latency

For instantaneous sampling:
- Proportion (all samples)
- Proportion (scored samples)
- Scored samples
- Total number (all samples)
- Total number (scored samples)
- Calculating statistics

If you choose numerical analysis, the following statistics are available:
- Minimum (both for numerical modifiers and external data)
- Maximum (both for numerical modifiers and external data)
- Mean (both for numerical modifiers and external data)
- Total duration
- Total value
- Mean (per minute)
- Number of samples (only for external data)
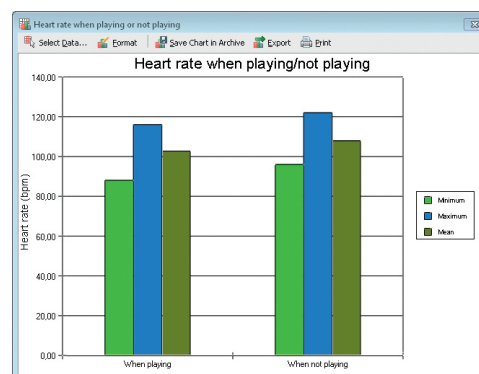
Analyze your event data together with physiological data.

For both behavior analysis and numerical analysis, the following calculated independent variables are available:

- Analyzed duration
- Minimum interval length
- Maximum interval length
- Interval number
- Total interval length

Explore and present data

The Observer XT allows you to create pie charts, line bars, scatter plots (with trendlines) etc. And, it allows you to make a snapshot of your event plot. You can easily use these illustrations in your PowerPoint presentation or research article. In addition to these illustrations, you can also make video highlight clips. The improved episode selection allows you to create an overview of interesting elements of your study. For example, create an overview of aggressive or play behavior, or show parts of the video in which the heart rate of the subject was above a certain level.

Reliability analysis: inter-rater and intra-rater

In collaborative projects, it is vital to avoid observer bias. That is why The Observer XT also performs a reliability analysis: observations by different observers are compared, record by record, and the software reports Cohen's Kappa, along with a listing of agreements and disagreements. Reliability analysis is also used for intra-rater reliability, as a basic quality check.

Reliability analysis output includes a confusion matrix. When looking at the confusion matrix, it only takes one blink of an eye to see exactly which values are seen as agreements and which are not. Values that do not exactly match between observations are shown off the diagonal, to visually represent the disagreement. Agreements are indicated with a blue background color.

The Observer XT shows you a confusion matrix. The confusion matrix shows a matrix of events from the two observations under comparison. The diagonal values are the counts of agreements and the values on both sides of the diagonal are the counts of disagreements.

Import functions

The Observer XT is an open system, allowing you to import event data from many different systems and to export data in XML format for use in other programs. The analytical powers of The Observer XT can easily be used on data from:

- FaceReader
- uLog™
- DAQ systems
- Eye trackers
- And more

Export functions

You can easily select which data to export. Export the event data together with external data such as heart rate to get a complete overview. You can split up the results in intervals and the layout of results is completely customizable to the requirements of the receiving software packages. You can export data in XML format and as a text file for use in other programs, such as Theme™, statistical packages or Microsoft Excel. Exporting into Excel allows you to export directly from the observation and analysis. By merging header rows, Excel format files can be imported directly into SPSS and used immediately, thus saving valuable time adjusting the data.

Develop your own add-ons

A Software Development Kit (SDK) is available for developers who want to build their own modules or interfaces with other systems. For example, The Observer XT contains a mechanism for executing other (external) applications during certain actions taken by the user in The Observer XT. One of these actions is 'start observation'. You can thus command an external application of your choice, for example a light switch, to react to this action. Another example is a plug-in which offers the possibility to obtain event data from an external program while you carry out a live observation in The Observer XT. The external events, for example presses of a button, are imported simultaneously with your manually scored data in The Observer XT.
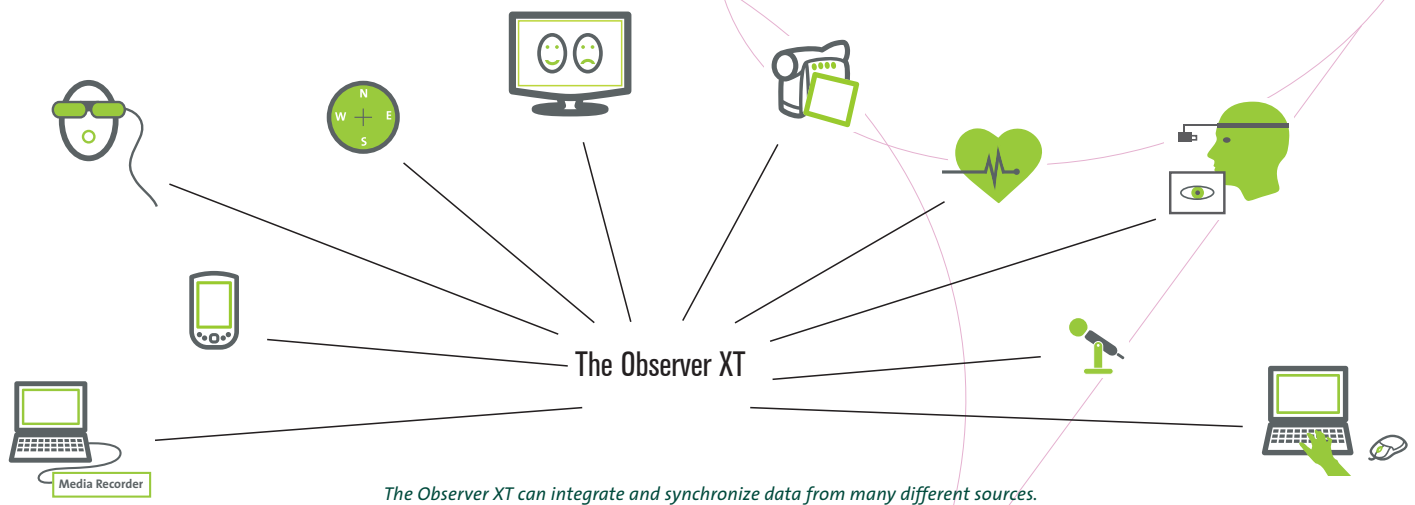
MODULES

The Observer XT base offers the best solution for live coding and data analysis. You can extend this basic system with up to five modules, whatever suits your research needs.

Advanced Analysis Module

This module allows you to perform two extra types of analysis:
1) *Reliability analysis* – calculate the Kappa, percentage agreement and disagreement, and Pearson's rho.

The Observer XT

The Observer XT can integrate and synchronize data from many different sources.

2) *Lag sequential analysis* – create transition matrixes based on the logged data.

Video Module
Ideal for recording and playback of two video sources and the creation of video highlights.

Multiple Video Module
Extend the number of media files to four at a time. Larger numbers are possible with a customized version of this module.

External Data Module
The External Data Module supports the import of data from a wide range of DAQ systems. It accurately synchronizes concurrent acquired data of external DAQ systems. You can combine and analyze physiological signals with the behavioral data and video. The Observer XT has been developed to enable advanced analysis of multimodal data in relation to observational data.

Software Development Kit
A set of development tools that allows software engineers to create applications for use in combination with The Observer XT.

SOLUTIONS

COMPATIBLE PRODUCTS

ADDITIONAL DOCUMENTATION

- Application notes on how to use The Observer XT for eye tracking, usability testing, the Facial Action Coding System, parent-child interaction, consumer behavior research, ergonomics, behavioral analysis in training, and HCI research
- White papers on The Observer XT and flexible coding, multimodality, new video technology, quantifying variables in observed events, and data analysis with Theme
- Case study: Social behavior among Kalmyk primary school children
- Case study: Study repetitive behavior of autistic persons
- Case study: Behavioral observation and psycho-physiological of communication between patients & physicians
- Technical specifications

POCKET OBSERVER

Imagine children on a playground, customers in a busy supermarket, or visitors in a museum. They are constantly on the move and you need to observe them unobtrusively. In these situations, Pocket Observer is the ideal solution to code behavior.

BENEFITS

- Maximum freedom in moving.
- Observe unobtrusively.
- Code on a handheld computer.
- Cost-effective.
- User-friendly software.

Run Pocket Observer on a rugged handheld device: code behavior of supermarket visitors.

CODING WHILE WALKING AROUND

If you need to be mobile during observations, but also require accurate coding and analysis, Pocket Observer offers the best solution for your research by combining the power of The Observer® XT with the portability of a handheld device. Pocket Observer allows you to code behavior while literally looking over the shoulder of free ranging test participants, in just about any location.

A HANDHELD DEVICE FOR ANY ENVIRONMENT

Handheld devices are the ideal event recorders. Whatever your requirements, we have the knowledge and experience to help you find the right device for your research. Heat, frost, mud, dust, or water poses no problem, since a handheld computer is available for any environment.

UNOBTRUSIVE

This handheld observation system has many advantages. You can observe behavior live, on-site, and still obtain a high level of accuracy. A handheld computer does not attract nearly as much attention as a clipboard.

RESULTS IN A FLASH

1. Set up your project in The Observer XT at your office or lab. The software allows you to setup a coding scheme and define your independent variables.
2. Download the coding scheme onto Pocket Observer, running on your handheld device, and you are ready to start collecting your data.
3. Modify Pocket Observer as you wish. The display of the handheld can be modified to suit your application: you can change the font size of the buttons, which makes coding easier and helps prevent errors. And you can add behaviors and modifiers on the handheld during actual observations. When you discover a new behavior during a live observation, just add this to your coding scheme. You don't have to go back to your PC to make changes.
4. After observing, you simply upload the observation data to your computer for analysis.

INTEGRATE WITH OTHER DATA

You can integrate your handheld observation data with recorded video or physiological data. Our modular approach makes it easy to add media files to observations from Pocket Observer. The same goes for physiological data. For example, if your test participant wears a heart rate monitor, you can integrate the acquired data with that of Pocket Observer using The Observer XT research software.

? MORE INFORMATION?

COMPATIBLE PRODUCTS

A Coder License is the ideal solution for when you need to work with several people on one research project. Several observers can work on a project at the same time using The Observer® XT Coder License, which allows for coding and visualization only. After all behaviors are coded, you can collect the observations in your main project with a full license of The Observer XT and perform data selection, visualization, and analysis.

BENEFITS

- Cost-effective.
- Work together on a research project.
- Save time and resources.
- Score behavior live on the spot.
- Use the template project to score pre-recorded video.
- Maintain control of the collected data.

FEATURES

The biggest advantage of these licenses is the low pricing! Combined with the Noldus multiple license discount means the more you order, the better the discounts will be! If the coding work is more than one person can manage, tasks can easily be divided amongst colleagues and students.

ONE FULL THE OBSERVER XT LICENSE

Coder Licenses can be used in any situation where one study supervisor builds a project and the coding work is done by others. The Observer XT Coder Licenses are thus always used in combination with at least one full license of The Observer XT. This license is needed to do the project set-up, extensive analysis, and to combine the datasets.

WITH OR WITHOUT VIDEO

There are two versions available: The Observer XT Coder License with video or without video. The latter is ideal for live coding. The Coder License with video can only be used in combination with a full license of The Observer XT with Video Module.

SET UP

Set up your project in The Observer XT and designate if you want to code a subject continuously or instantaneously in your coding scheme. You can then save your project set up as a template. The coding scheme and coding scheme settings cannot be adjusted with a Coder License. This way it is ensured that all observers work with exactly the same set up.

RELIABILITY ANALYSIS

After coding is completed, all observers can deliver their work to the study supervisor. You can simply upload all the different observations in one project and see how the different observers have annotated the behaviors. In collaborative projects, it is vital to avoid observer bias. The software reports Cohen's Kappa, along with a listing of agreements and disagreements.

MORE INFORMATION?
See page 68 for contact information.

COMPATIBLE PRODUCTS

- The Observer XT   p. 16
  - Video Module
- Computers, video, and audio systems   p. 46

ADDITIONAL DOCUMENTATION

- Technical note: The Observer XT Coder License

ULOG

uLog™ is our innovative tool for automatically recording user-system interaction. It is available in two versions: uLog Lite and uLog Pro. uLog Lite enables you to log basic computer events such as mouse clicks and keystrokes. Next to that, the Pro version, an add-on to The Observer® XT, enables you to record text strings, the resizing of windows, pop-ups, which applications are active, and more. uLog runs on Windows XP and can, therefore, be used to log Windows XP applications.

uLog logs a whole series of events automatically - saving the researcher a lot of work.

BENEFITS

- Record user-system interaction automatically.
- Keep the test PC clean: no registry change on test computer.
- Increase the consistency of user experience observations.
- Log Windows XP applications accurately and in detail.
- Select data of your choice using the advanced filter function.
- Combine uLog and The Observer XT for optimal control, visualization, and analysis options.

FEATURES

uLog records more than just keystrokes, scrolls, and mouse clicks. You can see which button was clicked and whether or not it was double-clicked. On top of this, uLog can log individual characters as well as complete text strings so you can read exactly what your test partici-pant has entered. uLog tells you which applications are active, which menus are used in the user interface, which pages are opened in your web browser, and much more. All logging functions are displayed in the table.

ULOG LITE & ULOG PRO

Download uLog Lite from www.noldus.com/ulog for free. It allows you to perform basic functions, such as logging keystrokes, scrolling, and mouse clicks. Because data is saved in text format, it is easy to import uLog data into other software packages for further analysis.

uLog Pro comes complete with full functionality and is an event logging module for use with The Observer XT. An unbeatable combination, offering optimal control and analysis options! Star-ting and stopping of event logging is automatically synchronized with other observational data. The event log is imported into your The Observer XT project without any additional action. Combine these data streams with video and screen captures, and experience an unprecedented logging solution in The Observer XT.

LOGGING FUNCTION*		ULOG LITE	ULOG PRO
Computer mouse	Log each mouse click as time stamped event	√	√
	Mouse wheel activity	√	√
	Left, right, or middle mouse button click	√	√
Keyboard	Log each keystroke as time stamped event	√	√
	Log which key is pressed	√	√
	Record text as one string		√
Software functions	Record active program item, such as application, menu, or window (including titles of pages loaded in web browsers)		√
	Appearing/disappearing dialogs and pop-up menus		√
	Log cut/copy/paste actions		√
	Log maximize/minimize/restore actions		√
	Move or resize windows		√
Filter for specifying what to log			√
Calculate relative distance of mouse movement		√	√
Calculate total distance of mouse movement		√	√

*uLog can be used for logging Windows XP applications. Depending on the application, dialogs and pop-up menus are not always logged with an identifiable label.

WWW.NOLDUS.COM

ADVANCED FILTERING

In order to save you from drowning in data, uLog includes a filter function allowing you to select which applications and actions to track. Choose to log keyboard events such as single key presses and text strings. The maximum of a text string is 256 characters.

PREVIEW

uLog offers a preview function showing which events are captured once logging has started. You can use this option to check whether you are logging the data you need.

uLog tracks every keystroke as an event. Text can also be recorded as one string.

CONNECTED OR STAND-ALONE SET

uLog Pro can be used in a connected set-up: the full logging process on the test PC can be controlled from the observer PC. The configuration can be sent to the test PC via a LAN connection. After the test, data is automatically transferred to the observer PC using the same connection. Not able to connect the test and observer PC? No problem: save the configuration on a USB stick, plug it into the test PC, and start logging. uLog even works without installing the software on the test PC!

Go to www.noldus.com/ulog for a free download of uLog Lite!

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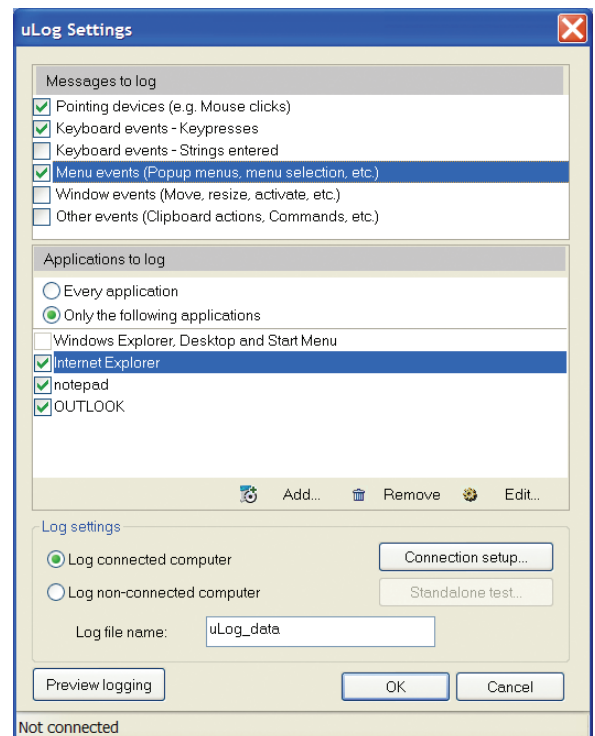### APPLICATIONS

- Usability testing
- Human-Computer Interaction
- User experience research
- Labs mentioned in this catalog
- Many others

ADDITIONAL DOCUMENTATION

- White paper: How to use The Observer and uLog for Human-Computer Interaction research
- Technical specifications

uLog lets you select which events and which applications to log.

uASQ is a questionnaire tool which enhances The Observer® XT with direct feedback from your test participant during a live observation. It enables you to ask your test participant three different types of questions: open ended, multiple choice, and Likert scale.

	Time	Subject	Behavior	Behavior Modifier	Comment
Start	0,00	Start			
2	37,50	Julia	Product liking	4,000	
3	66,00	Julia	Product liking	1,000	
4	73,09	Julia	Dislike. Why?	too sweet too sticky	
5	84,07	Julia	Product rating	2,000	
6	113,44	Julia	Product liking	1,000	
7	120,99	Julia	Dislike. Why?	not sweet enough	
8	128,54	Julia	Product rating	4,000	
9	159,41	Julia	General impression		ok, but I don't like these bright color sweets. I prefer natural candy
Stop	162,78	Stop			

The event log in The Observer XT with uASQ data contains the following columns: time column with the corresponding time stamps, subject column with the name of the subject, behavior column with the question titles, behavior modifier column with the answers to Likert scale or multiple choice questions, and the comment column with the answers to the open ended questions.

