HELSEPLATTFORMEN
for pasientens helsetjeneste

Procurement of an
EHR solution
with adjacent systems and services

***

Invitation to Dialogue

T Appendix 4 Testing and Approval

Based on SSA - T

Case number: 2016/238

History

Version	Responsibility	Date	Comments/Changes
v1.0	Helseplattformen	02.02.17	Version v1.0 shared with the Contractors

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1 INTRODUCTION

The purpose of this Appendix is to ensure an optimal and efficient execution of the test and approval of the Contractor's Deliverables, in order to secure that the Deliverables fulfils the purpose of the procurement as described in *Appendix C0*.

This document shall be used by the Contractor to describe the Contractor's suggestions regarding test and approval with main focus on test strategy and test methodology.

The following appendices contain additional information that may affect the Contractor's approach to test and approval:

- Customer Furnished Assets (CFA), cf. *Appendix C7* (overview of infrastructure and software required to execute tests)

- Project and Progress Plan, cf. *T Appendix 3*

2 INSTRUCTIONS FOR THE CONTRACTOR'S COMPLETION OF THE APPENDIX

The Contractor shall complete this Appendix in accordance with the instructions set out herein.

The document has been partially completed by the Customer, with the majority of content free for the Contractor to adjust and edit. The Contractor's content will be evaluated according to the evaluation methodology and principles based on the Risk award criteria, refer to *Invitation to Dialogue document, Chapter 25.5* for details.

The Customer's current framework for test and approval may not be the optimal choice considering the Contractor's Deliverables and preferred methodology. The Customer acknowledges the Contractor's competence and previous experience in testing and implementing its Deliverables, and wishes to draw on this competence and experience.

Rather than specifying requirements and a set plan for testing, the Contractor shall in this document suggest recommendations, details and plans for testing and approval. The Contractor shall propose the elements in the process for test and approval using the instructions below. This will be the basis for the dialogue phase, resulting in a unified process for test and approval.

Terminology:

Where there is ambiguity regarding translation of test terminology and definitions, the definitions in the **ISTQB Terminology list**, http://www.istqb.no/dokumentasjon/ will be the basis of understanding.

Non-editable text:

Most chapters contain text elements including tables holding information from the Customer. This text shall NOT be edited. The tables are blue and the header states "**Customer's information. Content is not to be edited**". Se example below:

(Customer's information. Content is not to be edited)
(text)

The text states conditions or gives information useful to the Contractor when completing this Appendix. The content ranges from reminders about rules and regulations, instructions to the Contractor, to general information relating to the Customer's expectations or requirements. Instructions shall be responded to by the Contractor in the equivalent chapter in the editable text section, see below. Content in <angular brackets> found in the Customer's non-editable text indicates tentative time frames that may be subject to change during the dialogue phase.

Editable text:

Text in [square brackets] contains text elements to be edited at the Contractor's will. This text is suggestions only and the Contractor can delete, replace or edit this text freely. The Customer's included suggestions are to be considered as guidelines only for the Contractor to complete the text. The Contractor may include additional information, comments or suggestions in the editable text and may additionally suggest activities and milestones where relevant and appropriate, and the fulfilment criteria for reaching milestones (milestones are described in *T Appendix 3*). The edited text will then be subject to discussion and finally agreed upon during the dialogue phase, resulting in the final agreement for test and approval. The Contractor shall substantiate its project and progress plan (*T Appendix 3*) through supporting descriptions. The detailed description of the activities and the completion criteria to be fulfilled, will also be subject to discussion and finally agreed upon during the dialogue phase.

3   INTERDEPENDENCIES WITH OTHER ITD DOCUMENTS

This Appendix is interconnected with several other ITD Documents, most importantly:

- The Requirements Specifications [*T Appendix 1A,1B,1C* and *1D*]

- *T Appendix 6 Price and Pricing Provisions*

- *T Appendix 3 Project and Progress Plan*

4 TEST AND APPROVAL STRATEGIES

4.1 PLANNING

(Customer's information. Content is __not__ to be edited)
The Contractor and the Customer shall collaborate in detailing a plan for testing and approval. The detailed test plan shall cover all levels of test and approval, including the Contractor's own tests and the Customer's testing. Approval of the project Plan, Detailed Plan, Detailed Options Plan and Detailed Specifications will be a part of the testing and approval regime. The detailed plan for test and approval will establish the agreed activities and milestones associated with testing and approval of the Deliverables. This plan will also establish the criteria for approval on each test level (both the Contractor's testing and the Customer's testing). The Contractor shall make available to the Customer the material the Contractor will utilise as a basis for its own testing of the Deliverables, so that the Customer may use this as a basis for the Customer's work on the test plan. For any modules, configurations or other parts not previously deployed and in use elsewhere, (i.e., new, customised or undeveloped functionality) this includes detailed test plans covering the Contractor's own testing, and corresponding risk assessments. These plans shall be subject to Customer review prior to Contractor's test implementation. The due date for both the Contractor's submittal and Customer's approval of the plans shall be stated in the Project Plan (cf. *T Appendix 3*). **The Customer's general outline for test and approval include:**   - Plans and specifications will be approved by the Customer   - An ambition to initially test proof of concept   - A process where each Partial delivery (ranging from organisational unit to a logical or system related unit) will conduct separate acceptance tests   - A process where functionality in the Deliverables will receive final approval in the acceptance tests   - A test plan where a full team of health care expertise is estimated to be available for the acceptance tests only, because access to key competency or specialised project resources will be limited

