Status of GRID and software tools for ILD optimization studies in Japan

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ILC-ECFA Workshop 2008 (10/June/2008 @Warsaw)

Contents of this talk

- Update report on ACFA-LCWG software tools
- A reaction to Frank's talk of TILC08 Sendai at Sim/Rec/ Opt session (& GRID talk in ILD meeting)
  - ilcsoft install to KEK-GRID sites
  - Benchmark analysis model on GRID
    - KEK and Japanese univs LCG-GRID deployment
    - File transfer speed check: current maximum rate w/ multiple stream
- A benckmark analyais: ttbar 500GeV

grid sites with ilcsoft v01-03-02

Frank Gaede, TILC08, Sendai, Japan, March 3-6, 2008

CE	SW-VER	SW-OS	DATE	TIME	SAM	JOB	TAGGED	HIST-LOGS
cclcgceli02.in2p3.fr	v01-03-02	sl4	2008-02-29	18-54-12	OK	OK	VO-ilc-ilcsoft-v01-03-01-sl4 VO-ilc-ilcsoft-v01-03-02-sl4	History
cclcgceli03.in2p3.fr	v01-03-02	sl4	2008-02-29	18-54-12	OK	OK	VO-ilc-ilcsoft-v01-03-01-sl4 VO-ilc-ilcsoft-v01-03-02-sl4	History
dg10.cc.kek.jp	v01-03-02	sl3	2008-03-03	12-38-40	OK	OK	VO-ilc-ilcsoft-v01-03-02-sl3	History
grid-ce3.desy.de	v01-03-02	sl4	2008-02-29	18-54-12	OK	OK	VO-ilc-ilcsoft-v01-03-01-sl4 VO-ilc-ilcsoft-v01-03-02-sl4	History
heplnx206.pp.rl.ac.uk	v01-03-02	sl4	2008-02-29	18-54-12	OK	OK	VO-ilc-ilcsoft-v01-03-01-sl4 VO-ilc-ilcsoft-v01-03-02-sl4	History
lcg-ce0.ifh.de	v01-03-02	sl4	2008-02-29	18-54-12	OK	OK	VO-ilc-ilcsoft-v01-03-01-sl4 VO-ilc-ilcsoft-v01-03-02-sl4	History
lcg-ce1.ifh.de	v01-03-02	sl4	2008-02-29	18-54-12	OK	OK	VO-ilc-ilcsoft-v01-03-01-sl4 VO-ilc-ilcsoft-v01-03-02-sl4	History
lcgce02.gridpp.rl.ac.uk	v01-03-02	sl4	2008-02-29	18-54-12	OK	OK	VO-ilc-ilcsoft-v01-03-01-sl4 VO-ilc-ilcsoft-v01-03-02-sl4	History
node07.datagrid.cea.fr	v01-03-02	sl4	2008-02-29	18-54-12	OK	OK	VO-ilc-ilcsoft-v01-03-01-sl4 VO-ilc-ilcsoft-v01-03-02-sl4	History
t2ce03.physics.ox.ac.uk	v01-03-02	sl4	2008-02-29	18-54-12	OK	OK	VO-ilc-ilcsoft-v01-03-01-sl4 VO-ilc-ilcsoft-v01-03-02-sl4	History

http://ilcsoft.desy.de/grid/results/User.html

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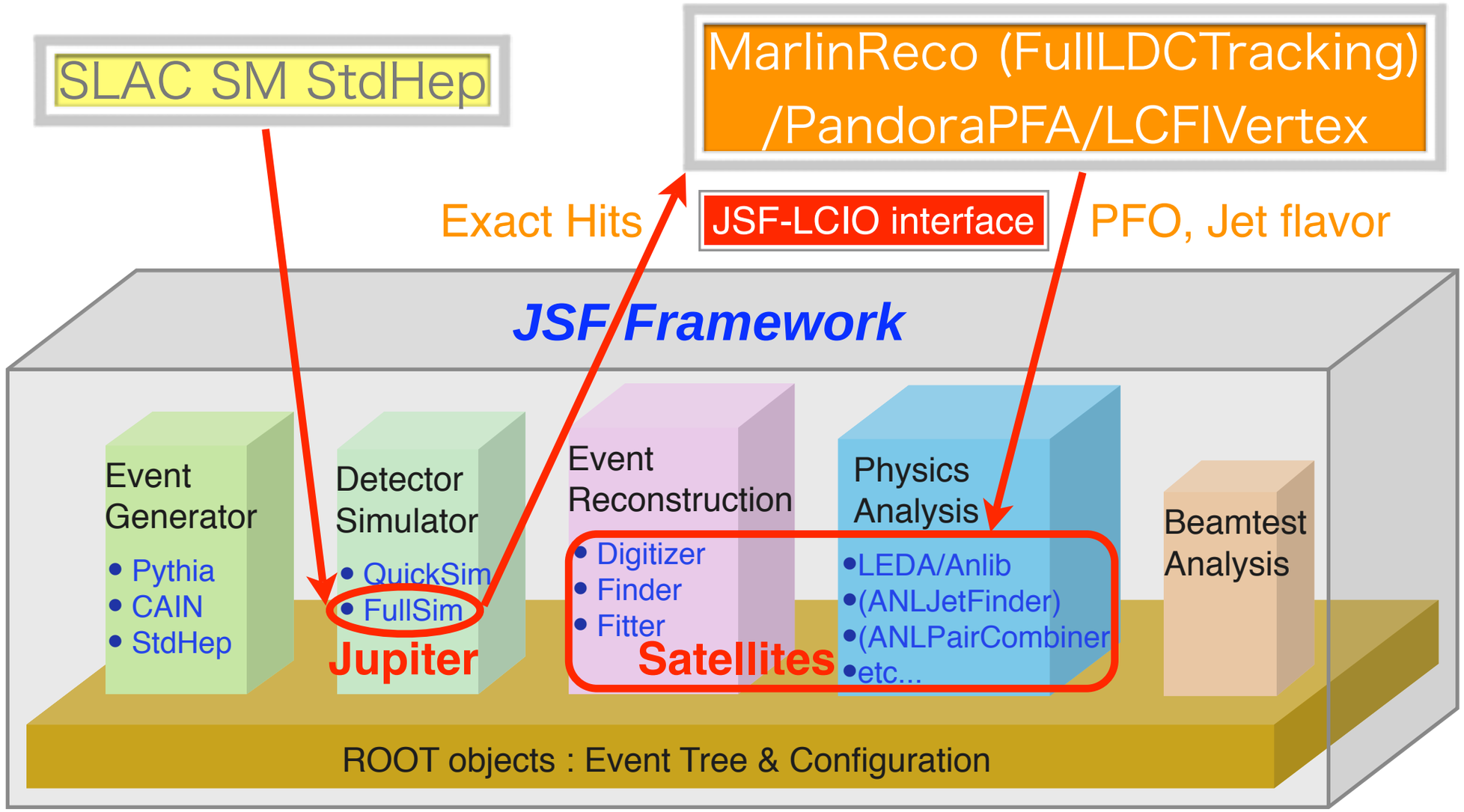
ACFA-LCWG simtools and ilcsoft

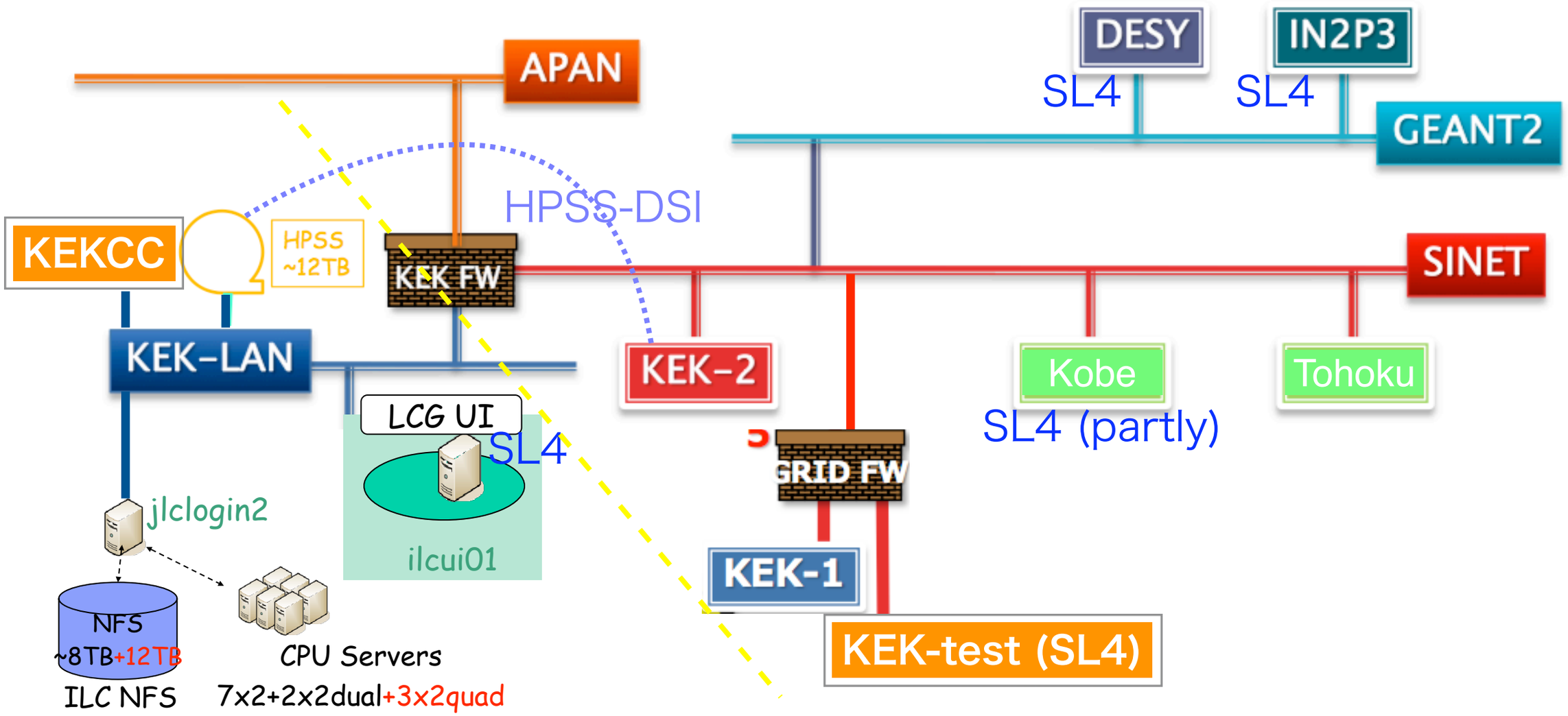
- Benchmark studies toward the LoI: Maximize our software resources/experiences from across the world
  - A happy medium between our familiar JSF & powerful tools!



