

# SDM

## An Educational Game for Software Engineering

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# MOTIVATION

- THEORIC CLASSES
  - KNOWLEDGE
- PRATICAL WORK
  - COMPETENCE
    - KNOW HOW TO
  - PERFORMANCE
    - SHOW HOW TO



# MOTIVATION

## ■ GAMES

- FUN
  - ENJOYMENT
- INVOLVING
  - PLAY
- MOTIVATING
  - GOALS
- LEARNING
  - FEEDBACK

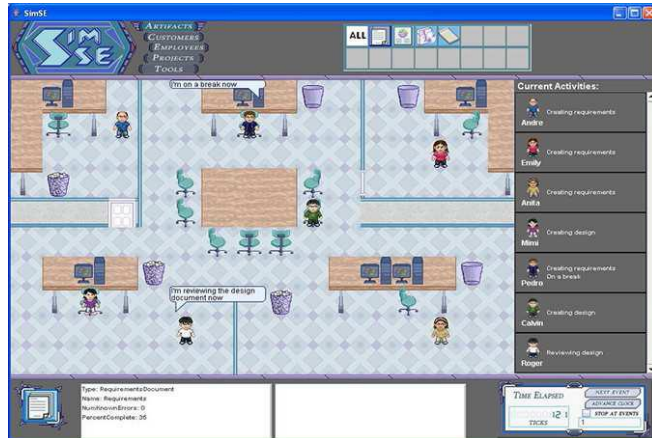


© Ron Leishman \* [www.ClipartOf.com/439904](http://www.ClipartOf.com/439904)

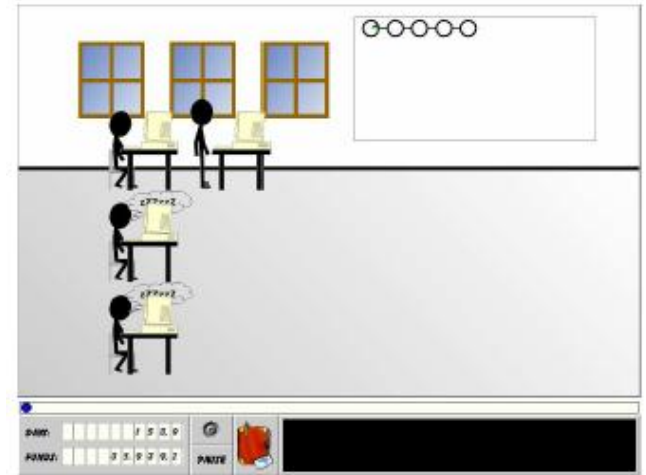


# RELATED WORK

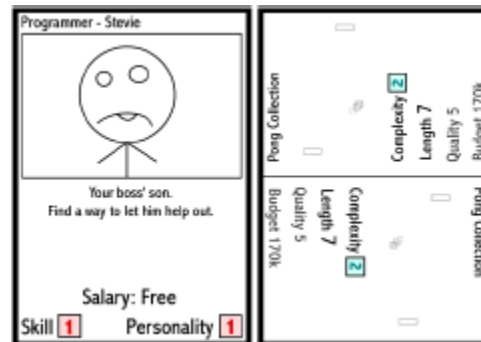
SIMSE



TIM



PnP



SIMULES

Projeto PR 1

**Expert Committee**

Expert Committee é um sistema multi-agente aberto para suporte ao gerenciamento de submissões e revisões de artigos submetidos a uma conferência ou workshop. O sistema oferece suporte a diferentes atividades, tais como, envio de trabalhos, atribuição de um artigo a um revisor, seleção de revisores, notificação da aceitação e recusa de artigos.