The Customer will develop and present an elaborated Customer's acceptance test plan. The test plan will e.g., contain criteria for test start-up/launch, criteria for test closure, plan for test performing and also approval criteria. The Contractor shall assist in preparing and detailing the plan.

(Customer's information. Content is not to be edited)

The Customer shall submit its test plan to the Contractor for review no later than <20> days prior to commencement of each Customer test level. The Contractor shall provide a written response no later than <10> days prior to commencement of each Customer test level.

The Customer's testing and approval will be organised in multiple parallel and sequential iterations as illustrated in the Customer's master test plan, Figure 1. The Figure shows that after approval of the Project Plan and Detailed Plan approved by the Customer (MS2) and the Detailed Specification approved by the Customer and EHR solution installed on technical platform (MS3). The Customer expects to run a concept test (Milestone A) as the first test. When approved, several iterations of the tests described in *Chapter 4.2* will be executed. Finally, a Customer's final acceptance test, conducted after the final deployment, will close the Main Project. This final acceptance test will cover the entire delivery and result in a final approval.

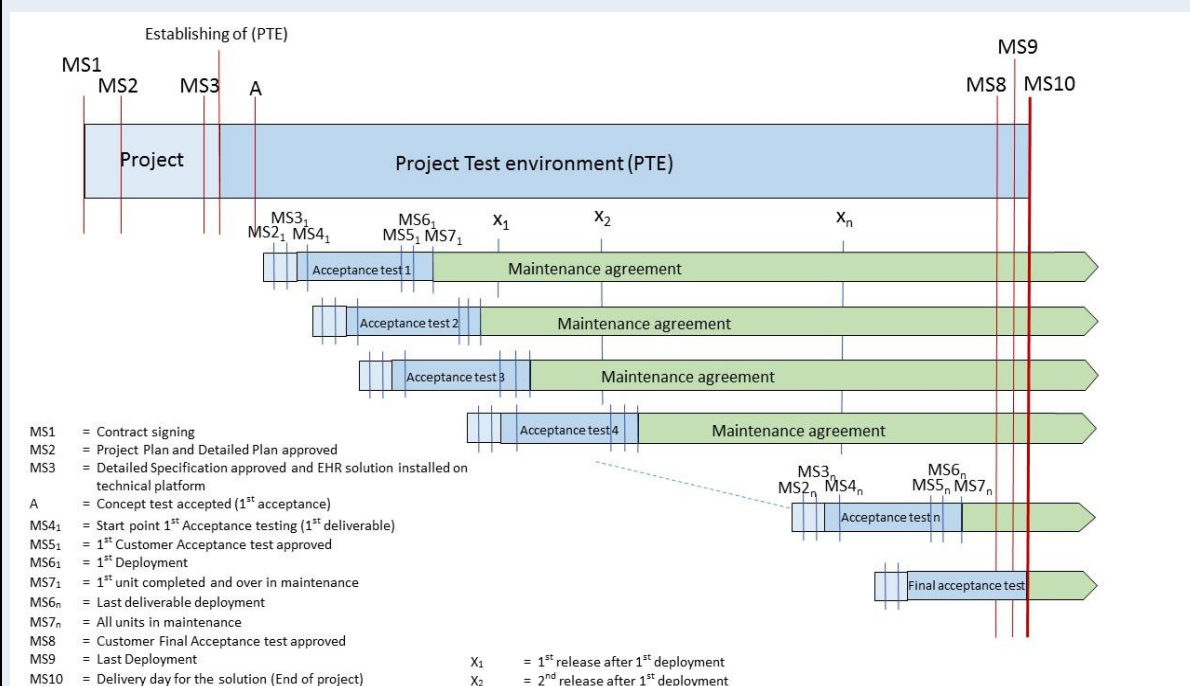Milestones MS1 –M10 correspond to the milestones outlined in *T Appendix 3.*

Figure 1 - Customer's test plan overview

(Customer's information. Content is not to be edited)

Some principles for Customer's tests, as described in Figure 1 above:

- Plans and specifications shall be approved before any of the Customer's tests starts

- All deliveries from the Contractor will be tested in the "Project Test environment" to verify proper installation, and to confirm that the Deliverable is ready for testing. A delivery will not be accepted before this test is approved by the Customer.

- Point marked "A" in Figure 1 is the first test milestone. Here the entire concept will be tested to gain confidence in the Deliverables (for solution assurance) for all Customer units. Test cases for this test will cover main issues for all units and interactions between units.

