Overview of Free and Open Source Tools-II
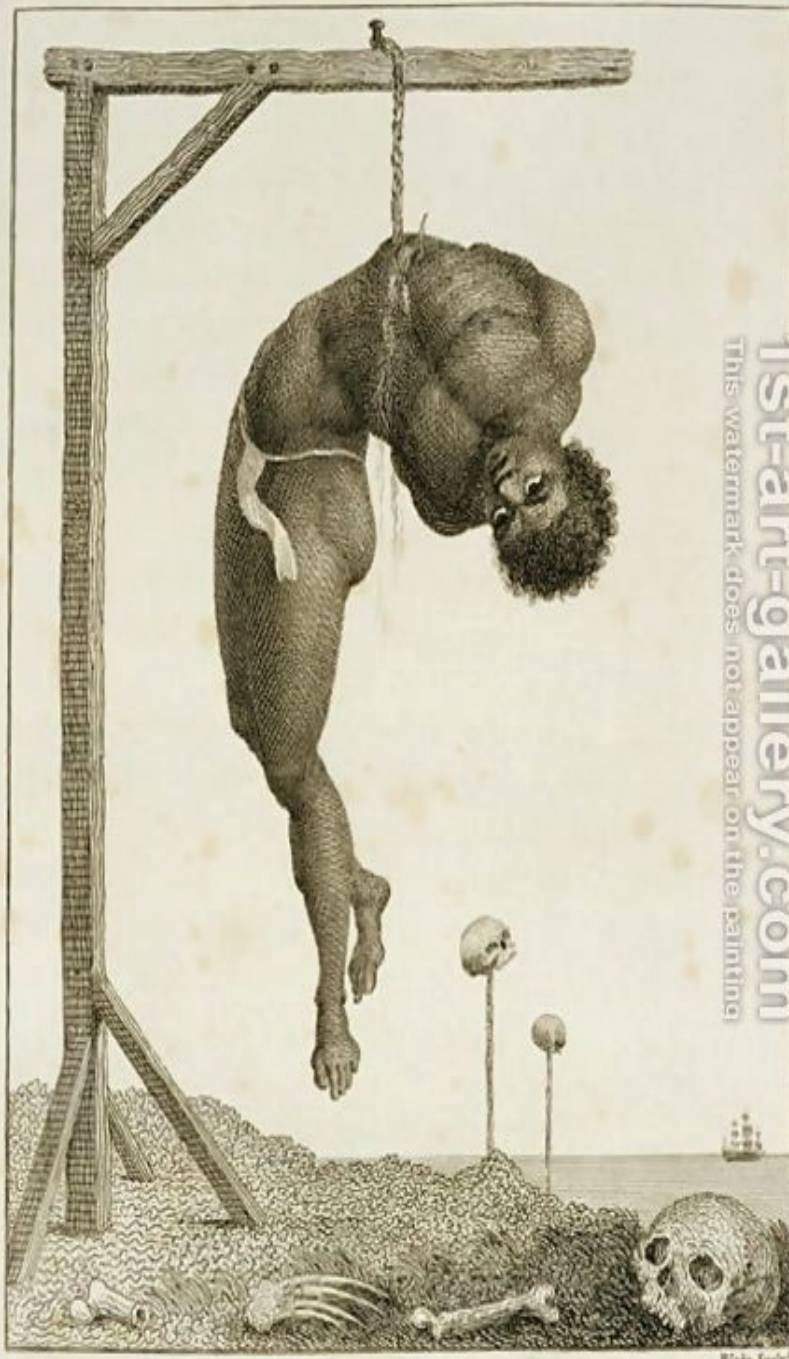
H.S.Rai

