Les tests fonctionnels

Vers une specification formelle des applications

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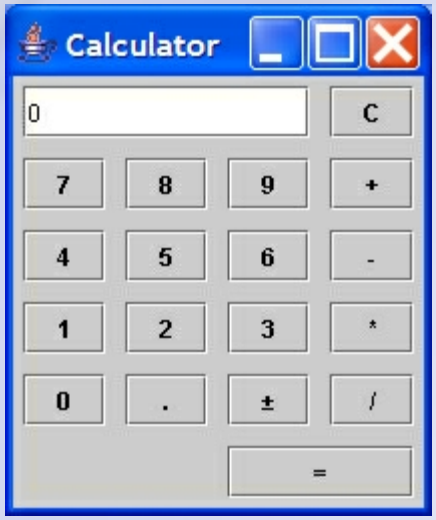
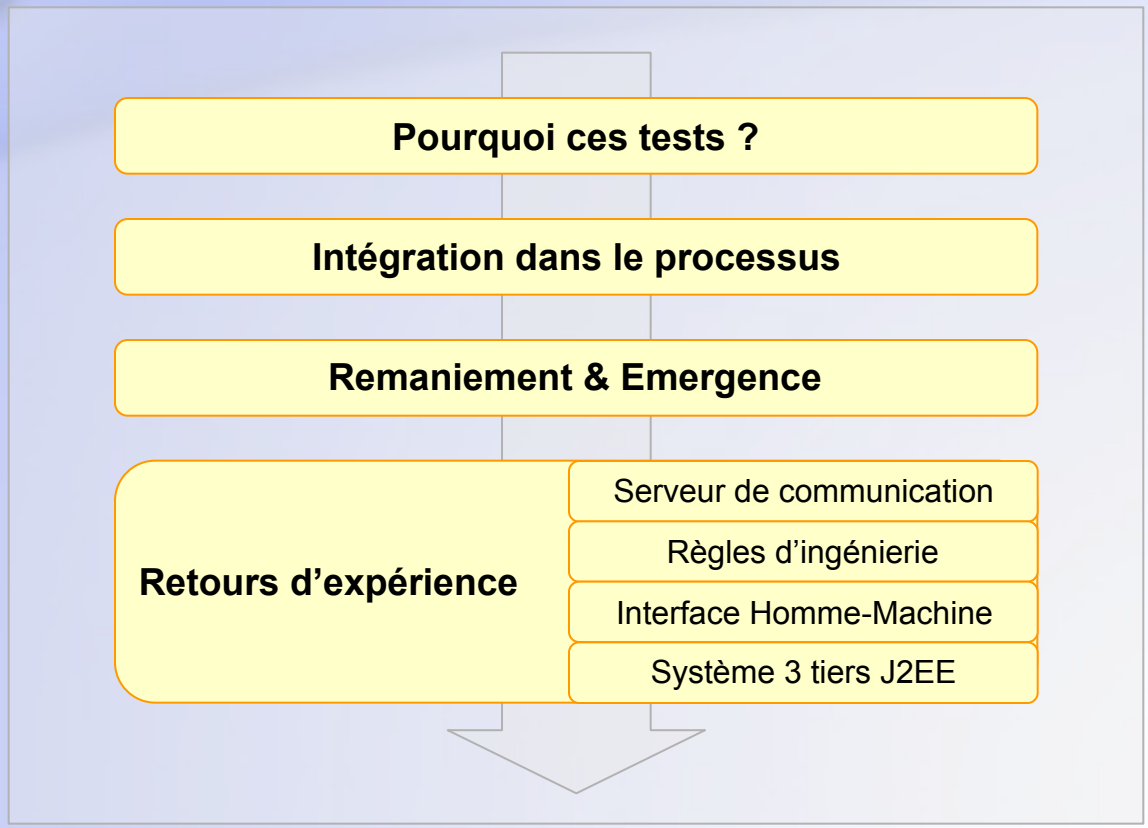
Un exemple



Key sequence	Display
1	1
12	12
2+	2
2+3	3
2+3=	5
2+3C	0
3±	-3
…	

Au menu

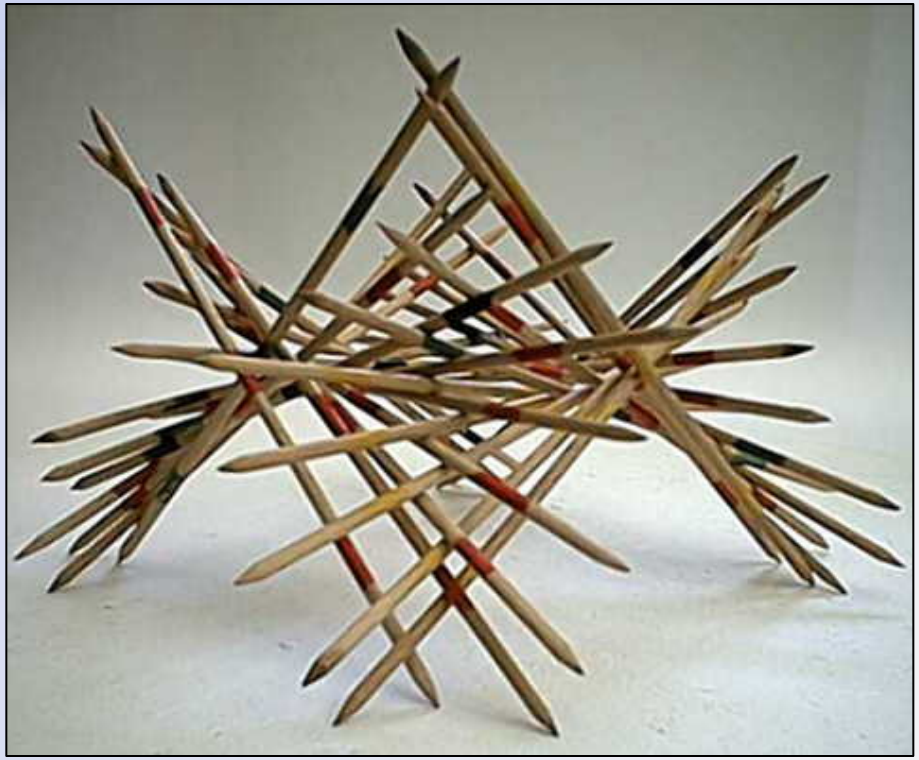


Pourquoi ces tests ?

Une progression laborieuse ?

« Surtout ne pas toucher l'existant ! »

