

Messaging around GeoPIXE modules using the "Notify" mechanism

Direction: "Incoming" for Notify messages that are handled here, "Outgoing" for Notify message sent from here, "Pass on" for message that are not handled, but are allowed to be passed on (Note 1)  
Tag: The name of the Notify message

- Note 1 If a routine has Registered for some Notify message tags, then they get passed on automatically, even if the routine never processes them.  
Note 2 Notify name given by argument when 'spectrum\_display' opened, depends on how window used: "spectrum-display", "chart-display", "groups-display" (Maia Mapper).  
Note 3 Notify name given by argument when 'detector\_select' opened. Passed from <update\_display> in 'spectrum\_select'.

Program	Routine	Direction	Tag	Function	Notes	
evt	evt_event			Open the raw data sorting to images window		
		Incoming	detector-fwhm	set channel enables based on channel FWHM below some threshold	Requires the detector layout table to include resolution values. Not really used anymore	
			detector-load	detector layout loaded elsewhere - do you want to set channel enable based on new details?		
			detector-select	switches display of detector channel parameters to a selected channel	e.g. from spectrum display/select	
			device-update	update EVT window to reflect new device object parameters for detector	no used anymore	
			dpath	set a specific path for raw data files, which can be eslewhere (e.g. Maia blog files)		
			path	set the default path for most data files, especially output files		
			snapshot	was to snapshot the position and size of a window	experimental, not used now	
			start-evt	Sent from Batch_Sort to start evt file processing		
	many	Outgoing	wizard-action	a command from a Wizard using wizard mechanism (linked list of commands)	These contain a "command" to be executed and arguments	
			abort-evt	indicates "start-evt" has been aborted, which is returned to Batch_Sort	returned to Batch_Sort	
			detector-get	"Get" has been used to load new Energy Cals	'detector_layout' uses this	
			device	device object has changed	e.g. picked up Batch_Sort to adopt this new device	
			done-evt	indicates "start-evt" has completed	returned to Batch_Sort	
			dpath	indicates that the specific path for raw data files (e.g. Maia blog files) has changed		
			evt-load	a new DAI template has been loaded, anyone interested?	triggers a 'detector-load' in 'detector_layout'	
			evt-mode	mode of processing (e.g. DA, CUTs, MPDA, ...) has changed		
			evt-type	type of data (e.g. SXRF, PIXE, ...) has changed		
			images	a new image has been formed and pointer passed to interested programs	e.g. main GeoPIXE Image routine and clones	
			path	indicates the default path for most data files, especially output files, has changed		
			root	indicates that the path root (above path and dpath) has been set	returned to Batch_Sort	
	wizard-return	return after a "wizard-action" has completed	returned struct has error flag (0 = OK) and perhaps some data			
	image				main image display or clone (or 3D stack images)	
		OnNotify_image				the main GeoPIXE routine
			Incoming	batch-operations-open	simple way to test if Operations window open for batch operations.	
				batch-rgb-open	simple way to test if RGB window open for batch operations.	
				batch-save	Save various options for current images (e.g. correct X, save HTML, CSV tables) from 'Batch_Sort'	
				corr-analyze-clear	returned from 'corr' to clear pixels inside spline	
			corr-analyze-spline	returned from 'corr' show pixels inside spline		
			dpath	set a specific path for raw data files, which can be eslewhere (e.g. Maia blog files)		
			image-analyze-all-clear	clear all markers (from Clone)		
			image-analyze-clear	clear current marker/shape on display (from Clone)		
			image-analyze-mark	plot current marker/shape (from Clone)		
			image-analyze-mode	change analyze mode (shape selection mode: "+" include, "-" exclude) (from Clone)		
			image-analyze-q	select pixels by passed 'q' vector (from Clone)		
			image-analyze-type	change analyze type (shape style: Distance, Box, Circle, ...) (from Clone)		
			image-clear-all-marks	returned from 'maia_launch' on NewRun		
			image-clone	another cloned 'image' has read in new image data to be displayed here too (but clone "owns" data)		
			image-corr-clear	returned from 'image' to clear pixels inside spline		
			image-corr-q	returned from 'clone' to pass on corr qc (pixel selection vector)		
			image-display	redisplay images, returned from 'image_select'		
			image-elements	change list of element labels.		
			image-kill-regions-all-planes	zero images within region pixels for all regions (from 'image_table')		

