Hands on EPrints
Haptic Software Systems through 3D Printing

Florian Fittkau
Kiel University, Germany

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ExplôrViz
Motivation

Introduction

- Software systems are abstract
- Most customers see the GUI as the software system
Motivation

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- Software systems are abstract
- Most customers see the GUI as the software system
- Vision: Haptic, physical 3D models of software systems
Possible Scenarios

Introduction

1. Customer dialog
   (“Change in back-end from x to y costs 10,000€”)
2. Communication basis for software developers/architects
Physical 3D Model Advantages

Introduction

- Occlusion “resolved” in a natural way
- “Something to touch”
- No extra equipment/monitors/glasses
Interactive approach for the live, explorable visualization of software landscapes [FWWH13]
ExplorViz Application Level

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ExplorViz Application Level

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Creation - Export 3D Model

Haptic Software Systems

Export 3D Model

Plugin
EPrints
EPrints
Import
Search
MetaField

Hands on EPrints

Florian Fittkau

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Technische Fakultät

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Export current view as OpenSCAD\(^1\) file:

```scad
module application() {
    union() {
        translate([0,5,3])
        cube(size = [194,184,3.059999942779541], center = true);
    }
}

application();
```

From OpenSCAD export into STL, OFF, DXF, CSG, ...

\(^1\)http://www.openscad.org
Our 3D Printer (Prusa i3)
Painted Kieker with Labels
Live Demo
Related Work

- Skyscrapar [RS12] (Virtual Reality)
Lessons Learned

3D printing is time consuming
- Calibration (micro meters precision)

Time consuming production
- Printing about 5 to 8 hours
- Painting about 5 to 8 hours
Summary

- Haptic, physical 3D models of software systems
- Open source tool ExplorViz available at http://explorviz.net

Future Work

- Class communication
- Lids for interactively looking into packages
- Puzzling of packages such that larger models are possible
- Printing other visualization metaphors
- Virtual Reality with Oculus Rift
Summary and Future Work

Conclusions

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