

# JOBS TASK REFERENCE

Icon	Name	Explanation	Example of usage	Requires
<b>EXECUTION FLOW</b>				
	<b>Condition IF</b>	If the specified expression is evaluated to TRUE (non-zero value), the contained tasks will run. Otherwise the contained tasks are skipped.	Conditional capturing: if more than N objects are detected (thresholded) in the preview image (10x), capture hi-res image (100x).	See also: Macro
	<b>Condition IF ELSE</b>	If the specified expression is evaluated to TRUE (non-zero value), the contained tasks will run. Otherwise the job proceeds to "Else" or other "Else If" (if defined).	Differencing frame rates: If temperature is below N°C, capture timelapse with 0,1 fps, ELSE use 1 fps.	See also: Expression
	<b>Break</b>	Exits execution of the selected loop and proceeds to the task following that loop.	Abort a loop if the required number of frames have been captured.	Time Lapse / Repeat / Loop Over Wells / Plates / Points / Z-Stack
	<b>Question</b>	Displays a pop-up window requiring user interaction or giving some information. The question can be blocking: the job continues after clicking a button, or parallel: the job continues without waiting for user interaction.	Let the user decide what to do next, wait for the user. E.g. Exchange slides on the stage, than press OK.	
	<b>Time Lapse</b>	Repeats the contained tasks according to the specified time schedule (total duration / number of loops, interval...).	Good for capturing any "living" processes such as cell proliferation, FRAP, etc.	
	<b>Redefine Time Lapse</b>	Modifies an existing Time Lapse definition.	Usually this is used within Condition - IF something happened, redefine Time Lapse (e.g. increase frame rate).	Time Lapse
	<b>Time Sequence</b>	Chains acquisition time-phases and phases of different type (temperature/gas control, perfusion control).	Typical sequence: Set temperature, capture timelapse, change temperature, wait, capture timelapse.	
	<b>Repeat</b>	Repeats the contained tasks for the specified number of iterations or indefinitely until Break.	Manual creation of a pointset containing a specified number of points.	See: Break / Add Point
	<b>Every Nth</b>	Reduces number of iterations in a loop by performing every Nth / first / last iteration.	A way to temporarily modify frame rate of a timelapse loop (in combination with Condition).	Time Lapse / Repeat / Loop Over Wells / Plates / Points / Z-Stack / Repeat
<b>WELL PLATES</b>				
	<b>Define Plate</b>	Specifies shape and size of a wellplate as well as the working area of single wells.	Select a wellplate type you use from the database or define a custom wellplate. The wellplate definition includes dimensions, number of wells and placement of wells.	
	<b>Select Wells</b>	Specifies which wells of the selected wellplate are actually used in the experiment.	Use the A1 well for alignment and leave the outer perimeter of wells unused.	Either Define Plate / Plates
	<b>Loop Over Wells</b>	Runs the contained tasks on each well of the selected well selection.	Used for analysis of wellplates. The wells are either analysed one-by-one (fast timelapse experiments) or in multiple well-loops (e.g. 1: pre-focus all wells, 2: capture each well).	Select Wells
	<b>Label Wells</b>	Enables to specify labels used in each well or a group of wells. Name, color and quantity can be defined.		Select Wells
	<b>Align Plate</b>	Determines exact position of a wellplate on the XY stage.	Before a wellplate is scanned, it must be aligned properly, so that the coordinates of wells are not misplaced. Select wellplate orientation and find the A1 well.	Define Plate
	<b>Plate Loader</b>	Specifies the list of wellplates to be scanned by means of the automatic wellplate loader. Barcodes are supported.	Put this task to wizard to initialize the loader and scan hotels for wellplates just before the experiment begins.	Device: Wellplate loader
	<b>Manual Plate List</b>	Specifies the list of wellplates to be used in a loop over wellplates. Wellplates are changed manually. Barcodes supported.	Assign names and barcodes to wellplates in an ordered list. This info will be included in the experiment results.	
	<b>Plates</b>	Runs the contained tasks on each wellplate of the specified list of templates.	Well-by-well (live) experiments: the whole analysis is inside a plate loop. Fixed/scanning experiments: several plate loops are used in a sequence - 1. pre-focus, 2. capture, etc.	Plate Loader / Manual Plate List
	<b>Move to Well</b>	Moves XY stage to a particular well of the specified wellplate.		Define Plate
	<b>Move to Well Center</b>	Moves XY stage to the center of the current well. To be used inside a loop over wells.	Treatment is usually applied to the well center.	Loop Over Wells
<b>SAMPLE HOLDER</b>				
	<b>Dish Definition</b>	Specifies shape, size and the working area of a dish. Database of dishes is available.	Working area and placement of the dish on the XY stage must be set correctly.	
