

# **A Roadmap to an Organisation's Project Delivery Practices**

**David G Leach BE, FIEAust.**

## **Abstract**

An organisation's work practices and procedures will have been developed over a number of years and are often not well understood, convenient to access or relevant to current business processes. There is generally recognition of the need to revise and integrate these procedures into a comprehensive, easily understood and consistent set of documents. Experience indicates that this task is rarely completed. The author has implemented in a variety of business organisations an alternative approach that provides a road map to the organisation's activities. This high level manual provides sufficient information to allow projects to be consistently managed and provides less experienced engineers with a world view of how the organisation requires its projects to be managed. The manual is supported where necessary by the organisations detailed procedures.

The resulting manual is conveniently kept by every engineer in the department as a controlled desk reference. Embedded hyperlinks in the manual can exploit the company's LAN to access necessary material. Alternatively the use of a platform such as Microsoft SharePoint will enable the concept of the manual to be integrated into the organisation's knowledge warehouse.

## **Keywords**

Project, Management, Plan, Execution, Procedure

## **Introduction**

Many organisations implement a programme of capital works designed to maintain the integrity or enhance the revenue earning capability of their assets. Larger organisations may establish a department that is charged with the development and implementation of these capital projects. Over time, the organisation will develop a number of written procedures describing various work practices that are used in managing these capital projects. As the organisation matures, these procedures will require modification and upgrading to properly reflect current work practices. In some instances, there may be work practices in place that have yet to be codified into written procedures.

A common phenomenon of the more mature organisations is that as procedures become out of date, more complex, hard to find and in some cases non-existent, staff is increasingly frustrated in trying to understand the organisation's methodology to control its projects. Management eventually recognises the need to establish a comprehensive and consistent set of documents that will describe and direct the work practices used. Most organisations find

this requirement to be a major task that often becomes moribund when the initial enthusiasm for its execution wanes. One approach to maintaining focus on completion is to establish a list of activities reflecting the business of the organisation and then compile a lexicon of associated procedures that need completing. Nominated documents are assigned to individuals to complete in the expectation that over time, a set of documents is produced fulfilling the needs of the organisation. This traditional approach has a serious disadvantage in that progress is slow and experience indicates that the task is rarely completed.

The author proposes an alternative approach that has been successfully applied to different organisations. The approach considers the production of a project delivery manual that provides a road map to the project department's activities. This high level manual provides sufficient information to allow projects to be consistently managed and provides less experienced engineers with a world view of how the organisation requires its projects to be managed. The manual is supported by the organisation's detailed procedures that describe the operating tools, systems and work practices.

The advantages of the project delivery manual are briefly:-

- By means of simple bubble diagrams and descriptions, an overall picture of the project delivery process is presented. This presentation generally reflects the typical project life cycle.
- A key control tool for projects is the requirement for a specific execution plan. The project delivery manual provides project managers with a toolbox to produce the execution plan.
- The manual directs engineering and other project delivery staff to appropriate detailed procedures, forms and tools as they proceed through a project's life cycle. The manual addresses the needs of a multi project environment where projects vary in size and complexity.
- Improvements to work practices are rapidly and effectively disseminated throughout the organisation.
- The organisation is focussed on developing as a priority those procedures that are key to the organisation's project delivery operation. In many instances, the content of the project delivery manual will be found sufficient.
- The manual provides a basic training tool.
- The resulting manual is conveniently available to everyone involved in delivering projects as a controlled desk reference or intranet based file.
- Importantly, the manual can be created and introduced within a relatively short time.

