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A Collaborative Approach to Automated UI Testing in OFBiz

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Summary and Goal Presentation

Business Feedback and How to increase « Functional » contributions

- Apache OFBiz® implementation Feedback
  - ✔ *Agile development team*
    - With only 20% with an ofbiz large experience
  - ✔ *Selenium Webdriver test used*
- My working experience in ERP implementation companies
  - ✔ *Functional and Development separate team*
  - ✔ *Lack of collaboration*
- How to contribute for an non technical actors (consultant or key users)
  - ✔ *Business or Functional*
  - ✔ *Help for other consultant or key users*
- Software quality and ERP modularity
  - ✔ *Key points for me for Free open-source ERP driven by a community*
  - ✔ *Collaboration to and for contribute*

All these points illustrated with the GUI test context

SUMMARY

Business and ERP context

- O'Toit
- ERP, Actors type, Functional Consultant
- GUI Test, requirement and cost

Technical context and definition

- OFBiz Selenium Webdriver Test reminder & summary
- Junit and Functional test
- Tests & Documentations

Collaborative Approach

- Unit test & Scenario test
- Javadoc as Help
- When and How

Tutorial & Implementation

- Help & Maintenance
- Modularity
- More contributor

O'Toit Project

A Market Place with open distribution location (Toits)

A digital Market Place associated to physical local distribution locations to be able to propose offers of the farming, production, retail and craft sectors available **in than same time** and in the **same place** (the toits).

