

# Arugula



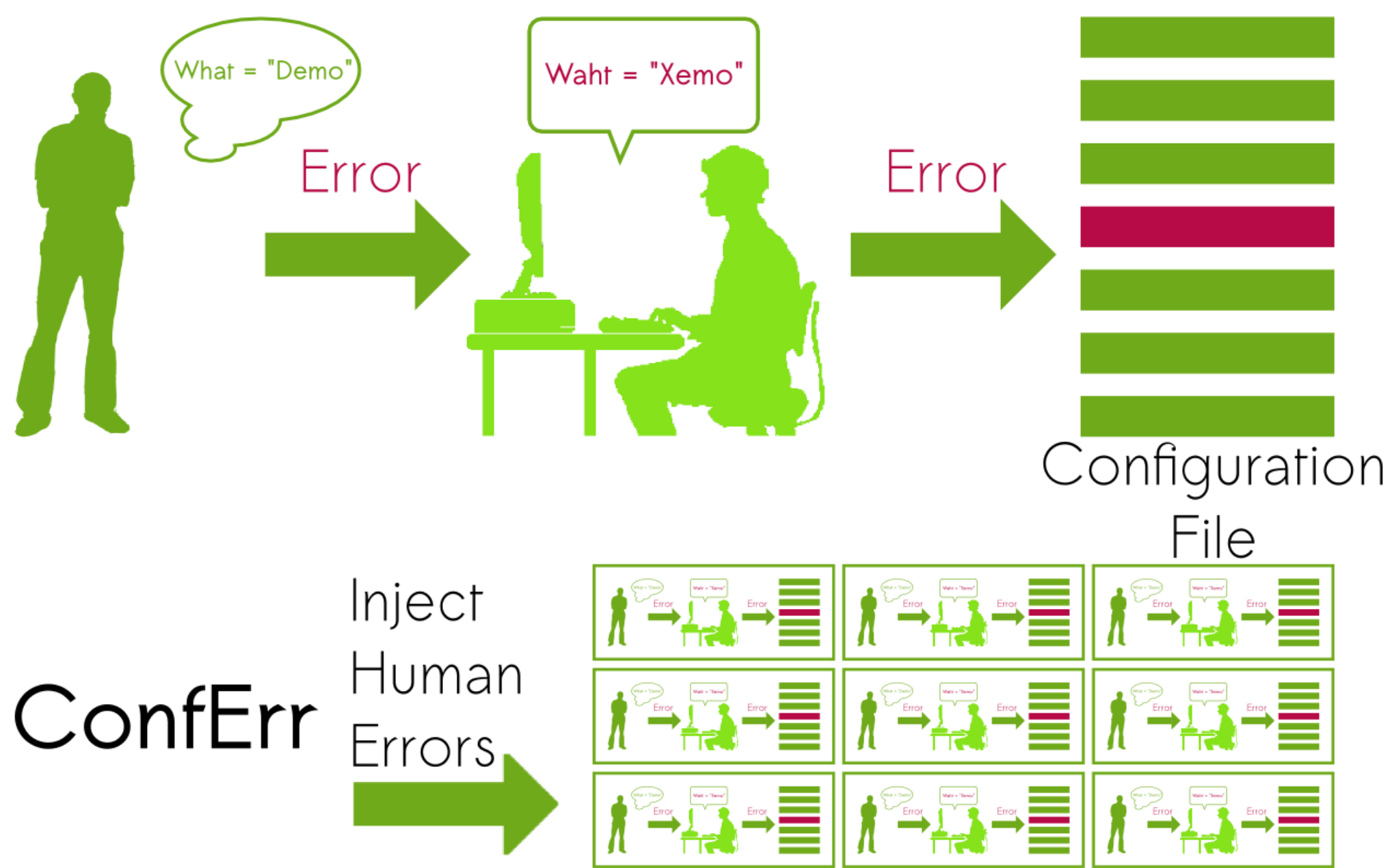
A Programming Language for Describing Human Errors

