IVEXSI INSTITUTE

The International Decision Governance Authority™

PROJECT MANAGEMENT BY DECISION™

REDEFINING THE CONCEPT OF A PROJECT AND THE TRANSFORMATION OF PROJECT MANAGEMENT

WALTER AFONSO FILHO

FOUNDATIONAL EDITION

2026 ◆ IVEXSI DECISION SCIENCES SERIES

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AND THE TRANSFORMATION OF
PROJECT MANAGEMENT

Project Management by Decision™

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Walter Afonso Filho

IVEXSI INSTITUTE LLC

Complimentary Edition

Project Management by Decision™

An invitation to look at projects from a new perspective

Dear Reader,

Project Management has evolved remarkably. We now have better methodologies, technologies, planning systems, and more qualified professionals.

And yet, projects continue to fail.

What if the explanation lies in the decisions that come before and determine their execution?

It is from this question that Project Management by Decision™ – PMD emerges, an approach that proposes to understand the project not only through its activities, schedules, costs, risks, and deliverables, but also as a Decision Network that continuously shapes its trajectory.

This Complimentary Edition presents the foundations of this new perspective and includes **Chapter 1 – Why Do Projects Still Fail?**

At the end of your reading, we would be delighted to know your opinion.

Perhaps there is a dimension of projects we are still not looking at carefully enough:
the decision.

Walter Afonso Filho
IVEXSI INSTITUTE LLC
Director

IVEXSI
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PEOPLE
KNOWLEDGE
DECISIONS
A BRIGHTER
TOMORROW

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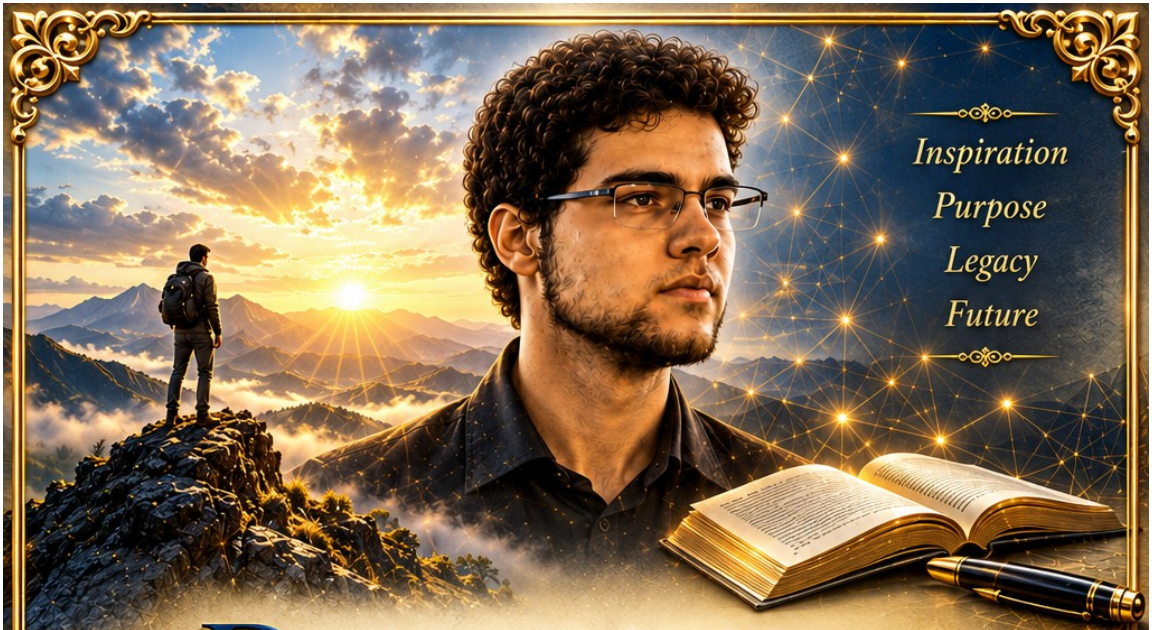

DEDICATION

To my beloved son,
Dr. Bruno Klaus de Aquino Afonso. Your life, your values, and your example continue to inspire every step of this work.

Although you are no longer physically with us, your memory remains a constant source of strength, purpose, and determination.

Much of what I have sought to build through Decision Sciences™ has been sustained by the inspiration that your legacy continues to provide.

This book is dedicated with love to your memory.

> *Ideas can be taught.*
> *Knowledge can be learned.*
> *But inspiration is inherited*
> *from those who touch our lives*
> *forever.*

Walter Afonso Filho

FOUNDER, IVEXSI INSTITUTE™

ABOUT THE AUTHOR

"Better decisions create better futures."

Walter Afonso Filho is a Mechanical and Civil Engineer, entrepreneur, and founder of the **IVEXSI Institute LLC.**

He holds an MBA in Business Administration and has more than three decades of professional experience in engineering, quality management, project management, organizational consulting, executive leadership, and technological innovation.

Throughout his career, he has worked with major national and international organizations, developing expertise in engineering, ISO 9000, quality management, management systems, organizational governance, and business transformation.

He has served as a **Project Manager** in several strategic projects and participated in multinational engineering teams abroad, gaining solid international experience in multicultural and highly complex environments.

He has worked at leading global companies such as **EMBRAER**, **PHILIPS**, **ERICSSON**, and **TETRA PAK**, contributing to projects, engineering, quality, and innovation.

He was the host of the TV program ***Company of the Future*** on the Rede Vida television network, focused on innovation, management, entrepreneurship, and the future of organizations. He also hosted the program ***Business Quality*** on TV Bandeirantes, with a focus on quality management, organizational excellence, and corporate competitiveness.

He is currently the **Director of the IVEXSI Institute LLC**, a research, technology, and publishing organization registered in Wyoming, United States, with its main research and operations activities based in São José dos Campos, Brazil. The mission of the **IVEXSI Institute** is to advance science, methodologies, and technologies in Decision Governance, helping organizations and projects make better decisions and build more sustainable, competitive, and innovative futures.

DECISIONS THAT TRANSFORM REALITIES

PEOPLE
PROJECTS
SOCIETIES
A BETTER TOMORROW

IVEXSI
DECISION NETWORKS INSTITUTE™

The International Decision Governance Authority™

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"Every decision builds a better tomorrow."

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IVEXSI
KNOWLEDGE FOR DECISIONS THAT TRANSFORM REALITIES

UNDERSTAND
DECIDE BETTER
BUILD TOMORROW

Foreword

Project management has undergone an extraordinary trajectory over the past decades. Methodologies have been refined, international standards have consolidated good practices, professional certifications have raised the level of the discipline, and new technologies have significantly expanded the ability to plan, execute, monitor, and control increasingly complex projects.

Even so, one question remains without a satisfactory answer:

Why do organizations that use internationally recognized methodologies, employ highly qualified professionals, use sophisticated planning and control systems, and have substantial resources continue to produce projects that fail or deliver results far below expectations?

This book starts from the premise that the answer to this question lies not only in project execution, but, above all, in the quality of the decisions that make it possible.

The classical project management literature has concentrated its greatest efforts on improving planning, execution, monitoring, and control processes. These advances were fundamental and remain indispensable. However, there is a dimension that remains surprisingly underexplored: the structure of decisions that precedes, guides, transforms, and, in many cases, determines the fate of a project long before the first scheduled activity.

The proposal presented in this work is precisely to make that structure visible.

Throughout this book, I propose a redefinition of the very concept of a project. Rather than understanding it merely as a temporary set of activities intended to produce a product, service, or result, I propose understanding it as a Network of interdependent Decisions, whose evolution continuously determines the project's Possible Futures.

This shift in perspective profoundly changes the way we understand project management.

Schedules cease to be merely planning instruments and come to represent the temporal materialization of prior decisions. Risks cease to be merely uncertain events and come to be understood, to a large extent, as the accumulated consequences of decisions made throughout the project's trajectory. Changes cease to be merely scope alterations and come to reflect new decisions that modify the originally projected future.

From this perspective, managing projects means far more than controlling activities. It means continuously understanding, structuring, assessing, governing, and improving the decisions that determine their evolution.