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OSGeo India

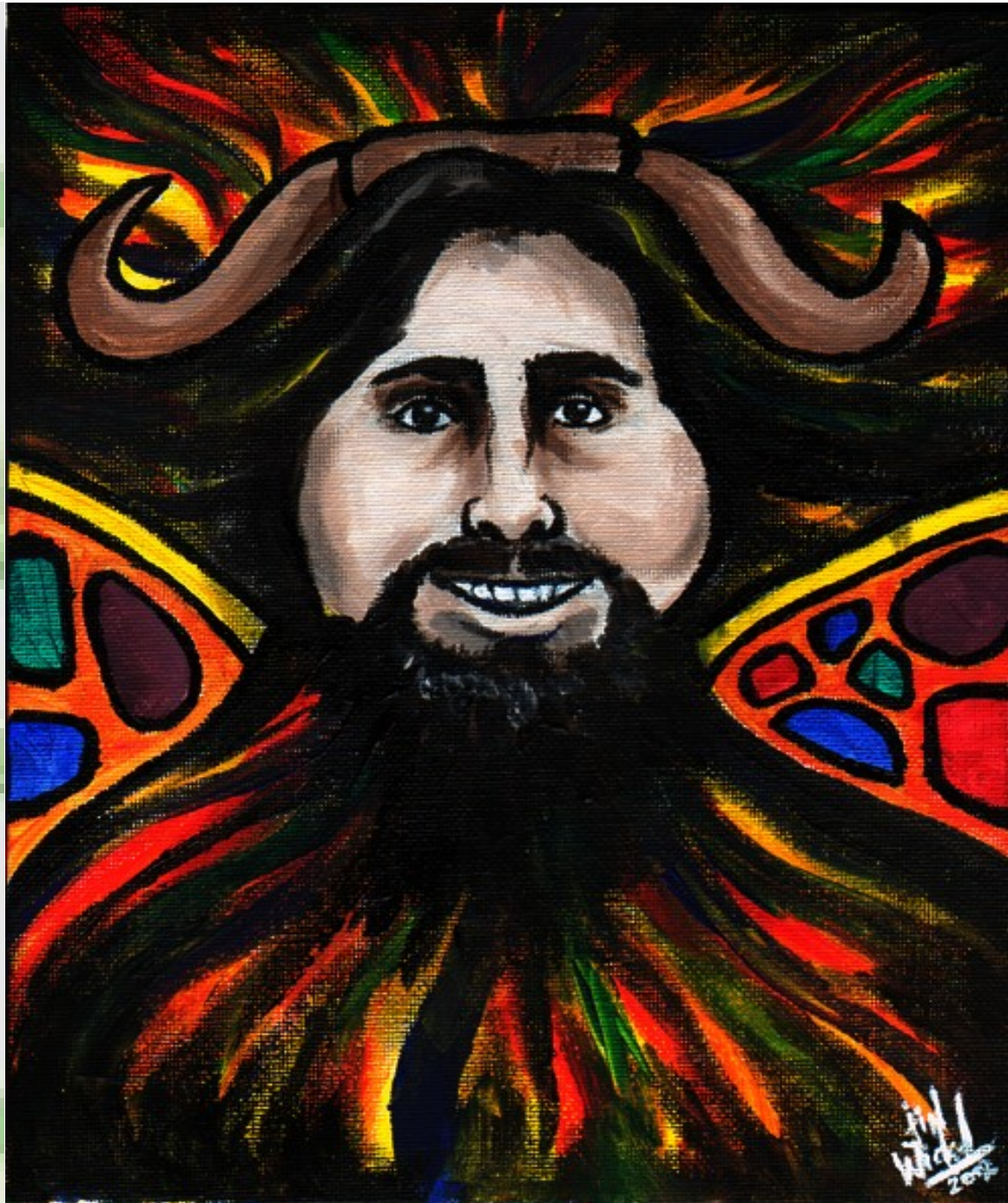*1: What does it signify*

2: *Slave*

3: Identify

4: Recent photo

5: Painting

Richard Matthew Stallman

a programmer at the MIT Artificial Intelligence Laboratory

graduated from Harvard magna cum laude earning a BA in Physics in 1974

1977: password control system. found a way to decrypt the passwords, suggesting no password, 20% followed

1979: "time bombs" in Scribe, to restrict unlicensed access to the software, RMS proclaimed it "a crime against humanity.

