

PHỤ LỤC 1: YÊU CẦU KỸ THUẬT PHẦN MỀM VNA-ETL

Nbr	Requirement	Description	Category	Acceptable	Non Acceptable	Evidentiary material	Mandatory
1	SYSTEM						
1.1	The ETL system must have a real time two-way sync with the AMOS application. Must have visual indicator that systems are auto sync'd.		System				Mandatory
1.2	Provisions for ACARS connection		System				
1.3	Provisions for GPS connection for position and UTC update		System				
1.4	Provisions for exporting Techlog data for analytics (E.g. Skywise)		System				
1.5	Minimum hardware requirement for Ipads, tablets & Mobiles (Both Android & IOS)		System				
1.6	Offline mode needs to be supported in the following situations (including, but not limited to): - lost cellular/wifi connection to iPad - lost connection to/from AMOS system - lost connection to Flight System Proper provision of Pilot acceptance traceability should be there.	Offline mode needs to be supported in the following situations (including, but not limited to): - lost cellular/wifi connection to iPad - lost connection to/from AMOS system - lost connection to Flight System Proper provision of Pilot acceptance traceability should be there.	System				Mandatory
1.7	Application servers must be hosted in a cloud environment: + Using international cloud infrastructure such as AWS, Microsoft Azure, Google Cloud, or cloud services in Vietnam, including VNPT, Viettel, FPT, and CMC. + In case, using international cloud services, Provider commits to providing backup system solutions in Vietnam to ensure uninterrupted system operation.		System				Mandatory
1.8	Allow to access the raw data	Our business team requires access to the raw data in order to perform analytics	System				
1.9	Availability: Offline mode for the applications with automatic sync when online	Please provide offline and autosave mode detail	System				
1.10	The ETL system must guarantee that some areas and information are available even without internet access.		System				
1.11	Access Management - Provide rights for history log		System				
1.12	Logging - Trace any reading, storing, modification or transmission of data, and record the identity of the user and the time of the actions		System				
1.13	Logging - Ensure the same controls for storage and operation of log data (e.g.: encrypted storage, same back-up cycles, etc.) than for other data		System				
1.14	Logging - If logging can be blocked/switched off, control and log these actions		System				
1.15	Logging - Ensure secure disposal of log data		System				
1.16	Backups and Recovery - Provide automatic backups mechanisms (including configuration data)		System				
1.17	Backups and Recovery - Protect backup data against unauthorised access (e.g.: access control, encryption)		System				
1.18	Backups and Recovery - Provide high availability solution		System				
1.19	Backups and Recovery - Provide disaster recovery mechanisms		System				
1.20	Encryption - Encrypt storage of data		System				
1.21	The ETL system should have a Productive environment (PRD) and the capacity to do UAT testing and reporting server		System				
1.22	AMOS must be able to access their data efficiently and securely and with the ability to be implemented an automated process		System				
1.23	Provisions to print and store Techlogs in case of loss of internet connectivity		System				
1.24	Provisions for connection with Smart phones		System				
1.25	The ETL system is able to support Single Sign On function.		System				
1.26	The ETL system should provide DR capabilities.		System				
1.27	Offline Data base with data dictionary to be provided for Vietnam Airlines Data lake analytics. Offline database should have near to real time data.		System				
1.28	The ETL system is able to control records by techlog page ID (include at least action: display, search, navigate..)	Currently ATL managed by page serial number	System				Mandatory
1.29	The ETL system is able to allow pilot prepare information of the flight in advance	For example, captain can request Total Fuel on-board while he is being on the way to the aircraft. Mechanic can prepare FOB in advance, hence saving time	System				
2	SYSTEM INTERFACES						
2.1	Two way interface with AMOS system - System should have two way interface with AMOS to reflect real time maintenance data in both E-techlog and AMOS systems		System Interfaces				Mandatory

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2.2	System should be able to trigger the interface to send data to AMOS at each sign off - e.g. after maintenance release, aircraft acceptance, flight signoff, defects update etc.		System Interfaces				
2.3	Interface with Operation and Control system (Netline currently) - System should have provision to Import Flight schedule & schedule changes from the schedule planning / Operations system. The airline is responsible for providing the API to the ETL provider		System Interfaces				
