Software Product Line Engineering

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LSI - Working Sessions
February 16th 2010, Santander (Spain)

About me

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Software Product Line Engineering

Software Product Line Holly Grail

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Example: Applications for mobile devices

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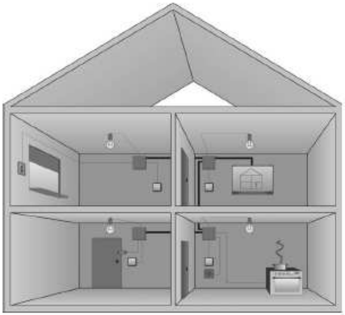
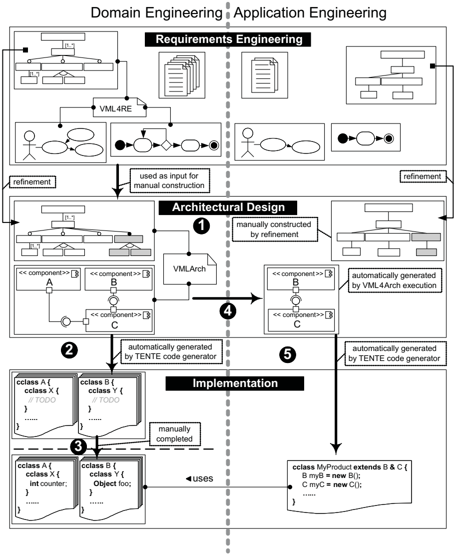
Example: Applications for automated houses



A typical SPL engineering process



Domain Engineering vs Application Engineering

Domain Engineering

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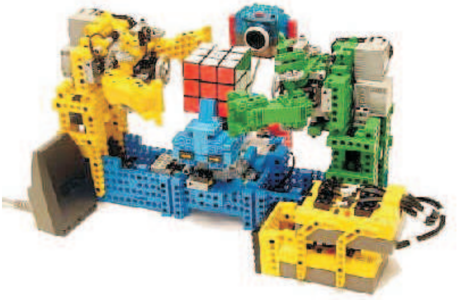

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4. Construction of specific products from domain engineering software assets should be as automatic as possible.

Running Example: Lock Control Framework

As part of a Smart Home SPL, a door lock control framework must be designed. This lock control is placed on doors of rooms whose access must be controlled. Several options are available to end users acquiring a specific Smart Home software installation:

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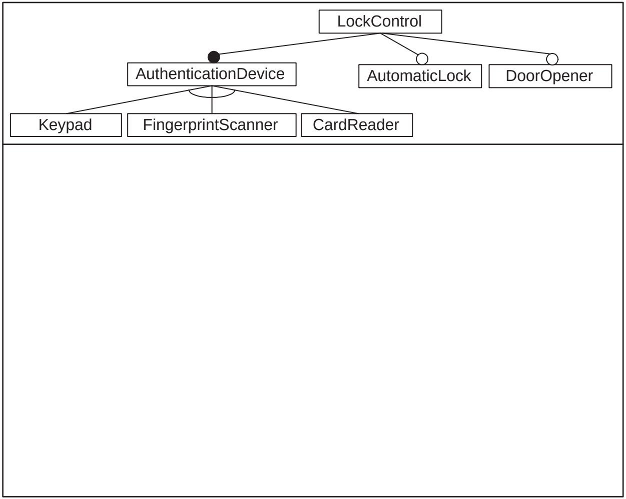
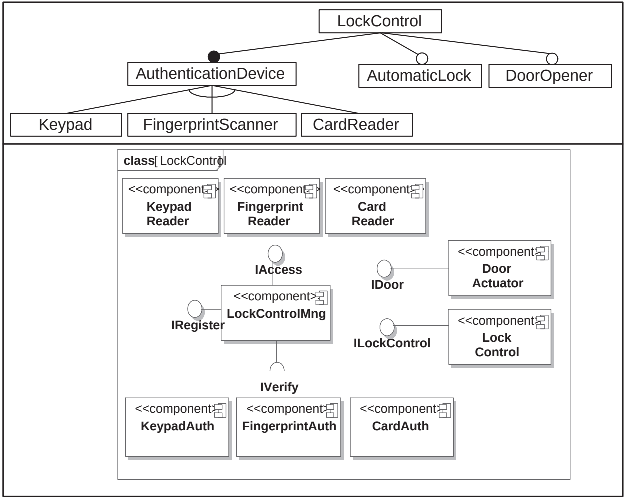
- Optionally, sliding doors that open automatically can also be used.

