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Technology Governance and Project Management in the Implementation of Information Systems for Health

Technology Governance and Project Management in the Implementation of Health Information Systems

Technological governance and project management in the implementation of health information systems

Gabriel Vaz Aires

Education: Bachelor's degree in Information Systems from the Lutheran University Center of Palmas (CEULP/ULBRA), specialist in Business Management from SENAC and in Project Management from UniCesumar, with approximately ten years of experience in software development, systems administration and technology management applied to medical devices.

Summary

The implementation of health information systems requires decisions that articulate software engineering, project management, and work organization. This article analyzes the technological governance of administrative and logistical platforms related to the medical device supply chain, paying attention to acceptance criteria, operational continuity, and results evaluation. The research uses a narrative literature review and conceptual analysis of socio-technical references, technology adoption studies, and institutional cybersecurity documents. The development discusses the distribution of decision-making rights, change management in integrated applications, the conditions for using cloud infrastructure, and knowledge transfer to teams. It proposes to distinguish between technical delivery, system adoption, and process performance, relating each dimension to specific evidence. The analysis argues that governance should allow for the review of priorities and the control of expansion based on observed operational behavior. The contribution consists of gathering criteria to conduct implementation without confusing software availability with demonstrated benefit. The proposal is theoretical in nature and requires empirical evaluation in organizations with different levels of technological maturity.

Keywords: Technology governance. Project management. Information systems. Digital health. Operational continuity.

Abstract

Implementing health information systems requires decisions that connect software engineering, project management, and work organization. This article analyzes the technological governance of administrative and logistical platforms in medical device supply chains, focusing on acceptance criteria, operational continuity, and outcome evaluation. The study combines a narrative literature review with a conceptual analysis of sociotechnical approaches, technology adoption research, and institutional cybersecurity guidance. It discusses decision rights, change management in integrated applications, conditions for using cloud infrastructure, and knowledge transfer to operational teams.

Technical delivery, system adoption, and process performance are distinguished and linked to specific evidence. The analysis argues that governance should enable priority revision and controlled expansion based on observed operational behavior. Its contribution is to bring together criteria for implementation without equating software availability with demonstrated benefit. The proposal is theoretical and requires empirical evaluation in organizations with different levels of technological maturity.

Keywords: Technology governance. Project management. Information systems. Digital health. Operational continuity.

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Introduction

Meeting the implementation schedule does not guarantee that the difficulties that motivated the contracting process will be resolved.
The issues within a system have been resolved. The team can continue entering data into controls.
Parallel integrations may occur, even with the application running. There may also be integrations that...
transmit information without clarifying its meaning for the sectors involved. The assessment of
The project therefore needs to verify how the work has changed since it went into production.
In the medical device supply chain, this relationship involves inventory, logistics, and other processes.
documentation and billing. The work can span organizations with systems and
Distinct responsibilities, requiring agreements on how to record events and resolve them.
Disagreements. Technological change modifies these relationships and, therefore, needs to be managed with...
Participation of those responsible for the processes.
The ICT Health 2025 survey records the high prevalence of electronic systems for information on
patients in Brazilian establishments who used the Internet and discusses the permanence of forms
hybrid storage (Brazilian Internet Steering Committee, 2026). These results
They contextualize digitization, but do not specifically measure the integration of medical devices and supplies inventory.
The distinction is relevant to avoid the presence of technology being interpreted as proof of
Organization of all administrative flows.
Technology governance is discussed in this article as the definition of who decides, and with what means.
information and under what responsibilities the project can move forward. This perspective allows us to examine
Architectural choices, continuity risks, and acceptance criteria. The objective is the implementation of
administrative and logistical systems; the analysis does not cover therapeutic decisions.
The objective is to develop criteria for conducting the implementation in a manner consistent with the
The process has been completed. The discussion integrates change management, infrastructure, security, and measurement.
of results and knowledge transfer. The aim is to establish a verifiable relationship between the
The operational problem, the proposed intervention, and the evidence used to evaluate its performance.

