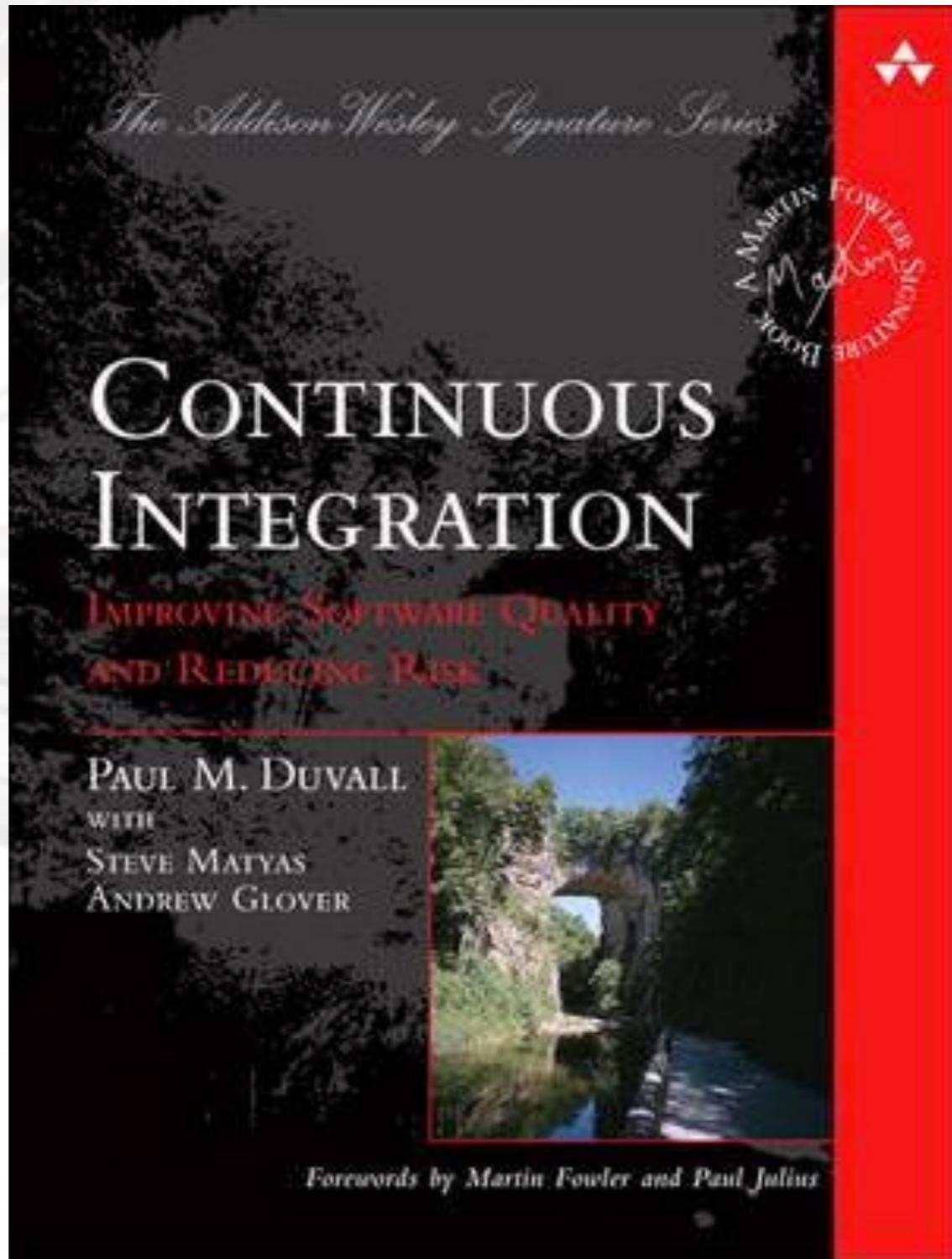


# Continuous Inspection



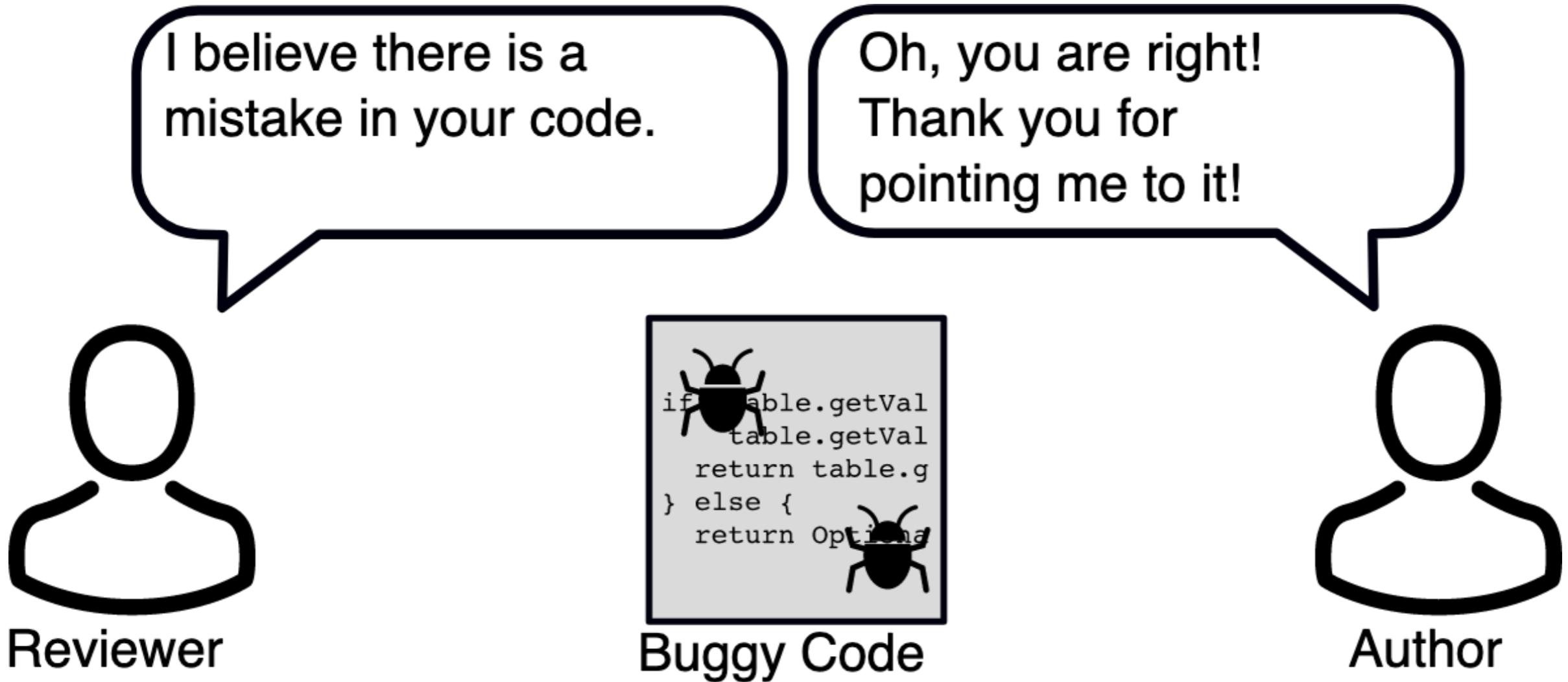
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# Continuous Integration



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# Inspection