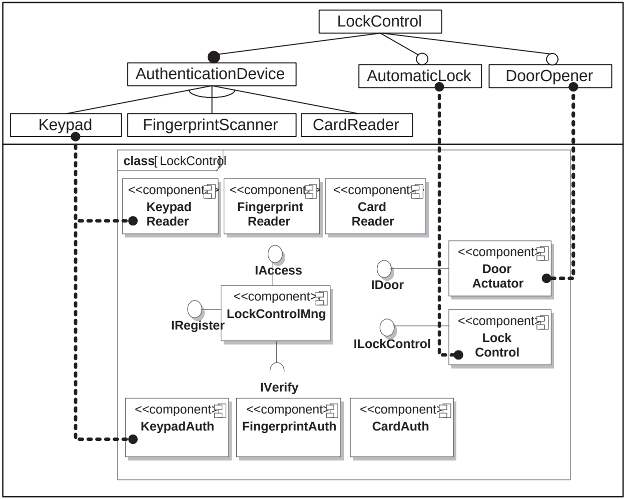
Variability Specification



Variability Realisation/Design



Linking between specification and realisation



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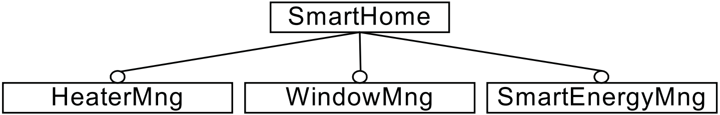

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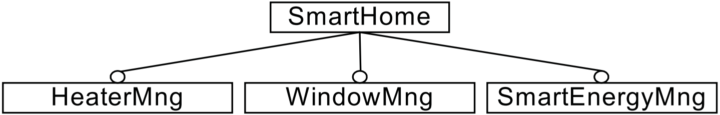

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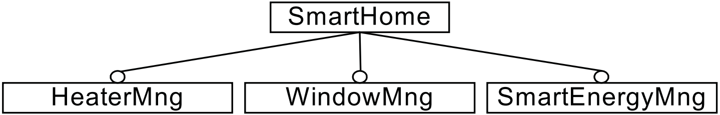

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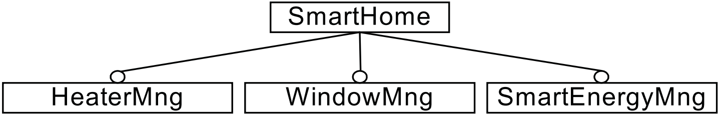

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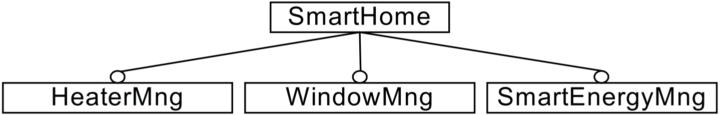

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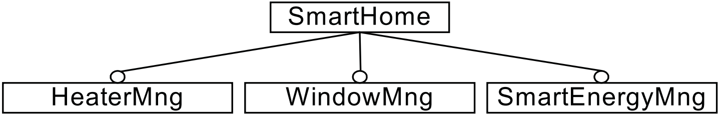

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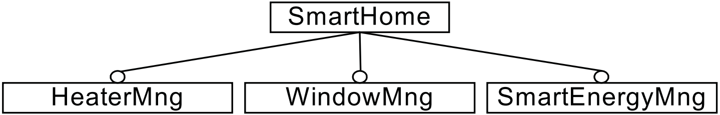

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  3. Number of remaining configurations.

