



# POLITECNICO

## MILANO 1863

### POWER ENJOY

#### Inspection Document

Lorenzo Casalino - 877421

Tommaso Castagna

Document version 1.0

# Contents

<b>1</b>	<b>Functional Role</b>	<b>1</b>
1.1	Class Under Inspection . . . . .	1
1.2	Functional Role . . . . .	1
1.2.1	OFBlz overview . . . . .	1
1.2.2	Entities and Services . . . . .	1
1.2.3	Project's architecture . . . . .	2
1.2.4	Parties . . . . .	3
1.2.5	Human Resource Entities . . . . .	3
1.2.6	Internal Organization . . . . .	3
1.2.7	Employee Position . . . . .	3
1.2.8	Human resource application . . . . .	6
1.2.9	Tree and HumanResEvents class . . . . .	6
<b>2</b>	<b>Checklist issues</b>	<b>9</b>
2.1	Notation . . . . .	9
2.2	HumanResEvents . . . . .	9
2.3	getCurrentEmployeeDetails . . . . .	10
2.4	getEmployeeInComp . . . . .	11
<b>3</b>	<b>Effort Spent</b>	<b>13</b>

# 1 Functional Role

## 1.1 Class Under Inspection

The code inspection activity described in the following of this document takes as subject the **HumanResEvent.java** class, a java compilation unit belonging to the **Human Resource** application, part of the OFBIZ open-source project.

The namespace of reference for this class is the *org/apache/ofbiz/humanres*.

## 1.2 Functional Role

The analysis of functional role covered by the java class under inspection would be quite superficial and with more arising questions than answers if a worthwhile overview of the most important elements of the project would not be taken in consideration.

Thus, before meeting the goal of this section, a glance to the relevant concept for our analysis is given.

### 1.2.1 OFBIZ overview

The Open For Business project is an enterprise-oriented suite of applications developed to support most of the aspects that an enterprise application has to take care of.

The applications share the same underlying architecture, using common data, logic and process components.

A loosely coupled approach is used as base for the architecture, allowing an easy extension of the suite itself.

Each application is loosely coupled with the others, easing the updating and the extension.

### 1.2.2 Entities and Services

As stated by the official documentation:

- **Entities:** an entity is a relational data construct that contains any number of Fields and can be related to other entities. Basic entities correspond to actual database structures.
- **Services:** a service is a simple process that performs a specific operation.

### 1.2.3 Project's architecture

The architecture of the entire suite is composed by 4 sets of components:

- **Framework**
- **Applications**
- **Special Purpose**
- **Hot-deploy**

The sets of components, as well the contained components, are in a dependency relationship according to the dependency-arcs shown in the following diagram.

The dependency flow goes from top to bottom, either for component sets and for components.

This means that components and applications on the top are dependent on elements on the bottom of the same diagram. The viceversa should not be allowed.

The type of dependency may vary: foreign key dependency in the data model, application's service calling another application's service and so forth.

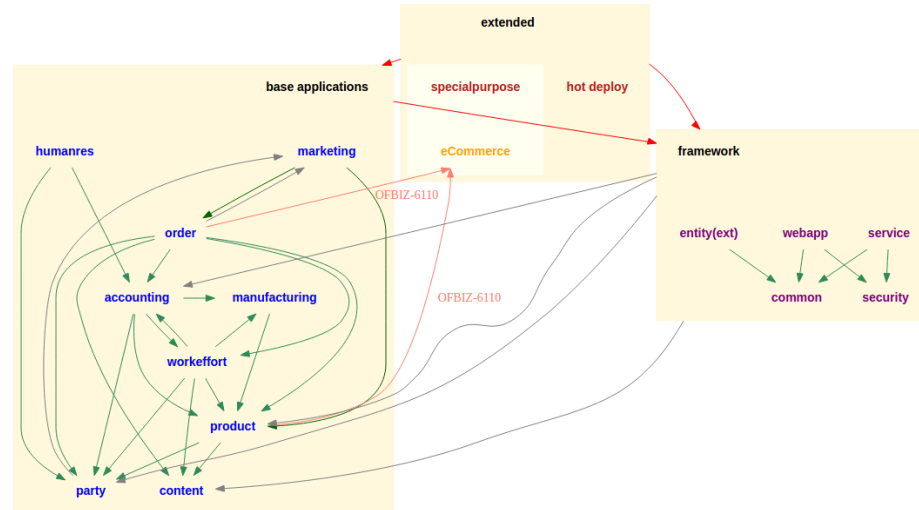


Figure 1: Components dependencies

As can be seen, there's a relation of dependency between the human resource application and the party application.

