

# FLiP: Product Line Derivation Tool

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V. Nepomuceno, A. Menezes, V. Alves

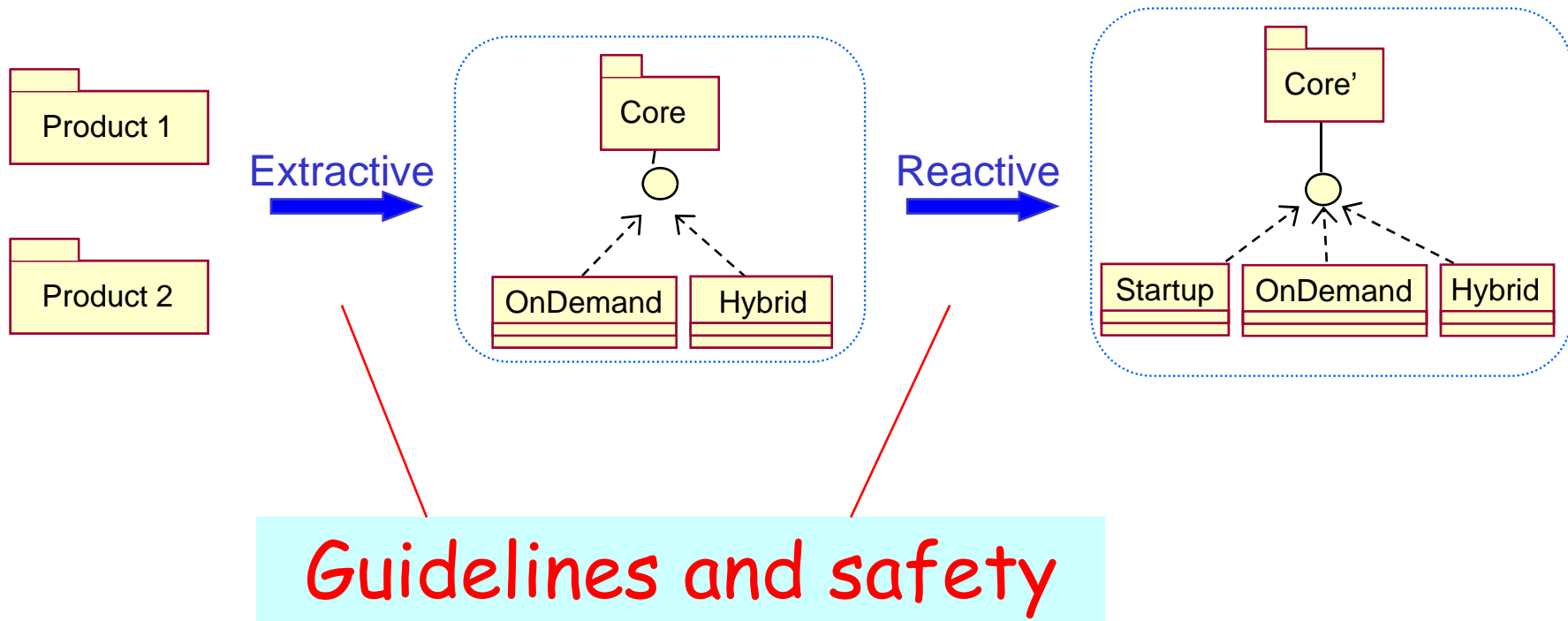
Federal University of Pernambuco  
University of Pernambuco  
Meantime Mobile Creations



