Consumer behavior

How to build a Consumer Experience Lab

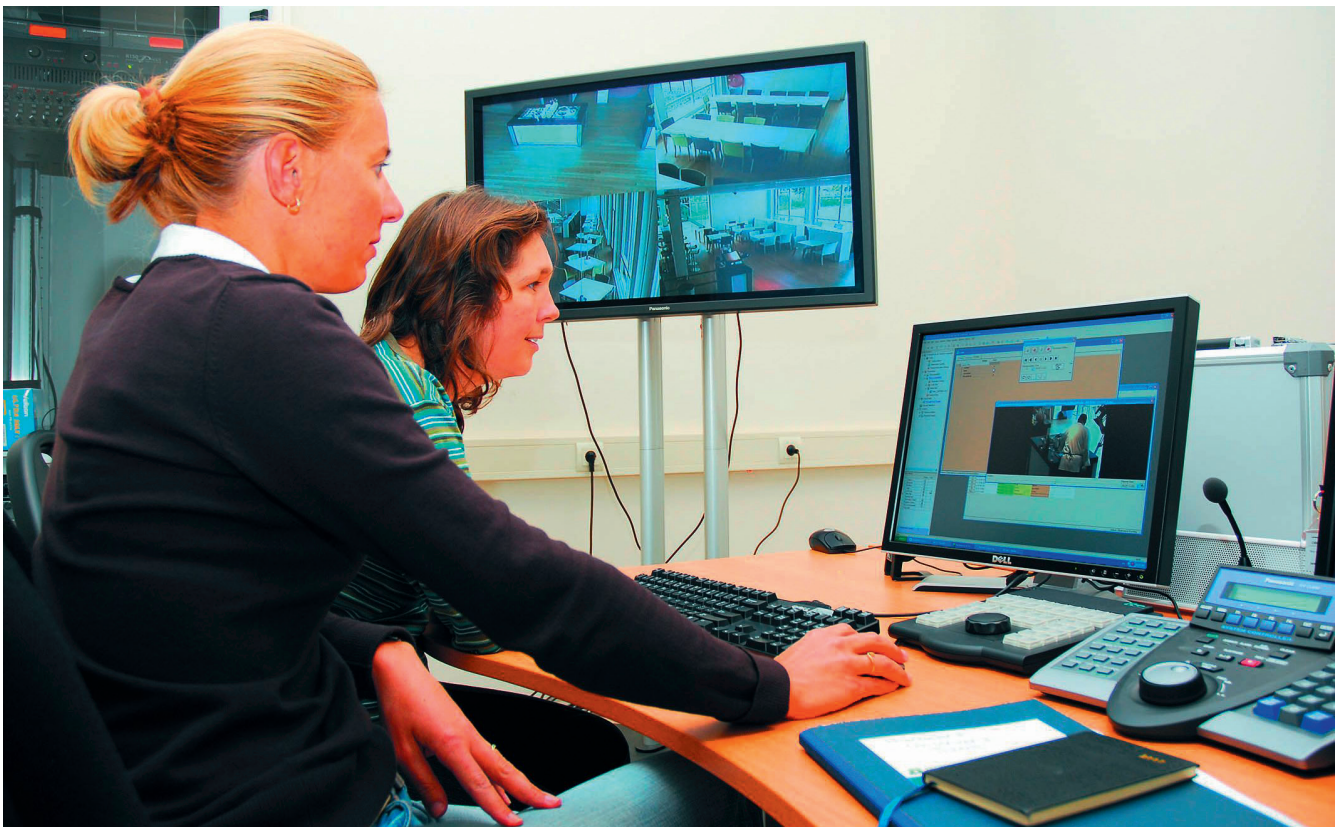
A white paper by Noldus Information Technology

HOW TO BUILD A CONSUMER EXPERIENCE LAB

Obtain high quality recordings and actionable data by designing a fully integrated Consumer Experience Lab.

