



Istituto di Scienza e Tecnologie dell'Informazione "A. Faedo"  
Software Engineering Laboratory

*Methods and tools for the specification, verification and testing  
of functional and extra-functional properties of Dynamic  
Software Architectures*

**Attività su:** *Tecniche e Strumenti per il Testing (WP4)*

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## Da progetti e attività presentati al kickoff

- FP6 PLASTIC → *Audition*
- FP7 TAS3:
  - implementazione concetto *Audition*
- TAXI (generatore di istanze XML):
  - due applicazioni
- SOA Test Governance (behind *Audition*, **SOCT**):
  - realizzazione **SOCT** framework e valutazione due usi



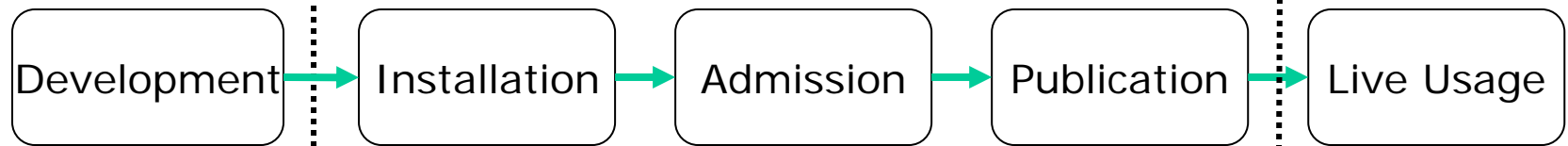
# Testing Stages

## Off-line Testing:

Services are tested  
in development

## On-line Testing:

Services are tested in the execution environment ...



