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ABSTRACT

Project management is known for its tools and techniques that are used to plan and deliver projects in a controlled context. Megaprojects don't always fit well into this paradigm due to their size, complexity and longevity. Megaprojects often start without precisely defined goals and without a detailed knowledge of how the project will progress or the outcomes will be delivered. We examine the requirements for governance of megaprojects by reviewing the literature and reflecting on practice. We use the analytical model of where, how and what to illustrate different units of analysis (i.e., context, governance and goals) in megaprojects in three countries and to illustrate how goals and governance move. Building upon the governance and performance management literature, the paper contributes to the understanding of moving goals and governance for ensuring performance. We propose a framework for diagnosing goals and we list six systemic errors that result in a misfit.

1. Introduction

A megaproject is a temporal goal-orientated endeavour (Vuorinen & Martinsuo, 2019). Megaprojects are complex, come in different sizes and behave differently – they all need managing (Turner & Xue, 2018). Governance is a construct that conceptually describes how to manage the control of activities, routines, performance and benefits from projects, programmes and portfolios (APM, 2019). In the simplest projects, there are fixed goals, whilst in most megaprojects, a more nuanced description would include a process of goals evolving from a fog through dialogue between different stakeholders (Di Maddaloni & Davis, 2017; Eskerod & Huemann, 2013; Obeng, 1995).

Megaprojects are projects that exceed a billion-dollar budget and are expected to deliver multiple societal values for decades to come (Lehtinen et al., 2019). Megaprojects are assumed to have fully developed governance systems supported by performance measurement systems that inform the direction and management of the project (Davies et al., 2009). Governance theoretically describes the fundamental components of control in project management (Musawir et al., 2020). Such governance processes follow various goals. Governance is easier to accomplish if goals are known, well defined, involve few uncertainties and impose few or no risks. Usually, we refer to such a 'match' as a predictive model. In theory, it is appealing to work with predictive models, but we know such models are difficult to apply in practice (Denicol et al., 2020). Still, projects are generally expected to follow predictable plans, although many of these plans are directly challenged from the outset by onsite conditions (Guo et al., 2014), conflicts of interest (Qiu et al., 2019) or other issues.

Studies on megaprojects have identified different facets of governance. Brunet (2021) used a sensemaking approach in a Canadian context and identified different governance facets at different levels. Müller et al. (2020) suggested that governance is found at a strategic layer led by a steering committee. Recent studies have also paid attention to different stakeholder roles, interactions and governance models that cope with these various roles (Qiu et al., 2019). Extant literature has also examined the role of controls in governance and, particularly, the relationship between objectives and resources (Müller et al., 2008). Müller et al.'s (2008) research indicated that objectives and resources are moderated by governance and type of project. He et al. (2022) joined this idea that governance differs due to type, context and stage of the project (Locatelli et al., 2014). He et al. (2022) emphasised that governance at different levels is not always congruent. Changes in planned project goals are often reflected in number (Eriksson et al., 2023) and type of change orders (Dahlin et al., 2021).

Much of the earlier literature is focused on front-end planning, which occurs prior to funding or when only a part of funding is secured (Klakegg et al., 2016). Given that megaprojects undergo major stages of planning involving multiple stakeholders, it is often the case that during

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the process of stakeholder engagement, the goals are modified. Megaprojects also come with societal and political expectations as to the value they will deliver and their implications for society. The societal value brings societal attention to the project. When a megaproject is planned, this typically brings a need to plan for additional infrastructure or changes in other parts of society. Governance models ensuring project performance must broaden their view and pay more attention to how to learn and to discuss societal adaption in a transparent way. There are limited studies on the principles of dealing with different governance facets involving societal impact. Therefore, we believe that this is an appropriate time for this study on the fit between governance, goals and context in megaprojects.

We position our paper as a theory paper, and we will use three cases as an illustration of how projects align goals and governance towards an evolving context. Following this, we focus on the intersection between context, goals and governance. Since megaprojects are overpopulated with various stakeholders (i.e., context), with different expectations (i.e., goals) and with everything mostly governed from one point (i.e., process), we suggest that there is a need to simplify the diagnoses to better fit the context, processes and goals. We conclude from this literature review that there is potential in specifying whether goals and processes are either non-specific or specific (Melnyk et al., 2014; Speklé et al., 2021). Furthermore, we question if the nature of the context is homogeneous or heterogeneous. We are aiming for a synthesis that bridges the theoretical lenses of context, processes and goals using the analytical framework of where, how and what (Eisenhardt, 1989).

We illustrate the current practice of moving governance, moving goals and the influence of the context in three different cases. Our study discusses the importance of aligning goals to governance (Klakegg, 2016; Turner & Cochrane, 1993), and we emphasise a new dimension of moving goals and moving governance. We introduce a framework for diagnosing alignment or misalignment and list six systematic errors that result in a misfit.

2. Theoretical background

2.1. Literature review of governance in project management

Theoretically, project governance is the system of controls (Brunet, 2021) that suggest an overall direction for the project (Eriksson et al., 2023) by matching activities, goals, intentions and performance (APM, 2019) to the type and phase of the project (Denicol et al., 2020; He et al., 2022). Governance is thus the means and mechanism to reach specific performance outcomes. Müller (2009) stated that 'Project governance is a subset of corporate governance, which contains the value system, responsibilities, accountabilities, ethical principles, and policies. Turner and Keegan (2001) focused on project governance as the link between the project and the enterprise: 'Aligning project objectives with organisational strategy, achieving set project objectives and monitoring performance'.

Megaproject governance is identified as one mechanism that explains success and failure of megaproject (Denicol et al., 2020). Megaproject governance can also be seen as a system of conveyor belts that transports goals, activities, resources in one direction towards performance of a project. Pinto (2014) combined both the systems view of governance with the elements of structure, policy and process to create a broad view of governance. Pinto (2014) incorporated appropriate decision making, allocation of resources and the setting and attainment of goals. However, there is a recognition that 'there is still a long way to go before major projects are sufficiently understood, and before practices in project governance and project management correspond to current knowledge relating to large, complex projects' (Klakegg et al., 2016, p. 294). Klakegg et al. (2016) believed that there are limitations to formal governance processes. Gil and Pinto (2018, p. 11) even went as far as challenging the assumption that these organisations are authority hierarchies with centralised capacity to allocate resources and resolve disputes. Unterhitzenberger et al. (2022, p. 14) studied the different levels of governance required, whilst Gil & Fu (2021) discussed the fundamental changes in project governance that occur when there is an engagement with wider stakeholders. Roehrich et al. (2023) conducted a longitudinal study of governing mutually shared activities of supply systems and subsystems. Too and Weaver (2014, p. 1391) 'assert that systemic project failure is a failure of organizational governance' with good governance requiring a balance between restrictive processes, freedom to operate and the use of specialist project knowledge with organisational norms.

