Software Release Report List for *FlexLab* and *Aptio by Inpeco*

Software Version	R20

The document is intended to provide an overview of the R20, Inpeco software major release for 2020.
This document lists key new features, enhancements and solved issues delivered with R20 Software providing enhanced performances and more reliability to the Automation system software.

NOTE – This is a general document which may report User Impact Items on Modules or Analyzer not installed on your automation system

R20 software release brings relevant improvements related to both Automation Modules and Connections, so leading to a better workflow management, as well as a strengthened communication with several instruments.

In the following paragraphs main changes related to DMS and SMS are listed.

DMS

The table below lists the main DMS software changes.

MODULE	CATEGORY	ID	USER IMPACT
Software	*New Feature* (Operating System)	DMS2-12743	New Operating System "Red Hat Enterprise Linux version 7.7" now supports R20, with the aim to achieve a more effective cyber security, bug fixing, as well as hardening forward for DMS software. In any case, DMS R20 version continues to support the upgrade on Ubuntu 12.04 Operating System
	New Feature (IOM)	DMS2-12063	New style for the "Lane configuration window" of the Input/Output Module (IOM) for a better user experience: - clear separation of input and output lanes; - added icon for each single lane according to the defined configuration; - added "save and configuration" button
		DMS2-12218	In the "Lane Configuration" window a new warning message ('Are you sure you want to exit without saving?') is displayed when clicking on "Close" button, in order to prevent the window closing without saving the configuration
	New Feature (QC)	DMS2-13185	Added a new functionality to allow the User to close the QC control from the Online table. Now, if all the QC level of a QC control have been closed, the new command "Delete" is shown in the "Control" tab. After pressing this command an additional pop-up message appears asking the User to confirm the action. Note: The command is present if and only if the control ID has no open QC levels associated to it
		DMS2-12059	Improved the alignment between the patient result and its related QC results for Instruments having the "Reject Result by QC" option enabled. Now, in case failed QC is obtained, it is shown in red (in the "QC Results" table in Quality Control screen or "QC Display" popup window) and DMS rejects patient results for that test and instrument. Then, in case that result is followed by a valid QC result, this last one wins over the last QC failed: so, DMS is able to update again the QC icon and stop rejecting new patient results for the specific test and instrument
		DMS2-11986	According to Westgard rules, QC result analysis has been updated by evaluating the values against closed ranges (intervals with included end-points for all ranges)
		DMS2-11985, DMS2-11770	Modified QC result graph visualization related to invalid result. Now, invalid QC results are shown red triangles linked to the line of the valid ones

	Enhancements (QC)	DMS2-12012	Improved the accuracy of QC result chart data by showing the values with 3 decimals instead of 2, for rounding up mean and standard deviation
	Solved Issue (QC)	DMS2-7350	Updated the QC Display screen to ensure the alignment between the QC icons and the QC results status, as well as the full replace of old icons (traffic light) with the new ones
		DMS2-6756	Restored the possibility to compare different QC controls of Analyzers in QC display window
		DMS2-11790	Modified the type of query in order to properly threat the test related to QC valid result. Test are now no longer rejected in case of QC is valid
		DMS2-11788	Fixed the alignment between QC status and the related icon. Now the QC icons in summary and in the Instrument "Overview" screen are able to reflect the current right status also for inactive QC
		DMS2-11787	Enabled the possibility to manually edit MEAN and SD in QC level window. Added also a popup to confirm the User the values update. Now the User can modify: - Only MIN value (Using the already MAX value set to recalculate MEAN and SD values); - Only MAX value (Using the already MIN value set to recalculate MEAN and SD values); - MIN and MAX values (to recalculate MEAN and SD values)- Only MEAN value (Using the already SD value set to recalculate MIN and MAX values); - Only SD value (Using the already MEAN value set to recalculate MIN and MAX values); - MEAN and SD values (to recalculate MIN and MAX values)
		DMS2-11771	Fixed QC result graph in order to properly display Mean values greater than 1000
		DMS2-11769	Improved the QC chart visualization of accepted results in case the theoretical values are selected. Now, having normalized value to Mean ± 4 std to lie on the borders of the Levey Jennings chart, if a high QC result is received the chart will not shift anymore, leaving the mean in the center of the graph and without compressing the borders
		DMS2-11713	Fixed the behavior of the Archived QC Levels, controls and results in case of performing a DMS upgrade on Ubuntu 12.04 Operating System. Now all the old QC levels (control and results) are properly displayed in the "Show closed" table also in the updated DMS version
		DMS2-13060	Fixed the QC status icon in "Quick Monitor" screen to properly manage the scenario of receiving a rejected QC result from an analyzer configured to disable tests in case of faulty QC.

