Análise evolutiva do Linux através de Design Structure Matrices

MATE08 - Tópicos em Engenharia de Software 1 (2012.2)

Joenio Marques da Costa

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“Exploring the Strucure os Complex Software Designs: An Empirical Study of Open Source and Proprietary Code”

- Design Structure Matrices
- Change Cost
- Coordination Cost
- Mozilla vs Linux
- Mozilla vs Mozilla

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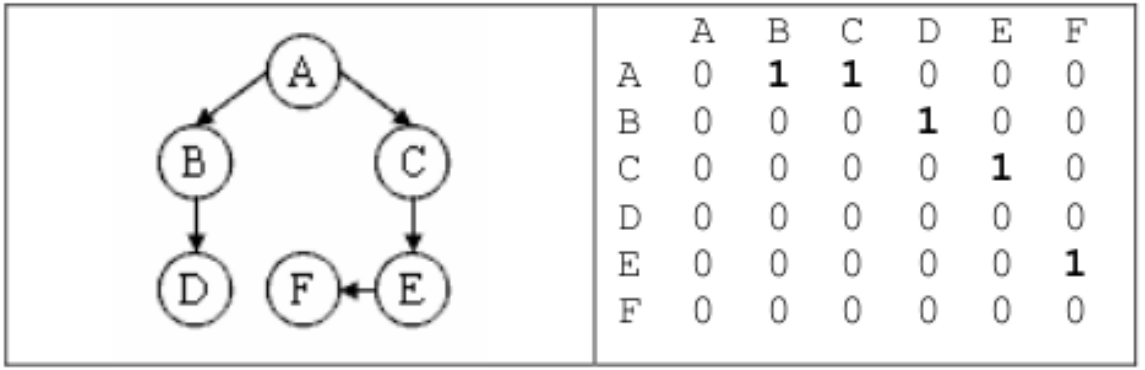
- Design Structure Matrices
- Change Cost
- ~~Coordination Cost~~
- Analizo
- ~~Mozilla vs Mozilla~~
- Linux vs Linux

Design Structure Matrix

Figure 1: Example System in Graphical and Dependency Matrix Form



	A	B	C	D	E	F
A	0	**1**	**1**	0	0	0
B	0	0	0	**1**	0	0
C	0	0	0	0	**1**	0
D	0	0	0	0	0	0
E	0	0	0	0	0	**1**
F	0	0	0	0	0	0

Change Cost (1)

Figure 2: Successive Powers of the Dependency Matrix

M^0

	A	B	C	D	E	F
A	**1**	0	0	0	0	0
B	0	**1**	0	0	0	0
C	0	0	**1**	0	0	0
D	0	0	0	**1**	0	0
E	0	0	0	0	**1**	0
F	0	0	0	0	0	**1**

M^1

	A	B	C	D	E	F
A	0	**1**	**1**	0	0	0
B	0	0	0	**1**	0	0
C	0	0	0	0	**1**	0
D	0	0	0	0	0	0
E	0	0	0	0	0	**1**
F	0	0	0	0	0	0

M^2

	A	B	C	D	E	F
A	0	0	0	**1**	**1**	0
B	0	0	0	0	0	0
C	0	0	0	0	0	**1**
D	0	0	0	0	0	0
E	0	0	0	0	0	0
F	0	0	0	0	0	0

M^3

	A	B	C	D	E	F
A	0	0	0	0	0	**1**
B	0	0	0	0	0	0
C	0	0	0	0	0	0
D	0	0	0	0	0	0
E	0	0	0	0	0	0
F	0	0	0	0	0	0

M^4

	A	B	C	D	E	F
A	0	0	0	0	0	0
B	0	0	0	0	0	0
C	0	0	0	0	0	0
D	0	0	0	0	0	0
E	0	0	0	0	0	0
F	0	0	0	0	0	0

$V = \Sigma M^n ; n = [0,4]$

	A	B	C	D	E	F
A	**1**	**1**	**1**	**1**	**1**	**1**
B	0	**1**	0	**1**	0	0
C	0	0	**1**	0	**1**	**1**
D	0	0	0	**1**	0	0
E	0	0	0	0	**1**	**1**
F	0	0	0	0	0	**1**

Change Cost (2)

Cálculo do Fan-out da Matriz V resultante

$V = \sum M^n ; n = [0,4]$

	A	B	C	D	E	F
A	**1**	**1**	**1**	**1**	**1**	**1**
B	0	**1**	0	**1**	0	0
C	0	0	**1**	0	**1**	**1**
D	0	0	0	**1**	0	0
E	0	0	0	0	**1**	**1**
F	0	0	0	0	0	**1**

