



# ***P-GRADE overview and introduction: workflows & parameter sweeps (Advanced features)***

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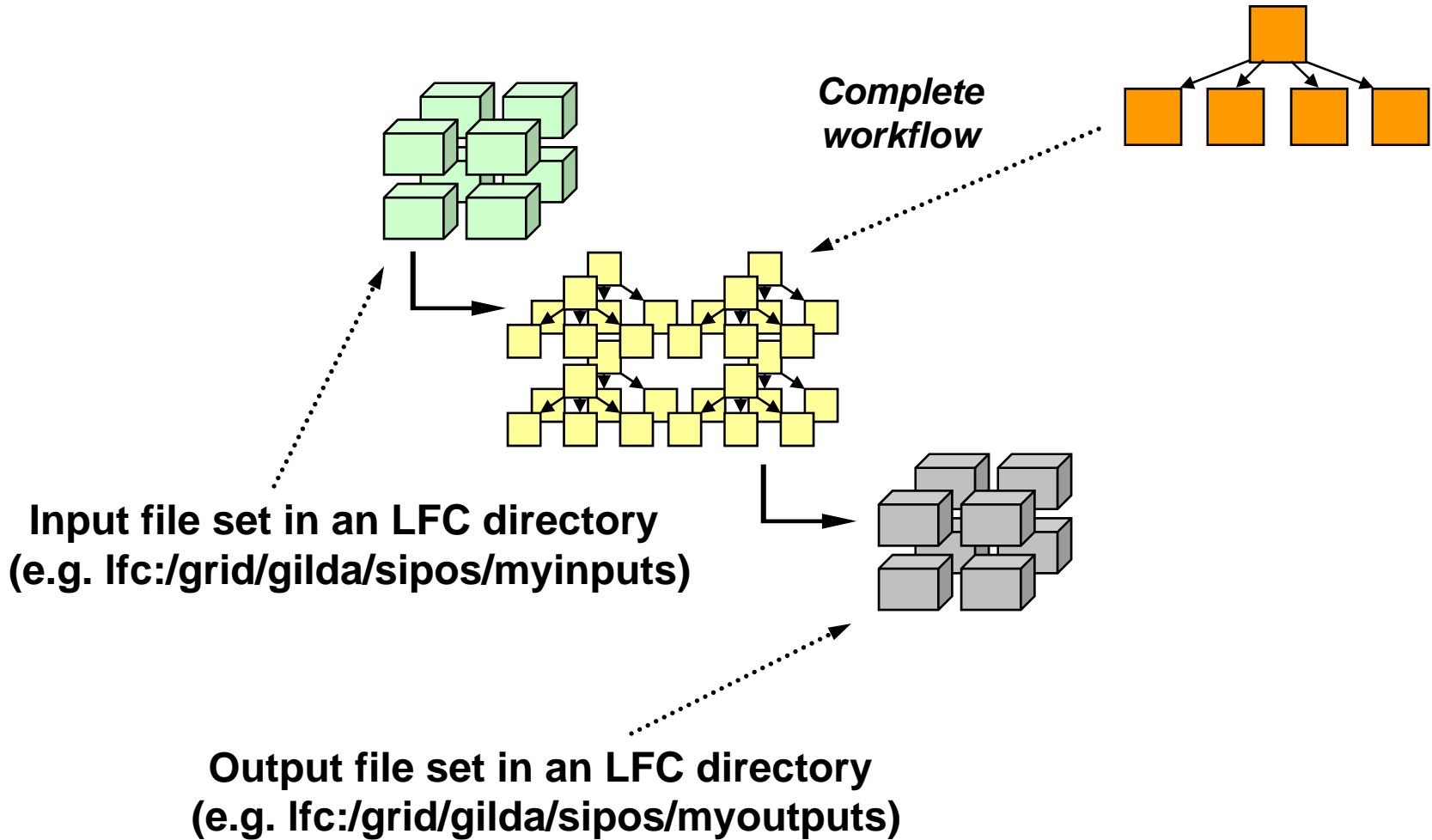


