REVaMP²

KernelHaven + FeDeV

Extraction and Visualization of Feature Dependencies

University of Hildesheim + ScopeSET

Agenda

- Reverse engineering of implemented feature dependencies
- Visualization of dependency structure
- Relation of dependencies and architectural components

Case Study: Linux 4.14.123

Idea of Extraction Approach

- Application of *feature effect*[*] analysis
  - Gathering of all Presence Conditions (PC) from SPL artifacts
  - Boolean aggregation of conditions

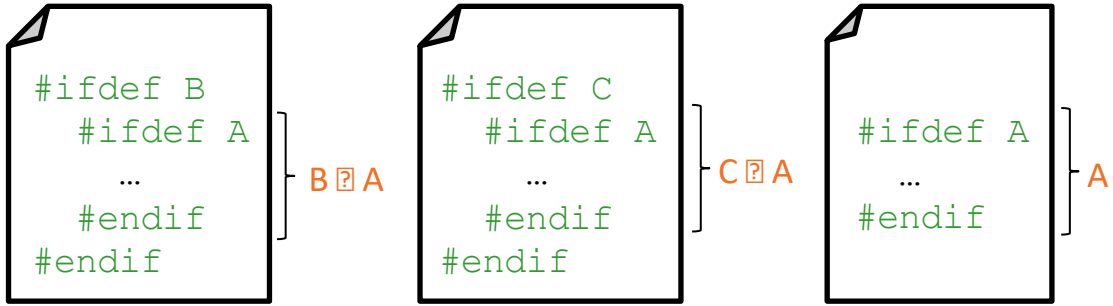
$$FE_f := \bigvee_{PC_i \in PC} \underbrace{PC_i[f \leftarrow True] \oplus PC_i[f \leftarrow False]}_{f \text{ has an impact on associated code}}$$

- Precondition, when has selection of feature a minimal effect on the product derivation

$$f \underbrace{\rightarrow FE_f}_{\text{precondition}}$$

[*] S. Nadi, T. Berger, C. Kästner, K. Czarnecki. *Where Do Configuration Constraints Stem From? An Extraction Approach and an Empirical Study*. TSE '15

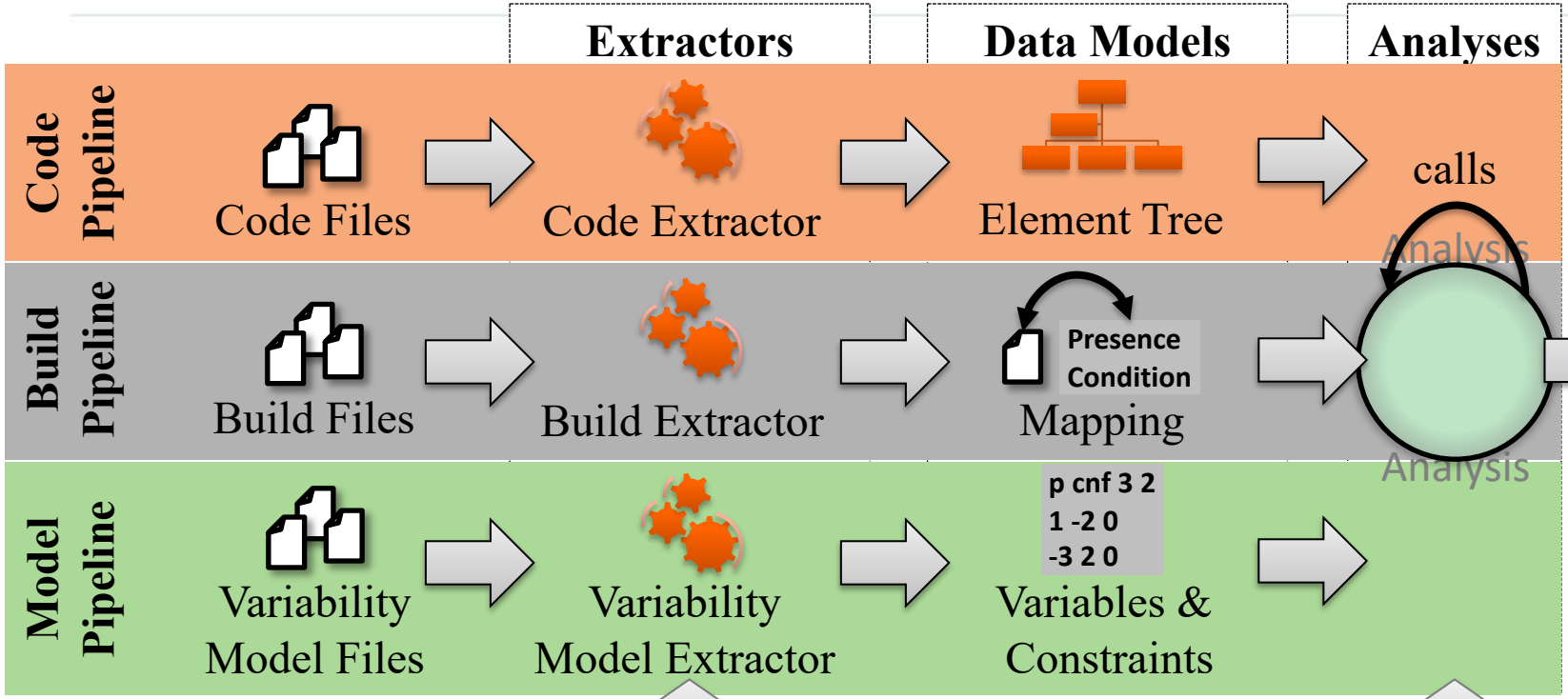
Example



A → (B ? A[True] ? B ? A[False]) ? (C ? A[True] ? C ? A[False]) ? (A[True] ? A[False])

? A → B ? C

KernelHaven Architecture



REVaMP²

Partners and Contact Details
KernelHaven

- **Partners involved**
  - University of Hildesheim (SUH), Germany

- **Contact Information**
  - Sascha El-Sharkawy (elscha@sse.uni-hildesheim.de)
  - Prof. Dr. Klaus Schmid (schmid@sse.uni-hildesheim.de)

- **Download**
  - GitHub: https://github.com/KernelHaven/KernelHaven

Partners and Contact Details
FeDeV

- **Partners involved**
  - ScopeSET, Germany

- **Contact Information**
  - Michael Benkel (michael.benkel@scopeset.de)
  - Felix Suda (felix.suda@scopeset.de)

- **Download**
  - https://nextcloud.scopeforge.de:444/s/m4RWSPB55pXKdPT