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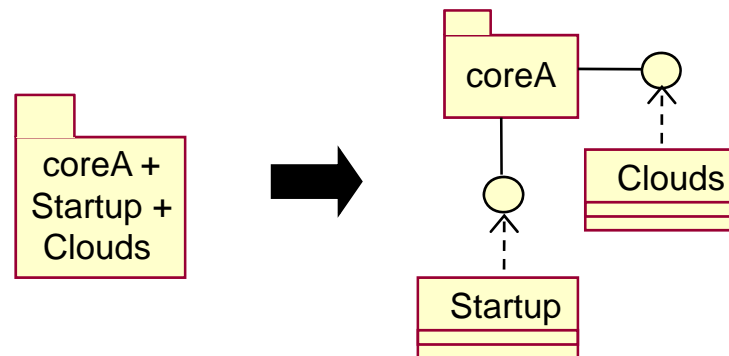
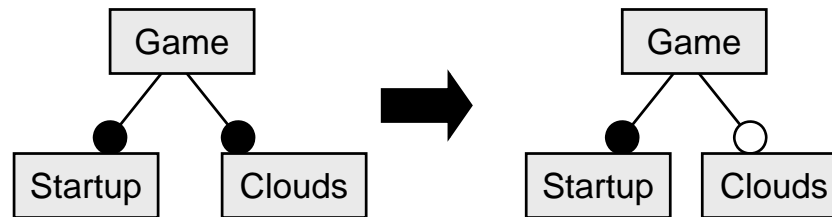