many	Outgoing	image-match-centroids	match in XANES stack regions	
		image-operations-closed	Operations window has closed.	
		image-process	execute a selected image processing function (from 'image_process')	
		image-region-clear	returned from 'image_table' before region-select	
		image-region-select	returned from 'image_table' to show a region from table	
		image-region-update	returned from 'image_table' to update concs for selected region	
		image-region-update-one	returned from 'image_table' to update concs for selected region (pnly current region row)	
		image-rgb-closed	RGB window has closed.	
		images	another app has read in new image data to be displayed here (local process will "own" data)	
		path	set the default path for most data files, especially output files	
		snapshot	was to snapshot the position and size of a window	experimental, not used now
		wizard-action	Wizard command request, or "open-test" probe of open wndow status.	These contain a "command" to be executed and arguments
		done-save	Save options done (to Batch-Sort)	returned to Batch_Sort
		image-analyze-all-clear	clear current marker/shape on display (to Clones)	
		image-analyze-mode	analyze type (shape style: Distance, Box, Circle, ...) has change (to Clones)	
		image-analyze-q	select pixels by 'q' vector (to Clones)	
		image-analyze-type	analyze mode (shape selection mode: "+" include, "-" exclude) has changed (to Clones)	
		image-clone	images changed (to Clone) - passes whole 'pstate'	
		image-corr-clear	clear highlighted pixels (to Corr)	
		image-corr-q	new Association pixel selection 'qc' (to Corr)	
image-display	redisplay images			
image-region-throttle	send pixel 'q' vector to Throttle editing routine			
image-results	new conc results available in region table			
images-changed	images changed (to Clone) - passes new image data 'p' struct			
image-show-element	passes new element to Image History Display (to shows details for element plane)			
image-update-time	send pixel 'q' vector to TimeAmp			
path	indicates the default path for most data files, especially output files, has changed			
spectra	Notify Spectrum Display when analyze shape is Traverse or X,Y projection spectra			
spectrum-display	new spectra to display (or changed colour map, so redisplay spectra too)			
wizard-return	return after wizard-action (may contain returned/passed data too)	returned struct has error flag (0 = OK) and perhaps some data		
spectrum_display			Open a spectrum display window instance	
OnNotify_Spectrum				
	Incoming	adjust-values	old, used to adjust background	experimental, not used now
		cal-ab	Energy Calibration a,b changed, for this spectrum (returned from 'Cal')	
		cal-ab-all	Energy Calibration a,b changed, for all spectra (returned from 'Cal')	
		cal-ab-ra	returned from 'Cal' to re-assign peaks to new marked E', based on Markers	
		cal-ab-ra-ab	returned from 'Cal' to re-assign peaks to new marked E' based on A,B	
		chart-display	like "spectrum-display" for Chart spectra	from Maia Launch
		correct-image-pileup	display pileup using image products	
		cut-select	returned from 'cut_setup' to draw a cut	
		detector-select	highlight a specific detector (e.g. used in Maia Control from Rates window)	
		dpath	set a specific path for raw data files, which can be eslewhere (e.g. Maia blog files)	
		fit-display	returned from 'pixe_fit' after fit or set-up change	
		groups-display	like "spectrum-display" for Groups spectra	from Maia Launch
		image-clone	to keep a local copy of images struct (e.g. for matrix details)	
		image-region-delete	delete a matching region spectrum (when a rrgion row is deleted)	from Image Table
		image-regions	keep a local copy of the regions struct pointer array	from Image Table
		image-region-select	model DA spectrum overlay for the selected region/spectrum	from Image Table
		images	to keep a local copy of images struct (e.g. for matrix details)	
		image-spectrum-throttle	model overlay, plus model Throttled spectrum	from Image_Analyze, /throttle via Image Notify
		mark-e	mark an energy ( returned from 'identify')	
		mark-element	mark element lines (returned from 'identify')	
		new-results	returned from 'pixe_fit' after valid fit (passed on)	
		path	set the default path for most data files, especially output files	
		results-select	this is passed on to PIXE Fit	
		snapshot	was to snapshot the position and size of a window	experimental, not used now
		spectra	new spectra data available	returned from parent, other spectrum, or image_table