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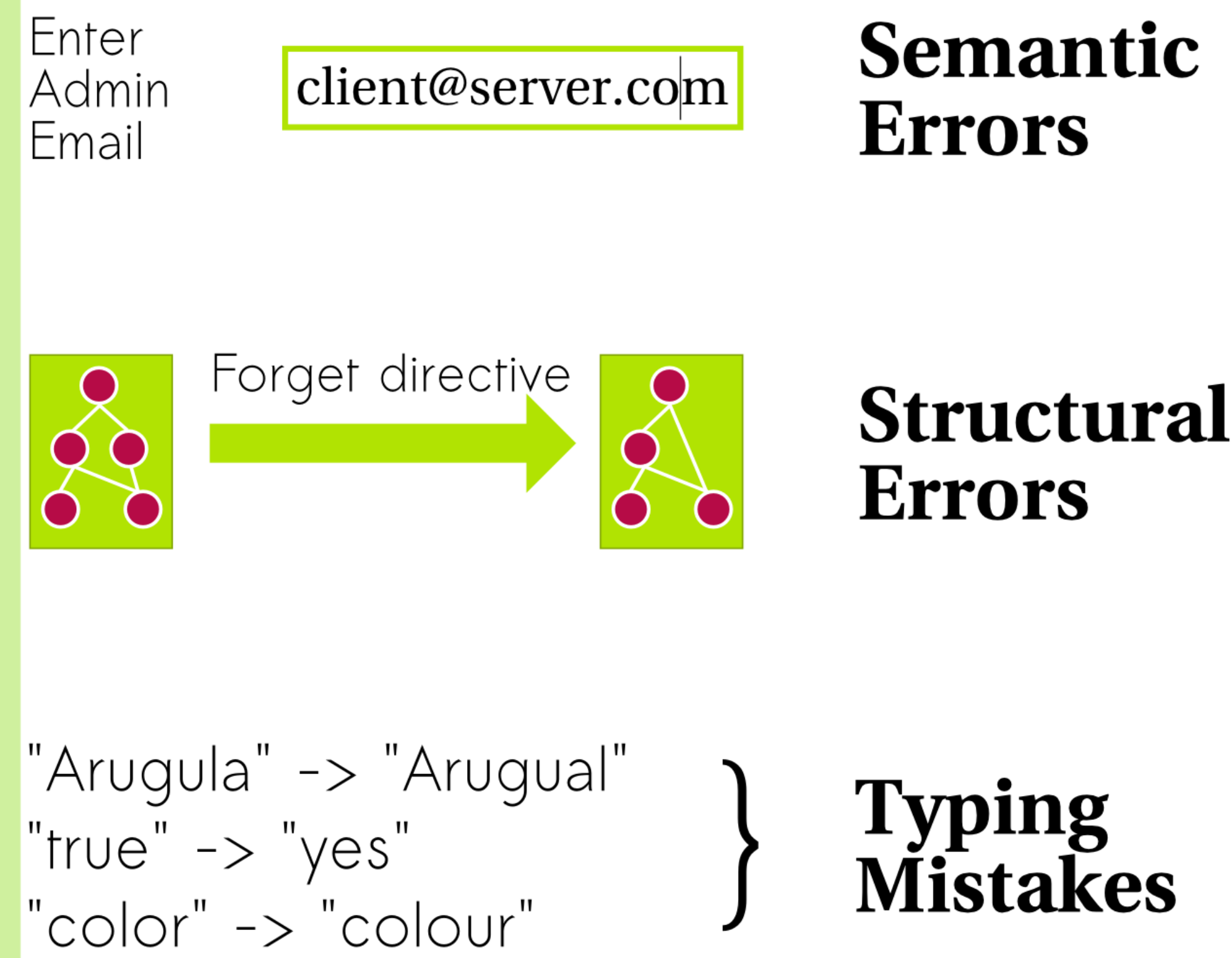