## **Project Delivery Manual**

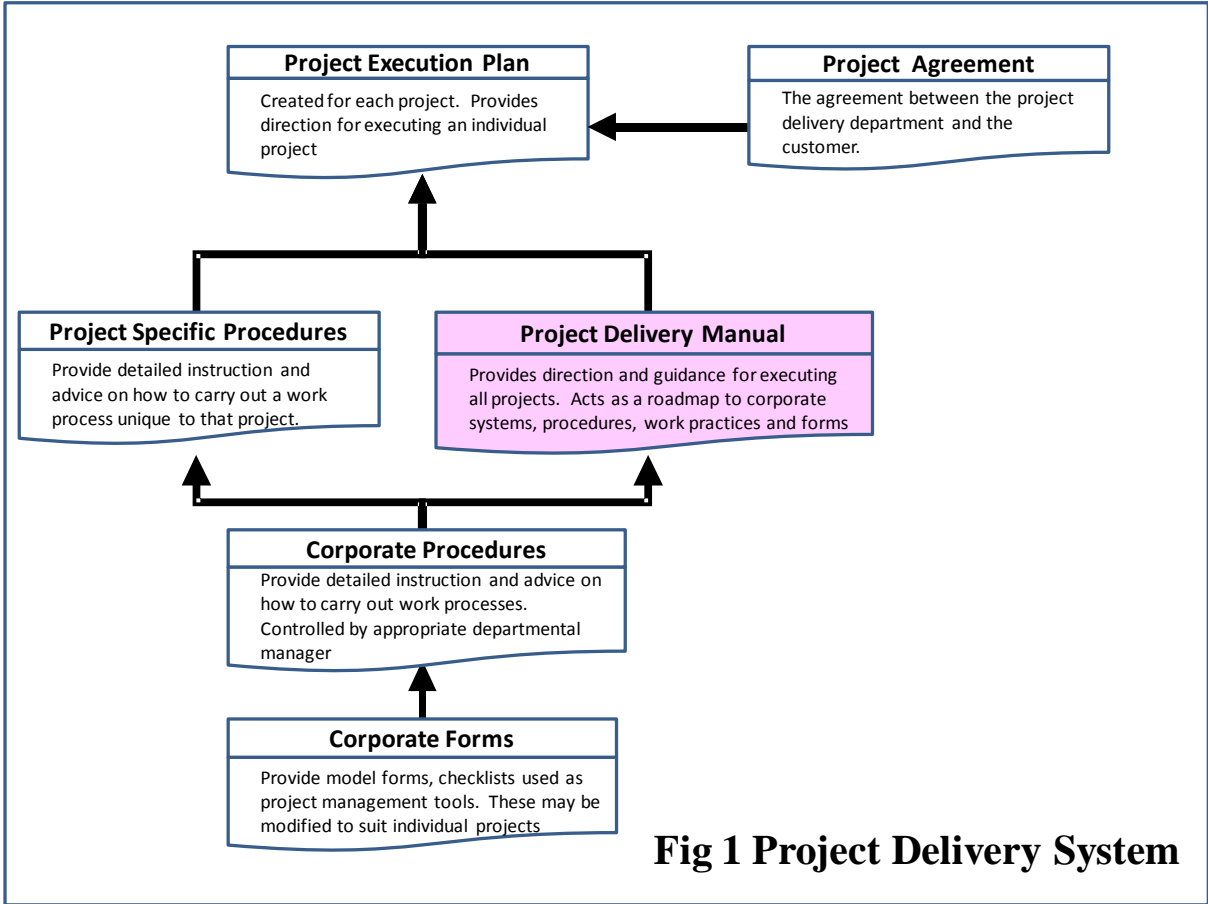
The project delivery manual provides advice and direction on work practices and procedures required to carry out an organisations projects. The manual together with detailed corporate

procedures, form the project delivery system that controls the organisations project development activity and is part of the quality system. The manual assists the organisation to improve its project delivery system by incorporating principles espoused by AS/NZ ISO 9001:2000 to achieve best practice in developing projects and delivering outcomes to the projects’ customers. Generally the manual is written to be the main reference for project management information with pointers to supporting procedures.

The manual therefore serves as a road map that:

- (a) Indicates procedures that need to be developed to support the work practices defined in the manual.
- (b) Directs project staff to the activities needed to obtain sanction for capital expenditure and effectively carry out the design, procurement, installation, commissioning and hand over of a project.