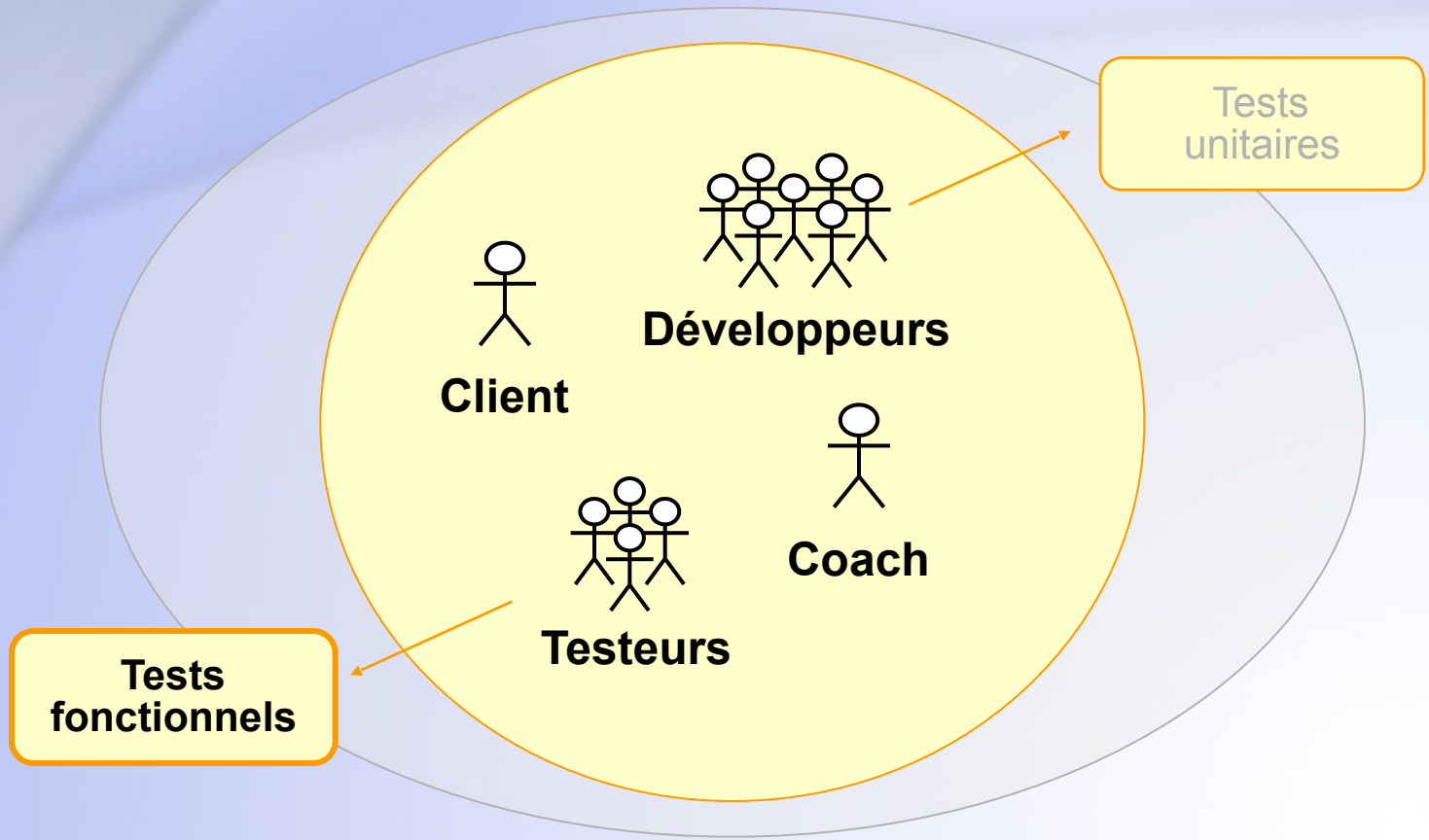
Un édifice fragile



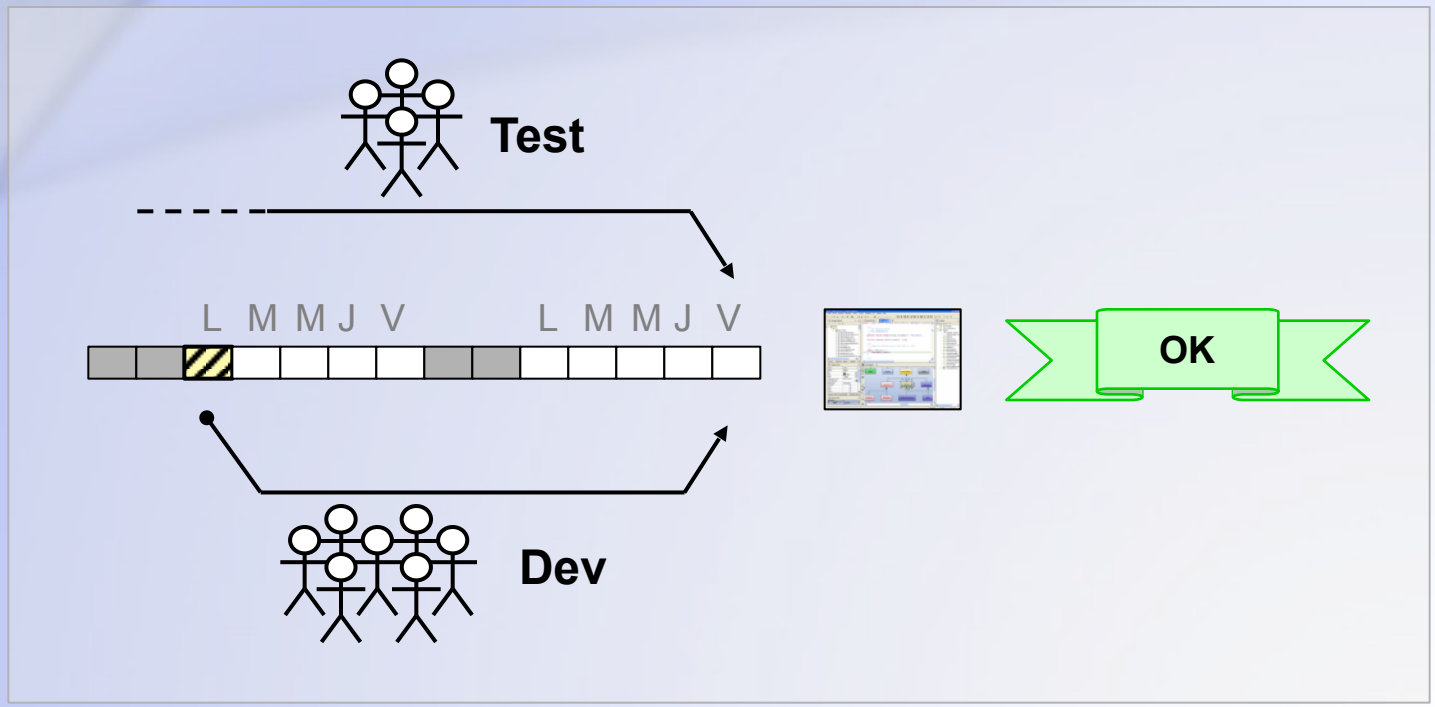
Les tests automatiques

Intégration dans le processus

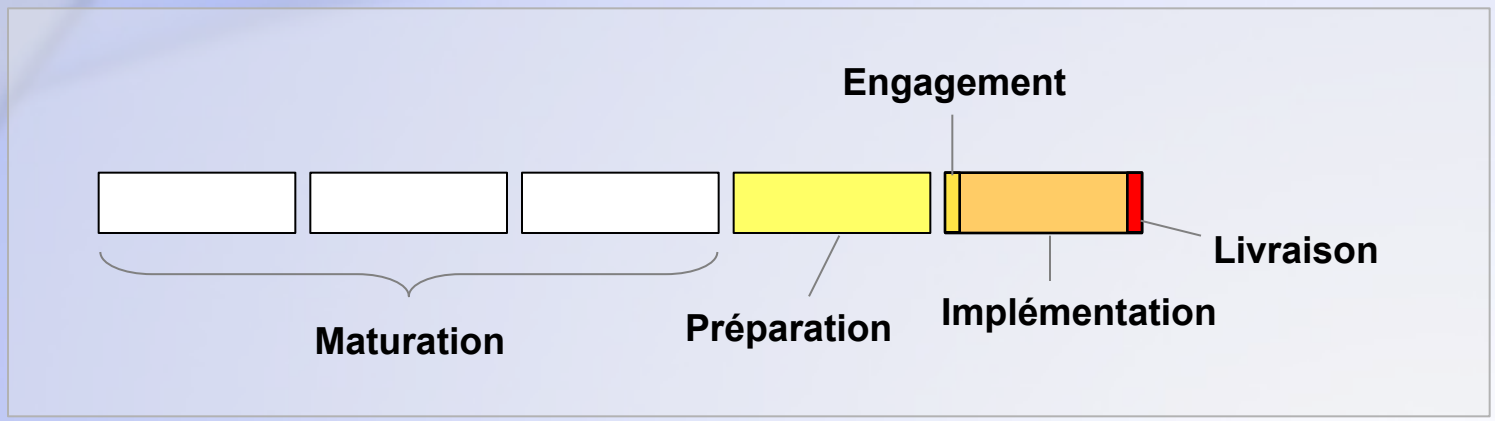
« Tests F » vs « Tests U »



