

# Using a generic policy-based infrastructure for implementing business processes

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## Presentation outline

- **Background and open policy issues**
- **Policy concepts**
  - Policy
  - Policy rule
  - Policy group
  - Policy execution environment
- **Policy and Business processes**
  - Policy groups for business processes
- **Example:** SLA Negotiation Policies in the FORM project
- **Conclusions**
- **Future plans**

## Background and Open Issues



- Background work
  - TMF Policy Group
  - Imperial College work
  - IETF/DMTF: PCIM and CIM
  - IST projects (Tequila, Cadenus, Aquila, etc)
- Open issues
  - Policy taxonomy
  - Generic policy language
  - High/Low level policy organisation
  - Transformation between high and low level policies
  - Policy validation
  - Conflict resolution
  - Policy domains
  - Security concerns

## Policy concepts



- Event
  - Triggers the evaluation of a condition in a policy rule
- Condition
  - If a policy rule condition evaluates to be true an action will take place
- Action
  - A process that is executed depending on the evaluation of a condition in a policy rule
- Policy rule
  - Expresses policy
  - Format: when <event>, if <condition> then <action>
- Policy group
  - A set of policy rules that concern a particular application area
  - Has the form of a single policy rule
  - Format: when <event>, if <policy rules evaluation> then <policy group actions>

## Policy group features



- **Conflict free:** no unresolved conflicts among policies of the same policy group
- **Execution unit:** policy group rules can be evaluated and executed in the same process
- **Evaluation unit:** policy group rules can require the evaluation of other policy groups but not of individual policy rules in other policy groups
- **Processing unit:** A policy group can only be processed as a whole. Therefore, no partial evaluation or execution of policy rules within a group is allowed
- **Reusable unit:** A policy group can be reused in different policy execution environments
- **Distribution unit**
- **Deployment unit**

## Policy rule features



- **Processing unit**
- **Evaluation unit,** and
- Provided it comes with the specification of its events and its dependencies on other policy rules:
  - **Reusable unit**
  - **Distribution unit**
  - **Deployment unit**

## Policy group information



### Policy Group Priority\*

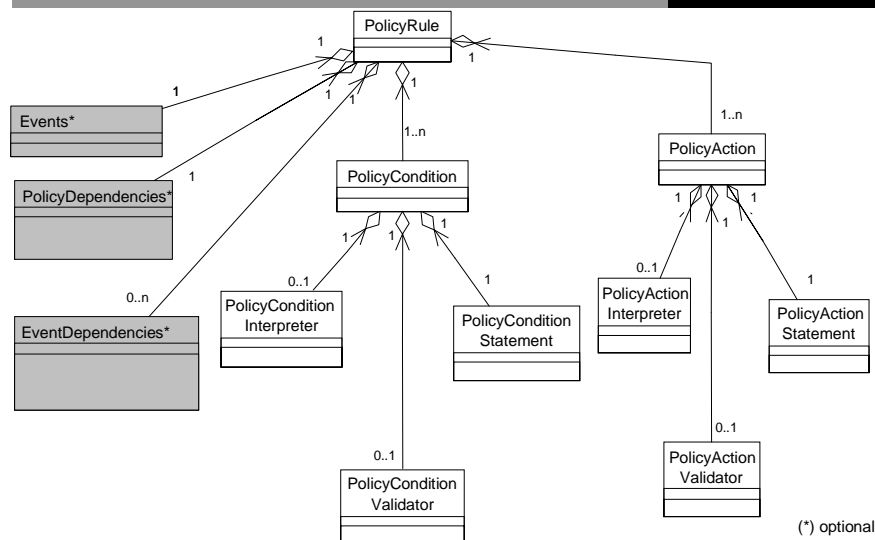
Policy group dependencies: <policy group ID> ...	Policy group ID (unique) Description Version number Rule evaluation pattern	Policy group events: <unique event ID, event description>
Event dependencies: <unique event ID> ...	Policy group rules: <policy rule> <policy rule> ...	

