



Feature Modeling

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[Feature and Feature Model]

- A feature is an increment in program development or functionality
 - A feature model is a compact representation of all products of the Software Product Line in terms of its features
- Feature models were first introduced in the Feature-Oriented Domain Analysis (FODA) method

[Types of Features]

- A feature usually has a simple name
 - It facilitates communication among stakeholders
- Features in a feature model can be classified as
 - Mandatory features
 - Optional features
 - Or-Features
 - Alternative features (XOR)

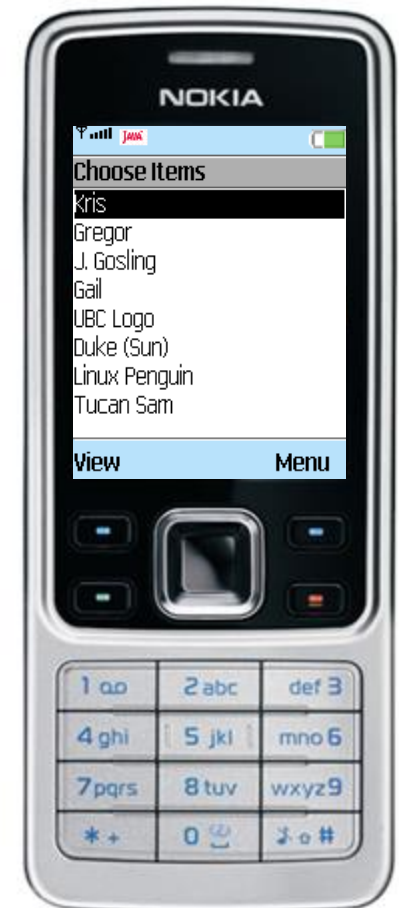
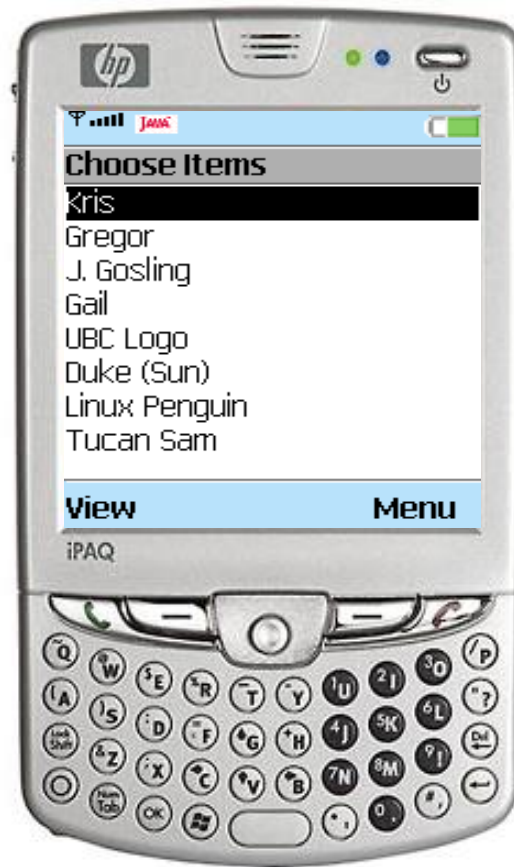


The MobileMedia Example

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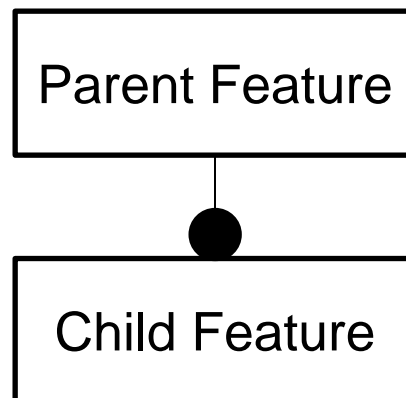
<http://www.dcc.ufmg.br/~figueiredo>

[The MobileMedia SPL]