A fully integrated Consumer Experience Lab allows you, to collect valuable data that leads to really understanding your customer. Stable images, high quality video recordings, and clear recordings of speech and other sounds make all the difference in your research results.

Obtain high quality recordings and actionable data by designing a Consumer Experience Lab. Would you like to learn more about how to build a dedicated lab? Check out this 'how to' guide! You can rely on our many years of experience with building labs all over the world to provide you with the perfect tips & tricks!



STEP 1

REQUIREMENTS

To get to a good start, a detailed description will help you choose the equipment you need in your lab, and which physical environment would best suit this observational research. In general, the description should answer the following questions:

PARTICIPANTS

- How many participants need to be recorded at the same time?
- What kind of participants are observed (age, gender, etc.)?
- Do consumer goods, products, food items need to be tested? Do participants need to walk around in the lab?
- Are children involved in the observation? Children require different camera positions than adults to have good view of their faces, posture, and expressions.

EQUIPMENT

- Is audio and video of all participants needed?
- Does the observation involve working at a computer? If so, should the computer screen of the participant(s) be captured and recorded?
- Are specific devices present, such as mobile phones, tablets? If so, should the screens be recorded?

LOCATION

- Are participants being invited to visit the lab? Is on-site research going to be performed? Or both?
- Should there be a separate room for participants to wait before an observation?
- How many observations are expected to be performed and are observations carried out simultaneously (in different rooms)?

How many observations are expected to be performed and are observations carried out simultaneously?

Depending on your research, it could be advisable to have more rooms available.

- How many rooms are required? A one room lab can be used for one focus group, but if you have more groups coming in, a two-room observation lab with two one-way mirrors is more convenient. Depending on your research, it could even be advisable to have more rooms available. Multiple rooms can be managed from a single control room with our software tool Viso®.

TECHNICAL SPECIFICATIONS

- What quality of video is needed? Most observation labs use hard discs or NAS (Network Attached Storage, also for backup) in combination with MPEG4 media files. Noldus solutions provide recording in HD which guarantees excellent video quality. The videos are stored in a compatible format.
- How many video streams need to be recorded simultaneously? Many Consumer Experience Labs use multiple video streams that are recorded in sync, and there are labs that use one video stream that consists of a mixed image.
- How is security of video material guaranteed? Storing the videos on an external hard drive is insecure (possibility of theft). Storing the videos on a server is more secure. Also in this case, special attention should be paid to protecting the video material.
- Are there other data modalities which need to be included in the test, such as measuring heart rate or galvanic skin conductance?

Ensure that there are no unwanted noises in the rooms.

THE HOUSING OF A CONSUMER EXPERIENCE LAB - TIPS

- Where and in which room(s) should the lab be built? How big are the rooms? And, does the building have special aspects (i.e. is it a monument)? You can also build a lab in an existing restaurant or cafeteria making it into a 'living lab'.
- Is air circulation guaranteed? It can become rather hot in the Control room due to computers and more than one observer. Ideally both rooms can be controlled (heat/cold) independently.
- Ensure that there are no unwanted noises in the rooms . For example, the noise of an air vent can disturb the observation.
- Take into account that the rooms should be soundproof or near to soundproof. Insulated walls are essential. A normal conversation can generate 40 to 70 dB and the test participant should not be disturbed during the observation. Think also about the negative effect incidental laughter and conversations of observers, or test leader, can have on an observation.
- The minimal dimensions of a one-way mirror are approximately 2 by 0.8 meters. From our experience, we know that three mirrors (2 meters each) are much cheaper than one mirror of 6 meters.

Example of a living lab. The Restaurant of the Future in Wageningen, The Netherlands, 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. This research can include behavior, food choice, design and layout, the influence on buying and eating behavior of lighting, presentation, traffic flow, taste, packaging, preparation, and countless other aspects involving out of home eating and drinking.