(\*) execution environment specific

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## Policy rule information



(\*) optional

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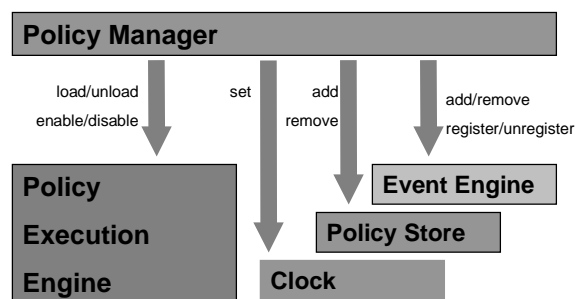
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## Policy model qualities



- Policy language independent
- Applies to different application areas
- Policy semantics are out of the model
- Security information can be added
- Compatible with current IETF/DMTF policy models
- A base for the implementation of policy language independent PDP/PEPs
- Separation between PDP/PEP infrastructure and policy specification, interpretation and enforcement

## Policy execution environment



## Policy groups & Business Processes

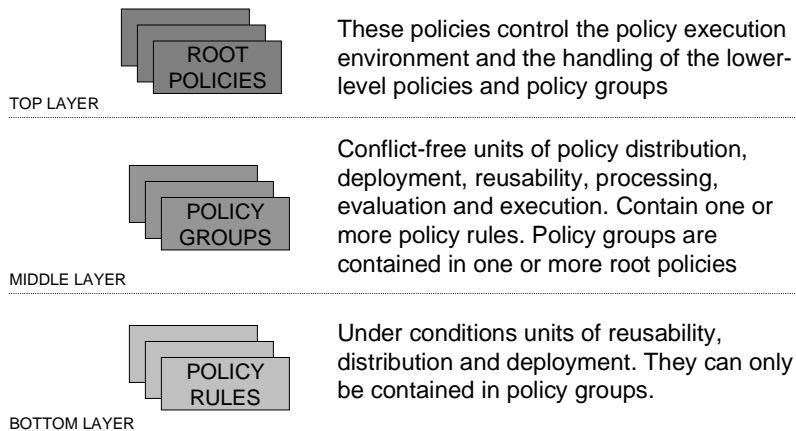


- Business processes can share the same policy execution environment
- Each business process is implemented by one or more policy groups
- A policy group may be reused for different business processes
- Policy rules (together with relevant events and dependencies) can be reused in one or more policy groups.

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## Policy Hierarchy for Business Processes



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## FORM: Goal and Approach



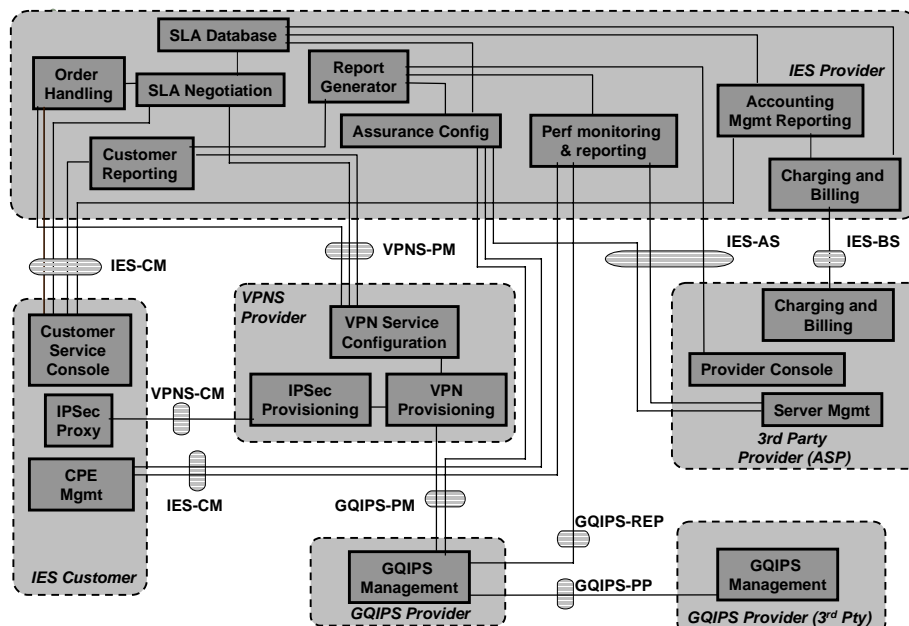
**GOAL:** To enable FORM's industrial partners to exploit services, software systems and software components for the management of an outsourced Inter-Enterprise Service (IES) supporting B2B communication requirements

