

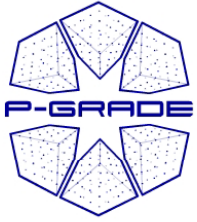


P-GRADE overview and introduction: workflows & parameter sweeps (Advanced features)

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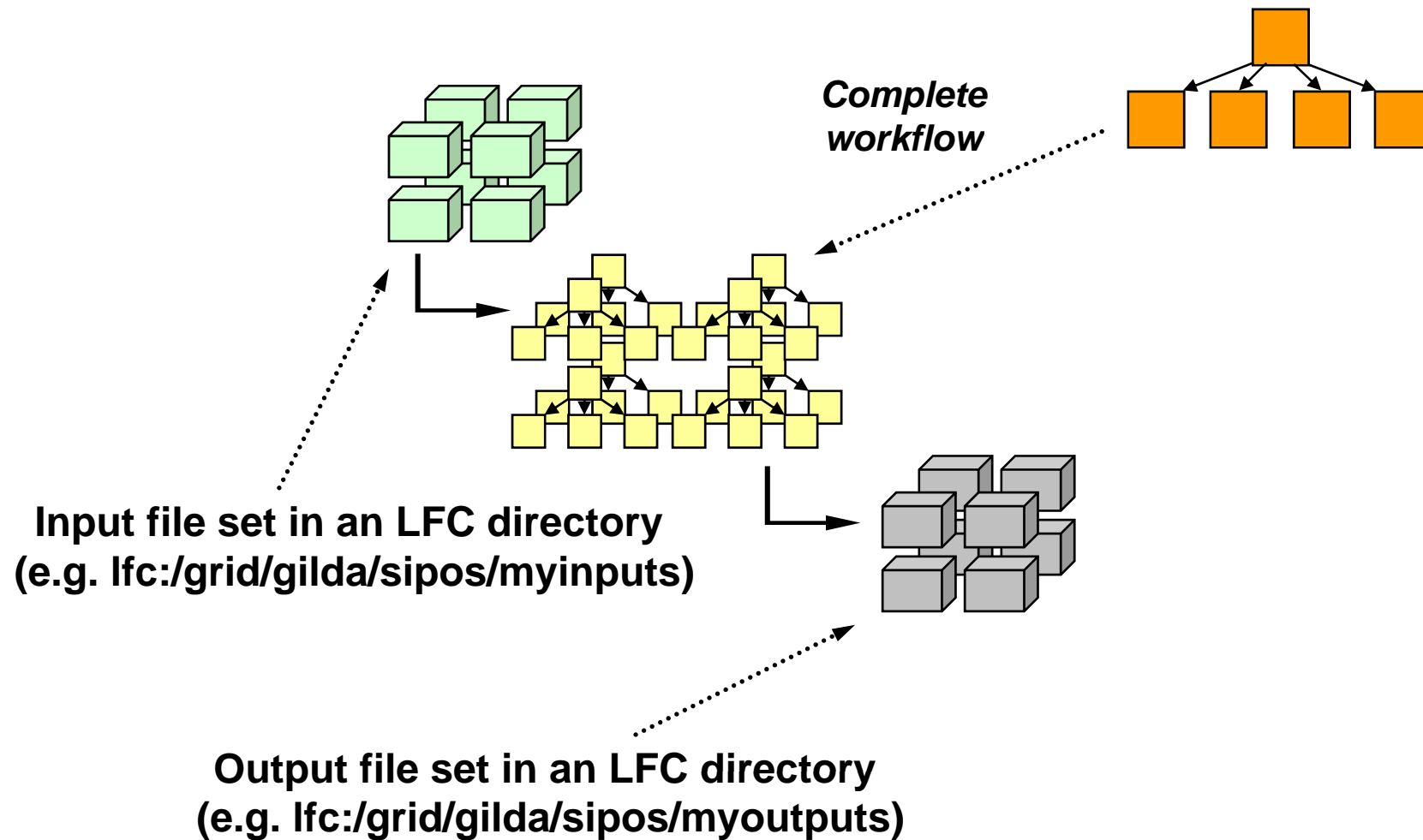


