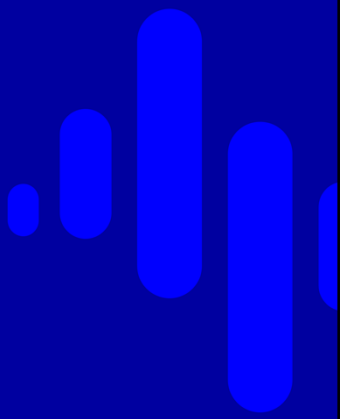
Nordea

Software Process introduction

January 2017



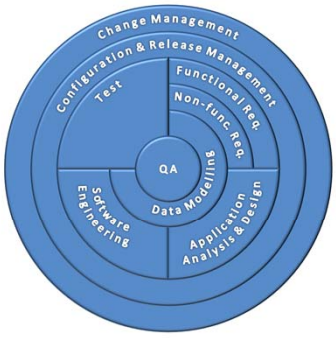
Comments regarding the training material to EDC

- This “self-study-package” is a high level view of the Software Processes in Nordea
- The material is especially targeted to the EDC consultants in India
- The aim is primarily to raise the awareness of the Software Processes in Nordea
- To fulfil the need of a “self-study-package”, each slide is accompanied with notes to support the studying

Nordea

Content

- Scope of the software processes
- Software process models
  - Agile software process
  - Traditional software process
- 9 Domains
- Software development lifecycle in a project
  - Decision points
  - Templates
- Quality checks and gates
- Summary



Nordea

The aim is to acquire general and overall knowledge about Software Processes in Nordea.
Focus is more on what to deliver rather than how to do.

More detailed information can be found from the Software processes –portal in Step In via Nordea Intranet (called – 'Intra').

There is also list of mandatory deliverables and links to templates which are needed.

Scope of the software processes

"Mature Processes Improving Quality!"

- The Software Processes guides projects and teams in adhering to Nordea standard and guidelines in each of the 9 software delivery domains.
- In this context software process mean software development life cycle and software process model across 9 domains.
- The Software Processes, apply to software and software development in the broadest possible sense: from traditional, transaction based mainframe software via Internet-of-Things Apps to Cloud and virtualisation software.
- All *IT related* projects, initiatives and maintenance efforts, *incl. infrastructural ones*, are subject to the standards and guidelines described in the Software Processes.
- Software life cycle management standards governing in Nordea applies to both developmental activities and maintenance.

Nordea

The 9 domains in the previous slide (circle) and on this slide will be described in details later in this material. Some domains are detailed in separate presentations and some in the Nordea intra pages by their owner organisation (e.g. Change Management).

Software process models

- Nordea is moving gradually toward agile way of working. However there is still lot of initiatives which are using more traditional approach and currently many new initiatives still select traditional process for their way to work.
- Some initiatives use kind of 'hybrid model' which is mostly agile, but contains some traditional steps. Many initiatives has taken full scale agile approach and following Scaled Agile Framework (SAFe).
- According to Nordea project model initiatives shall be classified either traditional or agile. Following slides elaborate these models, Agile and Traditional, more thoroughly.

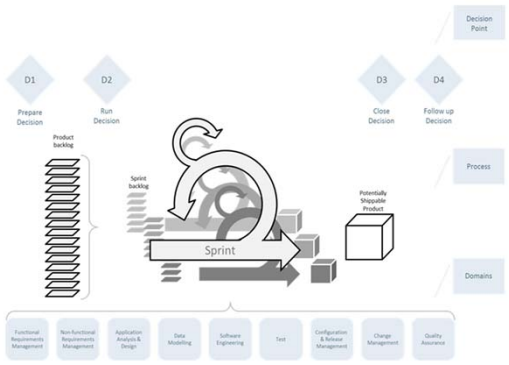
Nordea

The aim is to introduce variety of the development models used in Nordea.

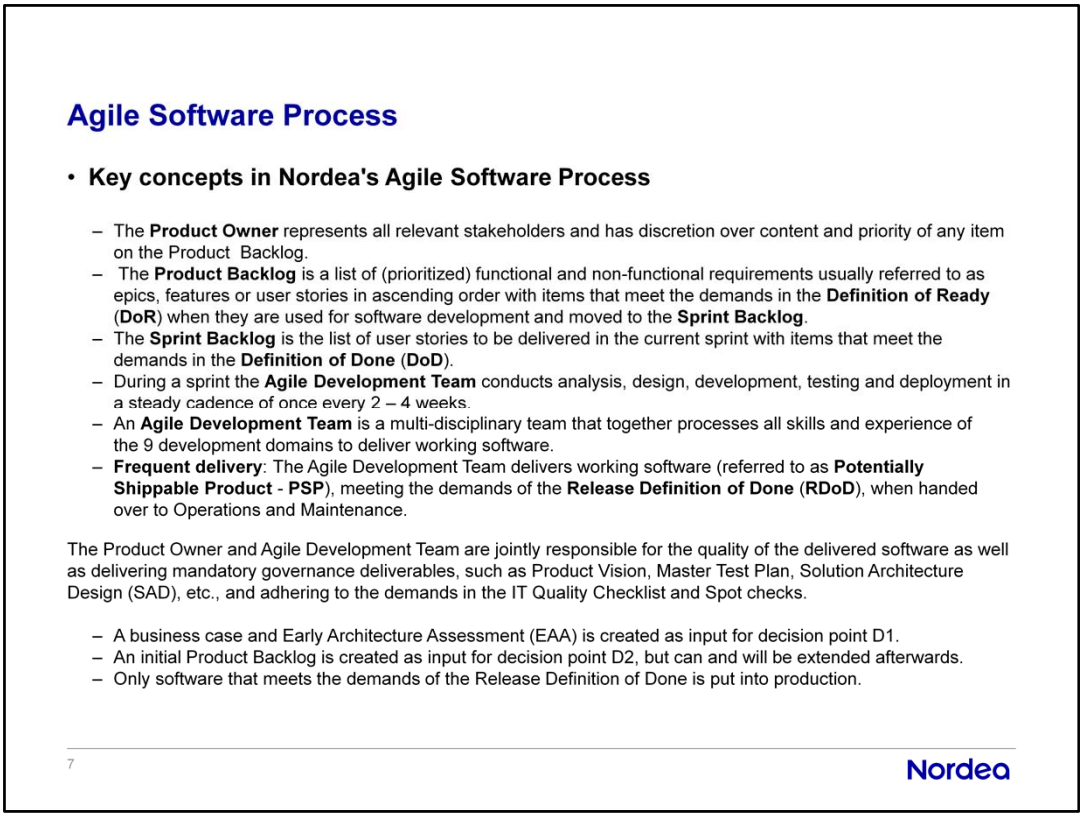
Software process models
Agile Software Process