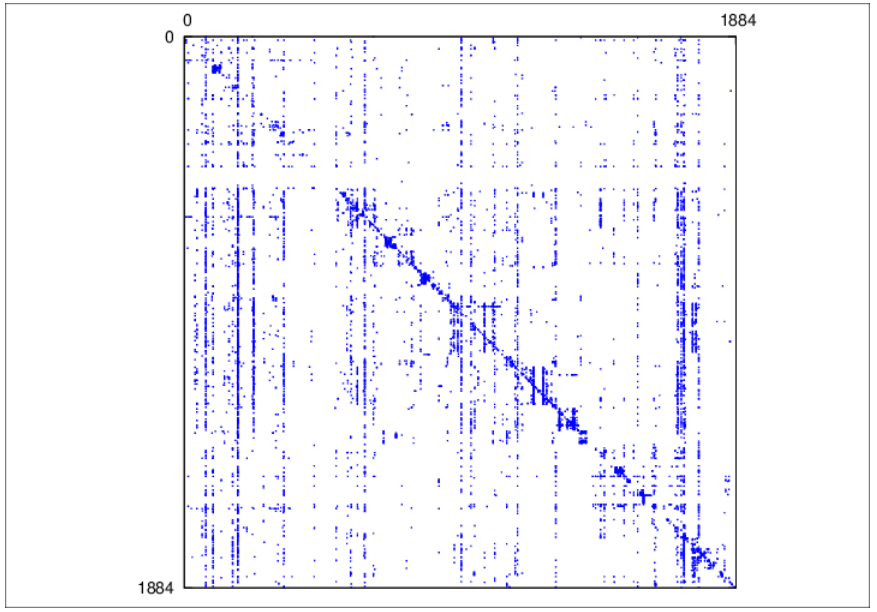
A = 6/6
B = 2/6
C = 3/6
D = 1/6
E = 2/6
F = 1/6

(6/6 + 2/6 + 3/6 + 1/6 + 2/6 + 1/6) / 6

0.42

Analizo – uma ferramenta para análise de código-fonte e visualização de software

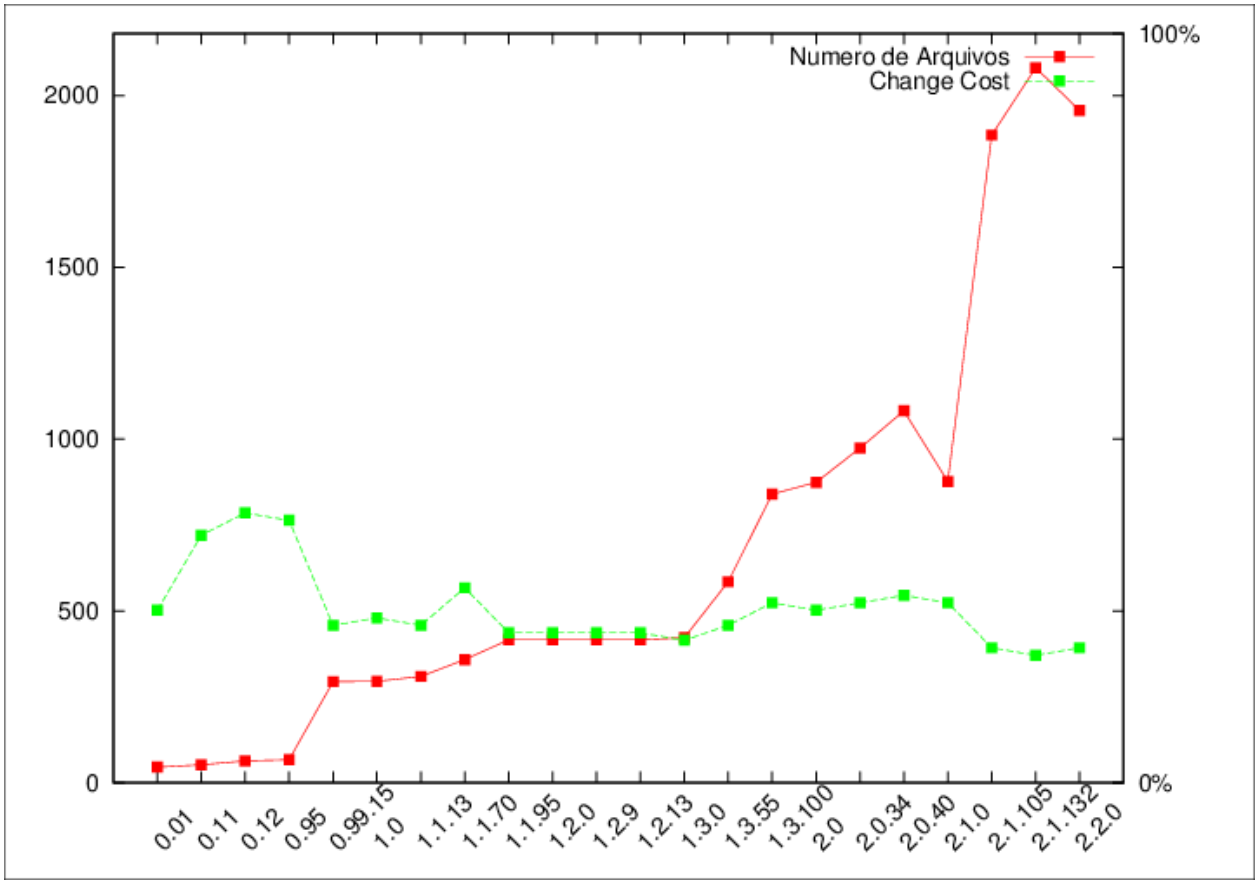
$ analizo dsm –change-cost linux-2.1.105



Change cost = 0.18

Foram avaliadas 22 versões do Linux

0.01	1.2.0	2.1.0
0.11	1.2.9	2.1.105
0.12	1.2.13	2.1.132
0.95	1.3.0	2.2.0
0.99.15	1.3.55	
1.0	1.3.100	
1.1.13	2.0	
1.1.70	2.0.34	
1.1.95	2.0.40	



1) Sem conclusões definitivas

2) Levantou-se dúvida sobre os resultados de:

"Exploring the Strucure os Complex Software Designs: An Empirical Study of Open Source and Proprietary Code"

3) Implementação de uma ferramenta para visualisação de DSM e cálculo de Change Cost

Obrigado!

Joenio Costa

joenio@colivre.coop.br