Chapter 3 | overview

This chapter is dedicated to the project manager, carefully describing what activities she under-takes, what roles she may have to assume in doing so and the personal skills and competences required as well as the behaviours she should be able to display in these roles.

The chapter is also dedicated to some aspects of career development and includes a description of how a competence development programme for project managers could look like. The chapter concludes with a number of personal views from the author on what makes a good project manager and why someone would choose this career.

Chapter 3 | outline

Chapter 3
The project manager

by Hans Wierda

3.1 | Introduction

This chapter is based on the author's experiences and observations in the energy world, managing projects from early initiation of an opportunity, through development phases to execution and start-up and covers projects with different degrees of complexity. This includes projects in a business environment varying from highly regulated in Europe with commercially focussed partners to highly government controlled environments in the Far East with partners with strong locally focussed strategic agendas. The author's experience base is predominantly from a project manager's role in an owner's organisation also responsible for operating the eventual project deliverables. The chapter henceforth tends to view the project manager's role through the owner's perspective.

This experience base is dominated by new or additional infrastructural facilities for the production ('upstream'), transport ('midstream') or processing ('downstream') of oil/gas and energy generation. However, there are many similarities with large infrastructural projects such as airports, hospitals, tunnels and large factories in mining, ore processing, etc.

Generally the maturation of opportunities into projects and subsequent final decision to invest and execute, is subject to a stage gate process with activities in each phase aiming to increase the level of definition and reduce uncertainty. At the end of each phase a sound proposal to proceed to the next phase is made, covering scope, budget, schedule and resources, all accompanied by a transparent description of remaining risks.

The nature of the activities in the development phases is characterised by unleashing creativity, thinking outside the box to create solutions for an optimal plan. The implementation phases, on the other hand, are generally characterised by a rigorous discipline to stick to the plan and procedures with creativity being subordinate to the delivery plan.

In this context the most succinct (and classical) definition of a project manager is that she is the person responsible for realising a project with clearly defined deliverables within an agreed schedule for an agreed budget.

However, that would not necessarily include her involvement and perhaps leading role in the development process that transfers an opportunity for investment into a firm proposal as well as obtaining agreements for final investment and execution of the project. This chapter considers that phase of a project as an integral part of the responsibility of a project manager[1].

The sheer size of the projects as described above (generally in excess of €10 million) and the impact they may have on environment and society, demands a multidisciplinary team to manage the complexity of internal and external agendas, regulatory requirements, industry standards and compliance assurance processes.

The prime job of a project manager is therefore to be a team leader with a significant versatility to play many different roles in relation to different stakeholders, from initiation until final hand-over to the end user, demanding a large repertoire of technical, commercial, communication and leadership skills.

A more accurate description of the project manager´s job therefore is *to lead a team executing all activities to transfer an opportunity for capital investment into a project with a defined and agreed scope and deliverables and its implementation within agreed budget and schedule.*

This chapter describes what activities she undertakes, what roles she may have to assume in doing so and the personal skills and competences required to do that and what behaviours she should be able to display in these roles.

3.2 | The project manager's job

The most important aspect of the project manager's job profile is the leadership to transfer the opportunity into a project and deliver it. The activities of the project manager are therefore predominantly driven by the requirements of the processes that most major companies use to mature opportunities: the stage gate process[2].

3.2.1 The project manager's job in the development phases

In the development phase the processes are aimed at developing the opportunity from ideas into a firm definition of the scope along with a budget and an implementation schedule. This includes a multitude of activities such as:

▸ Framing the opportunity and fully understanding why the opportunity exists, what the value, cost and schedule drivers and risks are and what decisions need to be made to reduce risks and uncertainties to an acceptable level to allow clear definition and execution of the opportunity.

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1   This choice is made for the sake of achieving an overview in the entire project lifecycle. In different parts of the infrastructural industries this might not be the case: within infrastructural contractor companies the responsibility for a project manager often starts with involvement in a bidding process which from a client's perspective is well into the implementation phases.