- Agile Software Process aims at early delivery of customer value by frequent delivery of small portions of usable functionality and is compliant with the Agile Manifesto and the 12 principles behind it.
- The **9 Domains** included in the Agile Software Processes are defined to ensure a clear definition of interaction in activities, tasks, responsibilities and expertise, resulting in higher customer satisfaction and faster software delivery.

Agile Software Process is compliant with the principles in the internationally known Agile manifesto (key concepts: Individuals and Interaction, Working Software, Customer Collaboration and Responding to Change) and is compatible with any Agile framework e.g. Continuous Integration, Safe, Scrum, Kanban etc.



Nordea

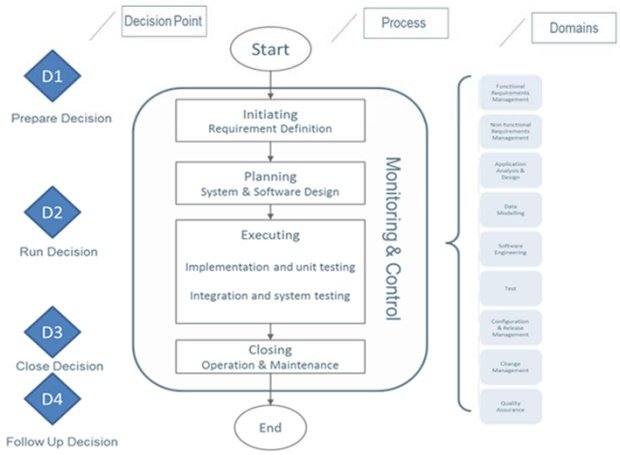


Scrum term ‘Sprint’ is used here as an example. Initiative might have also iterations or cycles.
Definition of Ready and other criteria items are described later in this material.
Decision points D1 to D4 are also described later.

Development models
Traditional Software Processes

- **The Traditional Software Process,** on both Waterfall and Iterative, is compliant with the international standard ISO/IEEE 12207, covering all processes concerned with full life cycle of software products including maintenance.

The Traditional Software Process is flow based and runs through a series of stages that relies on up-front planning and a set of sequential, prescribed steps to e.g. eliminate all project risks.
Each stage typically has its own team of experts and scripted milestones.
The Iterative approach being used in Nordea is following the same sequential steps, where actually the activities between Decision Point 2 and 3 are iterations.



Nordea

Traditional Software Processes

- **Key concepts in the Traditional Software Process**
  - **The Sponsor:** The overall accountable of the Project/ Programme.
  - **Programme Manager:** Accountable to the Sponsor for the successful delivery of the Project outcome.
  - **Project Manager:** Accountable to the Sponsor or to the Programme Manager for the successful delivery of the Project outcome.
- The process is connected to the Decision Points used in the Nordea Project Governance Approach. Each Decision Point is a checkpoint where it is decided if the requirements are met in order to move on to the next stage in the Process.
- The 9 Domains included in the Traditional Software Processes are defined to ensure a clear separation of activities, tasks, responsibilities and knowledge, resulting in better planning and management.

Nordea

Traditional Software Processes

Planning

- Functional and non-functional requirement specifications are studied.
- System and Software Design are prepared. System Design helps specifying hardware and system requirements, to define overall system architecture. Activities for the project or change are planned during this stage, resulting in a detailed planning. Also the Master Test Plan or Level Test Plan will be created during this stage.
- Requirements are translated into an overall system architecture. Software design involves representing the software system functions in a form that can be transformed in to a executable application/solution. The Design phase is best described by breaking it up into Logical Design and Physical Design sub phases. During the Logical Design phase, system's analysts makes use of the information collected in the Requirements phase to design the system independently of any hardware or software system. Once the higher-level Logical Design is complete, system's analyst begins transforming it into a Physical Design dependent on the specifications of specific hardware and software technologies.

Nordea

Traditional Software Processes

Executing

- The goal is to implement the software solution into the production environment. All activities, that needed to get to this point, are part of the Executing stage.
- Each individual component has to be developed and tested to ensure that each unit functions properly with respect to its specification before the units are integrated. Then integrate the individual components and test the system as a whole to ensure that entire software system functions properly with respect to its specifications and environment.
  - Implementation and unit testing – During this stage the software design is realised as a set of program or program units. Unit testing involves verifying that each unit meets the design, specification and functional and non-functional requirements.
  - Integration and System Testing – The individual Program units or programs are integrated and tested as complete system to ensure that the software functional and non-functional requirements have been met. After acceptance testing, software system is delivered to production for integration in production environment.
- Once all the functional and non-functional testing is done, product is deployed in the production environment.

Nordea

Traditional Software Processes

Closing

- Purpose is to close down the development initiative and handover to Operations and Maintenance.
- The system is delivered and integrated in production and the customer is using the developed application. After a handover period where the project team is still responsible for solving defects and issues, the solution is officially handed over to Operations.