			Now, the QC icon is properly updated even if another QC result is received for a different Control of the same test
	Solved Issue	DMS2-8830	Improved the transmission of replicate results to Host. Now multiple runs for the same test are correctly sent to Host LIS by adding the run number and result date
		DMS2-8415	Fixed the snapshot window refresh when the User select a rerun action on a group of tests. Now after the rerun executions, or other possible actions, all the test status are properly updated by displaying the right icon
		DMS2-7710	Improved the "Rerun" functionality of Cobas 8000 and all the other instrument drivers: now the rerun icon is properly displayed for each result
		DMS2-6441	In “Automation System/Utilities” screen, the "purge" command has been updated to manage the "system not validated" scenario, in which the automation system is not ready to process real routine samples. Now, by clicking on "Purge" button, the User is allowed to send samples to Priority Output racks. NOTE: if the Purge button is clicked during "shutdown system" scenario, the request is ignored
		DMS2-6334	Improved Patient Report visualization for non-English language. Now, in case of labels with missing translation (previously shown as "null"), all the information is displayed in English language
		DMS2-1858	Improved the Search function in "Search Screen" allowing the User to visualize all test, on both enabled and disabled Instruments. Now if a test is disabled by Enable/Disable Test functionality on DMS, and a filter by test code is applied for an instrument that run the same test in the search screen, all samples meeting search criteria are displayed, even if their related test have been previously disabled
		DMS2-9851	Improved the "Search" functionality so allowing the User to perform research by selecting the Main instrument and its respective sub-module at the same time
		DMS2-9849	In the Snapshot window, added the possibility to visualize test with results that have been disabled on the specific Instrument
Siemens Atellica SHC	*Enhancement*	DMS2-9164	Added a new instrument option “Remove Aspects from Result Comment” for Atellica SHC driver that allows to remove result aspects and Result ID information sent as a result comment to the LIS
	Solved Issue	DMS2-12200	Fixed the result and sample type combination when an exception is received from Atellica SHC. Now, results and related exceptions are transmitted to DMS with the proper association
		DMS2-12273	Improved the Atellica sub-modules management to ensure that each submodule status update (i.e. possibility to run again a test) is properly transmitted to the main module

Siemens CS-5100 (CS5)	*New Feature*	DMS2-12793	Added a new instrument option in the CS-5100 DMS driver, "Manage only charts for abnormal results", to ensure that only charts with specific flags are managed
	Enhancement	DMS2-12077, DMS2-12075	Charts provided by Sysmex CS-5100 analyzer are now displayed in the Validation Screen and can be exported to Host LIS as PNG images
Tosoh G8 (G8)	*Enhancement*	DMS2-11980	Updated the G8 DMS driver to provide a right evaluation of the "Retention Time" for each detected peak in the result chromatogram graph. Consequently, the Retention time parameter is properly displayed in the G8/G11 Glycated Hemoglobin result plot so becoming a reliable support for the User in result validation. Note: the current release is specifically referred to the G11 instrument, being Retention time already strongly implemented in the G8 instrument

SMS

The table below lists the main SMS software changes.