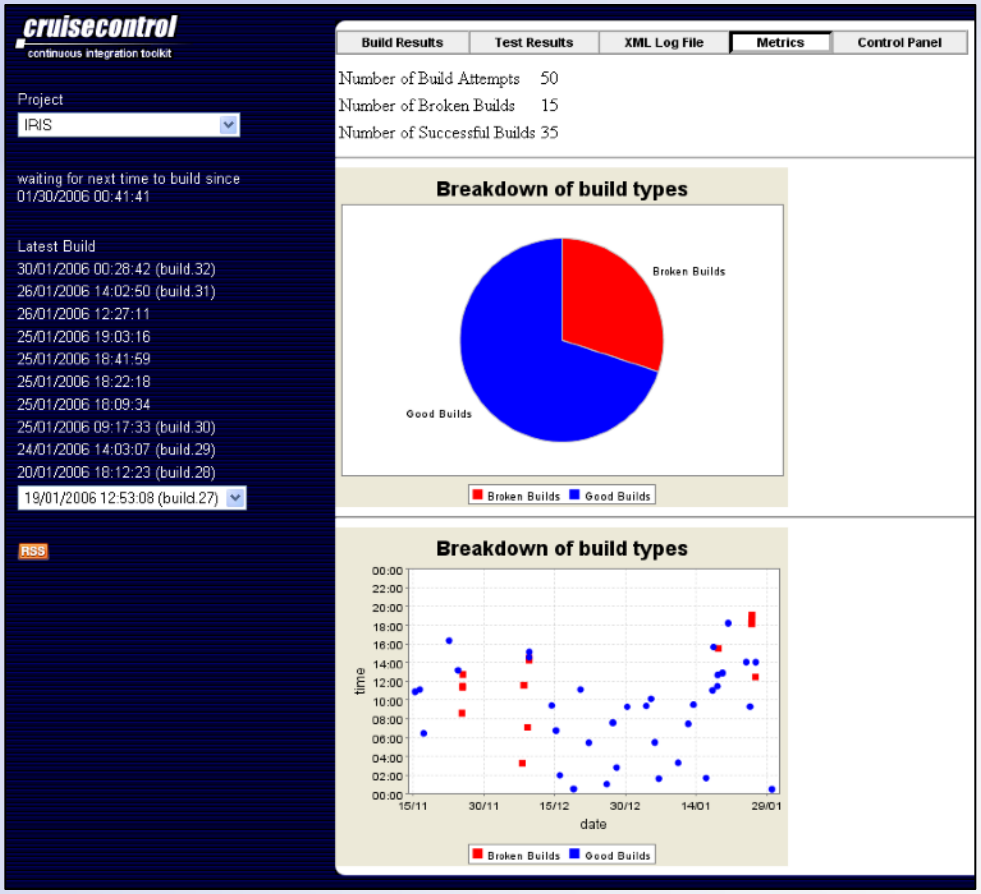
Recette de fin d'itération



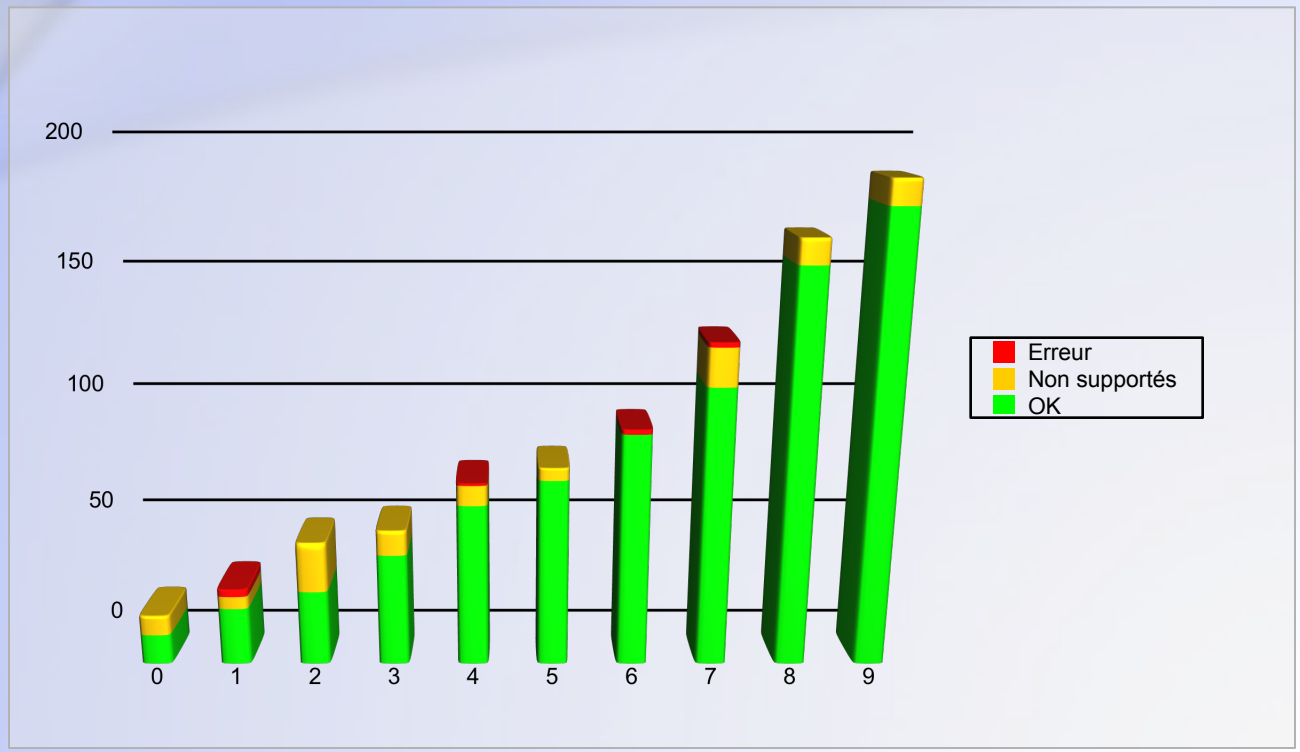
Spécifications « *just in time* »