- Acceptance of a function is conducted as part of the acceptance test for a Partial delivery

- The project can pass a milestone with remaining/unresolved defects, meaning that a Partial delivery can deploy the Deliverables (MS6$_1$) even though the delivery cannot be fully accepted/partly accepted. Rejected or failed functionality shall be re-tested and approved before the overall Deliverables are approved by the responsible organisation and the acceptance test is ended and the milestone is officially reached.

- Every Partial delivery will have their own test plan and every Partial delivery will conduct an acceptance test, and accept the deployment for their Partial delivery. If functionality is only partially approved, but the units receiving the Partial delivery still decides to deploy with this must be approved by both the Contractor and the Customer (project).

- After all Partial deliveries are deployed, the Customer's final acceptance test will be performed.

4.1.1 Concept Test

(Customer's information. Content is not to be edited)

An initial test will be a proof of concept test, ensuring that the objectives of Helseplattformen (cf. *Appendix C0*) is met by the Contractor's EHR solution.

The Contractor shall describe the outline and details of the Customer's suggested content, methodology and execution of a concept test. If the Contractor does not find the test applicable, the reason for this should be stated and an alternative proof of concept test should be described (or if described in other document section, referred to).

[The Contractor shall describe the outline and details of recommended content, methodology and execution of a concept test. The Customer suggests as a minimum to include a functional test covering interaction between hospitals, municipalities and GPs, a functional test covering critical functionality in each Partial delivery, test for system performance robustness and redundancy in regards to interaction between hospitals, municipalities and GPs, a test of solution security and a total solution risk analysis.]

4.1.2 Customer Final Acceptance Test

(Customer's information. Content is not to be edited)
When all Deliverables are deployed, the Customer will perform a final acceptance test to confirm that the Deliverables that are delivered is in accordance with all requirements specified in the *Delivery Contract*. This is to ensure that all Deliverables not yet approved fulfil the final acceptance test criteria. Also, the final acceptance test will ensure that any remaining defects and errors are retested and approved as well. Additional focus will be on the interaction between hospitals, municipalities and GPs as well.

[The Contractor shall describe the outline and details of the Customer's suggested content, methodology and execution of the Customer's final acceptance test.]

4.2 EXECUTION

This Chapter describes execution of the different tests. Figure 2 below gives an illustrated overview of possible responsibilities of the Contractor and the Customer for different tests and specifications. The right side of the illustration lists the different tests that the Contractor shall present a plan for, within the confinement of the Customer's outline stated in the subchapters below. The framed area represents the Contractor's main area of responsibility.
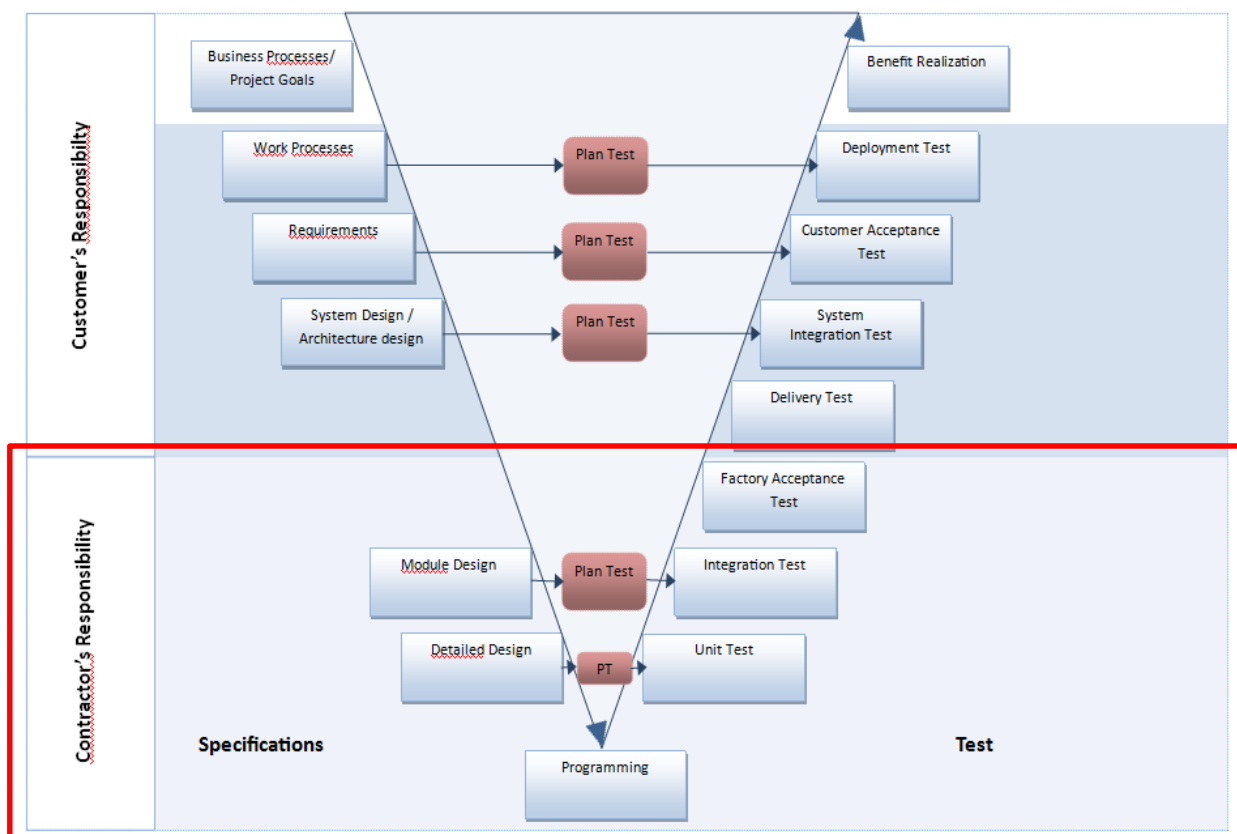

