

A Unified Approach to Architecture Conformance Checking

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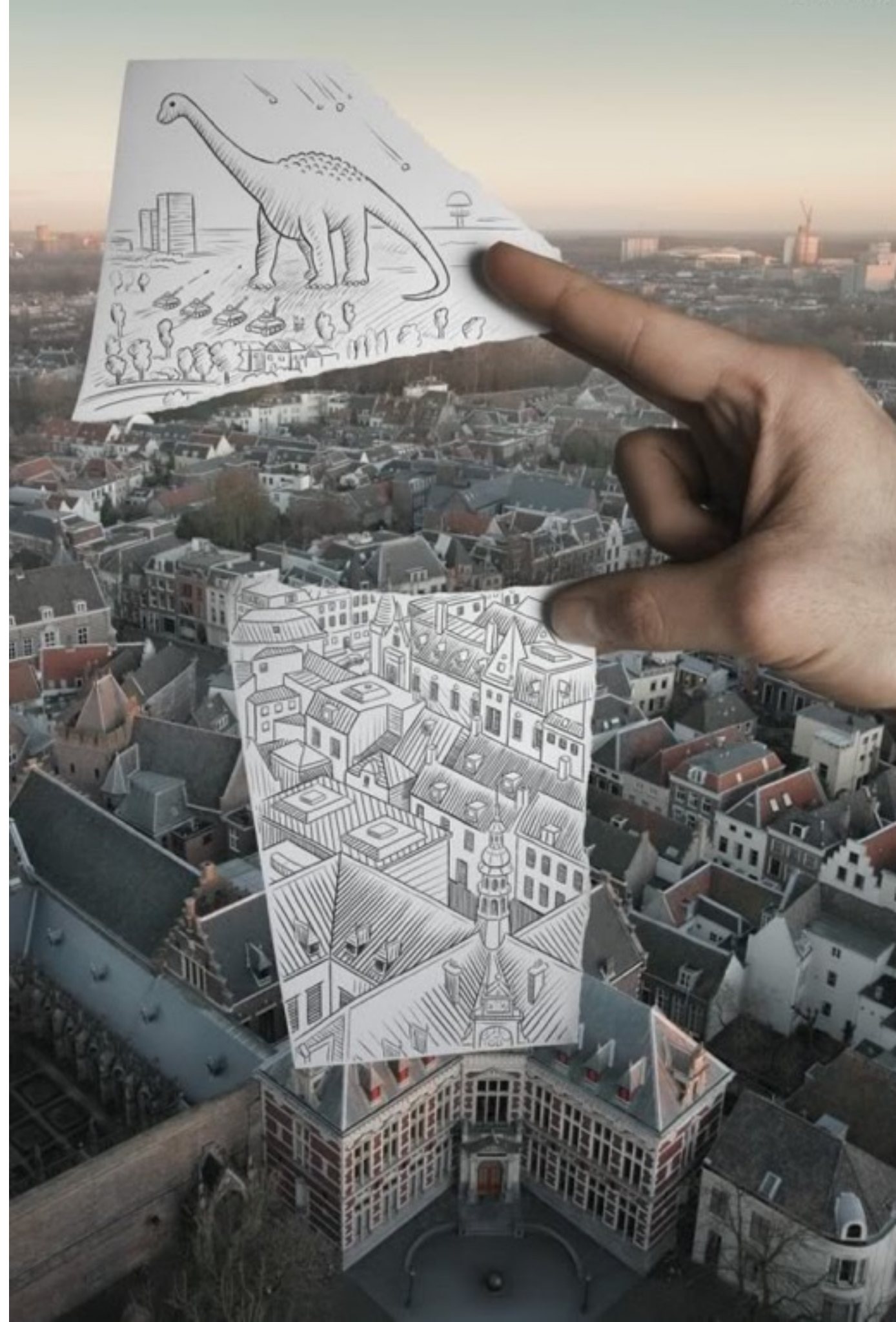
Erosion

?

