

## **Axivion - Technical Factsheet Metrics (including HIS Metrics, Herstellerinitiative Software)**

Version 7.12.0 upwards

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## 1. C/C++

### 1. Source Code Metrics (including HIS)

Metric-Rule	Severity	Description
Calling.CPP	Error	Number of functions calling this function (counting calls from template instances only once).
CloneRatio	Error	Clone Ratio.
CloneRatioFromRFG	Error	Clone Ratio.
CognitiveComplexity	Error	Cognitive Complexity.
Comment.Density	Error	Comment Density.
Comment.Internal	Error	Internal Comments.
Comment.Preceding	Error	Preceding Comments.
Coupling	Error	Coupling between classes, routines, etc..
ExtendedMcCabe	Error	Extended Cyclomatic Complexity.
Fan.In	Error	Deprecated. Number of incoming edges of certain configurable edge types.
Fan.In.Call	Error	Number of incoming edges of type "Call".
Fan.Out	Error	Deprecated. Number of outgoing edges of certain configurable edge types.
Fan.Out.Call	Error	Number of outgoing edges of type "Call".
HIS.APCGCYCLE	Error	HIS ap_cg_cycle metric: Number of callgraph recursions.
HIS.CALLING	Error	HIS CALLING metric: Number of calling functions.
HIS.CALLS	Error	HIS CALLS metric: Number of called functions.
HIS.COMF	Error	HIS COMF metric: Comment density.
HIS.GOTO	Error	HIS GOTO metric: Number of goto statements.
HIS.LEVEL	Error	HIS LEVEL metric: Nesting depth.

HIS.NOMV	Error	HIS NOMV metric: Number of MISRA violations.
HIS.NOMVPR	Error	HIS NOMVPR metric: Number of MISRA violations, per rule.
HIS.PARAM	Error	HIS PARAM metric: Number of function parameters.
HIS.PATH	Error	HIS PATH metric: Number of acyclic control-flow paths.
HIS.RETURN	Error	HIS RETURN metric: Number of return points.
HIS.STMT	Error	HIS STMT metric: Number of statements.
HIS.VG	Error	HIS v(G) metric: Cyclomatic complexity.
HIS.VOCF	Error	HIS VOCF metric: Language scope (vocabulary frequency).
Halstead.DifferentOperands	Error	Different Halstead Operands.
Halstead.DifferentOperators	Error	Different Halstead Operators.
Halstead.Difficulty	Error	Halstead Difficulty.
Halstead.Effort	Error	Halstead Effort.
Halstead.Length	Error	Halstead Length.
Halstead.TotalOperands	Error	Total Halstead Operands.
Halstead.TotalOperators	Error	Total Halstead Operators.
Halstead.Vocabulary	Error	Halstead Vocabulary.
Halstead.VocabularyFrequency	Error	Halstead Vocabulary Frequency.
Halstead.Volume	Error	Halstead Volume.
ImportCSV		ImportCSV
ImportRFGMetricAttribute	Error	Import an RFG attribute
Includes.DirectIncluders	Error	Number of directly including files.

Includes.DirectIncludes	Error	Number of directly included files.
Includes.IncludeBurden	Error	Include burden caused by file.
Includes.MaximumIncludeDepth	Error	Maximum Include Depth.
Includes.MaximumIncludeDepth	Error	Maximum Includer Depth.
Includes.TransitiveIncludes	Error	Number of transitively including files.
Includes.TransitiveIncludes	Error	Number of transitively included files.
InverseCoupling	Error	Inverse coupling between classes, routines, etc..
IssueCount.Architecture		Number of Architecture Violations
IssueCount.Clone		Number of Clones
IssueCount.Cycle		Number of Cyclic Dependencies
IssueCount.DeadEntity		Number of Dead Entities
IssueCount.Metric		Number of Metric Violations
IssueCount.Style		Number of Style Violations
Lines.Class.Code	Error	Lines in Class containing Code.
Lines.Class.Comment	Error	Lines in Class containing Comments.
Lines.Class.CommentRatio	Error	LinesClassCommentRatio
Lines.Class.LOC	Error	Lines of Code in a Class (Empty, Comment, Code).
Lines.Class.OnlyComment	Error	Lines in Class containing only Comments.
Lines.Code	Error	Lines containing Code.
Lines.Comment	Error	Lines containing Comments.
Lines.Empty	Error	Empty Lines.
Lines.File.Code	Error	Lines in File containing Code.