BENEFITS

- Combine video and event data with a participant survey.
- Collect quantitative and qualitative data.
- Find answers quickly by using the find functionality.
- Analyze all data in The Observer XT.

FEATURES

uASQ runs on the computer of the test participant. Questions appear on this computer and answers are sent back to the computer with The Observer XT. The questionnaire can be repeated several times during the test. Furthermore, questions can be triggered manually or automatically at fixed times after the start of the observation.

With uASQ you can add information from a participant survey to video and behavioral data. Answers to open ended questions are automatically added to the comments column. Other answers are stored in a separate event log. Therefore, you can easily use them in your analysis.

You can use uASQ in different types of situations. For instance, you can use uASQ in a usability test to ask the test participant questions about his experience while carrying out a number of computer tasks. Furthermore, you can now combine research methods by gathering qualitative data alongside quantitative data.

TYPES OF QUESTIONS

Open ended – If you want to encourage a full, meaningful answer using the test participant's own knowledge and/or feelings, you can use an open ended question type. These questions offer the test participant scope to give the information that seems appropriate to them. Examples of open ended questions:

- Tell me about your experiences with this application.
- Why did you choose that web page?
- Why do you like/dislike this illustration?

Likert scale – By responding to a Likert item test participants specify their level of agreement to a statement. In uASQ, up to a nine point scale is possible. After the observation The Observer XT can be used to analyze each item separately or responses may be summed to create a score for a group of items.

Multiple Choice – you can ask a multiple choice question when you want your test participants to choose the best possible answer among all options presented. You can also allow the test participant to select more than one answer. Furthermore, the multiple choice category allows you to choose nominal or numerical answers. You can fill in the possible answers, for example high, medium, and low or 1-5, 6-10, 11-15, or more.

ANALYZE DATA

In The Observer XT you can select data for analysis and you can for example filter by choosing only test participants who agreed with a certain statement. Both Likert scale questions and multiple choice questions can be analyzed quickly and easily in The Observer XT. You can analyze your data to answer questions such as how many test participants disagree, or how many times did the test participants responded with 'A' to a multiple choice question. The answers to open ended questions can be searched using the advanced find function. The Observer XT provides you with a list of all the events that meet your criteria.

? **MORE INFORMATION?**

APPLICATIONS

- Usability testing
- Human-Computer Interaction
- User experience research
- Psychology
- Labs mentioned in this catalog
- Many others
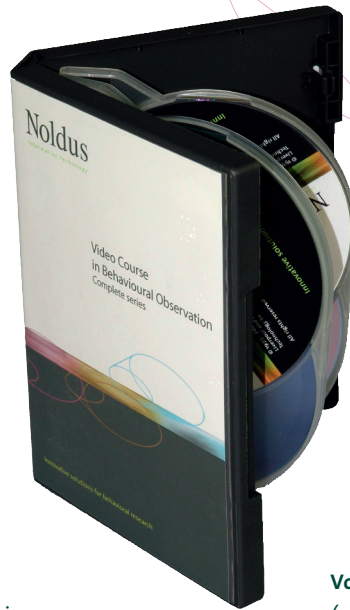
The Video Course in Behavioural Observation (VCBO) is a unique educational tool, designed to teach students the fundamentals of behavioral observation research. The primary aim of this four volume course is to stimulate students to think about the purposes and the methodologies of behavioral observation research. Students will learn to appreciate the usefulness of explicit categorization. The series is intended for class or individual use, with students at an undergraduate or graduate level.

MATERIALS

Each volume provides you with the following materials:

- *DVD* – The main teaching medium is a film, consisting of introductory theory and several main tasks. The film consists of video recordings on location, interspersed with attractive, clearly structured schemes, and graphical menus.
- *Observation recording sheets* – For those who wish to use paper-and-pencil recording, paper forms are included. These may be photocopied and distributed among the students.
- *The Observer® software* – Volumes two, three, and four of the video course come with a special student version of The Observer software. It supports keyboard versions of the exercises involved and some computer analysis of the results. The software can be installed and used on any number of computers within the framework of the educational training course. Students may also install the software on their own computers at home in order to complete the exercises.
- *Tutors' notes* – This booklet explains the tasks, provides answers to questions, gives background information and literature references, and contains the full narrated text of the video film.

DESIGN

Each volume of the VCBO is designed to be used as a self-contained course for students to use alone or in groups, without an instructor. The course is intended to be used as a series, but each volume can stand by itself. It has been written and narrated by Dr. David Dickins (Department of Psychology, University of Liverpool, UK) and Dr. Roger Clark (Department of Psychology, Liverpool Hope University College, UK).

Volume 1 'Focusing in'
(video duration 50 minutes; full class duration 2-4 hours)
The first volume starts in the context of a university field trip. The approach of ethology is outlined and the kittiwake gull is introduced as the focal species.

Volume 2 'Keys to success'
(video duration 60 minutes; full class duration 2-4 hours)
Volume two centers on behavioral categories. Examples of field projects on Lundy Island, again using kittiwake gulls as the focal species, show how categories are developed in relation to different research questions. Paper-and-pencil and keyboard recording are compared, as well as pairs of records to determine inter-observer agreement.

Volume 3 'Representative samples'
(video duration 90 minutes; full class duration 2-4 hours)
This volume gives an idea of the richness of the social life of chimpanzees in a well-maintained captive colony. This stimulates questions about the problems of anthropomorphism when trying to describe the behavior of apes objectively. Volume three compares different sampling methods and explains the necessity of representative sampling when conducting scientific studies.

Volume 4 'Observing ourselves'
(video duration 90 minutes; full class duration 3-4 hours)
The final volume introduces the ethological approach to the study of our own species, using the example of children in a university playgroup. It shows how behavioral observations can be used in conjunction with other investigation techniques to understand complex interpersonal and cultural situations such as parent-child relations. The course introduces further analyses of observational data.

MORE INFORMATION?
See page 68 for contact information.

The human face provides a number of signals essential for interpersonal communication. It is one of our most direct means of communication and allows us to recognize someone's affective state and intentions. However, annotating facial expressions objectively can be a challenge. FaceReader™ is the unique tool that is capable of automatically analyzing facial expressions, providing users with an objective assessment of a person's emotion.

The FaceReader interface, showing the test participant's face, the facial expressions, and a number of properties.

BENEFITS

- Increased accuracy and reliability.
- Objectivity in observations.
- No calibration necessary, but available when desired.
- Easy integration with The Observer® XT for advanced analysis.
- An API allows other software programs to respond instantly to the emotional state of a participant.
- Allows for analysis of elderly and children's faces.
- Save time by analyzing multiple videos in groups.

FEATURES

FaceReader is the most robust automated system for the recognition of a number of specific properties in facial images, including the expressions:

- happy
- sad
- angry
- surprised
- scared
- disgusted

WORK WITH FACEREADER

FaceReader works in three steps: face finding, face modeling, and face classification. Initially, an accurate position of the face is found using the Active Template Method. Next, Active Appearance 3D Modeling is used to synthesize an artificial face model, which describes the location of 491 key points as well as the texture of the face. As a result, FaceReader can also accurately analyze facial expressions as a test participant moves their head. Finally, the face classification delivers the output of six basic expressions and one neutral state. When desired, you can use the automatic calibration to tailor the analysis of facial expressions to a specific person. You can either run the calibration before the analysis or continuously during the observation.

ADDITIONAL CLASSIFIERS

In addition to the six basic expressions, FaceReader also automatically classifies mouth open-closed, eyes open-shut, and eyebrows raised-neutral-lowered. This feature will save you valuable time when coding video. FaceReader also registers head orientation and gaze direction. This provides you with valuable supplementary data in addition to the facial expression analysis.

VIDEO STREAM, IMAGE, OR LIVE ANALYSIS

You can work off-line using video, on-line for live analysis using a USB webcam or IP camera, or you can upload still images to be analyzed. If you plan to analyze multiple videos, you can analyze them in a group. Once you select the videos to be analyzed, the software does the work for you.

When analyzing from video, you can choose an accurate frame-by-frame mode or skip frames for high-speed analysis. The best results are achieved using diffused frontal lighting on the test participant; Noldus provides illumination for optimization of your set-up. You can follow the emotions of your test participant if their orientation, movement, and rotation is within certain limits.
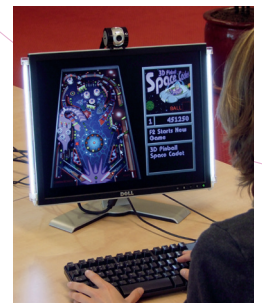
*FaceReader set-up with LED illumination and web cam.*

FaceReader can quickly detect interesting episodes, even in long series of events. The computer does the work for you! You can choose to analyze the whole video or only parts of it. Moreover, FaceReader includes a basic person identification algorithm, allowing subjects to be recognized after initial input of the original facial image. After the analysis, you can export data together with the identity profiles.

VISUALIZATION

Facial expressions can be visualized as bar graphs, in a pie chart, and as a continuous signal. A gauge display summarizes the negativity or positivity of the emotion (valence). The timeline gives you a detailed visual representation of the data. A separate reporting window displays a pie chart with percentages, a smiley, and a traffic light, indicating whether a person's mood is positive, neutral, or negative.

All visualizations are given to you in real-time and may be viewed afterwards.

In addition to analyzing expressions, FaceReader can classify faces based on the following characteristics: gender, age, ethnicity, and facial hair (beard and/or moustache). FaceReader can accurately read the faces of children > 3 years and elderly people. Although you can analyze all ethnic groups, FaceReader is currently not well-trained to work with children from East Asia or South-East Asia. The test database is still being expanded. Glasses may also interfere with the analysis process.
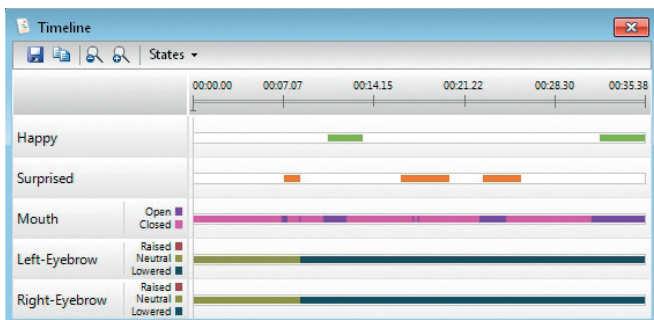
Dynamic visualization of facial expressions in a state overview.

USING FACEREADER WITH THE OBSERVER XT

FaceReader is compatible with The Observer XT. This offers a unique solution for synchronization, integration, and analysis of FaceReader data with other data, including but not limited to manually logged events, physiological data, keystrokes, screen captures, eye tracking data, etc. Analyze the full context: what user interface is the test participant looking at while showing anger? Or what is the increase in heart rate frequency when the test participant was looking scared at a particular image? Classifications can be exported to analytical and database programs such as Microsoft Excel or (in plain text format) to any other preferred software package.
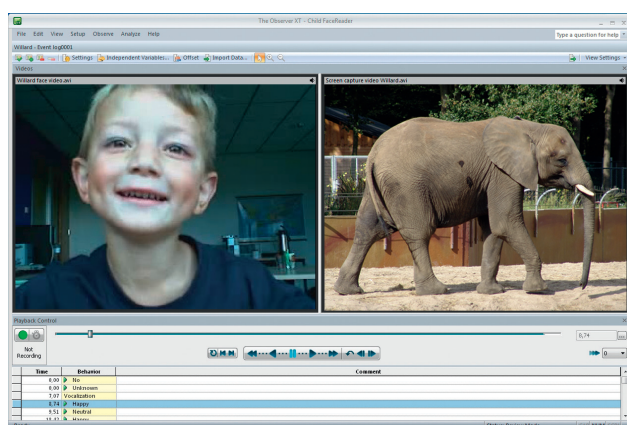
The Observer XT interface, showing the video of the test participant, a screen capture of the screen he is looking at, and the facial expressions.

REAL-TIME ACCESS

Facial expressions detected by FaceReader can be accessed in real time by other applications, making the program an ideal tool for research on affective computing and the design of adaptive interfaces. A FaceReader API has been developed. It serves as an interface between different software programs and facilitates their interaction, even if the program runs on another computer in the network. In other words, it allows other software programs to respond instantly to the emotional state of the participant.

RESEARCH AREAS

- *Psychology* – How do people respond to particular stimuli?
- *Education* – Observing students' facial expressions can support the development of educational tools.
- *Human-Computer Interaction* – Facial expressions can provide valuable information about user experience.
- *Usability testing* – Emotional expressions can indicate the ease-of-use and efficiency of user interfaces.
- *Market research* – How do people respond to a commercial?
- *Consumer behavior* – How do participants in a sensory panel react to a stimulus?

MORE INFORMATION?
See page 68 for contact information.

APPLICATIONS

- Labs mentioned in this catalog
- Many others

COMPATIBLE PRODUCTS

- The Observer XT   p. 16
- Theme   p. 30
- Media Recorder   p. 32
- Computers, video, and audio systems   p. 46

ADDITIONAL DOCUMENTATION

- Technical specifications
- FaceReader methodology note

Theme™ detects statistically significant time patterns in sequences of behaviors. These so called T-patterns are based on the timing of events, relative to each other. This can give striking new insights into the structure of behavior that cannot be found with the naked eye or with any other method.
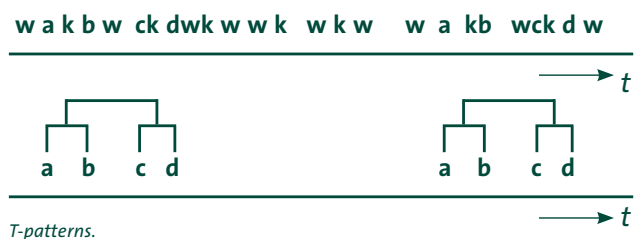
BENEFITS

- Get new and unexpected insights.
- Experience more power than with other sequential analysis methods.
- Unravel the time structure of behavior at any level of detail.
- Detect subtle differences in behavior that other methods cannot detect.
- Get quantitative results suitable for statistical analysis.
- Use a program that is sensitive to patterns, though insensitive to random variation.
- Analyze raw behavioral data – little or no data pre-processing and post-processing necessary.
- Based on a published and validated mathematical model.

Scientists have been conducting research with Theme for over twenty years, and Theme has been successfully used in a wide variety of disciplines (developmental psychology, psychiatry, etc). Use it in conjunction with any of the solutions described in this catalog, or as a stand-alone package. Theme was developed by PatternVision Ltd. (Reykjavik, Iceland).

WELL-ESTABLISHED MODEL

Theme is based on a well-established mathematical model. Due to this model Theme can detect much more structure than other methods (series of 20-30 events are no exception, where most methods stop at 3-5). The basis of Theme is a statistical test that finds significant time intervals between two series of events. The dyads found are tested against other events and dyads, and new connections are made. This is repeated until no new relationships are found. A special algorithm eliminates duplicate and incomplete patterns. In other words, Theme describes behavior in terms of time relationships between activities.

A simple T-pattern: the boss leans forward, and the employee starts talking. After the employee has finished, the boss leans back. This happened three times in a row.
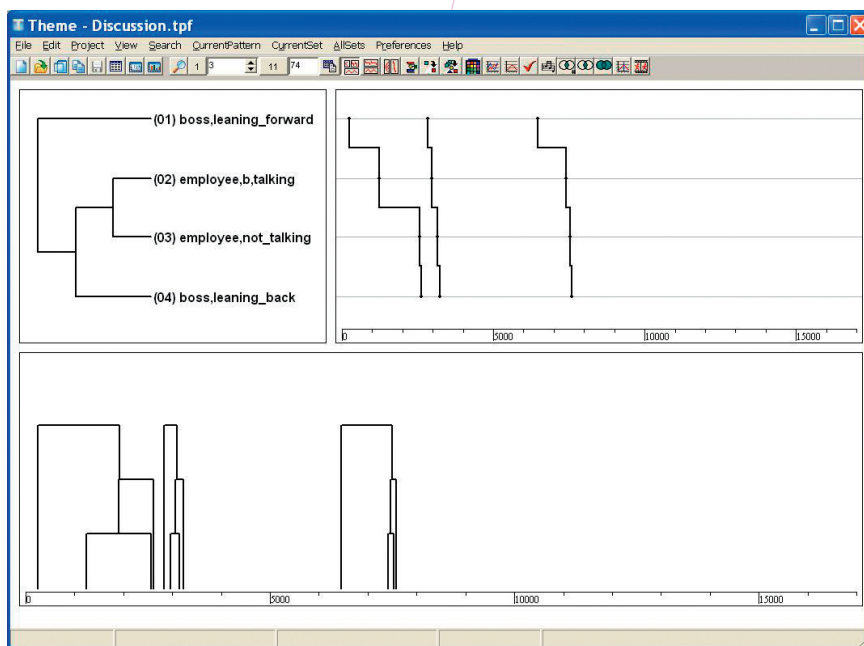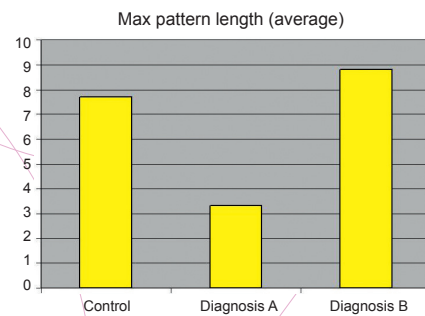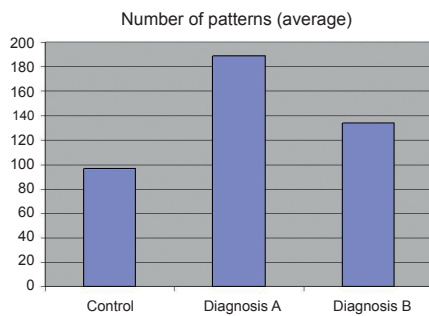
T-PATTERN

Timing and order are crucial to the effectiveness of nearly any kind of action, but they are often hard to capture in statistics. Theme is a software package that was especially developed to deal with this challenge. If two behaviors are linked by a certain time interval more often than expected by chance, Theme defines them as a T-pattern. This T-pattern analysis gives new and unexpected insights into the structure of behavior.

