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# How can Free Software help developing countries?

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# Author introduction

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- Marco Fioretti
  - Member of
    - *OpenDocument Fellowship* ([www.opendocumentfellowship.com](http://www.opendocumentfellowship.com))
    - *Digistan.org* ([www.digistan.org](http://www.digistan.org))
    - *www.eleutheros.org* – a Catholic approach to Information Technology
    - *RULE* (*Run Up to date Linux Everywhere*, [www.rule-project.org](http://www.rule-project.org))
  - Writer for Linux Journal, Linux Format, Pc Professionale and other magazines
  - Author of the Family Guide to Digital Freedom (<http://digifreedom.net>)
  - Home page and writings:
    - <http://mfioretti.com>
    - <http://stop.zona-m.net>

# Agenda

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- Main problems of developing countries
- How digital technologies can help
- Why is software relevant
- Limits and risks of some ways to promote Free Software
- Practical suggestions and general guidelines
- Role of ICT and Free Software in developing countries
- Further readings and resources
- Conclusion/Questions

# The basics: human rights

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*Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and **to seek, receive and impart information and ideas through any media and regardless of frontiers.***

*Universal Declaration of Human Rights, Article 19, [www.un.org/en/documents/udhr/](http://www.un.org/en/documents/udhr/)*

# Poverty

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- *“The UNDP says Kosovo has the highest unemployment rate in the Western Balkans -- around 45% of the working-age population is without a job. It also has an extremely young population, with half of its citizens under the age of 25.”*

Source: [www.setimes.com/cocoon/setimes/xhtml/en\\_GB/features/setimes/articles/2009/05/18/reportage-01](http://www.setimes.com/cocoon/setimes/xhtml/en_GB/features/setimes/articles/2009/05/18/reportage-01), 18/05/2009

# Health Care

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- *“In Kosova... communicable diseases are a major health problem... Infection control in Kosova is in its infancy. The main challenges in this field [include] technological gap.”*

Source: Denial, Media and Endurance in Infection Control in Kosova, 2007/2008

[www.ijic.info/article/viewPDFInterstitial/2609/2810](http://www.ijic.info/article/viewPDFInterstitial/2609/2810)

# Health Care (2)

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- *“There was an obvious need for electronic information and distance learning since there was no medical library, information system or facility for training. The rapid training of Kosovar physicians would not tolerate the absence of physicians for training because there were insufficient personnel to cover in their absence... The situation invited electronic and telemedicine solutions with international cooperation. ”*

*Source: Telemedicine Project of Kosova, <http://telemedks.org/ENGLISH/background.html>*

# E-government

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- **Definition:** “usage of ICT in a **reciprocal** activity between... state, citizens and businesses... Communicating with citizens through ICT, means they are considered government clients and not objects that are being governed. This brings governments closer to the citizens and empowers democratic governance as a whole.”
- (just as in Free Software, isn't it?)

Source: *Effect of e-Cadastre in Land Management in Kosovo and in Other Post Conflict Countries*, 2006

[www.fig.net/pub/fig2006/papers/ts50/ts50\\_01\\_murat\\_0392.pdf](http://www.fig.net/pub/fig2006/papers/ts50/ts50_01_murat_0392.pdf)

# How digital technologies can help

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- Cost reductions in public and private sector
- Energy efficiency
- Efficient healthcare
- Optimal education

# Cost reductions

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- Just one quick example from Italy (2007):
  - *"the order of magnitude of costs and inefficiencies in management of paper documents is between 3 and 5% of GNP, which amounts to a total toll between 42 and 70 billions of Euro"*
  - *"adoption of digital document can bring savings from 50/60% (electronic billing, digital-only archives) to 90% (certified electronic mail)"*

Source: <http://mfioretti.com/it/feltre-formati-dei-file-pluralismo-informatico>

# Efficient energy management

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*"Increased use of digital information" is one of the essential prerequisites to build the Smart Energy Grid that will help lower USA dependence on foreign energy and fuel job creation.*

Source:[www.consortiuminfo.org/bulletins/apr09.php#feature](http://www.consortiuminfo.org/bulletins/apr09.php#feature)

# Efficient Healthcare

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- Electronic Health Records (EHR) are single computer files, or database records, containing the complete medical history, drug records, test results and surgeries of an individual.
- Complete and **portable** EHRs could help to greatly reduce paperwork, money and time spent in hospitals and labs, or when moving from one city, health insurances or service provider to another.
- ...if **all** computers can read them, of course!