Reviewer

Buggy Code

Author



# What Is the Difference between Inspection and Testing?

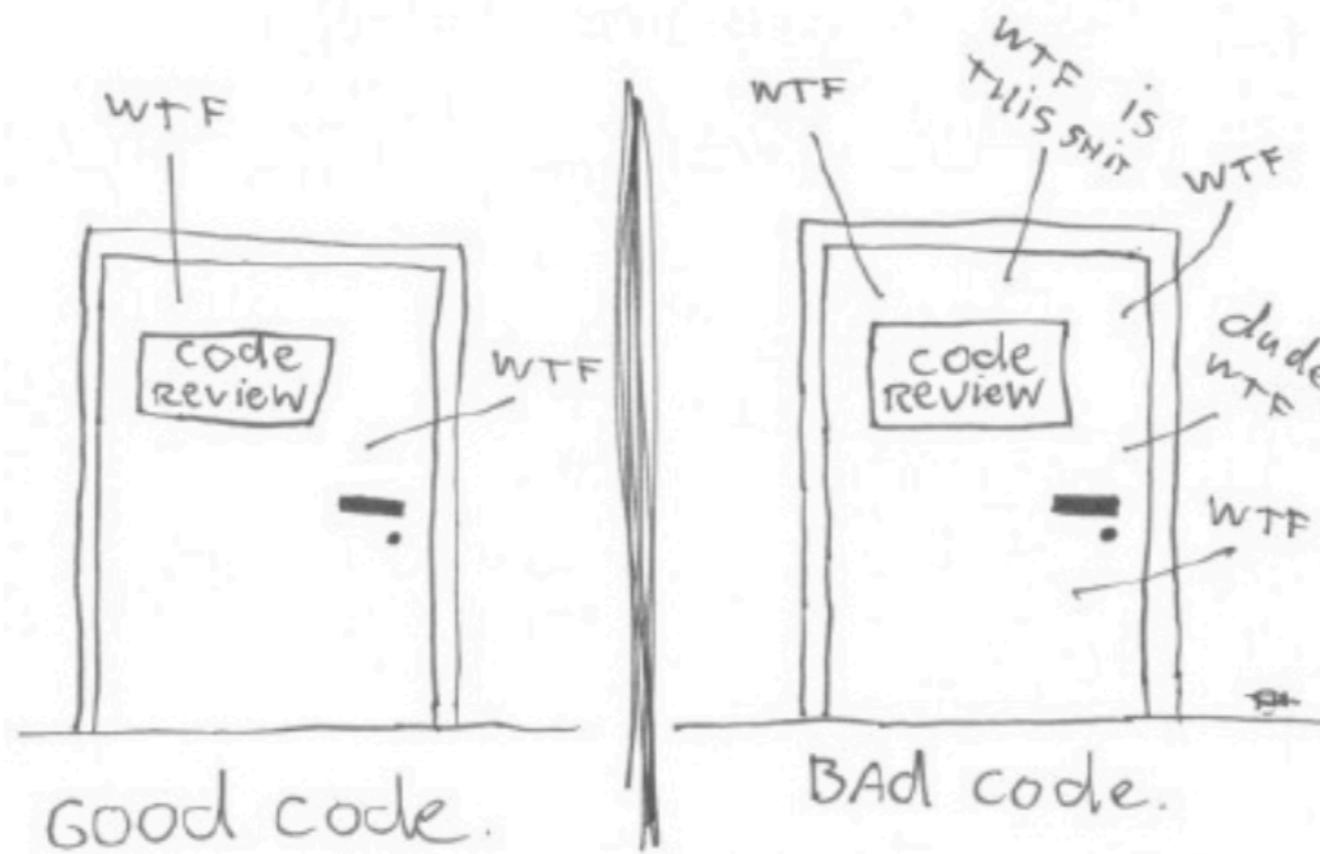
**Testing is dynamic and executes the software in order to test the functionality.**

