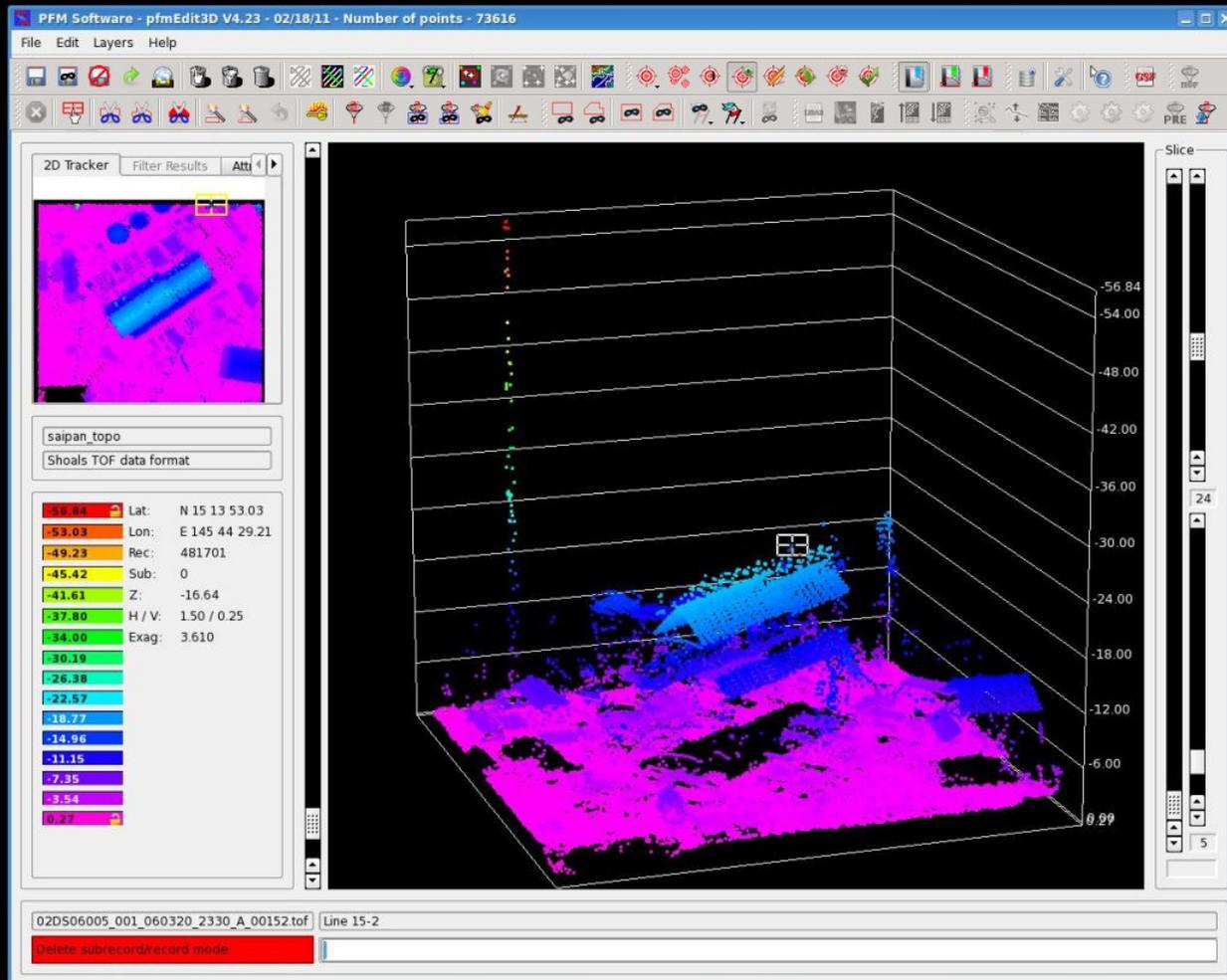


# The Future of the PFMABE Suite: The open source business model in the Hydrographic World



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## PFMABE Software Suite

Free, open source, cross platform software suite originally developed to help the Naval Oceanographic Office handle their immense backlog of collected bathymetric, multibeam sonar data.

Later adapted to edit and view hydrographic and topographic lidar data.

## What is open source?

The underlying code is available to the public for free, allowing for innovation, compilation and customization outside the usual channels.

As opposed to closed/proprietary code, where the compiled binaries/executables are sold to the customer and the underlying software code is only known to the provider.

