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Approach to shaping the quality gate process in the APCS business of the Rosatom State Corporation

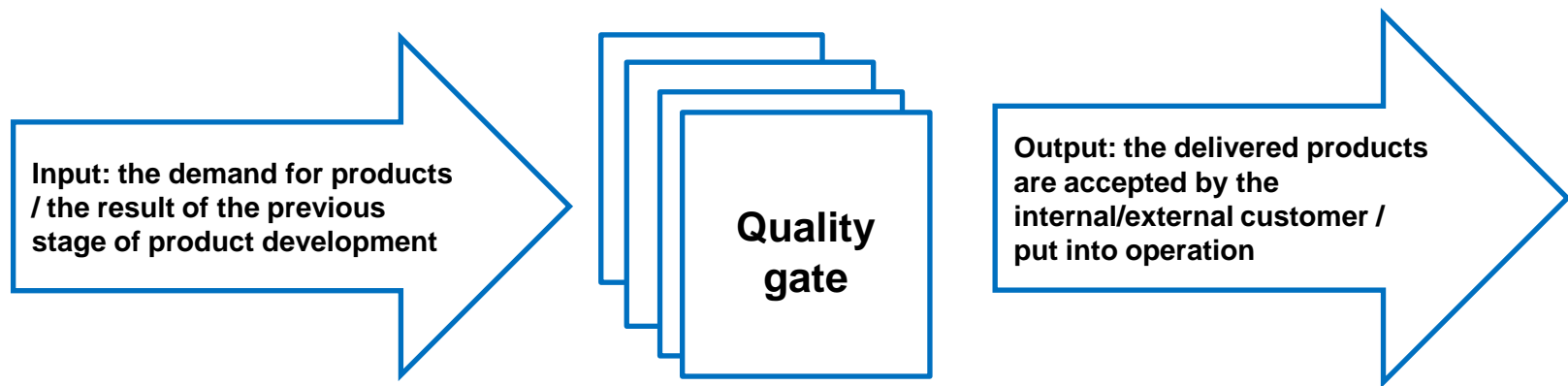
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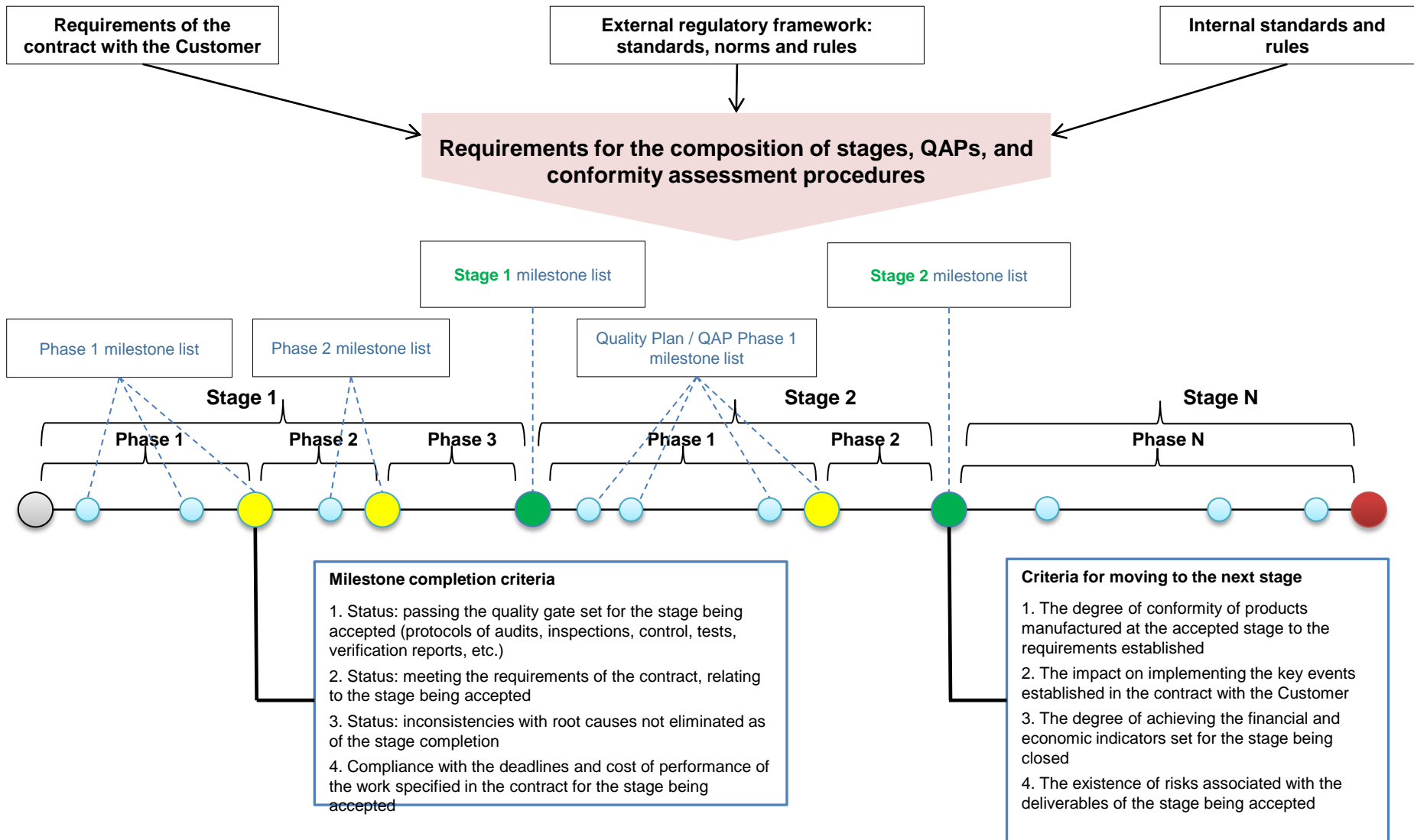
The quality gate as a basis for shaping a stage-gate-process of creating complex engineering systems

