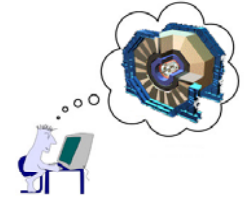


## SiD Spring Break April 2007

### General Software Issues at SiD

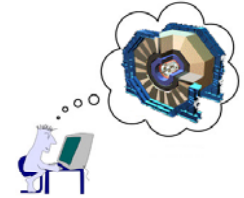
Tony Johnson  
Stanford Linear Accelerator Center  
[tonyj@slac.stanford.edu](mailto:tonyj@slac.stanford.edu)



# Outline

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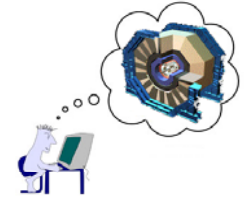
- **Topics Covered**
  - **Recap: Software Overview**
    - **Geometry**
    - **SLIC, org.lcsim**
    - **Tools**
  - **Planned Enhancements**
    - **LCIO improvements**
    - **LCGO common geometry**
  - **Documentation/Communication/Collaboration**
    - **Documentation**
    - **Forums**
    - **New SiD web site**



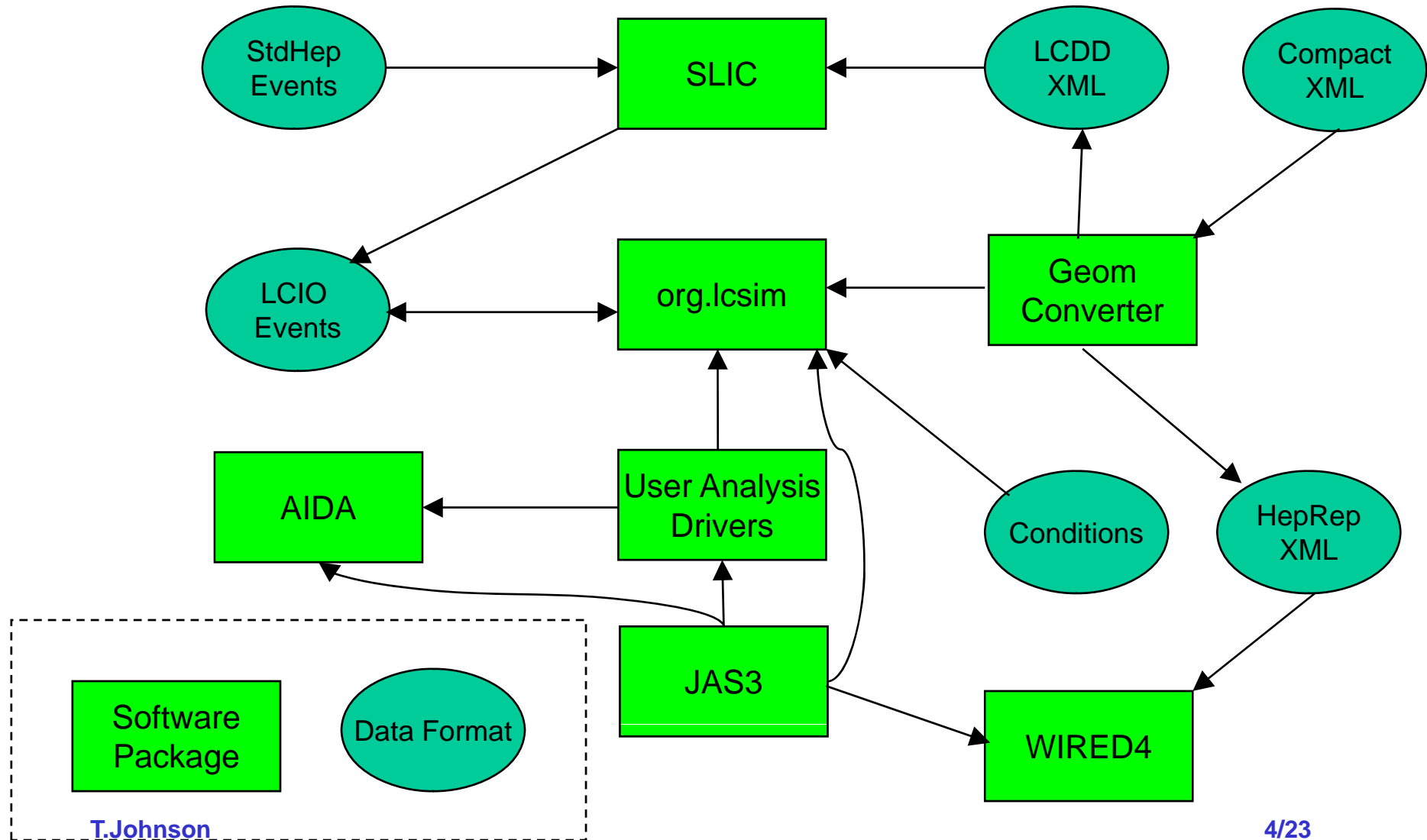
# Goals

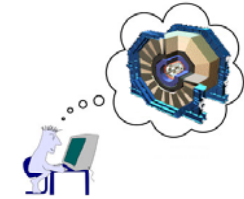
---

- **Enable full studies of ILC physics to optimize detector design and eventual physics output**
  - **Use realistic detector geometries**
  - **Full simulation (in combination with fast parameterized MCs)**
  - **Full reconstruction**
    - **Simulate benchmark physics processes on different full detector designs.**
    - **Encourage development of realistic analysis algorithms**
    - **See how these algorithms work with full detector simulations**
- **Facilitate contribution from physicists in different locations with various amounts of time available (normally not much!)**
  - **Software should be easy to install, learn, use**
    - **Goal is to allow software to be installed from CD or web with no external dependencies**
    - **Support via web based forums, tutorials, meetings.**