A fundamental tool of a project management system is a plan outlining how the project will be carried out, controlled, reported upon etc. Every project is provided with such a plan, specific to that project, called the Project Execution Plan. The Project Delivery Manual provides direction and support to the Project Execution Plan. Figure 1 illustrates this relationship and shows the relationship of the Project Delivery Manual with other elements of the organisations project delivery system.



**Fig 1 Project Delivery System**

## **Structure of Project Delivery Manual**

The manual is structured to generally reflect a project's life cycle and assumes that one department in the organisation is responsible for the delivery of projects. Depending on how the organisation defines the various stages in a project's life cycle, the manual will comprise chapters as shown below. This is a typical structure that is tailored to suit the organisation's needs. The manual is normally produced electronically with active internal references allowing readers to jump to the specific reference. In addition, references to external forms, procedures and other documents that are located on the organisation's Intranet are "hyperlinked" to provide access to the reference from the electronic document. In order for this concept to work efficiently, the "hyperlinked" references need to be fully controlled.

Work practices are generally described using graphics, the author dubs bubble diagrams that indicate key outputs from activities and key responsibilities. No attempt is made to provide detailed flow diagrams of each activity. This approach allows engineers a degree of flexibility in their approach and encourages a focus on outcomes rather than the process. The diagrams are described in more detail later in this paper. Model forms designed as "aide memoirs" are included as particularly useful devices to secure uniformity and compliance to quality requirements.

### ***Chapter 1      General Project Management Issues.***

This chapter deals with the general issues of managing projects and design activities in the project delivery department including: -

- Departmental organisation structure
- Organisation for executing projects
- Roles & responsibilities for departmental & project positions
- Quality system
- Innovation & continuous improvement
- Filing system, communications, general administrative issues etc.
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### ***Chapter 2      Project Initiation & Definition***

This chapter deals with the activities associated with sanctioning and acceptance of a project into the department such as: -

- Developing a business case justifying the project
- Defining project scope, expected outcomes, cost estimate, schedule.
- Developing risk management strategies & execution plan.

### ***Chapter 3 Planning for Control***

This chapter deals with the project control requirements including: -

- Change control of design and scope
- Project financial and progress performance reporting.
- Document management.

### ***Chapter 4 Engineering Design, Procurement & Installation/Construction***

This chapter deals with execution of design, procurement of equipment and site installation, including: -

- Design briefing, preparation of design, design reviews, checking, approval and verifying design outputs etc.
- Procurement and contracting practices, ordering, inspection, claims, etc.

### ***Chapter 5 Commissioning and Validation***

This chapter deals with commissioning the delivered facility, validating the project's design, installation, operation and performance to regulatory standards, and demonstrating that the customer's objectives have been achieved.

### ***Chapter 6 Handover & Close Out***

This chapter deals with the handover to the project's customer and the issues surrounding the close out of projects, including:

- Closing out supply and installation contracts.
- Closing out project within the organisation's financial control system.
- Review technical performance of project and performance against departmental benchmarks.
- Customer feedback.

### ***Service Providers***

The manual provides an opportunity to include direction and advice on managing service providers including partnering relationships, external engineering consultants, design & build contractors etc. This issue is usually dealt with in a stand-alone chapter.