Project governance is thus a system for directing and controlling projects. Larger and more complex projects, such as megaprojects, evolve over time through various interactions with stakeholders. Much of the literature has focused on stakeholder influence, but project governance also needs to adapt to the different phases of a project. The governance requirements for project initiation differ from those for project delivery, and the governance of project delivery differs from the governance of the transition to operations and business as usual (Engvall, 2003).

2.2. Context as a contingent variable in megaprojects = where

Project performance reflects the relationship between context, goals and processes (Ika & Pinto, 2022). In the management literature, this is known as the relative fit between strategy, organisation and context (Venkatraman &, Camillus,1984).

Classifying projects based on the ideas of relatively known goals and uncertainty are not new. Numerous researchers have applied these with different lenses using two-by-two matrixes. Speklé et al. (2021) viewed goals in contracting situations as more-or-less capable of being contracted. Obeng (1995) talked about the four types of projects. Each type of project will have different governance requirements. Simple projects are more closely aligned to 'straightforward' project management, whereas projects that are 'walking in the fog' require direction and learning. Melnyk et al. (2014) used a two-by-two matrix to differentiate between either general or specific performance or general or specific solutions. Similarly, Melnyk et al. (2014) linked processes to the different performance outcomes and solutions. Some governance approaches have well established models for how to reach various ends, but others need to evolve as the project team explores and learns.

Some researchers have found megaprojects in a context of few stakeholders and known technology – but most researchers concur with Zhou and Mi's (2017) description of megaprojects as combinations of many different stakeholders. In this respect, Dyer (2017) referred to the magnitude of contextual uncertainties of a complex structure of suppliers as a specific risk. When stakeholders change positions or add specialisations, it adds uncertainty to the megaproject. Simple contexts mean technology and experience are known and less driven by new developments, thus few new specialised suppliers are required (Keeys & Huemann, 2017). A homogeneous context means there are few stakeholders and a rather hierarchical structure: some have a big influence and can control the process. In contrast, the situation of megaprojects includes more heterogeneous contexts involving many stakeholders and distributed power, which creates greater uncertainty in the process.

3. Governance processes = how

Theoretically, governance systems promote strategic direction (Pesämaa, 2017), define boundaries and discourage potential stakeholder conflicts (Qiu et al., 2019; Müller, 2017). Governance is the framework of authority and accountability that controls the outputs, outcomes, and benefits from projects, programmes, and portfolios (Müller et al., 2020).

It is theoretically tempting to assume projects evolve stepwise, but recent literature has pointed out that at an early stage, projects start with informal meetings, which are later formalised into goal-orientated

meetings (Hedborg et al., 2020). Given that megaprojects tend to take a long time to be planned and built, such an approach may result in the governance creating goals that suit the past better than the time of commencement of the megaproject. For instance, establishing goals with a certain technology or standard may run the risk that this technology is overtaken by the time the project reaches the delivery phase (Söderlund et al., 2017).

4. Goal orientation = what

Project performance depends on a proper governance system that reflects the strategic goals of a project. Following He et al. (2022), megaprojects can be described by different goals. At the simplest level, these goals are either fixed or continuously moving (Keeys & Huemann, 2017; Wu et al., 2020). Furthermore, we add a dimension of uncertainty, implying that certain goals and activities are more known than others (Denicol et al., 2020; Turner & Cochrane, 1993).

Megaproject management involves steps with high uncertainty, unknown parameters, new individuals, unique organisations and goals that are customised to new and changing standards or requirements. Turner and Xue (2018) explicitly argued that megaprojects tend to frequently be considered failures, while the nature of megaproject is complex and reaching such complex goals is difficult and non-linear. In line with Bukoye et al. (2022), an emerging approach is to assume goals are misaligned and need specific nudging tools to offer new directions, new values and new controls.

5. Synthesis

Building upon previous performance governance studies (i.e., Melnyk et al., 2014; Obeng, 1995; Speklé et al., 2021; Turner & Cochrane, 1993; Turner & Xue, 2018; Wu et al., 2020; Zhou & Mi, 2017), we offer the framework in Fig. 1 in which '**where**' represents the location and stakeholders, **what** represents goals and **how** represents the governance process on the three axes of the cube.

The bottom left quadrant represents known goals with known standardised means and processes (Fig. 1: Type 1). The bottom right quadrant (Fig. 1: Type 2) has known processes and likely skilled and specialised teams that can then adapt and continuously change goals towards new emerging standards, permissions or other requirements. Type 3 in Fig. 1 reflects projects with known goals, whereas processes are too non-specific or not known and are thus expected to evolve during the project. The top right quadrant (Fig. 1: Type 4) reflects a situation with continuously evolving goals and processes (Wu et al., 2020). Goals and processes are uncertain and only stated in general terms. This requires exploration and the use of heuristics to manage progress searching for greater clarity. We also know from prospect theory that the more complex is a project, the more likely decision makers will abandon rational models in favour of emotional decisions or rules of thumb (Kahneman & Tversky, 2013). In the synthesis of our model, we believe we need to add a further dimension – the context (where). We consider the dimensions of where, what and how and the framework in Fig. 1 as our theoretical starting point for the empirical illustrations.

6. Research design

We explore the different theoretical types by looking into three megaprojects with a high degree of complexity from across Europe. Following Martinsuo et al. (2021), we selected megaprojects that clearly offered insights on our unit of analysis in terms of goals, governance processes and context. A summary of the case characteristics is given in Table 1 in the Appendix.

