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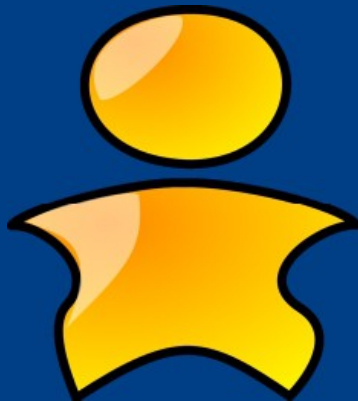
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An Agent-based Framework for Identity Management: The Unsuspected Relation with ISO/IEC 15504



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- Context
- SIM Project
- Policy engineering
- Policy deployment
- Multi-Agent Platform



- SIM stands for « Secure Identity Management »
- R&D project
 - Achieved in collaboration with the University of Luxembourg.
 - Funded by the National Research Fund Luxembourg.
- Main goals:
 - Make right management closer with business objectives
 - Automate the policies deployment



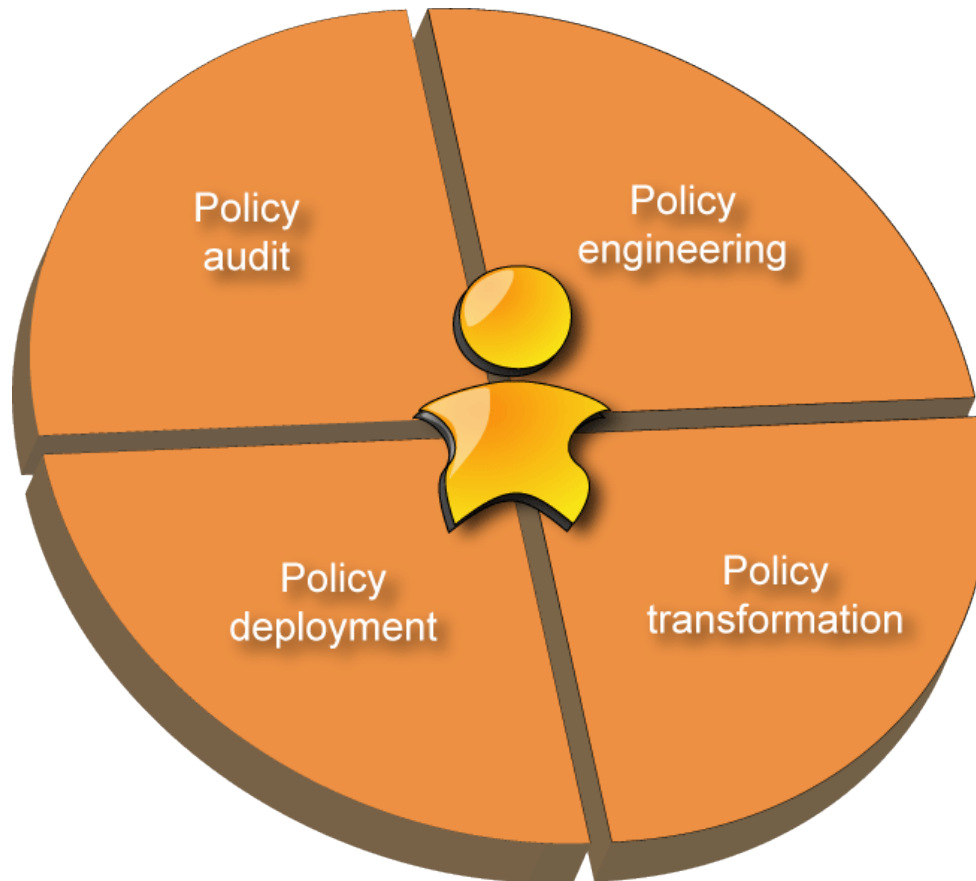
- Motivations:
 - Challenge to develop a Federated Identity Management.
 - Difficult to integrate heterogeneous applications to heterogeneous organizations
 - Existing IAM solutions are (most of time) monolithic, proprietary and non-flexible.