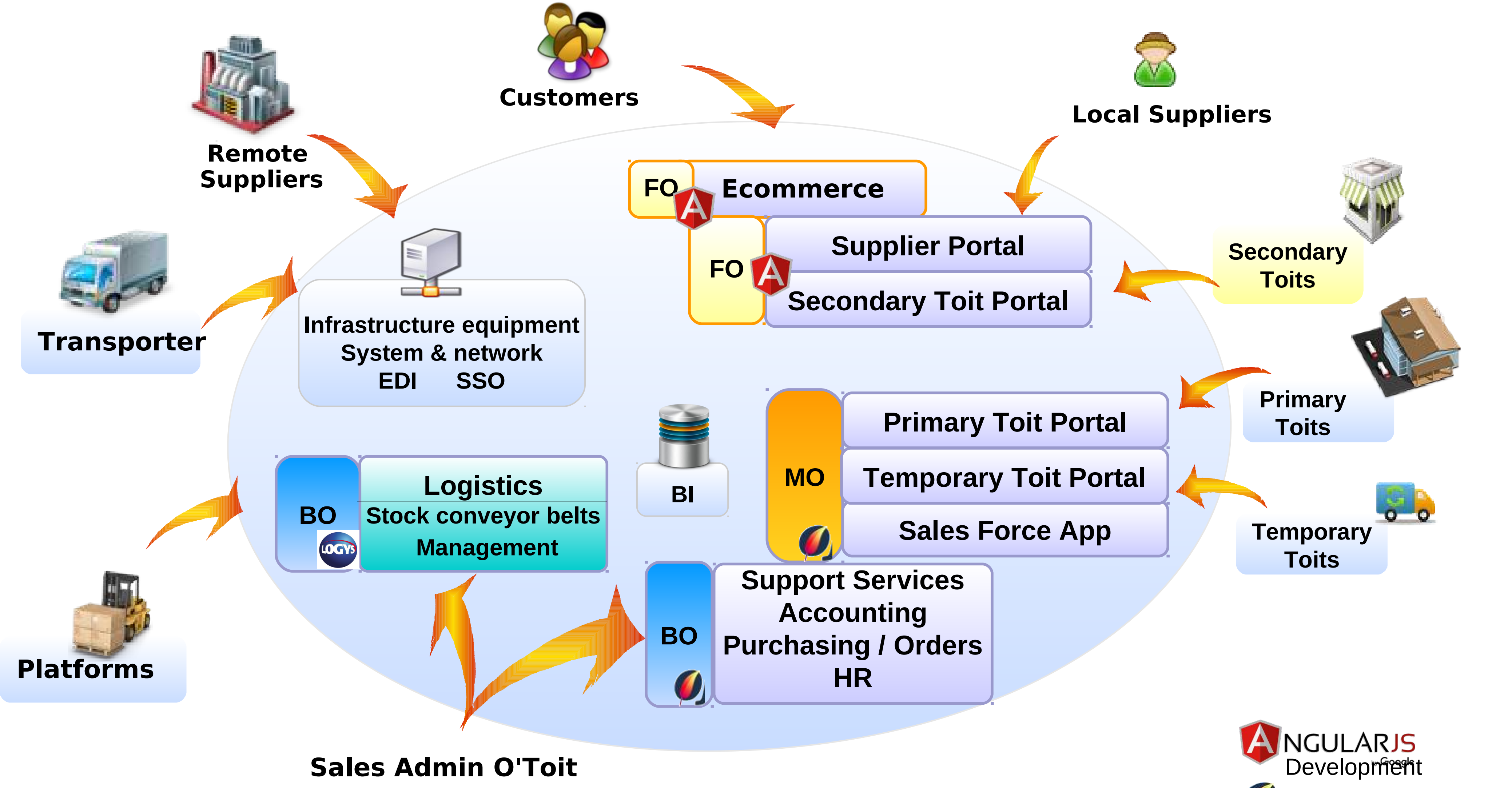
Toit

With the facility to order on **internet** or on **toit** or on the **local supplier** **or** **merchant** with scanner

And with convinience to collect the shopping
« à la carte » form the near toit,
or at home delivery
or at local mechant or supplier (toit secondary)

A new distribution model which meets all the structural requirements of the farming, production, retail and craft sectors and the satisfaction of consumer needed.

Software Architecture



Context : ERP, who is doing what

ERP implementation and development with Apache OFBiz®

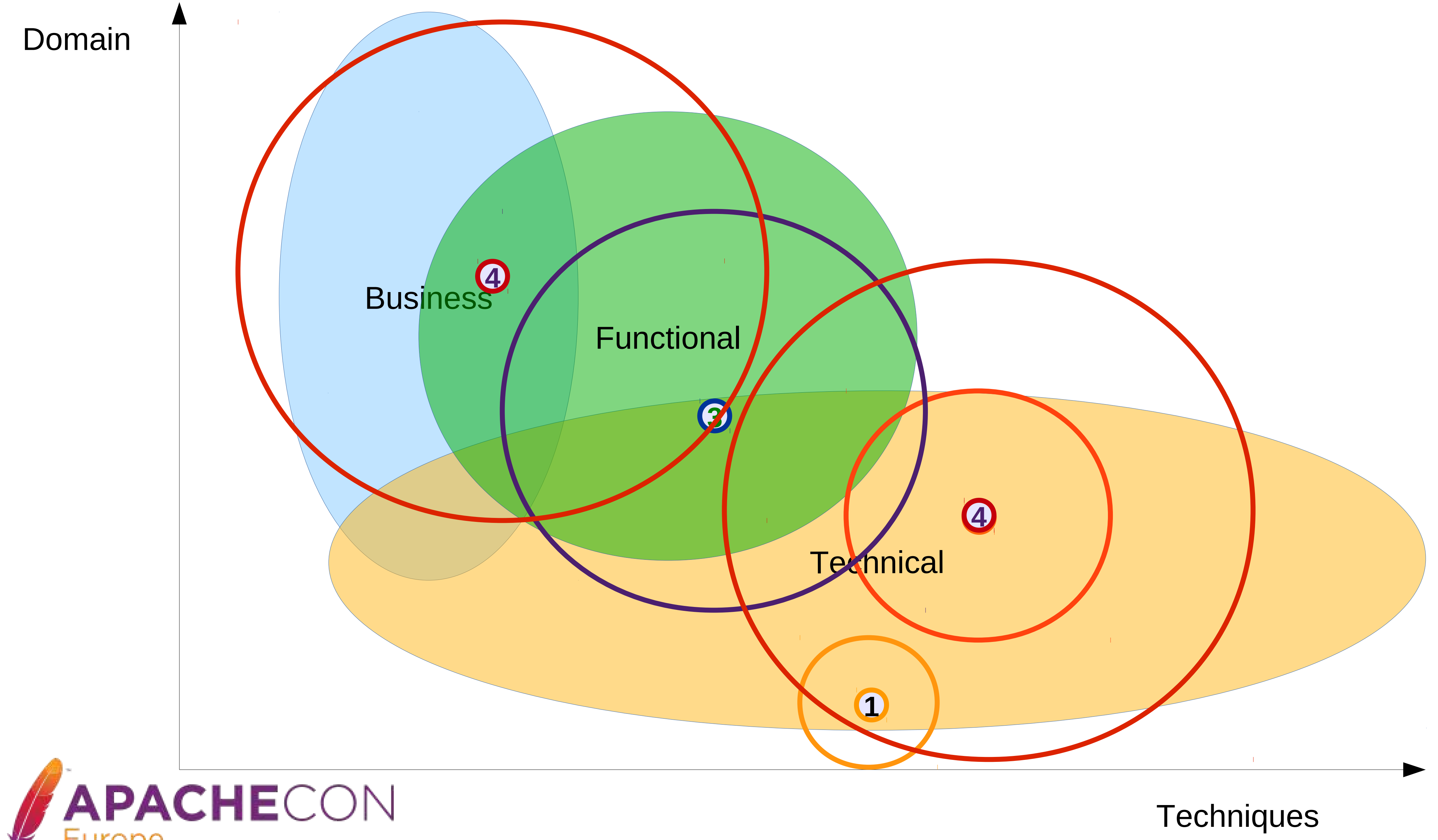
- Functionalities
  - *Back-Office :*
    - GUI very homogeneous, number of action type limited
    - Usable as is (but with param) for prod environment
    - A lot of functional domain
    - Need some data and context to understand
  - *Front-Office*
    - Most of time personalized
    - With or without ofbiz GUI framework
    - Should be user intuitive
- Implementation
  - *Not yet like other ERP*
- Development
  - *More efficient and fast than for other large ERP*