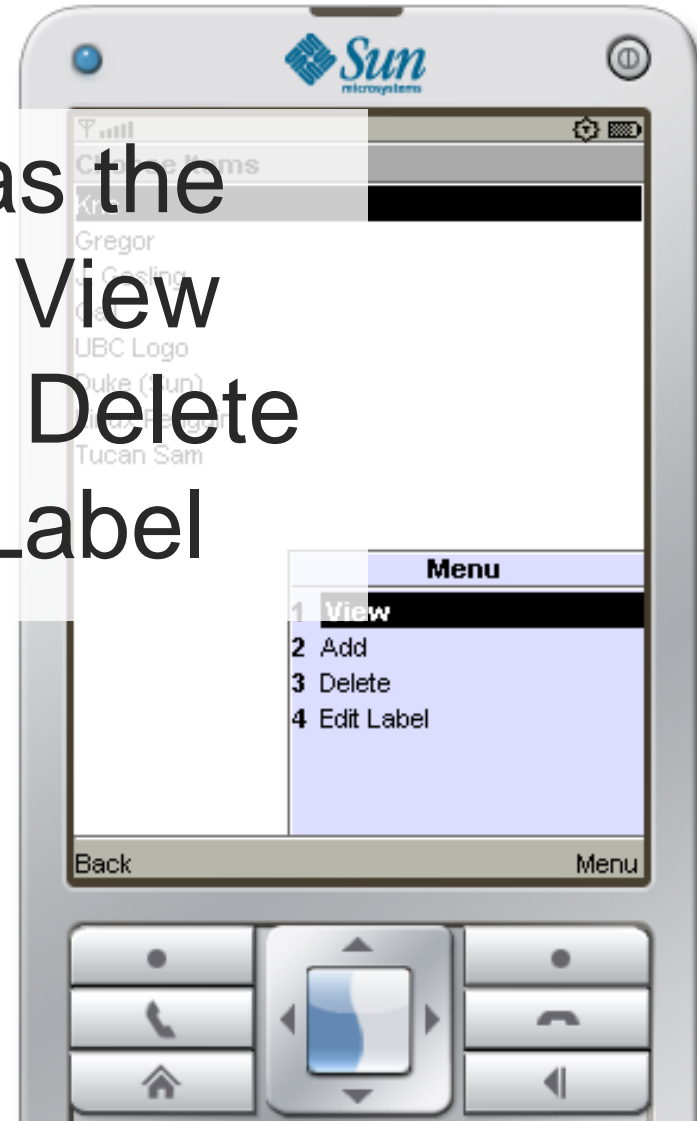
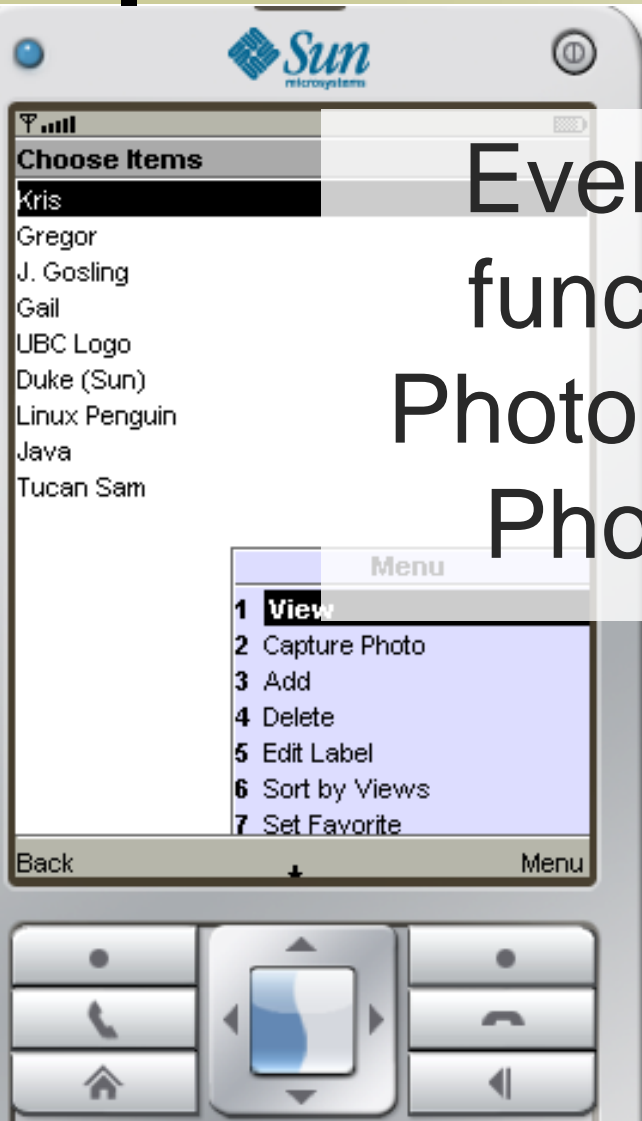
[Mandatory Features]