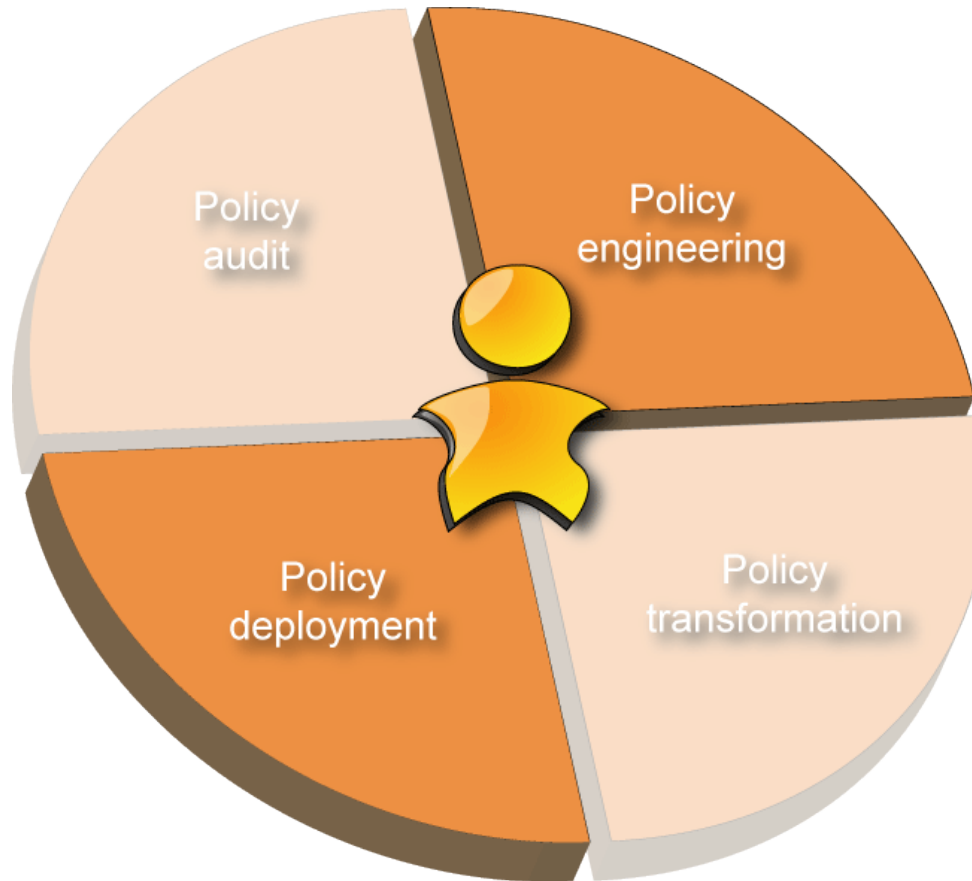
- Objectives:
 - Define responsibility concept.
 - Innovative policy engineering.
 - Develop a prototype for managing, deploying, maintaining and auditing access control policy.
 - Multi-agent system-based deployment.
 - Privilege open-source components and technologies.



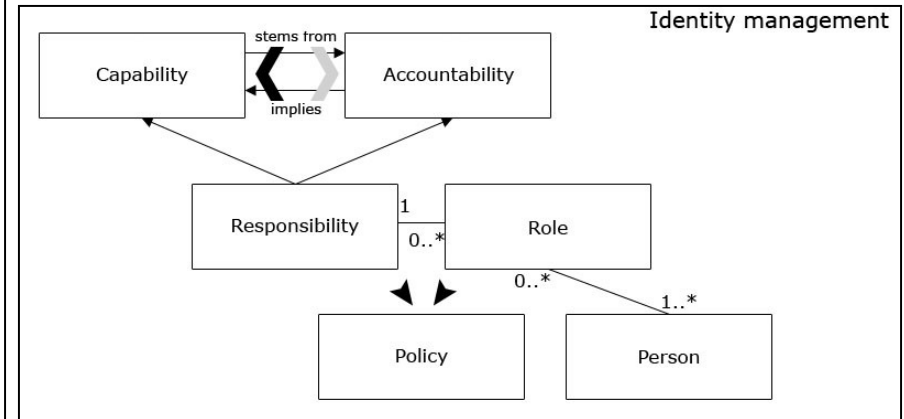
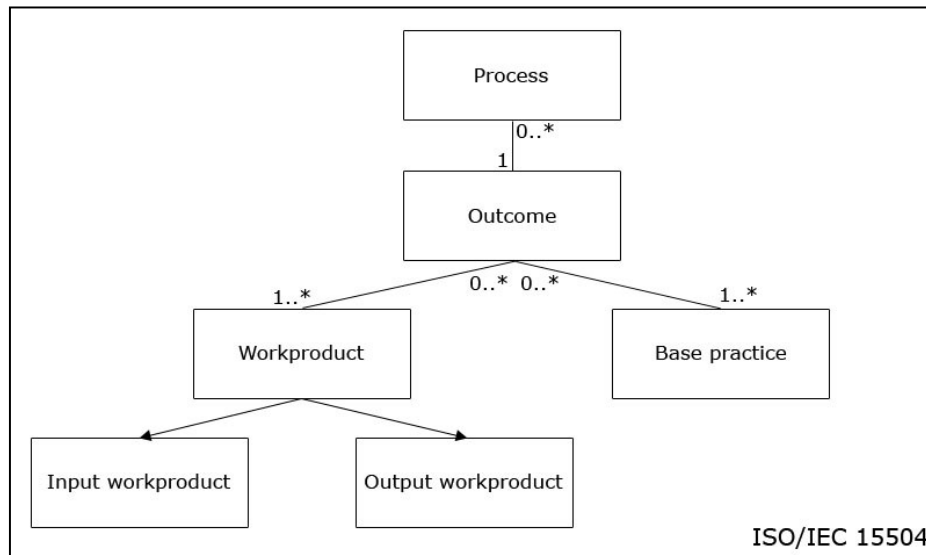
- Secure Identity Management



