POTI – Personal Objects as Adaptable Tangible User Interfaces

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Personal Objects as Adaptable Tangible User Interfaces – POTI – research project puts forward a model of interaction for the domestic environment in which users freely convert a day-to-day physical object into a tangible interface able to control or represent digital information. At the heart of this technology is a small wireless electronic tag that can be attached to everyday objects. The small tag is able to process movement and recognize gestures, and the labels are the mechanism by which the member of the home environment can transform any daily object into a digital function or a digital entity.

Case Study – SIX.
SIX is a particular aplication of the POTI conceptual framework and technology in a real interaction environment (TV and home environment), and it was funded by Altice.Labs. It consists of a customized tangible interface, with the shape of a cube, to select TV channels. One of the aims of the SIX is to abolish seniors' difficulties when they interact with a TV remote control, namely selecting channels. In order to understand the expectations and needs of seniors while they are using the SIX, an empirical study was performed, which characterized the affordance of the SIX.

The user activates the desired channel on TV by manipulating the cube and putting the corresponding face turned upwards. The object is also physically customizable by the user who can write the channel name or draw on each of its faces through paper labels. Therefore, instead of associating buttons with numbers to TV channels, the user can move the cube and this action results in a channel change (causal reasoning), which makes their interaction experience more natural.

The empirical study was conducted at the "Patronato de Nossa Senhora de Fátima de Vilar" in Aveiro, Portugal with 15 senior users who attend the Adult Day Care Centre, aged between 76 and 99 years.
All seniors quickly realized what SIX's main functionality was, taking a mean of 28 seconds to select a channel for the first time.

Another important aspect to note is that seniors, who did not use autonomously the TV remote, were able to select a TV channel without the help of others by using SIX. Thus, we believe that the autonomy of seniors can be clearly enhanced by the use of this artifact.

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