ERP implementation Team

- Product Owner – Business Analyst – Functional consultant – Technical consultant
  - *Knowledge center versus domain*
  - *Need to be a Team with multiple knowledge and view*

Knowledge / skill : domain or center ?

Collaboration needed for success



Functional consultant

My definition

Technical Level

- Able to read code, not to write it
  - ✔ *Understanding OFBiz directory tree*
- Data structure knowledge but not all the details
- Writing « code » (if not too complex) if auto-completion is efficient
  - ✔ *XML, Groovy or Java*

Its roles & tools

- Trying a process by using screen
- Use parameters / « type » data / demo data
- Help / wiki / book
- Writing post-it, speaking to Product Owner or Technical consultant
- Promote the "Use existing more than Develop new"

In charge for all Functional test

OFBiz User and possible contributor

Gui Test costs

Customer / user requirement

- No understanding about regression
- Not ready to paid a large overload
- Not a lot of time to define scenario tests

Functional Framework

- Existing ready to use screen
- Existing demo data
- Build with layer
  - ✓ *Technical os interface, sgdb reading, html generation, …*

Why a test failed

- Framework Technical change
- Function of Functional framework change
- Development change (std or internal)
- Data change (seed or internal)

Is the Gui test slow down the innovation ?

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Selenium Webdriver OFBiz test

Reminder and Summary

http://www.seleniumhq.org/

Selenium is a suite of tools to automate web browsers across many platforms

- runs in many browsers and operating systems
- can be controlled by many programming languages and testing frameworks

OFBiz integration

- Code (java) and Data (xml) separation
- Utils method on a framework spirit
- Video & Log

Continuous integration

- Jenkins / docker
- Unit test and Scenario test
- Video is not record as default value for a lot of test-case