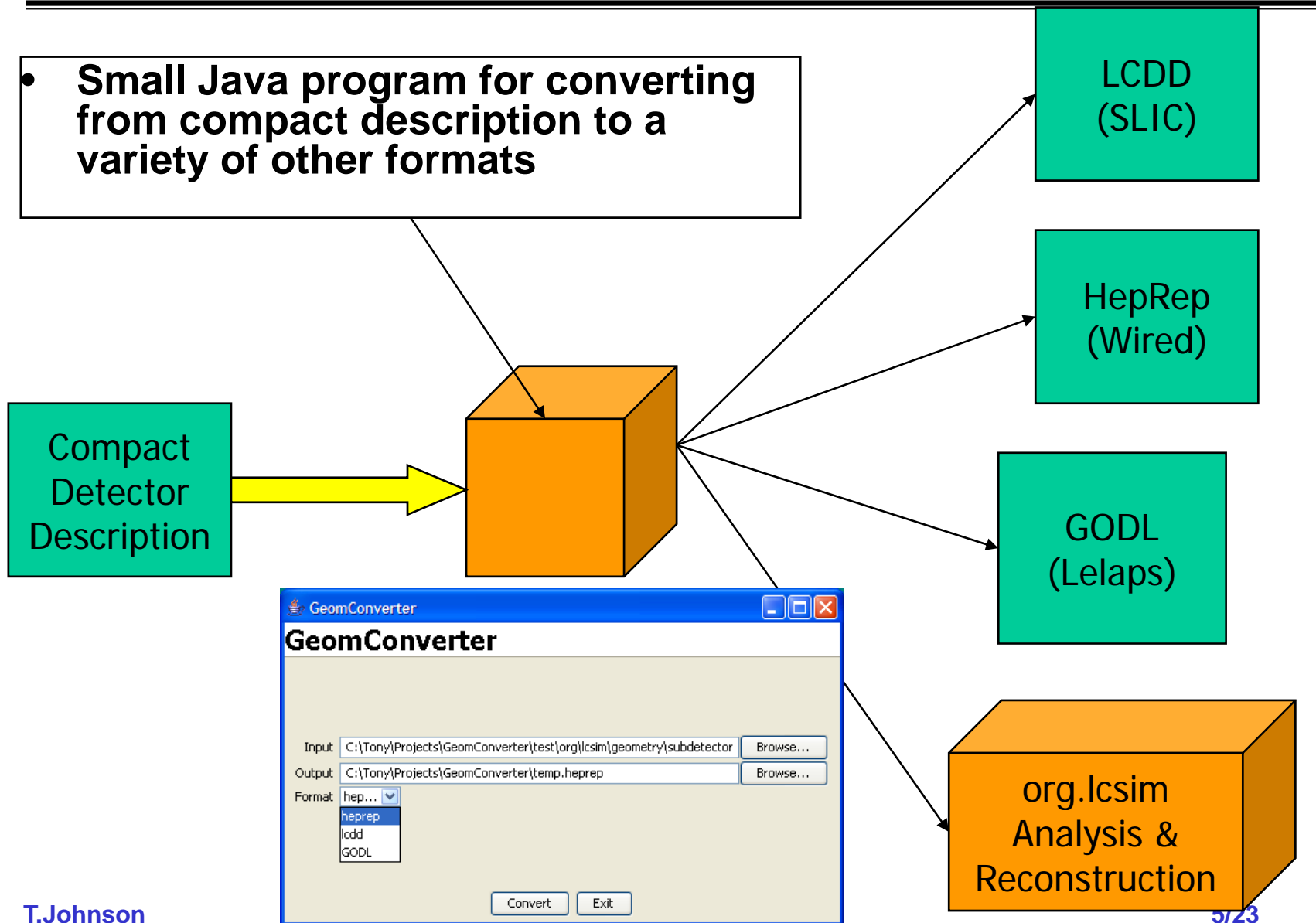
# Overview: "SiD/ALCPG" Framework

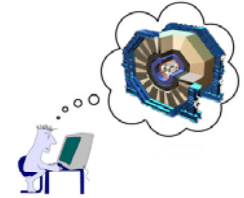




# org.lcsim: Geometry Converter

- **Small Java program for converting from compact description to a variety of other formats**

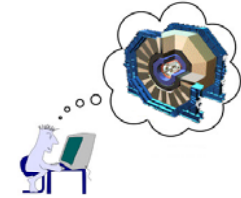




# Geometry in org.lcsim

---

- Up to now geometry in org.lcsim was at very high level
  - Derived from compact geometry description
    - Detector -> Global properties of detector
    - Subdetector -> Location, layering of subdetectors
    - IDDecoder -> Hit position, neighbors, ...
  - Not sufficiently detailed for Si strip reconstruction
- Detailed geometry created by Tim Nelson, Jeremy McCormick
  - Derived from compact description
  - Fits into existing compact geometry description
  - Gives full positioning of elements at the module level



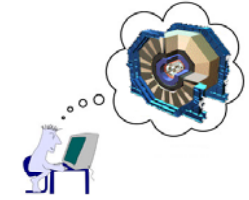
# Detailed Geometry in org.lcsim

- **Geometry tree**
  - hierarchy of **PhysicalVolumes** and **LogicalVolumes**
    - **LogicalVolume**
      - shapes – parameters, isInside
      - materials - A, Z, density, radiation length, interaction length, etc.
    - **PhysicalVolume**
      - transformation - translation + rotation
- **DetectorElement tree** –
  - hierarchy of **DetectorElements** with **uplinks**
    - What DetectorElement is point inside?
    - What position of a DetectorElement?
    - What is the global to local coordinate transformation for the DetectorElement?
- Existing **Detector**, **Subdetector** become **DetectorElements**

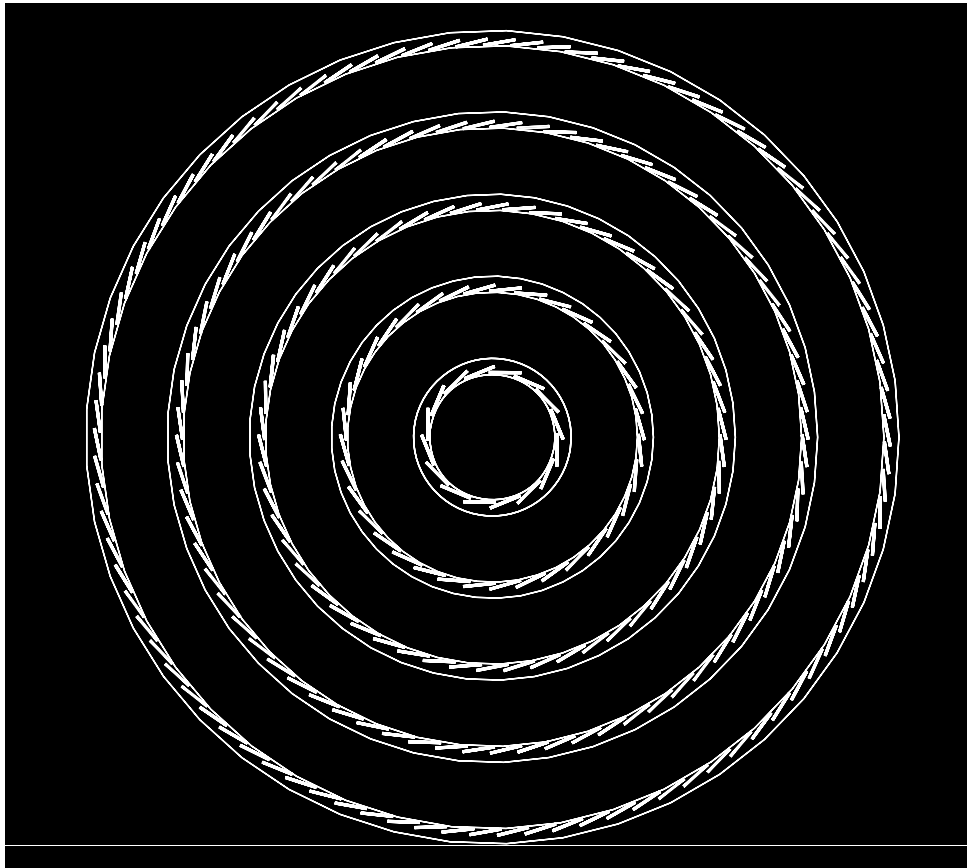
```

// Get child DetectorElements of the Detector.
IDetectorElementContainer detElems = detector.getChildren();
// Loop over the child DEs.
for ( IDetectorElement de : detElems )
{
    // Print the name.
    System.out.println( de.getName() );
    // Print the position.
    if ( de.hasGeometryInfo() )
    {
        System.out.println( de.getGeometry().getPosition() );
    }
    // Print the names of the children.
    for ( IDetectorElement child : de.getChildren() )
    {
        System.out.println( " " + child.getName() );
    }
}

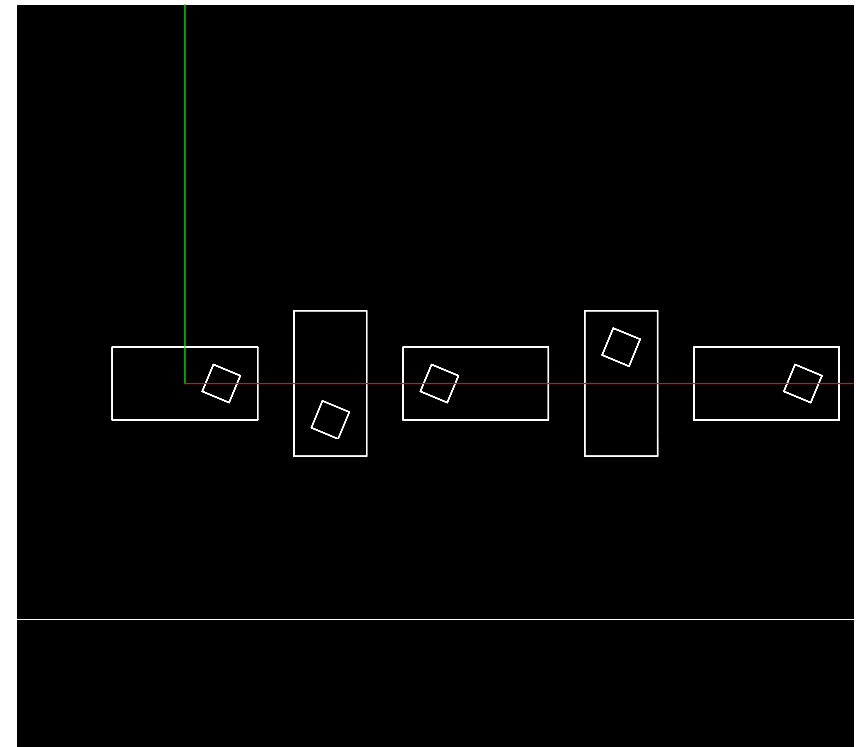
```



