Smart composite human-computer interfaces follow consumers' actions and offer help when needed

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VTT Technical Research Centre of Finland recently coordinated a pan-European initiative called SMARCOS, which focused on developing technology based on internet sharing between devices. The technology allows the interfaces of various smart devices to follow consumers' actions and react immediately to their needs. The smart coaching service, for example, can use all the user's digital devices for motivating his/her behaviour towards the goals or for reminding medication.

The pan-European SMARCOS (Smart Composite Human-Computer Interfaces) initiative focused on developing technology based on internet sharing between devices, which allows the interfaces and attributes of various digital devices to work seamlessly together in smart ecosystems.

What is unique about the technology is the way it makes use of information on the actions and processes of several people in a single situation to guide the operation and functions of device interfaces.

The physical interface stays the same, but the intelligence and functionality of the user interface level improve. The functions of an interface respond more accurately to users' needs when devices, services and applications are able to follow and predict the users' actions. This can be used, for example, motivate healthy living through all personal devices.

Interfaces can be distributed among devices and surfaces and therefore help users to be supported better by their digital services and applications. Examples of systems that have already been implemented successfully include a service that encourages consumers to lead healthier lifestyles.

The healthy living service operates on all the user's digital devices (mobile devices, TVs, car, computers, activity monitors). A real-time behaviour monitoring service controls when and through which device the user can be given information, reminders and encouragement. The service interacts with systems that encourage consumers to exercise, remind them to take their medication and help them to educate themselves.

The technologies developed during the initiative included multi-device interface technology, as well as real-time consumer behaviour interpretation technology. Several new tools and software applications were also developed for use in building smart, roaming interfaces. This makes it possible to use IoT (Internet of Things) devices as interfaces for connecting to cloud services. The initiative also laid down the groundwork for integrating physical products and cloud services and creating new business opportunities.

A minimalist interface prototype for controlling household energy consumption was developed in collaboration with Offcode Oy. The user-friendly prototype can be used to control household energy consumption and to buy and sell energy.

These kinds of interfaces are likely to be available for consumers before the end of the year.

A lot of work is being done to develop technology that will enable the interoperability of devices in smart ecosystems (ubiquitous

interoperability). Most devices we use on a daily basis, such as some mobile phones, tablets, laptops, household appliances and in-car information systems and satellite navigation systems, will ultimately run on the same interface software. The interoperability of these devices will improve user experience considerably.

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