
SEVENTH FRAMEWORK PROGRAMME

# Towards Standardization of Distributed Access Control

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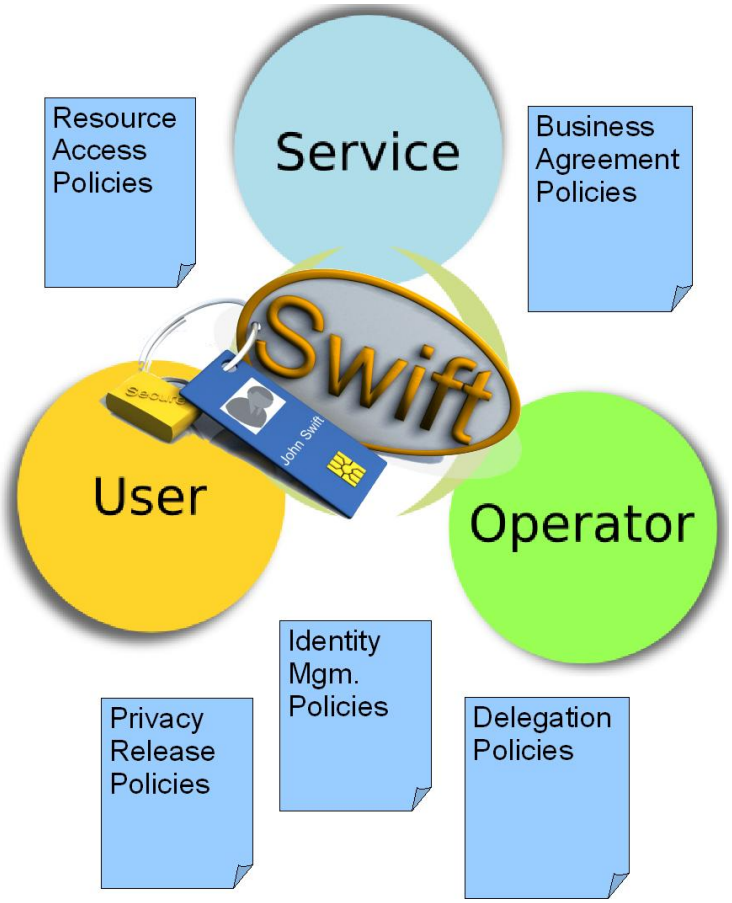
# Different type of policies

- identified different kind of policies
  - ➔ control the privacy of the user's identity
  - ➔ his/her data, as well as
  - ➔ interoperation between different participants.
- Decisions could not only be done locally,
  but have to be aligned with policies in other domains.