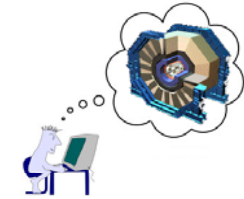
## SiTrackerBarrelTest



## ShapeRotateTest

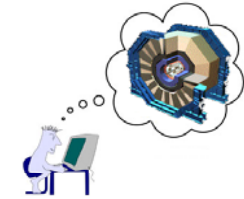






# org.lcsim Contents

- **Org.lcsim package includes:**
  - **Physics utilities:**
    - Jet finders, event shape routines
    - Diagnostic event generator, stdhep reader/translator
    - Histogramming/Fitting/Plotting (AIDA based)
    - Event Display
    - Processor/Driver infrastructure
  - **Fast MC**
    - Track/Cluster smearing
  - **Reconstruction**
    - Cheaters (perfect reconstruction)
    - Detector Response
      - CCDSim, Digisim
    - Clustering Algorithms
      - Cheater, DirectedTree, NearestNeighbour, Cone
    - Tracking Finding/Fitting Algorithms
      - TRF,
    - Muon Finding, Swimming
    - Vertex Finding (ZvTop)
- **Goal of org.lcsim is**
  - not “A single reconstruction package”
  - a framework into which reconstruction algorithms can be plugged.
- **We encourage users to contribute code to the “contrib” area as soon as possible.**
  - Important to encourage collaboration, reuse, and as learning tool.
  - Recently split into:
    - “Contrib” – code which compiles and is maintained
    - “Sandbox” – ideas, analysis snippets, doesn’t necessarily compile
- **Many contributions added recently:**
  - HMatrix cluster analysis
  - VertexFitter
  - PFA algorithms/template
  - SODTracker
  - Garfield Tracker
  - Calorimeter Cell Ganging
  - FastMC improvements
  - Tracking finding/fitting
  - MIP Finder
  - Minimum Spanning Tree Clustering



# org.lcsim: Examples

**org.lcsim examples**

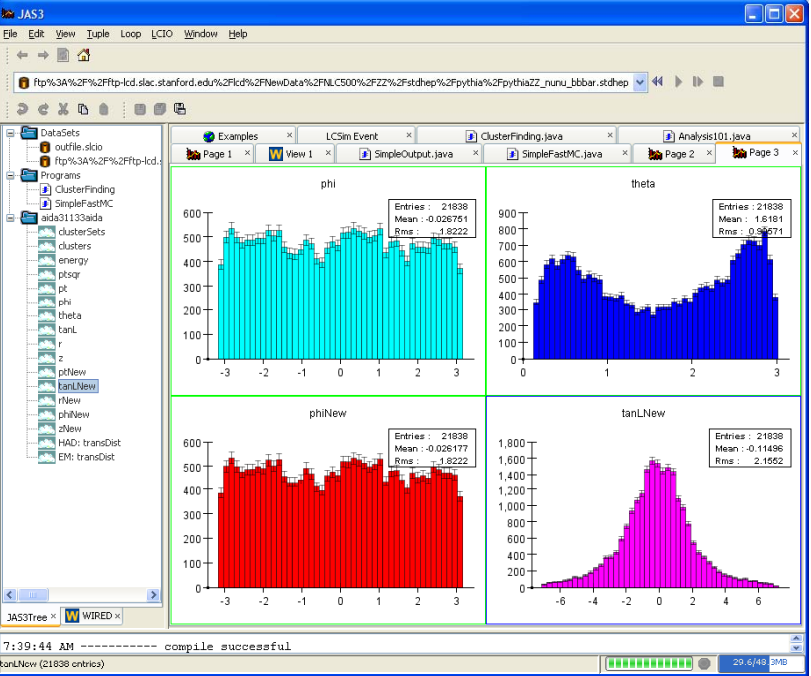
These examples are written using the Java language. After opening them you need to compile and load them, and then use feed data to them using the Run menu.

<a href="#">Analysis101</a>	Intro to analysis with AIDA.
<a href="#">BooleanCondition</a>	Add a boolean value to the EventHeader and read it back again from a different Driver.
<a href="#">Cheater</a>	ReconCheater example that makes perfect clusters, tracks, and reconstructed particles.
<a href="#">ClusterFinding</a>	Find clusters using the Nearest Neighbor clusterer.
<a href="#">DigiSimExample</a>	Digitization example using the Digitsim package.
<a href="#">EventGenerator</a>	Simple diagnosis
<a href="#">FastMC</a>	Run the Fast MC
<a href="#">JetFinding</a>	Use the Jet Finding
<a href="#">LCIOOutput</a>	Write LCIO output
<a href="#">NestedDriverExample</a>	Nest analysis Drivers
<a href="#">PrintEventHeader</a>	Print the Event Header
<a href="#">SkipEvent.java</a>	Skip events using
<a href="#">TrivialPFA.java</a>	An example of Particle Flow Analysis

**org.lcsim Jython examples**

These examples are written in Jython. You can use the Run menu of executing Java examples as well. You can also use the Run menu Tutorial visit [Writing a Jython Driver](#)

<a href="#">mainLoop.py</a>	The Main Jython wrapper
<a href="#">Analysis102.py</a>	A modified Jython wrapper running simultaneously in multiple threads



The histograms show the distribution of various variables for 21838 entries. The statistics for each histogram are as follows:

Variable	Entries	Mean	Rms
phi	21838	-0.026751	1.8222
theta	21838	1.6181	0.95871
phiNew	21838	-0.026177	1.8222
tanLNNew	21838	-0.11498	2.1552

```

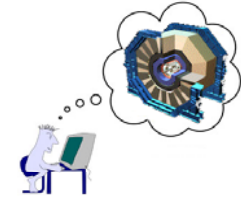
1 import org.lcsim.util.aida.AIDA;
2 import hep.physics.vec.VecOp;
3 import java.util.List;
4 import org.lcsim.event.EventHeader;
5 import org.lcsim.event.MCParticle;
6 import org.lcsim.util.Driver;
7
8 public class Analysis101 extends Driver
9 {
10     private AIDA aida = AIDA.defaultInstance();
11
12     public void process(EventHeader event)
13     {
14         // Get the list of MCParticles from the event
15         List<MCParticle> particles = event.get(MCParticle.class,event.MC_PARTICLES);
16         // Histogram the number of particles per event
17         aida.cloud1D("nTracks").fill(particles.size());
18         // Loop over the particles
19         for (MCParticle particle : particles)
20         {
21             aida.cloud1D("energy").fill(particle.getEnergy());
22             aida.cloud1D("cosTheta").fill(VecOp.cosTheta(particle.getMomentum()));
23             aida.cloud1D("phi").fill(VecOp.phi(particle.getMomentum()));
24         }
25     }
26 }
    
```

Compilation successful: 7:39:44 AM

tanLNNew (21838 entries)

T.Johnson

10/23



# org.Icsim: Event Browser

**JAS3**

File Edit View Tuple Loop LCIO Window Help

outfile.slcio

Examples × LCSim Event × ClusterFinding.java × Analysis101.java ×

Run:0 Event: 0

**Event**

**LCIO Event Header**

Run	0
Event	0
Time Stamp	Fri Mar 11 14:25:13 PST 2005
Detector Name	sdjan03

**Blocks**

Name	Type
HcalEndcapHitsNNClusters	org.Icsim.recon.cluster.nn.NearestNeighborCluster
HcalBarrHitsNNClusters	org.Icsim.recon.cluster.nn.NearestNeighborCluster
EcalEndcapHitsNNClusters	org.Icsim.recon.cluster.nn.NearestNeighborCluster
MuonEndcapHitsNNClusters	org.Icsim.recon.cluster.nn.NearestNeighborCluster
LumEndcapHits	org.Icsim.recon.hitset.LumEndcapHits
MuonBarrHits	org.Icsim.recon.hitset.MuonBarrHits
EcalBarrHits	org.Icsim.recon.hitset.EcalBarrHits
EcalEndcapHits	org.Icsim.recon.hitset.EcalEndcapHits
MuonEndcapHits	org.Icsim.recon.hitset.MuonEndcapHits
MCParticle	org.Icsim.recon.hitset.MCParticle
TkrBarrHits	org.Icsim.recon.hitset.TkrBarrHits
TkrEndcapHits	org.Icsim.recon.hitset.TkrEndcapHits
VtxBarrHits	org.Icsim.recon.hitset.VtxBarrHits
LumEndcapHitsNNClusters	org.Icsim.recon.cluster.nn.NearestNeighborCluster
EcalBarrHits	org.Icsim.recon.hitset.EcalBarrHits
EcalEndcapHits	org.Icsim.recon.hitset.EcalEndcapHits
HcalBarrHits	org.Icsim.recon.hitset.HcalBarrHits
HcalEndcapHits	org.Icsim.recon.hitset.HcalEndcapHits
LumEndcapHits	org.Icsim.recon.hitset.LumEndcapHits
MuonBarrHits	org.Icsim.recon.hitset.MuonBarrHits
MuonEndcapHits	org.Icsim.recon.hitset.MuonEndcapHits
MCParticle	org.Icsim.recon.hitset.MCParticle

