Testing

Selenium? Rich-Clients? Containers?

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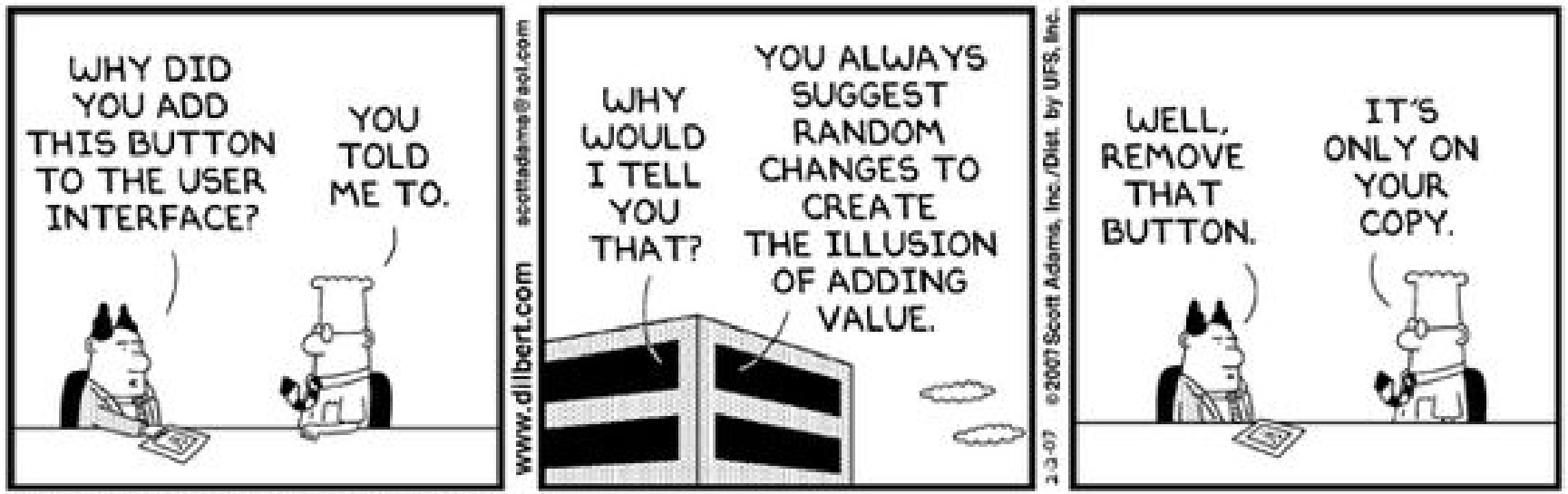
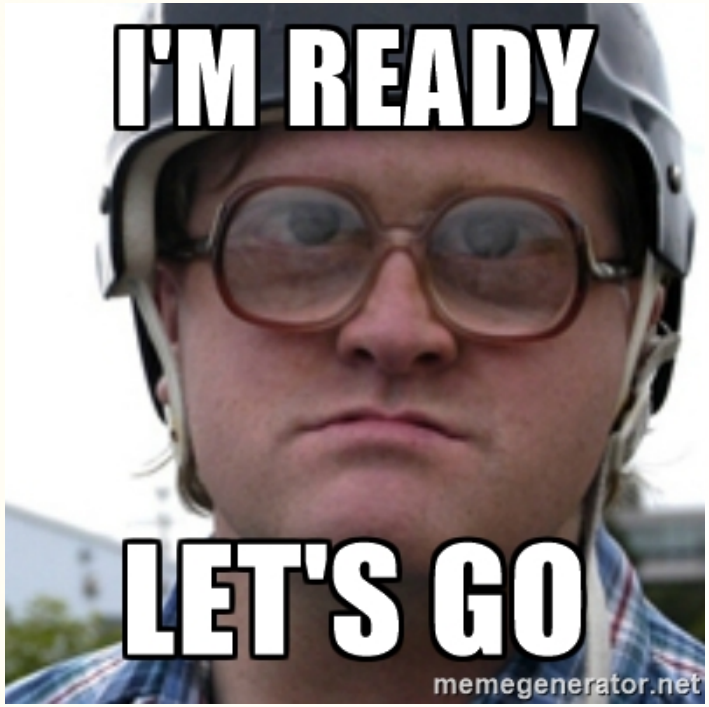
During the UI development phase ...



