

# Software Livre e de Código Aberto

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Alguns direitos reservados 

# O que essas organizações tem em comum?



- ① O que é Software Livre?
- ② O que é Software de Código Aberto?
- ③ Quais são as diferenças e semelhanças entre os dois?
- ④ Empresas estão interessadas em FLOSS?
- ⑤ Como você pode se beneficiar?

# Software Livre

# O que é Software Livre?

## Ideologicamente

- Software cujos usuários têm liberdade para
  - executar
  - copiar
  - distribuir
  - estudar
  - modificar
  - melhorar
- Usuários **controlam** os programas e não o contrário
- **Premissa básica:** **liberdade** é uma **coisa boa** para indivíduos e sociedade
  - **Movimento Social**

# O que é Software Livre?

## Estritamente falando

Um programa é **livre** se seus usuários têm as 4 liberdades essenciais:

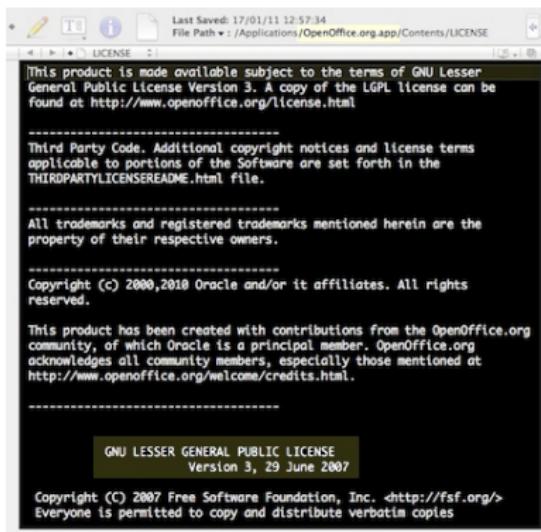
- 0 Liberdade de **executar** o programa, para qualquer fim.
- 1 Liberdade para **estudar** o funcionamento do programa e **modificá-lo** para fazer o que você **desejar**.
- 2 Liberdade para **redistribuir** cópias.
  - Assim, você ajuda seu vizinho.
- 3 Liberdade para **distribuir** cópias de suas **versões modificadas**.
  - Assim, a comunidade toda se beneficia com suas modificações.

Acesso ao código fonte é precondição para as liberdades 1 e 3.

# O que é Software Livre?

## Legalmente

- Software **distribuído** de acordo com uma **licença** que respeita as 4 liberdades



# Quem é esse?

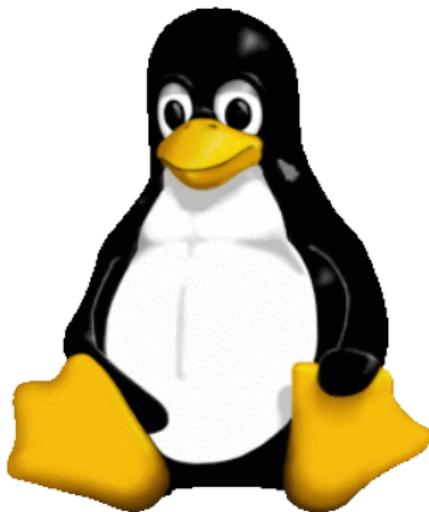


Richard M. Stallman

## Este programa é software Livre?



# Este programa é software Livre?



# Este programa é software Livre?



(considerando apenas a versão gratuita)

# Software de Código Aberto

# O que é Software de Código Aberto?

## Ideologicamente

O foco do movimento Open Source **não é ideológico**.

## Em poucas palavras...

- “Campanha de Marketing” em prol do Software Livre
  - Com foco em vantagens práticas
  - Sem viés ideológico
  - Para chamar a atenção de grandes corporações

# Por que “Código Aberto”?

- A palavra “free” em *Free Software* é problemática
  - “*Free as in freedom, not free beer*”



- Com “Código Aberto” a ênfase fica em algo mais palpável, o código

# Quem são esses dois?



Eric Raymond e Bruce Perens

# Open source doesn't just mean access to the source code

## Práticas

- ① Desenvolvimento distribuído
- ② Depuração em massa, com usuários envolvidos no desenvolvimento
- ③ Software disponível cedo e frequentemente
- ④ Meritocracia
- ⑤ Sem uma hierarquia rígida e sem coerção
- ⑥ Abertura do código fonte é uma pré-condição