Analyzed 1 records in 406ms

**JAS3**

File Edit View Tuple Loop LCIO Window Help

outfile.slcio

Examples × LCSim Event × ClusterFinding.java × Analysis101.java ×

Run:0 Event: 0

**Event**

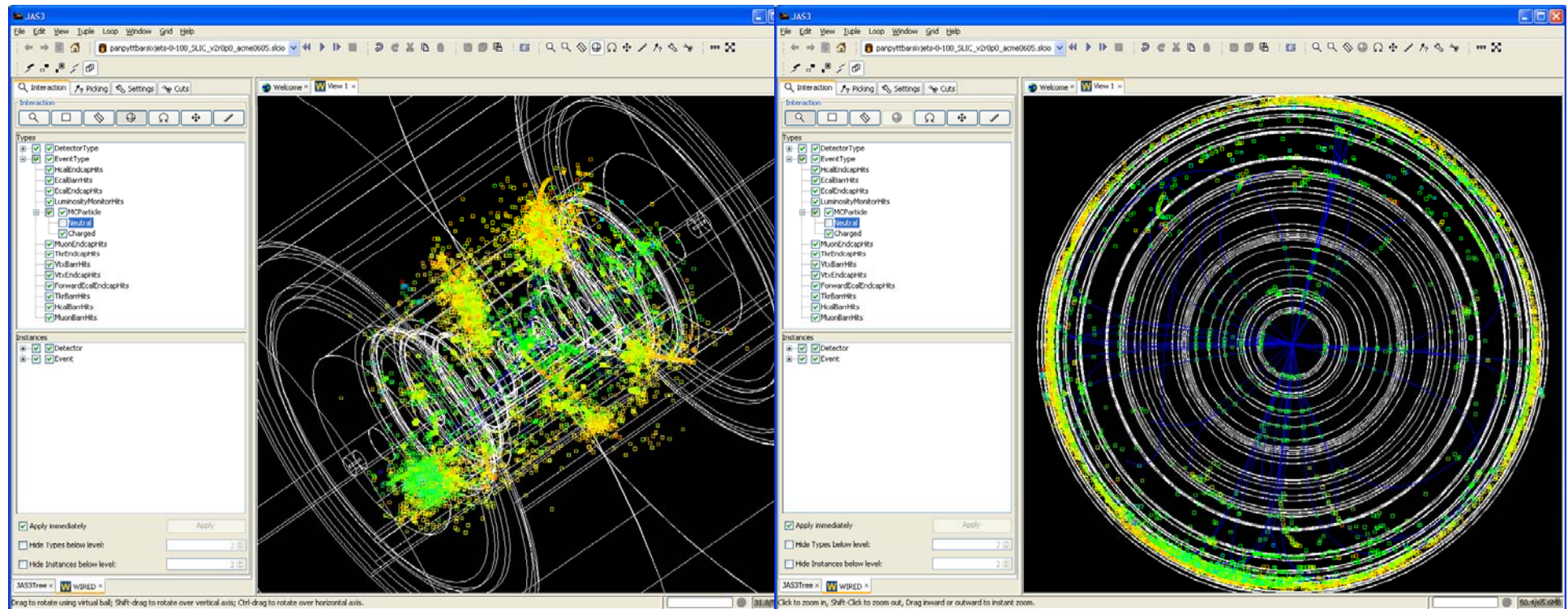
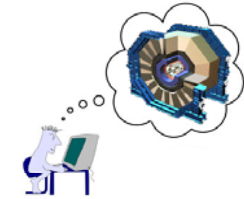
Collection: EcalBarrHits size:424 flags:a0000000

layer	system	barrel	theta	phi	energy	x	y	z
0	2	0	333	1595	4.0386E-4	1210.1	-395.70	426.89
1	2	0	333	1594	1.1317E-4	1213.4	-401.80	428.57
9	2	0	341	1593	6.0089E-5	1249.8	-419.05	398.53
1	2	0	333	1595	.0025117	1214.9	-397.26	428.57
2	2	0	333	1595	3.3759E-4	1219.7	-398.81	430.24
0	2	0	416	881	1.1273E-4	-1257.9	-196.82	16.667
1	2	0	416	880	3.5485E-4	-1263.6	-192.87	16.733
2	2	0	416	880	1.1914E-4	-1268.5	-193.62	16.798
3	2	0	416	880	1.0678E-4	-1273.5	-194.38	16.863
4	2	0	416	880	1.3202E-4	-1278.4	-195.13	16.929
5	2	0	416	880	1.0821E-4	-1283.3	-195.89	16.994
6	2	0	416	880	1.4717E-4	-1288.3	-196.64	17.060
7	2	0	416	880	1.1575E-4	-1293.2	-197.40	17.125
8	2	0	416	880	1.2397E-4	-1298.2	-198.15	17.191
9	2	0	416	880	1.3174E-4	-1303.1	-198.90	17.256
10	2	0	416	879	1.1775E-4	-1308.8	-194.77	17.322
11	2	0	416	879	1.3348E-4	-1313.7	-195.50	17.387
12	2	0	416	879	3.6082E-4	-1318.7	-196.24	17.453
13	2	0	416	879	1.1621E-4	-1323.6	-196.97	17.518
14	2	0	416	879	1.0455E-4	-1328.6	-197.71	17.583
15	2	0	416	879	1.0607E-4	-1333.5	-198.45	17.649
16	2	0	416	879	1.2895E-4	-1338.5	-199.18	17.714
17	2	0	416	879	1.2762E-4	-1343.4	-199.92	17.780
18	2	0	416	879	1.0222E-4	-1348.4	-200.65	17.845

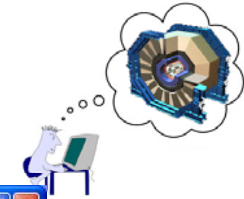
Analyzed 1 records in 406ms

7.22/7.43MB

# Using org.lcsim with WIRED4



# Using org.lcsim with WIRED4



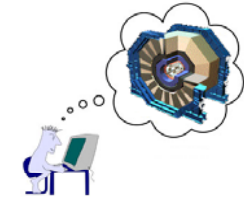
The screenshot shows the JAS3 software interface. The main window displays a complex, circular particle detector simulation with many concentric rings and radial lines. A mouse cursor is positioned over a small green square on the detector. The left sidebar contains several panels:

- Interaction**: Includes buttons for Picking, Settings, and Cuts.
- Shape**: Includes buttons for a pointer and a square.
- Actions / Settings**: Includes buttons for "Zoom into Region" and "Translate to Picked Object", and a checked checkbox for "Pick while Moving/Dragging".
- Picked objects (1):** A table with columns for Type, Points, and Children.
 

Type	Points	Children
VtxEndcapHits	1	0
- Attributes of picked object (9):** A table with columns for Name, Value, Unit, and Node.
 

Name	Value	Unit	Node
MarkName	Box		Type
color			Type
dEdx	1.8306E-5		Instance
drawAs	Point		Type
fill	<input checked="" type="checkbox"/>		Type
fillColor			Type
layer	Hits		Type
mcEnergy	.030593		Instance
time	2328.6		Instance

The bottom status bar shows "61.5/65.6MB".



# Using org.lcsim with WIRED4

The screenshot shows the JAS3 software interface. The main window displays a detector simulation with concentric circular layers and particle tracks. The tracks are colored yellow and orange, indicating energy. The interface includes a menu bar (File, Edit, View, Tuple, Loop, Window, Grid, Help), a toolbar, and a control panel on the left. The control panel has tabs for Interaction, Picking, Settings, and Cuts. The Cuts tab is active, showing a list of cuts and a table of parameters.