**Inspection analyzes the code based on a set of predefined rules.**



# How Often Should You Run Inspectors?

The ONLY VALID MEASUREMENT  
OF Code QUALITY: WTFs/MINUTE



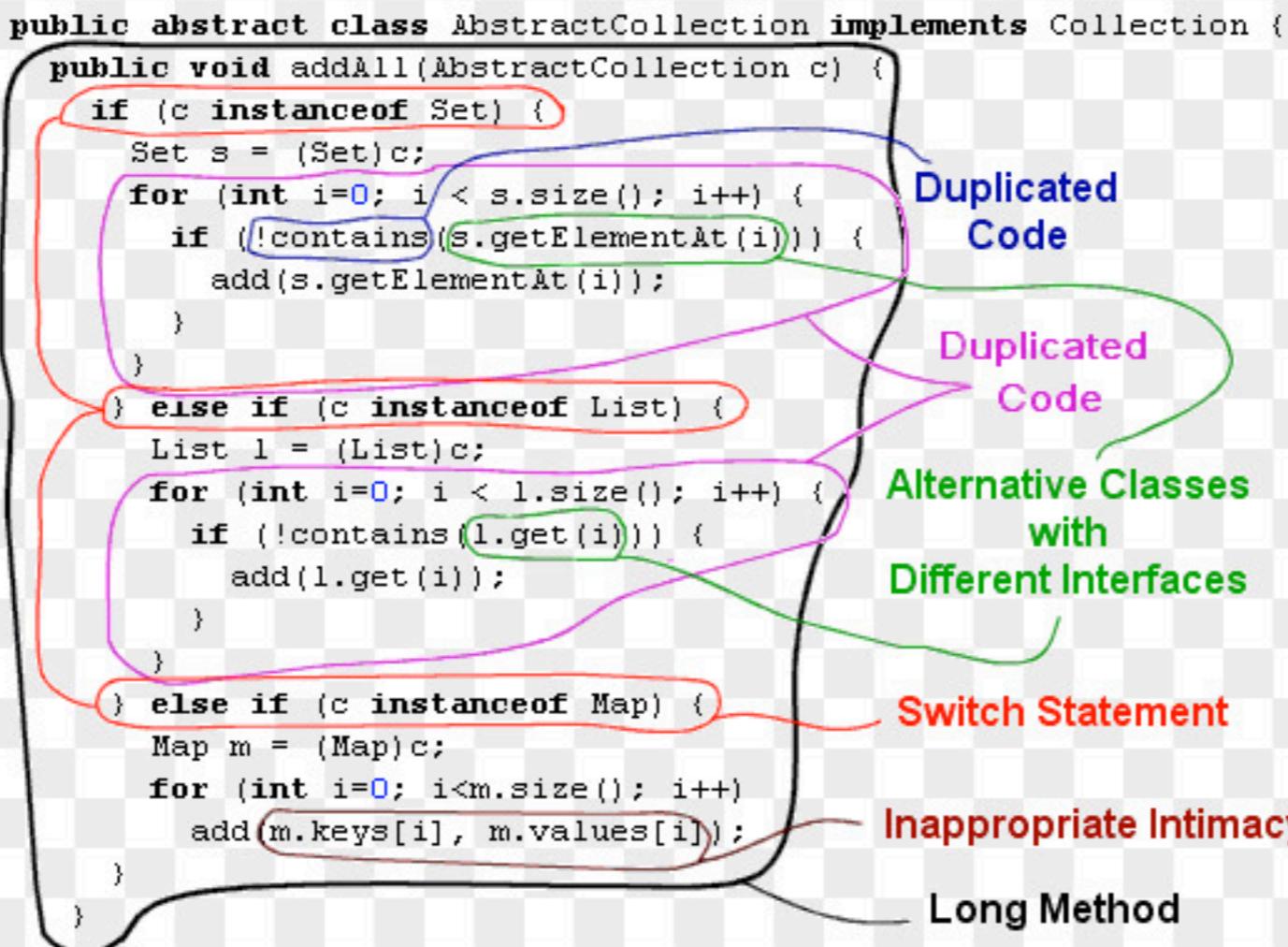
(c) 2008 Focus Shift



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# Code Metrics: A History

```
public abstract class AbstractCollection implements Collection {
    public void addAll(AbstractCollection c) {
        if (c instanceof Set) {
            Set s = (Set)c;
            for (int i=0; i < s.size(); i++) {
                if (!contains(s.getElementAt(i))) {
                    add(s.getElementAt(i));
                }