*Open-source software is widely used for public and non-commercial applications. In addition, many independent software vendors (ISVs), value added resellers (VARs), and hardware vendors use open-source frameworks, modules, and libraries in support of their proprietary, for-profit products and services. From the customer's perspective, the ability to use open-source technology under standard commercial terms and support is valuable. Customers are willing to pay for the legal protection (e.g., indemnification from intellectual property infringement), "commercial-grade QA", and professional support/training/consulting that are typical of commercial software built on top of the innovation and independence that comes with open source. -Wikipedia*

## Notable Users of the Open Source Business Model



\$14.33B Market Cap



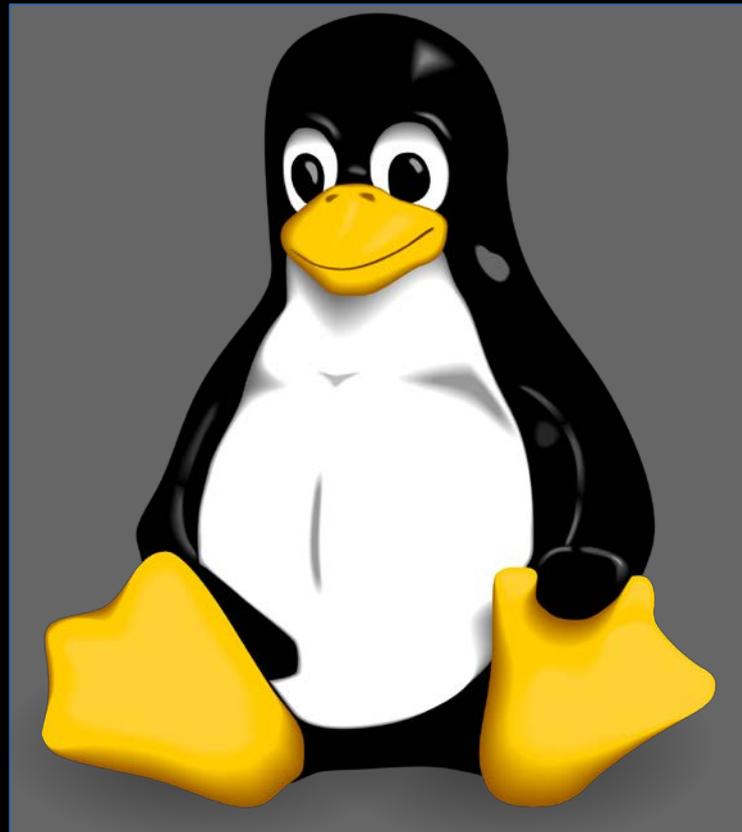
Parent company Canonical is privately held



Parent company Automattic is privately held

## What is cross platform?

Not restricted to a single operating system.



PFMABE is currently supported on Windows 7/8 and various Linux distributions via source code build. A port to Mac OS/X is possible, but has not been requested... yet.



The problem: In 1996, the Naval Oceanographic Office was years behind in editing and quality controlling it's collection of sonar data.

The solution: Area Based Editor vs Along Track Editor

The purpose: to allow hydrographers to geographically view minimum, maximum, and average binned surfaces, of sonar and lidar data, and then allow them to edit the original depth data. After editing the depth data, the bins would be recomputed and the binned surface redisplayed. The idea being that the hydrographer could view the min or max binned surface to find flyers and then just edit those areas that required it.





fileEdit3D – a fast, effective along-track editor for QA

trackLine – quick build of a decimated trackline file and minimum bounding rectangle of your data

areaCheck – display of tracklines, areas, geoTIFF and shapefiles

pfmLoad – the workhorse to build your pfm file from your data

pfmView – the heart of the editing suite, showing the binned surfaces of your data

pfmEdit3D – launched from pfmView, the editor uses a 3 dimensional editing GUI combined with powerful filter editing tools and waveform viewing capabilities to clean away noise or invalid data

pfm\_unload – writing your changes back to your files

pfmFeature – an automated, consistent, reliable target picking tool

pfmExtract – exporting your data for input into your final mapping tool



In May 2004,

The Federal Laboratory Consortium for Technology Transfer (FLC) recognized the successful transition via Cooperative Research and Development Agreement (CRADA) of government-owned software to the private sector... the release of PFMABE to SAIC (now Leidos) and IVS (now QPS).

NAVO realized a tenfold improvement in efficiency via code optimization and improvements from the partnership.

Yes. PFMABE is the father of 2 of the current major sonar editing programs now found in SABER and Fledermaus.





Released to the public...

In 2007 PFMABE was rewritten in Qt to allow for cross platform builds...

... and released without any warranty, without even the implied warranty of merchantability or fitness for a particular cause.... The software is distributed with the hope that it will be useful.

Unburdened by copyright protection, the code is freely available to any who would like to look, change and/or contribute.

And yet...

Usage outside of the Naval Oceanographic Office (NAVO) remains non-existent. (if you know of a commercial organization using PFMABE, please let me know)

The code has been widely distributed to over 350 users since the website went live. Thank you PFMABE Software and Slashdot.



