Managing Technology

Supervising Projects You Don't (Fully) Understand:

LESSONS FOR EFFECTIVE PROJECT GOVERNANCE BY STEERING COMMITTEES

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SUMMARY

Strategically important projects involve high stakes, uncertainty, and stakeholder complexity, with contingencies and risks typically surfacing repeatedly as the project evolves. This is challenging not only for the project team (PT) but also in particular for the steering committee (SC), the top management oversight structure typically used to align a project with the organization's strategic goals. This article explores how senior executives on SCs can exercise leadership and effective oversight of strategic projects, although they have only limited time and often incomplete expertise. The SC can keep a project aligned, even with limited time, through focused understanding of the key logic and drivers of the project. The SC needs to manage the surprises and crises that inevitably arise in a difficult project through proactive analysis that goes to the bottom of the problem and by working with the PT to generate solutions.

KEYWORDS: strategic projects, project supervision and oversight, project governance, steering committee work, focused understanding, managing surprises

Many senior executives are frustrated with how difficult it is to influence important projects in their organization, whether in order to align them better with strategy, manage risk levels, get ailing projects back on track, or even get valid information on them in the first place.[1] Executives on project steering committees (SCs) sometimes describe themselves as hostages, overwhelmed by myriad opaque technical issues and by the difficulty of really understanding what is going on.

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At the same time, the role of top management is crucial,[2] and it goes far beyond the well-known "sponsor" role[3] (or "head cheerleader"[4]). Critically, top management must monitor projects[5] to ensure that they produce value and align with the organization's strategic goals. Typically, this takes place through the SC, a temporary group of senior executives charged with a joint project ownership role on top of their regular tasks, roles, and responsibilities. With limited expertise and facing severe time constraints,[6] SCs have to balance support and governance and make sound decisions.[7]

Consider a project aimed at developing a new cancer diagnostic test (based on a biological blood marker) that was carried out at a global diagnostics company in partnership with a small biotech company. Eighteen months in, the project faced horrendous schedule and budget overruns, with market entry so much delayed that profitability became unreachable, and it was abandoned. The key reason for this was supervision failure. The large company's SC members did not understand the uncertainty involved and trusted the technical experts too much, not realizing that their "expert jargon" hid weak assumptions. Once difficulties arose, the SC fell into the trap of desperately wanting the business to materialize, dropping the issues they did not want to see until it was too late. One executive commented, "We finally started to challenge the assumptions of the project, but we did this 18 months too late." Had they insisted early on for a clear account of the uncertainty, the SC could have guided the project team (PT) toward a modified development approach, including the creation of backup plans. This could have either rescued the project to a profitable conclusion, or terminated it earlier, saving time and money.

This leads us to the central leadership dilemma addressed in this article: how can the SC keep difficult projects on track when they are not familiar with all the issues involved and have limited time?

Prior research has remained largely silent on how SCs should fulfill the heavy responsibility of ensuring and maintaining the alignment of a complex strategic project with the organization's goals and priorities. Work on SCs is scarce[8] and mainly focuses on up-front composition and self-organization[9] and on goal setting.[10] Studies acknowledge the importance of the SC throughout the project's life cycle,[11] its role in communication and power brokering,[12] and in solving problems and providing directions when dealing with emerging issues.[13] However, too little attention has been paid to the dilemma of how an SC can achieve effective oversight in spite of a lack of detailed expertise and time.

In our study, we examined strategic projects that were important for the future competitive position of the organization (and thus supervised by a senior SC); the strategic (non-repeated) nature of the projects also made the SCs "one-time" task forces rather than standing committees. In order to focus on the challenge of supervision when standard milestone approaches are insufficient, we asked our respondents to consider "difficult" projects. In the words of our respondents, this meant: "Insufficient clarification (and definition) of interfaces and interactions of work packages, be the interfaces internal or external." This includes novelty and uncertainty (lack of knowledge of cause and effect) as well as complexity (many interactions, either technical among system components or among

stakeholders), explicitly forcing the SC to engage in ad hoc problem solving rather than mere routine milestone reviews.

How We Conducted the Study

To explore the challenges facing SCs and to identify effective strategies for them, we conducted in-depth interviews with 17 senior executives or chief executive officers (CEOs) from different industries on 29 projects (see Table 1). To prepare our participants, we provided them with a set of questions beforehand (see the appendix). We also asked them to prepare by thinking of two "difficult" strategic projects for which standard milestone oversight processes were insufficient: one project where SC supervision had worked well and one where it had not worked as hoped.

We considered three types of projects that previous research typically considered separately: R&D projects, engineering services projects, and organizational change and information technology (IT) projects (see Table 1). When asking about "difficult" projects, we intentionally left this term undefined because we wanted to see what key supervision challenges would emerge. Interestingly, it turned out that in all three project types (R&D, engineering services, and organizational change), respondents agreed on what made a project difficult (see definition above) and on the most important sources of difficulty: different stakeholder interests, project novelty, and project complexity (see Table 2 for a summary). This consensus suggests that the three types of projects are not very different for the purpose of SC supervision, and we therefore combined them in our analysis. (See the appendix for more details on our methodology.)

Results

What are typical mistakes made by SCs? By categorizing the constructs identified in our analysis, we identified five themes of supervision challenges for the SC: SC composition, goal agreement, PT motivation and control, intelligence gathering, and managing surprises and change. Table 3 highlights typical "traps" that each theme poses for SCs. In addition, SCs often insufficiently prepare for changing project circumstances, which may require difficult negotiations about a new project approach. Traps also exist in how SCs agree on project goals, how they control *and* motivate the PTs, how they become knowledgeable about actual project progress, and how they deal with the inevitable changes and surprises that befall difficult projects. All of the traps in Table 3 can cause supervision to fail and projects to go wrong.