This is not about replacing PMBOK®, PRINCE2®, ISO 21502, agile approaches, or any other established methodology. On the contrary: all of them remain fundamental for organizing and executing projects efficiently. This book's proposal is to complement these approaches with a governance layer that, as far as I have been able to determine, had not yet been systematically developed in the

project management literature. The consistency of this proposal became even more evident during the study of more than twenty cases of failures, accidents, and disasters, including Fukushima Daiichi, Chernobyl, Three Mile Island, the Bhopal industrial disaster in India, the Deepwater Horizon platform explosion, the Grenfell Tower fire in England, Volkswagen's Dieselgate, the Wenzhou train accident in China, the Brumadinho dam collapse, the collapse of the Hyatt Regency walkways, the Ford Pinto case, the baggage system at Denver International Airport, the Mars Climate Orbiter, the Ariane 5 rocket, Brazil's Alcântara satellite launch vehicle (VLS-1 V03), the Space Shuttles Challenger and Columbia, the Boeing 737 MAX, and even a classic case: the Titanic. Although there is not enough room in this book to present all of these cases in detail, I analyze two of them: the NASA space shuttle accidents and the Boeing 737 MAX case. In studying them, I was deeply struck to find that many could have had a different outcome had the principles and mechanisms of a Decision Governance System been applied to make decision-making fragilities visible, integrate warning signs, and assess consequences before they became irreversible. The analyses revealed a recurring pattern: critical decisions sustained by ambiguous evidence, warning signs disregarded, fragmented responsibilities, organizational pressures, and governance failures that accumulated until they produced serious or irreversible consequences. The remaining cases will be explored in greater depth in a dedicated work, provisionally titled The Engineering of Disaster — No One Failed Alone: an analysis of great engineering disasters from the perspective of Decision Governance.

Throughout the following chapters, the reader will find original concepts, analytical models, and case studies that show how

decisions made long before execution can explain both extraordinary successes and historic failures. These events are not analyzed merely as emblematic incidents or isolated technical failures, but as evidence of the need to understand projects from a new perspective: the perspective of the decisions that build, restrict, and, at times, compromise their Possible Futures.

This book does not intend merely to present a new methodology, but to offer a new way of thinking about projects. The evolution of project management will not depend solely on more powerful and sophisticated methodologies or tools, but, above all, on organizations' ability to understand that projects are living systems of decisions and that the quality of those decisions determines, to a large degree, the quality of the results produced.

I hope that, upon finishing this reading, readers will find not only new tools and concepts, but will come to see projects differently.

The greatest evolution in project management does not lie merely in better managing activities, but in understanding that every project is, above all, a Network of Decisions.

It is precisely because we place decision at the center of this new way of thinking that the diamond became the symbol of IVEXSI. It represents what lies at the heart of everything we study, develop, and propose: decision. To us, a decision is not merely a choice or a moment within a process. It has value, structure, relationships, and consequences capable of influencing other decisions and transforming the trajectory of projects and organizations. That is why we give decision the same care one gives something precious: we seek to understand it, analyze it, qualify it, and protect it.

This conviction also explains why we are an Institute. Our purpose is not merely to develop methods, technologies, or knowledge about decision governance, but to contribute to building a better world — a world in which people, organizations, and governments make more conscious, more structured, and more responsible decisions. We believe that transforming the quality of decisions is, ultimately, transforming the quality of the results and the future we build collectively. It is this vision that guides our identity, our mission, and our reason for being.

Perhaps you share this vision. If you believe that better decisions can help build a better world, join us. You too can be part of this transformation — because the future we imagine begins with the decisions we make today.

Preface

I have always sought to understand why complex projects, led by highly competent teams, backed by substantial resources, and managed according to widely recognized good practices, still failed — sometimes slowly and almost imperceptibly over years; other times, suddenly and catastrophically, in a single afternoon.

It was this unease, long before any theory, that began a journey of investigation that would eventually lead me to develop Decision Governance and, later, the proposal presented in this book.

My path to this question did not begin in project management theory. It began in engineering and evolved over many years of work with quality management systems, including the ISO 9000 series, ISO/TS 16949 for the automotive industry, the German VDA reference standards, and numerous organizational consulting programs, in addition to participation in projects of different sizes and industrial sectors.

Throughout this trajectory, I delivered training to professionals at every hierarchical level and in practically every area related to Quality Management and Assurance, building capacity in Quality Management Systems, audits, standardization, and process improvement in organizations across various segments. I also organized and coordinated congresses, seminars, and training programs focused on management and quality; served as editor of Revista Qualidade Empresarial [Business Quality Magazine]; and hosted the television programs Qualidade Empresarial, on TV Bandeirantes, and Empresa do Futuro [Company of the Future], on

Rede Vida de Televisão, in which I interviewed executives, specialists, and business leaders about the challenges and transformations of management, quality, and the future of organizations.

This diversity of experience gave me a privileged view of how organizations with different levels of maturity implemented their management systems and conducted their projects — engaging with highly structured organizations, mature processes, rigorous audits, and technically competent teams. More than getting to know their management systems, I observed how they made decisions and, above all, why apparently mature organizations produced such different results. Regardless of sector or the maturity level of management systems, there was a common element that remained poorly understood: the quality of the decisions that shaped the future of projects.

One unease had accompanied me since that time. I realized that this entire structure, though essential, was not enough to ensure that a project achieved the expected results. There was something beyond processes, methodologies, audits, and formal controls that determined a project's success or failure. Gradually, I understood that this element lay in the quality of the decisions that originated the project, guided its trajectory, and defined its future.

This realization led me to a fundamental reflection. Management systems are extremely effective for structuring processes, responsibilities, documentation, and control mechanisms. However, they are not able, by themselves, to guarantee a project's success. The decisive element was not only in how the project was controlled during execution, but, above all, in the quality of the decisions made from its conception — decisions about feasibility, objectives, scope,

investments, priorities, risks, and strategy. When those decisions were inadequate, excellence in execution could rarely reverse their consequences. A project could be managed with precision and, even so, move inexorably toward an unsatisfactory outcome.

Over time, I became convinced that this invisible layer of decisions was precisely the element that explained why organizations with mature methodologies and highly qualified professionals still produced avoidable failures. It was this insight, formed long before the formulation of Decision Governance, that gave rise to the ideas developed in this book and evolved into an independent research program dedicated to understanding how decisions shape the future of projects and organizations.

The chapters examining NASA and Boeing emerged directly from that long-term investigation. Rather than serving merely as illustrations, these historical cases became analytical foundations through which the concepts proposed in this book could be explored, challenged, and progressively refined.

The result is Project Management by Decision, an approach matured over years of practical observation and structured as a scientific framework capable of explaining why apparently well-managed projects still fail.

This book does not propose that project managers, PMOs, or executives abandon the knowledge, methods, and practices they already use. It merely proposes that they add one essential question:

"Are the decisions sustaining my project structurally sound — and would we be able to identify their deterioration before it compromised the project?"

I believe this question can be answered through disciplined engineering, systematic governance, and continuous monitoring of organizational decisions.

I hope this book contributes to that goal.

An Invitation to the Reader

Although this work presents the foundations of Project Management by Decision, it is part of a broader scientific program developed within Decision Sciences. This book belongs to the "Decision Sciences Collection," made up of eleven complementary works: Decision Sciences, which establishes the foundations of the discipline; Decision Governance, dedicated to the principles of authority, responsibility, transparency, and control over decisions; Decision Architecture, which investigates how decisions are structured and interconnected; Decision Engineering, focused on the conception, modeling, and refinement of complex decisions; Decision Economics, which analyzes the value, costs, and economic consequences of decisions; Risk Management by Decision, which redefines risk as a consequence of decisions; Project Management by Decision, this work, which redefines projects as Decision Networks; Decision Networks, which deepens the relationships, dependencies, and propagation effects among decisions; Universe of Decision, which extends this perspective to organizations and complex systems; Theory of Possible Futures, which examines how decisions build, restrict, or eliminate futures; and Mirror of the Future, which investigates how present decisions project and reveal future conditions.

Together, these works present an integrated view of decisions — from their origin, structure, and governance to the risks, results, and Possible Futures they produce. Each book develops a specific dimension of this new scientific field, but all share the same

purpose: to understand how decisions shape projects, organizations, and societies, and how they can be improved before their consequences become irreversible.

The knowledge developed in this collection applies to every area of Organizational Management. Strategy, projects, processes, finance, investments, risk, operations, innovation, technology, people, quality, compliance, and governance all depend, at their core, on decisions. For this reason, Decision Sciences is not intended only for executives or specialists, but for every professional involved in analyzing, formulating, approving, executing, or monitoring decisions. By understanding its foundations, readers will be able to expand their ability to interpret complex problems, evaluate alternatives, anticipate consequences, recognize fragilities, and build decisions that are more coherent, traceable, and aligned with organizational objectives.