Blocking the user's freedom that he believes is a "crime", not the issue of charging for the software.

In 1980, Stallman and some other hackers at the AI Lab were refused access to the source code for the software of the first laser printer.

Modified the software on an older printer, messaged a user when job was printed, and would message all logged-in users when a printer was jammed.

Not being able to add this feature to the printer was a major inconvenience, as the printer was on a different floor from most of the users. This one experience convinced RMS of people's need to be free to modify the software they use.

software users should have the freedom to "share with their neighbour" and to be able to study and make changes to the software that they use. He maintains that attempts by proprietary software vendors to prohibit these acts are "antisocial" and "unethical".

announced the plan for the GNU operating system in September 1983 on

several ARPANET mailing lists and USENET
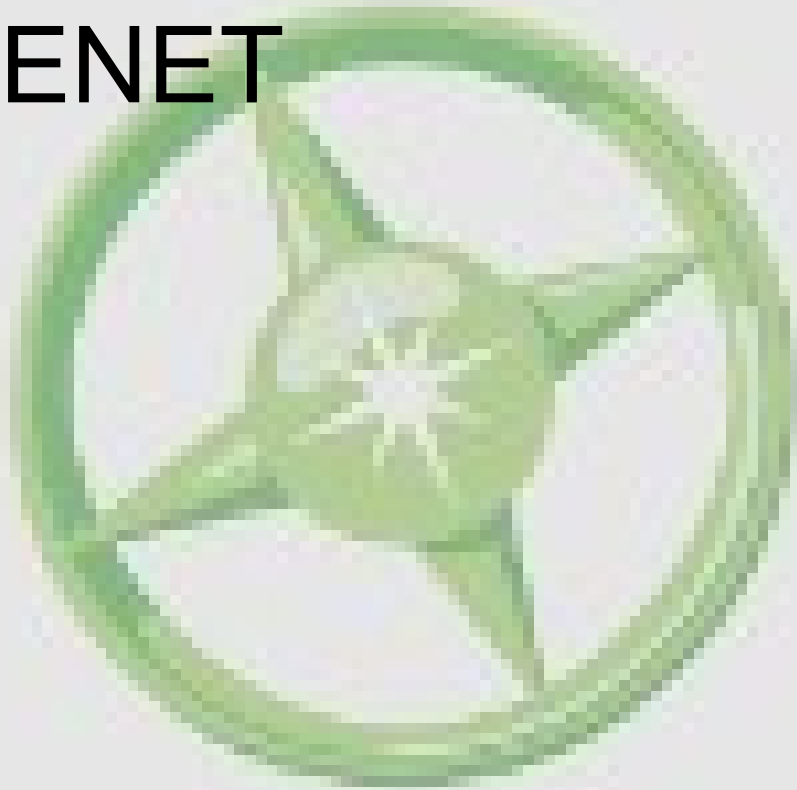
<u>Links</u>

fsf.org.in

fsf.org

gnu.org

directory.fsf.org

6: Identify

7: Same guy

Mark Shuttleworth

Studied finance and information technology at the University of Cape Town

Founded Thawte, a company specialising in digital certificates and cryptography. Sold it to US company VeriSign in 1999

Founded HBD Venture Capital and The Shuttleworth Foundation.

Moved to London in 2001, and began preparing for the First African in Space mission

Got training in Star City, Russia, and Khazakstan.

Flew in space on April 2002, as a cosmonaut member of the crew of Soyuz

mission TM34 to the International Space Station.

2004: Founded the Ubuntu project, which aims to produce a free, high quality desktop OS for everybody.

Archimedes

Solution Provider

Software License

The software is licensed, not sold. This agreement only gives you some rights to use the software. Owner reserves all other rights. Unless applicable law gives you more rights despite this limitation, you may use the software only as expressly permitted in this agreement. In doing so, you must comply with any

technical limitations in the software that only allow you to use it in certain ways.