- The relationship between a parent feature and its child feature is categorized as mandatory if the child feature is required in all SPL products
- Representation



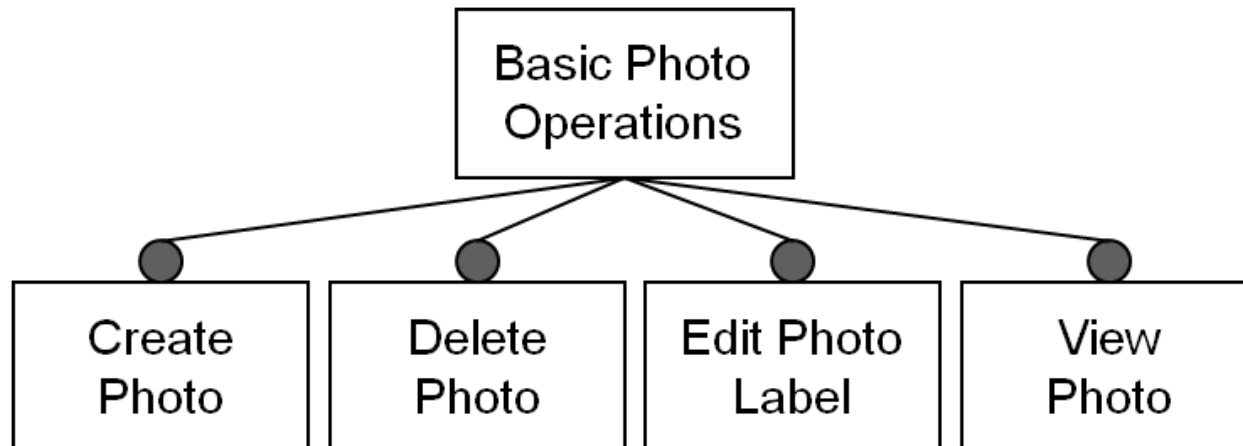
Example of Mandatory Features

Every product has the functionalities to View Photo, Add Photo, Delete Photo and Edit Label



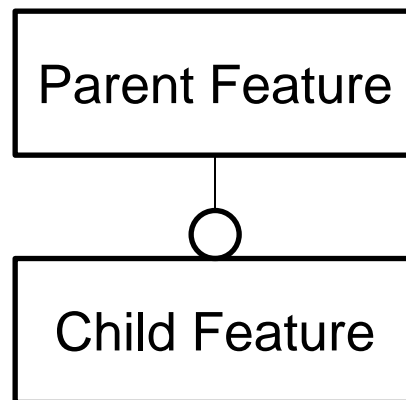
[Representation Example]

