Free Open Source Software for Geoinformatics (FOSS4G), A Practical Example - System for Automated Geoscientific Analyses (SAGA)

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Abstract:
Over the last decade, there have been significant changes in the field of geo-information science and technology in terms of the use of the increasingly more available and high-quality geospatial data and the strong development of computer technology and software for processing and analyzing geospatial data.
One of these significant changes is a strong development and the use of Free and Open Source Software (abbreviated as FOSS, FLOSS). FOSS GIS software is increasingly gaining in importance, and has become a kind of alternative to the proprietary (closed) software, and increasingly more companies today decide to simultaneously use proprietary and free software together. Behind the development of free software is the philosophy by which a user can run, record, distribute, study and modify the source code of the software for any purpose.
The first part of the paper briefly presents the basic definitions related to FOSS and four fundamental freedoms according to Open Geospatial Consortium (OGC), by which a particular software program qualifies as free software. Also, the paper briefly presents the most desktop GIS FOSS software today used in geo-information technologies. The second part of the paper outlines the basics and the concepts of the free and open source Geographic Information System (GIS) software – System for Automated Geoscientific Analyses (SAGA). SAGA is an amazingly powerful geo-scientific program with a comprehensive fast-growing set of geo-scientific methods, and provides an effective, but easily learnable platform for the implementation of own geo-scientific methods.
SAGA features an easily approachable Graphical User Interface (GUI). The source code of the software is designed in the object-oriented language C++ and contains over 50 libraries and over 450 methods. SAGA runs on Windows, Linux and FreeBSD, both 32 and 64 bit. The software is licensed under the GPL and LGPL licenses. A special emphasis in the paper is put on analyzing satellite imagery and raster data, geo-statistical functions and terrain analysis functions, which represent state of the art in geo-scientific analysis, and such functions are difficult to find in other FOSS programs.

Keyword: Free Open Source Software, FOSS, open source, System for Automated Geoscientific Analyses