Instant Payments

National Bank of Moldova

Project implementation

Digitally signed by Mocanu Radu
Date: 2021.06.17 16:44:37 EEST
Reason: MoldSign Signature
Location: Moldova

Table of Contents

Project plan: NBM IPS

1 Project scope

1.1 Project objective(s)

TietoEVRY fully understands National Bank of Moldova objective to maintain an innovative and inclusive, real-time national payment ecosystem in benefit for stakeholders - Moldovan banks and customers of banks.
The new platform shall be open and support innovations, including seamless and instant payments. The key aspects of the platform are **security**, **compliance, usability** and **openness** for further innovations.
TietoEVRY fully understands National Bank of Moldova objective to start delivery of project in 2021. The platform shall be interoperable and co-exist with payment infrastructures. A critical service to establish will be providing real-time availability of funds for all participants as well as establishing interconnectivity between the service providers.
TietoEVRY assumes that a single and measurable short-term objective could be to deliver a solution platform with a single use case that will be available for all market participants.

1.2 Project scope estimation

Estimation for this project was done using expert method and historical data, participating experts from implementation department and based on historical data from MS project server data base.

When got information about:

1) resources assigned for the project,

2) project specifics (country, region, customer, etc.),

3) implementation project portfolio plans affecting the project, project plan was reviewed by project team to reconcile work breakdown according to the appropriate resource levels & competences. Decision was made to accept project estimation as correct.

1.3 Scope and deliverables

The central infrastructure will provide the following services:

- Instant Payment Solution (IPS), for online instant payment clearing between participants. IPS includes functionalities:
    - Message Processing & Routing service
    - Participant managing
    - Connectivity for participants
    - Liquidity management: monitoring the threshold of the Participant collateral, limits management. Enable Participants to manage their collateral reserved for instant credit transfer settlement obligations;

- Proxy database proxy database of alternative account Ids, including national ID, mobile numbers, e-mail address and social media handles
- Stand-in solution - allows to issue and activate accounts for private, companies and government as stand in accounts for mobile payments (for payees and payers).
- System administration and configuration including identity and access management
- System monitoring
- API connectivity platform for payment initiation by certified third party payment service providers.
- Operational reporting and individual report dashboards for direct participants
- Clearing & Settlement services
- Dispute management system
- Request to Pay

To realize the project goals following professional services will be provided by TietoEVRY:

- Project Management
- Pre-Study
- Technical & system user training(trainings of participants are excluded from Project)
- Preparation of test environment in TietoEVRY
- Development of identified GAPs and their implementation
- Solution installation and configuration on MNB test environment
- Test scenario preparation
- Preparation of Project supporting documentation(technical & administrative)
- Validation and Functional tests
- Integration tests of implemented solution
- Integration tests with two Banks participants selected by NBM
- Support of testing performed by NBM
- User Acceptance Tests requested by NBM and agreed in Master Test Plan
- Analysis of test results
- Project GO-LIVE/post GO-LIVE support
-

Implementation of Application software Complex
Phase 1 - Planning and Clarification: pre-study(Business Analysis Phase)
Phase 2 - Environment and solution preparation (Design Phase)
Phase 3 - Solution preparation(Build phase)
Phase 4 - Go live and Final Acceptance phases – Pilot
Phase 5 - Go live and Final Acceptance phases
Phase 6 - Transfer to maintenance mode
Phase 7 – Warranty period 1y

List of Project Deliverables:

Pre-Study Phase (**Business Analysis Phase)**:

ID	Description of Deliverable	Responsible
1	Detailed software requirements specification of the solution proposed for the implementation with clear link/track of the particular requirements to the process(es).	TietoEVRY
2	Detailed acceptance criteria.	TietoEVRY
3	Concept of data model of the Solution.	TietoEVRY
4	Conceptual architecture of the solution and infrastructure diagrams.	TietoEVRY
5	Detailed and updated (within given timelines) project plan for the rest phases of the implementation.	TietoEVRY
6	Detailed, accurate and up-to-date task/issue/risk log.	TietoEVRY
7	Updated set of deliverables.	TietoEVRY
8	Fit analysis document	TietoEVRY
9	Solution Description	TietoEVRY

Acceptance Criteria's:

- The acceptance criteria shall be revised and agreed with the NBM at the beginning of the initiation stage. The below mentioned criteria are minimal and shall not be subject of elimination.
- The deliverables of the analysis phase shall be provided to the NBM as in accordance with the project plan.
- NBM shall not have any objections regarding the completeness and correctness of the document, in accordance with agreed quality and other criteria.
- Deliverables meet the NBM expectations and requirements in terms of clarity, level of detail, structure, content, etc.

- Deliverables are aligned with internal standards of the successful Tenderer and best practices.
- Deliverables are easy to use and understandable to the intended beneficiaries.
- Deliverables are aligned with quality standards agreed between the NBM and the successful Tenderer.
- Acceptance documentations for the analysis phase are approved by the Parties.

Environment and solution preparation (**Design Phase)**:

ID	Description of Deliverable	Responsible
1	Solution Description to be updated with • Solution overview • integration platform of solution components, interfaces (the name that will be integrated with the solution, the type of interface (e.g., supplier, consumer, symmetric), solution and the impact of the failure of the interfaces); • solution architecture attributes (software and hardware technologies, services, components, portability, capacity, availability and reliability, scalability); • Continuity plan and disaster restoration - BCPDR (specifying architectural attributes necessary to meet solution requirements for BCPDR); • data architecture (context diagrams, logical data model); • security architecture (overview of security solution);	TietoEVRY
2	Solution configuration and installation guides	TietoEVRY
3	Testing documentation: • Master Test plan • Test Strategy • Test scenarios for planned test activities	TietoEVRY
4	Solution validation tests has been successfully finished	TietoEVRY

Acceptance Criteria's:

- The acceptance criteria shall be revised and agreed with the NBM at the initiation phase. The below mentioned criteria are minimal and shall not be subject of elimination.
- The design phase related deliverables shall be provided to the NBM as per the project plan.
- NBM shall have no objections regarding the completeness and correctness of the document in accordance with the agreed quality and other criteria.

- Deliverables are in line with the NBM expectations and requirements – in terms of clarity, level of detail, structure, content, etc.
- Deliverables are aligned with successful Tenderer's internal standard and with the best practices.
- Deliverables are easy to be used and understood by the targeted beneficiaries.
- Deliverables are in line with quality standards agreed between the NBM and the successful Tenderer.
- NBM shall have no objections regarding chosen solutions.
- An acceptance report shall be signed by both parties within the agreed time period.

Solution preparation on-site Phase (**Build Phase)**:

ID	Description of Deliverable	Responsible
1	Solution, configured and installed in: • Test environment • Development environment • Training environment • Production environment	TietoEVRY
2	Solution is installed according to signed Agreement and Solution Description document approved in Pre-Study phase	TietoEVRY
3	Solution support documentation(User and Administrator Guides)	TietoEVRY
4	Security documentation(user management, roles, encryptions)	TietoEVRY
5	Technical deployment document prepared	TietoEVRY

Acceptance Criteria's:

- The acceptance criteria shall be revised and agreed with the NBM at the initiation phase. The below-mentioned criteria are minimal and shall not be subject to elimination.
- Deliverables shall be provided to the NBM as per the project plan.
- NBM shall have no objections regarding the completeness and correctness of the document.
- Deliverables are in line with the NBM expectations and requirements – in terms of clarity, level of detail, structure, content, etc.