		many	Outgoing	spectrum-display spectrum-highlight wizard-action cut-results identify-element identify-line image-display path select-update spectra-changed spectrum-fit spectrum-get-cals wizard-return	update spectrum display set/clear Highlight mode for spectra display Wizard command request, or "open-test" probe of open wndow status. analyze_cut' results for X or View markers switch to element marker mode identify feature at Identify marker images changed (e.g. correct images for pileup contributions) indicates the default path for most data files, especially output files, has changed a spectrum has been selected view into spectrum has changed new selected spectrum passed tp pixe_fit tell maia-launch to copy *pm Cals to spec return after wizard-action (may contain returned/passed data too)	name set by '(*pstate).update_notify' and changes with context (spectra, chart, group display) returned from 'spectrum_select' or parent These contain a "command" to be executed and arguments to 'cut_setup' to Identify to Identify to image windows  to spectrum_select to 'Spectrum History' and Spectrum_select  in Maia-Control spectra cals tied to Maia parameters returned struct has error flag (0 = OK) and perhaps some data
image_table		Open the image regions window				
		OnNotify_Image_Table		incoming	dpath image-region-throttle image-results image-results-clear path snapshot wizard-action	set a specific path for raw data files, which can be eslewhere (e.g. Maia blog files)  new image data, which may have cleared regions table data already cleared in 'image', but clear table as viewed set the default path for most data files, especially output files was to snapshot the position and size of a window Wizard command request, or "open-test" probe of open wndow status.
		many	Outgoing	dpath image-kill-regions-all-planes image-match-centroids image-region-clear image-region-delete image-regions image-region-select image-region-update image-region-update-one image-results image-spectrum-throttle spectra wizard-return	indicates that the specific path for raw data files (e.g. Maia blog files) has changed zero images within regions, for all regions shift XANES images to match feature centroids in response to an Update (used to clear shape elsewhere) image table row was deleted - Delete selected region and spectrum regions have changed table row selected in response to an Update in response to an Update - single row table has changed for display of throttle overlay on spectrum Regions and matching spectra have been loaded, infor Spectrum Display return after wizard-action (may contain returned/passed data too)	experimental, not used now These contain a "command" to be executed and arguments  done in 'image' done in 'image'  (Spectrum Select must be open)  region applied to image again region applied to image again  returned struct has error flag (0 = OK) and perhaps some data
Spectrum_select		Open the spectrum selection window				
		OnNotify_Select		incoming	array-select image-region-select select-highlight select-update spectra-changed wizard-action	subset of spectra selected for display by 'detector_select' pop-up Row selected in Image Region table, so select corresponding row in spectrum list highlighted spectrum changed, so update table and trigger spectrum display update the table spectra data changed, so update spectrum pointer and the table Wizard command request, or "open-test" probe of open wndow status.
			outgoing	<update_notify> select-highlight spectrum-highlight wizard-return	Update spectrum display. Defaults to 'spectrum_display' select spectrum to highlight on spectrum display select row of spectrum table to highlight return after wizard-action (may contain returned/passed data too)	These contain a "command" to be executed and arguments Name depends on argument. See Note 2  returned struct has error flag (0 = OK) and perhaps some data
Cal		Open the spectrum eneregy calibration window				
		OnNotify_Cal		incoming	cal-x path	from Spectrum_Display
		many	outgoing	cal-ab cal-ab-all  cal-ab-RA	set the default path for most data files, especially output files apply energy cal to currently selected spectrum apply energy calibration to ALL spectra "Re-assign" selected (marked) peaks to new energies, which maintains differences between spectra channel energy calibrations.	to Spectrum_Display to Spectrum_Display  to Spectrum_Display