[Garcia et al, 2004]

Complexidade	<input type="text" value="4"/>	Módulos
Tamanho	<input type="text" value="5"/>	1 2RQ+1DS+1CD
Qualidade	<input type="text" value="2"/>	2 1RQ+1RT+1CD
Orcamento	<input type="text" value="220 K"/>	3 1DS+1RT+1CD
		4 2DS+1RT+1CD
		5 1DS+2AJ+1CD
		6

JEEES



# SDM

- DIFERENTIAL

- PEOPLE MANAGEMENT

- IMPORTANT FACTOR FOR QUALITY

- HUMAN RESOURCES

- EMPLOYEE

- ROLES

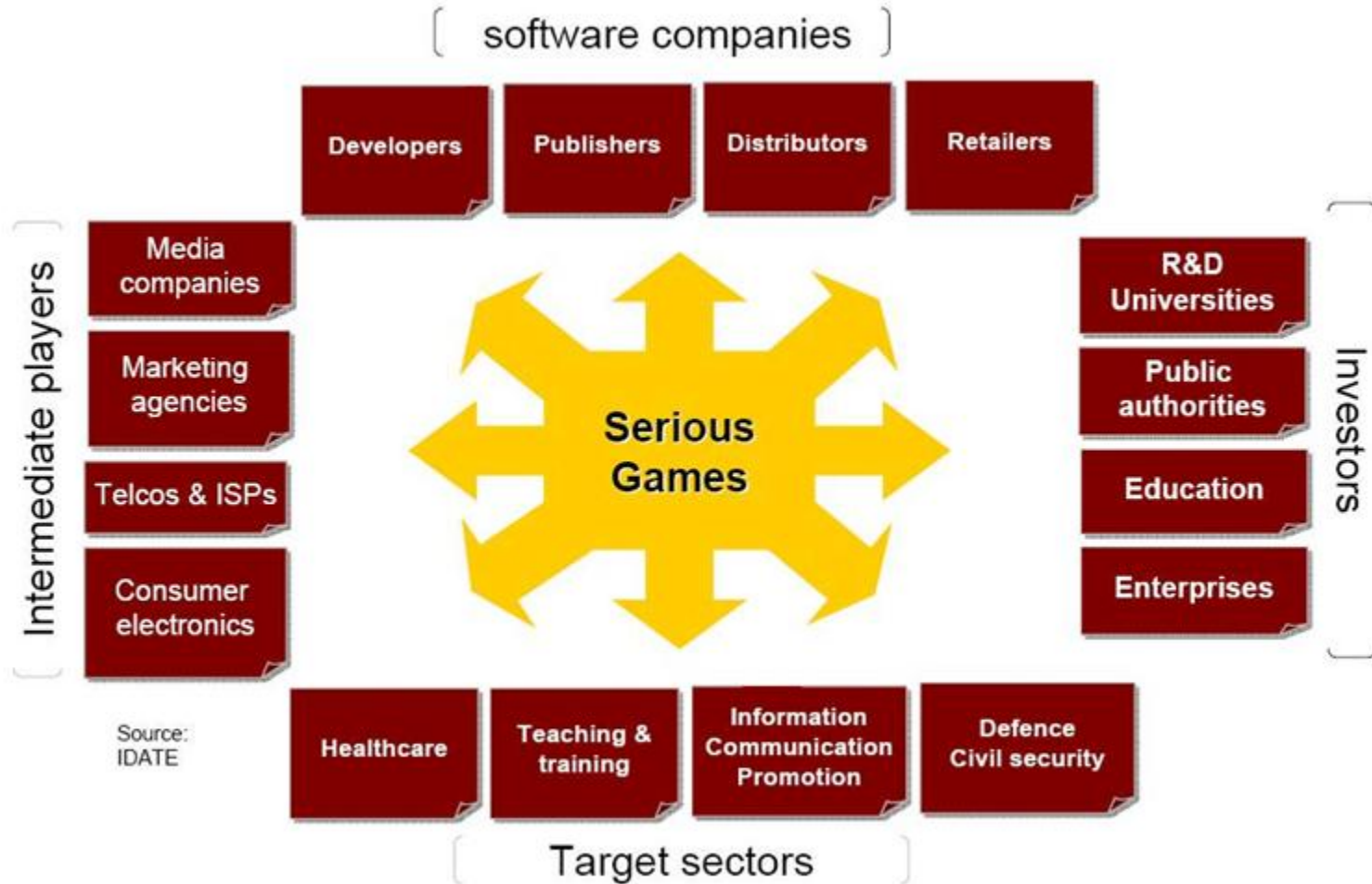
- REAL TIME

- INSTANT FEEDBACK





# SERIOUS GAME



## Staff's Settings

Language: Methodology:  
java Agile

## Staff Team

Emma Analyst  
Garik Programmer  
Wedge Programmer  
Sophia Manager

## Staff's Hours

Weekly: 40

Set

Expenses:		Morale	Stamina
Emma :	\$221	100%	100%
Garik :	\$252	100%	100%
Wedge :	\$241	100%	100%
Sophia :	\$167	100%	100%
Vacant :	\$0	100%	100%
Vacant :	\$0	100%	100%
Vacant :	\$0	100%	100%
Vacant :	\$0	100%	100%
Daily :	\$881		
Monthly :	\$24730		
Income in:	28Days		