#### 1.2.4 Parties

According to the *OFBiz project's overview*<sup>1</sup>:

*Party can be either a Person, or a group of Parties. A Party Group could be a company, an organization within the company, a supplier, a customer, and so forth. Information that describes Parties or is directly related to Parties is contained in these entities.*

According to the party's data model, each party, either a person, a group and so forth, is identified by a unique ID number.

#### 1.2.5 Human Resource Entities

According to the *OFBiz project overview*:

*The Human Resources entities are used to keep track of positions, responsibilities, skills, employment, termination, benefits, training, pay grades and payroll preferences, performance reviews, resumes and applications, and other Human Resources related information.*

#### 1.2.6 Internal Organization

Quoting the *human resource glossary*<sup>2</sup>:

*Internal organization is the name of a relationship between a party group and your company.*

*This relationship is used to filter party groups as being part of your company to distinguish them from other groups which are external.*

*For example your marketing department is an internal organization while a suppliers sales department is not.*

#### 1.2.7 Employee Position

Also abbreviated as *position*, it is an entity used to represent a work position inside the company. Quoting the *official documentation of the project*<sup>3</sup>:

*In OFBiz a position is the authorization, typically from the budget of an internal organization, for the Company to engage one person to do a job. OFBiz handles positions in a flexible manner so you can think of a position as an authorization for a full-time equivalent (FTE).*

---

<sup>1</sup><https://cwiki.apache.org/confluence/display/OFBIZ/Component+and+Component+Set+Dependencies>

<sup>2</sup><https://cwiki.apache.org/confluence/display/OFBIZ/Human+Resources+Glossary>

<sup>3</sup><https://cwiki.apache.org/confluence/display/OFBIZ/Employee+Position>

This means that you can fulfill a position with a person in a number of different ways. You can fill a position with one full time person, change the assignment of a position from one person to another over time, or split a position across more than one person at the same a time.

As implemented a position can be fulfilled by **either a person or organization**.

The data model<sup>4</sup> representing a employee position is quite huge and complex, so only the essential part for our analysis are shown and described.

**NB:** The whole data model diagram on the wiki is not up to date, therefore there could be some discrepancy between it and the documentation.

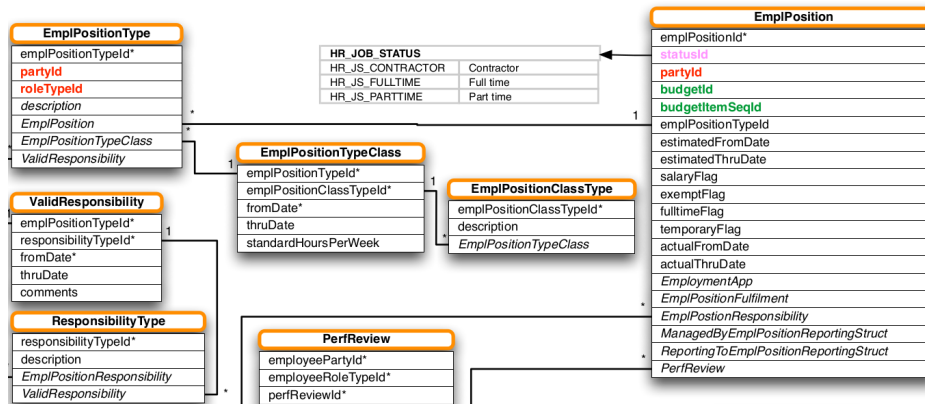


Figure 2: Employment Position - Employment Position Type relationship

- **EmplPosition**: entity used to represent an employee position inside the Human Resource Application.

Each entity is characterized by several. The most relevant for our analysis are:

- **emplPositionId**: an **unique** identifier used to distinguish a position from another one.
- **statusId**: a string identifying the status of the position.

Actually, the documentation and the data model of the emplPosition entity diverge about the content of this field.

The former specifies that it is used to state if the position is **Active/Open**, **Inactive/Closed** or **Planned for**, while the data model diagram report is as a field specifying the type of position: **full time**, **part time** or **contractor**.