Who reads license?

PC Pitstop included a clause in one of its own EULAs that promised anyone who read it, a "consideration" including money if they sent a note to an email address listed in the EULA. After four months and more than 3,000 downloads, one person finally wrote in. That person, by the way, got a check for $1,000 proving, at least

for one person, that it really does pay to read EULAs.

Why FOSS

www.dwheeler.com/oss_fs_why.html

- ➢ Has significant market share

- ➢ Is often the most reliable software

- ➢ In many cases has the best performance

➢ Scales well, both in problem size and project size.

➢ Has far better security

➢ Total cost of ownership is often far less

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Open Source Initiative

Open source is a development method for software that harnesses the power of distributed peer review and transparency of process. The promise of open source is better quality, higher reliability, more flexibility, lower cost, and an end to predatory vendor lock-in.

➢ 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 sale.

➢ Source Code: The program must include source code, and must allow distribution 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.

➢ Derived Works: The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

➢ 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.

➢ No Discrimination Against Persons or Groups: The license must not discriminate against any person or group of persons.

➢ 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 genetic research.

➢ 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.

➢ 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.

➢ 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.

➢ License Must Be Technology-Neutral: No provision of the license may be

predicated on any individual technology or style of interface.

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What is Free

Nobody should be restricted by the software they use. There are four freedoms that every user should have:

➢ the freedom to use the software for any purpose,

➢ the freedom to change the software to suit your needs,

➤ the freedom to share the software with your friends and neighbors, and

➤ the freedom to share the changes you make.

When a program offers users all of these freedoms, we call it free software.

http://www.sci.brooklyn.cuny.edu/~sdexter/copyleft_ethics.html

Copyleft software licenses require all modified versions of the software to be released under the same licensing terms as the original.

Hence, copylefted free software is required to remain free in all future versions. Non-copylefted software is not subject to this requirement; thus non-copylefted free software may become proprietary in future versions.

The FSF makes clear that its motivation in creating the FSD is the preservation of a freedom granted by society rather than by a particular programmer7. The preservation of the freedom of all software users, now and in the future, is a moral and social imperative. This concern for the freedom of future users is reflected by the use of copyleft in the GPL.

The OSD emerges from a desire for technical efficiency (acknowledging the technical strength of free software8) and neo-liberal business pragmatism (Berry 2004). Indeed, the stated motivation for the promulgation of the OSD is widespread corporate adoption of the free software development model. The text of the FSD deploys an explicit language of freedom and community, while the terms of the OSD are presented

in dialog with explicitly business-oriented pragmatic 'rationales' attached to each clause of the Definition. For example, Clause 6 of the OSD ("No Discrimination Against Fields of Endeavor") reads:

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 genetic research.

This statement is accompanied by the following 'rationale':

The major intention of this clause is to prohibit license traps that prevent open source from being used commercially. We want commercial users to join our community, not feel excluded from it.

The FSD states the same requirements with this language:

[Users must have the] freedom to run the program, for any purpose…. The freedom to use a program means the freedom for any kind of person or organization to use it on any kind of computer system, for any kind of…job, and without being required to communicate subsequently

with the developer or any other specific entity.

Through its language and strong identification with copyleft licensing, the FSD appears to hold the interests of society paramount, while the OSD, with its concern for constraints on the individual (copyleft is one such constraint, although it is not explicitly identified as such in the OSD), seems to prioritize the

interests of the individual licensee. A copyleft license need not use the ideological language of the FSD; it might simply state its requirements in pure legalese. That the GPL does borrow language and ideology from the FSD

Free software makes available the knowledge and innovation inscribed in its source code.

This dissemination breeds independence in, and facilitates the agency of, the community of software users.

The free availability of source code also enables the community-wide critical dialogue crucial to the objectivity of computing as a scientific practice.

Both the OSD and FSD demonstrate a commitment to the idea of software being free.

The remarkable difference in the language of the two definitions, however, and the attendant encouragement on the part of the OSD of non-copyleft licensing, lead us to the questions of freedom we have considered above.