  - ACFA software tools for ILD: `http://ilcphys.kek.jp/soft/`

Our GRID deployment

- ILC virtual organization (ilc & calice VOs)



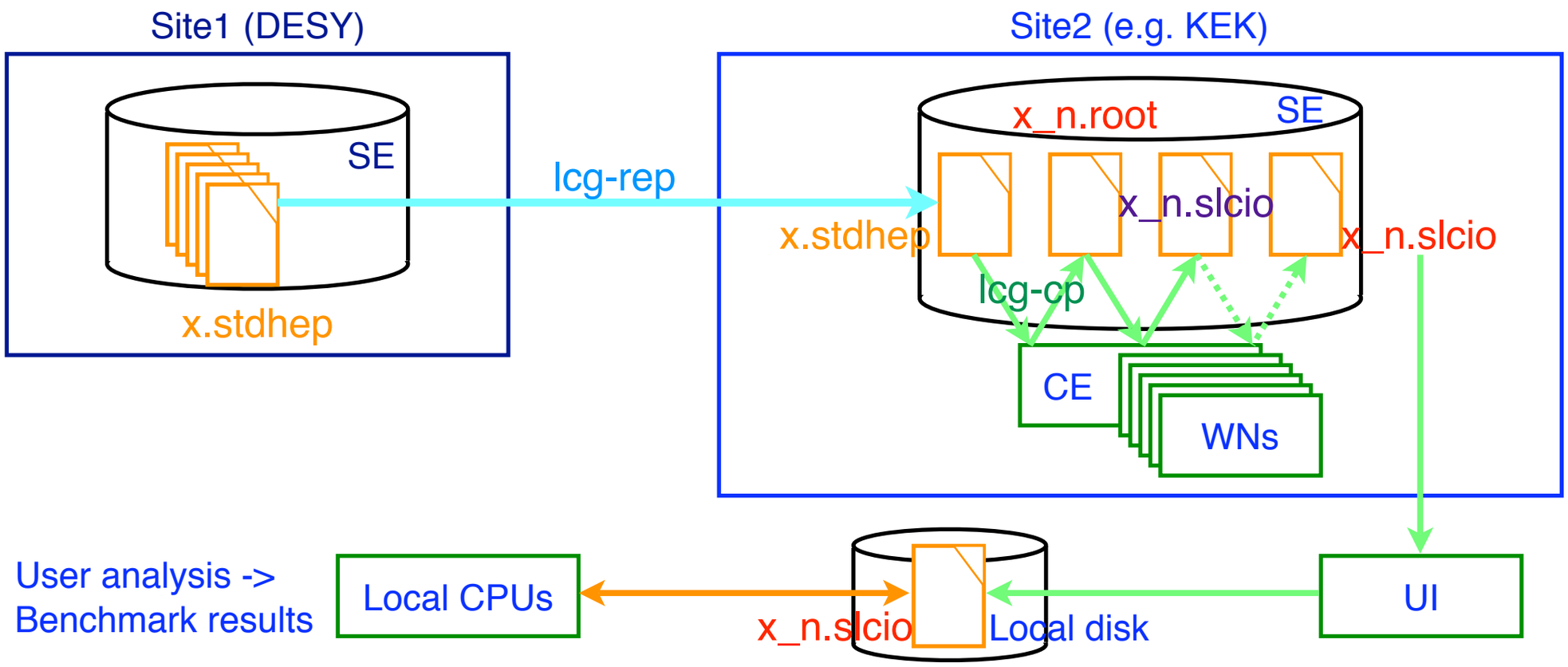
- SL4 migration for v01-03-05 (A new test LCG site based on SL4 was deployed at KEK)
- HPSS-DSI will be introduced at KEK-DMZ soon (DSI: Data Storage Interface)
- ilc GRID in Japan: insufficient CPUs (apart from Atlas tier 2/U. Tokyo)

lcg-infosites --vo ilc ce (as of 29.05.2008)

#CPU	Free	Total Jobs	Running	Waiting	ComputingElement
452	2	0	0	0	cit-gatekeeper.ultralight.org:2119/jobmanager-condor-ilc
1006	2	48	0	48	grid-ce3.desy.de:2119/jobmanager-lcgpbs-testing
1006	2	2486	1005	1481	grid-ce3.desy.de:2119/jobmanager-lcgpbs-default
306	0	7	0	7	lcg-ce0.ifh.de:2119/jobmanager-lcgpbs-ilc
306	0	6	6	0	lcg-ce1.ifh.de:2119/jobmanager-lcgpbs-ilc_blade
12941	5065	300	150	150	fermigrid1.fnal.gov:2119/jobmanager-condor-ilc
1508	655	159	159	0	grid10.lal.in2p3.fr:2119/jobmanager-pbs-ilc
696	348	1	0	1	node07.datagrid.cea.fr:2119/jobmanager-lcgpbs-ilc
364	221	141	141	0	polgrid1.in2p3.fr:2119/jobmanager-pbs-ilc
3023	3023	0	0	0	cclcgceli01.in2p3.fr:2119/jobmanager-bqs-medium
416	416	0	0	0	cclcgceli01.in2p3.fr:2119/jobmanager-bqs-short
3023	2805	218	218	0	cclcgceli01.in2p3.fr:2119/jobmanager-bqs-long
3023	3023	0	0	0	cclcgceli02.in2p3.fr:2119/jobmanager-bqs-medium
3023	2869	154	153	1	cclcgceli02.in2p3.fr:2119/jobmanager-bqs-long
416	414	2	0	2	cclcgceli02.in2p3.fr:2119/jobmanager-bqs-short
12	2	0	0	0	dg10.cc.kek.jp:2119/jobmanager-lcgpbs-ilc
3	0	1	1	0	dg02.cc.kek.jp:2119/jobmanager-lcgpbs-ilc ← SL4 test site
66	64	0	0	0	rls02.cc.kek.jp:2119/jobmanager-lcgpbs-ilc
6	6	0	0	0	grid02.kobe.jp.hep.net:2119/jobmanager-lcgpbs-ilc
2	2	0	0	0	grorie02.awa.tohoku.ac.jp:2119/jobmanager-lcgpbs-ilc
957	890	0	0	0	ce01.cmsaf.mit.edu:2119/jobmanager-condor-ilc
2050	112	1618	89	1529	u2-grid.ccr.buffalo.edu:2119/jobmanager-pbs-ccr
2050	112	0	0	0	u2-grid.ccr.buffalo.edu:2119/jobmanager-pbs-debug
2050	112	0	0	0	u2-grid.ccr.buffalo.edu:2119/jobmanager-pbs-inquiry
2553	70	3	0	3	lcgce02.gridpp.rl.ac.uk:2119/jobmanager-lcgpbs-gridS
2553	70	1326	929	397	lcgce02.gridpp.rl.ac.uk:2119/jobmanager-lcgpbs-grid500M
32	32	0	0	0	lcfgng.cs.tau.ac.il:2119/jobmanager-pbs-ilc
1	0	3	3	0	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-cms
1	0	87	84	0	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-hep
1	0	40	32	8	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-hase
1	0	1	1	0	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-tigre
1	0	4	0	4	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-serial
1	0	48	48	0	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-hepquad
1	0	0	0	0	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-parallel
255	83	0	0	0	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-receiveq
1	0	0	0	0	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-Phys-Class
1	0	0	0	0	antaeus.hpcc.ttu.edu:2119/jobmanager-lsf-quadparallel