Parameter Sweep applications

- 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

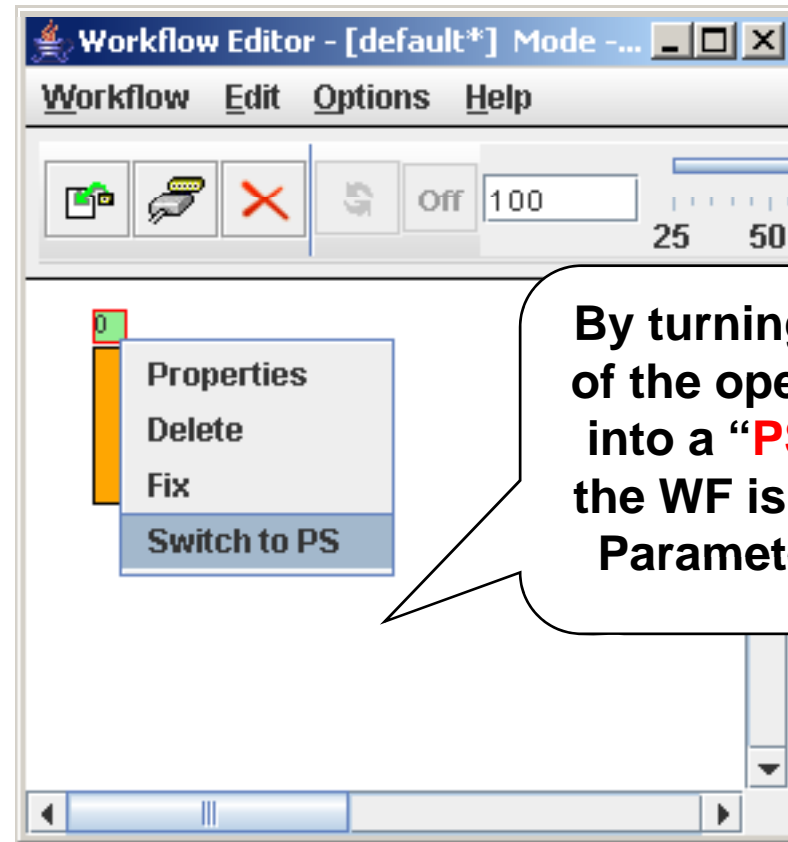


Scaling up a workflow to a parameter study with P-GRADE





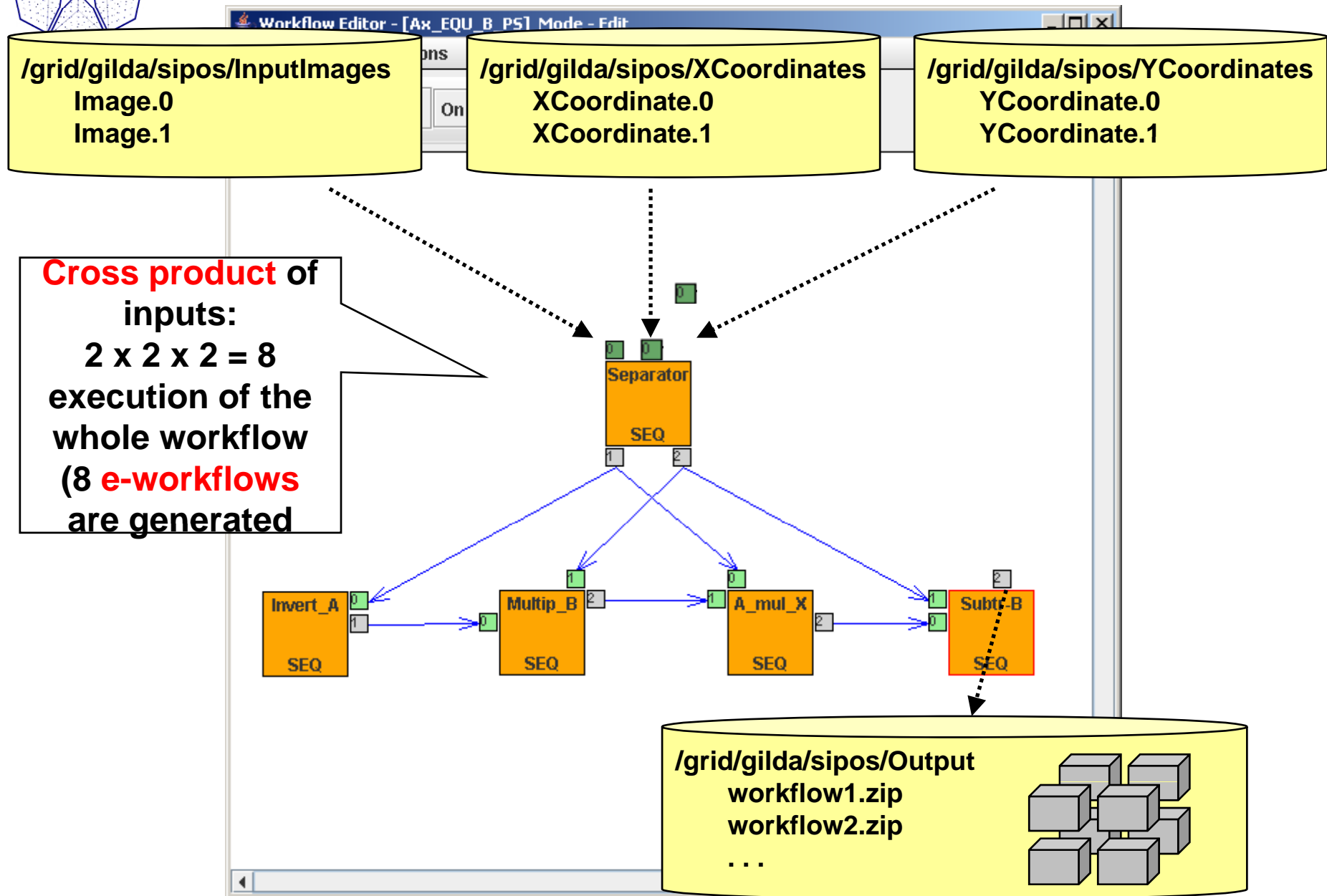
Turning a WF into a parameter study



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



Input-output files are stored in SEs





PS Input Port of Simple PS

The screenshot shows the Workflow Editor interface for a process named "Ax_EQU_B_PS". The main workspace contains two orange boxes labeled "Invert_A SEQ" and "Multip. SEQ" connected by arrows. A dialog box titled "Separator / 0 PS properties" is open, showing the following settings:

- PS Port name: 0
- Type: In Out
- Directory type: Local Remote
- Directory: nann/PS/EQU_AGEN_11_10/A_GEN12
- File Browser: [button]
- managed copy:
- Internal File Name: INPUT
- File storage type: Permanent Volatile

Buttons for "Ok" and "Cancel" are at the bottom of the dialog. A green callout bubble points to the "Directory" field with the text: "Remote file Directory instead of FILE reference".



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 list of Virtual Objects (VOs) is visible in the background, with columns for 'Details', 'Submit', 'Attach', and 'Delete'. The 'Multiply_remote' VO is highlighted as 'finished'.

Activity Name	Status	Size	Progress	SE	Actions
Multiply					Details, Submit, Attach, Delete
Multiply					Details, Submit, Attach, Delete
Multiply_remote	finished	73 KB	0.07%	Not defined.	Details, Submit, Attach, Delete
Overall used quota:		1.039 MB	1.04%		

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

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

Properties of the VO File Catalog

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 browser's address bar displays the URL: `http://n43.hpcc.sztaki.hu:8080/gridsphere/gridsphere?cid=77&gs_action=doRefreshList`. The page content includes a table 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_voice_PS	init	151 KB	0.15%	N/A	PS Details, Submit, Attach, Delete

The "PS Details" button for the "Ax_EQU_B_voice_PS" application is circled in red. A callout box 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 shows the P-Grade Grid portal interface. At the top, there is a navigation menu with 'Welcome', 'Workflows', 'Certificates', 'Settings', 'Information System', and 'Help'. The main content area is titled 'Workflow Manager' and contains several sections:

- PS workflow details:** A table showing details for a specific workflow.
- eWorkflow list Statistics:** A summary table of workflow counts.
- Workflow list:** A table listing individual workflows with their status and actions.