# Product line derivation and evolution benefit from **refactoring**

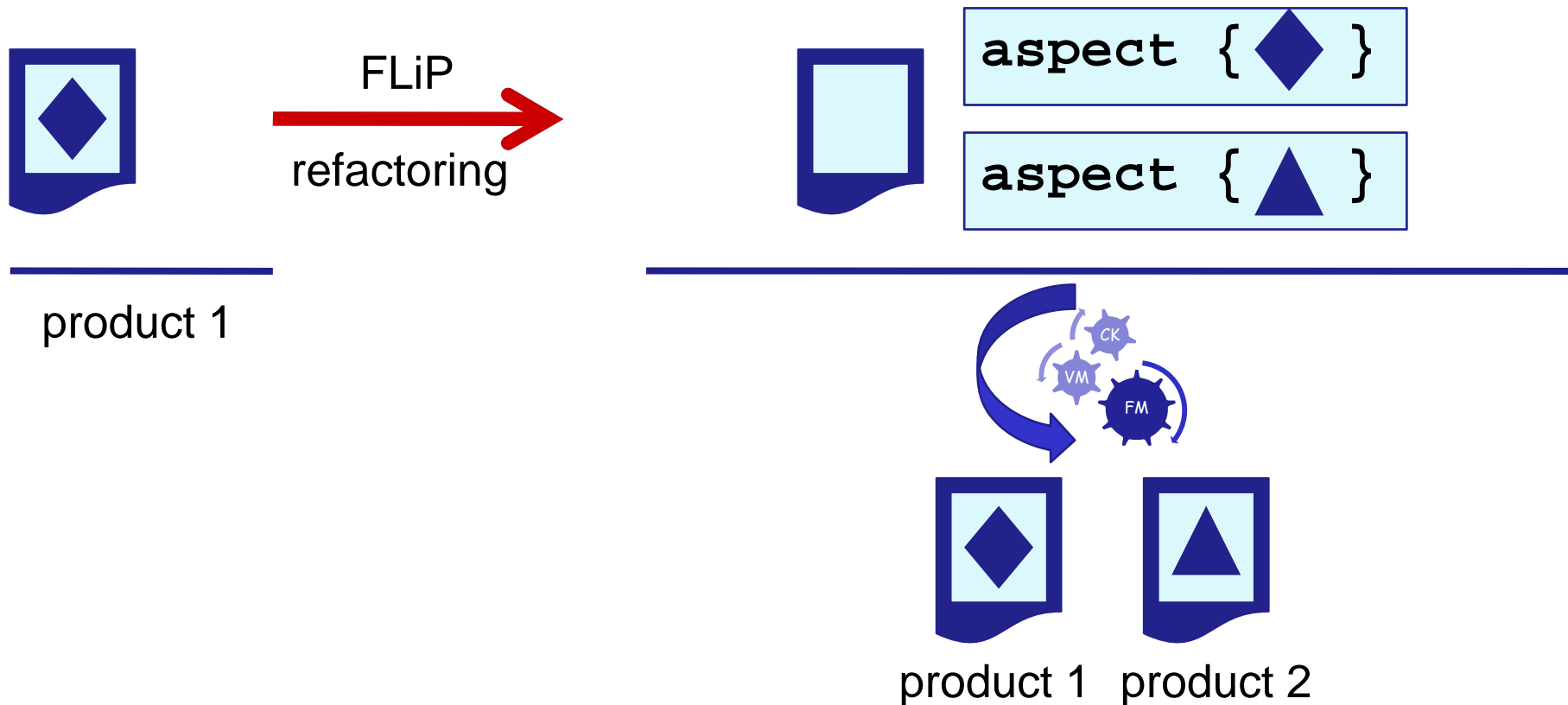


# But PL refactoring should go beyond code...

## Rain of fire



# Product line extraction...



useful for progressive  
porting...



*64kb, flip*



*4Mb, flip*



*100Kb, no flip*

different  
devices, more  
than 500  
builds...



# including functional variations

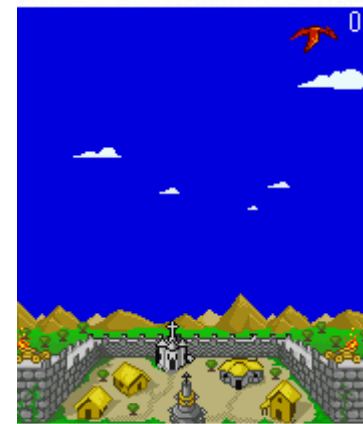


moving clouds

FLiP  
→  
refactoring



static clouds



moving clouds

# Refactoring guided extraction...

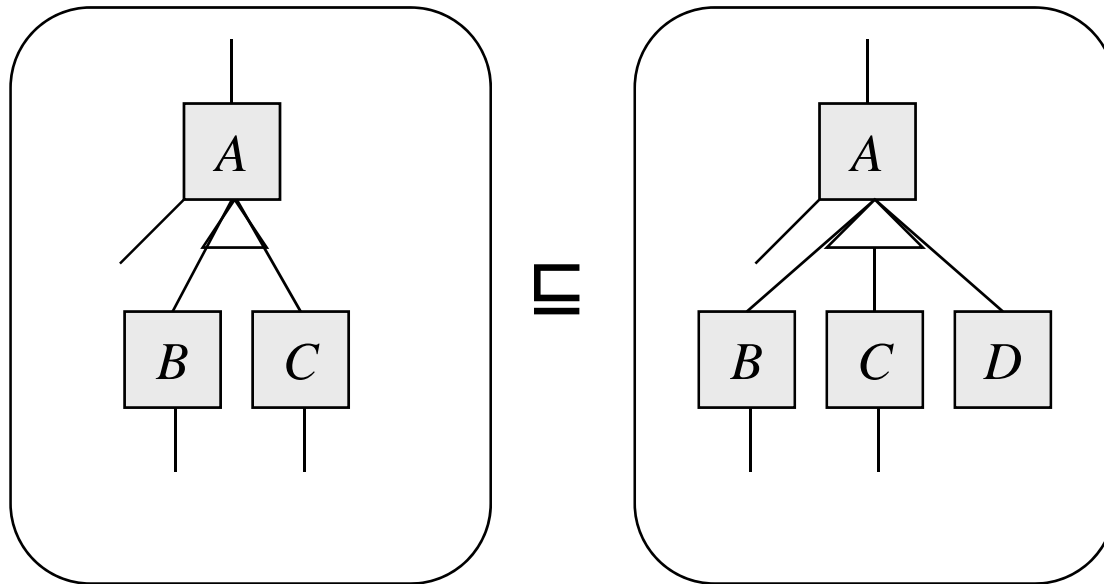
```
ts  
class C {  
  fs  
  ms  
  T' m(ps) {  
    body'  
    body  
  }  
}
```



```
ts  
class C {  
  fs  
  ms  
  T' m(ps) {  
    body  
  }  
}  
privileged aspect A {  
  before (context):  
    execution ( $\sigma$ (C.m))  
    && bind (context) {  
      body' [cthis/this]  
    }  
}
```