PAUSED



Welcome

Welcome to S.D.M.  
(Software Development Manager)

In this game you are able to have 8 employees, where each can perform different roles, like Analyst, Architect, Manager, Marketing, Programmer and Tester. Your employees have attributes and specialities that can be useful for a certain kind of role. They also possess morale and stamina stats that control his working productivity. If his morale is too low he can resign.

Your objective is to make a software with good quality for a client. The client will pay you monthly.

To interact with an employee you need to be near him and press SPACE BAR. Also, you MUST obey the client restrictions, like Programming Language. To access the game menu press ESC key  
That said, good luck with your software.

Close Window

Money	\$ 100000	Time	Week: 000 Day: 1	% complete	0 %	# bugs	0
Monthly Inc.	\$ 24250	Deadline	Week: 008 Day: 1	Validation	0 %	Req. Code	java

Pause

Play

Fast

Fastest

# SDM

## ■ EMPLOYEES

### ➤ ROLES

- ANALYST
- ARCHITECT
- MANAGER
- MARKETING
- PROGRAMMER
- TESTER





# SDM

## ■ EMPLOYEES

### ➤ ATTRIBUTES

(Santos 2005 and Russo 2007)

#### ➤ HUMAN

9 ATTRIBUTES

#### ➤ PERFORMANCE

6 ATTRIBUTES

### ➤ SPECIALIZATIONS

#### ➤ LANGUAGE

#### ➤ METHODOLOGY

#### ➤ TOOLS

Profile	
Name: Darven	Adaptability: 55
Morale: 100%	Autodidact: 84
Stamina: 100%	Human Relations: 81
Role: None	Logical Reasoning: 46
Grade: Junior	Meticulous: 42
Weekly Hours: 40	Negotiation: 67
Salary/Day: \$202	Objectivity: 51
Level: 1	Organization: 56
Experience: 0 / 100	Patience: 53
----- Specialties -----	
C#	
Test	

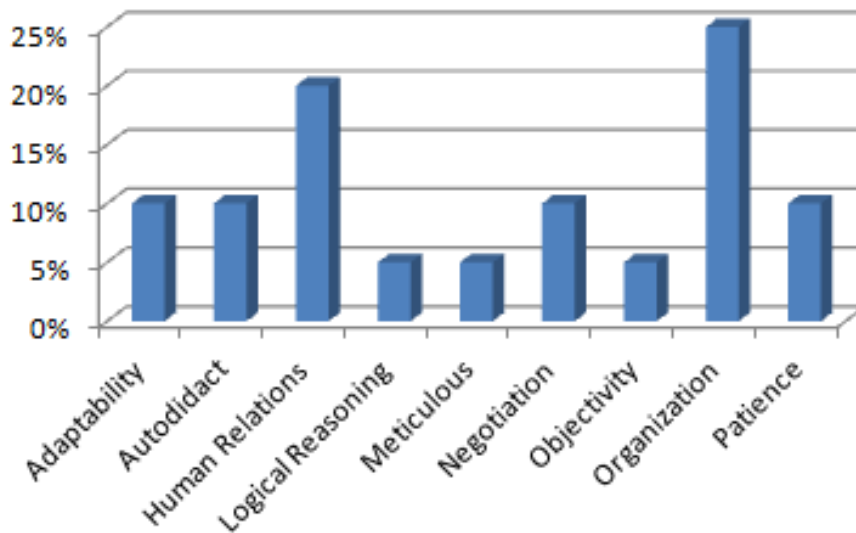
Close Profile View Level Up Modifiers View Report

Especializations / Price: 7500	
Lanaya	
---Programming Language---	---Tools---
Assembly	Analysis Program
C#	Version Control
Java	Debugging
Perl	Project Management
Ruby	Metrics
---Methods---	Planning
Agile Method	Test
Classic Method	
Cancel	