**Cuts:**

Apply	Name	Invert
<input checked="" type="checkbox"/>	ECut	<input type="checkbox"/>

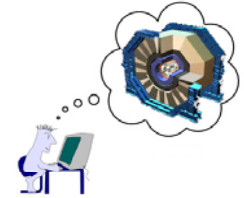
**From types:**

Apply	Name	Inter...	Unit	Invert
<input type="checkbox"/>	dedx	all		<input type="checkbox"/>
<input checked="" type="checkbox"/>	energy $x \geq \dots$			<input type="checkbox"/>
<input type="checkbox"/>	mcen...	all		<input type="checkbox"/>
<input type="checkbox"/>	mome...	all		<input type="checkbox"/>
<input type="checkbox"/>	radius	all		<input type="checkbox"/>
<input type="checkbox"/>	time	all		<input type="checkbox"/>

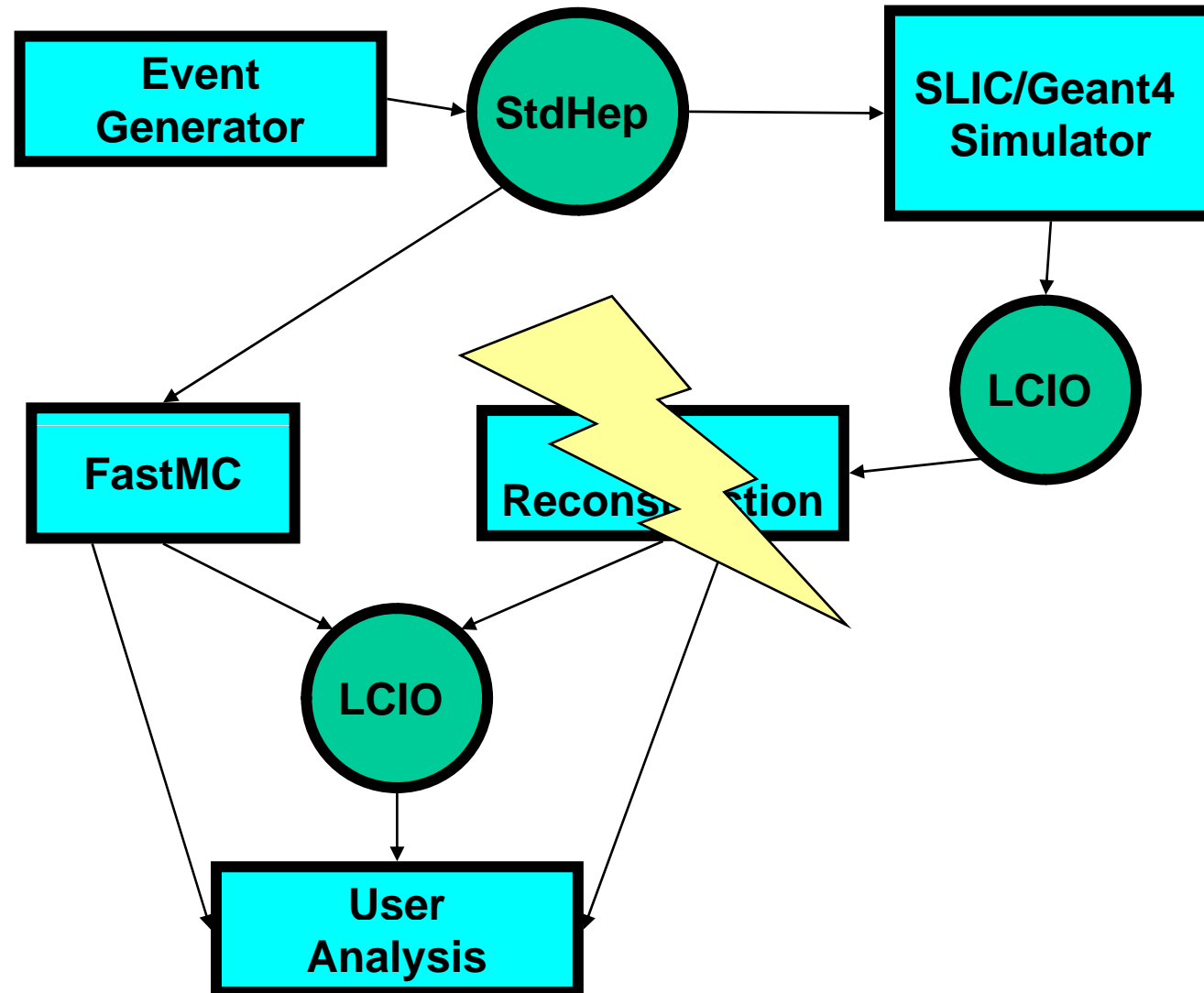
energy:  $x \geq 8.2742E-4$

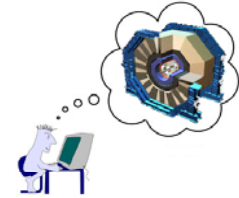
Click to zoom in, Shift-Click to zoom out, Drag inward or outward to instant zoom.

37.2/77.2MB



# How to run full reconstruction?





# org.lcsim Reconstruction Packages

## Contrib

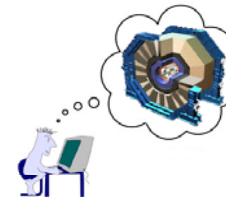
Package	Author	State	Docs/Talks	Description
<a href="#">org.lcsim.contrib.CalAna</a>	?	?	?	?
<a href="#">org.lcsim.contrib.CarstenHense</a>	Carsten Hense	?		HMatrix cluster analysis
<a href="#">org.lcsim.contrib.Cassell_recon_Cheat</a>	Ron Cassell	?		Cheat Recon driver
<a href="#">org.lcsim.contrib.EricBenavidez_EMClusterID</a>	Eric Benavides	?		HMatrices analysis of single particle events
<a href="#">org.lcsim.contrib.JanStrube_tracking</a>	Jan Strube	complete	<a href="#">A New Track Interface</a>	Alternate implementation of Track, FastMCTrack, Swimmer. Awaiting incorporation into main body of code
<a href="#">org.lcsim.contrib.JanStrube_vtxFitter</a>	Jan Strube	incomplete		Vertex fitter, using the Kalman approach by Grab, Luchsinger. Add the VtxFitterDriver from the sandbox to get an idea of the current status
<a href="#">org.lcsim.contrib.JanStrube_zvtop</a>	Jan Strube	incomplete		ZVTop implementation, taking advantage of the new Track interface, alpha quality
<a href="#">org.lcsim.contrib.KFFiter</a>	Fred Blanc	?		Kalman Filter Fitter
<a href="#">org.lcsim.contrib.LeiXia</a>	Lei Xia	?		PFA analysis
<a href="#">org.lcsim.contrib.NickSinev_tracking_wmfitter</a>	Nick Sinev	?		SLD Weight matrix fitter
<a href="#">org.lcsim.contrib.NickSinev_ztracking</a>	Mike Ronan+Nick Sinev?	?		Track cheater?
<a href="#">org.lcsim.contrib.onoprienko_mcTrackFinder</a>	D. Onoprienko	complete		Configurable cheater track finder and related utilities.
<a href="#">org.lcsim.contrib.onoprienko_tester</a>	D. Onoprienko	functional, under development		Track finder performance testing suite
<a href="#">org.lcsim.contrib.SODTracker</a>	Fred Blanc	?		Silicon Outer Detector (SOD) Tracker
<a href="#">org.lcsim.contrib.SiStripSim</a>	Tim Nelson	?		Silicon Strip Simulation (moving soon to org.lcsim.detector)
<a href="#">org.lcsim.contrib.SteveMagill</a>	Steve Magill	?		PFA Analysis example
<a href="#">org.lcsim.contrib.niu</a>	Vishnu and Guilherme	?		NIU PFA code
<a href="#">org.lcsim.contrib.proulx</a>	?	?		?
<a href="#">org.lcsim.contrib.seedtracker</a>	Richard Partridge	?		Tracking algorithm based on forming track seeds from all 3-hit combinations
<a href="#">org.lcsim.contrib.subdetector_tracker_silicon</a>	Tim Nelson	?		Experimental geometry package (Developed further in Geomconverter as org.lcsim.detector by Jeremy)
<a href="#">org.lcsim.contrib.tracking</a>	Tim Nelson	?		Outer-tracker-only track finding
<a href="#">org.lcsim.contrib.uiowa</a>	Mat Charles	unstable		Template-style PFA implementation (NonTrivialPFA)