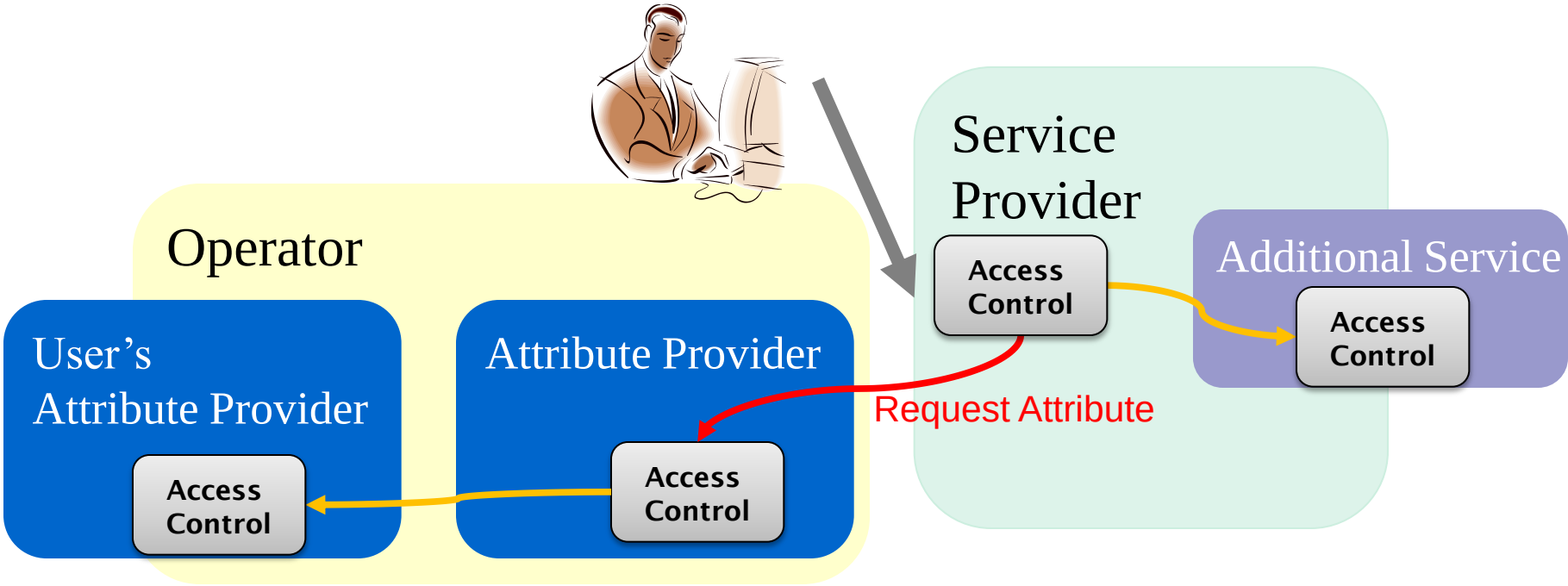


# Overview

- Example
- Important Aspects
- Proposed Architecture
- Extension to Policy Language
- Complexity of Evaluation
- Conclusion

# Example of Deductive Policies

- Access to service provider requires
  - approval of included service
  - access to additional values

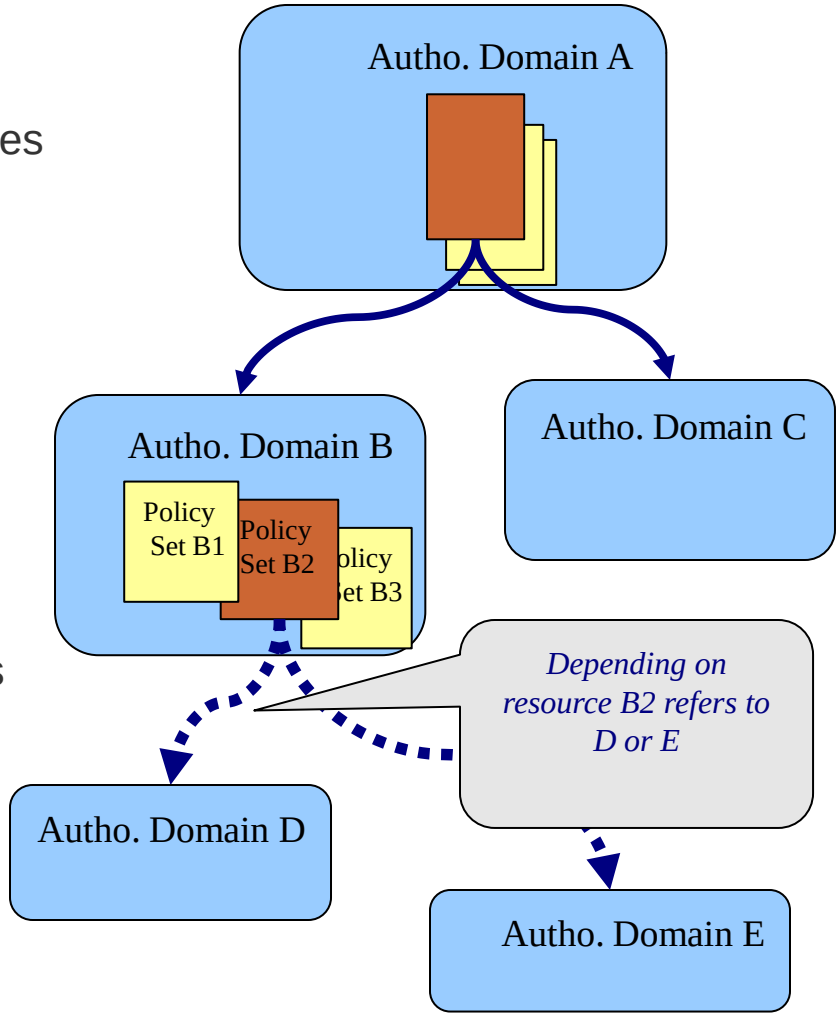



- Decisions could not only be done locally, but have to be aligned with policies in other domains.

