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STANDARDIZATION OF FULL-CYCLE PROJECT MANAGEMENT IN REAL ESTATE DEVELOPMENT

Marian Krotov

Project Director, FSK Severo-Zapad,
Saint Petersburg, Russia

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ABSTRACT

Real estate development projects combine long investment horizons, capital intensity, and a changing composition of participants, which makes managerial outcomes difficult to reproduce from one project to another. This article examines the standardization of project management across the full development cycle, from land acquisition and permitting to the transfer of completed buildings to clients. The study rests on a comparative analysis of international project management standards and peer-reviewed research on construction management, combined with a synthesis of managerial practice in large-scale residential development. The result is a framework that defines objects of standardization for each phase of the life cycle, links them to control mechanisms, and integrates them through cross-cutting instruments, among which are stage-gate control of phase transitions, an authority matrix, a unified document and data flow, and continuous monitoring of project risks and contract events. The framework treats standardization as a system of managerial filters that convert heterogeneous project situations into comparable decisions. The analysis shows that such a system raises the manageability of individual projects, makes their status transparent to investors and lenders, and turns successful managerial solutions into a reproducible asset of the development company. Directions for quantitative validation of the framework are outlined.

KEYWORDS: project management standardization, real estate development, full-cycle project, stage-gate control.

1. INTRODUCTION

Real estate development presents managerial challenges that most project-based industries face only in part. A full-cycle project spans 5 to 10 years, involves dozens of administrative procedures, and brings together designers, general contractors, subcontractors, suppliers, banks, municipal services, and public authorities whose interests coincide only at discrete points in the schedule. Construction project management as a discipline has developed a wide arsenal of methods for cost, schedule, and quality control, and at the same time, the field continues to search for managerial models that match

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the growing complexity of technologies, contractual arrangements, and stakeholder expectations [1]. For a company running a portfolio of parallel projects, the central question sounds simple but remains hard to answer. How can a predictable result be obtained from processes that differ from site to site, from team to team, and from year to year?

Standardization in this article means the deliberate unification of managerial processes, documents, and decision criteria across the projects of 1 company. The subject received wide attention in manufacturing and product development, while the development industry approaches it with caution because every land plot, every approval history, and every market moment appears unique to participants. The article's argument rests on a distinction. The uniqueness of sites coexists with the repeatability of managerial situations, and the repeatable share of the work is large enough to justify a corporate standard. An investment decision, a tender, an acceptance of completed work, and a transfer of an apartment to a client follow comparable scenarios on any site, and these scenarios form the natural material for unification.

Empirical evidence points to the front end of the cycle as the zone of the highest risk concentration. A survey of 225 practitioners in the Australian and New Zealand development market showed that formalized methods of feasibility assessment penetrate early decision-making unevenly and that firms' confidence in their ability to identify risks before site acquisition differs across the industry [2]. Decisions made before purchasing land determine the economics of the project for years to come, since the location, permitted construction parameters, and acquisition price cannot be revised later at comparable cost. An organization that leaves the front end to the intuition of individual managers accepts a level of variance that no downstream control can compensate.

The economic weight of phase-level decisions persists across the whole cycle. Research on the phasing of real estate projects demonstrates that dividing the scope into stages changes the project's net present value and the degree of customer satisfaction, because phasing governs the timing of cash inflows, the sequence of deliveries, and the financing burden [3]. The transition between phases thus ceases to be a mere technical formality and becomes an instrument of value creation or destruction. This observation elevates the status of the managerial procedures surrounding such transitions.

International standards provide developers with a shared vocabulary for project management. ISO 21502 integrates elements from earlier process-oriented standards and links project management to its success criteria, bringing the normative layer closer to business outcomes [4]. The standard describes a universal project and, for that reason, leaves the specifics of full-cycle development to the branches. Urban planning approvals, land banking, escrow-based financing of housing, and the transfer of thousands of apartments to retail customers have no direct analog in a generic process model.

Academic literature closes this gap only in fragments. Publications on agile methods report experiments with flexible frameworks in the pre-construction stage [5], and separate streams of research examine procurement, information environments, and quality control within individual phases. The managerial architecture that ties all phases of the development cycle into one standardized system remains outside the focus of both groups of sources.

The demand for standardization grows as the industry consolidates. Large developers absorb regional players, enter new cities, and multiply the number of simultaneously managed sites, and every act of such growth tests the transferability of managerial practice. A company that carries its methods in the heads of veterans transfers them slowly and with distortions, while a company that carries its methods in documents transfers them at the speed of training. Consolidation converts the corporate standard from an internal convenience into a competitive advantage, and the quality of this advantage separates the developers that scale from those that only grow.

The practitioner literature of consulting origin approaches the topic from the opposite side and offers checklists, maturity models, and implementation recipes without the discipline of evidence. The academic literature offers evidence that is deep but focuses on fragments of the cycle. This article works in the space between the 2 traditions. It borrows from practice the full-cycle perspective and the orientation toward applicable structures, and from research the requirement to anchor every element of the structure in published findings.