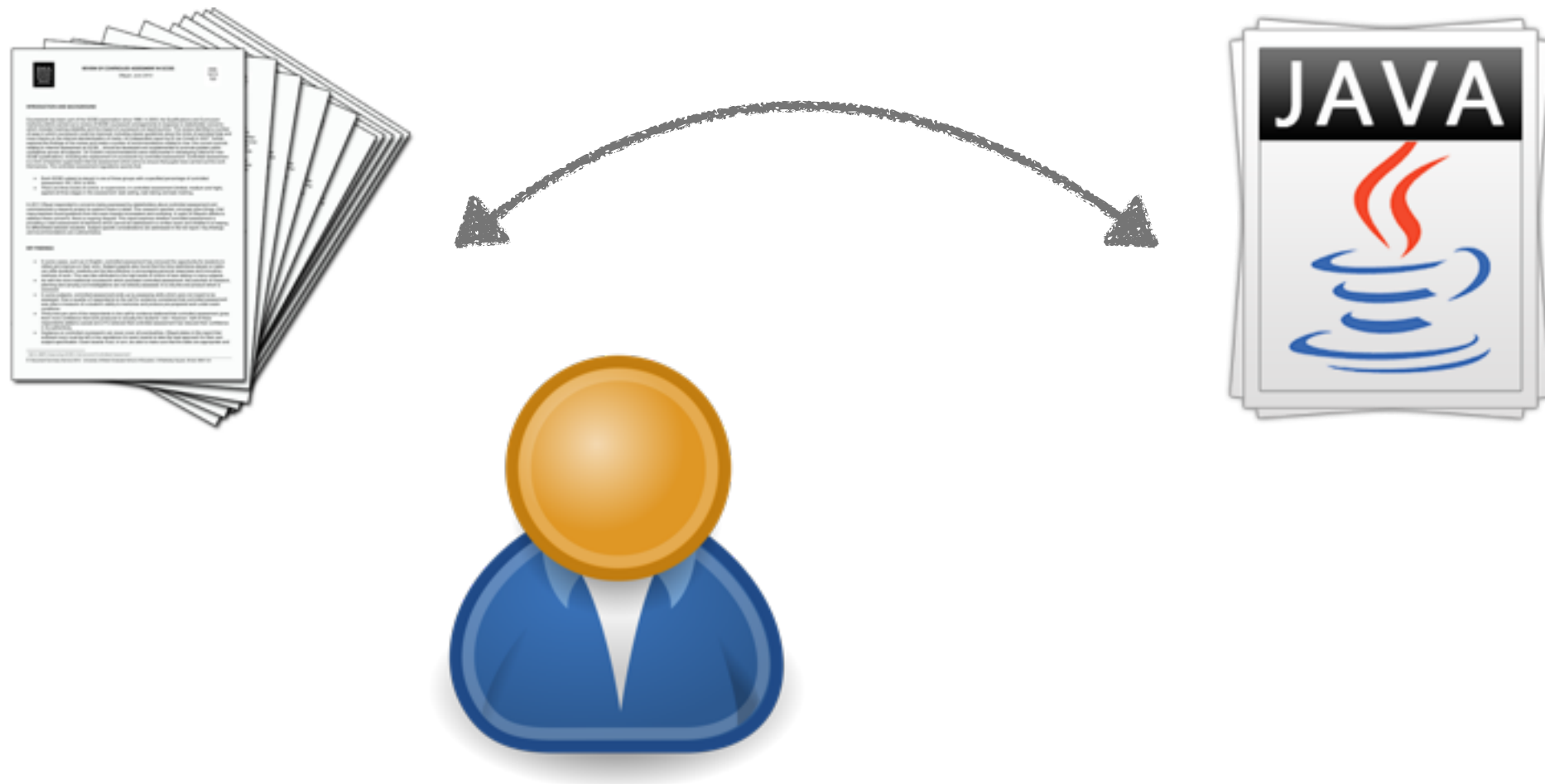
Design = Implementation



**Compliance
Monitoring**

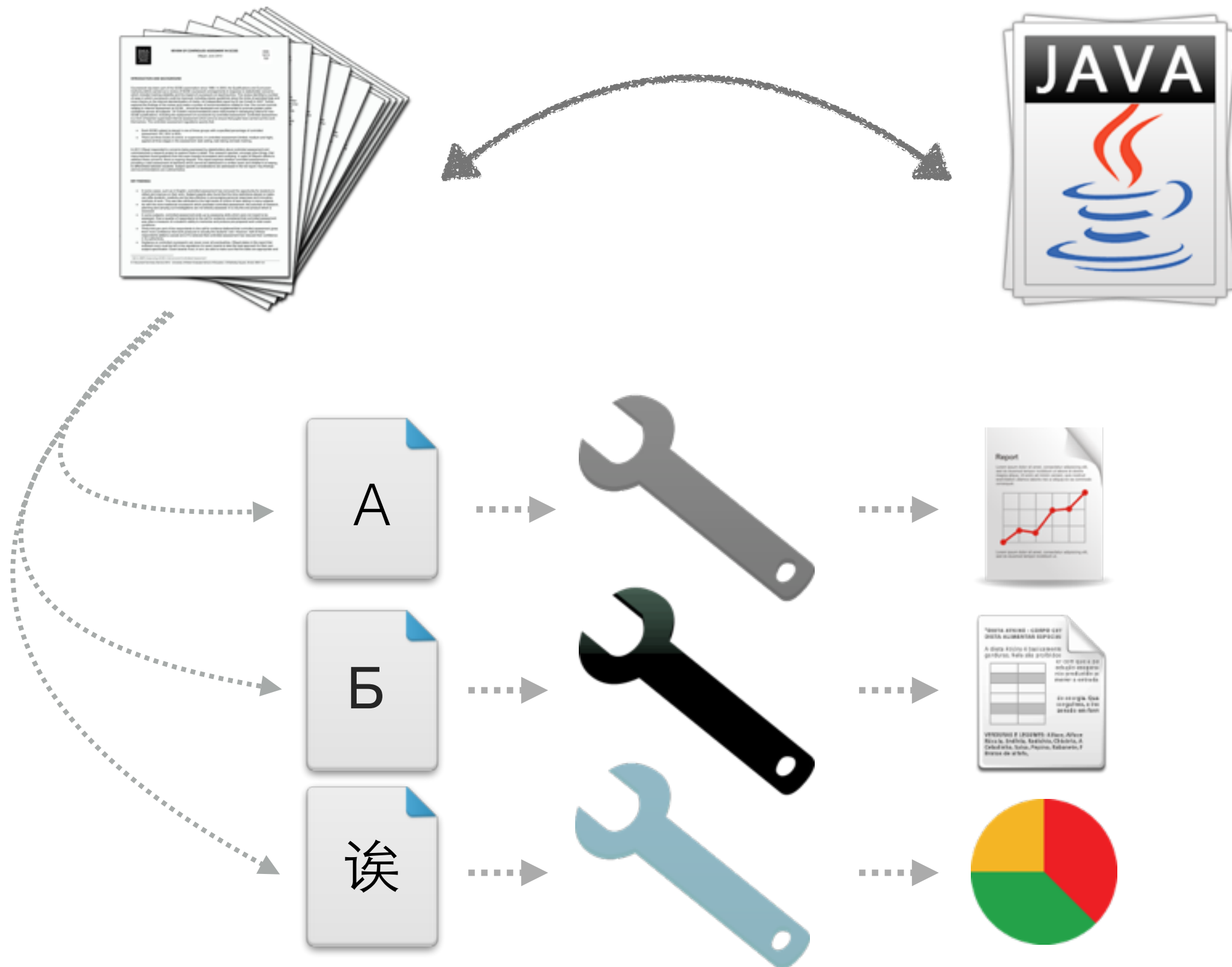


Compliance Monitoring

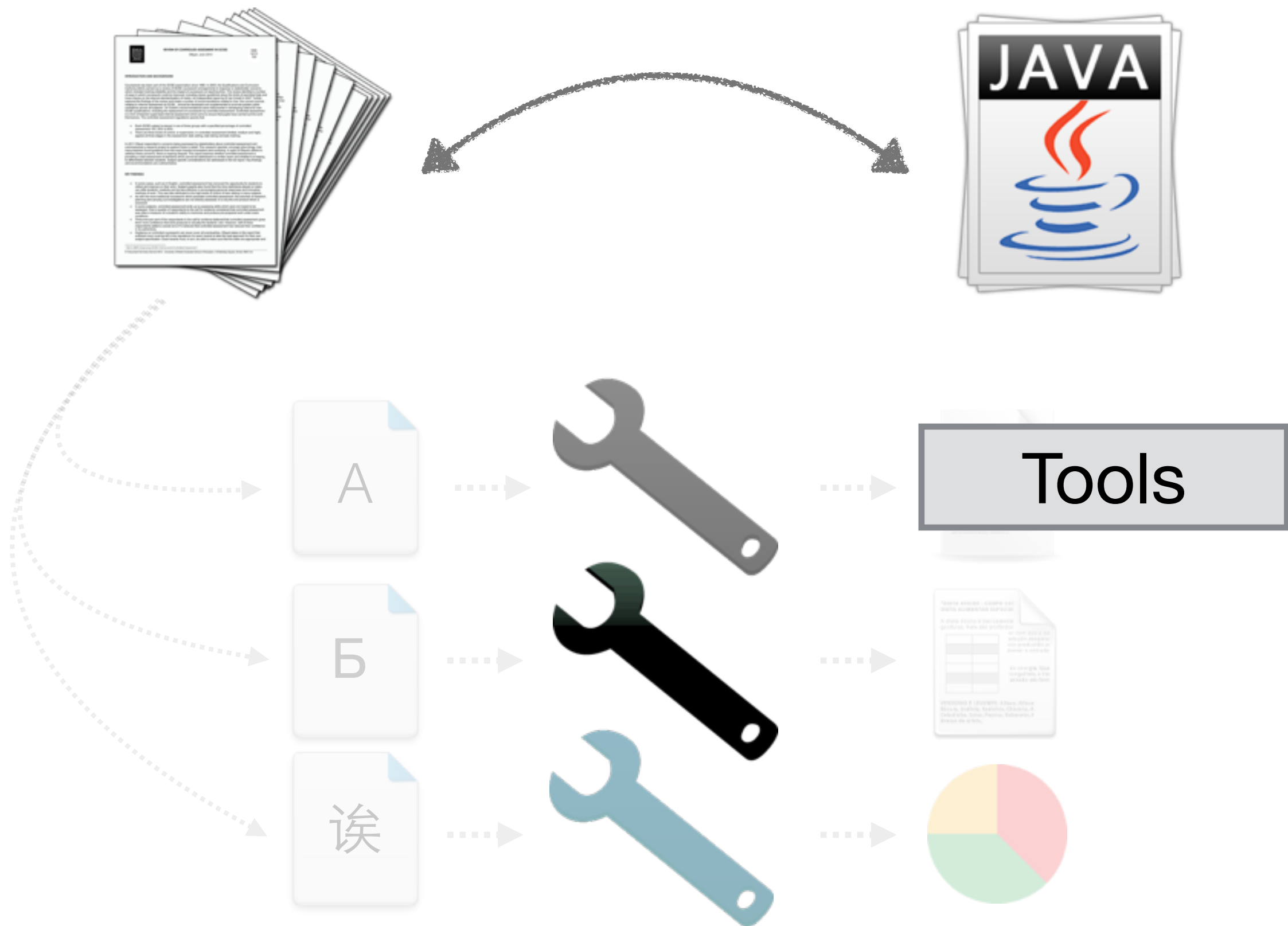


60% **non-automated**
techniques

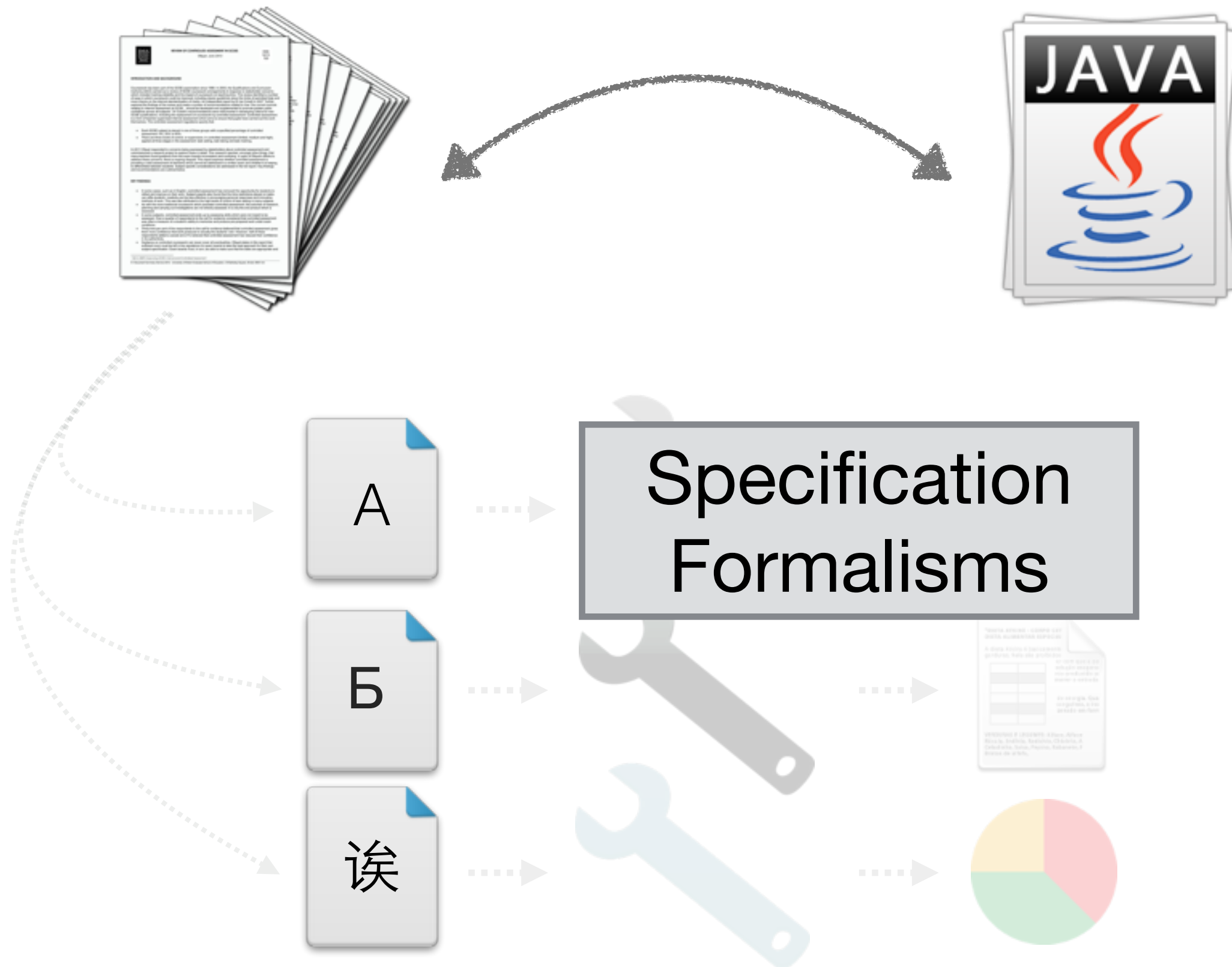
Compliance Monitoring