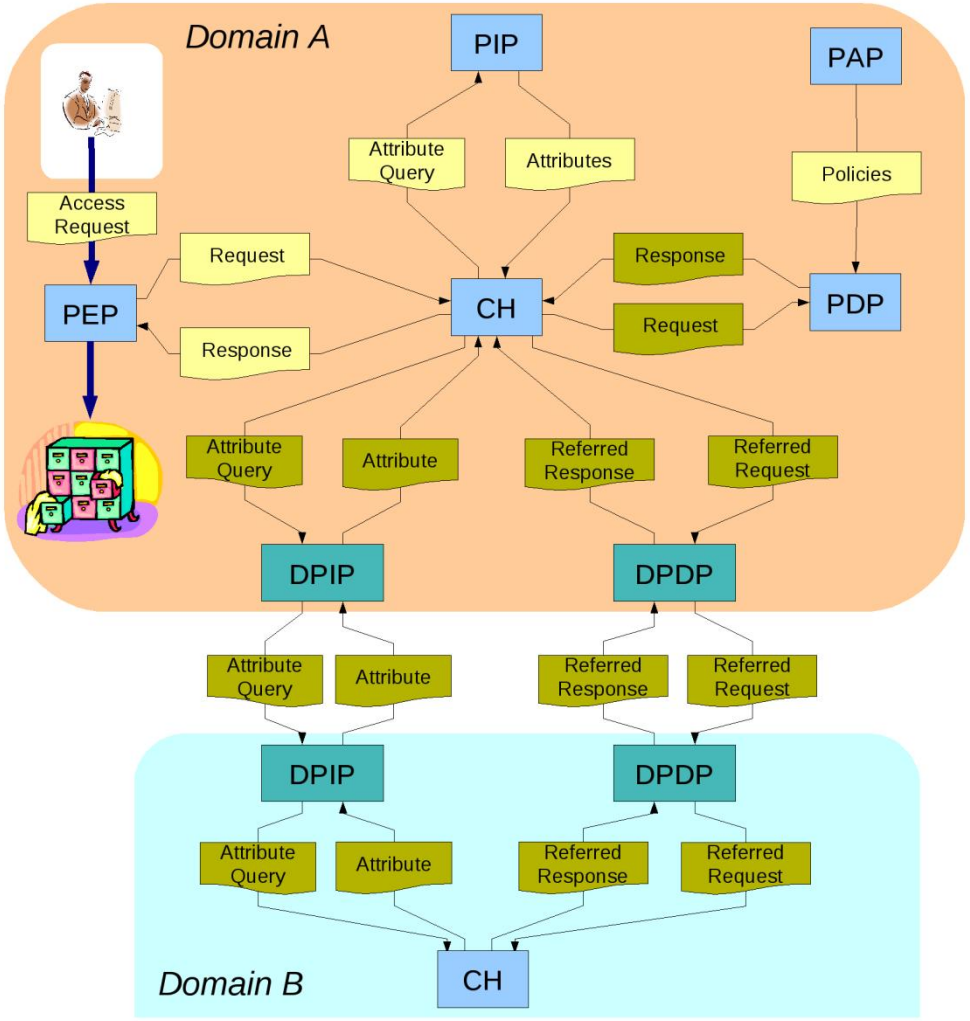
# Important Aspects

- **Authoritative Domain** as new structuring entity
- **Hierarchical requests:** circular dependencies among Authoritative Domains have to be avoided

- **Abstraction:** details about other policy of other domains are not required
- **Independent** :definition of policies
- **Adaptive:** Policies support dynamic references to other authoritative domains
- **Bridging:** translation of local attribute names and value space into those of referred ones
- **Transparency**: location of the referred domain with respect to end-points is not explicitly required inside a policy
- **Confidentiality**: internal details on the rules and the attributes leading to the decision can be kept confidential