2.4	Interface with AMOS for Structural Damages - System should have an interface to import/export structural damage data to AMOS system to reflect the status of the Aircraft damages		System Interfaces				
2.5	Interface with the Crew Management system (AVES currently)- System should have an interface with the customer Crew Management system to import/export data from crew scheduling. The airline is responsible for providing the API to the ETL provider		System Interfaces				
2.6	Interface with the Human resource management system - System should have an interface with the customer Human resource management system to import/export data from Airlines's Staff profile. The airline is responsible for providing the API to the ETL provider		System Interfaces				
2.7	Interface with the Ejourney Log or Electronic flight bag- System should have an interface with the customer e journey log system to import/export data from flight tech log and from the Data entry done in the Customized forms		System Interfaces				
3	USER INTERFACES						
3.1	Information on the screens can be customized, new screens can be added (labels, choice of data displayed)		User Interface				
3.2	Pilots and First Officers need ability to begin aircraft review prior to boarding	Pilots and First Officers need ability to begin aircraft review prior to boarding	User Interface				
3.3	The ETL system is able to populate relevant flight information based on airline integrated flight system (origin station, destination station, flight time, etc)	Auto-populate the city pair based on the aircraft selected and the OFP (Operational Flight Plan) (Note - Vendor need to confirm, which all third party they can integrate with)	User Interface				
3.4	The ETL system has a chat feature allowing flight crew and ground crew to communicate	Ability for MOC, Dispatch and Pilots to communicate via a chat/text feature. Feature should allow the equivalent of "group texting" in order to facilitate communication on aircraft/flight issues.	User Interface				
3.5	Display "information only" items	Need the ability to display items that are informational only and are not 'faults' on the aircraft. These items are carried as open item in the aircraft log and are addressed on RON.	User Interface				
3.6	The ETL is able to provide defaults or existing data where possible	Avoid having a user re-enter known information.	User Interface				
3.7	Any information that is presented by colour (either foreground or background) should be compliant with proper contrast ratios	Regarding colors, the standard defines two levels of contrast ratio: AA (minimum contrast) and AAA (enhanced contrast). The level AA requires a contrast ratio of at least 4.5:1 for normal text and 3:1 for large text (at least 18pt) or bold text.	User Interface				
3.8	The ETL system must provide consistency for common screens and features across all system components	Apply UI elements as they are originally defined, consider several well-established conventions when deciding on layout, design for your user's expectations and create consistent visuals	User Interface				
3.9	User interface must be flexible to accommodate changes and scalable to accommodate demands	There are constant evolutions of software versions, application components and design system rules. The system must allow scalability to ensure these evolutions	User Interface				
3.10	The ETL system must ensure that the information filled in regarding forms and reports is not lost if there is no internet access.	Information must be stored in the system's core and submitted later and automatically when access to the server is detected again, without the user having to perform all the actions again.	User Interface				Mandatory
3.11	User interface must provide an audit trail	Ability to trace all activity undertaken on ads (captures: user id, date & time stamp, affected fields, etc.)	User Interface				
3.12	The outlined system is able to allow users to have multiple "sessions" running simultaneously	Allows user to work on multiple features or different areas of the system at once	User Interface				
3.13	The ETL system must prevent two users from updating the same information at the same time	Use concurrency to prevent record updating on records that have been modified by someone else in the same time that other user was changing the	User Interface				Mandatory
3.14	The ETL system is able to provide a keyboard alternative to any point-and-click mouse action	These keyboard alternatives accommodate users with arthritis in their hands or other problems that make it difficult for them to control and	User Interface				
3.15	The ETL system is able to provide Pilot mode, Cabin Crew Mode, Mechanic Mode and readonly mode		User Interface				
4	GENERAL						
4.1	The ETL system has CAAV & EASA(or FAA) approval		General				Mandatory