The contrast between the FSD and the OSD, and between copyleft and non-copyleft licensing schemes, reveals that our putative dilemma is resolved through

a consideration of the potential loss of liberty that is a consequence of non-copyleft licensing. Non-copyleft licenses would do well to display the ethical sensitivity manifest in the GPL and to confront the undesirable consequences of the freedoms they do permit.

The Open Source Initiative represents a schism in the free software movement: it seeks greater acceptance among

corporate developers for the free software development model, but not for its attendant political and ethical message.

In disdaining the explicit ideology of the FSD, the OSD is forced implicitly to make facile claims that writing software is just engineering, that free software is not a moral or social imperative. But these ring hollow in our world, where software is

deeply implicated in the creation and maintenance of contemporary social and political structures, ranging from electronic voting to public education to an ever-increasing set of economic transactions. That this deliberate narrowing of the free software ideal is tolerable is perhaps all we need to know in our comparative ethical assessment of the free and 'open source' software.

Navit

Car navigation system with routing engine.

It's modular design is capable of using vector maps of various formats for routing and rendering of the displayed map. It's even possible to use multiple maps at a time.

8: Navit: Bird View Mode

➢ User interface is designed to work well with touch screen displays. Points of Interest of various formats are displayed on the map.

➢ The current vehicle position is either read from gpsd or directly from NMEA GPS sensors.

➢ The routing engine not only calculates an optimal route to your destination,

but also generates directions and even speaks to you using speechd.

➢ Supports 24 languages

➢ Designed to be applied in everyday situations and by people that are not developers or technical people.

➢ http://wiki.navit-project.org/

gvSIG

Desktop application GIS designed to solve complex management and planning problems.

