Interfacing Resolvigen 3 with AutoVue Innova 1.02

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Version 1.02 of Innova can export results for antibody identification tests to Resolvigen 3, moreover:

- · It will export group identification results to Resolvigen 3.
- · It will export patient's antigenic profiles for Rh and Kell.
- It will export results obtained with antibody screening panels when exporting results for antibody identification panels.

AutoVue Innova 1.02 also differs from previous in the way it manages archived images.

In order to interface with Innova 1.02 you must use Resolvigen 3 version 1.20rc4 or above.

When interfacing with AutoVue Innova 1.02, make sure that you are using Resolvigen 3 1.20rc4 (or above) and select AutoVue as instrument type within Resolvigen 3.

Also note that from version 1.20rc4 onward, Resolvigen 3 no longer requires abilitation codes for interfacing to instruments.

Quick start

If you do not have time to go through this document, please read at least this paragraph. In order to setup an instrument select **Configure** in **Tools** menu, and click on **Instruments** tab. Then select AutoVue from **Available Instruments Types** (not AutoVuePre or AutoVue1.01) and click the **Add** button. Click **Edit Settings** button to configure the AutoVue interface module. The configuration reported below is reasonable:

Files Panels Panel coo	des Programs	
Import folder:	C:\OCD\AV2G\RESOLVIGEN	
Image path:		
Image path replacement:		
Image copy path:		

If you want BioVue images to remain available for Resolvigen 3 even after they are deleted from Innova, you should create a directory and enter its path in **Image copy path**; the **Image path** and **Image path replacement** fields should be left blank in 99.9% of the cases, so leave them blank unless you wish to go into the details of this document.

Innova directory structure

Innova exports test data for use by Resolvigen 3 into XML files named IdentXXXX.xml (where XXXX represent four digits from 0000 to 9999). After acquisition Innova saves images in JPEG (Joint Photographic Exper Group) format files with names like 22101264_001.JPG (where the initial part contains part of the barcode of the BioVue cassette).

Two directories are relevant when interfacing Resolvigen 3 to Innova:

- The directory in which Innova stores IdentXXXX.xml files; this is usually C:\OCD\AV2G\RESOLVIGEN.
- The directory in which BioVue JPEG images are stored; this is usually

```
C:\OCD\AV2G\RESOLVIGEN\IMAGES.
```

Resolvigen 3 defines a third directory which it uses to store copies of the BioVue images; if this directory is defined, Resolvigen 3 copies images here when importing data so that they are permanently stored even in case Innova software deletes images or the software directory structure is changed.

Resolvigen 3 setup

In order to setup an instrument select **Configure** in **Tools** menu, and click on **Instruments** tab. Then select AutoVue from **Available Instruments Types** (not AutoVuePre or AutoVue1.01) and click the **Add** button.

Configuration			
Storage User options	Instruments	System	Modules
Installed instruments			
			<u>^</u>
			M
Available instrument ty	pes		
AutoVue			Add TCP/IP
Settings			
Property		Value	~
Remove			Edit settings
Help			Cancel OK

A new instrument will be added to the **Installed Instruments** list and default values will be displayed for it in the **Property/Value** table at the bottom of the window.

installed instruments	ments System Modules	
Auto∨ue - [Auto∨ue Innova]		
		~
Available instrument types		
Resolvigen 2	Add T	CP/IP
Settings	Add	CP/IP
Settings Instrument name: Auto∨ue	Value	CP/IP
Settings Instrument name: Auto∨ue Property		
Settings Instrument name: AutoVue Property DeleteExpiredPanels	Value	
Settings Instrument name: Auto∨ue Property	Value no	
Settings Instrument name: AutoVue Property DeleteExpiredPanels ImageCopyPath ImagePath	Value	
Settings Instrument name: AutoVue Property DeleteExpiredPanels ImageCopyPath ImagePath ImageReplacePath	Value no	
Settings Instrument name: AutoVue Property DeleteExpiredPanels ImageCopyPath ImagePath	Value no C. Unnovalimages	

Click **Edit Settings** button to configure the AutoVue interface module. The configuration window contains four tabs; the first tab, **Files**, shows information related to the directory structure.