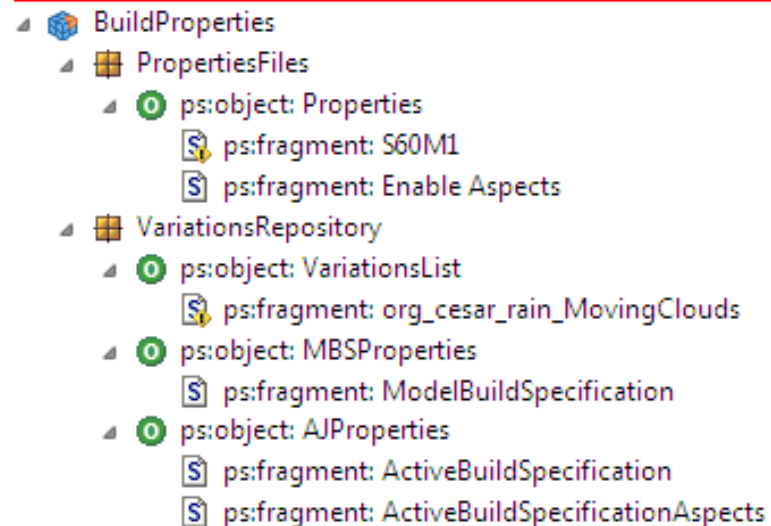
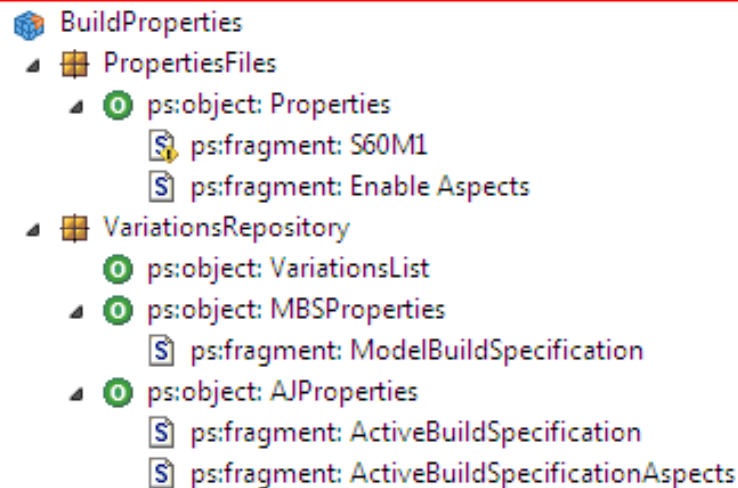
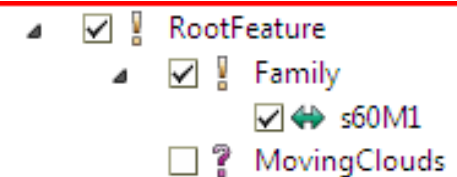
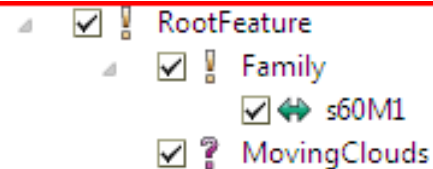
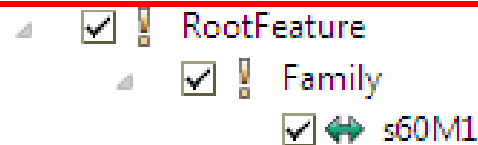
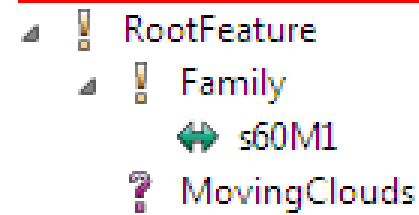
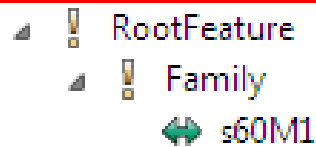
- *body* does not use local variables declared in *body'*;
- there is no designator `within` or `withincode` capturing join points inside *body'*; ...

transforming code, feature  
model, and configuration  
knowledge...