<sup>4</sup><https://wiki.apache.org/confluence/display/OFBIZ/Data+Model+Diagrams>

As stated previously, the data model is not updated, therefore we take as reference what described by the documentation.

- **partyId**: the ID of the **Internal Organization** authorized to fill the position.
- **EmplPositionType**: entity representing a possible type for a position. An example of position type is the Business Analyst or the System Administrator. Relevant fields are:
  - **emplPositionTypeId**: unique identifier used to discern between position types.
  - **partyId**:
  - **description**: a description of the type of position.
  - **EmplPosition**: identifier of the employee position having this specific type.

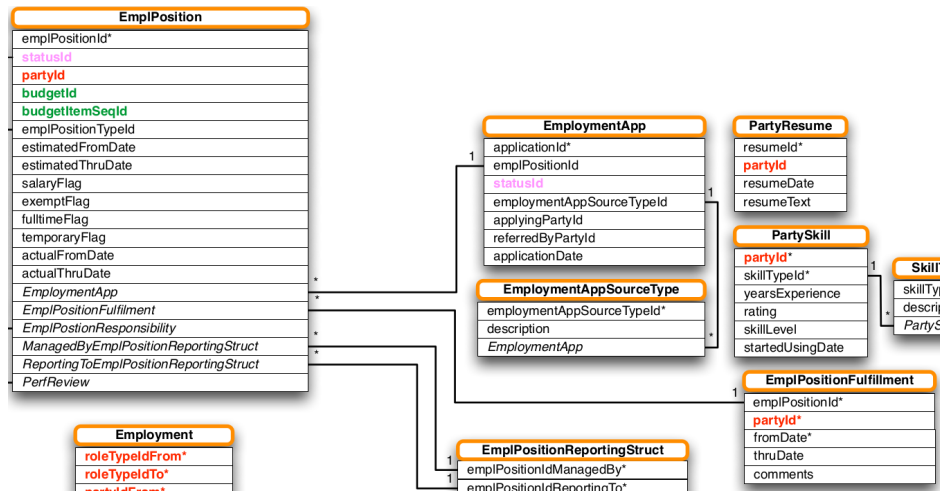


Figure 3: Employee Position - Employee Position Fulfillment relationship

- **EmplPositionFulfillment**: entity used to represent the party or parties that fulfill a specific position. Relevant informations of this entity are:
  - **emplPositionId**: the ID of the position fulfilled by the party.
  - **PartyId**: the ID of the party fulfilling the position.
  - **fromDate**: the date from which the position is fulfilled.

### 1.2.8 Human resource application

The human resource application comes with a predefined set of functionalities that can be used to perform HR tasks or to provide a support for the creation of more complex HR applications.<sup>5</sup>

According to the documentation of the human Resources application<sup>6</sup>:

*The Main window is the entry point into the Human Resources Application and displays the Company tree view for navigating to the main menu items.*

*There are three node types in the tree, each identified by a different icon. The top of the tree represents your Company, the highest level in the organization. The Company and departments under the Company can have sub departments or positions. Under positions are the people who fulfill the position.*

Furthermore, as stated by the documentation, from the main screen of the application is possible:

- Navigate the company hierarchy, viewing departements, position and people.
- Add or remove a department
- Add a person
- Quickly open the profile of any item in the tree
- If an item is a position, you can add a person to fulfill the position.

### 1.2.9 Tree and HumanResEvents class

In the previous paragraph the important role played by the tree has been discussed, showing how several important actions may be performed only through the tree itself.

This tree is created each time the main screen of the human resources application is visited. The generation is performed thanks to a jquery script named *create-Tree* and located in the *humanres/template/category/CategoryTree.ftl* template file. The script is executed each time the main screen is loaded, sending an asynchronous POST request to the resource located at *getHRChild*.

According to the *controller.xml* file, located in *webapp/humanres/WEB-INF* folder, the *getHRChild* resource is mapped to the only public method provided by the HumanResEvents class: **getChildHRCategoryTree**.

---

<sup>5</sup><https://cwiki.apache.org/confluence/display/OFBIZ/Human+Resources+Guide>

<sup>6</sup><https://cwiki.apache.org/confluence/display/OFBIZ/Human+Resources+-+Main+Window>



In the light of this premise and the concepts introduced before, it's quite easy and straightforward to understand the role of this class: help in the construction of the company tree by

- Collecting the necessary informations of each party and position in the company.
- Using the collected informations to build the html attributes needed to enable the action performable through the tree (viewing departements, open profiles...).