## Production

Package	Author	State	Docs/Talks	Description
<a href="#">org.lcsim.digisim</a>	Guilherme Lima	?		Calorimetry digitization simulator
<a href="#">org.lcsim.mc.CCD5im</a>	Nick Sinev	?		CCD digitization
<a href="#">org.lcsim.mc.fast</a>	Many	?		Fast MC package, including tracking, calorimetry
<a href="#">org.lcsim.recon.cat</a>	D. Onoprienko E. von Toerne	functional, under development		Calorimeter Assisted Track Finder
<a href="#">org.lcsim.recon.cheater</a>	Mike Ronan	?	<a href="#">confluence</a>	Recon cheater
<a href="#">org.lcsim.recon.cluster.analysis</a>	Ron Cassell	?		Generic cluster performance analysis
<a href="#">org.lcsim.recon.cluster.cheat</a>	Ron Cassell	?		Cluster cheater
<a href="#">org.lcsim.recon.cluster.clumpfinder</a>	Mat Charles	?		finds dense clumps within clusters
<a href="#">org.lcsim.recon.cluster.directedtree</a>	G.Lima, J.McCormick, Vishnu	?		Directed tree cluster finder
<a href="#">org.lcsim.recon.cluster.fixedcone</a>	Norman Graf	?		Cluster finder
<a href="#">org.lcsim.recon.cluster.mipfinder</a>	Wolfgang Mader, Mat Charles	stable		MIP finding
<a href="#">org.lcsim.recon.cluster.mst</a>	Mat Charles	stable		Minimal spanning tree cluster finder
<a href="#">org.lcsim.recon.cluster.nn</a>	Norman Graf	?		Nearest neighbour cluster finder
<a href="#">org.lcsim.recon.cluster.structural</a>	Mat Charles	stable		Specialized clusterer for hadronic showers
<a href="#">org.lcsim.recon.emid_hmatrix</a>	Norm Graf	?		HMatrix package
<a href="#">org.lcsim.recon.ganging</a>	Ron Cassell	?		Allows virtual ganging of calorimeter hits
<a href="#">org.lcsim.recon.muon</a>	C. Milstene	?		Muon finding
<a href="#">org.lcsim.recon.particle</a>	Ron Cassell	?		Perfect PFA
<a href="#">org.lcsim.recon.pfa.cheat</a>	Mat Charles	functional		Cheating tools for PFA
<a href="#">org.lcsim.recon.pfa.identifier</a>	Mat Charles	functional		Turn more primitive objects (clusters, tracks, etc) into ReconstructedParticles
<a href="#">org.lcsim.recon.pfa.output</a>	Mat Charles	?		Modules to produce standard plots for PFAs
<a href="#">org.lcsim.recon.pfa.structural</a>	Mat Charles	?	incomplete	Iowa PFA implementation (when stable) and associated tools
<a href="#">org.lcsim.recon.tracking.cheat</a>	Ron Cassell	?		Track Cheater
<a href="#">org.lcsim.recon.tracking.hf</a>	?	?		?
<a href="#">org.lcsim.recon.tracking.trf</a>	Norm Graf	?		TRF track finder + fitter
<a href="#">org.lcsim.recon.vertexing.billoir</a>	Norman Graf, (Jan Strube)	incomplete		vertex fitting based on Billoir's method. Needs testing
<a href="#">org.lcsim.recon.vertexing.zvtop4</a>	Jan Strube	incomplete		Vertex finding/fitting, awaiting completion of a vertex fitter
<a href="#">org.lcsim.recon.ztracking</a>	M. Ronan	?		Track cheater

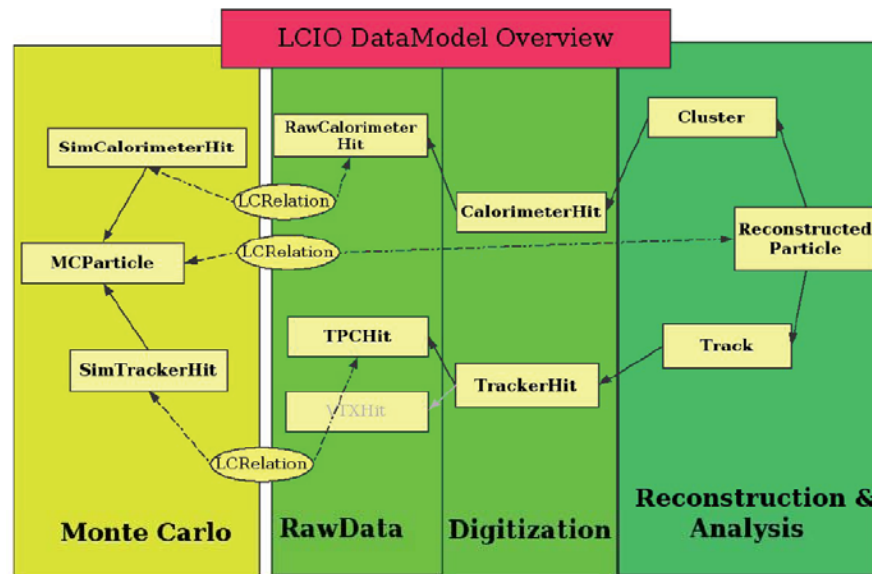
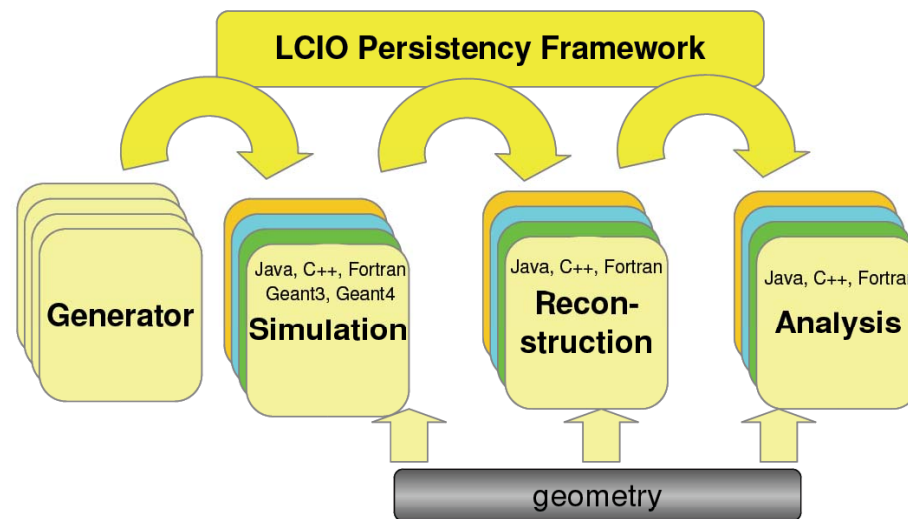
- **Conclusions**
  - Many people are working on reconstruction code
  - Effort to persuade people to commit code to “contrib” area has been successful
  - But it is not easy for new users to understand how to use or contribute
- **We need to work to extend tutorials to also cover reconstruction packages**
  - Encourage developers to contribute documentation
  - Start by updating: <http://confluence.slac.stanford.edu/x/f3c>
  - We need realistic analysis examples
  - extend PFA template idea to full reconstruction

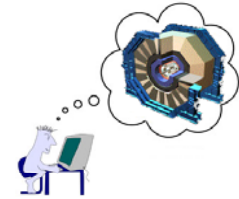




# LCIO Enhancements

- **LCIO adopted by most ILC software**
  - Provides interoperability between frameworks
- **LCIO enhancements being actively worked on**
  - Improved performance for rawdata/DAQ
  - Improved efficiency for DST analysis
    - Random access to events/parts of event
    - Ability to split data over multiple files
  - Should be ready this summer
- **LCGO – geometry interoperability**
  - Technical specs developed
  - Ready by end of year?





