Feature model in the SPL framework

- Not restricted to document/communicate
- Product/model derivation
  - reminder of previous course
- Safe composition and automated reasoning
- Configurators

Feature Models

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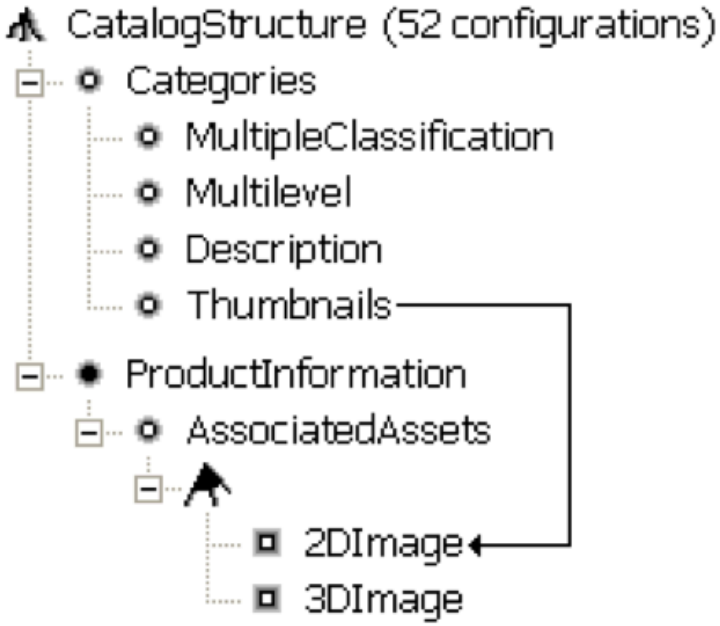
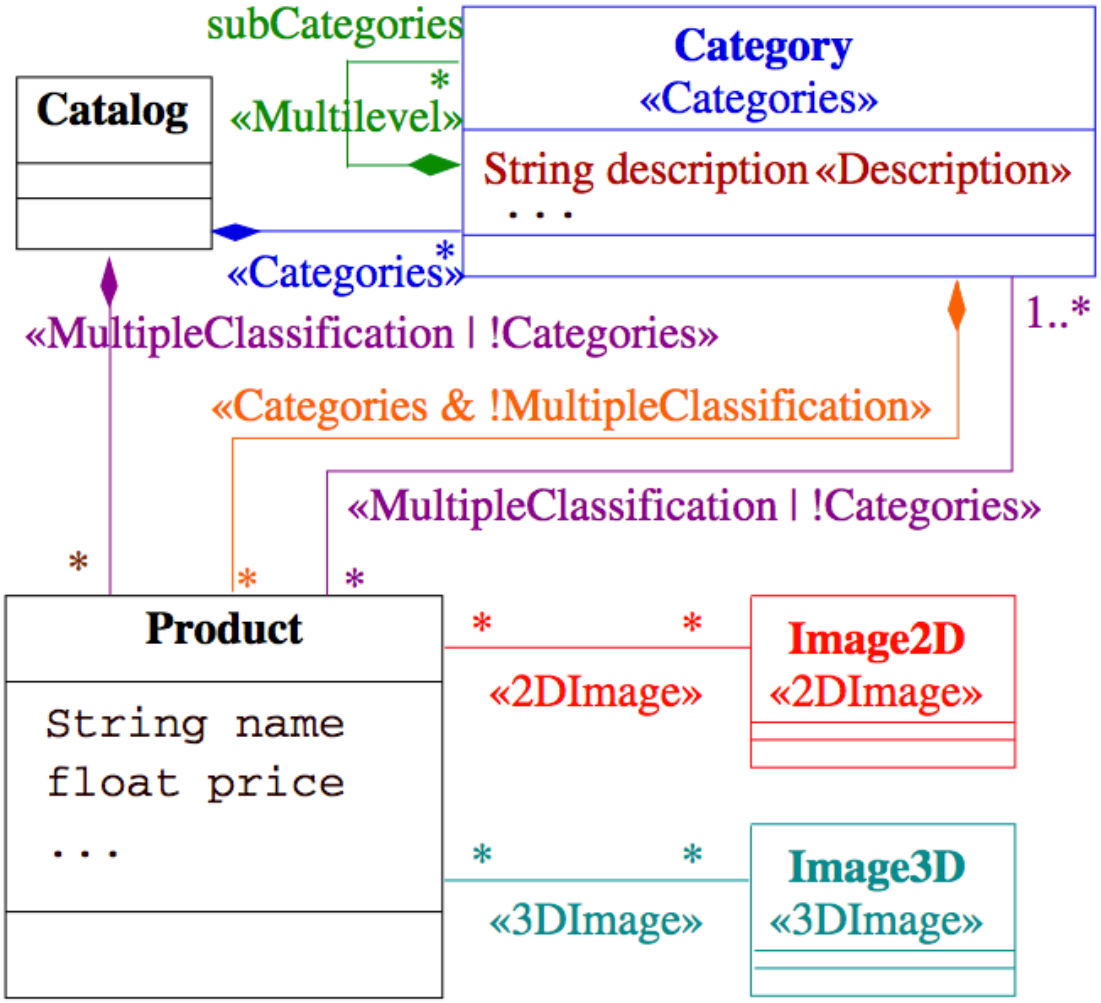
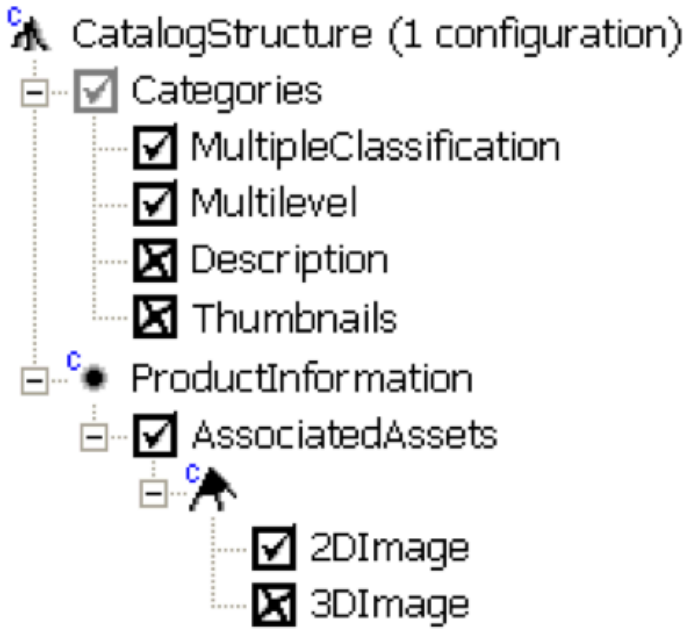
other artefacs