            }
        } else if (c instanceof List) {
            List l = (List)c;
            for (int i=0; i < l.size(); i++) {
                if (!contains(l.get(i))) {
                    add(l.get(i));
                }
            }
        } else if (c instanceof Map) {
            Map m = (Map)c;
            for (int i=0; i < m.size(); i++)
                add(m.keys[i], m.values[i]);
        }
    }
}
```



Duplicated Code

Duplicated Code

Alternative Classes with Different Interfaces

Switch Statement

Inappropriate Intimacy

Long Method

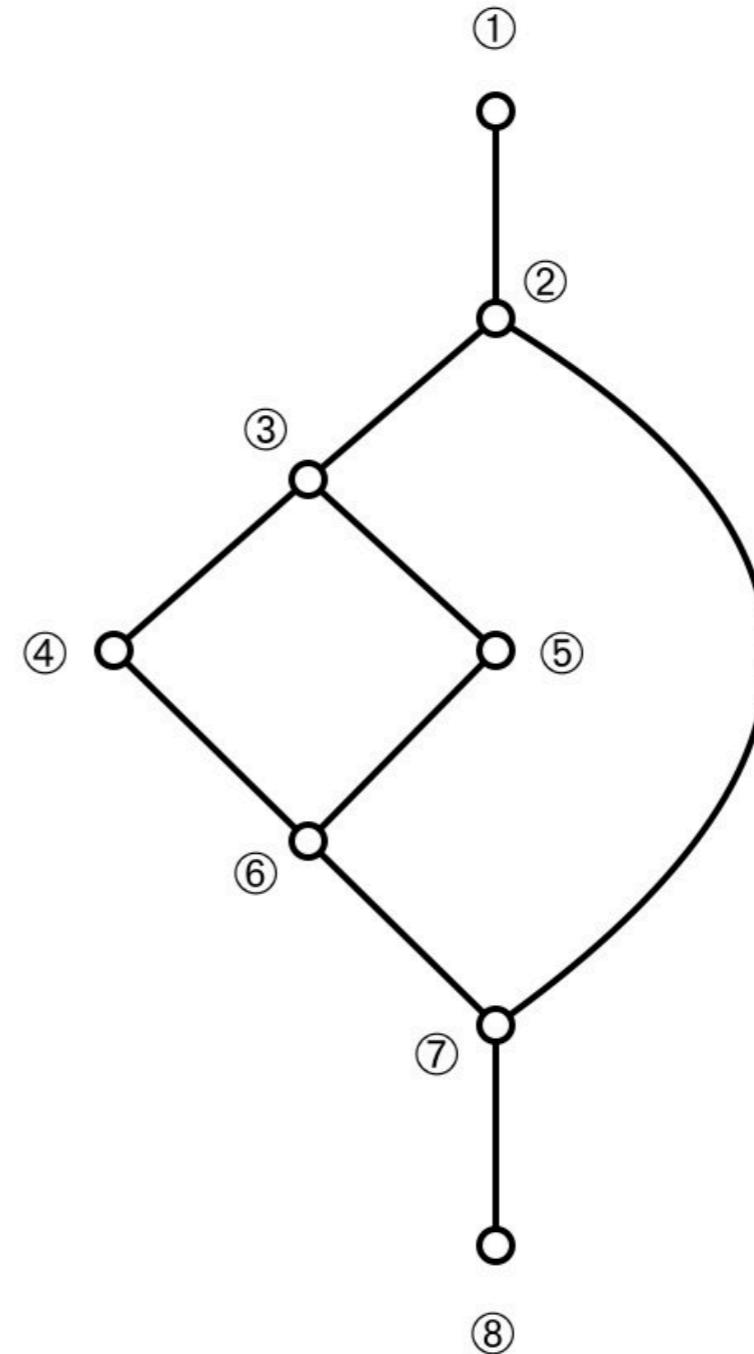
<https://it.cleanpng.com/cleanpng-w1ian7/>