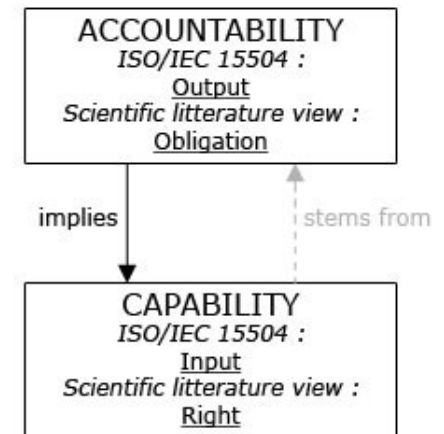
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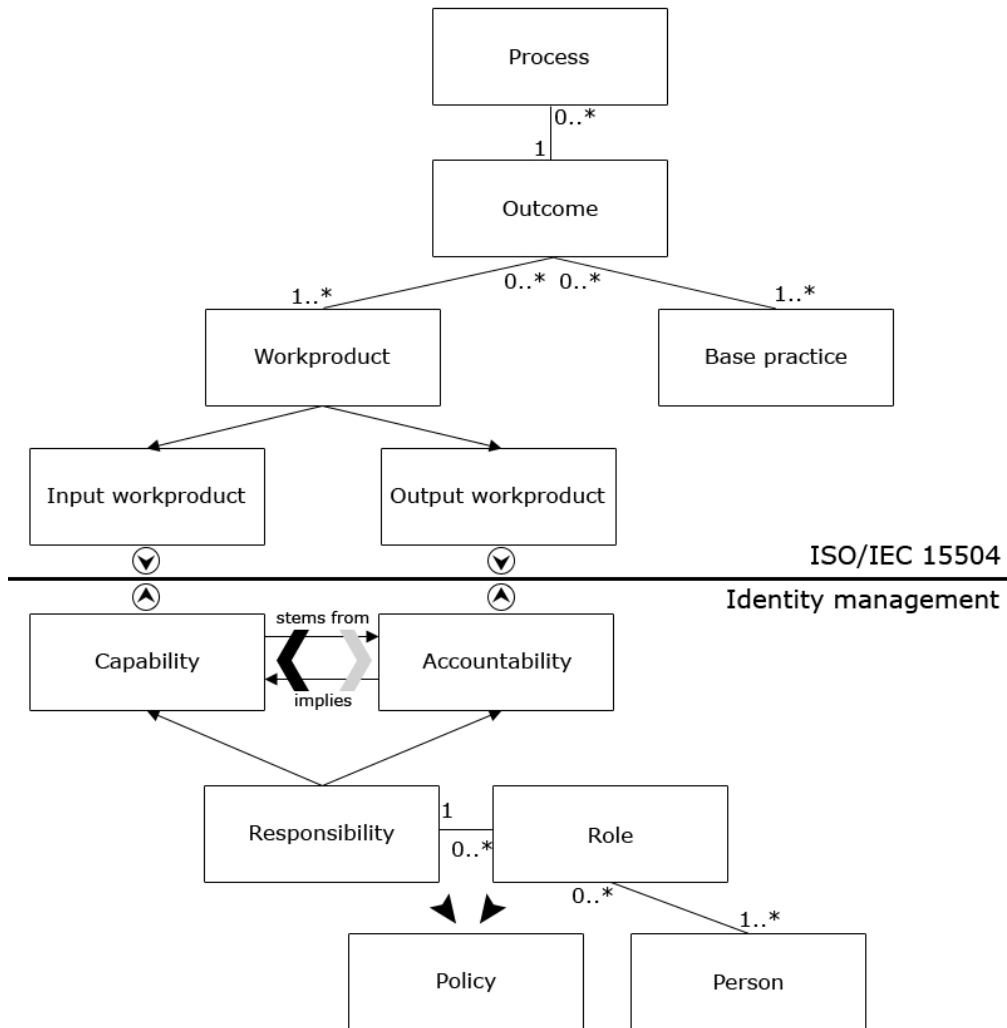