Yeah - release 1.0 is out!

Next step:
Make this things perfect!

- ✘ Rewrite all of our tests?
- ✘ Validate the order confirmation PDF?
- ✘ Test the rich-client implementation as well?
- ✘ Where to run the test?



- Keep current tests
- Use same codebase
- Keep it simple

Add Maven Dependencies

```
<dependencies>
        <!--- selenium and testNG dependency ... -->

        <dependency>
            <groupid>org.sakuli</groupid>
            <artifactid>sakuli-selenium-setup</artifactid>
            <version>1.1.0-SNAPSHOT-247_sakuli_se</version>
            <scope>test</scope>
        </dependency>
    </dependencies>

    <!-- ConSol Labs repository holds the Sakuli libraries-->
    <repository>
        <id>labs-consol</id>
        <name>ConSol Labs Repository</name>
        <url>http://labs.consol.de/maven/repository</url>
        <snapshots>
            <enabled>false</enabled>
        </snapshots>
        <releases>
            <enabled>true</enabled>
        </releases>
    </repository>
    <repository>
        <id>labs-consol-snapshots</id>
        <name>ConSol Labs Snapshot-Repository</name>
        <url>http://labs.consol.de/maven/snapshots-repository</url>
        <snapshots>
            <enabled>true</enabled>
        </snapshots>
        <releases>
            <enabled>true</enabled>
        </releases>
    </repository>
```

Use the Sakuli Annotations

```
@Listeners(SakuliSeTest.class)
public class BasicSakuliSeTest {

    private static final String TEST_URL = "http://bakery-web-server:8080/bakery/" ;
    private static final String PDF_EDITOR_NAME = "masterpdfeditor4";
    protected WebDriver driver;
    protected Region screen;
    protected Environment env;
    protected SeTestCaseAction tcAction;

    private Application pdfEditor;

    @BeforeMethod
    public void setUp() throws Exception {
        driver = getSeleniumDriver();
        env = new Environment();
        screen = new Region();
        tcAction = new SeTestCaseAction();
    }

    private Application openPDF(String pdfFilePath) {
       return pdfEditor = new Application(PDF_EDITOR_NAME + " \"" + pdfFilePath + "\"").open();
    }

    //....
}
```

Use the Sakuli Annotations

```
@Listeners(SakuliSeTest.class)
public class BasicSakuliSeTest {

    //....
    private static final String SAKULI_URL = "https://github.com/ConSol/sakuli/blob/master/README

    @Test
    @SakuliTestCase
    public void test1() throws Exception {
        //your test code
        driver.get(SAKULI_URL);
        screen.highlight();
        screen.find("sakuli_logo.png").highlight();
    }

    @Test
    @SakuliTestCase(testCaseName = "mysecondtest", warningTime = 10, criticalTime = 20, addition
    public void test2() throws Exception {
        //your test code
        driver.get(SAKULI_URL);
        screen.highlight();
        screen.type(Key.END).find("github_logo.png").highlight();
    }
}
```

- ✓ Rewrite all of our tests?
- ✗ Validate the order confirmation PDF?
- ✗ Test the rich-client implementation as well?
- ✗ Where to run the test?