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# Reduce Code Complexity

```
① start
② if (X) then
③   if (Y) then
④     perform A
⑤     perform B
⑥   else
⑦     perform C
⑧     perform D
⑨   endif
⑩ endif
⑪ end
```



<https://craftofcoding.wordpress.com/2017/06/18/coding-a-small-note-on-cyclomatic-complexity/>



# Reduce Code Complexity

JavaNCSS Metric Results - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Averages.

NCSS average	Program NCSS	Classes average	Functions average	Javadocs average
42.10	470.00	0.00	3.30	0.10

**Functions**

[ package ] [ object ] [ function ] [ explanation ]

**TOP 30 functions containing the most NCSS.**

Functions	NCSS	CCN	Javadocs
com.beer.business.data.BeerDaoImpl.findAllStates(String)	238	114	0
com.beer.web.ServletController.doPost(HttpServletRequest,HttpServletResponse)	29	6	0
com.beer.business.data.BeerDaoImpl.create(String,Brewer)	21	3	0
com.beer.business.data.BeerDaoImpl.findAll(String)	19	4	0
com.beer.web.ServletController.processRequest(HttpServletRequest)	14	5	0
com.beer.common.BaseDao.getConnection(String,String,String,Connection)	10	5	0
com.beer.common.BaseDao.closeDbConnection(ResultSet,PreparedStatement,Connection)	9	6	0
com.beer.business.service.BeerServiceImpl.findAll()	7	2	0
com.beer.business.service.BeerServiceImpl.findAllStates()	4	1	0
com.beer.business.service.BeerServiceImpl.create(Brewer)	4	1	0
com.brewery.app.App.main(String[])	2	1	0
com.beer.business.domain.Beer.setId(String)	2	1	0
com.beer.business.domain.Beer.setName(String)	2	1	0
com.beer.business.domain.Beer.setBrewer(String)	2	1	0
com.beer.business.domain.Beer.setDateReceived(String)	2	1	0
com.beer.business.domain.Beer.getId()	2	1	0
com.beer.business.domain.Beer.getName()	2	1	0
com.beer.business.domain.Beer.getBrewer			