We collected responses from key informants including the client side, the contractor side and public representatives. The authors had followed the cases over the years in the past and are well knowledgeable about these megaprojects. However, the interviews presented in Table 2 in Appendix explore the typology developed in our model (Fig. 1). Each interviewee had a specific role in governing the project. The study involved semi-structured interviews, with subsequent questions by email, along with field notes and other documents from project

Table 1
Descriptives of case studies.

Characteristics	Case 1	Case 2	Case 3
Country	Sweden	Netherlands	United Kingdom
Type of project	Windfarm	Road	Hospital
Industry	Energy	Transportation	Health service
Context	Private	Public	Public
Funding	Multiple source	Single source	Single source
Budget in MEuro	8500	4400	5000
Duration (approximately)	24 years	12 years	10 – 15 years
Project phase	End phase	End phase	Front-end

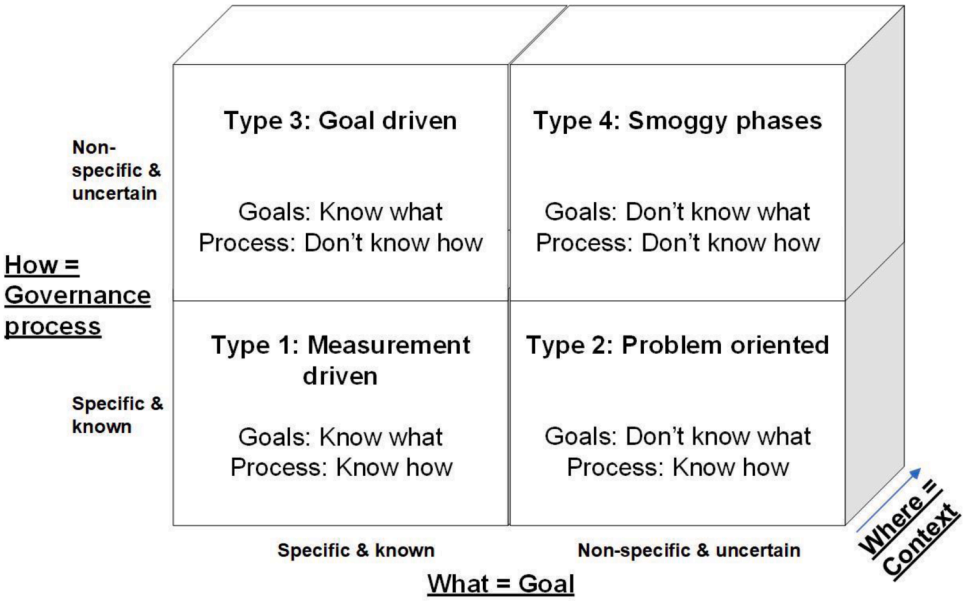

Fig. 1. Type of megaproject.

Table 2
Respondents profile and background information of interviews.

Case	Role	Number of interviews	Number of interviewees	Type of interview	Hours of interviews	Email response
Case 1	Contractor	2	4	Group	2 h 10 min	Yes
Case 1	Municipality representative	3	1	Single	2 h 20 min	Yes
Case 2	Client representative	1	1	Single	60 min	Yes
Case 2	Contractor representative	1	1	Single	45 min	Yes
Case 3	Programme leader	2	4	Group	1 h 50 min	Yes
Case 3	Project leader	1	1	Single	60 min	Yes
Case 3	Project advisor	2	1	Single	1 h 20 min	Yes

meetings. Interviews were transcribed and translated into English when needed.

7. Results

The empirical findings are presented below starting with Case 1, the windfarm megaproject in Sweden, followed by Case 2, the Dutch infrastructure megaproject and finally the U.K hospital megaproject. Case 3. We present each project starting with **context (where)**, we follow-up with governance **process (how)** and **goals (what)**.

7.1. Case 1 – the Swedish windfarm megaproject

The project started measuring wind in 2002, and the first turbines were up and running in 2010. Svevind (the contractor organisation) is a project development organisation that plans, develops, designs, sells and operates renewable energy projects. Svevind's largest project, and the focus of this research, is Markbygden in Piteå in Northern Sweden. Markbygden was planned in three main phases:

1 Phase 1 including 314 turbines with an estimated annual production of 3 TWh (Granted permission in October 2012).
2 Phase 2 including 440 turbines estimated to generate 3.5 TWh annually (Granted permission in February 2016).
3 Phase 3 accounting for 442 turbines estimated to generate 5.5 TWh annually (Granted permission in June 2018).

All three phases are planned and under construction with wind turbines of 200 metres standing height. Markbygden is currently the largest wind power farm in Europe and accounts for 14% of Sweden's energy production. Markbygden is an onshore megaproject.

7.1.1. Context of Case 1

A wind farm megaproject starts with measuring wind. Getting permission to build is estimated to take seven to eight years, and during this time, goals must be general. Gaining permission involves engaging with stakeholders representing different interests **(Context moving)**. These included local native people as well as those with an interest in culture, environmental protection or defence (Air Force), along with landowners and other local, regional or national authorities **(Context moving)**. Both contractor and the municipality representative we interviewed said transparency in the governance process is extremely critical at all stages.

7.1.2. Governance process of Case 1

The general goals and processes were known, but the ultimate plan was subject to decisions made by the authorities and the permissions granted. Uncertainty at the early stage is high in terms of permission and finance. The project is conditional on what the authorities and permits will allow to be built **(Governance moving).** As a result, changes could occur in technology, type of permission, type of final investor and when to finally build.

Part of the governance of a project organisation is coordinating and understanding different roles. The contractor argue cooperation, coordination and continuance are incredibly important ingredients. Furthermore, contractor says it is a challenge to have all specialised individuals walking in the same direction and to connect with the right experts **(Governance moving).** The contractor claim governance, it is important to create an organisation populated by people with the requisite skills and there are demands on everyone wanting to produce energy **(Governance moving)**.

On another note, the contractor strongly talks about routines for quality assurance, competence transfer and learning are all important. It is incredibly challenging to make sure the organisation can adjust **(Governance moving)**. The need to adjust means individuals need to see things and learn. The contractor argues individuals need to recognise that they have done something good but still see the opportunity to do the same thing even better. There is constant work with routines, formalising routines based on experience and adjusting the structure to ensure this work in a meaningful way **(Governance moving)**.