Data integration

Scenario / test-suite / test-case

- Data-obj
- Included

Context initialisation

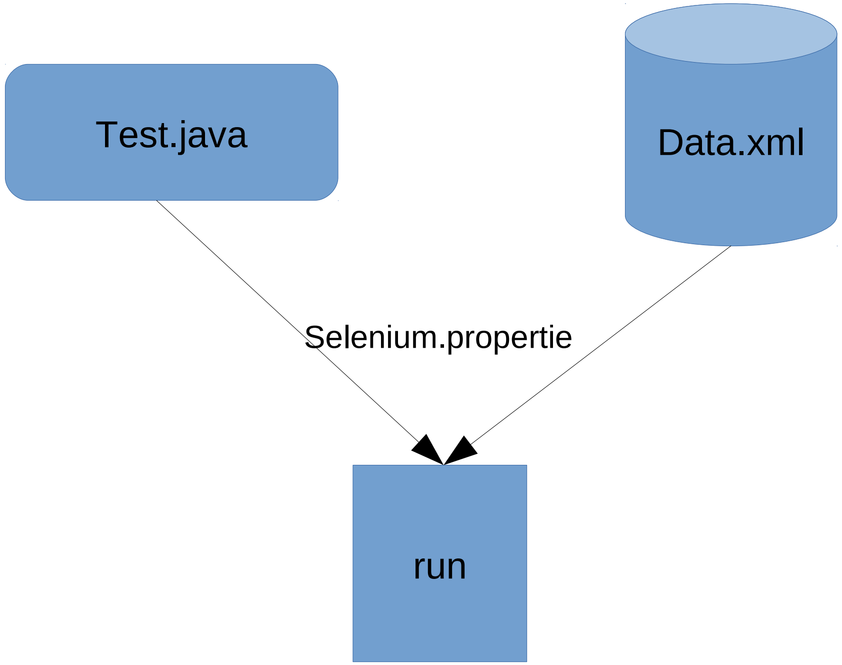
- Import xml
- Dedicated scenario

Data type

- String, **indexed**, cssSelector
- Date, Tmstamp
- Integer, Double

selenium.properties

- Scenario to use
- Index to use
- Browser, Screen dimension, log level, ….



Actual Utils Class

Goal : framework for simplification developpers life

SimpleTestSuite

- Data, log, video, ... integration
- Simplification seleniumQa
  - ✔ *Click*
  - ✔ *ClickForm*

Utils

- For data integration
- Complexe Dom Operations
  - ✔ *SearchLine*

LogSelenium

- showInfoPanel, zoomId, logInfo, verbose, error, ..

OfbizSWdHelper

- Classic ofbiz operation
  - ✔ *Login, logout, menu, ..*
- Complex classic ofbiz selenium task
  - ✔ *Lookup*
  - ✔ *WaitNextOrMessage*

Video & Log

For debugg or demonstrate

- ✔ *infoPanelEnabled=yes*
- ✔ *logPanelMessage=yes*
- ✔ *record.video=yes*
- ✔ *log.print.error=yes*
- ✔ *log.print.info=yes*
- ✔ *log.print.verbose=no*