**FIGURE 7-2** CCN report generated with Maven

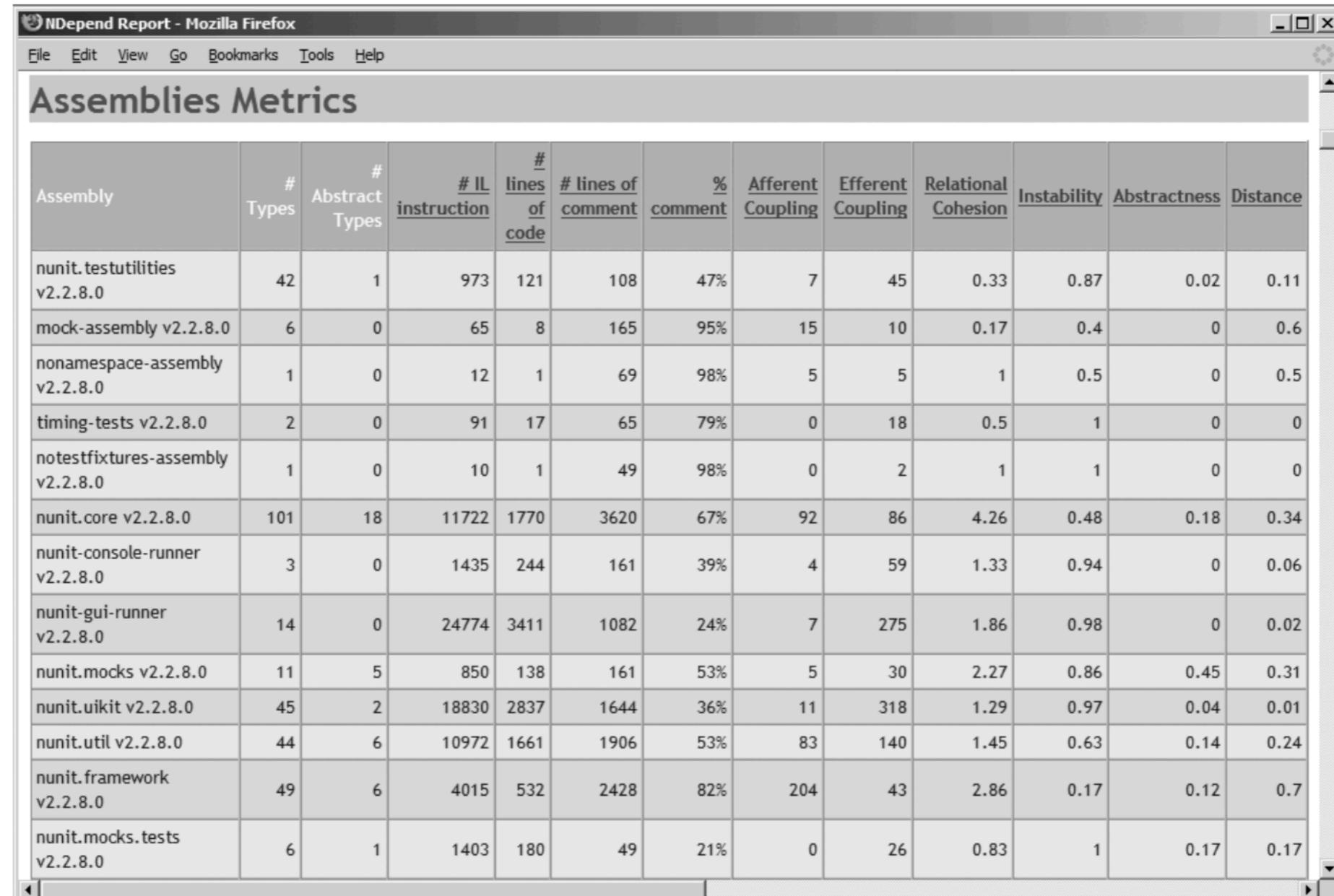


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# Perform Design Reviews Continuously



The screenshot shows a Firefox browser window displaying the NDepend Report. The title bar reads "NDepend Report - Mozilla Firefox". The main content area is titled "Assemblies Metrics". A table lists 13 assemblies with their respective metrics. The columns include: Assembly, # Types, # Abstract Types, # IL instruction, # lines of code, # lines of comment, % comment, Afferent Coupling, Efferent Coupling, Relational Cohesion, Instability, Abstractness, and Distance.

Assembly	# Types	# Abstract Types	# IL instruction	# lines of code	# lines of comment	% comment	Afferent Coupling	Efferent Coupling	Relational Cohesion	Instability	Abstractness	Distance
nunit.testutilities v2.2.8.0	42	1	973	121	108	47%	7	45	0.33	0.87	0.02	0.11
mock-assembly v2.2.8.0	6	0	65	8	165	95%	15	10	0.17	0.4	0	0.6
nonamespace-assembly v2.2.8.0	1	0	12	1	69	98%	5	5	1	0.5	0	0.5
timing-tests v2.2.8.0	2	0	91	17	65	79%	0	18	0.5	1	0	0
notestfixtures-assembly v2.2.8.0	1	0	10	1	49	98%	0	2	1	1	0	0
nunit.core v2.2.8.0	101	18	11722	1770	3620	67%	92	86	4.26	0.48	0.18	0.34
nunit-console-runner v2.2.8.0	3	0	1435	244	161	39%	4	59	1.33	0.94	0	0.06
nunit-gui-runner v2.2.8.0	14	0	24774	3411	1082	24%	7	275	1.86	0.98	0	0.02
nunit.mocks v2.2.8.0	11	5	850	138	161	53%	5	30	2.27	0.86	0.45	0.31
nunit.uikit v2.2.8.0	45	2	18830	2837	1644	36%	11	318	1.29	0.97	0.04	0.01
nunit.util v2.2.8.0	44	6	10972	1661	1906	53%	83	140	1.45	0.63	0.14	0.24
nunit.framework v2.2.8.0	49	6	4015	532	2428	82%	204	43	2.86	0.17	0.12	0.7
nunit.mocks.tests v2.2.8.0	6	1	1403	180	49	21%	0	26	0.83	1	0.17	0.17

**FIGURE 7-3** NDepend report



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# Maintain Organizational Standards with Code Audits

---

## LISTING 7-1 Simple Conditional without Braces

---

```
if(status)
    commit();
```

---

## LISTING 7-2 Simple Conditional with a Logical Defect

---

```
if(status)
    log.debug("committing db");
    commit();
```



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# Maintain Organizational Standards with Code Audits

## LISTING 7-3 A Poorly Named Method with Nondescriptive Variables

---

```
public void cw(IWord wrd) throws CreateException {
    Session s = null;
    Transaction t = null;
    try{
        s = WordDAOImpl.sessFactory.getHibernateSession();
        t = s.beginTransaction();
        s.saveOrUpdateCopy(wrd);

        t.commit();
        s.flush();
        s.close();
    }catch(Throwable thr){
        thr.printStackTrace();
        try{s.close();}catch(Exception e){}
        try{t.rollback();}catch(Exception e){}
        throw new CreateException(thr.getMessage());
    }
}
```