The contractor says we are in a constant need of technical experts and to keep abreast of the latest cutting-edge technology **(Governance moving)**. Consequently, everything was evolving but it needs to be made in a transparent way. They say that they are always happy to respond to people and they never cover up anything. If they delete, change or hide information, that is the beginning of the end. Yet, it is better to receive the signals at an early stage and correct these than at a late stage, which may otherwise cause time delays. Not to inform people is lying and is troublesome for a project like this. To inform in all situations and communicate always is important and part of learning **(Governance moving)**. The policy is to receive questions and answer them **(Governance moving)**. If you have knowledge, you have the opportunity to inform people about what you know.

7.1.3. Goals of Case 1

The contractor says a project itself is a goal-orientated activity in which the only thing that you constantly focus on is the end goal. At the start of the project in 2002, a standard wind turbine was 80 metres tall, whereas today's technology allows wind turbines up to 240 metres or more **(Goals moving).** The goals are initially general in the sense that technology develops, and standards change (sustainability) with planning requirements evolving, too **(Goals moving)**. These goals are ultimately set outside the organisation and then are translated into more specific internal goals once the permissions are clarified.

In terms of goals the government approval is the most critical issue. There are two types of permissions for wind energy, one is the box permit that simply allows building of a certain number of turbines within a given geographical area (flexible); the other permit specifies height (technology) and number of turbines (fixed). While the first governance model allows the permit process to adjust for moving goals (i.e., changed technology), the latter is more fixed to certain turbines. This creates uncertainty, and uncertainty is likely the most difficult for a project of this size. The Swedish government has a very ambitious plan to transform Sweden into a renewable country before 2040. The municipality representative says: Paradoxically, our informants claim the goals are ambitious, but it takes a long time to get a final permit.

7.2. Case 2, the Dutch infrastructure megaproject

Case 2, the Dutch infrastructure can be described as a megaproject

positioned as the Netherlands' largest road-widening programme ever and it started under financial pressure. Because of its size, the program got an independent status within the public client organisation. The programme can be seen as a collection of sequential projects that share some physical interfaces and are all part of the same chain.

7.2.1. Context of Case 2

This megaproject takes place in a highly dynamic context, and the lead times are very long. As a result, a municipality might have developed their ideas, when a contractor comes for permits, resulting in requests for changes **(Context moving)**. The way to deal with these changes is to carefully discuss them and be transparent about their consequences **(Governance moving)**.

7.2.2. Governance process of Case 2

Governance took place on different levels: on the client side and on the contractor side. Contractors often work in combinations, here with four construction companies as partners, but also using numerous subcontracts with project teams consisting of more than 100 people. The client believes that governance was used to manage the relationship between the programme and the client organisation, less focussed on the client–contractor relationship. The stand-alone status of the programme allowed for top management attention in terms of policy, finance and implementation. The programme could deviate from the standard ways of working when this would contribute to the purpose of the programme **(Governance moving)**.

The steering committee consisted of top managers of the organisations involved in the fields of finance, policy and implementation. This steering committee held three formal meetings a year in which the programme management would justify the progress of the programme. Rather than asking for advice, the programme management would ask the steering committee for a decision or approval. The projects did not have sufficient budget to reasonably achieve their goals without programme support; and thereby forcing the projects to come up with more efficient and effective solutions **(Governance moving).** Smaller drawbacks could be resolved within the risk budget. From the project perspective, broad risk descriptions were preferred to avoid the need to go back to the programme for further approval.

The contractor interviewee indicated that the governance structures on the different sides did not always align. For example, the integrated project management model was mentioned, which separates the roles of project manager, contract manager, project controls manager, technical manager and environment manager. On the client side however, most often the contract manager is the contact person for the project manager of the contractor, not the project manager **(Governance moving).**

Another example of misalignment is the size of the mandate, which is much bigger on the contractor side. For a change of 5 M Euro, the contractor project manager can decide, but on the client side, that decision should be taken a few levels up in the organisation. To create alignment, it is important to understand who talks to whom and about what, and who takes the decisions. The client should understand the concerns of the contractor and the contractor should be willing to understand the concerns of the client **(Governance moving).**

In this project, the relationship was close, and the project director of the client was explaining his answers, like: 'I wish I could help you, but this is outside my mandate so I cannot answer right now. I will do my best and come back to you'. The contractor felt thankful, and this interaction positively influenced their relationship. For governance to work, this 'informal' part is more important than the formal part, although the formal part might obstruct or delay **(Governance moving)**. And culture differences might influence the formal part; hence, also influence the collaboration.

One important ingredient of the project was learning. According to the client the subsequent projects indeed applied lessons learned from the first project, for example, in terms of contract content **(Governance moving)**. At the time of defining the first project, there were no developed and operationalized standards. The contractor argues the role of learning, in general, is largely underexposed. People like to start new things rather than evaluate an 'old' piece of work. Deliberate, joint, evaluation sessions were organised to share and evaluate certain situations between client and contractor. These stories were publicly shared **(Governance moving)**. It was fragile and, as a result, strong at the same time. To stimulate learning, targets were set on the project team formation by the client.

For the contractor learning is also necessary, as you cannot define all upfront with these kinds of projects. An adaptive method is required, and to find out what to do next, it is good to take a step back and do reviews in a joint session between client and contractor. But not all activities can be adaptive; a project probably consists of 80% predefined activities, while the remaining 20% should be flexible. Parties need to reserve time and effort to allow for this flexibility, which was the case in the project under study **(Governance moving)**.

7.2.3. Goals of Case 2

The client says deficiency was there from the beginning and shortage was cultivated. It is clear there is no money, which prevents people from making outrageous proposals and it stimulates creativity. Towards the end of the programme, this situation changed as the programme recovered the initial deficiencies and was even able to include substantial extra scope **(Goals moving)**. On time delivery was anchored in contracts, which had a strong incentive on time, given the financial regime between the contractor and its financier.

Quality systems were largely based on the client parent organisation but were customised for the programme and the underlying projects. According to the client procedures have been developed for the critical processes.

The control system compares the budget estimates with cost performance at regular moments. The overall performance, from the contractor's perspective, hinges upon well-developed relationships with the client. This attitude regarding collaboration originated from an earlier problem in which the contractor had caused a problem and openly admitted fault. This helped the relationship with the client: the contractor did not try to hide behind a contract but indicated what they did wrong and how they would assure this would not happen again. The client appreciated the transparency of the contractor and only gave a provisional penalty **(Goals moving)**.