T-patterns.

SOCIAL INTERACTIONS

Theme is especially effective in the analysis of social interactions. Social behavior is highly organized in time, but can also be quite variable. Contrary to other methods, Theme can detect and quantify the overall time structure in behavioral data without being distracted by the variation in details.

ROBUST

The results found by Theme are very robust. The probability of long T-patterns occurring by chance is extremely low in most data. Theme performs checks against chance effects. A rigorous randomization function checks which proportion of the patterns can be explained by chance. In most data that is a small subset of the shorter patterns.

Number of patterns (average)

Control | Diagnosis A | Diagnosis B

Max pattern length (average)

Control | Diagnosis A | Diagnosis B

Theme finds differences in the frequencies and lengths of patterns. Children with PDD-NOS showed longer patterns than control children, where children with ADHD show shorter patterns in larger numbers.

FEATURES

Theme can import, filter, and pre-process data, and detect patterns by objective statistical criteria. The resulting pattern sets can be displayed, searched, and analyzed in a number of ways. Pattern statistics can be exported to statistical software packages for further analysis.

IMPORT DATA AND DETECT PATTERNS

Theme works well on most raw behavioral data. It has built-in pre-processing options for filtering and reorganizing the data so data can be imported easily. When you import data, the pattern detection engine can be tuned to the desired level of detail, sensitivity, types of pattern, and calculation time. Pattern detection works best on continuously scored events, such as the data produced by The Observer XT.

Theme was especially designed for analyzing social interactions.

PATTERNVISION DATA EXCHANGE PROGRAM (DEP)

With the PatternVision DEP, an accurate conversion of data from The Observer XT to Theme for extensive analysis has become much easier. The DEP is a simple and straightforward program that converts exported files from The Observer XT (.ODX files) to text files that Theme can then import. The DEP and manual are available for free to Theme users on the Theme download section of the website.

SEARCH AND FILTER THE DETECTED PATTERNS

The detected patterns can be searched and filtered in a number of ways, allowing you to focus on important details. There are simple criteria like behaviors, pattern length, pattern frequency, and number

of actors involved in patterns. There are also advanced criteria based on the relationships between patterns and the underlying event data. Criteria can be freely combined and the results can be stored for later use.

PRESENTATION OF PATTERNS

The overall structure of the behavior is presented in a matrix of linked event types. An overview of the position of event types in patterns gives an impression of their relative importance. At the lowest level of detail, individual patterns can be displayed on a timeline and the associated video fragments can be played to see the pattern unfold. You can use this feature for presentations and conferences. Theme gives all the details for each pattern: exact times for each occurrence, significance, and various other statistics. For behaviors with a spatial element like choosing items in a store, Theme can show a path graph.

PERFORM STATISTICAL TESTS AND EXPORT DATA

Theme provides a full range of descriptive statistics per input file, such as number of patterns, length, and diversity. These statistics are measures of overall structure which can be more sensitive to the effect of experimental treatment than frequency and duration based statistics. The statistics can be exported as a table to statistical packages, with their independent variables.

? MORE INFORMATION?
See page 68 for contact information.

ADDITIONAL DOCUMENTATION

- White paper: Theme – analyzing data from The Observer XT
- Case study: Discovering behavioral patters in the use of a universal remote control
- Case study: Soccer analysis
- Case study: Revealing the organization of autistic behavior
- Case study: Hormone-behavior interaction
- Case study: Web log analysis
- Methodology note
- Technical specifications

The Media Recorder is a software tool that enables synchronous video recordings from up to four different sources. Compatible with both The Observer® XT and FaceReader™, and a broad range of cameras, it is the ideal recording tool.

BENEFITS

- Easy to use.
- Versatile.
- High quality recordings.
- Record videos with or without sound.
- Accurate synchronization.

RECORD VIDEO

Using the Media Recorder in your lab allows you to easily combine several videos from one study. Video files may be stored separately or combined into one singular file. For example, you may choose to save separate video files when studying repetitive behavior in children for detailed behavioral coding with The Observer XT. You may also choose to combine four video streams into one file when studying parent-child interactions from several different camera angles. This will allow you to views the videos simultaneously. The Media Recorder will store the files in a user specified location, allowing for easy retrieval at any moment.

RECORD RAPIDLY OCCURRING BEHAVIORS

When you are studying rapidly occurring behaviors, it is ideal to record videos and code them afterwards with The Observer XT; the playback functionality of The Observer XT allows you to play back the videos at a low speed, and code behaviors in great detail.
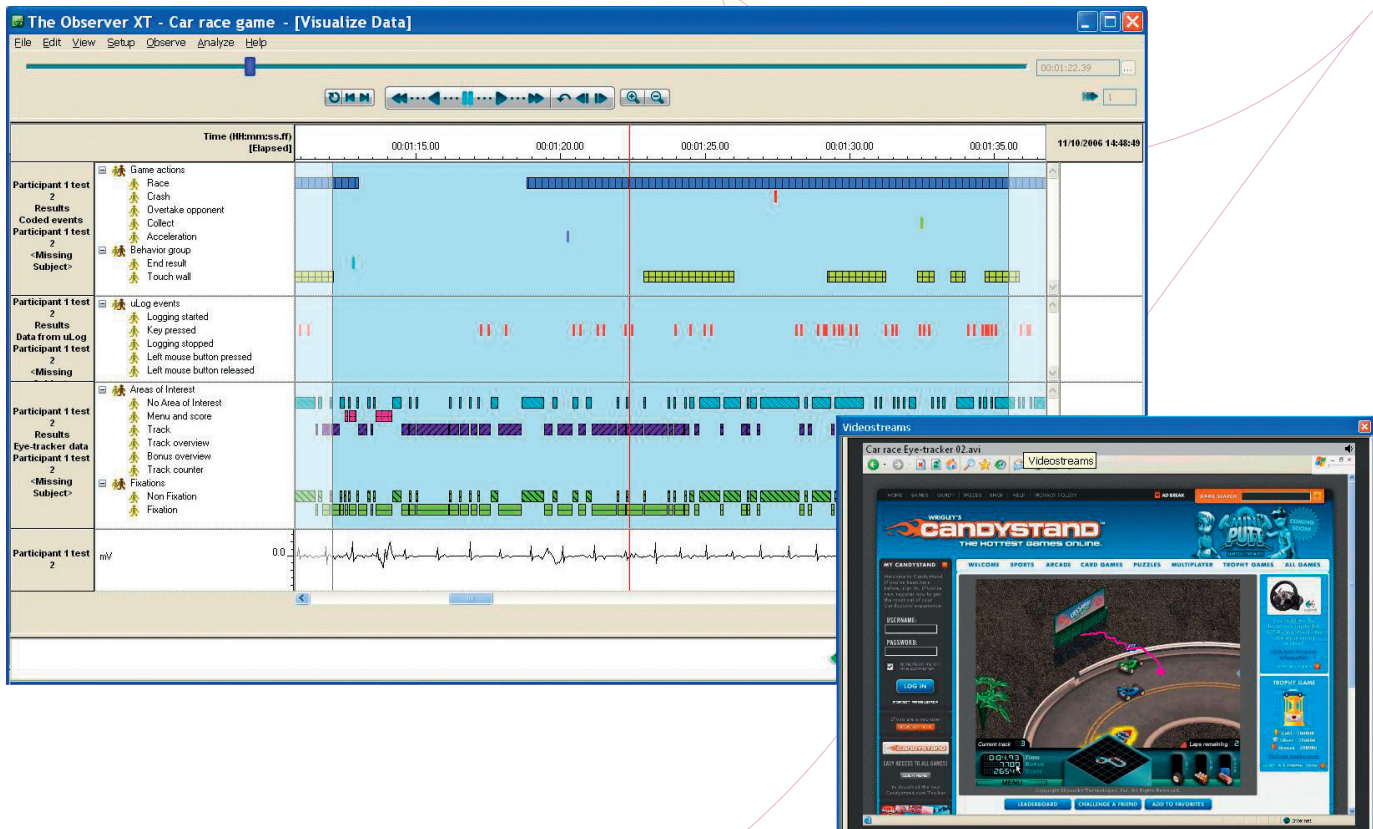
DATA SYNCHRONIZATION

Data synchronization is vital in multimodal research. When you use the Media Recorder, you don't have to worry about data synchronization, because the Media Recorder can record up to four files at the same time. For example, study peer interaction in an Observation Lab and use the Media Recorder to combine the videos. The first camera is following a girl, the second another girl, and the third camera is giving you an overview of the room. The fourth stream, which is recorded by the Media Recorder, is a screen capture from the monitor the girls are occasionally looking at. Start recording manually or choose to command the Media Recorder from another software package.

FULLY INTEGRATED

The key to synchronization is integration. Files recorded with the Media Recorder can easily be used in The Observer XT making it a fully integrated package. Once you have set up a project in The Observer XT, all data and video material are stored in one database and shown in one software application. It gives you complete control over video, and guarantees a frame accurate link with your data. By controlling the Media Recorder from The Observer XT, you can manage all your data with one application. You can also start other tasks from The Observer XT, such as facial expression analysis with FaceReader. By using The Observer XT as the main project manager, you stay in control of your collected data.
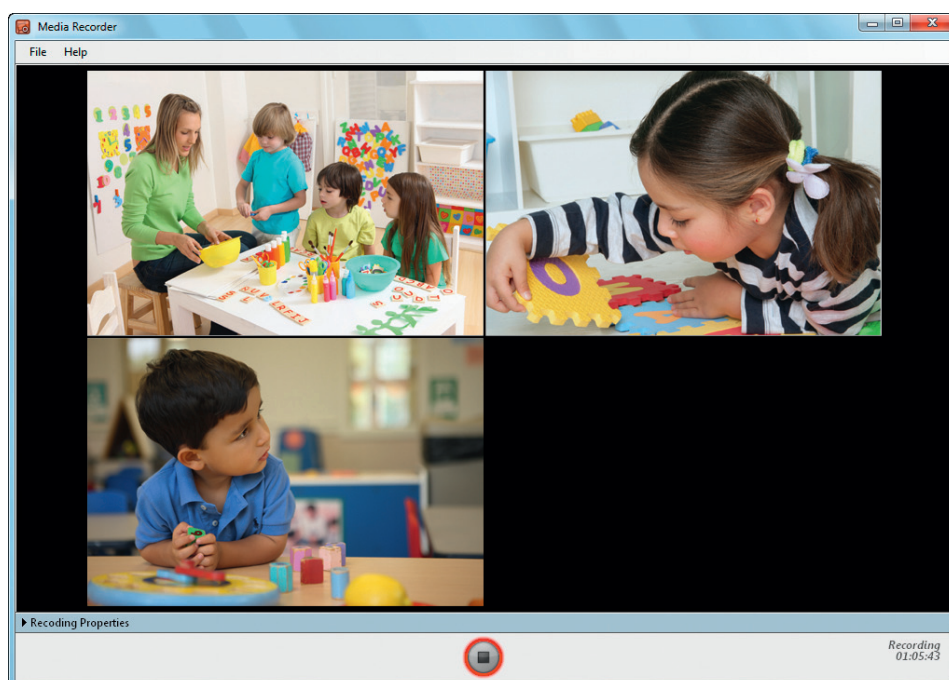
Study classroom interaction using Media Recorder to record the videos in sync. Media Recorder is Noldus' recording tool for FaceReader and The Observer XT. It allows you to record from a wide variety of cameras and devices including analog, FireWire, USB, and IP cameras as well as screen capture devices.

Data from a gaming study: synchronized and visualized in The Observer XT. The upper bar contains game situations and actions of the user. They were scored manually based on the video. The second contains a keyboard and mouse logging, made by uLog. The third are eye tracking data, including area of interest views and fixations. The lowest contains the ECG, recorded by a data acquisition system. The video shows the computer screen, with the point of gaze overlaid as a pink dot. The hair line in the plot indicates the position of the video.

STAND-ALONE OPTION

You can use the Media Recorder as a stand-alone tool, or can run it on your computer in the lab, at home, or in a classroom to record, combine, and file your video recordings. Then use the video files later on your office computer running The Observer XT. This is an easy and efficient way to increase productivity.

COMPLETE SOLUTION

It is also possible to create your own solution or ask Noldus to assist you with designing the entire lab set-up as there are always nume-rous technological issues to consider.

? **MORE INFORMATION?**

COMPATIBLE PRODUCTS

OBSERVATION LAB

Controlled conditions and accurate data recording are key factors that contribute to scientific success. That is why many researchers choose to work in an Observation Lab. At Noldus, we design labs that allow you to observe your test participants unobtrusively, in an environment similar to their natural surroundings.

BENEFITS

- Controlled conditions.
- Unobtrusive observations.
- High quality audio and video recordings.
- Fully integrated equipment.
- Superior behavior recording and analysis.
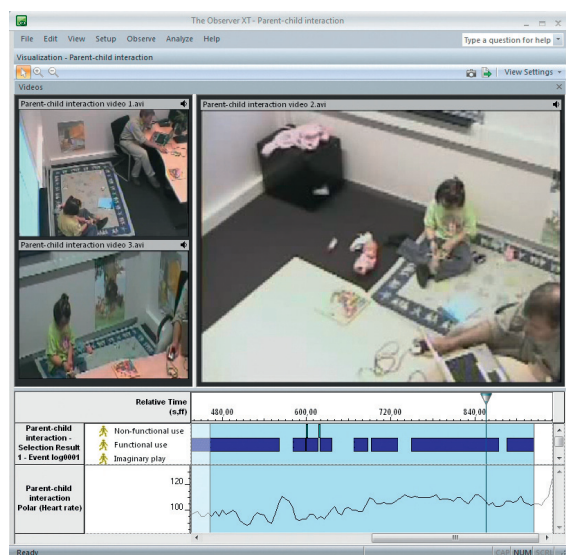
A lab scene: Multiple cameras record father and daughter. The child wears a heart rate monitor. All videos, heart rate, and scored behavior are shown in one view in The Observer XT software.

DESIGNED WITH YOU, BUILT BY US

We design user-friendly, turnkey observation labs that are tailored to meet your research needs. When conducting experiments and observations, you don't want to waste valuable time setting up and controlling your hardware and software. In a Noldus Observation Lab, all equipment is fully integrated, allowing you to operate all components and make recordings on one central computer in the control room, while an intercom enables you to communicate with your test participants. To gather data effectively, The Observer® XT is installed in every Noldus lab. You can obtain high quality recordings without the trouble of setting up a lab yourself!

STABLE AND ROBUST EQUIPMENT

Stable images, high quality video recordings, and clear recordings of speech and other sounds make all the difference in your research results. Simply put, you need to hear and see how your participants

A lab designed to look like a living room.

are communicating. In a Noldus lab, you can benefit from the most up-to-date hardware equipment. Moreover, all cables, cameras, and microphones are hidden in the walls and ceilings, allowing your test participants to feel at ease and behave in the most natural way.

EXCELLENT INTEGRATION FACILITIES

The Observer XT software is at the core of every Noldus lab. Due to its excellent integration features, we can arrange labs in such a way that all your devices work together perfectly. The Observer XT allows you to make synchronous multimodal recordings including video and audio streams, physiological data, eye tracking data, and more. As a result, you get complete insight into the relationships between the experimental conditions, overt behavior, and physiological responses. You can even compare different sessions and quantify behavior.

EXTENSIVE ANALYSIS

To get the most of your research data use:
- The Observer XT for its extensive analysis features and elaborate system for managing data. Our software allows you to visualize processes, calculate statistics, and create highlight clips of video and data. You can also create pie charts, line bars, or other graphs

Parent-child interaction: shared book reading. Code behaviors live while you observe mother and child. Play back the video later to check the coding work and for additional coding.

CONTROL ROOM
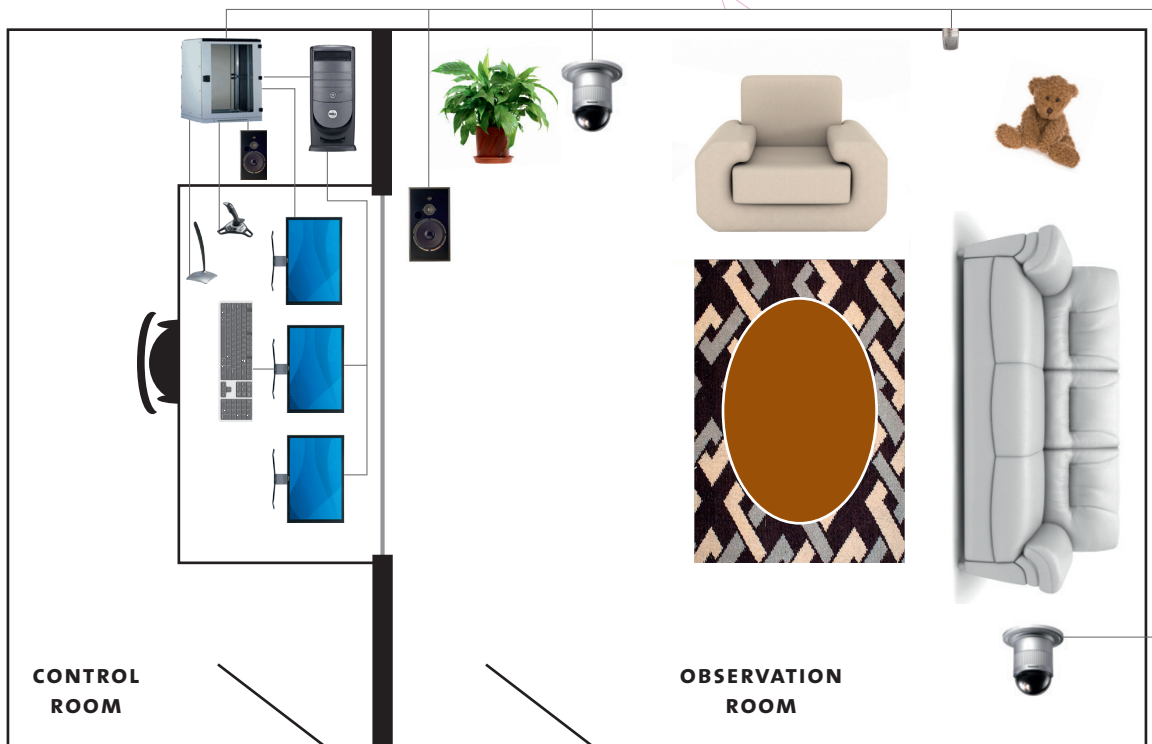
OBSERVATION ROOM

Example floor plan of a fixed Observation Lab. On the left side is the control room with an audio-visual system, multiple monitors for viewing camera images, a speaker, a push microphone, and a joy stick for controlling the pan/tilt/zoom cameras. On the right side is the observation room. It is equipped with multiple dome cameras, hidden microphones, and a speaker for the intercom. The Observer XT controls the equipment, records the video, and allows the researcher to code behavior live while recording.

and even draw a trend line. With the Advanced Analysis Module, you can perform reliability analysis and lag sequential analysis, see page 16.