# Resources for getting started/working with simulation/reconstruction tools

- <http://lcsim.org/> Web Site
  - Tutorials
    - Software installation
    - Using tools
    - Simple Analysis Examples
    - Developers Guide
  - Datasets
  - Documentation
- Confluence Wiki
  - More tutorials
  - More documentation
  - Frequently asked Questions
  - You are encouraged to comment on, add to, or correct existing documentation
    - <https://jira.slac.stanford.edu/signup/>

The screenshot shows the lcsim.org website with the following sections:

- Introduction**: This site is designed to provide physicists the tools needed to investigate the physics potential of a linear e+e- collider. Many of the tools necessary to generate Monte Carlo events, simulate the response of typical detectors, and conduct the ensuing analysis of the "data" can be found at this site or others linked from here.
- Getting Started**
  - [org.lcsim Tutorial](#) - instructions on setting up and using the Java reconstruction framework
- Datasets**
  - [ILC Datasets](#) - instructions for accessing datasets via anonymous FTP
- Detectors**
  - [Detectors](#) - list of available compact format detector descriptions
- Wiki**
  - [ILC Confluence Wiki](#) - collaborative documentation site
- Feedback**
  - [LinearCollider.org Forum](#) - get feedback from the experts

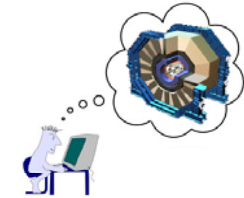
The bottom part of the screenshot shows a Confluence Wiki page for "ILC Wiki". It includes a search bar, a "Contributing to the ILC Wiki" message, and lists of links and news items.

**Links**

- [Reconstruction and Analysis](#)
  - [org.lcsim Tutorials](#)
  - [org.lcsim Wiki](#)
  - [org.lcsim Frequently Asked Questions](#)
  - [org.lcsim homepage](#)
  - [GeomConverter homepage](#)
  - [LCIO](#)
  - [Marlin](#)
- **Detector Simulation**
  - [SLIC FAQ](#)
  - [SLIC-Wiki](#)
  - [Mokka](#)
  - [ILC Detector Simulation FAQ](#)
  - [ILC Detector Simulation Picture Gallery](#)

**News**

Title	Author	Date Posted
<a href="#">org.lcsim Package overview</a>	by Tony Johnson	(16 hours ago)
<a href="#">HEP Framework Links</a>	by Jeremy McCormick	(18 hours ago)
<a href="#">Java Links</a>	by Jeremy McCormick	(19 hours ago)
<a href="#">Re: org.lcsim Package overview</a>	by Jeremy McCormick	(20 hours ago)
<a href="#">How do I turn on histograms in Drivers (e.g., FastMC2)</a>	by Tony Johnson	(03 Apr)
<a href="#">org.lcsim</a>	by Tony Johnson	(03 Apr)
<a href="#">How can I write out an LCIO file from org.lcsim?</a>	by Tony Johnson	(03 Apr)
<a href="#">Contributing to ILC Software Projects</a>	by Jeremy McCormick	(02 Apr)



# Resources for getting started/working with simulation/reconstruction tools

## • Discussion Forums

- <http://forum.linearcollider.org/>
  - SLIC, org.lcsim
- Not recommended
  - Spray E-mail to developers
    - Banging head against wall
    - Uninstall and reinstall software 3 times
- Recommended
  - Post questions on the forum
    - You will get faster answers
    - You will get more accurate answers
    - Others will benefit from seeing answers to your questions
  - Discuss what you would like to do
    - get feedback on best practices

Welcome **tonyj**, your last visit was on Tue, 10 April 2007 07:48  
 Show: [Today's Messages](#) :: [Unread Messages](#) :: [Unanswered Messages](#) :: [Show Polls](#) :: [Message Navigator](#)  
 Admin: | [Group\(s\) Manager](#)

Forum	Messages	Topics	Last message
<b>Software Tools</b> - Developers and users discussion forum			
<a href="#">Fast Simulations</a>	4	4	Mon, 24 July 2006 By: <a href="#">mitaroff</a> ↕
<a href="#">LCIO</a> Discussion of LCIO data format.	191	64	Fri, 16 March 2007 By: <a href="#">gaede</a> ↕
<a href="#">org.lcsim</a> Discussion forum for developers of org.lcsim reconstruction and analysis package, plus related projects (GeomConverter etc).	84	21	Tue, 03 April 2007 By: <a href="#">biasper</a> ↕
<a href="#">Marlin et al</a> Discussion, questions and feedback concerning Marlin, MarlinReco, Gear and related projects	50	20	Thu, 29 March 2007 By: <a href="#">samson</a> ↕
<b>Analysis and Reconstruction</b> - Linear Collider Reconstruction and Analysis			
<a href="#">Analysis Tools</a> General discussion of analysis tools	14	5	Mon, 24 July 2006 By: <a href="#">mitaroff</a> ↕
<a href="#">Reconstruction</a> General reconstruction discussion	56	21	Mon, 29 May 2006 By: <a href="#">fabio</a> ↕
<a href="#">Results</a> Got some cool results to share. This is the place to post them.	0	0	n/a
<a href="#">Tracking &amp; Vertexing</a> Forum for discussions related to tracking and vertexing.	51	15	Tue, 13 March 2007 By: <a href="#">kilenberg</a> ↕
<a href="#">Individual Particle Reconstruction</a> aka "Energy Flow", "Particle Flow", E-Flow, P-Flow, PFA	1	1	Thu, 13 October 2005 By: <a href="#">NormanGraf</a> ↕
<a href="#">EUNET Telescope</a> Discussions about EUNET pixel beam telescope -- mainly analysis software and DAQ issues.	21	4	Fri, 02 March 2007 By: <a href="#">antonio.bulgheroni</a> ↕
<b>Simulation</b> - Detector Response Simulation			
<a href="#">Full Simulations</a> Discussion of tools and techniques not covered by any more specific forum.	4	3	Thu, 15 July 2004 By: <a href="#">musat</a> ↕
<a href="#">Mokka</a> Forum for discussing <a href="#">Mokka</a>	160	66	Mon, 09 April 2007 By: <a href="#">hooberman</a> ↕
<a href="#">LCDG4</a> Geant4 simulation program for the ALCPG.	13	7	Thu, 07 July 2005 By: <a href="#">lima</a> ↕
<a href="#">Common Simulation Framework</a> Open discussion on development of a common simulation framework or toolkit.	3	3	Sat, 05 June 2004 By: <a href="#">lima</a> ↕
<a href="#">slc</a> Forum for discussing <a href="#">slc</a> (Simulator for the Linear Collider)	18	9	Wed, 14 February 2007 By: <a href="#">mienge</a> ↕

0 [Cheater example](#)

Re: [Cheater example](#) By: [biasper](#) on Thu, 29 March 2007 14:19

Re: [Cheater example](#) By: [tonyj](#) on Thu, 29 March 2007 15:16

Re: [Cheater example](#) By: [biasper](#) on Sat, 31 March 2007 21:18

Re: [Cheater example](#) By: [tonyj](#) on Mon, 02 April 2007 17:32

Re: [Cheater example](#) By: [tonyj](#) on Tue, 03 April 2007 14:24

Re: [Cheater example](#) By: [biasper](#) on Tue, 03 April 2007 23:10

[org.lcsim frequently asked questions](#)

Re: [org.lcsim frequently asked questions](#) By: [tonyj](#) on Thu, 15 March 2007 11:55

Re: [org.lcsim frequently asked questions](#) By: [zhaohy](#) on Thu, 22 March 2007 15:44

By: [tonyj](#) on Thu, 29 March 2007 07:39

[SimTrackerHit getLayer method](#)

Re: [SimTrackerHit getLayer method](#) By: [stevens\\_lori](#) on Thu, 15 February 2007 19:20

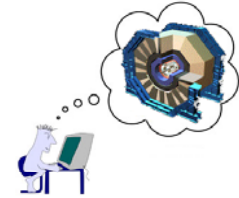
Re: [SimTrackerHit getLayer method](#) By: [NormanGraf](#) on Fri, 16 February 2007 08:53

Re: [SimTrackerHit getLayer method](#) By: [stevens\\_lori](#) on Mon, 19 February 2007 22:15

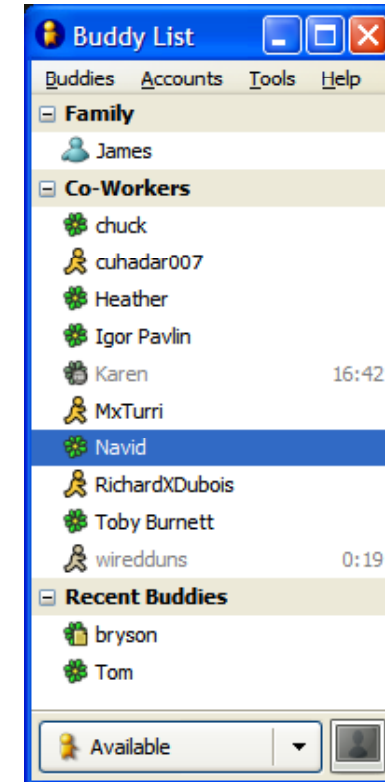
Re: [SimTrackerHit getLayer method](#) By: [Dmitry Onoprienko](#) on Tue, 20 February 2007 15:05