# Software de Código Aberto também tem uma definição

The screenshot shows the homepage of the Open Source Initiative. The header features the "open source initiative" logo and the text "Open Source Initiative". Below the header, there's a search bar with the placeholder "Search this site:" and a "Search" button. A sidebar on the left is titled "Navigation" and lists various links such as "About the OSI", "The Open Source Definition", "Anotated", "License Review Process", "License Proliferation", "Open Source Licenses", "Trademark and Logo Usage", "FAQ", "Open Standards", "Open Source Education", "Mailing Lists", "Getting Help", "Donate to the OSI", "OSI Individual Membership", "OSI Affiliate Membership", "Contact OSI", "Terms of Service", and "OSI Corporate Sponsors". The main content area is titled "The Open Source Definition" and contains the following sections:

- Introduction**

Open source doesn't just mean access to the source code. The distributor terms of open-source software must comply with the following criteria:

  - 1. Free Redistribution**

The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sales.
  - 2. Source Code**

The program must include source code, and must also distribute in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost; preferably, downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.
  - 3. Derived Works**

The license must allow modifications and derived works, and must also allow them to be distributed under the same terms as the license of the original software.
  - 4. Integrity of The Author's Source Code**

The license may restrict source-code from being distributed in modified form only if the license allows the distribution of "patch files" with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.
  - 5. No Discrimination Against Persons or Groups**

The license must not discriminate against any person or group of persons.
  - 6. No Discrimination Against Fields of Endeavor**

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for generic research.
  - 7. Distribution of License**

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.
  - 8. License Must Not Be Specific to a Product**

The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.
  - 9. License Must Not Restrict Other Software**

The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.
  - 10. License Must Be Technology-Neutral**

No provision of the license may be predicated on any individual technology or style of interface.

At the bottom of the page, there's a footer with the text "Creative Commons.org site content is licensed under a Creative Commons Attribution 3.0 License. | Terms of Service" and a Creative Commons Attribution 3.0 license logo. There are also icons for the OSI, CC-BY, and SPG.

# “Open Source” é mais popular que “Free Software”



redhat.

Google



Microsoft

ORACLE®

IBM

MySQL®



Centro  
de Informática  
U - F - P - E

INES

SPG  
SOFTWARE-PUBLICO-GROUP

# Quem é esse?



## Quem é esse?



Linus B. Torvalds

# Uma palavrinha sobre o Linux...

Primeiras versões baseadas no MINIX

Disponível para o público desde outubro de 1991

## A importância do Linux

- Núcleo usado no GNU (GNU/Linux)
- Feito notável de colaboração
  - Atualmente: Mais de 9500 desenvolvedores contribuindo
  - Informações interessantes: <http://www.ohloh.net/p/linux>
- Principal exemplo de software livre que alcançou o **grande público**

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- Lei de Linus: “dados olhos suficientes, todos os erros são triviais”

# Diferenças e Semelhanças entre FS e OSS

Em pouquíssimas palavras...

A democracia é um direito moral

vs

A democracia é o sistema mais  
eficiente que se conhece

# Pragmaticamente

- Práticas **indistinguíveis**
  - Principalmente após “The Cathedral and the Bazaar”
- Amplo espectro de pontos de vista
- Dois meios de atingir o mesmo fim

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# Aspectos Econômicos de Software Livre e de Código Aberto

# Eu posso vender software livre? E de código aberto?

Resposta curta: **SIM!**

## Na prática

- Não faz sentido
- E cobrar por instalações em máquinas, pode?
- Restringir uso comercial?

# Economia de dom?

- ① Boa explicação para os primórdios do OSS
  - Em particular, justifica a ação de voluntários

# Economia de dom?

- ➊ Boa explicação para os primórdios do OSS
  - Em particular, justifica a ação de **voluntários**
- ➋ Não explica tão bem o interesse de corporações
  - Economia de **escassez**, teoricamente
  - Por que **gastar dinheiro** em algo disponível gratuitamente?
  - Por que alguém **abriria** o código do seu produto?