4.2	The ETLB application needs to have a mechanism to guarantee that the logbook entries are being made for the correct aircraft.		General				
4.3	Need to have multiple roles/permissions available to segregate Pilot vs AMT vs MOC/MCC information. These permissions needs to align to AMOS functionality for AMTs and MOCs.		General				
4.4	The system must be able to handle 150 aircraft of multiple fleet type		General				Mandatory
4.5	The system must be able to support 2000 flights a day with Multiple A/C and Multiple Configuration		General				Mandatory

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4.6	Need to see a history of faults and work packages on the A/C. History of previous 50 techlog summary, open items, next major check due should be readily available and rest should be as per A/C record. All techlog history to be saved. It should be available from day 01. It should be extractable in soft copy. (Archive)		General				Mandatory
4.7	The supplier must have a solution CAAV compliant. The selected supplier must support Vietnam Airlines in obtaining the certification of the ELB from CAAV - Civil Aviation Authority.		General				
4.8	The ETL system is supported for 15 years		General				
4.9	UTC time - System should maintain a uniform time across the application i.e. UTC.		General				
4.10	Customization of Data Fields - System should allow the administrator to configure the fields within the different phases of the flight based on the customer procedures/requirement.		General				
4.11	Based on the organizational requirement, system should have a provision to rename the fields labels, Mark the field as mandatory, Optional, pre-defined values.		General				
4.12	Identification of Action button and Data field by Colours - System should highlight the Action button for the pending action, Mandatory fields etc.		General				
4.13	Device Read only View - System should provide a device Read only view option on the web portal for the office staff (based on the roles and access) to support to crew in case of any clarification.		General				
4.14	Correction of the signed data - System should provide an option to correct the already signed page with the audit trail to the specific roles only.		General				
4.15	Web Portal - There should be an option to access the Data repository for back office staff to access the Etech log data. Preferably a web portal of Etechlog and login via different type of OS Window mobile, IOS and Windows.		General				
4.16	The ETL system in web portal is able to process data in real time		General				
4.17	Accessible in multiple locations/stations - System should be available for multiple station / location (with capacity to add other stations/locations if required)		General				
4.18	Recording Structural Damages - System should be capable of the recording the Damages and reflect the complete Structural damage status in the techlog system.		General				
4.19	Design Form - System should have a functionality to design form as per the organization requirement to capture data at any stage of the flight cycle. E.g. To capture weight and balance information, tire pressure, Additional		General				
4.20	Offline functionality - System should have a functionality to update the system offline and auto transmit the data when the connectivity is back.		General				Mandatory
4.21	Product Roadmap - Vendor should be able to provide with the Product Road Map for the next five years with release dates for major versions.		General				
5	JOURNEY LOG (Flight Counter)						
5.1	The ETL system is able to record Flight details which include following at least: 01. The operator's name; 02. Aircraft Registration; 03. Names of crew members; 04. Duty assignments of crew members; 05. Signature of pilot-in-command; 06. Nature of flight (general aviation, aerial work, scheduled or unscheduled commercial air transport); 07. Date of flight; 08. Departure point; 09. Arrival point; 10. Out-of-chocks time of departure; 11. In-to-chocks time of arrival; 12. Total hours of flight time; 13. Trip events, incidents and observations. 14. Touch and Go (if any).		Journey log				
5.2	The ETL system is able to record APU operation hours and cycles.		Journey log				
5.3	The ETL system is able to record airframe FH/BH and cycles.		Journey log				
6	DEFECT & ACTION TAKEN						
6.1	Need to support the items that are required due to a deferral that can be performed by the flight crew & Engineering crew. Need to be able to display repetitive (M) & (O) procedures accomplished by AMT's. Need to be able to set repetitive requirement at interval specified in the MEL. (once day, each Flight)		Defect & Action taken				
6.2	Pilots & Engineers are able to select references for fault deferrals.		Defect & Action taken				
