# 1 Publishable Summary

## 1.1 Project context and objectives

Help4Mood is a system that supports the treatment of people with major depression in the community. Depression is one of the most common causes of disability in Europe. It accounts for substantial costs directly to health services and indirectly through lost productivity and the burden of caring. In most cases patients recover with appropriate treatment, but recovery can be slow and may be incomplete. Help4Mood specifically targets patients with delayed and partial recovery, with the aim of aiding their return to health and normal social and economic activity.

Recovery is mostly tracked using validated questionnaires where patients self-rate their moods and activities during the past week or two. However, these self-reports can be highly unreliable. Help4Mood addresses this problem by providing objective data about activity levels, sleep quality, speech, various aspects of psychomotor function, and daily self-reports of mood. Monitoring is restricted to factors that can be monitored relatively unobtrusively in shared homes.

While most other systems focus on monitoring, Help4Mood integrates monitoring with carefully selected activities and messages that increase adherence to treatment. Help4Mood is designed to keep patients engaged through a novel Virtual Agent interface. During the interaction with Help4Mood, the system collects self-reported data, and supports the patient in identifying and challenging negative thought patterns and in establishing positive habits and behaviours.

Monitoring and patient interaction are tightly integrated. Results from monitoring are interpreted by a Decision Support System using advanced pattern recognition techniques. Based on this data, the Decision Support System then plans the daily interactions with patients and provides summaries to the patient and the clinician.

The outputs of the project will include a personal monitoring system, an interactive virtual agent designed for use in the home, and a decision support module.

## 1.2 Activity and main achievements to date

The main activities to date involved the detailed assessment of system requirements (completed in M4) and, based on these requirements, the work on initial versions of virtual agent and sensor technology (completed in M7). In addition to this, two important strands of work aimed both to specify the technologies and protocols which would be used to build the Help4Mood system and to develop an ontology which would ground communication at the research level and, again, in the actual system. All of this effort was completed by M9. The other important objectives were the production of a dissemination plan (completed in M6) and the design and creation of the project website and knowledge community. Project management and dissemination activities are of course ongoing.

## 1.3 Expected final results and potential impact

The output of the project will be a research prototype that includes a personal monitoring system an interactive virtual agent, and a decision support module which controls the operation of Help4Mood. This prototype will be evaluated in a small trial that will provide sufficient data for CE-marking / approval as a medical device, if required.

The resulting system can then be taken forward in several ways:

**Academic research:** Longitudinal research on activity, sleep, and neuropsychomotor symptoms in people who are recovering in the community.

**Commercial research:** Monitoring of participants in clinical trials of new anti-depressants in their own homes

**Clinical use:** Validation as an adjunct to treatment in a randomised controlled trial

## 1.4 Project website

In addition to presenting the aims and results of the project, the Help4Mood website provides video interviews with consortium members and a number of links to other sources of information (`http://help4mood.info`). The website is also linked with the project knowledge community where it is possible to update the contents of the website through a knowledge management system.