

# ITK Examples

ITK Meeting, Iowa  
Presenter(s)

# 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 excellent, 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/PolyData>
- <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
- Additionally, 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 slightly 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