

CHAPTER 1

INTRODUCTION

In a world of continuous and seamless exposure to visual and auditory stimuli, human perception is increasingly challenged by information overload. Among the primary human senses, vision, audition and tactation, particularly the sense of touch appears underemployed in today's designs of interfaces that deliver information to the user. While about more than 78% of the information perceived by humans is delivered via the sight and hearing channel, only about 21% is perceived via the haptic sense, approximately 80% to 90% of all sensory input is received via the eyes). In situations of work or engaged activity, where both the visual and auditory channel are occupied because of the involvement in the foreground task, notifications or alerts coming from the background, and delivered via these channels tend to fail to raise sufficient levels of attention.

With the development of modern technology, long duration flying has become less physically demanding and non-challenging, as most functions are automated. It is well known that during long periods of light, monotonous/boring or repetitive work with low physical activity, there is drowsiness setting-in leading to loss of alertness of aircrew. Therefore, there is a need for a simple system for keeping aircrew alert during such low activity phases of flight and restrain them from falling into bouts of drowsiness. Thus, it is envisaged that voluntary usage of simple body-mountable, programmable Vibro-tactile alarm device could stimulate the wearer and keep him/her awake and alert during such conditions enumerated above. Such a system can be used in all situations needing alertness and by all people who are sleep deprived, or performing light repetitive, monotonous/boring tasks of low physical activity especially while operating in window of circadian low (NOCL) i.e., 0000 to 5000 hrs, who are prone to loss of mental alertness/drowsiness. The basic requirement is to design and implement a haptic system for delivering vibro-tactile stimuli to the body for alerting the person from drowsiness. A body worn belt like vibration system has been developed, delivering tactile notifications and to provide a system with individually controllable vibration motors.