Themes 1 through 3 have been discussed in previous work—while the recommendations are still often not adhered to and lead to the traps in Table 3, research has identified what *should* be done. Therefore, we focus our detailed discussion on themes 4 and 5, "Intelligence Gathering" and "Managing Surprises and Changes." (In the conclusion, we also incorporate the recommendations by our respondents on themes 1 through 3 in order to provide a complete picture.)

TABLE 1. Interviewees and Example Projects.

Industry	Country of Informant	Position	Success Project	Failure Project
R&D projects				
1. Car manufacturing	Germany	COO	(General issues discussed but no specific projects given)	
2. Car manufacturing	Germany	VP	Vehicle development	Pre-development
3. Car manufacturing	Germany	Plant manager	New vehicle concept development	Address system interactions across car
4. Owner/investor	Israel	CEO	New printing product that would kill current product line	Intestinal cancer marker based on new technology
5. Pharmaceutical R&D	Belgium	Head of Discovery	New risky compound	Trial with unexpected negative outcomes
6. Pharmaceutical R&D	Germany	Head of clinical trials	Development collaboration with large U.S. partner but from another industry	Development collaboration with small Asian partner
7. Chemical engineering	Germany	Head of corporate R&D	Two projects each with strengths and weaknesses: high-risk new technology and collaborative work with business units.	
Organizational change and IT projects				
8. Hospital	Sweden	CEO	Organizational restructuring (into divisions)	Shared patient documentation across hospitals
9. Truck manufacturing	Sweden	Head, after-sales	Global order management for customized trucks	Solution for process support of reseller service provision
10. Power electronics	Germany	CEO	Cross-functional technology development	Corporate sustainability strategy
11. Local health care authority	Sweden	COO	Patient record consolidation into one system	Shared data management across hospitals
12. Banking	France	Head of IT	(General issues discussed but no specific projects given)	
13. Telecommunication	Sweden	Head, IT and security	Personnel integration of an acquired company	Salary administration after a merger
14. Software	Germany	Head of services	System to allocate employees to service projects	Knowledge management system
Engineering services projects				
15. Engineering services	Germany	CEO	(General issues discussed but no specific projects given)	
16. Construction	France	Head of projects	One project with strengths and weaknesses: construction of a new type of building	
17. Engineering and machinery	Germany	Division head	Chemical production facility at unprecedented scale on another continent	Development of emergency power generators for nuclear plant

Note: R&D = research and development; COO = chief operating officer; VP = vice president; CEO = chief executive officer; IT = information technology.

TABLE 2. Sources of Supervision Challenges.

Case No.	R&D								Organizational Change and IT						Eng. Serv.			Sum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Stakeholders		X	X		X	X	X	X	X		X		X	X	X	X	X	13
Novelty/ Uncertainty		X	X	X		X	X			X	X		X		X	X	X	11
Complexity						X		X			X	X			X	X	X	7
Lack of Ownership								X				X		X				3
Method Rigidity									X		X							2

Note: R&D = research and development; eng. = engineering; serv. = services; X = presence of supervision challenge.

TABLE 3. Themes of SC Responsibility and Challenges.

1. Steering Committee Composition	2. Goal Agreement	3. Motivation and Control	4. Intelligence Gathering	5. Managing Surprises and Changes
Challenges in SC creation: • Temptation to include everyone "who is important" or "everyone even remotely concerned" Challenges regarding SC discipline: • "Just show up between other responsibilities" • Lack of procedural agreement leads to breakdown of collaboration when things get difficult	Challenges: • Conflicts of interest of stakeholders are "swept under the carpet" • In order to avoid conflicts in the SC, goals become too vague to be measurable	Challenges for incentives: • Bonuses lead to "more of the same" behavior, or incentives absent, leading to PT having nothing at stake Challenges in motivation: • Micromanage on one hand, or over-reliance on trust, effectively abdicating responsibility • SC blames and thus suppresses open discussions	Challenges for detecting deviations from plan and getting project back on track: • SC does not understand key drivers and barriers • SC fails to ensure that information it gets is valid • SC meetings are ceremonial, do not challenge assumptions	Challenges: • Obsolete action plan maintained too long • Inadequate response to changes, for example, firefighting or incorrect interpretation • Changed situation changes interest constellation among stakeholders, and collaboration within SC is lost • SC does not provide clear decisions

Note: SC = steering committee; PT = project team.

Despite the lack of prior research on themes 4 and 5, they are particularly important for "difficult" projects. How can the SC keep abreast of what is really going on? How does the SC make difficult decisions when the project is in trouble and needs to be redefined? Indeed, a lack of understanding by the SC may *contribute* to surprises over the course of the project.

Intelligence Gathering: Coping with Insufficient Information

Many SCs fail to become sufficiently knowledgeable. As one of our respondents noted,

> Some people on SCs do not invest the effort to question and insist until they have a clear understanding of the fundamental logic and drivers. This has two reasons, (a) because they are too busy (and do not have enough time for this important responsibility), or (b) because they do not want to admit that they don't know— after all, when you have reached a certain seniority, you become more reluctant to admit in front of the "troops" that there is stuff of which you are ignorant.

However, when the SC is not informed, then decisions are either not made (another respondent called it, "the project is covered in wool and becomes opaque"), or they are made by the PT in ways that are not necessarily aligned with the company strategy and can cause problems later.

Two examples from the facility engineering industry illustrate how critical it is for the SC to understand the key trade-offs and risks in the project. In the first example, the company took on a large, complex project that required compatibility with legacy regulations. The SC accepted the project plan without sufficiently challenging the assumptions, failing to become aware of some technical challenges as well as some legal regulations affecting customer requirements. As a result, the company agreed to a project that could not be achieved within the time plan, and only after the third schedule delay did it begin to dawn on them that this project was a "bottomless pit."