S AutoVue Innova co Files Panels Panel code		
Panels Panel Codi	as Programs	
Import folder:	C:\OCD\AV2G\RESOLVIGEN	
Image path:		
Image path replacement:		
Image copy path:		_
Help	Cancel	ОК

You would usually leave **Image path** and **Image path replacement** empty; these fields are used when Innova and Resolvigen 3 run on different machines and data is shared by mapping a directory. For example, if images are stored on Innova PC in C:\OCD\AV2G\RESOLVIGEN\IMAGES and the directory C:\OCD\AV2G\RESOLVIGEN is mapped to Z: on Resolvigen 3 PC, you would set **Image path** to C:\OCD\AV2G\RESOLVIGEN\IMAGES and **Image path replacement** to Z:\IMAGES. **Image copy path** may be left undefined: in this case images will not be copied and Resolvigen 3 will search the original path when requested to display a BioVue image.

The next three tabs contain information that is needed by Resolvigen 3 to translate information transferred from Innova.

The **Panels** tab lists the correspondences between barcodes used by Innova to identify Panels, and actual Panel codes (e.g. RA123) used by Resolvigen 3.

	Panel codes Pro	igrams		
Bar code	Name	Туре	Expiration date	
8154	8RA154	Panel A	2003-04-08	
Add P	anel	Edit Panel	Delete Panel	
	ally remove expired		2	

The **Panel codes** tab lists the correspondences between names used by Innova to identify different types of panels with the types used by Resolvigen 3.

Panel type code	Туре	
Resolve Panel A	Panel A	1
Resolve Panel B	Panel B	
Resolve Panel C	Panel C	
Resolve Panel C Enz	Panel C	
0.8% Resolve Panel A	Panel A	
0.8% Resolve Panel B	Panel B	
0.8% Resolve Panel C	Panel C	>
0.8% Resolve Panel C Add panel type	j	elete panel type

The **Programs** tab matches different Programs used by Innova to the different reaction phases (temperature, enzymes, etc.) used by Resolvigen 3.

Files Panels Panel code	es Programs		
Program name	Түре		
D I A D I	0	21024	~
Panel A Poly	Coombs IgG		
Panel A Poly	Loomos igu	, and a second se	~

You do not need to fill any of these information right now: Resolvigen 3 will query for different pieces of information when transferring data from Innova and will remember them for the next time.

Innova setup

In order to export results to Resolvigen 3, exporting to LIS must be enabled. In <u>SETUP mode</u> select **Data** button on the right corner and click on **Transfer to LIS** field to open the transfer configuration window (transfer setup).

	E.Innova Maintenance Status	Sample Data	Diagnostics	Setup Search	Setup innova	
	General Privileges	Maintenance	Testing	Results	Data	
LIS Connection	LIS Transfer Option	Value	Analyses Gro	up Analyses Group		
	Transfer to LIS Rejected Results Transfer	Yes No		heno - Kell - ABScr - Auto - Poly - IgG - C3	- XM - Ident - BRC	
Pipetting	Bidirectional Mode Query Mode	Yes	New Group			
Maintenance	Protocol Format	Kermit Std ASTM			Transfer Setup	
	Character Set	ANSI		Vpload Filename Mask	lis???upl.	Test
Resources		7		Rejected Results Tra		
	Archiving	×		Auto Upload Period	0	(0-120 min.)
Samples	Option Automatic Archiving	Value		Download Filename Mask	lis???dnl.	Test
	Automatic Archiving Period	3		Auto Download Period	60	(5-600 s.)
Results				Query Filename Mask		Test
22/09/2005		a)	6	V Transfer to RESOLVIGEN	Kermit	F
21 : 23		e Door	-	Format Character Set	Std ASTM	
				End of line	CRLF	
				Ok		Cancel

In this page you should make sure that the **Transfer to Resolvigen** option is checked; the **Protocol**, **Format**, **Character set** and **End of line** options should be configured as needed for transferring to LIS but are of no concern for Resolvigen 3.

Exporting from Innova

You should at this point perform screening and identification tests as required; please note that **data** is only transferred to Resolvigen 3 when an identification test has been performed for a given patient.

Usually you would perform some preliminary tests for a patient; for example ABO, Rh, Kell and say a SurgiScreen. If you try to transfer at this point **nothing is sent**: Resolvigen 3 should be involved in the antibody identification (not screening) task, so there is no reason to transfer results for screening tests alone.

If SurgiScreen is positive you would probably perform a Panel A test. When you ask to transfer Panel A/B/C results to Resolvigen 3, Innova will search results for the same patient for ABO, etc. for tests performed in the last 24 hours and transfer them as well. Please note Innova will be able to locate tests for the same patient **only if the PID is used** to identify the patient.