- A one-way mirror only works when the light intensity in the Control room is lower than in the Observation room. This light intensity can easily be adjusted by actively controlling (= dimming) the lights in the Control room.
- Light intensity in the Control and Observation room is approximately 1500 Lux (lower by dimming it).
- It can be really practical to add a warning sign out-side the test facilities when an observation is in progress. This ensures that (unexpected) visitors will not disturb any observations.
- Video and audio cables have to connect the Control room with the Observation room. The cables can be hidden in a double ceiling or floor. Or by using cable gutters.
- The observation lab should have a constant source of (220V, 50 Hz or 120V, 60Hz) electricity. The lab can be protected against extreme power and voltage fluctuations by using one or more (depending on their capacity) UPS devices (Uninterrupted Power Supplies).
- Cater to the needs of both testers and participants by providing enough drinks and/or food.
- A rest room close to the Observation and Control room can prove to be very handy.
- In a living lab set up (restaurant), make sure the counters and/or tables can be easily moved about in order to better facilitate different set-ups.

STEP 2

EQUIPMENT

A Consumer Experience Lab is designed to allow you to observe consumer actions unobtrusively, in an environment similar to their natural surroundings. Equipment varies from cabinets, one-way mirrors, test counters, and tables, to fully integrated high-tech recording devices, data acquisition systems, and computers.

EQUIPMENT USED IN THE OBSERVATION ROOM

A wide range of equipment is available, depending on your research needs, you can choose between the following components:

> If you work with a combination of adults and children, make sure the height of the cameras is adjustable.

- **IP camera (integrated pan/tilt/zoom)** - IP cameras may be installed in the ceiling. However, it may be more practical to connect them to a vertical rail, to enable height adjustment. Especially if you work with a combination of adults and children, make sure the height of the cameras is adjustable . This way the faces, expressions, and body language of all test participants can be recorded well.
- **Small IP cameras on tripods** - Can be positioned anywhere needed.
- **Mini camera mounted on a device** (Mobile Device Camera) - An ideal option for testing mobile phones, tablets, or other small devices.
- **Webcam** - To record facial expressions.
- **Microphone** - The exact number depends on the number of participants per observation. There are several unique devices that can be used in the Observation room.
- **Speakers** - The test leader can easily give instructions, ask questions, or provide assistance when participants don't know how to proceed. Keep in mind that sometimes an earpiece may be a better choice than a ceiling speaker system. For example, with multiple consumers in one room, you can choose who to talk to.
- **Telephone** - For example for calling the front desk to let new participants in.
- **Participants' PC** - If participants need to work at a computer (with monitor, keyboard, mouse, printer, internet connection, etc.).

- **Eye tracker** - For tracking the eye movement of the participant. Noldus offers a large choice of different brands which can be integrated in the total solution.
- **Data acquisition systems** - To measure heart rate, skin resistance, skin temperature, muscle tension, or neuronal activity.
- **Splitters/mixers/amplifyers** - For splitting, mixing, and amplification of signals. Noldus will make sure the ones that fit your research requirements are used.

EQUIPMENT USED IN THE CONTROL ROOM

A wide range of equipment is available, depending on your research needs. You can choose between the following software components:

> Viso records from multiple cameras and rooms simultanously.

- **Multi-room audio and video recording** - Viso records from multiple cameras, and rooms, simultaneously. Provided all rooms are housed on the same local network, recordings can occur across multiple buildings at once.
- **Event logging and video analysis software** -The Observer® XT. This software is the ideal integration platform. It allows you to synchronize videos, audio, physiological data, and more.
- **Media Recorder** - Record with up to 8 filming devices with Media Recorder (analog or digital cameras or screen capture devices).