MODULE	CATEGORY	ID	USER IMPACT
Software	*Enhancement*	FXSMS-3352	Provided the possibility to configure multiple IOM instances for Complete, Incomplete and Error Tubes in case there are more than 2 IOMs. Now Complete Tube is no longer added to an IOM instance in the following circumstances: - if its Complete Output Racks are missing or they're full (considering also the possible complete tubes already added to the worklist, travelling to the IOM, but not unloaded to Complete Output Racks yet); - if another online IOM instance, compatible to the tube exists and it is not in error state and with Complete Output Racks available and not full
	Solved Issue	FXSMS-5806	Improved the tube's routing of samples retrieved from the Storage and Retrieval Module with an add-on for aliquoting tests. Now, if the tube can be desealed (i.e. Desealer on-line, max number of seals not reached, max tube age not reached, etc.), it is directly sent to DSM while encountering the IOM first. This means the tube is able to skip the IOM so preventing that it is incorrectly sort to PO racks at IOM without error
		FXSMS-5805	Fixed the transmission of S004 message (error for unreadable tubes or invalid SID) from SMS to DMS. Now by checking into the IOM rack the User is able to see the presence of any unreadable or Invalid SID tube. Note: the issue occurred only on R19.1 software version
		FXSMS-5650	Improved the alignment between FlexLab and DMS IUI at the automation start up. Now DMS is able to remove from its records all tubes that were still on-line when FlexLab has been shut down the latest time, except tubes located in Storage and HVS. Therefore, at FlexLab start up, the IOM rack content shown in DMS IUI corresponds to the real content in the rack. Additionally, when the User performs the "Clear-Tubes" command for a specific Centrifuge Module and thus the tubes of that particular Centrifuge Module are considered manually removed and off-line, DMS is now aligned accordingly for each tube that was located in the Centrifuge Module
		FXSMS-5527	Improved the tube's routing of samples to be sorted to one of the following specific output module BOM/MOM/ROM/RM4, so that in case the output module is not available the tube id directly sent to IOM. Before routing to IOM a sorting tube for these output module, the software checks whether no BOM/ROM/MOM/RM4 compatible with that sorting tube is available instead of double checking only the output modules availability

		FXSMS-5197	In case of samples only requiring shaking before being sorted to BOM/ROM/ROM-400 (so without having analytical/aliquoting/priority sorting tests to do), the tube is now properly flagged with SC06B "Shaker Not Available" Error in case no Shaker Module is available
		FXSMS-5192	Improved the tube's routing for a sample needed to be shaken and with a sorting test for BOM. Now the tube is correctly routed to the Shaker Module (USH)
		FXSMS-5155	Improved the tube's routing to ensure the highest priority of a sorting test even if the sample tube needs to be shaken
		FXSMS-5129	Improved the handling of tubes which require to be sent to SVD before being decapped ("svd before dcm") in order to ensure that only centrifuge sample tubes are sent to SVD
		FXSMS-4980	Changed the software in order to properly threat a tube needed to be desealed and having at same time a sorting test at ROM 400. Not the tube is properly route to the DSM as a first step
		FXSMS-4891	Changed the software so that in case a tube needs be sorted to IOM, BOM, ROM or ROM-400 because of a sorting test, but this sorting test also requires tube shaking, the tube is sent to the USH first. Note: The exception to this is when the sorting test is a priority sorting test and the destination of sorting test is the IOM: in this case the USH is skipped
		FXSMS-4785	Changed the software so that if the tube has both a priority sorting test for the IOM and a sorting test (no priority) for BOM, ROM or ROM-400, the tube is directly routed to the IOM while encountering first one of the all other modules along its path on track
		FXSMS-2152	In the GUI/IUI added two new errors in the title bar (and also as a pop-up window) in order to let the User be aware of a Sample Database or DMS Database not responding for more than 45 seconds. Respectively the errors are: - SC0A6 Sample Database not responding - SC0A7 DMS Database not responding to Automation System queries Additionally, the automation system is automatically paused and the GUIs/IUIs are notified about the error even if the message parsing process is completely blocked by forcing the dispatch to GUIs/IUIs of an updated STATUS message including the database error. In case of error SC0A6 while the automation system startup process has not been completed yet, and thus the GUIs/IUIs have not started yet, an error pop-up window is displayed directly on the SMS server. The STATUS message is sent every 4 seconds, as long as the error SC0A6 persists, in order to keep alive the communication socket
Hologic Panther (HPI)	*New Feature*	FXSMS-5775	Improved communication between DMS and the Hologic Panther Instrument in order to manage reagent information. Now the User can visualize the list of the updated Reagents on Test Maps screen on FlexLab GUI

CONNECTIONS AVAILABLE

The table below contains the list of all the automation modules and interfaces that are developed and officially released for FlexLab and Aptio by Inpeco.