Intégration Continue

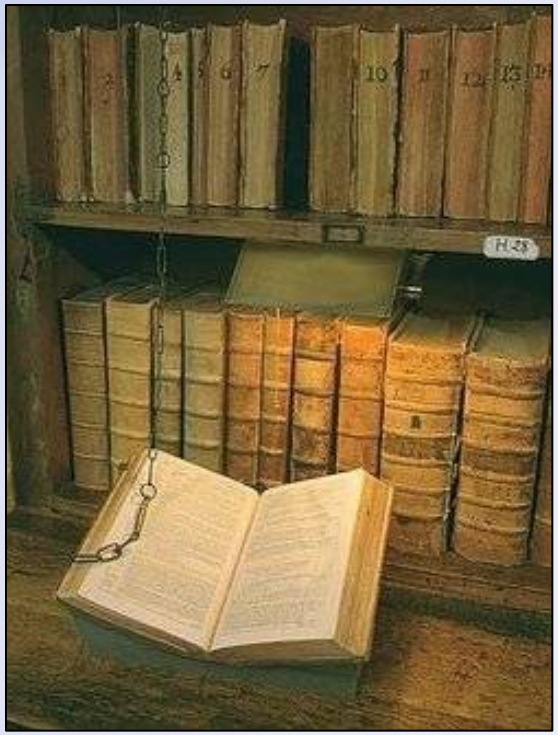


Suivi



Les tests manuels

La documentation



Remaniement & Emergence

Mécanique de test

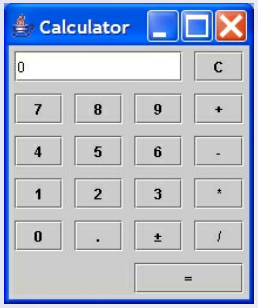
Entrée

5,25	5,27	5,45	5,98	6,02
13	76	54	55	54
4	5	3	3	4
63,9	46,7	76	72,1	127

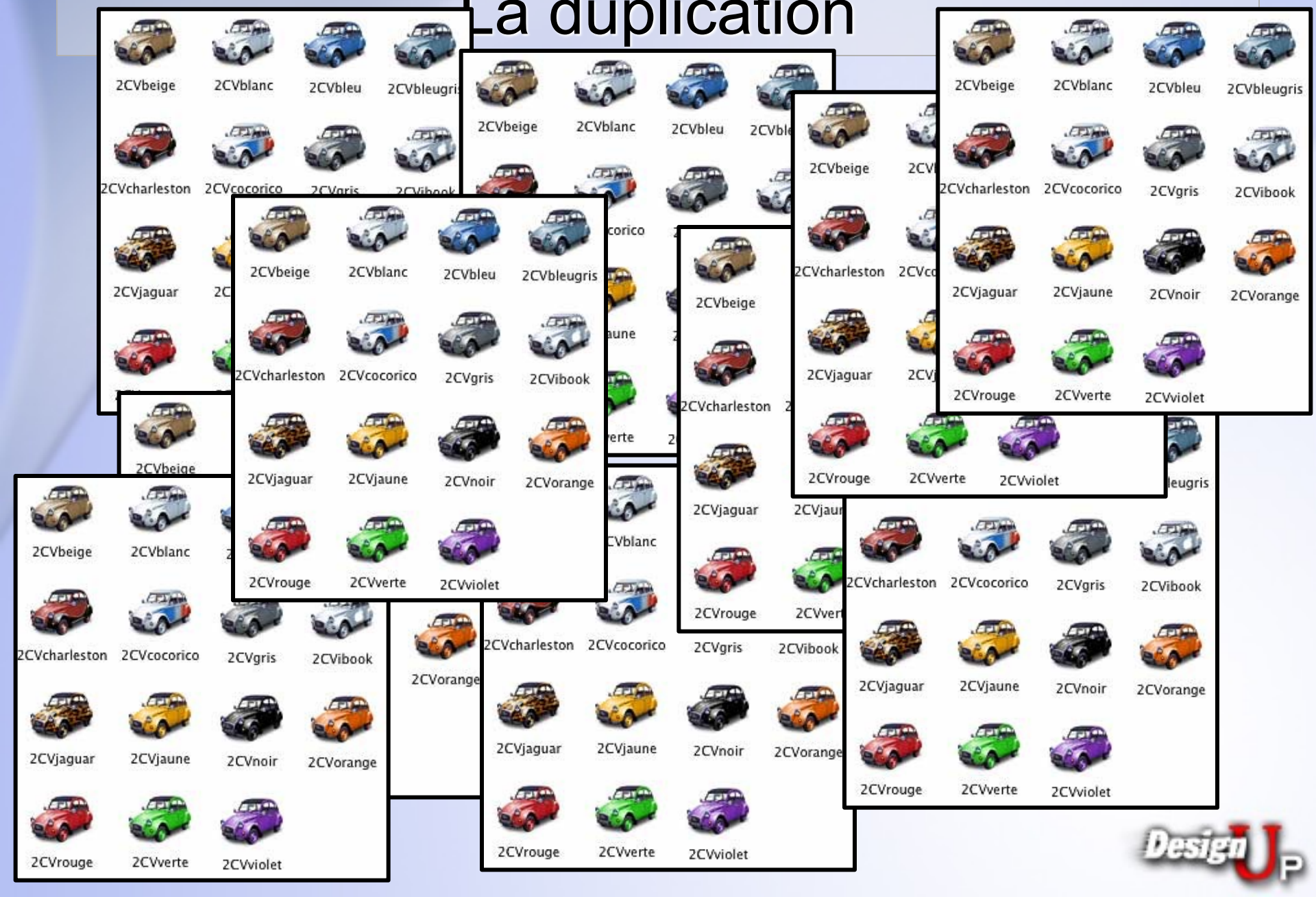
7,21	6,58	7,45
6	6	2
31	27	39

Résultat attendu

Framework de test spécifique



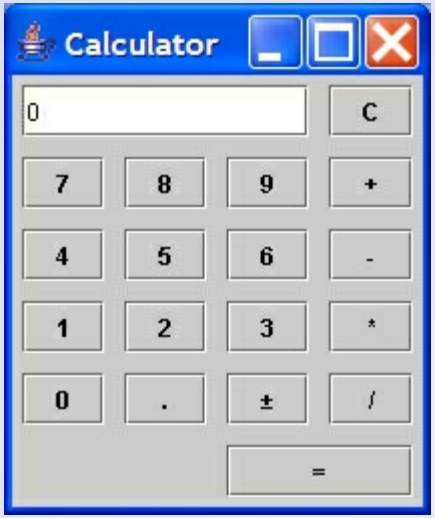
La duplication



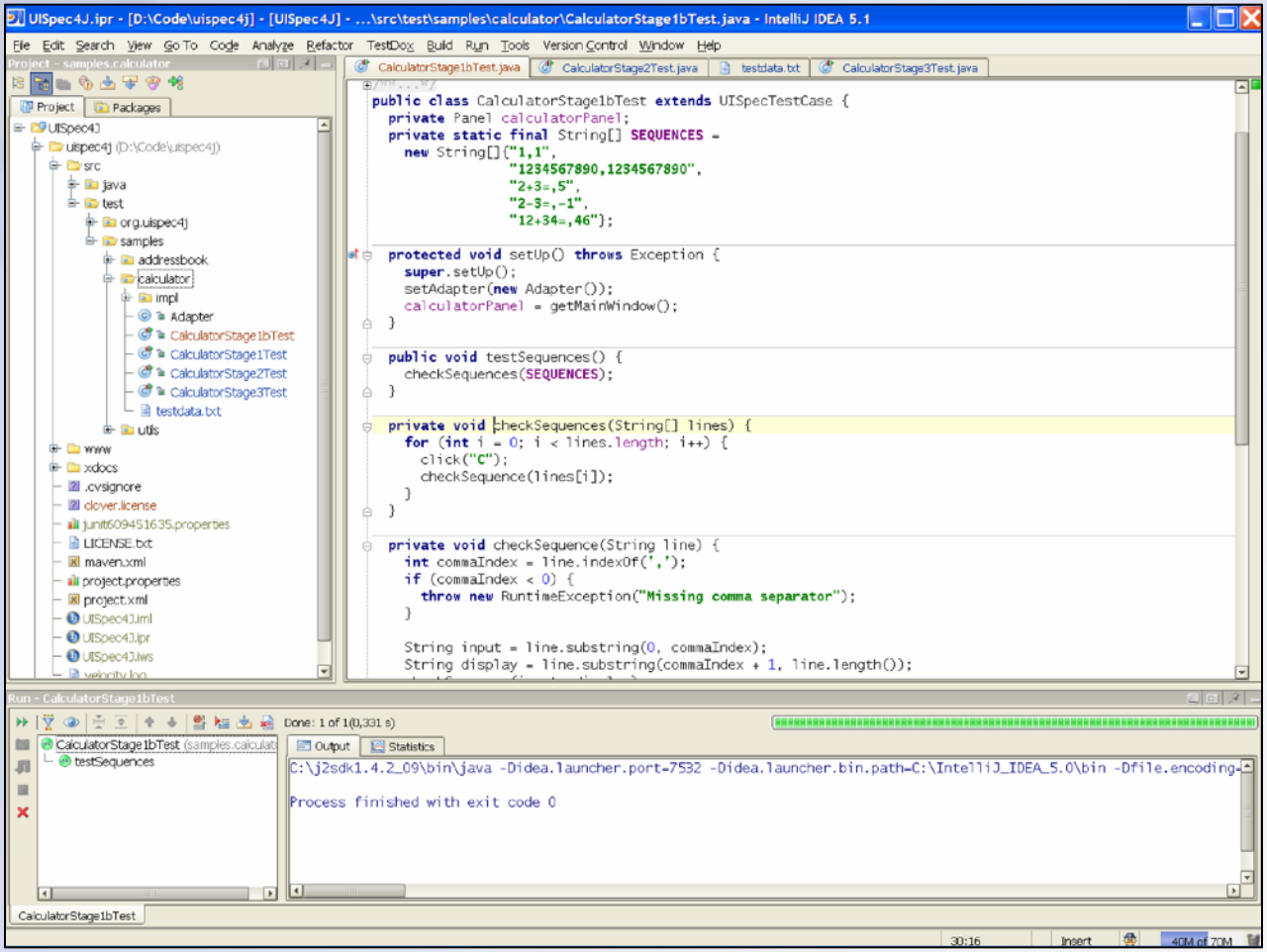
Le remaniement

- Rename
- Extract interface
- Move
- Extract superclass
- Safe delete
- Encapsulate fields
- Extract / Inline variable
- Introduce constant
- Extract / Inline method
- Introduce parameter
- Change signature
- Pull members up
- Use interface where possible
- Replace inheritance with delegation
- Replace constructor with factory method