- Generate PDF file
- Open the file in a native PDF viewer
- Validate the content

Test Definition (Selenium)

```
@Test
public void testOrderPDF() throws Exception {
    driver.get(TEST_URL);
    WebElement heading1 = driver.findElement(By.name( "Cookie Bakery Application" ));
    dsl.highlightElement(heading1);
    assertTrue(heading1.isDisplayed());

    WebElement download = driver.findElement(By.partialLinkText( "Print PDF"));
    dsl.highlightElement(download);
    assertTrue(download.isDisplayed());
    download.click();

    //save as pdf ???
}
```

Test Definition (Selenium + Sakuli SE)

```
@Test
@SakuliTestCase
public void testOrderPDF() throws Exception {
    //... open pdf in browser

    //save as pdf
    screen.find("save_button.png").highlight().click();
    String pdfFilePath =  "/tmp/order-confirmation.pdf" ;
    env.type("a", Key.CTRL)  //mark filename in "save under" dialog
            .type(pdfFilePath + Key.ENTER);  //type filename and press ENTER

    //open pdf and validate
    openPDF(pdfFilePath);
    screen.waitForImage("pdf_order_header", 30).highlight();
    Stream.of(
            "pdf_blueberry",
            "pdf_caramel",
            "pdf_chocolate",
            "pdf_place_order"
    ).forEach(validationPicture -> screen.find(validationPicture).highlight());
}

private Application openPDF(String pdfFilePath)  {
    return pdfEditor = new Application(PDF_EDITOR_NAME +  " \"" + pdfFilePath +  "\"").open();
}
```

- ✓ Rewrite all of our tests?
- ✓ Validate the order confirmation PDF?
- ✗ Test the rich-client implementation as well?
- ✗ Where to run the test?

- Make an order at the web client
- Trigger the reporting function in the rich client
- Validate the reported count of produces orders

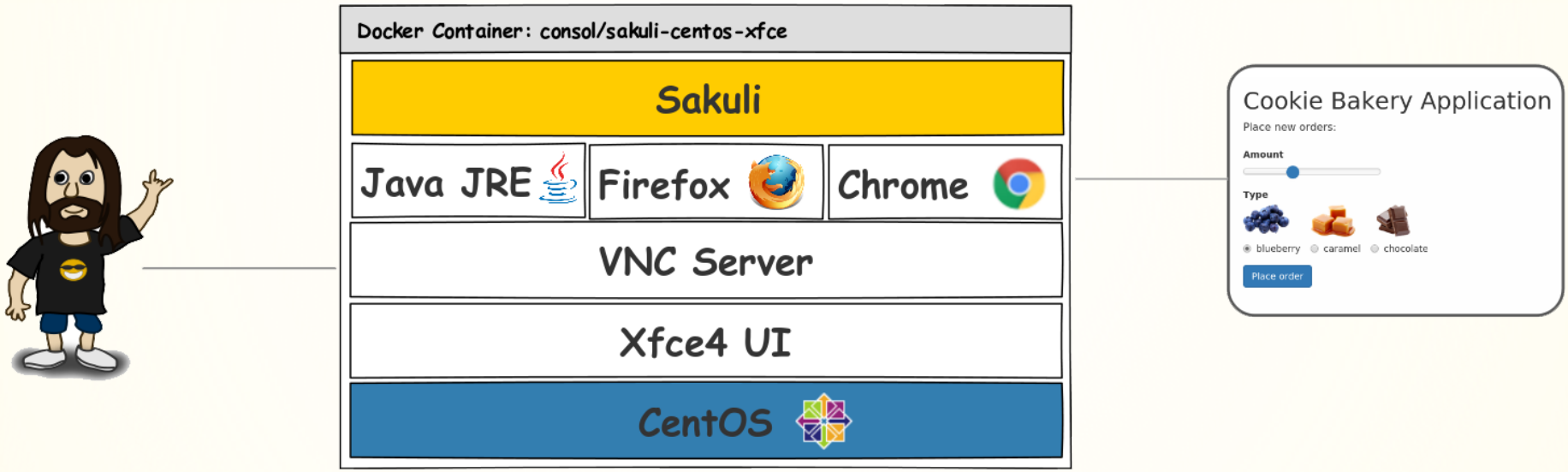
Control Web and Rich Clients

```
@Test
@SakuliTestCase
public void testWebOrderToReportClient () throws Exception {
    driver.get(TEST_URL);
    WebElement heading1 = driver.findElement(By.name( "Cookie Bakery Application" ));
    assertTrue(heading1.isDisplayed());

    WebElement order = driver.findElement(By.cssSelector( "button blueberry-order" ));
    assertTrue(order.isDisplayed());
    for (int i = 0; i < 20; i++) {
        LOGGER.info( "place blueberry order " + i);
        order.click();
    }

    //open native client application over $PATH
    reportClient = new Application( "baker-report-client" ).open();
    Region reportClientRegion = reportClient.getRegion();

    //generate the report
    reportClientRegion.type( "r", Key.ALT); //type ALT + r to open the report view
    reportClientRegion.find( "get-daily-report-button" ).click();
    reportClientRegion.waitForImage( "report-header", 10);
    try {
        reportClientRegion.find( "blueberry_muffin_logo" );
        reportClientRegion.find( "report_blueberry" );
        reportClientRegion.find( "report_blueberry" )
                    .below( 100)
                    .find( "report_value_20" );

    } catch (Exception e) {
        //useful for custom error messaten
        throw new SakuliException( "Validation of the report client failed"
                    + " - no muffins produced?" );
    }
}
```