6.3	Pilot & Engineer are able to select the correct ATA code for the system impacted by the write-up. The search feature needs to be easy to use and reduce likelihood of user selecting the wrong value. The list needs to align with the AMOS list. Ideally these two systems use a single, real-time source for the listing.		Defect & Action taken				
6.4	The ETL system is able to support the Fault Reporting Manual	Should support the Airbus & Boeing FRM manual	Defect & Action taken				
6.5	The ETLB needs to have the same functionality as the Logbook binder Document Fault • Fault Name • Found By • Found on Date • FaultSource(MECH/PILOT) • Fault Code • Flight Stage • Station		Defect & Action taken				

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6.6	The ETL system contain all the information about the Deferrals & Defects: • Corrective Action • Corrective Action Deferral Type • Flt/Check • STA • UTC Date • Cat III Action Required • RII • Inspector • EMP or Mech Cert # • Signature Non-IGO Emp • Authorization #		Defect & Action taken				
6.7	Typical deferrals are MEL and CDL, Possibility to add cabin defects. Need to have the ability to add IGO specific deferral types.		Defect & Action taken				
6.8	The ETL provide a method that requires Maintenance Control to authorized deferrals.	All MEL/CDL/and HVN specific deferral require authorization. Possibility of uploading customised MEL/ CDL. Dent log (Figures), AI for finding it with previous entry, possibilities of making new entry.	Defect & Action taken				
6.9	The ETL system is able to provide aircraft status indicators to the Flight Crew (Open Defect/ special ops status, EDTO, AWO. ect.....)		Defect & Action taken				Mandatory
6.10	Exchange of Infos between Flight and Maintenance Crews (not for Defects and Rectification/Deferrals purpose, but for any other information which might be useful, and with no CRS needed, e.g. for troubleshooting purposes, or for a preformatted report like Vibration Report or Cabin Odour Report)	What are the different modes are available ex:- Flight crew mode, Mx mode, cabin mode, acceptance mode	Defect & Action taken				
6.11	Maintenance can electronically complete and e-sign the paperwork (process approved by Aviation Authority)	Provision of locking the text after E-signing the document.	Defect & Action taken				
6.12	Solution supports all elements of the Aircraft Technical Logbook system, including all airworthiness status	E.g. Release information, dent and buckle, maintenance agreements, details of the registered name and address of the operator, the aircraft type	Defect & Action taken				
6.13	P/N and S/N information when parts removed / installed (information of currently installed parts is desirable)	include information such as GRN	Defect & Action taken				
6.14	Count and warning for next dues (Operational Inspection and Deferrals, including Repetitive Maintenance Procedures and respective dues either days, cycles, Fhrs)		Defect & Action taken				
6.15	Defect report user friendly: - typification by system "Type"; - 3-levels of info report;		Defect & Action taken				
6.16	The features of E-Techlog for alerting MCC/SIC in real time as soon as there is any entry		Defect & Action taken				
6.17	Provisions for storing customized MEL for different aircraft versions		Defect & Action taken				
6.18	Provisions for storing customized Dent Mapping chart for different aircraft versions		Defect & Action taken				
6.19	Provisions for recording flight parameters for RVSM/Engine monitoring		Defect & Action taken				
6.20	Both mobile & web application should be available		Defect & Action taken				
6.21	Faults can be deferred according to MEL (A, B, C, D), CDL, NEF (Non-Essential Equipment and Furnishings), along with the reference of MEL, CDL, NEF		Defect & Action taken				
6.22	Faults can be deferred according to references other than MEL, CDL, NEF, such as AMM, SRM.		Defect & Action taken				
6.23	Create events (at a minimum AOG, MOR, Delay) and synchronize from ETL to AMOS (no synchronization from AMOS to ETL)		Defect & Action taken				
6.24	A repetitive inspection request can be opened from ETL and synchronized to AMOS as an ADHOC JIC. ADHOC JIC can be identified from ETL on AMOS		Defect & Action taken				
6.25	There is a function to change the Due date of a deferred defect.		Defect & Action taken				
6.26	There is a function to send a notification email to the registered address when the flight has Touch & Go		Defect & Action taken				Mandatory
6.27	Synchronize PIREP/MAREP from ETL to AMOS (including information about deferred faults, if any). Ensure that PIREP/MAREP from ETL can be identified on AMOS		Defect & Action taken				
6.28	Synchronize maintenance activities to rectify deferred defects from ETL to AMOS.		Defect & Action taken				
6.29	Synchronize the installation and removal of equipment from ETL to AMOS (can stop at the level of creating a label booking with the status NOT BOOKED on AMOS		Defect & Action taken				