The html attributes built for each party or position are returned in a **Map**, which structure follows the design of the json implementation of the tree, as stated by the comment on line 40.

As soon as the *getChildHRCategoryTree* is invoked, the informations gathering begins. The driver is the **partyId** identifier passed as a parameter to the class method.

Since a company or a department may have positions or child departments, the public method manages the retrieving of positions and child departments informations separately.

The gathering of positions informations is performed invoking the *getCurrentEmployeeDetails*, which queries the database about the presence of an employee position instance identified by the partyId identifier.

If positive, the computation goes on, verifying the presence of parties fulfilling that position. The check is made through a query against the *EmplPositionFulfillment*.

In presence of parties fulfilling that position, the following informations are collected:

- Name & Surname of the employee.
- Group name of the departments and companies.

For each party, html attributes necessary to show the informations and create links to their profile are built and stored inside map structure. After iterating over all the parties, the method ends and returns the list of map structures containing the informations of each party.

In both cases in which no employee position matches the partyId or no fulfillment is related to the position, the method ends returning an empty list.

**NB:** actually, the implementation of the *getCurrentEmployeeDetails* provides the retrieving of informations of only one employee position, since each *EmplPosition* entity is identified by a unique identifier.

The retrieving of child departments informations is handled by two different methods.

The first one, *getChildCompos*, retrieves the informations concerning the children of the partyGroup: querying the *PartyRelationship* entity, it looks for parties that are in a father-child relationship with the partyGroup.

For each of the matching parties, the informations are retrieved and the html attributes built and stored in map structures, whichi are put in a list returned to the caller.

The informations are the same collected by the *getCurrentEmployeeDetails*.

The second method, *getChildInComp*, queries the *EmplPosition* in order to find employee position currently active and authorized by the partyGroup. These informations are:

- **emplPositionId:** the employee position identificator.
- **description:** description of the position type.

As always, the required html attributes are built and stored in map structures, in turn placed into a list returned to the caller .

Maybe for an error, the comment preceding the invocation of this function in the public method states that it retrieves the informations of the employees working in the partyGroup, which is contrast with the behaviour of the method.

In the end, the *getChildHRCategoryTree* method returns to the jquery script the concatenation of lists of maps created retrieving informations about positions and child departments.

## 2 Checklist issues

### 2.1 Notation

During the code inspection of the class and the methods, some notations are used to ease the reporting:

- To make reference to a certain source line code, the **L.value** notation is used.

Example: *L.123 refers to line 123 of the class.*

- To make reference to a block source lines code, the **L.val1-valN** notation is used.

Example: *L.123-456 refers to the block of source lines of code starting from line 123 and ending at line 456.*

- To make reference to a specific issue of the check list, the **Cnumber** notation is used.

Example: *C42 refers to the 42th item of the checklist.*

### 2.2 HumanResEvents

1. **C1** The class name does not suggest its purpose of supporting the creation of the category tree.
2. **C1** Class attributes *module* and *resourceError* does not respect the naming convention for class attributes.
3. **C18** Any comment is used to explain the utility and purpose of the class.
4. **C23** Actually, the javadoc for this class is empty, making hard the task to understand the purpose of the class and of its methods.
5. **C27** The lines from L.42 to L.47 are identically repeated in other two methods (getCurrentEmployeeDetails & getChildComps). It would be a possible to create a proper method to handle this assignments, avoiding code duplication.
6. **C27** The lines from L.126 to L.129 are identically repeated in other two methods (getChildComps & getEmployeeInCompo). It would be a possible to create a proper method to handle this assignments, avoiding code duplication.
7. **C27** The lines from L.110 to L.120 are repeated in another method (getChildComps). It would be a possible to create a proper method to handle this assignments, avoiding code duplication.

8. **C27** The lines from L.131 to L.148 are repeated in another method (`getChildComps`). It would be a possible to create a proper method to handle this assignments, avoiding code duplication.

