Service-based ICT

Antonio Brogi

Department of Computer Science
University of Pisa

brogi@di.unipi.it

The big bang of (software) services

Economy trend: from *goods* to *services*

Software services

- huge investments by all major players (IBM, Microsoft, Oracle, Google, …) during the last years
- intensive (industrial and academic) research activities
- from (Web) services
    to the Cloud (IaaS/PaaS/SaaS)
    to IoT to
    *aaS …

Our research activity

While service standards considerably simplify integration within and across enterprise boundaries, various types of incompatibilities (e.g., signature, interaction, QoS, security) unavoidably arise when composing services developed by different parties

Our general objective:

Provide well-founded and effective techniques

to support the flexible development and management

of service- and cloud-based applications

Our research activity

More concretely, we have succesfully developed and prototyped well-founded techniques for:

- **service composition** and **adaptation**
- **service discovery**

to overcome signature and interaction incompatibilities, both flexibly and dynamically

> *A few examples:*
> - *How to quickly customise a service in a non-intrusive way?*
> - *How to be sure of what a service composition will do?*
> - *What if I replace a service in my app?*
> - *What if a needed service is not available?*

Our research activity

Results:

- publications in international journals and conferences

- research prototypes

- solid international collaborations

- participation in European projects

  - e.g., EC project **SMEPP**

    - "Secure Middleware for Embedded Peer-to-Peer Systems"
    - with Telefonica, Siemens, Tecnatom, VTT and other 3 universities
    - UPI responsible of the definition and implementation of SMEPP's (lightweight) **service model**

New FP7 project starting

Seamless adaptive multi-cloud management of service-based applications (Oct 2013 – March 2016)
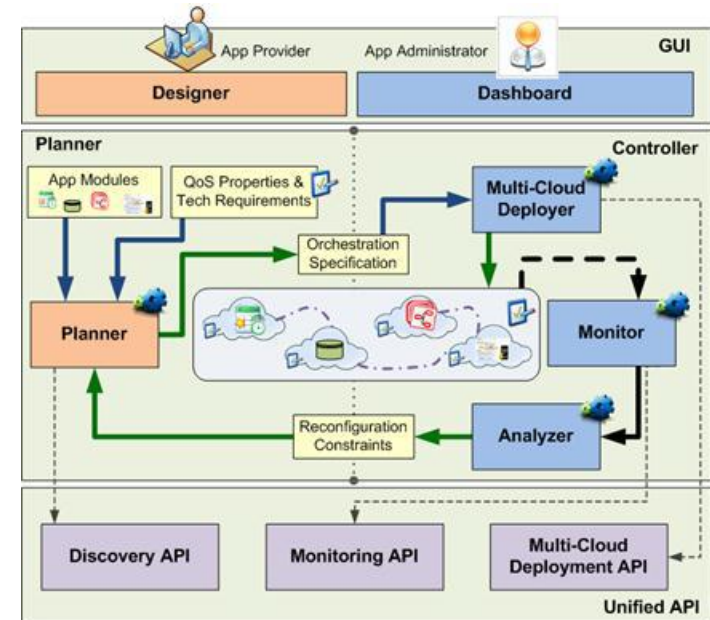
Objectives: seamless adaptive multi-cloud management of service-based applications, by supporting distribution , monitoring and migration of application modules over multiple heterogeneous (PaaS) clouds
+ compatibility with emerging OASIS standards (CAMP and TOSCA)

Other new research lines

- Run-time monitoring of mashups in the IoT (Internet of Things)

- SLAs (Service Level Agreements) for service-based applications

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