- Process-Oriented Policy Engineering
 - Combining responsibilities components to ISO/IEC 15504 concepts.



- Combining responsibilities components to ISO/IEC 15504 concepts.
 - *Input Workproduct:*
 - Right for a stakeholder to perform a activity
 - → *Capability*
 - *Output Workproduct:*
 - Stakeholder's obligation to issue an activity
 - → *Accountability*





- Conceptual connection between ISO/IEC 15504 and Identity management concepts.

- Policy transformation
 - XACML format

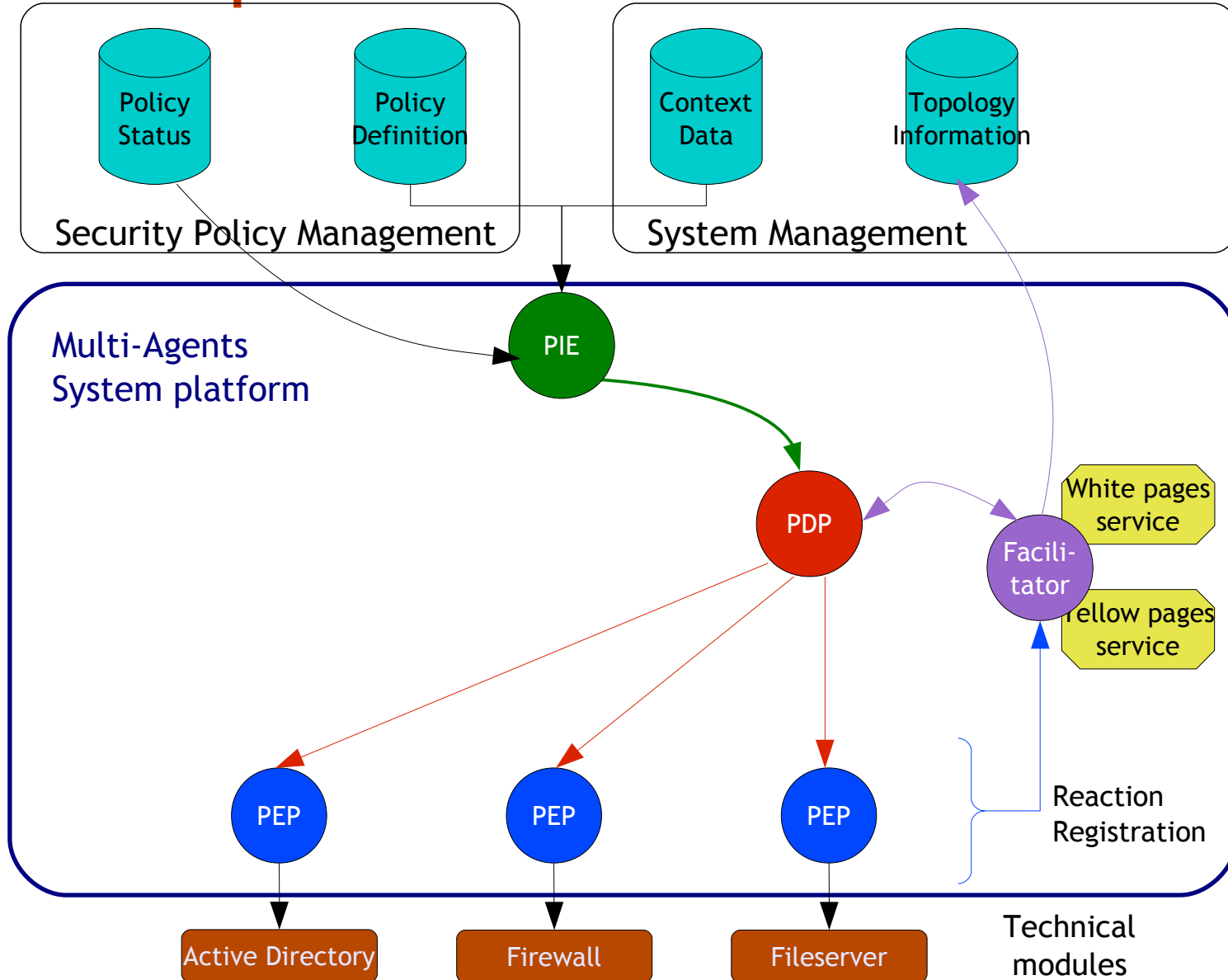


- Goal: apply policy on devices (fileserver)
 - Find all the devices concerned by the policy's rules.
 - The rules must be sent to the technical modules.
 - Each received rules must be transformed into script or command.
 - Specific scripts or commands must be executed .

- Agent-based policy deployment
