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# An Architecture for Modelling and Applying Quality Processes on Evolving Software

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## Overview

- **Background**
- **Our Approach**
- **Architecture**
- **Evaluation**
- **Related Work**
- **Conclusion**



## Background

- **Focus on Software Evolution Mgmt**
- **SCM: Infrastructure for SEM and SP**
- **Process & Product**
- **Development & Quality Evaluation**
- **Unification & Realistic Reporting**
- **Tool → Data → Process → Product**
- **Infrastructure for SEM – SP Methodology**

## Our Approach

- Semantic Artefacts
- Systematic Monitor
- Data Model
- Extensibility
- Applying Policy, Quality



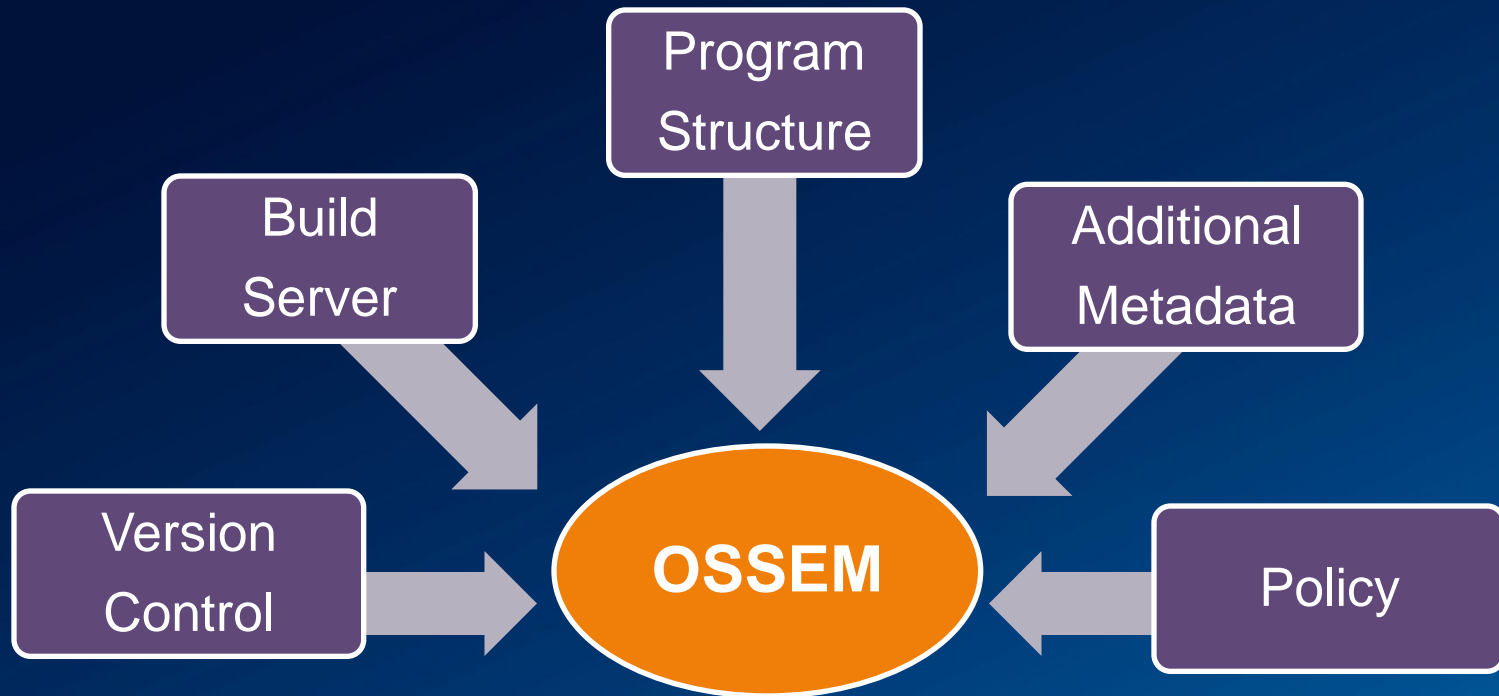
OSSEM: OO SW Semantic Evolution Management