In the second example, the company constructed a new chemical production plant. In this project, all key decision makers were in the SC, and everyone on the SC understood at the beginning that this was a highly risky project. This created the willingness to openly discuss even the most difficult issues. The SC learned how to identify the most important challenges before problems became critical. When challenges occurred that required changes, the need for change was openly discussed, and decisions were made quickly and unanimously to prevent the project from spinning out of control.

How can the SC become sufficiently knowledgeable when there is not enough time? Our respondents suggested that successful SCs approach this problem from two sides. On their own side, they strive for a *focused understanding* of the project. On the side of the PT, the SCs try to *motivate the PT to reveal complete and truthful information* about events. If necessary, *outside information* can help to enforce transparency.

Invest in focused understanding. While it is impossible to understand all details, the SC needs to understand the *logic* of the project, its key parameters and key barriers to success, including an understanding of where the project novelty lies. "Ideally, you should understand 70% of what's going on; realistically, it is often closer to 50%, but it's not 30%." This requires "going beyond a consumption attitude," to study the relevant documentation beforehand and to *question assumptions* throughout the project. To enable this, each SC member has to repeatedly ask:

> Have I understood this? And if not, ask again, and if necessary, even meet with the team outside of the official SC meetings. Clarify for yourself what questions you *do* have, do not simply wait for what they tell you. This allows you plausibility checks and consistency checks.

An important aspect of this is that technical jargon must be translated into business language that reveals the key trade-offs.

> People tell you a lot of stuff in such situations: on one extreme, pseudo-plausible hot air (the lack of substance of which becomes apparent only over time); and on the other extreme, expert jargon behind which one can hide weak assumptions and [other] weaknesses. I have to regularly test the milestones for their controllability. I must understand what [reaching the] milestone gives me what I did not have before: a clear analysis, a partial functionality, a customer.

Exactly what is critical for an individual SC member to understand depends on that member's role.

> Are you there for general/overall input . . . or do you have a specific role? Depending on your role, ask yourself: What will help me to *drive* success? What will help me to understand the critical path? And, what will help me to understand the key barriers, the contentious or scarce resources or the critical pieces?

Finally, it might be useful to "*look at the project through the PT's own eyes*—for example, through site visits and informal conversations. Being in direct touch with the project often provides a better understanding of the problem and reveals risks more easily."

Get truthful information. In addition to getting a focused understanding of the project, the SC also needs to "get the truth" in a timely manner, especially about critical events or mistakes later in the project. Open discussion and exchange is a key element for this—a *no-blame culture* where the "messenger is not in danger of being shot."

> It all comes down how mistakes are treated. The answer should not be a barrage of criticism ("this *has* to change!"), but working with the mistakes. The SC must insist on a . . . correction of the error, but not necessarily with a damning reaction. Mistakes [happen] for many reasons. It is a natural reaction by the SC to become irritated when a mistake was covered up. But the trick is to not get into a negative spiral. Make it

unambiguously clear that the rules here require openness in order to be able to collaborate, but at least the first few times the SC should also show some understanding and sympathy. It is a trap to fall too quickly into a suspicion of being cheated.

A vivid example of withholding blame happened at a pharmaceutical company. The vice president (VP) was on his way to an award ceremony, where outstanding PTs were honored for their work. On the way, he received an urgent phone from the project manager (PM), reporting that an unexpected toxicity problem had arisen in the very drug that was scheduled to win an award. Arriving at the venue, the VP informed the CEO. Should they cancel the award for this team? They decided to go ahead and award the team, but afterward, they took the team aside, alerting it to the fact that top management was aware of the issue. The CEO criticized and partly blamed the VP in front of the team for the fact that this problem had been discovered so late. The VP, resisting blaming the team, swallowed the criticism. This showed the PT that they could trust him as a superior and SC member, and they doubled their efforts. Three weeks later, they made a breakthrough, reducing toxicity by 70%, so the drug could safely go ahead. While passing the buck and blaming the PT would likely have had a demotivating effect, the no-blame approach of the VP instead focused the PT on solving the problem, and it instilled them with confidence and loyalty. The PT never forgot this in subsequent projects.

Get outside information. If serious inconsistencies or problems arise, the SC may seek additional opinions by interacting with team employees or consulting external experts (see Box 1). Caution is advised, however, since this approach may be viewed as distrustful and could disempower the PM, reducing PT motivation.

BOX 1. Strategies of Acquiring Information from Multiple Sources.

Building additional information channels may help:

Make field visits: "I visit the units (straight into the field) to take a look at what was going on. If you are the captain you have to walk the deck at times, not just stand on the bridge." According to another CEO, "You cannot understand a facility project unless you have gone to the site to see it."

Go to trade shows and see artifacts, even "wear different hats" and talk to people informally, without relying on your official position.

Look for friends who have access to and can provide additional, perhaps diverging, information, for example, board members, other people who know the industry. Sometimes, you might even call on a PT member "socially" (it is a "non-meeting," perhaps even "non-quotable," so you get sensitive information).

Create an advisory group of external people.

However, external opinions, especially formal reviews, are to be treated with caution because they can also do damage, as external experts may not understand the strategic priorities or have their own agendas:

What is the "right" external opinion? "I trust the people in my organization (within limits) to try to do the right thing. I do not have that trust in external advisors; they too often try to tell you what they think you want to hear."

While many interviewees advocated searching for information anywhere you can get it, some advised caution about appearing to break the chain of command: "I do not go around spying behind the back of the PM. If I meet team members lower down and talk to them, that is happenstance."

Note: COO = chief operating officer; PT = project team; PM = project manager.

