



Contents lists available at ScienceDirect

International Journal of Project Management

journal homepage: www.elsevier.com/locate/ijproman

Call for papers: Program management of major infrastructure projects

1. Introduction

Program management (or programme management) is widely recognized as a key concept in project management literature and evolved throughout the last decades (Arto et al., 2009; Ferns, 1991; Gray, 1997; Lycett et al., 2004; Pellegrinelli, 1997, 2002; Pellegrinelli et al., 2007; Pollack & Anichenko, 2022). Yet, projects and programs are often used as synonyms causing fragmentation and confusion in theory and practice.

Some scholars have tried to distinguish broadly between project, program, and portfolio management (Morris, 2013; Morris et al., 2011), while others focused on explaining why program management is different to project management (Arto et al., 2009; Lycett et al., 2004; Maylor et al., 2006; Pellegrinelli, 2011). Project management is often concerned with a single project and the achievement of traditional performance metrics (time, cost, quality). Program management is used to describe the coordination of multiple interdependent projects that have a common goal to achieve outcomes not possible if they were managed in isolation. In infrastructure, it might be used both by asset owners (e.g. in a program of water system upgrades with potentially similar projects that together have a significant impact) or by megaprojects (e.g. a major program of potentially different projects). Portfolio management refers to the resources allocated to a group of projects or programs that might not be interdependent and are often established to achieve an organization's long-term strategy.

Despite these definitions, there is a need for research to explain what the pivotal role of program management is and why it is important for major infrastructure projects. Some scholars suggest that program management has similar roots to project management (Arto et al., 2009), while others maintain that program management is not an expanded version of project management (Pellegrinelli, 1997; Lycett et al., 2004). The use of a programmatic approach aims to identify common threads across multiple projects such as opportunities to share the allocation of resources and to remove bottlenecks that might impact the execution of the program. In addition to its coordination function, several scholars emphasize that program management is located at a higher more strategic level in organizations, incorporating the management of interfaces with organizational, institutional, and societal spheres (Lycett et al., 2004; Maylor et al., 2006; Pellegrinelli, 2002; Rijke et al., 2014). This highlights the dual function of program management and the critical focus beyond the technical aspects of the project (Pellegrinelli, 2002; Lycett et al., 2004). Program management in major infrastructure projects has an inward-focus when coordinating multiple projects to achieve synergies, and an outward-focus to align the objectives and ongoing changes with the parent organization (e.g. asset owner and often future operator), key external stakeholders (government agencies, local communities, politicians), and the public opinion.

There is a need for research exploring how program management is nested in the inter-organizational structure (Oliveira & Lumineau, 2017; Provan et al., 2007; Roehrich et al., 2023; Sydow & Braun, 2018) where decisions are structurally intertwined and interdependent, impacting the final performance of the project (Stefano et al., 2023). Program management in major and megaprojects is embedded in permanent organizations or new standalone entities, on multiple levels (Denicol et al., 2021): a lead organization – typically the client – has the ultimate program management role and visibility, while delivery partners, major contractors (often organised as joint ventures) and tier 2 contractors, will equally put in place program management strategies to organise their work package.

More research is needed to investigate program management as a bridge between project delivery and organizational strategy (Sosa et al., 2004; Gulati et al., 2012; Castañer & Oliveira, 2020; George et al., 2023), highlighting the connection between the technical aspects of individual projects, and the strategic level of the program organization, including its external stakeholders. We need to understand how program management performs as a meta-function that integrates the outputs and outcomes of several projects and sub-projects (Davies & Mackenzie, 2014). Program management involves managing up, across, and around individual projects, integrating and aligning organizational boundaries (Denicol et al., 2021). We need to understand the differences and complementary relationship between program management and systems integration (Davies et al., 2009; Muruganandan et al., 2022; Whyte & Davies, 2021). The research on the decomposability of the program into multiple projects, and inter-project relationships, requires more investigation on how sub-projects are established as standalone modules, and how the management of scope, sequence, and interfaces contribute to the overall integration of the program.