Figure 2 - V-model for testing

4.2.1   Unit Test (Contractor's test)

(Customer's information. Content is not to be edited)
The test shall include testing of both configuration and developed components. The result of the test shall be verified against detailed design.

[The Contractor shall describe the outline and details of content, methodology and execution of the unit test. Suggested content includes listing of the Contractor's responsibilities (and also the Customer's if applicable), and description of test environment to be used for this test.]

4.2.2   Integration Test (Contractor's test)

(Customer's information. Content is not to be edited)
The test shall include testing of internal and external interfaces within the Contractor's areas of responsibility. The result of the test shall be verified against detailed integration interface (design). The integration test shall be executed by the Contractor's personnel and in the stated test environment.

[The Contractor shall describe the outline and details of content, methodology and execution of the Integration test. Suggested content includes listing of the Contractor's responsibilities (and also the Customer's responsibilities, if applicable), and description of test environment to be used for this test.]

4.2.3   Factory Acceptance Test (Contractor's test)

(Customer's information. Content is not to be edited)
The test will ensure that all Deliverables, including functionality that required customisation and adaptation, has been finalised and meets all requirements as agreed in *T Appendix 2* prior to the delivery to the Customer.
This test will determine whether the delivered module, solution or functionality is ready for Customer testing. The test shall cover all situations including deviations and error situations.
For this test, in addition to describing the test design, the Contractor should describe the contributions from the Customer necessary to complete the test.

[The Contractor shall describe the outline and details of content, methodology and execution of the Contractor's factory acceptance test. Suggested content includes listing of both the Contractor's and Customer's responsibilities, description of necessary Customer contributions and description of the test environment to be used for this test.]

4.2.4 Delivery Test

(Customer's information. Content is not to be edited)
The test is performed to ensure that the Deliverables are complete and ready for upcoming tests. This test shall verify the installation procedure and determine whether the delivered module, solution or functionality is ready for end user acceptance test. The test shall cover all situations including deviations and error situations. This test must be approved by the Customer for the delivery to be accepted as delivered.

[The Contractor shall describe the outline and details of content, methodology and execution of the delivery test. Suggested content includes listing of the Contractor's responsibilities (if applicable), description of necessary Customer contributions and responsibilities, and description of the test environment to be used for this test.]

4.2.5 System Integration test

(Customer's information. Content is not to be edited)
The test shall include testing of the Deliverables including external systems and adjacent systems that are integrated through the Enterprise Service Bus (ESB), cf. *Appendix C7*. The test shall cover all situations including deviations and error situations, and the result of the test shall be verified against detailed documentation (solution, use case etc.)

[The Contractor shall describe the outline and details of content, methodology and execution of the system integration test. The Contractor shall recommend activities for the Customer to plan and execute to ensure successful delivery of the test. Suggested content includes listing of the Contractor's responsibilities, description of the Customer's activities, contributions and responsibilities, and description of test environment to be used for this test.]

4.2.6 Customer Acceptance Test

(Customer's information. Content is not to be edited)

The acceptance test verifies that the Deliverables covers the Customer's purpose, needs and requirements as described in *T Appendix 1* and *T Appendix 2*. The Contractor shall support the Customer in planning and facilitating the acceptance test, so that the test can be executed in accordance with the overall test plan, cf. *Chapter 4.1*.

Where possible, the test will be executed using real, anonymised data from Customer's live/production environment and executed as end-to-end testing with actual integration interfaces in a live/production test environment. When this is not possible due to legal, technical or economic reasons, and it is otherwise beneficial to the Customer, the Customer may choose to use a simulated interface.

The Contractor shall during the acceptance test make available sufficient resources to handle errors and discrepancies detected in the Customer's test. If the Customer finds it necessary to, given the procurement purposes, carry out further tests and verifications in addition to those described in this agreement, the Customer will be eligible to do so.

All error corrections done after the acceptance test launch must be retested and approved by the Contractor prior to handover/delivery to the Customer for acceptance test. The Customer shall assess the need for regression testing. Any retests and regression tests, including the Contractor's evaluation of these, shall be documented and presented to the Customer, who will decide whether retesting is necessary.

