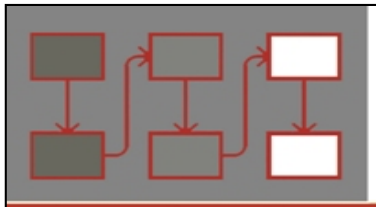

PLEASE2013

4th International Workshop on Product LinE Approaches in Software Engineering, May 20, San Francisco, California
held in conjunction with the 35th International Conference on Software Engineering (ICSE 2013)

Graphical User Interfaces in Dynamic Software Product Lines

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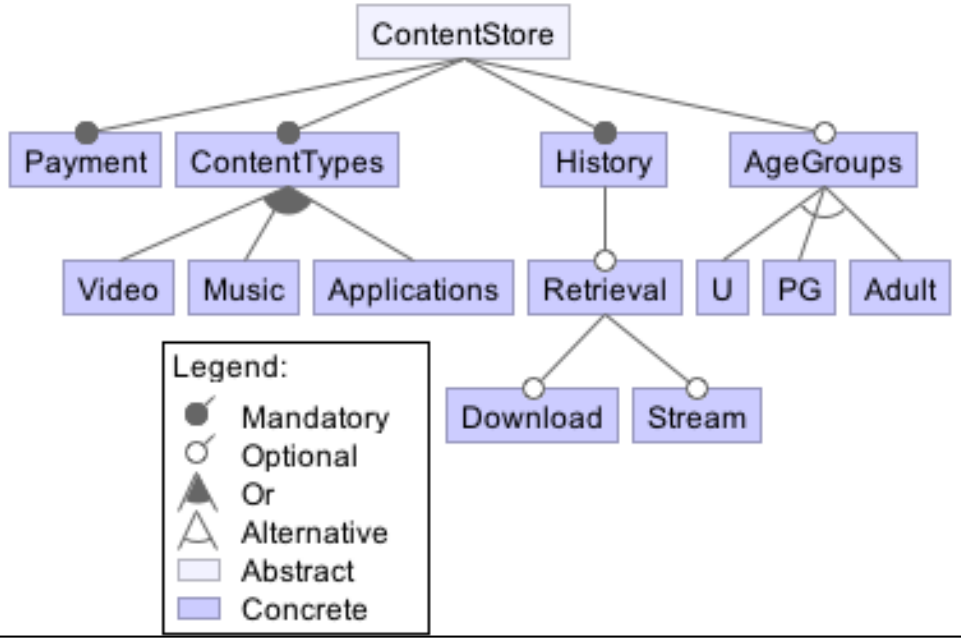
Contact Profile

- **DSPLs/FOSD/Context-awareness**
- **Objectives / Looking for**
  - Discussion on problem, and potential approaches
  - Feedback on approaches, collaboration on case studies
  - Goal: Research inspiration, and direction

Dean Kramer, UWL

Product Line

- Mobile Dynamic Software Product Lines
  - Context-Aware (User, Device, and Environment)
  - Devices with differing specifications
  - Applications can react to different contexts
  - Adaptation can be static or dynamic



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The Problem

- Separation of GUI representation (MVC)
- Document-Based GUIs
  - Popular method of respresenting GUIs
  - WYSIWYG Editors, clearer SOC
  - Can be helpful when handling different devices (screen size, resolution etc)
  - Technology specific
  - Static in nature

```
<Button
    android:id="@+id/apps"
    android:layout_width="match_parent"
    android:layout_height="120dp"
    android:contentDescription="@string/apps"
    android:text="@string/apps" />

</LinearLayout>
<LinearLayout
    android:id="@+id/adverts"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_weight="1.0"
    android:orientation="vertical" >
    <ImageButton
```

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The Problem (cont)

- Variability applies also to GUIs
  - Features can crosscut GUIs
  - Depending on what features are bound dynamically, a GUI varient will be needed
  - Adaptation (static or dynamic) should be unified

Current Solution

- Using methods in previous work would mean handling GUI variability within the host language.
  - No real consideration of handling across multiple sources
  - Not unified, GUI code should be written a single way
- Currently considering how we can handle variations in GUI documents

Why is it interesting?

- GUIs are prone to variability
  - Different features can require GUI differences
  - In DSPLs, this requires dynamic configuration
- Towards FOSD for GUI documents
  - Allow developers to continue to use GUI documents within DSPLs
  - Towards handling multiple source variability

Discussion

- Compositional Techniques
  - Should DOGUIs be still used on the deployed application, or transformed into logic for dynamic use?
- Configuration Timing
  - Different changes should happen at different times, how can we control that?
- Verification and Validation
  - Unforeseen variants and misshaped/misplaced widgets

Potential Collaborations

- People
  - Klaus Schmid
  - Michael Dukaczewski
  - Sachin Patel
- Collaborators in:
  - Industrial Cases
  - GUI variability
  - Source Transformations

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Thank you!