**APPROACH:** Definition of an Open Development Framework (ODF) addressing operational needs for IES management and development of management systems based on software components (Building Blocks)

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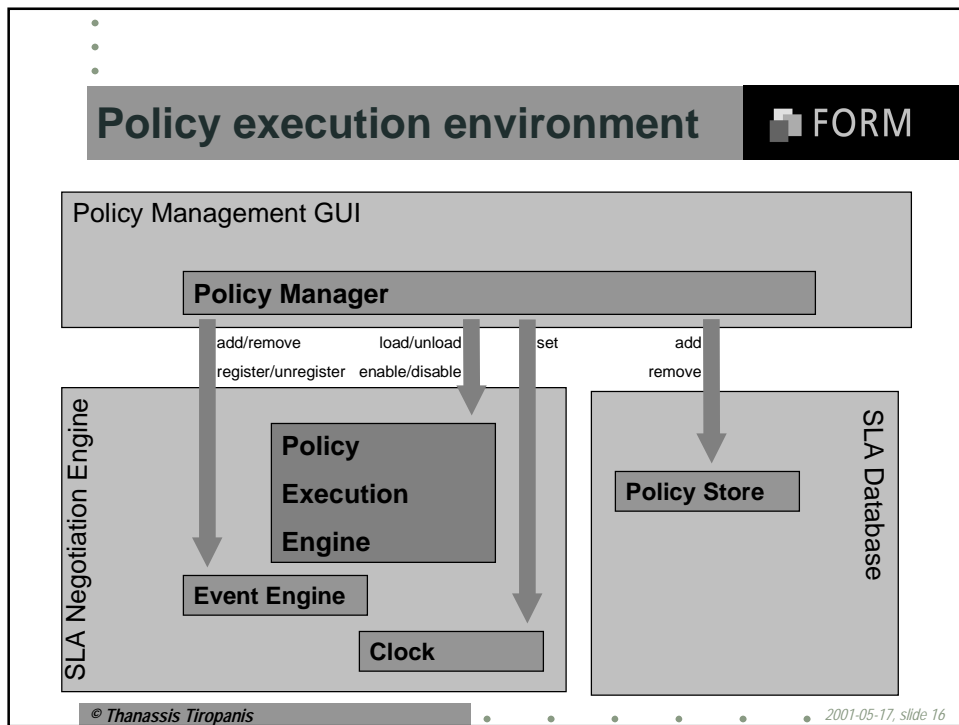
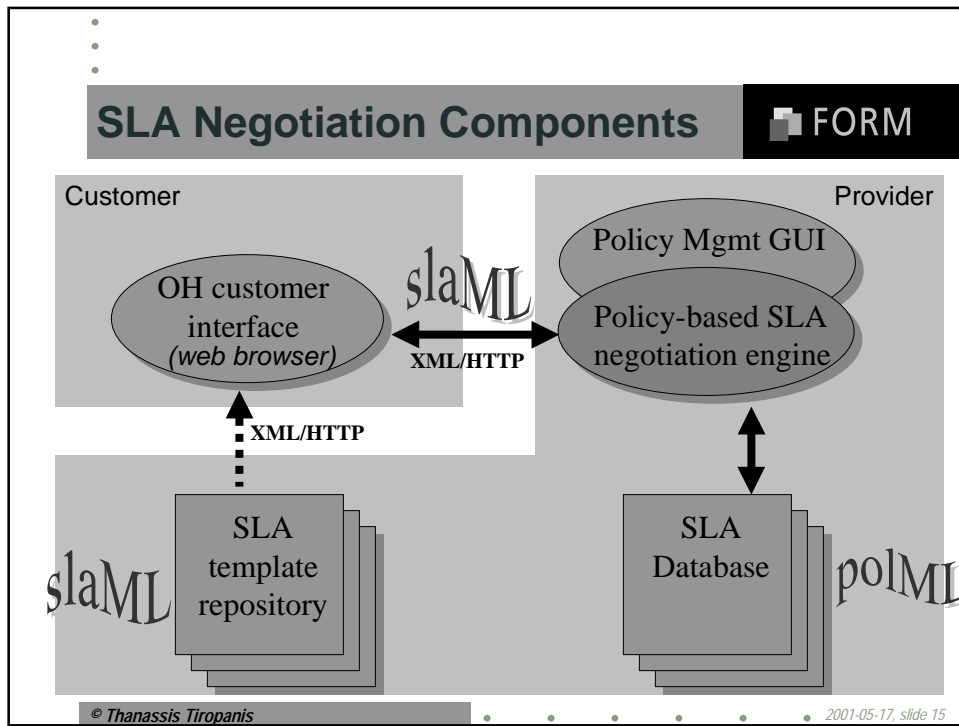
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## FORM Business Processes