It is essential that getting additional and sometimes detailed information (e.g., from team members) does not lead to meddling in details (or creating a concern in the PT that this might happen).

Managing Surprises and Changes

As many executives know from hard-earned experience, strategic projects of extended duration that are novel, complex, and/or involve multiple stakeholders share the characteristic that even the best-laid plans can go awry. If the PT and SC cannot jointly address a crisis, the project often enters into a destructive downward spiral, in which the PT engages in "window-dressing" (hiding problems) for the SC, and, as problems re-erupt, the SC–PT relationship becomes progressively undermined. This destructive cycle also frequently triggers conflicts within the SC. Conflicts in the SC also frequently emerge. When surprises materialize and crises occur, the PT and the SC therefore need to show flexibility and have the ability to re-plan the project and adapt.

For example, one of our interviewees described a construction project involving a historical building to be renovated and partly rebuilt. This was a showcase project for the company, but with a major known complication, namely, asbestos. A major surprise occurred, however, when the PT realized that asbestos was not only in the walls but also in the load-bearing concrete structures. Neither the PT nor the SC had prior experience with this problem, so they brought in people from different backgrounds and brainstormed solutions for several days. Finally, one project engineer had the idea to apply an approach used in underground parking garages. With some cost penalties, this solution resulted in a viable timetable and enabled a successful completion of the project.

Our interviews revealed six useful approaches for addressing unexpected problems: foresee *solution procedures* at the outset, *get informed quickly*, understand the *reasons* for and the *consequences* of the event, use the *PT's expertise in getting solutions* on the table, *make a clear decision*, and *use experiments* to learn proactively.

Foresee solution procedures at the outset. The uncertainty inherent in a difficult project ideally needs to be accounted for from the beginning. However, this aspect of project initiation is often underplayed, partly due to a managerial "craving for control" (and the fear that detailed analyses of uncertainties can stop the project before it gets started). Furthermore, unaddressed differences among SC members sometimes lead to glossing over or downplaying problems (which pushes ambiguity onto the PT's work). Also, there is often an unfounded belief that up-front planning can reduce uncertainty to a level that can be managed with buffers.[14]

Nevertheless, it is important that the SC at the outset develops *procedures* for how to deal with possible plan modifications. "Once the problem has occurred, it is already too late because everybody descends into their trenches"— in other words, uncertainty interacts with the SC's ability to *maintain a common goal*. The elements required for successful renegotiation include relationships of

trust among SC members, recognition of uncertainty and the resulting possibility of substantial plan modifications in the initial plan, and the *in-advance specification of a renegotiation process*. Project changes can upset the balance among stakeholders and imperil a working coalition, resulting in conflicts in the SC. Projects will succeed only if the SC continues to find compromises that do not create losers.

Get informed quickly. Even if the SC has identified operational targets with no hidden trade-offs, surprises often appear like bolts of lightning from a seemingly clear sky. When trouble hits, the SC and PT must avoid the extremes of either sticking too long with the action plan (which may be obsolete) or firefighting in response to a multitude of external events. There are several reasons why the SC might not react to signs of trouble: the SC may receive so many complaints that it cannot respond to every alarm; performance targets may be so rigid that the PT is insufficiently open with the SC; and the SC might

> fall into the trap of desperately wanting the business to materialize, so you do not want to see the problems . . . [so] you give in and drop [the ball regarding] . . . what you don't want to see.

To be effective, the SC needs to ensure a quick reaction: "The issues must be brought on the table quickly and clearly . . . [I tolerate] no delay under the mantra 'we can still make it.'"

In order to quickly detect a severe problem, it is crucial to have a good *"baseline" comparison*, that is, a sufficiently detailed plan. In the words of an engineering services CEO,

> A "first tier" team produces a comprehensive networked project plan with interactions, which allows a diagnosis at any time when problems arise. This is not an issue of having captured all interactions, but of having the critical interactions . . . A good base plan allows you to diagnose progress and the effect of changes [to the plan].

Ensuring this openness from the PT toward the SC is directly related to the type of *incentives* used in the project.

> When you are doing new things in the organization, bonuses are terrible. Bonuses assume that you know where you are going and that you make the bonus depend on the right indicator. But that causes rigidity because when new things happen, the previously defined indicators become wrong; they need to change. Bonuses encourage "more of the same."

In other words, formal incentives are rigid because they cement things that may need to change in the project. Similarly, if the SC focuses only on what can be measured (using key performance indicators), this may lead the PT to neglect to report or even hide information to protect itself, undermining trust.

Addressing incentive issues thus requires a combination of formal and informal evaluations. The SC should reward not only successful outcomes but also consider effective problem solving and open communication.

> We do not have only super heroes in our organization . . . Everyone makes mistakes, and we do *not* . . . link project outcomes . . . to bonuses or salaries . . . , we base our judgment on the PM's activities. How does he keep schedules, or at least the parts that he can influence? How does he deal with problems? Does he anticipate them or react only when an explosion occurs? Does he push (e.g., try to change the environment and mobilize resources) when he runs into problems, and does he seek help and support when there is danger? How does he work with the SC to get through difficult situations?

Such an evaluation on activities rather than outcomes is sometimes referred to as "process incentives."

Understand the reasons for and the consequences of the event. When surprises do occur, it is essential to determine whether the deviation reflects a correctable mistake, an unavoidable but minor occurrence that can be compensated for, or grounds for modifying the plan. To allow the SC to make this assessment, executives should "ask for an analysis of the consequences of these new developments . . . a red-yellow-green assessment. If this is a red flag, you want to talk in depth about the situation." To avoid continuous firefighting, it is also important to assess the full scale of the problem: "There is nothing worse than repeated . . . bad news and a realization that the fresh resources that we brought to bear are insufficient."