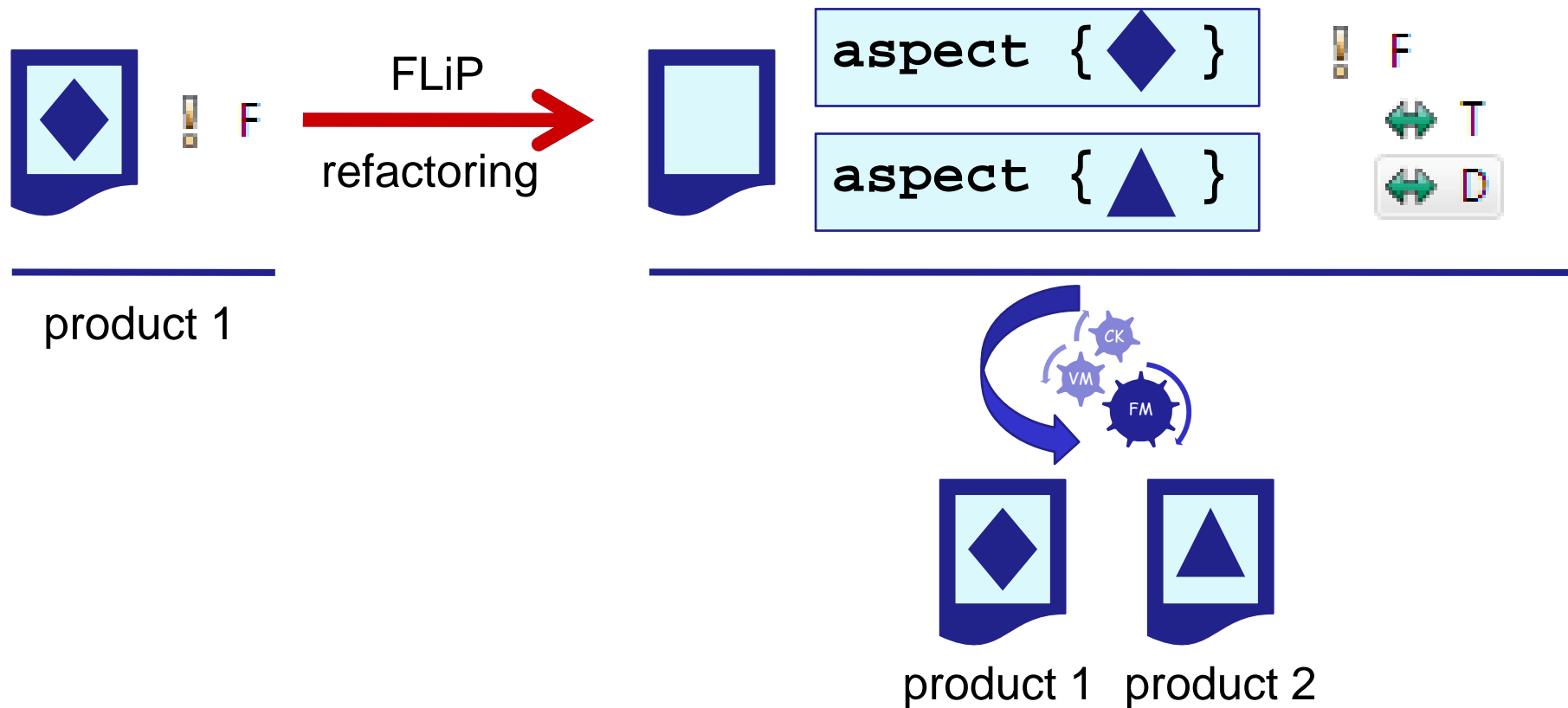


# with pure::variants models

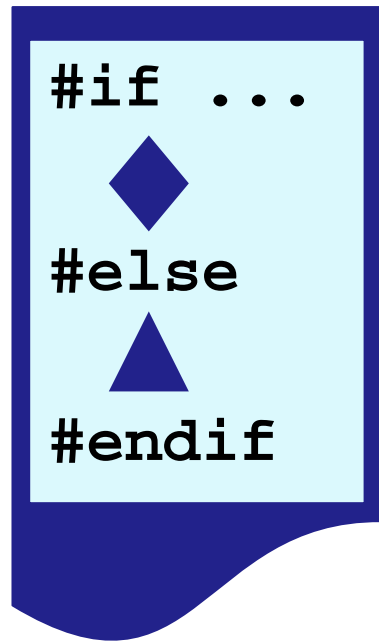


Demo, part 1

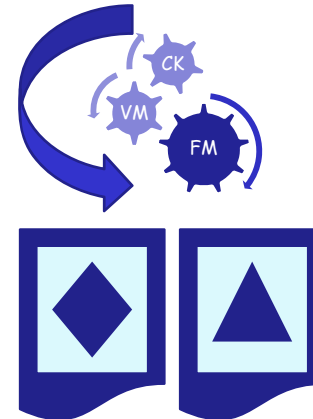
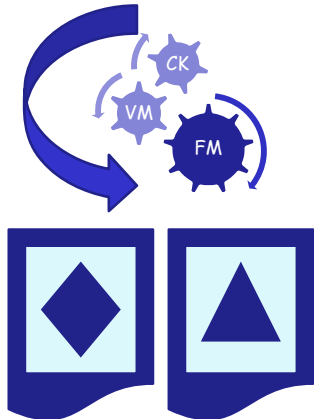
