

Table 1– Measurements results for the affected aspects before and after applying AOR methods: AJEFW project

Aspect- Oriented Refactoring Method	Aspect Name	Inheritance		Coupling		Cohesion	Size and Complexity			
		DIT	NOC	CBC	RFC	LCOO	WOC	NOA	LOC	
Pull Up Advice	Before	AspectMajorGroup	2	0	6	2	1	2	3	15
		AspectMinorGroup	2	0	6	2	1	2	4	13
		AspectError	1	2	7	6	4	7	8	82
	After	AspectMajorGroup	2	0	6	1	0	1	3	12
		AspectMinorGroup	2	0	6	1	0	1	4	10
		AspectError	1	2	7	7	6	8	8	85
Push Down Advice	Before	AspectMajorGroup	2	0	6	1	0	1	3	12
		AspectError	1	2	7	7	6	8	8	85
	After	AspectMajorGroup	2	0	6	2	0	2	3	15
		AspectError	1	2	7	6	4	7	8	83
Pull Up Declare Parents	Before	AspectMajorGroup	2	0	6	2	0	2	3	15
		AspectMinorGroup	2	0	6	1	0	1	5	11
		AspectError	1	2	6	6	3	7	7	82
	After	AspectMajorGroup	2	0	5	2	0	2	2	14
		AspectMinorGroup	2	0	5	1	0	1	4	10
		AspectError	1	2	7	6	3	7	8	83

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Aspect- Oriented Refactoring Method	Aspect Name	Inheritance		Coupling		Cohesion	Size and Complexity			
		DIT	NOC	CBC	RFC	LCOO	WOC	NOA	LOC	
Push Down Declare Parents	Before	AspectMinorGroup	2	0	5	1	0	1	4	10
		AspectError	1	2	7	6	3	7	8	83
	After	AspectMinorGroup	2	0	5	1	0	1	5	11
		AspectError	1	2	6	6	3	7	7	82
Push Down Pointcut	Before	AspectMajorGroup	2	0	5	2	0	2	2	14
		AspectError	1	2	7	6	3	7	8	84
	After	AspectMajorGroup	2	0	5	2	0	2	3	16
		AspectError	1	2	7	6	3	7	7	82
Push Down Inter-Type Declaration	Before	AspectMinorGroup	2	0	5	1	0	1	4	10
		AspectError	1	2	7	6	3	7	7	82
	After	AspectMinorGroup	2	0	5	2	0	2	4	13
		AspectError	1	2	6	5	2	6	7	79

Table 2– Changes in the internal quality metrics caused by applying refactoring methods: AJEFW project

Aspect-Oriented Construct	Aspect- Oriented Refactoring Method	Inheritance		Coupling		Cohesion	Size and Complexity		
		DIT	NOC	CBC	RFC	LCOO	WOC	NOA	LOC
Advice	Pull Up Advice	-	-	-	↓	↓	↓	-	↓
	Push Down Advice	-	-	-	↓	↓	↓	-	↓
Declare Clause	Pull Up Declare Parents	-	-	↓	-	-	-	↓	↓
	Push Down Declare Parents	-	-	↓	-	-	-	↓	↓
Pointcut	Push Down Pointcut	-	-	-	-	-	-	↓	↓
Inter-Type Declaration	Push Down Inter-Type Declaration	-	-	↓	↓	↓	↓	-	↓