

Personal ePartners for Astronauts

ePartner's Intentions

- to harmonize astronaut's task load to his or her momentary cognitive capacities
- to improve human-machine team's resilience
- to improve astronaut's self-care, and safeguard him or her from failures

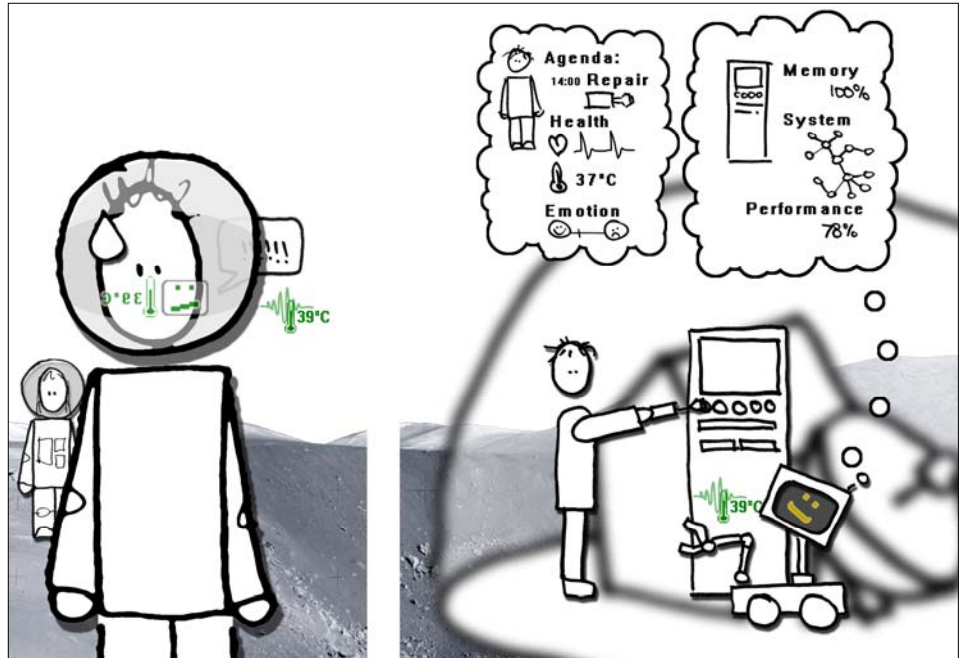
Profile of Astronaut

- permanent characteristics (e.g., personality)
- dynamic characteristics (e.g., experience)
- base-line state (e.g., "normal" heart rate)
- momentary state (e.g., current momentary heart rate)
- planned tasks (e.g., maintenance)

Detecting Critical Conditions

- attentiveness and task involvement
- cognitive task load
- affective state
- mental and physical fitness
- social behavior

Via **multimodal** behavior, state, and context sensing



ePartner detects temperature problem and informs ePartner of astronaut at habitat

ePartner's Presence

- virtual personal assistant
- presence in ubiquitous computing environment
- different appearances (e.g. GUI window, "voice", or virtual or embodied character)
- social actor
- multimodal interaction

Test in Virtual Environment

- human in the loop
- user experience:
 - performance
 - trust
 - satisfaction

Mitigation Strategies

- taking over tasks
- guiding the task performance
- requesting other partners to help
- persuasion and critique
- motivational interviewing

MECA Project:

The Mission Execution Crew Assistant (MECA) project is a development funded by the European Space Agency (Contract 19149/05/NL/JA). Project partners are TNO Human Factors (NL), Science & Technology BV (NL), OK-Systems (E) and EADS (D). See <http://www.crewassistant.com>