Use the PT's expertise in getting solutions on the table. It is crucial that the SC not impose solutions.

> It is not OK to force onto the team the solution that oneself would have chosen. Some SCs influence the decision on the color of the linoleum floor of the facility building. This way, (a) the SC ridicules itself and (b) you may get "funny solutions." However, the SC does need to take responsibility for decisions being made at all, for example by asking: "Does the floor correspond to the specs, and will it be put in place according to schedule?" If it does emerge that the original specification of the floor was incorrect, then the SC should still not take the decision on the right color, but it or the PM—depending on who sees this first—should raise the flag and initiate a correction of the specs.

Apart from the fact that the SC members typically do not have the detailed project knowledge required to identify the best possible solution, the SC also needs to avoid demotivating the PT. Indeed, another CEO states,

> Do *not* meddle in operational issues (especially not when the customer is involved). It demotivates the team because you are denying them being taken

seriously, and it wears out your authority—senior managers should be brought to bear in careful dosages.

Make a clear decision and articulate priorities. When changes do occur, the SC must make a clear decision on the project direction. The SC ducking important decisions amounts to an *abdication of responsibility*. For example, one pharmaceutical supervisory council was confronted with trial data hinting toward heart-damaging side effects of a new drug. When the CEO, who had the supervisory role for the project, was confronted with this information, "the CEO simply said, 'I trust you.' But what he was implying was, 'I don't understand any of this, so you make a decision.'" The VPs ended up taking the decision to introduce the drug. Without guidance, they settled the risk-reward trade-off in one way, but it was not necessarily the trade-off that the CEO wanted or that was consistent with the overall vision of the project.

While abdication is one problem, allowing *too many voices* and not prioritizing what should be done are equally problematic. Consider an electronics strategy project in an automotive company. The project cut across multiple functions, all represented in the SC. The PT could never nail down the stakeholders because the SC was ambivalent toward allowing enforcement of their decisions rather than voluntary buy-in. However, sound general principles often became questionable at the level of specific processes, priorities, and decisions—reducing ambition level and progress. In the end, this project never came close to reaching its original mission. This is a common fate of projects that carry the burden of ambivalent leadership at the SC level.

In extreme cases, when the defined context of the existing project is violated, making a clear decision might require more than project redirection. Rather than "muddling through," the SC might want to declare the project terminated, and then start a new project from scratch where the old one left off. The new project would have to start with a new business plan and a new resource allocation. "Make a clear cut," and get a fresh start, but with the knowledge and experience gained in the previous attempt intact.

Use experiments. In some cases (where time is not so pressing that risks need to be taken in order to move forward), uncertainty can be anticipated and diffused with experiments, which can help break through problems. "It is dangerous to plan a three-year process and stick with that plan [regardless]. Had we done that, the process would have derailed a long time ago." Unfortunately, experiments tend to look expensive and time-consuming. In fact, only two of our respondents use experiments regularly. However, when fundamental risks and assumptions are not understood and making "progress" is a mirage, a small investment in an experiment may pay back manyfold if it helps uncover a major erroneous assumption. (Box 2 provides an example of how experiments are used.)

BOX 2. The Need for Experimentation and Iteration.

"When you do not get credible answers, [because the team does not know how to proceed] . . . the process becomes iterative. You can set a general direction and an overall vision, but you don't know all the conditions from the beginning and the environment changes, and you have to take that into account . . . We do a trial first, but always formalize what we do. The trial becomes a written assignment, with a defined task for that phase."

Example from one respondent: how experimentation works

"When an ad agency designs an ad, a proof needs to be approved before the offset press starts running it in large quantities. We developed a normal laser printer to provide this proof, 'simulating' the offset press at only 10% of its costs. But since this digital proof is not 100% 'true,' the designers refused to sign off the digital proof: we faced market resistance."

"Trying to address the discomfort of the ad designers, we got into preliminary test prints that did not commit anyone. The people who received them liked them, worked with them, and became comfortable with them. This, first, already generated a business (although smaller than originally foreseen), and, second, after two years the organizations had become so comfortable with the digital proofs that ultimately the final offset proof became irrelevant. Everyone had learned to interpret and work with the (less than perfect) digital proofs. Thus, we had indeed overcome the market resistance."

"More generally, when surprises happen causing resistance, you ask, 'Can we conceptually break the resistance down into smaller components, or redefine it?' For example, you go from the 'true' offset proof to the interim (approximate) digital proof. You create *micro-level experimentation* to create something that works. This is a trial-and-error decision process that can, of course, also lead to termination at any point."

Conclusion

Our study shows that effective SC work is crucial for strategic, difficult projects. We identified not only traps and problems in current practice (see Table 1) but also effective strategies that executives can use (see Table 4). Recognizing the challenge of SCs to ensure project alignment and progress in spite of limited expertise and time, our study offers detailed and actionable insight into *how* SCs can carry out their important governance and oversight responsibilities for difficult projects.

We identify five major themes of SC supervision challenges: SC composition, goal agreement, PT motivation and control, intelligence gathering, and managing surprises. Each of these five themes can lead to supervision and project failure, but only the first three have been discussed in earlier research. Hence, we have paid particular attention to reporting and discussing the insights related to themes 4 and 5. Nevertheless, we also summarize the recommendations for themes 1 to 3 in Table 4. Although they are "known," they emerge in our interviews as challenges, suggesting that they have not yet become part of the standard repertoire for project governance.

For the SC's ability to gather intelligence to understand the project, the recommendation is, first, *focused understanding*. The SC members need to spend the time to understand the key logic and its drivers, and the key risks and their reasons. This includes insisting on a successful translation of technical jargon into business language, and continuing to ask "dumb" questions until the SC member can perform plausibility checks on information that comes to them from different sources. Focused understanding requires discipline and SC members should not

TABLE 4. Summary of Recommendations for Effective Steering Committee Work.