A benchmarking model on GRID

- From common StdHep to benchmark results

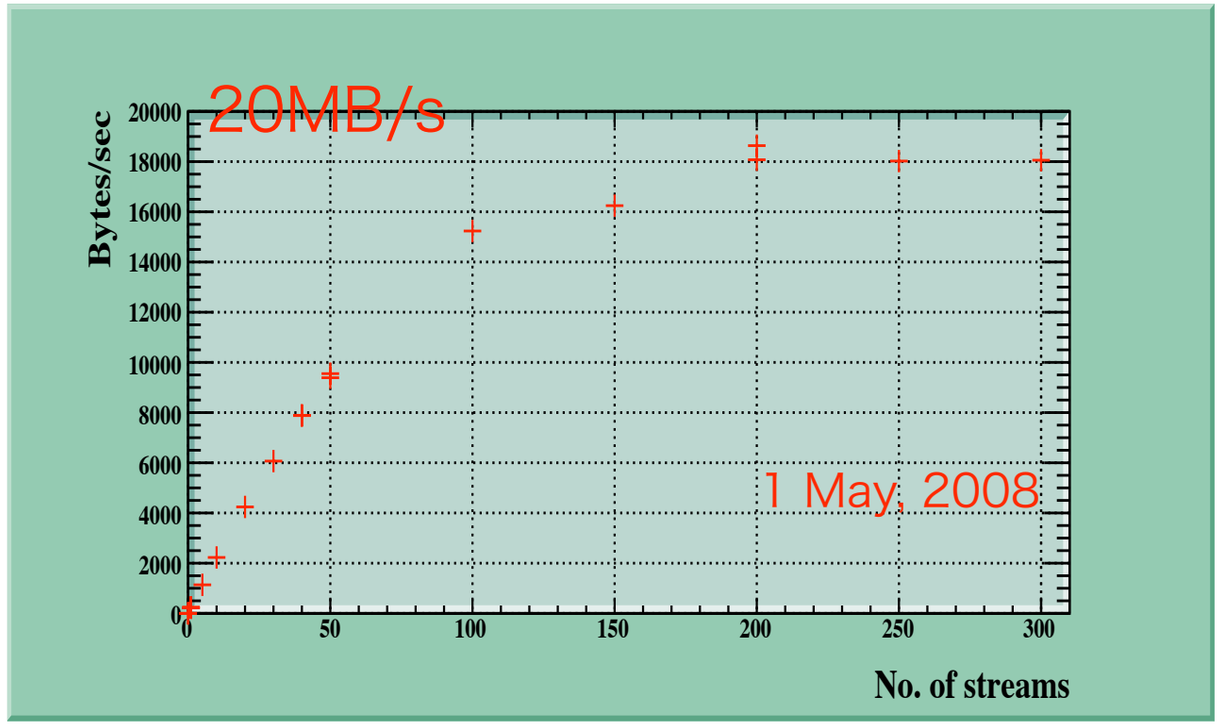


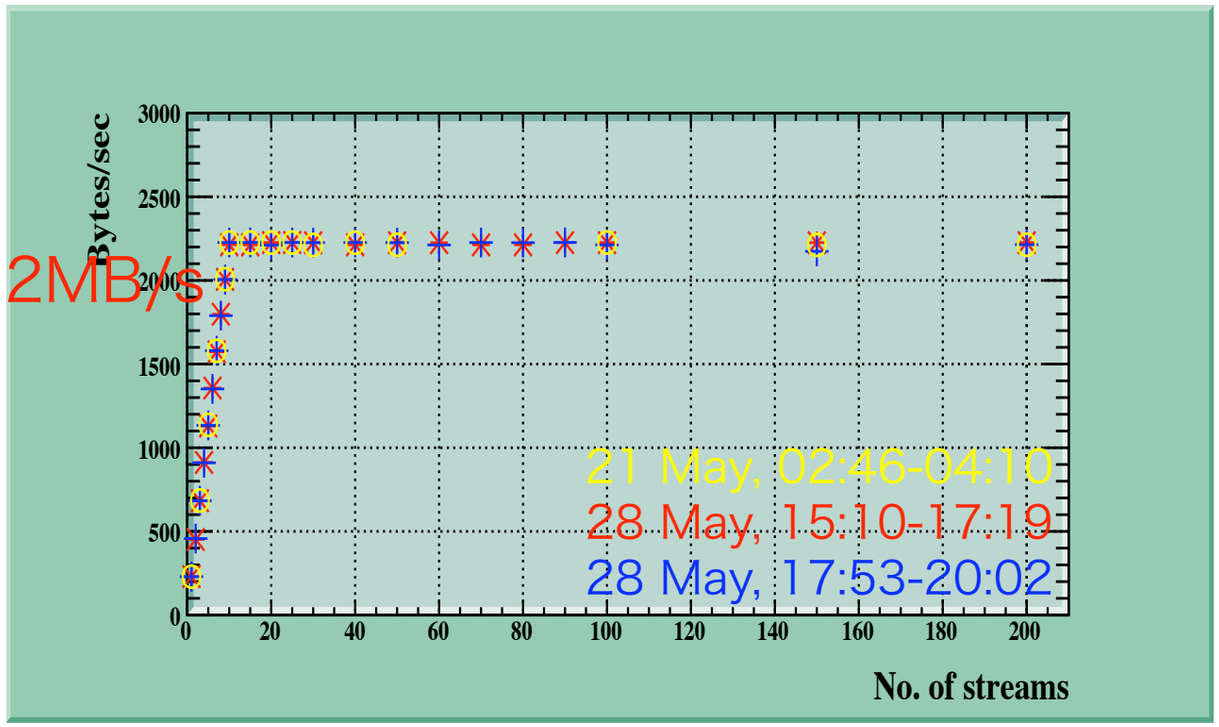
- At the moment, there is a problem to execute (modified) MarlinReco/PandoraPFA on GRID in our environment
  - ilcsoft version control by ILC-SGM (Software Group Manager)
    - Offical shared libraries (binaries): under $VO_ILC_SW_DIR
    - Our own libraries to adapt to Jupiter: replace libMarlinReco.so & libPandoraPFA.so

    ➡Potential problem for loading offical/private SOs -> will be solved soon...

lcg-cp w/ multi-port trans.

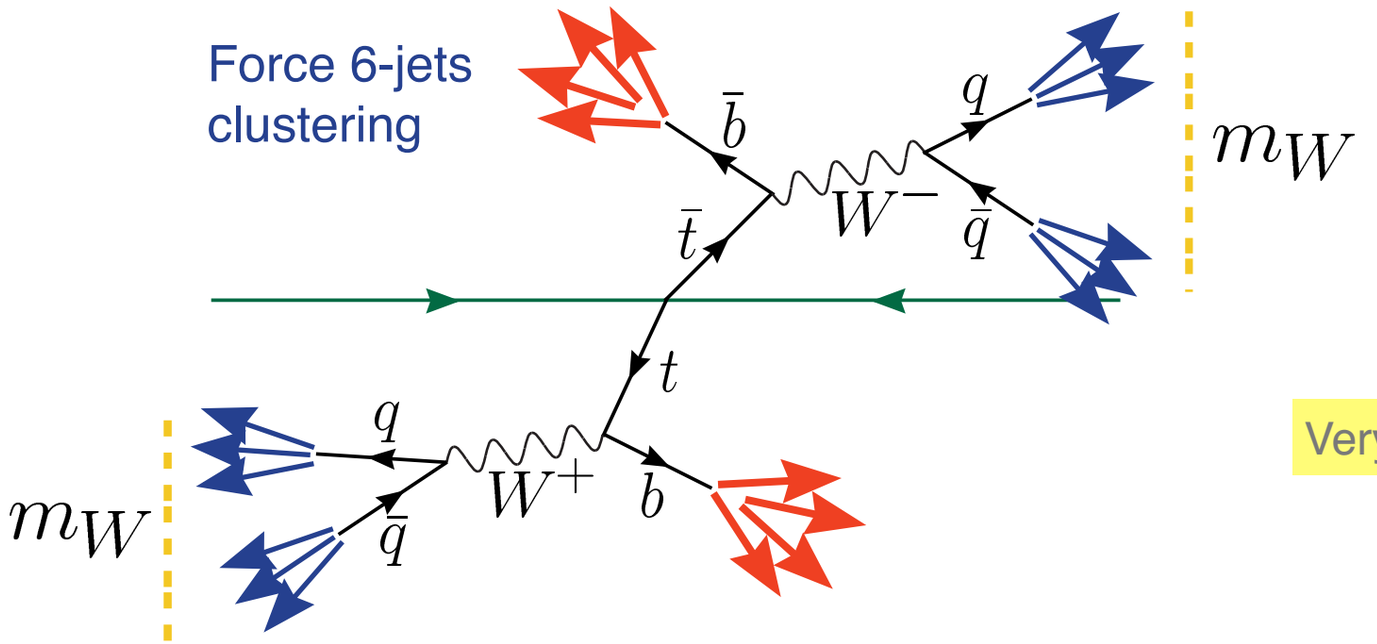
- File transfer speed: essential problem
  - 370MBytes transfer
  - From RAL-SE to KEK
  - As of 1 May, 2008
  - Max 20MB/s w/ 200 streams
  - After 20 May, 2008
  - Max 2.2MB/s w/ 10 streams
  - Same rate at any hour/day
    - Configuration change at RAL?
  - Same rate from DESY
  - Need network tuning: TPC window size