## Abstract

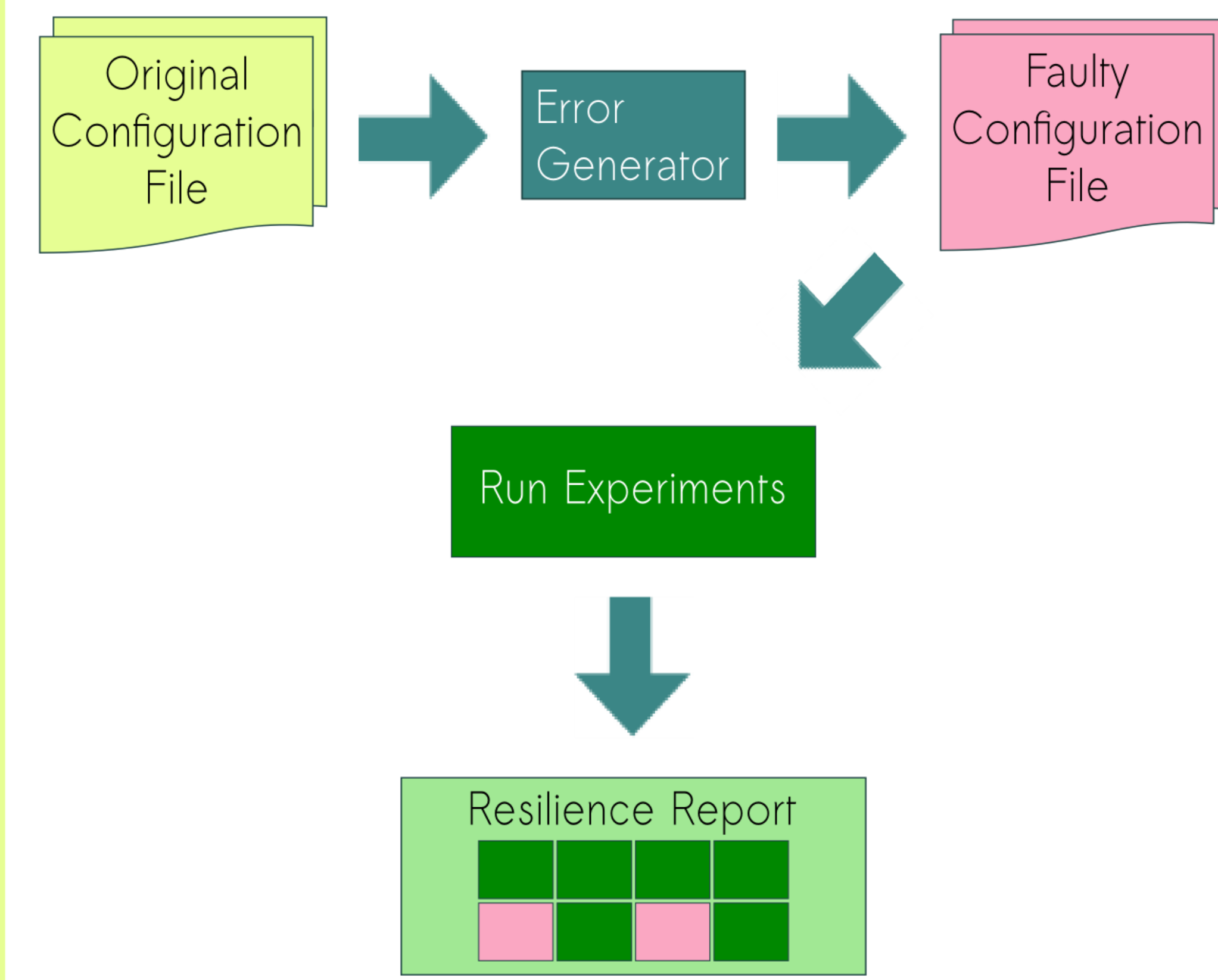
**ConfErr** tests the reaction of programs to **human-induced configuration mutations**.