# *Parameter Sweep applications*

- Typical usage of the Grid is that the same application is executed with many different parameters
- P-GRADE portal from release 2.5 supports this functionality
- The next part of the lecture shows how parameter sweep (PS) applications are supported by P-GRADE portal

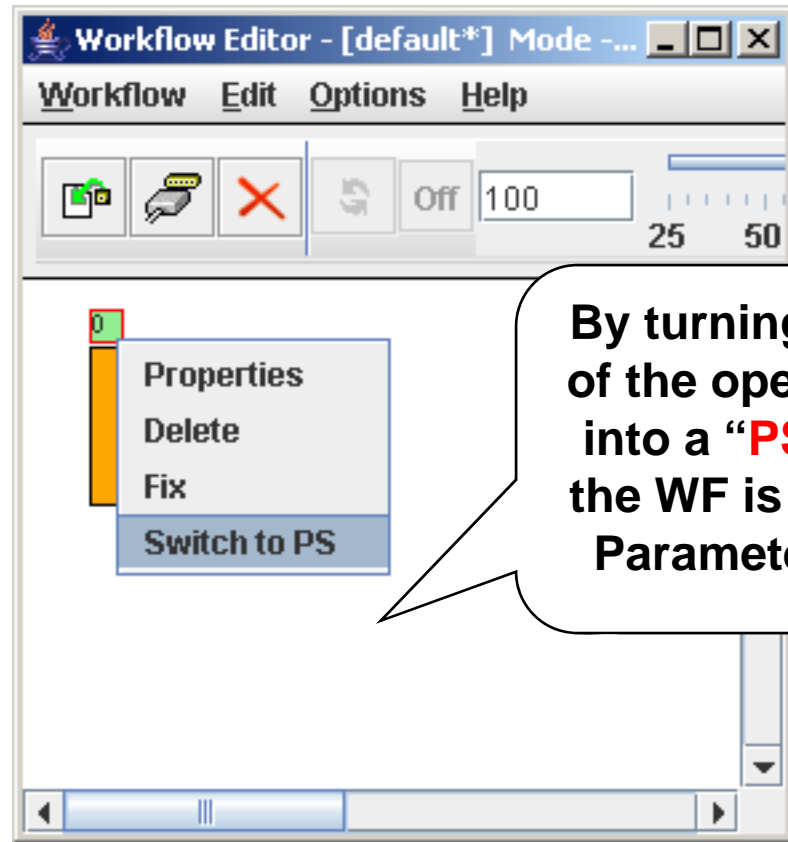


# *Scaling up a workflow to a parameter study with P-GRADE*





# Turning a WF into a parameter study



By turning at least one of the open input ports into a **“PS Input port”** the WF is turned into a Parameter Study WF



## PS Input Port of Simple PS

The screenshot shows the Workflow Editor interface for a process named "Separator / 0 PS properties". The main window displays a workflow with two "SEQ" blocks: "Invert\_A" and "Multip.". A dialog box is open, showing the configuration for the "PS Input Port".

**Remote file Directory instead of FILE reference**

The dialog box contains the following fields and options:

- PS Port name: [ ]
- Type:  In  Out
- Directory type:  Local  Remote
- Directory: nann/PS/EQU\_AGEN\_11\_10/A\_GEN12
- File Browser: [ ]  managed copy
- Internal File Name: INPUT
- File storage type:  Permanent  Volatile

Buttons: **Ok** **Cancel**



## Simple PS Activity 2: placement of result

The screenshot shows the PGrade Grid portal interface. The main window is the Workflow Editor, displaying a workflow named 'MultiplyPS\_GILDA\_LCG2\_gabor'. A 'PS Properties' dialog box is open, showing configuration options for the PS activity. The 'Output Directory' is set to '/grid/gilda/debrecen00/MatrixPS/results'. The 'Grid' is 'gilda\_LCG\_2\_BROKER'. The 'LCG Catalog Type' is 'lfc'. The 'LFC Host' is 'lfc-gilda.ct.infn.it' and the 'SE' is 'aliserv6.ct.infn.it'. A table at the bottom shows the workflow execution status, with 'Multiply\_remote' completed. A table with columns for workflow name, status, size, and percentage is visible at the bottom of the screen.