- Deliverables are aligned with successful Tenderer's internal standard and with the best practices.
- Deliverables are easy to be used and understood by the targeted beneficiaries.
- Deliverables are in line with quality standards agreed between the NBM and the successful Tenderer.
- An acceptance report shall be signed by both parties within the agreed time period.

Solution Preparation Phase (**Testing Phase)**:

ID	Description of Deliverable	Responsible
1	Tests conducted according to • UAT scenarios • Master Test plan • Testing strategy	TietoEVRY
2	Evidence report, test result report	TietoEVRY
3	Testing documentation: • Master Test plan • Test Strategy • Test scenarios for planned test activities	TietoEVRY
4	Solution validation tests has been successfully finished	TietoEVRY

Acceptance Criteria's:

- All tests shall be completed without severity levels Critical or Blocker.
- Testing process shall consist of as many test cycles as necessary until all severity Critical and Blocker issues will be eliminated. After a Severity Critical or Blocker problems will be fixed, it is for the NBM testing team to decide whether test cycle will be restarted or continued.
- The number of outstanding defects is below an acceptable upper limit (to be agreed before the acceptance phase) or the faults are minor.
- Acceptance document agreed and 'signed-off' by both parties.

Solution Preparation Phase (**Training Phase)**:

ID	Description of Deliverable	Responsible
1	Training is conducted with accordance to agreed Training Scenario	TietoEVRY

Acceptance Criteria's:

- The training sessions have been organized.

- Knowledge Testing Questionnaires demonstrate that end users have an acceptable level of knowledge.

- The NBM has no objections regarding the integrity and the correctness of the training materials.

- Deliverables correspond to the expectations and requirements of the NBM - in terms of clarity, level of detail, structure, content, etc.

- An acceptance report shall be signed by both parties within the agreed time period.

UAT/GO-LIVE/Pilot (**Go-live and acceptance Phase)**:

ID	Description of Deliverable	Responsible
1	The solution is ready for launching into production (the solution was installed on production environment, testing was performed and no severity Critical and Blocker defects were found).	TietoEVRY
2	Plan for all found issues has been prepared and agreed by parties	TietoEVRY
3	Self-assessment document	TietoEVRY
4	UAT conducted by Customer, relevant issues has been reported with all necessary information.	NBM
5	Issues found during UAT phase has been solved or it was agreed	TietoEVRY
6	Solution supporting documentation has been updated and reviewed by NBM	TietoEVRY

Acceptance Criteria's:

- Successful Tenderer's self-assessment report demonstrates that all business and technical requirements were fully delivered.
- No major bugs identified during UAT period.
- No discrepancies found between the NBM self-assessment report and successful Tenderer self-assessment report. In case discrepancies found, these shall be removed prior to final acceptance of soak period.

- An acceptance report shall be signed by both parties within the agreed time period.

Solution Documentation:

ID	Description of Deliverable	Responsible
1	User instructions and users guide	TietoEVRY
2	Maintenance instructions/service management troubleshooting guide	TietoEVRY

ID	Description of Deliverable	Responsible
3	Installation and Configuration manuals	TietoEVRY
4	Solution administration manuals	TietoEVRY
5	Solution security documentation	TietoEVRY

1.4 Exclusions

Project scope is limited to agreement and Solution description which will be agreed after Pre-Study. Other services or deliveries which are not mentioned in the agreement are excluded from project scope if no additional change request is signed.

1.5 Preconditions and outer dependencies

ID	Description of precondition	Approval criteria	Responsible
1	Customer test and production environment is ready for solution installation. Purchase and creation of required infrastructure in accordance with the recommendations of Supplier.	Test and production environment are available	NBM
2	Test environments of related systems ready for integration with 3rd parties(external).	Test environments of related systems are available	NBM
3	Project team assigned on Customer site according to Project Plan	Unformal notification from Customer or Meetings Notes	NBM
4	3rd parties' licenses insured	Unformal notification from Customer or Meetings Notes	NBM
5	Interface specifications agreed by parties	Unformal notification from Customer or Meetings Notes	NBM/TIETOEVRY
6	Solution Description and GAPS agreed	Steering Group decision approval	NBM/TIETOEVRY

ID	Description of precondition	Approval criteria	Responsible
7	Test Plan prepated by TietoEVRY and agreed with Customer	Unformal notification from Customer or Meetings Notes	TIETOEVRY
8	User Acceptance Testing is finished	User Acceptance tests are executed, no blocking issues are opened	NBM/TIETOEVRY
9	Integration and certification plan agreed with participants	Steering Group decision approval	NBM /TIETO
10	3rd party systems(external) are ready for integration using ISO 20022	Unformal notification from Customer or Meetings Notes	NBM

1.6 Project phasing, dependencies and schedule

Project schedule can be found on TietoEVRY MS Project file server Project page.

Project detailed decision point and milestones in MS Project plan can be found in on MS Project server.

The Project manager analyses the status of each milestone and reports it in a project status report to update decision points. Decision points and milestones are monitored in every steering group meeting and updated in project status.

If there will be changes in project schedule, they will be updated in MS Project plan, agreed with Customer and published on MS Project server.

Proposed preliminary project schedule can be found as attachment/appendix to this document –

1. IPL_Estimation_ips_Moldova_v1.mpp

2. IPL_WBS_ips_Moldova_v1.xlsx

1.7 Schedule tracking

Project manager is responsible for following up the schedule and making corrections if needed. Project schedule is tracked on regular basis. Actual version of project plan is available in TietoEVRY intranet, the project homepage.

Any changes to project schedule are escalated to Steering group where decisions regarding schedule changes are made. If there are schedule changes that do not affect the main milestones and delivery dates, those can be approved by Project manager.