Lines.File.Comment	Error	Lines in File containing Comments.
Lines.File.CommentRatio	Error	LinesFileCommentRatio
Lines.File.LOC	Error	Lines of Code in a File (Empty, Comment, Code).
Lines.File.OnlyComment	Error	Lines in File containing only Comments.
Lines.LOC	Error	Lines of Code (Empty, Comment, Code).
Lines.OnlyComment	Error	Lines containing only Comments.
Lines.PP.Define	Error	Lines containing #define.
Lines.PP.Elif	Error	Lines containing #elif.
Lines.PP.Elifdef	Error	Lines containing #elifdef.
Lines.PP.Elifndef	Error	Lines containing #elifndef.
Lines.PP.Else	Error	Lines containing #else.
Lines.PP.Endif	Error	Lines containing #endif.
Lines.PP.Error	Error	Lines containing #error.
Lines.PP.Ident	Error	Lines containing #ident.
Lines.PP.If	Error	Lines containing #if.
Lines.PP.Ifdef	Error	Lines containing #ifdef.
Lines.PP.Ifndef	Error	Lines containing #ifndef.
Lines.PP.Include	Error	Lines containing #include.
Lines.PP.Line	Error	Lines containing #line.
Lines.PP.Pragma	Error	Lines containing #pragma.
Lines.PP.Sharp	Error	Lines containing #.
Lines.PP.SharpSharp	Error	Lines containing ##.
Lines.PP.Undef	Error	Lines containing #undef.
Lines.PP.Warning	Error	Lines containing #warning.
Lines.Preproc	Error	Lines containing Preprocessor Directives.

Lines.Routine.Body.LOC	Error	Lines of Code in a Routine body (Empty, Comment, Code).
Lines.Routine.Code	Error	Lines in Routine containing Code.
Lines.Routine.Comment	Error	Lines in Routine containing Comments.
Lines.Routine.CommentRatio	Error	LinesRoutineCommentRatio
Lines.Routine.CommentRatio.LOCQualified	Error	LinesRoutineCommentRatioLocQualified
Lines.Routine.LOC	Error	Lines of Code in a Routine (Empty, Comment, Code).
Lines.Routine.OnlyComment	Error	Lines in Routine containing only Comments.
LogNPathCeiling	Error	LogNPath_Ceiling.
LogNPathFloor	Error	LogNPath_Floor.
MIPerRoutine	Error	MaintainabilityIndex
MaximumExtendedNesting	Error	Maximum Extended Nesting.
MaximumNesting	Error	Maximum Nesting.
McCabeComplexity	Error	McCabe Cyclomatic Complexity.
NPath	Error	NPath.
NumberOfCalledRoutines	Error	Number of functions this function is calling.
NumberOfCallingRoutines	Error	Number of functions calling this function.
NumberOfGotos	Error	Number of Gotos.
NumberOfInvocations	Error	Number of Invocations.
NumberOfParameters	Error	Number of Parameters.
NumberOfReturns	Error	Number of Returns.
NumberOfSCCs	Error	Number of recursions (ap_cg_cycle).
NumberOfStatements	Error	Number of Statements.

00.CB0	Error	Coupling between object classes.
00.CB0a	Error	Coupling between objects (excluding ancestors).
00.CB0s	Error	Coupling between objects (excluding statics).
00.DAC	Error	Data abstraction coupling.
00.DIT	Error	Depth of Inheritance Tree.
00.LCOM	Error	Lack of cohesion in methods.
00.LCOM4	Error	Lack of cohesion in methods.
00.LCOMs	Error	Lack of cohesion in non-static methods.
00.NIVOC	Error	Number of invocations.
00.NOA	Error	Number of ancestor classes.
00.NOCC	Error	Number of child classes.
00.NOFA	Error	Number of fields added.
00.NOMA	Error	Number of methods added.
00.NOMO	Error	Number of methods overridden.
00.NOPC	Error	Number of parent classes.
00.RFC	Error	Response for a class.
00.WMC.McCabeComplexity	Error	Weighted Methods per Class based on McCabe Complexity.
00.WMC.One	Error	Weighted Methods per Class based on 1.
StabilityIndex	Error	Measures the stability of components based on their fan-in and fan-out values
SwitchComplexity	Error	Switch Complexity.
Template	Error	Deprecated, use Metric-ImportRFGMetricAttribute instead
TokenFileMetric.Check	Error	Lines containing CHECK token.
TokenFileMetric.Debug	Error	Lines containing DEBUG token.