 - Multi-Agent System (MAS) :
 - Several agents capable of mutual interaction,
 - Agents are proactive, reactive and social autonomous entities,
 - Agents are able to exhibit organized activity to meet their objectives.



Policy deployment



- Policy Instantiation Engine (PIE)
 - Interface between Policies and the agents.
 - Instantiates the business process (policies) regarding to some context data and policies instantiation.
 - Detects policies changes.
 - Sends modified policies (to apply) to PDP agent.



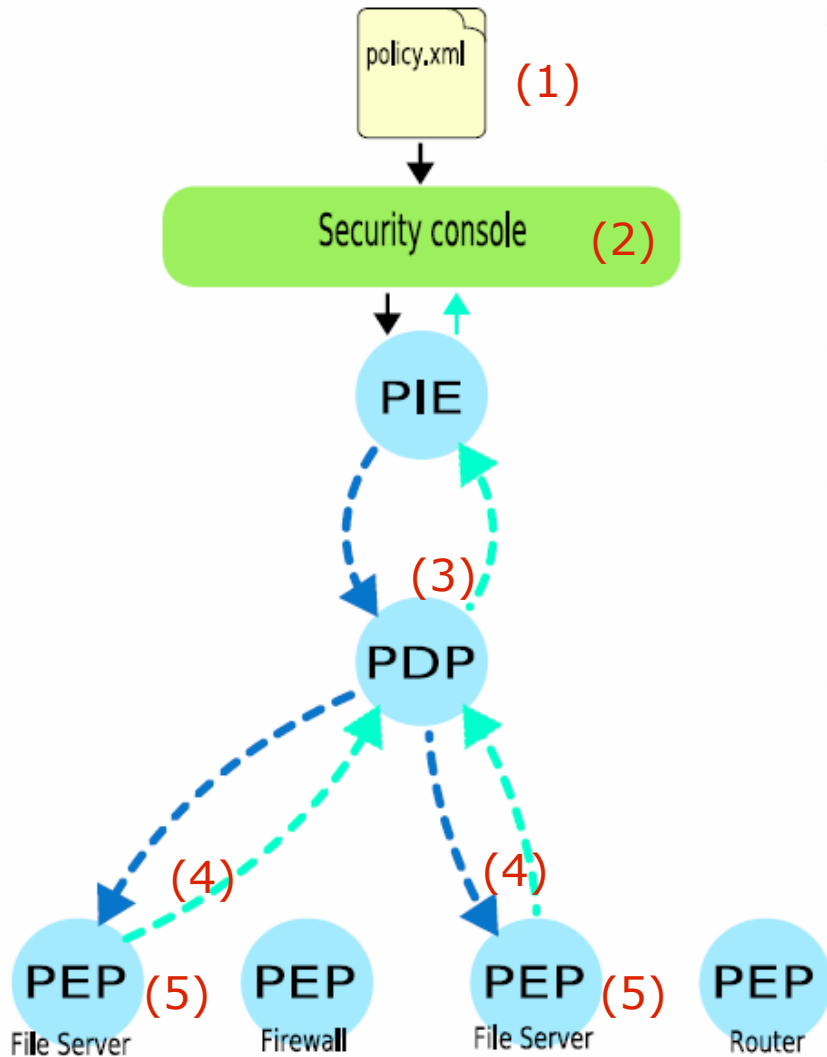
- Policy Decision Point (PDP)
 - Determines PEP agents concerned by the policies (with Facilitator agent help):
 - By localization (IP address, MAC address...),
 - By policy application capability (firewall, fileserver...).
 - Sends policies to concerned PEP.