Methodology

The article is theoretical in nature and uses narrative literature review and document analysis. The analysis
It brings together studies on the implementation of technologies in healthcare and institutional documents on...
Cybersecurity and digitization of services. The focus is on governance issues.
present in the implementation of administrative and logistical systems in the medical device supply chain.

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Relevant references were selected regarding the relationship between technology, organization, and evaluation: the Sittig and Singh's model, Greenhalgh and colleagues' NASSS framework, Wilson's discussion and collaborators on UDI adoption, the NIST CSF 2.0, and the ICT Health 2025 survey. The selection is This is intentional and does not constitute a systematic review of the governance or project management literature. The analysis was organized by decision-making problems, relating operational objectives, Responsibilities, transition, and evaluation. The criteria presented constitute propositions. conceptual, without collecting internal organizational data, conducting interviews, or applying a scale of maturity. The transfer of benchmarks to administrative and logistical systems is discussed. depending on the scope of each source, without presuming full equivalence with clinical applications.

Chapter 1: Technology Governance and Defining Project Objectives

Governance begins with describing the problem that justifies the change. An organization that To reduce conference time, one must identify where the process begins, which characterizes it. its conclusion and what information is needed to decide. This definition prevents the evaluation be limited to the number of features delivered.

The objective also needs to be translated into an operational hypothesis. If the integration aims to To reduce the need for manual re-entry, it should be made clear which records will be circulated. automatically and which will remain dependent on verification. The hypothesis allows us to examine whether The mechanism was implemented, and if the work has actually changed, it's not just a matter of comparing. indicators without understanding their origin.

Decision-making powers should be distributed according to the necessary competence. Those responsible The process defines the meaning of the records and the criteria for resolving exceptions. Engineering The management is responsible for the technical conditions of implementation and for providing evidence of its operation. arbitrates priorities and resources. Collaboration between these functions is necessary, but it does not eliminate the need for... specific responsibility for each decision.

Sittig and Singh (2010) present a socio-technical model that relates technical dimensions, people, work and organizational context. The contribution of this framework to the project is to promote the Analysis of interdependencies. A change in the interface can modify the way data is recorded, and a The new validation rule may shift responsibilities to a team that does not have the necessary expertise. Required information.

Acceptance criteria should cover operations and exceptions. Verify that the application logs... Correct delivery is insufficient when the flow also involves partial returns. Cancellations and corrections. Governance needs to establish which situations should be...

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demonstrated before production begins and who has the authority to accept a limitation.
remaining.

The scope should define the types of decisions supported by the system. A conference platform.
Documentary analysis can reveal discrepancies between records, but the incorporation of a feature that
Interference in clinical decisions requires separate evaluation. The broadening of scope needs to be addressed.
as a change in responsibility and requirements, not just as the addition of a screen.

Chapter 2 Systems Architecture and Change Management

Architecture influences the ability to change rules without compromising existing operations.
Inventory, documentation, and invoicing are related, but they address distinct needs.
It is proposed to define limits between these responsibilities so that a change in billing does not alter...
Silently interpreting a movement of material.
The distribution of components should consider the team's ability to maintain them. A system
Divided into many services, it requires monitoring of integrations, fault handling, and control.
of versions. The decision should stem from demonstrable needs for scale and autonomy, and not from
Adoption of an architecture based on its popularity. A less fragmented application might be...
It is appropriate when it maintains clear boundaries and provides conditions for development.
Change management needs to examine the effects on data and interfaces. A field that becomes
The mandatory update may interrupt messages sent by applications that are not yet updated. The change
An operational state can modify reports and conference rules. To control these
Regarding dependencies, the project must maintain an inventory of integrations and documentation of the conditions of
compatibility.
Automated deployments can promote repeatability, but automation does not replace the...
release criteria. The process should link the release to evidence of testing, approval, and
possibility of recovery. For materials integration, tests need to include messages.
Repeated errors, delayed confirmations, and incomplete records, as these situations affect the status of
process.
Database migrations require specific planning. A structural change may be
technically applied and yet produce ambiguous relationships between old and new records. The team
must verify matches, preserve historical references, and define how to investigate data that
They do not meet the new rules. Migration should not transform a lack of information into a
Confirmation that never occurred.