*before publication*

*while running*

Development Testing

Audition

Monitoring

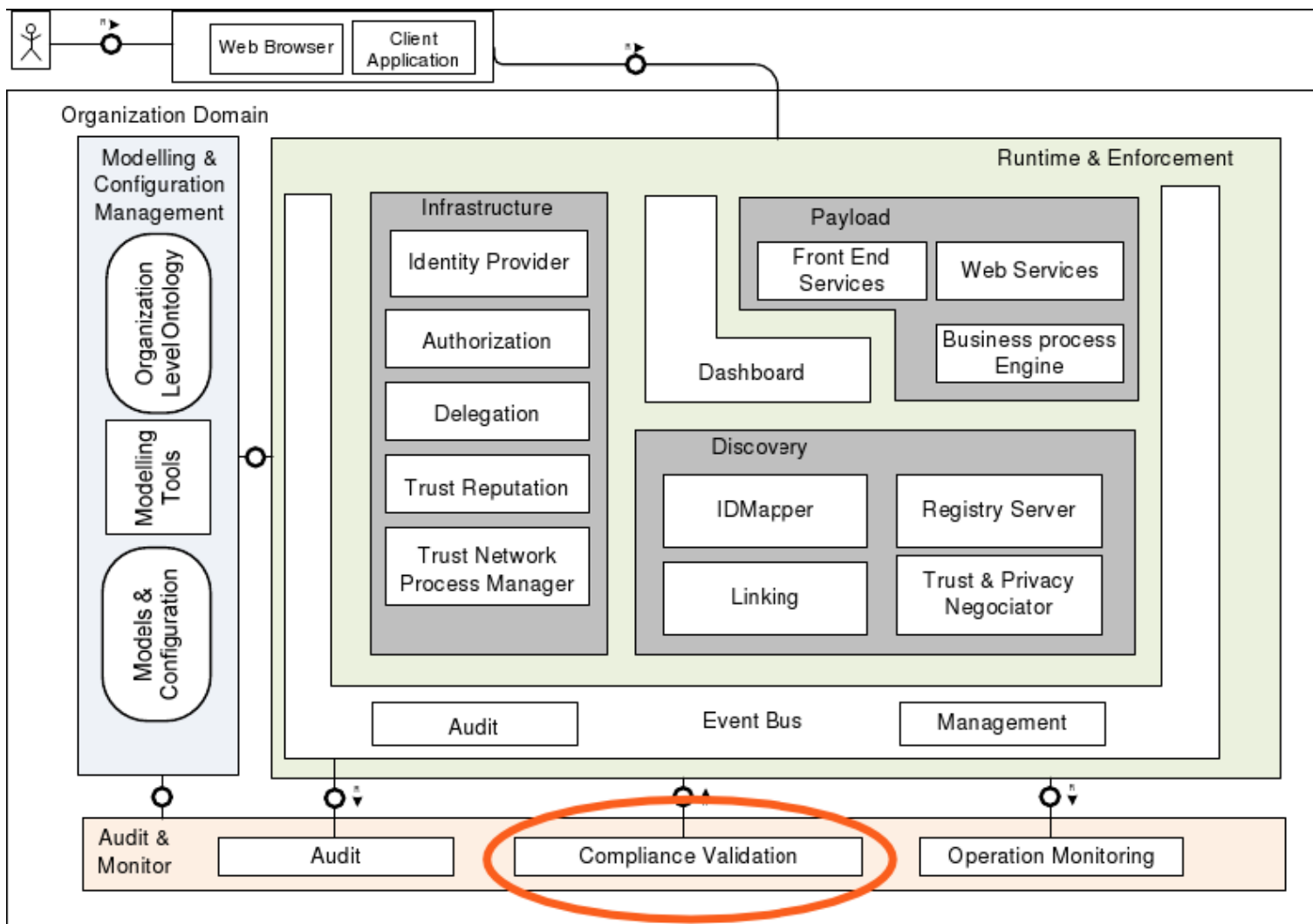


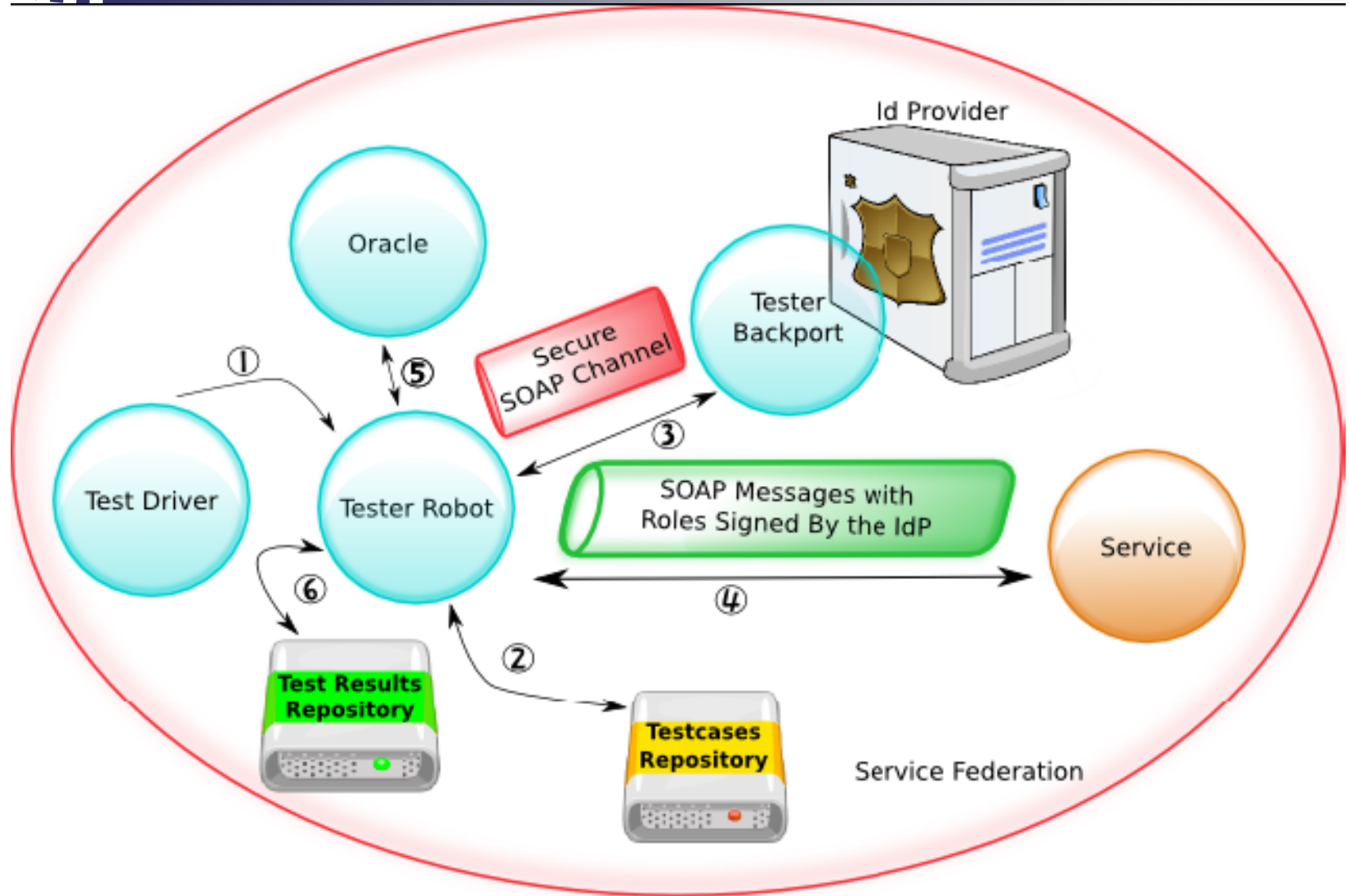
# On-line Compliance Testing

- Implementazione del concetto di Audition in TAS3
- **TAS<sup>3</sup> (Trusted Architecture for Securely Shared Services):**
  - open architecture to manage services based upon **personal information**, which is typically generated over a human lifetime and therefore is collected & stored at distributed locations and used in a multitude of business processes
- The idea behind OCT is that TAS3 services undergo (active) testing in their real execution environment, while they possibly interact with other services (and may even be unaware that an invocation they receive comes from OCT)
- OCT validation may be performed periodically or after some relevant event, aiming at verifying that every service in the TAS3 federation abides by the manifested policies and/or complies with the functional specifications



# TAS3 components







- TAXI is a CNR tool for systematic document generation from XML Schema
- Applicazioni:
  - WS-TAXI (presentato al KO)
  - XSLT (100% automatico)
  - XACML access policies



# TAXI used for XSLT Validation

- » User specifies
  - » the original XML schema,
  - » an XSL stylesheet, and
  - » a target XML Schema;
- » TAXI generates from the original schema a set of instances
- » TAXI picks each instance in sequence, transforms it according to the rules in the stylesheet
- » TAXI validates the output instance against the target XML schema.
- » A log is generated that describes which of the transformed instances were conforming and which were not, and for the non-conforming ones details the validation errors.

