

# The Economics of Free Software

*and why it matters for developing countries*

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# Software in society

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“Access [to ICTs] is not enough, it is the ability to create, to add value, that is important”

Felipe Gonzalez  
former Spanish Prime Minister,  
Speaking at Open Source conference in Málaga, Spain, 18/2/04

(Source: “Counting potatoes” by Gonzalez-Barahona et al)



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# The worth of free software

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- Debian 2.2 GNU/Linux (2001):
  - Source lines of code: 55,201,526



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# The worth of free software

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- Debian 2.2 GNU/Linux (2001):
  - Source lines of code: 55,201,526
- If Debian was written in a software company:
  - Estimated effort: 14,005 person years
  - Estimated schedule: 6.04 years (team of 2,318!)
  - Development cost: US\$ 1,891,990,000

(Source: "Counting potatoes" by Gonzalez-Barahona et al)

# The worth of free software

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- Debian 2.2 GNU/Linux (2001):
  - Source lines of code: 55,201,526 (of which Linux forms *under 6%* – Stallman is correct!)
- If Debian was written in a software company:
  - Estimated effort: 14,005 person years
  - Estimated schedule: 6.04 years (team of 2,318!)
  - Development cost: US\$ 1,891,990,000
- Price of access to the public – and businesses:
  - Usage: Free; Copying: Free; Editing: Free

(Source: "Counting potatoes" by Gonzalez-Barahona et al)



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# Skills and economic growth

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- **Skills development: “the ability to create”**  
FLOSS is a training environment that increases the earning capacity of community participants without any explicit investment in training: a novel form of technology transfer
- **Economic growth: “ability to add value”**  
FLOSS allows local entrepreneurs to provide a greater share of total value added, thus retaining a greater share of profits within the local economy



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# FLOSS develops local skills

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- Free software is a training environment that enables the ability to create and participate in the information society.
- Free software communities increase the earning capacity of community participants without any explicit investment in training: a novel form of technology transfer.



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# FLOSS develops local skills

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- Not skills *to use* FLOSS applications, but skills *learned from* participating in the FLOSS community
- Skills learnt through participating in the FLOSS community:
  - programming
  - copyright law and licenses
  - teamwork and team management



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# FLOSS develops local skills

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- ❑ 70% participate in FLOSS communities to “learn and develop new skills” [1]
- ❑ Developers say technical, legal and management skills learnt are learnt better in FLOSS communities than in formal courses [2]
- ❑ Employers agree with this [2]

1. FLOSS 2002 survey – [flossproject.org](http://flossproject.org); 2. FLOSSPOLLS 2005 survey - [flosspols.org](http://flosspols.org)



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# Employers value these skills

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- Developers say that skills learnt in FLOSS communities gets them jobs
- In an EU survey of firms, employers say proven experience in FLOSS communities can compensate for a lack formal degrees



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# Local value addition: proprietary

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## □ Building over a platform

This applies equally to any platform, which is simply used as a (non-modifiable) base on which new services or software are built: 100% of the added value is local

## □ Sales commissions

Something which is rarely possible with free software, but also represents little value. Only the commission is retained locally, which is a small part of the total value.

## □ Support, integration, customisation...

Local value addition limited, as “deep” (high-value) services require “deep” access – only the proprietor has it.



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# Local value addition: FLOSS

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## □ Building over a platform

As with proprietary software, free software platforms can be used as a (*modifiable!*) base on which new services or software are built: 100% of the added value is local

## □ Sales commissions

Rarely possible with free software, but also represents little value. However, the entire “sale price” can be retained locally, as no proprietor has to be paid a royalty or licence.

## □ Support, integration, customisation...

Local value addition extensive, as “deep” access is available. 100% of such services can be provided locally, retaining 100% of the value locally.



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# Extremadura: Free software society

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- ❑ Poorest region in Spain, one of the poorest in Europe
- ❑ Agricultural and remote with limited transport infrastructure
- ❑ 1999: EU telecoms liberalisation threatened to sharpen a digital divide



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# Extremadura: Free software society

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- Decided to “leapfrog” into the information society
- Strong political support at the highest level of government
- Principle of universal access and universal active participation



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# Extremadura: Free software society

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“We could use proprietary software to provide access to all government officials, even all doctors and lawyers, but to provide access to all *citizens* – to *everyone* – we had to use free software”



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# Extremadura: Free software society

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- Public Internet access points in every village, 2mb connectivity
- Public libraries in every village
- A computer for every 2 students in every school
- Free “digital literacy” training for pensioners, unemployed, housewives



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# Extremadura: Free software society

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- ❑ Government-supported gnuLinEx project: gnu/Linux distribution adapted to local language *and* culture
- ❑ Universally adopted by entire public sector
- ❑ Over 70 000 desktops (running now)
- ❑ Promoted for private sector too



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# Extremadura: Free software society

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- 78000 people trained in “digital literacy” programme – GNU/Linux is obviously not hard to learn!
- Training is participatory – creation of multimedia “local knowledge” archives, regional Internet radio...
- School students using gnuLinEx
- Teachers trained to use gnuLinEx



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# Extremadura: Free software society

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- Business incubator provides business plan assistance
- Encourages new local startups to provide services and support
- Locally developed (private-sector) applications include FacturLinEx, free software invoice/billing system



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# Extremadura: Free software society

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- From a backward, poor region to a leader in many key indicators of ICT access – in FOUR YEARS
- Won the European Regional Innovation Award (April 2004)
- Agreements to share model with Andalusia, Brazil, El Salvador...



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# Extremadura: Free software society

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“Access [to ICTs] is not enough, it is the ability to create, to add value, that is important”

Free software can make practical:

- *Access* – for everyone
- *Participation* – active, by everyone
- *Learning skills* – with low barriers



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# FLOSS lets developing countries:

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- ❑ *Rapidly* deploy information technology
- ❑ *Affordably* deploy information technology
- ❑ *Universally* deploy information technology
- ❑ Develop a *local* ICT software and services skills base and foster a *local* ICT software and services economy
- ❑ Develop an ICT infrastructure while respecting IPR, limiting “software piracy”



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# More information...

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The FLOSS project  
[flossproject.org](http://flossproject.org)  
FLOSSWorld project  
[flossworld.org](http://flossworld.org)



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