Performance management might be a concept from an academic point of view, but it is not something that the client representative recognised within his organisation, beyond agreeing performance measures with contractors. Such performance measures, however, should go beyond the classical numerical performance indicators to include learning effects **(Goals moving).**

7.3. Case 3, the UK hospital megaproject

This project can be described as a major programme created by the government as a national priority. The programme comprises some 40 to 50 different projects at different stages of development. Some are already under construction whilst others are at different stages of planning.

7.3.1. Context of Case 3

The programme was created relatively recently to oversee these projects and to bring them together to deliver the national priority. However, this has meant that a new governance structure is being created and imposed on projects, some of which are already in flight, causing tension between the programme and project levels **(Context moving)**.

7.3.2. Governance process of Case 3

In this setting, there are very different views of, and approaches taken to governance. At the programme level, governance has been

primarily defined by structure, controls and the delegation of decision-making authority within limits. Alternatively, at the project level, governance has been seen as managing the co-creation process of the detailed plan supporting the outline business case. From a third perspective, governance is seen as the performance measurement and associated performance management of the project.

The overall governance reflects a traditional structure; at the programme level, this comprised four tiers:

1 Oversight Board made up of senior members of the executive team and an external non-executive from interested stakeholders.
2 Programme Board
3 Executive Committee
4 Committee structure

The governance model comprises five committees, each of which has certain delegated authority within set limits. These committees are an investment committee (makes recommendations on business cases and investments); a commercial committee (provides guidance and governance of key commercial decisions); a policy and standards committee (sets technical standards); a project performance committee (reports progress); and a people and resourcing committee (approves team structure and resourcing decisions).

One focus here appears to be on the framework of authority and accountability that controls the outputs, outcomes and benefits of the programme. The definition element is presently less clearly captured within this governance structure. It is possible to see how this could work, but the actual governance structure doesn't compel the design **(Governance moving)**.

The project had a slow start, but as the project director came on-board, he decided that to design and deliver a sustainable project with appropriate outcomes, the approach would need to include greatly increased stakeholder engagement. However, the board went further and asked for genuine co-production of the design **(Governance moving)**.

At the first meeting, the project board and the team created a set of governing principles for coproduction. The intention was to allow maximum freedom within the governance constraints. At a granular level, the outputs from the coproduction process were governed through the following layers:

1 First line of governance / challenge was the clinical lead from the new hospital programme.
2 Second line – our new hospital leadership team (my team – where I would inject the commercial challenge and other practicalities).
3 Third line – peer review group – we set up a panel of senior ops, finance, HR and clinical leads, and we checked all designs with them.
4 Fourth line – Executive panel – the Trust exec met every Friday to review outputs.
5 Fifth challenge – Programme Board.
6 Final challenge – the Boards of each programme board member (when necessary) – so, for example, we reviewed the strategic outline case at the Programme Board.

The design process was carefully crafted to engage multiple stakeholders in the design of the new facility. The whole process took a year and a half, involving some 25 days of facilitated workshops **(Governance moving)**. The process included:

- Clinicians creating a vision of the future involving 13 separate specialisms.
- A virtual consultation with patient groups.
- Debating the design with clinicians and patient groups in the same room.
- Modelling the demand, capital and operational capability.
- Co-creating an initial design.
- Challenging the initial design on the grounds of space requirements and affordability.
- Working through the design with the various stakeholder groups to reach consensus on a revised detail design with two thirds of the original floor space.
- Creating an outline 1;200 level design and planning document.
- Obtaining local consensus and approval.

In terms of the definitions of governance, this approach closely mirrors the definition of governance of the Institute of Chartered Accountants in England and Wales and, in particular, its view of the purpose of corporate governance. Governance is the system by which companies are directed and controlled. This primarily focuses on the *define* aspect of the APM definition of governance, and as a result, the *control* aspects simply guide the definition of what is to be achieved **(Governance moving)**.

7.3.3. Goals of Case 3

Performance measurement is often seen as the way an organisation receives feedback on what is being achieved, and governance is seen as the wider process. However, one of the advisors saw governance and performance measurement as virtually synonymous.

The project leader argues the performance measurement literature has a whole section of papers on the creation of the goals leading to the use of measures to define the goals to be achieved. The performance management process is designed to ensure that deviations from delivering the goals are identified and then acted upon **(Goals moving)**. In terms of controls, this can be seen in two distinct ways.

First, this can be seen as classic feedback control. Goals are set, measures put in place, performance tracked, deviations identified, corrective actions taken and then the cycle is repeated. Second, this can be seen as feedforward control. By feedforward control, the focus is on activities that will deliver a future state and manage the pathway to that future state **(Governance moving)**.

8. Cross-case comparison

Comparing the three cases reveals several patterns: The context is moving, and as a result, goals and governance are moving. The long duration of megaprojects inherently brings uncertainty and requires flexibility.

We also plotted the three cases in our analytical framework, as shown in Fig. 2. The dimension of goals links to performance measurement and the dimension of processes can be recognised in the governance processes of learning and transparency. In all three cases, there was evidence of a dynamic context, requiring evolution and change, including heterogeneous stakeholders. Fig. 2 depicts a cross section through our framework (Fig. 1) depicting the boxes furthest from the viewer on the 'Z' axis. Looking at our data, however, we observed that the cases would not stay within their initial categorisation.