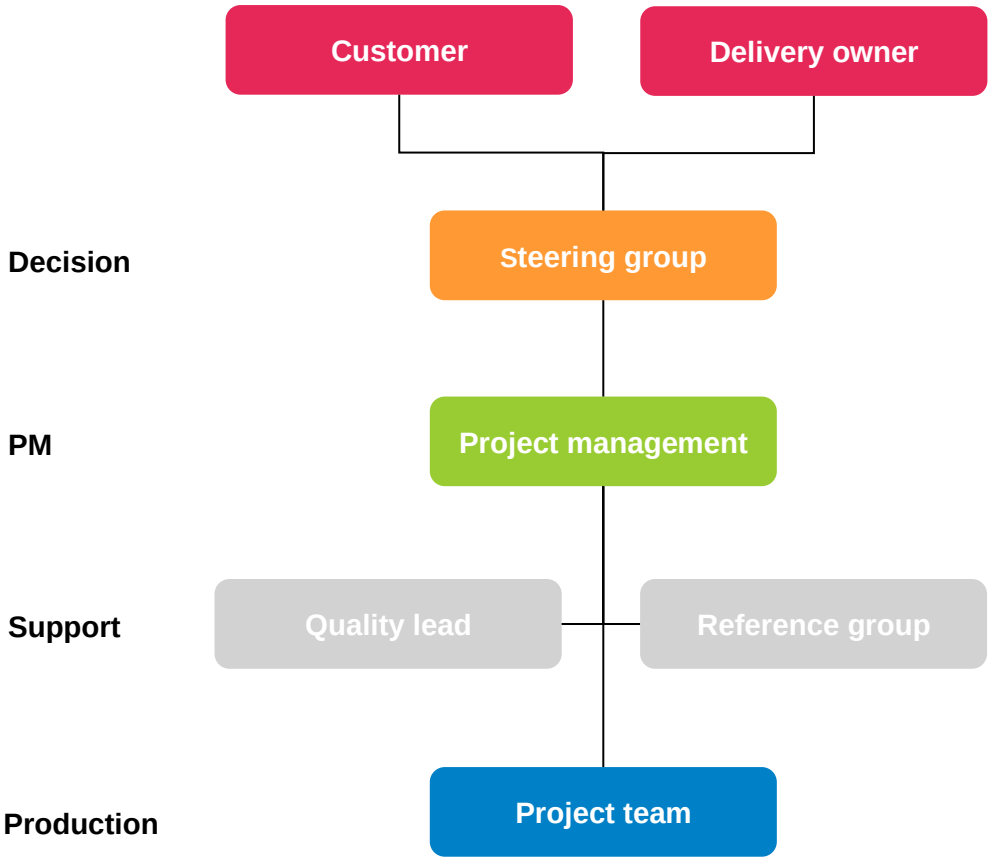
2 Project cost

Cost control and budget executing is managed in TietoEVRY Facts.

3 Project resources

3.1 Project organisation

The stuffing high-level structure is presented below:



Role	Responsibilities	Authorities	Person(s) in role (sub-role, if any)
Project manager	• Heads the project team. • Is responsible for all commitments made by the project and described in the project plan. • Is member of project's steering group and internal steering group.	• Control of allocated resources • Decision-making issues, approval of agreed work results	

Role	Responsibilities	Authorities	Person(s) in role (sub-role, if any)
Customer	• Orders and pays for the project. • Ensures that set project objectives will contribute to business needs/expected benefit of his organisation. • Is a member of project's steering group and is its chairman.	• Highest decision-making mandate on behalf of Customer's organisation • Approval of project-related agreements from the Customer side (including project plan).	
Agreement owner	• Initiates the project (in external deliveries). • Ensures that the project-related agreements contribute benefits to the business. • Is member of project's steering group and internal steering group.	• Highest decision-making mandate on behalf of the delivery organisation • Approval of project-related agreements (including project plan)	
Delivery owner	• Initiates the project (in internal deliveries). • Gives resources for the project. • Ensures that the project-related agreements contribute benefits to the business. • Is member of project's steering group and internal steering group.	• Highest decision-making mandate on behalf of the delivery organisation • Approval of project-related agreements (including project plan)	
Steering group	• Monitors and controls that the project will conform to the terms and conditions of the agreement and its appendices • Ensures that project priority and project objectives steer the project all the time	• Decision-making concerning the contents, execution and method of implementation of the project to the extent that such decisions do not affect the contents of the project as set forth in the agreement • Start, change and closure of the project • Request for external project audit or assessment in order to ensure the right status of the project	
Internal steering group	• To steer and support project management proactively in managerial questions. • To monitor and control the project progress from internal perspective. • To act as the 1st escalation step within the project (e.g. related to changes or issues hindering the proper progress of the project).	• Decision-making concerning contents, execution and method of implementation of the project as long as they do not affect the project priority and project objectives negatively. • Request for external audit or assessment in	

Role	Responsibilities	Authorities	Person(s) in role (sub-role, if any)
		order to ensure the right status of the project.	
Quality lead	• Supports project management in project quality management (quality planning, quality evaluation, quality improvement and quality awareness) as a delivery-internal P&Q person. Main focus is in quality assurance (i.e. assuring management that defined standards, practices, procedures and methods of the process are applied). • Reports in matrix to the project management and P&Q country and unit organisations. • Is member of project's internal steering group.	• Raising of issues and non-conformities in the implementation of the project during its whole lifecycle. • Escalation of issues to higher-levels of management if the handling of them is not sufficient within the project.	
Project team (member)	• Produces verified work results according to tasks delegated to single members of the project team	• Performance of tasks according to the project plan and other agreed working procedures, guidelines and standards	
Reference group	• Provides advice and other kind of support to the Project manager and project team on the area of own expertise. • Ensures that work results fulfil the requirements in order to achieve project objectives successfully	• Reporting of deviations, other inputs that do not satisfy the requirement in the project to the Project manager	

3.1.1 Staffing plan

Resources	Estimated requirements	Competence centre
Maris Zandersons	Project Manager	TietoEVRY Latvia
Gustavs Galdiņš	Solution Architect	TietoEVRY Latvia
Jelena Čekušina Natalija Maļuhina	Business Analyst	TietoEVRY Latvia
Natalija Maluhina	Instructor (Trainer)	TietoEVRY Latvia
Vadims Lamovs Konstantins Feofantovs Ivars Jaunozolins	Software Developers	TietoEVRY Latvia
Sergejs Tammeoja	Test Team lead	TietoEVRY Latvia
Vadims Lamovs	Lead Technical consultant	TietoEVRY Latvia
Andris Eiduks	Lead Security Specialist	TietoEVRY Latvia
Maris Zandersons Sergejs Tammeoja	Quality Assurance specialists	TietoEVRY Latvia

3.1.2 Competence development

The TietoEVRY project team resources do not require any competence developments.

3.2 Work environment

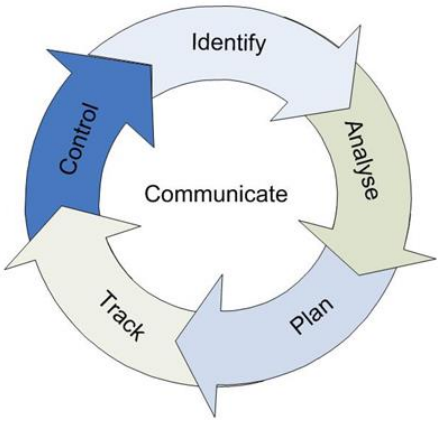
Existing work environment at TietoEVRY office consists of:
- office equipment and furniture;
- workspace, including individual workspace, conference rooms, meeting spaces;
- training areas;
- human environment controls (temperature, humidity, lighting, noise);
- communications equipment for personnel, such as telephones, facsimile machines, modems, and electronic mail facilities;
- procedures for operation, safety, and security ;
- computers, workstations, or other computing equipment;
- network infrastructure;
- equipment and tools, such as office software, decision support software, project management tools, requirements management tools, design tools, configuration management tools, evaluation tools, test and/or evaluation equipment, production tools, and shipping and receiving equipment and tools;
- work environment support services.

On customers site work environment for TietoEVRY specialists should include all mentioned above to implement agreed project tasks except equipment and services TietoEVRY provides for employees.

The project does not require specific environment.

4 Project risks management

The TietoEVRY risk management strategy is followed in the project.



Identify: Search for and locate risks before they become problems adversely affecting the project

Analyse: Process risk data into decision-making information

Plan: Translate risk information into decisions and actions (both present and future) and implement those actions

Track: Monitor the risk indicators and actions taken against risks

Control: Correct for deviations from planned risk actions

Communicate: Provide visibility and feedback data internal and external to your program on current and emerging risk activities

The project risks for this project are identified, their impact and probability assessed, and mitigation actions and contingency plans with responsibilities developed when project estimation process on-going.

The Project manager analyses the status of each risk and reports it in a project status report. The risks are monitored in every steering group meeting. The basic approach is continuous risk management.