			cal-ab-RA-AB	"Re-assign" energy calibration A,B coefficients to new values, but maintain differences between spectra channel energy calibrations.	to Spectrum_Display
fit_setup					
open the X-ray spectrum fit window					
	fit_setup_event	incoming	mark-fit new-correct new-detectors new-filters new-yields path results-select spectrum-fit spectrum-view time-amp-pileup wizard-action	select an element to fit (from Xray identify window) new multi-phase yield correction calculation matrix just done, so use that new detectors available, reload detectors and update list new filters available, reload filters and update list new yield calculation just done, so use that set the default path for most data files, especially output files row selected in fit results (pass to fit setup for refit) new spectra loaded, so initial background and initial peaks based on this update fit_setup copy of View markers from spectrum display new pileup E-T acceptance mask from 'time_amp'	from Spectrum_Display
	fit_setup_event	outgoing	wizard-return	Wizard command request, or "open-test" probe of open wndow status. return after wizard-action (may contain returned/passed data too)	does not seem to get used These contain a "command" to be executed and arguments returned struct has error flag (0 = OK) and perhaps some data
layer_setup					
pop up a layered target specification and yield calculation window					
	layer_setup_event	incoming	path new-detectors new-source	set the default path for most data files, especially output files new detectors available, reload detectors and update list new source available, set beam parameters from this new source model	
	layer_setup_event	outgoing	new-yields layer-plot	new yield calculation just done, so pass that on/up update parameters seen in the 'layer_plot' window	to 'fit_setup' to 'layer_plot'
source_setup					
pop up an X-ray lab source specification window					
	source_setup_event	incoming	path select-periodic	set the default path for most data files, especially output files select element for monochromator (Ka used)	from a periodic table popup
	source_setup_event	outgoing	new-source	new source available, send beam parameters up to 'layer_setup'	to 'layer_setup'
identify2					
Pop up an X-ray line identification window with line list and periodic table					
	identify2_event	incoming	new-detectors new-filters indentify-e identify-element indentify-line	new detectors available, reload detectors and update list new filters available, reload filters and update list set search energy and position list on best match set 'ident2' into element periodic table mode set 'ident2' into sorted line list mode	from 'spectrum_display' from 'spectrum_display' from 'spectrum_display'
	identify2_event	outgoing	mark-element mark-fit mark-e	tell 'spectrum-display' to mark the lines for a selected element tell 'fit_setup' to select/toggle an element in fit	to 'spectrum_display' to 'fit_setup' to 'spectrum_display'
detector_select					
Pop up a detector array mimic display to select a sub-set of array elements					
	detector_select_event				name set by '(*pstate).watch', which is taken from '(*pstate).update_notify' from spectrum_select parent and changes with spectrum context (spectra, chart, group display)
	detector_select_event	incoming outgoing	<(*pstate).watch> array-select	set the enable flag for a selection of detector array elements return the selected elements of the detector array	
filter_setup					
pop up to define a filter specification					
	filter_setup_event	incoming	path	set the default path for most data files, especially output files	
		outgoing	mark-e new-filters	from 'ident' to mark a given energy new filters available, reload filters and update list	
detector_setup					
pop up to define a detector specification					