Decision Governance represents, in this sense, a new order in the field of Organizational Management: a form of management in which decisions cease to remain scattered, invisible, or sustained only by individual experience, and come to be treated as structural assets of organizations. In a new era of work, marked by artificial intelligence, automation, uncertainty, and growing complexity, professionals will be valued not only for what they execute, but also for their ability to understand, structure, govern, and improve decisions. This collection offers concepts, foundations, and instruments that can enrich your training and be applied concretely in your professional practice.

We therefore invite you to continue this intellectual journey through the forthcoming works of the Decision Sciences Collection and to

discover, in its full scope, the foundations of a new discipline designed to transform how professionals and organizations understand, make, and govern their decisions.

From PMI to IVEXSI

From Conventional Project Management to Project Management by Decision

For decades, the Project Management Institute — PMI played a fundamental role in consolidating Project Management as a professional discipline. By systematizing knowledge, establishing reference standards, developing certifications, and helping build an international community, PMI played a decisive part in transforming project management into a structured, globally recognized professional practice. This contribution remains relevant, since projects continue to require planning, scope definition, schedule organization, resource management, cost, risk, quality, process, team, and monitoring and control mechanisms.

The growing complexity of projects, however, reveals a dimension that cannot be understood solely from the standpoint of execution. Projects are continuously influenced and shaped by decisions that set priorities, authorize investments, select alternatives, define assumptions, accept risks, modify strategies, and determine execution paths. In this context, a fundamental question emerges: how are the decisions that influence and determine a project's trajectory governed?

A project may have a well-structured schedule, budget, processes, and control mechanisms and still be compromised by decisions based on fragile assumptions, insufficient evidence, unidentified

dependencies, changes in context, or unrecognized structural risks. Likewise, a decision considered adequate at the time it was made may progressively lose its validity as the conditions that supported it change. The problem, therefore, lies not only in the ability to manage execution, but also in the ability to understand and govern the decision structure that precedes, conditions, and transforms it.

It is in this space that Decision Governance is established. Its purpose is to make relevant decisions explicit, structured, traceable, assessable, and monitorable over time, allowing their assumptions, evidence, owners, dependencies, consequences, risks, and relationships with other decisions to be known. This perspective is based on the principle that a decision does not end its cycle the moment it is made. Its conditions can change, its assumptions can lose validity, new information can emerge, and its effects can propagate through broader decision structures. Consequently, critical decisions need to be observed throughout their trajectory.

Project Management by Decision — PMD is an application of this perspective to the field of projects. Rather than representing the project solely through activities, deliverables, resources, timelines, and controls, PMD recognizes the existence of an underlying structure formed by a Network of interdependent Decisions. In this network, decisions can support other decisions, establish dependency relationships, concentrate risks, transmit fragilities, alter trajectories, and create or eliminate Possible Futures.

This representation adds a new dimension to project analysis. The traditional question — "Is the project being executed as planned?" — remains necessary, but now coexists with another: "Are the

decisions sustaining this project still valid, structurally sound, and capable of leading it to the desired future?"

Formulating this second question requires specific analytical capabilities and governance mechanisms. This is the context in which the IVEXSI Institute operates, structured to develop concepts, reference standards, standards, methods, metrics, and technologies — a scientific, methodological, and technological infrastructure — designed to allow organizations to understand, assess, and govern decisions systematically. Its purpose is not to replace traditional project management standards, but to develop a complementary dimension whose central object of analysis is the decision.

This architecture spans fields such as Decision Governance, Decision Engineering, Decision Architecture, Decision Networks, Structural Risk, Possible Futures, and Executive Decision Intelligence. Project Management by Decision is one of its applications, but the potential field of Decision Governance extends beyond the boundaries of projects.

Decisions are present in strategy, investments, finance, operations, risk, innovation, technology, quality, people management, and corporate governance itself. Thus, whenever a relevant decision is capable of committing resources, modifying risks, establishing dependencies, altering trajectories, or producing significant organizational consequences, there is a potential object of governance.

This perspective leads to a significant change in how projects themselves are represented. In conventional Project Management

approaches, a significant portion of planning and control mechanisms focuses on execution-related elements: activities, resources, costs, timelines, deliverables, risks, and performance. PMD adds the possibility of also making observable part of the decision structure that shapes that execution.

From the PMD perspective, a project ceases to be understood merely as a system of activities and comes to be understood also as a Network of interdependent Decisions.

This shift allows investigation of relationships that often remain scattered or poorly visible in traditional models: which decisions support other decisions, where the main dependencies are concentrated, which fragilities have the greatest potential to propagate, which assumptions are losing validity, and which decisions have the greatest potential to change the project's trajectory.

When this structure is formalized and turned into analyzable data, it becomes possible to apply quantitative methods, network theory, algorithms, and Artificial Intelligence to observing the decision structure. Computational systems can support the identification of relationships, the monitoring of changes, the detection of deterioration signals, the analysis of structural risks, and the assessment of Possible Futures. The goal is not to eliminate human responsibility for decisions, but to expand the ability to understand relevant conditions before their consequences fully manifest in execution.

The transformation proposed by PMD, therefore, does not consist merely of improving the analysis of what has already occurred. It

also consists of developing a structured capacity to identify conditions that could change what may still occur.

This transformation has direct consequences for project professionals. Competencies related to planning, execution, cost, risk, people, processes, and technology will remain essential. However, as computational systems and Artificial Intelligence take on a growing share of information-processing, indicator-tracking, pattern-identification, and analysis-producing activities, new competencies related to structuring and governing decisions tend to become increasingly relevant.

Project professionals will need to understand not only how activities relate to one another, but also how decisions are structured, how they depend on one another, how their assumptions can deteriorate, how fragilities can propagate, and how different decisions can change a project's Possible Futures. In this context, the role of the project manager tends to expand: beyond managing execution, it increasingly incorporates the governance of the project's trajectory.

This evolution does not represent the replacement of traditional Project Management. It represents its expansion through an additional dimension of analysis and governance. The knowledge consolidated over recent decades remains necessary, but now coexists with instruments capable of observing and governing the decision structure that influences the trajectory of projects.

PMI helped consolidate Project Management worldwide as a professional discipline. IVEXSI positions itself at a distinct and complementary frontier: contributing to the development of

decision as an explicit, structured, and systematically governable object.

In this sense, activities and decisions represent different, though related, dimensions of the same system. Activities allow us to observe what the project is doing; decisions allow us to understand part of the reasons why certain trajectories are established, maintained, or changed.

The growing use of Artificial Intelligence further amplifies the relevance of this distinction. The central question for the future of project professionals may lie not only in determining which activities will be automated, but in understanding who will be prepared to structure, assess, and govern the decisions that intelligent systems may help identify, analyze, and anticipate.

Project Management by Decision emerges, in this context, as a proposal to expand the capacity to understand and govern projects. It does not replace the existing foundations of Project Management, but adds a dimension focused on the decision structure that influences its trajectory.

INTRODUCTION

What Is Project Management by Decision – PMD

Project Management by Decision – PMD is a new project management model developed by IVEXSI — Decision Networks Institute, headquartered in the United States with operational headquarters in Brazil, founded on the Decision Network, integrated with the conventional structure for planning and controlling scope, timelines, costs, resources, risks, and deliverables.

Within this structure, project decisions are identified, organized, and connected according to their interdependency relationships. Each decision ceases to be treated as an isolated event and becomes part of a dynamic structure, in which it can influence other decisions, modify existing conditions, propagate its effects, and alter the project's trajectory.

In PMD, each decision comes to be treated as a governable entity, with its own identity, complete history, and defined life cycle. Just as a person has a birth record, identification documents, health history, and a formal closure of their existence, each decision has a unique identifier, origin, context, owner, justifications, assumptions, evidence, risk assessments, dependencies, changes recorded over time, continuous monitoring, and a formal closure record when it ceases to produce effects on the project.

This decision identity makes each decision fully traceable and auditable throughout the project's life cycle, preserving its memory, its evolution, and the impacts it produces on the Decision Network.

Managed through IVEXSYS, a proprietary computational system specifically designed to operationalize PMD, this structure integrates

hundreds of primary and secondary algorithms designed to process, correlate, and analyze information about the project and its Decision Network. This analytical architecture allows simultaneous evaluation of the project's execution and its decision dynamics, ongoing predictive assessments, identification of structural fragilities and risks, analysis of impact propagation, and projection of possible future trajectories.