Iterative Process
An iteration encompasses the development activities that lead to a product **release** - a stable, executable version of the product, together with any other peripheral elements necessary to use this release. Therefore, development iteration is in some sense one complete pass through all the disciplines: Requirements, User Interface Design, Analysis & Design, Implementation, and Test, at least. It is like a small Waterfall project in itself.

9 Domains

The Software processes divides solution development in 9 distinct domains, that together cover all aspects of solution development. For core activities, this is a repetitive cycle. Support activities have interfaces with the surrounding environment or exists in all areas (Quality Assurance).

Core activities are covered by these 6 domains:

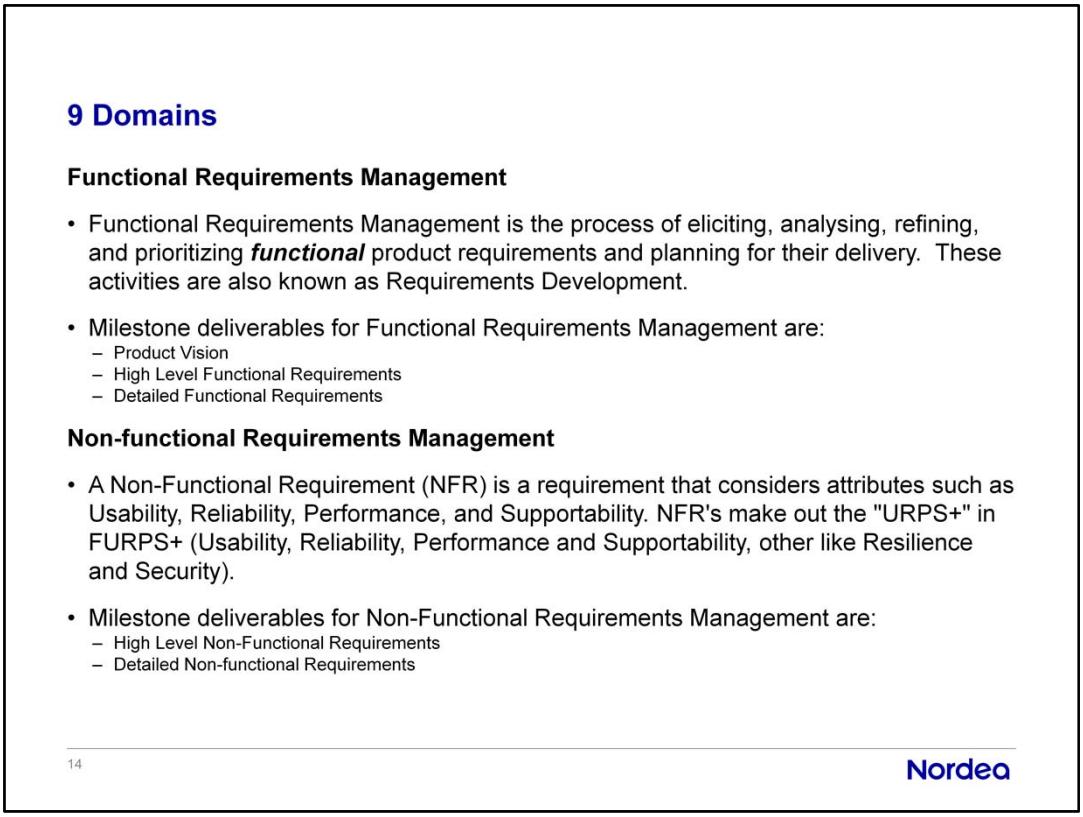
- Functional Requirements
- Non-functional Requirements
- Application Analysis and Design
- Software Engineering
- Data Modelling and
- Test

The support activities by these 3 domains:

- Change management
- Configuration and Release Management
- Quality Assurance

Domain is an area that covers one activity or stage in the Solution development that requires specific knowledge and/or expertise and that produces specific, well defined deliverables

Nordea



Non-functional Requirements Management has also own material to describe it more thoroughly.

