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Secure Interoperation in a Multi-Domain Environment

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Mutli-domain System

A collection of (autonomous and heterogeneous) systems collaborating to accomplish common goals

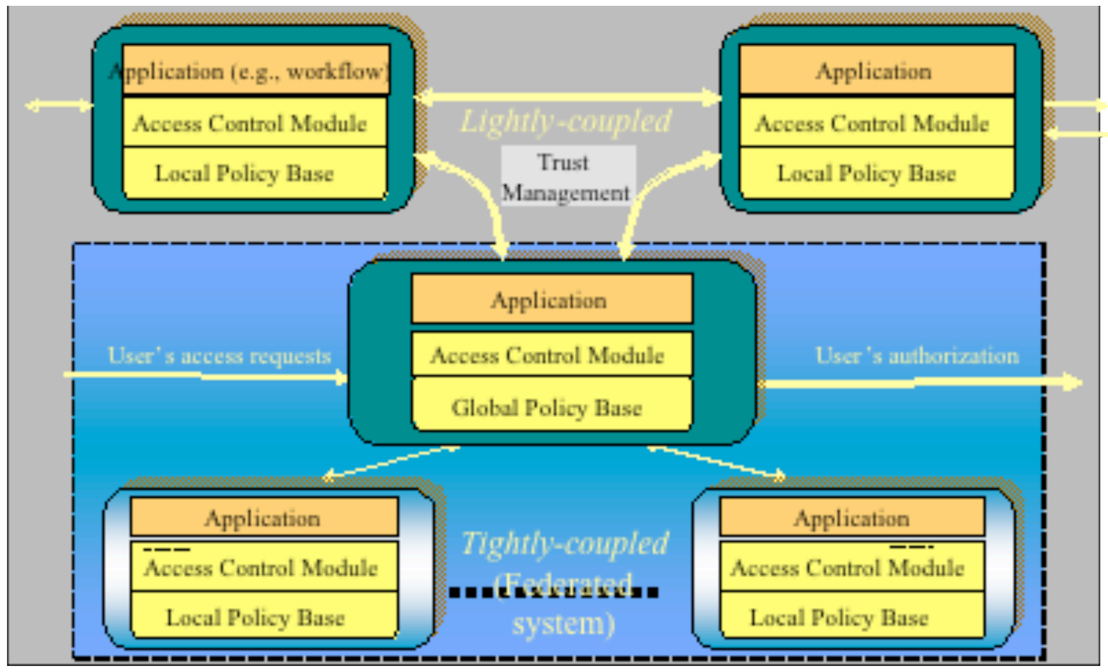
Security Issues

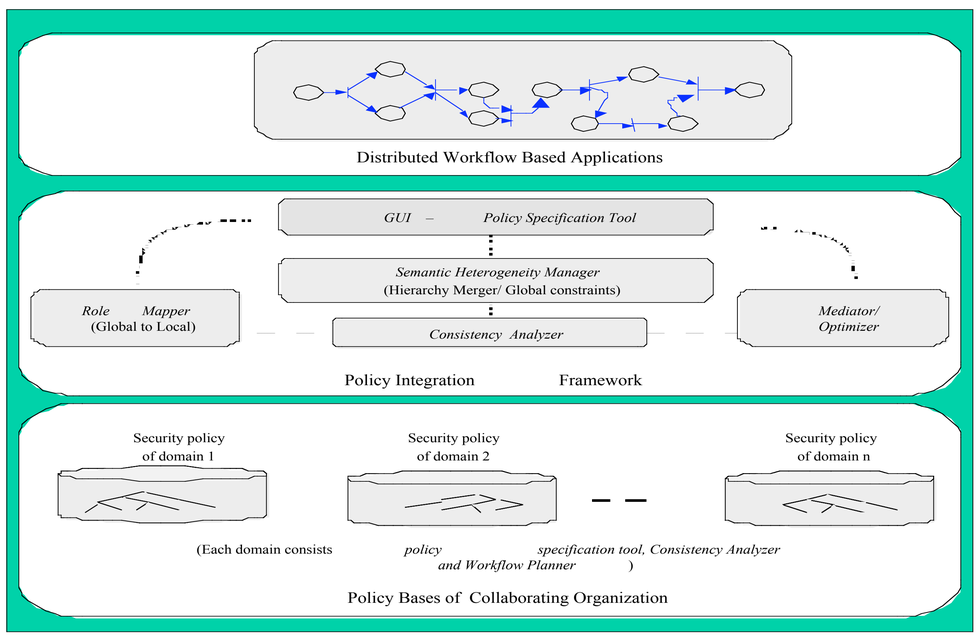
Semantic heterogeneity

- Different systems may use different security policies or variations of the same
- Naming(Structural) conflict on security attributes(rules)

Principle of autonomy If an access is permitted within an individual system, it must also be permitted under secure interoperation in a multi-domain environment