- Theme™ is software that enables you to unravel the time structure of behavior at any level of detail, see page 30.

FULL SUPPORT

All our labs come complete with installation, training, and support. We make sure you know exactly how to operate your system by not only training you on how to use our software tools, but also by giving advice on different observation methods. If you experience any challenges, our support department is there to help. If you need an Observation Lab for a short period of time, a special course, or a special project, Noldus can offer you a wide range of systems and products for rent, (see page 63). In short, we help you get the best out of your behavioral research!

Visit www.noldus.com
The best way to track recent developments on all our products.

? **MORE INFORMATION?**
See page 68 for contact information.

COMPONENTS

Typical components
- The Observer XT   p. 16
- Media Recorder   p. 32
- Computer   p. 46
- Cameras   p. 46
- Two-way audio system   p. 46
- Event logging keyboard   p. 51
- Service contract   p. 60
- Installation & training   p. 62

Optional components
- Additional software licenses   p. 16
- The Observer XT Coder Licenses   p. 23
- FaceReader   p. 28
- Computers, video, and audio systems p. 46
- Eye tracker   p. 48
- Data acquisition equipment   p. 52
- Other services   p. 56

PORTABLE OBSERVATION LAB

If your research requires traveling, observing on-site or recording videos, then a Portable Observation Lab is the perfect solution for your research. Designed for easy transportation, our portable lab requires very little set-up time, and is ideal for observing people in their natural environments: at home, in classrooms, in shops, in offices, etc. Built to fit in a convenient Carry On Case, the lab comes complete with The Observer® XT and Media Recorder software to integrate and synchronize all video and data recordings.

BENEFITS

- Perform on-site research studies.
- On-site video and audio recording of behavior.
- Designed for traveling.
- Complete and compact.
- Robust.
- Quick set-up.
- Cost-effective.

ON-SITE BEHAVIOR RECORDING

Some phenomena are difficult to study in a lab, such as habits during a family dinner, or children in a classroom. In those cases, you can achieve the best results with live and on-site observation, using our compact portable lab.

DESIGNED FOR TRAVELING

The complete lab weighs approximately 11 kg (25 lbs) and is built into a rugged Carry On Case. Noldus portable labs are specially designed for traveling; as carry-on luggage on an airplane, or put it in the trunk of your car.

On the road with a Portable Observation Lab.

QUICK SET-UP

Once you have arrived at the observation site, you can start working quickly! A Noldus portable lab can be set up in under 10 minutes.

USER-FRIENDLY

A Noldus portable lab is a user-friendly package, consisting of high quality components to guarantee excellent results. Using this equipment can save you valuable time in an on-site observation. And less time means earlier results against less cost!

Study behavior on-site using our Portable Observation Lab.

HIGH QUALITY COMPONENTS

Our portable lab contains all the equipment you need to make live behavioral recordings in a natural environment, including a laptop and two video cameras.

As in all Noldus labs, The Observer XT is at the core of the portable lab. It is an excellent tool for observational studies, giving you maximum freedom in coding behavior. On-site, you can record video with the Media Recorder. During or after the observation you can code the behaviors with The Observer XT; synchronicity is guaranteed.

In addition to the portable lab, you can order an extra license of The Observer XT and an event logging keyboard. These additions enable you to code your recordings back in your office or lab while your colleagues use the portable lab for recording.

MODULAR DESIGN

A Noldus portable lab is built on a modular platform. Do you want to use additional equipment like a heart rate monitor or special keyboard? We offer many devices you can add to the lab. Of course you can also add your own tools.

WWW.NOLDUS.COM

EXTENSIVE ANALYSIS

To get the most out of your research data, use The Observer XT for its extensive analysis features and comprehensive system for managing data. Our software allows you to visualize processes, calculate statistics, and create highlight clips of video and data.

FULL SUPPORT

All our labs come complete with a three year Basic service contract. Upgrade your lab further by purchasing an in-depth training or a Plus or Platinum service contract. If you experience any challenges, our support department is there to help. In short, we help you get the best out of your behavioral research!

A Portable Observation Lab, small and quick to set up.

INTERESTED?

Feel free to contact us or one of our local representatives for more references, client lists, or more detailed information about a Noldus Portable Observation Lab.

? MORE INFORMATION?
See page 68 for contact information.

TECHNICAL SPECIFICATIONS

Weight	Approximately 11 kg (25 lbs)
Size	55.9 x 35.1 x 22.9 cm
	22.0 x 13.8 x 9.0 inch
Water and dust protection (Carry On Case)	Totally protected against dust and protected against the effect of immersion up to 1 m (IP 67)
Set-up time	Less than 10 minutes
Video storage capacity	Up to 200 hours

COMPONENTS

Typical components
Carry On Case with

The Observer XT	p. 16
- Video Module	
- Advanced Analysis Module	
Media Recorder	p. 32
Notebook and mouse	p. 46
2 USB video cameras	p. 46
2 Mini tripods	p. 46
Table microphone	p. 46
Headphones	p. 46
Cables and power supply	p. 46
Basic service contract	p. 60

Optional components

Additional software licenses	p. 16
uASQ	p. 26
Theme	p. 30
Mobile Device Camera	p. 50
Event logging keyboard	p. 51
Portable heart rate monitor	p. 52
Services	p. 56

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USABILITY LAB

Capturing human-machine interaction can be a challenging task. Multiple forms of data can be collected, from user actions on the computer and eye movements to physiological and simulator data. Performing Human Factors research requires a well-equipped, user centered lab and specialized knowledge. We can help you at every stage of your research process, from the set-up of your lab to the interpretation of the results.
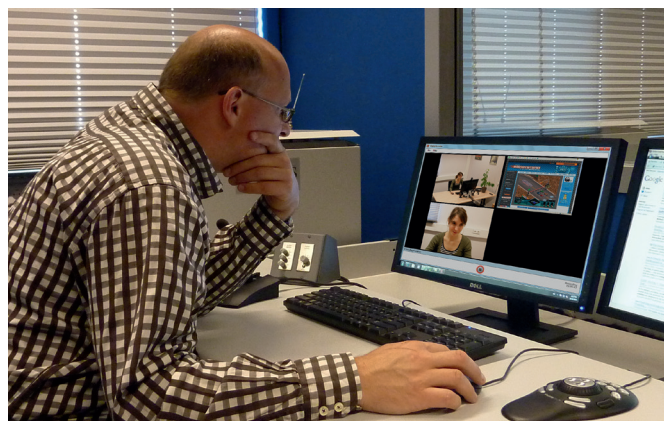
BENEFITS

- Realistic simulations under controlled conditions.
- High-tech and customizable.
- Superior video recordings and screen captures.
- Fully integrated equipment and software.
- Compelling video highlights.
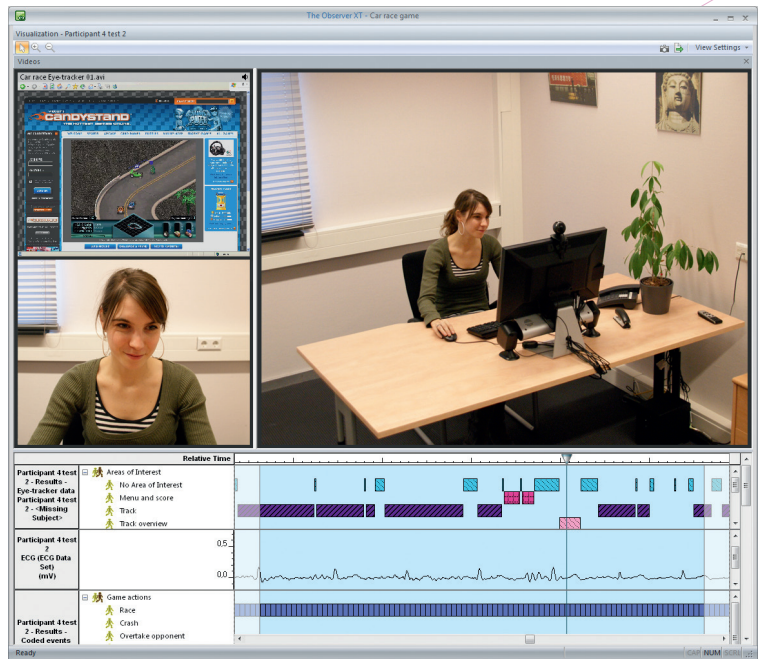
DESIGNED WITH YOU, BUILT BY US

We design sophisticated labs tailored to meet your research needs. When running experiments and observations, you do not want to waste valuable time setting up and controlling your hardware and software. In a Noldus lab, the equipment is fully integrated, allowing you to operate the equipment and make recordings on one central computer in the control room, while an intercom enables you to communicate with test participants sitting in the observation room. Media Recorder allows you to record video from multiple cameras and capture computer screens. With The Observer® XT software you can analyze your video material offline, or make live data recordings of tasks, comments, and usability issues.

POWERFUL EQUIPMENT

Stable image quality, high quality video recordings, and clear recordings of speech and other sounds make all the difference in your research results. In a Noldus lab, you can benefit from the most up-


A multi-modal recording in The Observer XT. It contains a screen capture video, a camera image showing a user close-up, a dome camera overview, manually recorded behavior, eye tracking data, and an ECG signal.

to-date hardware components and equipment. Moreover, all cables, cameras, and microphones are hidden in the walls and ceilings. Together we can make this lab an operational environment in which user experience can be tested effectively.

EXCELLENT INTEGRATION FACILITIES

Due to The Observer XT's excellent integration facilities, we can arrange labs in such a way that all your devices work together perfectly. The Observer XT allows you to make synchronous multi-modal recordings of screen captures, video, audio, mouse clicks, eye movements, physiological measurements, and more. It gives you complete insight into the behavior of your test participant which enables you to evaluate your application or product simple and effectively.

- With uASQ you can ask questions to test participants during live observations.
- If you incorporate FaceReader™ into your lab, you will have the additional ability to record facial expressions automatically.
- Integrate eye tracking technology to complete your usability lab. We deliver customized solutions with several eye tracking systems.
- Combine physiology and behavior in your usability lab by adding a Data AcQuisition (DAQ) system to your set up. You can collect ECG, skin conductance, respiration, and much more synchronous to behavior.

From the control room you have a perfect overview of your test participants.
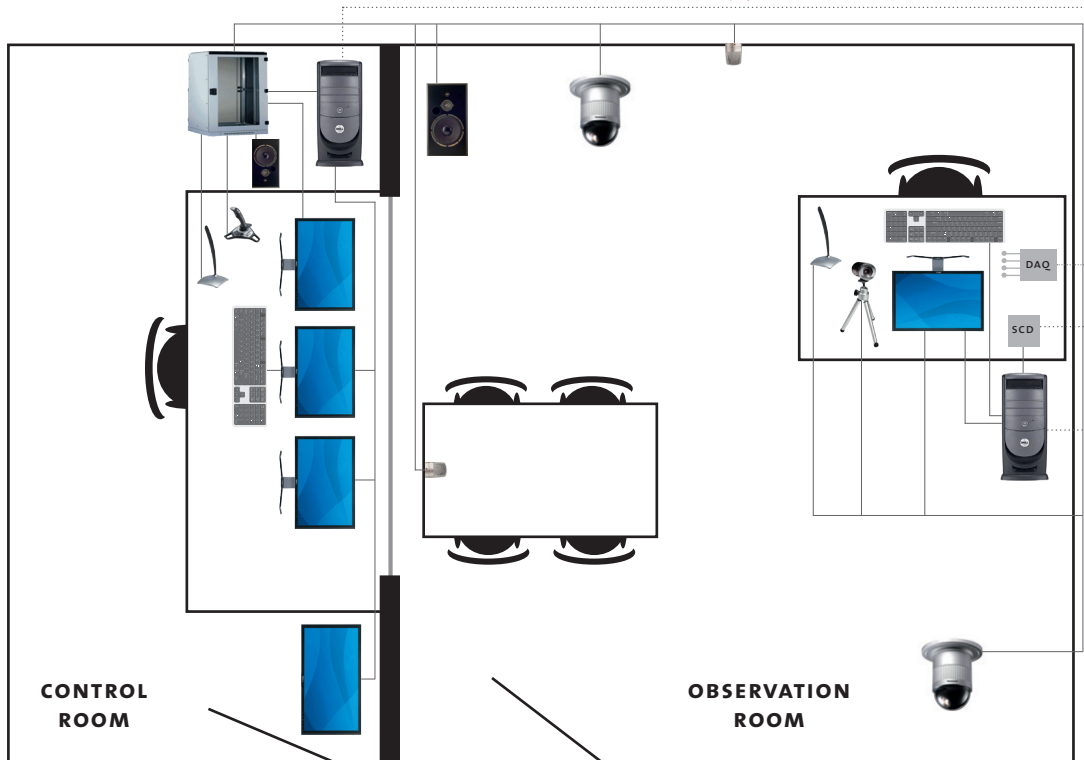
Example floor plan of a fixed usability lab. On the left side is the control room. It contains multiple monitors for camera images, an audio-visual system, a push microphone, and a speaker. A large plasma screen allows multiple people to watch. On the right side is the observation room. It is equipped with dome cameras, microphones, and an intercom. On the desk there is a test computer. A camera, microphone, a screen capture device, and DAQ system capture the test participant's activities. The Observer XT controls and synchronizes the equipment, and integrates video and data. The test leader records tasks, user behavior, and other events.

EXTENSIVE ANALYSIS

To get the most of your research data use:

- The Observer XT allows you to visualize processes, calculate and compare metrics, and create highlight clips of video and data. Moreover, you can analyze physiological data together with observational data using The Observer XT software. Read more on page 16.
- Theme™ to unravel the time structure of behavior in any level of detail. This software is especially effective in analysis of interaction, such as social interaction or Human-Computer Interaction, see page 30.

FULL SUPPORT

All our labs come complete with installation, training, and support. We make sure you know how to operate your system by not only training you on how to use our software tools, but also by giving advice on different observation methods. If you experience any challenges, our support department is there to help. If you need a usability lab for a short period of time, a special course, or a special project, Noldus can offer you a wide range of systems and products for rent, (read more on page 63). We help you get the best out of your behavioral research!

Example labs can be found on www.noldus.com/labs

COMPONENTS

Typical components

The Observer XT	p. 16
– Video Module	
Screen capture device	p. 46
Media Recorder	p. 32
Computer	p. 46
Cameras	p. 46
Two-way audio system	p. 46
Event logging keyboard	p. 51
Service contract	p. 60
Installation & training	p. 62

Optional components

|	
Additional software licenses	p. 16
uLog Pro	p. 24
uASQ	p. 26
FaceReader	p. 28
Theme	p. 30
Computers, video, and audio systems	p. 46
Eye trackers	p. 48
Data acquisition equipment	p. 52
Event Logging Interface	p. 55
Other services	p. 56

PORTABLE USABILITY LAB

The Noldus Portable Usability Lab is the complete solution for on-site usability testing. You can easily study Human-Computer Interaction (HCI) in your test participant's workspace or office. Designed for easy transportation, our portable lab fits into a Carry On Case and can make all the difference in your behavioral research.

BENEFITS

- Perform on-site research studies.
- Synchronous recordings of Human-Computer Interactions, video, and audio.
- High resolution screen capturing, operating system independent.
- Designed for traveling.
- Quick set-up.
- Cost-effective.
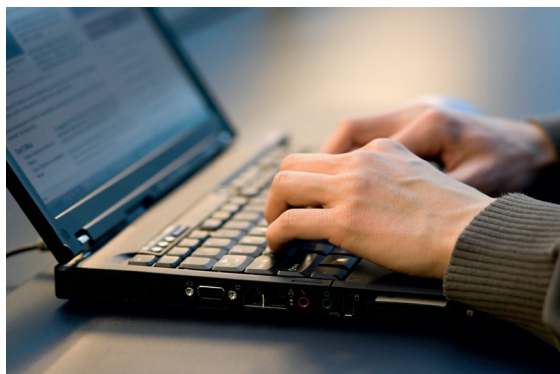
Study behavior on-site using our Portable Usability Lab.

STUDYING HUMAN FACTORS ON-SITE

If you really want to know what happens at the workplace, study it on-site using our Portable Usability Lab. You can make screen captures, record video, score tasks, usability hits, and context details.

DESIGNED FOR TRAVELING

The entire lab weighs approximately 11 kg (25 lbs) and is built into a rugged Carry On Case. Noldus portable labs are specially designed for traveling; as carry-on luggage on an airplane, or put it in the trunk of your car.

On the road with a Portable Usability Lab.

QUICK SET-UP

A Noldus portable lab can be set up under 10 minutes. Once you have arrived on site, you can start working quickly! As all the equipment works together perfectly, you only have to connect the wires and set up the camera.

USER-FRIENDLY

A Noldus portable lab is a user-friendly package, consisting of high quality components to guarantee excellent results. Using this equipment can save you valuable time in an on-site observation. And less time means earlier results against less cost!

TYPICAL COMPONENTS

Our portable lab contains all the equipment you need to make on-site usability recordings, including a laptop, a webcam, and a digital screen capture device. As in all Noldus labs, The Observer® XT software is at the core of the portable lab. It allows you to add comments, mark tasks, and score usability hits during screen capture and video recording. The Observer XT helps you to maximize the value of live or video-recorded sessions. It is combined with the Media Recorder, our innovative tool for synchronous video recording. To enhance the portable lab, you can order an extra license of The Observer XT and an event logging keyboard. These additions enable you to code your recordings back in your office or lab while your colleagues use the portable lab for recording.