2. Program management and major infrastructure projects

Major infrastructure projects involve numerous stakeholders, supply chain partners, public-private interfaces, and many other aspects recently covered by the major and megaprojects literature (Denicol et al., 2020; Flyvbjerg, 2014; Mellow, 2011; Morris & Hough, 1987). Program management is often identified as the core capability required to deliver major infrastructure projects over a long life cycle from inception throughout development, to delivery and handover to operations (Brookes et al., 2017; Davies et al., 2019; Denicol, 2020; Denicol & Davies, 2022). Infrastructure refers to the networks and systems enabling society in multiple industrial sectors such as, but not limited to:

- Transport (roads, bridges, tunnels, railways, underground systems, airports, air traffic control systems, ports, electric vehicle charging stations)

<https://doi.org/10.1016/j.ijproman.2023.102517>

- Water (dams, water supply systems, wastewater, sewer systems)
- Energy (oil and gas, wind, solar, coal, nuclear)
- Information and Communication Technology (ICT) (telecommunications, broadband, data centres, cybersecurity of infrastructure assets)
- Hospitals
- Prisons
- Sport venues (Olympic park, stadiums)
- Major urban developments

Major infrastructure projects can be divided into phases of development, delivery, and operations (Davies et al., 2019; Denicol et al., 2021). While the literature often associates program management with the development and delivery phases, recent research has shown how it is important during the transition to operations (Zerjav et al., 2018; Whyte & Nussbaum, 2020; Zhang et al., 2023). The life cycle of major infrastructure projects will naturally bring reconfigurations of actors during each phase of the program and multiple projects will follow different temporal boundaries, concurrently and sequentially (Brookes et al., 2017; Maylor et al., 2006). During development, for example, clients manage professional service firms and a variety of other inputs to develop and submit the scheme to government and authorities for permission. Each project within the program will contribute with its share of benefits, incrementally building value throughout the life cycle, and enabling the full program delivery and realisation of benefits, over the course of operations. Often there is a relationship of precedence, where some elements of the program need to be completed to allow the start of the next set of projects (e.g. enabling works, construction of tunnels, and railway systems).

Infrastructure projects are characterized by multiple temporalities within and across phases. An umbrella program organization might be established to coordinate the entire life cycle, such as the role of the meta-systems integrator on the London 2012 Olympics (Davies & Mackenzie, 2014). However, organizations responsible for individual projects are established to manage such projects and disbanded when the overall program moves to the next phase. The umbrella organization may be a temporary (Bakker, 2010; Burke & Morley, 2016), semi-permanent, quasi firm, or virtual firm, which is responsible for setting the scene for multiple levels of program management.

There is significant interest in how different organizations (e.g. clients, delivery partners, tier 1s, tier 2s) are creating program management strategies and the connections and implications to the organizational system across the multi-level structure (Denicol & Davies, 2022). For example, a permanent firm (e.g. utility firm, national infrastructure agency, state-owned enterprise) might have a 'major projects directorate', with multiple projects and programs managed as a portfolio. If a program is too large to be part of the major projects directorate, often the program is established as a temporary organization with the autonomy and flexibility required to achieve the program's objectives. The new organization might be a Special Purpose Entity (SPE) or Special Purpose Vehicle (SPV), acting as the focal program organization on behalf of several sponsors. Within the new program management organization, there might be professional service firms working alongside the client, and/or a dedicated delivery partner organization (often with program management expertise). This highlights the need for designing the organization, its development, the capabilities required over time, and integration with multiple delivery partners.

3. Related topics

This Special Collection is interested in theoretical and empirical research exploring how program management is used to improve all aspects of the infrastructure development, delivery and handover to operations. Potential studies might explore the execution and management of programs. Whilst the majority of infrastructure projects are initiated and connected with the public sector, we welcome studies

exploring how infrastructure assets are managed by the private sector, and various forms of public and private partnerships. We are interested in contributions examining the boundary between program management and organizational strategy, revealing avenues that might advance program management practice and improve the delivery performance (Denicol et al., 2020) of infrastructure projects globally. We are motivated to publish theoretically informed, evidence-based thinking on program management strategies to deliver infrastructure projects faster and greener, and meet the grand challenge of infrastructure provision to societies around the world.

Research in the *International Journal of Project Management* should be framed by theoretical contributions building upon the project management literature. We welcome contributions bridging with other fields and literatures, such as, but not limited to: strategy, organization studies, operations management, construction management, engineering management, urban studies, and public management. We encourage researchers to build upon one or multiple theoretical lenses (e.g. organization, network, systems, agency, stakeholder, governance, institutional, transaction cost economics) to explore major program management.

