

Communication software

Software application to be installed on a computing device (computer, tablet, smartphone, or dedicated communication device), primarily designed to produce communication messages.

It comes with pre-defined textual or pictorial or symbolic communication tables tailored to various daily life situations such as conversation, writing, phoning, emailing, web browsing. The items on the tables (letters, pictures, icons, symbols) can be selected through various techniques, such as direct selection (the user directly targets the desired item), row-column scanning (the software first scans the table rows, then the columns of the selected row until locating the desired item) or block scanning (the software first scans large blocks of items, then smaller blocks within the selected one until locating the desired item).

The user can operate the system through a variety of input devices, such as a touch screen, a mouse, a wearable pointer, a keyboard, one or more switches or sensors, eye-gaze recognition, movement tracking, or a brain computer interface). This product also comes with configuration software that allows the user or support professionals to create custom-made communication tables and customize input and output functions.

Different versions may be available for installation on different devices, operating systems, and operating system versions. Each product item on the market may have a different range of capabilities and functions, as well as different hardware and software requirements to ensure proper installation and operation.

- **Product Classification**
 - APL (WHO Assistive Product Priority List): 10 (Communication software)
 - ISO 9999:2022: 222112 (Face-to-face communication software)
- **Possible configuration variants**
 - Environmental control capability (ability to control the electrical appliances of the home or the surrounding environment).
 - Word processing capability.
 - Speech output capability.
 - Phoning and messaging capability.
 - Computer control capability (ability to access and operate all software applications that run on the computing device where the product is installed, such as a computer or a tablet or a smartphone or a dedicated communication device).
- **Possible accessories or optional components**

None specified.
- **Product goals**

Activities or functions the product is mainly intended to support, according to WHO ICF Classification:

 - Speaking [\[d330\]](#). *Only if used with variants: Speech output capability*
 - Writing messages [\[d345\]](#).
 - Writing [\[d170\]](#). *Only if used with variants: Word processing capability*
 - Holding a conversation [\[d350\]](#). *Only if used with variants: Speech output capability*
 - Using communication devices and techniques [\[d360\]](#).
- **Indicated impairments**

Difficulties the product is mainly intended to address, according to the WHO ICF Classification:

- Speaking [\[d330\]](#) (severe difficulty). *Only if used with variants: Speech output capability*
- Hand and arm use [\[d445\]](#).

- **Contraindicated impairments**

Difficulties for which the product may be inappropriate:

- Insufficient consciousness level to enable association of symbols with messages.
- Lack of communication intention.
- Blindness.
- Severe vision loss.

- **Indicated environments**

Specific environments in which the product should be used:

None specified.

- **Contraindicated environments**

Environments in which the product may be inappropriate:

- In the rain.

- **Other indicated factors**

Other factors or situations the product is intended to address:

- Assisting functional assessment and training strategy within rehabilitation programs (for people with pre-intentional communication i.e., without reliable yes/no responses to develop intentional communication, particularly in the acquired brain injury and profound intellectual disability population).
- Controlling a computing device such as a computer or a tablet or a smartphone. *Only if used with variants: Computer control capability*
- Controlling the electrical appliances of the home or the surrounding environment. *Only if used with variants: Environmental control capability*
- Phoning and messaging. *Only if used with variants: Phoning and messaging capability*

- **Other contraindicated factors**

Other factors or situations in which the product may be inappropriate:

None specified.

- **Points to be considered in product selection**

- Check that the product is available in your primary language or in a language that is known by you and your interlocutors.
- In the product documentation, check the hardware, software, and network requirements for installation.
- If installing the product on a current computing device (such as a laptop, a tablet, a smartphone, or a specific communicator), make sure that the device is configured with the required operating system and version, is powerful enough to run the application and can have internet connectivity when needed.
- If you are selecting a new computing device along with the application, consider all the tasks you want to perform and what the environments of use will be: depending on that, you may prefer a mainstream device (such as a laptop or a table or a smartphone) or a dedicated device (such as a communicator which can be fitted onto an outdoor wheelchair and endure vibrations and bad weather); you may prefer a larger screen for better visibility or a smaller screen for better portability; you may need additional batteries to keep the device working as long as you need; you may also need other products to complete the assistive solution, such as a flexible fixation arm or an adjustable table or stand.
- Think about the audio capability: in case you need spoken output outdoors or in noisy places, the device built-in audio system may be not loud enough so additional loudspeakers may be required.
- If the application is also used for environmental control, additional hardware may be needed to interface the device with the appliances to be controlled; you may need engineering assistance to check their compatibility, decide the signal transmission means (wired, infrared, radiofrequency etc.) and protocols (Wi-Fi, Konnex etc.) and configure the connection; in order to avoid mistakes, carry out this technical analysis before acquiring the device and installing the application.
- Depending on your motor abilities, consider the physical way you will operate the application, whether through a touch screen, or a pointing device (such as a mouse or a touchpad), or a keyboard, or through switches or sensors (which may require additional hardware interfaces); the choice of the best physical

interaction method should be based on thorough assessment, training and trials within a habilitation or rehabilitation program.

