



Integration of UVL into FeatureIDE

Chico Sundermann¹, Tobias Heß¹, Dominik Engelhardt², Rahel Arens¹,
Johannes Herschel¹, Kevin Jedelhauser¹, Benedikt Jutz¹, Sebastian Krieter³, Ina Schaefer²
MODEVAR@SPLC'21

1)



ulm university universität
uulm

2)

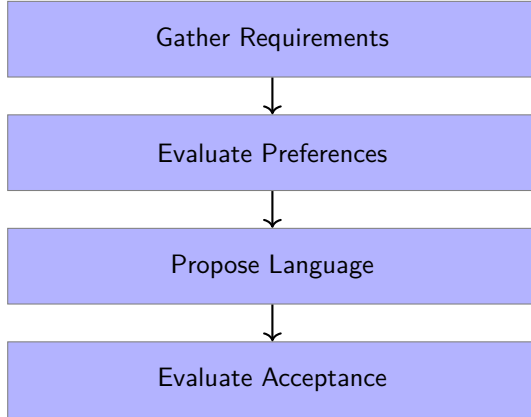


Technische
Universität
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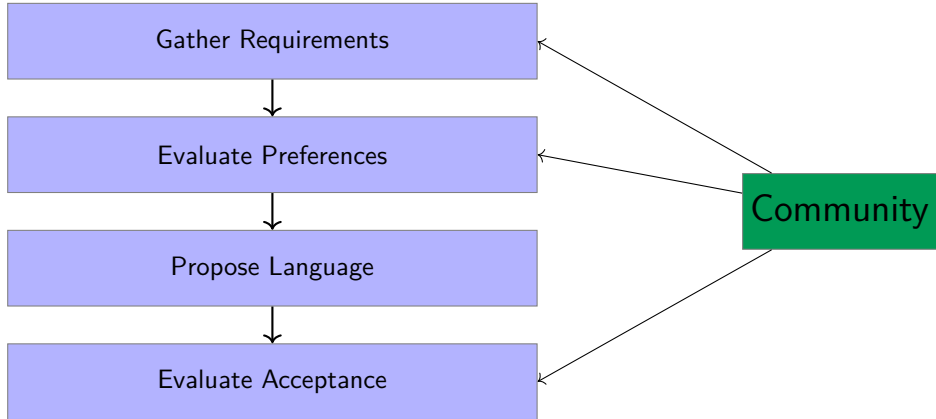
The Theory: Language Design (Research Track)



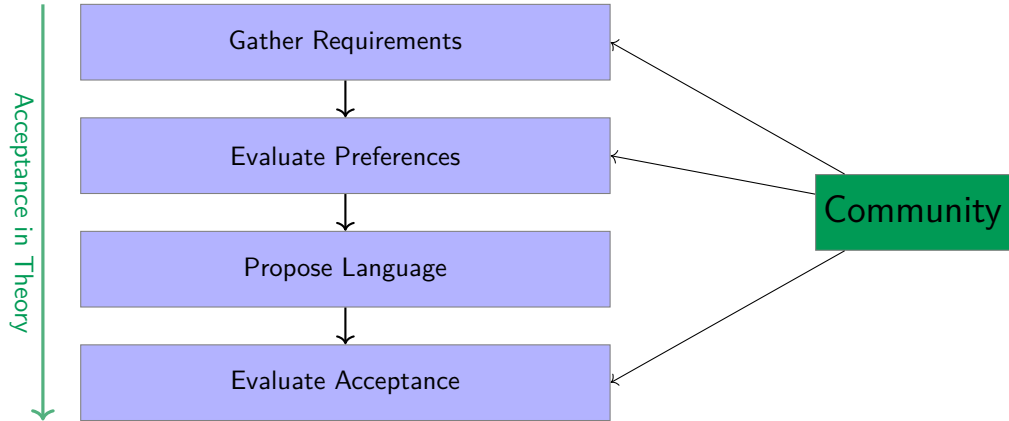
```
features
  Server {abstract}
    mandatory
      FileSystem
        or // with cardinality: [1..*]
          NTFS
          APFS
          EXT4
      OperatingSystem {abstract}
        alternative
          Windows
          macOS
          Debian
    optional
      Logging {
        default,
        log_level "warn" // Feature Attribute
      }

constraints
  Windows => NTFS
  macOS => APFS
```

The Theory: Language Design (Research Track)



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Theory vs Practice: UVL in FeatureIDE