I. SC Composition	2. Goal Agreement	3. Motivation and Control	4. Intelligence Gathering	5. Managing Surprises and Changes
Manage SC creation: • Key stakeholders represented, but not more than six to eight people • Every member understands his or her own role of what he or she can contribute Set up governance: • Agree on meeting rules, and procedures for negotiation and decision making • Invest in relationship and trust building	• Articulate conflicts of interest and produce workable and stable compromises: build win-win spirit • Translate desired business contribution into clear, operational deliverables that can be translated into measures (measures to be developed later by the team) • Produce detailed scoping document: required actions, rough budget, important conflicts and trade-offs among goals, required expertise, key barriers and risks, and areas of insufficient knowledge; candid working document, not political statement	• Ideal PT has right competence mix and experience, but often PT is already in place when SC is established • Incentives: not only quantitative indicators but also process goals—professionalism, communication, and resourcefulness. But here must be no possibility to profit from failure • Motivation: avoid both micromanagement and pure trust (verify key trade-offs), build culture of openness, coach the PT	• Invest in focused understanding: understand logic and risks, challenge assumptions, force translation of technical issues into business issues, have firsthand information • Get truthful information: maintain no-blame culture, do not rely only on outcome incentives • Get outside information: field visits, external visits, and so on, but be wary of external expert opinions (which have their own biases)	• Establish SC problem-solving procedures at the outset, to maintain win-win relationship • Get informed quickly (standard of proactive reporting) • Understand reasons and consequences of change ("get to the bottom") • The PT is responsible for generating solutions • Make a clear decision • Use experiments to learn and explore available approaches

Note: SC = steering committee; PT = project team.

fear "looking incompetent" but keep going until they understand. While seeking information from multiple team members, they should resist the "shortcut" of too quickly bringing in outside experts to make themselves more comfortable, because this might signal a lack of confidence in the PT.

The hardest test for an SC comes when a major surprise occurs and the project must adjust. This challenge involves the SC's internal relationships and the quality of its decision procedures. Trust and transparency are needed for the SC to be able to adapt and renegotiate the project's goals while coping with shifting benefits for various SC members. Furthermore, the capability to guide the change depends on the SC-PT relationship. The SC must be immediately informed of *possible* changes, not just those that have actually occurred. This requires trust and evaluation based on actions, rather than formal incentives. The SC must also be disciplined enough to understand the reasons for and consequences of these changes to avoid getting stuck in a piecemeal approach to fixing problems: the PT is where the expertise lies, so it must make solution proposals. Finally, the SC must make clear decisions to address the problems and make constructive changes in a timely manner. This allows for either rescuing the project to a profitable conclusion or terminating it early, saving time and money. Small-scale experimentations can be a way to break a deadlock.

All these activities require discipline, functional relationships, engagement, courage, and know-how. SCs often fail to execute key activities across all five themes. The respondents in this study, senior executives with extensive experience in the management of strategic projects, *all* readily identified examples from their own organizations where SCs failed. Indeed, all our study participants confirmed that the results of this study were relevant to their organizations, and several passed our initial report on to their project management staff in order to incorporate some of the lessons into corporate procedures and practices. We thus believe that our findings, which cut across the fields of leadership and project management, can help executives create effective practices for supervision and governance of strategically important projects.

APPENDIX

Research Methodology

Our study employs an empirically grounded framework derived from the data collected through our in-depth interviews with executives.[15] The reason for this methodological choice is that there is no distinct theory of project supervision that could be tested. Previous work has pointed to a broad set of issues that might be at play, such as incentives, information asymmetry, problem solving, team support and motivation, resource allocation, unaligned interests, information ambiguity, and complexity, but no causal theory of what makes supervision

effective has been developed. Therefore, we identified patterns of responses from the interviewees, comparing their descriptions of effective supervision and ineffective supervision.[16]

All three authors used their industry networks to approach companies. The sampling strategy[17] focused on executives with extensive experience on SCs, who have seen their share of project disasters and successes. As noted, 17 senior executives or CEOs from different industries were interviewed, capturing data on 29 projects. Interviews were semi-structured, employing an interview protocol (see Table A1) to guide the interview, and a set of questions was shared with interviewees beforehand. A third of the interviews were conducted by two authors for mutual calibration, the remaining by one author. Each author wrote a detailed transcript of the conversation the same day (the "24-hour" rule)[18] and shared it with the other authors. Each author analyzed all interview responses independently and produced a table of emerging patterns and constructs. The authors then compared their proposed constructs and reconciled differences. In order to provide more background on our data and analysis process, Tables A2, A3, and A4 summarize detailed quotes from respondents on the key themes discussed in this article.

As with all research, the question of robustness of research results is important. For our study, three aspects strengthen the likelihood that our results will be applicable and useful in cases and settings beyond those included in the study. First, our study covered a wide range of projects and found consistent patterns and results across projects with different technical and organizational complexities and challenges, in different industrial and geographical settings. Second, while some of our results are novel and have not been addressed previously, our results are consistent within those themes already identified by earlier research. Finally, we obtained additional feedback on the framework, both from several participants in the original study and from executives not previously involved in the study. For the latter, we conducted two workshops with executives to tentatively test our framework and recommendations, one with 21 Swedish IT executives and another with 32 Swedish senior managers from the financial services and health care sectors. Participants were first introduced to the framework and then asked to consider its applicability in their respective organizations, indicating on response sheets which themes they saw as particularly important and their organizations' relative strengths in the different themes. Both sets of workshop participants found the five supervision themes useful and confirmed that in their experience more than one of the themes were often not well managed. During a follow-up discussion, the weaknesses in organizational practices that they pointed to were spread over all five themes, indicating that the themes are all relevant for understanding and improving an organization's SC activities in many organizations. Finally, we also asked participants if they could identify additional themes that were not included in the framework, but no such themes surfaced.