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Reverting a version also needs to take into account events that occurred after the change.
Returning the application to its previous state does not automatically resolve stock discrepancies or
documents produced during the period. The return plan should clarify how to preserve and
Reconcile these records, protecting informational continuity.
Urgent changes require a specific path, with responsibility and subsequent review.
The existence of an exception for emergency correction should not erase the origin of the change.
Documenting the reason, the person responsible, and the verification process allows for an assessment of whether the emergency resulted from a foreseeable failure.
due to an external dependency or a new operational condition.

Chapter 3 Cloud Infrastructure and Business Continuity

The adoption of cloud infrastructure changes the way resources are contracted and operated.
Computational factors, but do not, by themselves, define the level of continuity of an application. The project needs
Identify your dependencies and determine which operations should remain available when
A component fails. The analysis should include authentication, database, integrations, and channels.
communication with other organizations.
It is possible for the internal application to remain accessible while an external integration is underway.
unavailable. In this case, the interface should indicate which information is up-to-date and which is unavailable.
They depend on confirmation. Displaying an old balance that looks like recent data makes it difficult to...
User evaluation. The quality of continuity also depends on clarity regarding the conditions.
where the service is working.
Limits on unavailability and record loss should be defined according to the consequences of
process. A step that can await review does not necessarily have the same requirement of
An operation whose interruption prevents a shipment from being prepared. The definition must be made with the
those responsible for the work, allowing for proper sizing of investment and alternative procedures.
Recovery planning should include verifiable exercises. A completed backup represents...
One step, while restored database and reconciled operation represent others. The test needs
examine whether the team can access the information, resume integrations, and identify
events that occurred during the interruption. The duration and flaws in the exercise offer
evidence to review the plan.
Provider dependencies should be evaluated before consolidating the solution. Data export,
Documentation of interfaces and output conditions affects continuity capability.
Storing information in a contracted environment needs to be accompanied by

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the possibility of recovering them with their relationships and meaning, and not just as a set.
of isolated files.
Recurring costs are also part of governance. Infrastructure consumption, record retention,
Support and data transmission may vary depending on the volume of the operation. Monitoring should
Relate these costs to process needs and maintenance conditions. A change
The factors that improve availability need to be examined along with the effort and resources involved.
necessary to support it.

Chapter 4 Information security and technology risk management

The NIST CSF 2.0 presents a framework for understanding, prioritizing, and communicating outcomes.
cybersecurity risks. The document includes governance and does not prescribe a single way of doing so.
to achieve each outcome (Pascoe; Quinn; Scarfone, 2024). This framework allows for addressing safety.
as part of the decision-making process, with measures proportionate to the information and the operation.
Risk should be described by a situation and its consequences. The generic expression "failure to
"Security" is not very useful for guiding a decision. Unauthorized access to documents, alteration of a
Critical registration issues or the inability to recover a database require different responses. Identifying the
This scenario allows you to associate the control with a verifiable purpose.
Permissions need to accompany roles and changes in responsibility. A professional who
Leaving an activity can retain access if there is no review. The same problem arises.
with integrations and vendor accounts. Governance should include maintaining inventory of
Identity verification, permission verification, and termination of access without a current purpose.
Protecting records requires attention to authorship and the possibility of alteration. An audit trail.
You need to specify who performed the action and what changes occurred. If the user can delete the...
Based on the history of its own unreviewed release, the evidence of accountability remains.
compromised. The design must consider this conflict and provide controls compatible with the
organizational structure.
Information sharing should be limited to the needs of each task. Systems of
Materials can link their records to identifiable procedures and bring logistical data closer together.
personal information. The architecture should define which teams need this association and in
Under what conditions will it be accessible? The existence of integration does not equate to authorization for
Make all the content available to the participants.
Incident response and recovery should be linked to the operational plan. When a
If credentials are suspended or an integration is interrupted, the team needs to know how to proceed.