	<b>Slide Definition</b>	Specifies shape, size and the working area of a slide. Labeling area can be specified for usage of barcodes. Database of slides is available.	Working area and placement of the slide on the XY stage must be set correctly.	
	<b>Free Shape Definition</b>	Specifies shape and size of a general area on the XY stage.	Area and placement of the sample on the XY stage must be set correctly. An arbitrary shape and size can be defined.	
	<b>Align Sample</b>	Determines exact position of the selected sample on the XY stage.	Use this each time the sample holder is switched on the stage.	Dish Definition / Slide Definition / Free Shape Definition
<b>STAGE XY POINTS</b>				
	<b>Generate Points</b>	Creates a pattern of XY points on the selected sample.	Used with quantitative/statistical methods where you detect objects in large number or "randomly" scanned frames.	Dish Definition / Slide Definition / Free Shape Definition / Loop Over Wells
	<b>Predefined Points</b>	Specifies a list of XY points on the selected sample manually in a tabular way.	Used for fixed samples. Find interesting scenes with joystick and add them to the table one-by-one.	Dish Definition / Slide Definition / Free Shape Definition / Loop Over Wells
	<b>New Point Set</b>	Creates an empty pointset. Points shall be added later either by <a href="#">Add Point</a> or <a href="#">Add/Edit Points Manually</a> .	While looping an existing generated pointset, only interesting scenes are added to the empty pointset for later use.	
	<b>Add Point</b>	Adds a named XY point to the selected pointset. Current XY(Z) position is used.		New Point Set / Predefined Points
	<b>Remove Point</b>	Removes the active XY point from the selected pointset. Example: use this task in an XY point loop to remove points which are not useful for further analysis (e.g. do not produce any image signal).	Remove points which are useless for the experiment from the parent point loop.	Points
	<b>Add/Edit Points Manually</b>	Waits for the user to add or edit points to the selected pointset manually at runtime.	May be used to check focus and offset the pointset if needed.	New Point Set / Predefined Points / Generate Points
	<b>Points</b>	Runs the contained tasks on each XY point of the selected pointset.	Capturing of XY(Z) ND2 files.	New Point Set / Predefined Points / Generate Points
	<b>Shift Point Set</b>	Redefines the selected pointset by adding offset to all of the XYZ coordinates.		
	<b>Export Point Set to ND</b>	Exports the selected pointset definition to the Define/Run ND Acquisition window.	Create a pointset using JOBS and then continue the work in NIS-Elements using the ND Acquisition window.	

	<b>Import Point Set from ND</b>	Imports the multipoint definition from the Define/Run ND Acquisition window to the selected pointset. The existing pointset settings will be overwritten.	Multipoint definition saved in the ND2 file can be loaded to the ND Acq. window and then imported to a JOB.	New Point Set / Predefined Points
<b>Z + PIEZO Z</b>				
	<b>Define Auto Focus</b>	Defines Z device settings to be used by the <a href="#">Auto Focus</a> task. Different AF settings may be defined for different purposes.	Define different focus settings for rough pre-focus and fast piezo Z focus.	
	<b>Auto Focus</b>	Performs autofocus using the selected Auto Focus settings ( <a href="#">Define Auto Focus</a> ).	Focus before capturing each frame or focus just once before capturing the whole image sequence.	Define Auto Focus
	<b>Define Focus Surface</b>	Calculates global focus surface from an existing set of Z positions. Z positions must be defined beforehand e.g. by the <a href="#">Redefine Z</a> task.	Ideal for flat surfaces such as slides which however can be tilted on the stage. Once the Focus Surface is created, you may not need to focus before capture.	New Point Set / Predefined Points / Generate Points
	<b>Offset Focus Surface</b>	Modifies an existing Focus Surface by adding/subtracting offset distance.	Using the focus surface on each point for pre-focus, check every N-th point whether the focus has not shifted. If it has, shift the whole focus surface to match the current focus.	
	<b>Move to Focus Surface</b>	Moves Z drive to the position defined by the <a href="#">Define Focus Surface</a> task (or <a href="#">Offset Focus Surface</a> ).	Use it on each XY position within a point loop to get the image into focus (or pre-focus).	
	<b>Redefine Z</b>	Assigns the current Z position to the selected XY position of a sample.	Use this task inside a loop after Auto Focus to define Z positions for fast scanning.	
	<b>Z-Stack Definition</b>	Specifies distances and other parameters for scanning by the <a href="#">Z Stack</a> task.	When scanning thick samples, set the focused image as home position and define the Z - range. Z-stack can be used to create all-in-focus image or 3D model.	