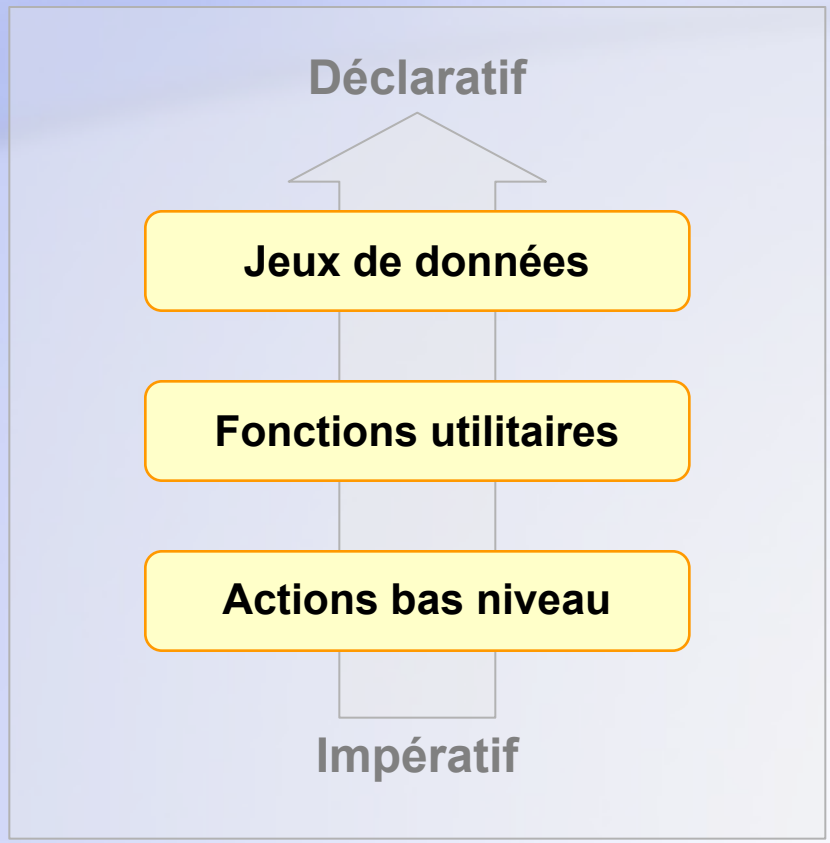
Exemple



Démonstration



Emergence



Expression des données

XML

```
<testSuite>
  <test name="Display">
    <sequence input="1" display="1"/>
    <sequence input="12" display="12"/>
  </test>
  <test name="Addition">
    <sequence input="2+" display="2"/>
    <sequence input="2+3" display="3"/>
    <sequence input="2+3=" display="5"/>
  </test>
  <test name="Reset">
    <sequence input="2+3C" display="0"/>
  </test>
  <test name="Sign">
    <sequence input="3±" display="-3"/>
  </test>
</testSuite>
```

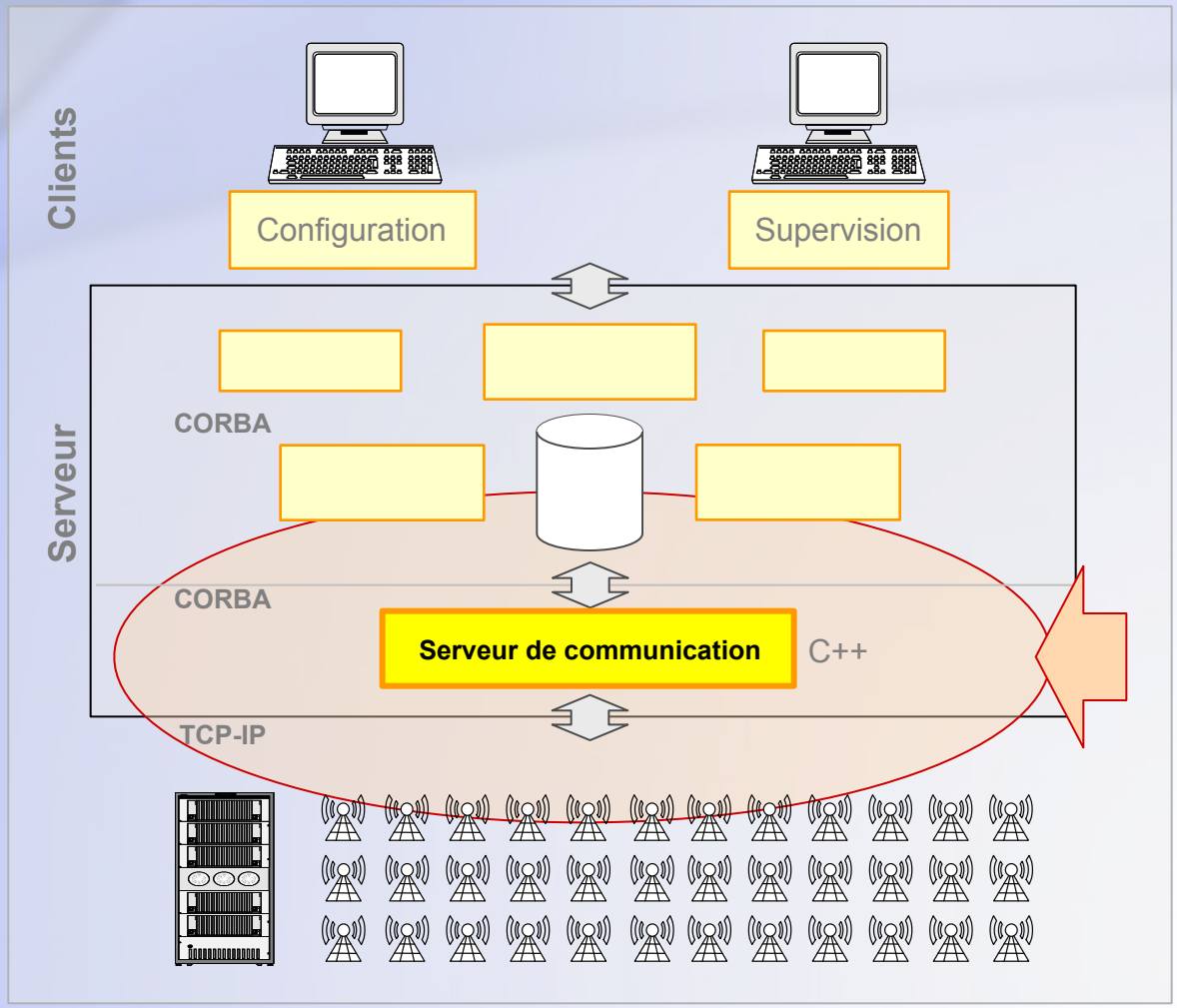
Tables type « FIT »