Um *potlach* dos Kwakwaka'wakw

# Free as in free beer?

- A IBM gastou, entre 1995 e 2005, US\$ 1bi no Linux
  - Para fins de desenvolvimento e promoção

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- A IBM gastou, entre 1995 e 2005, US\$ 1bi no Linux
  - Para fins de desenvolvimento e promoção
- E, três anos atrás, anunciou o seguinte:

The image shows the top navigation bar of the IBM website. It features the IBM logo on the left, followed by a horizontal menu with links: "Industries &amp; solutions", "Services", "Products", "Support &amp; downloads", and "My IBM".

News room > News releases >

## IBM Commits \$1 Billion to Fuel Linux and Open Source Innovation on Power Systems

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Select a topic or year

[↓ News release](#)      [↓ Contact\(s\) information](#)  
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**NEW ORLEANS, LA - 17 Sep 2013:** At [LinuxCon 2013](#) today, IBM (NYSE: [IBM](#)) announced plans to invest \$1 billion (USD) in new Linux and open source technologies for IBM's [Power Systems](#) servers. The investment aims to help clients capitalize on [big data](#) and [cloud computing](#) with modern systems built to handle the new wave of applications coming to the data center in the post-PC era.

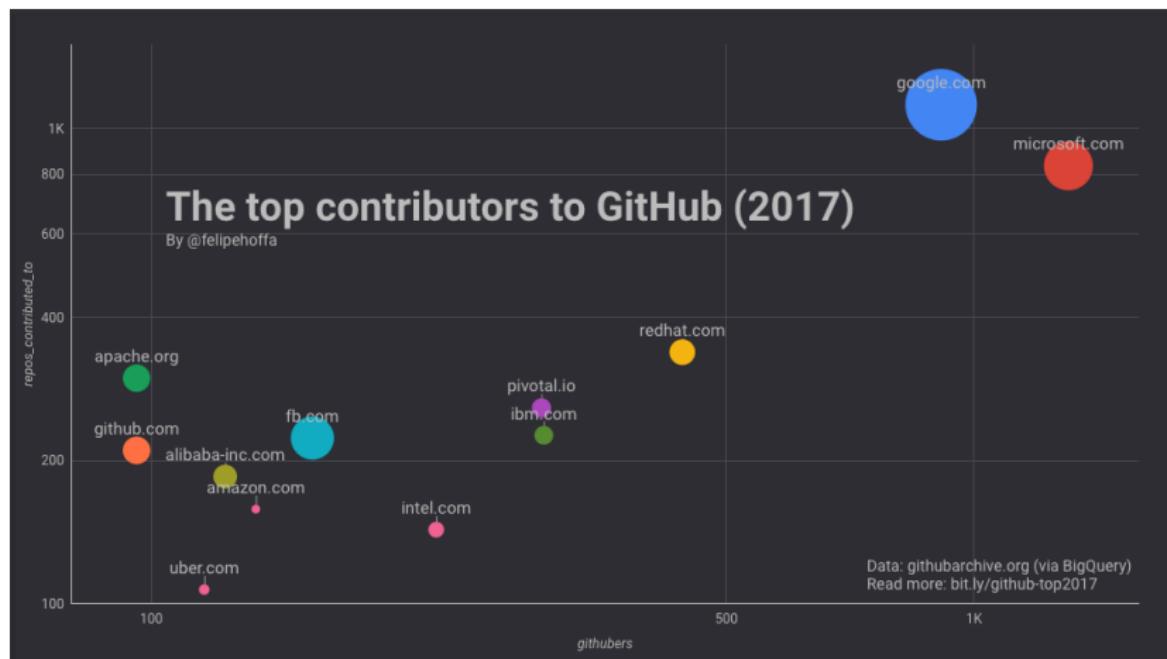


**Related links**

- IT Analyst support center
- Investor relations

 SPG  
Software Productivity Group





# Free as in free beer?

- A Oracle (graças a **aquisições**) **era** dona, em 2010, de
  - MySQL
  - Java
  - Berkeley DB
  - OpenOffice
  - VirtualBox

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  - MySQL
  - Java
  - Berkeley DB
  - OpenOffice
  - VirtualBox
- O Google desenvolveu um dos melhores Web Browsers
  - E **abriu ele**, via projeto Chromium
  - Incluindo o **engenho V8** para JavaScript