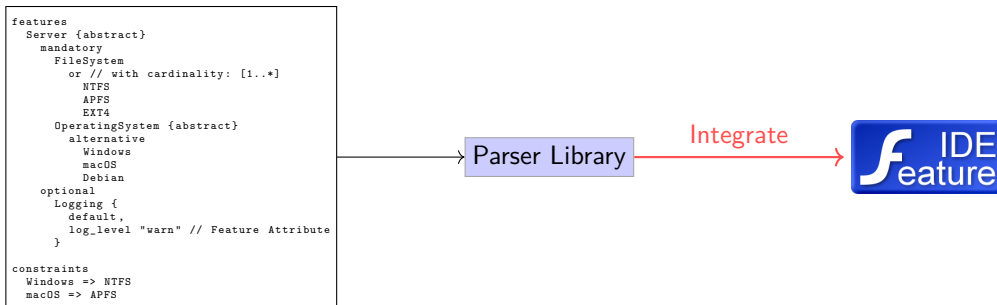
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Parser Library



Theory vs Practice: UVL in FeatureIDE



Theory vs Practice: UVL in FeatureIDE

New Requirements?

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  Server {abstract}
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New Requirements?

Parser Library

Integrate





The Universal Variability Language (UVL)

- Groups (**AND** Cardinalities)
- Propositional Constraints
- Feature Attributes
- Abstract Features
- References

```
features

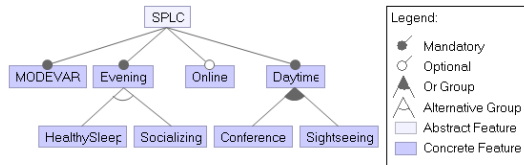
imports
  FileSystem as fs

  Server {abstract}
    mandatory
      fs.FileSystem
      OperatingSystem {abstract}
        alternative // Cardinality: [1..1]
          Windows
          macOS
          Debian
    optional
      Logging {
        default,
        log_level "warn" // Feature Attribute
      }

constraints
  Windows => NTFS
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```

What works?

- Feature Model Editing
- Detecting Errors
- Transformation
- Compositions
- Feature Attributes



Online \Rightarrow \neg Sightseeing

```
1 namespace Root|
2
3 features
4   SPLC {abstract}
5     mandatory
6       MODEVAR
7       Evening
8         alternative
9           HealthySleep
10          Socializing
11       Daytime
12         or
13           Conference
14          Sightseeing
15     optional
16       Online
17
18 constraints
19   Online => !Sightseeing
20
```

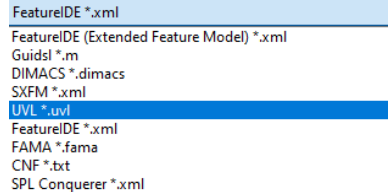
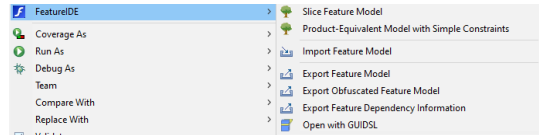
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```
1 namespace Root
2
3 features
4   SPLC {abstract}
5     mandatory
6     MODEVAR
7     Evening
8 Parse error at line 7, column 9:
9   MODEVAR
10    ^
11 Expected one of:
12 "_DEDENT_"
13 "["
14 "optional"
15 "mandatory"
16 "alternative"
17 "or"
18 "_INDENT_"
19
20 Online => !Sightseeing
```

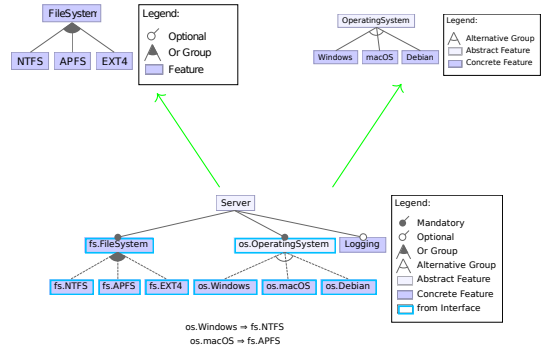
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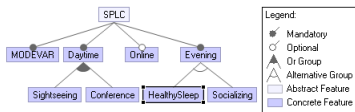
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What works?

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| Feature Diagram | Feature Order | Source |
|-----------------|---------------|--------|
| | | |
| Element | Type | Value |
| ▼ SPLC | - | - |
| ▼ Evening | - | - |
| ▼ HealthySleep | - | - |
| @ Duration | long | 8 |

```
alternative
  HealthySleep {
    Duration "8"
  }
  Socializing
```

What to improve?