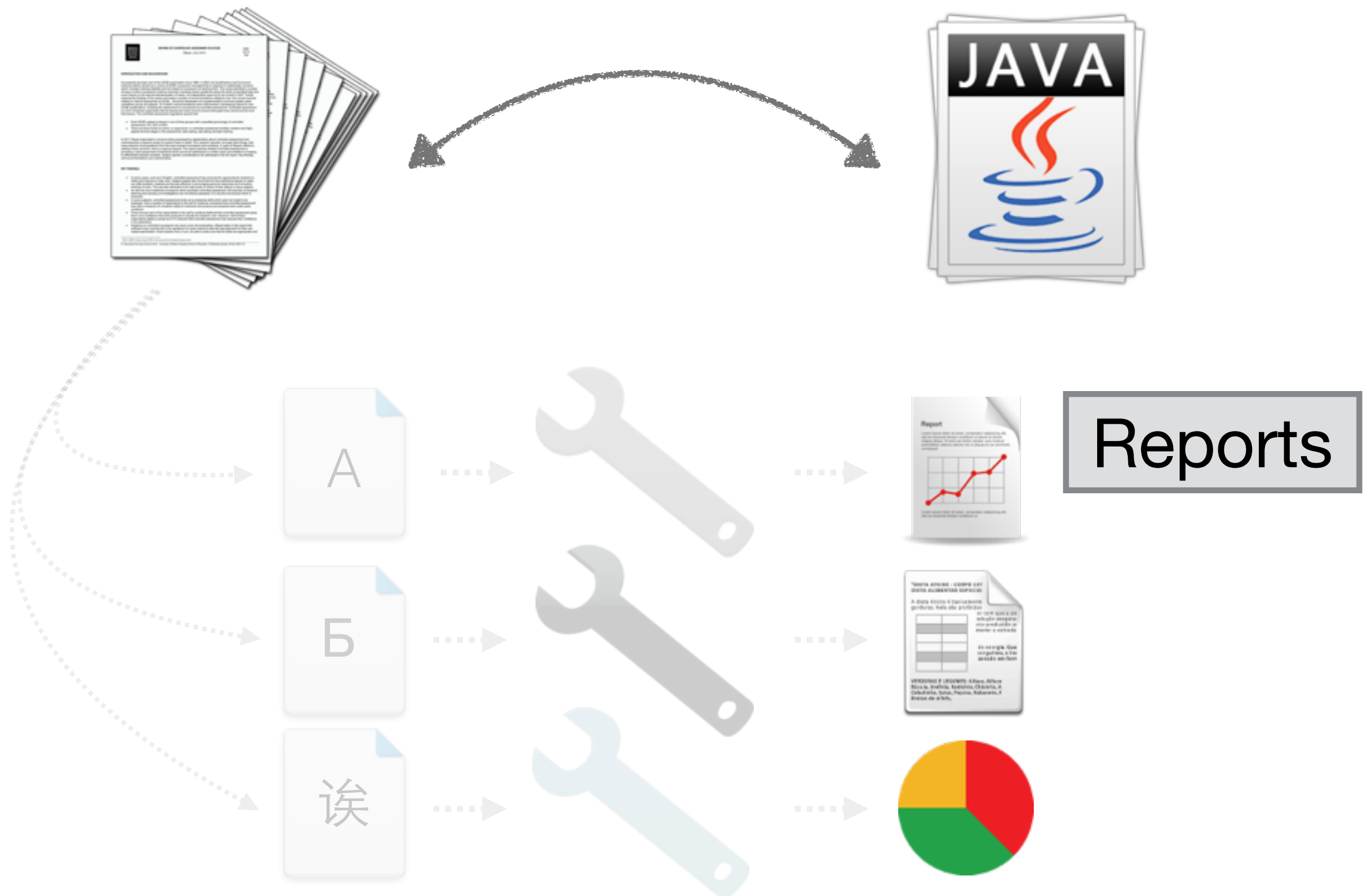
Compliance Monitoring



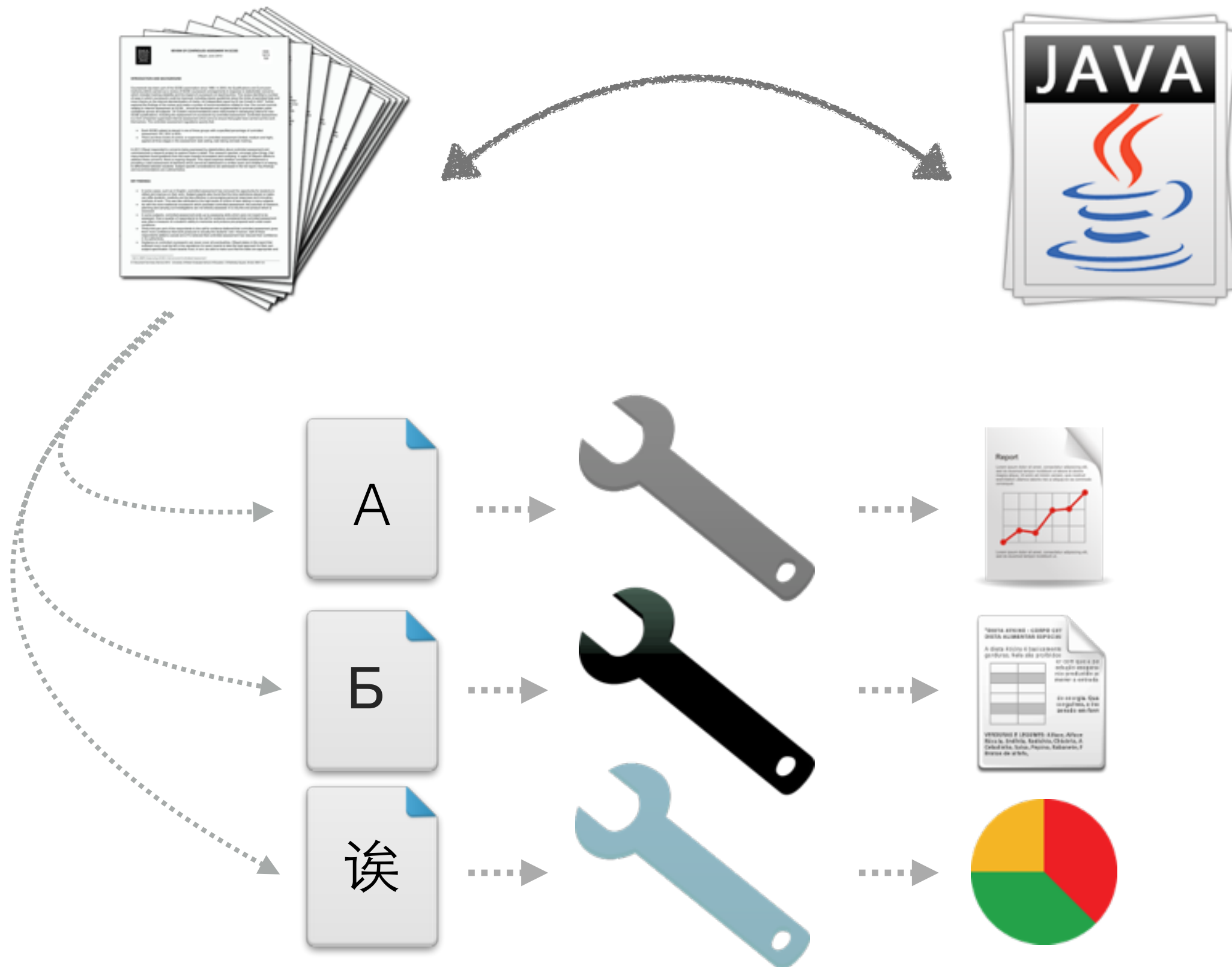
Compliance Monitoring



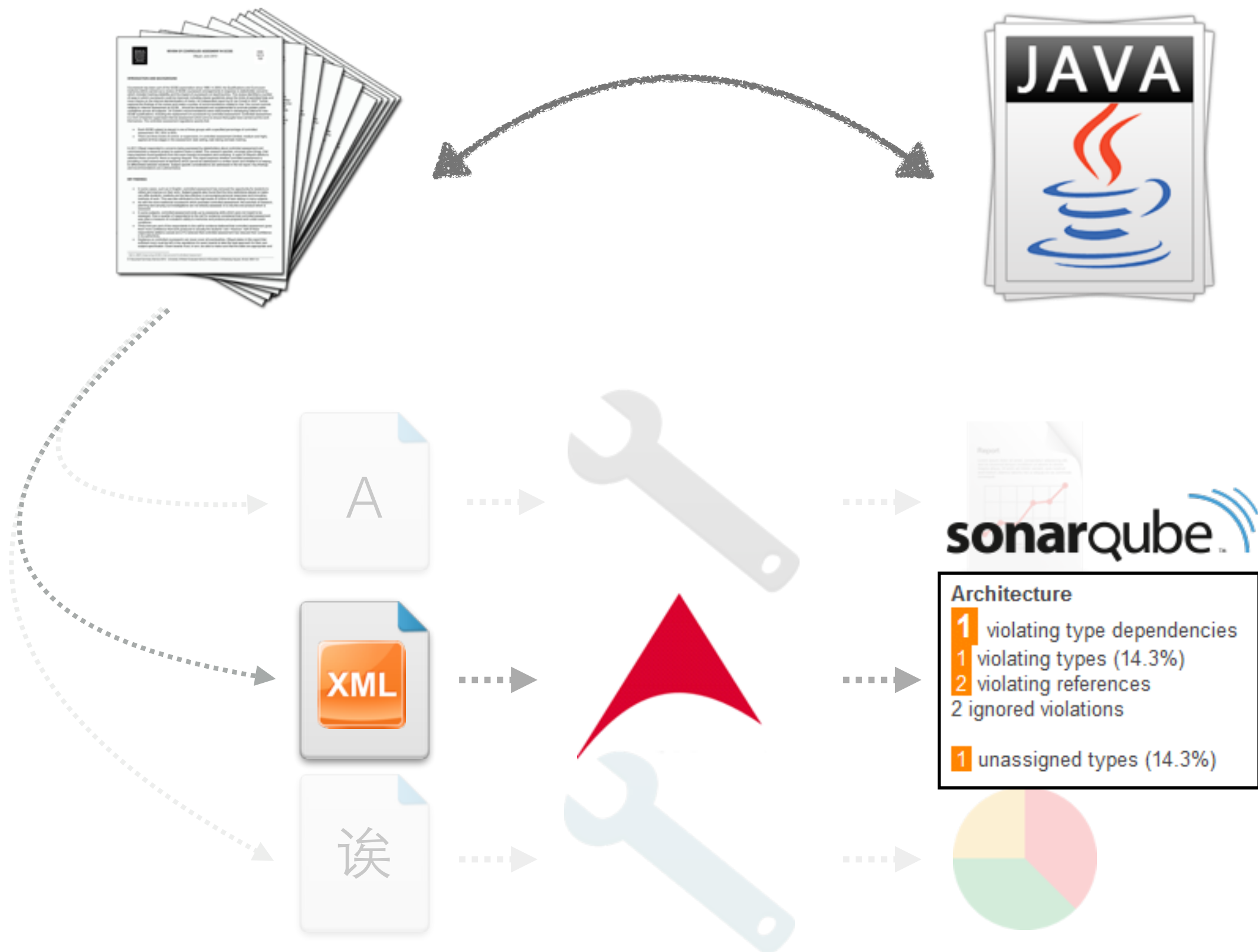
Compliance Monitoring



Compliance Monitoring



Compliance Monitoring

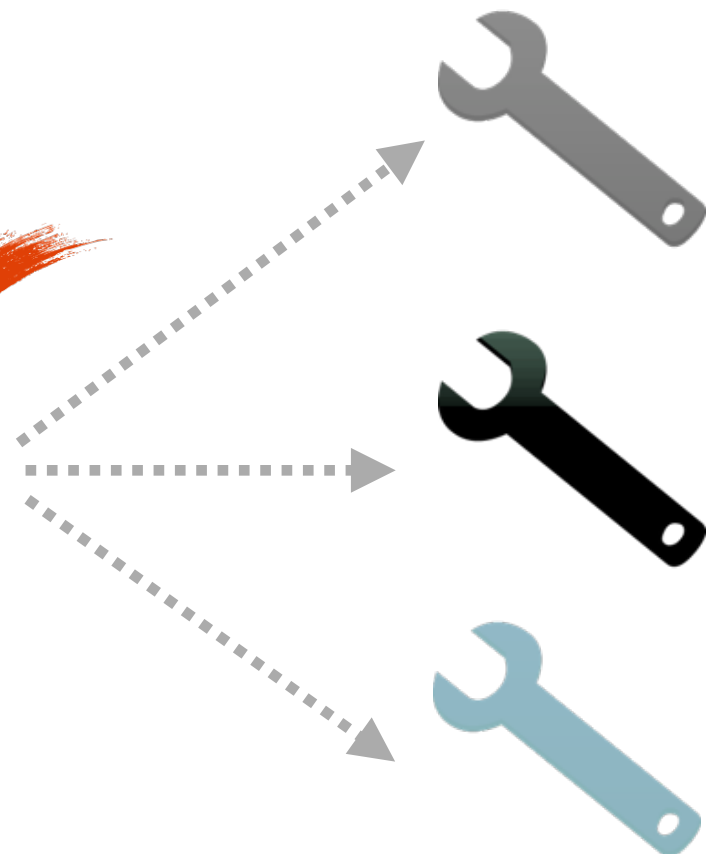