- Mandatory features are represented with filled circles
- Example



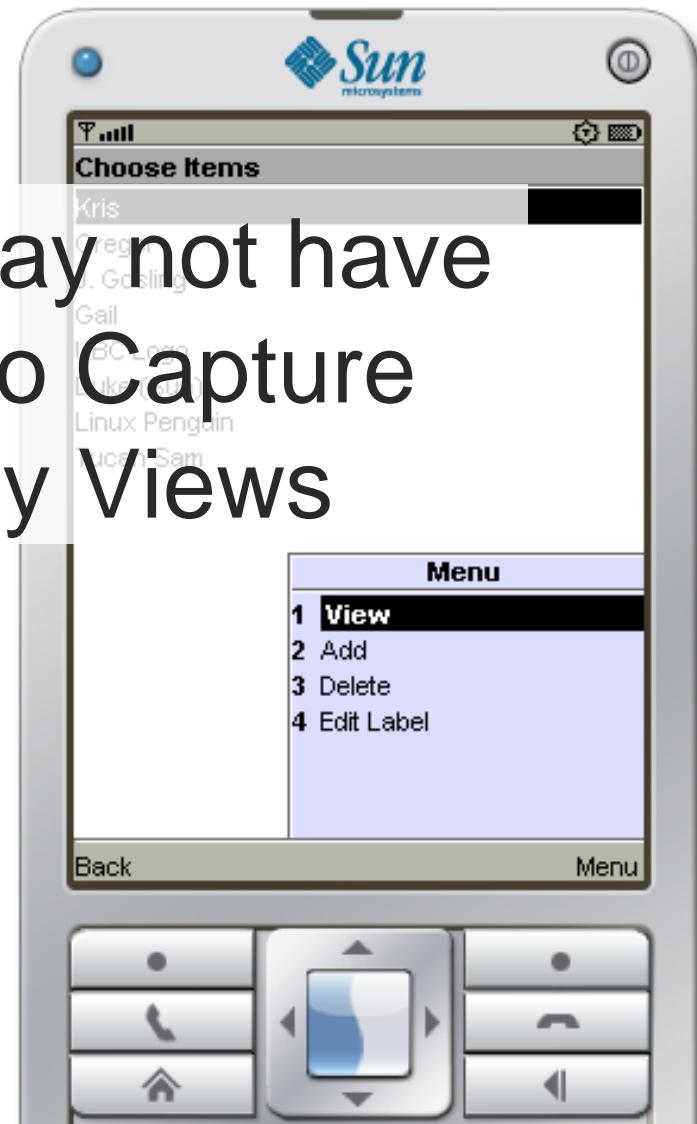
[Optional Features]

- The relationship between a parent feature and its child feature is categorized as optional if the child feature is not required in all SPL products
- Representation



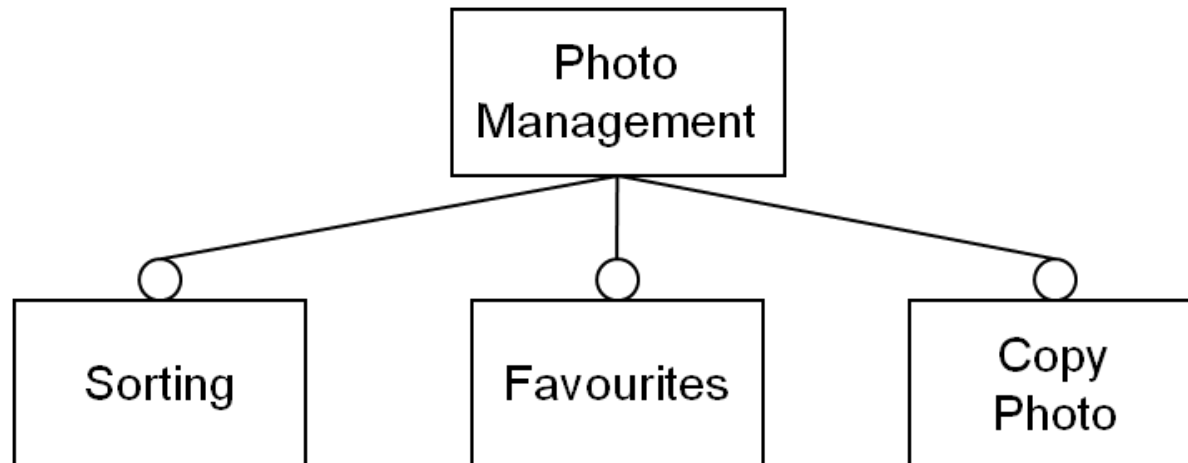
Example of Optional Features

The SPL products may not have the functionalities to Capture Photo and Sort by Views