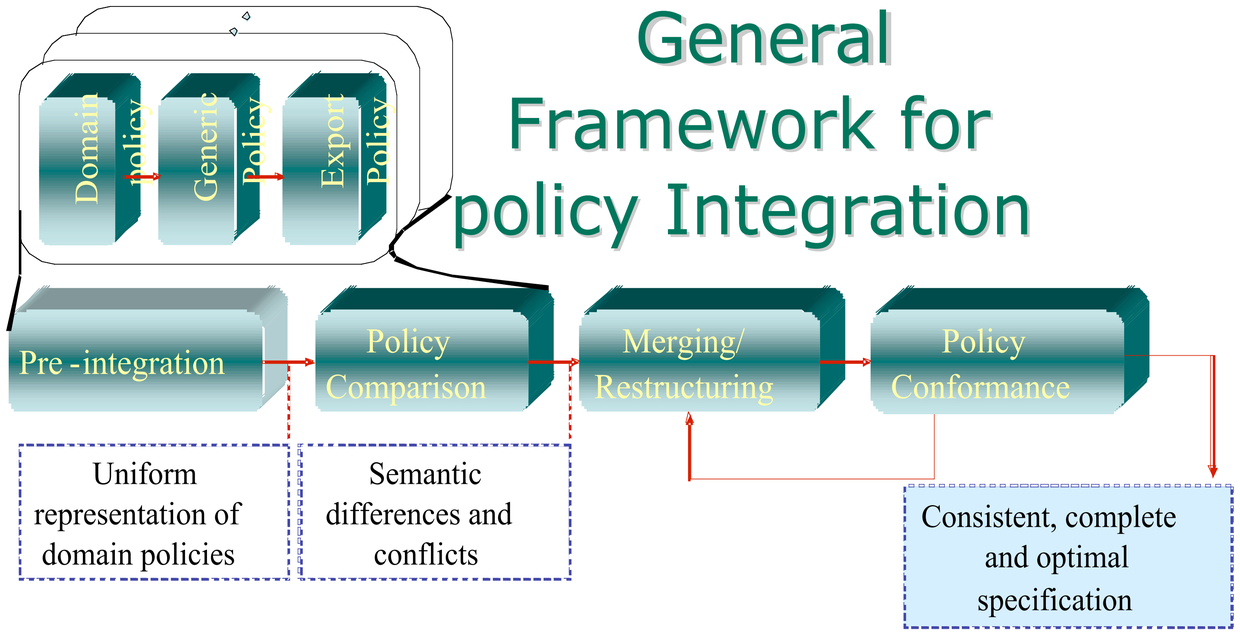
Principle of security If an access is not permitted within an individual system, it must not be permitted under secure interoperation



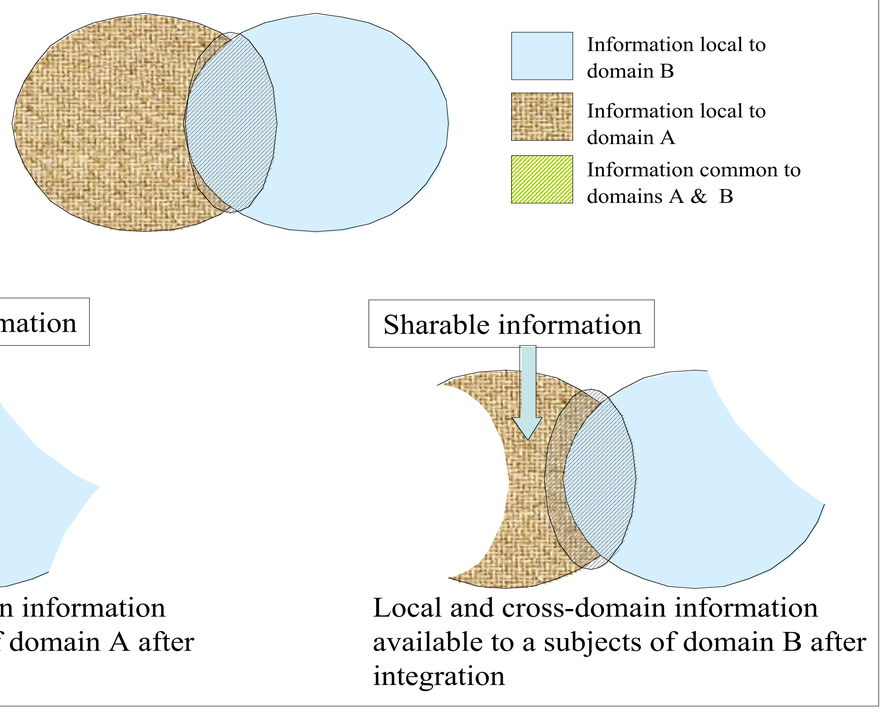


- **Preserving both security and autonomy may not be feasible. Which one can be compromised?**
  - Security principle should not be violated
  - Autonomy may be compromised for the greater benefit of information and resource sharing
- **An interoperation policy must:**
  - Maximize inter-domain information and resource accesses
  - Preserve the security of each collaborating domain
  - Be scalable
  - Allow evolution of domain policies
  - Minimize autonomy violations

General Framework for policy Integration



The overlapping region decides what information can be shared between cross domain subjects



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