- Depending on your cognitive and language abilities and your physical interaction speed, you need to decide the structure, the symbolism (texts, photos, pictograms, symbolic languages, etc.) and the layout of the communication tables appearing on the screen, which contain the activation buttons to be selected; these tables may come with the product at its first installation, or may be downloaded later from the Internet (free or upon payment), or can be built by yourself by means of the configuration software embedded in the product; as for the physical interaction method, also these decisions should be based on thorough assessment, training and trials within a habilitation or rehabilitation program.
- When deciding on the communication tables, the way the messages should be presented to the communication partners and the product functionalities to be implemented, consider all communication needs the product should meet: whether those of a child or an adult or an elderly; whether within the family or also with strangers; whether in the school environment (primary or secondary or high or university) or in the work environment; whether within a habilitation or rehabilitation setting such as an augmentative communication program.
- Keep in mind that this is a complex product with plenty of configuration options and usage levels; learning to use it effectively may take time and may need frequent configuration readjustments, especially in the first period of use; if the person is not already an expert user of assistive communication products, make sure that the person can rely on a knowledgeable professional or trusted person, able to serve as communication facilitator in the first period of usage.
- If Internet connection is required for installation and regular updates, make sure that such connection exists and has sufficient bandwidth in the place where the user lives.

- **Points to be considered in product fitting**

- Install the application on the selected device following the instructions of the installation program; at this stage, you may need to be connected to the Internet for registration and download of updates, communication tables and plug-ins.
- Connect and install all the peripherals you need (control switches/sensors, loudspeakers, printer, environmental control interfaces, etc.) and check that all work correctly with the application.
- If the device is not going to be used handheld, position the device on an appropriate support (e.g., an adjustable stand, or a wheelchair-mounted articulated arm) in such a way that you can operate it comfortably, see well the screen and look face-to-face at interlocutors; you may also need to adjust the screen brightness in relation to the ambient light.
- Carry out the initial configuration of the communication tables according to the decisions taken in the assessment / selection stages.
- Plan a training program to familiarize with the system and achieve the skills needed to efficiently operate it; usually the selection, fitting and use of this kind of products is carried out in specialized centers where all needed competences are available, as part of individual habilitation / rehabilitation programs or augmentative communication interventions.
- Consider that during the training program, the communication tables may need to be adjusted and improved several times as your use skills improve.
- Find out the user's body functions that are best suited to comfortably access the product; be mindful of how carrying out the physical movements needed to control the device may change overtime, particularly where the person fatigues quickly.
- The user's posture should be taken into account, since it is directly related to the capability to operate the product.
- Configure the user profile, if the product has a users' profile management system.

- **Points to be considered in product use**

- When you need to communicate with persons who are unfamiliar with assistive communication equipment, put them at ease by informing that you cannot speak or produce messages in the same way as most others, but the device does it for you; this instruction can be given for instance by selecting something like a "start conversation" button on the communication table to speak out a welcome message with instruction.
- Regularly check about the availability of new software updates or new communication tables (often the system carries out this check automatically) and download and install them if appropriate.
- You may wish to join social networks of users of this product, to exchange views and learn from each other's experience.

- Points to be considered in product maintenance / follow-up
 - Your capabilities are likely to change over time: the functions required from the product may need to be changed or adjusted as your personal situation develops and moves through life stages.
 - Regular reviews (annual or biannual) are recommended, to check whether the product still meets your needs, or configuration adjustments are needed in relation to changes in your capabilities, occupation, use environment, clinical condition, or life goals.
 - Make sure to have a reliable contact person or company in case of any technical problem.
- Examples of products available on the market
 - Live product search in the EASTIN website <https://www.eastin.eu/en/searches/products/list?iso=222112>

Source

This Fact Sheet was compiled in 2021 by an international team of experts, to provide the initial knowledge base for a project ("An online system to assist the selection of assistive product") supported by the World Health Organization in 2020-2021 within the GATE Initiative (Global collaboration on Assistive Product). Fact Sheets were compiled for each of the 50 types of products included in the WHO APL (Assistive Product Priority List).

The team was composed of Renzo Andrich (Italy, group leader), Natasha Layton (Australia), Stefan von Prondzinski (Italy), Jerry Weisman (USA), Silvana Contepomi (Argentina) and Hasan Minto (Pakistan).

The project led to a prototype online tool called ASPREX (ASsistive PProduct EXplorer). At the end of the project, it was transferred to a WHO collaborating center (the Global Disability Hub in the UK), in view of possible future developments.