# Better services and Public Administration

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- Publishing online raw data and decision processes of Public Administrations carries along:
  - more direct control from more citizens
  - accountability
  - optimal usage of public money
- In other words, openness, participation and more money left available for critical tasks.

# Why is software relevant?

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- What matters isn't software, but what is done *through* and thanks to software
- Software and digital data can help tremendously to achieve all the crucial goals just mentioned
- Your own civil rights and the quality of your own life heavily depend on how software is used **around you**

(<http://digifreedom.net/node/84>)

# 2008: Hague Declaration on Digital Rights

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- Government information, services and resources are increasingly provided virtually rather than physically;
- Freedom of speech and association are increasingly exercised on line rather than in person;
- The Internet and the Web provide an unprecedented avenue to equality of education and opportunity for all peoples throughout the world;

Fonte: [www.digistan.org/hague-declaration:en](http://www.digistan.org/hague-declaration:en)

# What is that makes software different?

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- There are some big potential differences for society between production of software and that of most material goods: when your car breaks or spare parts for it go out of production, **there is no retroactive damage.**

**“New and old car in Prishtina Market”**  
[www.flickr.com/photos/blandm/297556309/](http://www.flickr.com/photos/blandm/297556309/)



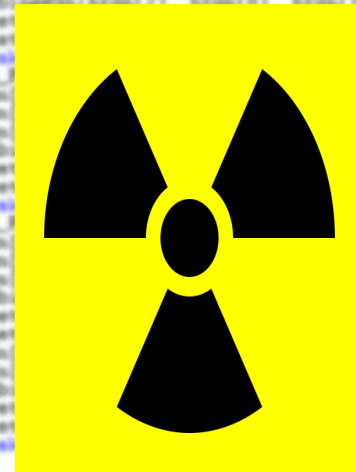
- Your next car won't have to be compatible with everything you did with the old one: all the memories of all the trips made with your old car, all the business relationships built thanks to it, will still be there.

- Secondly, your new car needs not be "compatible" with the cars that your neighbors or co-workers use.

# Why and how is software dangerous?

- If a software maker goes bankrupt or simply discontinues a product, instead, it can put out of your reach for good all the **files** you created with it.
- If that's the case, the damages caused through software have one characteristic common, even if in an infinitely less serious way, with those caused by nuclear plants without waste management policies, or by depleted uranium weapons:
- *It will hurt even people who weren't there when it was used, for a long time after it was used.*
- Using software in the wrong way, you also limit the freedom of choice *of everybody else.*

```
switch (iFilterType)
{
    case CL_FILTERHIGHPASS:
    case CL_FILTERBANDPASS:
        hrgn[2] = CreateEllipticRgn(x11, y11, x12, y12);
        break;
    case CL_FILTERLOWPASS:
    case CL_FILTERBANDSTOP:
        hrgn[0] = CreateEllipticRgn(x11, y11, x12, y12);
        hrgn[1] = CreateRectRgn(0, 0, 19, 19);
        hrgn[2] = CreateRectRgn(0, 0, 19, 19);
        CombineRgn(hrgn[1], hrgn[0], hrgn[2], RGN_AND);
        DeleteObject(hrgn[1]);
        DeleteObject(hrgn[2]);
        break;
    case CL_FILTERNOTCH:
        hrgn[0] = CreateRectRgn(x11, y11, x12, y12);
        hrgn[1] = CreateRectRgn(x11, y11, x12, y12);
        hrgn[2] = CreateRectRgn(x11, y11, x12, y12);
        CombineRgn(hrgn[1], hrgn[0], hrgn[2], RGN_AND);
        DeleteObject(hrgn[1]);
        DeleteObject(hrgn[2]);
        break;
    case CL_FILTERDIPOLAR:
        hrgn[0] = CreateRectRgn(x11, y11, x12, y12);
        hrgn[1] = CreateRectRgn(x11, y11, x12, y12);
        hrgn[2] = CreateRectRgn(x11, y11, x12, y12);
        CombineRgn(hrgn[1], hrgn[0], hrgn[2], RGN_AND);
        DeleteObject(hrgn[1]);
        DeleteObject(hrgn[2]);
        break;
}
hrgn[0] = CreateRectRgn(0, 0, 19, 19);
hrgn[1] = CreateRectRgn(0, 0, 19, 19);
CombineRgn(hrgn[1], hrgn[0], hrgn[2], RGN_AND);
// Tapa del modello originale i bordi
FillRgn(PaintInfo hdc, hrgn[1], hbrRed);
// Filtro di eliminazione regionale, da un base sidiertidige
for(i=0; i<4; i++)
    if (hrgn[i] != NULL)
        DeleteObject(hrgn[i]);
```



