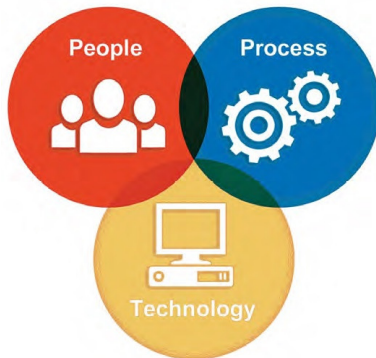


Project Controls – A Definition



The purpose of this White Paper is to offer a concise definition of project¹ controls.

Project controls is a function (not a job description) and any one person may fulfil parts or all of the function as defined and include other allied function such as various aspects of contract and project administration within their particular job description. The critical element for success is ensuring the full spectrum of the controls function is covered and coordinated to meet the requirements of the project or program being controlled.

The project controls function is defined as²:

Project controls are the data gathering, management and analytical processes used to predict, understand and constructively influence the time and cost outcomes of a project or program through the communication of information in formats that assist effective governance³ and management⁴ decision making⁵.

This definition encompasses all stages of a project or program's lifecycle from the initial estimating needed to 'size' a proposed project, through to reflective learning (lessons learned) and the forensic analysis needed to understand the causes of failure (and develop claims).

The functions undertaken by project controls professionals includes estimating future works, determining the current status of work in progress, understanding the reasons for this status and recommending appropriate actions or alternatives based on the observed status and trends. Within this framework, for a recommendation or prediction to be useful, the reliability of the information upon which it is based needs to be understood, and additionally, any realistic estimate or forecast must take into account uncertainty and the cost and time consequences of identified risk events.

Consequently, the project controls discipline can be seen as encompassing:

- Project strategy⁶, contribute to the development of the project strategy by undertaking planning and methods studies, and value engineering to help the Project Manager (PM) optimise future outcomes and satisfy stakeholder requirements;
- Scheduling⁷ including development, updating and maintenance;

¹ The terms **project controls** and **project management** are used in this White Paper for simplicity. The concepts and definitions are equally relevant to programs and program management.

² The original definition and concept of 'project controls' was widely circulated within the 'controls community' during November and December 2013, this white Paper is based on the comments and feedback from a number of people whose contribution is acknowledged and appreciated.

³ For more on the **functions of governance** see: https://www.mosaicprojects.com.au/WhitePapers/WP1096_Six_Functions_Governance.pdf

⁴ For more on the **functions of management** see: https://www.mosaicprojects.com.au/WhitePapers/WP1094_Defining_Management.pdf

⁵ For more on **decision making** see: https://www.mosaicprojects.com.au/WhitePapers/WP1053_Decision_Making.pdf

⁶ For more on **strategy** see: https://www.mosaicprojects.com.au/WhitePapers/WP1038_Strategy.pdf

- Cost estimation⁸, cost engineering/control and benefits management;
- Risk management⁹, including maintaining the risk register and risk analysis/assessment;
- Earned Value Management¹⁰ and Earned Schedule, including WBS¹¹, OBS and other breakdown structures,
- Document control, records management, and data verification and traceability¹²;
- Supplier performance measurement / oversight (but excluding contract administration);
- Stakeholder analytics¹³ and issues tracking¹⁴ (but excluding stakeholder engagement and management);
- Some statistical aspects of quality control as they affect future performance and the prediction of project outcomes; plus any aspects quality directly linked to the management and performance of the project controls function itself such as measuring the quality of the data used for estimation (but excluding any direct involvement in the management of the work of the project).
- The elements of a project management methodology that integrate these disciplines both within the 'controls' domain and with other project management functions; including the management of the project controls function and processes;
- Monitoring and reporting on the project's performance against defined success criteria (and potentially assisting in establishing these criteria)¹⁵;
- Potentially elements of organisational governance, culture and ethics as they apply to project and program teams and affect their work¹⁶;
- Developing, maintaining and using relevant historical data sets (lessons learned / production rates / knowledge management / benchmarking / etc.); and
- The ability to effectively communicate to management, the information generated by these processes¹⁷, including effective reporting, advising and influencing.

⁷ For more on **scheduling** see: <https://mosaicprojects.com.au/PMKI-SCH.php>

⁸ For more on **cost estimating** see: https://www.mosaicprojects.com.au/WhitePapers/WP1051_Cost_Estimating.pdf

⁹ For more on **risk management** see:
https://www.mosaicprojects.com.au/WhitePapers/WP1047_Risk_Management.pdf

¹⁰ For more on **Earned Value** see:
https://www.mosaicprojects.com.au/WhitePapers/WP1081_Earned_Value.pdf

¹¹ For more on **WBS** see: https://www.mosaicprojects.com.au/WhitePapers/WP1011_WBS.pdf

¹² **Data verification and traceability** is becoming increasingly important with the advent of BIM and other integrated management tools. The controls function includes the ability to trace the origin, application, location, and history of each data element and maintaining a record of the changes and its use. This function may extend to ensuring appropriate quality checks and sign offs have been obtained before the information is used and managing 'design freezes' to ensure information is not inadvertently changed after it has been used and the consequences of any change are properly managed.