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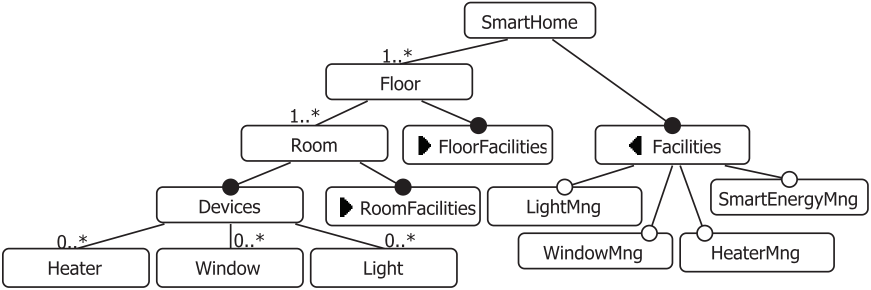
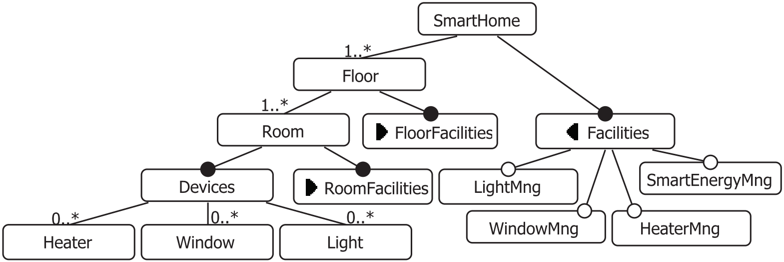


Challenges of constraints involving clonable features



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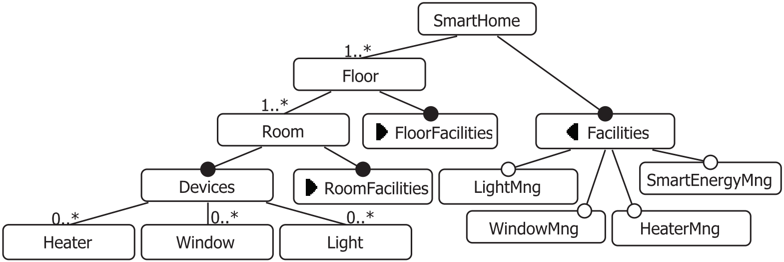

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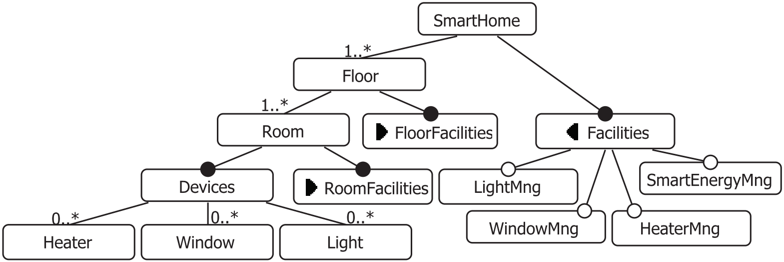

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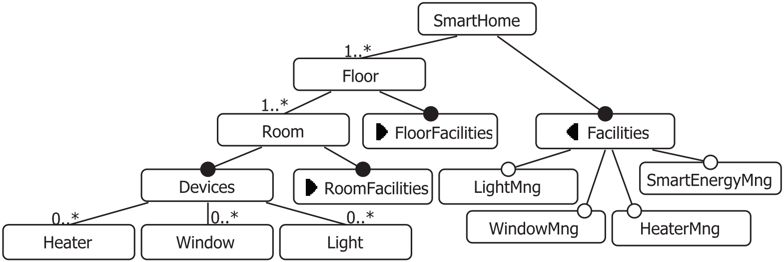