The purpose of this article is to systematize the objects and mechanisms of project management standardization across the full-cycle of real estate development and to combine them into a framework applicable in the practice of development companies. Three objectives follow from this purpose. The first objective is to construct a taxonomy of standardization objects for each phase of the life cycle. The second objective is to identify the cross-cutting mechanisms that hold the phases together and convert local regulations into a corporate system. The third objective is to evaluate the managerial effects and the limits of standardization against the background of universal standards and current research. The article has the following structure. The second section describes the study's materials and methods. The third section presents the taxonomy of standardization objects, the cross-cutting mechanisms, and the resulting framework. The fourth section discusses the findings, their relation to prior work, and the restrictions of the proposed approach. The fifth section concludes.

Existing studies examine isolated phases of the development cycle, among them the front end of investment decisions, procurement, and the information environment of design. This article is among the first to propose an integrated governance framework that spans the entire development cycle and connects its phases through a common set of control mechanisms. The proposed model carries the name Integrated Development Gate Framework, abbreviated below as IDGF.

2. MATERIALS AND METHODS

The study belongs to the review and conceptual category and combines 2 complementary foundations. The first foundation is an analytical review of normative and academic sources. The normative layer includes the current international guidance on project management, among which ISO 21502 occupies the central place as the successor of the process-based ISO 21500, together with the seventh edition of the PMBOK Guide and the practice-oriented documents that accompany it. The academic layer covers peer-reviewed publications from 2021 to 2025, indexed in Scopus and Web of Science, and devoted to construction project management, property development, procurement, information management, and the adoption of managerial methodologies in construction. Sources were included in the review when they met 2 conditions. The publication had to address managerial processes in the investment and construction cycle and either include empirical material or a systematic synthesis of prior empirical work.

The remaining central terms are defined as follows. A full-cycle project is one in which the same company controls the entire chain, from the acquisition of land rights to the transfer of completed premises to clients. A gate is a formal point of transition between phases at which an authorized body confirms, corrects, suspends, or reverses the project's movement. The corporate standard refers to the ordered set of policies, regulations, and templates through which the company unifies its managerial practices. Policies define the principles of governance, regulations describe the processes step by step, and templates translate the requirements into the day-to-day tools of project teams.

The review did not pursue the exhaustive coverage of the literature that a formal systematic protocol would demand. The article's task is conceptual synthesis, and the sources were selected for their capacity to represent the main research streams across the phases of the development cycle. Publications on front-end risk, phasing economics, procurement criteria, information environments, methodology adoption, and digital maturity serve as the reference points for this map. The reviewed set illustrates the streams and suffices for constructing the framework, and the framework itself remains open to enrichment from the adjacent literatures on megaproject governance and organizational design.

The comparative analytical procedure consisted of 3 steps. In the first step, the life cycle of a full-cycle development project was divided into 5 phases, and for each phase, the review identified the managerial processes identified in the sources as candidates for formalization. During the second step, the extracted processes were grouped into standardization objects, and mechanisms that recur across more than 1 phase were separated into a cross-cutting category. During the third step, the objects and

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mechanisms were assembled into a single framework, which was then compared with the provisions of the universal standards and the findings of the reviewed studies to identify points of agreement, points of tension, and open questions.

The second foundation is the author's generalized managerial experience, gained over more than 18 years directing full-cycle investment and construction projects for a large residential development company in Saint Petersburg. This experience covers project launch, urban planning approvals, design management, tender and procurement procedures, construction control, and the transfer of completed buildings to clients. Corporate practice is introduced in the article at the level of industry patterns. Internal normative documents of the company are neither quoted nor disclosed, and only the observable composition of managerial processes, their sequence, and their typical failure modes serve as empirical background for the framework. Such a restriction protects commercial confidentiality and, at the same time, keeps the framework at a level of generality that allows it to be transferred to other companies in the sector.

The unit of analysis is the managerial process of the development company. Technical and engineering processes in construction remain outside the scope of the study, except when a managerial regulation defines their control. The framework claims conceptual validity. Quantitative testing of its effects on portfolio indicators forms a separate research task and is discussed in the final part of the article.

3. RESULTS

This section presents the analysis results in 3 steps. The first subsection builds a taxonomy of standardization objects across the 5 phases of the development cycle and connects each phase to its control mechanisms and managerial outcome. The second subsection extracts the mechanisms that operate across all phases and turn separate regulations into a corporate system. The third subsection assembles the objects and mechanisms into a single framework and reads it as a cascade of managerial filters. A fourth subsection outlines the sequence through which a development company moves toward the target state. The general architecture that binds these results together appears in Fig. 1, and the subsections that follow unfold its elements in order. The results below describe this model under the name Integrated Development Gate Framework (IDGF), which gives the framework a stable designation for citation and for use in corporate documents.