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

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

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

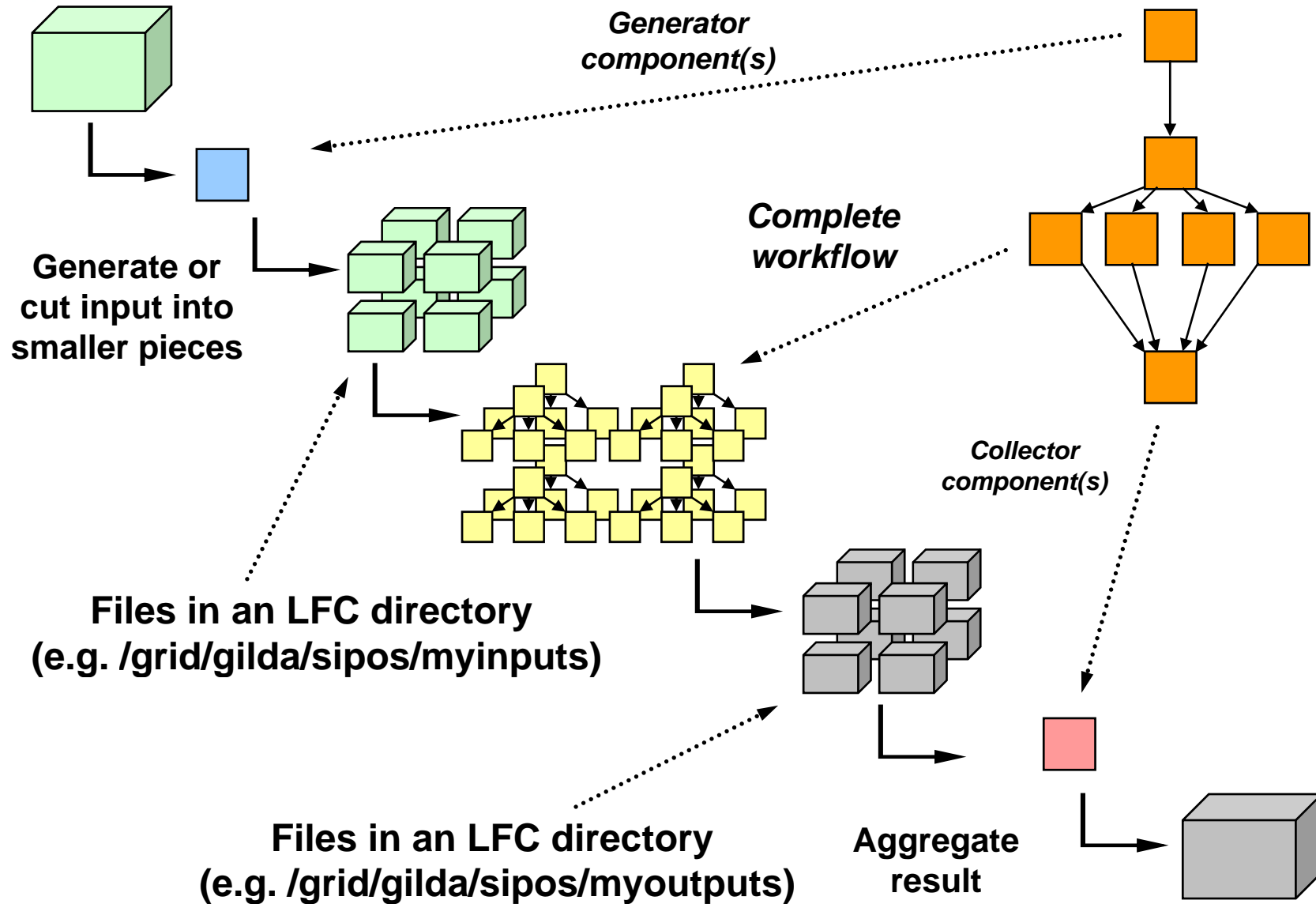
Message: eWorkflow list successfully shown.