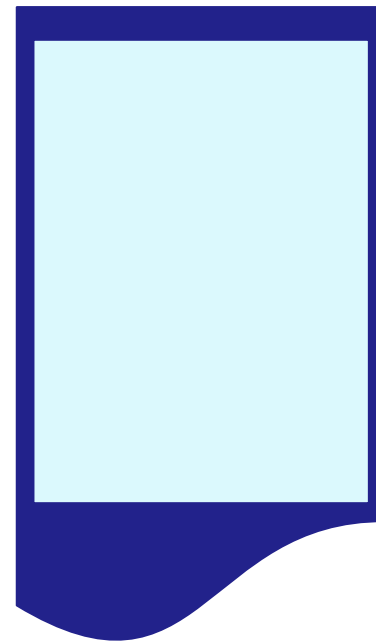
# Product line extraction demo



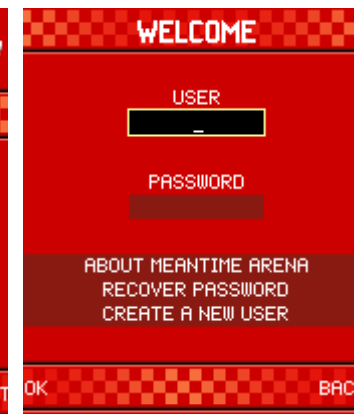
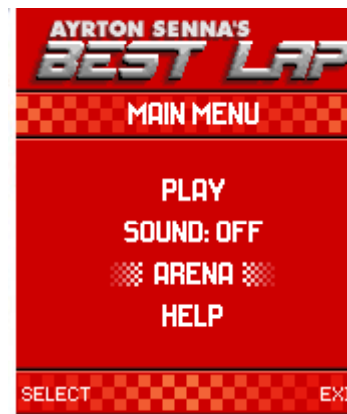
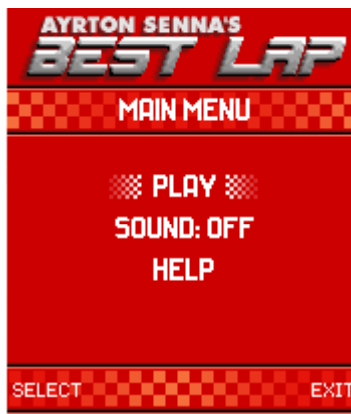
# Product line restructuring...