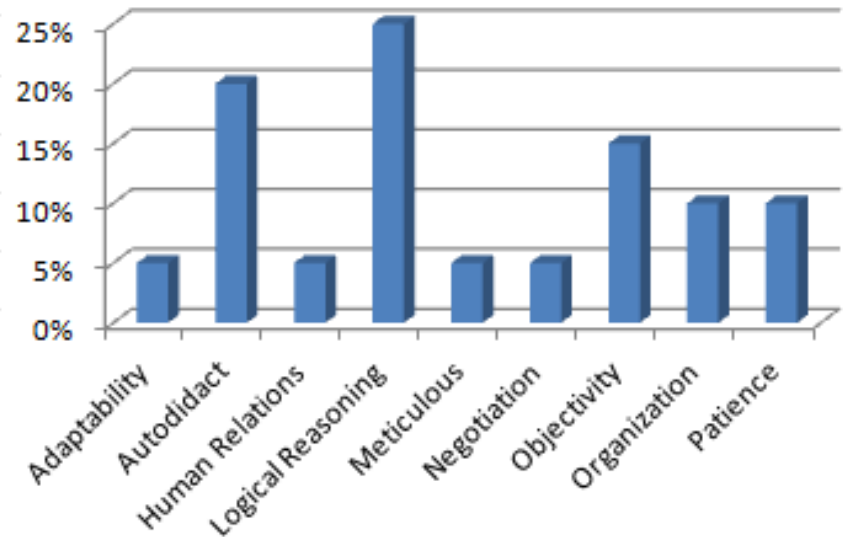


# HUMAN ATTRIBUTES X ROLES

## Manager

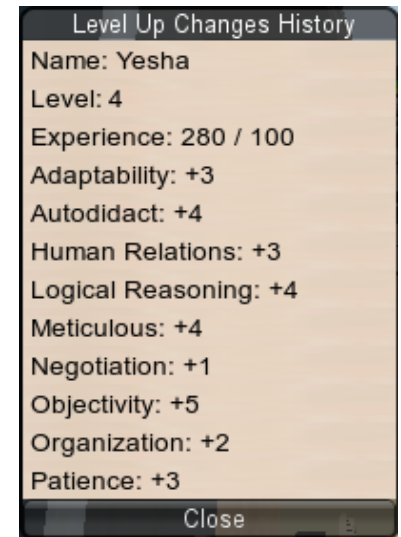
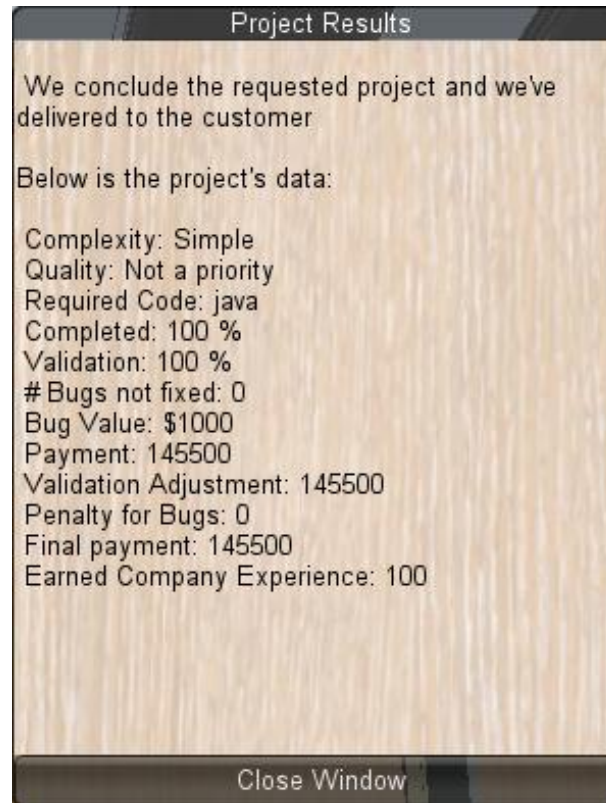