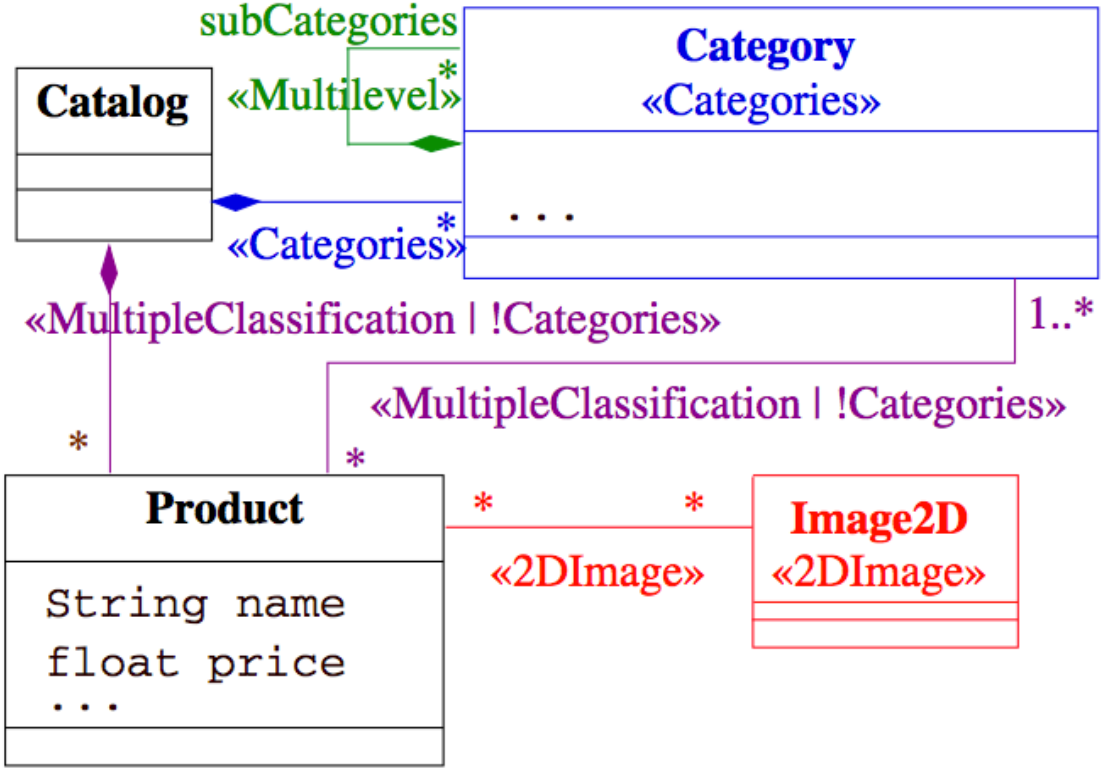
(what we can do with feature models)