- **Facial expression analysis software** - FaceReader™. This software automatically analyzes facial expressions and gives you insight into affective states: boredom, interest, and confusion. It saves you valuable time when analyzing videos for emotional responses.
- **Screen Captures** - Capture and record the screen the participant is looking at and combine this on the test leader computer to have both the participant and his screen for analysis. To control the video cameras from the Control room.
- **Joystick controller** - To control the video cameras from the Control room.
- **Optional: Network Attached Storage** - 4TB for storage of 1000 hours of video material and backup should anything happen. Of course, storage space can be increased.

The following hardware can be choosen from:

- **PC** - PC for event logging and analysis of an observation, or to produce your report. Depending on media type the following equipment will be integrated: MPEG encoder, decoder, audio board, and large hard disc.
- **Monitor** - To view camera images. The number and size of monitors depends on the number of people that are invited in the observer/control room.
- **Screen splitter and multiple other monitors** - Necessary when a larger number of people have to see the actual PC screen of the participant live on a PC monitor.
- **Microphone** - For the test leader.
- **Large monitor or projector** - For debriefing/discussing the results. Also live images can be shown on this monitor (for showing a larger group of people what is happening during a test inside the lab without having them entering the Observation room)
- **Microphone amplifyer** - For signal of participants and test leader.
- **Speakers or headphones** - For hearing the participant(s).
- **19" Rack with glass door** - For mounting of the equipment.
- **Internet connection** - For website evaluations and remote observation of tests. Or to control the test-PC remotely.

A refrigerator in an adjacent room could provide the necessary refreshments.

Other parts that are necessary in the lab are closets/cabinets for storage, a refrigerator in an adjacent room could provide the necessary refreshments , chairs, and tables for putting the monitors on. These tables can range from simple straightforward tables to custom prepared PC or monitor tables.

STEP 3

INSTALLATION AND START

NoldusCare includes fast, reliable, and worldwide available services.

To achieve the best result, the lab should be installed and tested by a qualified engineer. Depending on the complexity of the lab, this installation could take several days. Noldus professionals have installed observation labs for many years. The team has helped many customers and has the ability to tackle challenges quickly onsite.

Before installing the lab at your location, it can be fully integrated and tested at Noldus headquarters by professionals; you can count on Noldus to deliver a lab that meets your research needs. Training in the lab from a professional trainer on how to use the software and hardware is a very valuable step. You will quickly learn how to get the most out of your lab. A training course usually takes one or two days and is totally adjustable.

Achieve maximum return on your investment with NoldusCare. Our service is fast, reliable, and available worldwide. It ensures continuous use of the lab. It includes technical support, updates, and upgrades of the software, full professional support via phone/e-mail, and onsite maintenance visits, for training e.g. Noldus can also deliver hardware replacements onsite to minimize downtime due to unexpected equipment failure.

STEP 4

PERFORMING OBSERVATIONS

Test leader

Researcher

Participant

Lab technician

How to observe consumer behavior unobtrusively: read tips & tricks on how to perform consumer goods tests, sensory and eating tests, and more.

Five roles can be distinguished:

- **Test leader** — the person managing the observation, creating the study design, communicating with the participants, carrying out the analysis, and writing the report.
- **Researcher** —the person looking for insights during and after the observations. The roles 'test leader' and 'researcher' can be held by the same person.
- **Lab technician** — the VIP installing hardware and software, and the person in charge of maintenance.
- **Participant** — the consumers in your lab.
- **Client** — the person asking for the consumer behavior test. This can be an internal client.

Please note – A participant could also be a pet animal for testing pet food. This may result in additional requirements such as laminate flooring which is easy to clean.

A TYPICAL OBSERVATION?

All observations have in common that one or more consumers are observed, like in a focus group, and that important events are coded in professional research software. For some target groups, for example elderly people living in a nursing home, transfer to a stationary lab can be stressful or even impossible. In such a case, a portable observation lab is what you need. Behavioral observations systematically uncover behavioral patterns and these can be turned into actionable results.

Making a coding scheme allows for analysis of the behaviors that take place during the observation.