TokenFileMetric.Fixme	Error	Lines containing FIXME token.
TokenFileMetric.Hack	Error	Lines containing HACK token.
TokenFileMetric.TODO	Error	Lines containing TODO token.
TokenFileMetric.XXX	Error	Lines containing XXX token.
TokenMetric.Check	Error	Lines containing CHECK token.
TokenMetric.Debug	Error	Lines containing DEBUG token.
TokenMetric.Fixme	Error	Lines containing FIXME token.
TokenMetric.Hack	Error	Lines containing HACK token.
TokenMetric.TODO	Error	Lines containing TODO token.
TokenMetric.XXX	Error	Lines containing XXX token.
ViolationCounts	Error	Violation counts of metrics and stylechecks.

## 2. Code Quality Management Metrics

Metric-Rule	Severity	Description
ClassIncest	Adv	A superclass should not be dependant of any of its subclasses.
Classlet	Error	Classes shall not have too few data members and/or routines.
ConstantsRain		Global constants should have unique names.
DataCapsuleBreakUp	Adv	Do not declare non-const data members public.
DeadFields	Error	A private filed of a class is not used.
DeadImplementation		Unreachable statements.
DeadRoutines	Error	Counts the number of dead routines.
DuplicateCode	Error	Number of cloned lines of code.
ForbiddenLoveClass	Adv	The number of cycles at class level.
ForbiddenLoveFile	Adv	ForbiddenLoveFile
ForbiddenLoveRoutine	Adv	ForbiddenLoveRoutine
GeneralParameter	Error	Parameters of a function shall not get casted to a more specific type.
GenerationalConflict	Adv	A subclass should not reject most of the routines inherited from its superclass.
GodClassMember	Error	Classes shall not have too many data members.
GodClassRoutine	Error	Classes shall not have too many routines.
GodFile	Error	Lines of Code in a File (Empty, Comment, Code).
GodNamespace	Error	Namespaces shall not contain too many classes and/or routines.
GodRoutine	Error	Lines of Code in a Routine (Empty, Comment, Code).
HalfHeartedOperation		Related routine clusters should be implemented completely or consistently.

IdentitySplit	Error	Classes should have unique names.
IncludeChaos	Error	Duplicate includes
IncludeLie		Unused includes.
IncompleteCode	Error	Code contains comments that point to it being incomplete.
IncompleteInheritanceField	Error	Multiple subclasses contain the same field, which does not exist in their superclass.
IncompleteInheritanceRoutine	Error	Multiple subclasses contain the same routine, which does not exist in their superclass.
IncorrectNameLength	Error	The names of artifacts shall not be too short or too long.
IncorrectNameLengthFile	Error	The names of files shall not be too short or too long.
InformalDocumentation		Public routines should be formally documented.
LabyrinthRoutine	Error	Routine Complexity.
LateAbstraction	Error	An abstract class has a direct or indirect non-abstract parent class.
LongParameterList	Error	Number of Parameters.
MaskingFile	Error	Files should contain classes with a similar name.
MemberHiding	Error	Data members shall not hide data members in superclasses.
NamespaceHierarchyBreakUp	Adv	The classes hierarchy should not run against the namespace hierarchy.
Namespacelet	Error	Namespaces shall not contain too few classes and/or routines
NamingError	Error	Number of CodingStyle-Naming violations.
NamingErrorPR	Error	Number of CodingStyle-Naming violations, per rule.
ObjectPlaceboMember	Error	A static data member is accessed via an object.
ObjectPlaceboRoutine	Error	A static routine is called via an object.

OverbookedFile	Error	Files should not contain to many classes
PolymorphismPlacebo	Error	Routines of subclasses should not hide static routines of their parents.
PotentialPrivacyMember	Error	Data members that could have more private scopes.
PotentialPrivacyRoutine	Error	Routines that could have more private scopes.
PreOrPostnatalCommunication	Error	Number of prenatal or postnatal communications.
RejectedInheritanceImplementation	Adv	A routine of a superclass gets overridden or hidden in most of the subclasses.
RejectedInheritanceInterface	Error	Overriding should not reduce the functionality or accessibility of a routine.
RiskyCode		Typical fail-safe mechanisms are misused.
SecretRelation	Error	Classes should not have public routines that are not called from outside their inheritance hierarchy.
SignatureLikeClasses	Error	Two unrelated classes should not have most of their routines in common.
SimulatedPolymorphism	Error	An objects type is checked multiple times inside one routine.
SloppyCommenting	Error	Ratio between all lines of code and lines containing comments.
ViolationCounts	Error	Violation counts of metrics and stylechecks.