For each of the risks the following information should be provided:

- Description – description of the risk
- Source – risk source can be defined from the following choices:
    - Project – e.g. risks related to schedule, scope or costs
    - Customer – e.g. risks related to customer dependencies
    - Result – product/solution related risks
    - 3rd party – risks related to 3rd parties
    - ICO / Regulator – risks related to ICO or other regulator (e.g. legal) requirements
    - Human resources – risks related to human resources, competences, resource turn-over etc.
    - HW / Environment – risks related e.g. to HW performance, environment readiness
    - Technologies – risks related to platforms, open-source SW and other technologies
    - Other

- Impact on project – Low, Medium, High, Critical
- Probability – Low, Medium, High. When risk comes true, this has to be moved to section Issues and to be addressed by PDs.
- Priority – rated from 1 to 9 where 1 is the highest priority and 9 is the lowest. For the priority calculation the following formula is used:
- Priority = Impact X Probability
- (High=1; Medium=2; Low=3)
- Status – short description of status (open, in-progress, closed).

For **Impact on project** the following categories are defined:

- High – project execution may be stopped. (Greater than 20% slip in schedule, greater than 20% cost overrun, greater than 20% reduction of functionality/delivery scope)
- Medium – project execution impacted, though project can still be executed with medium adjustments (10-20% slip in schedule, 10-20% cost overrun, 10-20% reduction of functionality/delivery scope)
- Low – project execution may continue, negligible impact on project.

For **Probability** the following categories of risk becoming true are defined:

- High – 71-99%
- Medium -31%-70%
- Low – 0-30%

In both Internal and External Steering minutes the Risk List must be followed up.

Risk management including risk list and risk analysis information can be found on project page.

5 Project quality objectives and management

In project management, quality control requires the project manager and the project team to inspect the accomplished work to ensure its alignment with the project scope and objectives.

5.1 Delivery verification and validation model

To ensure high quality delivery two processes are in place: verification (reviews and testing) and validation. Verification and validation activities should address quality, security, performance and/or other non-functional requirements along with the functional requirements verification and validation.

5.2 Technical reviews & audits

The following technical reviews and inspections for the technical work products are performed in the scope of development projects:

ID	Work product	Author	Technique[1]	Reviewer	Frequency
1	Project task review (code review)	Develo per	Peer review; Walk-through	Lead Developers, Architects	For all tasks with estimation above 10 man days
2	Functionality reviews (analysis, programming, UI)	Busine ss analyst/ develop er/ Tester	Peer review; Supervisor review	Corresponding responsible person	According to the project plan
3	Complex task reviews	Develo per	Group review; Supervisor review	Development department manager	At least once per quarter
4	Test case/Test plan review	Tester	Peer review; Supervisor review	Lead Tester or Testing unit manager	For all testing tasks with estimation above 10 man days
5	Technological quality audit	Project Manag er	Audit	Testing Unit manager, Configuration Manager, Security Officer	For all product version development projects
6	Outgoing document review	Any	Walk-through	As required in guidelines which define the document	Before sending to customer

Following inspections for the technical work products are performed in the scope of implementation project:

ID	Work product	Author	Technique[2]	Reviewer	Frequency
7	Solution Description review	Customer Business Analyst	Peer review; part of internal agreement approval	Other Customer Business Analyst, Product Manager; other specialists according to agreement approval matrix	Before the agreement signing

[1] Review techniques: Peer review, Code review, Group review, Supervisor review, Inspection, Walk-through, Demo

[2] Review techniques: Peer review, Code review, Group review, Supervisor review, Inspection, Walk-through, Demo

ID	Work product	Author	Technique[2]	Reviewer	Frequency
8	Technical deployment document	Implementation specialist	Supervisor review	Implementation team manager	Before delivery and handover to Support
9	Delivery validation	Customer Business Analyst	Validation	Implementation specialist, project manager, testing manager	At the final delivery
10	Test strategy / Master test plan	Test Lead	Peer review	Another leading testing specialist	Before test strategy approval
11	Migration Plan	Data migration specialist	Peer review	Solution Architect	Before Migration plan approval

The ways of establishing the review records depend on the used review technique and are the following:

Review technique	Description of establishing review records
Self-review & Walk-through	No formal review records to be established.
Other reviews in scope of development project	Formal review records are established by using the review checklist or commenting JIRA task.
Test case/Test plan	Formal records are established in Intranet
Technological quality audit	Formal records are established in Intranet
Validation of final delivery	Formal records are established in Intranet

5.3 Quality assurance

In project management, quality control requires the project manager and the project team to inspect the accomplished work to ensure its alignment with the project scope and objectives. Quality assurance activities are included in Project audits.

The goal of quality assurance practices is to ensure that the project is employing all defined standards, practices, procedures and methods of the processes needed to meet the project requirements. This project follows TietoEVRY Project management process.

Methods used:

- Project Management documents reviews
- Project Audit

5.4 Audits & assessments

Project internal audits are performed according to TietoEVRY Audit management procedure. The projects are nominated for internal audits by Project portfolio manager or escalations from Leadership team.

Following audits and assessments are performed during project:

ID	Audit/assess-ment type	Objective	Auditor/ Assessor	Frequency	Records
1	Project audit (A1)	Verify that project is performed in accordance with the related standard, agreement, QMS, etc.	According to audit plan	After project plan preparation;	Report, JIRA tasks
2	Project audit (A2)	Verify that project is performed in accordance with the related standard, agreement, QMS, etc.	According to audit plan	Before delivery to customer (DP6)	JIRA tasks

5.5 Project Key performance indexes (KPIs) & reporting

Project manager prepares monthly Status Report, which is reviewed in Steering Group meetings. Status report consists of the following information:

- project status (what was done and what is planned in next period)
- project KPIs (WAI, SAI, DQP) and financial data
- Risk report
- Changes to be approved (scope, schedule, cost, quality etc.)
- Decisions to be made (DPs according to TietoEVRY PM process)
- Reviews, Testing and Audit results

Before acceptance of delivery (DP6) Project manager prepares status report about reviews/testing/validation tests/audits performed based on which Steering group can make a formal decision about the delivery.

6 Project development and management processes

6.1 Development model

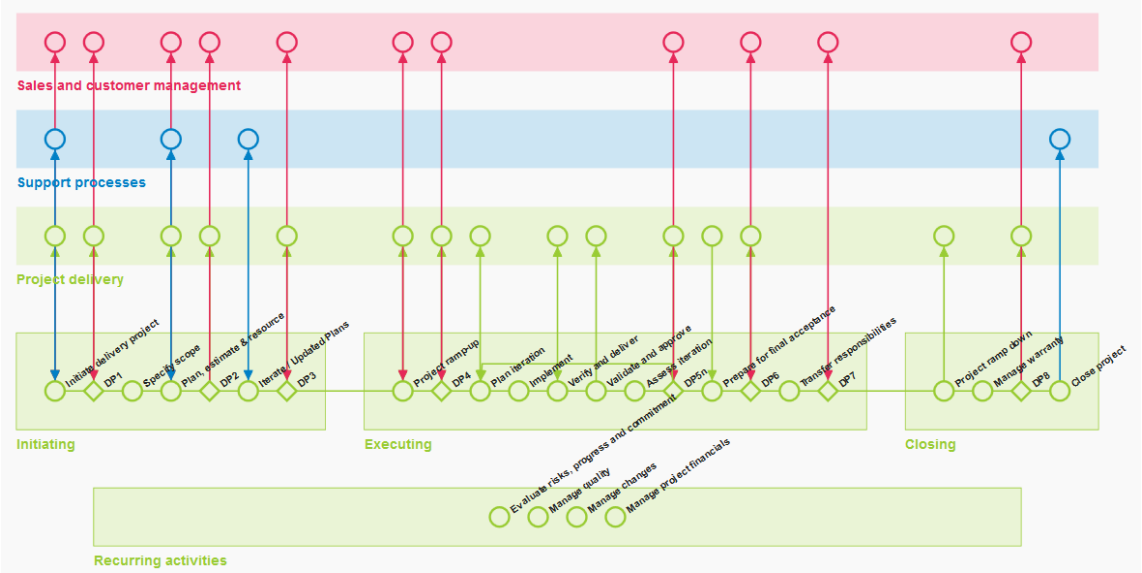
TietoEVRY IRPC is product-oriented organisation. Therefore, Product development is organised in separate product development projects according to internal Product development procedure. The stack of possible software development models (approaches) at the moment are:

- Elements of Agile/Scrum methodology;

- Elements of RUP (Rational Unified Process) methodology.

