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Identifying Code Smells with Multiple Concern Views

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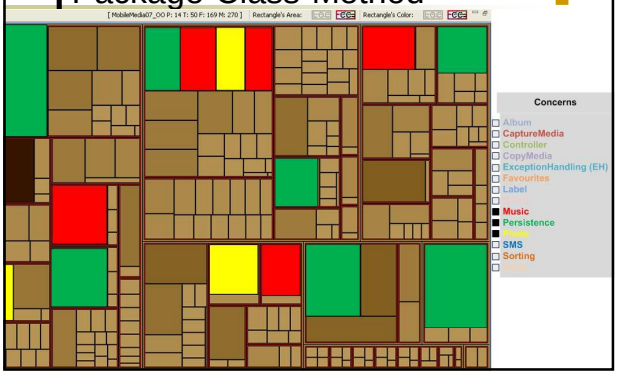
Code Smells and Concerns

- Code smells are often caused by crosscutting concerns
- Software visualization are mostly limited to present modular structures
  - Packages, classes, methods and relationships

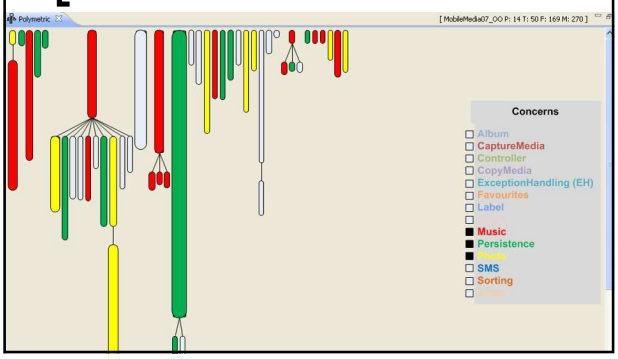
SourceMiner

- SourceMiner is a visualization tool
  - It implements a multiple views approach enriched with concern properties
- Includes four views
  - concern's package-class-method structure
  - concern's inheritance-wise structure
  - concern dependency
  - concern dependency weight

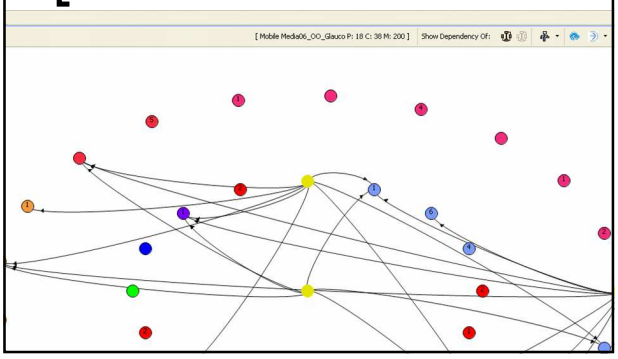
Package-Class-Method



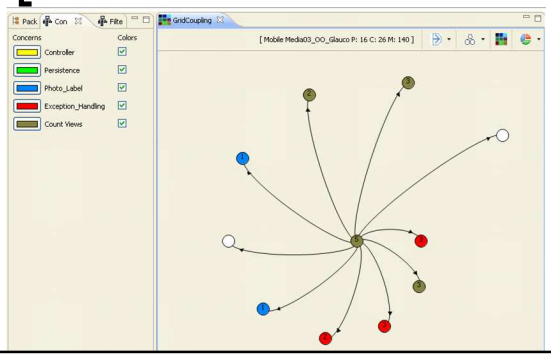
Inheritance-wise Structure



Concern Dependency



Dependency Weight (1)



Dependency Weight (2)

Evaluation Protocol

- Controlled experiment with 5 participants
- Each participant had to detect instances of three code smells
  - God Class, Divergent Change, and Feature Envy
- They used SourceMiner to visualize the structure and concerns of one application (MobileMedia)

Results

- SourceMiner supported detection of two code smells
  - God Class and Divergent Change
- It did not help detecting Feature Envy

	Recall	Precision
God Class	0.6	0.6
Divergent Change	0.5	0.5
Feature Envy	0.4	0.2

Bibliography

- G. Carneiro, et al. **Identifying Code Smells with Multiple Concern Views**. In proceedings of the 24th Brazilian Symposium on Software Engineering (SBES), pp. 128-137, 2010.