Software Livre  
oooooooooo

Código Aberto  
oooooooooooo

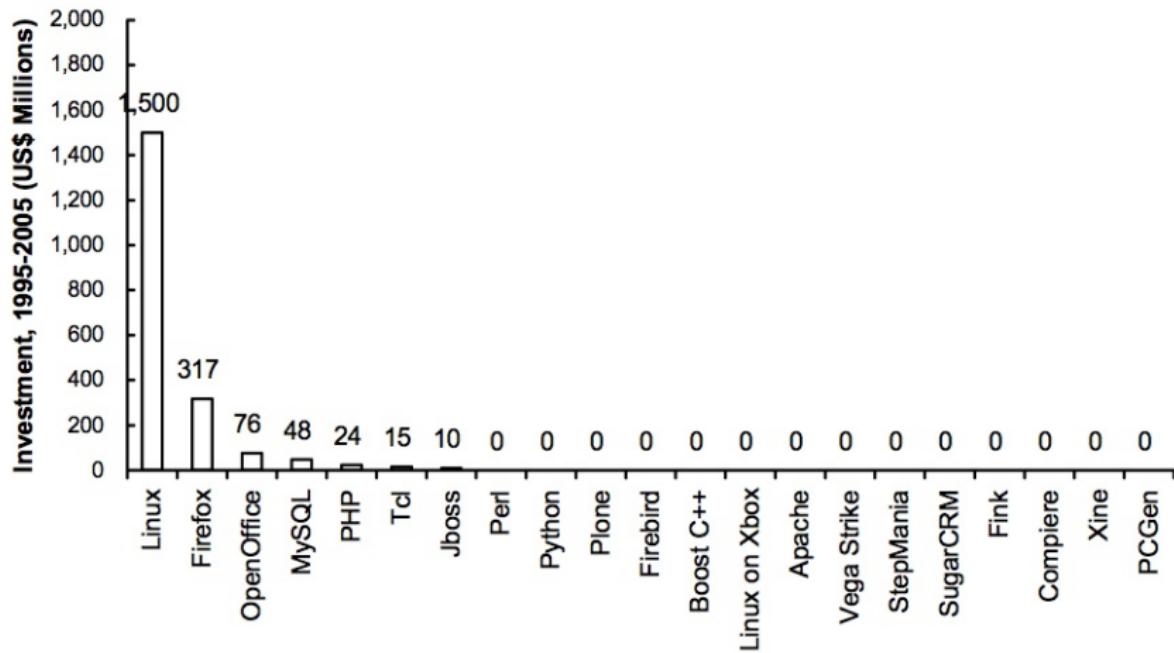
Diferenças e Semelhanças  
ooo

Aspectos Econômicos  
oooooooo●oooooooooo

Como se Beneficiar?  
oooooooooooooooo



# Investimento em projetos FLOSS, por projeto

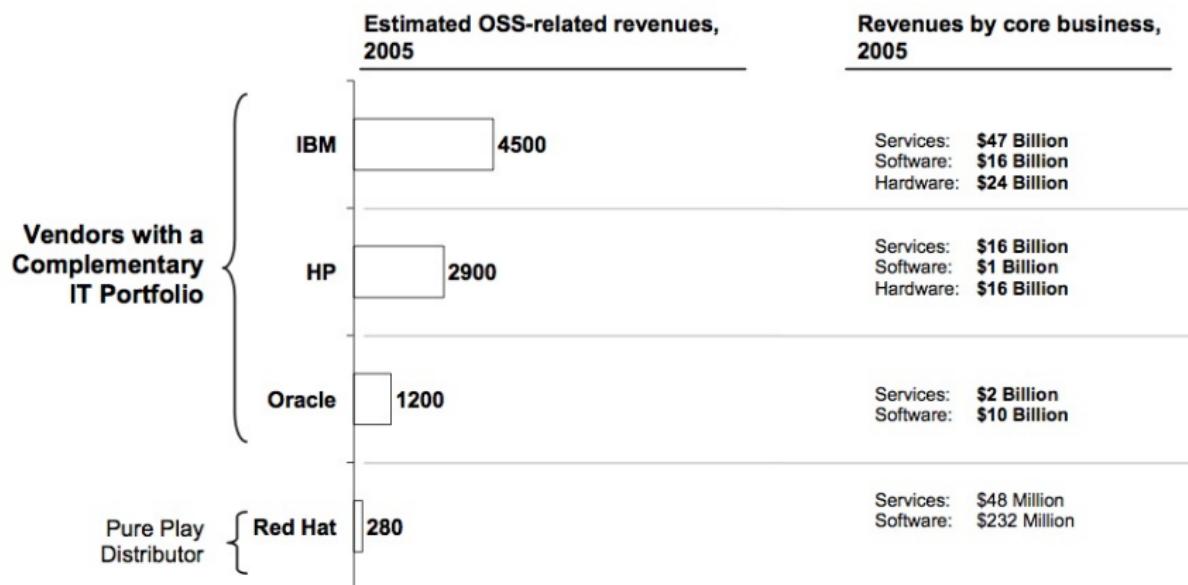


# Receita relacionada a FLOSS vs. receita por área

Corporações não tem fins humanitários...

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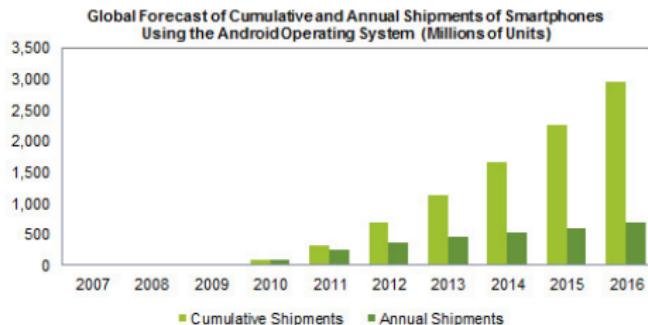
# Como consumidores acessam a Internet

## HOW CONSUMERS SPEND MEDIA TIME (HH:MM) EACH MONTH

— ● + CHANGE SINCE 2012      — ● - CHANGE SINCE 2012