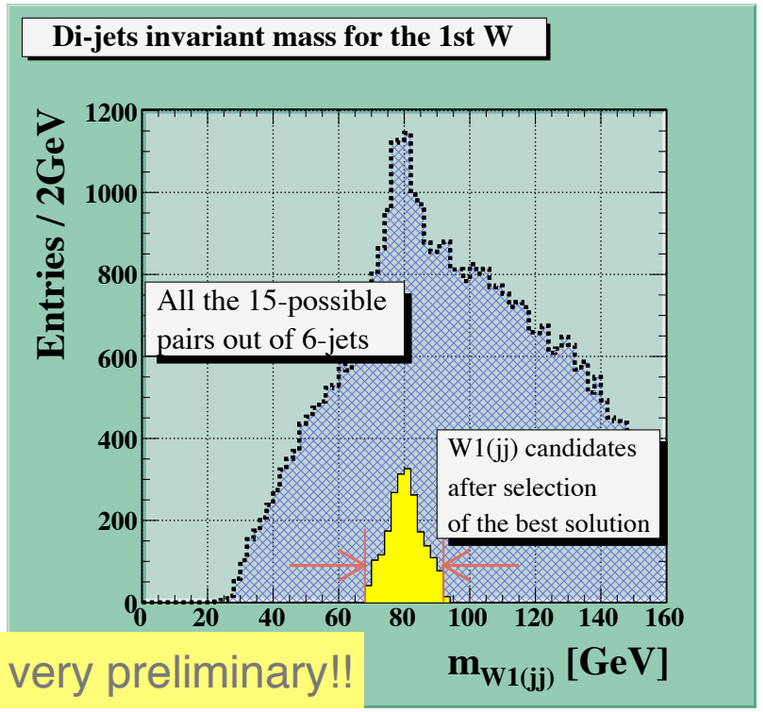




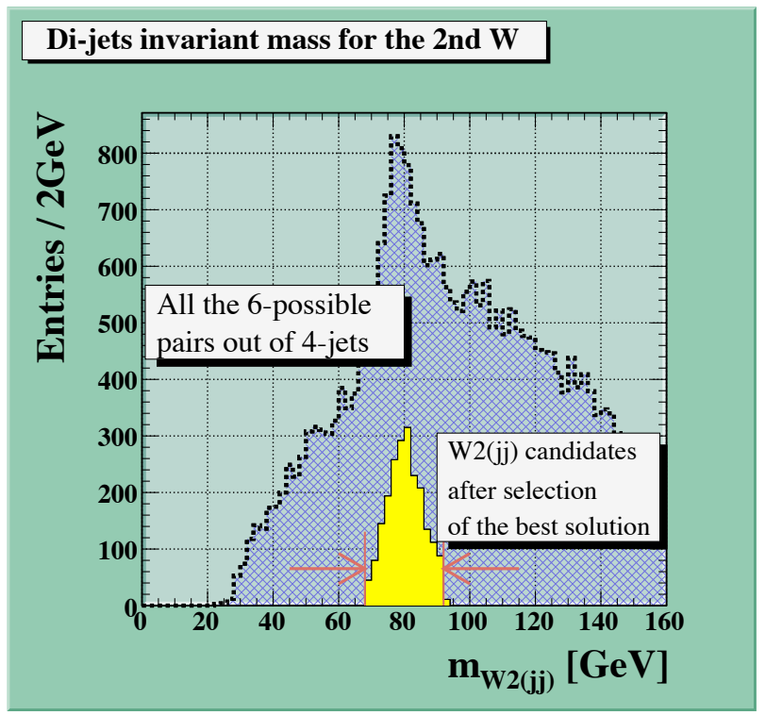
A benchmark analysis: ttbar 500GeV

- SLAC SM StdHep -> Jupiter -> MarlinReco/PandoraPFA
  -> JSF & Sattelites (LEDA, Anlib)





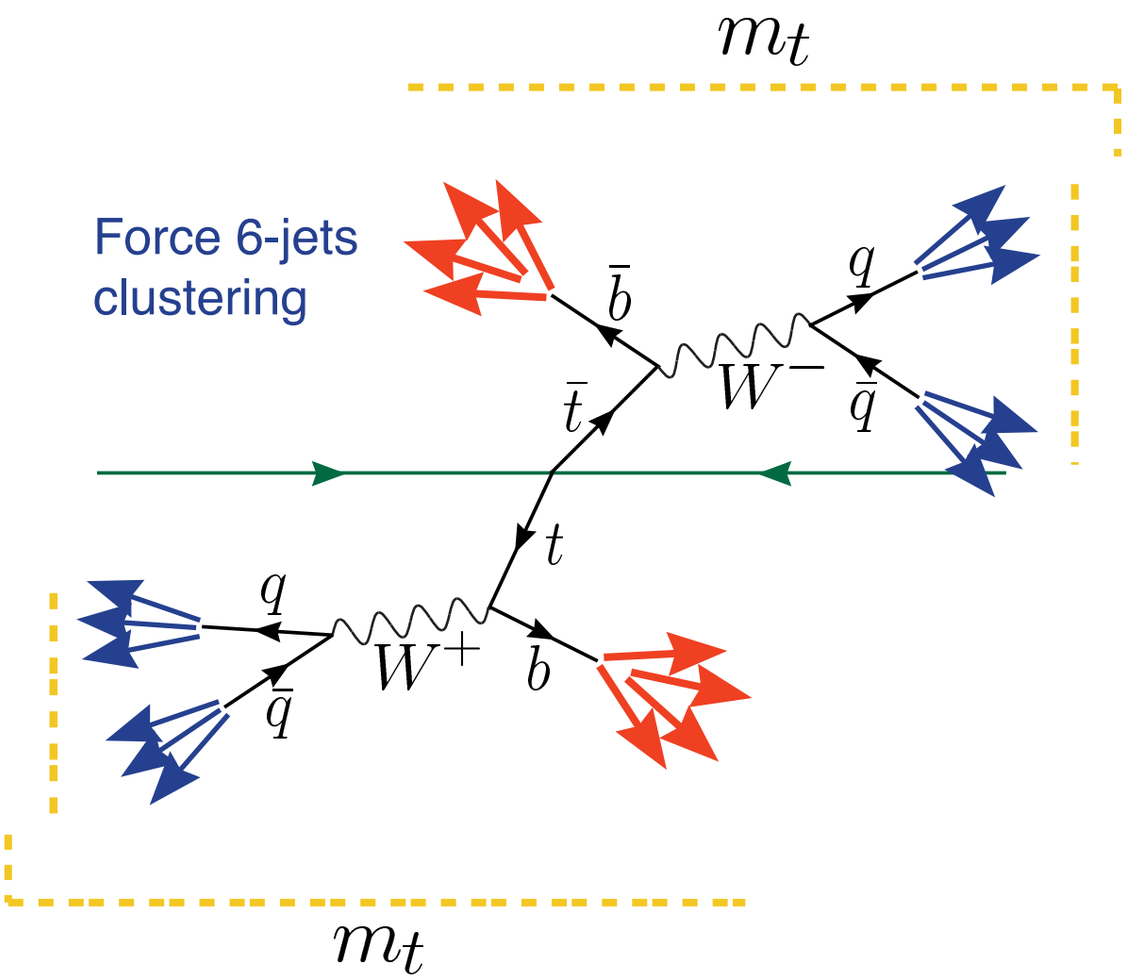
Very very preliminary!!

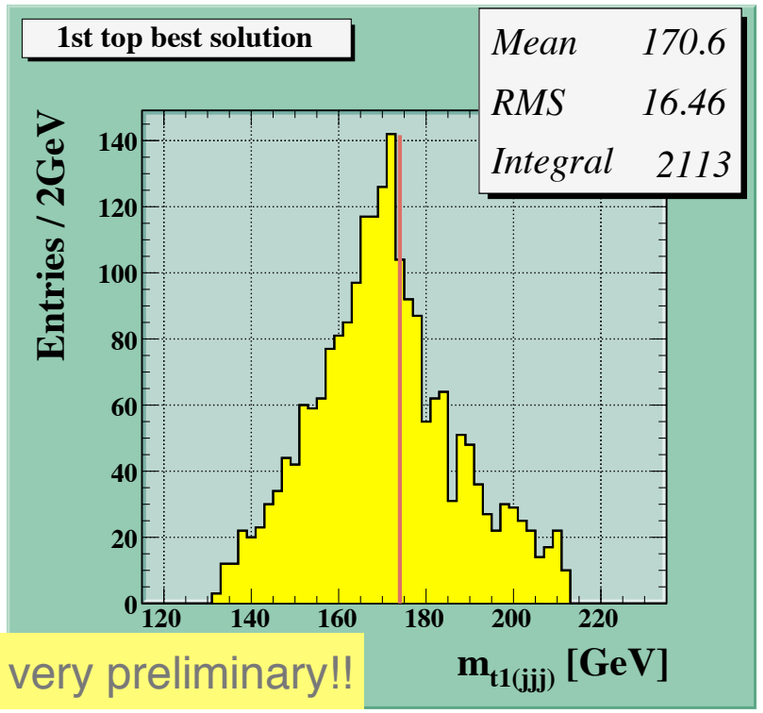


- $\chi^2 = (m_{w1} - m_w)^2/\sigma_{mw}^2 + (m_{w2} - m_w)^2/\sigma_{mw}^2$
  $+ (m_{t1} - m_t)^2/\sigma_{mt}^2 + (m_{t2} - m_t)^2/\sigma_{mt}^2$
- Reduction of both process & combinatorial BG:
  - Double b-tagging is powerful tool
  - Not yet implemented LCFIVertex to this analysis