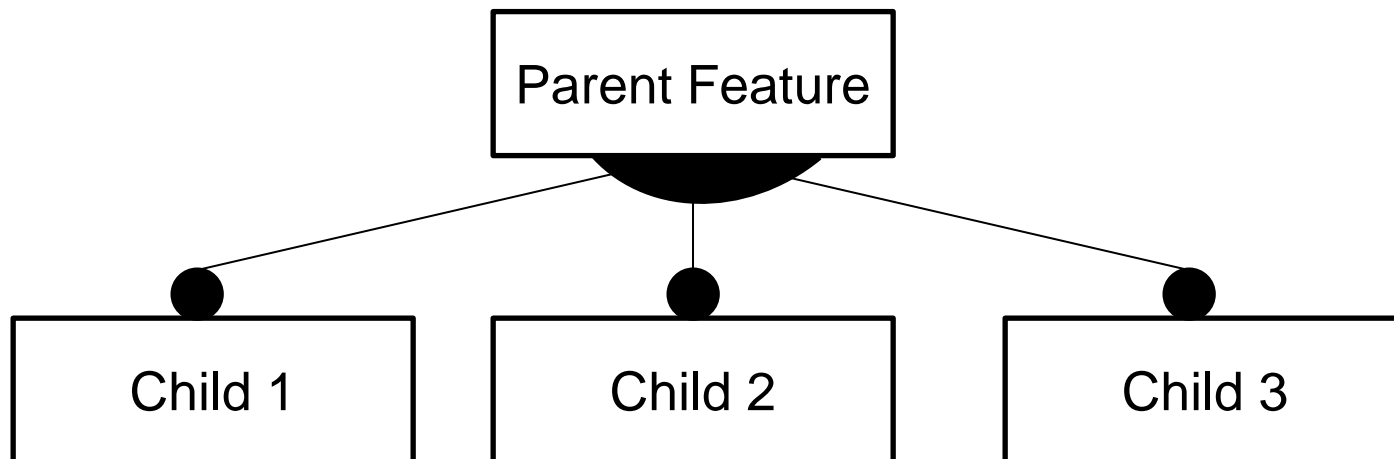
[Representation Example]

- Optional features are represented by empty circles
- Example



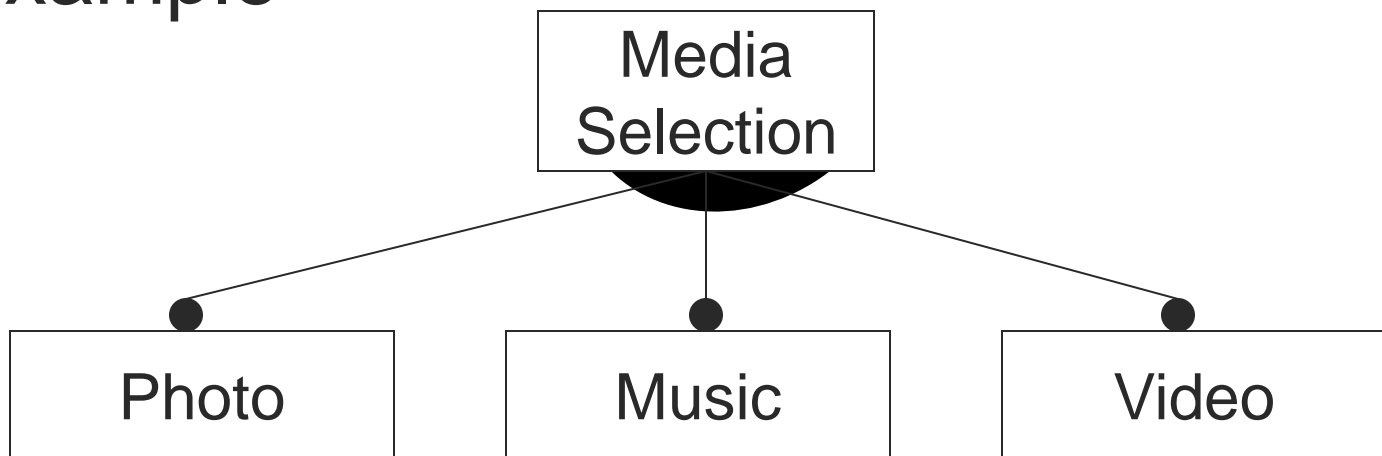
[Or Features]

- The relationship between a parent feature and its child features is categorized as Or if at least one of the child features must be selected
- Representation