UASQ

This questionnaire tool which enhances The Observer XT with direct feedback from your test participant during a live observation is a typical part of the Portable Usability Lab. uASQ runs on the computer of the test participant. Questions appear on this computer and answers are sent back to your laptop. The questionnaire can be repeated several times during the test.

SCREEN CAPTURE DEVICE

With the screen capture device, you can easily follow what your test participant is doing on his computer. This device has a high frame rate and provides you with high quality images of the screen at which the test participant is looking. The device is plugged into the test pc to capture the image on the screen. This image is recorded in the Media Recorder along with the video. After recording with Media Recorder software, you can import the video of the test participant in The Observer XT and see all the different elements on the same timeline. In The Observer XT you can code behaviors and create a video highlight clip.

WWW.NOLDUS.COM

MODULAR DESIGN

A Noldus portable lab is designed as a modular platform allowing you to add additional equipment such as a heart rate monitor, eye tracker, or Mobile Device Camera. Of course you can also add your own tools.

EXTENSIVE ANALYSIS

To get the most out of your research data, use The Observer XT for calculating usability metrics, visualizing processes, and statistical analysis. Our software allows you to export interesting highlight clips of video and data for presentational purposes.

A Portable Usability Lab, small and quick to set up.

FULL SUPPORT

All our labs come complete with a three year Basic service contract. Upgrade your lab further by purchasing an in-depth training or a Plus or Platinum service contract. If you experience any challenges, our support department is there to help. In short, we help you get the best out of your behavioral research!

INTERESTED?

Feel free to contact us or one of our local representatives for more references, client lists, or more detailed information about a Noldus Portable Usability Lab.

? MORE INFORMATION?

TECHNICAL SPECIFICATIONS

Weight	Approximately 11 kg (25 lbs)
Size	55.9 x 35.1 x 22.9 cm
	22.0 x 13.8 x 9.0 inch
Water and dust protection (Carry On Case)	Totally protected against dust and protected against the effect of immersion up to 1 m (IP 67)
Set-up time	Less than 10 minutes
Video storage capacity	Up to 130 hours

USB webcam

Resolution	640 x 480
Frame rate	30 fps

Screen capture device

Resolution	1920 x 1080
Frame rate	30 fps

COMPONENTS

Typical components
Carry On Case with

▪ The Observer XT	p. 16
- Video Module	
- Advanced Analysis Module	
▪ uASQ	p. 26
▪ Media Recorder	p. 32
▪ Notebook and mouse	p. 46
▪ Headphones	p. 46
▪ Digital screen capture device	p. 46
▪ Webcam (with mini tripod)	p. 46
▪ Participant microphone	p. 46
▪ Cables and power supply	p. 46
▪ Basic service contract	p. 60

Optional components

▪ Additional software licenses	p. 16
▪ Theme	p. 30
▪ Eye tracker	p. 48
▪ Mobile Device Camera	p. 50
▪ Event logging keyboard	p. 51
▪ Portable heart rate monitor	p. 52
▪ Services	p. 56

Your research is unique. So are your lab requirements. To meet them, Noldus offers a wide range of tools that are flexible and designed to meet a variety of research demands. If your application requires a truly unique solution, you can rely on our many years of experience with building labs all over the world to create a custom lab for you. We can even integrate the hardware and software you already have into one of our solutions.

SOLUTIONS THAT MEET YOUR REQUIREMENTS

When designing your lab, we combine software and hardware solutions that meet your unique research requirements. We have many standard solutions in our portfolio that offer a good value for the money. Do you need something special? A different type of camera or Data AcQuisition (DAQ) system? We are more than happy to work with you to create the optimal custom solution.

FULL INTEGRATION

Full integration means we integrate hardware components into full systems, even if they are not mentioned in this catalog. High speed cameras, data acquisition systems, eye trackers, and video servers, are just a few examples of the components we can integrate. We can also integrate third party hardware and software.

Integration can take place on many levels. Some systems only require data integration or screen recordings,

Synchronize all your lab equipment.

while others need fully synchronized recordings of multiple modalities. Backed by highly technical support staff, our sales team can help you investigate the options, and create the best system for your needs.

SERVICE AND SUPPORT

We test our standard components extensively under many different circumstances to verify how they work with new releases of our products. Custom components are tested as well, in conjunction with our software. We provide extensive documentation and our staff is trained and experienced in helping you with common issues.

THE OBSERVER XT

We only work with world-class suppliers. The Observer® XT has been successfully integrated with many different systems and equipment. We help you to build the right solution, consisting of The Observer XT

and the equipment you require. We offer systems that include components from:

EYE TRACKERS
- SMI
- Tobii

DATA ACQUISITION EQUIPMENT
- Biopac
- Mindware Technologies
- Polar Electric

CAMERAS
- Basler
- Imaging Source
- Panasonic

You can also work with equipment from other suppliers. The Observer XT has been successfully integrated with ASL and Smart Eye eye trackers and with DAQ equipment from ADInstruments, Becker Meditec, Biosemi, EGI, TMS International, VU-AMS, and G-tec. If you are looking for motion capture equipment, you can choose equipment from Motion Analysis. The Observer XT has also been integrated with E-Prime and simulators from BAE Systems and Re-lion.

OTHER HARDWARE

EVENT LOGGING INTERFACE
You can code automatically sensed behaviors live into the data files of The Observer XT by using the Event Logging Interface (ELI). This tool allows you to replace yourself as the coder, partially or completely, and build your own automated event logging set-up. You can connect any type of sensor-based switch (voice activated switch, infrared beam, movement sensor, etc.) to one of the twelve input channels on the ELI. Activation of this sensor will automatically lead to an entry in the event log of The Observer XT.

SYNCBOX
For the synchronization of lab equipment that is not compatible with The Observer XT, we designed the SyncBox. This piece of hardware receives electrical pulses from The Observer XT, and in turn, all recording equipment receives signals from the SyncBox, such as light signals, sounds, electrical pulses, and key strokes. The pulses are also recorded in the event log of The Observer XT. This allows you to easily synchronize, and verify synchronization in all your recordings.

? MORE INFORMATION?

FOUR EXAMPLES OF CUSTOM-MADE SOLUTIONS

RESTAURANT OF THE FUTURE

The Restaurant of the Future is a unique environment where scientists can observe restaurant frequenters in conditioned situations for a prolonged period of time. Research may include behavior, food choice, design and layout, influence of lighting, presentation, traffic flow, taste, packaging, preparation, and countless other aspects involving out of home eating and drinking. As one of the 'founding fathers', Noldus equipped the restaurant with the latest computer and video technologies, including The Observer XT for visualization and analysis of consumer behavior. We also performed the complete on-site installation, and trained the researchers to conduct the consumer behavior research. This research facility is also available for contract research. Read more on page 65.

A restaurant or an observation lab? Researchers can watch every table and every visitor with hidden cameras. They control all conditions, from the layout of the counters to the lighting of the room.

BAE SYSTEMS

Noldus provides key software solutions to BAE Systems, a premier global defense and aerospace company, assisting in the development of the next generation ground combat and transport vehicles. BAE Systems constructed a simulator to study interactions between the driver, gunner, and commander in various conditions. Other defense contractors in this program include General Dynamics Land Systems, Boeing, and SAIC.

Noldus has developed a special vehicle performance data recorder (UDP Reader) for BAE Systems. Using The Observer XT and the UDP Reader, BAE Systems studies the vehicle performance in sync with various communications. This measurement and analysis set-up configured for BAE Systems represents one of the first applications in crew performance analysis and after-action review in training simulators.

FORENSIC FIELD LAB

Within the research project CSI The Hague, the premier forensic and technological companies in the Netherlands are combining and developing technologies to digitize and visualize the crime scene. In the near future, we will be able to feel, smell, hear, taste, and observe in virtual reality all the evidence that was present at a crime scene. This 'freezing' of the crime scene provides great opportunities for reconstruction and testing hypotheses or witness statements. Not only will there be a virtual lab, but there will also be a house where forensic researchers can be observed and trained in a real-life exercise. It will be very useful for education, training forensic researchers, and for experimenting with new methods and techniques. CSI The Hague will stimulate innovation into forensic investigation and help to solve crimes. Noldus is excited to be one of the partners in this project.

GAME LABS

The IBBT game experience lab in Ghent, Belgium and the Hohenheim GameLab in Stuttgart, Germany were built by Noldus to facilitate research into user experience with video games in different stages of their development cycle. The IBBT game experience lab is used to study and evaluate various aspects of the user-game interaction and serves as a playground for exploring and developing new methods for measuring user experiences in a non-obtrusive manner. The different setups in the Hohenheim GameLab makes it possible to study different forms of single- and multiplayer gaming (co-located, online, local network). Noldus equipped the lab with state-of-the-art hardware and Media Recorder, FaceReader™, and The Observer XT software.

Hohenheim GameLab: the individual stations can be used to study single- or multiplayer gaming with PCs or consoles.
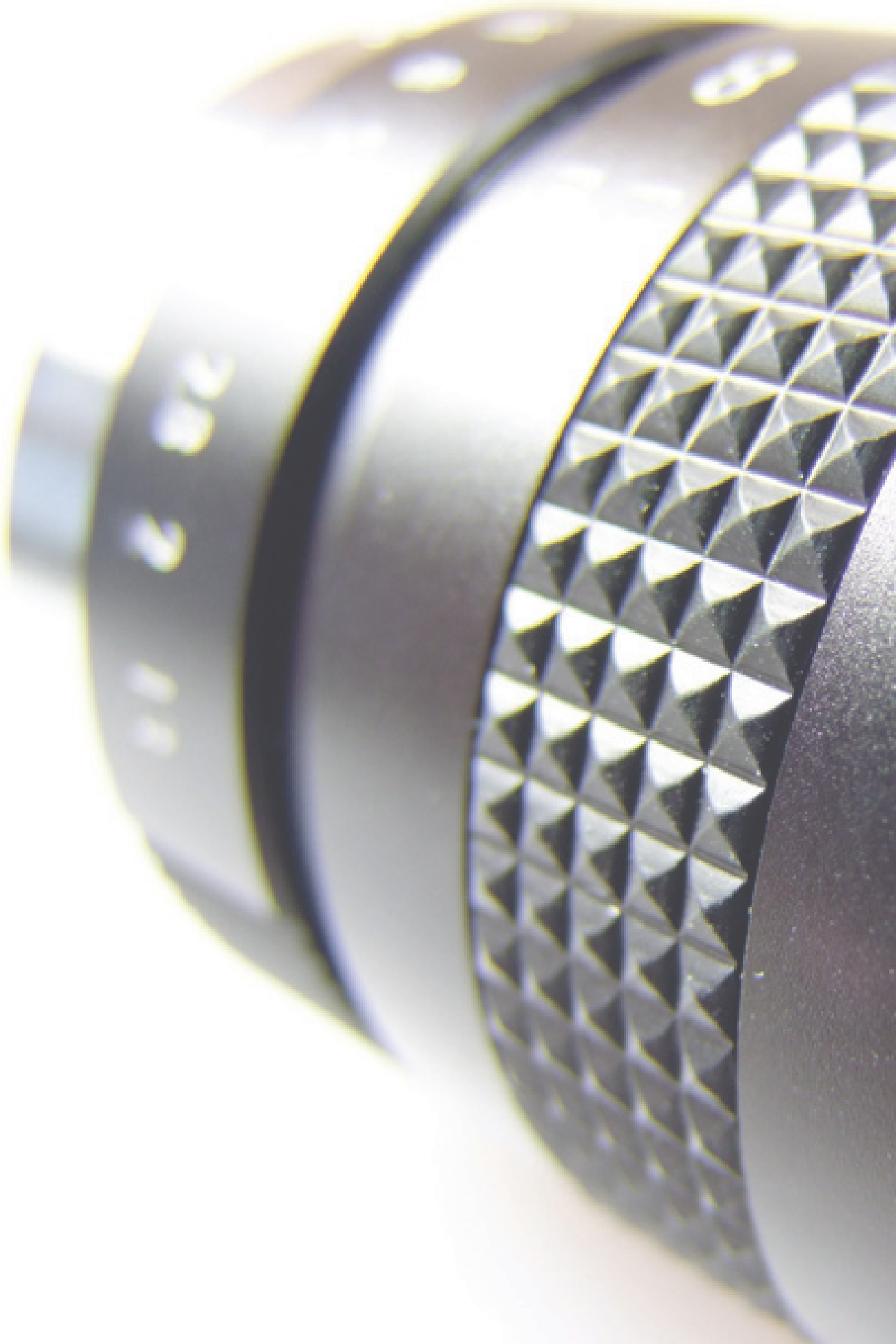
Contents

In this section you will find

COMPUTER, VIDEO, AND AUDIO SYSTEMS

Noldus has a solid reputation for the wide selection of computer components that comprise our field of proven hardware set-ups. We are continuously striving to help you achieve your research goals by offering turn-key solutions. Even as technology rapidly advances, we always try to incorporate the latest tools into our solutions. Our knowledge and experience in video observation will help you choose the best solution to conduct your observations, even under the most challenging conditions. The list below is static, so if you are interested in a new kind of camera for your Noldus solution, and it is not yet included in this list, check out our website for up-to-date information or contact our sales department.

COMPUTERS

You can order your Noldus software product separately, or in a complete lab that includes computers, microphones, and cameras. The computers we supply are Dell workstation computers designed to do processor-intensive video work. They are selected, configured for, and thoroughly tested with our software. With our Portable Labs we supply Dell laptops. A Portable Lab is a compact and complete solution for behavioral research.

A complete lab includes computers, microphones, and cameras.

Purchase a complete solution from Noldus, and you are guaranteed a perfectly working set-up, avoiding time consuming technical issues. If you want to use one of our software products in combination with another computer, please refer to the technical specifications of your Noldus software for compatibility.

Noldus supplies Dell workstation computers.

HANDHELD COMPUTERS

We offer several handheld devices for coding behavior on the go. Depending on your needs we can customize a set-up to be rugged, wireless, remote controlled, portable or stationary, adapted to any type of environment.

Rugged handheld computers can withstand high humidity and extreme environmental temperatures and are suitable for observing behavior outdoors. They can resist a drop of one meter (1.09 yard), are splash proof, and can operate in temperatures ranging from −20 °C to +60 °C (-4 F to + 140 F). Most rugged handhelds are keyboard-based. Coding behavior simply takes place by pressing the corresponding key of the keyboard, allowing you to fully concentrate and keep your eyes on the test participant you are observing. Most handhelds can be delivered with additional batteries and a protective carrying case.

Rugged handheld computer.

CAMERAS

There are many different types of cameras, and choosing the right type of camera for your research is vital for reliable observations. That is why our specialists can advise you about the right camera, lenses, and lighting for your research project. We offer a broad range of color and black and white video cameras and several of our black and white cameras are infrared (IR) sensitive.

ANALOG CAMERAS
Many laboratories come equipped with analog cameras, which is why we make our products compatible with this hardware. Analog cameras are reliable and come in a large variety and cabling length has virtually no maximum, making it a practical choice in many circumstances.

FIREWIRE CAMERAS
FireWire cameras allow you to record video in compressed formats without any additional hardware. This makes them a good alternative to analog cameras. FireWire cameras are generally suitable for high frame rates and resolutions, enabling highly accurate synchronization. The fact that you need no additional hardware makes this an easy and cost-effective solution.

USB CAMERAS
If you do not require high resolution video material, USB cameras can be an inexpensive and practical solution. No additional hardware is needed to compress video. Multiple video streams can be used in The Observer® XT. USB cameras are also suitable for use with FaceReader™.

IP CAMERAS
IP cameras can be plugged into, and remotely controlled via an existing network. This gives you the advantage of using an existing infrastructure, eliminating cable length issues. IP cameras are suitable for use with both The Observer XT and FaceReader.

HARD DISK CAMCORDERS

Hard disk camcorders record video in a digital media format. You can copy these files directly to your computer hard drive and code them with The Observer XT, making them very practical for field work. When using hard disk camcorders, you do not need additional equipment and there is no need to convert your recordings from hard disk or memory sticks when using them with The Observer XT. For use in FaceReader, a software tool is needed for converting and splitting the camera signal.

HIGH SPEED CAMERAS

High speed cameras allow you to record videos of fast moving activity, and code behavior in high detail afterwards. When creating a video file with high speed cameras you are not limited to the standard 25 or 30 frames/second time resolution. The Observer XT simply uses the video file and processes it frame by frame.

COMBINE MULTIPLE VIDEO FEEDS

If you want to record from multiple cameras simultaneously, you can use the Media Recorder. This is a software tool that enables synchronous video recordings from up to four different sources. The video files from the different cameras can be stored separately or combined into one video file. The Media Recorder is easy to use, versatile, and it enables you to make high quality recordings. It is compatible with both The Observer XT and FaceReader, and a broad range of cameras, making it ideal for detailed offline accurate coding. For more information on the Media Recorder, please see page 32.

Record video and sound with Class A equipment.

SUPERIOR SOUND RECORDING

Whatever your requirements, we design and configure recording systems with the right type of microphone, amplifier, mixer, and speaker set. We also include a lab intercom which allows you to communicate from the control room with the test participants in the lab. Each type of experiment has its own sound recording requirements. Your test participant may be close by or far away, moving freely around or staying at one place. There may be one or multiple test participants, or the acoustics of your lab may influence recording quality. Taking into account all these factors and more, we are able to provide the solution that meets your specific requirements best.

Noldus technicians configure your lab for you. They install, connect, and test all equipment. They make sure that your video and sound recordings are synchronized.

PREFERRED SUPPLIERS

All our solutions are assembled using top quality equipment without sacrificing the price-quality ratio. By working with reputable manufacturers, we can offer lengthy support and, if needed, replacement of parts for all our solutions. We are continuously looking for the latest hardware innovations to keep our solutions on pace with technological developments. Some of our preferred suppliers include:

- Dell computers and laptops
- Hewlett Packard PDA's
- Psion Teklogix rugged handheld computers
- Sennheiser microphones
- Canon cameras
- Basler Vision Technologies cameras
- Axis IP cameras
- Panasonic cameras
- Bosch cameras

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The best way to track recent developments on all our products.