6.2 Project management model/Implementation Project approach

TietoEVRY Project Management Model (TPM) will be used.



The Project management process has the following **Decision Points (DP):**

- **In initiating:**
  - DP1: Decision to initiate a project
  - DP2: Decision to continue, change or interrupt preparation work
  - DP3: Decision to approve the project plan
- **In Executing:**
  - DP4: Decision to start execution
  - DP5: Decision to continue, change or interrupt the project
  - DP6: Decision to approve the result of a delivery
  - DP7: Decision to approve the responsibility of transfer
- **In Closing:**
  - DP8: Decision to close the project.

6.2.1 Description of Project management process

6.2.1.1 Initiating

Project delivery starts by initiating it. This happens already during the sales phase, when the preparation work for a proposal is started, and when the delivery organisation needs to be involved in preparation work to ensure the success of the delivery.

The initiating activities include only activities related to the initiation of the delivery. Initiating a project begins by defining the expected needs and benefits of the project by setting the project

scope and its boundaries such as cost and schedule. This is documented in the Project directive created by the delivery executive.

At this stage, a prospect project is created, and the Project manager is appointed.

The internal steering group make a decision (DP1) if the project is ready for planning based on the inputs from the project directive.

During delivery-level planning, the project objectives are identified, delimited, planned, estimated and documented in the project plan. Also, resources are organised, risks analysed and internal/external quality targets set. Project plan drafts are reviewed iteratively by the TietoEVRY members of the internal steering group at DP2s. It is advisable to involve also key internal and external stakeholders in the reviews to ensure better commitment to the plan.

The approved project plan and its alignment with the contract is a pre-requisite for a decision at decision point DP3.

After Initiating, the Executing phase follows. At the same time, recurring project activities start.

6.2.1.2 Executing

The project execution starts as soon as the customer contract for the delivery has been signed.

The project ramp-up activities follow. The DP4 decision ensures that all the pre-requisites to start delivery execution are satisfied. It is ensured that all project stakeholders are aware of the content of the project plan. At this time the external steering group must be in place.

The execution phase comprises one or more iterations. The iterations can also be phases.

Typically, one increment of deliverables for the Customer is produced and delivered through an iteration. The iteration starts with planning the iteration, i.e. refining the delivery-level project plan. The iteration continues with executing the iteration plan; executing and managing tasks to produce deliverables and verifying them.

Verified results are either accumulated to be packaged and delivered at a later time or, prepared and delivered to the Customer and validated according to the agreed procedure.
Typically, the Steering group decides on the continuation of the delivery and starting the next iteration (DP5). At DP5, the Steering group confirms the project situation (based on the status report) and approves proposed preventive/corrective actions and changes brought up at the meeting.

After the final iteration, deliveries have to be accepted by the Customer and approved by the Steering group (DP6). The plans to manage warranty are also checked and agreed at the same time. Responsibility for delivered results is transferred to the receiving organisation and approved by the Steering group at DP7.

After this, Closing activities are started.

6.2.1.3 Recurring activities

Continuous monitoring and control of the progress, commitment, risks and quality is part of the project. Project manager evaluates the project's current situation, compares it with the planned desired state according to the Project Plan, Project directive and customer contract – in terms of effort, cost, risk, scope (incl. changes and deviations) and quality. Change requests or deviations from plan/specifications that affect scope, estimates or schedule are analysed for corrective measures and possible re-planning. The project situation and proposed preventive/corrective actions (to handle deviations or mitigate risks) are submitted to the steering groups, together with the project's proposal on if, how and when to implement submitted change requests.

6.2.1.4 Closing

The closing phase starts when the final delivery has been made and approved, i.e. after (DP6) or once the hand over to receiving organization has been approved (DP7). The project starts its ramp down operations and prepares for managing the warranty period (if applicable). Feedback is gathered from the Customer and project, performance measures are evaluated and lessons learned documented in the Final report, which is shared. The final report and the completion of the warranty period are approved at the final steering group meeting (DP8) where the project is officially closed. After closing decision, the final tasks related to the closing activity can take place. The reusable components and documents are archived, resources and assets are returned and accounts closed.

6.2.2 Project management setup

To ensure the project works there has to be the following setup in place from TietoEVRY and Customer side:

6.2.2.1 Implementation Project Owners

Each Party shall assign their Project Owner who shall be responsible for the overall supervision of the project. The owner shall be authorized to represent their own Party and sign acceptance reports.

6.2.2.2 Implementation Project Managers

Each Party shall assign their Project Manager. Project Managers shall be authorized to handle the mutual and internal co-ordination of all matters concerning the project and shall be responsible thereof.

6.2.2.3 Project Steering Committee

Parties have to establish a steering committee (Committee) for managing the project. Each Party shall be represented by at least 2 (two) members in the Committee.
The Committee shall decide on such matters as the progress of project implementation, objectives, deadlines, conditions and control, changes in project costs, changes in the delivery terms.
The Committee shall hold sessions at least once a quarter unless the Parties agree otherwise. Parties shall agree as to the venue and time for each session in advance. Sessions may also be

held over the telephone, videoconference, or by other means. Parties may invite advisors from outside and their own experts to participate in sessions.
All sessions held by the Committee and any of its independent decisions shall be duly recorded in minutes, coordinated, and signed by the representatives designated by Owners.

At least once a quarter, Project Managers shall submit a report to the Committee on the progress and problems of the project. The Committee shall review the reports and decide on further steps.

6.2.2.4 Project Communication Matrix

Parties have to agree on Project Communication Matrix to establish escalation levels.

6.3 Deviation and change management

The purpose of the Deviation & change management process is to prepare the project for deviation and change management by defining a plan on how to identify, collect, document and classify deviations and changes. Also, included impact analysis enables the project to propose corrective actions and/or changes/additions to the project plan or agreement.

A **change** is an alteration of an agreed specification or other basis (project plan, agreement, requirement, development/project environment etc.). It means that the project (if the change is implemented) has to do other than what was agreed (doing more or even less usually both demands effort for re-planning).

TietoEVRY may judge a deviation to be a change request. If there is a disagreement in this judgement, the Project Managers will attempt to come to an agreement. If an agreement is not possible, the Steering Group will attempt to agree.

The detailed Implementation Plan will be oriented to discover disagreements as soon as possible. It is assumed that both sides when approving/evaluating are defining acceptance criterion: high level solution descriptions, confirming interface specifications, approving test cases, and remote interface test results.

