



Software Improvement Group



Een 5-sterren project, wat is het en hoe kan ik het bereiken?

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J-Fall
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Welke sterren?



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lets specifieker ...



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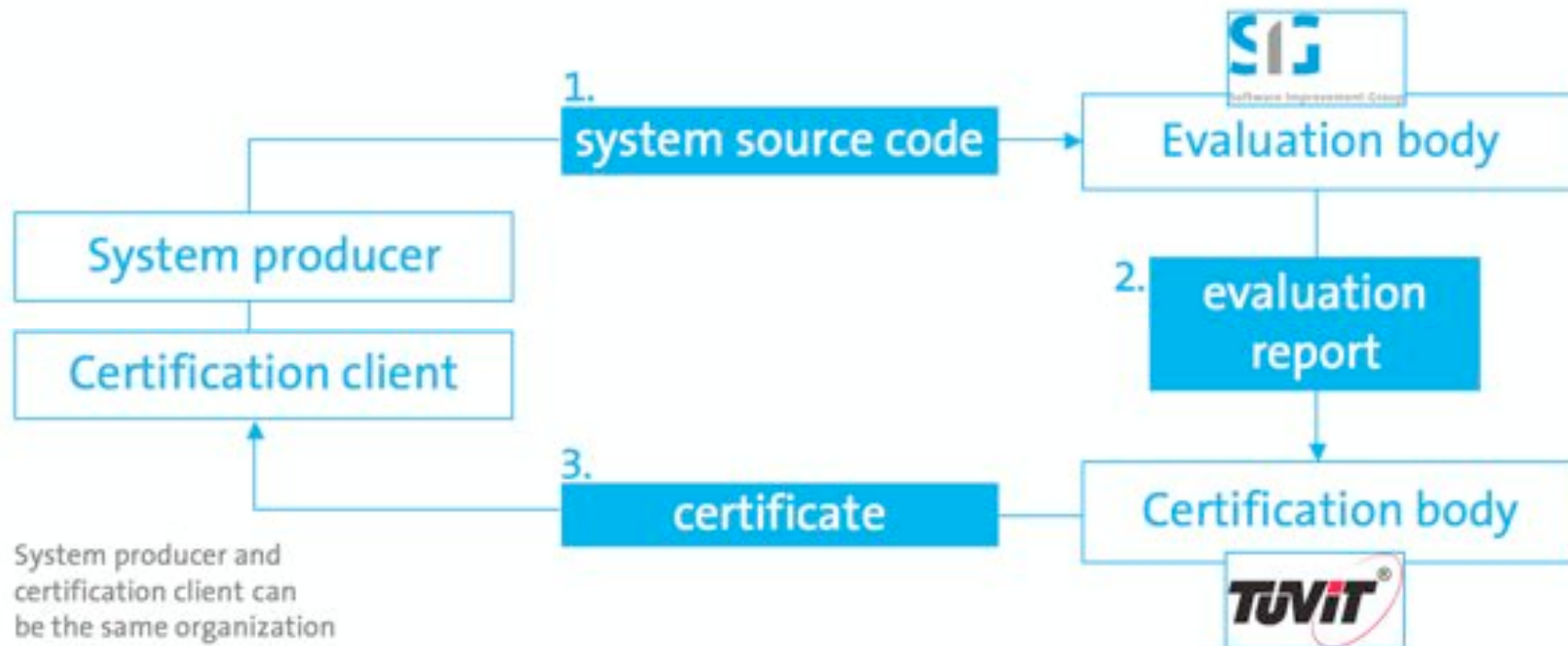


Het proces



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Waarom?



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Wat zeggen de sterren?



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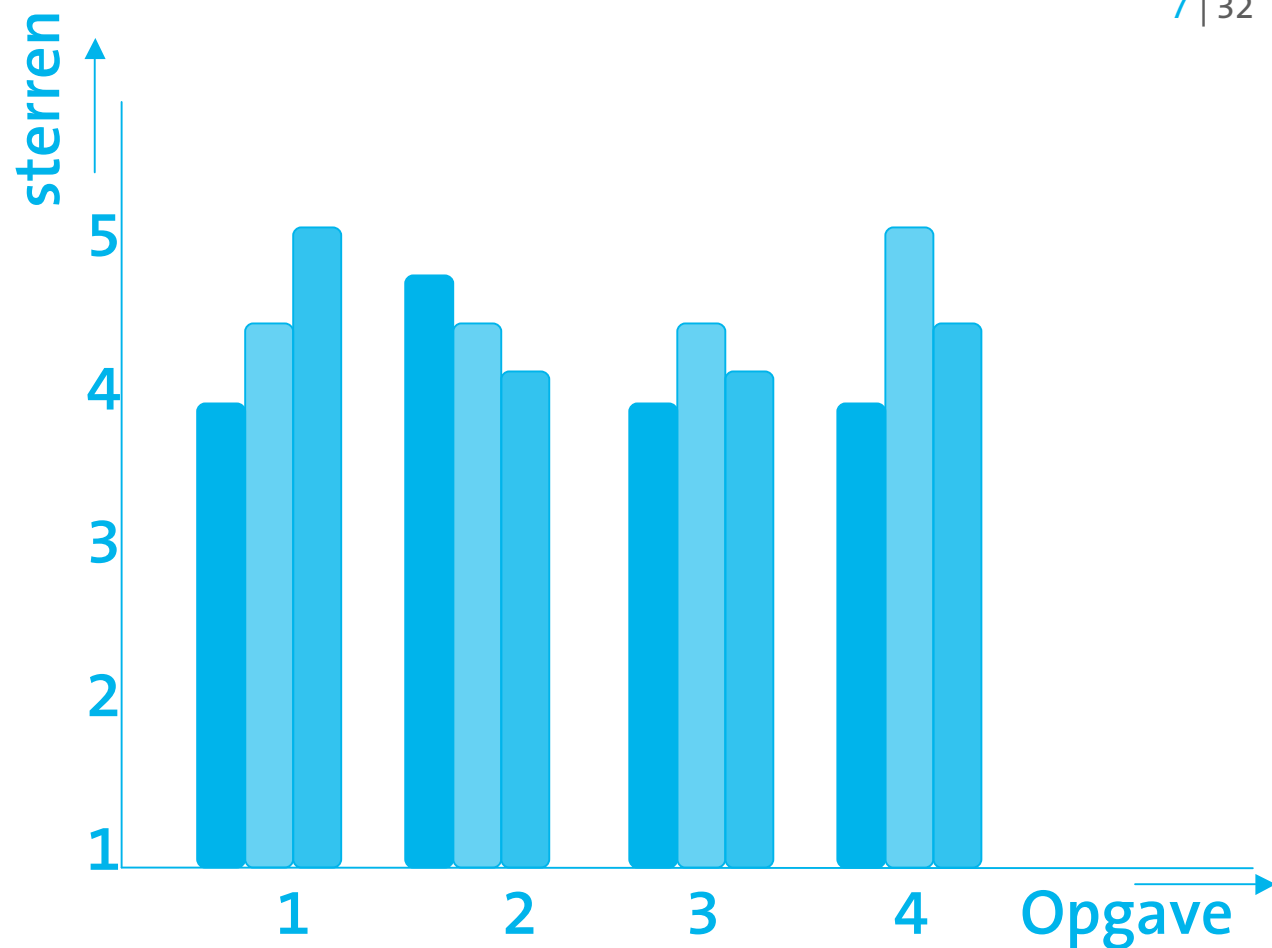
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onderhoudbaar