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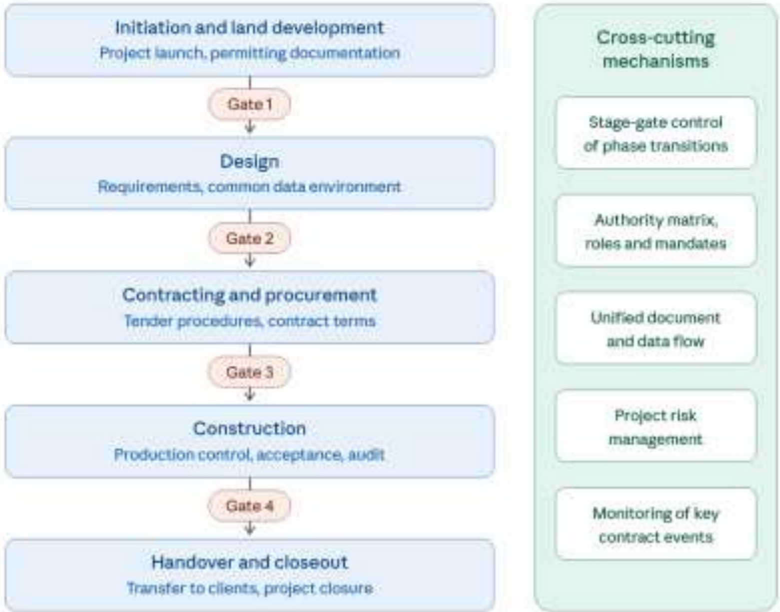

Figure 1: Integrated Development Gate Framework for standardization of full-cycle project management in real estate development

3.1 Taxonomy of standardization objects across the life cycle

The framework phases run from initiation at the cycle's entry to handover and closeout at its end, and the gates mark the transitions between them. The panel of cross-cutting mechanisms on the right-hand side of the scheme operates in parallel with all phases and receives separate treatment in the next subsection. The paragraphs below describe the objects of standardization in each phase, in the order of their appearance in the cycle.

The selection of objects for standardization followed 3 principles. The principle of materiality guides regulation toward processes whose failure carries the greatest financial or legal consequences. The principle of frequency directs it toward the operations that repeat across projects and, for that reason, reward unification with cumulative savings. The principle of interface directs it toward the points where organizations meet, because the boundaries between the developer, designer, contractor, and bank generate disputes that consume managerial time. A process that scores high on all 3 principles enters the standard first, and a process that scores low remains in the zone of managerial discretion.

The phase of initiation and land development opens the cycle and carries the risk profile described in the front-end research [2]. The objects of standardization here include the composition of the project launch package, the format of the preliminary financial model, the checklist for land plot assessment, and the roadmap for urban planning approvals from the acquisition of initial permits to the construction permit. A unified launch package makes projects comparable at the moment of the investment decision, because the governing body evaluates every candidate project against the same list of documents and the same set of indicators. Formalized entry criteria stop weak projects before the company commits capital to them, and this early screening remains the cheapest of all portfolio quality mechanisms.

The absence of a standard at this phase produces recognizable failure patterns. Financial models arrive at the investment committee in incompatible formats, the optimism of initiators substitutes for market evidence, and the approval history of the plot surfaces after the purchase. A launch regulation attacks each of these patterns with a formal requirement. The model follows a corporate template with fixed assumptions; market evidence is included as a mandatory section with named sources; and the legal and urban planning audit of the plot precedes the binding decision. The regulation leaves market uncertainty in place and, at the same time, removes the uncertainty about the quality of the material on which the decision rests.

The permitting roadmap in the initiation phase deserves more detail, since administrative procedures set the rhythm of the front end. The roadmap outlines the sequence from the registration of land rights through urban planning documentation and the technical conditions for utility connections to the construction permit, and concludes with the commissioning permit at the far end of the cycle. Every step receives a responsible role, a normative duration, and a list of blocking dependencies. The map converts the administrative environment from a source of surprises into a planned workstream, and deviations from the normative durations are entered into the risk register as early signals.

The design phase converts the business idea into engineering documentation, and its standardization concentrates on 3 objects. The first object is the structure of employer requirements, which fixes the composition and the depth of the design assignment and protects the project from silent scope drift. The second object is the change-control procedure, which separates admissible refinements from revisions that require a return to the gate. The third object is the common data environment, abbreviated below as CDE, which serves as an agreed source of project information and a managed process for its exchange among participants. Research on the application of a CDE in engineering design shows that a shared information platform reduces data duplication across disciplines and shortens coordination loops among design process participants [6].

The typical failures of the design phase without a standard include scope drift due to informal instructions, divergence between engineering sections that meet only at the expert review, and the loss of the connection between design decisions and the project's financial model. Standardized employer

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requirements anchor the scope, the CDE keeps the sections synchronized between formal reviews, and the change control procedure returns every material revision to the economics of the project. The phase gate at the end of design verifies this connection, since the transition to contracting requires confirmation that the approved documentation continues to deliver the indicators promised at the start of the project.

The contracting and procurement phase transforms the design into a network of obligations. The corporate standard covers the sequence of the tender procedure, the qualification requirements for bidders, the criteria for bid evaluation, the standard contract terms, and the thresholds for authority to approve prices and deviations. A systematic review of construction procurement identified 256 selection criteria in the academic literature and recorded the absence of a universally applicable set [7]. This finding supports the corporate standardization approach. Since no universal list exists, each company defines its own subset of criteria, thereby making the outcomes of its tenders explainable and repeatable. Collegial decision-making by a tender committee, combined with published evaluation criteria, narrows the scope for individual discretion in contract allocation.