## Programmer



# SDM

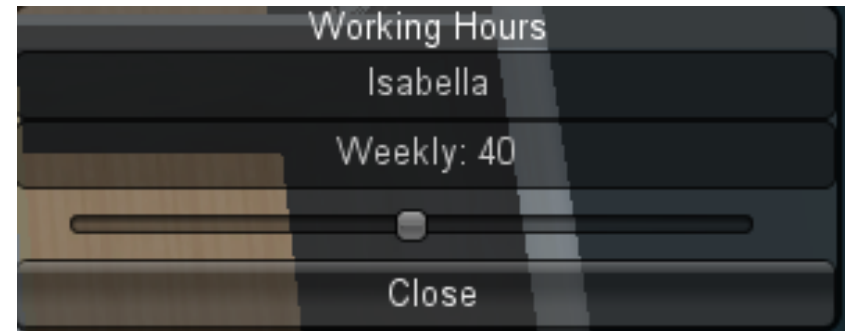
- LEVEL
  - EMPLOYEES
    - ATTRIBUTES
  - COMPANY
    - PROJECTS



# SDM

## ■ EMPLOYEES

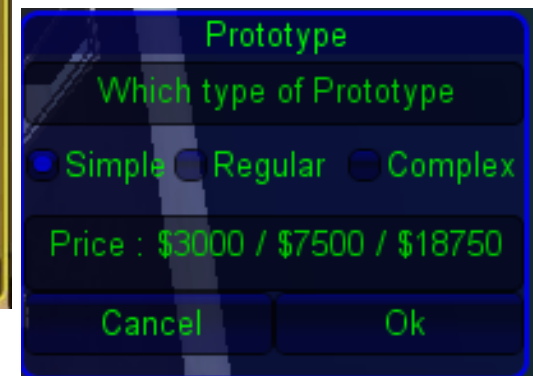
- TRAINING
- WORKING HOURS
- MORALE
  - WILL TO WORK
- STAMINA
  - FATIGUE





# SDM

- STAFF
  - HIRING
- DEVELOPMENT
  - NEGOTIATION
  - PROTOTYPING



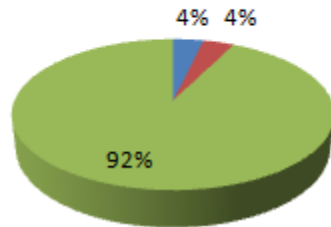
# PRELIMINARY ASSESSMENT

27 VOLUNTEERS

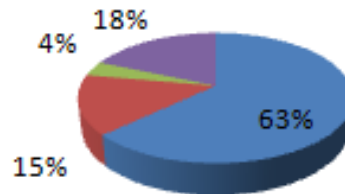
## Software Engineering Experience

### Education

■ PhD ■ Master ■ Undergrad

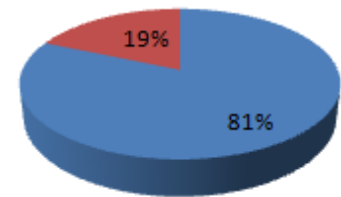


■ Never Studied ■ Read about ■ Studying ■ Studied



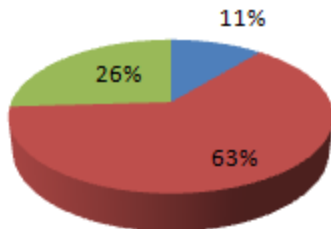
### Learned Anything New?

■ Yes ■ No



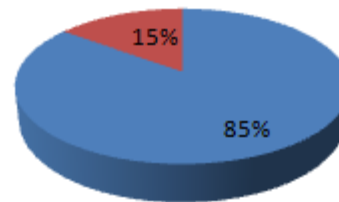
### Gameplay

■ Easy ■ Normal ■ Complicated



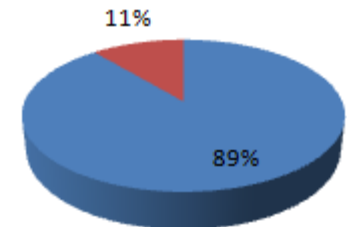
### Aroused Interest in SE ?