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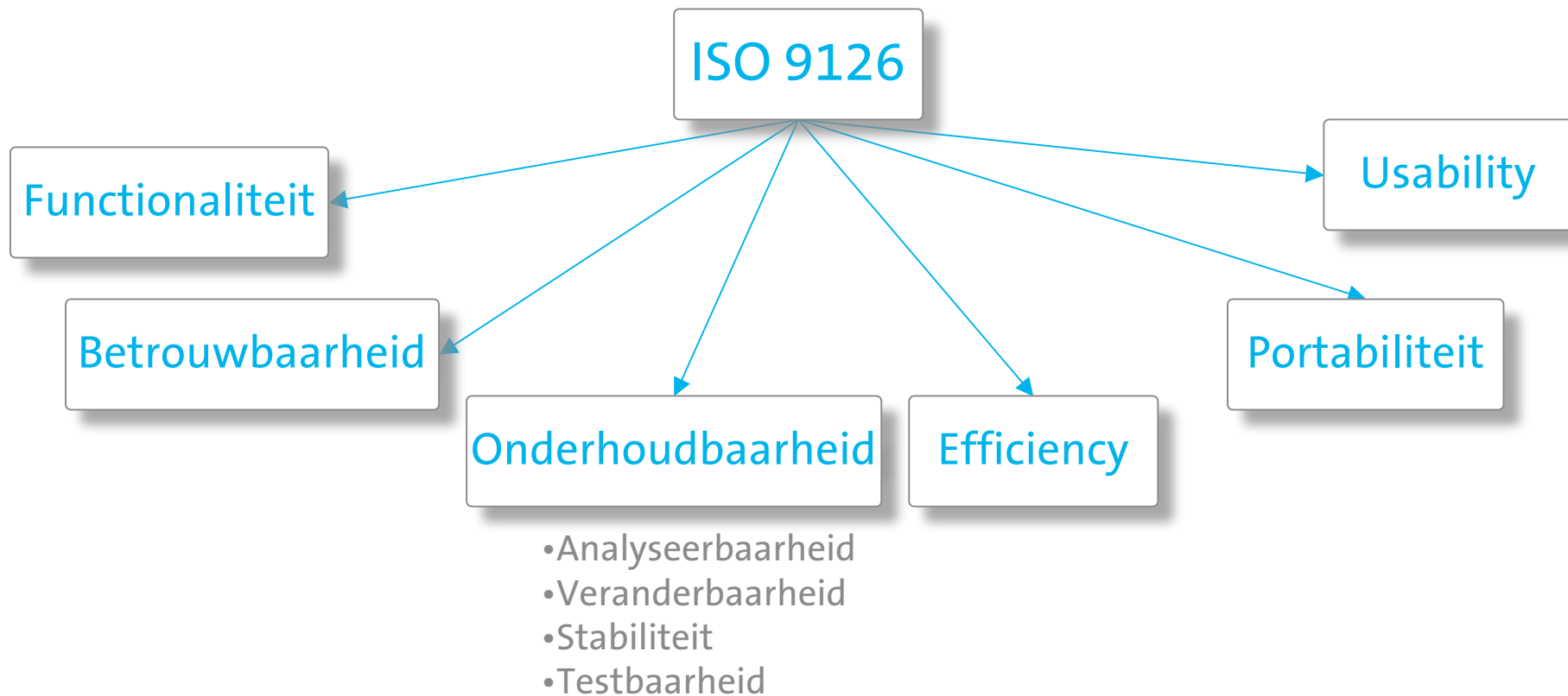


De basis: ISO 9126



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SIG Maintainability model



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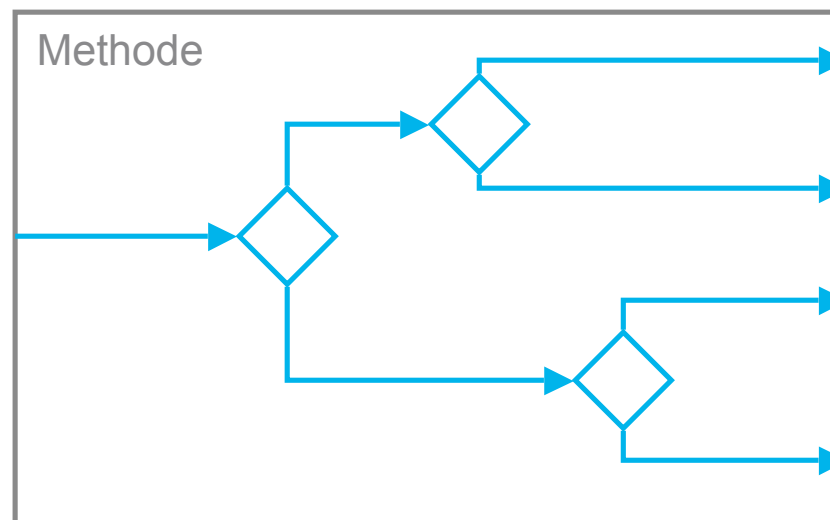
	Modularisation	Complexity	Unit length	Duplication	Volume	Fan-in	Unit Interfacing	Exception handling	Unit test quality
Analyseerbaarheid	X			X	X	X			X
Veranderbaarheid			X		X		X		X
Stabiliteit							X	X	X
Testbaarheid			X	X					X