Advanced PS WFs in P-GRADE Portal

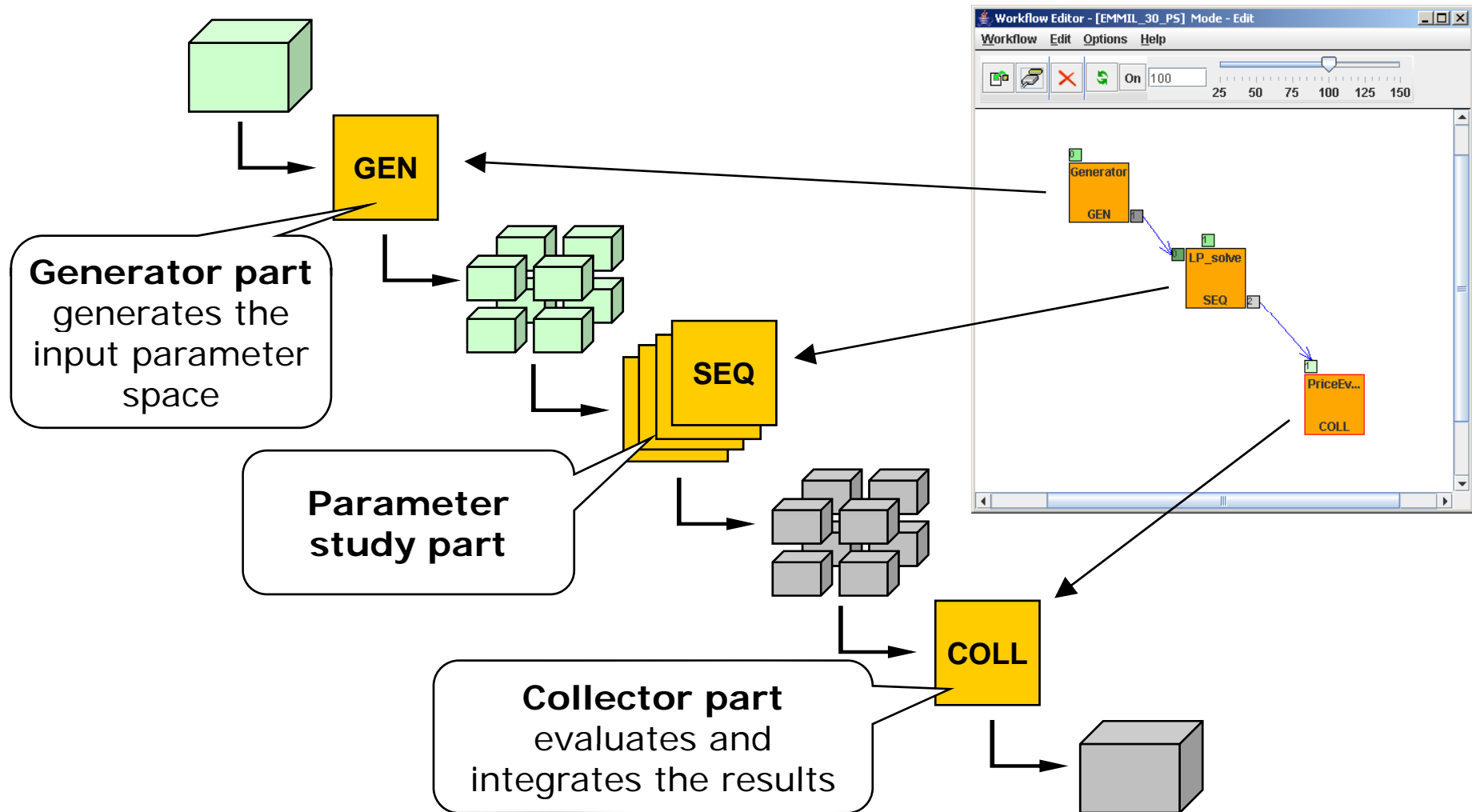


Advanced parameter studies