## *Appendices*

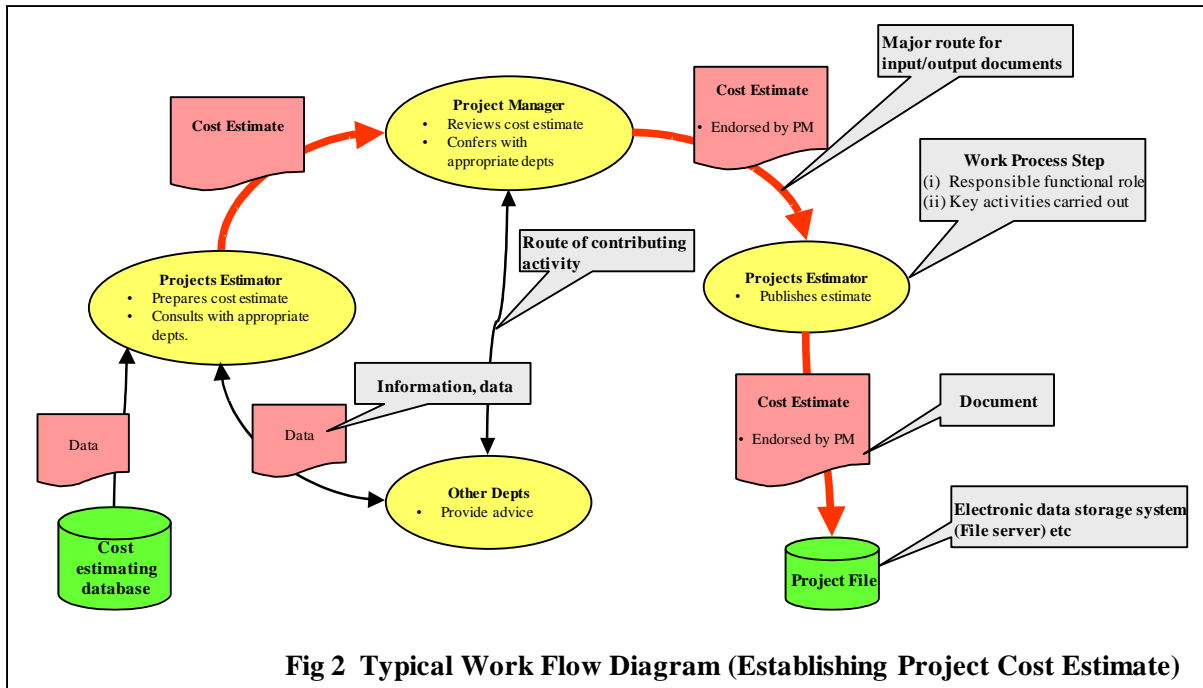
A list of procedures describing the work practices necessary to support the manual is included as an appendix. This list should be organised into the same categories as the manual with those procedures that require modification or are yet to be written being identified. Similarly, a list of commonly used forms and model forms or templates is included. As procedures and forms become accessible they are “hyperlinked” to the document. These model forms are designed as “aide memoirs” and provide templates for the required information. Use of these model forms will obviate the need for many additional written procedures

### **Bubble Diagrams**

Throughout the manual, simple diagrams are employed to illustrate work processes. These diagrams are not detailed flow diagrams but rather are designed to show:

- Responsibility for the activities at a step in the work process eg Senior Projects Manager.
- The key activities carried out by the functional role at a step in the work process eg review and endorse cost estimate.
- The key inputs and outputs associated with a particular step in the work process eg *Approved cost estimate*.

A yellow ellipse indicates a step in the work process at which a group of activities occurs. The functional role responsible for these activities and the list of key activities are nominated in the ellipse. Pink icons represent documents or data that are required inputs to the step and required outputs of the nominated activities. Thick red arrows indicate the route of major data or documents. Thin black arrows indicate the route of contributing activities, data and documents. Other icons indicate physical or electronic storage, data-bases and management systems. A process shown in one diagram may be shown in greater detail in a supporting lower level diagram. An example of a bubble diagram is the annotated diagram Figure 2 below that shows an estimating process.



## Developing and Implementing a Project Delivery Manual

Developing a Project Delivery manual that will introduce best practice into an organisation may require changes to the current culture as existing work practices may not compare well to best practices espoused by the Project Delivery Manual. Another problem that the author finds is there is often one or two highly valued individuals carrying out functions not properly documented or understood by colleagues.

The author has used a methodology outlined below that successfully develops and implements a Project Delivery Manual. The process has the following steps.