“features” in feature models: a label

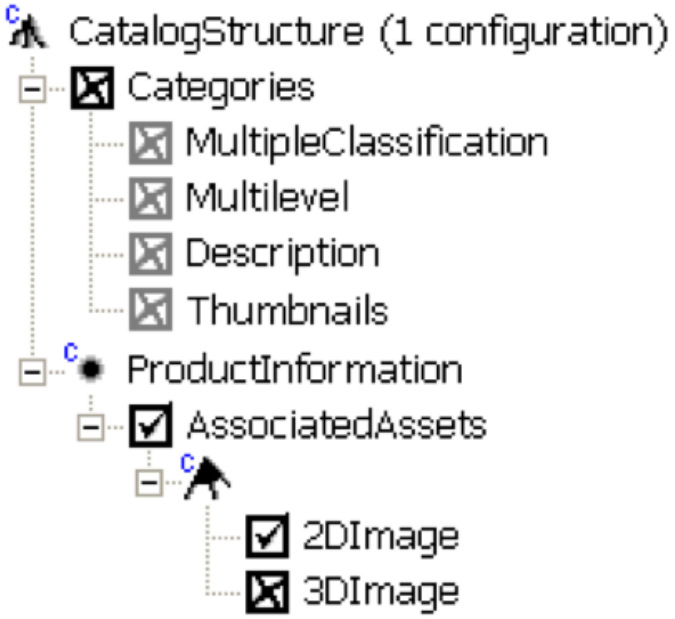

CatalogStructure (52 configurations)
Categories
MultipleClassification
Multilevel
Description
Thumbnails
ProductInformation
AssociatedAssets
2DImage
3DImage

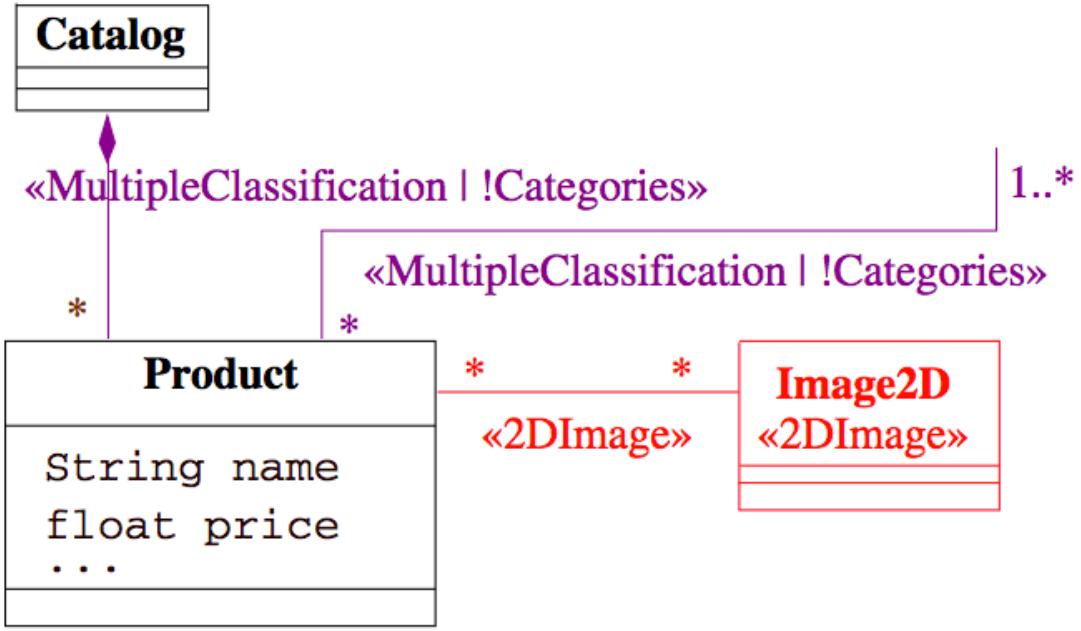

subCategories
Catalog
«Multilevel»
Category
«Categories»
String description «Description»
. . .
«Categories»
«MultipleClassification | !Categories»
«Categories & !MultipleClassification»
«MultipleClassification | !Categories»
1..*
Product
String name
float price
. . .
«2DImage»
Image2D
«2DImage»
«3DImage»
Image3D
«3DImage»