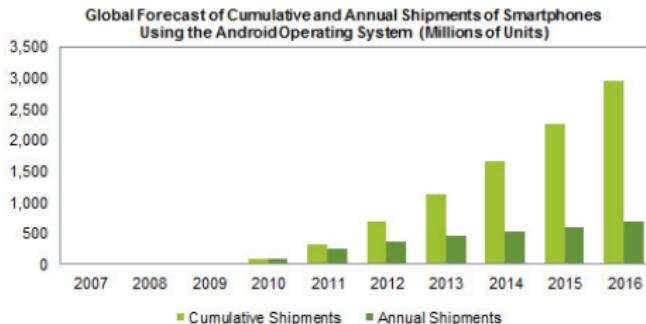


# Smartphones com o sistema Android



Source: IHS iSuppli/Screen Digest Research September 2012

# Smartphones com o sistema Android



Source: IHS iSuppli/Screen Digest Research September 2012

Cada um desses smartphones...

- é um ponto de entrada para pessoas conectarem-se à Internet;
- funciona bem com as ferramentas do Google;
- e coleta informações que o Google pode usar!

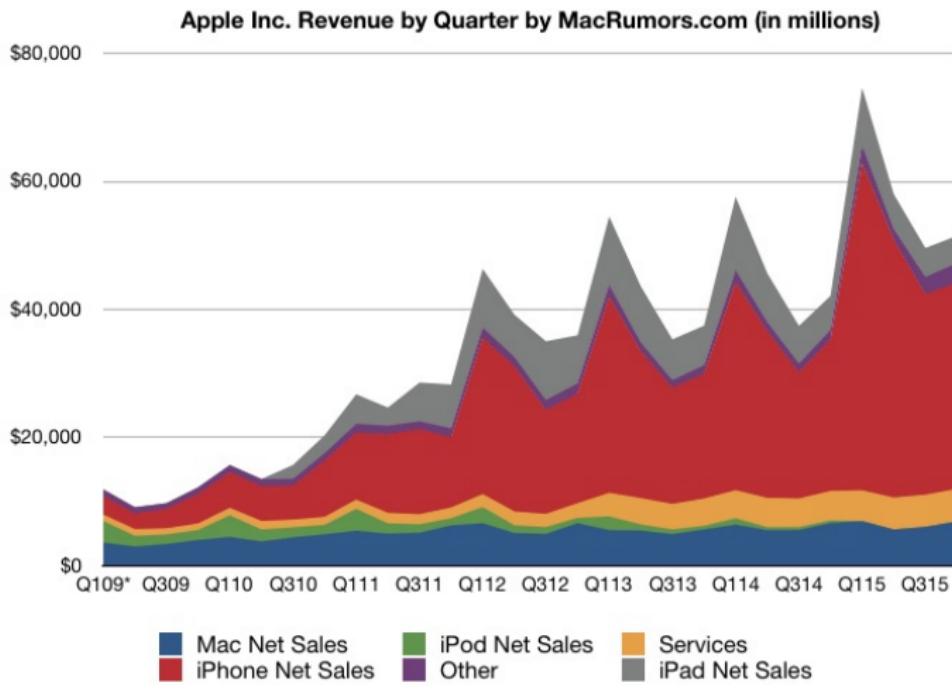
**Missão do Google:** ... *to organize the world's information and make it universally accessible and useful.*