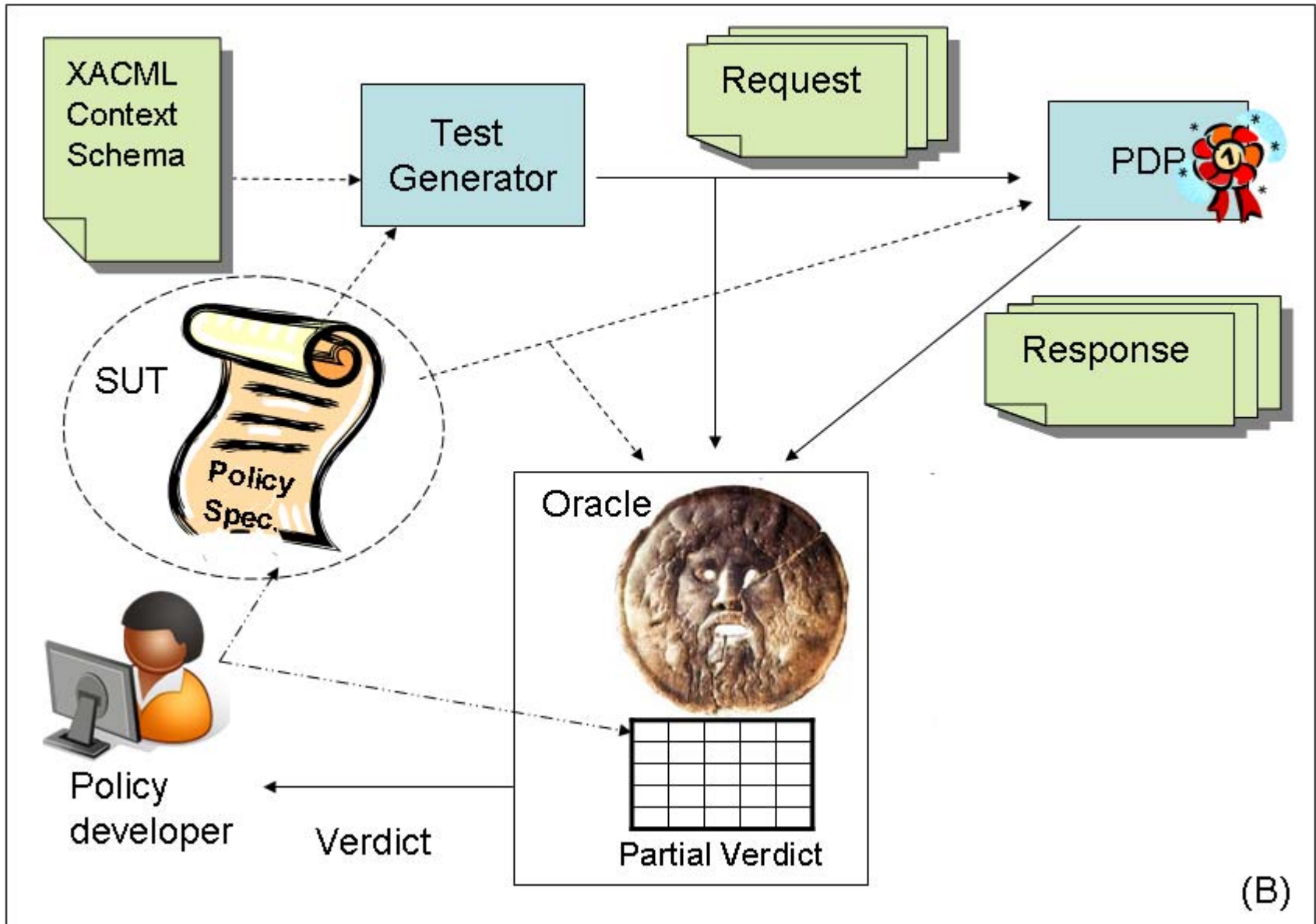




# TAXI applied to policy testing

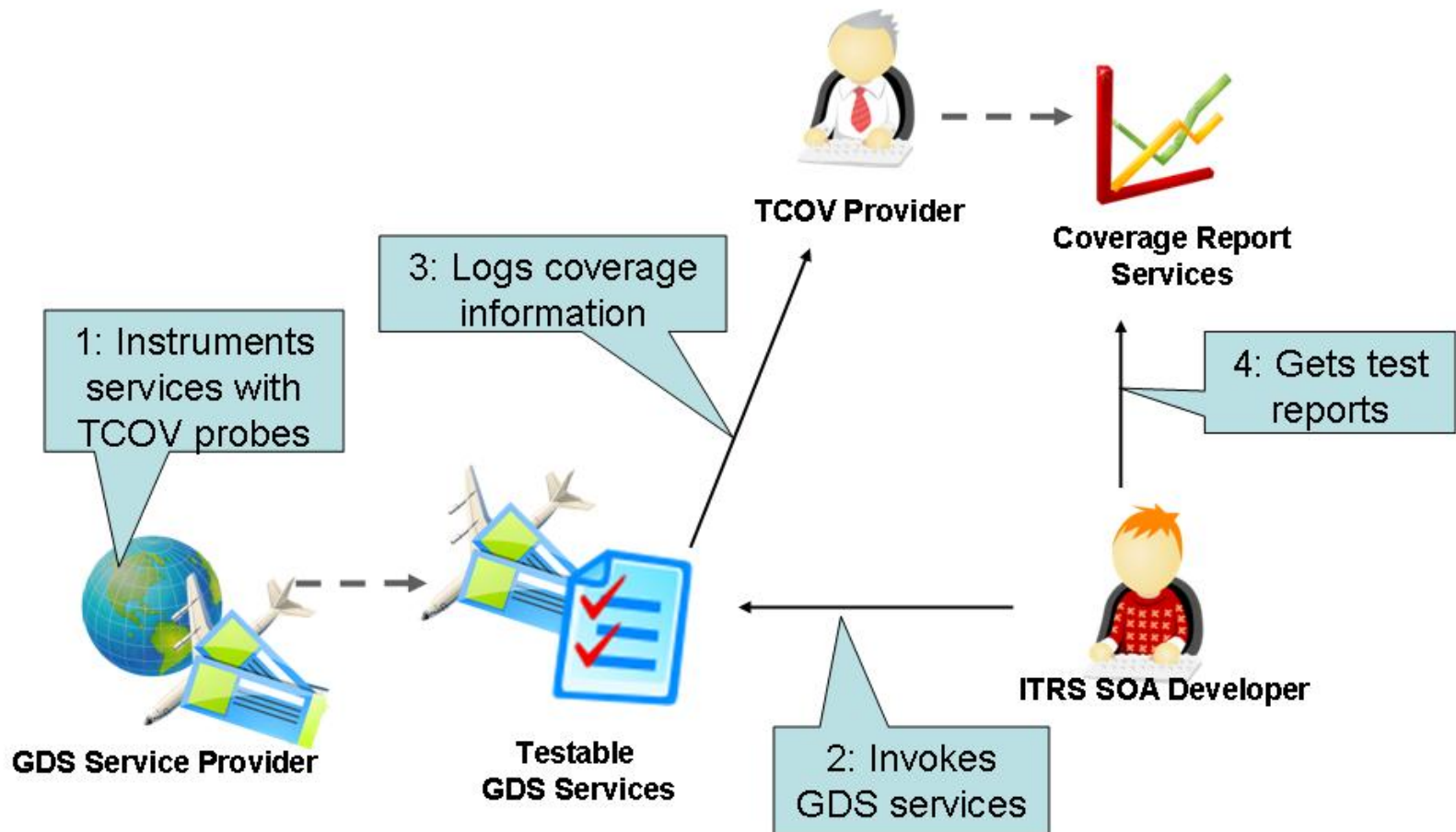
- XACML is a XML-based standard language designed by OASIS to specify access control policies
- The XACML Technical Committee provides a Policy Schema for the validation of XACML policies and a Context Schema for the validation of XACML requests and responses
- We propose to exploit the standard Context Schema to derive a set of compliant requests that can be useful for verifying the policy specification or for testing the PDP

# TAXI used for XACML policies testing





# SOCT idea





- Improved WorldTravel Case study (working!)
- Full realization and evaluation for:
  - Test suite reduction: e.g., given a coverage report listing the cumulative coverage measure for each executed test case, the reduced test suite includes all and only those test cases that provide a coverage increment.
  - Regression detection: can detect changes to invoked WS implementation



## Ulteriori lavori in corso...

- Progetto Regione Toscana IPERMOB per realizzazione infrastruttura pervasiva di controllo traffico, con realizzazione benchmark su parcheggio nella zona aeroportuale di Pisa
- Nuovo progetto FP7 in cui verra' sviluppato concetto di SOA test governance