[The Contractor shall describe the outline and details of content, methodology and execution of the Customer's acceptance test. The Customer expects the Contractor to describe recommended activities for the Customer to plan and execute to ensure successful delivery of the test. Suggested content includes listing of the Contractor's responsibilities, description of the Customer's activities, contributions and responsibilities, and description of test environment to be used for this test.]

4.2.7 Deployment Test

(Customer's information. Content is not to be edited)

Before the Deliverables goes live, but after the Deliverables has been installed in the production environment, a deployment test will be executed. The purpose is to test and verify that the Deliverables operates in accordance with the *Delivery Contract*, and that the enterprise units can facilitate all work tasks and processes through the new EHR solution.

[The Contractor shall describe the outline and details of content, methodology and execution of the deployment test. Suggested content includes listing of the Contractor's activities, contributions and responsibilities (and also the Customer's responsibilities, if applicable), and description of test environment to be used for this test.]

4.2.8 Benefits Realisation

(Customer's information. Content is not to be edited)
This is not a test that will be conducted during the project period.

4.3 COVERAGE

(Customer's information. Content is not to be edited)
To achieve acceptable test coverage, different properties in the Deliverables must be tested at different test levels. It must be ensured that, based on a risk assessment, the part of delivery that is most complex and most crucial to vital business functions (VBF) are tested first and most rigorously.

[The Contractor shall describe how optimal test coverage can be achieved. Planning and monitoring of test coverage is to be managed using the Customer's project test management tools. In both the master test plan and the detailed test plans for the different levels of testing, the test- and code coverage required for each test type shall be described.

The Customer suggest including a structured overview in this description, where the table below is an example of a possible matrix check-out. This table can be used and edited by the Contractor if desired, or replaced by other relevant overview or matrix.

Table 1 - An example of a possible matrix check-out

Property / Test level	**UT**	**IT**	**FAT**	**DT**	**SIT**	**AT**	**DT**
UT=Unit test, IT=Integration test, FAT= Factory acceptance test, DT = Delivery test (TI=Technical installation test and ST=System test), SIT=System integration test, AT=Acceptance test, DT = Deployment test. **Check boxes with "X" where relevant**							
Functionality							
Proper functionality to resolve and perform tasks							
Correctness							
Standards compliance							
Interaction between modules							
Interaction with external systems							
Security (unauthorised access)							
Performance							
Normal use online response times							
Resource use							
Timed batch runs							
Compatibility							
Interaction between software and peripherals							
Usability							
Comprehensible (meaningful use)							

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Property / Test level	UT	IT	FAT	DT	SIT	AT	DT
Easy to learn							
Effective to use							
Reliability							
Resilience							
Stress tolerance							
Concurrency							
Availability							
Fault tolerance							
Maintains consistency after stops							
Operational maturity							
Security							
Roles and access							
Access logging and transactions							
Identification							
Maintainability							
Analysable							
Changeable (easy to change)							
Testable							
Portability/installation							
Installation							

Good test coverage is achieved by establishing test plans based on the solution hierarchy, i.e. the enterprise process structure broken down into the individual solution element, linked to the contract requirements of the solution elements. In addition, good test coverage is ensured by verifying/testing all requirements of the contracted specification. The Contractor shall, for each requirement, describe how the fulfilment of the requirement will be tested/verified. This shall be documented in the specification phase and approved by the Customer.]

4.4 TEST DOCUMENTATION

(Customer's information. Content is not to be edited)
Test documentation and templates used shall be based on international standards, such as IEEE Standard for Software Test Documentation (IEEE Std. 829) or equivalent.

[The Contractor shall describe recommendations for test documentation, including a plan and timeline for documentation deliveries.]

4.5 TEST TOOLS

(Customer's information. Content is not to be edited)
The Contractor shall, unless otherwise recommended and agreed, use the Customer's tools for test implementation/execution and reporting.

[The Contractor shall describe recommendations for test documentation, including a plan and timeline for documentation deliveries. It should be possible to link Customer requirements verified during the Contractor's test run to test procedures in the Customer's test tool(s). The Contractor shall provide tool(s) for testing the performance of the offered EHR solution, and describe recommended performance measurement criteria. The Contractor may also provide a list of suggested test tools recommended for testing and approval:

Table 2 - A list of suggested test tools recommended for testing and approval

Task	**Tool** (content in brackets are the Customer's current tools)
Requirements and test management	(HP ALM)
Test planning	(HP ALM, MS Office)
Test execution/implementation	(HP ALM)
Error management	(HP ALM)
Reporting and monitoring	(HP ALM, MS Office)
Automated tests	Please list
Security testing	Please list
Performance testing	Please list
Test data anonymization	Please list

The Contractor shall, unless otherwise recommended and agreed, use the Customer's tools for test implementation/execution and reporting.]