THE CONSUMER EXPERIENCE TEST - PREPARATION

The Consumer Scientist, test leader or researcher, creates the study design. In the coding scheme, the researcher can describe the behaviors that will fill the behavior map. This coding scheme allows for a systematic analysis of behaviors that take place during the observation . The test leader books the observation facilities.

The Observer XT guides you through the process of building a coding scheme. You can describe the behaviors of interest and then the modifier that tags to the behavior, like 'read – recipe'.

A typical observation can last from less than an hour to several hours. It is possible that the same group is observed several times, for example to determine food preference change over time in older adults.

The experience

Usually, the researcher creates an experience describing what the participants have to do during the observation, like bringing specific products together in a test kitchen area and using it to create the end product

After creating a task list, the researcher determines what has to be coded during the observation and in what detail. In this step, a pilot experiment is carried out to determine whether the coding scheme is correct and whether the analysis gives the data the researcher needs to turn behavioral data into actionable results.

Inviting consumers

Either the client or the test leader recruits the participants. The participant group should form a representative sample from the intended community, with the number of consumers per test varying from 2 to 20.

The last check

Prior to the observation all the equipment is checked either by a technician or by the test leader. The following things should be checked:

- Are the cameras in the correct position?
- Are the cameras switched on, in focus, correctly zoomed in/out?
- Are the computers switched on?
- Are the data integration, video recording, and other analysis software (FaceReader, Eye trackers) activated?
- Are the correct cameras selected in the video recording software?
- Is there enough disc space to store the video files?
- Are all microphones and speakers functioning correctly?
- Is the warning sign that an observation takes place switched on?
- A small test recording is made to check that all cameras, microphones and software function correctly.