AUTOMATION MODULE	NODE
Aliquoter	*AQM*
Bulk Input	*BIM*
Centrifuge	*CM*
Decapper	*DCM*
Desealer	*DSM*
Input/Output	*IOM*
Liquid Handling Robot	*LHR*
Rack Input	*RIM*
Rack Output	*ROM*
Recapper	*RCM*
Sealer	*SM*
Sample Volume Detection	*SVD*
Storage & Retrieval Module 9000	*SRM*
Storage & Retrieval Module 15000	*SRM*
Universal Shaker	*USH*
Wide Belt Carrier Buffer 240	*WBB*
Wide Belt Carrier Buffer 600	*WBB*
Tube Identification Module (TIM)	*TIM*

COMPANY	MODEL	NODE
Abbott	Architect c8000/c16000	*C16*
Abbott	Architect i2000sr	*ISR*
Abbott	Alinity s	*BSQ*
Abbott	Alinity h	*HSQ*
Abbott	Alinity ci-series	*ICQ*
Abbott	Sapphire/SMS	*SAP/SMS*
Alifax	Jo Plus with Carousel	*JPC*
Arkray	HA-8180v	*HA8*
Beckman Coulter	AU 5800	*IAU*
Beckman Coulter	DxI 800	*DXI*
Bio-Rad	Bioplex 2200	*BP2*
Bio-Rad	D100	*D10*
Copan	WASP	*WSP*
Diasorin	Liaison XL	*LXL*
Diesse	Vesmatic Cube 80	*VMC*
Fujirebio	Lumipulse G1200	*L12*
Helena	Helena V8, V8 Nexus	*HV8*
Instrumentation Laboratory	ACL TOP LAS (700 and 750)	*ATL*
EUROIMMUN	RA Analyzer 10	*I10*
IDS	I10	*I10*

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Jeol	Biomajesty 6010	*BMJ*
Jeol	Biomajesty 6050	*BM6*
Jeol	Biomajesty 6070	*BM6*
Mechatronics	StaRRsed TL	*STL*
Roche	Cobas C513	*C513*
Roche	Cobas 8000	*CO8*
Sebia	Capillarys 3 Tera TLA	*EC3*
Sekisui	CP-3000	*CP3*
Siemens	Advia® 1800/2400	*A24*
Siemens	Advia® 2120i	*A2L*
Siemens	Advia® Centaur XP/XPT	*CEN*
Siemens	Advia® Chemistry XPT	*ACH*
Siemens	Atellica® Solution SHC	*ATS*
Siemens	BN II	*BN2*
Siemens	CA7000	*CA7*
Siemens	CS®-5100	*CS5*
Siemens	Dimension® ExL 200 / EXL with LM	*EXL*
Siemens	Immulite® 2000/2000 Xpi	*I2K*
Siemens	Dimension Vista® 500/1500	*VIS*
Siemens	Atellica® COAG 360	*RYL*
Snibe	Maglumi 2000/2000 Plus/4000 Plus	*MG2*
Stago	STA-R (Evolution, MAX, MAX2, MAX3)	*STR*
Sysmex	XN-9000 / 9100 (dual robot)	*XN9*
Thermo Fisher	Phadia 1000	*I1K*
Thermo Fisher	Phadia 250	*250*
Tosoh	AIA 2000	*AIA*
Tosoh	AIA CL 1200/2400	*AIA*
Tosoh	G8/G11	*G8*
Trinity Biotech	Premier Hb9210	*PHB*

Important *For each specific Automation Project, the final agreement for the connection of one the Analyzer above should be always confirmed also by the Analyzer Manufacturer and/or Distributor*

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