As new information, decisions, changes in conditions, or events are incorporated, the analyses are automatically recalculated and updated, keeping the assessment aligned with the project's evolution. The system incorporates intelligent trajectory-correction triggers, capable of identifying deviations, structural deterioration, and relevant changes in project conditions, flagging the need for intervention before their effects become entrenched.

IVEXSYS also natively incorporates the IVEXS-ST Standards, which make up the IVEXS Standards System developed by the Institute specifically for decision governance. This normative body ensures that the processing, assessment, and monitoring of decisions are carried out according to standardized principles, criteria, structures, and parameters, providing consistency, traceability, and standardization in the application of PMD.

IVEXSYS's analytical architecture also draws on Graph Theory to mathematically represent and analyze the Decision Network. Decisions can be treated as nodes and their dependency relationships as connections, making it possible to identify centralities, concentrations, critical paths, dependencies, impact propagation, and structural fragilities that would hardly be perceived through isolated analysis of individual decisions.

In addition, IVEXSYS incorporates the Bruno Klaus Factor, a specialized family of qualification, validation, and analytical-consistency algorithms developed to enhance the reliability of the data and results processed by the system. These algorithms identify

inconsistent, anomalous, poorly representative, or low-reliability values and subject them to criteria for validation, filtering, weighting, and, where applicable, correction before they are used in analyses. This reduces the influence of inadequate or distorted information on indicators, assessments, and projections, increasing the robustness, consistency, and credibility of the results produced by IVEXSYS.

The use of Artificial Intelligence within IVEXSYS extends this capability by continuously analyzing data, recognizing patterns, evaluating alternatives, and supporting the identification of the most appropriate actions to preserve or restore desirable trajectories. PMD thus makes it possible not only to track execution based on the decisions that determine it, but also to anticipate changes, guide course corrections, and reveal relationships and conditions that would hardly be perceived when analyzed in isolation.

All of this intelligence is consolidated into a visual, interactive executive dashboard, through which CEOs, executives, and those responsible for project governance can access, in an integrated way and in real time, the information most relevant and urgent for guiding the project. Visual indicators, criticality levels, and alerts direct attention to the decisions that require intervention, the emerging structural risks, changes in future trajectories, and the actions that need to be considered, allowing executives to focus their attention on what can actually determine the project's future.

This integration of structural analysis, artificial intelligence, continuous monitoring, and decision support also changes how the project is presented to senior management. Rather than requiring executives to interpret large volumes of scattered data, reports, and indicators, the system turns the complexity of the project into an integrated executive view, organized according to what requires attention and action.

IVEXSYS was designed to operate integrated with traditional project management software and existing corporate systems, incorporating information related to activities, schedules, costs, resources, deliverables, risks, and performance. This integration makes it possible to relate what is happening in execution to the decisions that are producing, shaping, or modifying those results, providing a more complete and integrated view of the project's current state, risks, and possible future trajectories.

The logic is simple: executives do not need to see everything; they need to see, at the right moment, what could change the project's trajectory. For that reason, information is prioritized according to its decision-relevance, highlighting the project's overall status, critical decisions, structural risks, existing dependencies, possible futures, key alerts, and priority actions.

The figure below shows an example of this view within IVEXSYS, illustrating how the intelligence produced by PMD can be turned into objective, visual, and actionable information for CEOs and executives responsible for project governance.

Note that the panel does not present only data from the Decision Network. It also integrates information from traditional project management systems, such as performance, timelines, costs, risks, and other relevant indicators. In this way, executives no longer view the project's results separately, but come to see them together with the decision structure that influences and, often, determines them.

Information thus becomes more complete and integrated: on one side, the project's current state; on the other, the decisions, dependencies, structural risks, and possible trajectories that help explain why the project reached that situation and what may happen from there.

This figure will be presented and analyzed in greater depth in Chapter 14 — Executive Intelligence in Project Management.

IVEXSYS™
DECISION INTELLIGENCE SYSTEM FOR PROJECTS

SCREEN 1 – EXECUTIVE PROJECT VIEW
The big picture. Answers in seconds.

LIVE
Last update: Aug 25, 2026 – 09:42 AM

PROJECT New Factory Implementation

TOTAL INVESTMENT $ 300 Million

EXPECTED COMPLETION Nov 30, 2028
26 months remaining

PROJECT MANAGER Carlos Almeida
Head of Project Management

INTEGRATION WITH PROJECT MANAGEMENT

Schedule	Costs	Scope	Risks	Resources	Changes	Activities
Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated

Synchronized data with traditional project management tools (MS Project, Primavera, Jira, SAP, etc.).

1 IS THE PROJECT UNDER CONTROL?

OVERALL STATUS
HEALTHY

Project within acceptable parameters.

Total decisions	57
Active decisions	32
Completed decisions	25

VIEW DETAILS

2 WHAT IS THE MOST CRITICAL DECISION?

D-247
Investment Approval – Phase 2

RESPONSIBLE
Carlos Almeida
Project Management Director

DECISION DUE DATE
Sep 12, 2026
18 days remaining

VIEW DECISION

IMPACT ON ACTIVITIES
8 linked activities
3 critical • 2 delayed

Next milestone:
Contract Signing
Aug 28, 2026

VIEW IMPACTED ACTIVITIES

3 WHERE IS THE HIGHEST RISK?

STRUCTURAL RISK (R$™)

0.34
MODERATE

TREND
RISING
(Increasing attention)

VIEW ANALYSIS

4 WHAT DECISION REQUIRES IMMEDIATE INTERVENTION?

CEO INTERVENTION
REQUIRED

Approve Investment of Phase 2

IMPACT ON PROJECT
HIGH
Impacts cost, schedule and strategic viability.

DECIDE NOW

5 IF WE CONTINUE LIKE THIS, WHAT WILL HAPPEN?

58%
POSSIBLE FUTURES PRESERVED — FPP

58% of modeled trajectories remain viable.

42% unviable under current conditions.

Main driver of unviability:
delay in decision D-247

VIEW SCENARIOS

DECISIONS ↔ ACTIVITIES RELATIONSHIP

DECISION NETWORK™
Decisions • Dependencies
Structural Risk • Trajectories

↕

BI-DIRECTIONAL INTEGRATION
Decisions impact activities
Activities generate signals for decisions

↕

ACTIVITY NETWORK
Schedule • Milestones
Deliverables • Resources

DECISION NETWORK — OVERALL VIEW ⓘ

12 decisions are directly dependent on D-247

NETWORK METRICS

Total decisions	57
Levels (depth)	5
Critical decisions	7
High impact decisions	16
Risk concentrations	High
Structural redundancy	Medium

VIEW COMPLETE METRICS

CONNECTION LEGEND
Direct dependency
Indirect dependency

KEY ALERTS

Increasing trend in Structural Risk Deterioration in current trend detected	CRITICAL
Imminent delay in decision D-247 Due date: 09/12/2026 (18 days remaining)	VERY HIGH
3 high impact decisions without a responsible owner (D-158, D-203, D-312)	HIGH

VIEW ALL ALERTS

NEXT RECOMMENDED ACTIONS FOR YOU

1. **Decide:** Approve Investment – Phase 2 (D-247)
   Impact: High • Due date: 09/12/2026
2. **Review structural risk analysis**
   Upward trend in the last 2 weeks
3. **Evaluate future scenarios**
   58% of modeled trajectories remain viable

VIEW ALL ACTIONS

FUTURE POSSIBLE PATHWAYS — FPP
Total modeled trajectories: 100
Not a probability prediction of success.
Indicates the decision space and its consequences.

DECISION DOSSIER
Consolidated view of all structured information and kept up to date.
Use Decision Log™ to consult and analyze.

DECISION LOG™
Secure and auditable record of all project decisions, in accordance with PMBOK®, ISO 9001 and IVEXSI Standards.

The Foundations That Made PMD Possible

To make the development of Project Management by Decision possible, IVEXSI developed a set of theoretical, conceptual, and methodological foundations devoted to studying, structuring, and managing decisions. These include Decision Engineering, Decision Network Theory, the Theory of Possible Futures, Decision Bank Theory, Decision Economic Theory, and the IVEXS Standards System.

The Institute has developed and maintains its own normative body for decision governance, made up of the IVEXS-ST Standards, which establish principles, criteria, structures, and references for standardizing, tracing, assessing, monitoring, and governing decisions. These standards provide a common normative foundation for applying PMD and for its progressive operationalization through IVEXSYS.

These foundations, as well as the conceptual and methodological body developed by IVEXSI, have been the subject of formal intellectual-property registration and protection measures in the United States, intended to document their authorship, preserve their conceptual integrity, and protect the body of knowledge developed by the Institute. They will be presented and further developed in specific publications of the Decision Sciences Collection.