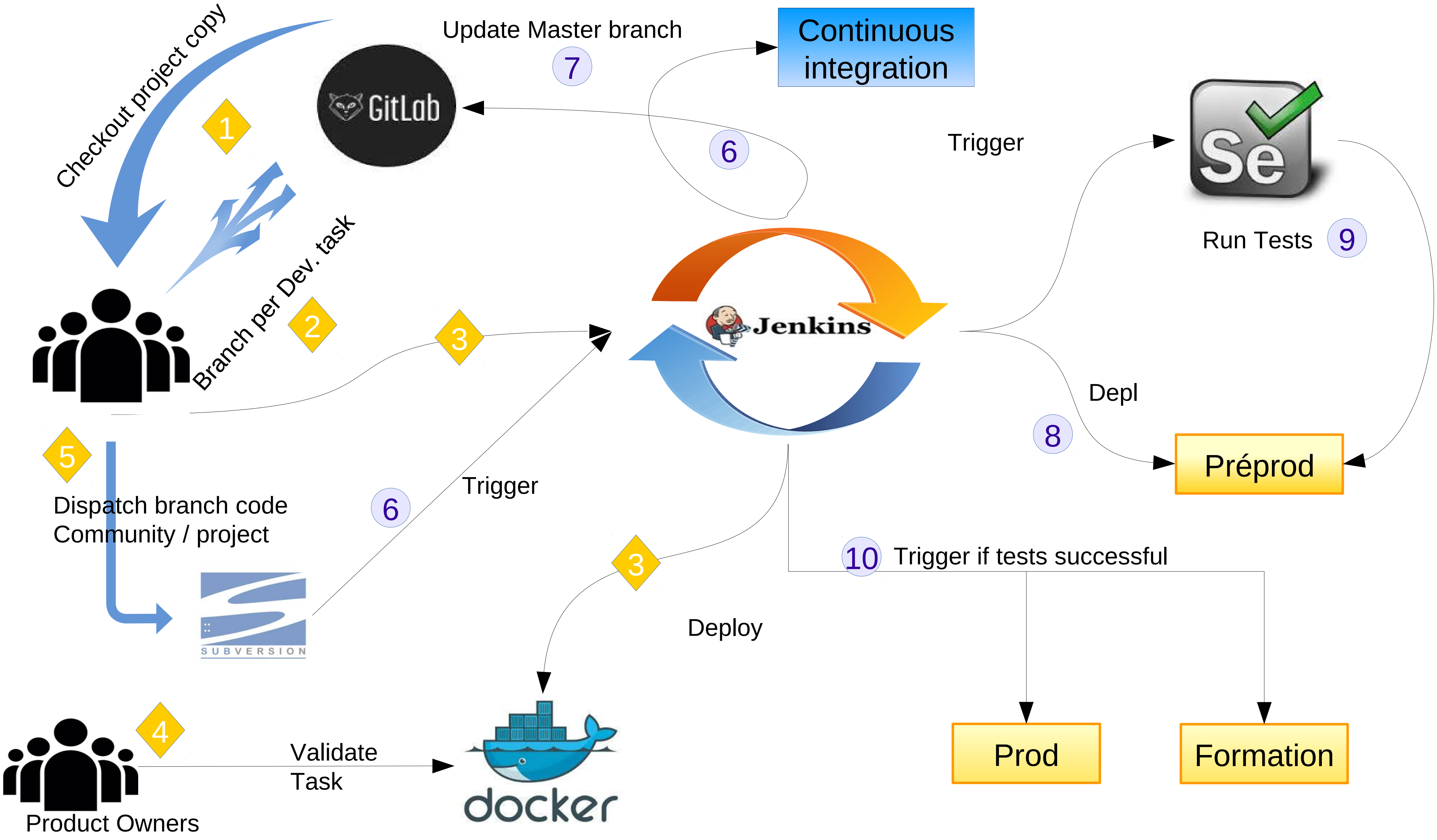
03_AnParty...-simplePerson...avi

0_AnParty...-out.txt

Best Practice

- ➢ Be able to run gui test multiple time
  - ✔ *Indexed data*
  - ✔ *Webtools actions*

O'Toit Development Infrastructure



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GUI Test Type

Acceptance test

Junit Gui test

- “mechanics” test without context constraint
- Done by developpers for the developpers

Functional test

- For functional (or business) consultant
  - ✔ *And product owners*
- Base on Use Case, for one context
- Multiple screens /applications

Technical architecture charge capacity test

- Not working on it, so no feedback, so nothing to say about 😊

Junit GUI Test

Standard or Initial requirement : « Done by dev. for the dev. »

Development Best Practice

- Test is done in the same time that development

Apache OFBiz standard

- To deliver a quality application ⇐ same goal as service Junit test
- Menu / screen or part of screen

Portal Page and Portlet

- Modularity should help to have re-usable test
- Each portlet parameters should tested

Done by developpers

- Test all technical aspect, if possible without context constraint
- Put a lot of « assert » to easly localize error when test failed.
- Do action methods usable for functional test
  - ✓ *Work together with functional consultant to deliver usable and documented tools*

Functional Test

Customer requirement : « Function acceptance & no regression »

Acceptance process

- Base on Use case, define by Product Owner
  - ✓ *Linear : in one context*
  - ✓ *Included Data to use*
  - ✓ *Describe by user actions : manual or with the application*
- Build during development process
  - ✓ *With functional consultant*

No regression

- If new bug ⇒ is it sure it's a new bug ?
- When a test failed ⇒ is it a regression or a process evolution ?

Defined and used by Functional (& Business) consultant

- Product Owner translation to formal langage
- “Type” data and screen parameters knowledge
- Bug and test failed first analyst level

Test & Documentation

Short test in Junit spirit (Developers domain)

- ✔ *Auto-documented by title or by one sentence*
- ✔ *Easy to read & understand what is tested*
- ➢ So, no documentation ?
  - ✔ *Only if “service” to test is simple*
  - ✔ *Only if used data is simple*

Test for who

- ➢ Developers
- ➢ Functional user

Developers pleasure priority

- ✔ *Code*
- ✔ *Test*
- ✔ *Documentation*

Development Best Practice

- ➢ Writing convention
- ➢ Modularity
- ➢ Documented
- ➢ With Junit test

Documentation reader

- ➢ Developers
- ➢ Functional user

Functional pleasure priority

- ✔ *Using*
- ✔ *Documentation*
- ✔ *Test*
- ✔ *Code*

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Unit – Scenario Test

Method type

Actions & Test

- In Junit test there are both
  - ✔ *Goto Menu-item1 - check if Page is open*
  - ✔ *CreatePerson - check if person is created*
- Action == visual button or menu

Scenario test

- A serie of actions
  - ✔ *with user data*
- Some check (not a lot)
- Should be write by Functional Consultant