Onderdeel van TÜViT-certificatie
'Trusted Software Product Maintainability'

Voorbeeld sterrenbepaling: Complexiteit (1/4)

```
public Integer geefGriepPercentage(){  
    if ( werktInZorg() ){  
        return isZwanger() ? 20 : 50;  
    } else {  
        return isKind() ? 10 : 40;  
    }  
}
```

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McCabe: 4

Voorbeeld sterrenbepaling: Complexiteit (2/4)

McCabe complexiteit	Risico-inschatting
1-10	Duidelijke code, klein risico
11-20	Complex, medium risico
21-50	Erg complex, hoog risico
> 50	Niet begripbaar, niet testbaar, zeer hoog risico

Voorbeeld sterrenbepaling: Complexiteit (3/4)

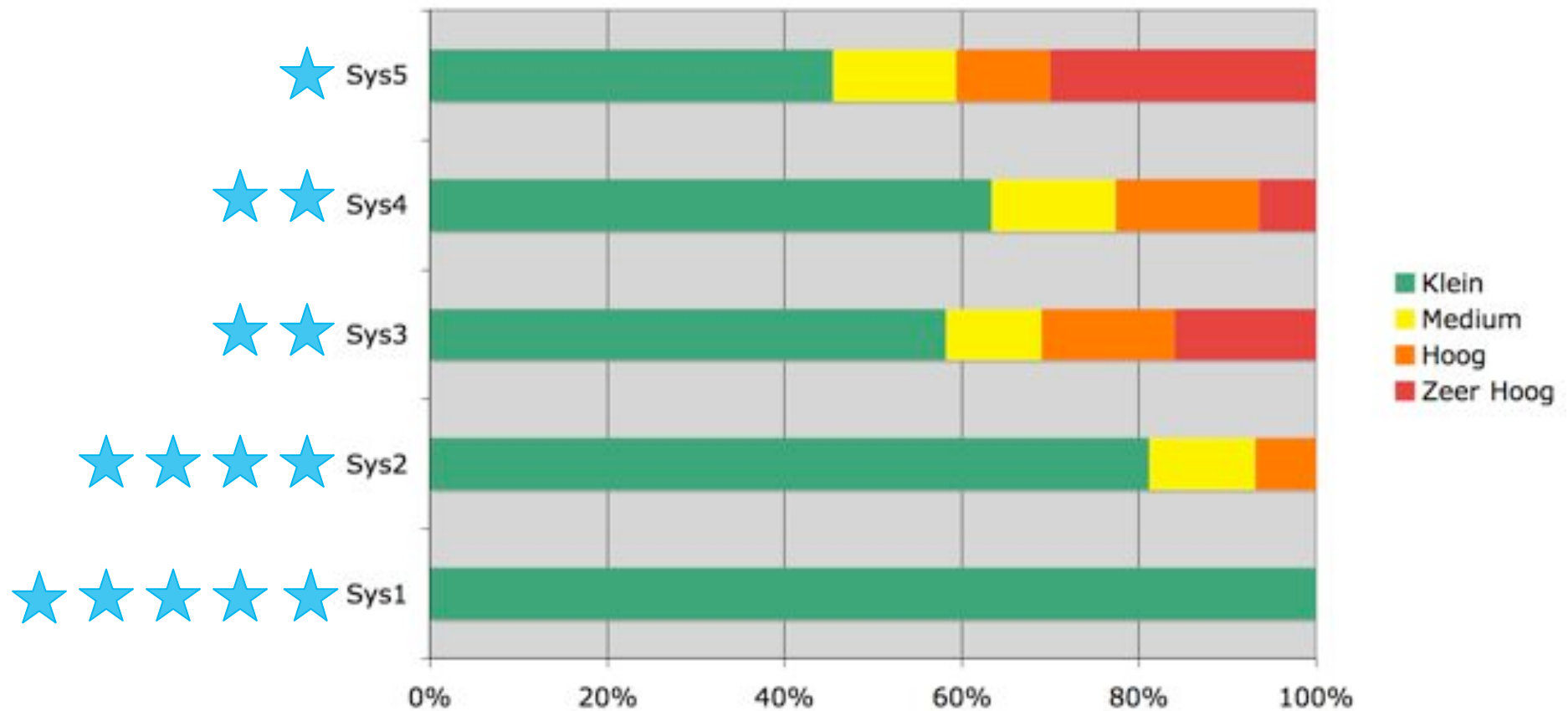
Situatie: 1 methode met een McCabe van 50, is dat erg?

A) Ja

B) Nee

C) Ligt eraan

Voorbeeld sterrenbepaling: Complexiteit (4/4)



Grenswaarden?