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10: gvSIG in action

Known for having a user-friendly interface

Features a wide range of tools (query tools, layout creation, geoprocessing, networks, etc.),
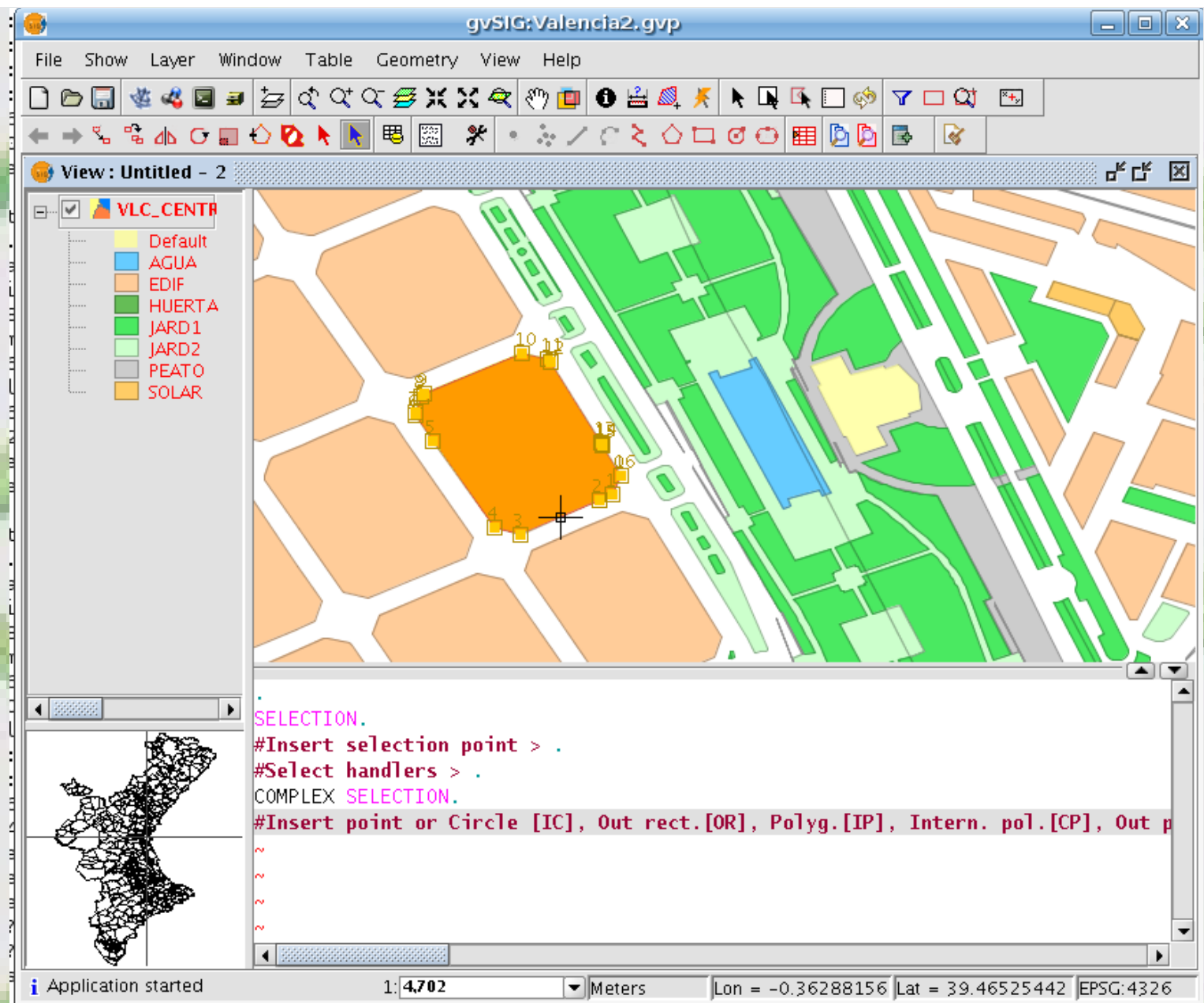
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11: gvSIG - Editing
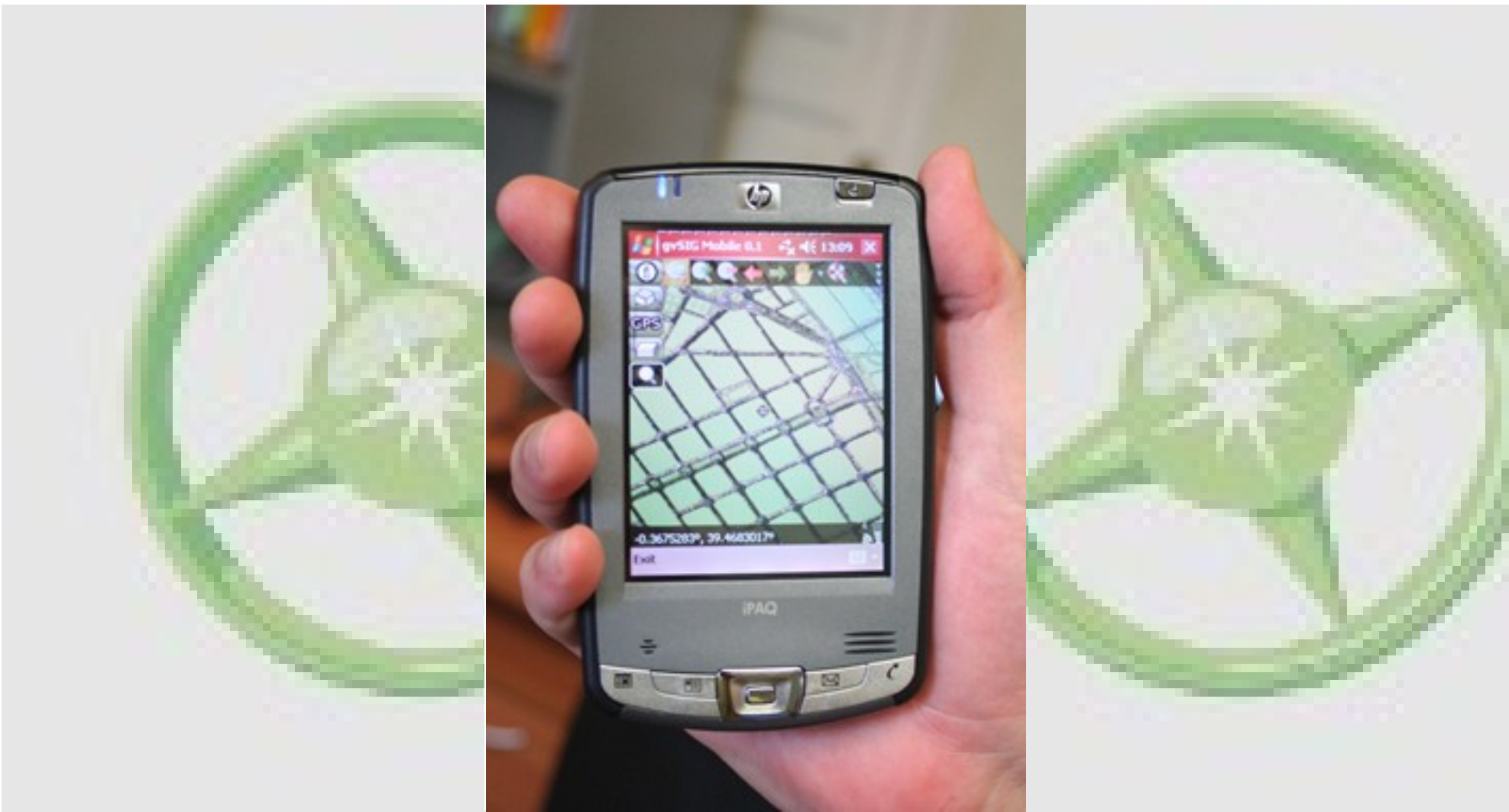
12: gvSIG on mobile