Change management consists of:

- Changes in project scope - must be formed as Change request and amended to the Agreement upon signing.
- Change to the project budget must be agreed according to Change request management procedure.
- Changes in agreement terms – must be recorded according to the agreement.
- Changes in project’s team – must be approved according to TietoEVRY Staffing procedure and according to the agreement with customer.
- Changes in project’s plan or schedule - must be approved by Steering Group.
- If any other changes in project arise, those must be escalated to Steering group for the decision.

The Project manager identifies, collects, distributes and archives the project data, i.e. project management documentation and other project-related data such as measurement data. The project data is stored in TietoEVRY Intranet.

A **deviation** occurs when there is non-conformity with specified requirements (or other agreed basis). This means that the project is “at fault”. Either it has to be corrected or the basis has to be adjusted.

Small **technical errors** and corrections are handled within activity control as part of the development process itself.

6.4 Configuration and data management

6.4.1 Configuration management

The purpose of configuration management is to systematically manage results of software development and also administrative results. It consists of planning the management of configuration (e.g. responsibilities, authorities, scope of the tasks and needed procedures), managing the configuration during the development phases and in all environments (e.g. identifying and controlling component items, their version handling, packaging, publishing and approving packages), auditing the configuration management frequently, and closing the configuration management (e.g. archiving backup copies and documents, and releasing resources).

General principles in configuration management are the following:

- All artefacts which are related to the application or product being created and which require updating are maintained in a configuration management system.
- Artefacts comprising a specific application or product version are labelled with a unique identifier.

6.4.2 Data management

Project manager identifies, collects, distributes and archives the project data, i.e. project management documentation and other project-related data such as measurement data. The project data is stored in the project-specific home page.

During implementation project communication with customer regarding consultancy, reported bugs and other issues that need involvement of technical specialists must be organised through JIRA. In this tool customer projects are created with specific e-mail address for each customer project. Project manager is responsible for JIRA task follow-up and informing customer about JIRA usage in communication. Project manager is automatically set as Assignee and Reporter for all created issues in JIRA customer project.

Financial data of the project is stored in MyProjects – TietoEVRY ERP system. Financial data monitoring is done in system TietoFacts.

All project data and information have to be accessible from the project Intranet home page:

General data:

- Status,

- Start / end date,
- Background & Basis
- Purpose, Objectives& Deliverables
- Terp ID,
- Link to Customer d/b,
- Link to CRM d/b,
- Link to Contract d/b,
- Link to JIRA,
- Link to MS Project
- Project team and responsibilities
- JIRA issues

Documents:

- Certification,
- Contract related,
- Finances,
- Correspondence,
- PPS Documents,
- Plans,
- Meeting minutes,
- Reports,
- Solution,
- Testing
- Project specifics

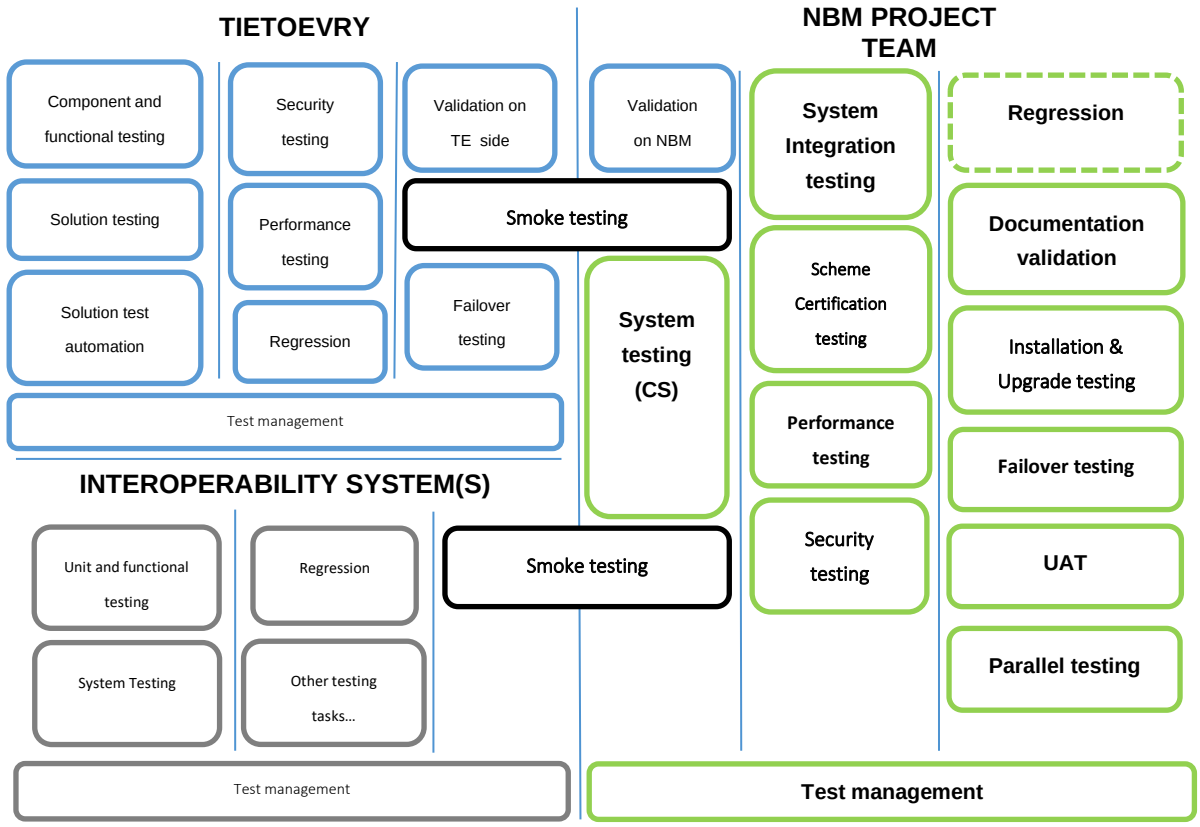
6.5 Test strategy

The purpose of this Test Strategy section is to define all test activities related to the services performed by TietoEVRY. The overall objective of testing activities is to verify that the services meet the requirements from a functional and technical point of view and that all deliveries are qualitative.

6.5.1 Testing Phases

Depending on the project schedule, priorities and other agreements scope of these phases could be changed. In this Test Strategy document scope and details of each phase and of each delivery are not mentioned and these are managed within general Implementation project plan.

Below are the basic principles of all related testing activities which generally should be applied to the each of phase and delivery.



In each delivery of the project test automation activities are included to provide qualitative and fast regression testing of already implemented functionalities.

Below in the table each testing activity is described with major aspects.

Activity	Objectives	Covered types of tests
Component and functional testing	• To verify standard functionality of Product/Solution and requested change requests to the existing products.	• Component testing • System integration testing • Security testing • Regression testing (automated and manual)
Solution testing	• To provide configured and tested Solution for particular Customer needs.	• System integration testing • System testing • Regression testing (automated and manual)
Solution test automation	• To develop and prepare set of test scripts and test cases for further regression testing.	• Automated testing
Security testing	• To ensure secure data exchange with third parties	• Penetration testing
Performance testing	• To ensure deployed system ability to perform in accordance to stated requirements	• Performance testing
Validation on TietoEVRY side	• To validate deployed system to stated requirements and to ensure readiness for delivery to customer	• System smoke testing • Validation
Regression testing	• To ensure that previously developed and tested software still performs the same way after it is changed	• Regression testing (automated and manual)

Validation on NBM side	• To validate deployed system to stated requirements	• System smoke testing • Validation

6.5.2 Testing levels

The purpose of this chapter is to describe in details testing levels performed by TietoEVRY, define environments where each testing level will be performed and specify entry and exit criteria.