# Role of software licenses in the big picture

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- The actual impact of digital technologies on civil rights and equal opportunities is a combination of many factors
- Some of them are, in decreasing order of importance:
  - General Legislation (availability of public documents online, freedom of speech, etc)
  - Hardware costs and limitations
  - Copyright regulations and copyright duration
  - Availability of official, international open standards for file formats and telecom protocols
  - Price and availability of fast Internet connections
  - Software licenses

# Role of software licenses in the big picture (2)

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- Even if, historically, problems like waste of money in SW licenses, Net Neutrality, online censorship or lack of transparency in Governments have been often first discovered and denounced by users and advocates of Free Software...
- ...quite often, the license of the software involved in some “digital rights” problem is either irrelevant or a really secondary issue.
- Examples:
  - *You can build the perfect police/censorship state using only Free SW*
  - *You can destroy Net Neutrality using only Free SW in routers*
  - *Using Free SW in e-voting machines solves none of the big, real problems with e-voting*  
*(cfr <http://digifreedom.net/node/52>)*

# Limits and risks of some ways to promote FOSS

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- Promote Software Freedom for the sake of software, for love of programming
- This risk is always present if using exclusively, and acritically, FSF/ Gnu language and points of views
- The practical consequences can be very serious:
  - Isolation
  - Alienation of non-programmers (that is ~95% of human beings)
  - Fighting the wrong battles
  - Less occasions for Free SW to make the world a better place

# Example: wrong attitudes/communication strategies

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- *“Free SW is about COMMUNITY: since you got for free some software that everybody can improve, you are a parasite to be ignored if you don't do just that. Even if you can't code”*
- In real life, the principle that to ask for support or changes in a "community"-driven software you must contribute to it is disturbingly elitist and...sends the message that other communities, including the one of all human beings, are worthless

(more examples at <http://digifreedom.net/node/56>)

# Example: too narrow views

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- *“A non-free program systematically denies the users the freedom to cooperate”*

R. M. Stallman in a 2005 interview (<http://kerneltrap.org/node/4484>)

- The truth: in real life today, almost all users are **NOT programmers**
  - therefore, proprietary software doesn't deny them “freedom to cooperate” any more than “Free as in Freedom” software
  - if the software doesn't work, they are unable to cooperate with each other to improve it, even if they have the source code
  - Solutions like “hire a programmer to do it for you” are very often purely theoretical  
(more on this at <http://digifreedom.net/node/57>)

# Practical suggestions and general guidelines

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- Acknowledge the limits of some concepts
- Fight the right battles, in the right order

# What is really important?

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## FSF, 1984:

*"So that I can continue to use computers without dishonor, I have decided to put together a sufficient body of free software so that I will be able to get along without any software that is not free"*

*R.M. Stallman, The GNU Manifesto  
[www.gnu.org/gnu/manifesto.html](http://www.gnu.org/gnu/manifesto.html)*

# What is really important? (2)

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## FSF Latin America, 2009:

*Software Freedom activists have a responsibility to present values, defending and disseminating the essential Freedoms that define Free Software*

...