MORE INFORMATION?
See page 68 for contact information.

Eye trackers add substantial power to your lab set-up. They produce gaze video and large quantities of rich data, all related to attention and emotion. Take advantage of our experience and knowledge: as we often integrate eye trackers into lab set-ups, we can help you find the eye tracker that works best for you.

BENEFITS

- See what your test participant is looking at.
- Get rich, quantitative, and reliable data for attention, mental load, and arousal.
- Combine eye tracking videos and other sources like FaceReader™ or Data AcQuisition (DAQ) systems with The Observer® XT.

HEAD MOUNTED EYE- AND GAZE TRACKER

A head mounted eye- and gaze tracker consists of a lightweight cap or glasses with a built-in eye tracker and video camera. It allows your test participant to move and look around freely, while you are getting a complete movie of your test participant's view with a gaze point overlay.

Analyze your eye tracking video with The Observer XT, and find out how often and how long your participant looked at various items. The red cross indicates the point of gaze.

In The Observer XT you can easily code the video and import eye tracking data such as number of blinks, fixations, pupil dilation, and gaze position. These parameters tell you everything about mental load, attention, arousal, and eye position of your test participant. This makes the head mounted eye tracker very useful, not only in Human Factors research in the aviation and automotive industry, but also in military training, behavior studies in simulated environments, and consumer research.

suitable for Human-Computer Interaction research, usability testing, psycholinguistics, and market research. Some computer-monitor eye trackers allow you to see in real time what your test participant is looking at. They all make screen captures with a gaze overlay that are suitable for video analysis in The Observer XT. Moreover, you can easily import the test participant's views as behavioral data, and integrate this information with manually recorded behavior.

Market research with a head mounted eye tracker from SMI.

COMPUTER-MONITOR AND DESKTOP EYE TRACKER

We also offer computer-monitor eye trackers that track the test participants gaze on a computer screen. They are contact free, and built into or attached to computer monitors. This makes them very

A stationary eye tracker built into a computer monitor.

REMOTE AND FLEXIBLE EYE TRACKING

If you are interested in your test participant's response to physical objects such as posters or product placement, you can use a contact free eye tracker. It provides you with data such as area of interest, views, pupil dilation, blinks, and gaze position. The gaze path can also be overlaid on a picture. The desktop eye tracker also produces a video on which an overlay of for example the eye movements can be placed.
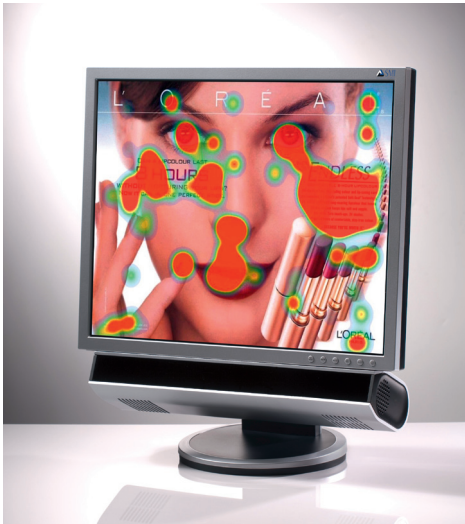
This device can be connected to a computer monitor, making a combo system.

MODULAR SYSTEM

Are you planning to apply both head mounted and contact free eye tracking? We offer you a modular system which consists of a base unit for acquisition and analysis, and exchangeable tracking devices. This will greatly reduce the cost of your total set-up. The Observer XT is suitable for video analysis, for recording behavioral context, and for joint analysis of eye movements and behavior. You can easily combine eye tracking videos with data gathered with other software or hardware such as FaceReader, uASQ, or DAQ systems.

PREFERRED SUPPLIERS

- SensoMotoric Instruments
- Tobii Technology

Note: other brands and types of eye trackers can be delivered as custom solution. See the Custom labs section (page 42), or contact your sales representative (page 68).

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The best way to track recent developments on all our products.

? MORE INFORMATION?
See page 68 for contact information.

APPLICATIONS

Observation Lab	p. 34
Usability Lab	p. 38

COMPATIBLE PRODUCTS

The Observer XT	p. 16
FaceReader	p. 28
Data AcQuisition (DAQ) systems	p. 52

ADDITIONAL DOCUMENTATION

- Application note: How to use The Observer for eye tracking

Eye tracking technology is for instance used in infant behavior research. Using an eye tracker you can exactly see where the child is looking. In this picture an eye tracker from Tobii is used.

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All other countries
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MOBILE DEVICE CAMERA

Do you want to investigate the interaction between users and a mobile device, such as a smart phone, MP3 player or PDA? In that case, our specially developed Mobile Device Camera is what you need. Just clip it on the device and start filming. It also records sound to capture user comments. Our Mobile Device Camera is compatible with The Observer® XT, creating a powerful system for Human Factors research on mobile devices.

BENEFITS

- Capture interaction of users and mobile devices.
- Test under natural conditions.
- Combine videos and other sources with The Observer XT.

FEATURES

- Close-up video of mobile device.
- Close-up video of user (optional second camera).
- Audio recording.
- Adjustable to device's size and shape.
- Stable image.
- Lightweight.
- Synchronized overview video recordings (optional additional cameras).

FIT THE DESIGN TO YOUR OBSERVATIONS

It is more important than ever to know how users operate a mobile device. The number of small mobile devices has grown enormously. Most people today have at least one cell phone, an MP3-player, and a remote control. Designing them is a challenge. They are small, have few controls, hold a tiny screen (if any), and often contain a dazzling number of functions. With our Mobile Device Camera you can easily study how they are operated in real life situations, and use the results to create the ultimate mobile device.

UNDERSTANDING THE USER

Efficient design starts with understanding the user. Understanding begins with observation. But how do you observe interaction on a small device? The Mobile Device Camera was created to do just that. It is a small camera you can easily mount on a device. It captures key strokes, taps on the screen, or scrolling. Moreover, it also captures the way the user works with the device, the way it is held, and the user comments.

FIT ON A WIDE VARIETY OF DEVICES

The camera clamp is designed to fit on a wide variety of devices. The lightweight and sturdy frame provides a stable camera image, even

during swift movements. You can adjust camera distance and angle to match the size of the device.

STUDY THE USERS FACE AND THE CONTEXT

It is even possible to place a second camera on top of our Mobile Device Camera, pointing towards the user's face. You can play the video of both cameras in sync in The Observer XT.

COMPLETE KIT

The Mobile Device Camera comes as a complete kit, ready for operation:

- a camera with mobile device holder
- carrying case for transmitter
- batteries
- power adapter for receiver
- composite video cable
- case for easy storage and transport
- media recorder/player (optional)
- second camera for recording the user's face (optional)

TECHNICAL SPECIFICATIONS

Camera

Type	Color, PAL, or NTSC
Image sensor	1/4" CCD
Array size	PAL 500 x 582 pixels, NTSC 510 x 492 pixels
Lens	f 3.7 mm, F 2.0
Lens angle	60.5° x 53°

Media recorder/player

Format	MPEG-4 recording, 30 frames/sec at 640 x 480 px.
Storage capacity	40-60 GB (4.5 hours recording)

APPLICATIONS

- HCI research of mobile devices
- Usability testing

Are you looking for tools that will make coding more efficient and at the same time, help prevent coding errors? We offer an entire range of keyboards to make observing and logging of behaviors along with positioning and controlling of videos much easier. Select the keyboard that suits your needs best and discover how it enables you to code more accurately and effectively.

These keyboards are part of our integrated solutions for observational research. We can take care of installation of the complete solution and assist you in programming the keyboards in order to achieve the best performance for your application.

BENEFITS

- Coding becomes easier and more accurate.
- Reduction of coding errors by limiting faulty key presses.
- Customizable keyboard programmed to your preferences.
- Usable for both coding and video analysis.

FEATURES

- The keyboards are multifunctional: you can use them as a replacement or in combination with your standard keyboard.
- Special programming options allow you to set your keys for single or multiple keystrokes. For example, code subjects, behaviors, and modifier combinations with one key press.
- The 'press and hold' functionality enables you to log the duration of behavior: just keep the key pressed as long as the behavior occurs and the start and stop entries in the event log will be added accordingly.
- Control keys permit you to automatically perform software functions such as rewinding videos, starting observations, or changing play speed.
- Color or text labels make all your keys unique. The use of different colors can be used to distinguish between different behavioral classes.
- Keypads are available with 3 to 46 keys.
- Unlimited storage, importing, and exporting of programmed key sets gives you the opportunity to use one key set on multiple keypads or multiple sets on one keypad successively.

46-KEYS KEYBOARD WITH JOG/SHUTTLE FUNCTION

In addition to the features mentioned above, the 46-key keyboard also includes a jog/shuttle dial (14-step shuttle, 2-step jog). This is ideal for controlling and positioning videos. Turning the dial clockwise initiates the video to play and turning the dial further speeds up the video. Releasing the dial pauses the video and turning it counterclockwise initiates playing the video in reverse.

3-KEY USB FOOT PEDAL

Let your feet control the video while coding with your hands: the three foot pedals can be programmed for video control functions such as play, stop, or pause. Two buttons are located on each side while the third can be activated by pressing the center of the footrest. With this tool you will be able to fully concentrate on coding the video while your feet do the rest!

VIDEO CONTROL KEYBOARD

This ergonomically designed unit can be used in combination with your normal keyboard, allowing you to use one keyboard for scoring and one keyboard for video control. Besides the jog/shuttle (14-step shuttle and 2-step jog), this unit has fifteen programmable keys. The keyboard is easy to program, although it only allows programming of single key presses.

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The best way to track recent developments on all our products.

? **MORE INFORMATION?**
See page 68 for contact information.

TECHNICAL SPECIFICATIONS

- Connects to the USB port like a USB keyboard
- Includes software for Windows
- Instruction manual included
- 46-key keyboard has a hardwired 1.32 m (52") cord
- 9 of the programmable buttons on the video control keyboard have removable keycaps for easy labeling

COMPATIBLE PRODUCT

- The Observer XT   p. 16

DATA ACQUISITION (DAQ) SYSTEMS

Behavioral studies are mostly focused on measuring overt behaviors, related to experimental variables. In order to gain insight into the inner state of your test participants, we offer several Data AcQuisition (DAQ) systems that work in conjunction with The Observer® XT. You can set up synchronous recordings of physiological data, video, and behavior which allows you to carefully study the interaction between external events, physiological responses, and the resulting behavior.

BENEFITS

- Measure the internal state of your test participant.
- Collect ECG, skin conductance, respiration, and more.
- Easily and accurately synchronize physiological responses with behavioral coding.
- Study the interplay of external events, physiology, and behavior.

THE INNER WORLD

Although your test participant may appear to be calm, he or she may be concealing a considerable amount of stress. To reveal this level of stress, you can combine behavioral coding with physiological measurements acquired with a DAQ system. For example, skin conductance is a method of measuring the electrical conduct-

A heart rate monitor built into a wrist watch.

ance of the skin which is used as an indication of psychological or physiological arousal. A combination of physiological and behavioral data can provide you with essential information that will help you to further understand and explain your participants' behaviors. In some cases, you might find that your test participant is tense due to environmental variables, such as the behavior of another person, or the difficulties that the software presents the test participant with. Of course, we can also support you in measuring heart rate, skin resistance, skin temperature, muscle tension (EMG), neuronal activity (EEG), and more.

MULTIMODAL RESEARCH

DAQ systems enable you to study almost any research topic involving emotions, or mental and physical load. We help you build the right solution, consisting of a DAQ system and The Observer XT, the ideal platform for multimodal research. The DAQ system can be started from The Observer XT. Furthermore, The Observer XT will send out a synchronization signal to the DAQ system, making sure your external

data is in sync with your video recording. And to make the solution complete, The Observer XT External Data Module (read more on page 16) has predefined import profiles for the acquired data. You can easily link external data such as heart rate measurements to a specific observation. This allows you to import, select, analyze, combine, and work with the external data that you collected.

A multi channel stationary DAQ unit.

EQUIPMENT

Since The Observer XT is set up to work with a broad range of equipment from several suppliers, we can offer a wide range of DAQ devices, including:

- Stationary and wireless DAQ base units, consisting of:
  - ECG module (heart activity)
  - EEG module (brain activity)
  - EMG module (muscle activity)
  - EOG module (horizontal eye movements)
  - GSR module (transpiration)

Measure GSR accurately during an experiment.

WWW.NOLDUS.COM

- Respiration module (VO$_2$ and Respiration Exchange Ratio)
- Oxygen saturation module (non-invasive)
- Heart beat module (non-invasive)
- Blood pressure module (non-invasive)
- Portable heart rate monitor

Please contact our sales department if you have any questions or if you are looking for technical specifications. As technology rapidly advances, we are more than happy to provide you with the most up-to-date information.

THE OBSERVER XT AND E-PRIME

E-prime from Psychology Software Tools (PST) is a stimulus presentation program widely used in psychological research. The combination of The Observer XT and E-prime provides insight in the relationship between behavior and presented stimulus. In The Observer XT you can use the free interval selection with which you can define an interval for one kind of data and observe the direct link between this data and all other data in that interval.

Complete integrated psychophysiological observation solutions supported by Mindware and Noldus.

PREFERRED SUPPLIERS

We only work with world-class suppliers. Our preferred suppliers for DAQ devices are:

- Biopac Systems, Inc.
- Mindware Technologies
- Polar Electric

SELECTED CUSTOM INTEGRATIONS

The Observer XT has previously also been integrated with:

- ADInstruments
- Becker Meditec
- Biosemi
- EGI
- TMS International
- VU-AMS
- G-tec

Note: other brands and types of DAQ equipment can be delivered or integrated as custom solutions. See the custom solutions section or contact your sales representative.

Visit www.noldus.com!
The best way to track recent developments on all our products.

MORE INFORMATION?
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SOLUTIONS

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COMPATIBLE PRODUCTS

The Observer XT - External Data Module	p. 16

In your lab you want your different research tools to work together. Our SyncBox allows you to synchronize your equipment before you start recording with The Observer® XT. Moreover, you can easily verify synchronization during and after your recordings.

BENEFITS

- Synchronize all your lab equipment.
- Derive offsets to correct startup times.
- Verify and calibrate the synchronization of your set-up.

The front of the SyncBox, with sockets for a variety of signals.

FULL AUTOMATION

The Observer XT allows you to start equipment and software applications synchronously at the beginning of an observation. This is particularly useful for making multimodal recordings: no need to start everything manually. However, even when you start all devices and applications from The Observer XT, some devices and applications need additional time before they actually start recording. To compensate for these startup times, you can enter an offset for each device in The Observer XT.

DERIVE DEVICE OFFSETS

The SyncBox is ideal for determining and verifying offset delay differences between applications. It is able to send out a variety of signals, such as lights, sounds, electrical pulses, and keystrokes. This assures you that the synchronization signal is visible in the recorded data, no matter what kind of device you are using. The signal is also automatically marked in The Observer XT's event log. You only need to check the time differences between the pulses, relative to the sync point in the event log, to derive the exact offset for each device and application.

VERIFY SYNCHRONIZATION

The SyncBox allows you to make correct initial settings, but while you are recording, delays or clock drift may nudge your devices out of sync. During and after your observation you can quickly verify synchronization, allowing you to take corrective action if needed. The SyncBox can automatically send out

The back of the SyncBox.

repeating pulses, or send pulses when you press a button. If there is drift between devices, the pulses will show you.

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The best way to track recent developments on all our products.

? MORE INFORMATION?
See page 68 for contact information.

TECHNICAL SPECIFICATIONS

Power requirements
External power supply 5 Volt DC-0.2A

Input/Output
- 4x LEDbox output
  RCA type connector (white)
- 4x Sound output
  RCA type connector (red)
  ~1500 Herz, max. 1.5 Vpp in 8 Ω speaker
- 6x DC pulse output
  3.5 mm stereo jack connector
  5 V, 1 mA
- 2x optical pulse output
  3.5 mm stereo jack connector
  Open collector type output, max. 30 VDC, 50 mA

- 2x Xkeys USB output
- 1x COM-port RS-232 input, 9 pin SubD female connector

Operating temperature	+5 °C ..... +40 °C (+41 °F ..... +104 °F)
Storage temperature	-10 °C ..... +70 °C (+14 °F ..... +158 °F)

Dimensions (L x W x H)
160 x 165 x 90 mm (6.3" x 6.5" x 3.5")

APPLICATIONS

Custom labs	p. 42

COMPATIBLE PRODUCT

The Observer XT	p. 16

Code automatically sensed behaviors live into the data files of The Observer® XT by using the Event Logging Interface (ELI). This innovative tool allows you to replace yourself as the coder, partially or completely, and build your own automated event logging experimental set-up.

scrolls when the attached switch sensor reports a closed (or open) state. Each channel can have two assignments due to double command layer functionality. Active command layers can be toggled by one of the inputs or through the installed software. This enables you to log 23 different types of events during an experiment.

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The best way to track recent developments on all our products.

? MORE INFORMATION?
See page 68 for contact information.

BENEFITS

- Reduce event coding time by automating logging of certain events.
- Automatically log switch operated sensors.
- Integrate sensors into your experiments.
- Program the ELI to meet your needs.

FEATURES

With the ELI behavior can be logged automatically. You can connect any type of sensor-based switch (voice activated switch, infrared beam, movement sensor, etc.) to one of the twelve input channels on the ELI. Activation of this sensor will automatically lead to an entry made in the event log.

Twelve input channels enable you to log different events during an experiment. Each input channel can be programmed to send keystrokes, execute macros, emulate mouse buttons, movements, and

TECHNICAL SPECIFICATIONS

- Twelve switch operated input channels.
- Double output assignment per channel.
- Input channels are industry standard 3.5 mm mono plugs.
- Each channel can be programmed to send dedicated keystroke commands.
- Connects to the USB port just like a USB keyboard.
- Includes software for Windows (or Mac OS-X).
- Includes 3 m (118") USB cord.
- No external power is required.
- Dimensions: 115 mm x 80 mm x 32 mm (4.5" x 3.125" x 1.25").
- Additional button switches available.