Fig. 2 shows the current phase of the megaproject. At the time of our research, the Dutch case (Fig. 2: Type 1) was a mature infrastructure project with known goals and clear processes. Earlier, processes were unclear (Type 3), which emphasised the need for learning The UK case (Fig. 2: Top right) has a quite traditional and formalised structure at the overall programme level (Type 4). This was the initial position at the project level, too, but the project level team used the governance process to engage the wider stakeholder base to create greater certainty and agreement over goals. The project is thus expected to move towards the top left quadrant (Type 4). However, because of wider uncertainties, making this move is taking more time at the programme level. The Swedish case (Fig. 2: Top left) exhibits the characteristics of a goal-orientated organisation but was dependant from the beginning on permits from authorities, involvement of a wide set of stakeholders and emergent technology (Type 3). We believe the Swedish case had clear goals, but over time, these had to evolve as the result of technology

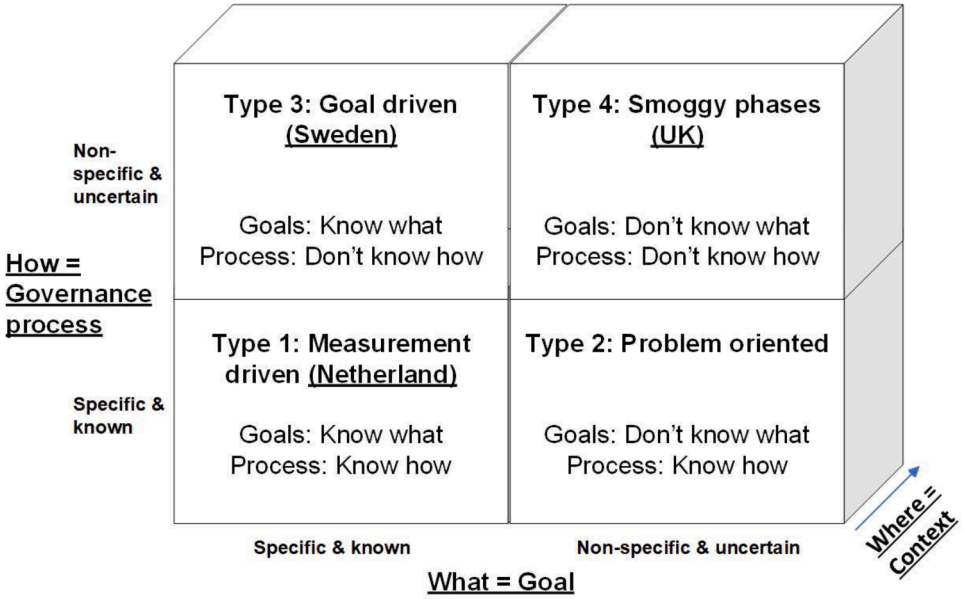

Fig. 2. Megaprojects studied; Netherlands (Bottom left), UK (Top right) and Sweden (Top left).

change (taller turbines) and the fact that the process of granting permissions is not controllable. This would suggest that Sweden is cycling between Type 4 (exploring), Type 3 (understanding the goals as they crystalise with the granting of permissions but dealing with emergent technology) and Type 1 as the project moves into delivery. The explanations in all cases and particularly the Swedish lies in long duration in the beginning of the project. But environmental changes over time push even megaprojects back to Type 4.

9. Discussion

9.1. Theoretical contributions

Project management is the notion of how temporary organisations evolve and reach various ends (Vuorinen & Martinsuo, 2019). Megaprojects have long durations and complex goals, involving multiple stakeholders (Lehtinen et al., 2019), and requiring specific governance processes. The governance of megaprojects can be seen as a system of controls (Brunet, 2021) that varies across different phases of the project (Denicol et al., 2020; He et al., 2022). In a recent article Eriksson et al., 2023 found that relational and contractual governance mechanisms affect project performance. Their controls in the regression indicate that the results are robust with different sizes of the project but that the effects differentiate with number of change orders. This is one recent indication that changes as proxy for moving matter maybe even more than size of the project.

Building upon the performance management literature in the field of project management (i.e., Melnyk et al., 2014; Obeng, 1995; Speklé et al., 2021; Turner & Cochrane, 1993; Turner & Xue, 2018; Wu et al., 2020; Zhou & Mi, 2017) allows us to categorise megaprojects as an evolving process of both governance and goals.

Our model hinges upon the theory that goals, and governance are moving due to uncertain requirements, goals and governance processes across megaprojects. We argue that the more uncertain the goals and processes, the more complex the megaproject will be and the more important the role of governance will be. The less you specify the goals and processes, the more general the governance and goals of the megaproject will be. Our results are in line with prospect theory, which assumes that the more complex are the issues dealt with by decision makers, the more likely they are to abandon specific rational models in favour of emotional thoughts and/or rules of thumb (Kahneman & Tversky, 2013). Such complexity is dominant in all our cases, and all our respondents at some point hesitated over their direction, goals and requirements. The governance system needs to allow this pause for reflection and even encourage it. Without pause, there can be pressure to continue rapidly down what could be an inappropriate governance path.

Fundamentally, we argue, the governance needs to change as the requirements of the project change. This happens over the extended length of megaprojects.

Borrowing from the performance management literature, Franco-Santos and Otley (2018) addressed the issue of unintended consequences arising from the misalignment of performance management systems by focusing on the implications of goal alignment and goal uncertainty in an organisation. Goal alignment is the perceived degree of alignment between employees' objectives and those of the organisation. Goal uncertainty is the degree to which managers in an organisation believe they can predict and manage the delivery of the strategic plan. We argue that in the situation of low goal alignment (in which individuals' goals do not strongly align with those of the organisation) and low goal uncertainty (in which managers are clear about the goals and how they are to be achieved), a directive performance management system is appropriate. We propose an *agency theory* basis for the design of the performance management system. However, under the alternative situation in which employees' goals are broadly aligned with the organisational goals and there are high levels of goal uncertainty, then a supportive performance management system is appropriate – a *stewardship theory* approach. Franco-Santos and Otley (2018) continued to discuss the issue of managers' perceptions of the situation differing from reality. The design of the performance management system will be based on management's perception, and when this doesn't match reality, it leads to a misguided use of management control systems that over time breaks down the social relationships within the organisation, resulting in perverse outcomes. The issue of perception not always matching reality applies to governance, too, but we wish to take this one step further.

From the literature and the case illustrations, we note that projects progress through different phases, with each of these phases having different governance requirements. For simple projects, there are still aspects of the design phase which require the goals to be clarified and alternative approaches to be evaluated, suggesting that a supportive governance approach would be appropriate. However, once goals are clarified and there is an agreed delivery process, a more directive

approach becomes a better fit during the project delivery phase. Thus, even in simple projects, there needs to be a change in goals and governance between the phases. In megaprojects, different phases are also present, including initial design and delivery. But because of their size, complexity and longevity, changes in technology, environmental factors and political pressures will happen over the life of the megaproject. When these changes occur, the governance needs to revert from a directive approach focused on delivery to a more supportive approach to allow the team time and space to absorb the new situation.

