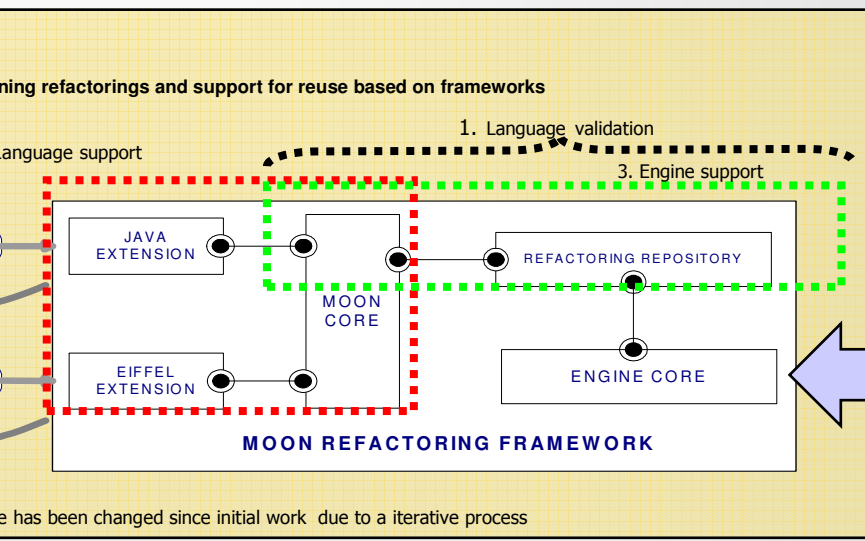


...ing software adapting it in a new context  
 ...preserves software behavior  
 ...not excluding  
**ols**  
 ...re software system  
 ...definitions when adapting to new source language

**to software reuse and software reuse is important to refactoring**

- Previous works**
- Model language MOON
    - Abstract constructions in the m
    - Common to a family program
  - Refactoring parameterize [Crespo, 20
- Related works**
- Refactoring definition
    - Non formal
    - Semiformal (pre- and portcon
  - Works with a particular language
    - Tools for Java, Smalltalk
  - Do not reuse refactoring definitions



**STOP**

**Problem: Loss reuse from previous efforts**

**Model Language: Template**

...description explaining the refactoring

...refactoring can be useful

...parameters supported in the model language MOON

...conditions must be satisfied. They are defined with predicates and functions on model in the MOON

...condition primitives defined on MOON grammar. They transform the classes.

...conditions must be satisfied. They are defined with predicates and functions on model in the MOON

**Example: Specialize Bound S**

Description  
 Motivation  
 Inputs: C, G, B

Preconditions:

$$G \in \text{FormalParam}(C)$$

$$\forall T \in \text{SubstFormalPar}(C, G) \Rightarrow T \in \text{Subtype}(B)$$

$$\exists \text{FormalPar}(C, G) = C, \forall B \in \text{FormalPar}(C, G)$$

$$\forall C' \in \text{Desc}(C) / \text{BoundType}(C', G) = T \wedge \text{IsComp}$$

Actions

Postconditions:

**ReplaceBoundType(C,G,B)** ← Primitives

BoundType(C,G) = B ←

**Example: Predicates and functions**

**class A[G -> C,H]**

...

end

**class B[H]**

... attributes

a1:A[H];

a2:A[Number];

... end

FormalParam(A) = { G, H }    IsCompleted(TE(B, \_a1)) = false  
 BoundType(A,G) = C        IsCompleted(TE(B, \_a2)) = true

**Example: Actions**

**class A** attributes a:D; ... end

**RemoveAttribute(a,A)**

**class A** attributes ... end

**MOON Framework**

...e constructions

...and semantic language rules

...ing basic operations

...language constructions

**Engine Framework**

...e method to achieve refactoring by checking preconditions, executing

**Example: MOON Framework and extension with**

1

2

**BOUNDED\_S**

<<abstract>> geRecursiveFormalPar() : FORMAL\_PAR

<<abstract>> isBoundedF() : Boolean

bound\_s\_type

0..\*

1

**CLASS\_TYPE**

completed : Boolean

**GJFBOUNDED\_S**

boundedF : Boolean

isBoundedF() : Boolean

setBoundedF(p : Boolean)

getRecursiveFormalPar() : FORMAL\_PAR

**Collection**

public class Collection

<A implements Comparable <A>>{...}

context BOUNDED\_S:

inv FBOUNDS:

self.isBoundedF() = true implies

self.bCLASS\_TYPE -> completed = fa

(A,Collection):TYPE:FORMAL-PAR:BOUNDED\_S:GJFBOUNDED\_S