*Governments must... ensure the control of the goods they administrate and regulate... through Software that brings with it freedom to run it for any purpose, to study its source code to understand its functioning and adapt it to their own needs*

### *Caracas Declaration*

[www.fsfla.org/svnwiki/anuncio/2009-07-declaracion-de-caracas](http://www.fsfla.org/svnwiki/anuncio/2009-07-declaracion-de-caracas)

# What is really important? (3)

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2005:

*Almost all software applications are used to manage information so these applications are **worthless** without information to process, store and display...*

*the result of [proprietary file formats (**not software**)... is that digital information isn't always under the complete control of the person who created it.*

*M. Fioretti, Format wars*

*[www.freesoftwaremagazine.com/articles/focus\\_format\\_history](http://www.freesoftwaremagazine.com/articles/focus_format_history)*

# What is really important? (4)

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2009:

*“these databases that grow through user contributions are the real source of lock-in. Eventually, these guys probably will make their software open source because **it won't matter**. The value lies in having the data.”*

*Tim O'Reilly*

*[http://news.cnet.com/8301-13505\\_3-10264471-16.html](http://news.cnet.com/8301-13505_3-10264471-16.html)*

# Are computers and Internet always good and necessary?

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- Slogans like “a computer in every village” or “one laptop per child” are not always put in practice out of complete, realistic assessments of the actual needs and capabilities of the potential beneficiaries
- The underlying, unspoken dogma:

*“computers and/or Web connections will (without additional efforts) provide increased social justice, enable local peoples to sell their products in the world market, feed the hungry, meet unmet medical needs...”*

Source: Bridging the Digital Divide: Lessons from India, [www.mit.edu/people/kken/PAPERS/Intro\\_Sage.html](http://www.mit.edu/people/kken/PAPERS/Intro_Sage.html)

# Sometimes, simple and offline is better

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- Unwired computers can be all that is needed in many cases:

*“here in rural Uganda we use web browsers not to surf the Internet, but to browse agriculture manuals distributed in HTML format on CD-Rom. In that way users must only learn how to use one program”*

*Source: [www.linuxplanet.com/linuxplanet/interviews/5567/1/](http://www.linuxplanet.com/linuxplanet/interviews/5567/1/)*

- Side note: the automatic online update procedures so popular among western Gnu/Linux users are more a liability than an asset in countries without affordable, flat rate broadband connections, and can make Linux much less popular than Windows.

# Role of ICT and Free SW in developing countries

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- Computers, Internet and (Free) Software are not self-justifying magic tools
- In most cases they can only make sense, in developing countries, as new tools for solving *preexisting, concrete, local problems: food, employment, education, health, democracy and so on*
- **Wrong question:** “How can I convert more everybody to Free Software?”
- **Right questions:**
  - "when, where and how could I use computers and Internet to guarantee human rights and concrete, essential needs? What is the best way? What are the best tools?"

# Where to start and how?

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- If you love Software Freedom...
  - start from Free file formats and Open access to data
  - especially in Public Administrations and schools
- Remember: regardless of its quality and license, most software is useless without data to process and exchange
- Software is like pens, formats like alphabets: if the alphabet is free, it doesn't matter which pens are used

# Free as in Freedom access to public digital data

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- Publishing online without legal restrictions but respecting privacy public raw data like maps, census records, wheather surveys, agricultural statistics, court rulings or internal budgets makes it possible (even if the implementation is not Free Software):
- **generation of wealth:** if both public agencies and private businesses can freely use all those data to make better decisions and offer new services, they'll minimize their expenses
- **much more control** from private citizens on their Administrations, as well as closer cooperation with them:
  - everybody could develop Web interfaces to display things like who got money from a public contract, percentage of contracts assigned to some firm from each public officer, and so on.

# Demand Open File Formats for all public documents

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- Demand that all Public Administrations and Schools, at all levels, only accept and store office files in non proprietary standard formats like OpenDocument (the only viable alternative today to the forced upgrades caused by the continuous changes in .doc, .xls and .ppt file formats)
- Result:
  - leave all their partners free to use whatever office software they like best, immediately
  - protect the pockets and freedom of choice of millions of small businesses, schools and students

# Education!

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*“Kosova has an extremely young population, with half of its citizens under the age of 25.”*

- Demand that:
  - only Free Software is used to teach programming
  - only open file formats are used in schools and universities, so that users of Free Software are never discriminated
- When certification is proposed, evaluate certification programs made to order to promote FOSS and cooperation among young generations like the INGOTs ([www.theingots.org/](http://www.theingots.org/))