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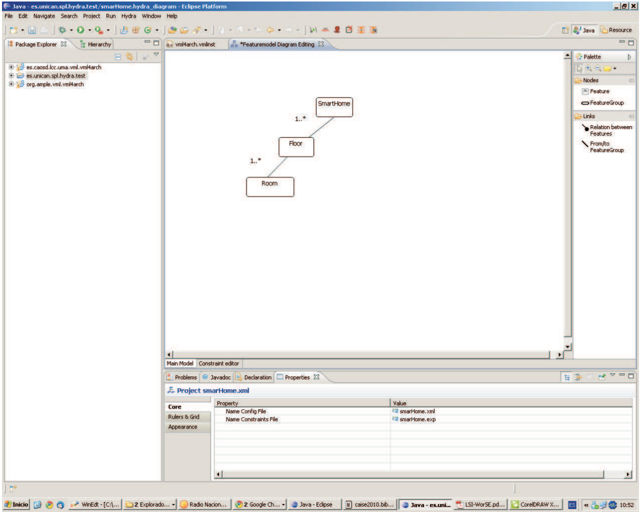
- If LightMng is selected in a Room, a Light, at least, must also be selected in that a room.

Hydra


Java - es.unican.spl.hydra.test/smarHome.hydra_diagram - Eclipse Platform
Package Explorer
Hierarchy
es.caosd.lcc.uma.vml.vml4arch
es.unican.spl.hydra.test
org.ample.vml.vml4arch
vml4arch.vmlinst
*Featuremodel Diagram Editing
SmartHome
1..*
Floor
1..*
Room
Palette
Nodes
Feature
FeatureGroup
Links
Relation between Features
From/to FeatureGroup
Main Model
Constraint editor
Problems
Javadoc
Declaration
Properties
Project smarHome.xml
Core
Rulers & Grid
Appearance
Property
Value
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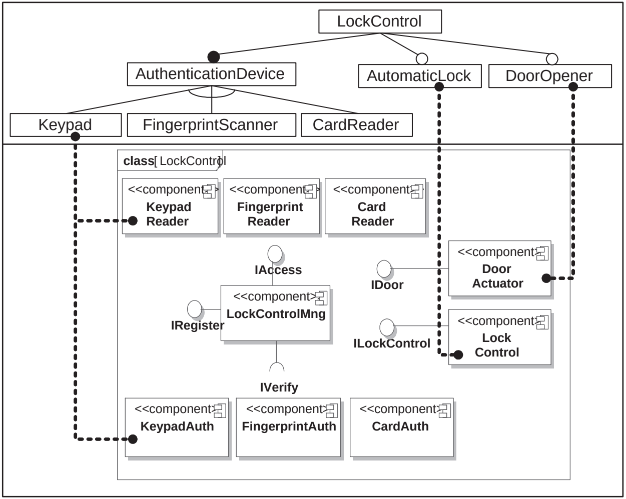

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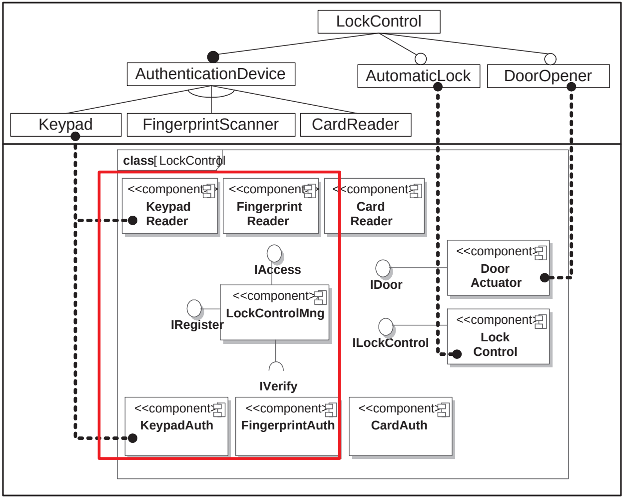