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5 - 30 - 30 - 30 - 5

Stappen overzicht



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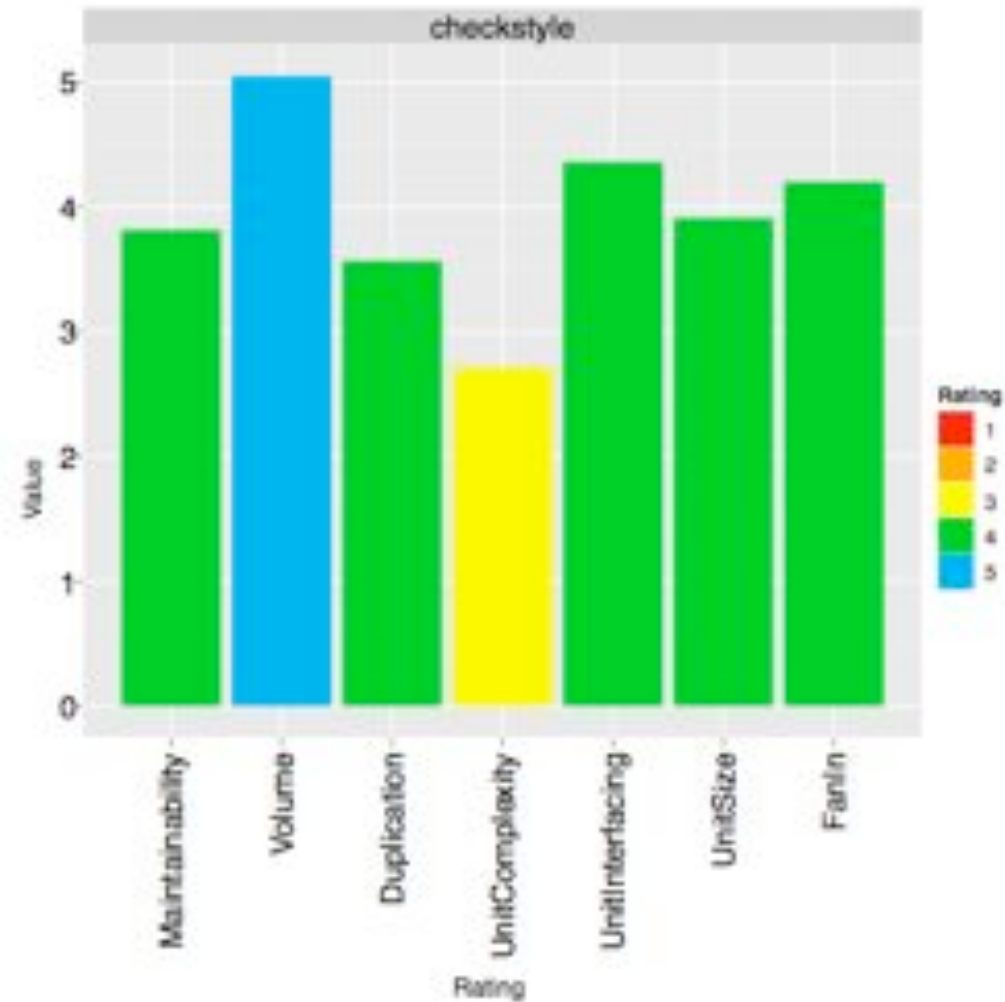


Checkstyle (2009/04/18, v5.0)



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Hoeveel sterren?
(onder voorbehoud)



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```

public IClass resolveExpression(
    SymTabAST expression,
    Scope location,
    IClass context,
    boolean referencePhase) {
    IClass result = null;

    try {
        switch (expression.getType()) {

            case TokenTypes.TYPECAST :
                result =
                    resolveTypecast(
                        expression,
                        location,
                        context,
                        referencePhase);
                break;
            case TokenTypes.EXPR :
            case TokenTypes.LITERAL_RETURN :
                if (expression.getFirstChild() != null) {
                    result =
                        resolveExpression(
                            (SymTabAST) expression.getFirstChild(),
                            location,
                            context,
                            referencePhase);
                }
                else {
                    // YOU WRITE BAD CODE!
                }
                break;

            case TokenTypes.ELIST :

                SymTabAST child = (SymTabAST) (expression.getFirstChild());
                while (child != null) {

```



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```
case TokenTypes.METHOD_DEF:
case TokenTypes.CTOR_DEF:
case TokenTypes.STATIC_INIT:
case TokenTypes.INSTANCE_INIT:
    mScopeStack.push(new HashMap<String, DetailAST>());
    break;

case TokenTypes.PARAMETER_DEF:
    if (ScopeUtils.inInterfaceBlock(aAST)
        || inAbstractMethod(aAST))
    {
        break;
    }

case TokenTypes.VARIABLE_DEF:
    if ((aAST.getParent().getType() != TokenTypes.OBJECT_BLOCK)
        && (aAST.getParent().getType() != TokenTypes.FOR_EACH_CLAUSE))
    {
        insertVariable(aAST);
    }
    break;

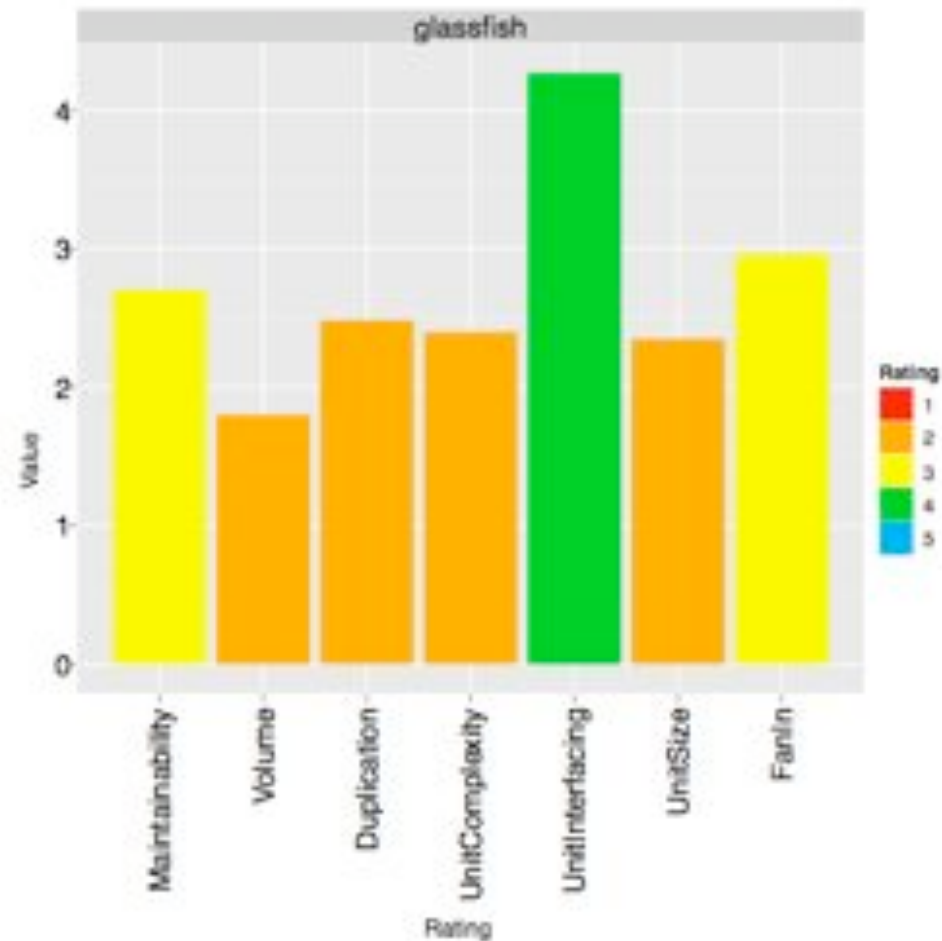
case TokenTypes.IDENT:
    final int parentType = aAST.getParent().getType();
    if ((TokenTypes.POST_DEC == parentType)
        || (TokenTypes.DEC == parentType)
        || (TokenTypes.POST_INC == parentType)
        || (TokenTypes.INC == parentType)
        || (TokenTypes.ASSIGN == parentType)
        || (TokenTypes.PLUS_ASSIGN == parentType)
        || (TokenTypes.MINUS_ASSIGN == parentType)
        || (TokenTypes.DIV_ASSIGN == parentType)
        || (TokenTypes.STAR_ASSIGN == parentType)
        || (TokenTypes.MOD_ASSIGN == parentType)
        || (TokenTypes.SR_ASSIGN == parentType)
        || (TokenTypes.BSR_ASSIGN == parentType)
        || (TokenTypes.SL_ASSIGN == parentType)
        || (TokenTypes.BXOR_ASSIGN == parentType)
        || (TokenTypes.BOR_ASSIGN == parentType)
        || (TokenTypes.BAND_ASSIGN == parentType))
    {
        isDecrement(parentType)
        || isIncrement(parentType)
        || isAssign(parentType)
    }
}
```