6.30	Synchronize the work hours (time booking/manhours) from ETL to AMOS.		Defect & Action taken				
6.31	Synchronize uplift from ETL to AMOS (at a minimum Fuel, ENG/APU/IDG Oil, Hydraulic).		Defect & Action taken				
6.32	Synchronize data for De/anti-icing (fluid type, start time, finish time) from ETL to AMOS		Defect & Action taken				
6.33	Synchronize the execution of line checks on ETL with the corresponding line checks on AMOS, at a minimum PF (pre-flight), TR (transit), and TE (terminal/daily) checks.		Defect & Action taken				
6.34	Synchronize MEL, CDL, NEF (Non-Essential Equipment and Furnishings) documents from AMOS to ETL		Defect & Action taken				
6.35	Synchronize TAH/TAC (Total Aircraft Hours/Cycles) after flight completion (flight close) from/to AMOS		Defect & Action taken				
6.36	Automatically calculate TAH and TAC based on the most recent synchronization of TAH and TAC from AMOS and the information about Take off, Landing, Touch & Go of subsequent flights in case of no connection		Defect & Action taken				
6.37	Synchronize the open deferred defects recorded in AMOS during maintenance to ETL		Defect & Action taken				

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6.38	Synchronize the structural defects recorded in AMOS during maintenance to ETL.		Defect & Action taken				
6.39	Synchronize the maintenance activities to rectify deferred defects from AMOS to ETL		Defect & Action taken				
6.40	Synchronize the Due date of deferred defects from AMOS to ETL (if there is a change in the Due date of the defect on AMOS).		Defect & Action taken				
6.41	Synchronize the Work Packages (WP) performed between two flights from AMOS to ETL. Ensure that the description of the WP can be viewed from ETL		Defect & Action taken				
6.42	Synchronize the execution of Terminal checks between two flights from AMOS to ETL		Defect & Action taken				
6.43	There is a log that records errors/warnings when synchronizing data from ETL to AMOS.		Defect & Action taken				
6.44	the ETL system has a provision for tracking the deferred defects, which may be included as a separate page or pages in the front or back of the technical log		Defect & Action taken				
7	LIQUID						
7.1	The ETL system is able to record Oil/Hydraulic uplift quantity		Liquid				
7.2	The ETL system is able to record Oil/Hydraulic quantity remain		Liquid				
7.3	The ETL system is able to set up Oil/Hydraulic users (Engine 1, Engine 2, Engine 3, Engine 4, APU, VFSG, IDG,...);	Every aircraft type has its own Oil/Hydraulic configuration, such as : - ATR doesn't have APU; - Current VNA aircrafts are twin engines. Maybe in future VNA will operate 4-engine aircrafts; - Some aircraft types have 2 hydraulic system (A350, B737) but some have 3 hydraulic system (A321, B787) The proposed ETL should have capable of handling these cases	Liquid				
7.4	The ETL system is able to record Fuel quantity (uplift/defuel/...)	ref. to current form of technical log	Liquid				
7.2	The ETL system is able to record other Fuel information such as Density, Discrepancies, Bill No.,....	ref. to current form of technical log	Liquid				
7.6	The ETL system is able to record De-icing Fluid information such as Type, Start time, Finish time,....	ref. to current form of technical log	Liquid				
8	STATEMENT						
8.1	Issue of maintenance CRS, with the abbreviated or complete release statement, PGA/AMOS approval number pre-selected by default	Possibility of customising the CRS statement should be available	Statement				
8.2	The ETL system has a mean of recording of captain's acceptance of the aircraft for flight		Statement				
8.3	The ETL system is able to issue of Oil/Hydraulic uplifting/reading statement		Statement				
8.4	The ETL system is able to issue of Fuel uplifting/reading statement		Statement				
8.5	The ETL system is able to issue anti-icing statement		Statement				
9	PF/TX/TERM/LINE CHK						
9.1	The ETL system is able to support typical Operational Inspections, which includes transit check, pre-flight check, daily/terminal check, weekly check, line check, etc.,		PF/TX/TERM/LINE CHK				
10	TECHNICAL LOG REVIEW						
10.1	Workflow and approvals - In case of any correction to the closed tech log records, system should have a workflow and approval process in place with the audit trails						
10.2	Audit trail - system should have a provision to carry out a authorized error rectification with logs of who performed the correction and when, with the values before and after the rectification.						
10.3	Tech Log page form - System should have a provision to generate/ design a report similar to the current customer techlog page for the purpose of sending to the ground station etc.						
10.4	E techlog record and the workorder should be linked with the unique reference number (based on date and flight number) which should be reflected in AMOS for reference.						