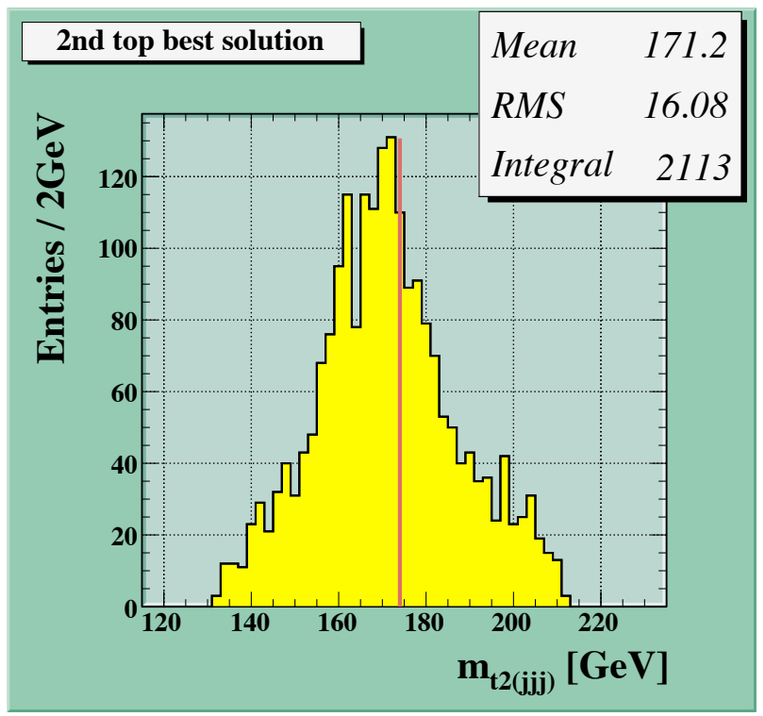
A benchmark analysis: ttbar 500GeV

- SLAC SM StdHep -> Jupiter -> MarlinReco/PandoraPFA
  -> JSF & Sattelites (LEDA, Anlib)





Very very preliminary!!



- $\chi^2 = (m_{w1} - m_w)^2/\sigma_{mw}^2 + (m_{w2} - m_w)^2/\sigma_{mw}^2$
  $+ (m_{t1} - m_t)^2/\sigma_{mt}^2 + (m_{t2} - m_t)^2/\sigma_{mt}^2$
  - w/o b-tagging => tight Di-jet mass cut: Eff(sel)=68%
  - Need to check jet-parton correspondence

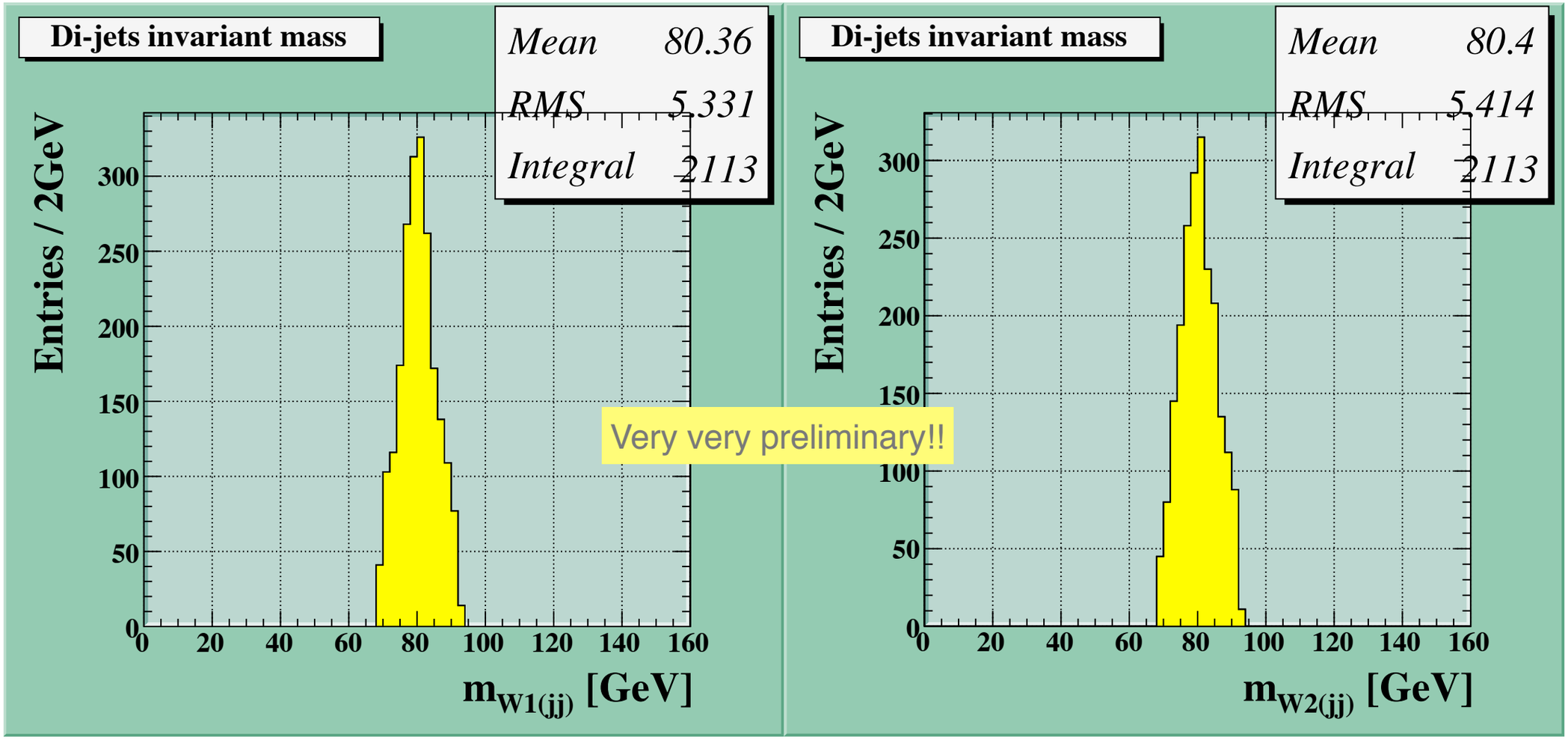
Summary / Plan

- Toward writing up the ILD-LoI:
  - Our analysis flow: Common StdHep -> Jupiter -> MarlinReco/ PandoraPFA (& Satellites) -> JSF (LEDA & Anlib) established
    - A happy medium between our familiar tools and powerful tools
  - Cooperation bet Europe and Japan: GRID is suitable framework
    - All of the SLAC 500GeV SM StdHep files on DESY GRID-SE
    - ilcsoft installation & version control by DESY-IT (Thanks to Jan Engles/DESY)
  - KEK-GRID: SL4 migration (will finish within a month)
  - File transfer speed: insufficient rate -> need tuning
  - Demonstrated on a analysis model on KEK-GRID (part of)
    - As an example: ttbar 500GeV (w/o b-tagging, background analysis)
- Next step:
  - SM background MC mass production on GRID (benchmarking related processes)
  - LCFIVertex implementation to our benchmark analysis
  - Check jet-parton correspondence

Backup slides

A benchmark analysis: ttbar 500GeV

- Di-jets mass resolution (W1 & W2 for the best solution)