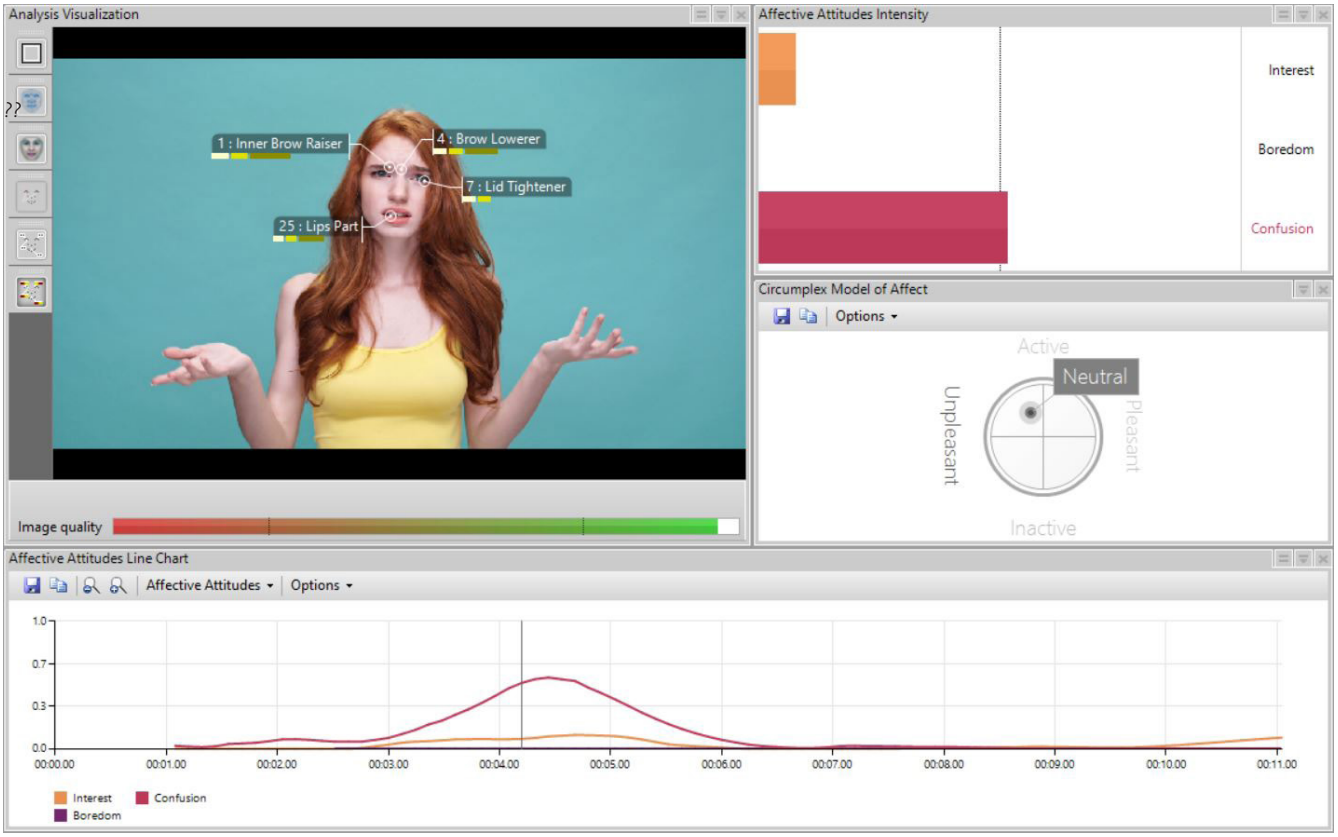
THE OBSERVATION

On the test day, the participants are welcomed and asked to wait in the waiting room, after which the test leader welcomes them.

The purpose and procedure of the test is explained, then the participant or his/her parent or guardian is asked to sign a consent form for the video recording in the context of the study and is asked to complete a pre-test questionnaire.

A test still typically involves only one participant, however, multi-participant tests are becoming more common in consumer behavior research.

During the observation, you can observe your results in real-time. In a post-test interview, you can ask more about the events of interests that you've noticed.



Start and stop recordings across multiple rooms, and multiple buildings, independently of one another.

Informed consent

The participant is then asked to sign a consent form for the video recording in the context of the study. Often, the participants are first asked to complete a questionnaire, or are interviewed by the test leader. An important step here is that the participants are made at ease in the Observation room.

Start the observation

The test leader may move to the Control room, often separated from the Observation room by a one-way mirror. It may also be that the test leader stays in the Observation room (this can be a food lab, kitchen area, or focus group room) and leads the observation. Test leader and/or researcher(s) observe the participants through the one-way mirror, or on a large screen or projected image. If the observation involves using a computer, laptop, or mobile phone, its display may be shown in the Control room on a secondary monitor, and recorded on video .

Viso provides easy management of all rooms/locations on the network from one central location. A test leader can easily start and stop recordings in different kitchen areas with the push of one button. This enables a full day of consumer testing in a quick and easy way.

Instruct the participants

Test leader and consumers may communicate via microphones and loudspeakers if the test leader moves to the Control room. The test leader starts and stops the session. The consumers carry out the tasks, meanwhile being observed by the researcher(s) and observers.

Close-up view of the facial expression, and sometimes an overview is recorded on video.

The main purpose of having different researchers in an observation is to be able to collect more observational data at the same time.

Mark and discuss events of interest

During the session, the researcher notes all relevant events in the form of predefined codes, using a data collection tool (e.g. Viso, or The Observer XT). Each event is time-stamped and anchored to the corresponding video frame(s). The researcher may also make a transcript of the consumer comments. After the recording, the session can be played back immediately to provide the client with the requested insights.

Actionable results

After the consumers have left, the test leader analyzes the data. A behavioral mapping session can be organized to share and discuss the results and further steps. These sessions allow key players to figure out what worked well, what did not, and to share ideas for product design and other improvements. In this step, researchers turn data into meaning. For consumer research, questions on liking and preference can always be asked, but observing behavior in the moment, gives additional insight in the process and therefore is a key part of consumer experience research.

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REPRESENTATION

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