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GlassFish

(2009/03/19, v2.1)

Hoeveel sterren?
(onder voorbehoud)



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Voorbeeld Duplicatie



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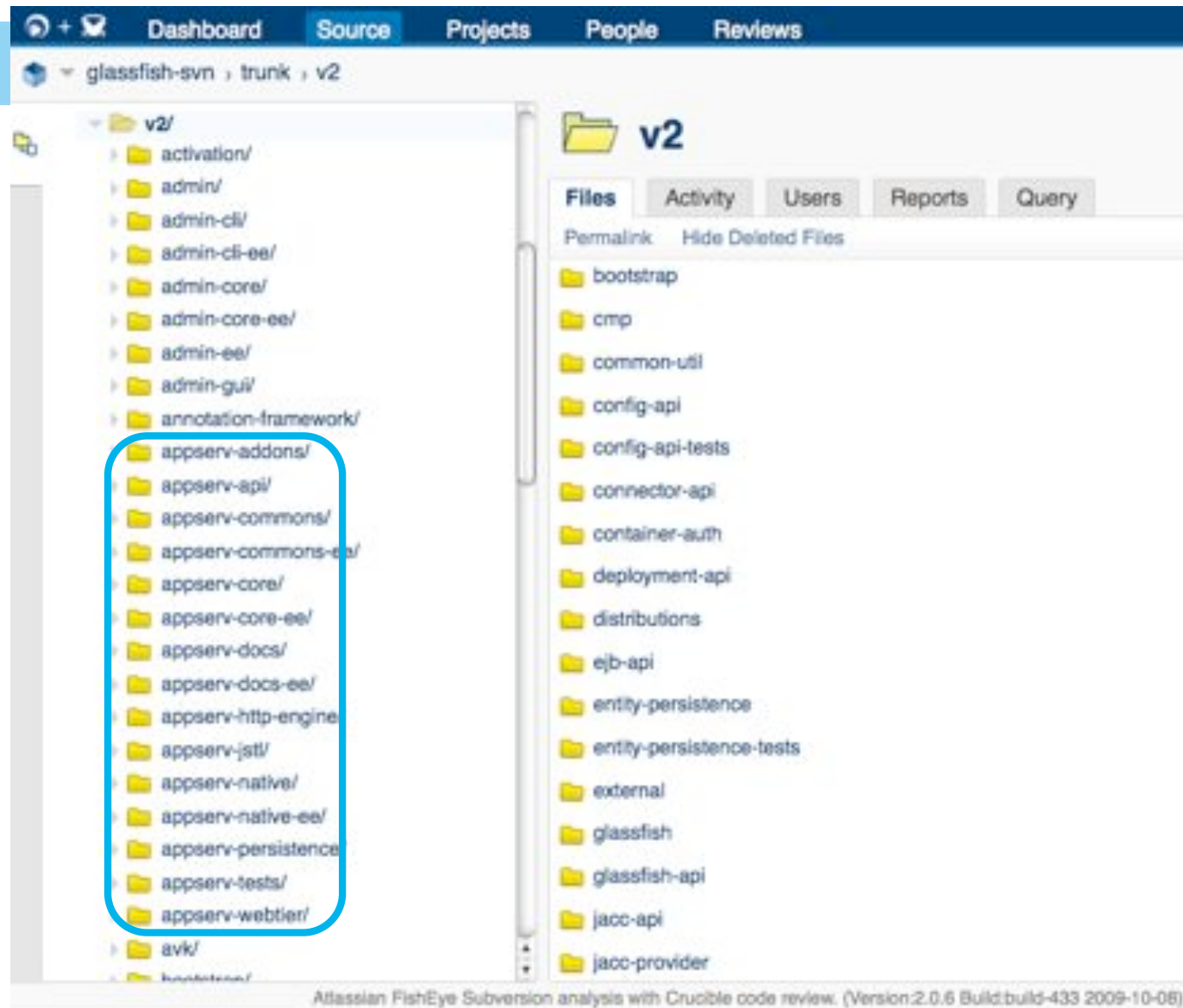
Naam	Lengte	Duplicatie
appserv-webtier/src/java/com/sun/el/parser/SimpleCharStream.java appserv-jstl/src/ org/apache/taglibs/standard/lang/jstl/parser/SimpleCharStream.java	228	100%
admin/validator/src/java/ com/sun/enterprise/config/serverbeans/validation/XPathHelper.java admin-core/admin/src/java/ com/sun/enterprise/admin/meta/XPathHelper.java	211	100%
appserv-jstl/src/ org/apache/taglibs/standard/lang/jstl/parser/ParseException.java appserv-webtier/src/java/com/sun/el/parser/ParseException.java	90	100%