We seek papers that can achieve one or more of the following themes and objectives:

- How program management is conceptually positioned within the project management and adjacent literatures (e.g. project networks, (meta)organization design, temporary organizing, systems integration, meta-systems integration, ecosystems, project lineage)
- The key elements of effective program management to deliver major infrastructure projects
- Relationships between program strategy and the configuration of the multi-level project network
- Organizational strategies of permanent entities (e.g. infrastructure agencies, owner/operators) influencing the emergence of program management strategies in the temporary program organization (e.g. within the permanent agency or as a new standalone entity)
- Program management strategies of sponsor or client organization impacting the strategies of other project-based firms across multiple levels (e.g. delivery partners, tier 1 contractors, JVs, sub-contractors)
- Designing program organizations to evolve during of the project life cycle, including relationships with external entities (e.g. the supply chain and external stakeholders)
- Program management in an inter-organizational setting, where multiple parties (e.g. engineering/management consultancies) are working integrated and collocated to augmenting the client's capability and capacity
- Program management organizations building integrated teams with different supply chain partners at inter-organizational level (e.g. integrated client/delivery partner, client/delivery partner/tier 1 contractors)
- Program management structures and practices fostering collaboration between internal and external partners
- Program management strategies to address varying degrees of complexity, urgency, risk, and uncertainty
- Program management strategies to design, shape, monitor, and influence the evolving inter-organizational architectures of major infrastructure projects, unlocking value and performance
- Strategies and governance structures to shield the program organization from political and institutional interference
- Governance structures and assurance processes that enable or constrain the coordination and integration of the program at multiple levels (e.g. intra-, inter-organizational)
- Establishment and contribution of executive boards at multiple levels, and the relationship between the composition of boards and the effective decision-making for program management
- Conceptual and practical differences/similarities between systems engineering, systems integration, and program management

- Management of projects at multiple levels, vertically and horizontally (interface management, configuration management) to achieve the outcomes of the program
- Interfaces and relationships between procurement, management of multiple supply partners (tier 1s, JVs, tier 2s) and the overall program management strategy of the client organization
- Program management organizations structured as a capable procurer or buyer, and role of procurement strategies in buyer-supplier (structural and relational approaches) relationships
- Program management role in developing temporary and often one-off relationships with suppliers

4. Process and key dates

The development of this Special Collection will go through a multi-stage process. The first stage will be a launch through a call for abstracts (1000 words) which will be reviewed and shortlisted for transition to the next stage. This will consist of the submission of a draft paper which will be peer reviewed by other submitting authors in an online paper development workshop (PDW). We will also organise extra feedback sessions during the ‘Multi-level Perspectives on Major and Megaprojects’ track in the Project Organizing SIG for EURAM 2024, in Bath, UK. Attendance at EURAM will not be a mandatory requirement for inclusion in the special collection. Following submission of final papers, they will then be peer reviewed through the normal IJPM process.

The submitted abstract must cover four components of the research: (i) relevance of the problem (a description of the real-world phenomenon and the need for research), (ii) theoretical underpinning of the research, (iii) methodology (a clear description of the research design steps and a description of the data), and (iv) theoretical and practical contributions to the discipline of project management.

Authors should submit extended abstracts by 31 January 2024 to Giuliano Denicol (juliano.denicol@ucl.ac.uk). Please use the exact title of the call and the journal in the subject line of the e-mail. Guest editors will review the proposals and contact authors with their recommendations. The papers will appear as a Special Collection as soon as they are accepted. Submissions should comply with the standard guidelines of *International Journal of Project Management* and will be subject to the standard IJPM double-blind review process. In the submission process, the authors should select the tab for the “Program Management” special collection. If you have additional questions, please contact the guest editors.

We anticipate the following timeline:

1. Launch September 2023
2. Abstract (1000 words) deadline, **31 January 2024**
3. Selected proposals invited for full paper submission: **February 2024**
4. Draft paper deadline, **31st May 2024**
5. Online PDW, **June 2024**
6. EURAM, Bath, **24th-28th June 2024** (Major and Megaprojects track opportunity for extra feedback – paper deadline mid-January 2024)
7. Full paper deadline, **30th October 2024**
8. Publication of Collection, during 2025. Please note that papers will be published as they are accepted so authors may wish to submit in advance of the timeline above.

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