- ✓ Rewrite all of our tests?
- ✓ Validate the order confirmation PDF?
- ✓ Test the rich-client implementation as well?
- ✗ Where to run the test?

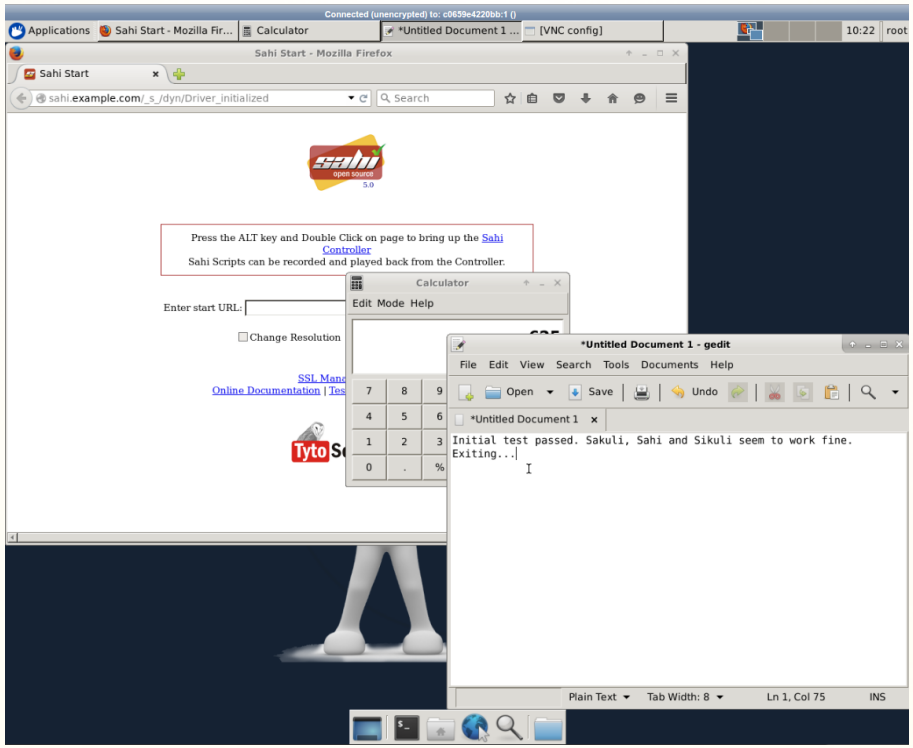
- Run all UI tests in the container
- Make it scalable for parallel execution
- Keep the possibility to "watch" the test
- Should be triggered by the CI server
- Use our internal private cloud infrastructure

We need a containerized GUI!