A Unified Approach



Dictō

Persistence cannot **depend on** Service
Impl must **have annotation** "@Service"
System cannot **contain cycles**





Core cannot contain code clones
only Controllers can catch ValidationEx
CustomerAPI must have latency < "100 ms"
Tests must have method Setup, Teardown
WebRoot must have child "servlet-mapping"



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Maintainability

Compatibility

Reliability

Performance



Controllers = Class with annotation: "*@Controller*"

Views = Class with name: "*app.*.*View*"

Tests = Method with modifier!: "*static*", name: "*test**"

Core = {Controllers, Model} except {Tests, Utils}



Controllers = Class with annotation: "*@Controller*"

Views = Class with name: "*app.*.*View*"

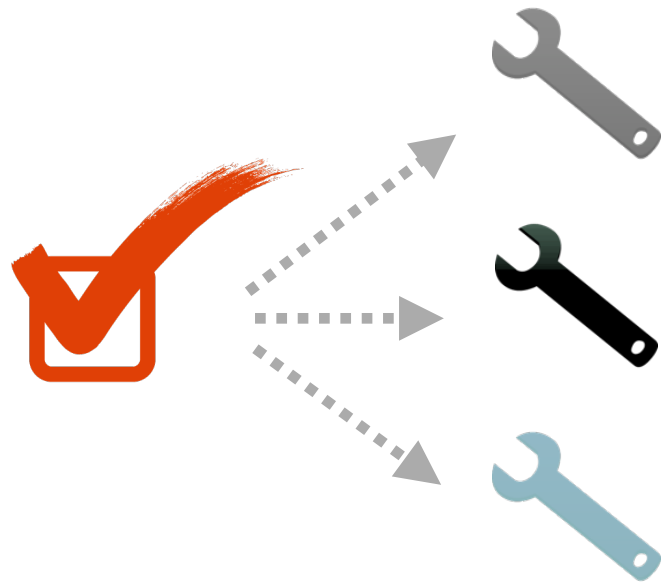
Tests = Method with modifier!: "*static*", name: "*test**"