Workflow Name	Status	Size	Percentage
Multiply_remote	finished	73 KB	0.07%
Overall used quota:		1.039 MB	1.04%

**Menu item PS Properties is available in the Workflow menu**

**Properties of the VO File Catalog**

**The Output directory will contain the ZIP-ped result files of the Workflow executions**

**One SE of the VO – Choose a reliable one!**



# Executing PS workflows

The screenshot shows the PGrade Grid portal interface in a Windows Internet Explorer browser. The address bar displays the URL: [http://n43.hpc.sztaki.hu:8080/gridsphere/gridsphere?cid=77&gs\\_action=doRefreshList](http://n43.hpc.sztaki.hu:8080/gridsphere/gridsphere?cid=77&gs_action=doRefreshList). The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The toolbar contains various icons for navigation and utility. The main content area displays a table of workflow applications with the following data:

Application Name	Status	Size	Progress	Completion	Actions
Ax_EQUAL_B_PS_G_C_sztaki_fork	finished	253 KB	0.25%	✓	PS Details, Submit, Attach, Delete
Ax_EQU_B	init	112 KB	0.11%	N/A	Details, Submit, Attach, Delete
Ax_EQU_B_voce_PS	init	151 KB	0.15%	N/A	PS Details, Submit, Attach, Delete

The "PS Details" button for the "Ax\_EQU\_B\_voce\_PS" application is circled in red. A callout bubble points to this button with the text: "PS Details for parameter sweep workflow applications".

PS Details for parameter sweep workflow applications

# Workflow Manager List PS Details view showing eWF-s



Status of complete application

Statistics of workflows generated from the application

Workflow list shows the state of the generated Workflows.

The screenshot displays the P-Grade Grid portal interface. At the top, there is a navigation bar with tabs for Welcome, Workflow Manager, Certificates, Settings, Information System, and Help. The main content area is titled "Workflow Manager" and contains a "PS workflow details" section and an "eWorkflow list" section.

**PS workflow details**

PS Workflow	Status	[ Output ]	[ Logs ]	[ Action ]
Ax_EQU_B_voce_PS	submitted	N/A	-	Abort Attach Delete

**eWorkflow list**

Statistics

Total	Init	Submitted	Rescue	Error	Finished
12	2	5	0	0	5

Workflow list

Workflow	Status	[ Output ]	[ View ]	[ Action ]
Ax_EQU_B_voce_PS.10	submitted	N/A	Details	Suspend Abort
Ax_EQU_B_voce_PS.6	running	N/A	Details	Suspend Abort
Ax_EQU_B_voce_PS.7	running	N/A	Details	Suspend Abort
Ax_EQU_B_voce_PS.8	running	N/A	Details	Suspend Abort
Ax_EQU_B_voce_PS.9	submitted	N/A	Details	Suspend Abort