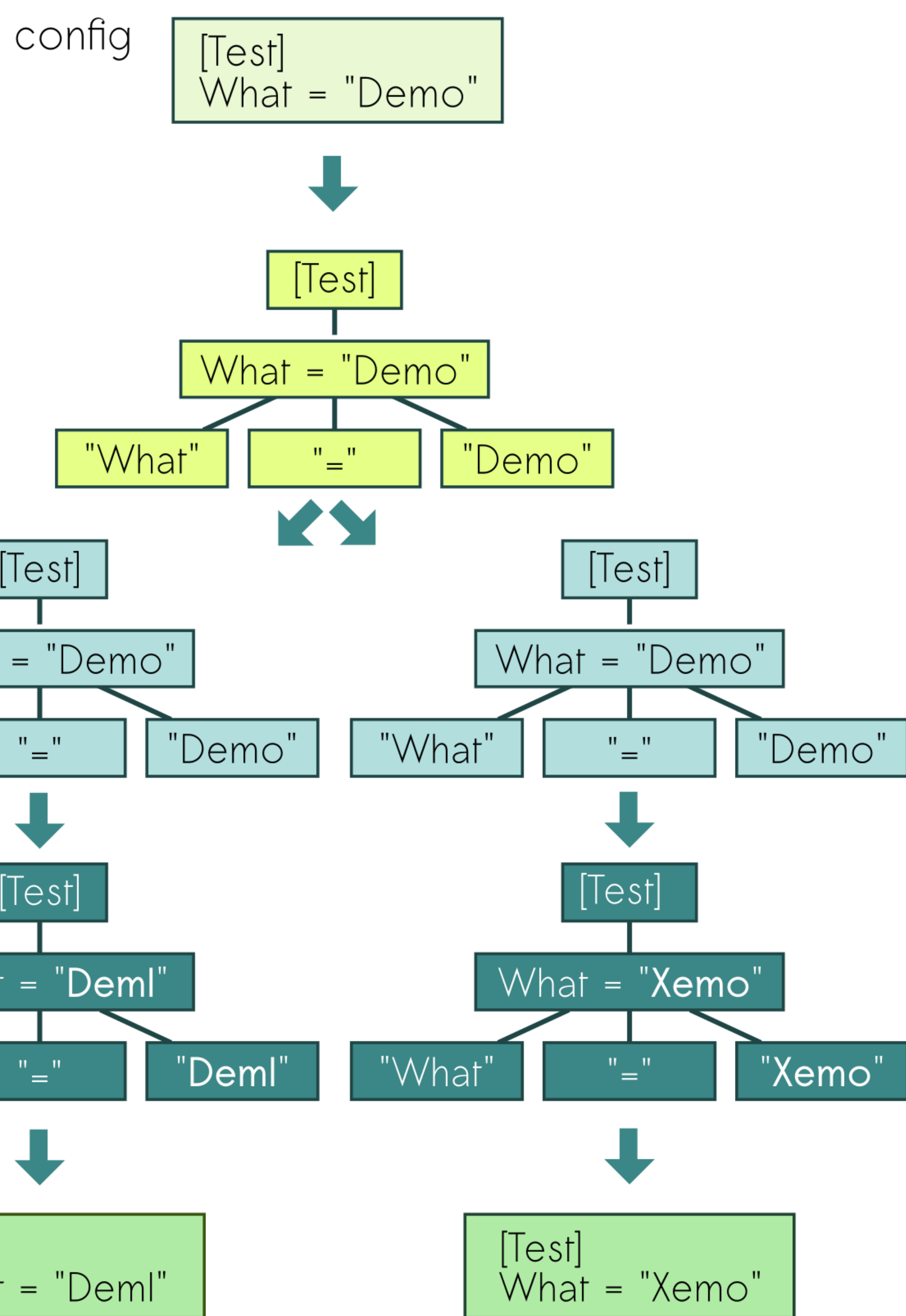
## How People Err



## ConfErr