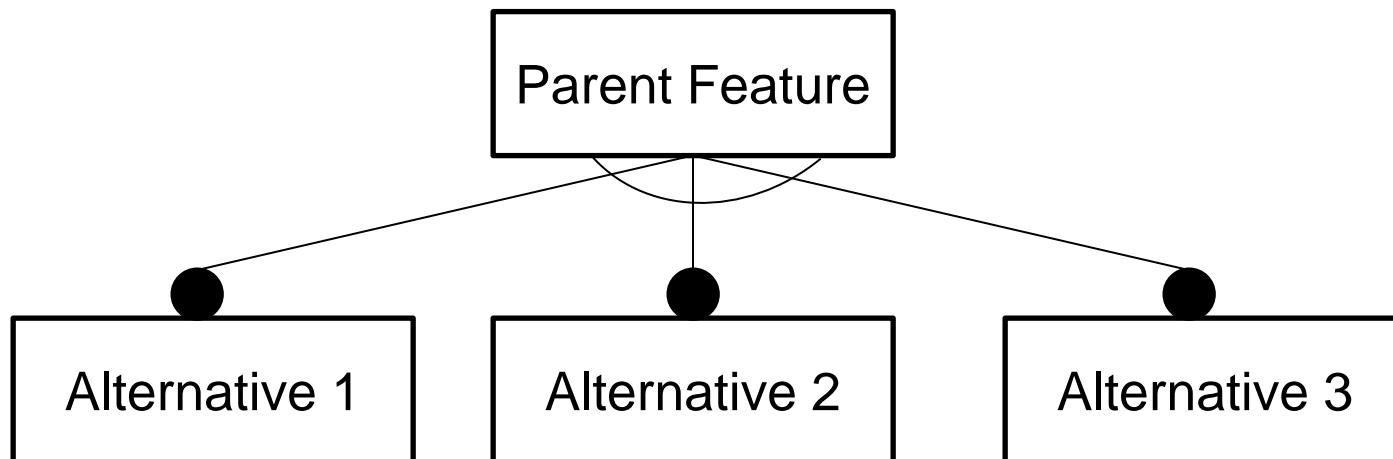
[Representation Example]

- Or features are represented by a filled semi-circle grouping the child features
- Example