9 Domains

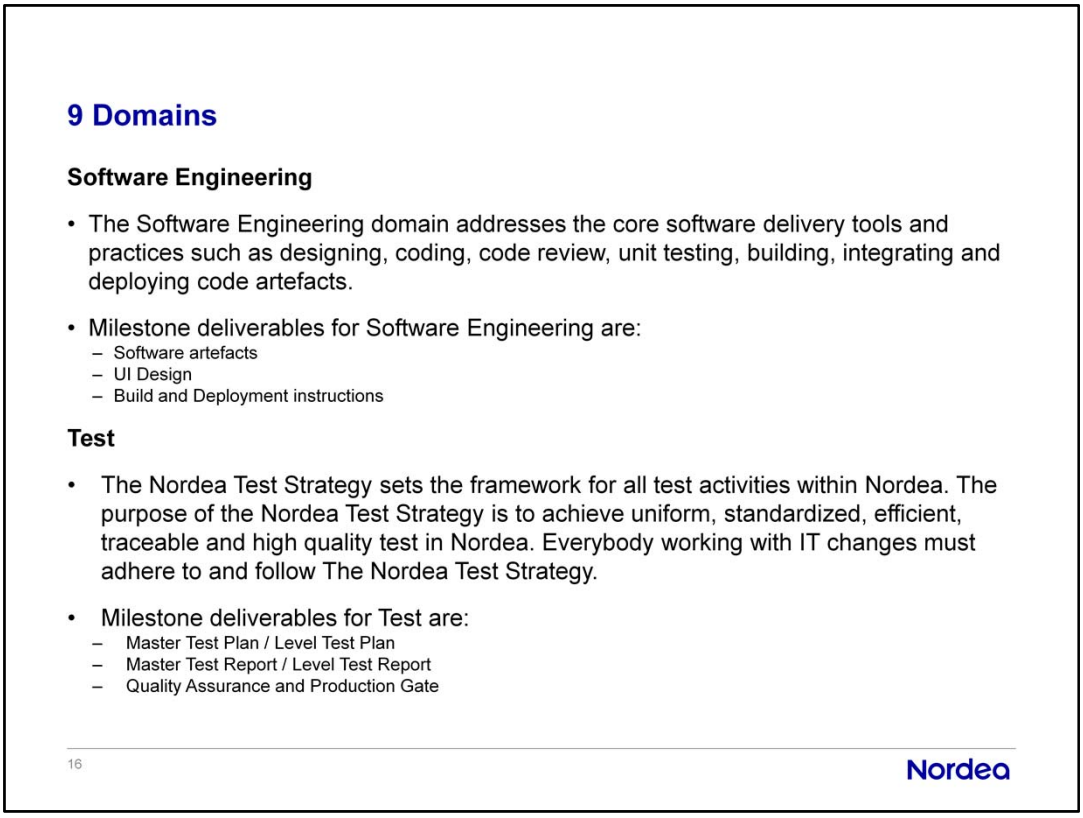
Application Analysis & Design

- The Application Analysis and Design domain addresses all static, dynamic and behavioural modelling aspects of Nordea's application landscape. It builds upon the requirements (both functional and non-functional). Where requirements primarily focus on ***what*** the system shall do, AA&D focuses on ***how*** it will be implemented.
- Milestone deliverables for Application Analysis & Design are:
  - Architecture Vision
  - SAD - Solution Architecture Document
  - Business Process Diagram
  - Use Cases
  - User Stories

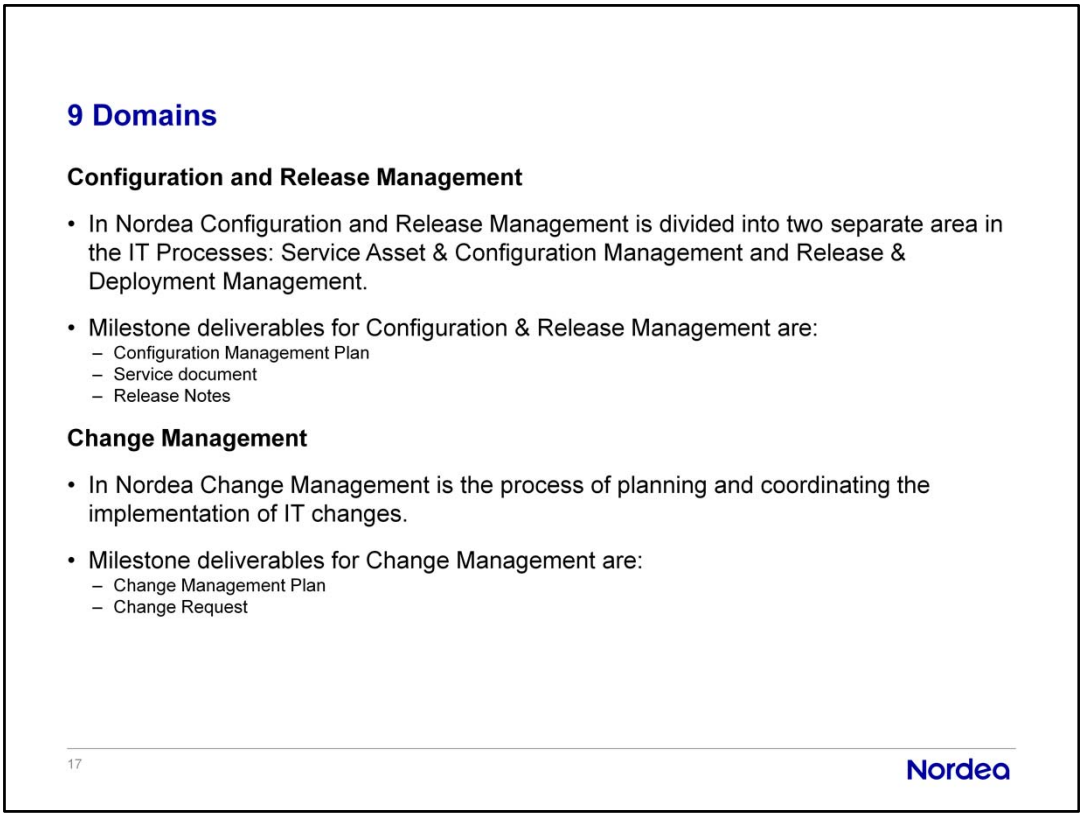
Data Modelling

- Data Modelling addresses Nordea's logical data entities and their interrelationships. It describes ***which*** data is used in a particular area or sub-area.
- Milestone deliverables for Data Modelling are:
  - Data model
  - Data Transportation Language
  - Data categories