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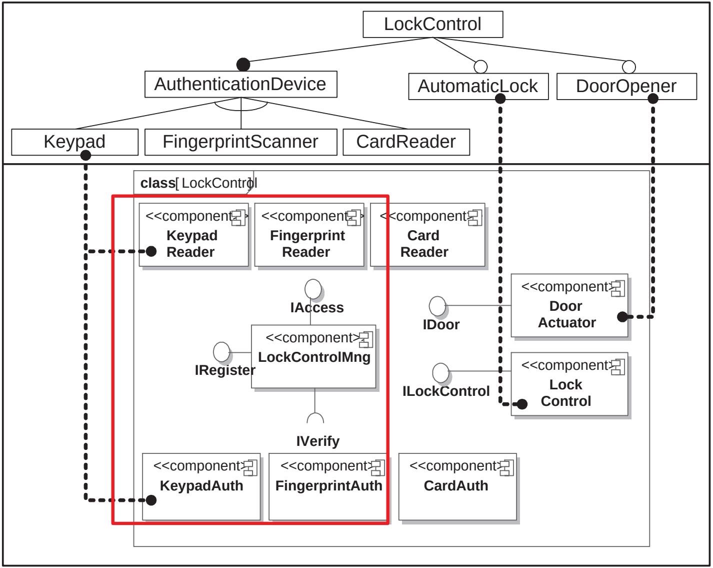

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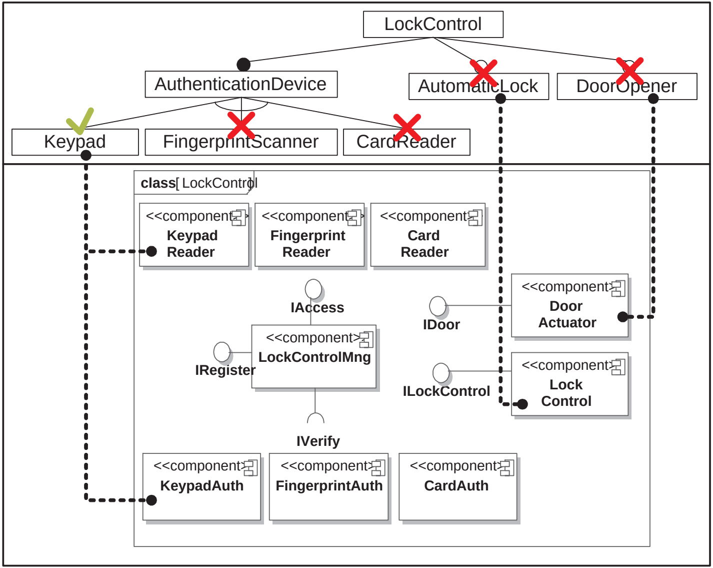

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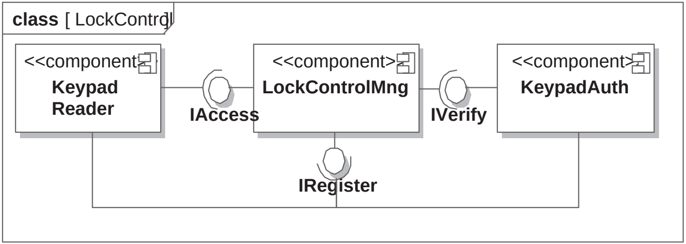
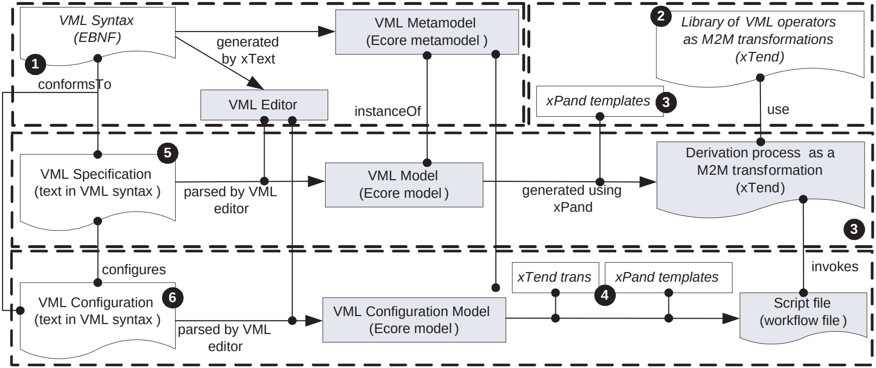