Unit methods are usable by functional for Scenario

- Unit methods not only for one test and so should be correctly documented
  - ✔ *Creation of actions library*
- Functional want very simple method with simple parameters (data-obj)
  - ✔ *Find the method by looking on screen which action I want to do*
- Scenario validate (or demonstrate) a use case
  - ✔ *Documentation associated describe it*

Javadoc, a tool for documentation

Organize, web generation

- Easy to write, integrated in development process (commit, release, …)
- Creating for sharing and re-usability
- Easy to create link between method

Overview.html

Associated to code

- Easy to check if up to date or not
- Technical image but usable even by Keys Users after explanations

Writing for the future reader

- Functional consultant or Product Owner (or Key users)
  - ✓ *Maybe package for test should be by “Application / Menu”*
  - ✓ *It's more easy for a reader to know what he is waiting for*
- Technical too
  - ✓ *For technical points*
  - ✓ *For understanding use case by example*
- Understanding or/and Debugging

AD_PrdtCategoryMgmt

Where and When Collaboration

Unit java method

- Junit test during developpemnt
  - *Actions and Test methods*
- Javadoc
  - *First release*

Test Data xml file

- Data-obj structure

Log message

- Log message
  - *Debug*

Other

- Technical error
- Bug analysis

Iteration

- Add details

Scenario method

- Use Case definition or first test
  - *Using or defining action and test method*
- Testing documentation
  - *Add more details*

Use Case context

- Real or demo data

ShowInfoPanel

- Follow the actions
  - *User interaction*

Other

- User process error
- Parameters or Data error

Iteration

- Add (or ask to) bundle actions method

Increase with Iteration

Collaboration for all actors type

- Each feature enhancement is a derivative of an existing Use Case
  - *Using corresponding scenario test to create the new one*
    - To explain context
    - To detail enhancement
    - …
  - *Acceptance scenario can be at the beginning*
  - *Javadoc is directly the requirement*
- Simple proof of concept in enhancement definition
  - *Without development*

Scenario functionality coverage

- Business demonstration is more clear with multiple data
  - *Special data type*

Demo data become dynamics

- As part of a process

Scenario_121.html

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Tutorial & Help

Feature == Use Case

- An example is better than a long explanation
  - ✔ *Need a lot of ShowInfoPanel or Clear JavaDoc*
  - ✔ *Need clear demo data*
- Video is up to date even if it run only one time per week or month
  - ✔ *Easy to reproduced for the user*

Help can focus on concept

- With list of example
  - ✔ *Very efficient when there are a lot of case*
    - Promotion type
    - Feature category associated to Product Category => filter type on front office
- Scenario is used to show all the details

Possible to enhance Scenario Test

- zoomAndSendKeys(id, text)
  - ✔ *Even if method is simple*
    - Directly unit action method modification
    - Ask to insert at the right place

04-TestJavaScriptFunctions-functi

Maintenance

When test failed

- First analyst level : Functional consultant
  - ✔ *Retrieve / understand the context*
    - It's possible to connect to testing environment
  - ✔ *Using message and log and javadoc*
    - If not clear should complete existing
  - ✔ *If needed re-run with video*
- Technical is on support
  - ✔ *Technical error*
  - ✔ *Bug analyse*

Bug declaration

- Reproduced it with a scenario before trying to solve it
  - ✔ *Check existing test*
  - ✔ *Clarify the context*
- Formal description when resolution will not be immediately

Modularity by design

Utils methods

- Back-Office is GUI homogeneous, so, corresponding test method exist

Unit actions and tests

- Same level as screen or sub-screen or portlet

Scenario to sub-part of process

- Include test-case, data-obj
- Technical can help

In Business environment

- Not necessary to test each screen in each place
  - *Multiply test type*
- If screen is never use in scenario, maybe it is not used in Business

Functional Contributions

OFBiz community and collaboration for non technical

- Usage and answer
  - ✓ *Help in requirement*
- Documentation
  - ✓ *Wiki*
  - ✓ *Help*
  - ✓ *Book*
- Demo data

Scenario test and / or tutorial

- Explain internal and external
  - ✓ *Usable in commercial process*
- Day to day evolution and enhancement
  - ✓ *First analyst level when it failed*
  - ✓ *Bugs or no more used*

A Collaborative Approach to Automated UI Testing in OFBiz

CONCLUSIONS

expertise in cooperation more than in techniques
Skill and Knowledge sharing

for implementation Team & Community are
the Keys Success Factors

The OFBiz Contributors Initiative