- Tool Specific Properties
- Indicator for Language Level
- Small Inconveniences
- Language Support

```
<properties>  
  <graphics key="legendautoLayout" value="true"/>  
  <graphics key="showshortnames" value="false"/>  
  <graphics key="layout" value="horizontal"/>  
  <graphics key="showcollapsedconstraints" value="true"/>  
  <graphics key="legendhidden" value="false"/>  
  <graphics key="layoutalgorithm" value="0"/>  
</properties>
```

```
1 namespace Root  
2  
3 features  
4   SPLC {abstract, extended__}  
5     mandatory
```

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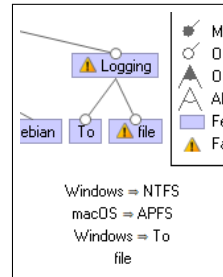
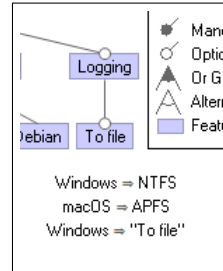
```
1 <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2 <featureModel>
3   <properties>
```

```
1 <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2 <extendedFeatureModel>
3   <properties>
```

```
1 namespace Root
2
3 features
4   SPLC {abstract, extended__}
5     mandatory
```

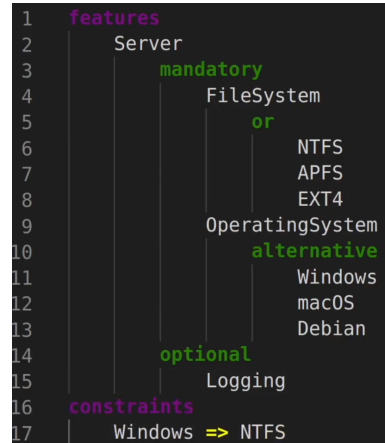

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UVL: Current State and Future

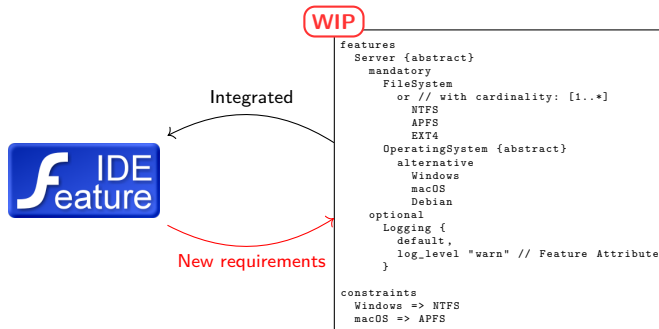


Integrated

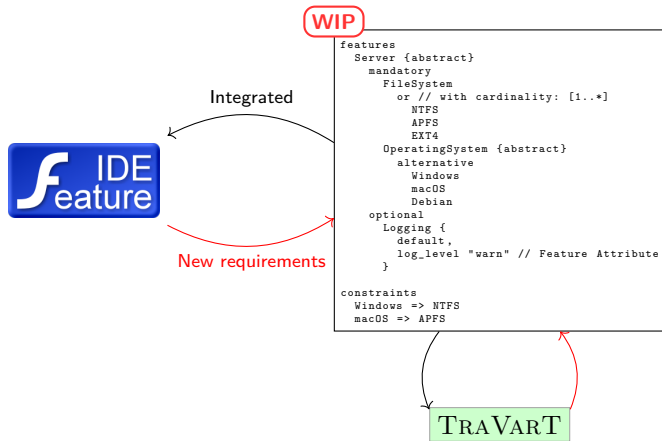
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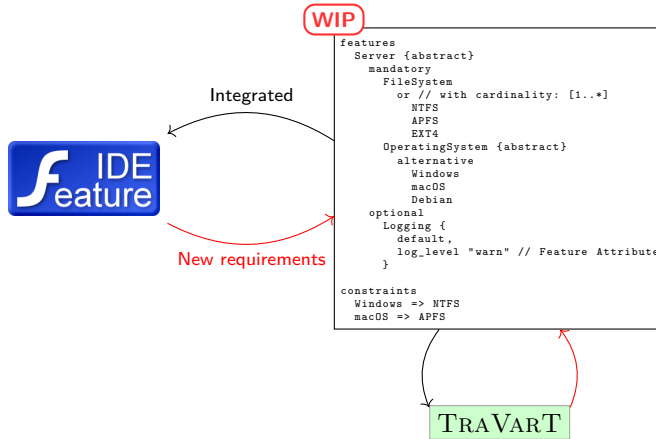
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