Procurement without a corporate standard tends to drift toward 2 poles. The first pole is selecting the lowest price, which shifts risk to the construction phase through claims, substitutions, and schedule failures. The second pole is the selection based on personal trust, which closes the market to new suppliers and hides the true price level from the company. A standardized procedure holds the process in place. Qualification filters remove unreliable bidders before the price competition, multi-criteria evaluation weighs price against capability, and the standard contract distributes risks in a form that the company has already tested on previous projects.

The construction phase holds the largest volume of expenditures and the densest flow of events. The objects of standardization here include the regulations of production control on the side of the general contractor, the procedure of acceptance and accounting of completed work, the rules for the substitution of materials foreseen by the cost calculation, the monitoring of the use of advanced materials by subcontractors, and the practice of internal and external construction audit. Standardized acceptance converts the physical progress of the site into verified accounting information, and audit procedures create an independent channel of information about the project's state. The managerial outcome of this phase is the predictability of schedule, budget, and quality, which the standard achieves through the repetition of identical control cycles at every site in the portfolio.

The construction phase demonstrates the value of the standard through the volume effect. A portfolio of parallel sites multiplies every weakness of the acceptance procedure by the number of contracts and reporting periods, and a process defect that looks tolerable on 1 site becomes a systematic loss on 10 sites. Unified acceptance rules, unified formats of as-built records, and a calendar of quality inspections turn control into a routine that new sites join without redesign. External audit closes the loop, since an independent reviewer checks the sites against the same corporate standard and reports comparable findings to the management.

The handover and closeout phase completes the cycle. Its objects of standardization include the procedure for transferring completed units to clients, the composition and storage of as-built documentation, the formal closure of the project with the settlement of obligations, and the transfer of records to the corporate archive. A standardized closure returns the project's experience to the company in the form of documented lessons, and the archive converts this experience into material for revising regulations. The managerial outcome of the phase is the reproducibility of results across the portfolio, because each closed project either confirms the current standard or supplies arguments for its correction.

Closeout suffers more than other phases from the pressure of the next project, because the team that finished construction moves to a new site and leaves the closure to inertia. A standard makes the closure a gate with its own deliverables. The transfer of units follows a scripted client path with fixed reaction times to defects; the as-built archive receives documents in the structure that future operations and future audits require; and the lessons learned review converts the team's observations into proposals for regulatory revision. The company, in this way, finishes the project twice, once in the physical world and once in its normative memory.

Table 1 summarizes the taxonomy. Each phase receives its objects of standardization, the control mechanisms that verify the standard's execution, and the managerial outcome to which it contributes.

Table 1: Objects of standardization, control mechanisms and managerial outcomes across the project life cycle

Life cycle phase	*Objects of standardization*	*Control mechanisms*	*Managerial outcome*
Initiation and land development	Project launch package, permitting road map, feasibility documentation	Entry gate, mandated document set, investment committee review	Early screening of non-viable projects
Design	Employer requirements, design task templates, change control, common data environment	Design review gate, requirement change control	Consistency of design with the business case
Contracting and procurement	Tender procedures, qualification criteria, standard contract terms	Authority matrix, collegial tender committee decisions	Cost control and transparency of supplier selection
Construction	Production control, work	Progress and quality	Predictability of schedule,

	acceptance, material substitution rules, external audit	monitoring, control of material contract events	budget and quality
Handover and closeout	Transfer of units to clients, as-built documentation, project closure procedure	Closeout gate, archiving, lessons learned review	Reproducibility of results across the portfolio

3.2 Cross-cutting mechanisms of the corporate standard

Objects of standardization inside separate phases remain a set of disconnected regulations until cross-cutting mechanisms bind them into a system. The analysis distinguishes 5 such mechanisms. The first mechanism is stage-gate control of phase transitions. The gate constitutes a formal review at which a collegial body examines the deliverables package of the completed phase against the criteria of budget, schedule, risk, and compliance, and selects 1 of 4 decisions. Fig. 2 presents the decision mechanism of a single gate.

Figure 2: Stage-gate decision mechanism at phase transitions

The decision to proceed opens the financing of the next phase. The conditional decision allows movement forward under named conditions with fixed deadlines for their removal. The decision to hold suspends the project without closing it, which preserves the option value of the site under unfavorable market conditions. The decision to recycle returns the deliverables for revision and repeated review. The gate protocol records the decision along with its justification, forming the audit trail of the portfolio. Research on project phasing confirms the economic content of such transitions, as the transition points between stages redistribute cash flows and alter the project's value [3].

The practice of gates rests on 3 design choices. The first choice concerns the number of gates. Too few gates leave long uncontrolled intervals, and too many gates turn management into a permanent reporting exercise, so the framework sets 4 transition gates for the base cycle and allows additional checkpoints within long phases. The second choice concerns the composition of criteria. The criteria must combine a retrospective view of the completed phase with a forward view of the readiness of the next phase, and the balance between the 2 views defines the value of the review. The third choice concerns the discipline of consequences. A gate whose negative decision triggers no managerial action loses its meaning within 1 or 2 cycles; for this reason, the framework connects every decision type to a named consequence in financing, scheduling, and responsibility.