Fig. 4 illustrates the different situations that will inevitably impact a megaproject. Box 1 is the initial condition, in which the governance is aligned to the goals if perception reflects reality; and misaligned if perception does not reflect reality.

If we assume that the alignment has been correctly created at initiation, then if the context causes the types of project goals to change, misalignment will occur unless there is a change in governance approach (Box 2, Fig. 4). Similarly, if someone causes the governance approach to change when the types of project goals are stable, then again, misalignment will occur (Box 3, Fig. 4). Finally, if the types of goals change but the governance approach is appropriately adjusted, then realignment will occur (Box 4, Fig. 4).

10. Practical implications

Our paper has four practical implications and highlights six reasons for a mismatch between the project environmental requirements, governance approach. First, megaprojects are complex, long-term endeavours within emerging environments (i.e., context) that are often caused by multiple disparate stakeholders and a focus on exploration and learning is essential. The value of predictive models is extremely limited once emergence begins. Our empirical findings also identify specific flexible governance models (e.g., box permits) that allows technical goals to vary from initial planned estimates (see Case 1).

Second, project management success and success of the project must be separated. Many projects may exceed the time estimates, incur cost overruns and deliver insufficient quality. However, many of these shortcomings may be remembered as project management performance issues, whilst the value of the project will be remembered as the ultimate measure of success. The success of the project management is not the same as the success of the project and these should be managed and viewed separately.

Third, our review of the cases suggests that over the lifetime of a megaproject, the project either has moved or is expected to move between the boxes depicted in our model (see Fig. 2). Our model posits that movement between boxes requires changes in governance approach and corresponding changes in the focus of (and information provided by) the performance measurement system. In practice, this means that the approach to performance measurement and governance needs to be constantly under review throughout a megaproject. This is required so fit is maintained and governance is appropriate for the situation to avoid the misalignments as illustrated in Fig. 4.

Fourth, and this one is a little speculative as it comes from reflecting across the cases and not directly from the case data itself, there is the issue of specificity. The more tightly the definition of a goal and the more specific the measure of achievement, the clearer the communication. But the higher the level of specificity of goal and process, the greater the focus on those elements, leaving less capacity to look at the megaproject performance in the round. We like to nail things down, but in so doing, we limit wider discussion and debate. In our theoretical model, each box appears to have an edge that differentiates it from the boxes on each side. This is done for presentation, but, each face is a continuum; there isn't a step change between one box and the next. In our cross-case review discussions, the idea of being too specific emerged. So, practically, we suggest that project directors reflect on how vague or specific the goals and measures should be by thinking about the purpose of goals and measures in the overall governance approach.

Let us now turn to the mismatches that can occur in project governance. While many project organisations use goal-orientated measures (e.g., time, cost and quality), we know many of these measures are weak or absent (Turner & Xue, 2018). This research suggests that these goal-orientated measures fit predictive models that have known consequences and outcomes. However, we argue that most megaprojects deal with multiple unknowns, emerging conditions and outcomes. This requires performance measures suitable for a changing context with an emphasis on learning. The literature we have reviewed and our cases support the thesis that it is difficult to accurately estimate goals and processes.

The voices from our case interviewees highlighted the need to use governance to guide the project through different phases and circumstances over time. This is made difficult by the long timelines involved in these megaprojects combined with the complex nature of the evolving context. Designing and maintaining the appropriate fit between the context, project and governance structure is not a trivial task. From our reflections on our cross-case analysis, we have identified six possible systemic errors. The first three are initial condition errors caused by misperception (Franco-Santos & Otley, 2018) or inappropriate knowledge. The latter three result from developments over time.

1 Design error: This often occurs at the start of a project when the governance structure isn't set up to reflect the project context. Design error is caused by misdiagnosis of the type of project being embarked upon. The consequence is that the initial fit between project context and project governance is missing, making the governance approach inappropriate (see Fig. 3). But this can also happen as projects progress if the needs of the project change, but the governance doesn't (illustrated in Fig. 4).
2 Experience error: This occurs when a governance structure from a prior project is implemented in the new context, usually because 'it was successful last time'. The consequence is that the approach to governance is implemented regardless of the needs of the project context.
3 Bias: This occurs when influential project sponsors, directors or senior managers have a single view of governance. We would suggest this is often command and control based on simple predictive models of project management. The consequence is that the approach to governance is implemented regardless of the needs of the project context.
4 Phase change: This occurs during the life of a project when the project moves to a new phase and the governance doesn't evolve to match the requirements of the new phase, rendering the governance approach inappropriate (Misaligned, Box 2 in Fig. 4).
5 Drift: This occurs during the life of a project when the project context changesand the governance approach does not adapt with this change. The consequence is that the fit between project context and project governance deteriorates over time and, if left unchecked, to such a point that the governance approach is inappropriate (again, Misaligned, Box 2 in Fig. 4).
6 Intervention: This occurs during the life of a project when changes in governance are made. If these coincide with changes in context, the result can be appropriate (Re-alignment, Box 4 in Fig. 4). But often these results from institutional pressure – often stated as "get a grip" when a project gets into difficulty. This can result in an inappropriate governance approach (Misaligned, Box 3 in Fig. 4) when a project is in difficulty, compounding that difficulty.

These six mismatches will have a negative impact on performance as well because the shape and use of performance measurement systems is determined by the governance approach.