**Message:** eWorkflow list successfully shown.

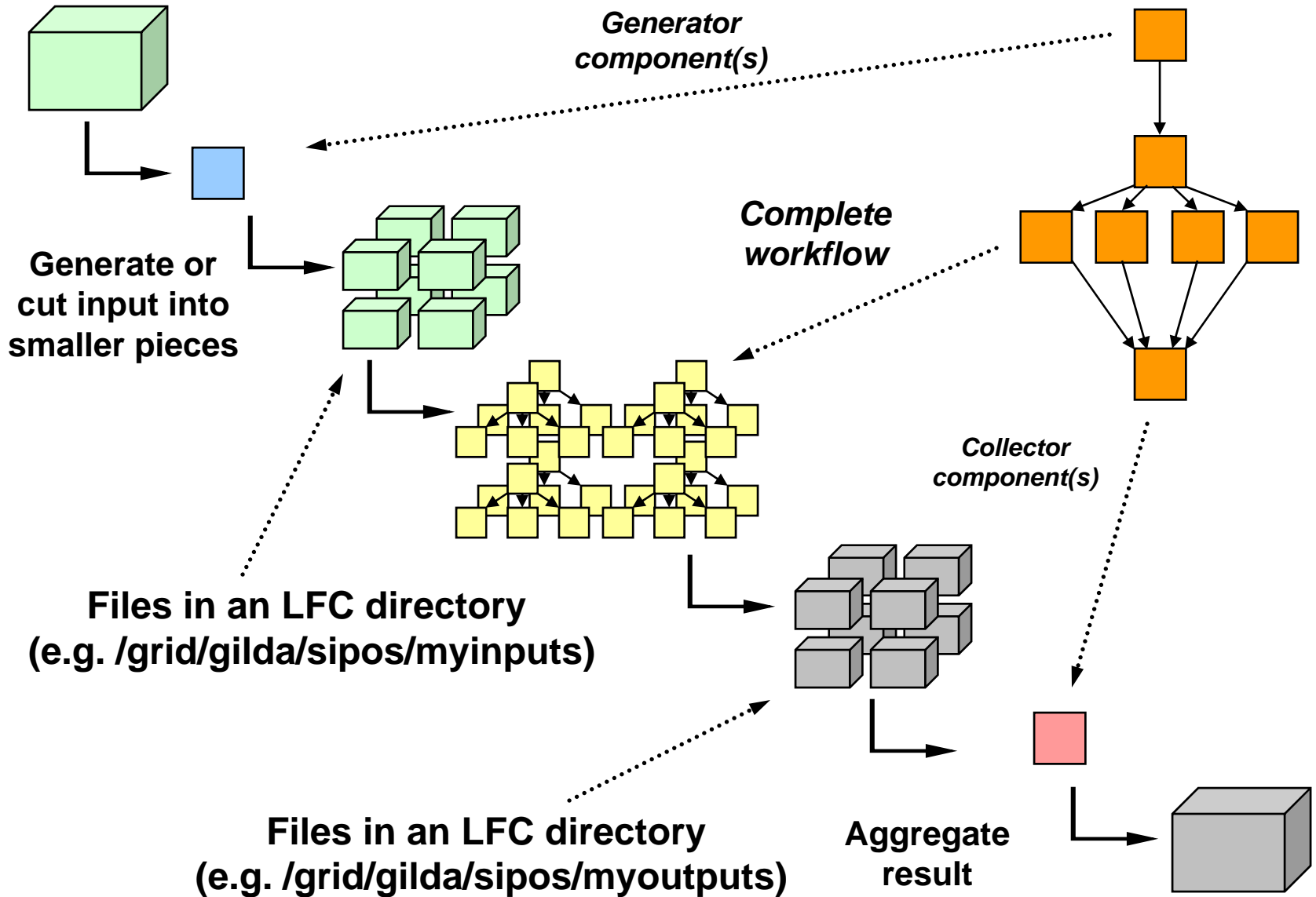




# ***Advanced PS WFs in P-GRADE Portal***

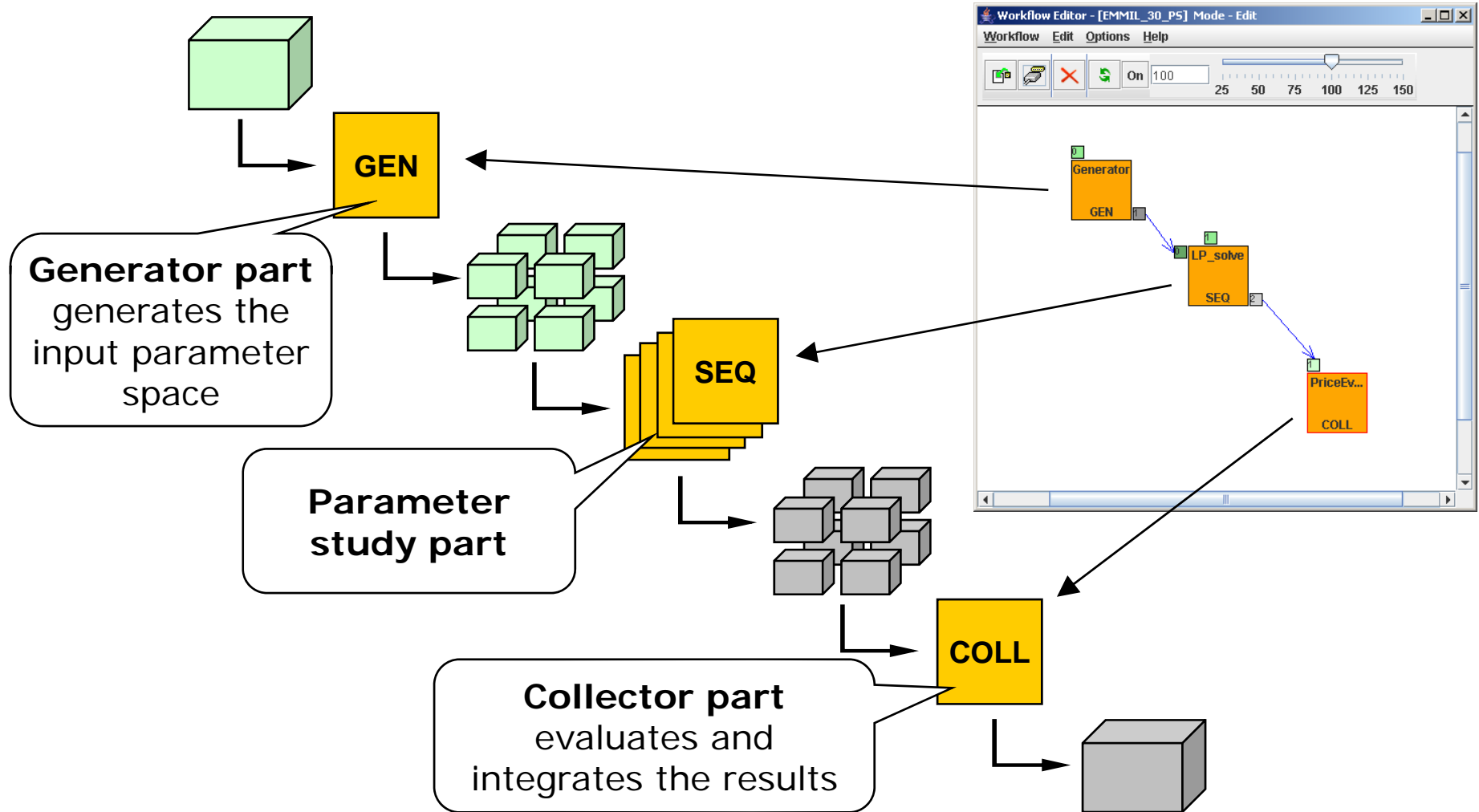


# Advanced parameter studies





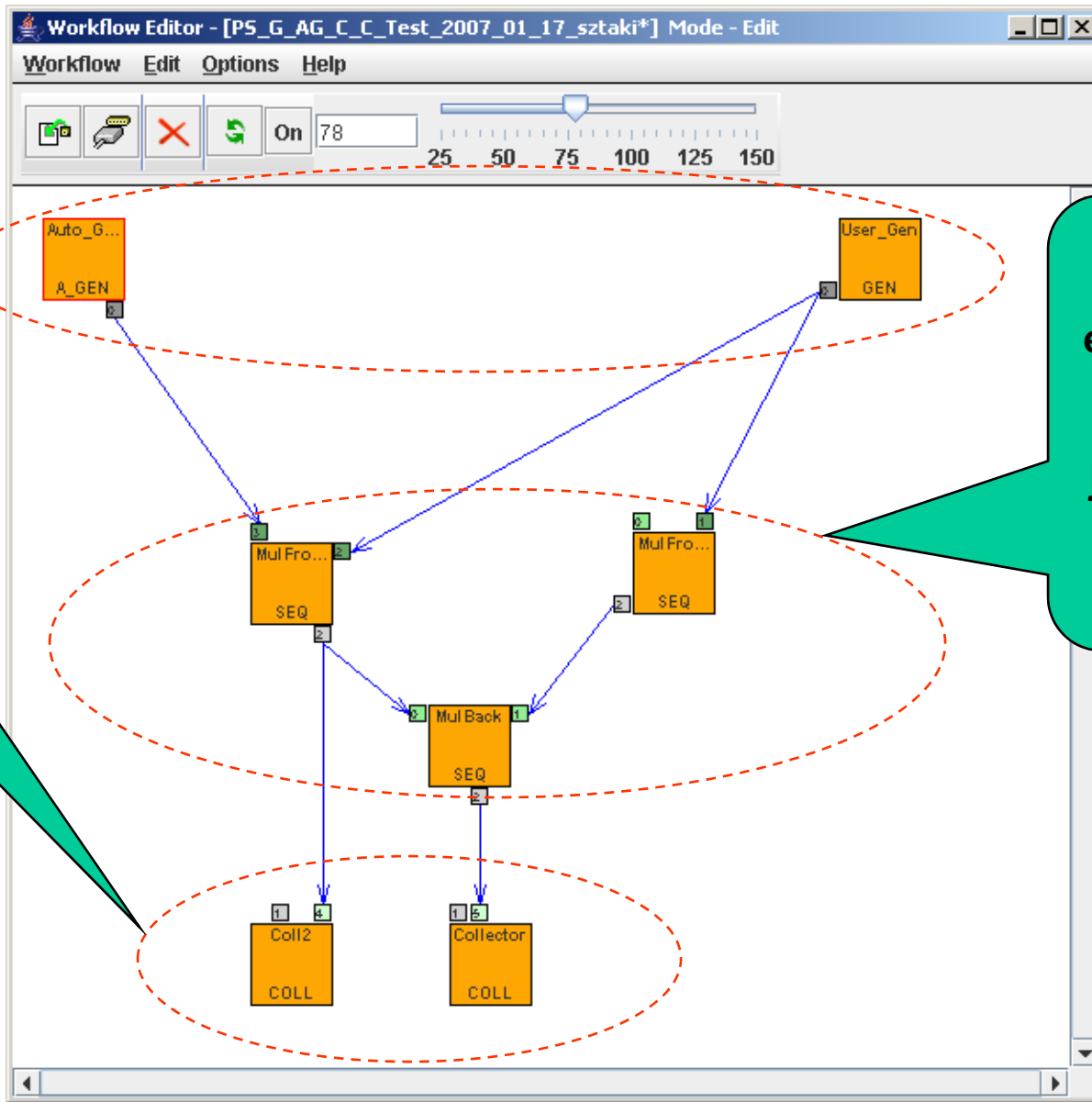
# Concept of advanced parameter study workflows





# The generic PS workflow application

First phase:  
executing  
the  
generators



Second phase:  
executing the  
"real"  
processor  
jobs for each  
input file  
combination

Third phase:  
executing  
the  
collectors



# Detailed view of a PS workflow

Workflow Manager

Refresh Back

PS workflow details					
PS Workflow	Status	[ Output ]	[ Logs ]	[ Action ]	
Ax_EQU_B_PS_A_GEN_Collector	submitted	N/A	-	Abort	Attach Delete

Jobs in generator phase					
Job	Status	Type	Gridname	Hostname	[ Logs ]
Job5	finished	auto-generator	seegrid_LCG_2_BROKER	Portal Server	Out

eWorkflow list Statistics					
Total	Init	Submitted	Rescue	Error	Finished
2	0	2	0	0	0

Workflow	Status	[ Output ]	[ View ]	[ Action ]	
Ax_EQU_B_PS_A_GEN_Collector.1	submitted	N/A	Details	Suspend	Abort
Ax_EQU_B_PS_A_GEN_Collector.2	submitted	N/A	Details	Suspend	Abort

Jobs in collector phase					
Job	Status	Type	Gridname	Hostname	[ Logs ]
Collector	init	collector	seegrid_LCG_2_BROKER	unknown	--

Message: eWorkflow list successfully shown.

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Generator job(s)

Overall statistics of workflow instances

Workflow instances

Collector job(s)



# ***PS practical***