■ Yes ■ No



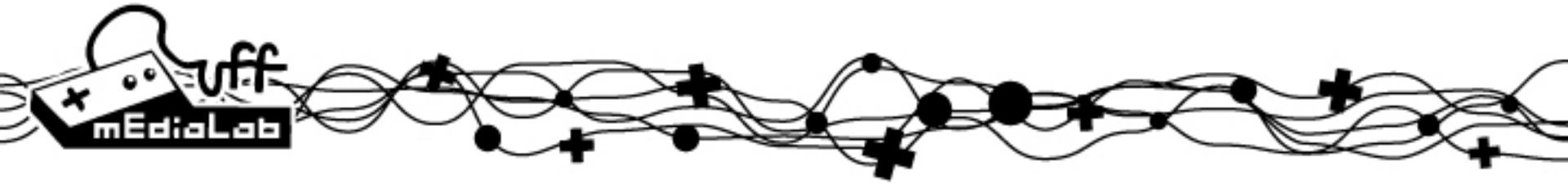
### Want to Play again?

■ Yes ■ No



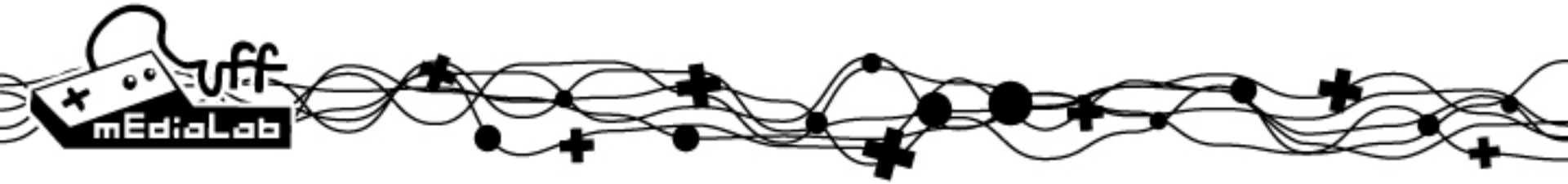
# GAMIFICATION

- COUNTDOWN
  - PROJECT DEADLINE
- INFINITE GAMEPLAY
  - RANDOM PROJECT GENERATION
- LEVEL
  - EMPLOYEE AND COMPANY EARN EXPERIENCE POINTS
- PROGRESSION
  - EXPERIENCE BAR
- LOSS AVERSION
  - COMPANY'S EXPERIENCE POINT LOSS ON FAILURE
- REWARD SCHEDULES
  - MONTHLY PAYMENT WHILE ON SCHEDULE



# CONCLUSION

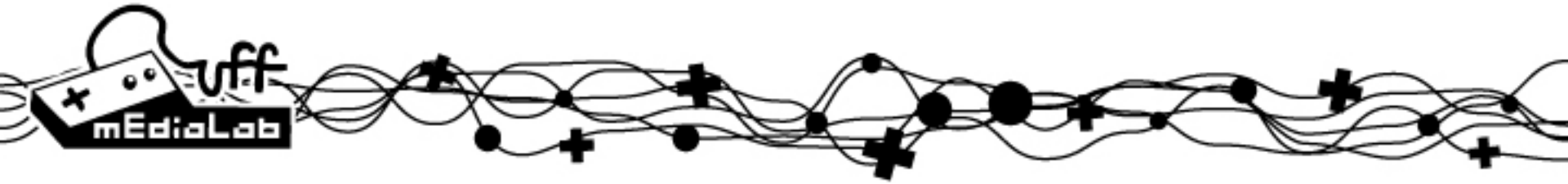
- UNDERSTANDING AND LEARNING
  - EMPLOYEE
  - ROLES
- LIMITATIONS
  - ITERATION PERIOD
  - METHODOLOGY
  - STAFF SIZE





# FUTURE WORK

- MULTIPLE OFFICES
  - MULTIPLE STAFF
  - MULTIPLE PROJECTS
- COMPANY REPUTATION
  - MARKET REPUTATION
- METHODOLOGY
  - DETAILED METHODS



# SDM

## An Educational Game for Software Engineering

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Game Access:

