**ASTUTE**

Pro-active decision support for data-intensive environments

**PROJECT OBJECTIVES**

ASTUTE project aims to improve usability of embedded systems by using user state and context situation capture to provide pro-active decision support via multi-modal interfaces. To achieve this objective ASTUTE project is targeting the following research actions:

- To enable use of user and context awareness through heterogeneous data sources.
- To provide tools for integrating multi-modal information.
- To design and develop intelligent information management techniques.
- To enable the use of proactive information flow/push, via a proactive decision engine.
- To enable (re)optimization for the user through appropriate information filtering and summarization by adaptive HMI.
- To provide a reliable and scalable infrastructure based on a reference architecture.

Pro-active decision support system based on human centered design able to support user intentions while keeping him in control.

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**TARGETED INNOVATIONS**

- **Cross-domain applications**
  - Autonomous Domain
  - Natural environments domain
  - Emergency dispatching domain
  - Manufacturing processes management

- **Adaptive HMI interface**
  - Proactive interfaces based on context sensitive information retrieval to optimize user decision-making
  - Adaptive user interfaces able to consider present state and to predict future information demands.

- **Proactive decision engine**
  - Naturalistic decision making framework by analyzing user’s tasks cognitive requirements
  - Multi-modal interface able to dynamically interpret continuous inputs from heterogeneous sources.

- **Context modeling and reasoning engines based on semantic technologies**
  - Multi-modal, multi-level information fusion integrating contextual information.
  - Context modeling and reasoning engines based on semantic technologies.

- **Intelligent context-aware information retrieval based on user state (present, historic and predicted)**
  - Intelligent user state information retrieval by exploring emotional state sensing technologies.

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**ASTUTE ARCHITECTURE**

**CROSS-DOMAIN APPLICATIONS**

**ADAPTIVE HMI INTERFACE**

**PROACTIVE DECISION ENGINE**

**CONTEXT MODELLING ENGINE**

**PHYSICAL WORLD**

**USER**

**CONTEXT**

**PROJECT COORDINATOR**

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**NUMBER OF COUNTRIES**

6

**PARTICIPATING ORGANISATIONS**

36

**TOTAL INVESTMENT**

€ 65.9 M

**DURATION**

March 2011 - March 2014

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**INSTITUTION**

Advanced Research & Technology for Embedded Intelligence and Systems