- Policy Enforcement Point (PEP)
 - Must manage each device being part of SIM's technical layer.
 - Specific to the kind of devices or services offered by the device.
 - Transforms policies from abstract policy description format (e.g. XACML) in applicable scripts or rules.



Policy deployment



- (1) An xml file containing policy type and policy rules is created.
- (2) The policy is sent to the PIE through the security console (a policy editor).
- (3) The PIE sends the policy to the PDP.
- (4) The PDP dispatches the policy to the concerned PEP regarding the policy type
- (5) The PEP receive the policy and regarding the policy format map it to a set of corresponding commands and execute them.



- Right management facilitated by using a process approach based on business goals.
- Business-oriented approach facilitated by using ISO/IEC 15504 and Identity Management concepts.
- Obtained policies are deployed through a multi-agent system which provides:
 - Flexibility
 - dynamically addition of new PEP
 - Heterogeneity
 - if the associate agent is developed and configured correctly, all kind of system can be managed by SIM
- FIPA-ACL keep free agents to build messages with specific content (XACML for the moment).

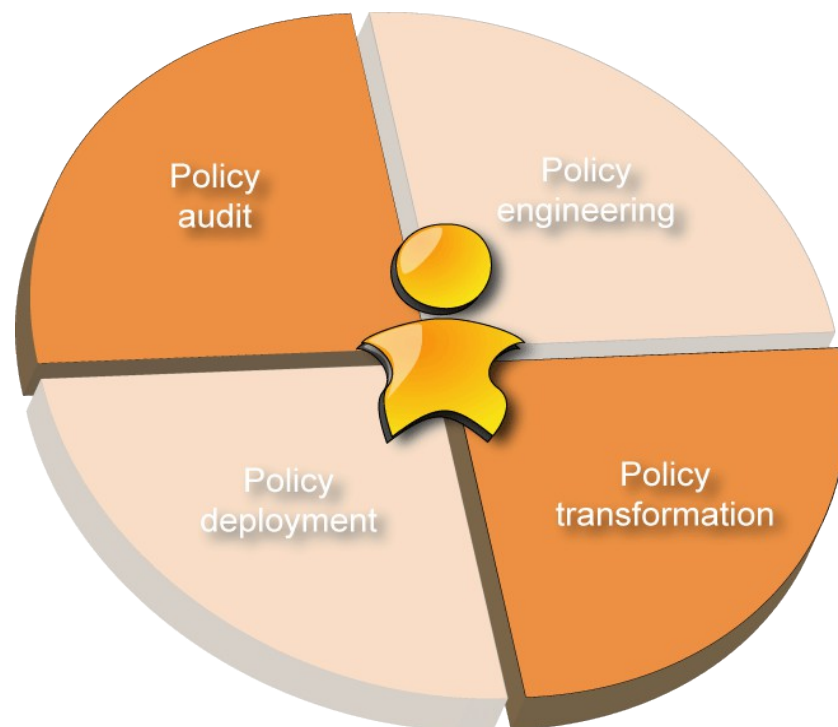


- **Policy transformation**

- Policy deduction strategy from the organizational layer
 - XACML
 - CIM-SPL
 - OrBAC
- Access to MAS platform through Web Service

- **Policy Audit**

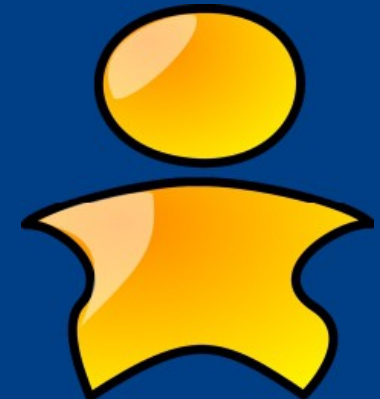
- Feedback about deployment
- Policy application status
 - Avoid differences between organizational & technical point of view



Thanks for your attention!
Questions?

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