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# Maintain Organizational Standards with Code Audits

## LISTING 7-4 Completely Legal Code, but Rather Verbose

---

```
public boolean validateAddress(){
    if(this.getToAddress() != null){
        return true;
    }else{
        return false;
    }
}
```

## LISTING 7-5 A Simplified Method, Thanks to PMD

---

```
public boolean validateAddress(){
    return (this.getToAddress() != null);
}
```



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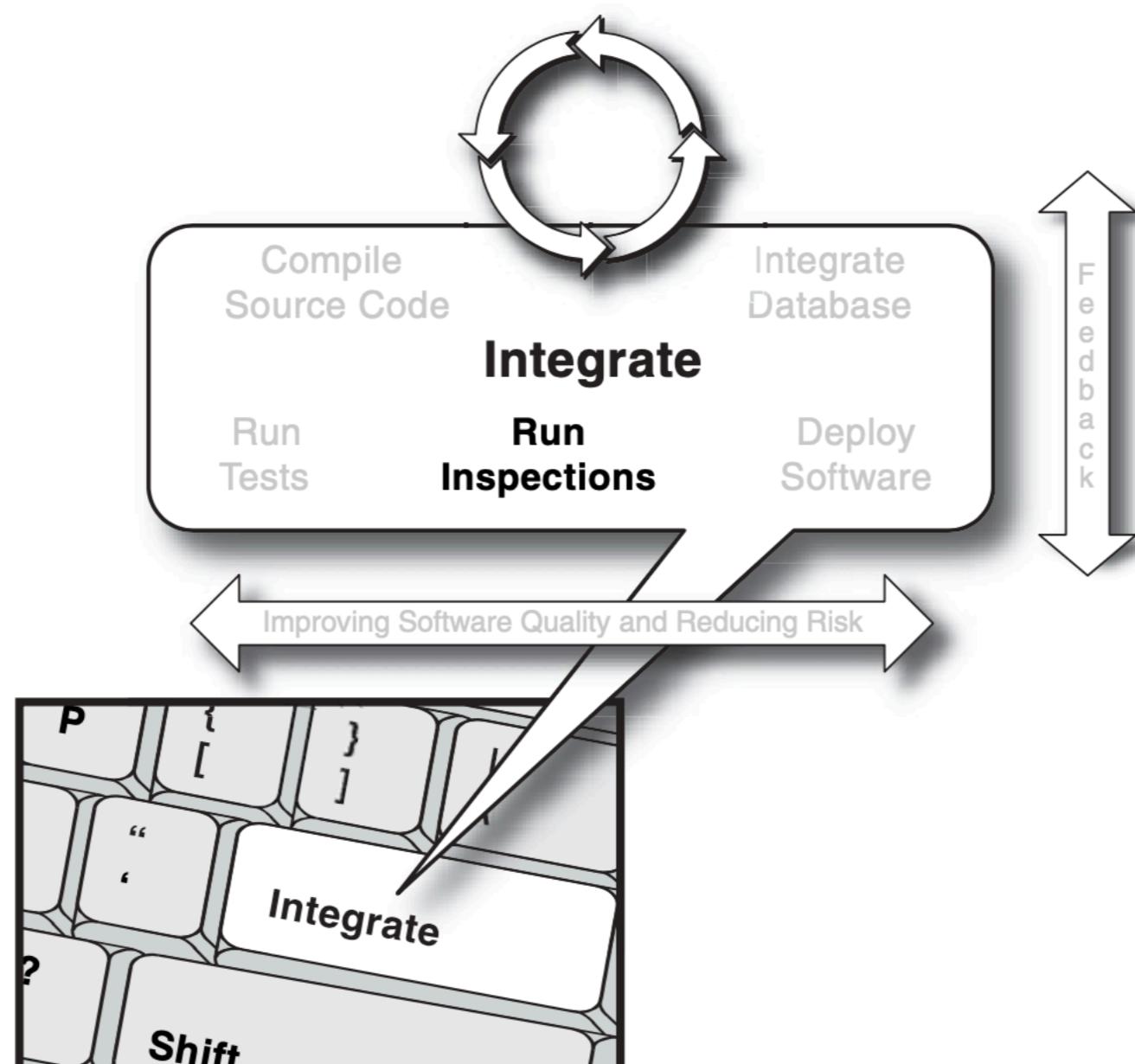
# Maintain Organizational Standards with Code Audits