Let's try the Sakuli Container

```
# start the docker container
docker run -it -p 5911:5901 -p 6911:6901 consol/sakuli-ubuntu-xfce
docker run -it -p 5912:5901 -p 6912:6901 consol/sakuli-centos-xfce
docker run -it -p 5913:5901 -p 6913:6901 consol/sakuli-ubuntu-xfce-java
docker run -it -p 5914:5901 -p 6914:6901 consol/sakuli-centos-xfce-java

# start in parallel via docker-compose
# use docker-compos.yml from https://github.com/ConSol/sakuli/tree/master/docker
docker-compose up
```



Mount and Run the Testsuite

```
# docker-compose.yml
version: '2'

services:
  sakuli_se_test:
    image: consol/sakuli-ubuntu-xfce-java:v1 .1.0-beta
    environment:
    - TZ=Europe/Berlin
    volumes:
    - .:/opt/maven
    - data:/headless/.m2
    network_mode: "bridge"
    ports:
    - 5911:5901
    - 6911:6901
    # to keep container running and login via `docker exec -it javaexample_sakuli_java_test_1 bash
    # command: "'--tail-log'"
    command: mvn clean test -P docker -f /opt/maven/pom.xml

volumes:
  data:
    driver: local
```

```
# start it from the command line
docker-compose up
```

- ✓ Rewrite all of our tests?
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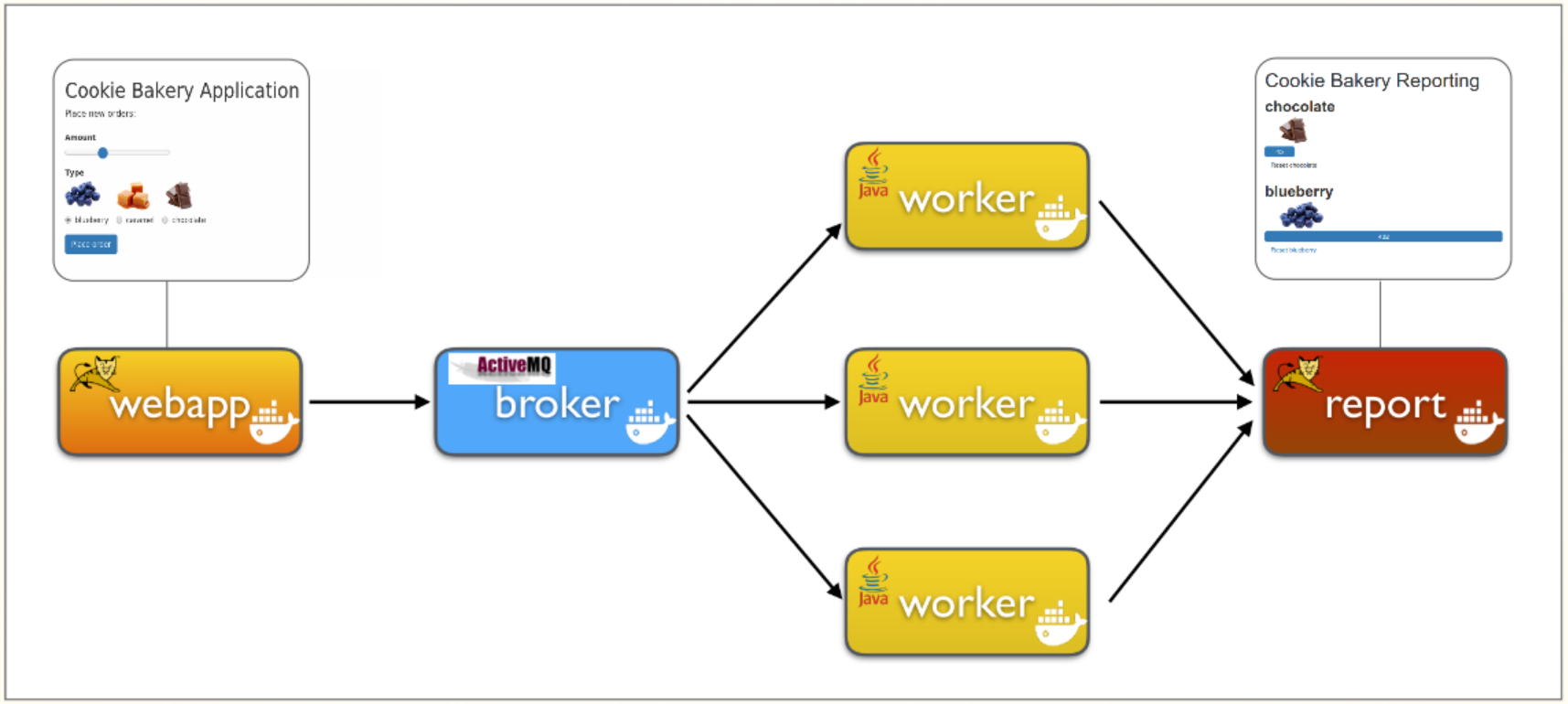
- ✓ Where to run the test?