Totaal: +/- 147.000 regels gedupliceerd

Volume



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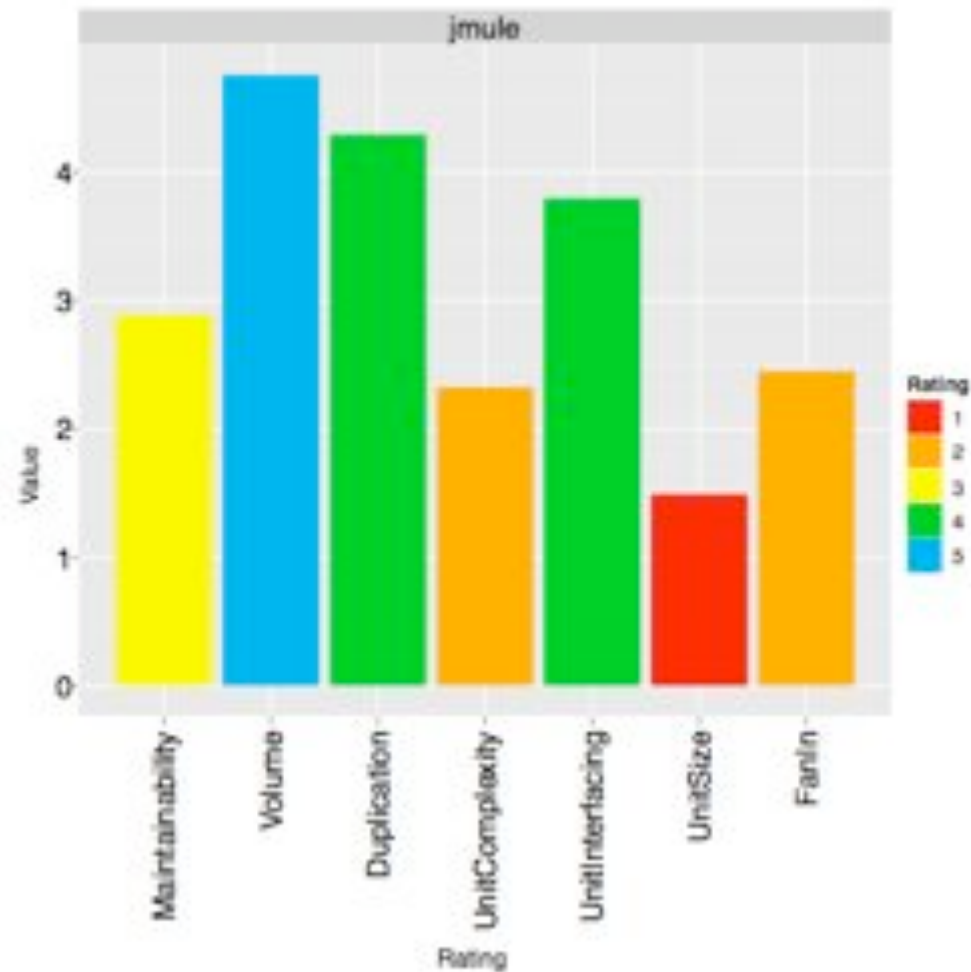
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jMule

(2009/06/13, v,0.5.0)

Hoeveel sterren?
(onder voorbehoud)



Voorbeeld Unit Size



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```
preferences.  
node( getColumnNodePath( particular_ui_root, SHARED_LIST_COMPLETED_COLUMN_ID ) ).  
putBoolean(VISIBILITY, getDefaultColumnVisibility( SHARED_LIST_COMPLETED_COLUMN_ID ) );
```