ONTHO AUTO VI	JE, Innova		intenanc	e Sto	itus Samp	e Da	ta	Diagnos) stics	s	etup)	Sear	rch		-	Routine
	Sample Racks											٧	Vorklis	st			
LIS Connection	Work	/orklist (list	2/2)				Co	mplete	d (0)								
		Remain		Sample ID	Patient Information		ABO Rh	Pheno	Kell	ABScr	Auto	×M	Ident	BRC		A	Filter
			3	12		Panel A							Done				Filter
Pipetting)	21		Panel A				_			Done				Deselect all
						Transfer	Mode										
Maintenance						Accepted Result:	s Not Transfer	red Yet									Print
					0	🕈 All Accept	ed Result	s									
					C	Partially Ac	cepted Re	sults									Transfer
Resources					Ok			Co	ancel	ו							
																	Archive
Samples																	
																~ 1	
Results																V	
			_	-					-	-	6				~		
22/09/2005 22 : 06				p 🖬 i					1	2		?		1			0
	Access [oor Ma	in Cover	Drawe	r Waste Door				Lo	gout	Ŧ	Help	1	Ninimi	ze		Shutdown

In **Routine** mode click on the **Sample** button at the top of the screen, then **Results** button on the left and select **Work list**.

Click on the **Transfer** icon on the right of the screen, then select in the popup dialog which tests you wish to transfer (e.g. **All accepted results**).

At this point results should have been exported. You may now import results into Resolvigen 3 as described below.

For troubleshooting, you may check that a file named IdentXXXX.xml (where XXXX is a numeric sequence from 0000 to 9999) was created in the directory C:\OCD\AV2G\RESOLVIGEN; you may check the content of this file using Microsoft Explorer. The file should look like the following example:

<result hole="2" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124956_001.JPG" urclassii<br="">URClassName="Surg 2" URValue="40" /></result>	D="22"
<result hole="3" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124956_001.JPG" td="" urclassi<=""><td>D="23"</td></result>	D="23"
URClassName="Surg 3" URValue="40" />	
<test panelclass="Resolve panel A" panellot="1234" program="Panel A Poly"></test>	
<result hole="1" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124957_001.JPG" urclassii<br="">URClassName="Cell-1" URValue="0" /></result>	J= ·· 4 6 ··
<result hole="2" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124957_001.JPG" td="" urclassii<=""><td>D="47"</td></result>	D="47"
URClassName="Cell-2" URValue="40" />	
<result hole="3" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124957_001.JPG" td="" urclassi<=""><td>D="48"</td></result>	D="48"
URClassName="Cell-3" URValue="40" />	D #40#
<result hole="4" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124957_001.JPG" urclassii<br="">URClassName="Cell-4" URValue="40" /></result>	J=49
<pre><result hole="5" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124957_001.JPG" pre="" urclassii<=""></result></pre>	D="50"
URClassName="Cell-5" URValue="40" />	
<result hole="6" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124957_001.JPG" td="" urclassii<=""><td>D="51"</td></result>	D="51"
URClassName="Cell-6" URValue="0" />	
<result hole="1" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124958_001.JPG" td="" urclassi<=""><td>D="52"</td></result>	D="52"
URClassName="Cell-7" URValue="0" />	D
<result hole="2" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124958_001.JPG" urclassii<br="">URClassName="Cell-8" URValue="40" /></result>)=23
<pre><result hole="3" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124958 001.JPG" pre="" urclassii<=""></result></pre>	D="54"
URClassName="Cell-9" URValue="40" />	
<pre><result hole="4" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124958 001.JPG" pre="" urclassii<=""></result></pre>	D="55"
URClassName="Cell-10" URValue="40" />	
<result hole="5" imagename="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124958_001.JPG" td="" urclassii<=""><td>D="56"</td></result>	D="56"
URClassName="Cell-11" URValue="40" />	

The only part worth examining are the names of the exported image files, for example C:\OCD\AV2G\RESOLVIGEN\IMAGE\22124958_001.JPG; in case the images are not displayed inside Resolvigen 3, you may wish to check that these files really exist.

You may later check which results have been transferred: In Routine mode click on the **Data** button at the top of the Screen (or on the **LIS Connection** on the left) then select LIS Communication Log. You may double click on any row of the file list to view details of the exported file and eventually to retransmit it.