Design



# Arugula



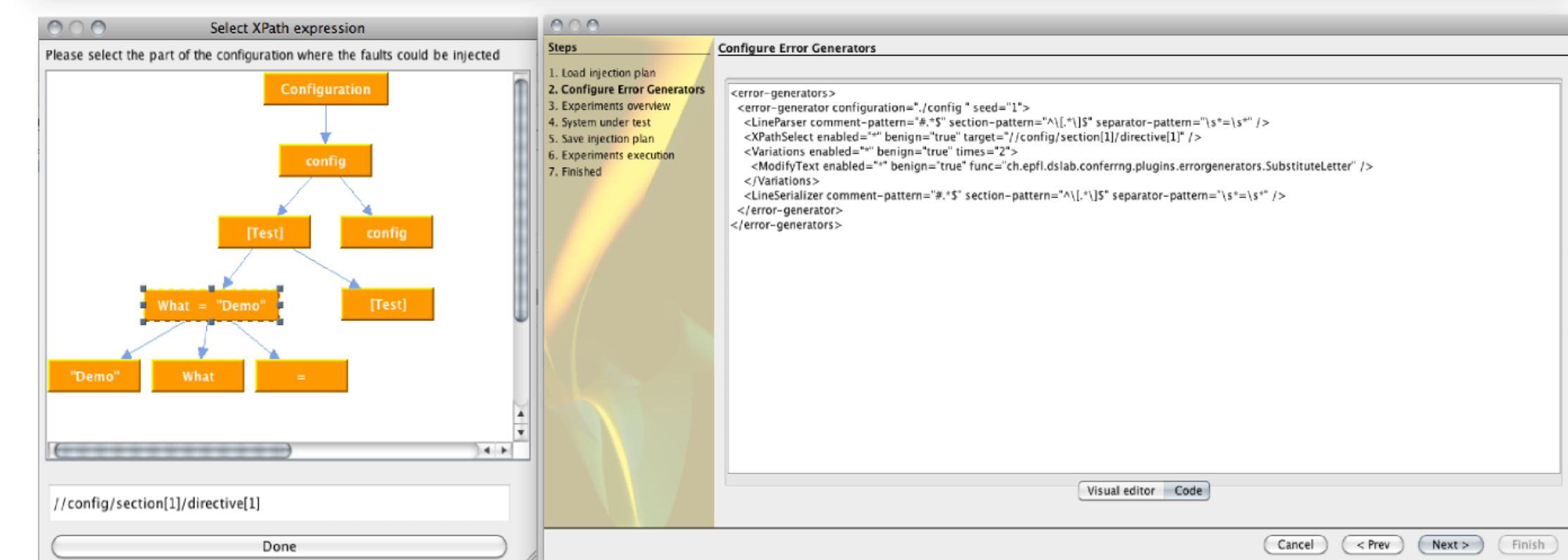