# Mais recentemente...



- 5+ anos de desenvolvimento (primeiro *commit* em 2010!)
- *open source um ano e meio depois de seu lançamento*

# Fontes de receita da Apple



# Dois pontos de vista complementares

Software pode ou não ser um diferencial de negócios

- ① Software livre não é a principal fonte de receita para IBM, HP, Google ou Apple
- ② Mas **ajuda a dividir custos e riscos** para produtos que **não** são um diferencial de negócios

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- ② Mas **ajuda a dividir custos e riscos** para produtos que **não são um diferencial de negócios**
- ③ Se software não é a diferenciação, é um centro de **custo**, não de **lucros**

Tecnologia meio vs. tecnologia fim

- ① Software pode ser uma tecnologia “possibilitadora”
- ② Desenvolvimento de software proprietário é uma **minoria**
  - Menos de 10% das vagas para desenvolvimento de software
  - Mais de 70% estão em empresas que são “usuárias de TI”



Se tiverem que aprender apenas uma coisa, aprendam isso

Vale a pena abrir o código para

- ① software que **não é um diferencial** de negócios
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Porque os custos e o risco do desenvolvimento são divididos

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Porque os custos e o risco do desenvolvimento são divididos

**Software Livre** como parte de um modelo de negócios “**puro**”  
não é comum

# Como Você Pode se Beneficiar?

# Software livre é grátis

# Software livre é grátis?

# Pode aumentar sua empregabilidade!

## Education



## Experience

- *September 2009 - December 2009.* Travelled from Japan to England without flying.
- *December 2008 - September 2009.* Mathematical Systems, Tokyo: statistical software consultancy. Member of Knowledge Engineering team doing custom development in Common Lisp for NTT.
  - Monitoring system for large numbers (100k) of routers, with Holt-Winters' seasonal exponential time series forecasting to detect aberrations.
  - Visualisation of large (cyclic) directed graphs by condensing nodes while attempting to preserve the graph structure.
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  - Portable persistent memory-mapped object database integrating into Lisp object system with the Meta-Object Protocol (MOP), including a precise compacting garbage collector and atomic transactions (transads).
- *January 2006 - November 2008.* Travelled in the Middle East, South East Asia, China, North Korea, India, and Japan.
- *October 2004 - December 2005.* Alphamosaic (bought by Broadcom), Cambridge: semiconductor company specialising in low-power video. Engineer on the software research team.
  - Embedded C software development: system-wide and video codec performance optimization, dynamic DMA resource management infrastructure, lightweight reliable mutual exclusion without malloc, H.264 video decode code (dramatically increased performance of an already heavily optimized system, directly benefiting the video iPod project), virtual filesystem layer, device drivers.
  - Algorithms evaluation for hardware design: image sensor pipeline (image processing in Matlab), and simulated performance of different i-cache and d-cache sizes and associativities.
  - On-site customer support at Samsung on DMB (mobile TV) phone project. Starting with a dysfunctional project, rebuilt trust with Samsung.
  - High-level ASIC design and software emulation of components for next generation platform (JPEG acceleration).
- *Winter 2003.* Volunteer at NGO with ISP in Mozambique.
- *Easter 2003.* Hospital in Bethlehem. Volunteer IT system administrator. Continued regularly until 2007.
- 2002-2004. Trinity College Students' Union.
- 2001-2002. Cambridge University Computing Society. Chairman.
- *Summer 2000.* Linux Information Systems AG, Munich: productivity software start-up. Intern.
- *Spring 2000.* Linux kernel. Contributed USB driver for a scanner; accepted and integrated into the Linux kernel (`/drivers/usb/microtek.c`). Userspace program to assist reverse engineering (`usb-robo`).
- *1998.* Unreleased game framework in C++ with dynamic code generation.