4.6 TEST DATA

(Customer's information. Content is not to be edited)
The Contractor must comply with the Customer's procedures for use of test data. Migrated data may contain sensitive personal information, and should thus be treated as production data and in accordance with the regulations on processing of personal data. The Norwegian Code of Conduct for information security in the healthcare and care services (www.normen.no) provides an overview of the current guidelines for the use of production data in test, cf. *Appendix C6, Chapter 10.2, SG2[1].* For test data that will be migrated to the systems, the following applies: • Test data creation shall be executed the same way as data migration for deployment. • The Contractor shall provide the test data for the Contractor's tests, unless specifically agreed that the Customer shall provide this. The complexity and variability of test data should correspond to actual production data. • If the Contractor is responsible for anonymisation of test data, a solution for anonymisation of test data based on extracts from Customer's databases shall be offered. This solution shall also be available for the Customer's acceptance test use. • The Contractor is responsible for ensuring that all test data used in the Contractor's tests are documented and quality assured.

4.6.1 Procedure for establishing test data

(Customer's information. Content is not to be edited)
The Contractor shall provide an overview of their recommended procedure for establishing test data.

[The Contractor shall describe recommended procedure(s) for establishing test data, including compliance with the Customer's test data procedures as indicated in Chapter 4.6.]

4.7 APPROVAL CRITERIA

(Customer's information. Content is not to be edited)
The Customer will approve the objectives, content, scope and criteria for start-up and completion for the Contractor's tests. The test plans shall define and include and exact start, stop, continuation and completion criteria of the various tests.

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[1] Compliance with following specific guidelines in www.normen (Norwegian only) is essential:

Factsheet 43 - Use of test data in systems with personal health content

Factsheet 48 - Information security during test execution

Factsheet 18 - Portable computer equipment security

Factsheet 8 - Deviation management

4.7.1   Criteria for test level start-up

[The Contractor shall describe the defined criteria that have to be fulfilled prior to a specified test level start-up. The Customer suggests including a structured overview in this description, where the list below is an example of a possible presentation to be used and edited by the Contractor if desired, or replaced by another relevant overview.

Table 3 - An example of a possible presentation of criteria for test level start-up

In general, the following criteria will be valid for specified test level start-up:
Previous test level has been completed and approved
The test plan for the current test level is prepared and approved, including detailed plans for resources and timing
The test cases/scenarios and test scripts are prepared and ready
Test environment is available
Test data are available and installed in the appropriate test environment
The current level delivery is complete, installed in the test environment and ready for test
Necessary training has been provided for test personnel (Contractor's and Customer's personnel)
The Contractor has allocated resources for troubleshooting, debugging and testing
The Customer has allocated resources as agreed

]

4.7.2   Criteria for test level closure

[The Contractor shall describe the defined criteria that have to be fulfilled prior to a specific test level closure. The Customer suggests including a structured overview in this description, where the list below is an example of a possible presentation to be used and edited by the Contractor if desired, or replaced by other relevant overview.

Table 4 - An example of a possible presentation of criteria for test level closure

In general, the following criteria will be valid for specified test level closure:
A test report from the previous test level shall be received and approved
All test items are tested
Requirements for test coverage are met
All planned tests are completed
The final bug fixes are retested
Regression test is complete
The number of remaining errors are within the pre-agreed scope
The report of remaining errors with plan for fixing is delivered and approved
The report of remaining change requests / orders are approved

]

4.7.3 Number of outstanding errors for approval

(Customer's information. Content is not to be edited)
Before the Contractor's testing can be concluded, the following criteria must be reached (see table below for error definition and explanation):   1. All known critical errors (A – errors) must be resolved.   2. There must be no serious errors (B or C – errors) remaining that affects or impacts the Customer's ability to initiate acceptance tests.   3. A plan for resolving any remaining/outstanding errors must be delivered to ensure that these errors can be properly tested and, if necessary, re-tested during the Customer's planned acceptance test.   A cluster of errors – i.e., as a result of propagation of errors - might be assessed as a higher category error if the individual errors in the cluster have a mutual impact on solution operability more critical than the single errors individually.   For all known defects, the defect shall be identified and possible to recreate, and an error fix shall be identified including an error resolve workload estimate and deadline approved by the Customer.   The list of remaining errors from the Contractor's test shall be included in the final report from the Contractor's test.

[The Contractor shall describe error definitions. The Customer suggests including a structured overview in this description, where the list below is an example of a possible summary to be used and edited by the Contractor if desired, or replaced by other relevant overview.