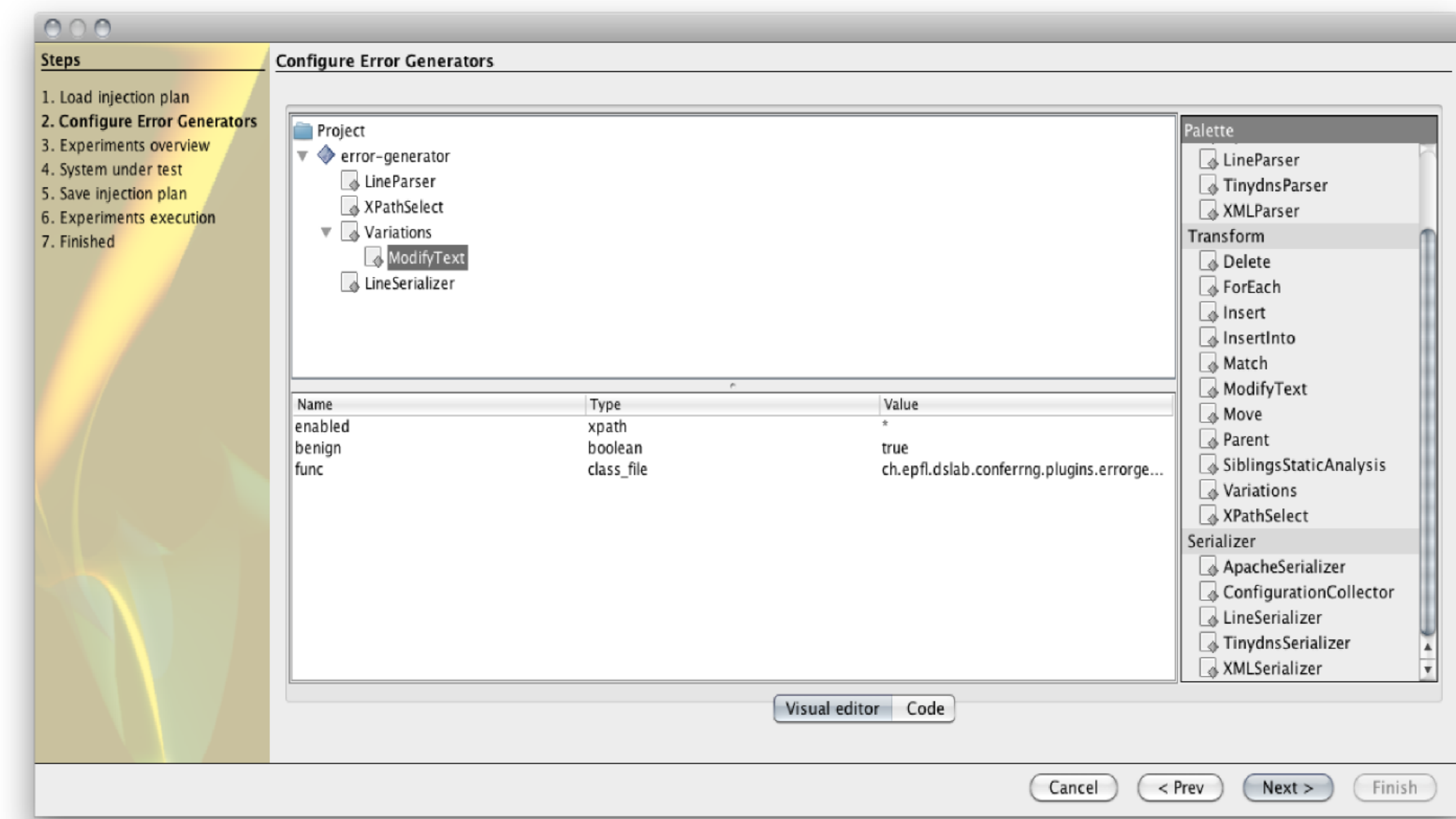
ErrorGen config="config"