Developing PMD also required expanding the way risk in projects is understood and assessed. Conventional risk analysis remains necessary, but PMD adds to this perspective the concept of Structural Risk, seeking to identify risk also at its decision-based origin: in the decisions themselves, in the dependency relationships among them, and in the structural conditions capable of generating, concentrating, or propagating their effects.

The shift is one of focus, not replacement. Instead of acting only on risks already identified and their consequences, it becomes possible to also act on the decisions and interdependencies that may be

forming those risks, while alternatives capable of changing the project's trajectory still exist.

A New Stage in Project Management

Behind the activities, costs, timelines, risks, and deliverables of any project lies a continuous flow of decisions. Some exert limited influence; others shape multiple decisions and future paths. This structure has always existed; rarely, however, has it been represented and managed as a system in its own right. It is this structure that PMD seeks to make visible, structured, analyzable, and manageable.

By integrating the decision structure with the conventional management structure, relationships that were previously scattered become analyzable: critical decisions, dependencies, concentrations of influence, structural fragilities, and propagation mechanisms. The temporal dimension of management also expands: in addition to tracking what has occurred and what is occurring, it becomes possible to assess conditions that are forming and the trajectories that remain possible given the current state of the Decision Network.

This capability expands the possibilities for anticipation and intervention. Rather than acting only once the effects of a decision have already manifested in costs, timelines, risks, or deliverables, it becomes possible to identify structural signals and intervene while alternatives capable of changing the project's course still exist.

The project thus comes to be understood not only by what it is executing, but also by the decision structure that is building its future.

This Is What This Book Will Present

This book presents the foundations of Project Management by Decision and demonstrates how to systematically incorporate decisions into project management.

Throughout the following chapters, readers will learn how to identify and structure decisions; build and interpret Decision Networks; understand their interdependencies; assess impact propagation; identify Structural Risks; analyze Possible Futures; and use this information to expand the capacity for anticipation and intervention over the project's trajectory.

Secrecy, Confidentiality, and Protection of Information

The security, secrecy, and confidentiality of information are fundamental and inseparable principles of PMD and of the governance architecture developed by IVEXSI. Decision-related information may involve highly sensitive strategic, technical, financial, contractual, operational, and organizational content, and for this reason its protection is an integral part of decision governance itself.

Within PMD and IVEXSYS, the principle of information secrecy is absolute. Its preservation is structured through different layers of protection, including authentication, access control and segregation according to authorization levels, cryptographic protection where applicable, access traceability, and audit records. Decisions, documents, data, analyses, relationships, and other decision records must remain accessible exclusively to authorized individuals, according to their responsibilities.

Building a Decision Network does not mean, therefore, that all the information that makes it up is available to all its participants. Each user must access exclusively what their role, responsibility, and authorization level allow them to know. Traceability does not mean exposure. Transparency does not mean unrestricted access.

The traceability provided by PMD means preserving the ability to understand the origin, evolution, foundations, and effects of decisions within a controlled framework of governance and information security. This protection becomes particularly important because the integrated representation of decisions can reveal

relationships, dependencies, vulnerabilities, and strategic information that would not be perceptible when analyzed in isolation.

Confidentiality is not, therefore, an element external to PMD, but an integral part of decision governance itself. There is no decision governance without information governance.

Human Responsibility for Decisions in the Age of Artificial Intelligence

The growing incorporation of Artificial Intelligence into organizational processes significantly expands the ability to analyze information, identify patterns, compare alternatives, simulate scenarios, and support decisions. This evolution, however, introduces a fundamental governance challenge: distinguishing the technological capacity to analyze, recommend, or execute actions from the authority to decide and the responsibility for the consequences of the decision.

In PMD, the participation of Artificial Intelligence in a decision-making process neither eliminates nor diffuses this responsibility. Whenever a decision has relevance, risk, or impact compatible with the established governance criteria, there must be an identifiable decision-making authority — individual or collegiate — to which competence, responsibility, and accountability can be attributed, according to the mechanisms established by the Decision Governance Framework.

In cases where decisions are executed entirely by automated systems, without human intervention in each individual event, responsibility is not transferred to Artificial Intelligence. It remains attributed to the human and organizational authorities responsible for approving the use of the system, its purpose, criteria, parameters, limits of autonomy, and operating conditions. Automating the execution of a decision does not mean automating or eliminating responsibility for it.

This principle makes the Decision Record particularly important in the age of Artificial Intelligence. Whenever AI systems are involved, traceability must make it possible to identify, according to the criticality of the decision, which system took part in the process, what function it performed, what relevant information, analyses, or recommendations it produced, how those contributions were considered, and which authority assumed responsibility for the resulting decision. Merely formal human intervention should not be mistaken for effective decision-making responsibility.

PMD thus establishes a distinction between algorithmic support, automated execution, decision-making authority, and responsibility for the decision. This separation converges with contemporary Artificial Intelligence governance frameworks, including the EU AI Act, in its human-oversight requirements applicable to high-risk AI systems; the NIST Artificial Intelligence Risk Management Framework (AI RMF), with its approach to governance, accountability, and the definition of responsibilities; and ISO/IEC 42001:2023, which establishes requirements for organizational artificial-intelligence management systems.

In PMD, these principles are incorporated specifically into the structure of the decision and into the relationships that make up the Decision Network, making it possible to record not only the use of AI, but also its participation and influence in the formation of decisions and in the trajectories that result from them.

In this way, the growing use of Artificial Intelligence does not reduce the need for decision governance; it makes it even more necessary. The greater the autonomy and capacity of systems to influence organizational decisions and trajectories, the greater must be the ability to identify how that influence occurred, what limits were previously established, who held authority over its use, and who is accountable for the resulting consequences.

AI can support the decision. Responsibility cannot be delegated to it.

More than presenting a new set of tools, this book proposes a change in the very way we understand projects: moving from observing them only by what needs to be executed, to also understanding the decisions that determine what will be executed — and, ultimately, the future of the project itself.

Professionals and organizations now have foundations, methods, and resources capable of expanding their ability to understand, anticipate, and govern the conditions that determine the trajectory of projects.

Applicability of PMD to Projects of Different Sizes

Project Management by Decision was designed to be applicable to projects of different sizes, investment levels, strategic relevance, criticality, structural complexity, and organizational scope. Its application does not therefore assume that the project is large or highly complex. Smaller projects may have few decisions and relatively simple relationships, while larger projects may involve hundreds of decisions, multiple interdependencies, different organizations, and highly critical consequences. What changes is the scale and intensity of PMD's application, which must be proportional to the characteristics and governance needs of each project. The multidimensional classification presented in this work, and further developed in a later chapter, makes it possible to characterize this profile and adjust PMD's application to the specific reality of each project.

Beyond Projects

Although this work's specific subject is Project Management by Decision, the foundations of Decision Governance developed by IVEXSI have a significantly broader field of application. The decision structure that shapes a project's trajectory is also present in the decisions that guide strategies, investments, industrial processes,

operations, public policies, and other activities capable of committing resources, establishing dependencies, modifying risks, and producing consequences over time.

An investment decision, for example, may commit capital for years based on economic, technological, or market assumptions that later change. In an industrial process, decisions related to capacity, technology, suppliers, quality, maintenance, productivity, or process changes can establish dependencies and produce effects that propagate through different areas of the organization. Likewise, a public-policy decision can commit resources, establish relationships between different agencies and institutions, and produce economic, social, and operational consequences over long periods.

In all of these contexts, it is not enough merely to record what was decided; it is necessary to understand why the decision was made, what evidence and assumptions supported it, which other decisions it depends on, which decisions depend on it, who holds authority and responsibility for its effects, and whether the conditions that justified its adoption remain valid over time.

This perspective can be applied to business strategy, investments, risk management, industrial processes, operations, organizational efficiency, productivity, quality, process improvement, innovation, organizational transformation, product development, programs and portfolios, as well as to governments, public policies, and public-sector organizations. The context, objectives, and specific governance mechanisms may change, but the need remains to understand the structure of decisions, their interdependencies, their evolution, and their capacity to produce, concentrate, or propagate consequences.

Project Management by Decision is, therefore, a specific application of a broader architecture developed by IVEXSI: Decision Governance. Its fundamental object is not limited to projects, but extends to the decision itself — its origin, its foundations, its

relationships, its risks, its evolution, its responsibility, and the Possible Futures it helps to build.

