

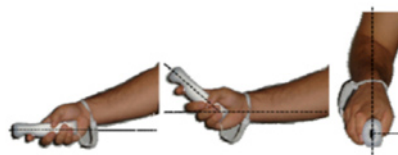
## Strategic Business Relevance:

Device ecologies enable users to interact with multiple devices and services through which not only the activities of everyday life can be conducted but also provide opportunities for hedonistic, playful and enjoyable activities that enrich user experience. In this type of environment gesture provides an interaction technique which is both useful and useable across this range of devices, services and settings.

## Summary of Research

To date, we have conducted a number of studies on gesture which include: exploring user generated gestures; the trade-off between user and system requirements for gesture; social acceptability and the use of gesture in a text entry application.

The aim of these studies was to identify a set of gestures that could be useful and usable across a range of devices, services and contexts, as well as being socially acceptable. Furthermore, they aim to discover the balance needed between user performance and preference and system performance.



## Core Research: User Interactions for Breakthrough Services

This research addresses the ways in which users interact with portable and mobile devices (and other devices in their physical and logical environment) in order to enable new types of personalised and highly contextualised services.

Gestural interaction research forms part of the novel interaction techniques area of research undertaken for this programme.

Virtual Centre of Excellence  
in mobile and personal  
communications



For more information see:  
[www.mobilevce.com](http://www.mobilevce.com)

# Evaluation Summary

#### User Generation of Gesture

Participants spontaneously generated gestures to perform given interaction tasks. The tasks were identified from scenarios developed by Mobile VCE. These ranged from concrete tasks familiar to computer users, e.g. "Select ...", to more abstract tasks, e.g. "Show me a ...". We recorded the gestures made by each participant and categorized typical or most common gestures for the different tasks. From this we were able to identify a set of gestures which are useful and usable across a range of devices, services and contexts.

#### Trade Off Between User and System

This study evaluated both participants performance and experiences in recalling and performing gestures from a given gesture set and the capabilities of a system to recognise these gestures. We examined the balance needed between the need for a recognition system to effectively recognise gestures and requiring users to adapt their performance to conform to the inevitable constraints of a given recognition system. The resulting design recommendations enable the design of gestural interactions which are intuitive and natural for the user and recognisable by the system.

#### Social Acceptability of Gestures

We carried out two separate sessions of semi-structured group interviews to gain insight into the social acceptability of gesture. Two groups were interviewed - one late adopters (61+ years old), the other early majority adopters (age 20-40). In the study a gesture was shown and participants asked to write down their first impression in two or three words; no explanation of the gesture was given at this time. Once complete a brief explanation of the gesture and its purpose was given and participants were asked how they would feel performing this gesture in a range of situations. This process was repeated for a number of different gestures. The outcome of this study was a set of design principles which give guidance on the form and action of gestures if they are to be adopted as an interaction technique.

#### Gesture as Text Entry

This study explored different text entry interface layouts to be used for accelerometer based gesture input. For each interface participants typed fifteen sentences. It was found that a matrix layout (a 3x3 grid layout similar to a the telephone keypad on mobile phones) is most suitable for novice users with users able to type 5.4 wpm

## Key Points

- Gestures provide a useable and useful way of interacting across a range of devices and contexts.
- Users should be involved in the generation of gestures.
- Expressive Gestures (gestures where both manipulations and effects can be seen) and Hidden Gestures, (gestures where both manipulations and effects hidden) are socially acceptable for both public and private contexts.