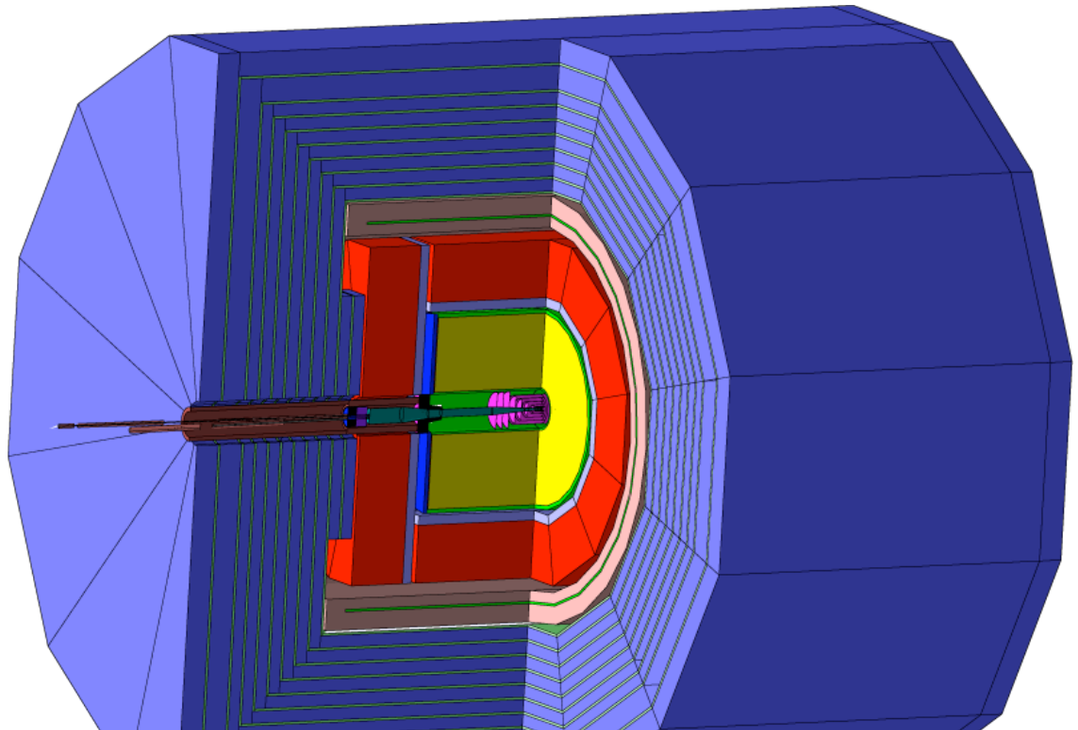
- $\chi^2 = (m_{w1} - m_w)^2/\sigma_{mw}^2 + (m_{w2} - m_w)^2/\sigma_{mw}^2 + (m_{t1} - m_t)^2/\sigma_{mt}^2 + (m_{t2} - m_t)^2/\sigma_{mt}^2$
  - Not yet implemented b-tagging (LCFIVertex information)
    - Tight Di-jet mass cut: $|m_{W(jj)} - m_W| < 12$GeV => Eff(sel) = 68%

MC prod (physics samples)

				Jupiter samples		
Calibration samples			# Events	gldapr08	gldprim_v04	j4ldc_v04
	Thomson's uds91		10000	done	done	done
	Thomson's uds200		10000	done	done	done
	PythiaZPole uds		10000	done	done	done
	PythiaZPole ccbar		10000	done	done	done
	PythiaZPole bbbar		10000	done	done	done
	jsf's uds 91		2500	done	done	done
	jsf's uds 200		2500	done	done	done
	jsf's uds 500		20000	done	done	done
				Jupiter Production		
	Process	Int. Lum(1/fb)	# Events	gldapr08	gldprim_v04	j4ldc_v04
250 GeV	zh->eeH	250	5000	done	done	done
	zh->μμH	250	5000	done	done	done
	zh->ννH	250	12500	done	done	done
	zh->qqH	250	40000	done	done	done
	zz->eeqq	250	20000	done	done	done
	zz->μμqq	250	20000	done	done	done
	zz->ννqq	250	77500	done	done	done
	zz->qqqq	250	168000	9300	done	93000
	zz->ττqq	250	20000	0	done	0
	ww->enuenu	250				
	ww->munumunu	250				
				Jupiter Production		
	Process	Int. Lum(1/fb)	# Events	gldapr08	gldprim_v04	j4ldc_v04
500 GeV	smuon(e-L)	500	14750	done	done	done
	smuon(e-R)	500	61000	done	done	done
	xcxc(e-L)	500	79000	done	done	done
	xcxc(e-R)	500	500	done	done	done
	xn2xn2(e-L)	500	14750	done	done	done
	bblnqq(e-L)	100	54000	0	done	0
	bblnqq(e-R)	100	24000	0	done	0
	bbqqqq(e-L)	150	126000	0	done	0
	bbqqqq(e-R)	150	51000	0	done	0
	tau-pair	12.4	57500	done	done	done
	tau-pair	100		0	in progress	0