From this perspective, projects are one of the environments in which Decision Governance is applied, but not the only one. Whenever relevant decisions influence the trajectory of an organization, an investment, a process, an operation, or a public policy, it becomes possible to investigate their structure, relationships, and consequences from the perspective of decision.

From Understanding to Application

The application of PMD does not end with the content of this work. The IVEXSI Decision Networks Institute offers specialized training, capacity-building, and advisory services for professionals and organizations interested in learning about, adopting, and progressively implementing Project Management by Decision.

This support covers team training, structuring decision-making processes, building Decision Networks, defining governance mechanisms, and preparing the organization for the progressive use of the methods and technological resources associated with PMD.

Implementation can be carried out gradually, respecting the characteristics of each organization, its governance structure, its level of maturity, and the specific needs of its projects. The foundations and methods presented in this work can initially be applied in controlled environments, pilot projects, or selected areas, allowing their application to be evaluated, necessary adjustments to be made, and eventual adoption at a larger scale to be prepared.

The foundations have been developed. The methods have been structured. The training and advisory mechanisms are available. And the technological resources continue to evolve, progressively expanding the capacity to apply PMD.

The path to application is open.

Professionals who continue to manage the projects of the future exclusively with the structures of the past will be increasingly less able to understand, anticipate, and govern the complexity ahead of them — and will be prone to reproducing, at ever-greater scale and complexity, the failure patterns that have challenged project management for decades.

Two professional postures will therefore tend to become increasingly distinct: those who remain prepared predominantly to manage projects with structures designed for past conditions, and those who seek to develop new capabilities to understand and govern the projects of the present and the future.

You, the reader who works in the field of projects, will have the opportunity to make that choice. By learning the foundations, structure, and possibilities of Project Management by Decision, you will have the means to assess what this new perspective adds to existing structures and how it can contribute to your own professional and organizational reality.

The simple fact of being willing to learn a new way of understanding and managing projects already represents, in itself, an openness to this reflection. My hope is that, by the end of this work, you will be prepared to look at projects from an additional perspective — seeking to anticipate decisions, understand interdependencies, identify emerging risks, and expand your capacity for intervention before certain effects become difficult or impossible to reverse.

The future does not wait. Projects tend to become increasingly complex, interdependent, and exposed to conditions that will require greater capacity for anticipation, understanding, governance, and decision-making. The expansion of Artificial Intelligence will add yet another dimension to this challenge, simultaneously expanding our analytical capacity and the need to clearly define who decides, how they decide, and who is accountable for the decisions made.

Throughout this book we will talk about decisions. In the end, one of them will be yours:

→ Deciding how you intend to manage your projects.

By learning the foundations, methods, and possibilities of Project Management by Decision, you will have the means to make that choice for yourself — to understand what this new perspective can add to conventional management and decide how to incorporate it into your professional and organizational reality.

After all, this is a book about decisions.

And now, the next decision is yours.

Because decisions do not merely choose paths. They build Possible Futures. And your next Possible Future begins with the decisions you make today.

CHAPTER 1

Why Do Projects Still Fail?

What Is Still Missing from Traditional Project Management?

1.1 When Apparent Success Hides Failure

Traditional Project Management has become one of the most mature and widely adopted management disciplines in the world. Over the past seven decades, organizations have developed increasingly sophisticated methodologies for planning, scheduling, budgeting, resource allocation, quality assurance, risk management, stakeholder engagement, and project governance. International standards such as the PMBOK® Guide, ISO 21502, PRINCE2®, Agile frameworks, and countless industry-specific methodologies have turned Project Management into a highly structured professional discipline, underpinned by globally recognized good practices.

Despite this remarkable evolution, one fundamental question continues to challenge both practitioners and researchers.

Why do large projects still fail?

This question is neither theoretical nor exceptional. Throughout modern history, countless projects have been led by highly qualified professionals, backed by advanced engineering capabilities, substantial financial resources, rigorous governance structures, and internationally recognized management methodologies. Even so,

many of these projects suffered catastrophic failures, significant cost overruns, prolonged schedule delays, or simply failed to deliver the organizational value they were originally meant to create.

The Space Shuttle Challenger, the Space Shuttle Columbia, the Mars Climate Orbiter probe, Boeing's 737 MAX development program, and countless major infrastructure projects illustrate a recurring pattern. These initiatives were not led by inexperienced organizations. They involved some of the most capable engineers, project managers, scientists, executives, suppliers, regulators, and government institutions in the world. Their failures, therefore, cannot be satisfactorily explained by a lack of project management knowledge.

Organizations have never before possessed such comprehensive project management methodologies or had access to such advanced planning software, predictive analytics, digital collaboration platforms, governance frameworks, scheduling techniques, or professional certifications. Even so, international studies continue to report persistent rates of budget overrun, schedule deviation, scope instability, benefit-realization failures, and stakeholder dissatisfaction in projects of every size and sector. The paradox becomes even more significant when one considers that ongoing methodological refinement has not produced a corresponding reduction in major project failures. Planning techniques have improved. Risk management has become more systematic. Governance structures have matured. Project management offices have become increasingly sophisticated. Artificial intelligence and digital technologies now offer unprecedented analytical capabilities. Even so, organizations

continue to experience remarkably similar patterns of poor project performance.

This observation suggests that the discipline may be approaching the limits of a perspective predominantly focused on execution. Traditional Project Management has achieved extraordinary progress in organizing, planning, monitoring, and controlling projects. However, the persistence of failures indicates that managing execution alone may no longer be sufficient. It is in this space that Project Management by Decision emerges, adding a layer prior to execution: the governance of the decisions that determine the project's trajectory.

IVEXSI

IN RELATION TO OTHER STANDARDS AND FRAMEWORKS

GLOBAL STANDARDS
STRONGER ORGANIZATIONS
SUSTAINABLE FUTURES

PEOPLE • KNOWLEDGE • DECISIONS • A BRIGHTER TOMORROW™

DECIDE → PLAN → CONFORM → EXECUTE

1 DECIDE

The decision initiates the entire cycle. It defines what to do, why, who decides and with which risk level.

IVEXSI

Technical Governance of Decisions
(authority, legitimacy and risk premises)

IVEXSI
Defines the direction, criteria and governance of the decisions that sustain the entire system.

2 PLAN

Defined decisions are translated into plans, projects and resources to generate results.

PMI / PMBOK®

Project Governance
(planning, scope, schedule and costs)

Transforms decisions into plans and projects with objectives, timelines and budget.

3 CONFORM

Plans and processes are executed in compliance with recognized standards and best practices.

ISO STANDARDS

ISO 9001 / 14001 / 45001
Management Systems
(processes, compliance and audits)

ISO 31000 / 37301
Risk Management and Compliance
(risks, compliance and information security)

Ensures that processes are in compliance with requirements and regulations.

4 EXECUTE

Technology and information provide the support for efficient, secure and traceable execution.

COBIT®

IT Governance
(information technology)

Supports execution with technology, data, security and IT governance.

AN INTEGRATED AND INTELLIGENT CYCLE™

From strategic decision to technological execution, each system has an essential role — and together they generate sustainable value.

IVEXSI INSTITUTE LLC
DECISION SCIENCES FOR A BETTER WORLD™

Figure 1c

Figure 1 summarizes this relationship: IVEXSI operates in the technical governance of the decision, before choices are converted into plans, processes, and execution.

1.2 From Traditional Project Management to Project Management by Decision

Since the origins of modern Traditional Project Management, in the 1950s, cost, time, and scope have been fundamental reference points for planning and controlling projects. Later consolidated in the representation known as the Iron Triangle, these dimensions gave organizations a simple, practical, and measurable framework for planning, controlling, and evaluating execution. Their importance remains today, deeply embedded in the schedules, budgets, contracts, performance reports, and control mechanisms used by organizations.

Project Management itself, however, has evolved far beyond these three dimensions. The Project Management Institute (PMI) and other organizations, reference standards, and international approaches progressively expanded the discipline, incorporating risk, quality, stakeholder, benefits, strategy, governance, sustainability, adaptation, and value-generation management. A project ceased to be understood merely as a combination of deliverables completed within certain constraints and came to be seen also as an instrument of transformation and value creation for organizations.

At the same time, an extensive technological infrastructure was developed to support this evolution. Project management systems,

planning and collaboration platforms, PMIS, ERPs, risk management tools, financial systems, Business Intelligence solutions, and executive dashboards have come to offer an ever-greater capacity to plan, integrate, execute, record, and analyze projects. Today, organizations can track thousands of activities, resources, costs, risks, contracts, deliverables, and indicators practically in real time. The ability to observe and control execution has reached an unprecedented level of sophistication.