	<b>Z-Stack</b>	Repeats the contained tasks for each Z position of the selected Z Stack.	Used inside any other loop (time-lapse, pointset) with Capture, captures Z stacks to extend spatial resolution of the image sequence.	Z-Stack Definition
	<b>Move to Z stack center</b>	Moves Z drive to the central position of the selected <a href="#">Z Stack Definition</a> .	When capturing multi-channel Z-stacks, not all the channels are required to contain the Z dimension. These shall be captured in the home/center position.	Z-Stack Definition
<b>PFS</b>				
	<b>PFS On and Focus</b>	Turns PFS on and tries to find the PFS focal plane. Make sure the Z drive focal plane is not too far from the PFS focal plane otherwise the task may fail.		Device: PFS
	<b>PFS Off</b>	Turns PFS off.		Device: PFS
	<b>Auto PFS Offset</b>	The PFS system searches for the most in-focus plane and sets the PFS offset accordingly.		Device: PFS
	<b>Redefine PFS</b>	Uses the current Z position to specify PFS offset for the selected XY position (e.g. a well).	Use this task inside a loop over XY points after Auto PFS Offset.	Device: PFS
	<b>Define PFS Surface</b>	Calculates global PFS surface from an existing set of PFS positions. To XY positions without the PFS position defined, the PFS position of the closest XY point (which includes PFS pos.) is copied.		Device: PFS
	<b>Set PFS Offset from PFS Surface</b>	Changes the current PFS offset value to match the calculated PFS Surface.		Device: PFS
	<b>Offset PFS Surface</b>	Modifies an existing PFS Surface by adding/subtracting an offset distance.		Device: PFS
<b>ACQUISITION</b>				
	<b>Capture Definition</b>	Defines multi-channel acquisition settings, assigns optical configurations to channels.	Select an optical configuration to be used to capture each channel and set an offset between each channel.	
	<b>Capture</b>	Performs acquisition according to the selected <a href="#">Capture Definition</a> . Large Image can be acquired and an analysis can be run upon capture.	Case #1: Capture images inside a loop. Case #2: Run analysis (e.g. cell count) after each capture and decide what to do next based on the results.	Capture Definition
	<b>ND Acquisition</b>	Acquires an ND2 image according to the definition specified within the task.		
	<b>Sequential Stimulation</b>	Chains acquisition time-phases and stimulation/bleaching/waiting phases.	FRAP: Bleach, then start acquisition and perform time-measurement at the same time.	
	<b>Simultaneous Stimulation</b>	Runs a time-lapse acquisition and stimulation simultaneously.		
	<b>Live Window</b>	Displays, freezes or hides the live-signal window.	Used whenever a preview of what is happening under the microscope is needed.	
	<b>Storage</b>	Specifies the file-format used to store images created by the <a href="#">Capture</a> task. The recommended (and default) setting is ND2 (the system tries to save images from different loops to a single file if possible).	If the captured data are to be processed by other software, set the format to TIFF (single/multipage).	
<b>OPTICAL CONFIGURATIONS</b>				
	<b>Select OC</b>	Switches the system to the selected optical configuration.	Make arbitrary changes on automated devices. E.g. change camera settings, switch objectives, etc...	At least one existing optical configuration.
	<b>Auto Brightness</b>	Automatically adjusts brightness settings (exposure, gain...) on the selected Optical Configuration.	Auto exposure on the current scene (before each capture).	
	<b>Close Shutter</b>	Closes Specified Shutter.		
	<b>Open Shutter</b>	Opens Specified Shutter.		
<b>SYSTEM</b>				
	<b>Macro</b>	Enables the user to write and run a macro. The whole set of available macro-commands can be used.	Write sophisticated C-like scripts for tasks which cannot be done by the job or reuse your existing macro.	
	<b>Expression</b>	Assigns values to variables available within the job. It enables e.g. to modify settings of some tasks, manipulate motorized devices, etc.	If auto-focus fails (FocusFailed==TRUE), extend the range by the expressin and try again.	
	<b>Variables</b>	Declares variables for the current job.	Assign critical temperature to a variable. Then if Current Temp. > Critical Temp., Redefine Timelapse to "No Delay".	
	<b>Email Notification</b>	Sends an email to the specified address. SMTP server configuration (within the task) must be correct.	Send results of experiment, message about the experiment progress (failed, finished, in progress,...).	
	<b>Sms Notification</b>	Sends a text message to the specified phone number if the particular mobile phone operator provides such services (sending SMS over email).	Send results of experiment, message about the experiment progress (failed, finished, in progress,...).	
<b>DEVICE CONTROL</b>				
	<b>Temperature and Gas Control</b>	Sets target temperature and gas concentration.	Start / stop heating at the beginning / end of the experiment or change the conditions during the experiment.	Device: Incubation chamber and the like.