# Motivation

Dynamic service composition in open environments as in pervasive computing and/or ambient intelligence systems, implies that services should be discovered and composed on the fly at execution time. This is achievable only if service descriptions are machine-understandable. This motivates the enrichment of service description languages with a semantic dimension that will allow a more flexible matching than the classical and limited syntactic matching. This semantic matching includes two dimensions:

- The semantic annotation of service interfaces using ontologies, for understanding the services' provided functional and non-functional capabilities
- The services' behavioral description for enforcing valid component invocation

# Research

Our work on enabling semantic-aware service composition for ambient intelligence decomposes into:

- **Semantic-aware service discovery**, including semantic service description and related matching.
- **Semantic-aware service composition**, including QoS- and context-aware service composition, and semantic process integration and verification.

# Contributors

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# Supporting Grants

- IST Amigo -- Ambient Intelligence for the networked home environment
- DYONISOS -- Carroll-Thales - Dynamic Organization and Instantiation of Systems-of-Systems

# Related Software

- iCOCOA semantic service-oriented middleware

# Follow-up

- QoS-aware  service-oriented middleware

# Publications

Titre COCOA: COnversation-based service COmposition in pervAsive computing environments with QoS support AuteursBen Mokhtar Sonia; Georgantas Nikolaos; Issarny Valérie Détail *Journal of Systems and Software* 80-12 (2007) 1941-1955 Accès au texte intégral

Titre EASY: Efficient semAntic Service discoverY in pervasive computing environments with QoS and context support AuteursBen Mokhtar Sonia; Preuveneers Davy; Georgantas Nikolaos; Issarny Valérie; Berbers Yolande Détail *Journal of Systems and Software* 81-5 (2007) 785-808 Accès au texte intégral

Titre Distributed Behavioural Adaptation for the Automatic Composition of Semantic Services AuteursMelliti Tarek; Poizat Pascal; Ben Mokhtar Sonia DétailIn *Proceedings of the International Conference on Fundamental Approaches to Software Engineering (FASE 08)* 4961 (2008) 146--162 Titre Efficient Semantic Service Discovery in Pervasive Computing Environments AuteursBen Mokhtar Sonia; Kaul Anupam; Georgantas Nikolaos; Issarny Valérie DétailIn *Middleware* (2006) 240-259 Accès au texte intégral

Titre Towards ad hoc contextual services for pervasive computing AuteursFournier Damien; Ben Mokhtar Sonia; Georgantas Nikolaos; Issarny Valérie DétailIn *1st Workshop on Middleware for Service Oriented Computing : MW4SOC* (2006) 36-41 Accès au texte intégral

Titre Context-Aware Service Composition in Pervasive Computing Environments AuteursBen Mokhtar Sonia; Fournier Damien; Georgantas Nikolaos; Issarny Valérie DétailIn *Rapid Integration of Software Engineering Techniques, Second International Workshop : RISE 2005* (2005) 129-144 Accès au texte intégral

Titre Semantics-Aware Services for the Mobile Computing Environment AuteursGeorgantas Nikolaos; Ben Mokhtar Sonia; Tartanoglu Ferda; Issarny Valérie DétailIn *Architecting Dependable Systems III* , Springer (Ed.) (2005) 1-35 Accès au texte intégral

Titre QoS-aware dynamic service composition in ambient intelligence environments AuteursBen Mokhtar Sonia; Liu Jinshan; Georgantas Nikolaos; Issarny Valérie DétailIn *20th IEEE/ACM International Conference on Automated Software Engineering : ASE 2005* (2005) 317-320 Accès au texte intégral

Titre Ad Hoc Composition of User Tasks in Pervasive Computing Environments AuteursBen Mokhtar Sonia; Georgantas Nikolaos; Issarny Valérie DétailIn *Software Composition* (2005) 31-46 Accès au texte intégral

Titre The Amigo Service Architecture for the Open Networked Home Environment AuteursGeorgantas Nikolaos; Ben Mokhtar Sonia; Bromberg David; Issarny Valérie; Kalaoja Jarmo; Kantorovitch Julia; Gérodolle Anne; Mevissen Ron DétailIn *Fifth Working IEEE / IFIP Conference on Software Architecture : WISCA 2005* (2005) 295-296 Accès au texte intégral