However, even with all this technological apparatus and the use of increasingly sophisticated planning, control, and management techniques, projects continue to exhibit significant failures — some with financial, strategic, operational, and human consequences of great magnitude. This reality reveals an important point: although indispensable, existing methods and systems cannot, on their own, explain, anticipate, or prevent every pattern of failure. It therefore becomes necessary to investigate what may be happening before problems manifest in traditional indicators, and what additional dimension could complement existing management capacity.

This dimension lies in a layer that precedes much of execution: the decisions that give rise to what will later be planned, executed, and measured.

A schedule does not arise spontaneously. It results from decisions about priorities, resources, dependencies, assumptions, and commitments. A budget incorporates prior decisions about alternatives, estimates, risks, and investments. A scope change stems from choices made in light of certain evidence and circumstances. Before much of this information reaches operational systems,

therefore, a structure of decisions has already begun to determine the project's trajectory.

Every project thus has two deeply interconnected structures. The first is the visible operational structure, made up of activities, schedules, deliverables, milestones, costs, resources, and indicators. The second is a decision structure, formed by choices, approvals, evidence, assumptions, technical judgments, priorities, responsibilities, dependencies, and responses to uncertainty. The operational structure materializes the project; the decision structure continuously guides and influences the trajectory along which that execution unfolds.

It is in this space that Project Management by Decision introduces a complementary capability.

In the architecture developed by the IVEXSI Institute, this function is technologically supported by the IVEXSYS System, designed to structure decisions, evidence, assumptions, responsibilities, and dependency relationships, allowing this information to connect with the existing technological ecosystem. As a project grows, the volume of decisions — and, above all, the relationships among them — makes manual tracking practically unfeasible. Analyzing dependencies, impact propagation, centrality, criticality, deterioration, and other structural metrics requires continuous information processing and updating of the relationships that make up the Decision Network. For this reason, although conceptually applicable as a management approach, Project Management by Decision, when applied to more complex projects, requires computational support

capable of turning a complex decision structure into information usable by managers and executives.

The principle is complementary: existing systems continue to perform the functions for which they were developed, while the IVEXSYS System adds the capacity to observe, analyze, and track the decision structure that precedes and continuously influences them. This is not about replacing the technological ecosystem of Project Management, but about adding to it a layer that is not yet observed with the same depth: the structure of decisions.

Project Management by Decision is, therefore, an integrated approach that combines Traditional Project Management with Decision Governance. The first plans, organizes, monitors, and controls project execution; the second structures, qualifies, governs, and tracks the decisions that determine its trajectory. Combined, these two capabilities constitute Project Management by Decision, making it possible to simultaneously observe execution performance and the soundness of the decision structure that guides the project's evolution.

This perspective shifts the point of observation. Cost overruns, schedule delays, scope changes, and benefit shortfalls remain essential indicators, but they also come to be understood as possible later manifestations of decisions made earlier. When a conventional indicator reveals significant deterioration, an important part of the problem's history may already have occurred weeks, months, or even years before.

This time lag is particularly relevant in large engineering, infrastructure, defense, aerospace, and complex organizational

transformation programs. Fragilities can develop through sequences of decisions involving incomplete evidence, excessively optimistic assumptions, fragmented responsibilities, inadequately considered signals, or insufficient responses to uncertainty. Individually, these decisions may seem acceptable; interconnected over time, they can progressively reshape the project's structure before operational indicators clearly reveal the problem.

Cost, time, and scope, therefore, do not lose their importance. They remain indispensable dimensions of planning and control. The issue lies in the level of observation: when these indicators reveal significant deterioration, the decisions that contributed to producing it may have occurred much earlier.

The question ceases to be merely whether the project is meeting cost, schedule, scope, and other performance indicators. An additional question now accompanies its entire life cycle:

Is the Decision Network sustaining the project structurally sound — and are we able to identify its deterioration before its consequences become irreversible?

1.3 Hidden Causes of Project Failure

Many initial decisions seem entirely reasonable when evaluated individually. A schedule may be compressed to meet strategic expectations. Technical uncertainties may be accepted because further studies would delay the project's start. Supply alternatives may be selected based on immediate financial constraints rather than long-term operational considerations. Engineering assumptions may be accepted without sufficient validation because historical

experience suggests acceptable confidence levels. Stakeholder concerns may be postponed to maintain political consensus. None of these decisions necessarily produces immediate operational consequences. Their importance often only becomes evident once subsequent decisions begin interacting with one another.

Projects therefore exhibit a phenomenon that can be described as cumulative decision dependency. Every significant decision changes the context in which future decisions will be made. An optimistic schedule increases pressure on engineering teams. Accelerated engineering reduces the time available for validation. Reduced validation increases uncertainty. Increased uncertainty generates additional changes during implementation. Each decision influences the next, creating trajectories that gradually shape the future behavior of the entire project system.

This process rarely follows a linear progression. Organizational decisions interact through complex feedback mechanisms, involving technical dependencies, contractual relationships, governance structures, stakeholder expectations, regulatory requirements, and evolving external conditions. As these interactions become increasingly interconnected, the project may begin to exhibit patterns of structural fragility that remain largely invisible to conventional project-reporting systems.

A further complication arises from the temporal separation between decisions and their observable consequences. Many critical decisions produce no immediate evidence of deterioration. Their effects remain latent until triggered by subsequent events, environmental changes, or additional organizational choices. An engineering commitment accepted during the conceptual project phase may not

generate measurable consequences until integration testing several years later. A supply decision aimed at reducing costs may eventually introduce unforeseen compatibility problems during system deployment. Governance fragilities established at the start of a project may only become visible when the project faces major uncertainty requiring rapid strategic adaptation.

This time lag frequently creates a false perception of organizational control. In the early stages of a project, executives may interpret the absence of visible operational problems as evidence that prior decisions were adequate. In reality, the project may simply not yet have reached the stage at which the structural consequences of those decisions become observable. By the time measurable deviations appear, the underlying causes are often already deeply embedded in contractual commitments, engineering designs, organizational structures, financial investments, and stakeholder expectations, making corrective intervention increasingly difficult.

The pattern seen in Challenger, Columbia, Mars Climate Orbiter, and the Boeing 737 MAX repeats a structure common to post-project investigations: not isolated operational errors occurring immediately before the collapse, but long sequences of interconnected decisions involving underestimated uncertainty, inadequate governance, fragmented responsibility, normalization of emerging risks, and insufficient challenge to prevailing assumptions. Each individual decision may seem relatively minor in isolation. Collectively, they gradually reshape the project's structural resilience until failure becomes increasingly likely.

None of this diminishes the importance of execution management; it relocates part of the explanation for project failure to a system

that execution alone does not control. Cost overruns, schedule delays, quality deficiencies, and benefit shortfalls become observable indicators of underlying structural conditions, rather than isolated operational events.

* * *

1.4 Why Even the Best Planning Is Not Enough

Planning has long been regarded as one of the fundamental pillars of Project Management. Every recognized project management methodology emphasizes the importance of defining objectives, establishing schedules, estimating costs, allocating resources, identifying risks, and coordinating activities before execution begins. Comprehensive planning reduces uncertainty, improves organizational alignment, facilitates communication among stakeholders, and provides the baseline against which project performance can later be monitored and controlled. Without adequate planning, complex projects would be exposed to unacceptable levels of operational uncertainty.

The remarkable evolution of planning methodologies in recent decades reflects the maturity the discipline has achieved. Modern organizations employ sophisticated scheduling algorithms, integrated cost models, digital collaboration platforms, simulation techniques, probabilistic forecasting, resource-optimization systems, and advanced project analytics. From an operational standpoint, planning has never been as comprehensive as it is today. However, as international research continues to show, project outcomes have not improved proportionally — suggesting that the limitations affecting

project success cannot be explained solely by deficiencies in planning technique. Planning, though indispensable, addresses only part of the underlying organizational challenge.

A project plan represents an organized projection of the future, based on assumptions considered valid at a specific point in time. Every schedule presupposes certain levels of productivity. Every budget presupposes specific market conditions. Every risk assessment presupposes identifiable uncertainties. Every resource allocation presupposes future availability. Consequently, every project plan is, ultimately, built on a foundation of organizational decisions about what is believed to be true about the future.