6.5.2.1 Component and Functional Testing

The objective of Component testing is to ensure that each component of the software works in isolation and fulfils its component functionality. Since some functionality can be developed independently each from other, it is possible to provide its simultaneous testing on separate development environment. This testing level can be considered as completed when all planned test cases are executed, testing results are published and all critical defects resolved and retested.

6.5.2.2 Solution testing

Solution Testing is conducted on a complete, integrated system and the behaviour of the whole system is tested. Test cases should be based on requirements and risks.

6.5.2.3 Regression Testing

Regression Testing is testing some certain set of test cases to verify that a system has not been affected by updates as new version or defect fixed. Regression test set should be executed every time new version is installed to a system or related defect fixed.

The test cases are designed and approved and form a ready-made set of test cases based on normal use cases. The regression test set can be executed as a whole or only a part of the test set may be chosen in special cases where smaller updates are done to the system.

6.5.2.4 Security Testing

Security testing covers the Payment Application Data Security Standard (PA-DSS) principle and ensures that all sensitive information will be encrypted in screens, logs, reports and etc.

Security testing also includes penetration testing. It is performed to uncover and repair security flaws in data exchange based on web services.

6.5.2.5 Performance Testing

Performance testing is in general testing performed to determine how a system performs in terms of responsiveness and stability under a particular workload. It

can also serve to investigate, measure, validate or verify other quality attributes of the system, such as scalability, reliability and resource usage.

6.5.2.6 Validation on TietoEVRY side

Validation Testing is performed by TietoEVRY on Test environment to ensure that System fulfills its intended purpose and is ready for deployment on NBM test environments.

6.5.2.7 Validation on NBM side

Validation Testing is performed by TietoEVRY on NBM test environment to ensure that System fulfills its intended purpose and is ready for further testing activities on NBM environments.

6.5.2.8 Failover testing

The purpose of Failover testing is to ensure Solution application ability to be able to allocate extra resource and to move operations to back-up systems during the server failure due to one or the other reasons.

6.5.3 Defect management

6.5.3.1 Defect classification

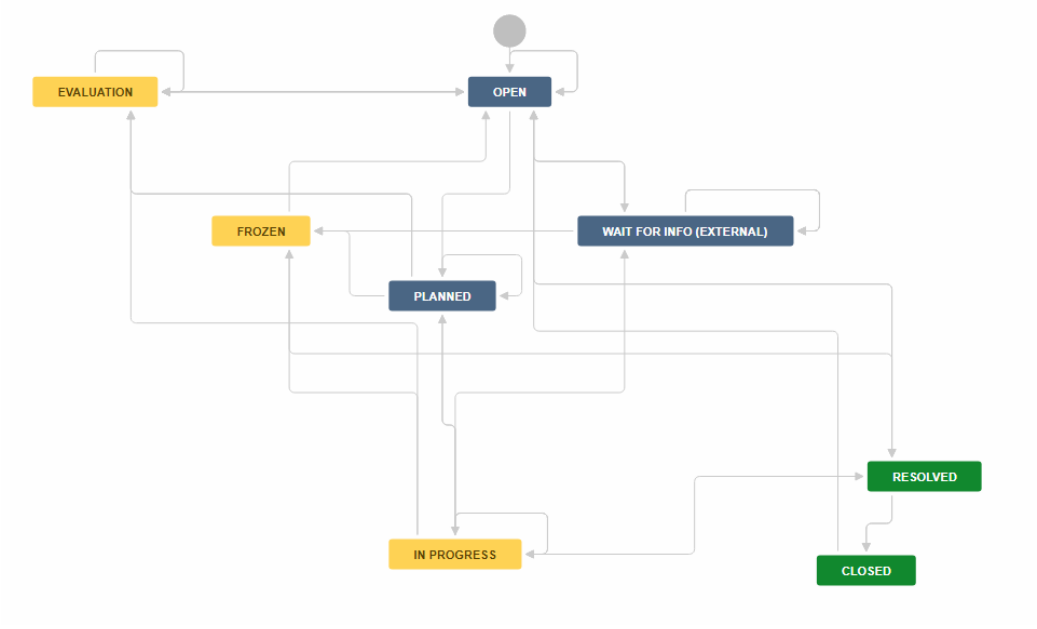
TietoEVRY uses classification of errors by priorities.

Priority	Description	Impact to testing	Actions
1 (Trivial)	The lowest priority where functionality is not affected, e.g. cosmetic change required	Nice-to-have features	Solution can be postponed, but agreed with customer.
2 (Minor)	Indicates that this issue has a relatively minor impact and not interfere with the system operation.	Cosmetic error, e.g. wrong error message	Solution can be postponed, but agreed with customer.
3 (Major)	An issue where either: a) functionality does not work as specified, and a workaround is available if necessary b) affects minor system monitoring possibilities c) usability is affected in a significant way	Some part of function is not working	Solution can be postponed, actions to be decided by Project owners.
4 (Critical)	Issue which: a) Prevents continuous use of the system OR	Essential function not functional.	Indicates that this issue is causing a problem and requires urgent attention. Needs actions soon.

Priority	Description	Impact to testing	Actions
	b) Prevents or severely restricts the operation of a specific function, but not the overall operation of the application	It is **critical** for the project.	
5 (Blocker)	Issue for which no work around exists and this issue: a) prevents the operation of the system OR b) prevents the application from processing, sending or receiving data causing data loss.	**Show stopper** for project	The highest priority. It indicates that this issue takes precedence over all others. Needs actions immediately.

6.5.3.2 Defect handling

For handling of errors during each phase of the testing TietoEVRY uses JIRA system. Following states of the errors (registered issue with type BUG) are supported in JIRA system:



During system integration testing and Acceptance testing activities by customer, NBM will be provided access to TietoEVRY system JIRA. In JIRA OTP will be able to:

- Register bugs found during testing
- Follow-up bug resolution
- Comment of bug resolution.

Bug registration:

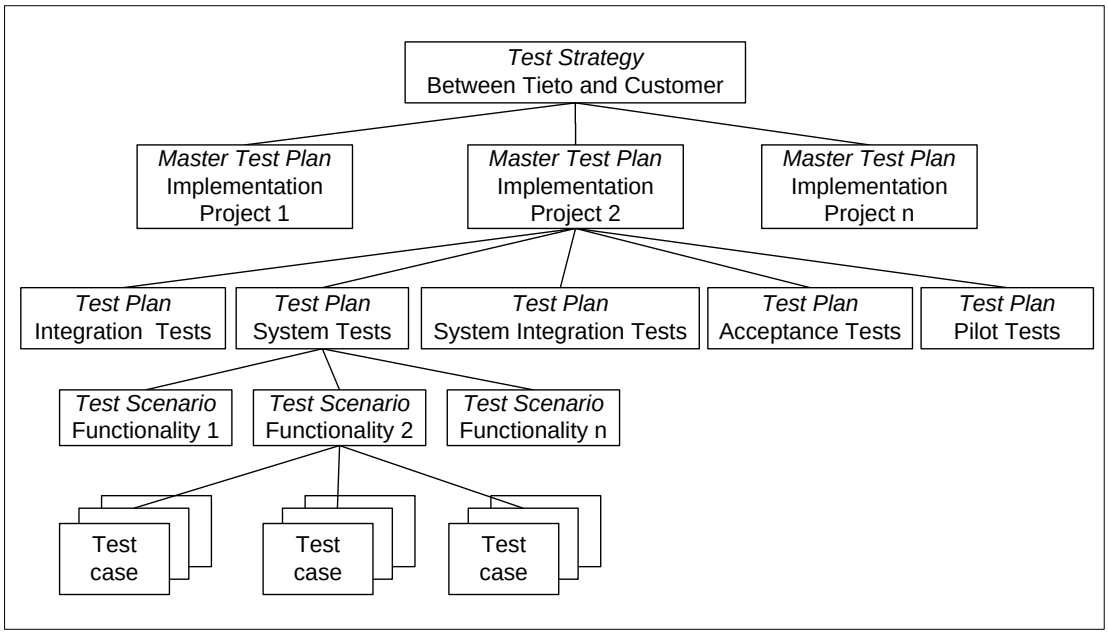
To register issue with type ‘BUG’ NBM project team members will send email with bug description and attached test logs, test data or any other related information to specific email address provided by Project Manager

Mapping of email fields to JIRA bug fields:

Email	JIRA
Subject	Summary (Title)
Body	Description
Attachments	Attachments

To ensure quick reaction for each bug, email subject should contain key word **BUG** as first word in subject. As well bug priority should be mentioned in email body. After bug registration in TietoEVRY Jira, it will be analyzed by TietoEVRY project team to check that description and received data is enough to reproduce the problem.

6.5.4 Hierarchy of testing documentation



TietoEVRY supports the following testing documentation which includes the above mentioned:

Test Strategy document describes collaboration principles between TietoEVRY and Customer.

Master Test Plan (MTP) describes testing activities that should be performed for each particular Implementation Project.

Test Plan (TP) is prepared in QaTraq system for each testing level to link test scenarios of different functionalities. It contains only basic information about planned tests for current stage; all other information is defined in MTP.

Test Scenario (TS) is the set of Test Cases (TC) necessary for proper testing of particular functionality.

Test Case is the set of input conditions, test data, execution steps description and expected results to verify program's proper behaviour and compliance with specific requirement.

The tests shall be conducted under conditions that, to the most possible extent, correspond to a normal operational situation.

The plan shall include the following elements:
- Overview of the applicable test (approach, test items / features, scope, test types, time plan, organisation and resources)
- Specific test activities, including daily and periodic operation routines
- Entry and Exit criteria (only if it deviates from Test Strategy)
- Risk evaluation
- Definition of roles and responsibilities for all parties
- Reporting and monitoring
- Test data
- Environment set-up
- Testing estimates (or reference should be provided to the project plan with estimates)

Customer is always entitled to suggest amendments to TietoEVRY's test plans.

6.5.5 Tools used in testing

Some specific tools are used by TietoEVRY for testing process support:
- Jira as issue tracking system
- Postman for manual API testing
- Python / Pytest + specific utility libraries for general automated tests
- Allure test report aggregation platform
- Javascript / Cypress for UI unit & E2E test automation
- Jenkins as CI/CD platform

n the beginning of testing activities testing task is opened in JIRA by Lead Tester or Project Manager and is assigned to specific Tester. All tasks have the same Project ID in the system and are easy to find. Every testing task contains link to technical specification, list of modules & versions, configuration parameters necessary for specific functionality testing.

JIRA

JIRA system is used for task management and defect registration (by TietoEVRY and Customer):

- Testing task registration, management and tracking.
- Defects registration and management.

- Statistics about planned tasks and discovered defects.

Test automation tools

Jenkins - is an open-source continuous integration software tool written in the Java programming language for testing and reporting on isolated changes in a larger code base in real time. The software enables developers to find and solve defects in a code base rapidly and to automate testing of their builds.

Pytest - is a mature full-featured Python testing tool, used to write automated tests.

Allure - an open-source framework designed to create test execution reports that are clear to everyone in the team.

6.6 Communications management

Meetings

Party	Meeting	Purpose/result	Format / Location	Person Responsible	Frequency/Time
TietoEVRY & Customer	Project team meeting	Project organizational issues	Informal	Project manager	Weekly or as per necessity
TietoEVRY & Customer	Kick-off meeting (internal & external)	Kick-off presentation and Project plan walk-through	Formal	Project manager	Once – start of project execution phase
TietoEVRY	Project Development status and planning meetings	Project monitoring	Formal	Project manager	According to schedule of Area refinement, Team refinement and Area review.
TietoEVRY	Project Implementation status meeting	Project monitoring	Formal	Project manager	As per necessity
TietoEVRY	Resource conflict meeting	Project staffing issues solving	Formal	Project manager	As per necessity
TietoEVRY	Internal Steering group meeting	Project review, change approval	Formal	Project owner	Monthly or as communicated

Party	Meeting	Purpose/result	Format / Location	Person Responsible	Frequency/Time
TietoEVRY & Customer	External Steering group meeting	Project review, change approval	Formal	Project owners from both Parties	At specified project milestones
TietoEVRY & Customer	Risk workshop	Risk management	Formal	Project manager	Monthly or as communicated

Correspondence

Hard copy documents – must be scanned and copied on file server folder Correspondence.

E-mails – all e-mails containing approvals, change requests and other important project information must be copied on file server folder Correspondence.

Telephone calls or other communication tool usage

Use of communication tools for communication is not forbidden. If these conversations contain project important information, decisions etc., they must be written in minutes or e-mail afterward and sent to all involved stakeholders. After that minutes/e-mail must be copied on file server in project's folder.

Reporting

The following reporting takes place in the project:

Report	Purpose and target group	Responsible	Frequency/Time
Status report	Reporting status of the project and a forecast regarding cost, schedule and effort to the internal and external steering groups.	Project manager	Monthly
Measure-ment report	Reporting the status of the project in form of measurement data.	Project manager	Monthly
Final report	Reporting the lessons learned, measurement data with analysis results and stakeholders' feedback related to the project.	Project manager	At the end of the project

6.7 Formal decision-making

The following documents are mandatory for signing:

- Agreement, Agreement appendices
- Change requests
- Delivery and Acceptance notes

Other documents are optional for signing and may be approved by e-mail:

- Project plan
- External steering meeting minutes (previous minutes approved in meeting minutes)
- Project status reports
- Invoices
- Test cases and plans
- Specification documents

7 Transfer to operations

Transfer to operations performed in accordance with the detailed plan and rollback plan, which are prepared and tested before transfer. The plan consists of detailed steps, which have to be performed, and specifies for each activity: Date, Time, Duration, Description, Expected result, Responsibility. Rollback plan specifies rollback activities to be performed from different transfer stages in situations when rollback activities have to be started.

8 Project closure

During the project closure phase the following activities are performed:

- Signing of acceptance note
- Transferring project to TietoEVRY Customer Support unit (including Customer support unit training and the necessary information providing)
- Customer satisfaction survey fill-in and result analysis
- Internal survey and feedback management and it’s results analysis
- Final Report preparation (including lessons learned, achieved project goals, reusable artefacts, project measures and other project related information)
- Final Report sent to Steering group members for approval
- Technical project closing in internal TietoEVRY tools.