<http://www.ic.uff.br/~tkohwalter/sdm/>



# SDM

EMPLOYEES

GRADES

JUNIOR

MID-LEVEL

SENIOR



# SDM

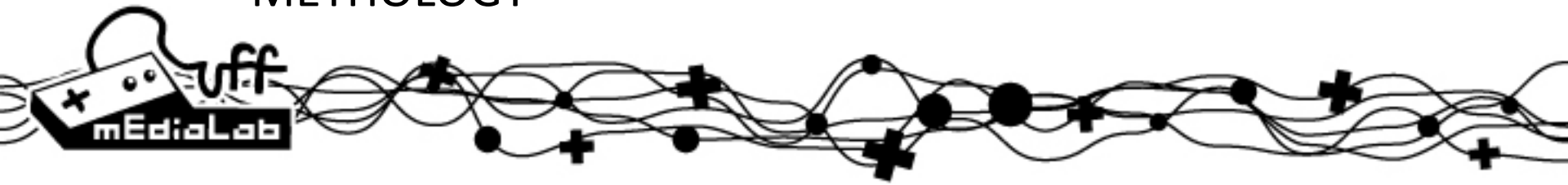
EMPLOYEES

SPECIALIZATIONS

TOOLS

LANGUAGE

METHODOLOGY





# ITERATIONS

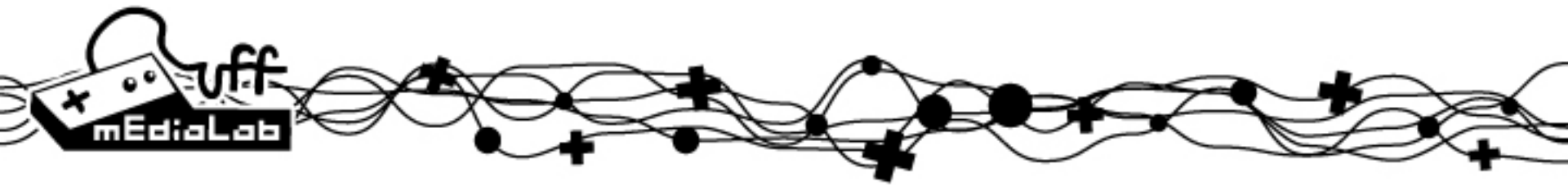
Employee Report				
Name: Tekla	Last week	2 weeks ago	3 weeks ago	4 weeks ago
Analyst's Validation:	+ 0 %	+ 0 %	+ 0 %	+ 0 %
Architect's Bug Find:	+ 0 %	+ 0 %	+ 0 %	+ 0 %
Architect's Architecture:	+ 0 %	+ 0 %	+ 0 %	+ 0 %
Manager's Design:	+ 0 %	+ 0 %	+ 0 %	+ 0 %
Manager's Development:	+ 0 %	+ 0 %	+ 0 %	+ 0 %
Marketing's Validation:	+ 0 %	+ 0	+ 0	+ 0
Marketing's Money:	+ \$0	+ \$0	+ \$0	+ \$0
Programmer's Progress:	+ 657	+ 680	+ 622	+ 147
Programmer's Bugs:	+ 6	+ 10	+ 7	+ 4
Tester's Bug removal:	- 0	- 0	- 0	- 0
Close				