This characteristic introduces an important distinction between planning and decision-making. Planning organizes decisions that have already been made, whereas decision-making continuously changes the conditions on which planning depends. Once execution begins, organizations encounter new information, unexpected constraints, technological discoveries, stakeholder demands, regulatory changes, variations in supplier performance, geopolitical events, financial pressures, and operational uncertainties that were unknown or impossible to predict during initial planning. Under these circumstances, project success increasingly depends on the quality of the decisions made after the original plan is approved.

In practice, no complex project is executed exactly as originally planned. Schedules are revised, priorities are redefined, technical alternatives are reconsidered, contracts are renegotiated, resources are reallocated, risks evolve, and strategic objectives themselves may change over time. The project plan thus functions less as a rigid prescription and more as a dynamic reference that requires

continuous interpretation through successive organizational decisions.

This observation helps explain why two projects developed under nearly identical planning methodologies can produce drastically different results. Their initial plans may show comparable levels of technical quality, methodological rigor, and organizational consistency. However, as execution progresses, differences begin to emerge in how project teams interpret evidence, respond to uncertainty, challenge assumptions, authorize changes, evaluate alternatives, escalate concerns, and govern increasingly complex decisions. The divergence between successful and unsuccessful projects often arises not from differences in planning quality, but from differences in the quality of decisions made throughout execution.

Traditional project control systems generally assume that deviations from the plan should be minimized whenever possible. Although this principle remains operationally valid, it can inadvertently encourage organizations to preserve plans even when changing conditions justify reconsidering them. Teams may continue executing outdated assumptions because modifying the approved plan requires organizational effort, governance approvals, contract renegotiations, or political consensus. Under these circumstances, planning itself can become a source of organizational rigidity rather than a mechanism for adaptive management.

Project Management by Decision is an integrated approach that combines Traditional Project Management with Decision Governance. The first plans, organizes, monitors, and controls project execution; the second structures, qualifies, governs, and

tracks the decisions that determine its trajectory. Combined, these two capabilities constitute Project Management by Decision, making it possible to simultaneously observe execution performance and the soundness of the decision structure guiding the project's evolution.

For this reason, a project's performance should not be assessed solely by the quality of the original plan, but also by the quality of the organizational decisions that continuously reshape its trajectory after planning is complete. A carefully planned project driven by inadequate decisions can evolve toward failure. Likewise, a project that begins under a high degree of uncertainty can achieve exceptional results when its critical decisions are continuously structured, governed, validated, monitored, and refined throughout execution.

This finding does not diminish the importance of planning. On the contrary, it reaffirms its role as one of the foundations of professional project management. However, it proposes a shift in perspective: planning does not represent the end of the decision-making process, but only its starting point. From it begins a succession of strategic and operational decisions that continuously redefine the project's future.

If planning alone were sufficient to explain project success, mature organizations, well-established methodologies, and highly qualified teams would not continue to produce recurring failures. This evidence indicates that there is an additional dimension that needs to be understood and governed.

It is precisely this dimension that this book seeks to make explicit. The proposal presented here consists of a new paradigm for project management: a paradigm in which the governance, quality, and

intelligence of decisions cease to occupy a peripheral position and become the primary core of project management.

1.5 The Need for a Decision-Centered Paradigm

Every mature scientific discipline eventually reaches a point at which incremental improvements become insufficient to explain increasingly complex phenomena. At such moments, the discipline is often led to reconsider its own conceptual foundations, rather than simply refining existing techniques. Traditional Project Management has undergone continuous methodological development throughout its history, but the persistence of major project failures suggests that methodological refinement alone may no longer be sufficient to explain why projects ultimately succeed or fail.

1.6 Decisions Shaping Possible Futures

Throughout this chapter, it has been shown that projects fail not only because of deficiencies in execution, nor exclusively because of planning limitations. Before schedules slip, costs rise, or risks materialize, there is a succession of decisions that progressively builds the project's trajectory. Execution reveals the effects of these decisions, but not always their causes.

This finding leads to an important shift in perspective. Traditionally, Project Management has focused its efforts on organizing work: defining activities, allocating resources, controlling schedules, managing costs, monitoring risks, and coordinating teams. Project Management by Decision proposes observing an earlier and more fundamental level: the structure of decisions that continuously guides, modifies, and governs all of that execution.

This becomes even more relevant in environments characterized by high complexity, intense technological change, regulatory shifts, global supply chains, geopolitical risks, environmental pressures, and the growing use of artificial intelligence. Under these conditions, no plan remains fully valid throughout the project's entire life cycle. Adaptive capacity comes to depend less on the rigidity of the original plan and more on the quality of the decisions made in response to new information, new constraints, and new opportunities.

Each decision changes the very context in which subsequent decisions will be made. A scope change influences investments, technical architecture, contracts, schedule, resources, risks, regulatory compliance, and expected benefits. Decisions therefore cease to be isolated events and instead form a dynamic system of relationships, in which each choice continuously alters the project's evolution.

From this perspective, each decision also transforms the set of futures that remain possible. Some alternatives cease to exist, others become viable, and new trajectories may emerge. A project's future is not predetermined by its initial plan; it is continuously built by the decisions that guide its evolution. Projects do not follow a fixed trajectory; they continuously evolve within a Space of Future Possibilities, whose configuration changes with every significant decision.

This dynamic remains practically invisible in traditional management models. Schedules, budgets, work breakdown structures, and performance indicators describe how execution is organized, but they do not explicitly represent the architecture of decisions that governs that execution. Behind the operational structure lies a

decision-making system made up of criteria, authorities, governance mechanisms, validation processes, information flows, and organizational responses to uncertainty. It is this architecture that, ultimately, determines the project's ability to preserve its strategic direction while facing continuous change.

Project Management by Decision seeks to make this architecture explicit. Planning, scheduling, risk, quality, procurement, and governance remain essential components of professional practice; however, all of them depend on the quality of the decision-making system from which they originate.

This perspective significantly expands organizations' adaptive capacity. By treating decisions as objects of engineering and governance, it becomes possible to identify structural fragilities before their effects manifest as delays, cost overruns, conflicts, or operational failures, favoring preventive interventions over corrective, and often belated, responses.

This capability stems from the fact that decisions do not merely produce results; they continuously alter the very space of futures available to the project. Each decision exerts a curvature on its future trajectory. By analogy with Physics, in which the presence of mass and energy curves space-time and modifies the motion of bodies, organizational decisions curve and deform the Space of Future Possibilities. Some decisions expand this space, preserving alternatives, creating opportunities, and increasing the organization's adaptive capacity. Others compress it, eliminating possibilities, imposing constraints, and steering the project toward progressively more limited trajectories. Decisions, therefore, do not merely guide the project toward the future; they curve its trajectory and

continuously reshape the configuration of the futures that can still be reached.

This perspective introduces a new way of understanding the evolution of projects. The future ceases to be a predefined destination and becomes a dynamic space of possibilities, shaped by decisions. This phenomenon underpins the Theory of Possible Futures and will be explored further in Mirror of the Future, dedicated to the Theory of Decision Curvature and to how decisions expand, restrict, deflect, curve, and reconfigure the futures of projects, organizations, and societies.

Figure 2 illustrates this dynamic through three future configurations. In the Expanded Future, decisions broaden possibilities, enhance value, and favor positive, lasting impacts. In the Regular Future, the project achieves the expected results, with acceptable performance and deliverables in line with its objectives. In the Contracted Future, successive decisions reduce possibilities, compromise value, and can lead the project to failure.

DECISIONS SHAPE THE FUTURE

Throughout execution, each decision can expand, keep on track, or delay the project's future.

BETTER DECISIONS.
BRIGHTER FUTURES.
EXTRAORDINARY RESULTS.

Each decision influences the next.

Small decisions today create big consequences tomorrow.

Governing decisions means governing the future.

DECISIONS DRIVE A BETTER TOMORROW

Throughout execution, each decision can expand, keep on track, or delay the project's future.

BETTER GOVERNANCE.
BETTER RESULTS.

Each decision influences the next.

Small decisions today create big consequences tomorrow.

Governing decisions means governing the future.

Figure 2

IVEXSI
INSTITUTE

The International Decision Governance Authority™

PEOPLE
KNOWLEDGE
DECISIONS
A BRIGHTER
TOMORROW

AN INVITATION TO CONTINUE

PROJECT MANAGEMENT BY DECISION™

The journey continues.

Dear Reader,

I hope you have enjoyed this Courtesy Edition and that it has inspired you to look at project management from a new perspective.

What you have read is only the beginning.

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Artificial Intelligence is transforming how we work, analyze, execute — and increasingly, how decisions are made.

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