Table 5 - Definitions of errors

Level	Category	Description
A	Critical error	*Error that results in the stoppage of the software or equipment, loss of data, or loss of other functionalities that, based on an objective assessment, are of critical importance to the Customer not being delivered or not working as agreed.* *The documentation being so incomplete or misleading that the Customer is unable to use the software or the equipment, or material parts thereof*
B	Serious error	*Error that results in functions that, based on an objective assessment, are of importance to the Customer not working as described in the agreement, and which it is time-consuming and costly to work around.* *The documentation being incomplete or misleading, and this results in the Customer being unable to use functions that, based on an objective assessment, are of importance to the Customer.*
C	Less serious error	*Error that results in individual functions not working as intended, but which can be worked around with relative ease by the Customer.* *The documentation being incomplete or imprecise.*
D	Cosmetic error	*Error that does not affect further processing of the application.* *Spelling mistakes, tab sequence, UI anomalies like font-related variance, background colour of specific fields etc.*

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The Contractor shall also describe the acceptance criteria per test level using the suggested format below if applicable, in which the table provides the acceptance criteria per test level:

Table 6 - The acceptance criteria per test level

Test level Error	FAT	Delivery test	System integration test	Acceptance test	Approval period
A Critical error	0 errors	0 errors	0 errors	0 errors	0 errors
B Serious error	Less than 5 errors Agreed plan for resolving delivered.	Less than 5 errors. Agreed plan for resolving delivered.	Less than 5 errors. Agreed plan for resolving delivered.	Less than 5 errors. Agreed plan for resolving delivered.	Less than 5 errors. Agreed plan for resolving delivered.
C Less serious error	Less than 10 errors.	Less than 10 errors.	Less than 10 errors. Agreed plan for resolving delivered.	Less than 10 errors. Agreed plan for resolving delivered.	Less than 10 errors. Agreed plan for resolving delivered.
D Cosmetic error			Agreed plan for resolving delivered.	Agreed plan for resolving delivered.	Agreed plan for resolving delivered.

]

4.8   MIGRATION

(Customer's information. Content is not to be edited)
Testing of migrated data is considered part of the test run in the Customer's acceptance test. Final approval of the migration will be part of Customer's acceptance test. Migration approval depends, as any other test, on test results, as described in this document.

[The Customer shall describe and recommend methodology for verifying test migration. If the Contractor is responsible for the migration, the Customer shall approve the Contractor's migration output by verifying that the test migration has been successful, including that the data has been transferred and is in the correct format.

The Contractor shall deliver own test scripts for testing and verification of data through the migration process and data development process. The Contractor shall establish test scripts for migrated data verification, and a separate plan for migration shall be provided. Migrated test data shall be handled according to procedure, cf. Chapter 4.6.]

4.9   DEPLOYMENT (GO-LIVE)

(Customer's information. Content is not to be edited)
Before the Deliverable is approved for deployment all agreed upon criteria have to be met. The updating and approval of V *Appendix 3* by both the Contractor and the Customer prior to deployment is considered a mandatory criteria, as is the Customer's approval of the established maintenance organisation prior to initial deployment.

[The Contractor shall describe criteria for deployment readiness, i.e., the delivery will be ready for deployment when suggested criteria are met. Customer's criteria suggestions include

Acceptance test approval, end user training completion, deployment plan approval, but the Contractor shall provide the complete criteria description and listing.]

4.10 THE APPROVAL PERIOD

(Customer's information. Content is not to be edited)
An approval period will follow each deployment as stated in the Delivery Contract. Before the Final Delivery Date (see Figure 1) there will be a final approval period. During the approval period the Customer will conduct quality and performance control activities and measurements of the solution in the production environment. Before the closure of each acceptance test the Customer shall provide an approval period plan to be presented to the Contractor. The approval period plan will state how and when tests are to be performed during the approval period. When errors occur during the approval period they will be categorised within the definitions listed in *Chapter 4.7*. Error handling will be according to the procedures set in the *Maintenance Contract*.

[The Contractor shall describe recommended activities for the Customer to perform during the approval period to control quality and performance of the solution. In addition, the Contractor shall describe any additional activities to be performed during the final approval period.]

5 REQUIREMENTS FOR ERROR HANDLING

This Chapter contains requirements for error management prior to deployment.

5.1 CATEGORISATION

All errors reported during the Customer's acceptance test shall be documented, in order that they may be reproduced. All reported errors shall be categorised by the Customer within the definitions provided in *Chapter 4.7.* The Contractor shall not change the error categorisation without the Customer's consent and acceptance.

5.2 DEADLINES FOR CORRECTING ERRORS AND OMISSIONS

The Contractor shall without undue delay correct all faults and errors.

[The Contractor shall describe suggested deadlines for correcting errors and omissions. The suggested table and description below can be used or edited by the Contractor if desired, or replaced by other relevant overview and description.

Table 7 - Deadlines for correcting errors and omission

Cat	Description	Error response time		Deadline for error corrections	
		System integration test	*Acceptance test*	*System integration test*	*Acceptance test*
A	*Critical error*	*1 hour*	*1 hour*	*4 hours*	*4 hours*
B	*Serious error*	*3 hours*	*3 hours*	*1 day*	*1 day*
C	*Less serious error*	*6 hours*	*6 hours*	*5 days*	*5 days*
D	*Cosmetic error*	*2 days*	*2 days*	*10 days*	*10 days*

Error response time is the time between an error is reported (as received by phone, email, routed by the error logging system or physical inquiry) from the Customer, and the time the Customer receives feedback that the error request is received. The deadline for correcting errors is the time from when a request is received from the Customer and the Contractor has notified the Customer that the error is rectified and delivered in the current environment. All inquiries and feedback should also be in writing. Errors, faults and defects shall be recorded in the project's test management tools as soon as they are discovered.]