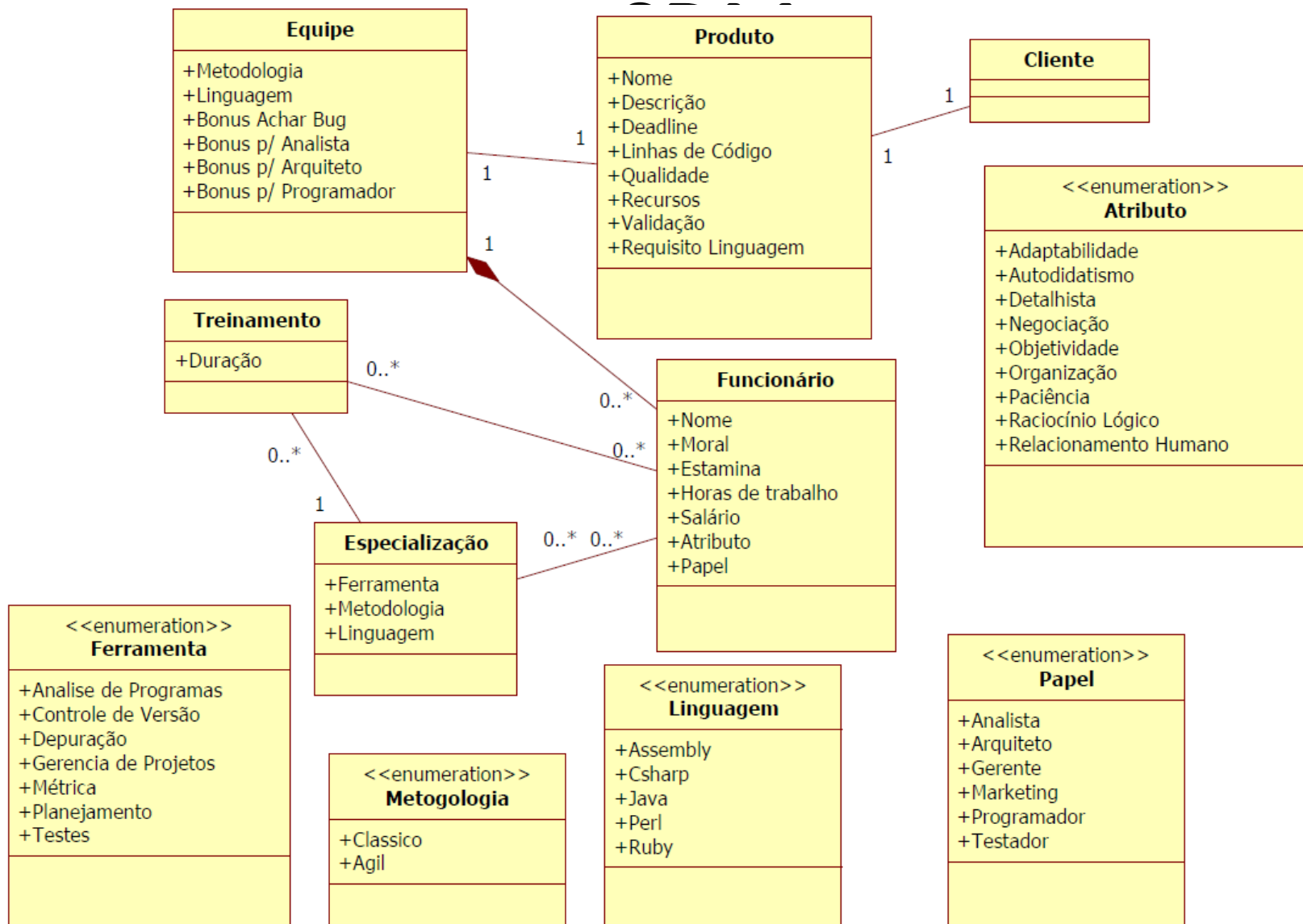
Staff Report				
Staff:	Last week	2 weeks ago	3 weeks ago	4 weeks ago
Analyst's Validation:	+ 0 %	+ 0 %	+ 46 %	+ 49 %
Architect's Bug Find:	+ 0 %	+ 0 %	+ 0 %	+ 0 %
Architect's Architecture:	+ 0 %	+ 0 %	+ 0 %	+ 0 %
Manager's Design:	+ 42 %	+ 43 %	+ 42 %	+ 42 %
Manager's Development:	+ 13 %	+ 13 %	+ 14 %	+ 12 %
Marketing's Validation:	+ 0 %	+ 0	+ 0	+ 0
Marketing's Money:	+ \$0	+ \$0	+ \$0	+ \$0
Programmer's Progress:	+ 1155	+ 1121	+ 622	+ 147
Programmer's Bugs:	+ 13	+ 16	+ 7	+ 4
Tester's Bug removal:	- 4	- 2	- 6	- 4
Close				



# HUMAN ATTRIBUTES X PERFORMANCE

	Analista	Arquiteto	Gerente	Marketing	Programador	Testador
Adaptabilidade	20%	25%	10%	5%	5%	5%
Auto-ditata	5%	5%	10%	5%	20%	5%
Detalhista	10%	15%	5%	5%	5%	25%
Negociação	5%	5%	10%	25%	5%	5%
Objetividade	10%	10%	5%	5%	15%	10%
Organização	5%	10%	25%	5%	10%	10%
Paciência	10%	10%	10%	20%	10%	15%
Raciocínio Lógico	10%	15%	5%	5%	25%	20%
Relacionamento Humano	25%	5%	20%	25%	5%	5%





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