The boundaries between the phases carry a managerial character. Engineering activities overlap in time, since working documentation continues during early construction, and procurement starts before the design closes in full. The framework separates the managerial transition from the physical overlap. The gate confirms the readiness of the deliverables that the next phase requires as input, and the physical works may proceed according to the project's schedule logic. Such a separation removes the classic objection to gated models in construction, namely that the phases of a real project never follow each other in a clean sequence.

The practice of gates accumulates recognizable anti-patterns. The rubber-stamp gate approves every package because the committee lacks the time and the criteria. The delayed gate exists on paper, waiting for a convenient moment, while the project spends money. The overloaded gate demands dozens of documents and pushes the teams toward formal compliance without substance. The framework counters these patterns with published criteria, the calendar discipline of reviews, a short mandatory list of deliverables, and the audit of gate protocols, which reveals the degeneration of the mechanism before it becomes a norm.

The calendar of gates combines event logic with calendar logic. The transition gates open upon phase completion, and long phases receive calendar checkpoints, since a construction phase of 24 to 36 months cannot remain without formal review between its boundary gates. The checkpoint inherits the gate's format with a reduced deliverables list, keeping the reporting load proportional to the decision content of the session.

The second mechanism is the authority matrix. The matrix assigns each class of managerial decisions to a level of the hierarchy or to a collegial body, and sets the monetary thresholds for individual approval. Investment committees decide on the entry of projects into the portfolio and on gate transitions, tender committees allocate contracts, and technical councils resolve engineering questions that exceed the mandate of the project team. The matrix converts the abstract principle of accountability into an operational rule: for every decision of the project, the standard names the person or body responsible for it.

Maintaining the matrix requires the same discipline as its creation. Organizational changes, new contract types, and the growth of the portfolio shift the reasonable thresholds for authority, and an outdated matrix pushes the teams toward informal workarounds. The framework treats the matrix as a versioned document with a scheduled revision and an owner who is responsible for its consistency with the company's actual structure. The connection with the gates is direct, since the composition of every gate committee and the mandate of every signature at the gate follow from the current version of the matrix.

The classes of decisions inside the matrix follow the money and the obligations. Approval of budgets and their revisions, signing of contracts by value bands, acceptance of completed work above threshold volumes, changes of design decisions with cost consequences, and write-offs, together with the claims, form the core list. For each class, the matrix lists the preparatory role, the approving level, and the informed circle, and the same list serves as the checklist for internal audit when it verifies the execution of the authority regime.

The third mechanism is the unified document and data flow. The standard defines the classes of documents, their identification, statuses, approval routes, and archiving rules, and the CDE described above provides the technical platform for this flow. The connection between information management and process standardization is bilateral. A systematic review of BIM maturity demonstrates that the achievable level of standardization of construction processes rises with the maturity of digital tools, and that mature standardization, in turn, prepares the data structures that digital tools require [8].

The document flow mechanism carries the project's memory between phases and participants. Every document class follows a life cycle from creation through verification and approval to archiving, and the CDE status model makes the position of any document in this cycle visible to all participants. The practical effect appears at the boundaries between organizations. The general contractor, the designer, and the technical customer use the same document registry and statuses, eliminating recurring disputes over the actual version of a drawing or the actual date of a transfer.

The fourth mechanism is continuous risk management, which maintains the register of project risks with named owners, response plans, and escalation routes to the gates. The fifth mechanism is the monitoring of material events under the contracts of the development cycle. The standard defines a list of contract milestones whose violations trigger managerial action before the failure propagates along the schedule. Both mechanisms feed the gates with verified information, thereby closing the control loop of the framework.

The risk mechanism derives its value from its connection to the gates and the authority matrix. A risk that exceeds the project team's response capacity escalates to the level whose mandate covers the required decision, and the register travels to every gate as a mandatory part of the deliverables package. The monitoring of contract events supplements the register with an early warning function, as the standard names the events whose occurrence changes the project's risk profile, including delays in milestone deliveries, contractor insolvency signals, and deviations in sales from financing covenants.

3.3 The framework as a system of managerial filters

The elements described above form a single system in which the objects of standardization answer the question of what the company regulates, the cross-cutting mechanisms answer the question of how the regulation operates, and the gates answer the question of when compliance with the standard receives verification. The framework can be read as a cascade of managerial filters. Heterogeneous project situations enter the cascade, pass through unified document formats, unified evaluation criteria, and unified decision points, and emerge as comparable managerial conclusions. The filter metaphor clarifies the economic content of standardization. The company pays for filter maintenance and receives, in exchange, a reduction in the variance of project outcomes.

The filter cascade changes the statistical properties of managerial decisions. Unified formats reduce the noise of presentations, published criteria reduce the drift in judgment between committees and years, and documented protocols enable retrospective analysis of decision quality. A company that stores the history of its gates can compare package forecasts with project outcomes and calibrate its criteria accordingly. Decision-making acquires, in this way, the property of a learning system that separate managers cannot provide, regardless of their individual experience.