- (i) Present an outline of the road map concept to the group responsible for delivering projects. This usually involves an overview of the issues that must be addressed in order to achieve successful project outcomes. This is a very important step, as there are many myths and egocentric opinions how best to deliver projects. The presentation introduces a model of the project team structure, defining notional roles and responsibilities for each project function and interfacing corporate functions.
- (ii) Interview the current practitioners involved or interfacing with the group that delivers the organisation's projects. The object is to understand how existing processes work and who is currently responsible for particular tasks.
- (iii) Define the organisations notional project team structure and establish roles and responsibilities of the project team in terms of the various project functions, such as engineering design, procurement, quality control, construction etc. An individual manages each function and is responsible for the execution of that function. In a given project, an individual may be responsible for several project functions. An individual may also be responsible for functions in a number of

con-current projects. It is important to recognise that project assignments, being functional responsibilities do not necessarily reflect an individual's corporate rank. Thus there is no conflict for a senior line manager with special expertise, occupying a design engineering role and functionally responsible to the Project Manager who may hold a more junior corporate rank.

- (iv) Construct the Project Delivery Manual based on existing work practices that are modified where necessary to incorporate improvement. Develop new work practices where required.
- (v) Interface with senior management to obtain agreement and support for the changes to existing practice. This step is vital to a successful outcome.
- (vi) Present the completed Project Delivery Manual in a workshop environment to all stakeholders and obtain commitment for implementation.
- (vii) Commit to ongoing education and review of the manual's application.

## **Application**

Two applications are briefly described to illustrate the effectiveness of the manual.

- A. The concept of a Project Delivery Manual was initially developed and applied to improve the project delivery practices used by a privately owned electricity distribution company, one of the companies resulting from privatising the Victorian Government electricity generating and distribution organisation. The project delivery culture of the original government organisation had been largely dissipated by the time the author was approached. Creating and applying a Project Delivery Manual was instrumental in improving project outcomes and enabled the company to establish an effective quality assurance process.
  - (i) Bubble diagrams immediately ensured consistent work flows.
  - (ii) Model forms ("aide memoirs") complete with instructions enabled engineers to input data consistently and completely.
  - (iii) The project delivery process became more widely understood.
- B. In 2003, Uhde Shedden Australia P/L a subsidiary of ThyssenKrupp Uhde was a successful Australian engineering design company with a leading reputation in front end engineering process design. Being keen to develop the ability to fully service clients with a total project delivery capability, the company engaged the author to develop suitable management systems and work practices and lead the implementation of accompanying culture changes. Recognising that the company's prime business was managing the delivery of projects on behalf of its Clients, Uhde Shedden adopted two fundamental axioms viz:



- (i) That the project task force is a profit centre with a fully accountable Project Manager.
- (ii) That the function of the corporate organisation is to support project task forces in the business of delivering projects.

A Project Delivery Manual that incorporated these axioms was quickly developed. This document provided the reference for training personnel in the new culture and became the foundation document for constructing the company's now well established and recognised, ISO9000 accredited, project delivery system known as SUBS. Since that time, a company knowledge warehouse incorporating the principle of the Project Delivery Manual has been constructed using the Microsoft SharePoint platform. This improved the access to corporate knowledge and ensured that all users access current information. The author retained a senior management position with the company from 2003 to 2010. During that period the company was successful in winning and delivering several major refining and chemical processing EPCM projects using the SUBS project delivery system.

## **Conclusion**

Organisations having problems establishing an effective, easily understood and accessed set of project delivery procedures will benefit from introducing a manual that is designed as a roadmap to the organisation's project delivery processes. The manual takes a relatively short time to develop and implement and with the support of model forms acting as "aide memoirs" to a process will obviate the need for many additional written procedures. However, its success depends upon senior management support and a commitment to continuing education of the project delivery staff.

Additional convenience, control and functionality will be achieved if the Project Delivery Manual is mounted on a platform such as Microsoft SharePoint as part of an organisations knowledge warehouse.

## **Bibliography**

The concepts developed in this paper are based on the author's extensive experience with delivering capital projects in the oil/gas refining, mineral processing and chemical processing industries. Whilst working with major international engineering contractors, the author developed a body of improved project delivery work practices, prepared a number of project execution plans for major projects and delivered work practice training to the associated project delivery teams. Much of the author's approach to delivering projects has been forged by the accumulated knowledge and wisdom resident in the culture and personnel of these corporations. Nevertheless two seminal papers are referenced which inspired the author to develop the concept of the Project Delivery Manual described in the paper.

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