CatalogStructure (1 configuration)
Categories
MultipleClassification
Multilevel
Description
Thumbnails
ProductInformation
AssociatedAssets
2DImage
3DImage

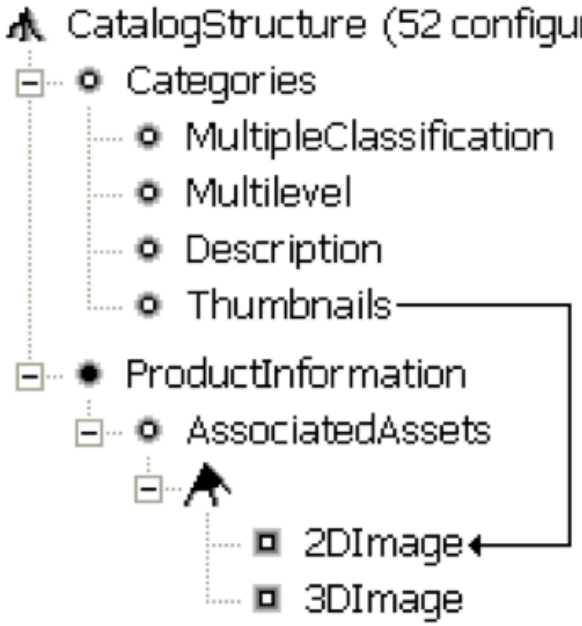

subCategories
Catalog
«Multilevel»
Category
«Categories»
...
«Categories»
«MultipleClassification | !Categories»
1..*
«MultipleClassification | !Categories»
Product
String name
float price
...
«2DImage»
Image2D
«2DImage»