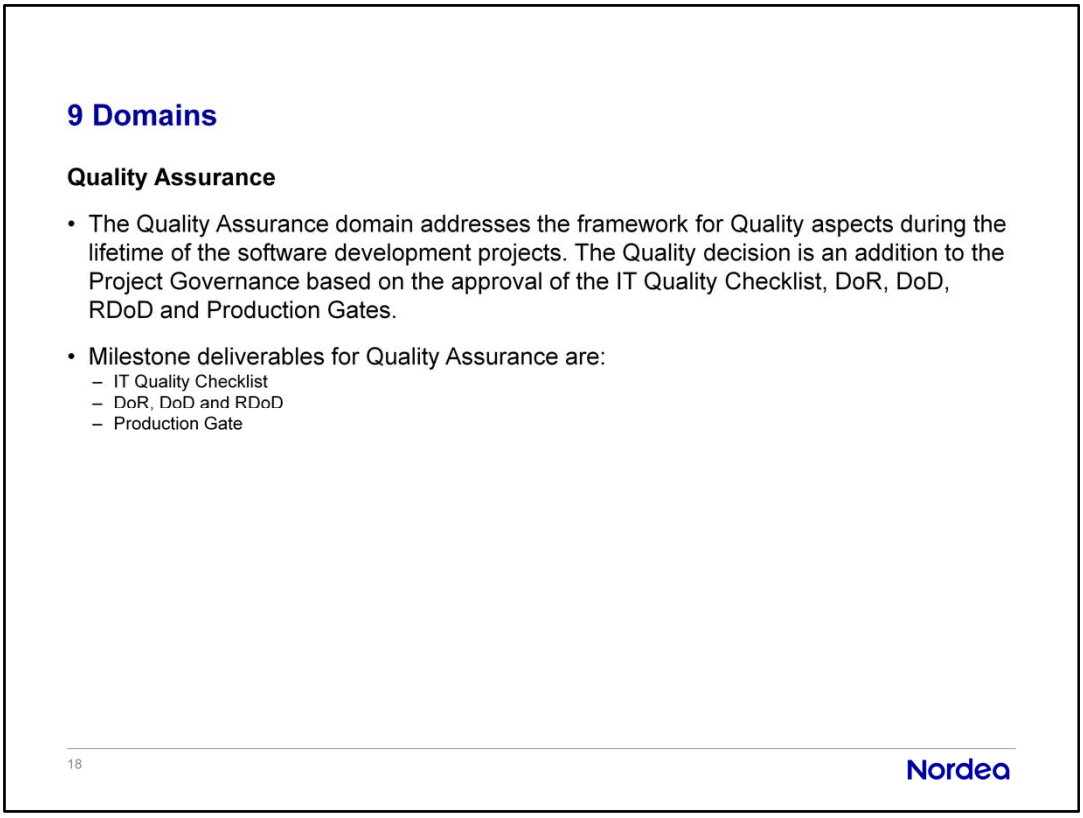
Nordea



Software Engineering domain is currently decentralised in Nordea. Each Business IT areas have defined their own methods for it.
Test domain has also own material to describe it more thoroughly.



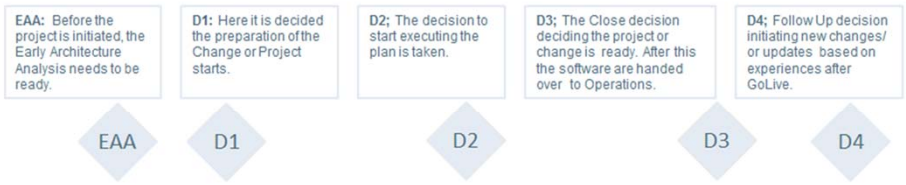
IT Processes are maintained by Infrastructure and Operations unit they have their own portal to describe them.



Quality Assurance domain is also decentralized. Each Business IT areas have defined their own methods for it.

Software development lifecycle in a project

Software Delivery follows Nordea's project governance structure of which the decision points are depicted below. In each decision point certain criteria shall be fulfilled before project can start next phase. Main part of the software processes are applied between decision points D2 and D3.



The table in the next page contains the *abstract*, high level deliverables that are used in the Decision Points.
Some of the abstract deliverables are domain specific, most of them are not. The abstract deliverables are mentioned in the domain that has the lead in creating the tangible deliverable as well as in the domains that play an important, recognisable role in doing so.

19

Nordea

Project lifecycle is described more in Project and Portfolio Management portal (PPM) in Nordea Intranet or in delivered Project Management material.

Theme of the high level deliverables that are used in the Decision Points

	EAA	D1	D2	Executing the project	D3	D4
Functional Requirements Management	Early Architecture Assessment	Business Case	Product Vision High Level Functional Requirements	Detailed Functional Requirements		
Non-functional Requirements Management			Product Vision High Level Non-functional Requirements	Detailed Non-functional Requirements		
Application Analysis & Design			Software Architecture	Updated Software Architecture		
Data Modelling			Software Architecture	Updated Software Architecture		
Software Engineering			Software Architecture	Software Artefacts UI Design Deployment Instructions		
Test			Master Test Plan	Level Test Plan Anomalies	Test report	
Configuration & Release Management			Configuration Management Plan	Base Lined Packages Release Notes Configuration Item(s)		
IT Change Management			CAB approved IT Change	Change Request(s)		
Quality Assurance			Quality Criteria	Quality Criteria	Met Quality Criteria	Closure Document

20

Nordea

Deliveries from each domain are not limited on these shown in the table. Naming might be also different.
Main purpose of this table is to show type of deliveries expected in each decision point. Some deliverables are mandatory to all developed products and some are conditional, depending scope of the development.

Nordea Domains Templates

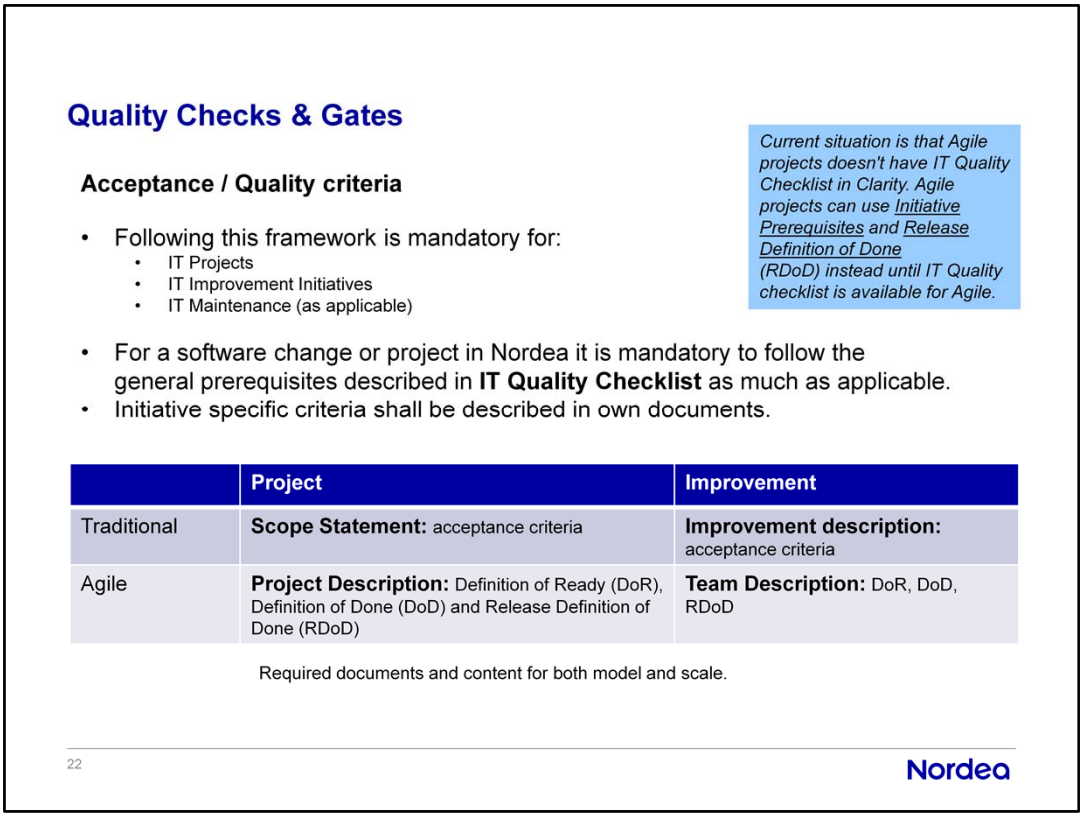
Nordea templates are based on best practices and methodologies and follow the industry standards. These templates are selected to cover the entire life cycle on software development process for both Traditional and Agile.