	Maintenance Instrument E		nple Data LIS Communi	Diagnostics cation Log	Setup Search Manual Action	is Log		
	Errors							
LIS Connection	Date / Time	Туре	Error Type		Information			
	22/09/2005 22:06	Upload file	Unknown	and the second		Acknowledged Errors		
	22/09/2005 22:03	Download file	System Error	No ser	rial port defined for KERMIT			
Pipetting	22/09/2005 21:43	Download file	System Error	No ser	rial port defined for KERMIT	V		
	Files					V		
Maintenance	Date / Time		Туре	Status	Filename			
	08/07/2005 13	.59	Upload	ОК	lis020.upl	Filter		
	08/07/2005 13	.59	Resolvigen	ОК	Ident0001.XML			
Resources	08/07/2005 12	.59	Contra d		Dettagli	file		
	08/07/2005 12	.58		Ē		The		
	08/07/2005 12	.36	Tipo	Ľ	Resolvigen			
Samples	08/07/2005 11	.59	Nome file	4	C:\OCD\AV2G\RESOLVIGEN\Ider	1+0001.XML		Ritr
Campies	08/07/2005 11	.54	Data/ora creazione	C	08/07/2005 13.59			Copi
	08/07/2005 11	.32	File tracciam.	6	C:\OCD\AV2G\RESOLVIGEN\TRA	CES\RE200507081359	35.TRA	copi
0.4	08/07/2005 11	.28	Errori		Nessun errore			
Results	08/07/2005 11	.19	Contenuto del file	Ľ				
			N.		riga			
2/09/2005			1		xml version=</td <td>:"1.0"?></td> <td></td> <td></td>	:"1.0"?>		
22:32			2		«doc»			
	Access Door Main Cover	Drawer Waste Doo	3	<paties< td=""><td>nt PID="0" FirstName="" FamilyNa</td><td>ame="" BirthDate="Inva</td><td>did Date"></td><td></td></paties<>	nt PID="0" FirstName="" FamilyNa	ame="" BirthDate="Inva	did Date">	
			4		<sample sampleid="1111111" sar<="" td=""><td></td><td></td><td></td></sample>			
			5	(Test Proor	ram="8 Panel A Poly" PanelClass="C			~
			a de la companya de la compa		="C:\OCD\AV2G\RESOLVIGEN\IMAGES\22124			

Importing data

Select the AutoVue instrument from the Instuments item of the File menu.

File Patients Tools He	elp
Panels	
Ratients	
😻 Rare RBCs	
Tests	
Access	
List print preview Print	
Instruments	AutoVue
Exit	

Assuming this is the first time you import from Innova, Resolvigen 3 will ask for some information; increasingly less information will be asked for in the future when data is imported, as Resolvigen 3 remembers data entered by the user.

First Resolvigen 3 asks for the phase in which reactions measured with the program used by Innova should be recorded.

Innova Progr	am configu	ration		
Program name:	Panel A Pol	Ŷ		
Phase:			~	
Help		Innova Progr	am configuration	
		Program name:	Panel A Poly	
		Phase:	Coombs lgG+C3d	×
		Help		Cancel OK

You will have to choose among the seven phases used by Resolvigen 3:

- · Room temperature
- · Room temperature with enzymes
- · 37 °C
- \cdot 37 °C with enzymes
- Coombs polyspecific (anti-IgG+C3d)
- · Coombs polyspecific (anti-IgG+C3d) with enzymes
- · Coombs monospecific (anti-IgG only)

Next Resolvigen 3 will ask you for the panel type.

Panel type co	le	×
Panel type code:	Resolve panel A	
Panel type:	Panel A	~
Help	Cancel	OK

Resolvigen 3 needs to be informed that the panel type 'Resolve panel A' used by Innova is actually a 'Panel A'. It may seem obvious that 'Resolve panel A' matches 'Panel A', but Resolvigen 3 prefers to ask, just in case: better safe than sorry.

Finally Resolvigen 3 asks for the Panel corresponding to the barcode received from the Innova.

Bar code			
0453			
Panel select	ion		
Panel type:	Panel A		~
Code		Expiry	
3RA182		31-May-2005	^
			1000
			~

You should select a panel; if the needed panel is not available, you may decide to import it now by clicking the **Import new Panels** button.

At this point the test should be imported correctly and you should be able to see it in the main window when the **Tests** group is selected.

Resolvige	n			
File Tests To	ools Help			
9	Name	Birth	PID	Test date
-	De Quincey		0	31-May-2005
Rare RBCs	Magnaghi Ca	15-May-1961		17-May-2005
Reutral Marine Tests				
Access				
View tests	-0.			guest

Recently imported tests may be viewed by clicking the **BioVue** button in the toolbar.

ecently imported tests	
Patient	Test
Thomas De Quincey	8002132

Select an item and click the **OK** button to view it. Please note that the test has been imported, but the corresponding patient has not been created, so Resolvigen 3 will ask you if a new patient should be created now unless a patient matching data for the test is already recorded in patients' archive.