Key sequence	Display
1	1
12	12
2+	2
2+3	3
2+3=	5
2+3C	0
3±	-3
…	

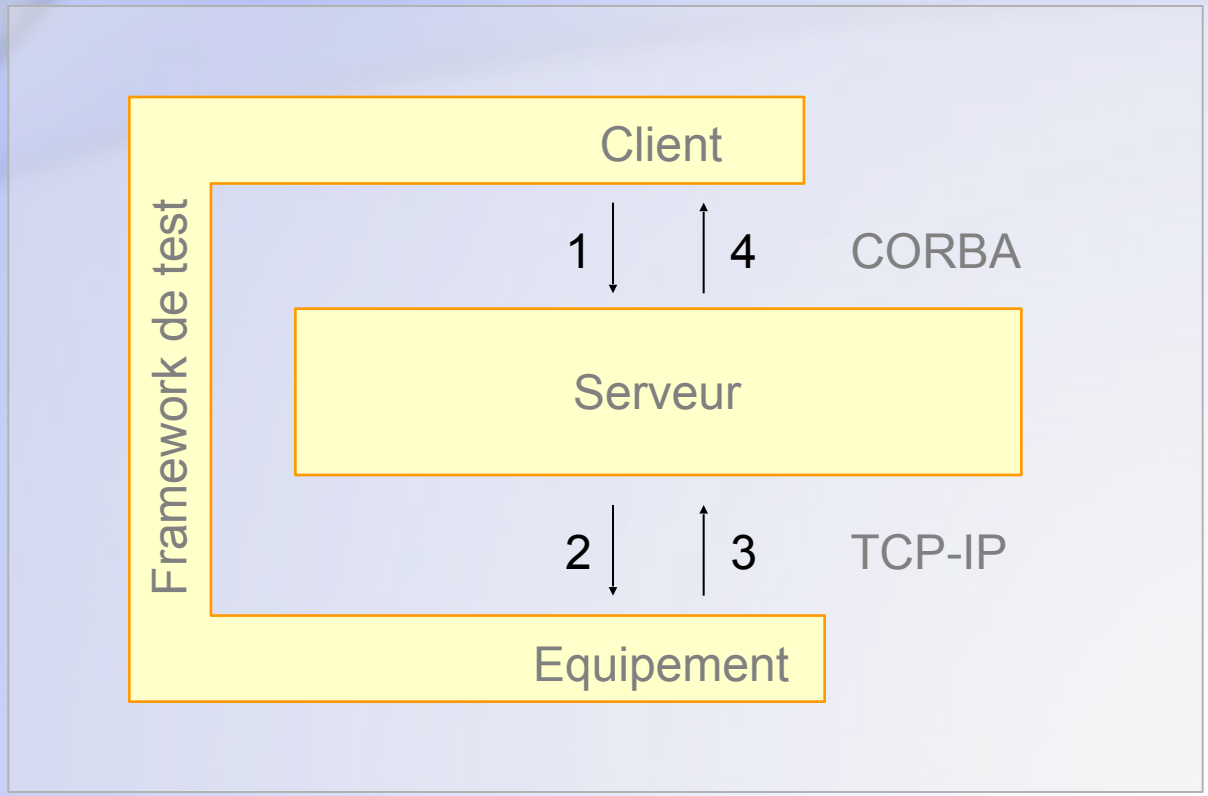
Retour d’expérience

Serveur de communication CORBA ⇔ TCP-IP

Le contexte



Un test type



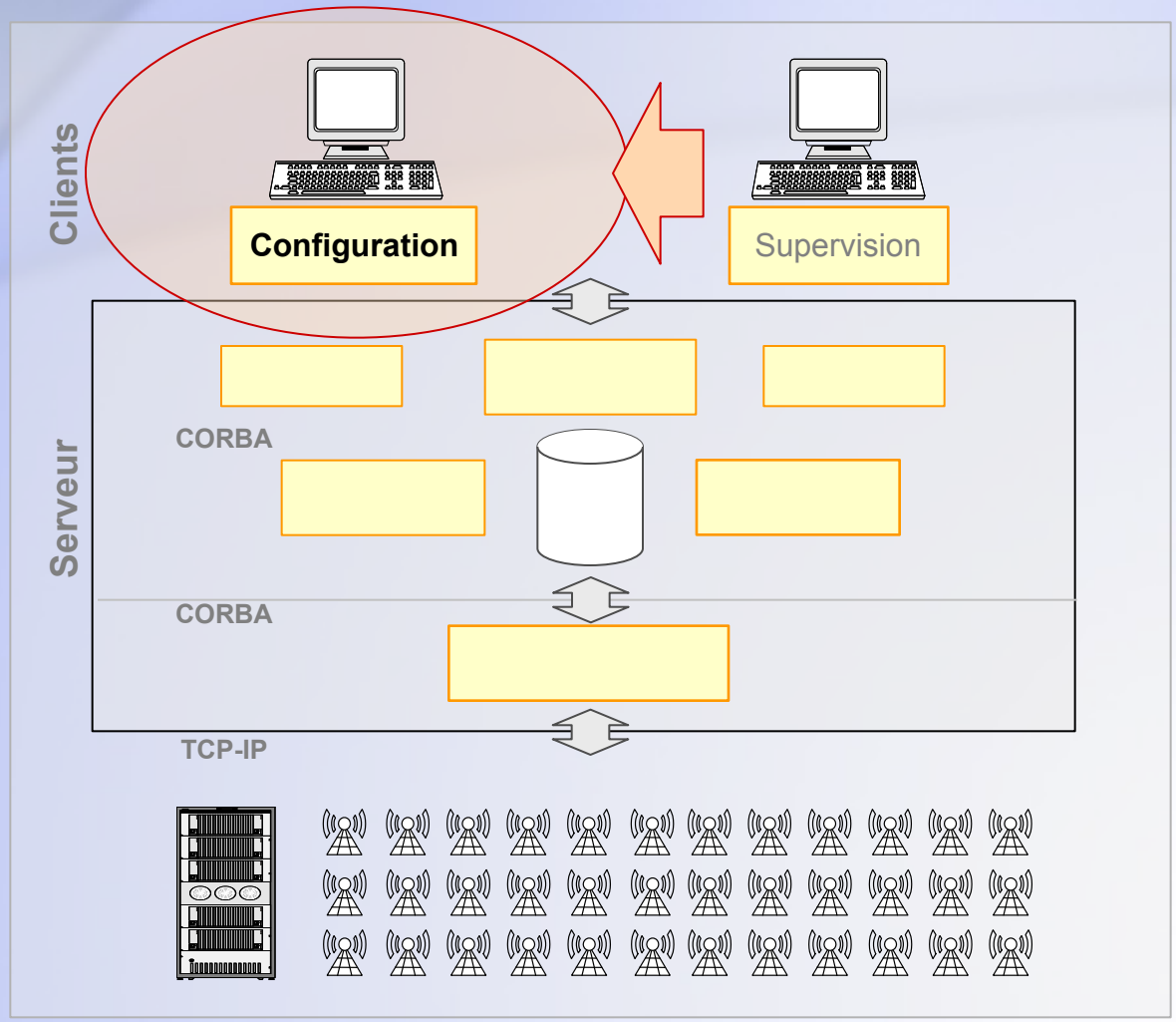
Exemple de test

```
void testConnection()
{
  CALLSYNC(CommService::Connect(id_, LOCALHOST, getListeningPort()));
  EXPECT(EqEvents::Connection<OpenConnection>(id_, MessageDefs::INIT));
  CALLSYNC(EqCommands::ConnectAck<OpenConnection>(id_, MessageDefs::INIT, true));
  EXPECT(CommListener::ProcessLinkReportEvt(id_, true));
}
```