LineParser

Variations times="2"

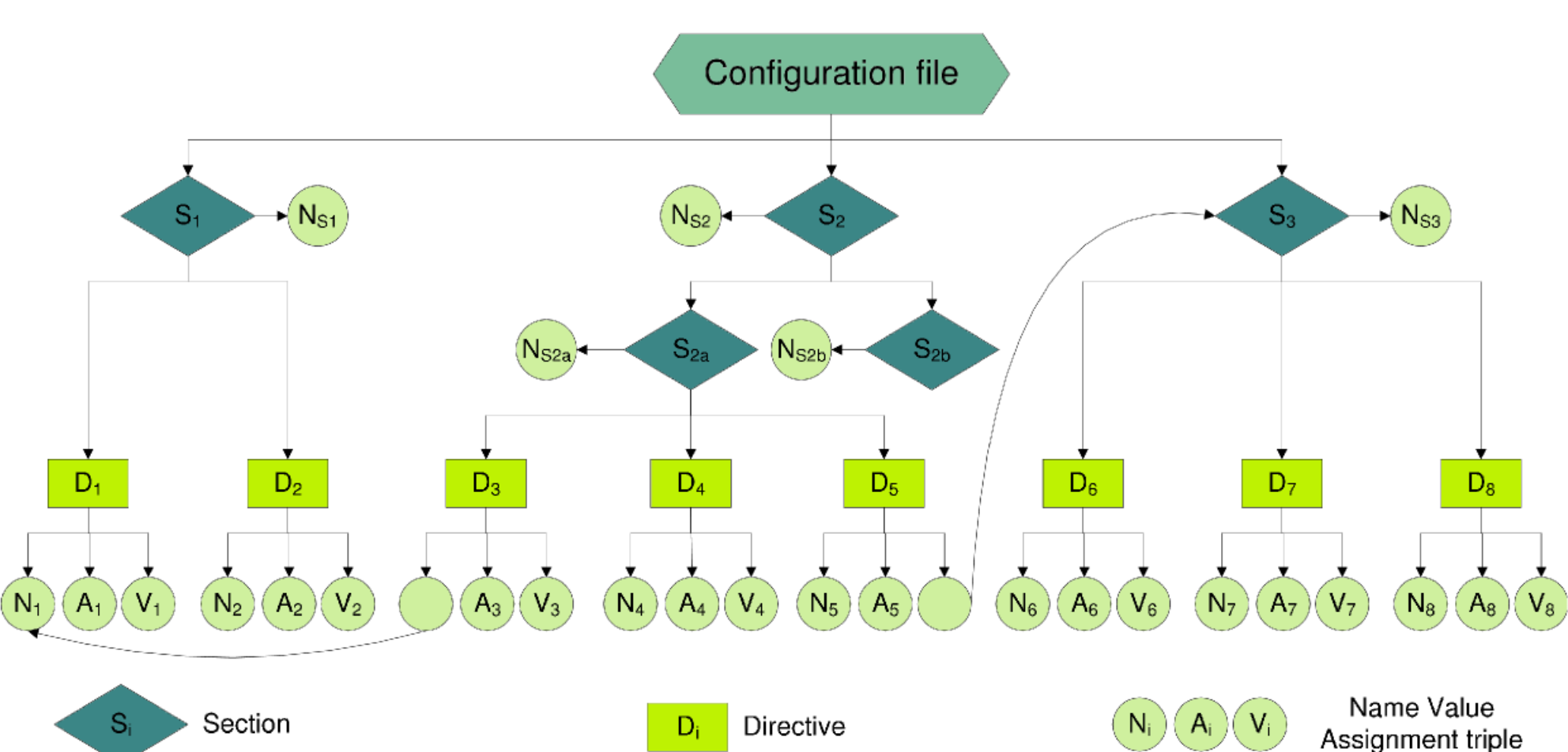
Typo how="Substitution"

LineSerializer



Easy to use  
Program-independent error generators  
Reproducible errors  
Basis for resilience benchmarks