Core = {Controllers, Model} except {Tests, Utils}

Code

Local/Remote
artifacts

Analysis



Test, View can only depend on Model, Controller

Test can only depend on Model, Controller

depend-on(com.app.Test, com.app.View) = False

depend-on(com.app.Test, com.app.Test) = False

depend-on(com.app.Test, com.app.Util) = False

View can only depend on Model, Controller

depend-on(com.app.View, com.app.View) = False

depend-on(com.app.View, com.app.Test) = False



depend-on(com.app.View, com.app.Util) = True

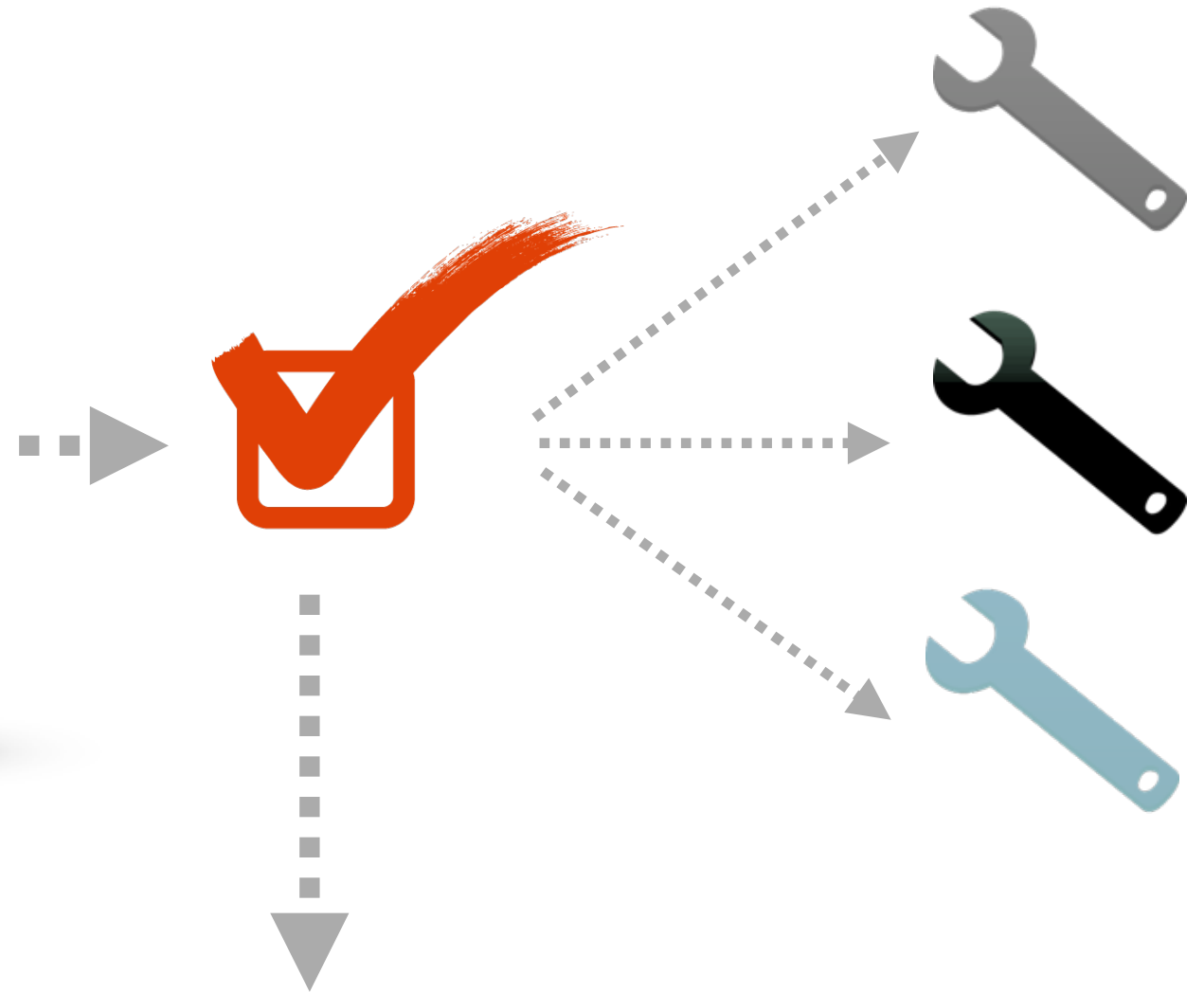
Reporting

Dictō

SYSTEM cannot **contain cycles**

Persistence cannot **depend on Service**

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Statistics