The first effect of the system is manageability. Unified statuses and unified reporting make the portfolio observable to top management, since the state of any project can be expressed using the same model. The second effect is transparency for external stakeholders. Housing development in many jurisdictions relies on bank project finance, and the lender monitors the project's condition throughout the cycle. A standardized system of documents, gates, and audit trails lowers the cost of this monitoring and enhances the borrower's credibility. The same argument applies to investors, to insurance providers, and to public authorities that supervise the industry.

The comparability of project statuses opens the portfolio-level planning. When every project reports its position in the same phase model, the company sees the distribution of the portfolio across phases, forecasts the load on committees, designers, and construction capacities, and balances the launches of new projects against the closures of current ones. Portfolio planning of this kind rests on the standard and its measurement infrastructure, and the absence of the standard leaves the portfolio visible only through aggregated finance, which reacts to problems with a delay of quarters.

Transparency for lenders deserves a concrete illustration. Residential development in Russia and in a number of other markets operates under escrow-based financing, in which the bank releases project credit against verified construction progress and holds buyers' payments until commissioning. Under this model, the lender examines the project documents throughout the cycle, and the quality of this examination depends on the order in which the borrower presents them. A developer whose gates, registries, and audit reports follow a stable corporate format passes bank monitoring faster and cheaper, and the same order supports the covenant reporting required by the credit agreements. Standardization here converts into the price and the availability of project finance, which gives the framework a measurable financial dimension.

The legal dimension adds an argument of the same kind. Standard contracts, documented acceptance, and archived correspondence form the evidentiary base for the company in claims and disputes, and pre-claim procedures move faster when the documents are in predictable places and formats. The reduction of legal risk rarely enters the business case of standardization at the start and appears among its results later, since construction disputes turn on documents more often than on the facts of the physical world.

The third effect is reproducibility. A development company grows through the multiplication of projects, and the standard turns successful managerial solutions into an asset that does not depend on the memory of individual employees. New teams receive the accumulated practice in the form of regulations and templates, which shortens their path to productive work. The standard in this reading serves as the company's institutional memory, and the lessons-learned procedure of the closeout phase serves as the mechanism for its updating. The tiered organization of the normative base supports this function, as policies define the principles, regulations describe the processes, and templates carry the practice into daily operations.

The framework interacts with the company's organizational structure in both directions. Collegial bodies, process owners, and the archive function require organizational carriers; the standard shapes the structure, and the existing structure limits the set of regulations the company can execute; the structure shapes the standard. The practical consequence concerns the sequence of changes. A company that introduces gate regulations without forming a working investment committee receives a formal procedure without a decision maker, and a company that forms committees without regulations receives meetings without a method. The synchronization of the normative and organizational tracks is part of the standardization program's tasks.

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3.4 Implementation sequence in a development company

The framework describes the target state, and the path toward it deserves a separate outline, since development companies approach standardization from different starting points. The observed sequence of implementation contains 4 stages. During the first stage, the company performs an inventory of its actual processes and records the practices as they exist, including all local variations across projects. During the second stage, the company selects the pilot contour, which in most cases covers the gates and the launch package, because these elements produce visible effects at moderate cost. During the third stage, the regulations extend to procurement, construction control, and closeout, and the CDE consolidates the information layer. During the fourth stage, the company institutionalizes the revision cycle and the training system, after which the standard begins to live as a maintained product.

The sequence matters more than the speed. An attempt to introduce the entire normative base in 1 step overloads the teams and undermines the idea of the standard, whereas the phased approach allows each regulation to demonstrate its usefulness before the next arrives. The pilot stage carries a special function, because the first visible results of the standard, among which a faster investment decision and a cleaner tender appear before the others, create the internal demand for the continuation of the program.

The rollout of regulations follows the logic of change management. Every new document travels through the cycle of drafting by a process owner, review by the practitioners who it will bind, pilot application with the collection of remarks, and formal approval with a named date of entry. The teams meet the standard as a product with an author and a feedback channel, which lowers the resistance that anonymous directives provoke. The training system accompanies every release, since a regulation that nobody explained competes with habit on unequal terms.

The implementation program needs an organizational owner. The observed practice assigns this role to a project management office or to a process methodology unit that drafts regulations, administers the CDE, prepares gate sessions, trains teams, and maintains the change request registry. The office holds the pen and does not hold the decision, since the content of regulations belongs to the business process owners, and approval belongs to the governing bodies. This division protects the standard from 2 symmetric distortions: from the methodology written in isolation from practice, and from practice that rewrites the rules to suit its convenience.

The measurement of the standard itself completes the implementation contour. The company tracks the share of projects that pass gates without schedule violations, the cycle time of core procedures, the number of deviations recorded by audit, and the intensity of change requests to the regulations. The

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last indicator deserves attention, since a stream of change requests signals the life of the standard, and the silence around the documents more often signals their irrelevance than their perfection.

4. DISCUSSION

The comparison between the framework and the universal standards identifies the boundary between the generic and branch-specific layers of project governance. ISO 21502 provides the vocabulary, the process structure, and the linkage of project management to success criteria, and research on the standard argues for the explicit management of success as its central novelty [4]. The corporate framework of a developer inherits this structure and saturates it with industry semantics. Urban planning approvals, land development, escrow-based housing finance, and the mass transfer of units to retail clients receive, in the corporate layer, the procedural detail that no universal text can provide. The practical conclusion for a development company sounds as follows. The adoption of an international standard and the development of a corporate standard constitute 2 stages of 1 movement, and the second stage accounts for the greater share of the managerial value.

