

Services and Objects: Open issues

Vincenzo D'Andrea and Marco Aiello
DIT - University of Trento, Italy

OOP

an object is a service

???

SOC

a service is an object

- what are the counterparts, in SOC, of:
 - class
 - instance

- is it possible to apply techniques as containment or inheritance to services?

- the goal: to exploit methodological tools available in OOP

"Service Oriented Computing Manifesto"

Services are autonomous platform-independent computational elements that can be described, published, discovered, orchestrated and programmed using XML artifacts for the purpose of developing massively distributed interoperable applications.

do we need
a definition
of OOP ?

OOP

SOC

invoke

find-bind-use

shared context

multiple context

synchronous
method invocation

asynchronous
method invocation

COMPOSITION:

- a key concept in SOC

- in OOP: design activity
- in SOC: dynamic discovery



infrastructure
versus
architecture

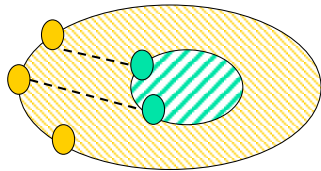
- SOC: no precise definition of composition
 - "syntacticians" versus "semanticians"

INHERITANCE:

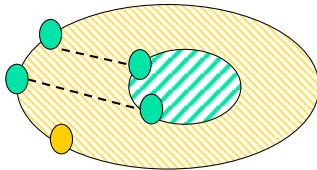
- OOP: derivation of a class from another
 - subclass or subtype (semantic coherence)
 - interface inheritance
 - a special kind of composition

- SOC: related concepts
 - service interface
 - service substitution

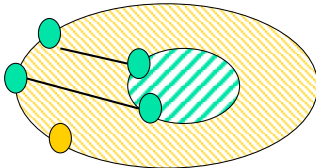
composition



subtype



subclass



POLYMORPHISM:

- OOP: related to inheritance
 - inclusion
 - overloading

- SOC:
 - requires definition of inheritance and types
 - same service different semantic

more ...

- statefull object / stateless class
- encapsulation / information hiding
- separating interface and implementation
- frameworks
- design patterns and other SE tools
- ...

summary & final remarks

- OOP - solid and well established
- SOC - new emerging field
 - goal: global interoperability between independent services
 - lot of open issues ...
- can we "borrow" concepts from the OO world ?
- services exhibit a number of object-like behaviors
- inheritance and polymorphism for composition semantics
- need of state information for services
- space for more contamination between OOP and SOC