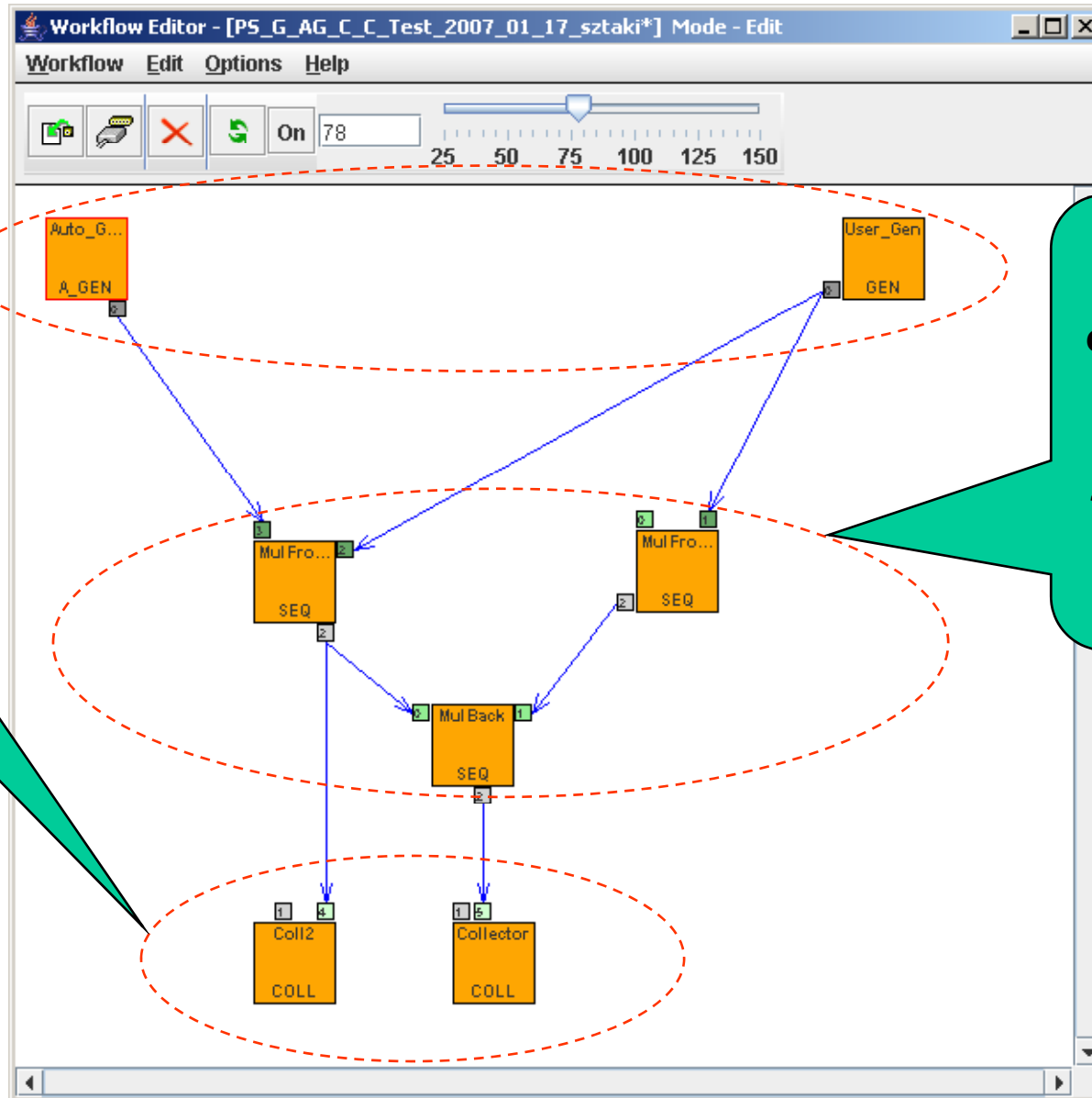
Concept of advanced parameter study workflows