5.3 PROCEDURE FOR CORRECTING DEFECTS IN TEST

[The Contractor shall describe an overview of their recommended procedure for correcting defects in test. Suggested elements include workflow between the Customer and the Contractor, procedures for re-testing corrected defects, correction approval, reporting and any other elements the Contractor finds relevant.]

6 RESPONSIBILITES, RIGHTS AND OBLIGATIONS

The Contractor's and Customer's responsibilities, rights and obligations regarding test and acceptance are described in earlier chapters, documents and agreements. In addition, the following applies:

- The Customer shall have full access to all Contractor's tests and full access to the Contractor's test documentation for possible reuse for Customer's tests and verifications.

- The Customer shall have the right to perform audit of the Contractor's test procedures. The Customer shall also have the right to have an on-site observer during the Contractor's testing.

- The Contractor shall ensure that a qualified and certified test manager has the responsibility for, and is in charge of, the Contractor's tests, and also be available for support for the Customer's tests.

- The Contractor shall specify the extent of the Customer's participation in the Contractor's test activities, with regards to for Customer's resources contribution, competency and time estimate (FTE).

7 REFERENCES TO REQUIREMENTS IN THE DELIVERY CONTRACT

7.1 THE DELIVERY CONTRACT, CHAPTER 2.1.4 PARTIAL DELIVERIES

The Customer's acceptance test will be organised as described in *Chapter 4.1*.

The Contractor's Deliverables will be timed to meet the agreed plan for the acceptance test and is coordinated with the overall project and implementation plan (cf. *T Appendix 3*).

7.2 THE DELIVERY CONTRACT, CHAPTER 2.2.2 DELIVERY AND APPROVAL OF THE DETAILED SPECIFICATION

Lead time for approval of Detailed Specification is set in the Delivery Contract, *Chapter 2.2.2.*

7.3 THE DELIVERY CONTRACT, CHAPTER 2.3.7 MIGRATION

Approval of migration to test, test migration and final migration will be performed as described in *Chapter 4.8*.

7.4 THE DELIVERY CONTRACT, CHAPTER 2.4.1 PREPARATIONS FOR CUSTOMER'S TESTS

The duties of the Customer and the Contractor in connection with preparations for customer tests are described in *Chapter 4.2.4, Chapter 4.2.5* and *Chapter 4.2.6.*

7.5 THE DELIVERY CONTRACT, CHAPTER 2.4.2 SOLUTION READY FOR CUSTOMER'S TEST

Requirements for starting the Customer's tests are stated in *Chapter 4.7.1* and in *Chapter 4.7.3*.

7.6 THE DELIVERY CONTRACT, CHAPTER 2.4.3 PLAN FOR THE CUSTOMER'S TESTS AND THE APPROVAL PERIOD

The duties and commitments of the Contractor in connection with Customer's tests are described in *Chapter 4.1, Chapter 4.2.4, Chapter 4.2.5* and *Chapter 4.2.6.*

7.7 THE DELIVERY CONTRACT, CHAPTER 2.4.4 SCOPE OF THE CUSTOMER'S TEST

The scope of the Customer's tests is described in *Chapter 4.2.4, Chapter 4.2.5* and *Chapter 4.2.6.*

7.8 THE DELIVERY CONTRACT, CHAPTER 2.4.5 PERFORMANCE OF THE CUSTOMER'S TEST

Carrying out the Customer's tests are described in *Chapter 4.2.4, Chapter 4.2.5* and *Chapter 4.2.6*.

Definition of errors are described in *Chapter 4.7.3.*

Routines for how rectified versions should be delivered to the Customer for re-testing, and how the re-testing should be conducted are described in *Chapter 5.4.*

7.9 THE DELIVERY CONTRACT, CHAPTER 2.4.6 APPROVAL OF THE CUSTOMER'S TESTS

Detailed criteria for approving the Customer's tests are described in C*hapter 4.7.*

7.10 THE DELIVERY CONTRACT, CHAPTER 2.4.7 DEPLOYMENT

The duties of the parties in connection with deployment are stated in *Chapter 4.9.*

7.11 THE DELIVERY CONTRACT, CHAPTER 2.5.1 DURATION

Duration for the approval period is remained unchanged from the Delivery Contract's *Chapter 2.5.1.*

7.12 THE DELIVERY CONTRACT CHAPTER 2.5.2 IMPLEMENTATION OF THE APPROVAL PERIOD

Requirements for the approval period are stated in *Chapter 4.10.*

7.13 THE DELIVERY CONTRACT, CHAPTER 2.5.3 FINAL APPROVAL – DELIVERY DATE

Criteria for the approval of the Deliverables are stated in *Chapter 4.7*.