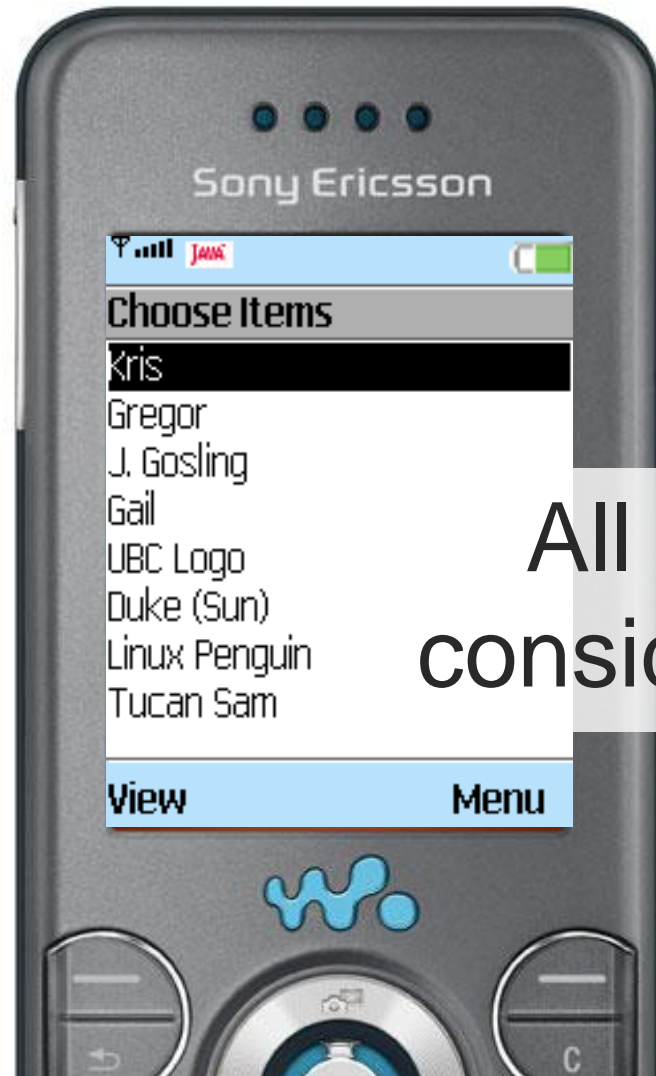


Alternative Features

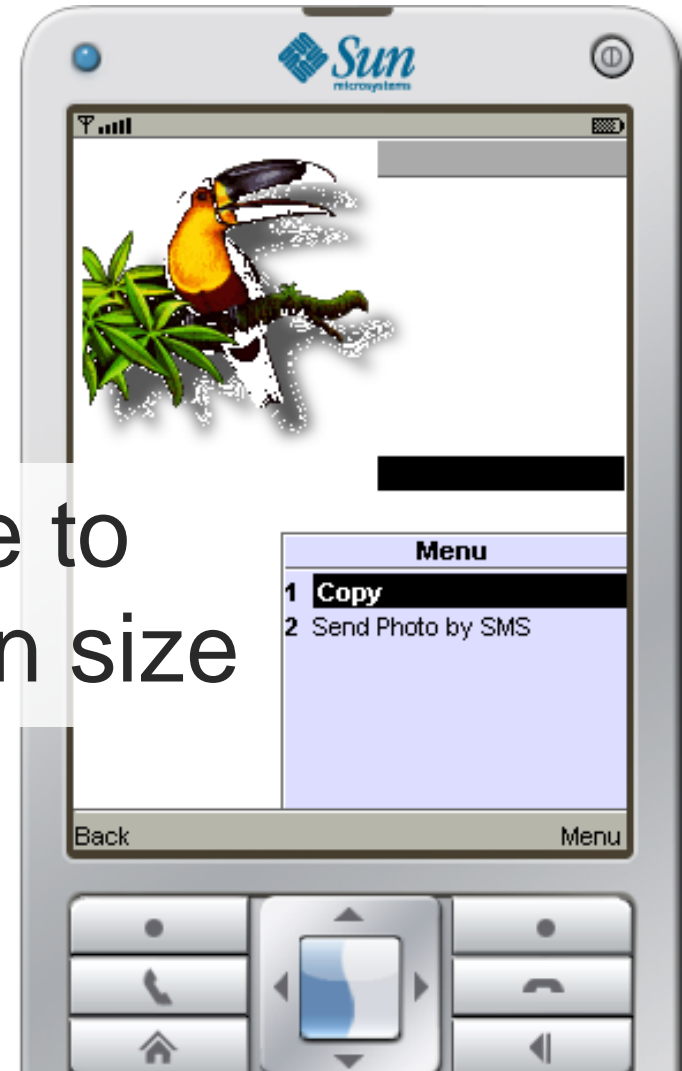
- The relationship between a parent feature and its child features is categorized as alternative if one (and only one) of the child features must be selected
- Representation