The generic PS workflow application

**First phase:
executing
the
generators**

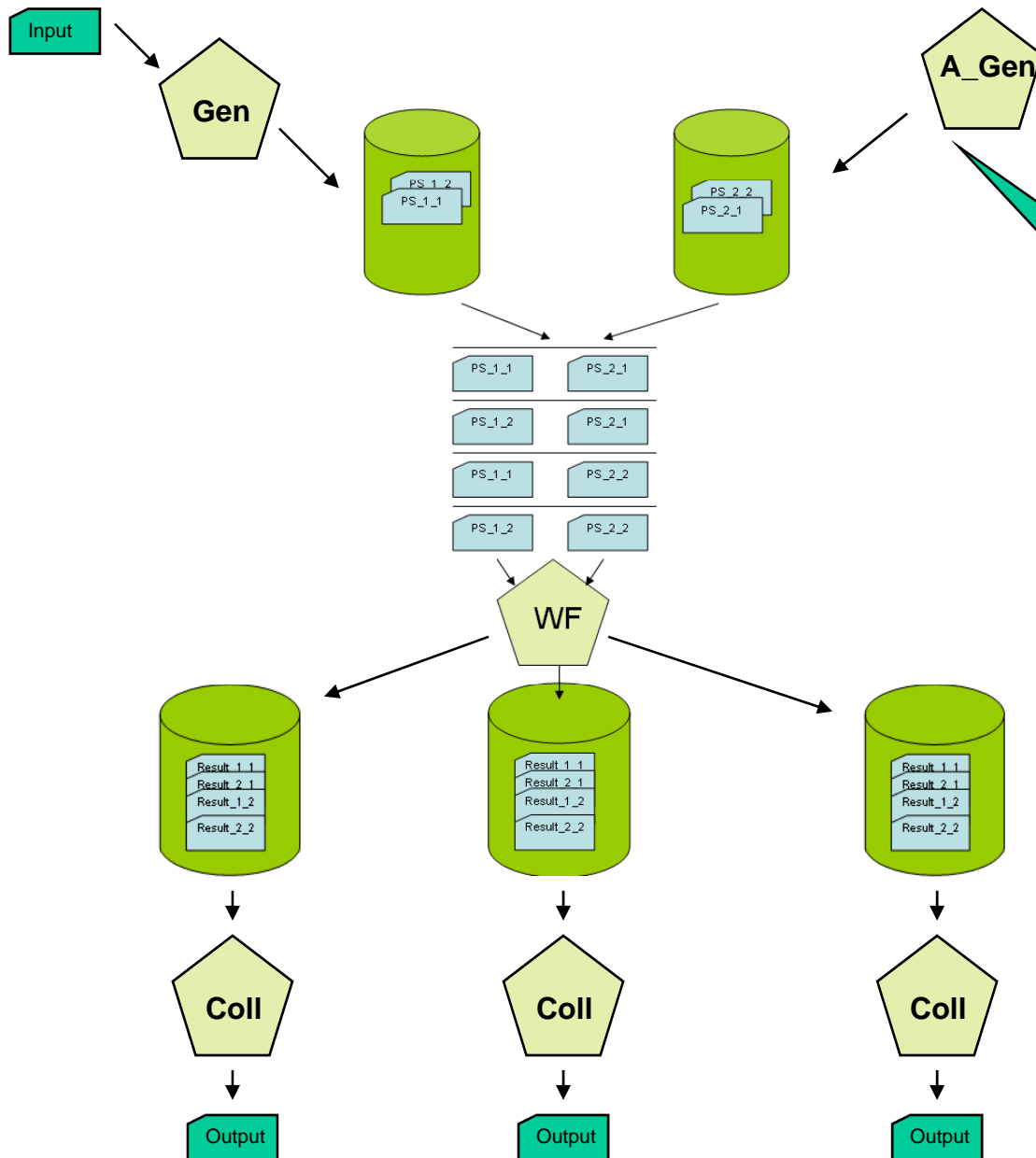


**Second
phase:
executing the
“real”
processor
jobs for each
input file
combination**

**Third
phase:
executing
the
collectors**



Data Model of advanced PS



The Autogenerator is a special job:

- May have no input
- Runs on the Portal



Detailed view of a PS workflow

PGrade Grid portal - Windows Internet Explorer

http://n44.hpcc.sztaki.hu:8080/gridsphere/gridsphere?cid=72&gs_action=doShowWorkflowDetails

File Edit View Favorites Tools Help

PGrade Grid portal

Welcome, Peter Kacsuk

Welcome Workflow Certificates Settings Information System Help

Workflow Manager Storage Upload

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

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.

November 13, 2006

Internet 100%

Generator job(s)

Overall statistics of workflow instances

Workflow instances

Collector job(s)



PS practical