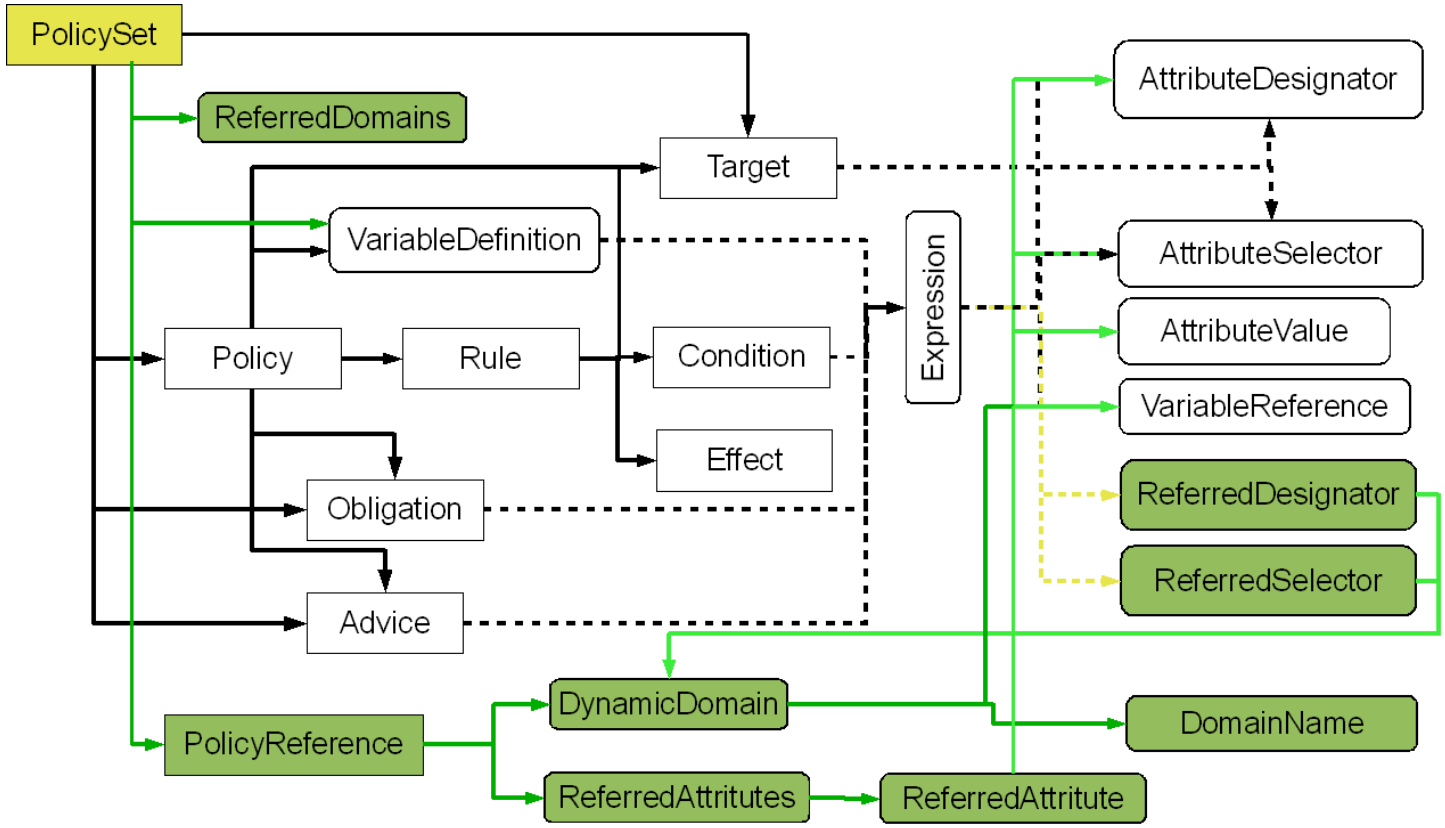
# Proposed Architecture




Extension to the existing XACML architecture

- Two new entities responsible for deducting
  - Attributes (DPIP)
  - Authorization request (DPDP)
- Messages are an extension of XACML

# Extension to XACML




- Redefinition of PolicySet
- Integration of distributed PolicyReference and local Policy through (new) combining algorithm

# Complexity of the Evaluation

- depending on combining algorithm
  - local policies could be evaluated first, avoiding referred requests
  - Initiate parallel evaluation (saving time)
- referred request takes extra communication time

- referred Domains are always unique at evaluation time (e.g, in contrast to Datalog)
- Circular dependencies are avoided

Complexity of the evaluation not changed compared to XACML

# Conclusion

- Deductive policies could be used to bridge different domains
  - distribute decisions
  - access to remote attributes
- *Authoritative Domain* provides a new abstraction level

- avoiding undeciadability problem of Datalog
- integration into existing XACML standard

- extra communication costs,
  but no general increase of evaluation complexity

- Application of Deductive Polices in various prototypes
  of the EU FP7 project SWIFT