

M3S

A general-purpose integrated and modular architecture
for the rehabilitation environment.

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M3S stands for Multiple Master Multiple Slave and is a proposed standard architecture for general-purpose integrated and modular systems. It is based on a digital communication bus and designed to improve access to assistive technical devices by disabled people. It provides a standard interface between input devices and end-effectors, allowing devices from different manufacturers to be linked in the same system. During revalidation phases this facilitates the process of evaluating different input devices and making the decision what input devices are optimal for a specific user. Furthermore the M3S architecture enables the user to operate more end-effectors using a single input-device.

M3S systems often have more input devices and end-effectors. Each combination of input devices and end-effectors defines a possible operational mode of the system. The total system can have an extensive set of such operational modes and one of the features of M3S is the way the user can switch between these so called tasks.

M3S is primarily intended for use on wheelchairs, although the architecture allows wider integration e.g. with home systems. It is based on an industry-standard bus, the Controller Area Network (CAN) which was developed for use in the automotive industry. Furthermore it includes additional signal lines to increase system safety and integrity.

M3S was a project in the pilot phase of the European Community research program TIDE (Technology Initiative for Disabled and Elderly people). In this project two demonstration platforms were assembled and evaluated at rehabilitation centres in the Netherlands and Switzerland. Further evaluation of five integrated systems in real life conditions is planned for this year in the IMMeDIate project of the European Community program SPRINT (Strategic Programme for Innovation and Technology Transfer). An ISO committee defining 'a serial interface for wheelchair controllers' takes the (preliminary) M3S protocol specification as the working draft for further standardisation.

To facilitate the development of M3S compatible devices the M3S protocol specification is available in the public domain. A broad range of development tools is already available, e.g. PC based CAN controller cards, micro-controller based M3S prototype cards, PC software tools and a portable M3S-API (application programming interface) for PC's and micro-controller cards.

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