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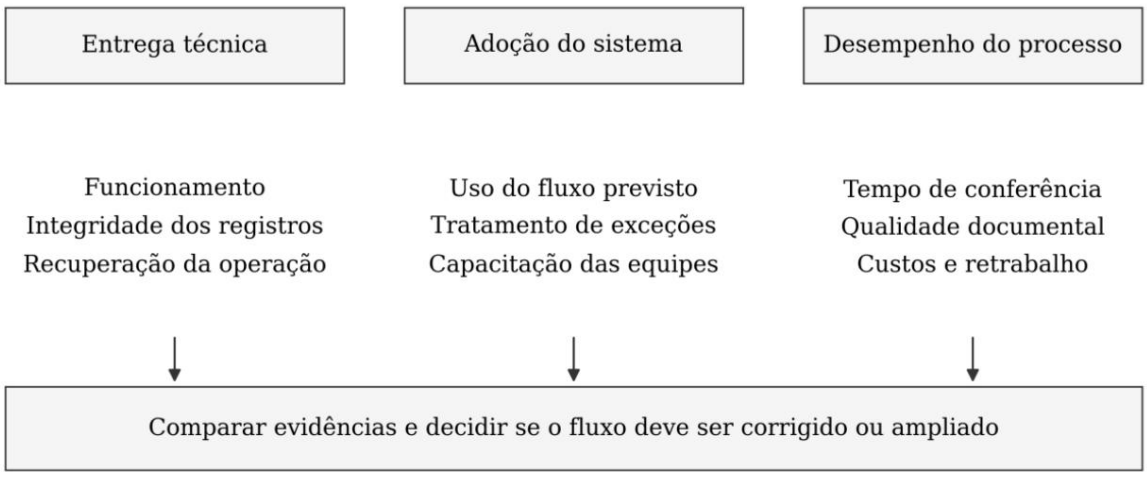
Permitted work and how to keep records. Security depends on procedures that can
to be used during an incident, with responsibility for the restoration and analysis of
consequences.

Chapter 5: Evaluating Results and Economic Sustainability

The proposed evaluation distinguishes between technical delivery, adoption, and process performance. Delivery examines
Functionality, integrity, and recovery. Adoption observes whether eligible operations are performed.
correctly according to the expected workflow. Performance considers time, document quality, and effort.
resolution. Separating these dimensions allows you to pinpoint the problem when an implementation is not
It produces the expected result.

Figure 1 Dimensions of evaluating an implementation



Source: Author's elaboration. Conceptual summary of the analysis in this chapter.

In Figure 1, each dimension requires its own evidence. The application's functionality does not prove this.
Adherence to the flow, and adherence does not, in itself, demonstrate savings. The decision to expand implementation
It depends on the joint analysis of this evidence.

An available system may have low adoption because a step requires information that arrives late.
An application used consistently may not reduce the total time if the main wait time
It occurs in another organization. In both cases, the analysis needs to follow the path of...
I work to understand what the intervention manages to change.

Indicators should have stable definitions. Reconciliation time, for example, can be measured.
either from the opening of the pending issue or from the availability of the minimum required documents. These choices
They answer different questions. The definition needs to indicate the beginning, the end, and the treatment of
External monitoring systems allow for comparisons throughout the project.

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Rework can be tracked by the frequency of corrections and the time spent, with
Classification of causes. A smaller number of corrections may indicate greater accuracy, but also
Reduced ability to detect errors. It is recommended to compare the indicator with checks.
independent of a sample of records, preventing the application itself from being the sole evidence.
of its quality.

The financial assessment should include licensing or development, integration, migration,
Training, support, and maintenance. Reduced time does not automatically translate to less...
Expense: This can represent additional capacity or a redistribution of tasks. To demonstrate
Revenue recovery requires relating received amounts to the causes of outstanding debts and to...
interventions performed.