The quality gate is a set of procedures to be incorporated in the product life cycle, aimed at ensuring a phased control over the conformity of products and processes of its creation to the requirements established, as well as clarifying these requirements as the product is ready



The quality gate establishes the criteria for product maturity and completeness of the processes in relation to the current life cycle stage and all the previous stages, as well.

Typical stage-gate-model for APCS project



Life cycle beginning



passing the quality gate with a project milestone achieved



passing the quality gate with a phase completed



passing the quality gate with a life cycle stage completed



Life cycle completion

The end-to-end integrated quality project in relation to APCS business

Determining requirements

Scheduling check-out operations

Performing check-out operations (passing quality gates)

Analyzing inconsistencies

Project Manager

Analyzing contractual requirements at the stage of approval

Processing and loading contract requirements into the project requirements management system

Shaping requirement registers to be incorporated in cooperation chain contracts

Developing the project requirements management plan

Developing the schedule and other plans within the PMP

Monitoring the completeness of customer requirements in the master action plan for quality assurance and conformity assessment

Maintaining a unified register of customer requirements, including the project progress and timing in relation to each requirement

Monitoring compliance by structural subdivisions and contractors with all and any customer requirements

Preparing documents required to pass quality gates

Monitoring the progress in eliminating inconsistencies that prevent you from passing quality gates and their root causes

Quality manager

Analyzing contractual quality requirements at the stage of approval

Analyzing the revenue contract requirements in order to assess conformity

Developing QMS documents on planning and quality control and inconsistency management

Developing the project stage-gate-model

Developing the Quality Assurance Plan (the QAP) indicating stages, phases, and milestones

Developing the consolidated action plan for quality assurance and conformity assessment

Developing and incorporating key quality events in supplier contracts with respect to payment

Verifying the QAP and milestone lists against the cooperation chain

Arranging, performing / taking part in quality assurance and conformity assessment activities as per the consolidated plan

Ensuring categorization of any inconsistencies identified

Suspending the work and introducing corrective actions by structural divisions or suppliers in case of any critical inconsistencies identified

Preparing documents in terms of quality control and arranging the procedure for passing quality gates, processing deliverables, and escalating problems

Conducting regular audits of suppliers and internal audits of the project

Coordination of and control over the work on inconsistency elimination (including searching and eliminating the root cause)

Updating the QAP and the consolidated quality assurance plan

The stage-gate-model exemplified by the project for APCS designing and engineering for the needs of Paksh-2 NPP: the quality gate of the engineering stage



No.	Quality gate name	Quality gate purpose
0	KT-0. Source data verification for design purposes	When passing a milestone, the completeness, correctness, and sufficiency of the input design data shall be analyzed
1	KT-1. In-house approval of the design documentation	The developed documentation shall be reconciled (verified) on an in-house interdisciplinary level for compliance with the basic criteria for each of the disciplines established for the relevant design stage
2	KT-2. Reviewing the requirements incorporated	When reviewing the documentation, the completeness of the Customer requirements incorporated in the relevant document shall be determined, as well as the correctness and completeness of tracing these requirements therein
3	KT-3. Independent verification of project documentation	In the independent verification of the documents, the compliance of all requirements and solutions contained in the relevant document with the Customer's requirements shall be determined, as well as the correctness and completeness of tracing these requirements therein
4	KT-4. Compliance assessment	In the framework of conformity assessment, the compliance of the documentation with the Customer's requirements regarding the composition, completeness, processing, and identification of the document shall be assessed, along with the confirmation that the relevant document has complied with the conditions and achieved all the milestones (passed the quality gates)

The key measures to ensure using quality gates in the management of supply chains in APCS design projects.



1. Developing the list of quality gates to be passed by the supplier, including HP and WP for quality plans and selected key quality measures (coordination or examination of documentation, certification of individual transactions, audits and inspections, etc.)
2. Incorporating key quality measures in the contract with the supplier, with the correlation of their deliverables and payment stages (in accordance with the order of the Rosatom State Corporation)
3. Incorporating the section covering the passage of quality gates in the contractual templates of the supplier's regular reports, to be shaped in the development and manufacture of products
4. Incorporating the RASU JSC corporate standards in the contract with the supplier, which require compliance in the development and manufacture of products (management of inconsistencies, requirements, changes, configuration, etc.)
5. Monitoring the passage of quality gates by the supplier, including:
 - analyzing open inconsistencies and their root causes
 - analyzing the quality requirements delivered using the supplier's expenditure contracting chain (including the status of expenditure contracting)
 - compliance with the corporate standards established in the contract
 - affecting compliance with the target deadlines and profitability of the project



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Thank you for your time!

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