detector_setup_event		incoming	path mark-e	set the default path for most data files, especially output files from 'ident' to mark a given energy	
		outgoing	detector-load detector-setup-load new-detectors	detector layout details loaded elsewhere convey new detector layout to 'detector_layout' mimic display new detectors available, reload detectors and update lists elsewhere	
corr				The Association window, plotting element X versus Y for all (selected) image pixels	
OnNotify_corr		incoming	corr-analyze-clear corr-analyze-spline corr-display image-analyze-all-clear image-analyze-q image-display image-region-select images-changed	clear eIX,eIY spline field sets eIX,eIY spline field, and subset of image pixels update display clear pixel selection pixel selection from image clone notified of a display change new region selected from image regions table (may contain eIX,eIY corr field) flags change of image data to recalculate/display corr	from elsewhere in 'corr' from elsewhere in 'corr' from 'pca_cluster'
Corr_Analyze_Spline many		outgoing	path corr-analyze-spline corr-analyze-clear corr-display	set the default path for most data files, especially output files sets eIX,eIY spline field, and subset of image pixels clear eIX,eIY spline field update display	from 'image' from 'image_table'
imageRGB				element RGB image window	
OnNotify_ImageRGB		incoming	path image-display images-changed image-analyze-mark	set the default path for most data files, especially output files redisplay images, returned from 'image_select' image data has changed plot current marker/shape (from Clone)	
		outgoing	batch-save wizard-action image-rgb-closed image-display wizard-return	Save various options for current images (e.g. correct X, save HTML, CSV tables) from 'Batch_Sort' Wizard command request, or "open-test" probe of open wndow status. window closed display image (w/ modified pixel selection) return after wizard-action (may contain returned/passed data too)	These contain a "command" to be executed and arguments  returned struct has error flag (0 = OK) and perhaps some data
image_history				display image data parameters (and stats) and history operation info for element image	
OnNotify_Image_history		incoming	images-changed image-show-element image-display	image data has changed, update details and statistics update details, as displayed element has changed update details	
		outgoing	none		
image_operations				list display of single-click image processing tools	
OnNotify_Image_Process		incoming	images-changed batch-filter	image data has changed, update details and statistics request from 'batch_sort' for a filter to be applied	
OnKill_Image_Process		outgoing	image-operations-closed done-filter image-process image-display	window closed filter done reply to 'batch_sort' request to 'image' to perform a selected image processing update image display and dependent displays (e.g. corr)	
interelement_operations				pop up window to perform interelment operations between element images	
interelement_operations_event		incoming	images-changed	image data has changed, update interelement operation	make_tvb' in 'image_routines' constructs the image bitmap using the selected interelement_transform and parameters, to make it visible before "apply"
		outgoing	image-display	update image display and dependent displays (e.g. corr)	
pcs_clusters				PCA and cluster analysis window	

OnNotify_pca_cluster	incoming	corr-display image-display path image-region-select images-changed image-analyze-q image-analyze-all-clear	update display notified of a display change set the default path for most data files, especially output files new region selected from image regions table (may contain elX,elY corr field) flags change of image data to recalculate/display corr pixel selection from image clone clear pixel selection	
	outgoing	corr-analyze-spline corr-analyze-clear corr-display	sets elX,elY spline field, and subset of image pixels clear elX,elY spline field update display	
correct_yield		Matrix yield correction of images (and projection of phases) window		
correct_yield_event	Incoming	path image-region-select images-changed	set the default path for most data files, especially output files returned from 'image_table' to show a region from table flags change of image data to reselect element vectors, etc.	not used yet ...
	outgoing	image-display images new-correct	display image (w/ modified pixel selection) image data has changed and images and element vectors need to be updated in 'image' new multi-phase yield correction calculation matrix done	to 'fit_setup'
multi_image		Displays an array of single element 'simple_image' windows		
multi_image_event	Incoming	image-display	notified of a display change	from 'image'
	outgoing	image-clone image-elements image-crop	another cloned 'image' has read in new image data to be displayed here too (but clone "owns" data) change list of element labels. crop of first element used to zoom others, but this Notify does not appear to be used	seems to be used in 'maia_launch' - perhaps not implemented
spectrum_history		display spectra data parameters and history operation info		
OnNotify_spectrum_history	Incoming	spectra-changed	spectra data changed, so update spectrum pointer and the table	
	outgoing	none		
cuts_setup		Window to tabulate and save CUTs defined using X or CUT markers on the spectrum		
cut_results_event	Incoming	path cut-results	set the default path for most data files, especially output files specification of a CUT using either X or CUT markers	from 'OnButton_Spectrum_Analyze'
	outgoing	cut-select	a CUT using either X or CUT markers sent to the spectrum for display	to 'spectrum_display'
time_amp		Plot E versus T (amplitude versus time) for Maia blog ET data		
OnNotify_time_amp	Incoming	time_amp-display path image-region-select time_amp-analyze-clear images-changed image-update-time image-analyze-all-clear	update time-amp display set the default path for most data files, especially output files image region table row selected clear time-amplitude scatter plot flags change of image data to recalculate/display corr q vector from 'image' display, used to mask points displayed clear current marker/shape on display (clear q vector above)	forget how this works ...
	outgoing	time_amp-analyze-spline time_amp-analyze-clear time_amp-display path time_amp-pileup	output of spline curve details clear details update time-amp display set the default path for most data files, especially output files pileup limits available after also saved to file	Not used yet. Spline usually saved as pileup limits file Not used  used in 'fit_setup' for pileup modelling