Select a patient Cannot locate related patien	nt in archives.
Locate one below, or click 'C patient.	ancel' to avoid linking to a
New patient as follows:	
Name: Thomas De Quincey	Birthdate:
Birthplace:	PID: 0

Click **OK** to create the patient or **Cancel** to skip to viewing test data without creating a new patient.

You may now view the panel; by right-clicking on any of the scores you may view the image of the matching BioVue well.



Maintaining conversion tables

Each time Resolvigen 3 asks for a piece of information, like the phase in which reactions obtained with a specific Innova program should be stored, it keeps track of such information. It is possible to browse and edit stored information, for example for correcting mistakes.

Select **Configure** in **Tools** menu, click on the **Instruments** tab. Select the AutoVue instrument in the **Installed Instruments** list and click the **Edit settings** button.

The **Panels** tab lists the associations between barcodes and panel codes for all the recently used panels; if **Automatically remove expired Panels** is checked, expired panels (that cannot be used with Innova anymore) are automatically removed from this list; please note that these panels are not removed from Resolvigen 3 archives.

Bar code	Panel codes P	Type	Expiration date
0453	8RA182	Panel A	2005-05-31
Add P		Edit Panel	Delete Panel

If you wish to remove one item from this list, just select it and click the Delete Panel button.

Innova P	anel configurat	tion	
Bar code			
0453			
Panel select	ion		
Panel type:	Panel A		~
Code		Expiry	
8RA182		31-May-2005	~
			~
List exp	ired panels		

You may edit an item by selecting it and clicking the **Edit Panel** button. Click the **Add Panel** button to add a new item.

The **Panel codes** tab lists associations between the names used by Innova to identify panel types and the names used by Resolvigen 3.

Files Panels Panel code	es Programs		
Panel type code	Туре		
Resolve panel A	Panel	A	

If you wish to remove one item from this list, just select it and click the **Delete panel type** button. You may edit an item by selecting it and clicking the **Edit panel type** button. Click the **Add panel type** button to add a new item.

Panel type code:	Resolve panel A	
Panel type:	Panel A	~

The **Programs** tab list the associations between the names of the programs used by Innova and the phases in which Resolvigen records scores.

			Tes	stres	ults			Files Panels Panel code	es Programs	
Ш Х.	RT	37	С	RTE	37 _E	Ce	lgG	Program name Panel A Poly	Type Coombs IgG-	+C3d
1 2	5	8	s	<i>.</i> 2.	8	s	<i>5</i>			
3		24			3. 		59	Add Program	Edit program	Remove Program

If you wish to remove one item from this list, just select it and click the **Remove program** button. You may edit an item by selecting it and clicking the **Edit program** button. Click the **Add program** button to add a new item.

Program name:	Panel A Poly	
Phase:	Coombs IgG+C3d	~

Troubleshooting tips

Are you using Resolvigen 3 1.20rc4 or later and Innova 1.02?

Are you trying to export screening tests alone? Innova only exports data to Resolvigen 3 when Identification tests for a given patient are present; at this point it will also export any other test (screening, ABO, Rh, Kell...) recently performed for the same patient.

Have you enabled exporting to LIS? The selected format is not important, but Innova will only export to Resolvigen 3 if the **Exporting to LIS option** is enabled.

Have you enabled Transfer to RESOLVIGEN in Innova configuration?

Can you see IDENTxxx.XML files in C:\OCD\AV2G\RESOLVIGEN after exporting from Innova? If not there is a configuration problem inside Innova software.

Are they deleted after importing to Resolvigen 3? if not there is a configuration problem inside Resolvigen 3 software.

Is AutoVue interface inside Resolvigen configured to import from C:\OCD\AV2G\RESOLVIGEN?

If you do not see BioVue images inside Resolvigen 3, are **Image path**, **Image path replacement** and **Image copy path** empty inside Resolvigen 3 configuration for AutoVue interface? This is the simplest configuration that works when both AutoVue Innova software and Resolvigen 3 are run on the same machine.

If results end up in the wrong phase, check configuration data in the **Programs** tab ('Maintaining Conversion tables' paragraph).

If results are exported with a wrong panel type or a wrong panel lot, check configuration data in the **Panels** and **Panel codes** tabs ('Maintaining Conversion tables' paragraph).