Government funded project

In the year 2003, the Regional Council for Infrastructures and Transportation (CIT) of Spain, called for tender.

Partnership of private company, Government and University (Jaume I of Castellón).

Ideal tool for users working in the land realm. gvSIG is known for:

➢ integrating in the same view both local and remote data through OGC standards.

➢ being available in several languages (Spanish, German, French, Italian,...) .

➢ being platform independent

Features

➤ Fully rich GIS desktop client

➤ Interface translated into more than 10 languages

➤ Modular: developed using independent modules adding scalability value.

➢ Standard compliant: Open Geospatial Consortium (OGC)

➢ Interoperable: able to work with most of the known data formats:

➔ raster : ecw, ENVI hdr, ERDAS img, (Geo)TIFF, GRASS, ...

➔ vector & CAD: shapefile, GML, KML, DGN, DXF, DWG

➔ databases: PostGIS, MySQL, Oracle, ArcSDE

➔ remote: ECWP (Enhanced Compression Wavelet Protocol), ArcIMS

➢ Its (Spatial Data Infrastructure) SDI client condition permits the connection, through the use of standard ADL,

➔ WMS, WFS (and WFS-T)

→ WCS, WMC

➢ Discovery services client is also provided within gvSIG which can be use to localise data resources within an SDI (catalogue and gazeteer services)

→ Catalogs: Z3950, SRW, CSW (ISO/19115 and ebRIM)

→ Gazetteers: ADL, WFS, WFS-G

- ➢ Geoprocessing tools:

  - → proximity: buffer, spatial join

  - → overlay: clip, difference, intersect, union

  - → other: convex hull, reproject, ...

- ➢ Integrated advanced CAD tools:

  - → functionality for vector data edition: modify, create and delete elements

→ command console typical element in CAD software

→ tools like help tools, grid tools, command stack, complex element selections

→ tools for inserting elements like points, polygons, lines, ellipses, etc. ...

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→ tools to modify its rotation, symmetry,...

➢ Integrated advanced raster tools:

→ georeferencing images, set image transparency, adjust bright and contrast, highlight, etc.

