

IPAC

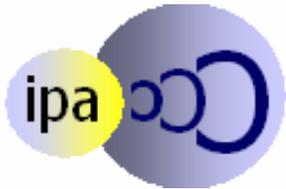
Integrated Platform for Autonomic Computing

IPAC aims at delivering a middleware and service creation environment for developing embedded, intelligent, collaborative, context-aware services in mobile nodes in the areas of embedded, mobile and pervasive computing.

KEYWORDS: Autonomic & Embedded Computing, Collaborative Context-Awareness

At A Glance: IPAC

Integrated Platform for Autonomic Computing



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Hellenic Ministry of Defence (GR)

University of Cyprus (CY)

Duration: 30 months

Start: May 2008

Total Cost: 2.52 M€

EC Contribution: 1.65 M€

Contract Number: *INFISO-ICT-224395*

Main Objectives

The lightweight and flexible IPAC middleware provides all services required for the deployment and execution of diverse applications in a collaborative nomadic environment. These services are supported by novel knowledge and ontology engineering techniques, dealing with interoperability, integration, and re-configuration / adaptation problems encountered in contemporary embedded platforms. Being collaborative, IPAC relies on short-range communications (e.g., ZigBee, DSRC, Bluetooth) for the ad hoc realization of dialogs between nodes. Being context-aware, IPAC relies on advanced sensing components thus, delivering highly innovative application architecture.

IPAC will focus on developing embedded, intelligent, collaborative, context-aware services in mobile nodes in the area of embedded, mobile and pervasive computing

IPAC is based on sophisticated information dissemination algorithms. Specifically, it relies on *rumour spreading* techniques. Rumour spreading involves the propagation of information within a certain network. Information is ducted only to immediate neighbours that are interested in specific content (*rumour*). Therefore, IPAC incorporates recent research advances in the area of bio-inspired computing systems.

Mobile nodes in IPAC are specified and developed to be *non-selfish* with respect to information dissemination (a mobile incarnation of a peer-to-peer system). Specifically, the IPAC nodes operate in a *collaborative* fashion in order to diffuse contextual information and broader knowledge in their environment. A node propagates an information message received by another node across the network. In case that such message appears to be usable for the node, it can process it. An information message that is of no interest to an IPAC node has to be forwarded across the network for further processing. The same path is followed for the dissemination of new applications or application components after their development thus contributing to the deployment and use of new embedded applications. IPAC integrates techniques and algorithms for energy-efficient, autonomic node behaviour, advanced context awareness, embedded service/application modelling and efficient information dissemination.