## Abstract Rep.

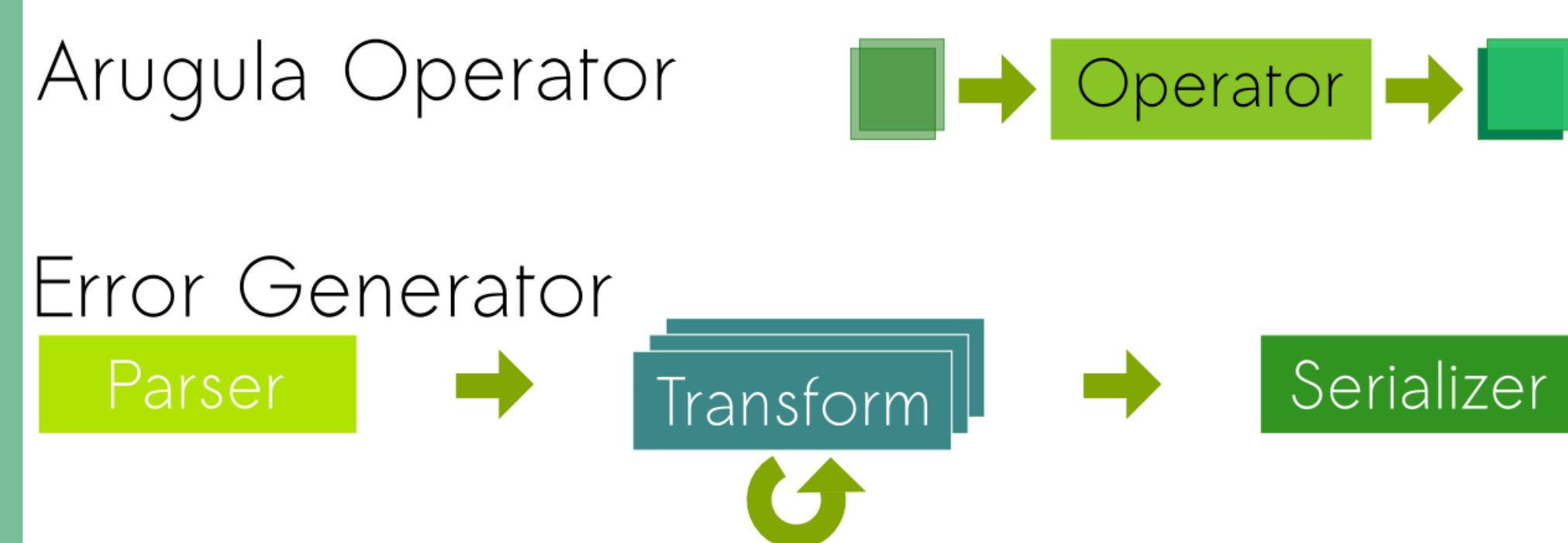


Config file = **Directed Acyclic Graph**

**Leaves** = text information  
**Inner nodes** = configuration structure

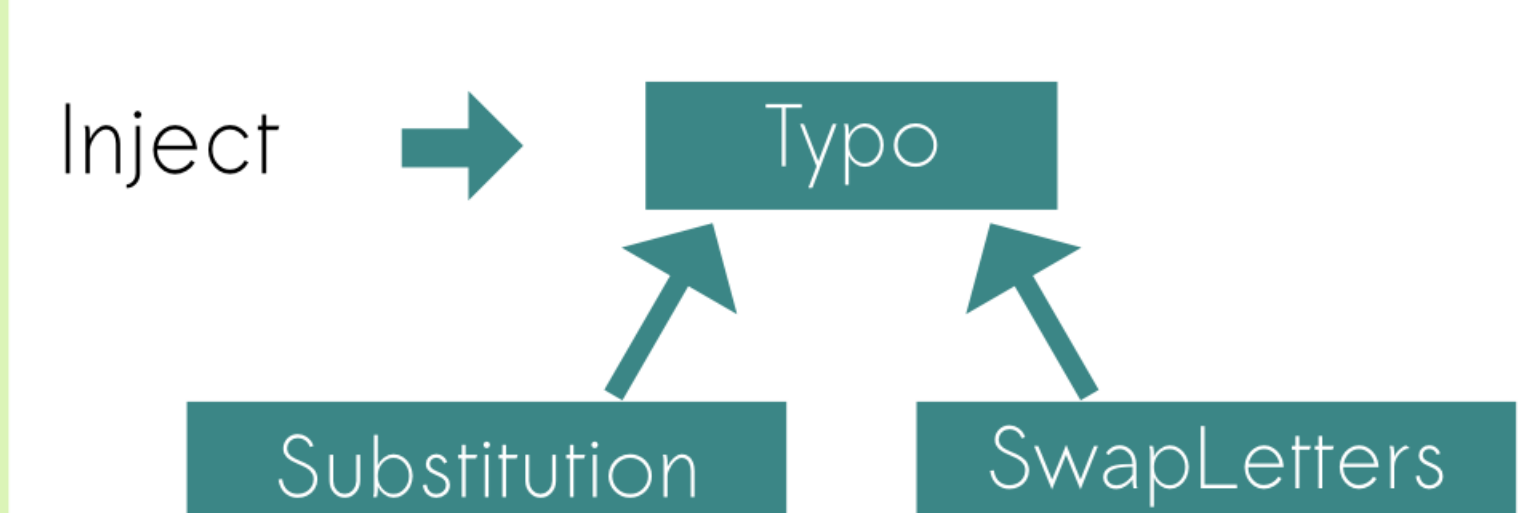
**Directive** = {name, separator, value},  
**Section** = (Directive | Section)+

## Arugula Operators



Operator	Description
Parse	Generate abstract representation
XPathSelect	Select nodes based on XPath expr.
Delete	Remove nodes from input
Insert	Add children to input nodes
Typo	Transform text representation
ForEach	Transform each node separately
Variations	Transform multiple times
Serialize	Generate concrete config. files

## Generic injection



## Discover directives

