Exergame Technology Roadmap
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The purpose of *Exergame Technology Roadmap* is to give an overview of the expanding area of exergaming (exercise + gaming, physical wireless gaming), and draw a technology roadmap for R&D work. The report has been written in the VTT's strategic project EXERGAME (2005-2006). The report is written in the form of critical path figures which are then described in more detail. As a result we present an analysis of the main technological trends in exergaming and discuss about possible paths to focus on the EXERGAME project.

In this work we have found that the common challenges that will have an effect to the generalization of certain technologies enabling richer exergaming include security, privacy and access technologies. Positioning technologies such as GPS will become more central to solutions that utilize everyday environments (e.g. city) as a playground. GPS or WLAN positioning solutions are needed to be integrated into mobile phones in able to support location based exergames to develop.

Context-awareness can be a new driver for emerging and future mobile entertainment applications. Enabling technologies include e.g., positioning technologies. In able to make the exergaming experience more natural, approachable and potentially ad hoc, physical, everyday environments should be reactive in some way. For example matrix codes, RFID tags and Bluetooth have been offered as a solution but the ideal of ambient intelligence demands both more advanced handsets, wearable or wireless devices as well as 'intelligence' spread out around the city

Physical browsing is a natural way to enhance human – mobile device communication by enabling surrounding environment to be used as a part of the user interface. Most promising physical browsing technologies for exergaming solutions use already available devices on the market: NFC and visual code based solutions. Infrared, proprietary RFID and proprietary short range radio technologies are suitable for exergame solutions using physical browsing, although this requires lot of development work and strong brand for product to succeed.

Novel smart textiles will offer a comfort and unnoticeable way to measure users' bio feedbacks such as heart rate, skin temperature, and breathing frequency. In addition, wearables could enable new feedback methods. Clothing might change colour, form or temperature according to the user action in the game. In some games the clothes could be an essential part of the game world e.g. a magic vest or gloves. Another more generalized trend in sensing technologies focus on health meters such as pedometers, cyclometers and pulse meters. Health meters definitely are wearable devices but in a different way than 'wearables' (referring to computing that is weaved or other way build in clothes).