→ the SEXTANTE Extension of gvSIG is already available to download,

including functions oriented to morphology and hydrology fields,

➢ Advanced functionalities like

→ Scripting support

→ Powerful re-projection engine (PROJ4 wrapper)

→ 3D visualization

→ Network analysis

→ New raster analysis features like classification, rectification,...

→ gvSIG for mobile devices

gvSIG OA Digitial Edition

OA Digital

Parent company Oxford Archaeology [one of the largest independent archaeology and heritage practices in Europ (UK and France)]

gaSIG is easy to learn, yet versatile and efficient enough for demanding GIS tasks.

we believe that gvSIG has matured into a powerful application that can be used productively in many working environments, especially when used in combination with other open source solutions such as GRASS GIS.

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We have used the software in a number of our own projects and made a number of modifications to it that we feel could also benefit other users of gvSIG; including a restructuring of the program menus, an easier installer that includes everything needed in one package and integrated GRASS GIS modules.

Portable GIS

http://www.archaeogeek.com/blog/portable-gis/

To provide beginners with a ready-installed and configured stack of open source GIS tools that would run in MSwindows.

The current set of software includes:

- Desktop GIS packages QGIS (with GRASS plugin), uDIG and gvSIG,

- FWTools (GDAL and OGR toolkit)

- XAMPPlite (Apache2/MySQL5/Php5)

- PostgreSQL / Postgis

- Mapserver, OpenLayers, Tilecache, Featureserver, and Geoserver web applications.

Rich web-mapping framework.

➢ Extends geospatial-specific functionality of Pylons (Python web framework)

➢ Provides specific tools for creating web services that allow querying and editing geographic objects.

➢ MapFish also provides a complete RIA-oriented JavaScript toolbox, a

JavaScript testing environment, and tools for compressing JavaScript code.

It uses

➢ GeoAlchemy for reading/writing geographic objects from/to spatial databases,

➢ Shapely for manipulating geometries,

➢ ExtjS, GeoExt and OpenLayers for creating UIs.

SQLAlchemy database toolkit, the Mako template engine, the repoze.who and repoze.what security frameworks.

With MapFish, web-mapping application developers combine general-purpose web technologies with geospatial-oriented libraries in their applications; for example, this makes it possible to

leverage general-purpose web security frameworks to secure geographic feature web services.

Opticks

http://opticks.org/confluence/display/opticks/Welcome+To+Opticks

Opticks is an expandable remote sensing and imagery analysis software platform that is free and open source. If you are interested you can learn about the history of Opticks.

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If you've used commercial tools like: ERDAS IMAGINE, RemoteView, ENVI, or SOCET GXP, then you need to give Opticks a try. Unlike other competing tools, you can add capability to Opticks by creating an extension. Opticks provides the most advanced extension capability of any other remote sensing tool on the market.

Features

➤ Free and open source

➤ Supports the following file formats: NITF 2.0/2.1, GeoTIFF, ENVI, ASPAM/PAR, CGM, DTED, Generic RAW, ESRI Shapefile, HDF5, AVI, MPEG, JPEG, GIF, PNG, BMP

➢ Zoom, pan, rotate spatially large datasets

➢ Quickly layer GIS features, annotations, results, and other information over your data to provide context

➢ Many image display controls such as colormap, histogram, transparency, etc.

- ➢ Support for datasets larger than four gigabytes

- ➢ Analysts can quickly combine steps using graphical wizards

- ➢ Support for processing data in it's native interleave of BIP, BSQ or BIL

- ➢ Get extensions to drop in new capability.

India: IT Super power

How to accept it?

What is the percentage of Indian software on our Computer?

Be developers, not only users.

There are plenty of software in many fields, including GIS, which can be used to solve problems pertaining to respective fields. If students are not exposing themselves to OS, they are missing a big opportunity to get excellent training.

If any company / Institute is not using Opensource, then it is not taking a well informed decision. Company is not getting value on his return.

Thanks

Suggestions / Questions / Comments at: hsrai@gndec.ac.in