¹³ For more on tools and techniques for **stakeholder analysis** see:
<https://mosaicprojects.com.au/PMKI-TPI-075.php>

¹⁴ For **issues management** see:
https://www.mosaicprojects.com.au/WhitePapers/WP1089_Issues_Management.pdf

¹⁵ For more on **project success criteria** see:
<https://mosaicprojects.wordpress.com/2017/07/04/defining-project-success-using-project-success-criteria/>

¹⁶ For more on **measuring governance and culture** see:
https://www.mosaicprojects.com.au/Mag_Articles/P026_Measuring_Culture.pdf

¹⁷ For more on **communicating controls information** see:
https://mosaicprojects.com.au/PDF_Papers/P186-Understanding_Design.pdf



This proposed definition deliberately excludes the actual management of the project scope, including scope related disciplines such as quality control, and general management disciplines such as team development, stakeholder management and communication. ‘Controls’ information is often an important input to these functions and the capability of the managers and administrators in performing these functions affects the measurements and observations undertaken by the ‘project controllers’; but the ‘controls’ role is information generation; managements role is making effective use of the information.

Managing Project Controls

The elements of managing the project controls function include:

1. **Standardising processes.** Moving to an integrated standardised set of processes helps generate consistent information for use by management and allows the easy movement of controls staff between projects.
2. **Ensuring data integrity.** Reliability and traceability of controls data is essential to analysis and reporting.
3. **Staff training and development.** Controls staff need to be encouraged to upskill.
4. **Continuous improvement.** Developing the capability to continuously improve the controls function including deploying aspects of agile, light, lean and Six-Sigma.

Advocating for Controls

Project controls is not a passive function – one of the important functions of project controllers, particularly senior project controls professionals and PMO Managers¹⁸, is advocating the value of effective project controls. This include measuring the ‘value of controls’, highlighting the contribution of effective controls to the creation of value and supporting a culture of openness and transparency. Project controls information is an important input to effective governance¹⁹ and strategic management as well as at the tactical level of project management.

Separating management²⁰ from ‘project controls’

It is important to separate the controlling part of management (the actual administration and direction of the workforce) from the ‘project controls’ function of observation, measurement, and analysis; and based on its findings, providing advice to management.

The primary function of management is directing and controlling work (PMI’s ‘executing’ and ‘monitoring and controlling’) to control the work, management needs a ‘control system’ and the management controls system needs a baseline that defines ‘in control’ (the project plan), information that indicates how far ‘out of control’ the work currently is (both of which are in the domain of project controls), and a process for correcting the situation to bring the work back into control (implementing corrective and preventative actions – the domain of project management).

Some information pertaining to current performance is derived by the project controls team; other aspects are integrated into the management and performance of the work. Two examples are:

¹⁸ For more on **PMOs** see: https://www.mosaicprojects.com.au/WhitePapers/WP1034_PMOs.pdf

¹⁹ For more on **governance** see: https://www.mosaicprojects.com.au/WhitePapers/WP1096_Six_Functions_Governance.pdf

²⁰ **Project management** is defined as ‘The application of knowledge, skills tools and techniques to lead and direct the work of a project organisation’. For a discussion on basis of this definition see: <https://mosaicprojects.wordpress.com/2016/08/11/seeking-a-definition-of-a-project/>



- **Quality Assurance:** Quality is an integral part of doing the work – quality is built into the fabric of a process in exactly the same way team performance is. Project controls is not involved with the direct management of the work and therefore cannot be involved with the direct management of quality (quality is designed in not inspected in). Even quality inspections (traditional quality control) are simply work undertaken by the project team to complete the required scope. There are activities in the schedule and have associated costs, etc but are fundamentally the same as digging holes or pouring concrete.
- **Contract Administration** is also an integral part of doing the work. Project controls is not involved with the direct management of the work and therefore cannot be involved with the direct management of contractor and the processes of payment, etc. Administering a contract is fundamentally the same as directing the work of employees in a project team, a management function.

Planning and controlling are inexorably linked. Plans form the basis for control. There are four primary components of controlling:

- **Establishing performance standards:** establishing the criteria by which methods and results will be evaluated.
- **Performance measuring:** recording and reporting work in progress and completed.
- **Performance evaluating:** appraising work in progress and results secured.
- **Performance correcting:** regulating and improving methods and results.

Performance measuring is definitely a ‘controls function’, performance correcting a ‘management function’; responsibility for the other two elements may be shared between controls and management.

Summary

The purpose of this White Paper is to define the specialist skill set of ‘project controls’ and promote the concept that managers benefit from the analysis and insight developed by project controls specialists. Project controls specialists contribute to management in several key areas:

- The development of the project plan is the responsibility of management supported by the project controls professionals in the areas defined above. Project controls professionals work with the team and other stakeholders to plan the optimum way of accomplishing the work.
- The surveillance aspects of time, cost and risk are intimately linked to the accomplishment of scope, to the quality standards required by the stakeholders²¹. The ‘project controllers’ measure the actual performance of the team against the agreed plan and use this data to recommend future actions and predict outcomes but are not directly involved with the management of project work. by the contractors and project team

This means: Project Controllers are the experts who gather, manage and analyse data to generate useful information and insights for others to use. And the primary users of the ‘controls information’ are the project management team and the project governance and oversight entities within the organisation such as PMOs and ‘project control boards’ (PCBs).

Most authorities recognise that it is impossible to effectively manage or govern a project (or program) in the absence of reliable information on the current status of work in progress, and reliable predictions of future outcomes. This is supported by the definition proposed in this White Paper, with the key delineator between ‘controls’ and ‘management’ being the recognition that it is management’s role to make use of the information and advice generated by the controls professionals.

²¹ For more on *project surveillance* see: https://www.mosaicprojects.com.au/WhitePapers/WP1080_Project_Reviews.pdf



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