COMPATIBLE PRODUCT

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Contents

In this section you will find

TRAINING COURSES

By taking a training course through Noldus, you can maximize the value of the software and system you have chosen so that it can benefit you and your organization even more. Noldus offers a wide range of training courses to assist everyone from the novice to the experienced user. We offer product training courses and methodology training courses in different languages and at different locations. An on-site training course gives you the ability to invite your colleagues who work with the same system. A training course arranged at a Noldus office gives you the opportunity to meet other researchers and are offered at very attractive rates. By choosing a remote training, you receive an affordable training package given by trainers who are qualified and who frequently give training courses all over the world. See for yourself which training course suits you best.

PRODUCT TRAINING COURSES

We offer product training courses in which the main functionalities of our products are addressed. Whether you just purchased one of these products, are an experienced user wanting to refresh your skills, or just upgraded to the latest release of the software, our training courses will give you a greater return on your investment and help you get the most out of your Noldus system. When new colleagues or students join your department partway during a research project, they can also easily enroll in a training course and start working quickly and efficiently. During these courses, you can gain knowledge of the main functions of software packages, such as The Observer® XT, FaceReader™, and Theme™. Below you can find an extensive description of the product training course in working with The Observer XT.

THE OBSERVER XT PRODUCT TRAINING COURSE

Duration of this course is 1 day. The overall training consists of two parts: general background and theory in the morning, and a hands-on session in the afternoon. One of our experienced trainers will assist you at every stage of the training process, from the set-up of your experiment, to the integration of different data sources. There will be plenty of opportunity for questions during the entire session, and you are more than welcome to bring your own video material to work on.

Overview
- *Create a configuration for your own work* – The training course begins with creating the right configuration which will enable you to create the right output and analysis after you have done the observation.
- *Observe behavior with The Observer XT* – The observation module has many functions. Knowing how to use these can help you perform your observations in a more efficient way.
- *Analyze your observational data* – How you want to select, group, and analyze the data you collected during the observation influences the structure of your configurations. Therefore, it is important to think about analysis before you start collecting data. During this part of the training we show you the ins and outs of data selection and analysis.
- *Create output with The Observer XT* – What can you do with your collected data and analysis reports? During this part we show you how to create reports and video highlight clips. We also teach you how you can export data. Finally, you will learn how you can use data from The Observer XT in your reports and presentations.

The training course includes extensive practical exercises during which we use realistic examples coming from your own research area. If you have special requirements regarding the contents of the training, feel free to contact us in advance.

METHODOLOGY TRAINING COURSES

We also offer training courses focusing on applications or methodology. We can assist you in designing the optimal set-up for your specific work. The standard duration of a session is one day (extended courses can be arranged). Here are some of the methodology training courses we offer:
- usability testing with The Observer XT
- how to study parent-child interaction using The Observer XT
- using The Observer XT and Theme to study social behavior
- using The Observer XT in ethological field studies

CUSTOM TRAINING COURSES

Together with you we can develop a training course, presentation materials, and manuals that are effective and uniquely designed to meet your needs. We will then adjust the content to your specific requests. For experienced users, we have developed a series of advanced training courses. Some examples of what you can ask from our experienced trainers:
- advanced analysis and reporting functions of The Observer XT
- creation of custom configurations for The Observer XT
- how to export my data from The Observer XT for use in another software package

These training courses are always customized to your individual needs. Mostly, they are a mixture of theory, demonstrations, and hands-on exercises.

ADVANCED ANALYSIS AND REPORTING FUNCTIONS OF THE OBSERVER XT

To give you an idea of what you can expect from us, we have outlined below the typical starting point of a training course about advanced analysis and reporting functions of The Observer XT.

- Considerations of the effects of experimental design on analysis possibilities.
- Data selection: nesting, filtering, combining criteria with and/or operators, grouping, etc.
- Analysis of numerical modifiers.
- Reliability analysis: how to use it, what does Cohen's Kappa mean, assumptions of the method.
- Lag-sequential analysis: how to use it, advanced features.
- How to export Observer data to SPSS or other analysis packages.
- Analysis of behavioral data in Theme or Excel.

LOCATION

ON-SITE TRAINING COURSES

Noldus specializes in on-site training courses for specific applications or products. Most courses can be organized on-site at your lab giving you the advantage of working with your own lab equipment. Also, a software training course at your own site gives you the opportunity to focus entirely on your specific research application.

IN-HOUSE TRAINING COURSE AT NOLDUS

We offer a wide range of training courses at our International Headquarters in Wageningen, The Netherlands and at our North-American Headquarters in Leesburg, VA. We can also organize these in-house training courses in other countries to assist our customers. During these training sessions, you meet other users and get the opportunity to share your experiences. Check our website for upcoming training dates and locations.

REMOTE TRAINING COURSES

Not able to attend one of our in-house trainings, or don't have the time to participate in a one-day course? We also deliver the majority of our courses remotely, using the latest in internet technology. These half-day courses are attractively priced. Remote training courses are available in the same range of languages as on-site courses. Choosing a remote training course is a sustainable choice.

Typically, the remote session starts with 2 hours of theory. After this session, you will be given exercises to perform offline. When you have finished these exercises, you will send them by email to your trainer. The trainer then studies your backup files and emails you his or her feedback before the final session. In the final session, you will go over the exercises and additional points can be discussed.

QUALIFIED TRAINERS

All our training courses are given by qualified trainers. The number of trainers present for any given course depends upon the size of your group. This way, everyone gets the attention he or she deserves. The principle language used for our training courses is English. Frequently, we can organize courses in other languages, such as Spanish, German, Italian, French, Hungarian, Dutch, Chinese, and Japanese. Please check with our sales department to learn in which languages training courses are available.

WHAT IS YOUR CHOICE?

Most product and methodology training courses can be organized as individual or group training sessions. And both variants can be taught in person or online.

	IN PERSON	ONLINE
GROUP TRAINING SESSIONS	*In-house training course* + meet other researchers + regularly organized at Noldus office + attractively priced	*Webinar* + free of charge to customers with a Plus or Platinum service contract + learning more about a product or application behind your own desk
Individual training sessions	*Training course on-site* + invite your colleagues + work with your own equipment + focus on your application + confidentiality guaranteed	*Remote training course* + attractively priced + the green choice! + focus on your application + confidentiality guaranteed

INTERESTED?

Visit our website for an overview of dates, locations, and topics. If you cannot find a date or location that suits you, or if you have a specific subject you would like to cover, please contact us to make the appropriate arrangements. If you wish, all course attendants can receive a Certificate of Completion.

Visit www.noldus.com for more information and registration.

SERVICE CONTRACTS

Whether you purchase an individual piece of software or a complete system, it is essential that you can confidently rely on comprehensive technical support. That is why we provide different service contract options that guarantee support services throughout the lifetime of your products. It's just one more way we help you get the best out of your behavioral research!

WHY A SERVICE CONTRACT FROM NOLDUS?

Noldus offers you even greater value and reassurance by providing 3 service contract options. Starting with our Basic contract, you are guaranteed comprehensive support via email or phone, and easy access to updates of your software. Need more? Our Plus and Platinum contracts provide an even more extensive level of support that will give you total peace of mind when it comes to your system. A Plus contract contains free upgrades of the newest releases of your Noldus software, allowing you to always benefit from the latest functionalities and the most up to date features. Next to this, a Platinum contract contains an extended warranty and, last but not least, express hardware replacement. With the extended warranty and express hardware replacement, you don't have to worry about down time if your system is ever out of order.

WHAT IS INCLUDED?

All Basic, Plus, and Platinum contracts include:

- *Free maintenance releases of Noldus software* – We update our software constantly to make it optimal for your research needs. Users of Noldus software products are entitled to updates as soon as they become available. We inform all users when there is an update, after which they can easily download them from www.noldus.com/downloads.
- *Technical support via phone* – Our technical support departments are reachable through phone and e-mail during regular business hours. With offices worldwide, you can reach us almost every hour of the day and we guarantee a personal response within one business day.
- *E-mail and remote assistance on software and set-ups* – Easily reach us through the internet via convenient web-based forms or email. Our service contracts cover software as well as hardware technical support on the complete integrated set-ups (which we delivered and tested upfront). Moreover, modern software tools allow us to remotely take control of your system (of course only after your explicit authorization). In this way, more advanced support is possible since we are able to remotely check your system and settings, almost as if we were on-site, and show you exactly how to use the software.
- *Access to the Technical Support Knowledgebase* – Access to our web-based Technical Support Knowledgebase extends the availability of technical support beyond our office hours. This database is continuously updated and is ideal for troubleshooting to help you find the right solution.

Take advantage of all the benefits above when you purchase a Plus or Platinum service contract, along with:

- *Free upgrades of Noldus software* – Stay ahead with the latest technology and functionality: a Plus or Platinum service contract assures that you automatically receive the latest version of your software product as soon as it becomes available.
- *Free webinars* – Web-based presentations or application seminars will give you information on how to use Noldus products in a specific lab set-up or test. It can also cover one specific subject such as doing a reliability or lag sequential analysis.
- *50% Discount on remote training courses* – Most of our training courses can be delivered remotely, using the latest internet technology. When you have a Plus or Platinum service contract, you can join a remote training course for half price!
- *10% Discount on rental equipment* – Renting software licenses or hardware can be an ideal option if you are looking for temporary observation capacity. An additional 10% discount on the already attractive rental fees is included in the Plus and Platinum service contracts.
- *Technical support on Software Development Kits (SDK)* – SDKs enable you to build your own plug-in components and interfaces for The Observer® XT. Support on SDKs is free of charge for customers who have a Plus or Platinum service contract.

With a Platinum contract, you also receive:

- *Extended warranty on hardware items* – During the service contract period, Noldus will replace any equipment found to be defective in materials or workmanship.
- *Free express hardware replacement* – Minimize downtime due to unexpected equipment failure. The Platinum service contract offers express hardware replacement. We deliver hardware replacements at your site using the fastest possible method of shipping. At your request, the hardware can be installed by a qualified Noldus technician (travel and lodging costs are not included).
- *On-site support and refresher training courses at a reduced fee* – A qualified trainer will visit your premises to assist you with your system. Refresher training courses are a great way to optimize your product's use in your specific application (travel and lodging costs for on-site visit are not included).

? MORE INFORMATION?
See page 68 for contact information.

CHOOSE THE CONTRACT THAT SUITS YOU

	BASIC CONTRACT	PLUS CONTRACT	PLATINUM CONTRACT
1. Free maintenance releases of Noldus software	√	√	√
2. Technical support via phone	√	√	√
3. E-mail and remote assistance on software and set-ups	√	√	√
4. Access to the Technical Support Knowledgebase	√	√	√
5. Free upgrades of Noldus software	regular fee	√	√
6. Free webinars	regular fee	√	√
7. 50% Discount on remote training courses	regular fee	√	√
8. 10% Discount on rental equipment	regular fee	√	√
9. Technical support on Software Development Kits (SDK)	regular fee	√	√
10. Extended warranty on hardware items*	regular fee	regular fee	√
11. Free express hardware replacement*	regular fee	regular fee	√
12. On-site support and refresher training courses at a reduced fee	regular fee	regular fee	reduced fee

√

included in contract

* Express hardware replacement cannot be guaranteed worldwide. Please check with your sales representative to find out whether the Platinum service contract is available in your area.

When choosing Noldus, you get more than just a product. Qualified trainers are ready to install your system on-site and teach you how to use it to its full potential. Our products and solutions come with extensive documentation (see page 67 for more information) and our technical support staff is renowned for being fast and knowledgeable. Plus, as a Noldus customer, you benefit from resources such as frequently available training courses and an online Technical Support Knowledgebase.

INSTALLATION AND TRAINING

In order to get the most out of your system, our experienced trainers will get you started by creating an initial set-up and thoroughly reviewing the most important functions of your system. Our training sessions are tailored to the specific research area of the individual user and, in addition, we install the complete system on-site. The result is a true turn-key system that is ready to go from day one.

Hands-on training session.

If you require additional training on our products and integrated solutions, you may also benefit from one of our other training courses. We offer a wide selection of training courses for new as well as experienced users, both face-to-face and via internet. Stay informed and visit www.noldus.com to read more or to register for one of the upcoming training dates (see page 58 for more information). You can also consult with one of our experienced staff who have research backgrounds in psychology, HCI, biology, engineering, and computer sciences regarding automation, experiment design, and the optimal use of our tools.

SERVICE CONTRACTS

To meet the needs of all our customers, we offer a range of service contracts at reasonable rates for support and additional services from the time of purchase, such as on-site assistance, free upgrades, and extended warranty. Choose the contract that suits you best: Basic, Plus, or Platinum (see page 60 for more information).

TECHNICAL SUPPORT

Each Noldus product is thoroughly tested and comes complete with detailed documentation and instruction manuals. However, technical
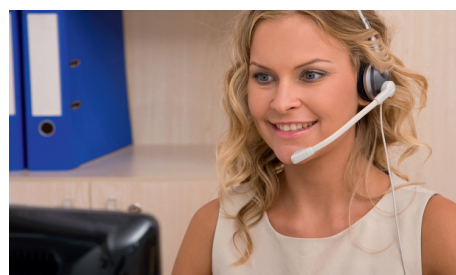
Our professional staff is ready to assist you.

issues may arise from time to time. For these instances, we have a professional staff of technical support representatives to assist you in a timely manner.

- All support inquiries are acknowledged within one business day and most are solved even faster.
- You can reach us almost every hour of the day. Support helpdesks are located in different time zones and continents for your convenience.
- Our technical support staff uses the latest communication tools to provide timely and helpful personal assistance.

Technical support for Noldus products is available via the website, by telephone, e-mail, and Skype. Contact us through our helpdesk (www.noldus.com/help-desk). On this webpage, you can also check our Technical Support Knowledgebase for solutions to common problems. This database contains hundreds of real questions asked by our customers with detailed answers from our support staff.

The technical support I received was excellent. The representative took ownership of my specific application difficulties, worked hard, and found solutions.
[Christopher West - USA]

PUBLICATIONS

A diverse collection of scientific articles citing Noldus products are published in renowned journals each week. On our website you can find links to hundreds of publications in which Noldus' products are applied, described, or reviewed. You can search an online database to learn more about the technical aspects of our products, to get information on independent reviews, or to find out how a product is used in a particular type of research. Visit www.noldus.com/search-publications for more information.

Do you need an observation lab for a short period of time, a special course, or a special project? Do you have a stationary lab but want to organize a session at another location? Do you need a large number of software licenses for educational purposes on a temporary basis? Noldus offers a wide range of systems and products for rental, ranging from single software licenses to complete observational labs. Wherever you are based: when you rent a system from Noldus, you can be sure to receive high-quality equipment in a ready-to-use system.

SOFTWARE AND SYSTEMS

Depending on your needs, you can rent tools or complete integrated systems:
- Portable labs
- Data acquisition systems
- FaceReader™ for emotion analysis
- Eye trackers
- Pocket Observer (with or without a handheld device)
- uASQ for participant surveys
- uLog™ for automatic logging of mouse clicks, keystrokes, etc.
- Any other Noldus software package

If you decide to rent software or a system for a period of time, consider these services to make the best out of your rental period:
- assistance with multimodal data integration
- technical assistance for operation and setting up the lab
- consulting services
- training

EXPERIENCE LAB FOR RENT

Our state-of-the-art Experience Lab in Wageningen, The Netherlands, is equipped for a wide range of studies in psychology, consumer behavior, usability testing, HCI research, and Human Factors. It is designed for observations in an office, meeting room, or living room setting. The lab has several rooms with set-ups that can be converted depending on your needs, allowing it to be used in a wide range of applications and for the evaluation of a variety of services.

OBSERVATION ROOM
The participant or user room is equipped with a computer, phone, desk, and chairs and is perfect for testing the usability of hardware, software, websites, and documentation. It can easily be modified to create a setting for observing other phenomena such as interviews, focus group sessions, or parent-child interaction.

Features:
- High-quality recording of the sessions is guaranteed by professional audio and video equipment, including ceiling mounted dome cameras. All cameras can be controlled remotely from the observation room so you can zoom in on a topic of interest.
- High-resolution digital screen capture.

- Select different recording methods: split screen, Picture-in-Picture, Picture-by-Picture, or multiple videos.
- Study data from multiple sources including physiological data, eye tracking data, facial expressions, etc.
- All cables and accessories are included.

Through the one-way mirror the observers can watch the session comfortably.

CONTROL ROOM
Behind a one-way mirror, up to six observers can comfortably watch a session, both live as well as on computer and video monitors. The test leader can communicate with the test participant(s) via microphones and speakers. Loggers have access to The Observer® XT, the professional software for the collection, analysis, and presentation of observational data. With The Observer XT you can also create highlight clips for presenting results to clients and colleagues.

SECOND OBSERVATION OR CONFERENCE ROOM
In the spacious conference room, ideal for studying larger groups, you will find all video equipment necessary to observe and record meetings with up to 24 participants. Alternatively, this room can be used if a larger number of people wish to observe sessions in the standard participant room.

In Leesburg Virginia, USA, we also have an Experience Lab. This is ideal if you want to include participants from North America and make sure that the same tools, set-ups, and data formats are used in your research.

PRACTICAL INFORMATION
- Other peripherals such as additional microphones, special cameras, or programmable keyboards are available upon request.
- CDs/DVDs for archiving your video images are included. Most common video formats are supported.
- All participant and observation rooms have direct internet access via our Gigabit network.
- Beverages are provided free of charge and additional catering is available upon request.
- Wageningen is located in the center of The Netherlands. Ample free parking is available. The lab is also served by public transport.

CONSULTING

Our consulting services will enable you to quickly take advantage of the many benefits that Noldus' systems and software provide. We can assist and advise you during the design of your research: by coding your observations, in the set-up of your lab to obtain the results that you are after, and in training your staff. If you have a very complex coding scheme and are looking for a suitable configuration or if you are struggling to get the analysis output in a particular format, we can help you there too, saving you a lot of time and energy at a later stage!