## Recent hobby projects

- `leepedecker2`: a high-performance web application platform in Common Lisp, directly calling Linux system calls. Benchmarked serving more than 10k dynamically generated pages per second on one processor core.
- `dysluckycom`: ranked seventh out of about three hundred teams in the ICFP 2009 programming competition.

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# Há muitas oportunidades para trabalhar com FLOSS!

 **CAREERS 2.0**  
by stackoverflow

home search jobs companies my profile for employers ▾

368 jobs 151 company pages

368 Open Source jobs sort by: Search relevance ▾

★ **Big Data Architect** 1 week ago

Bloomberg L.P. - New York, NY

The RoleWe are looking for individuals with experience in Big Data Technologies such as BigTable, Ha...

hadoop cassandra rdbms cloud open-source

★ **Innovation Engineer** 2 weeks ago

Consumer Reports - New York, NY

The Innovation Engineer is a key role in the TIC (Technology Innovation Center) located in New York City....

frontend api backend open-source agile

★ **Analyst/Programmer (Foundation) - Library** 1 week ago

California State University San Marcos - San Marcos, CA

California State University San MarcosAnalyst/Programmer (Foundation)LibraryUnder the direction of the...

go c c++ python java

★ **Software Engineer** 2 days ago

CrowdSurge - New York City, NY

ABOUT US:Our company was established in January 2008 to provide white-label e-commerce softwar...

go c c++ python java

★ **Senior Mobile Software Architect** 1 week ago

Jun Group Productions LLC - New York City, NY

Writing code is like writing a novel. It's an art form that many practice but few can do well. So who's...

ruby ruby java rails javascript

★ **Senior Software Engineer, DevOps -000000099674** 2 days ago

Nokia - Berlin, Germany

HERE, a Nokia business, offers the world's freshest maps and location experiences across multiple...

splunk cmake linux c++ python

search jobs

what \*open source\*

where city, country or zip code

distance (use slider) 20 miles

Work remotely

Offers relocation

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# Há muitas oportunidades para trabalhar com FLOSS!

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job title, keywords or company city, state, or zip

[Advanced Job Search](#)

**Open Source developer jobs**

## My recent searches

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[Open Source Developer - 2,084 new](#)  
[x clear searches](#)

## Sort by: relevance - date

## ▼ Salary Estimate

\$50,000+ (6797)  
 \$70,000+ (4839)  
 \$90,000+ (2468)  
 \$110,000+ (1026)  
 \$130,000+ (463)

## ▶ Title

## ▶ Company

## ▶ Location

## ▶ Job Type

## ▶ Employer/Recruiter

Tip: Enter your zip code in the "where" box to show results in your area.

- Let employers find you

Jobs 1 to 10 of 7,624

Ads

**Lightweight App Server**

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**Open-Source Test Software**

[www.kulanaga.com/](#) Wraps Selenium, TestNG, SoapUI & More. Free Download & Support!

**Accenture Linux Jobs**

[www.accenture.com/](#) Careers for Linux Experts. Develop Your Potential at Accenture

Show: [all jobs](#) - [2,084 new jobs](#) - only 'Easy Apply' jobs

**Open Source Developer - new**

Scholastic [97 reviews](#) - New York, NY

The Digital Services Group of Scholastic, Inc is seeking a full time **Open Source Developer** to assist in the creation and management of **Open Source** development...

1 day ago - [save job](#) - [email](#) - [more...](#)

**Senior Open Source Developer - new**

Samsung Information Systems America, Inc. (SISA) [400 reviews](#) - San Jose, CA reviewer, maintainer, etc., and have a passion for **open source** software, enjoy collaborating with the global community of **open source** developers, and...

Samsung - 6 days ago - [save job](#) - [email](#) - [more...](#)

**Senior Open Source Web Developer - Oldham - £35k - new**

Stephen James Consulting - Alabama

Our client a leading multi-faceted technology company are searching for a Senior **Open Source Web Developer** to be responsible for developing innovative, reusable... \$30,000 - \$35,000 a year Loffredempli - 5 days ago - [save job](#) - [email](#) - [more...](#)

**Open Source Software Developer - new**

HireNetworks - Durham, NC

Job Responsibilities of the **Open Source Software Developer** include: Translation of business requirements into working code.... \$70,000 - \$100,000 a year 5 days ago - [save job](#) - [email](#) - [more...](#)

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# Sua empresa pode economizar!

