Maturity Model and Lesson Learned for improve the Quality of Organizational Knowledge and Human Resources Management in Software Development

Flávio E. A. Horita
Marco I. Hisatomi
Fernando H. Gaffo
Rodolfo M. de Barros

Computer Department,
State University of Londrina, Londrina/PR, Brazil
Agenda

• Introduction
• Human Resources
• Maturity Models
• Lesson Learned
• Research Method
• Process Model
• Application
• Conclusion
Introduction

• Software Development
  o Process.
  o Human Resources.
  o Lessons Learned.
  o Resources Management.

• Software Projects has high dependence of human resources
Introduction

• How improve the Process of Software Development?
  
  o Process and Methodology.
  o Lessons Learned.
  o Report the actual result.
  o Maturity of human resource management.
  o Increase knowledge about the historic.

(Al-Mudimigh et al., 2011; Horita et al, 2012; Carrillo, 2012)
Human Resources

• Garantee the Success of a Software Project

- Technological Tools
- Work Models
- Efficient Techniques

+ Human Resources Management (HRM)

(Hazzan, 2008; Shan et al., 2010; Qiu, 2011)
• Technical and Practical is more importance of than Human Resources in the Software Process?

  o Intellectual Knowledge Management.
  o Collect Knowledge.
  o Store Knowledge.
  o Share Knowledge.

(Curtis et al., 2009; Qiu, 2011)
Maturity Levels

- Characterize stages in the implementation of improvement processes
  - P-CMMI - offers a set of good manners to make provisions for the continuous growing at RH
  - GAIA-HR
    - framework.
    - some services.
    - diagnostic assessment questionnaire (DAQ).

(MR-MPS, 2012; Curtis et al., 2009; Horita et al., 2012)
Lesson Learned (LL)

- Knowledge gained through experience
  - Can be positive as a successful test, or negative, as a failure.
  - Saves time in solving problems.
  - Helps reduce or avoid costs from rework.
  - Encourages the use of best practices.

(MR-MPS-SW, 2012; Roe, 2012)
Lesson Learned (LL)

- Process of documenting to implementation
  - Educate members of the organization.
  - Collect and record experiences.
  - Analyze successes and failures.
  - Disseminate knowledge.
  - Keep updated records.

(Aldenucci, 2009)
Research Methodology

• Applied a case study at a software house

  o Literature Review
  o Process - Initial Release.
  o Process Application.
  o Results Analysis.
  o Process - Final Release.

(Yin, 2002)
• Increase knowledge about the historic achievement of its tasks and projects developed through the LL.
Process Model

• A. Choose Organization Responders.
  o Members who will participate in the implementation.
  o Members aligned to the strategy of the organization.

• B. Apply the Questionnaire Assessment Diagnostic.
  o Purpose we can evaluate both aspects: the skills of workers and the HRM process.
  o We used the models of Diagnostic Assessment Questionnaire (DAQ) presented by Gaffo e Barros (2012).
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The system used to Diagnostic Assessment Questionnaire (DAQ) can be found on this link: [http://www.gaia.uel.br/gaia_ad/](http://www.gaia.uel.br/gaia_ad/)
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C. Define Organization Maturity Level.
   o Tabulation of the questionnaire results.
   o Establishing the landmark positioning of HRM.
   o Use maturity model defined by Horita and Barros (2012) and calculations based on Gaffo and Barros (2012).
   o The maturity level is defined by the lowest index obtained through the DAQ application.
• Maturity model defined by Horita and Barros (2012).
Process Model

• D. Services Implantation Planning.
  o Planning the implementation and evaluation process.
  o Planning the Lessons Learned to explicit knowledge.

• E. Services Implantation.
  o Define the activity and align the initial goal.
  o Monitor the tasks.
• **F. Evaluate Services Implantation.**
  o Shows whether they are satisfactory.
    ▪ Adjustments need, or.
    ▪ Are disapproved.

• **G. Increase Organization Maturity Level.**
  o Perform new challenges to improve HRM.
  o Using LL to define new services being deployed.
Process Model

• **H. Lesson Learned Process.**
  o Planned in four stages, there are: register, evaluate, analyze, and share.
  o Effectively used to improve the software development process.
Application

• Case Study Development Process
Application

- First Result of DAQ Application
Application

- New case study development process **plus new services**
Application

• Final Result of DAQ Application
### Changes identified through the DAQ applications

- All index increase more than 20%

<table>
<thead>
<tr>
<th>Services</th>
<th>Initial Index</th>
<th>Final Index</th>
<th>Evolution of Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage Human Aspects</td>
<td>32.81%</td>
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Application

- Changes identified through the DAQ applications
  - The rates achieved by **focus areas** all of them showing a growth above 20%.

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Before DAQ Application

 Lowest Level is 23.67%

 Maturity Level 2
Before DAQ Application → DAQ Application → After DAQ Application

Lowest Level is 23.67% → Maturity Level 2

Application
Application

Before DAQ Application

Lowest Level is 23.67%

Maturity Level 2

DAQ Application

Lowest Level is 49.24%

After DAQ Application

Maturity Level 3
Application

- Growth in the level of knowledge managed
Conclusion

• Improve the activities in human resource management.

• Increase the historic achievement of its tasks and projects developed through the LL.

• LL analyzing aims to understand the performance patterns of development team and help on future projects planning.
Conclusion

• When it was used together on an evolutionary HRM process, the LL cycle showed efficient by analyzing the indicator associated.

• In future lines of work, we will try to apply the process model on other companies and software house.
Thank You!

Flávio Eduardo Aoki Horita, MSc, CSM
E-mail: feahorita@gmail.com
Web-site: www.flaviohorita.com
Skype: feahorita
G-talk: feahorita@gmail.com
CellPhone: +55 43 9914-3169

Framework web-site
http://www.gaia.uel.br/gaia_rh