10.5	Publish E-techlog links in AMOS - System should have a provision to publish Web portal's etechlog records links in AMOS transactions for the users. This will help users to easily navigate to the linked etechlog records						
11	Notification and Alerts						
11.1	Notification after the successful data transmission - System should notify users with a pop up after each stage when user sign off and the data is transmitted.						
11.2	Interface failure - System should Alert the administrator/user in case of any interface Failure						
11.3	System should have an option to configure the notification based on the triggers like aircraft signoff, maintenance sign off etc.						

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11.4	Once the records is flagged for correction, system should send a notification to responsible person.						
11.5	The ETL system is able to alert the user for the expiring maintenance activity in the devices and via email notification also.						Mandatory
12	Cabin logbook						Mandatory
12.1	Cabin logbook: interactive integration with LOPA (configurable);	Cabin and galley layout, typical faults, etc.	Cabin logbook				
12.2	Record Cabin Defects System should have a provision for cabin crew to report a cabin defect in E techlog application		Cabin logbook				
12.3	Offline CDL - System should have a provision to report a cabin defect from Cabin crew iPad and transmit the data to the pilot e tech log device for review.		Cabin logbook				
12.4	Notification of the reported cabin log to Electronic tech log device and notification back cabin crew devices once acknowledge.		Cabin logbook				
13	REPORT						
13.1	System should be able to reflect the Certificate of Release to service for the complete aircraft, issued at the end of the last maintenance check.						
13.2	System should have a provision to generate/ design a report similar to the current customer techlog page for the purpose of sending to the ground station etc.						
13.3	System should have a provision to design/customize the Release service certificate/ tech log page as per customer requirement.						
13.4	System should provide pre defined reports based on the industry standards for analysis of the maintenance and flight data from etechlog system						
13.5	In additional to the system report, System should have a provision for the administrator/super user to design report as per customer requirements.						
13.6	System should have a provision to transfer the data to Data analytics software (Power BI, Tableau etc.)						
14	USER MANAGEMENT						
14.1	Role Based control - Powerful role-based control allowing different profiles with access to different data with different permissions (create, delete, modify, read...)						
14.2	User groups/roles - Capability to create multiple user groups/roles. Capable to assign a user for more than one user group, sub team, team. Role creation should be configurable i.e. new roles can be defined apart from the already						
14.3	Password reset self service - System should have an self service option to reset the password in case of forgotten by the user						
14.4	Change password policy - System should have a functionality to force user to change the password after X number of days. Administrator should be able to defined number of days as per company policies.						
15	SUPPORT AND TRAINING						
15.1	provides the Implementation support for the application						
15.2	provides the onsite/offshore implementation support for application						
15.3	provides onsite implementation support for devices						
15.4	Training Materials - provide with the webinar, documentation for the training of the end users						
15.5	Computer based training - provides with the computer based training program for the pilot, Engineers and other staff with the Demo application for the user to get a hands on experience of the application.						
15.6	Onsite training - vendor provides with onsite training to Key users during the implementation of the Application						
15.7	Train the trainer - provides the train the trainer training for the application						
16	DATA RETENTION						
16.1	System should be able to retain the aircraft technical log data until the organization's decision to archive the aircraft data.						
16.2	System should have option to change the status of the aircraft to inactive in case of aircraft is out of operation						
17	DEVICE REQUIREMENT						
17.1	Application should be compatible with the Toughbook , iPad and other devices without any limitations of operating system.						
17.2	Device should be capable to implement the policy to restrict the usage of device limited to the etechlog application only.						
17.3	Device on the aircraft should auto detect the aircraft registration or should be restricted to dedicated aircraft registration only						
17.4	Remote Support should be provided by the vendor for the issue/bugs in the devices and application.						

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17.5	Remote View access to the devices - Devices should be capable of remote view access which will be required by the back office support staff/MCC to support the end user during operations						
17.7	Device Back up - There should be a solution in place, in case of the device break down with or without internet connectivity						
18	Electronic Sign -						
18.1	System should have an ability for the user to sign electronically at the required section						
18.2	System should be able to link to the data for which the signature was created in such a way that any subsequent change of the data is detectable.						
18.3	Alternate signature option - System should be have alternate signature option in the system, For example in primary option is glass on sign, system should also have a alternate option to digitally sign with the password.						
18.4	Authorization of Signature - System should be provide a secure authentication of the signatory						