```
// -----
```

```
// sets the default width of the columns
```

```
preferences.  
node( getColumnNodePath( particular_ui_root, SERVER_LIST_NAME_COLUMN_ID ) ).  
putInt(WIDTH, getDefaultColumnWidth( SERVER_LIST_NAME_COLUMN_ID ) );
```

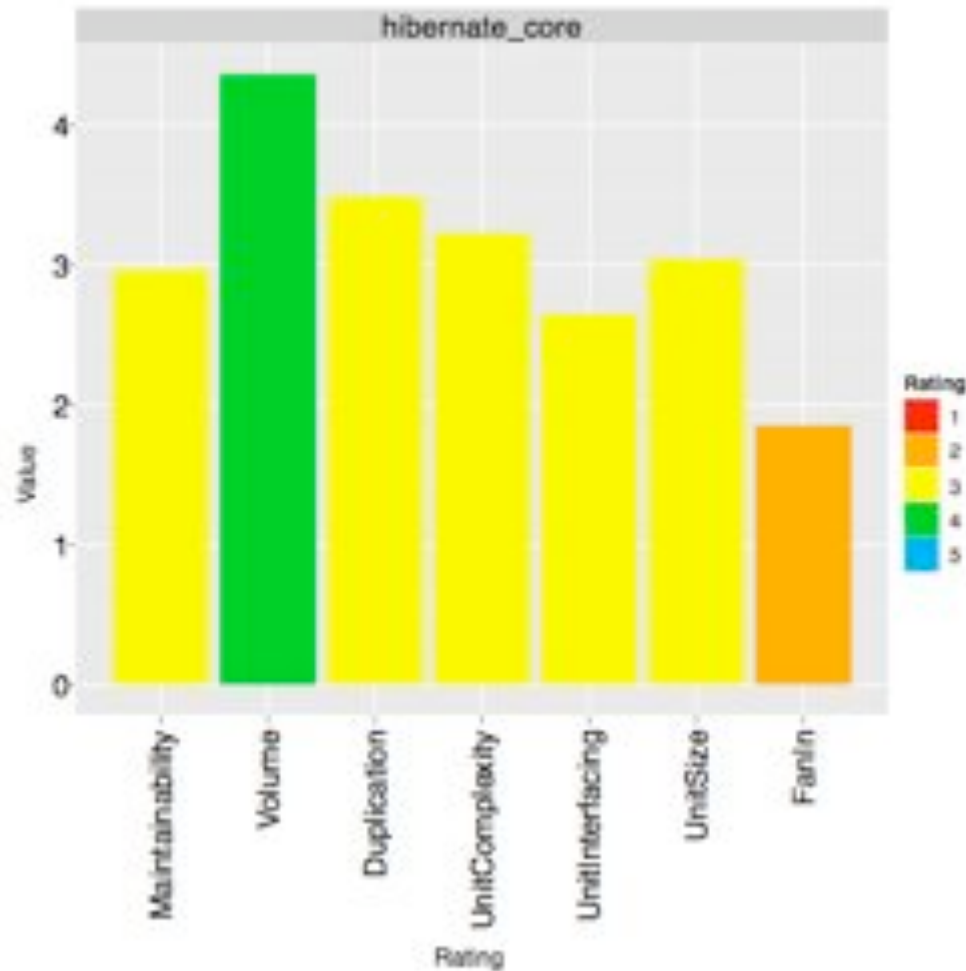
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```
308 // update last response  
309 KadContact rcontact = routing_table.getContact(packet.getAddress());  
310 if (rcontact != null) {  
311     rcontact.setLastResponse(System.currentTimeMillis());  
312     rcontact.setConnected(true);  
313 }  
314  
315 // notify packet listeners  
316 List<PacketListener> listener_list = packetListeners.get(packet.getComm
```

Hibernate (Core)

(2006/10/16, v3.2.0ga)

Hoeveel sterren?
(onder voorbehoud)



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```
78 Mappings(  
79     final Map classes,  
80     final Map collections,  
81     final Map tables,  
82     final Map queries,  
83     final Map sqlqueries,  
84     final Map sqlResultSetMappings,  
85     final Map imports,  
86     final List secondPasses,  
87     final List propertyReferences,  
88     final NamingStrategy namingStrategy,  
89     final Map typeDefs,  
90     final Map filterDefinitions,  
91     // final List extendsQueue,  
92     final Map extendsQueue,  
93     final List auxiliaryDatabaseObjects,  
94     final Map tableNameBinding,  
95     final Map columnNameBindingPerTable  
96 ) {  
97     this.classes = classes;  
98     this.collections = collections;  
99     this.queries = queries;  
100    this.sqlqueries = sqlqueries;  
101    this.resultSetMappings = sqlResultSetMappings;  
102    this.tables = tables;  
103    this.imports = imports;  
104    this.secondPasses = secondPasses;  
105    this.propertyReferences = propertyReferences;  
106    this.namingStrategy = namingStrategy;  
107    this.typeDefs = typeDefs;  
108    this.filterDefinitions = filterDefinitions;  
109    this.extendsQueue = extendsQueue;  
110    this.auxiliaryDatabaseObjects = auxiliaryDatabaseObjects;  
111    this.tableNameBinding = tableNameBinding;  
112    this.columnNameBindingPerTable = columnNameBindingPerTable  
113 }
```

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```
364 /**  
365  * Adds an entity to the internal caches.  
366  */  
367 public EntityEntry addEntity(  
368     final Object entity,  
369     final Status status,  
370     final Object[] loadedState,  
371     final EntityKey entityKey,  
372     final Object version,  
373     final LockMode lockMode,  
374     final boolean existsInDatabase,  
375     final EntityPersister persister,  
376     final boolean disableVersionIncrement,  
377     boolean lazyPropertiesAreUnfetched  
378 ) {  
379  
380     addEntity( entityKey, entity );  
381  
382     return addEntry(  
383         entity,  
384         status,  
385         loadedState,  
386         null,  
387         entityKey.getIdentifier(),  
388         version,  
389         lockMode,  
390         existsInDatabase,  
391         persister,  
392         disableVersionIncrement,  
393         lazyPropertiesAreUnfetched  
394     );  
395 }
```

Klein Simpel Specifiek

Addertje?