FLiP  
refactoring



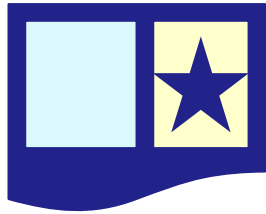
useful for improving  
variation modularity...





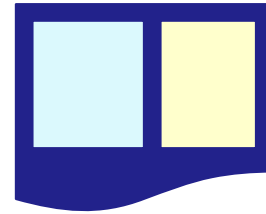
Demo, part 2

# Product line evolution...



aspect { ◆ }

aspect { ▲ }

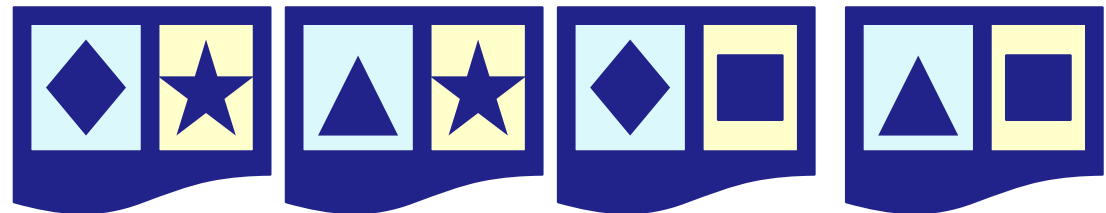
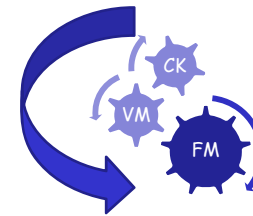
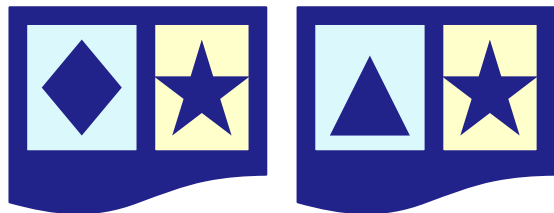
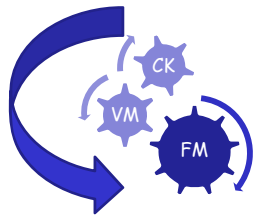


aspect { ◆ }

aspect { ★ }

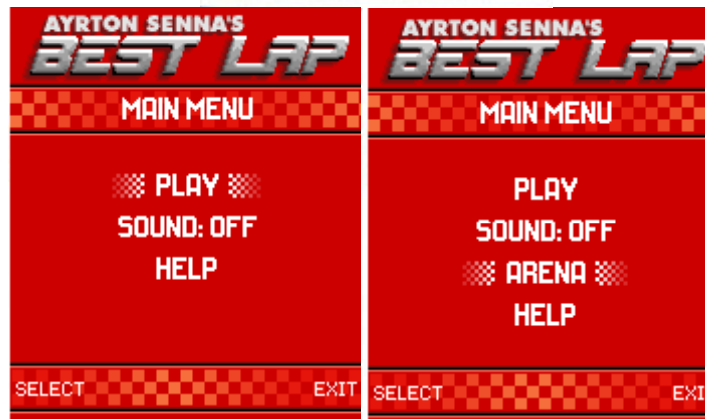
aspect { ▲ }

aspect { ■ }



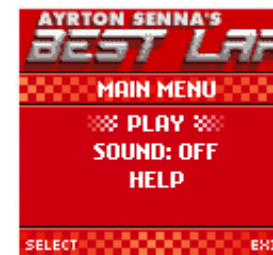


# useful for creating new variation points

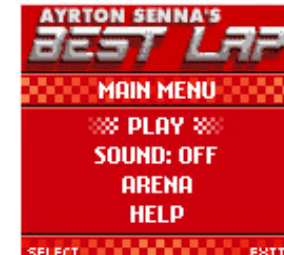


product 1

product 2



product 3



product 4

Demo, part 3

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