



# How Refactoring Impacts Security? A Security-Aware Refactoring Approach

Presented by: Chaima Abid  
Advisor: Dr. Marouane Kessentini

- 50% of security defects are flaws that have their genesis in the architecture and design phase.
- the US economy loses an average of \$60 billion per year as a cost of fixing security issues.

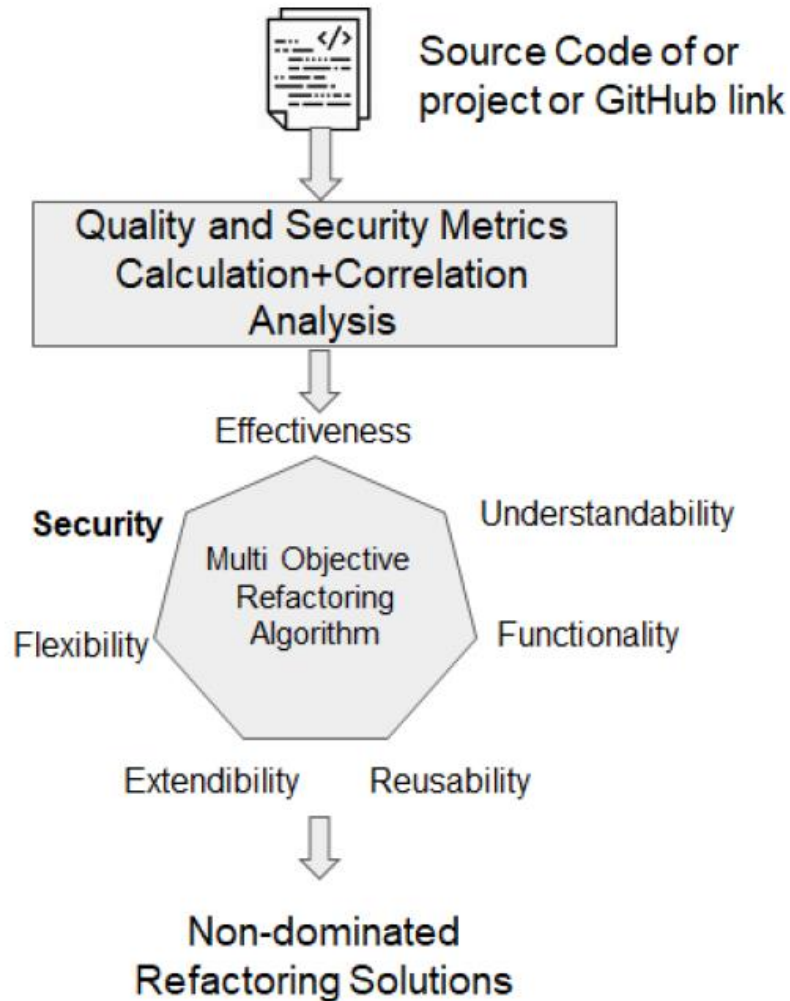
-The National Institute of Standards and Technology-



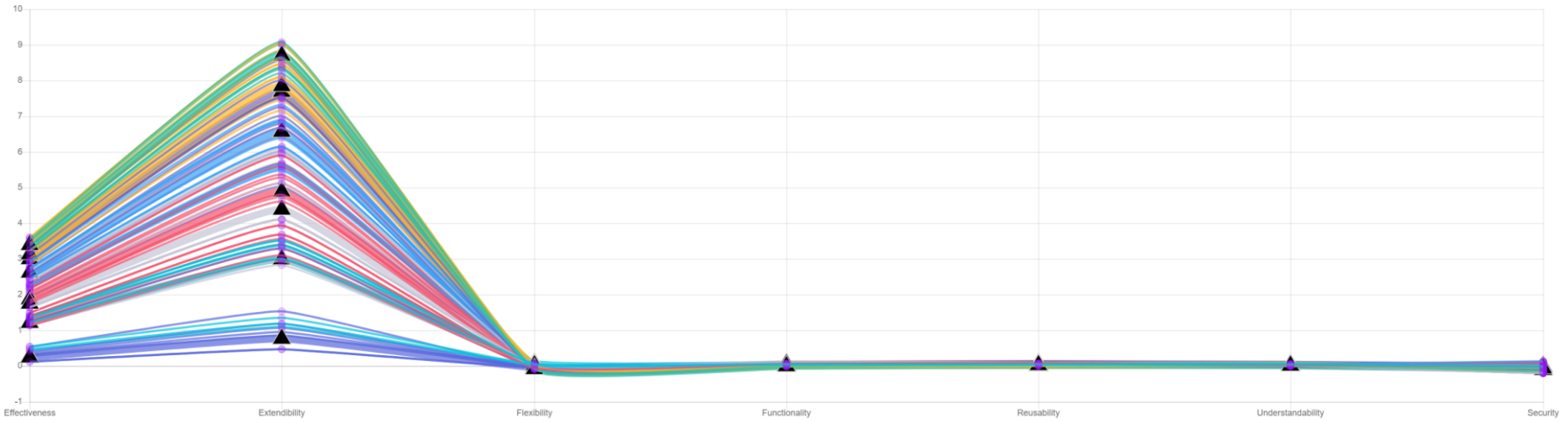
- Software quality is also critical and heavily impacts the productivity of programmers.

- Software quality may cause projects' failure as it may cost over 70% of a typical budget of a software project.





Line Chart of Solutions



Design: All Implementation: All Sort Quality: None

effectiveness extensibility flexibility functionality reusability understandability Bug Likelihood IsCritical? CIDA CCDA COA CMAI CAAI CAIW CMW VA Code Smell Status

functionality	reusability	understanda...	Design Smells	Imp Smells	Bug Likelihood	Is Critical?	CIDA	CCDA	COA	CMAI	CAAI	CAIW	CMW	VA	Code Smell Status
0.028	0.064	-0.042			0.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor
0.000	0.000	0.000			0.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor
0.000	0.000	0.000	unused abstraction		4.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor
0.000	0.000	0.000	unused abstraction		4.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor
0.000	0.000	0.000	unused abstraction	complex conditional	8.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor
0.000	0.000	0.000	unnecessary abstraction		4.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor
0.000	0.000	0.000		interface method	4.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor
0.000	0.000	0.000			0.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor
0.000	0.000	0.000	unused abstraction		4.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor
0.000	0.000	0.000	deficient encapsulation		4.000	not critical	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	refactor

Any Questions?