# Map your country!

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- Geographic Information Systems (GIS) make it much easier and less expensive to analyze and correlate data and events which happen close to each other
- Digital maps are one of the most important digital tools of our time
  - *"Who controls the map controls how people perceive the world"*
  - *"Map, or you will be mapped"* ("Mapping Hacks", O'Reilly)
  - *"Kosovo is missing one major thing to become a tourist attraction and a serious business partner: Online Street maps with street names"* James Michael DuPont, SFK09 organizer  
<http://sfck09.blogspot.com/2009/06/openstreemaporg-process-started-for.html>
- **Join the WikiProject Kosovo at OpenStreetMap!** ([http://wiki.openstreetmap.org/wiki/WikiProject\\_Kosovo](http://wiki.openstreetmap.org/wiki/WikiProject_Kosovo))
- **Promote adoption of Free SW in Kosova e-cadastre** ([www.fig.net/pub/fig2006/papers/ts50/ts50\\_01\\_murat\\_0392.pdf](http://www.fig.net/pub/fig2006/papers/ts50/ts50_01_murat_0392.pdf))

# Don't forget your cultural heritage

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- Tales, legends, costumes, proverbs, music, recipes, pictures, films of traditional activities, and so on constitute the soul of each people
- Today all this can be preserved and kept accessible from future generations very easily and cheaply, in digital formats, using only Free Software
- **Don't wait until it's too late!**

But remember to only use file formats which are completely documented, fully open international standards to save the heritage of your country!

# Only market what everybody needs from Free Software

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- Mention licenses and source code as little as possible
- Point out that Free Software:
  - doesn't impose rigid solutions from the outside, but can be always, legally adapted, at the lowest possible cost, to actual local needs at all levels:
    - **economics** (no per-seat licensing, can work on obsolete computers)
    - **language**
    - **functional:** (ex: business or tax software which has all and only the features required by, and compatible with, local laws)
- Creates high level jobs which, being focused on custom *service of local needs*, *is much harder to outsource...*

# Send the money where it is needed most

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- When public or private funding is available, give priority to **specific** FOSS projects which fill unique, locally relevant needs
- Some examples:
  - Localization of basic software (Gnome, KDE, OpenOffice, Firefox, CMS...)
  - Geographic information systems, digital mapping efforts
  - Cultural preservation, e.g. databases preserving
  - Distance learning
  - Healthcare: hospital management, digital databases for dentists, family doctors..
  - Professional applications for local businesses
    - tax software
    - customer and inventory management

# Conclusion

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- Software Freedom...

- Focusing on source code and on the freedom to study, improve and share it is sufficient when the only goal is guarantee the freedom of those users... *who also want and can be programmers*

- Or Software *for* Freedom?

- If the goal, instead, is to use Free Software to spread and increase freedom, cooperation, friendship, community in our societies:
  - Wonderful! Free Software is an excellent tool to reach that goal
  - As long as you always start from people, instead of programming, and stay close to them

# Suggested reading

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- Bridging the Digital Divide: Lessons from India [www.mit.edu/people/kken/PAPERS/Intro\\_Sage.html](http://www.mit.edu/people/kken/PAPERS/Intro_Sage.html)
- How to turn into Free Software supporters people who couldn't care less  
<http://digifreedom.net/node/103>
- Seven things we're tired of hearing from software hackers <http://digifreedom.net/node/56>
- A Free Software Manifesto for the rest of us <http://digifreedom.net/node/57>
- Free and open geographic data: Open Source solutions for the landscape, citizens and businesses  
<http://mfioretti.com/free-and-open-geographic-data-open-source-solutions-landscape-citizens-and-businessess>
- How file formats can be used to favor (or hamper) innovation, active citizenship and really free markets  
<http://mfioretti.com/how-file-formats-can-be-used-favor-or-hamper-innovation-active-citizenship-and-really-free-markets>
- Hague Declaration on Digital Rights [www.digistan.org/hague-declaration:en](http://www.digistan.org/hague-declaration:en)

# Final greetings, questions, contact info

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## • Questions?

- Comments, feedback, info and pointers to any project in the fields covered in this talk are always welcome!
- Email address: [marco@digifreedom.net](mailto:marco@digifreedom.net)
- More articles and news about digital rights and Free Software:
  - <http://mfioretti.com>
  - <http://digifreedom.net>
  - <http://stop.zona-m.net> (from Sept 2009, will also explain digital rights issues to non programmers)
- Thanks for your time by Marco Fioretti!