Job summary: http://ilcphys.kek.jp/soft/samples/apr08/

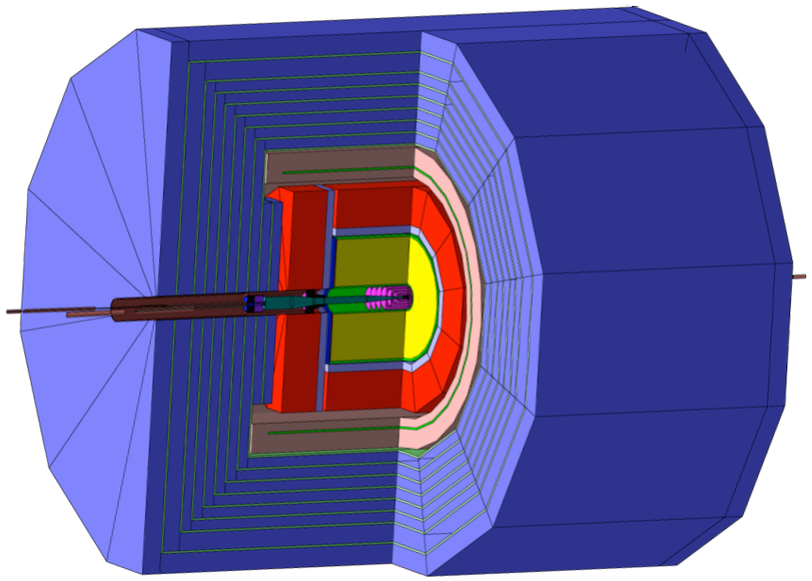
GLD / GLDPrim / J4LDC



GLD

B = 3 Tesla

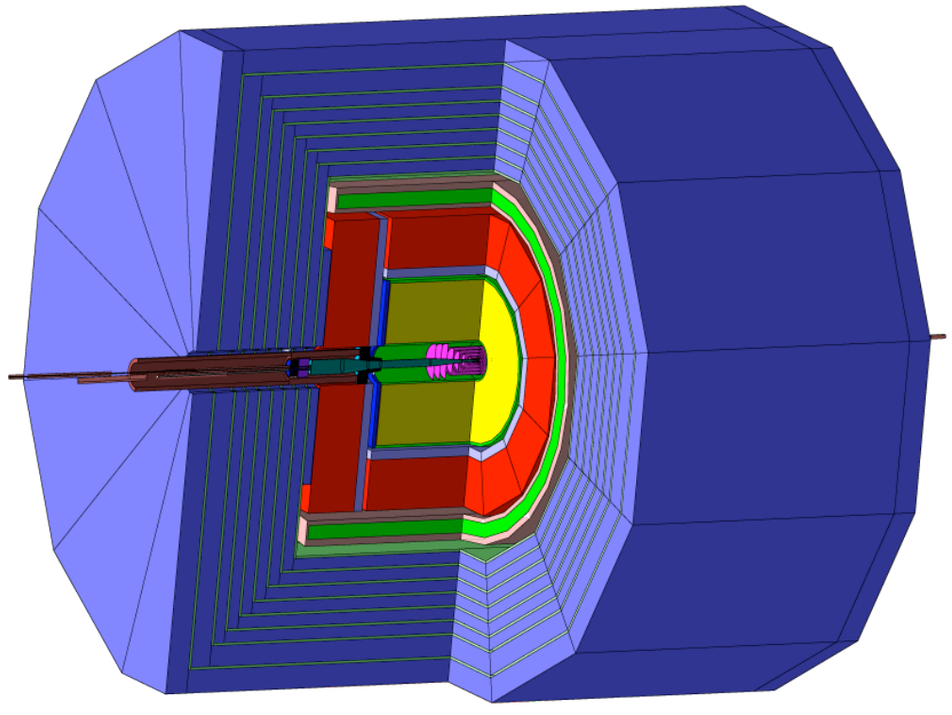
Rmin (ECAL) = 210cm



J4LDC

B = 4 Tesla

Rmin (ECAL) = 160cm



GLDPrim

B = 3.5 Tesla

Rmin (ECAL) = 185cm

GLD / GLDPrim / J4LDC

Name of Sheet of Properties		Properties					
Name of Sheet		gldec07_14m	gldapr08_14m	gldprim_v02	gldprim_v04	j4ldc_v02	j4ldc_v04
BeamPipe							
OuterRadius1		1.525	1.55	1.525	1.450	1.525	1.35
OuterRadius2		1.525	1.55	1.525	1.450	1.525	1.35
BeamPipeThickness		0.025	0.050	0.025	0.050	0.025	0.05
InnerRadius		1.5	1.5	1.5	1.4	1.5	1.3
Zmax J4.IR.ZEdges		5.0	8.0	5.0	8.0	5.0	8.0
Zmax J4IR.BeamPipeIP.HalfZLength		5.5	8.0	5.5	8.0	5.5	8
Zmax J4IR.BeamPipeMiddle.ZEdges		5.0	8.0	5.0	8.0	5.0	8.0
Vertex Detectors							
Number of Layers		6	6	6	6	6	6
Inner Radius		2.0	1.75	1.8	1.6	1.6	1.5
OuterRadius		5.0	6.0	4.8	6.0	4.6	6.0
VTX Thickness/Layers		0.005	0.0094	0.005	0.0094	0.005	0.0094
Silicon Radiation Length		9.36	9.36	9.36	9.36	9.36	9.36
VTX Thickness/Layer in Rad. Length	0.0010	0.000534188	0.001004274	0.000534188	0.001004274	0.00053419	0.0010043
Total VTX Thickness in Rad. Length		0.003205128	0.006025641	0.003205128	0.006025641	0.00320513	0.0060256
Half Z Length of 1st Layer		6.5	7.25	6.5	7.25	6.5	7.25
Outer Radius of 2nd Layer		2.205	1.9594	2.005	1.8094	1.805	1.7094
CosTheta Max of 2nd Layer	0.95	0.946994531	0.965365387	0.955572163	0.970240036	0.96353914	0.9733118
Half Z Length of 4th Layer		10	13.5	10	13.5	10	13.5
Outer Radius of 4th Layer		3.405	4.0094	3.205	3.9094	3.005	3.8594
CosTheta Max of 4th Layer	0.95	0.946628398	0.958616106	0.952285837	0.960535654	0.95769439	0.9614815
Half Z Length of 6th Layer		10	13.5	10	13.5	10	13.5
Spacial Resolution							
Intermediate Tracker Barrel							
Number of Layers		4	4	4	4	4	4
Inner Radius of 1st Layer		9.0	9.0	9.0	9.0	9.0	9.0
Inner Radius of Last Layer		30.0	30.0	30.0	30.0	29	29
Total Barrel IT Thickness (R.L.)		0.024	0.024	0.024	0.024	0.024	0.024
MaxCosTheta		0.9	0.9	0.9	0.9	0.9	0.9
HalfZ of 1st layer		18.58267444	18.58267444	18.58267444	18.58267444	18.5826744	18.582674
HalfZ of 2nd layer		33.03586568	33.03586568	33.03586568	33.03586568	33.0358657	33.035866
HalfZ of 3rd layer		47.48905691	47.48905691	47.48905691	47.48905691	47.4890569	47.489057
HalfZ of 4th layer		61.94224815	61.94224815	61.94224815	61.94224815	59.8775065	59.877507
J4IT.Barrel.HalfZ		18.5 33.0 47.5 62.0	18.5 33.0 47.5 62.0	18.5 33.0 47.5 62.0	18.6 33.0 47.5 62.0	18.5 33.0 47.5 57	18.5 33.0 47.5 57
Intermediate Tracker Endcap							
Number of layers		7	7	7	7	7	7
MinimumZ		15.5	15.5	15.5	15.5	15.5	15.5
Maximum Z		101.5	101.5	101.5	101.5	101.5	101.5
TPC							
TPC Region Inner Radius		39.5	39.5	39.5	39.5	30	30
Inner SupportTube Thickness		4.215	4.215	4	4	4	4
Drift Region Rmin		43.715	43.715	43.5	43.5	34	34
TPC Region Outer radius		206	206	180	180	158	158
Outer SupportTube Thickness		8.235	8.235	6	6	6	6
DriftRegion Rmax		197.765	197.765	174	174	152	152
Inner Support Tube Rad. Length		0.013000993	0.020864271	0.012337835	0.01980002	0.01233783	0.0198
Outer SupportTube Rad. Length		0.01700115	0.027283841	0.012386994	0.019878937	0.01238699	0.0198789
EndPlate and PadPlane Thickness		5	10	5	10	5	10
TPC Region HalfZ		260	260	235	235	216	216
TPC Drift Region HalfZ		255	250	230	225	211	206
EndPlate and PadPlane Thickness R.L.		0.0999972	0.147795858	0.0999972	0.147795858	0.0999972	0.1477959
# of Radial Sampling		200	256	170	217	150	196
Pad Radial Height		0.77025	0.601757813	0.767647059	0.601382488	0.78666667	0.6020408
Calorimeter							
ECAL Rmin		210	210	185	185	160	160
ECAL # of layers		33	33	33	33	33	33
ECAL Layer Thickness in cm		0.6	0.6	0.6	0.6	0.6	0.6
ECAL Layer Thickness in Rad. Length		0.860794846	0.860794846	0.860794846	0.860794846	0.86079485	0.8607948
ECAL Thickness		19.8	19.8	19.8	19.8	19.8	19.8
ECAL Total Rad. Length		28.40622991	28.40622991	28.40622991	28.40622991	28.4062299	28.40623
HCAL # of layers		46	46	41	42	37	37
HCAL Layer Thickness in cm		2.6	2.6	2.6	2.6	2.6	2.6
HCAL Total Thickness		119.6	119.6	106.6	109.2	96.2	96.2
HCAL Radius of Last Layer		349.4	349.4	311.4	314	276	276
Segment Half Angle (degree)		15	15	15	15	15	15
HCAL Rmax of Last Layer		361.7254974	361.7254974	322.3850026	325.0767206	285.736226	285.73623
ECAL layer Nucl. Int. Length		0.031924195	0.031924195	0.031924195	0.031924195	0.03192419	0.0319242
ECAL Total Nucl. Int. Length		1.053498424	1.053498424	1.053498424	1.053498424	1.05349842	1.0534984
HCAL layer Nucl. Int. Length		0.124730859	0.124730859	0.124730859	0.124730859	0.12473086	0.1247309
HCAL Total Nucl. Int. Length		5.73761952	5.73761952	5.113965224	5.238696083	4.61504179	4.6150418
Total Nucl. Int. Length		6.791117943	6.791117943	6.167463648	6.292194507	5.66854021	5.6685402
Barell CAL HalfZ		270	270	235	235	210	210
Endcap ECAL Front Z		280	280	245	245	220	220
Endcap ECAL LastZ		299.8	299.8	264.8	264.8	239.8	239.8
Endcal HCAL LastZ		419.4	419.4	371.4	374	336	336
Cryostat							
Cryostat Inner Radius		375	375	335	330	300	300
Coil-HCAL Distance of Barell		13.27450256	13.27450256	12.61499742	4.923279351	14.2637742	14.263774
Cryostat Outer Radius		440	440	400	385	375	375
Cryostat Thickness		65	65	65	55	75	75
Cryostat HalfZ		475	475	440	375	415	415
Solenoid Bfield		3	3	3.5	3.5	4	4
Coil Center Radius		400	400	360	355	325	325
Coil Thickness		5	5	5	30	5	5
Coil HalfZ		430	430	395	370	370	370
Return Yoke and Muon Detector							
Barrel Minimum Radius		445	445	405	405	380	380
Coil - Return Yoke Minimum Distance		15	15	10	35	10	10
Barrel Outer Radius		765	765	690	690	700	700
Barrel RY and MUD Total Thickness		315	315	280	280	280	280
Barrel RY Outer Radius		760	760	685	685	660	660
Barrel RY Maximum Radius		786.8098971	786.8098971	709.1641836	709.1641836	683.282279	683.28228
Endcap FrontEndcap FrontZ		425.1	425.1	390	375	365	365
Endcap FrontEndcap LastZ		485	485	450	400	425	425
Endcap FrontEndcap Nsuler Layers		2	2	2	1	2	2
Endcap LastZ		800	800	765	695	740	740
IR-FCAL							
FrontZ		230.0	230.0	230.0	230.0	230.0	230.0
Front Rmin		8.2	8.2	8.2	8.2	8.2	8.2
LastZ		284.99	284.99	284.99	284.99	284.99	284.99
Rmax		39.79	39.0	39.0	39.0	29.0	29.0
IR-BCAL							
CH2Mask FirstZ		405	405	405	405	405	405
CH2Mask LastZ		430	430	430	430	430	430
CH2Mask Outer Radius		20	20	20	20	20	20
BCAL FirstZ		430	430	430	430	430	430
BCAL LastZ		450	450	450	450	450	450
QC FirstZ		451.0	451.0	451.0	451.0	451.0	451.0

JSF: its features

- Framework: JSF = Root based application
  - All functions based on C++, compiled or through CINT
  - Provides common framework for event generations, detector simulations, analysis, and beam test data analysis
  - Unified framework for interactive and batch job: GUI, event display
  - Data are stored as root objects; root trees, ntuples, detector configuration in Jupiter run