The genealogy of the gate mechanism strengthens the argument for its central position. Stage-gate control entered managerial practice through new product development, where it structured the movement of ideas toward the market, and later spread to capital projects, where public and corporate owners use gated reviews to protect large budgets from premature commitment. Full-cycle development combines the features of both origins. A development project resembles product development on the front end, where the concept competes for capital, and resembles a capital project in execution, where the discipline of reviews protects the schedule and budget. The dual origin explains why the gate mechanism absorbs the largest share of the corporate standard and why its design quality predicts the overall system quality.

The relationship between standardization and flexibility warrants separate examination, as the literature on agile methods can be read as an argument against rigid regulation. The case study of agile application in the pre-construction stage reports gains in adaptability, collaboration, and speed of reaction to changes in requirements [5]. The framework proposed above does not conflict with such results. The gates standardize the boundaries of phases and the criteria of transitions, while the internal organization of work inside a phase remains a zone of methodological freedom in which a team may apply iterative planning, short review cycles, and other flexible instruments. Standardization of interfaces combined with freedom of internals reconciles the corporation's demand for comparability with the team's demand for adaptability.

Standardization coexists with experimentation when the standard names its own zones of freedom. New construction technologies, pilot digital instruments, and alternative contract models are

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introduced into the portfolio through designated pilot projects with an explicit deviation protocol. The deviation protocol records which provisions of the standard the pilot suspends, what the pilot must measure, and by what date the results return to the revision cycle. The standard in this construction works as the default that innovation must meet with evidence, and the burden of proof is structured this way to protect the portfolio from fashion and keep the door open for progress.

The barriers to adopting a corporate standard mirror those reported in the literature for other managerial methodologies in construction. The study of lean techniques identifies insufficient management commitment, a shortage of training, and cultural resistance as the main obstacles to implementation [9]. The same list threatens any program of standardization. The mitigation follows from the nature of the barriers. Visible sponsorship of the top management, systematic training of project teams, pilot application of new regulations on a limited number of sites, and a formal cycle of revision that allows employees to influence the content of the standard, reduces resistance and raises the quality of the documents themselves.

The main internal risk of the framework is bureaucratization. A normative base that grows without control converts the standard from an instrument into a burden, and the cost of maintaining regulations, versions, and training begins to exceed the benefit of reduced variance. The protection lies in the principle of proportionality. The depth of regulation has to correspond to the materiality of the process, the number of mandatory documents at every gate has to remain finite and short, and every revision cycle has to include the removal of provisions that have lost their function. A standard that the teams perceive as a working instrument survives, while one that they perceive as a reporting ritual degenerates, regardless of its initial quality.

The economics of standardization allows a direct managerial formulation. The costs of the system include the development and revision of regulations, the time of collegial bodies, the administration of the CDE, and team training. The benefits include reduced variance in project outcomes, earlier termination of weak projects, lower external monitoring costs, and shorter adaptation time for new employees. The balance between the 2 lists depends on the scale of the portfolio, since costs grow more slowly than the number of projects, while benefits grow with it. A company with 1 or 2 projects keeps the standard light on rational grounds, and a company with a large portfolio invests in the full contour on the same grounds, which makes the portfolio size the main variable in the standardization decision.

The relation of the framework to quality management systems clarifies its position among corporate normative contours. A quality management system built on the process approach already includes the process registry, document control, and audit function, and a developer with a certified system can

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mount the project management standard on this foundation. The difference of focus remains. Quality systems certify the conformity of processes to their descriptions, while the project management framework focuses on project outcomes and decisions regarding their continuation. The 2 contours share the infrastructure for documents and audits and answer different managerial questions, which argues for their integration under a common architecture rather than a mechanical merger.

The corporate standard competes with 2 alternative coordination modes. The first mode is the direct hierarchy, in which top management resolves project questions in a manual process. Hierarchy scales poorly because executives' attention is the scarcest resource in a growing company, and every escalated question consumes it. The second mode is professional culture, in which experienced managers act uniformly because they share training and history. Culture transfers slowly and erodes with turnover. The standard lies between the modes. It unloads the hierarchy through delegated rules, it fixes the culture in a form that survives the departure of its carriers, and both older modes continue to work above and beneath the documented layer.

The transferability of the framework across jurisdictions has 2 layers. The core of the framework, which includes the phase taxonomy, the gate mechanism, the authority matrix, the unified information flow, and the risk loop, describes the logic of any full-cycle development and travels between markets without structural change. The peripheral layer, which includes the composition of permits, the format of financing, and the procedures of transfer to clients, reflects national regulation and requires local adaptation. The framework thus functions as a template with a stable skeleton and replaceable branch elements, which corresponds to the way international standards themselves describe their tailoring.

The human dimension of the framework deserves a separate remark. Regulations describe the process and leave judgment quality within the process to people, so the company's standards and competency system develop together. Gate committees need members who read financial models and construction schedules with equal confidence; project directors need the skill to prepare a defensible deliverables package; and the authors of regulations need the ability to write processes that practitioners can execute. Training programs, internal certification of project roles, and the participation of experienced managers in document revision connect the normative and human layers of the system.