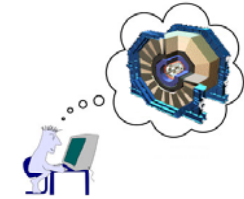
Re: [SimTrackerHit getLayer method](#) By: [stevens\\_lori](#) on Mon, 26 February 2007 21:17

# Resources for getting started/working with simulation/reconstruction tools



- Instant messaging
  - Great for quick questions
  - I use GAIM, many other options
    - <http://gaim.sf.net/>
  - Norman, myself, Jeremy available most of the time
    - <http://confluence.slac.stanford.edu/x/Rnk>
- Tuesday software meeting
  - 1:30pm Pacific Time
  - We are happy to answer questions/solve problems during or after these meetings
    - We can use desktop sharing to interactively view/solve problems
- Personal Tutorials
  - We are prepared to go anywhere anytime
    - Real\* or virtual



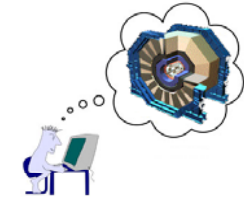


# Proposal to replace SiD web site



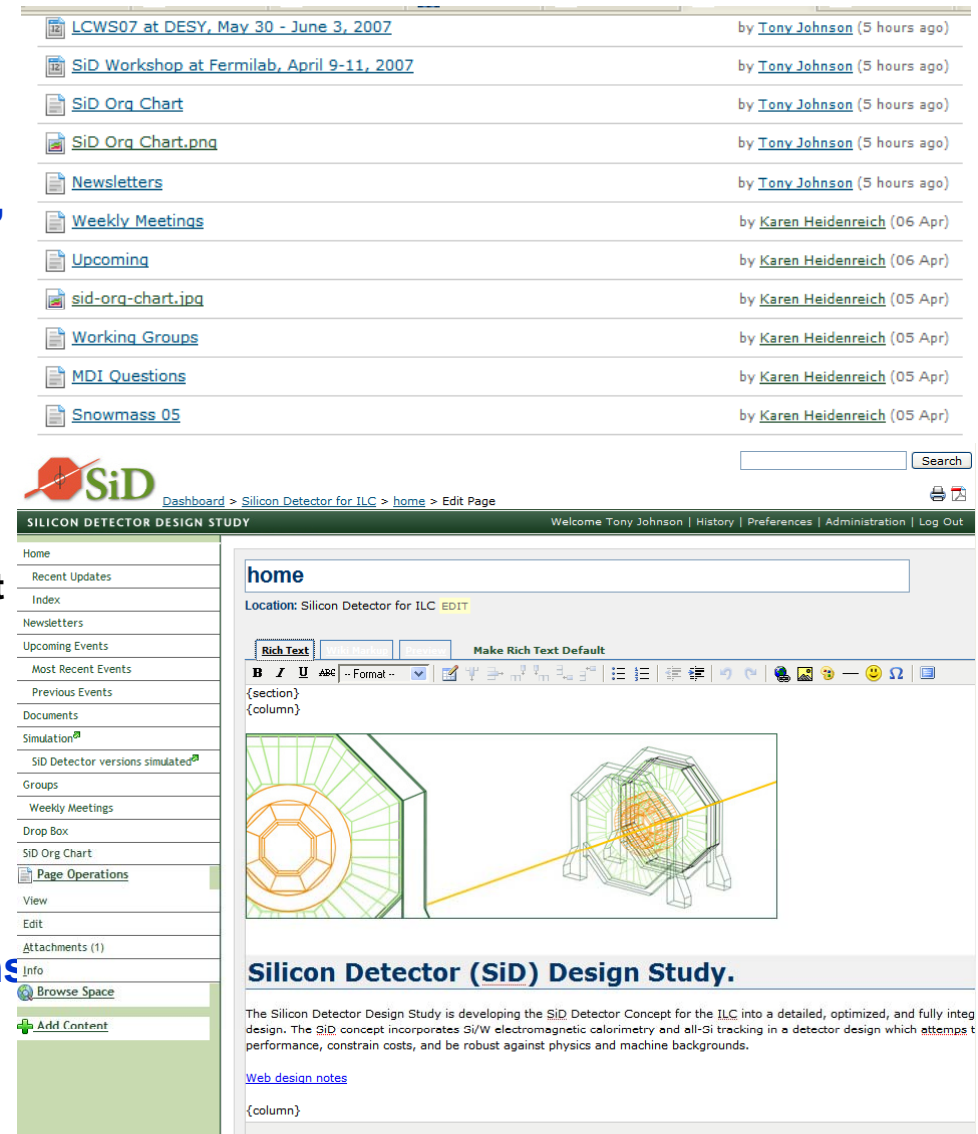
The screenshot shows a proposed website layout for the Silicon Detector (SiD) Design Study. At the top left is the SiD logo, followed by a search bar and a 'Search' button. Below the logo is a breadcrumb trail: 'Dashboard > Silicon Detector for ILC > home'. A dark green header bar contains the text 'SILICON DETECTOR DESIGN STUDY' and a 'Log In' link. On the left is a vertical navigation menu with links for Home, Recent Updates, Index, Newsletters, Upcoming Events, Most Recent Events, Previous Events, Documents, Simulation, SiD Detector versions simulated, Groups, Weekly Meetings, Drop Box, SiD Org Chart, Page Operations, and Browse Space. The main content area features a 3D wireframe diagram of the detector structure with a yellow line pointing to a specific component. Below the diagram is the title 'Silicon Detector (SiD) Design Study.' and a paragraph of text: 'The Silicon Detector Design Study is developing the SiD Detector Concept for the ILC into a detailed, optimized, and fully integrated detector design. The SiD concept incorporates Si/W electromagnetic calorimetry and all-Si tracking in a detector design which attempts to optimize physics performance, constrain costs, and be robust against physics and machine backgrounds.' A link for 'Web design notes' is provided below the text. On the right side, there are two sidebars: 'Upcoming Meetings' listing a SiD Workshop at Fermilab (April 9-11, 2007) and LCWS07 at DESY (May 30 - June 3, 2007), and 'ILC Newsline' with a link to 'ILC NewsLine - 5 April 2007' (Apr 05, 2007 10:35).

- Looks better than old site!
- Based on confluence (wiki) so has many collaborative features
  - <https://confluence.slac.stanford.edu/display/SiD/home>

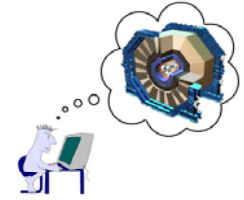


# Proposal to replace SiD web site

- **Confluence advantages**
  - Easy to embed active content (e.g. ILC Newsline feed)
  - Searchable (including attached PDF, PPT, DOC, etc).
  - Can see list of recent updates
    - Very useful for keeping up-to-date with what is happening
    - Full version info
  - Once logged in to site you can
    - Edit any page (if authorized)
      - No need to learn new tools, just use web browser
    - Comment on any web page
    - Subscribe to be notified of changes to any web site
    - Create “news items”
  - ... and much more
- **Other suggestions**
  - Switch to using linear collider forums instead of hypernews



The screenshot shows the current SiD website interface. At the top, there is a list of recent updates with links to various documents and news items, such as 'LCWS07 at DESY, May 30 - June 3, 2007' and 'SiD Workshop at Fermilab, April 9-11, 2007'. Below this is a search bar and a navigation menu. The main content area displays the 'home' page, which includes a rich text editor with a toolbar and a 3D diagram of the Silicon Detector (SiD) design. The diagram shows a cross-section of the detector with various components labeled. The page also contains a section titled 'Silicon Detector (SiD) Design Study' with introductory text and a link to 'Web design notes'.



# Conclusions

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- **Conclusions**
  - **Basic framework for SiD simulation/reconstruction/analysis exists and is mostly stable and usable**
  - **Active work on reconstruction algorithms ongoing**
- **Documentation, Tutorials etc exist**
  - **Good at introducing tools, getting users started**
  - **Tend to fade out for more advanced reconstruction**
    - **Needs some work – please contribute**
- **Communication**
  - **Many tools exist – encourage more active use**