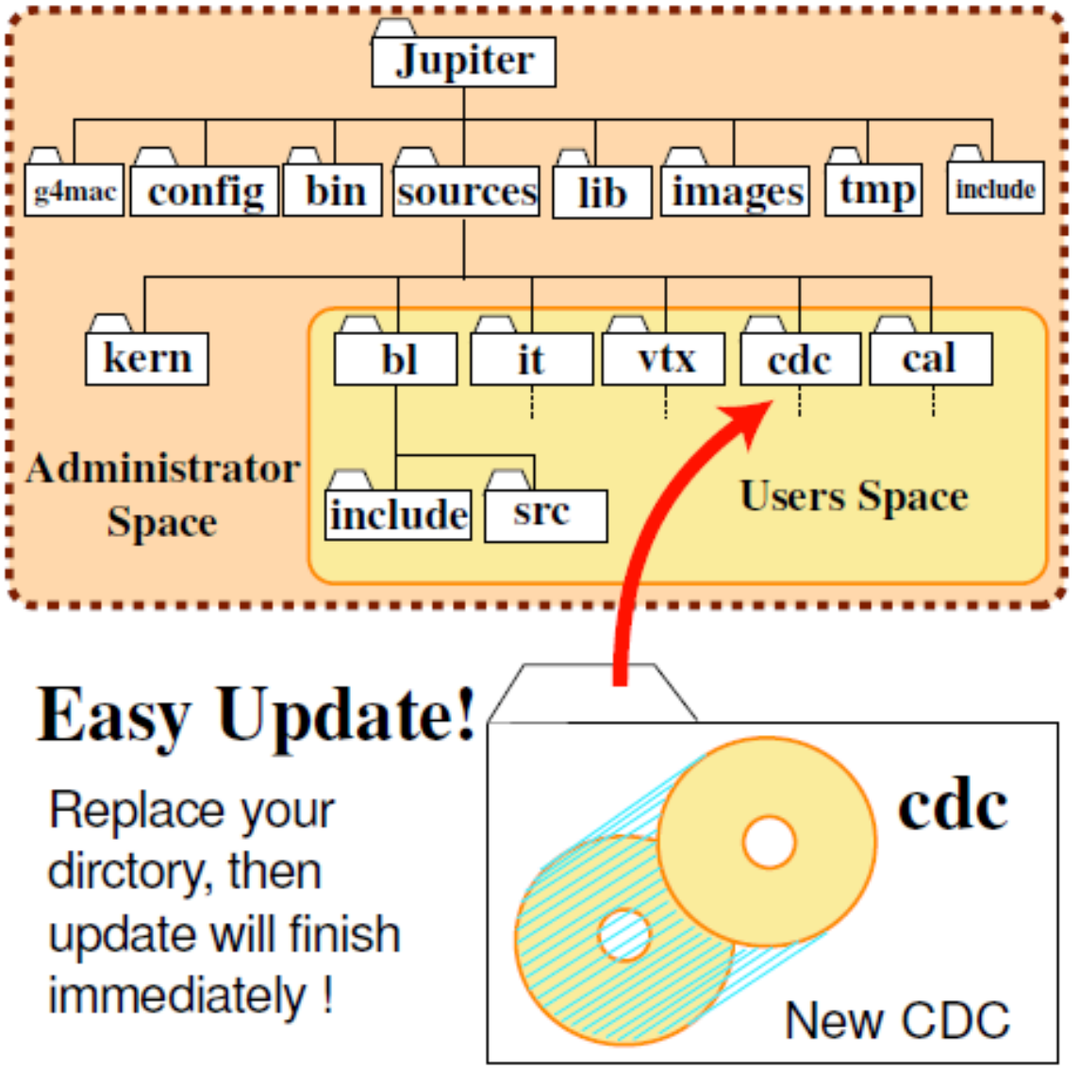
- Release includes other tools; QuickSim, Event generators, beamstrahlung spectrum generator, etc.

Jupiter: its features (1)

- Currently w/ Geant4 9.1p1

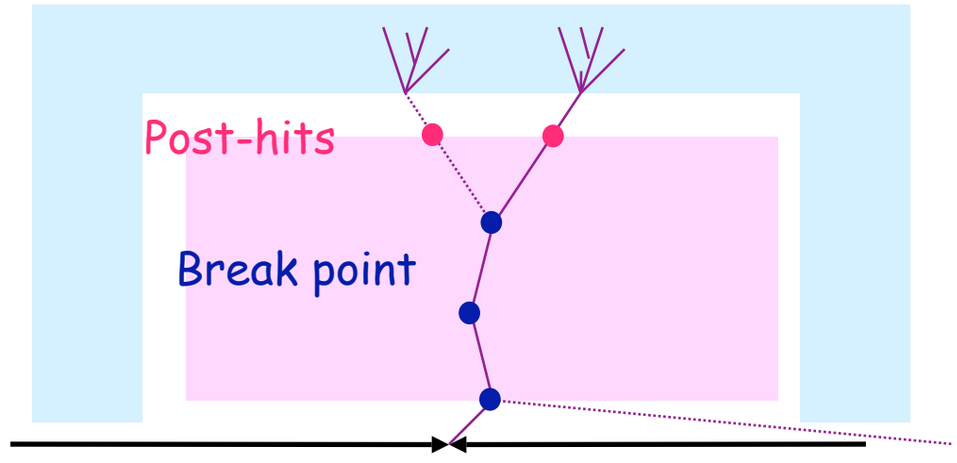
  Physics List: LCPysicsList

  (Default)
- Modular structure
  - easy installation of sub-detectors
- Geometry
  - Simple geometries are implemented (enough for the detector optimization)
  - parameters (size, material, etc) can be modified by an input ASCII file at run time
  - Parameters are saved as a ROOT object for use in Satellites later



Jupiter: its features (2)

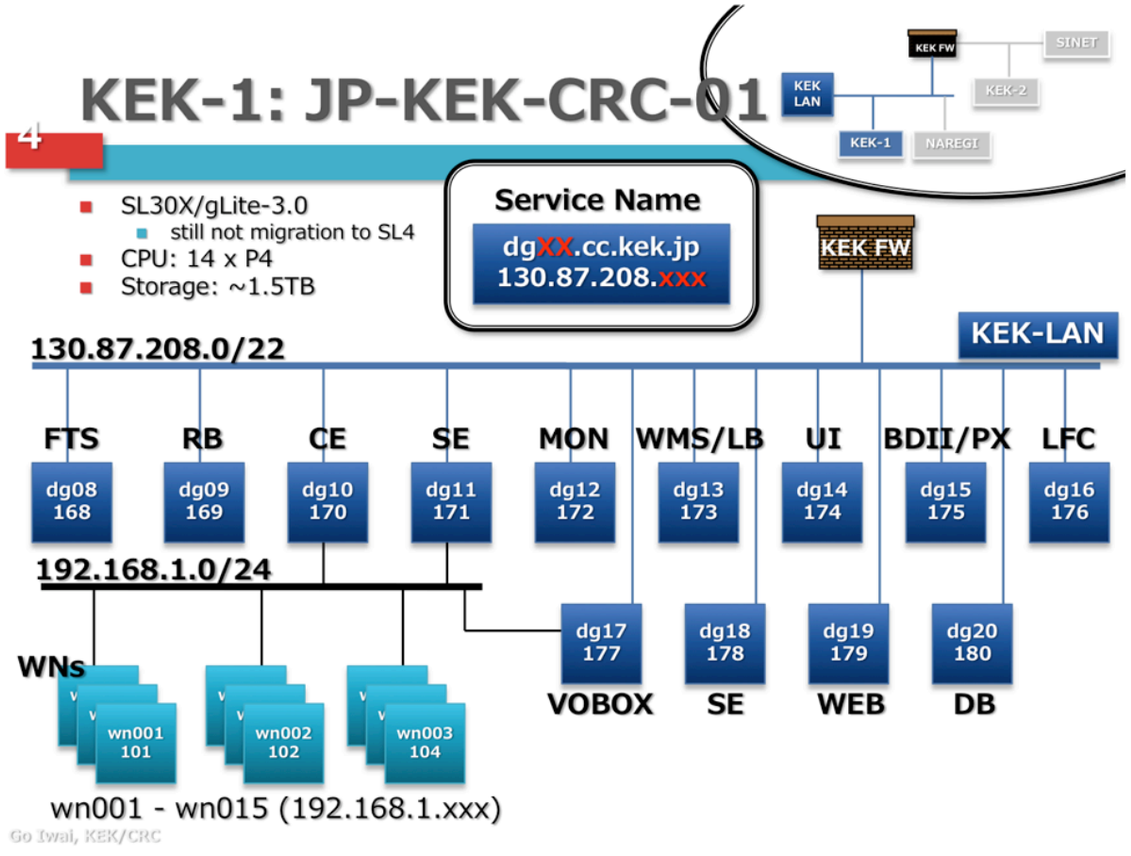
- Input:
  - StdHep file (ASCII), HepEvt, CAIN, or any generators implemented in JSF
  - Interface to StdHep: Prepared as a JSFModule, using StdHep 5.06.01
- Output:
  - Exact Hits of each detectors (Smearing in Satellites)
  - Pre- and Post- Hits at before/after Calorimeter
    - Used to record true track information which enter CAL/FCAL/BCAL
  - Break points in tracking volume
  - Output in LCIO Format is through a JSFModule
- Run mode:
  - A standalone Geant4 application
  - JSF application to output a ROOT file



LCG deployment at KEK

JP-KEK-CRC-01

- Experimental use and R&D, but production in LCG framework
- since Nov. 2005
- is registered to GOC, is ready to WLCG (World wide LCG)
- is operated by KEK staffs
  - practice for production system JP-KEK-CRC-02
  - test use among university groups in Japan
- Resource and component:
  - SL-3.0.5 w/ LCG-2.7 (upgrade to gLite-3.0 is done)
  - CPU: 14, Storage: 1TB



JP-KEK-CRC-02

- More stable services based on experience at KEK-1
- since Jan. 2006
- is registered to GOC, is ready to WLCG
- is outsourced to IBM Co.,Ltd.
- Resource and component:
  - SL-3.0.5 w/ LCG-2.7 (upgrade to gLite-3.0 is done)
  - CPU: 48, Storage: 6TB (w/o including HPSS)
    - HPSS is now connected to a part of DPM pool
- under GOC monitoring
- Accepted VOs are:
  - ilc, calice, belle, ppj, g4med, dteam, ops, apdg & ail (have been gone)