The external contour of the standard covers the developer's regular counterparties. General contractors, designers, and technical customers connect to the CDE, accept the acceptance formats, and learn the client's gate calendar, which turns part of the corporate standard into the interface standard of the ecosystem. Repeated counterparties amortize connection costs across projects, gain an advantage in tenders from the same client, and the developer receives a pool of partners whose processes are already compatible with its own. The interface layer of the standard, for this reason,

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deserves publication to the market, while the internal layer remains a corporate document.

The digital trajectory of the framework connects standardization with the accumulation of data. Processes that run through unified documents, statuses, and gates generate structured records, which serve as the raw material for the analytical methods the industry adopts. The review of big data and artificial intelligence applications in architecture, engineering, and construction shows the expansion of these methods across the project life cycle, together with their dependence on the quality and the uniformity of input data [10]. The maturity studies of BIM point in the same direction, as the levels of digital maturity and process standardization rise together [8]. Standardization in this perspective is a precondition for data-driven portfolio management.

The framework's boundary runs along the commercial block. Marketing, pricing, and the sale of premises were outside the taxonomy, although the commercial processes of a developer allow the same treatment and interact with the investment contour through financing covenants and the phasing of deliveries. Extending the framework to the commercial block is a separate task, and the gate architecture provides a ready connection point, since the sales indicators already enter the criteria for the construction-phase gates.

The study carries restrictions that follow from its design. The framework has a conceptual character and rests on the synthesis of literature with the generalized experience of 1 segment of 1 national market. The taxonomy of objects and the composition of mechanisms may require adjustment for commercial real estate, infrastructure development, and markets with different housing finance regulations. Quantitative validation remains outside the article. The natural continuation of the work includes comparing portfolio indicators before and after the introduction of standardized gates, survey-based measurement of project teams' perceptions of the standard, and case analysis of companies at different levels of process maturity.

The measurement of the effects meets a methodological difficulty that future studies will have to address. Companies that adopt standards differ from those that avoid them in scale, capital, and management quality, so a simple comparison of their indicators conflates the effects of the standard with those of selection. Longitudinal observation within 1 company around the moment of implementation, and the comparison of sites that adopted the standard in different years, provides cleaner identification than the cross-company comparison, and the gate protocols accumulated by the standardized companies themselves provide the data for such designs.

5. CONCLUSION

The article systematized the standardization of project management across the full-cycle of real estate

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development. The proposed framework arranges the cycle into 5 phases, defines for each phase its objects of standardization, and binds the phases together through cross-cutting mechanisms, among which stage-gate control of transitions, the authority matrix, the unified document and data flow, continuous risk management, and the monitoring of contract events form the load-bearing structure. The framework interprets the corporate standard as a cascade of managerial filters that convert heterogeneous project situations into comparable decisions.

The theoretical contribution of the article consists of the transfer of the standardization perspective from separate phases to the whole cycle and the description of the mechanism by which phase-level regulations become a corporate system. The concept of the managerial filter cascade provides a concise language for this system and connects the design of regulations to the observable economics of the portfolio.

The managerial effects of the system include the manageability of the portfolio, the transparency of projects for lenders and investors, and the reproducibility of results, turning accumulated practice into an asset for the company. The limits of the system follow from the risk of bureaucratization and from the branch- and jurisdiction-specificity of its peripheral elements, and the protection lies in the proportionality of regulation and in a living cycle of revision.

For practitioners, the framework offers a map of the normative foundation that a development company needs on the path from individual craftsmanship to the industrial management of a portfolio. For researchers, the framework offers a testable object, and the quantitative evaluation of its effects on indicators of schedule, budget, and quality provides the direction for further work.

The research agenda that follows from the framework covers 6 directions. The first direction is the design of performance indicators, known in managerial practice as KPI, that measure the effect of gates and regulations on the schedule, the budget, and the quality of projects. The second direction is the application of digital twins, where a synchronized model of the object supplies gate decisions with verified data on the state of construction. The third direction is the use of artificial intelligence for the analysis of accumulated gate protocols and for the early recognition of deviations in the portfolio. The fourth direction is the integration of the framework with BIM, since the maturity of information modeling defines the depth of achievable process standardization. The fifth direction is the extension of the framework toward ESG criteria, whose weight in the evaluation of development projects grows together with the requirements of lenders and public authorities. The sixth direction is predictive analytics, which converts the historical data of the portfolio into forecasts of cost and duration for the projects at the entry of the cycle.

The Integrated Development Gate Framework may serve as a managerial reference model for organizations that seek to improve governance, transparency, and economic performance across the entire real estate development life cycle.

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Author Profile

Marian Krotov received the engineer degree in industrial and civil construction from Peter the Great St. Petersburg Polytechnic University. He has directed investment and construction projects for more than 18 years and serves as Project Director at FSK Severo-Zapad, a residential development company in Saint Petersburg, Russia. His professional interests include stage-gate project governance, standardization of management processes, capital expenditure optimization, and tender procedures in construction.