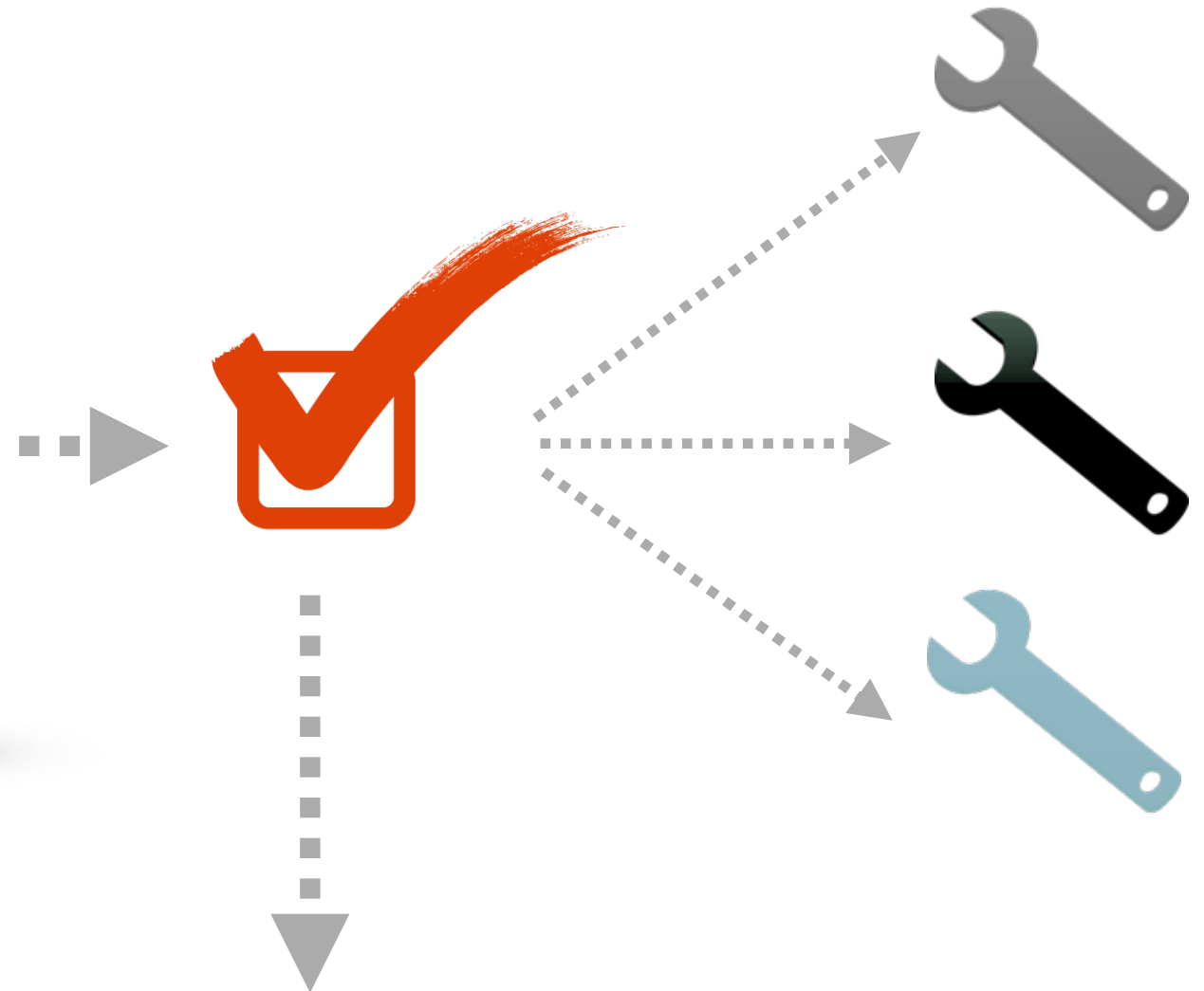
Reporting

Dictō

SYSTEM cannot **contain cycles**

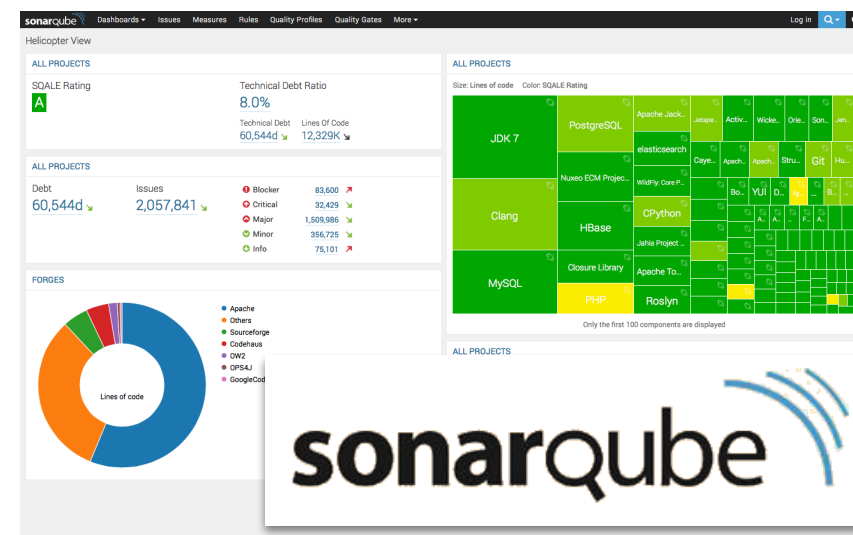
Persistence cannot **depend on Service**

Impl must **have annotation** "@Service"



New Issue

Statistics



Evaluation



Open source project

LMS - PHP (1.8M LOC)

12 service providers, 900'000+ users



Large size company

B2B - Java EE (50K LOC)

1'000 employees



Medium size company

various - Java EE / .NET

100 employees

Evaluation

Impact:

Code quality? Awareness?

Expressivity/Usability:

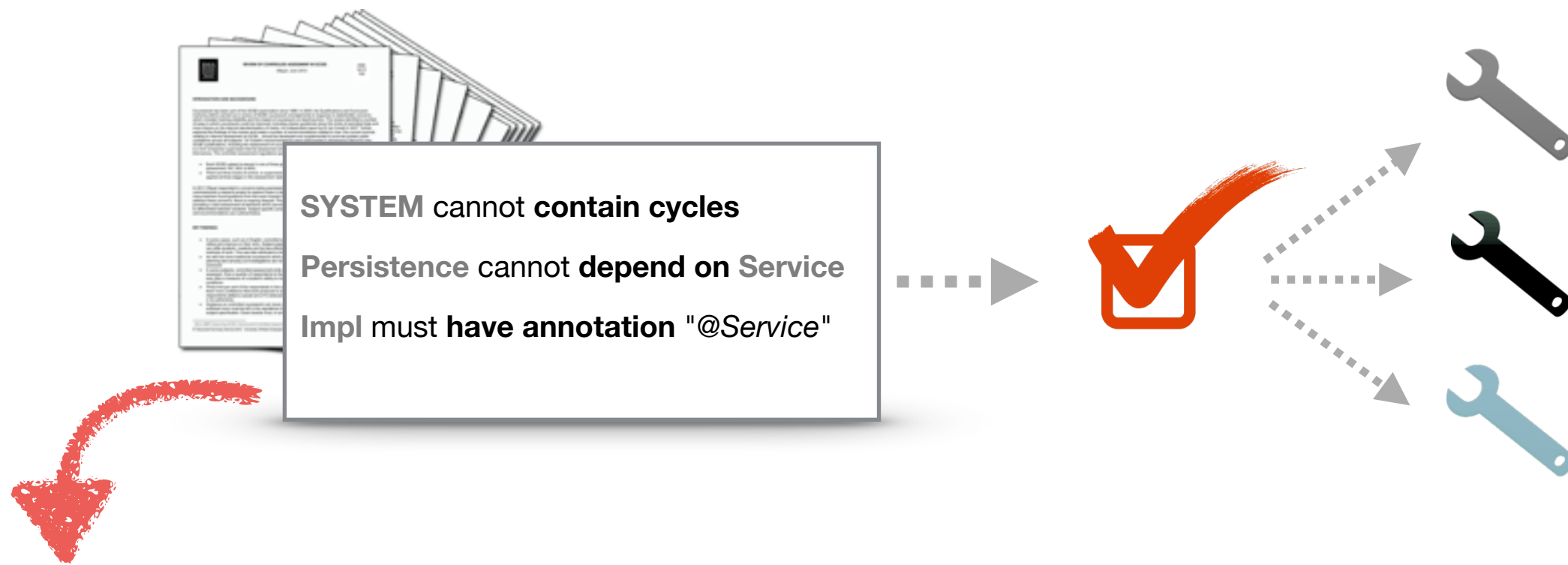
Fit needs? Usable?

Ease of adoption:

Cost-effective? Process?



Summary



Dictō

A uniform, readable, executable DSL
for specifying architectural constraints.