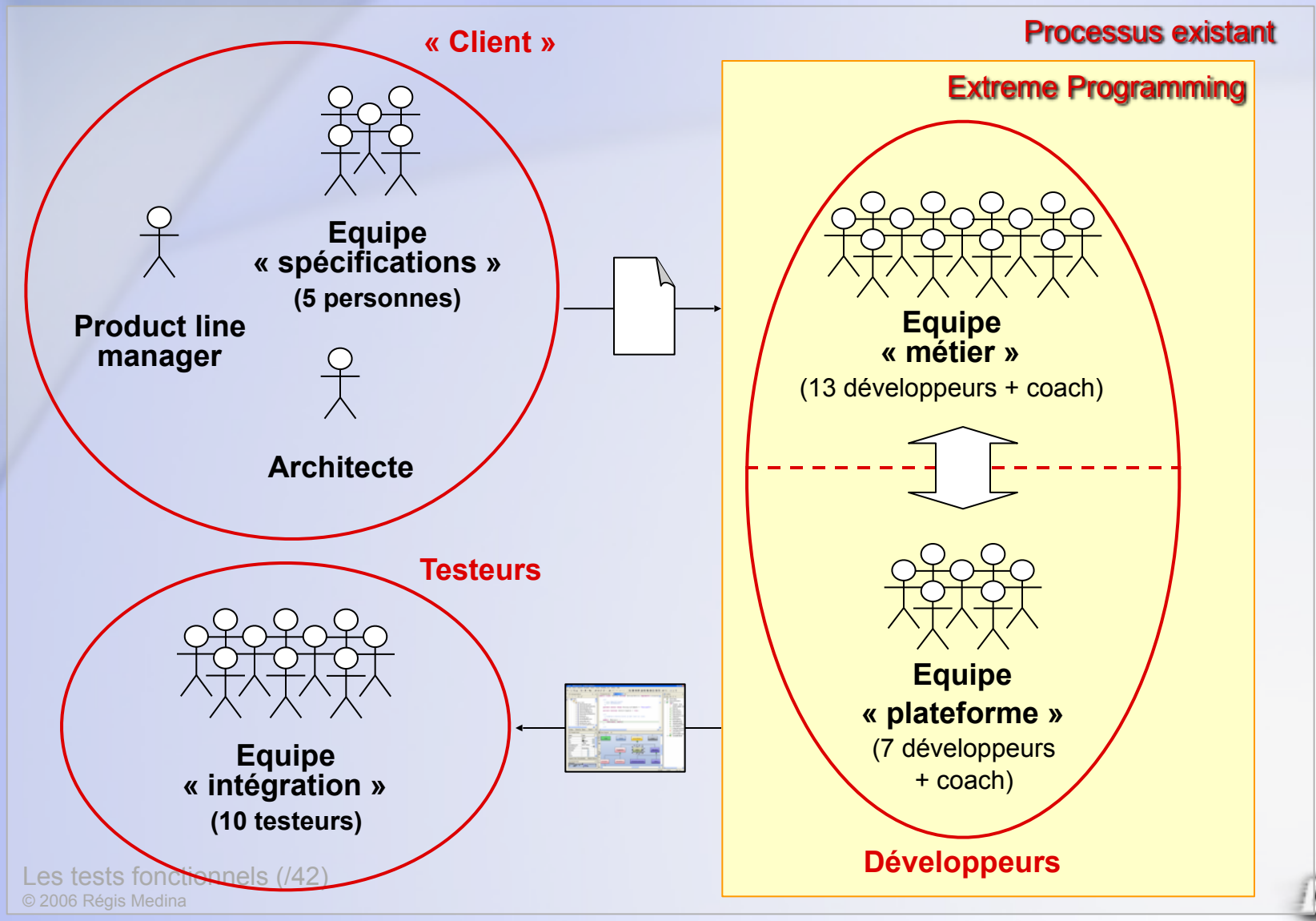
Retour d’expérience

Outil de configuration d’équipements de réseau

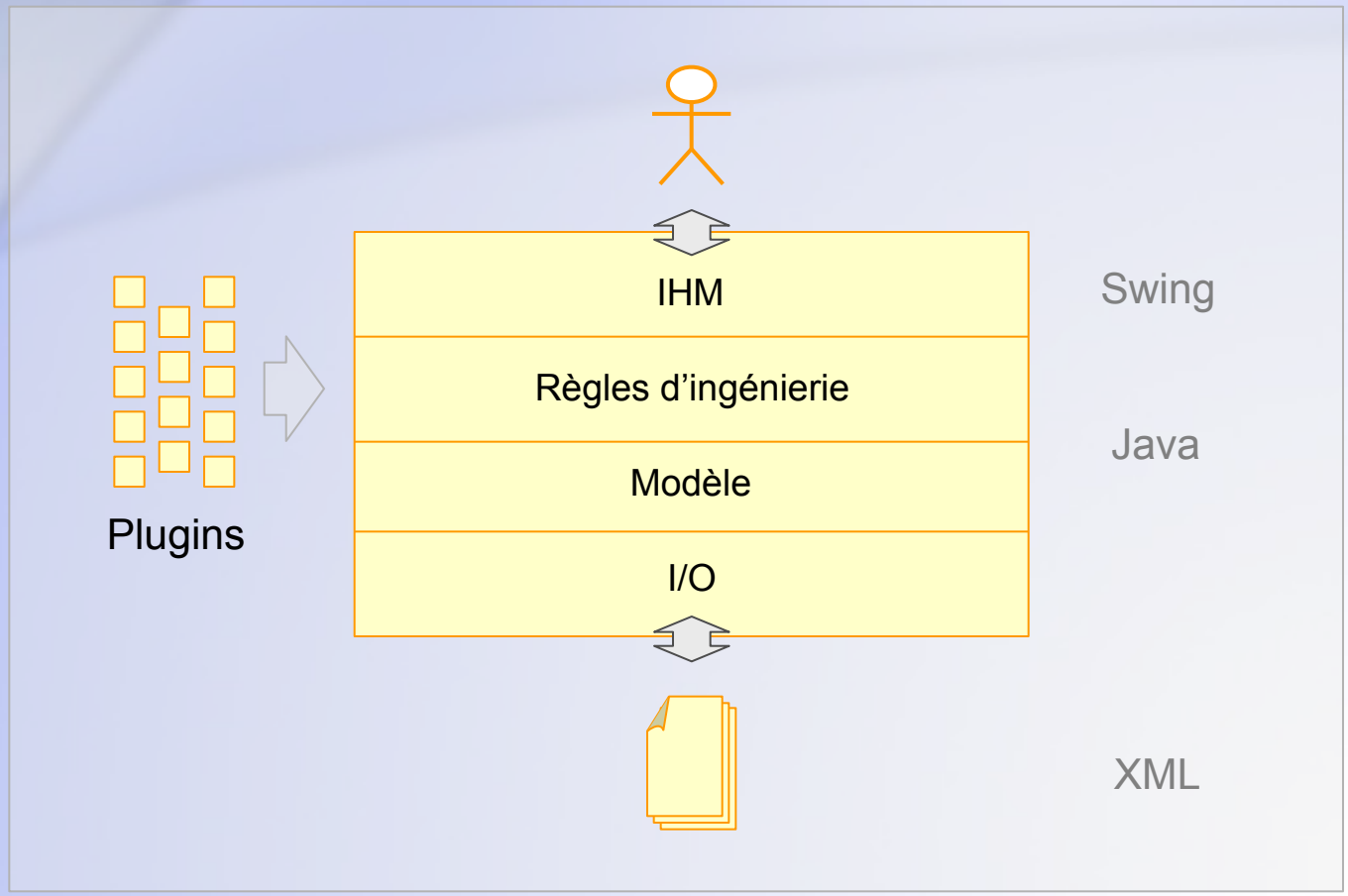
Le contexte



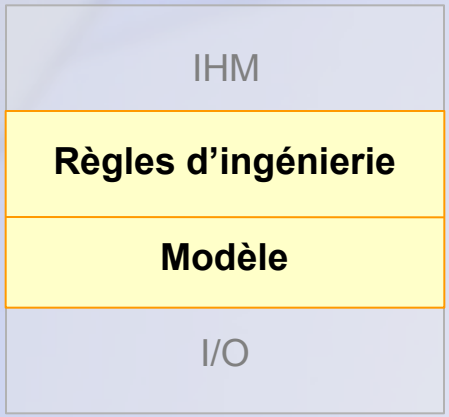
Organisation



L’application

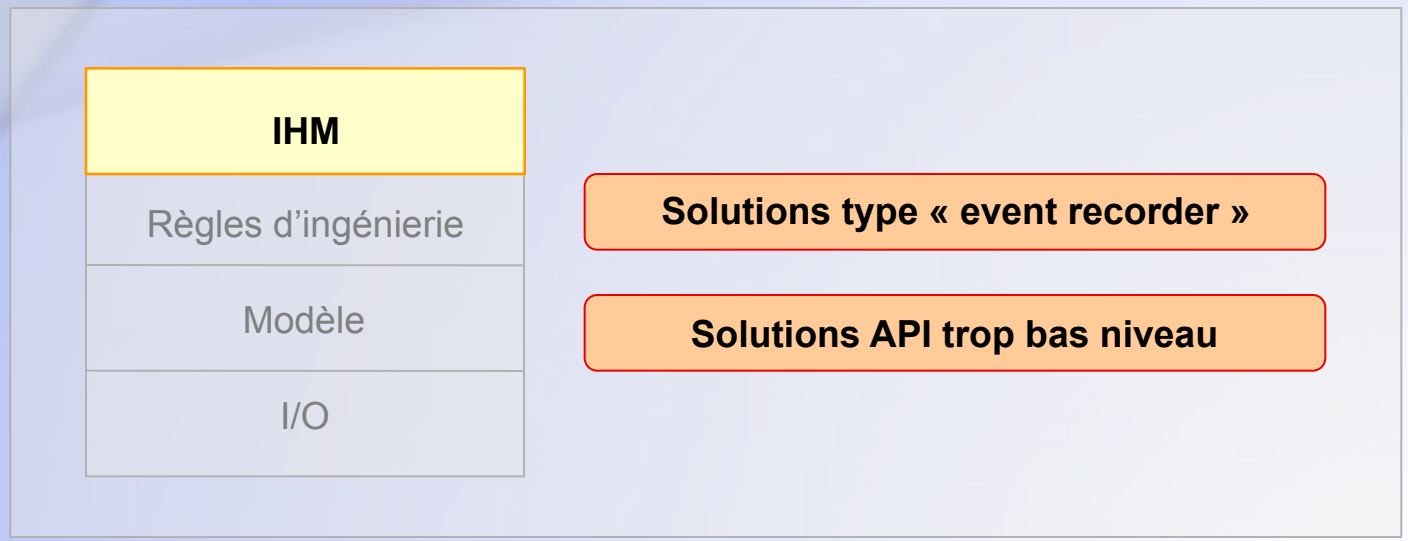


Tests « règles d'ingénierie »

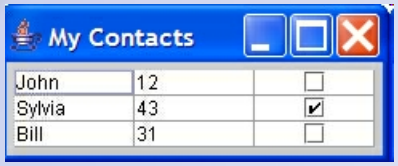



```
void testCheck1() {
  Obj1 o1 = root.createObj1();
  o1.setFirstField("default");
  o1.setSecondField(1,4);
  runCheck("check1", o1);
  checkError(o1.getId(),
             "Parameter firstField " +
             " must be set to 'auto'"  +
             " when secondField < 3");
}
```

Tests IHM

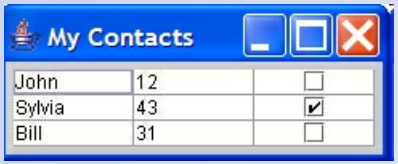


Exemple




```
public void testTableContent() (
  JTable table = ...
  assertEquals("John", table.getValueAt(0, 0));
  assertEquals("12", table.getValueAt(0, 1));
  assertEquals(Boolean.FALSE", table.getValueAt(0, 2));
  assertEquals("Sylvia", table.getValueAt(1, 0));
  assertEquals("43", table.getValueAt(1, 1));