TABLE A1. Abbreviated Interview Protocol.

(I) *Check how the interviewee categorizes routine/straightforward and difficult projects or not*

1. In your opinion, do different types of projects require different styles of project supervision, or is there a set of rules for project supervision that make you successful in the management across different project types?

2. What project characteristics do you look at? In other words, are there different types of projects in your mind, and if so, how would you describe or distinguish them?

(II) *Description and classification of the two projects chosen*

3. Tell us specifically why the two projects that you want to describe were "difficult" rather than "straightforward."

4. What were the "symptoms" that make you assess their supervision as effective in one case and less effective in the other case? That is, what project characteristics or evolution or outcome (or what else) lead to the conclusion for governance?

5. What were the key *reasons* why supervision was effective in one and less effective in the other case?

(III) *Questions related to project supervision (each question to be asked for both projects, contrasting them directly during this question)*

6. What kinds of targets do you set? What kinds of intermediate targets/milestones? How do you assess how challenging the target is? Do you use targets that are connected not to outcomes but to activities or processes used?

7. What do you try to understand about the project, and what do you let go? *How* do you learn enough to supervise the project (e.g., briefings, customer discussions, etc.)?

8. Do you give guidelines or help with respect to the chosen priorities or required actions?

9. How do you ensure that the chosen activities are appropriate for the target?

10. How do you measure progress? How do you ensure that the milestones are appropriate, and how do you monitor them?

11. Do you supervise different parts of the project differently? How do you prioritize the areas of the project that you get more involved in?

(IV) *Questions related to alternative management strategies*

12. Do you recall an instance where a project discovered significant knowledge gaps during execution: in such a case, do you support anything different from the usual milestones and target delivery planning in the project?

13. Did unforeseen changes/surprises come up? Do you prepare for unexpected deviations? If yes, how?

14. How do you deal with surprises or deviations, especially if they relate to performance problems?

15. In particular, do you allow (or even support or enforce) changes in the project's targets? Under which circumstances? How do you update your milestones?

16. Before allowing for changes in the target and/or milestones, how do you ensure that you learned the truth about the current status? How do you differentiate whether the change was caused by an unforeseeable event or was caused by a lack of "diligence"?

(V) *Questions related to team motivation ("control variables")*

17. How do you interact with the project team members (e.g., formally vs. informally, with what frequency, how much time do you spend, do you act as a listener)?

18. How important are transparency of decisions and discussions of decisions before they are finalized with the project team?

TABLE A2. Quotes on Supervision through Focused Understanding

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Understand the logic:

"What should I understand? The key parameters are: business model, unique selling points (USPs), the market, the technology (what functionality it offers at what risks), and the competitive environment."

"I don't have the time to read everything, but I can get them to think through their situation. This is just [five] simple questions: What have you accomplished so far? What have you done so far? What do you plan to do next? What are the problems/opportunities? How you do deal with those?"

"When you accept to serve on an SC, you need to be clear on what is your role: are you there for general/overall input (this is always there to some degree because the SC is, in the end, collectively responsible), or do you have a specific role? Depending on your role, ask yourself: What will help me to drive success? What will help me to understand the critical path? And, what will help me to understand the key barriers, the contentious or scarce resources, or the critical pieces?"

"I always try to understand [the logic] because otherwise I cannot really evaluate whether we are on the right track. People tell you a lot of stuff in such situations, on one extreme pseudo-plausible hot air (the lack of substance of which become apparent only over time), and on the other extreme 'expert jargon' behind which one can hide weak assumptions and weaknesses. I have to regularly test the milestones for their controllability. I must understand what the [fulfillment of the] milestone gives me what I did not have before: a clear analysis, a partial functionality, a customer compatibility, etc."

Understand key risks and uncertainties:

"I can't just trust people, I must understand. Understanding risks is one way to learn more. Then I can say whether I have learned enough."

"The SC member should have an understanding of the probability of reaching a certain (sub-)goal, of the degree of uncertainty. Look at the sub-goals and get an estimate of their risk, their likelihood of being achieved. Get the team to show you the risk list and the root causes."

"Part of the understanding is clarifying for yourself where the novelty in the project lies, for example, larger than before, more complex, new location, etc."

Question assumptions:

"I ask questions, I push for alternatives ('have you thought of x, y, and z?'). However, I do NOT read all the detailed documentation; I trust my people that they carry out technically competent work. This way, you quickly find the gaps. The golden rule is to never agree to or sign anything that I have not really understood. Even if there are complex issues that I do not understand at first, I force them to explain them to me in a way that I can understand."

"I make sure that I always have the relevant documentation beforehand, so I can study them. Ask clarifying questions. Go beyond a 'consumption attitude.' Make yourself detailed notes and ask the next time the questions that you had noted down. Make an explicit comparison to the status the last time. Ask yourself, 'Have I understood this?' And if not, ask again, and if necessary, even meet with the team outside of the official SC meetings. Clarify for yourself what questions you do have, do not simply wait for what they tell you. This allows you plausibility checks and consistency checks (I don't like it when teams change documents without an estimate of what effects the change may have)."

Look with your own eyes:

"Part of [understanding] comes from the SC members' responsibility to look at things themselves: reading, but also going on site, at least once (you don't understand a facility and a project unless you have seen the site)."

"I visited the units to take a look at what was going on. If you are the captain you have to walk the deck at times, not just stand on the bridge. As a doctor, you take a look at the wound. It's also to show people that you care and that they are important. And I get a better feel than if only listening to the project manager."

Note: SC = steering committee.