Example of Alternative Features

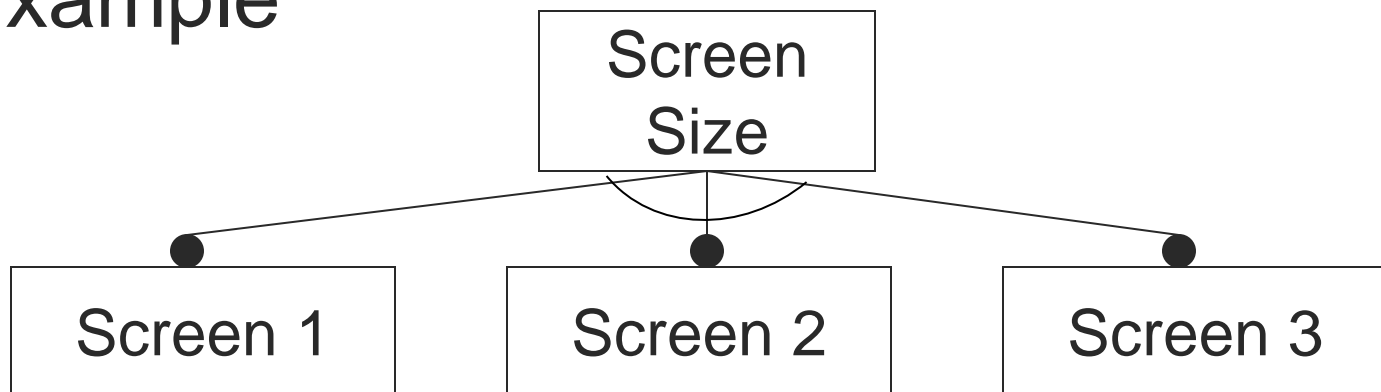


All products have to consider one screen size

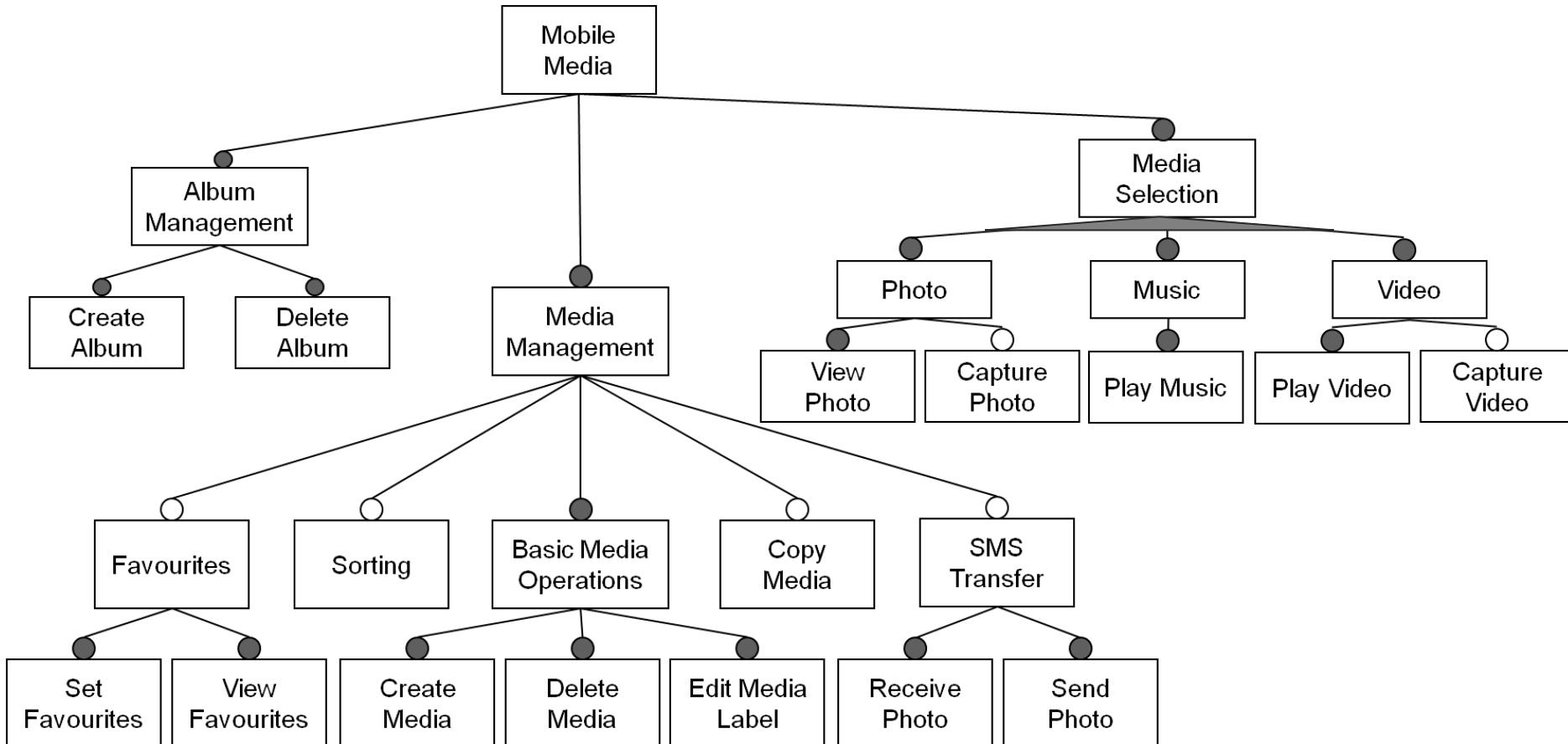


Representation Example

- Alternative features are represented by an empty semi-circle grouping the child features
- Example



MobileMedia Feature Model



[Bibliography]

- K.C. Kang et al. **Feature-Oriented Domain Analysis (FODA) Feasibility Study**, Technical Report CMU/SEI-90-TR-021, SEI, Carnegie Mellon University, 1990.
- K. Czarnecki and U. Eiseneckerr. **Generative Programming: Methods, Tools, and Applications**. Addison-Wesley, 2000.