CPSeis – an Open-Source Case History

Bill Menger

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Outline

- Get Permission
- Understand ROI
- What is your End Game?
- Pick a Target Platform
- Issues
  - Compiler changes
  - Fixing legacy code

Packaging

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Helping users
PERMISSION

• Research licenses for open source, make sure they are business-friendly. [http://opensource.org] MIT license

• I picked MIT because it is small (2 paragraphs)

• LEGAL

  - The legal team always wants to add their changes

  - DON’T LET THEM! Help them understand why the license needs to be left alone. Help them see the benefits.

  - Take your lawyer to lunch

• MANAGEMENT

  6/11/11 Make sure the company is ready to shed itself of this IP
Return On Investment

- MANAGEMENT must see value in open-source
- ROI takes on many forms for a company
  - WILL THEY STILL USE THE SOFTWARE?
    - Then ROI includes more users hitting it and finding bugs, helping with changes
    - ROI includes allowing others to work with your internal programming team
  - HAVE THEY ABANDONED THE SOFTWARE?
    - ROI includes “Good Will” among the community
- Corporate Image
- Grad School Users – recruiting leverage
END GAME

• What do you hope to accomplish?

• For CPSeis, my goal was:
  - Provide a system for undergraduate and graduate study of seismic processing
  - Provide a means for others to mine the software for algorithms

• Results to date:
  - OpenGeophysical built a product around it (OpenCPS)
  - Fusion added wrappers to the modules for their product (GeoPRO)
  - Several others have the software internally
Target Platform

This is difficult for a complete system

- Match up a good MPI
- A good Queuing system
- A good compiler (or set of compilers)
- An Operating system
- A package manager
- Third-party dependencies
- A Graphics suite/engine
Target Platform

- Click to edit the outline text format
  - Second Outline Level
    - Third Outline Level
  - Fourth Outline Level
    - Fifth Outline Level
    - Sixth Outline Level
- Second Outline Level
  - Third Outline Level
  - Fourth Outline Level
  - Fifth Outline Level
  - Sixth Outline Level
  - Torque/Maui
  - MPICH2
  - Centos 4.8 x86
  - Java 1.6
  - Ubuntu 8
  - OpenMotif
  - gfortran 4.1.2
  - gcc 3.4.6
  - Torque/Maui
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Issues

- Getting “market share”
- Compiler Changes
- Fixing legacy code
- Packaging
- Helping users
Decisionmaker Thinking
(understanding market share)

Perceived Usefulness

External Factors

Intention to Use

Perceived Ease of Use

Attitude to Using

Action

Technology Acceptance Model (TAM)
Compiler Changes and Legacy Code

- “Hard” compilers (F9x, C++)
  - GNU C++ is more strict than it used to be
  - So… legacy C++ sometimes decides to not compile
  - The work may be overwhelming… so

- Modify the Software OR

- Repackage with other Open Source components!

EXAMPLE: cbyt, va, (Viewer and Velocity Analysis)

“Easier said than done.” Fix it, merge it, use it, with others in the group.
Fixing Legacy Code

- Fortran usually not a problem (F90 F95, that is)
- F77 code is full of old errors, hard to find
- C++ (for me at least) is a nightmare
- gdb is your friend
  - (and so is “print”)
- But… Get the code to work. Put it into a structure
- Take out as many dependencies on the old environment as you can
  - e.g. hard-coded environment (ex: plotname=hoplot1, pony5...)
Packaging

- Put the code together in some kind of structure that will allow for changes
  - Because you WILL be putting in the changes – no one else will!

- When you get ready, put the source into SVN
  - Sourceforge is a good repository
  - Eclipse can be used with subclipse for end users to keep code current and to checkout/in changes

- Keep working on your makefiles and build scripts
  - Help the user pick a target platform that you can support

- Don’t try to please everyone, you will fail
Helping Users

- If you don’t have time to do the above steps...
- Then you’ll spend more time here.

- Do what you can
- Enlist others
- Try to form a support group

It all goes back to “perceived usefulness”
Screen Shots - cfe
Screen Shots - cbyt
GeoCraft

- Pure Java
- Many Platforms
- Interpretation
- AVO analysis
- Model Building
- Viewing
  - LAS
GeoCraft – SEG Salt Model
GeoCraft – SEG Salt Model
REFERENCES

- http://cpseis.org
- http://sourceforge.net/projects/cpseis
- http://geocraft.org
- http://code.google.com/p/geocraft/downloads/list
- http://opensource.org/licenses/MIT
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