ITK Examples

ITK Meeting, Iowa
David Doria, Luis Ibanez

Motivation

- Demonstrate concepts rather than classes

- The Doxygen pages are usually pretty good, but don't provide "cut and paste" solutions

- The new effort to crowdsource the Doxygen will help, but it is nice not only to have a snippet of code, but also a fully compilable example which can be run and the output inspected

Motivation (Cont.)

- The ITK Software Guide is exellent, but...

Software Guide	Examples Wiki
Cumulative	Stand alone/compilable
Large effort by few people	Natively massively collaborative
One release per decade	Infinitely rolling releases

VTK Examples

- VTK examples very successful
  - http://www.vtk.org/Wiki/VTK/Examples
  - http://www.vtk.org/Wiki/VTK/Examples/Cxx

- Proof of concept of the system

- 68,461 hits

- Many of the mailing list questions can be answered by simply sending a link to an example (real statistics on this?)

Exemplar VTK Examples

- http://www.vtk.org/Wiki/VTK/Examples/Cxx/PolyDa
- http://www.vtk.org/Wiki/VTK/Examples/Cxx/Meshes
- http://www.vtk.org/Wiki/VTK/Examples/Cxx/Filters/

- (Screenshots are tough because the pages are long...)

Structure of an Example page

- Code (.cxx file)

- CMakeLists.txt file
    - So users can continue the "copy->paste->try" paradigm
    - So users can see which libraries they must link to

- Image produced (to be continued...)

Example Images

- While ITK openly claims to not provide visualization capabilities, a visible, inspectable output of the examples is very helpful

- Users can "see what they're getting into" before they even look at a line of code

- Images also provide great regression testing

- QuickView class is written and will be provided in a module to allow this ITK->VTK visualization

Revision Control

- MediaWiki has built in revision history

- Aditionally, the wiki is "scraped" every night

- The result of the scrape is pushed to a git repository

Testing

- Just like core code, the examples must be tested to ensure they continue working as ITK evolves

- The examples are regression tested using an automatic testing framework

- main() is converted to a Test[Name]() function to be used with CTest

Testing

- All examples that produce images (a large majority of them) are tested against baseline images

- The images that are produced during the tests are automatically pushed to the wiki

Dashboards

- There are a few machines producing nightly CDash dashboards

- Multiple operating systems

Organization

- Categories on the Examples Wiki can match the new modularization effort

- It is helpful to name pages following this convention when possible:
    - Wiki/ITK/Examples/Category/MainClassDemonstrated

- This goes slighty against the "concept not class" demonstration strategy, but the link can explain the concept, where the page name matches the class for backend organizational purposes

Catalog of Mailing List Answers

- The same questions are repeated over and over on the mailing list

- When a question is answered once (and it is reasonably general), an example should be created

- The next time the same question is asked, a link to the example should be enough to answer the question

- A big time saver!

"Broken" Section

- While it should be kept as small as possible, it serves several purposes

  - If someone starts work on an example but doesn't fully complete it, it can be placed here for someone else to finish

  - If someone has a question for the mailing list, rather than sending code in an email, they can explain the problem in the email and post a link to a broken example, which can either be fixed by someone who reads the question on the list, or by the person asking the question once they resolve their issue.

ITK Examples Wiki

- http://www.itk.org/Wiki/ITK/Examples

- Has been seeded with ~50 examples