Domains	Templates	Remarks
Functional Requirements Management	*Product Vision, Use Case Diagram, Use Case Model Survey, Use Case Specification, Software Requirements Specification (SRS)*	All Requirement templates can be found from Software Process portal
Non-functional Requirements Management	*Product Vision, Specification Non-Functional Requirements (Word format), Specification Non-Functional Requirements*	All Requirement templates can be found from Software Process portal
Application Analysis & Design	*Solution Architecture Document (SAD), Solution Design Document (SDD), UI Design templates*	Application Analysis & Design is supported by the MEGA toolset.
Data Modeling	*Solution Design Document (SDD)*	Data Modelling is supported by the MEGA toolset.
Software Engineering	*Solution Architecture Document (SAD)*	
Test Management	*Mandatory Metrics, Level Test Plan, Level Test Report, Master Test Plan, Master Test Report*	All Test templates can be found from Test Portal
Configuration and Release Management	In Remedy and in IT Process portal	Templates for Service Configuration Management Templates are implemented in Remedy. For templates for Release Management please see IT Process portal.
Change Management	Change Templates in Remedy	The existing change templates are available via the change module in Remedy.
Quality Assurance	Embedded in Clarity	The IT Quality Checklist template is embedded in Clarity and can be found in Clarity/Properties module.

21

Nordea

MEGA – toolset used for data modelling and Application analyses & Design.
Remedy – tool used for issue and change management.
Clarity – tool to track, control and report progress of the projects.
Software Process portal – Nordea internal portal for software processes.
Test portal – Nordea internal portal for testing methods and steps.
IT Process portal – Nordea internal portal for the processes maintained by Infrastructure and Operation unit.



IT Improvement Initiative – small development initiative which doesn't have to use project governance model.

IT Quality Checklist, Initiative Prerequisites, Definition of Ready, Definition of Done and Release Definition of Done are described in next pages.

Acceptance criteria for traditional development shall be defined by per initiative in to Scope Statement or Improvement description. There is no specific template for it. Agile development usually have acceptance criteria embedded in to User Stories and common criteria is described in DoR, DoD and RDoD.