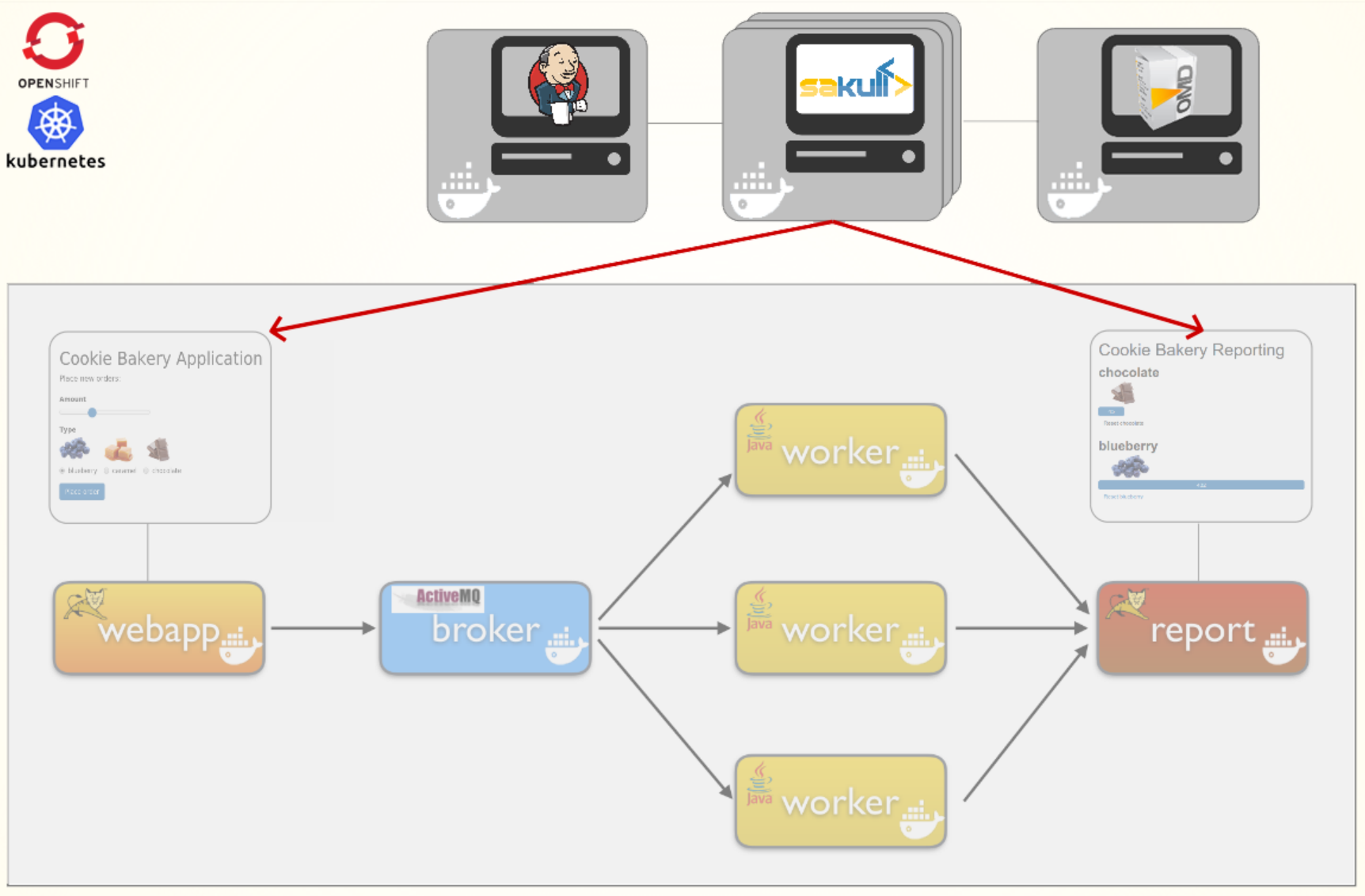
Bakery Demo Setup

OPENSHIFT

kubernetes



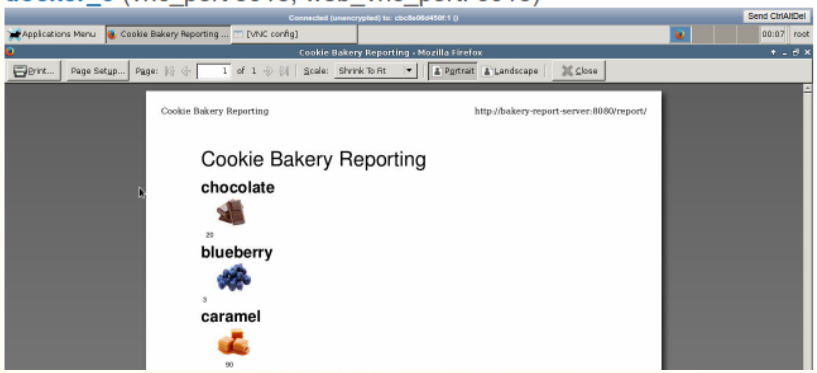
Bakery Demo Setup

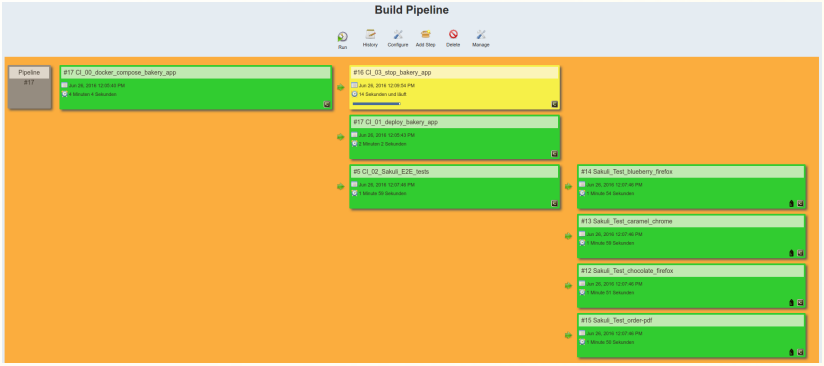


Bakery Demo

```
git clone https://github.com/toschneck/sakuli-example-bakery-testing.git

# start jenkins
jenkins/deploy_jenkins.sh
# start OMD montioring
omd-nagios/deploy_omd.sh

# start the build of the application images
bakery-app/app-deployment-docker-compose/deploy_app.sh

#start tests
sakuli-tests/execute_all.sh
#start tests for monitoring
sakuli-tests/execute_all_4_monitoring.sh

# for OpenShift deploy configuration, see READE.md
openshift/build_and_deploy_all.sh
```

docker_3 (vnc_port 5913, web_vnc_port: 6913)





What's next?

- Headless execution - **Linux:** VNC & Docker ✓ **Windows:** ?
- **Video** recording of the test execution (error documentation)
- **Web UI** to handle Sakuli test suites
- Connect 3rd-party **test management tools** (HP QC, TestRail, ...)
- Improve test **result presentation** in CI tools
- Implement **Junit 5** test runner

Links

- ConSol/sakuli
- ConSol/sakuli-examples
- toschneck/sakuli-se-example
- toschneck/sakuli-example-bakery-testing

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Informatik Aktuell

Software-Test im Container

Stabile und skalierbare Testumgebungen für End-2-End-Tests im Container mit Docker und Sakuli.

>> Weiterlesen

JUGS consol

Thank you!

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