TABLE A3. Quotes on Overcoming "Getting the Truth."

Establish a culture of no-blame:

"Whether your people release the critical information depends on the climate that you build: no blaming is critical, making people part of the solution and not part of the problem."

"This is largely driven by how the SC reacts to problems that it is reported or finds out. It all comes down how mistakes are treated. The answer should not be a barrage of criticism ('this has to change!'), but working with the mistakes: the SC must insist on a de facto correction of the error, but not necessarily with a damning reaction ('How could you do this?'). Mistakes are caused by many reasons. It is a natural reaction by the SC to become irritated when a mistake was covered up. But the trick is to not get into a negative spiral. Make it unambiguously clear that the rules here require openness in order to be able to collaborate, but at least the first few times the SC should also have some understanding and sympathy. It is a trap to fall too quickly into a suspicion of feeling cheated."

"We created a culture in which people report their problems or even report when a colleague faces a problem."

When to Use outside information channels:

"[Eliciting alternative information sources] may well happen, especially if you have an intuition that something is missing. You may sometimes ask externally simply to enrich one's own knowledge. But if there are issues that have not been clarified, or if there are two factions in the SC who have different interpretations or conclusions, then it is a useful exercise to observe a question and answer exchange of a group of experts. This may (a) clarify your own understanding, and (b) the experts become a bit more guarded in their claims when they know that other experts are present and can call them on unsubstantiated claims."

However:

"The tendency is to first try to clarify things internally before going to the outside. First, going outside disempowers the team. Moreover, it is often not so clear what the right external expert is. Often, claims by outside experts simply do not apply to the specific situation of the project. If the SC succeeds in creating an atmosphere of openness with the team, it can create a learning dynamic: what works for us?"

"I mostly talk to the PM. I do not go around spying behind the back of the PM. If I meet team members lower down and talk to them, that is happenstance."

"In an extreme case, we might decide to put a second (small) team, or an external consultant, on it to independently verify and unearth all facts. However, this would only happen if the situation is highly confused, and/or if an important decision needs to be made."

"Another way of checking the arguments of the PM would be to carry out a formal project review with external analyses. But this is not often done—I don't know why, perhaps because people simply don't think about it, because you don't know what is the right second opinion, and you don't want to admit weakness or ignorance by ordering this review. Possibly, it may also demotivate the PM by giving a sign of non-confidence."

"I need to have a couple of people whom I trust and who are close to the details and have the expertise. They represent a second source of information because the official SC presentations are always mere samples chosen by the PM (e.g., 10 slides plus 30 backups) . . . if something comes up, I want to hear about it, to be more proactive."

"There are two gaps, the knowledge gap and the context gap. The latter is the more important one, and it refers to 'what does it [the information] mean?' It requires a judgment call, for example, what they tell me about the schedule, or the market potential, is it really true? Because it requires a judgment call, I take a 'social' rather than a 'functional' approach, I look for [informal] partners for a dialogue that fills the gap [e.g., trade show or friends]."

Note: SC = steering committee; PM = project manager.

TABLE A4. Quotes on How to Respond to Surprises and Make Changes.

Demand proactive reporting:

"The issues must be brought quickly and clearly on the table."

"One thing I do look at is if I was informed quickly. I do not want to be faced with a fait accompli."

Understand the reasons for and the consequences of the surprise:

"I try to understand the reason. I ask whether there are alternative scenarios. Have we looked at the situation from multiple sides, [possibly uncovering new opportunities] rather than just saying, 'no can do'? The steering committee must be informed before the meeting, not only in a presentation at the meeting. All facts must come on the table, no hiding of information."

"Ideally, the SC understands the change and decides whether the change is enacted or not. This includes that the project assumptions (framework) are re-evaluated, and this can lead also to the conclusion that the project is terminated. We should have a systematic list of fundamental project assumptions—we have had this in some cases in a rudimentary form, but this is something that we should probably make more systematic."

"I analyze the situation before making changes to see what caused the need for delays or additional budgets. It is often difficult to find why a problem occurred, or especially if some other action could have prevented it. I always ask for an explanation of the situation, but there is no standard or quantifiable criteria to say how I do it."

"You ask for an analysis of the consequences of these new developments: What do we need to do to handle this? What decisions do we need to take? What are the necessary resources for this? It's also a red-yellow-green assessment. If this is a red flag, you want to talk in depth about the situation, the risks, and the consequences."

"It is important to find out why things went wrong, not necessarily to 'find a throat to choke.'"

"When the change becomes apparent, I would ideally like to isolate it and give it (if it's large enough) to a task force that deals with it 'separately,' 'off line.' . . . The main challenge is to recognize and safeguard the bottom: when have we reached the maximum size (or impact) of the problem that we can guarantee to contain ('I can rely upon it not getting worse than this')? There is nothing worse than repeated changes in the bad news and a realization that the fresh resources that we brought to bear are insufficient."

The project team must make a solution proposal:

"We discuss together what we should do, and normally, the team has a proposal (for example, 'the [production] volumes will go up [versus the original assumptions], and therefore, we require a higher budget')."

"The way this is done is that the team comes up with content proposals and the trade-offs. In our case, we kept the delivered functionality, but the demand side was delayed, and that was a decision [supported by the SC]."

"The good PM reports and presents solution alternatives, with their budget and schedule effects. Then the SC can take a decision, possibly after asking additional questions and perhaps demanding some additional analyses."

SC must make a clear decision:

"In an extreme case ('We need to change the target market segment'), the defined context of the existing project is violated. You cannot simply 'muddle through' this situation. In this case, the SC might want to declare the project as terminated, and then start a new project from scratch where the old one left off. The new project would have to start with a new business plan and a new resource allocation. 'Make a clear cut.'"

Note: SC = steering committee; PM = project manager.

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