CONSULTANCY IN MANY DIFFERENT AREAS

Our consultants, all of whom have academic backgrounds (mostly with a PhD in behavioral sciences), are trained to help you:

- If you want to know whether it is possible to use certain software tools for your project, we can set up a feasibility study. This helps you make the right investment.
- When you rent a system, we can provide technical assistance at any level.
- Together, we can configure your project in The Observer® XT so you can start using The Observer XT immediately. We help you identify the relevant categories and structure your project in such a way that your research can be executed in the most efficient manner.
- After video recordings have been made, you can rely on our consultants to code your videos. Many of our consultants are trained coders and can code behaviors accurately.
- Once data has been collected, we can provide assistance in analysis of your data and/or pattern searching. Our consultants are experienced researchers. Confidentiality is of course guaranteed.
- We train you and your colleagues to make sure you are using your system in the most efficient way. Whether you are an experienced or novice user, we offer dedicated training courses for your specific research application.

Together, we can configure your project in The Observer XT. Set up a suitable coding scheme and start using the software.

We can provide any of these services independently or in combination with the rental of software, small set-ups, or complete systems.

USABILITY TESTING - AN EXAMPLE

Besides training you and your colleagues in the art of usability testing and Human Factors research, we can also help you perform your own tests or take care of one or more of the stages of the testing process:

- We set up a test lab in an environment you describe as typical of that in which your products will be used.
- Next, we set up the test itself. Together we identify the relevant characteristics of your users and create a task list, consisting of all key tasks to be performed with your product.
- In the controlled environment, we then record actions and comments of users during their interaction with your product.
- All this information is analyzed and the results are presented in a report. You can choose to receive the report in an industry format, like CIF, as a PowerPoint presentation on CD, or in any format you need. Whenever possible, we illustrate the conclusions with the appropriate video clips.

We can provide any combination of services: you decide what you need. These services are also offered in combination with rental of our portable lab or Experience Lab.

You can contact us for any kind of consulting services, from feasibility study to assistance in analysis of acquired data.

CUSTOM SOLUTIONS

Our solutions are very flexible and have been designed to meet a wide variety of demands. We take care of selecting and integrating the optimal combination of hardware, software, and services. This way, we can create a solution that suits your application. If this is not sufficient, our consultants and engineers are more than happy to work with you in order to create the perfect custom solution. If you want to exchange ideas about your specific research demands, don't hesitate to contact our sales department to learn what is possible with our custom solutions.

? MORE INFORMATION?
See page 68 for contact information.

The Restaurant of the Future in Wageningen, The Netherlands, is a highly advanced facility for research on food-related behavior. The design and construction of this facility was triggered by the need to observe consumers in specific situations, enabling a better prediction of endurable success of new food and drink items in the market. Currently almost 90% of new food products disappear from the market within one year. One of the main reasons for this high failure rate is the underestimation of the role that situational factors play in food choice. Precisely these factors can be taken into account when performing research in the Restaurant of the Future. The facilities of the Restaurant are also available for contract research.

The Restaurant of the Future is a unique environment in which scientists and marketeers can observe restaurant frequenters in conditioned situations for prolonged periods of time with the help of state-of-the-art observation and sensory technology. Research may include behavior, food choice, design and layout, the influence of lighting, and countless other aspects involving out of the home eating and drinking.

The Restaurant of the Future is open to the general public. It is also available for research by third parties.

The Restaurant of the Future comprises two parts:

1. The *company restaurant* is open to the general public, on the condition that all visitors register. By registering, the visitor declares having no objection to being under close observation by cameras. Camera set-ups can be adjusted to satisfy nearly any research requirement. Even environmental aspects such as color and lighting can be manipulated for research purposes.
2. The *sensory consumer research lab* can be used by businesses to assess their products - under various circumstances - for smell, color, and taste. This lab contains an innovation lab for testing food innovations, a sensory lab for panel research, mood rooms for testing environmental influences on eating and drinking behavior, and a psychophysical lab

NOLDUS TOOLS IN CONSUMER BEHAVIOR RESEARCH

Noldus Information Technology is one of the four 'founding fathers', and leading technical partner, in The Restaurant of the Future. Noldus has provided the restaurant with the latest computer and video technologies, including The Observer® XT for visualization and analysis of consumer behavior. Noldus also took care of the complete on-site installation and training of the researchers who are conducting the consumer behavior observations. Furthermore, Noldus has committed itself to ongoing research on novel tools for consumer behavior studies, which will involve testing of prototypes and validation studies. The Restaurant of the Future demonstrates how Noldus hardware and software tools can be put to optimal use for the study
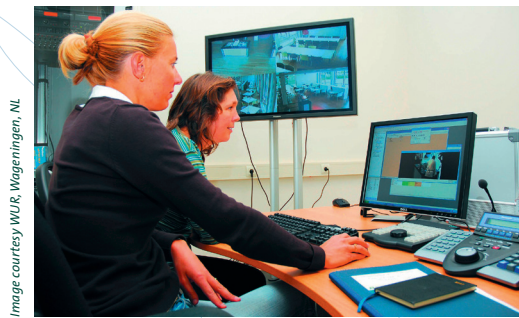
Image courtesy WUR, Wageningen, NL

From the control room researchers can observe the guests in the Restaurant and can control all cameras remotely

of consumer behavior. The Restaurant of the Future is a cooperative project of scientists from Wageningen University, the catering company Sodexo, professional kitchen supplier Kampri Group, and Noldus. This unique blend has ensured unique results!

- Herpen van, E.; van Trijp, H.; Kuipers, T. (2005).The influence of assortment organization on product comparisons and choice. *Proceedings of Measuring Behavior 2005, 5th International Conference on Methods and Techniques in Behavioral Research (Wageningen, The Netherlands, 30 August - 2 September 2005),* 595-596.
- Zeinstra, G.G.; Koelen, M.A., Colindres, D.; Kok, F.J.; Graaf, C. de (2009). Facial expressions in school-aged children are a good indicator of 'dislikes', but not of 'likes'. *Food quality and preference*, **20**, 620-624.
- Schepers, H.E.; Wijk, R. de; Mojet, J.; Koster, A.C. (2008). Innovative consumer studies at the Restaurant of the Future. *Proceedings of Measuring Behavior 2008, 6th International Conference on Methods and Techniques in Behavioral Research (Maastricht, The Netherlands, 26-29 August 2008),* 366.

PARTNERING

This research lab is available for research by third parties. We offer opportunities for field testing of new foods, testing of new ovens, launching new preparation methods, investigating the effects of changes in preparation modes, implementing cashless payment systems, judging access control systems on their merits, and many more. Businesses can draw on the Restaurant of the Future for prototype testing and assistance with the implementation of new techniques of food preparation, presentation, and meal serving systems.

In an increasingly complex society, businesses find it harder to launch product innovations or entirely new products. The Restaurant of the Future offers the ultimate opportunity for both larger and smaller companies to take a validated step towards the market. We are pleased to invite you to visit and take a guided tour of the facility, including demonstrations of the data collection and analysis systems.

? MORE INFORMATION?
See page 68 for contact information.

NOLDUS COMMUNITY

As a Noldus customer, you receive more than just a product, you receive a complete solution, benefiting from extensive documentation, installation and support, services, and consulting. Our technical support staff is renowned for their fast and knowledgeable service. Moreover, as a Noldus customer, you can take advantage of our multiple license discounts and our educational discount. Last but not least, you can join a large community of users: our tools have been validated and used by a large number of scientists and practitioners worldwide.

OUR CUSTOMERS COME FIRST!

At Noldus, we strongly believe in user-centered design of all our products and services. Your questions, both before and after a sale, are answered within one business day. And we promise that all calls are answered by a human being, not a computer. In an increasingly automated world, we cherish personal relationships with our customers.

Networking makes the world go round.

CODING SCHEME EXCHANGE

To assist our customers in good experimental design and methodology, we are developing an online tool with which you can upload and download coding schemes. You can use these coding schemes as example material for students or as basic coding schemes for your own research projects. For example, download a coding scheme used to analyze parent-child interaction. This coding scheme includes two behavioral groups: verbal behavior and play behavior, such as functional use, imaginary play, or agent play. Visit www.noldus.com to learn more!

SOCIAL MEDIA

LinkedIn Groups allow you to join communities of professionals who share a common experience, passion, interest, affiliation, or goal. We offer our customers the opportunity to meet other users and discuss research and product related topics. In the Noldus LinkedIn Product Groups, you can submit news for discussion, see who is also a member, and easily contact the product managers to submit ideas about how our products can be improved. We have formed several different groups for you to join: The Observer®, Theme™ or FaceReader™. There is also a *Measuring Behavior* conference group that will keep you up-to-date on the upcoming edition of *Measuring Behavior*.

Furthermore, you can find Noldus on Facebook and Twitter. There we announce which conferences we will attend or post interesting videos. Follow us on Facebook and Twitter:

- twitter.com/NoldusIT
- facebook.com/NoldusInformationTechnology

MEASURING BEHAVIOR CONFERENCE

Noldus regularly organizes an international scientific conference on methods and techniques used in behavioral research. *Measuring Behavior* offers a diverse program packed with varied presentations on new methods and techniques, scientific tours to local research facilities, technical training sessions, workshops, user meetings, and an enjoyable social program. Visit www.measuringbehavior.org for details on the next conference.

INTERNATIONAL COLLABORATIVE PROJECTS

We strongly believe in the added value of interdisciplinary contacts and collaborations. Therefore, we actively participate in national and international collaborative projects, together with leading universities and research institutes. Illustrating a few of these projects:

- *PRONTO* emphasizes the role of event recognition in intelligent resource management (IRM) and proposes a methodology for fusing data from various sources, analyzing it to extract useful information in the form of events and delivering the resulting knowledge for decision making, through a user-friendly IRM application. Noldus focuses on aggregation and processing of sensor and geographical data.
- In *TREND* (Trauma Related Neuronal Dysfunction), research on Complex Regional Pain Syndrome type 1 (CRPS-1) is integrated. In the project team Pulse Transit Time, The Observer XT is used to integrate behavioral data (coded events) and physiological data (electrocardiogram, blood pressure, and pulse plethysmogram).
- *CSI The Hague* aims to build a forensic research lab in which industry partners, knowledge institutes, and the Netherlands Forensic Institute work together on the implementation of available knowledge and on the development of new techniques. Noldus will develop tools for observation and analysis of behavior of forensic professionals investigating crime scenes.

Our preferred role is that of a technology partner: we develop the tools and methods, the researchers use and validate them. If you are building a project consortium and think that Noldus might be a valuable partner, don't hesitate to contact us!

When you buy a product from Noldus, it comes complete with a very extensive set of user documentation, including reference manuals, quick start guides, technical notes, and video tutorials.

The functionality of FaceReader™, Theme™, and The Observer® XT is described in detail in the product reference manuals which are supplied with the software or available in the form of searchable online help. If you don't require that level of detail, we also offer printed quick start guides for The Observer XT which provide a concise overview of how to use the program. Quick start guides are available in Dutch, Italian, Chinese, Japanese, Spanish, German, French, and English. On our website, you can find The Observer XT video tutorial. In just a few minutes, this tutorial guides you through the main steps needed to use the software.

REFERENCE MANUALS

- The Observer XT
- FaceReader
- Theme

Many of the products now also have a video tutorial, which in a few minutes guide you through the main steps needed to use them. Some information that we want to make available is too technical or specialist to be included in the reference manual, and that is provided in the form of technical notes.

USAGE NOTES

- Using The Observer XT in a clinical communication study
- Using The Observer XT in a standard usability test
- Using The Observer XT in human factors research
- Using The Observer XT in studying consumer behavior
- Using The Observer XT in studying parent-child interaction

SAMPLE PROJECTS

We realize that if you want to learn how to use a software program, there is no substitute for hands-on experience. For that reason, we also provide a wide range of sample projects. These contain video material in a variety of different subjects together with projects or experiments sampled from Noldus software. These are mostly based on actual published research. Many of these sample projects also have a special version of the quick start guide explaining how to use the software for a particular application of that sample project.

THE OBSERVER XT

- Car race game
- Medical research
- Chat application
- Kids at play
- Parent-child interaction
- Usability testing of cars
- Consumer behavior research
- Cockpit usability
- And more

THEME

- Soccer
- Garbage collection
- Interaction (children)

FACEREADER

- FaceReader & The Observer XT
- Children with FaceReader

AVAILABILITY

All documentation is available on the installation DVD/CD or for download on www.noldus.com. You can also find a lot of additional technical information on the website in the Technical Support Knowledgebase.

CUSTOM DOCUMENTATION

We offer custom documentation with our custom-designed observational labs. These manuals are written especially for your individual needs, describing how the entire system can be used for your research.

PROFESSIONAL WRITERS

All our documentation is written by professional documentation specialists who have PhDs in behavioral research. The writers are experienced trainers, so the manual text is based on personal experience of how new users learn to use the products. Needless to say, the writers also create the training material which is provided when you order a training course.

CONTINUOUS IMPROVEMENT

All our documentation is continually improved, based on feedback from customers; both informal comments and formal surveys. Every time we make a new release, the documentation is reviewed to see if we can make it better. We are proud of the quality and comprehensiveness of our user documentation and strive hard to maintain that standard.
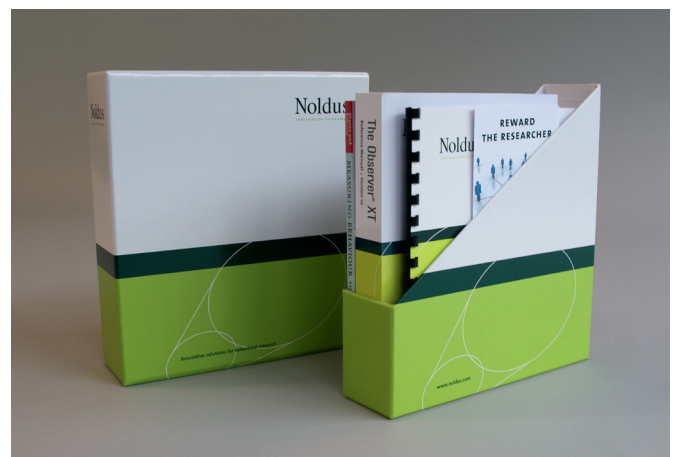
Contents

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www.commat.com.tr

United Kingdom & Ireland
www.tracksys.co.uk

Vietnam
www.vietbio.vn

Please visit our website www.noldus.com for up-to-date contact information such as phone numbers, e-mail addresses, websites, etc.

TECHNICAL SPECIFICATIONS

To the best knowledge of Noldus Information Technology, the information and products provided in this catalog are accurate at the time of printing (September 2011). However, information is subject to change without notice. Your local Noldus representative (see page 70) can provide you with the latest technical information upon request.

PRICING

The prices of our products and solutions are not listed in this catalog. Our systems are exported to over 75 different countries and priced in multiple currencies with discounts for educational institutions. Our products are used in a variety of research disciplines with multiple configurations available. This catalog is designed to provide the information you need to find the best solution for your research purposes. Your Noldus representative will gladly provide a price quotation for the most suitable system configuration.

PRICE OFFERS AND QUOTATIONS

For more detailed product information, prices, or a formal quotation, please contact your local Noldus representative.

ORDERS AND DELIVERY TIME

Orders are placed by written purchase order. We will always do our best to get your order to you in the shortest possible time. Delivery times vary on the order type: software only orders are usually shipped the same or the next working day, integrated systems will take longer. Your local Noldus representative can provide you with an estimated delivery time.

SHIPPING METHOD AND CHARGES

To minimize costs of shipping, insurance, taxes, and duties, systems purchased in the United States, Canada, and Mexico are shipped from our North American headquarters in Leesburg, Virginia, USA. Systems purchased in other parts of the world are shipped from our international headquarters in Wageningen, The Netherlands. If requested, we will include estimated shipping charges with the quotation. Unless otherwise specified when placing your order, we will use our best judgment in selecting a reliable and economical shipper.

DAMAGED GOODS

If goods arrive in damaged condition, please report the damage within 15 days of receipt. Please contact us for authorization for return and repair or replacement of the goods, prior to return shipment.

WARRANTY

All hardware products come with the original manufacturer's warranty. Noldus Information Technology provides a limited warranty for one year from shipping date on all Noldus-made products. During this period, Noldus Information Technology will repair or replace, at its discretion, any equipment found to be defective in materials or workmanship. Depending on your service contract you may be entitled to extended services. If a problem arises, please contact us for authorization before returning an item. Abuse, misuse, or unauthorized repairs will void any warranty.

LIMITATION OF LIABILITY

Noldus Information Technology will not be liable for any special, indirect, or consequential damages, including, but not limited to, loss of profits, loss of use, or loss of data or information of any kind, arising out of usage of or inability to use its products. In no event shall Noldus Information Technology be liable for any amount in excess of the purchase price.

FOR RESEARCH PURPOSES ONLY

The products listed in this catalog are designed for research purposes only, not for clinical use. At no time should our products be used in a medical treatment protocol, relied upon in a life-support function used to inform or alert medical personnel concerning the condition of a patient, or used to make a diagnosis or decision concerning medical treatment.

AFTER-SALES SERVICE AND SUPPORT

If you have any questions after the delivery of your order, please contact our support department (see page 68 for contact details). You will receive an answer within one business day.

All our transactions are subject to our general terms and conditions; a copy is available on request.

PERSONAL NOTES

The integration of FaceReader, The Observer, and psycho-physiological data collection make research programs possible at locations and within timetables that increase opportunity, quality, and efficiency.
[Cole Barton - USA]

WWW.NOLDUS.COM

We have found FaceReader and The Observer to be beneficial tools in helping us measure the engagement and attending behaviors of college students. This gives our professors and instructors feedback and helps them work on their own peda-gogy and sound teaching prac-tices to help increase engage-ment and attending behaviors in their own students.
[Tiffany Drape - USA]

CONTROL ROOM

OBSERVATION ROOM

DESIGN YOUR OWN LAB

Use this empty floor plan to design and draw your own lab. Below you can find different components: an eye tracker, computer, audio and video equipment, tables, chairs, and other items to change your observation room into a usability or observation lab.
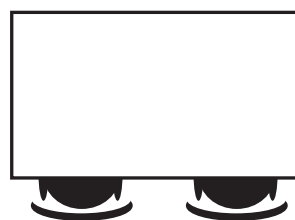
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We are also represented by a worldwide network of distributors. For the nearest regional office or distributor, see page 70 of this catalog.

www.noldus.com