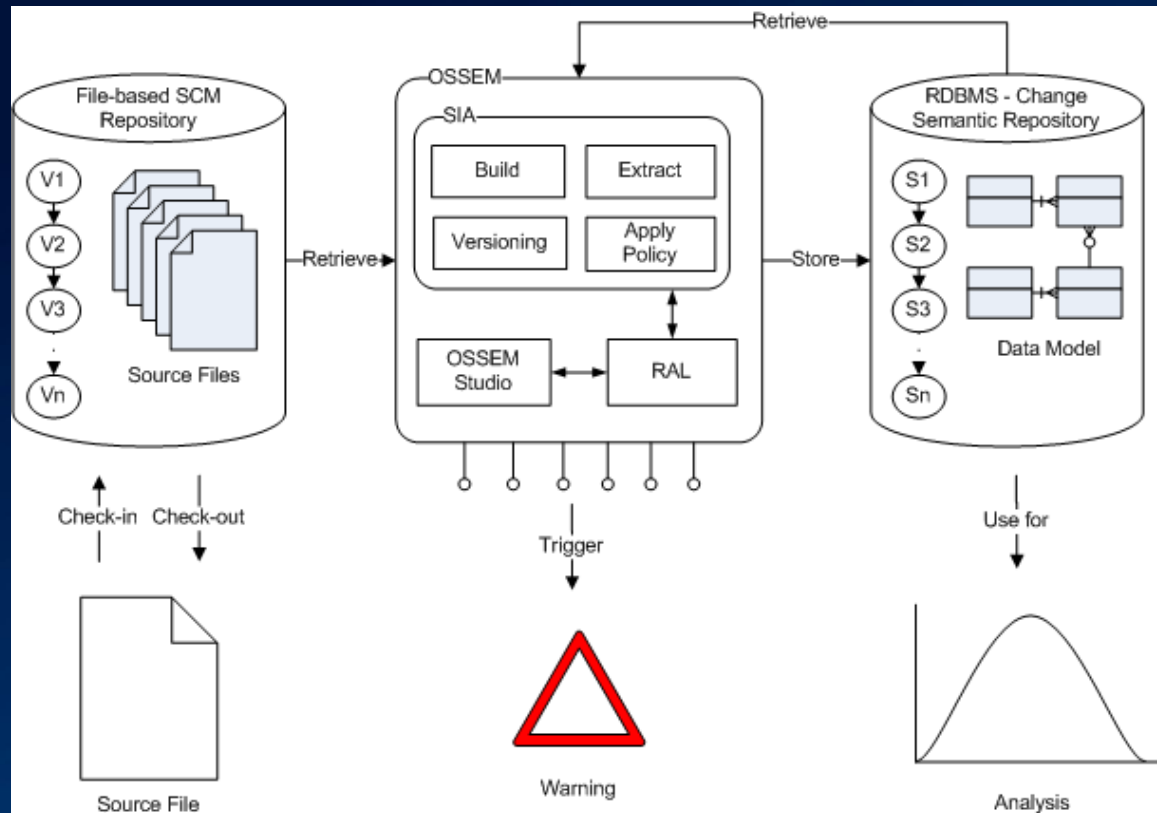
## Goals

- **Open Language**
- **Semantically Rich**
- **Well Defined, Accessible, Consistent**
- **Preserving Quality and Integrity**
- **Systematic and Automatic**
- **Minimal Overhead**

## Big Picture



# Architecture





## OSSEM

- **Semantic Instrumentation Agent (SIA)**
  - Automation Engine, Infrastructure
- **Repository Access Library**
  - Logic, Services
- **Studio**
  - Front End, Usability
- **User Defined Semantic Artefacts**



## Applications

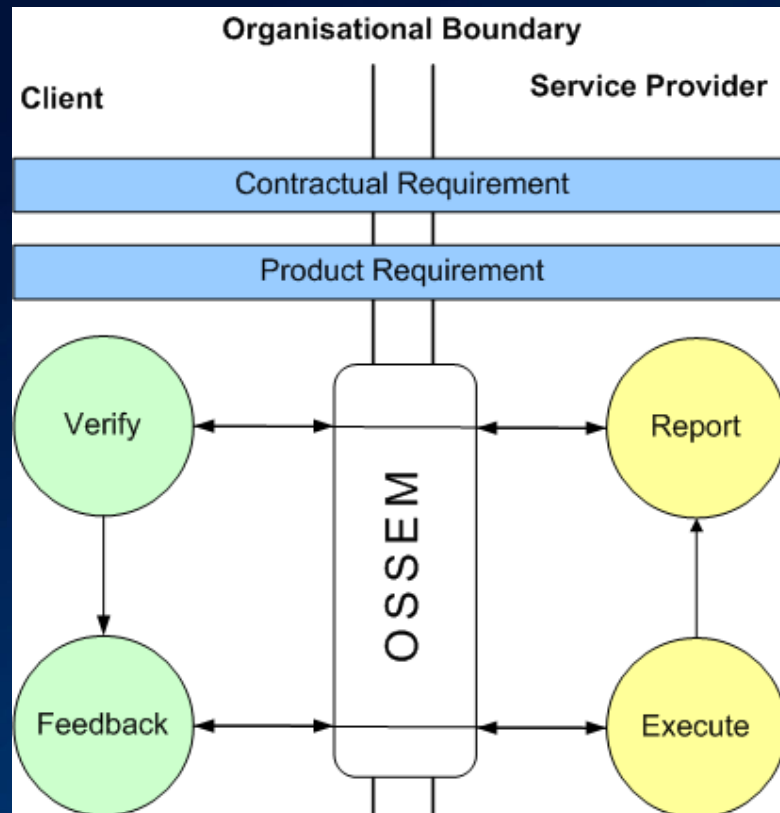
- **Structure**
  - Size, Coupling, Complexity, Cohesion
- **Quality**
  - Cognitive Complexity, Instability, Integrity
- **Custom**
  - Web Services, TDD, Design Pattern
- **Evolution**
  - Growth, Refactoring, Change Proneness



## Scenarios

- **Outsourcing**
  - Realistic Reporting, Transparency
  - Define Boundary, Guide Evolution
- **Software Library**
  - Integrity, Change Impact Analysis
  - Preserving Quality Attributes

# Feedback Loop





## Related Work

- **Darwin Environment (1989)**
- **Policy Oriented Feedback (2003)**
- **Mohaldo (2005)**
- **HISMO - MOOSE (2006)**
- **Kenyon (2005)**
- **CollabDev (2008)**
- **IBM Jazz, Microsoft VSTS**



## Conclusion

- Unifying Product and Process Views
- Dev and Quality Evaluation in Parallel
- OSSEM Infrastructure
- OSSEM Facilitates CMMI
- Quantitative Management & Software Audit



# Questions