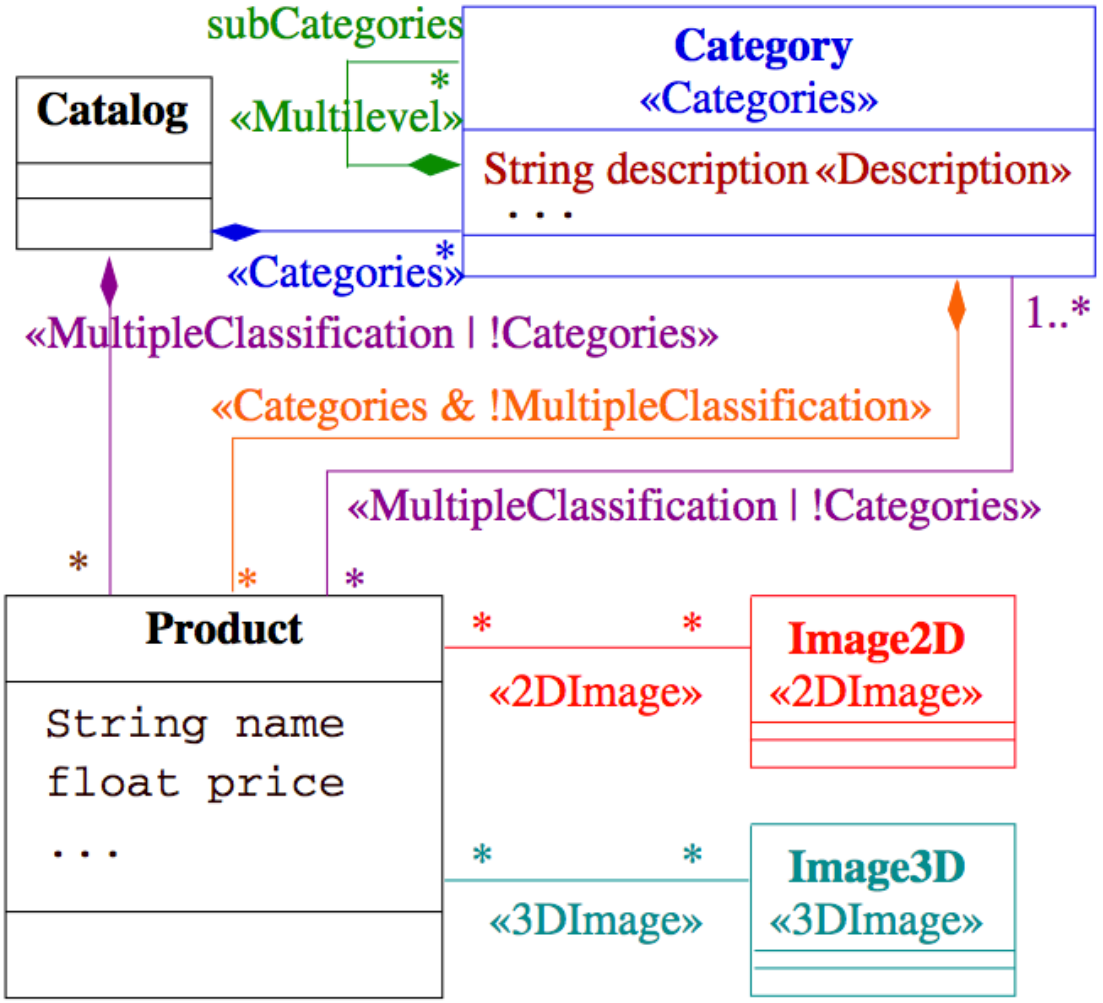
Ooops


CatalogStructure (1 configuration)
Categories
MultipleClassification
Multilevel
Description
Thumbnails
ProductInformation
AssociatedAssets
2DImage
3DImage

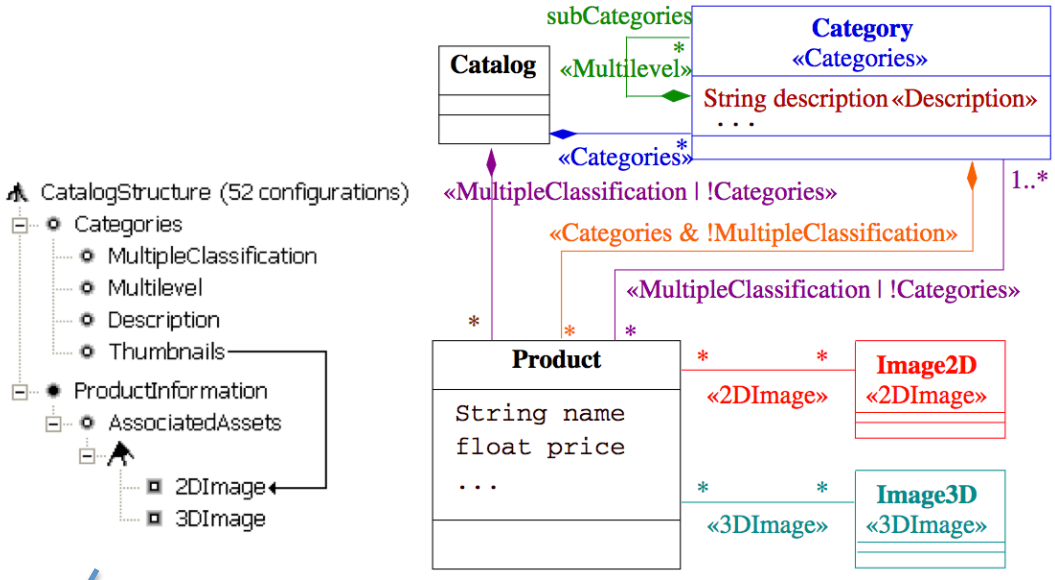

Catalog
«MultipleClassification | !Categories»
1..*
«MultipleClassification | !Categories»
*
*
Product
String name
float price
...
*
*
«2DImage»
Image2D
«2DImage»

Safe composition? No!





Safe composition: how does it work?



$$
\begin{aligned}
q_{FM} \quad &= \\
\textit{root:} \quad & cs \wedge \\
\textit{child-parent:} \quad & (\texttt{ct} \Rightarrow \texttt{cs}) \wedge (\texttt{mc} \Rightarrow \texttt{ct}) \wedge (\texttt{ml} \Rightarrow \texttt{ct}) \wedge \\
& (\texttt{ds} \Rightarrow \texttt{ct}) \wedge (\texttt{tn} \Rightarrow \texttt{ct}) \wedge (\texttt{pi} \Rightarrow \texttt{cs}) \wedge \\
& (\texttt{aa} \Rightarrow \texttt{pi}) \wedge (\texttt{i2} \Rightarrow \texttt{aa}) \wedge (\texttt{i3} \Rightarrow \texttt{aa}) \wedge \\
\textit{group:} \quad & (\texttt{aa} \Rightarrow \textit{choice}_{1,2}(\texttt{i2}, \texttt{i3})) \wedge \\
\textit{mandatory:} \quad & (\texttt{cs} \Rightarrow \texttt{pi}) \wedge \\
\textit{additional:} \quad & (\texttt{tn} \Rightarrow \texttt{i2})
\end{aligned}
$$

Another propositional formula