A Process Model for Human Resources Management focused on increasing the Quality of Software Development

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Topics

1. Introduction
2. MR-MPS
3. Related Work
4. Process Model
5. Case Study
6. Results
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Introduction

• Software Development (Sommerville, 2008)
  – Technology
  – Development Process
  – Software Project Management
  – Software Quality

• Do all these areas, make software perfect?
Introduction

• As we know:

• So, where is the problem?
  – The prior changes,
  – Lack of executive support,
  – Lack of changes control, and
  – Insufficient requirements and features specifications.

(Qiu, Y., 2011; Shan et al, 2010; Tohidi, H., 2011.)
Are these four areas sufficient for software development?
Introduction

• Here is the point.

ISSUES RELATED WITH PEOPLE IS THE MAIN FACTOR TO DEFINE THE SUCCESS OF SOFTWARE PROJECT.

(HAZZAN, 2010)
Introduction

- Then...

- Generate and strengthen innovation;
- Produce, make decisions;
- Lead, motivate;
- Supervise, manage.

TEAM
MR-MPS

- **Improve** Quality of Brazilian Software Development.

- Developed by the SOFTEX as part of MPS.Br program.

- It is composed of seven **maturity levels** and their **expected results**.
MR-MPS

- Process to Human Resources at Maturity Level E

- Its areas:
  - Planning, hiring and evaluate the human resources;
  - Training;
  - Knowledge Management.
Related Work

• Amâncio et al (2008)
  – Defined a process model, developed using the areas of PMBoK with a previews and short application.

• De Carvalho (2003)
  – Defined some *external* activities which must be accomplished in a more administrative sphere.
Related Work

• Morais (2009)
  – Developed a process model focused on improve knowledge identification, storage and sharing process.

• P-CMM (2009)
  – It is a maturity level model variant of CMM model and focused to development knowledge level, ability and capability.
A Process Model for Human Resources Management focused on increasing the Quality of Software Development
Human Resources Plan

• One of the most important process’ activity. Here it is defined, planned and identified factors that can influence on Human Resource.

• Management Policies must be defined.

• The artifact Human Resources Management Plan (HRMP) is started.
Review the Business Needs

- Revised the company human potential and capability qualities.

- To this end, it used the Organizational Chart and Plan of Positions and Functions.
Hire and Relocate Members

- Identify based on organizational chart, which roles and attributes will need to execute the project.

- Based on it, hire or relocate members for the team project.

- Besides, a Tactical Training Plan (TTP) can be developed to improve members abilities.
Manage Training

• If any training was identified, this activity focus on managing correct execution.

• Another important step is to evaluate the performance, propose improvement in teaching infrastructure and maybe even a new training course.

• Must be executed complying with the TTP.
Manage Human Aspects

- Its purpose is to identify the *environmental* and *social* factors which may influence good development of the project.

- All these factors must be constantly *evaluated*, through interviews or surveys, so *satisfaction* and *motivation* levels of team members could be identified and improved.
Manage Performance

• This activity is focused on managing members' performances during the project. When it finds a problem, corrective actions must be implemented.

• Performance management is executed following policies defined in the Human Resources Management Plan (HRMP).

• A Historical Database can be used to help.
Knowledge Management

- Focus in adopting measures, techniques and tools to help in identification, retention and sharing knowledge.

- Again, Historical Database can be used to help.
Artifacts and Positions

• Some **artifacts** were defined and must be kept during the project.
  – Human Resources Management Plan (HRMP)
  – Report of Effectiveness of Team Training

• And some **positions** were defined to guarantee activities accomplishment.
  – Course Coordinator
  – Project Manager
### Artifacts and Positions

<table>
<thead>
<tr>
<th>Human Resources Planning</th>
<th>Consumed Artifacts</th>
<th>Generated Artifacts</th>
<th>Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1) Organizational Policies; 2) Scope Document.</td>
<td>1) Human Resources Management Plan (HRMP); 2) Organizational Chart; 3) Plan of Positions and Functions; 4) Career Plan.</td>
<td>1) Project Manager; 2) Human Resources Manager.</td>
</tr>
</tbody>
</table>

| Organization’s Needs | 1) Project Requisites; 2) Organizational Structure; 3) Economic Conditions. | 1) Organizational Chart; 2) Career Plan; (CP). | 1) Project Manager; 2) Human Resources Manager. |

| Training Management | 1) Tactical Training Plan (TTP). | 1) Report of Effectiveness of Team Training. | 1) Project Manager; 2) Human Resources Manager; 3) Course Coordinator. |
## Comparative Analysis

<table>
<thead>
<tr>
<th></th>
<th>Amâncio et al.</th>
<th>De Carvalho</th>
<th>P-CMM</th>
<th>Morais</th>
<th>Process Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning Human Resources</td>
<td>Yes, during the initial phase of the project.</td>
<td>Yes, realized in the beginning of the project.</td>
<td>Yes, defined in the initial phase of the model.</td>
<td>No.</td>
<td>Yes, it is work in the beginning of the project.</td>
</tr>
<tr>
<td>Revise Organization’s Needs</td>
<td>Yes, approached superficially during the planning.</td>
<td>Yes, it uses a repository of knowledge and abilities.</td>
<td>No.</td>
<td>Yes, revised based on organizational factors.</td>
<td>Yes, it uses organizational factors.</td>
</tr>
<tr>
<td>Opt for Internal Mobilization to External Staffing</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Yes.</td>
</tr>
<tr>
<td>Training Management</td>
<td>High. It has a specific activity and an action and monitoring plan.</td>
<td>High. It defines and constantly monitors.</td>
<td>High. It is worked during the development of the model.</td>
<td>High.</td>
<td>High. Proposes a continuous process of improvement.</td>
</tr>
<tr>
<td>Organizational Knowledge Management</td>
<td>No.</td>
<td>No.</td>
<td>No.</td>
<td>Yes, the knowledge is identified, storage and sharing with the company.</td>
<td>Yes, focused in the individual sharing with the company.</td>
</tr>
<tr>
<td>Uses Historical Database</td>
<td>No.</td>
<td>Yes, it has an organizational and a project one.</td>
<td>Yes, used in all phases of the project.</td>
<td>No.</td>
<td>Yes, used in all phases of the project.</td>
</tr>
<tr>
<td>Human Aspects Management</td>
<td>No.</td>
<td>No.</td>
<td>Yes.</td>
<td>No.</td>
<td>Yes, monitored during the development of the project.</td>
</tr>
</tbody>
</table>
Case Study

Project of a **software factory in a public university**.

Their **teams** were composed by undergraduate and master’s students. Seasonality issues in periods of academic activity, lack of commitment, interest, a low rate of productivity in its members and a lack of a process of preservation of intellectual capital generated during the projects.
Results

Training Time vs. Rework Index

- Training A
- Rework A

0 2 4 6 8 10 12 14 16 18
1 3 6 10 15 20

Training Time vs. Rework Index
Results

Training Time vs. Performance Index
Conclusions

- Member’s motivation;
- Improvement in the development process;
- Increase the organizational memory;
Future Work

• New Maturity Model using Services.

• Improve our process implementing and evaluating it in other projects.
Thank You!

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