Why would such a powerful, utilitarian program be so under utilized?

What is missing?

A free tool to edit and clean sonar and lidar data, running on a free OS.

And yet, no adoption outside of the Naval Oceanographic Office and JALBTCX.

With all of the other survey organizations, both government and commercial, surely someone would see the benefit of leveraging the Navy's expertise?

So why no takers?

## The path of QGIS and GRASS GIS



Quantum GIS (QGIS) is a free and open source, cross platform, geographic information system.

Gary Sherman began development in Feb 2002 while working for the US Bureau of Land Management in Anchorage, AK.

He was looking for a way to visualize postGIS data on linux.

Used AIX at work and linux at home... wanted it to be cross platform.

Decided early on to write in Qt.

Posted code to Sourceforge in July 2002 and announced it on Freshmeat. (changed to Freecode.com – now defunct)



Adoption was extremely slow in the beginning.

Mr. Frank Warmerdam inquired if he would be willing to incorporate the GDAL/OGR framework into QGIS.

Mr. Sherman agreed, and then went on to incorporate support for python plugins.

Mr. Sherman attributes this point to when the community began to really grow. Eventually, it took on a life of it's own.



The common critique – “Well... these open source projects have a tendency to just up and disappear overnight.”



*...no one wants to work on the mundane bugs and issues that creep in. Everyone wants to work on the new features, and not the hard to track bugs – Interview with Gary Sherman, by Tim Sutton of Linfiniti.com*

QGIS has now been up and running for 13 years.

32 organizations offering support and training for QGIS to commercial entities

“My biggest hope ...that QGIS can be a GIS competitor to ESRI at some level, but people in 3<sup>rd</sup> world countries and people without a lot of money can have a GIS system that is capable and easy to use without having to pay any money for it.”



Tim Sutton, Linfiniti.com

“With QGIS, we offer an alternative — software that is free of cost and free in a social sense. You can make as many copies as you like. When learners leave school one day they can use this software to build their skills, solve problems at work and make the world a better place.”

When you buy commercial software, you limit your options for the future. By learning, using and sharing Free and Open Source Software, you are building your own skills, freeing money to be spent on important things like food and shelter and boosting our own economy.

We hope you enjoy using and learning QGIS in the spirit of **Ubuntu!** “

Tim Sutton, QGIS

## GRASS (Geographic Resources Analysis Support System) GIS

Originally developed and directed the USACE-CERL (Construction Engineering Research Laboratory) in 1982, it was released to the public in 1992 and updated/patched by USACE-CERL until 1995.

Developed to meet the needs of the US Military for land management and environmental planning, it began life on a UNIX platform and was later ported to Linux.

In 1998, GRASS 4.2.1 was released by a group at Baylor University.

In 1999, the public domain license was replaced with a GNU GPL and development was taken over by an international team.



GRASS is currently used in academic and commercial settings around the world, including many government agencies and environmental consulting companies.

Founding part of the Open Source Geospatial Foundation (OSGeo.org).

GRASS GIS 7 was just released in 2015.

Currently 11 organizations offer support and training in GRASS GIS.

<http://grass.osgeo.org/support/commercial-support/>



## GRASS and QGIS

GRASS has a reputation for being rather unfriendly and not well suited to the casual, beginner user. QGIS, through a plugin, can leverage the power of GRASS, while remaining much more user friendly. The two make a powerful combination.

QGIS has become a very popular way to access existing GRASS databases, and to use GRASS tools.





Who is using open source GIS software?

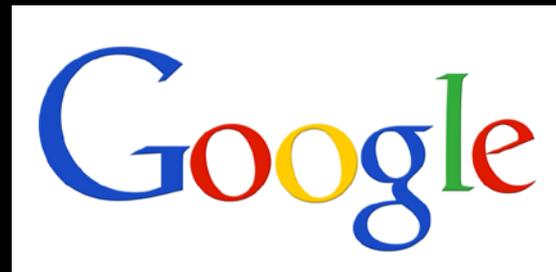
Job search at [www.indeed.com](http://www.indeed.com)

ArcGIS jobs: 2, 387

QGIS jobs: 73

GRASS GIS jobs: 31

Who is it?



VALOROUS



If the key to adoption is:

Demand

Availability of Training

Availability of Support

Continued development

Then the answer is....



The 1<sup>st</sup> to offer commercial training, support and customizability for the  
PFMABE Software Suite



With 16 years of experience in the PFMABE suite.

Backstopped by the primary software author, Jan Depner.

We at PFMABE Software, believe that you should be able to get access to your software. Under the open source software model, we believe you should have access to the training and support you need to quickly and efficiently utilize the software that you bought.

Let us help you to do more.

PFMABE Software LLC