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Kosten



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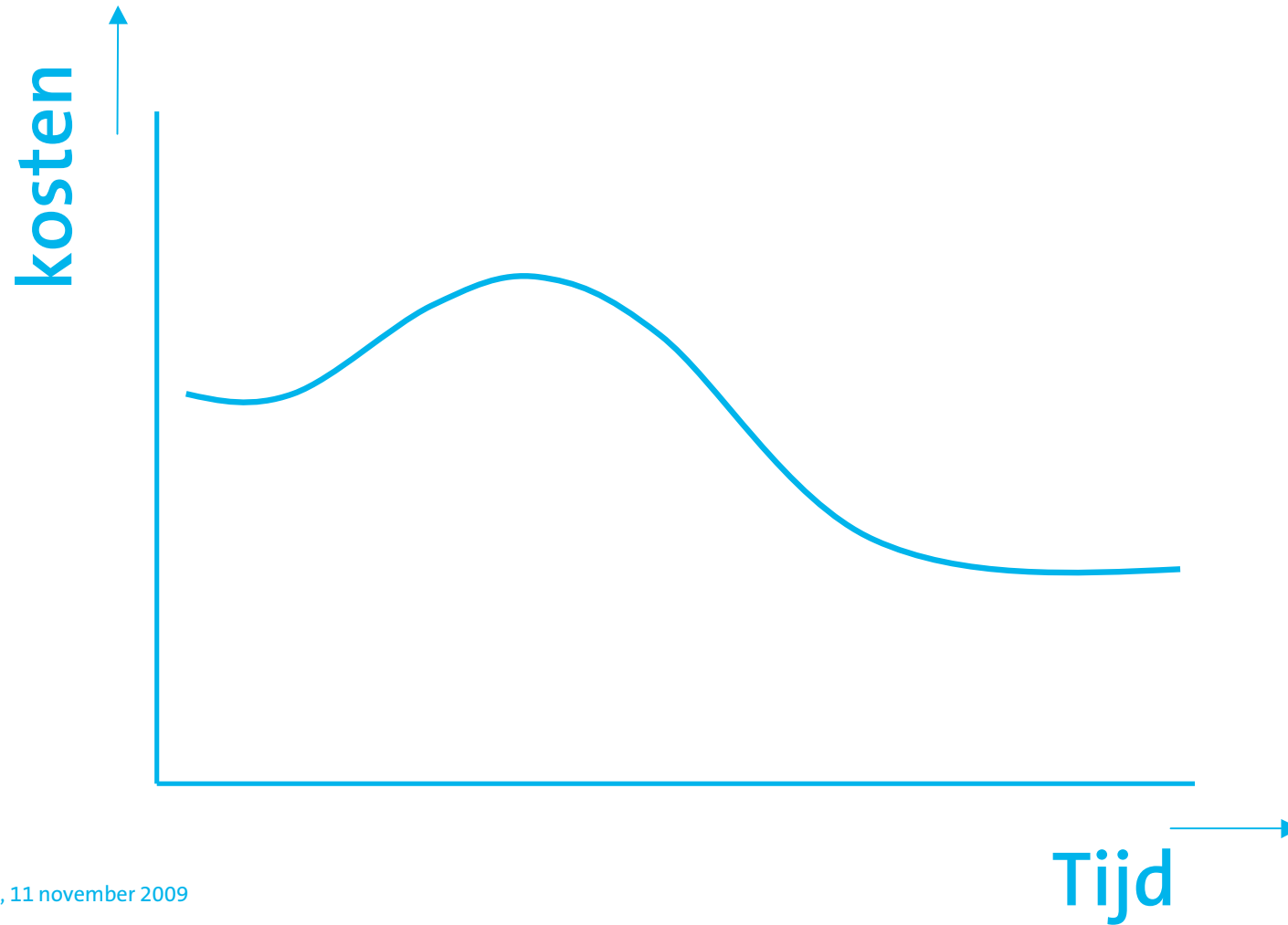


Investeren!



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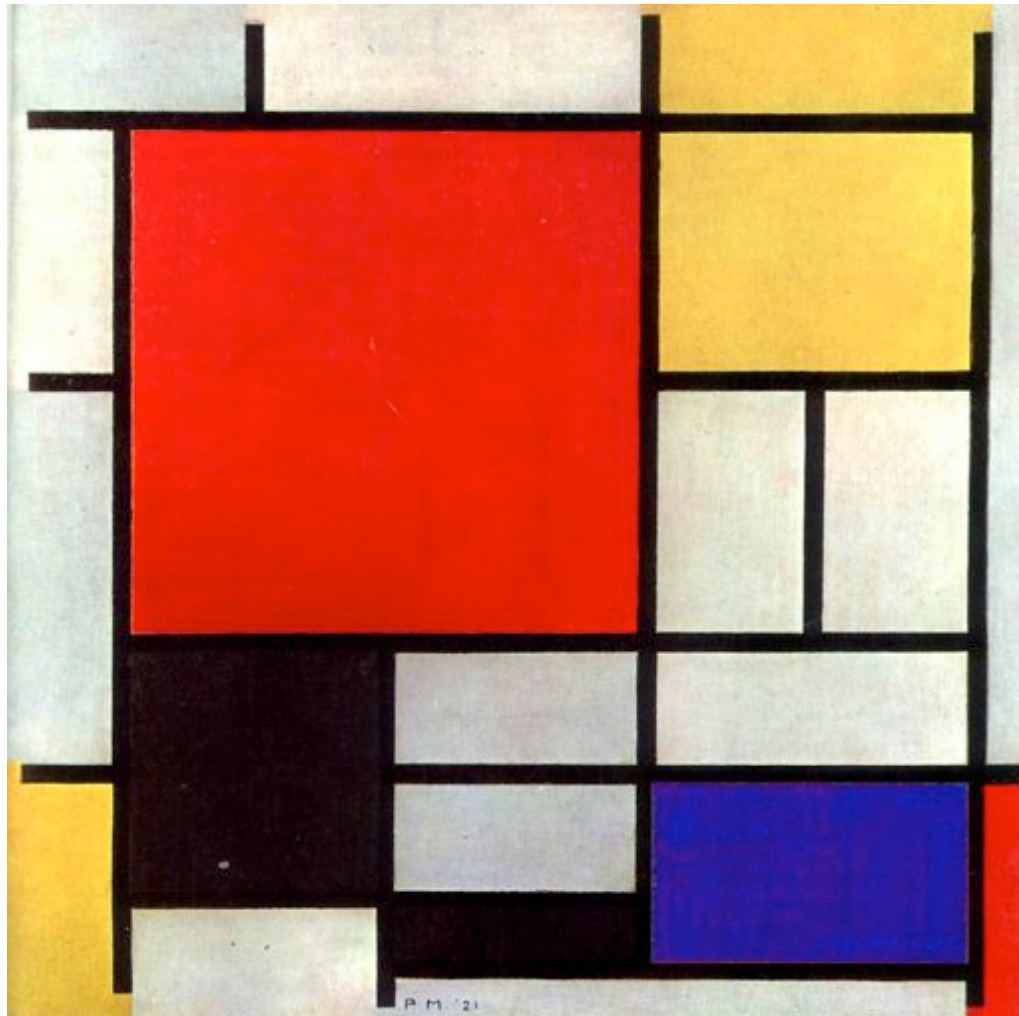


Abstract?



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Conclusie



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Klein
Simpel
Specifiek

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