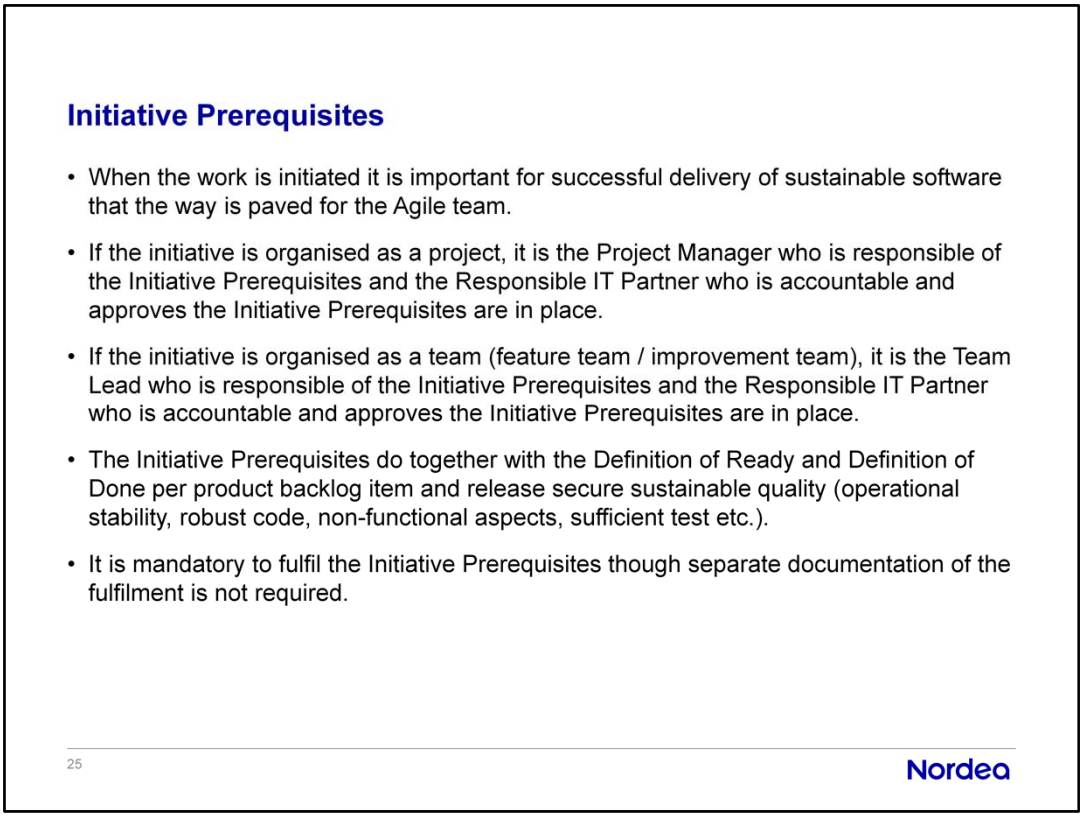
Quality Checks & Gates

Gates

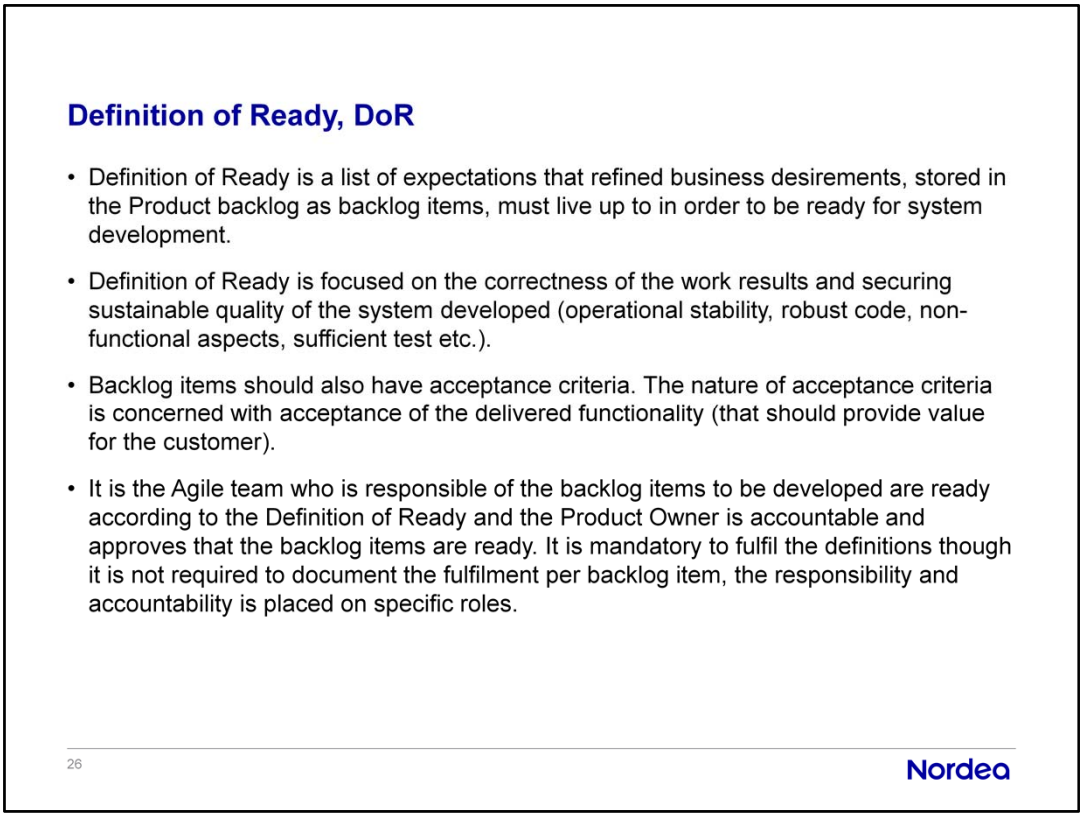
- For all software initiatives in Nordea it is mandatory to pass all the Decision Points defined in the Project Management Framework.
- Quality criteria before GoLive decision is defined in: **Production Gate (Agile/Traditional)**

IT Quality Checklists

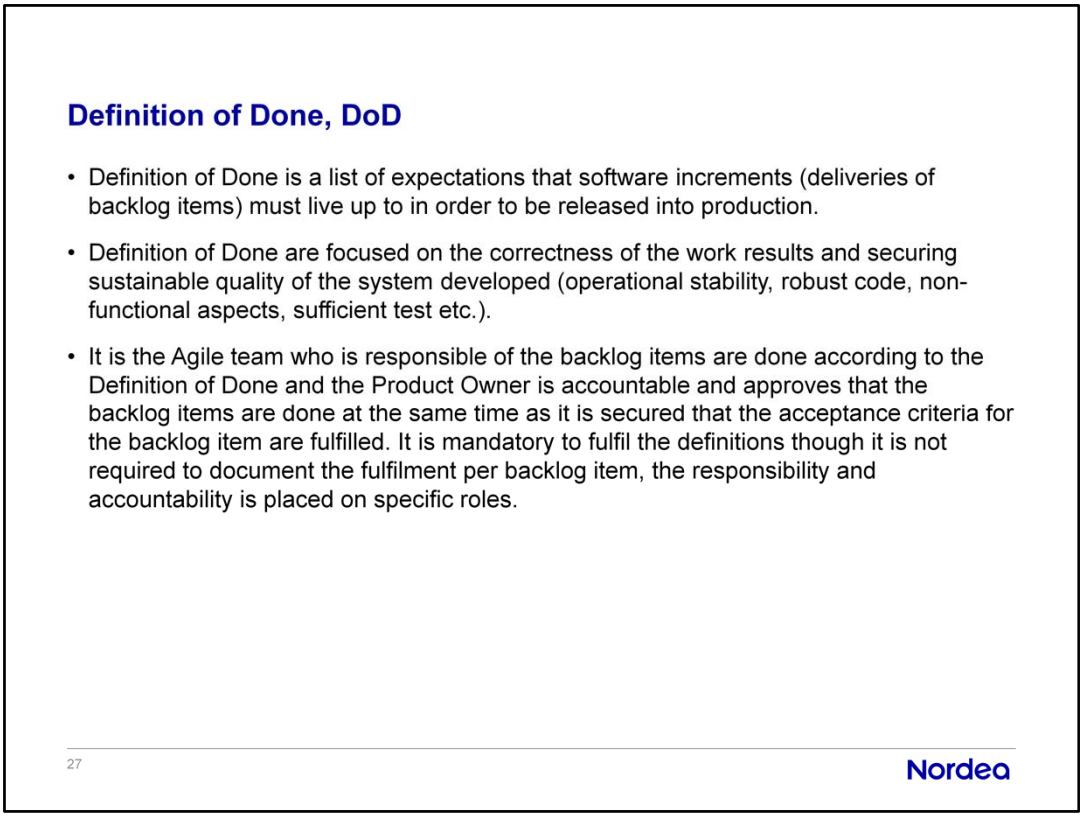
- The purpose of the IT Quality Checklist is to prevent incidents in production caused by release of changes. It supports the project in ensuring that the quality of the solution delivered will be on sufficient level.
- The Project Manager is responsible of the IT Quality Checklist and will be supported by the Project Management Team when assessing the project according to the checklist. Responsible IT Partner is responsible for approving the IT Quality Checklist.
- The IT Quality Checklists define *when* during a project lifetime certain criteria must be fulfilled. It is recommended to use as a supporting tool during the project life cycle not at least when preparing and planning the Project / the next phase in the Project. It is possible to mark most of the criteria N/A or Partly as well as Yes and No.
- The IT Quality Checklist is embedded in the Clarity tool.



