

PatternMap \triangleq Identifier \rightarrow B

mapping : Pattern* \rightarrow PatternMap

mapping [patts : Pattern*] \triangleq given associate_patterns \triangleq $\lambda p : \text{Pattern} \bullet \{<p.name, true>\}$
then
 over patts apply associate_patterns combine "overriding union" empty \emptyset
end

V_{Program} : Program \rightarrow B

V_{Program} [p : Program] \triangleq given pmap \triangleq mapping (p.patts)
then V_{Patterns} (p.patts, pmap) and V_{Template} (p.main, p.map)
end

V_{Template} : Template x PatternMap \rightarrow B

V_{Template} [t : Template, pmap : PatternMap] \triangleq over t apply $\lambda i : \text{Item} \bullet$ V_{Item}[i, pmap] combine "and" empty true

V_{Item} : Item x PatternMap \rightarrow B

V_{Item} [i : Item, pmap : PatternMap] \triangleq case i of
 Eltnode \Rightarrow V_{Template} [i.content, pmap] |
 TxtNode \Rightarrow true |
 Copy \Rightarrow V_{Template} [i.content, pmap] |
 Application \Rightarrow i.name \in dom pmap and V_{Selection} [i.select]
end

V_{Selection} : Selection \rightarrow B

V_{Selection} [s : Selection] \triangleq V_{Steps} [s.stp]

V_{Steps} : Step* \rightarrow B

V_{Steps} [steps : Step*] \triangleq over steps.HEAD apply
 $\lambda \text{stp} : \text{Step} \bullet \{V_{\text{Match}}$ [stp.match] and V_{Constraint} [stp.constr] $\}$ combine "and" empty true

V_{Constraint} : Constraint \rightarrow B

V_{Constraint} [c : Constraint] \triangleq V_{Steps} [c.stp]

V_{Match} : NodeExpr \rightarrow B

V_{Match} [n : NodeExpr] \triangleq case i of
 EltnList, AllElts, AllNodes \Rightarrow true |
 AllTxs \Rightarrow false
end