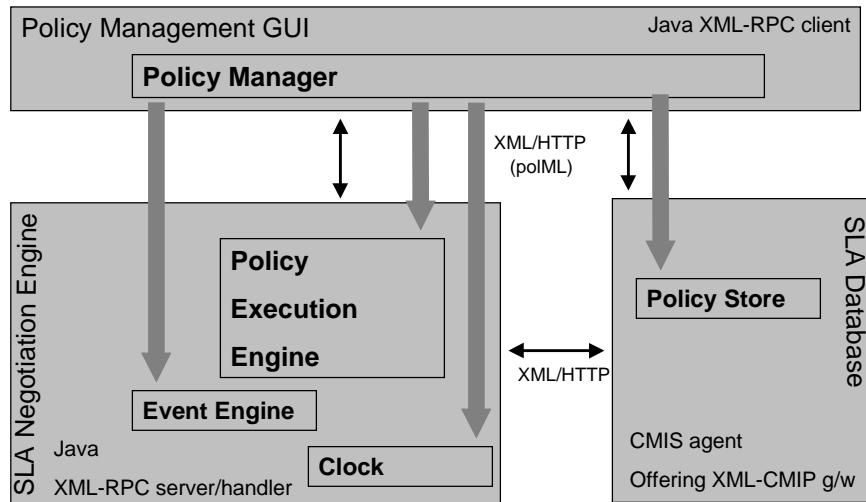
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## Implementation details



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## SLA Negotiation policy group



- Policy group ID: [http://www.ist-form.org/pol\\_grp/SlaNeg](http://www.ist-form.org/pol_grp/SlaNeg)
- Description: *Policy group for controlling SLA Negotiation*
- Version number: 3.1
- Rule evaluation pattern: *all, sequentially*
- Rules:
  - *When (SLA\_Request\_Event), if (param(bw) > 2Mbps) then (Reject\_SLA\_Request, Propose\_SLA\_Alternative (bw, 2 Mbps))*
- Events:
  - *SLA\_Request\_Event (when a SLA Request is Received)*
  - *SLA\_Customer\_Confirmation (when a customer accepts a proposed SLA)*
- Policy group dependencies:
  - *[http://www.ist-form.org/pol\\_grp/ResourceMonitor](http://www.ist-form.org/pol_grp/ResourceMonitor) (monitoring available resources)*
- Event dependencies:
  - *RM\_Low\_Resource\_Availability*

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## Conclusions



- A common policy execution environment for Business Processes is feasible
- The policy group concept can assist to using a policy based approach for business process implementation
- Added value from policy group reusability
- The generic policy model allows the execution of policies of different languages on the same execution environment
- Policy group specification for SLA negotiation is available

## Further work



- Policies for business processes
  - Catalogue of events, conditions and actions that relate to specific business processes
  - Catalogue of policy rules
  - Catalogue of policy groups
- Complete the implementation of the policy execution environment
- New policy groups for order handling and other business processes
- Policy domains
- Security concerns