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How Systemic Approaches are Needed for Complex Projects

Complex projects can only be understood using a holistic systemic approach: the understanding of the performance of one part of the project is not correlated to the performance of the whole project. However, many organisations are still using discipline specific rather than transverse KPIs to assess performance and thus miss the emergence of transverse issues. It is essential to implement tools and processes that address the systemic aspect through transverse checks on the consistency of performance throughout projects and project portfolios. In this White Paper we expose in more detail the reasons for this need and what tools and processes can provide proper oversight.

General characteristics of the performance of complex systems

Complex systems theory explains why the performance of the complex system is not just the sum of the performance of the parts. Some characteristics may emerge from the system itself; and the performance of the system is also only weakly correlated to the performance of its parts because of such effects as bottlenecks, natural variation and other non-linear behaviour and interdependence of various system components

Irrespective of a high level of oversight on each part of the system, a systemic oversight is needed, that takes a broader view. There are numerous examples of systems which looked fine seen from partial discipline indicators but were quite inadequate from a systemic perspective. An extreme example of an approach that will never work, but still sometimes observed, is the attempt to drive large complex projects using a set of discipline schedules without an integrated project schedule.

Usual processes that fail to provide a systemic overview

Organisations tend to spend substantial effort on discipline-specific checks and performance measurement and enhancement programmes that fail to consider the systemic aspect of complex project delivery. Such efforts are generally driven by discipline heads. Typical examples include measurements of discipline specific productivity without any link to the needs of the internal client.

Even processes which may appear to provide transverse checks such as quality often end up organising audits and reviews which are discipline centric.

Setting up transverse oversight is not natural in many traditional organisations and it may require a strong leadership drive from top management as well as the appointment of a specific leader in charge of systemic performance.

Systemic oversight approaches for complex projects

In order to assess the performance of a complex project, approaches are thus needed that consider the entirety of the system in a comprehensive manner and check the consistency across the project.

Those approaches need to be:

- Comprehensive and holistic, without necessarily going into the detail of each discipline, but focusing on the consistency of the overall picture and on the interfaces between disciplines and interdependency of stakeholders,
- Broad in terms of scope coverage (in particular, external stakeholders)
- Focused on the systemic issues such as: culture, team integration and performance, value to the organisation, consistency of the approach, proper coordination of activities etc.

The performance of the complex system is not just the sum of the performance of the different disciplines. It depends on the consistency across all project aspects.

- Identifying gaps and duplications across all disciplines and parts of the project

Depending on the phase of the project, the methods to provide this systemic oversight may vary, still the methods will always rely on bringing together data and reports from all disciplines and checking their consistency.

On a monthly basis – integrated project schedule and reports

On a monthly basis, the integrated project schedule update and the project report or dashboard are the occasion to bring together indicators from all disciplines and packages and consider their consistency. Inconsistencies and unexpected slippages of activities in time should be treated as weak signals and cause for investigation.

Those control tools are real systemic overview tools only if they are effectively balanced in the consideration of the various disciplines and if they include KPIs that are transverse across several disciplines. Earned Value Management is an example of the combination of physical progress and cost indicators.

The compilation and review of the integrated project schedule and project report by the Project Manager and the Project Control Manager is the occasion to ensure a systemic oversight.

On a regular basis (~quarterly) - checklists

On a regular basis, checklists are often utilised by projects as self-checks and a means of anticipation; or the checklists are part of governance tools used to ensure that projects are on track.

To enable a systemic approach, checklists must also cover all disciplines and packages in a balanced manner to ensure

that there is a consistency in the maturity of each project aspect.

Comprehensive reports at key milestones (end of preliminary design, final investment decision, key intermediate execution milestones):

Similarly, more comprehensive checklists and review frameworks are generally applied to key project milestones so as to decide whether the project is sufficiently mature to progress to the next phase.

To ensure these tools provide an effective systemic approach they also need to cover all disciplines in a balanced manner, making sure that there is an overall consistency across the project. This is generally ensured by preparing a full report covering all aspects in a comprehensive manner. The process of preparing the report is a way of ensuring full consistency across all project aspects. Therefore, the production of the report should be maintained as a tool to ensure a systemic check of the project even if there are time or resource constraints.

For these key milestones, soft power aspects of integrated team performance which are an essential part of the project execution resilience, must also be covered.

Independent project reviews

Project reviews by peers independent from the project team are often organised as a way to monitor project and exchange good practices.

The effectiveness of project reviews to achieve systemic oversight requires a transverse review of all major project disciplines (generally by a transverse team or by experienced personnel aware of most disciplines) and a focus on the consistency of project execution to identify any discrepancy in performance. The feedback from the review must also address systemic level issues, which include soft power team performance and governance aspects.

Portfolio-level monitoring

Systemic issues at portfolio level include resource management issues across the portfolio, which need to be considered for all disciplines in a consistent manner.

Specific tools and processes must be set up to enable a transverse oversight at project and project portfolio levels

Conclusion

Implementing systemic oversights of project performance is not easy and often not natural in many organisations. Specific reporting and checking practices used around

complex projects do respond to the need, however, they need to effectively cover all relevant disciplines in a balanced manner and with a specific focus on their interdependence. This sometimes require difficult adjustments in

organisations that are more used to concentrating on the local performance of each discipline. Strong leadership is then required to effectively implement systemic monitoring, which is the only way to have a reliable measurement of the effectiveness of the organisation, systems and processes on a large complex project.



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