

PLEASE – Panel Discussion

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Consequences of Cloning on Program Correctness

```
// Utilities for arrays of elements
public String showElements(ModelElement[] elements, String nomsg) {
    boolean found = false;
    StringBuffer res = new StringBuffer();
    if (elements != null) {
        Index.getInstance().setCurrentRenderer(
            FlatReferenceRenderer.getInstance());
        for (int i = 0; i < elements.length; i++) {
            ModelElement el = elements[i];
            res.append(showElementLink(el)).append(HTML.LINE_BREAK);
            found = true;
        }
        Index.getInstance().resetCurrentRenderer();
    }
    if (!found && nomsg != null && nomsg.length() > 0) {
        res.append(HTML.ITALICS(nomsg));
    }
    return res.toString();
}

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```

Analyzed 3 C#, 1 Java, 1 Cobol Systems. 107 faults identified
53% of all unintentionally inconsistent clones indicate faults

Cloning in Requirements Specifications

Study Objects

- 26 industrial SRS
- 11 companies
- different domains

Results

- Large variance
- much clon. in some

Consequences

- increased inspection effort
- inconsistencies

Spec Pages	Words	Clone cov.	Clones	Blow-up relative	Blow-up words
517	41,482	35.0%	914	32.6%	10,191
1,013	130,968	8.9%	639	5.3%	6,639
133	18,447	18.5%	88	11.5%	1,907
241	37,969	8.1%	479	6.9%	2,463
185	37,056	0.9%	12	0.4%	161
42	7,662	51.1%	162	60.6%	2,890
160	19,632	71.6%	360	129.6%	11,083
158	19,679	12.4%	45	6.8%	1,253
235	49,425	21.9%	553	18.2%	7,593
-	13,807	19.6%	117	14.2%	1,718
3,100	274,489	12.1%	1818	8.7%	21,993
696	81,410	5.4%	148	3.2%	2,549
		13.6%		13.5%	
Σ 8,667	1,242,765		7,669		100,178

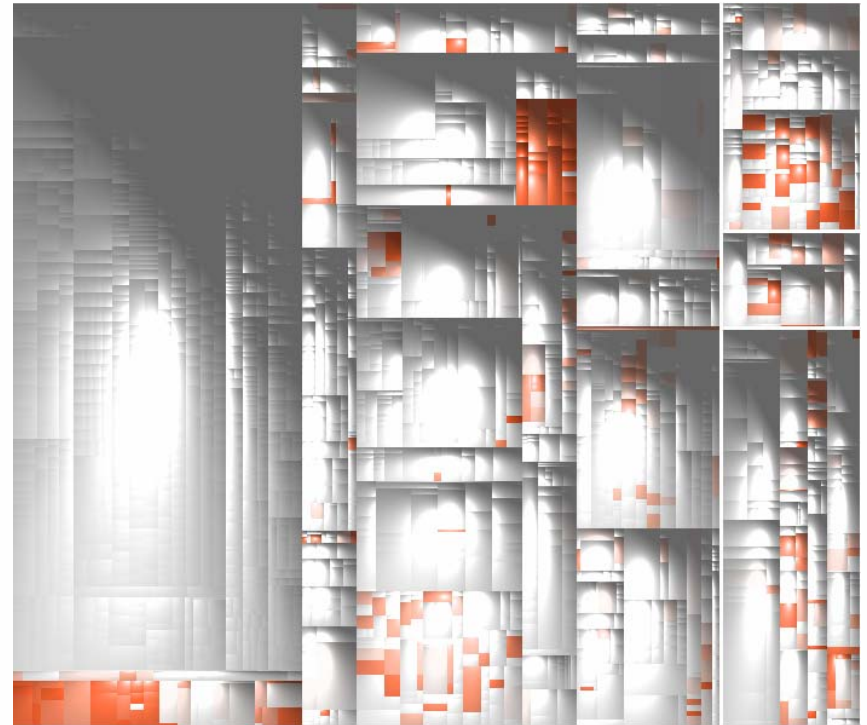
Clone Detection in Product Lines

PL Assessment

- Detection of missing abstractions
- Identification of architecture weaknesses

Elmar's Opinion

- Avoid Cloning in the large
- At least consolidate intra-product cloning before cloning a product



Clone Detection not only relevant if cloning is used intentionally