## **BLACK DUCK SOFTWARE ESTIMATES DEVELOPMENT COST OF OPEN SOURCE SOFTWARE AT \$387 BILLION**

*Reuse of Open Source Software Could Save U.S. Companies \$22 Billion a Year*



**WALTHAM, Mass., April 14, 2009** - Black Duck Software, a leading provider of products and services for accelerating software development through the managed use of open source software (OSS), estimates the total development cost of open source software at more than \$387 Billion U.S.

To put this figure into perspective, the cost to develop open source software code is equivalent to nearly 50 percent of the U.S. government's recently passed stimulus bill, the \$787 billion "American Recovery and Reinvestment Act."

Black Duck Software has the industry's most comprehensive database of open source software and related metadata. According to the company's research, there are over 200,000 open source projects representing over 4.9 billion lines of code. Using its detailed knowledge of open source projects and applying standard industry cost estimation techniques, Black Duck estimates that the total development cost of OSS exceeds \$387 billion and represents a collective investment of more than two million developer years.

An additional analysis, which estimates that 10 percent of IT application development spending is redundant with existing open source projects, indicates U.S. companies could realize savings of more than \$22 billion a year through the reuse of OSS in application development.

# Sua empresa pode economizar!

## **BLACK DUCK SOFTWARE ESTIMATES DEVELOPMENT COST OF OPEN SOURCE SOFTWARE AT \$387 BILLION**

*Reuse of Open Source Software Could Save U.S. Companies \$22 Billion a Year*



**WALTHAM, Mass., April 14, 2009** - Black Duck Software, a leading provider of products and services for accelerating software development through the managed use of open source software (OSS), estimates the total development cost of open source software at more than \$387 Billion U.S.

To put this figure into perspective, the cost to develop open source software code is equivalent to nearly 50 percent of the U.S. government's recently passed stimulus bill, the \$787 billion "American Recovery and Reinvestment Act."

Black Duck Software has the industry's most comprehensive database of open source software and related metadata. According to the company's research, there are over 200,000 open source projects representing over 4.9 billion lines of code. Using its detailed knowledge of open source projects and applying standard industry cost estimation techniques, Black Duck estimates that the total development cost of OSS exceeds \$387 billion and represents a collective investment of more than two million developer years.

An additional analysis, which estimates that 10 percent of IT application development spending is redundant with existing open source projects, indicates U.S. companies could realize savings of more than \$22 billion a year through the reuse of OSS in application development.

# Fonte de dados para pesquisa

## MSR 2017

The 14th International Conference on Mining Software Repositories  
May 20-21, 2017, Buenos Aires, Argentina.



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### Welcome to the official website of MSR 2017!

The Mining Software Repositories (MSR) field analyzes the rich data available in software repositories to uncover interesting and actionable information about software systems and projects. The goal of this two-day conference is to advance the science and practice of MSR. The 14th International Conference on Mining Software Repositories is sponsored by [IEEE TCSE](#), [ACM SIGSOFT](#), and [SADIO](#).

The MSR conference is co-located with [ICSE 2017](#), at [Buenos Aires, Argentina, 20-21 May, 2017](#).

### Call For Papers

Software repositories such as source control systems, archived communications between project personnel, and defect tracking systems are used to help manage the progress of software projects. Software practitioners and researchers are recognizing the benefits of mining this information to support the maintenance of software systems, improve software design/reuse, and empirically validate novel ideas and techniques. Research is now proceeding to uncover the ways in which mining these repositories can help to understand software development and software evolution, to support predictions about software development, and to exploit this knowledge in planning future development. The goal of this two-day international

# Obrigado!

## Resumo

- (0) executar, (1) estudar e modificar, (2) distribuir e (3) distribuir versões modificadas
- Software Livre e Software de Código Aberto são dois lados da mesma moeda
- Vale a pena abrir o código para
  - ① software que **não é um diferencial** de negócios
  - ② software que é uma **tecnologia possibilitadora** para vários negócios
- Há muitas formas de se beneficiar profissionalmente com FLOSS

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