#	File	Line	Problem
1	C:\dev\projects\projects-3.2\sligo\src\java\org\discoblog\words\bizobj\IDefinition.java	12	Avoid variables with short names like id
2	C:\dev\projects\projects-3.2\sligo\src\java\org\discoblog\words\bizobj\IDefinition.java	21	Avoid variables with short names like ex
3	C:\dev\projects\projects-3.2\sligo\src\java\org\discoblog\words\bizobj\ISynonym.java	12	Avoid variables with short names like id
4	C:\dev\projects\projects-3.2\sligo\src\java\org\discoblog\words\bizobj\IWord.java	14	Avoid variables with short names like id
5	C:\dev\projects\projects-3.2\sligo\src\java\org\discoblog\words\bizobj\impl\Definition.java	17	It is somewhat confusing to have a field name matching the declaring class name
6	C:\dev\projects\projects-3.2\sligo\src\java\org\discoblog\words\bizobj\impl\Definition.java	18	Avoid variables with short

**FIGURE 7-4** PMD report

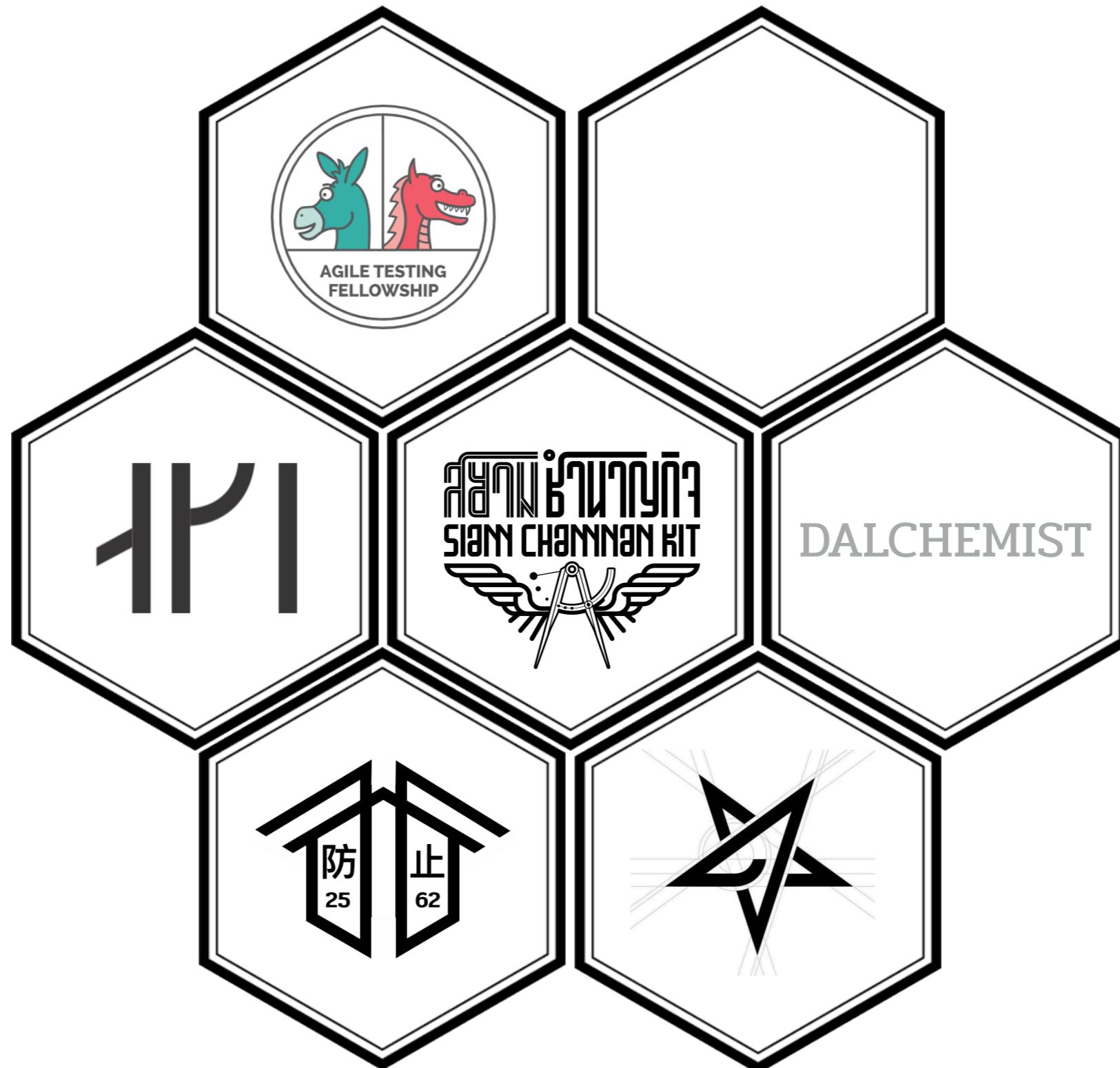


# Summary



**FIGURE 7-1** Integrate button—run inspections





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