The behavior of the indicators also depends on the conditions of the period. Changes in volume
Changes in procedures, contracts, and authorization rules can alter the outcome. Comparisons
Between before and after, these variables should be recorded. When feasible, phased implementation and
Comparison with similar processes can strengthen the evaluation, provided that its hypotheses and
Limitations should be made explicit.

Economic sustainability involves resources to maintain operations and adapt the solution.
An initial benefit may disappear when support, registration reviews, or other services cease.
Monitoring of integrations. Governance must link expansion to the capacity to sustain it.
These activities and the behavior of the results in comparable periods.

Chapter 6: Adoption of systems and knowledge transfer to teams

Greenhalgh et al. (2017), using the NASSS framework, examine non-adoption, dropout, and difficulties in
Expansion and sustainability of technologies in health and care. The work highlights the interaction between
Technology, users, organizations, and context over time. Its use here guides...
questions regarding the continuity of implementation, without presuming full validation of the framework for the
OPME supply chain.

Wilson et al. (2022) discuss barriers and strategies for the adoption of IDUs in health systems.
The question helps to distinguish the availability of a resource from its consistent use. For the
In this project, it means examining when the identification will be captured, by whom, and with what means.
What are the conference conditions?
The training should demonstrate the ability to perform tasks. Attendance at a presentation.
It reports participation, but does not prove that the user identifies or resolves an issue.

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Partial return. Representative situations allow us to observe where the interface, documentation, or
The business rules need to be reviewed before expansion.
The phased implementation should include a sufficient variety of operations. Choosing only specific situations...
Simply reducing exposure to risks during the pilot flight can mask difficulties that will appear later.
Widespread use. The proposal is to select common examples and relevant exceptions, with supervision and criteria.
clear to interrupt, correct, or expand the flow.
The transition needs to specify which system is the reference for each piece of information. Operation
A temporary parallel conference can support the conference, provided that its purpose and timeframe are met.
accompanied. The continuous release of the same event in different applications increases
The possibility of disagreement is eliminated, and a routine of reconciliation is created that can outlive the institution itself.
implantation.
Knowledge transfer should record the concepts that underpin the rules. A dictionary.
Operational guidelines, exception examples, and integration decisions preserve the understanding of
This process is carried out during team changes. This documentation is particularly relevant when...
Different suppliers participate in maintenance or when a solution is expanded to another.
organization.
Follow-up support needs to transform incidents into learning experiences. Recurring calls can...
to reveal an ambiguous field, information unavailable at the required time, or a condition of
unforeseen work. Analyzing these causes allows us to decide whether the response should be training,
Interface change or workflow revision. Deployment continues to be evaluated after entry.
In production.

Final Considerations

Technology governance allows for the alignment of operational objectives, engineering choices, and...
evaluation criteria. In the context analyzed, its function is to preserve the ability to decide with
based on evidence about the process, preventing compliance with a schedule or the
The availability of an application concludes the investment analysis.
The chapters discussed decision-making rights, change management, continuity, security, and...
Knowledge transfer. These elements are related: an integration alters
responsibilities, an access rule modifies the execution of the work and a procedure of
Recovery depends on the possibility of reconstructing the records. Governance must consider these factors.
relationships during deployment and maintenance.

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The distinction between technical delivery, adoption, and performance provides a basis for investigating outcomes. It allows you to assess what has been implemented, how the team uses the solution, and what effects it may have. to be observed. Financial interpretation requires specific data and consideration of the conditions of period, preserving the difference between capacity released, reduced expenditure and actual revenue. recovered.

The structure presented is conceptual in nature and has limitations stemming from the narrative review and... Lack of empirical application. Future studies could evaluate its feasibility in organizations with... different resources and operating models. The article's contribution is to organize questions and criteria. that make the implementation more verifiable, while keeping decisions regarding correction and expansion open. based on the available evidence.

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