## 2.3 `getCurrentEmployeeDetails`

1. **C1** The function's behaviour consists in gathering the informations of the employee or group parties fulfilling a given employee position. The function's name is quite misleading since it indicates the retrieving of the details about the employee whose `partyId` is passed to the method.
2. **C1** The `emplfillCtxs` variable has a name not clear and it does not suggest that the variable contains a list of fulfillment for a position.
3. **C1** The `emplfillCtx` variable has a name not clear and it does not suggest that the variable contains a fulfillment for a position.
4. **C1** The `memCtx` variable has a name not clear and it does not suggest that the variable contains a `GenericValue` object initialized with the information of a person fulfilling a certain position.
5. **C1** The `memGroupCtx` variable has a name not clear and it does not suggest that the variable contains a `GenericValue` object initialized with the information of a party group fulfilling a certain position.
6. **C13** The statements at line L.102, L.108, L.121 and L.131 exceed the length of 80 characters per line, while it's possible to break them on different lines.
7. **C14** The method's signature at L.85 exceed the maximum legal length of 120 characters per line, while it's possible to break it before the throws keyword.
8. **C18** The method is not documented in anyway. Only with the documentation, not related to the code, found on the project's wiki is possible to understand the purpose, behaviour and attributes of the method.
9. **C18** The IF and FOR blocks located at lines L.100, L.105, L.106, L.110, L.122 and L.134 are not commented.
10. **C33** `memGroupCtx` at L.121, map objects in the block L.126-129 and `hrefStr` at L.133 not declared at the beginning of FOR block at L.106.
11. **C42** The error message returned in the exception at L.153 specify solely the stack trace, without providing any guidance on how to correct the problem.
12. **C52** The `EntityQuery.queryOne()` method invoked at L.108 and L.121 may throw an `IllegalArgumentException` when the list passed to the `EntityUtil.getOnly()` method has more than one argument. None of the previ-

ously mentioned methods, nor the method under inspection, specify this expectation in a try/catch block.

## 2.4 getEmployeeInComp

1. **C1** The method's name is quite misleading since it does not suggest that the function returns informations about currently active employee positions authorized by the party group identified by the `partyId` passed as parameter.
2. **C1** *isEmpls* variable's name does not suggest to store the list of employee positions authorized by the party group.
3. **C1** *childOfEmpl* variable's name does not suggest to store the current employee position visited through the for cycle at L.269.
4. **C1** *emplfCtxs* variable's name does not suggest to store the list of fulfillment for a certain employee position.
5. **C1** *emplContext* variable's name does not suggest to store a `GenericValue` object initialized with the informations concerning the `EmplPositionType` instance related to the employee position currently analyzed through the for cycle at L.269.
6. **C13** At L.263, the *EntityCondition.makeCondition()* method invocation exceeds the suggested maximum length of 80 characters per line. Possible to break after the first comma.
7. **C13** At L.264, the *EntityCondition.makeCondition()* method invocation exceeds the suggested maximum length of 80 characters per line. Possible to break after the first comma.
8. **C13** At L.279, the statement exceeds the suggested maximum length of 80 characters per line. Possible to break after the second chain operator.
9. **C13** At L.289, the statement exceeds the suggested maximum length of 80 characters per line. Possible to break after the second "+" operator.
10. **C13** At L.294, the statement exceeds the suggested maximum length of 80 characters per line. Possible to break after the second "+" operator.
11. **C14** The method signature at L.254 exceeds the maximum legal length of 120 characters per line. Possible to break it before the *throws* keyword.
12. **C14** The statement at L.286 exceeds the maximum legal length of 120 characters per line. Possible to break it after the second chain operator.

**NB:** applying this correction another **C14** issue is created at L.287, where the rest of the statement at L.286 is placed. To solve it is possible to break after the first chain operator at L.287.

13. **C33** Variables at L.286-287 are not declared at the beginning of the for block at L.269.
14. **C52** *EntityCondition.makeCondition()* methods invoked at L.263-264 may throw an *IllegalArgumentException* due to the *EntityExpr* constructor called by the *makeCondition* method itself. No try/catch block managed this exception and no throws is used to pass the exception to higher levels.
15. **C53** The *Debug.logError()* method does not log any useful information about the error. Indeed, the *logError* calls the *Debug.log()* method, which has a "null" value as message.

Then it calls another version of *Debug.log()*, which simply get a logger and stores the level danger of the error, the msg, which is "null" and the informations about the exception.

### 3 Effort Spent

- 28 january 2017 - 55 min
- 29 january 2017 - 50 min
- 30 january 2017 - 2h
- 2 february 2017 - 1h 45min
- 4 february 2017 - 5h 30min
- 5 february 2017 - 8h 30min