



# ITK v4 – The Next Generation

*What's new in ITK v4?*



Julien Jomier, Kitware  
julien.jomier@kitware.com

# ITK v4

- 10 years old
- \$5 Million in funding
- ARRA funds
- 1.5 years
- Preparing for the next 10 years
  
- Beta release: October 2011
- 4.0 release: December 2011



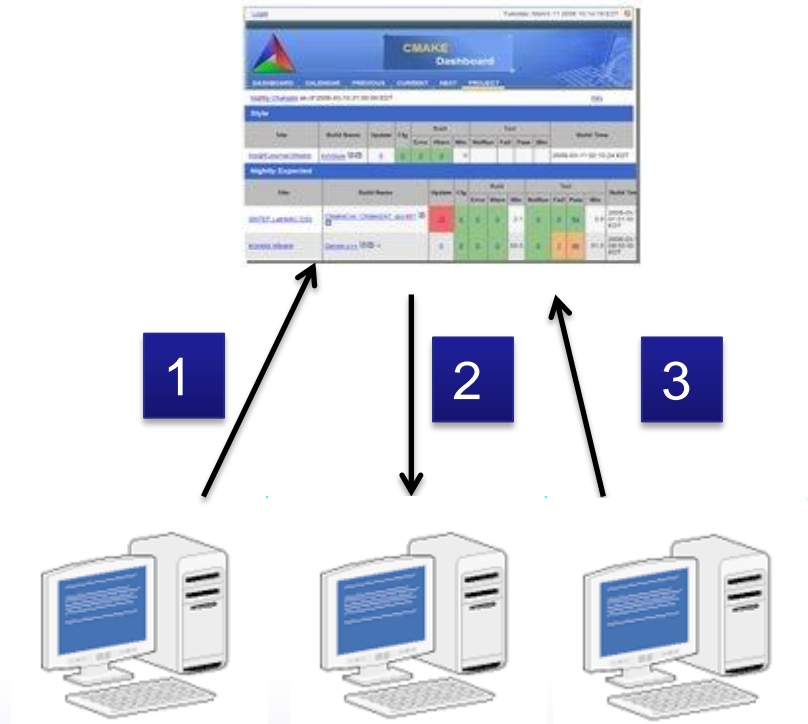
# License

- BSD to Apache 2.0 License
  - Patents right given by the authors
- Patented directory removed



# Software process

- GIT
- Gerrit
- cdash@home
- Improved Testing Data



# Modern C++

- Deprecated compilers
  - Visual Studio 6.0, 7.0
  - Borland 5.5
  - Sun CC < 5.9
  - SGI CC
  - MWORKS
  - Cygwin
  - GCC < 3.4



# 64 Bits support

- Since 2008
- In Windows 64 bits: unsigned long is 32 bits
- Use typedef
- CMake: `ITK_USE_64BITS_IDS`



# Modularization

- 98 Modules
- Groups
- External Modules



# Statistics Framework

- Refactorization





# DICOM Support

- GDCM 2.0
- Query / Retrieve
- RT Struct



# Simple ITK

- Hiding Templates
- Smarter IO
- Procedural Programming
- Easier Wrapping
- Binary Distribution



# New Fields

- Microscopy
- Video
- Remote Sensing



# Video Bridge

- OpenCV
  - <https://github.com/InsightSoftwareConsortium/ITK-OpenCV-Bridge-Tutorial>
- VXL
- Video Filters
- Video grabber
  - Laparoscopy
  - Ultrasound



# Microscopy

- Deconvolution
- Denoising
- Color correction
- Colocalization
- File Formats

Before and After Nearest Neighbor Deconvolution Analysis

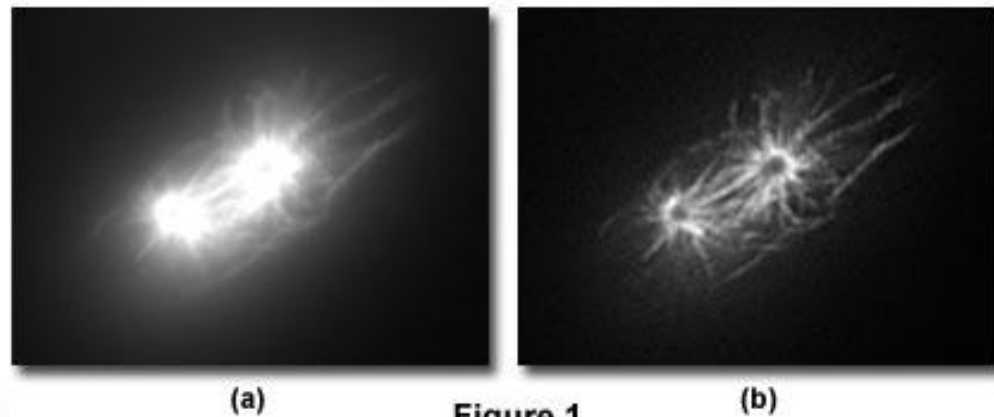


Figure 1



# Large Images

- JPEG 2000
- Tiling
- HDF5
- Multi-Resolution Levels



# Insight Journal

- Git Backend
- Virtual Appliances
- CDE (common desktop environment)
- Reproducible Research

The screenshot shows the Insight Journal website. At the top, there is a navigation bar with links for 'Home', 'Browse', 'Submit', 'Help', and 'Blog'. A search bar is located on the right side of the navigation bar. Below the navigation bar, there is a main content area with a header that reads 'The Insight Journal is an Open Access on-line publication covering the domain of medical image processing and visualization.' Below this header, there are several bullet points listing the journal's characteristics: 'Open-access to articles, data, code, and reviews', 'Open peer-review that invites discussion between reviewers and authors', 'Emphasis on reproducible science via automated code compilation and testing', and 'Support for continuous revision of articles, code, and reviews'. To the right of the main content area, there is a sidebar with a section titled 'Visualize MIDAS Journal datasets for free with VolView3.0' and a 'Try It Now' button. Below this, there is a 'Journals' section with a list of journal issues, including 'The Insight Journal' and 'The MIDAS Journal'. At the bottom of the main content area, there are three article listings, each with a thumbnail image, a title, a short description, and a 'No Option' button. The first article is 'Poisson Editing in ITK', the second is 'Loopy Belief Propagation on MRFs in ITK', and the third is 'Criminisi Inpainting'. The bottom right corner of the page features a 'Publication of the Month' section with the title 'Creating a 2D Active Shape Model Using itk:ImagePCAShapeModelEstimator'.



# More information

- [www.itk.org](http://www.itk.org)
- [http://www.itk.org/Wiki/ITK#ITK\\_Version\\_4](http://www.itk.org/Wiki/ITK#ITK_Version_4)