11. Conclusions and further research

The overarching aim of this paper is to elucidate the role played by

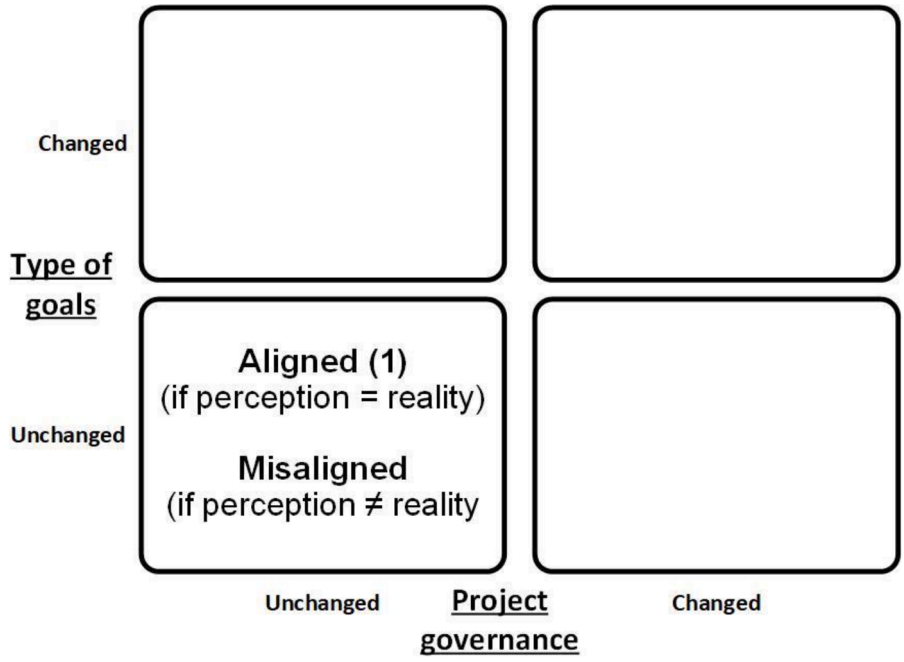

Fig. 3. Initial project governance and goal alignment.

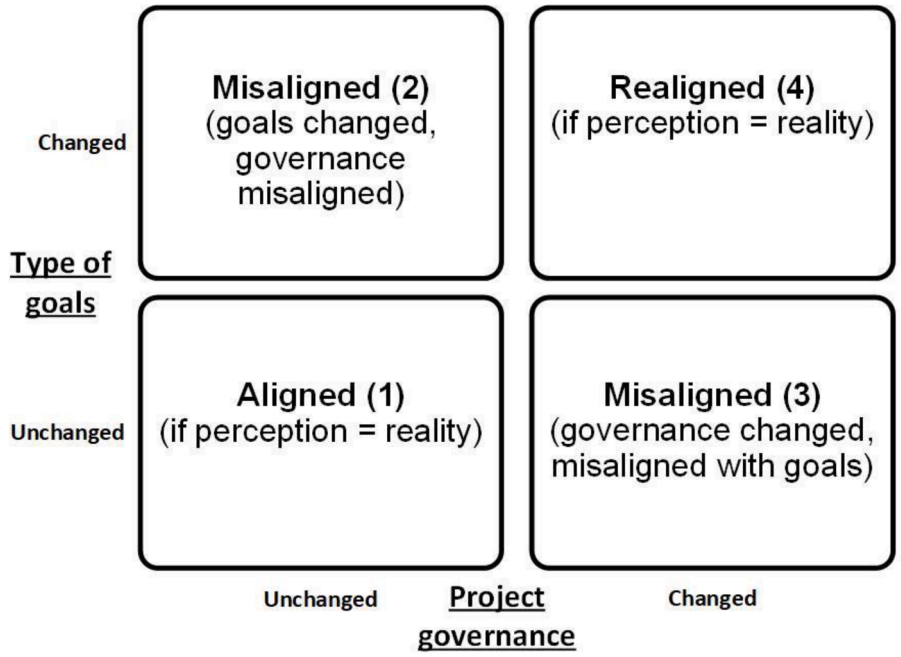

Fig. 4. Alignment and misalignment with changing context and governance.

goals and governance in megaprojects. Specifically, we promote the need for governance to fit the specific and changing context of the megaproject. On paper, during the interview and when reporting voices from projects like this, it is obvious that the long duration of the project with many stakeholders will change technology and routines. However, this may not be obvious as we plan. For governance to work effectively, it needs to be supported by appropriate performance measurement systems, and these systems also need to fit the specific and changing governance needs. In this paper, we problematised and deduced a theoretical model from the literature that builds on previous work that was focused on whether the processes and goals are known or unknown while introducing the additional element of the changing megaproject context.

Much of the project management literature is devoted to the use of predictive models focused on a controlled context. However, the world of megaprojects is far from being linear or controlled. The context often continues to evolve through emerging technologies or changes in the understanding of stakeholders as the project develops. Furthermore, it is often the situation at the outset that the final solution and path to that solution are not fully defined or understood despite the best efforts of planners and the exhortations of project sponsors. Megaprojects are large and complex, and given their longevity, they must evolve over time as the context changes. Taking these realities, captured by example in our illustrative cases, we conclude that predictive models cannot be

applied in megaprojects without further consideration.

The framework we have developed has given us multiple lenses through which to analyse and reflect on the megaprojects we have studied. Using this framework, it is logical to assume that projects start in the different quadrants of our framework (Fig. 1). This sets up an initial condition for the governance of the megaproject depending on the relative knowns and unknowns of the goals and processes. Some projects may initially appear to start from the know/known box and so appear to be susceptible to the use of predictive models, but most projects will have unknowns and, therefore, require governance frameworks that support exploration and learning. Once this initial phase of exploration and learning has been worked through, goals and processes for reaching those goals become clearer and, as a result, the governance structure should become more focused on guiding and controlling project delivery, probably using more predictive models. However, there is then the issue of emergence over time. Change in the context will inevitably emerge, creating the need for the megaproject to adapt and requiring the governance approach to change again. The predictive elements will need to be deemphasised so that once again, governance focuses on exploration and learning to allow the megaproject to navigate the emergent change and uncertainty.

We suggest the fit between the context and the governance of the megaproject, but we also emphasise that the need for the performance measurement system to fit the governance need. As the governance approach moves over time within our conceptual framework, so, too, will there be a need for the measurement system to maintain an acceptable fit. We know from the performance measurement literature that the updating of measures and measurement systems isn't easy (Bourne et al., 2000; Kennerley & Neely, 2002); thus, we expect these changes to governance and measurement to be difficult to manage and implement. However, the first requirement is to recognise the need to continuously review and change governance and performance measurement. Without a recognition of the different needs in different circumstances, governance and performance measurement will ossify and no longer be useful.

Despite being limited to three case, these cases challenge the idea that static predictive models are appropriate for the management of megaprojects. Following Huemann and Pesämaa (2022) we recommend wider research into the governance of a varied selection of megaprojects, ideally through in-depth longitudinal studies from multiple stakeholder perspectives.

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