  assertEquals(Boolean.TRUE, table.getValueAt(1, 2));
  assertEquals("Bill", table.getValueAt(2, 0));
  assertEquals("31", table.getValueAt(2, 1));
  assertEquals(Boolean.FALSE, table.getValueAt(2, 2));
}
```

UISpec4J




```
public void testTableContent() {
  Table contacts = getMainWindow().getTable();
  contacts.assertContentEquals(new Object[][]{
      {"John", "12", Boolean.FALSE},
      {"Sylvia", "43", Boolean.TRUE},
      {"Bill", "31", Boolean.FALSE}});
}
```

http://www.uispec4j.org

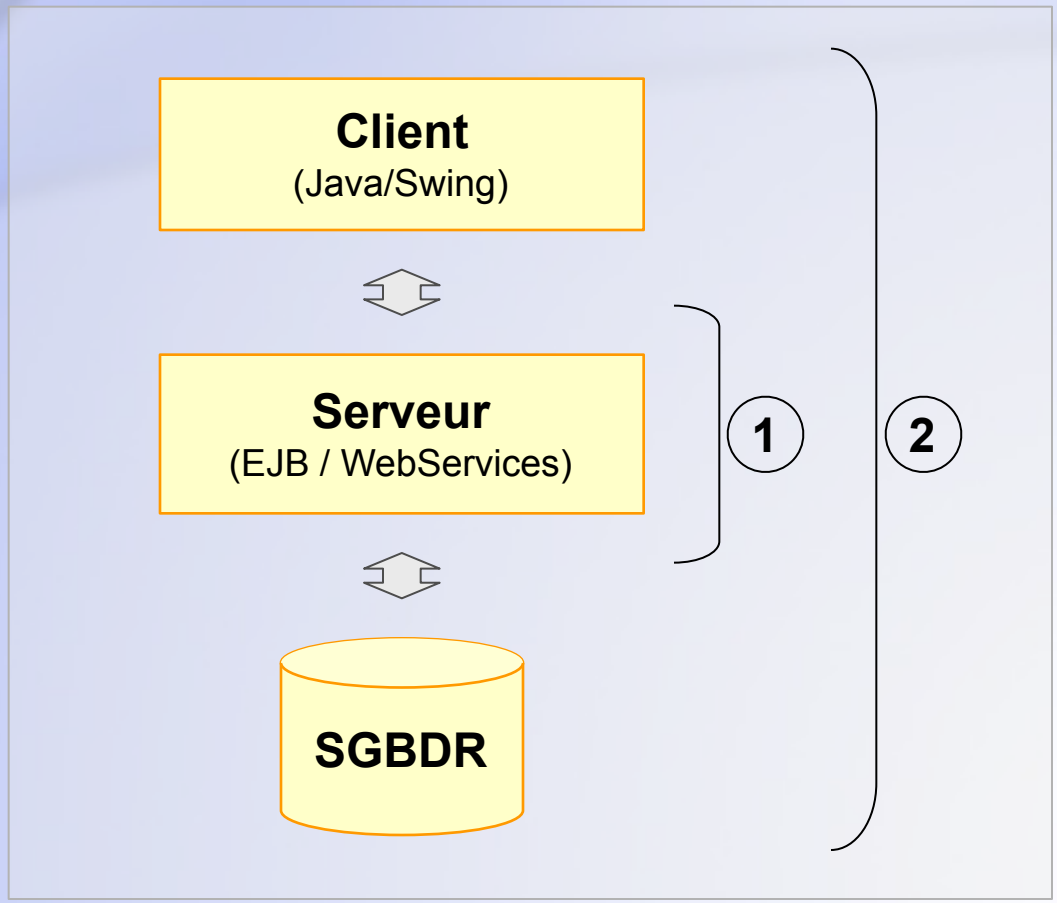
UISpec4J

- API orientées test
- Recherche de composants
- Mode « headless »
- Interception / Fenêtres modales
- Extensibilité

Retour d’expérience

Système d’aide à la décision dans le domaine de la finance

Stratégie de test

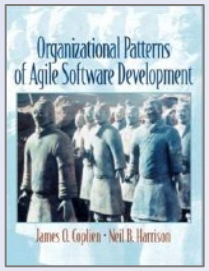


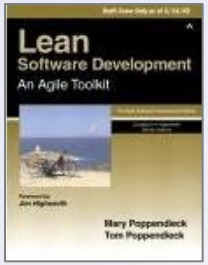
Conclusion

Conclusion

- Le remaniement concerne aussi les tests
- Faire émerger « l'essence » du fonctionnel
- Besoin d'outils adaptés

Références





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