VML compilation process



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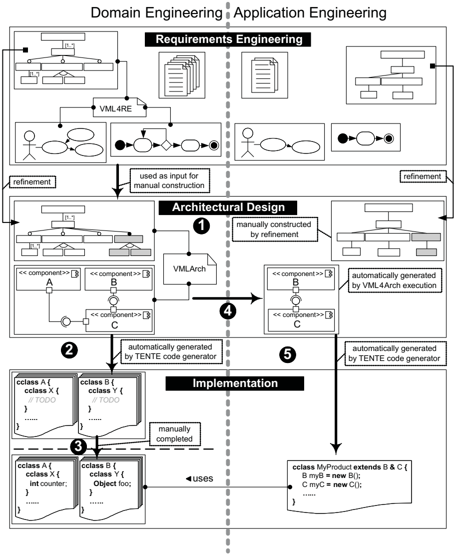

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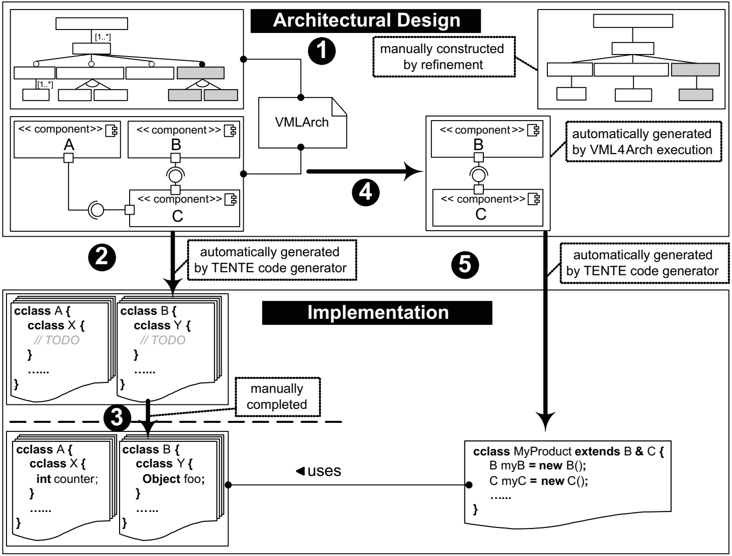
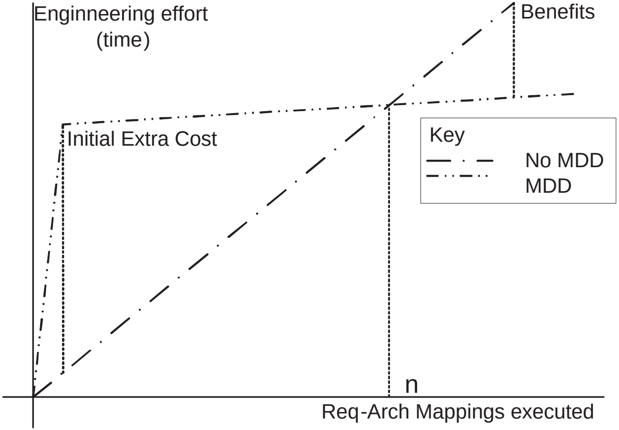


Is SPL cost-effective?



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2. TENTE: http://caosd.lcc.uma.es/spl/TENTE
3. Hydra: http://caosd.lcc.uma.es/spl/hydra

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Questions ?