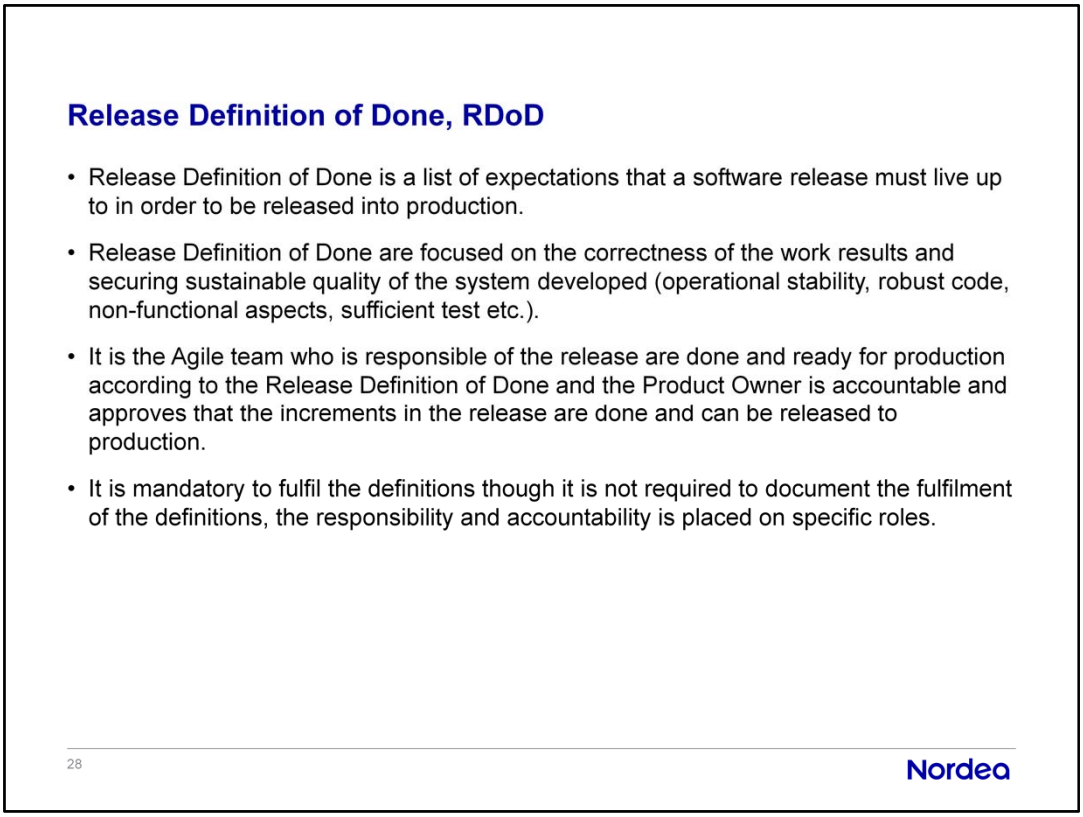
Currently each initiative shall define their own Initiative Prerequisites. Some examples can be found from Software Process portal.



Each initiative shall define their own Definition of Ready. Some examples can be found from Software Process portal.



Each initiative shall define their own Definition of Done. Some examples can be found from Software Process portal.



Each initiative shall define their own Release Definition of Done. Some examples can be found from Software Process portal.

Production Gate

- The main purpose of the Production Gate is to ensure that software and hardware changes to be implemented will not have a negative effect on the production environment.
  By checking all mandatory steps on testing and on the software processes before the GoLive decision, it is checked if mandatory documents and processes have been followed up.

Risk Assessment Questions and Regular Spot Checks

- In the Regular Spot Checks conducted on Projects Improvements or Maintenance areas it is validated that the test related risk question issues are documented in accordance with the Test Strategy 3.0.

Improving IT operational stability

- The strict change freeze was decided in order to obtain IT operational stability. The main purpose of the Production Gate is to support stability after the strict Change freeze is lifted. Also more data of risk and impact of changes are collected to be used to better target future improvements.

Summary

Main items in a high level to be remembered from this presentation:

- Two alternative process model for the development; Agile and Traditional
- 9 domains across development models with their core and supporting activities.
- Project lifecycle and decision points
- Deliverables for the decision points and domains to contribute.
- Templates for the domain deliverables.
- Quality checks and gates to ensure quality and compliance.

Nordea

Thank you!