2   Many stage gate processes consist of five phases where there is a lot of commonality in the nomenclature for the phases. For the purpose of this chapter the author standardises on APPRAISE, SELECT (collectively referred to as Development) and DEFINE , EXECUTE (together often referred to as Implementation) and OPERATE

▸ Identifying risks, issues, potential 'showstoppers' in the traditional risk areas of technology, commercial and in- and external organisational areas[3].
▸ Based on these risks and issues: identifying scope for studies, surveys, tests, etc.
▸ Estimating cost, resources and making a schedule for approval, execution and control purposes.
▸ Obtaining the approvals to execute the proposal.
▸ Resourcing and building the project team and setting up the network of specialists to support the team where required.
▸ Executing all activities to zoom in on the final concept for the scope of the facilities that will be built.
▸ Preparing the proposal to move to the next phase of implementation.

The main deliverable of these activities is a conceptual plan for project execution such that detailed economic evaluations allow comparisons with competing investment opportunities and to test whether the concept satisfies the owner as well as external requirements. The project manager's job is to ensure all of the (greater) team's activities focus on that final deliverable.

> ### Understanding Value drivers
> *Key success factor in the early phases is to establish the project drivers: 'Why are we doing this project?' What drives the value for the Owner/Funding Parties?*
> *Examples for possible project drivers for a tunnel under a river:*
> ▸ *provide a tunnel with a certain capacity between the two river banks*
> ▸ *provide a tunnel connection with a maximum cost*
> ▸ *provide a tunnel with a maximum foot print*
>
> *Without clarity on the priority of these project drivers lower level trade-offs cannot be made.*

3.2.2 The project manager's job in the implementation phases
During the implementation phase the project manager's job is twofold: at first she will need to obtain agreement from the owner on the final investment decision. After the agreement is obtained she will be expected to execute the project for final handover to the end users. For that purpose the project team's activities will include:
▸ Translating the agreed concept into a firm scope of work that can be used for tendering the work and test the market of contractors, suppliers and service providers.
▸ Developing an agreed contract strategy for the full scope of the project including tender and contract management strategies per work scope for each building blocks.
▸ Preparing contract documents and execution of all major tenders.
▸ Selecting contractors, suppliers and service providers.
▸ Re-building and managing her direct reports and 'greater' team of specialists, expeditors.

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3 Many companies apply acronyms such as TEMPO (Technology, Economics, Markets, Political, Organisation) or TECOP (Technology, Economics, Commercial, Political Organisation), TCP (Technology, Commercial, Political) as checklist for risk areas

- ▸ Arranging independent assurance on the robustness of the supporting information for the decision.
- ▸ Awarding and managing all contracts to execute the work.
- ▸ Managing the assurance[4] process to prove that the work is carried out as per agreed standards.
- ▸ Enabling a safe, efficient, effective commissioning and start-up process to hand over the facilities to the end user.
- ▸ Manage the project, contracts and budget closeout and demobilisation of the project team.

Again, the project manager's job in this phase is to keep the focus of the ('greater') project team on the end deliverables.

In all these phases the project manager is leading her 'greater' project team that consists of:
- ▸ fewer senior project managers taking responsibility for the delivery of parts of the project scope with direct line responsibility to the project manager.
- ▸ project discipline engineers who are accountable for the integrity of the traditional engineering disciplines (civil, structural, process, electrical, etc.) in the project deliverables.
- ▸ functional representatives such as economists, supply chain, HSE, financial, external communication and commercial specialists who are accountable for delivery of certain services to the project (team) but at the same time have to maintain the standards of their function.
- ▸ representatives from end-user parties who will eventually operate and maintain the facilities.
- ▸ contractors project team with their own project manager (only in DEFINE and EXECUTE).

A major challenge for the project manager are the differences between his own team and the organisation of his major stakeholders. The organisation of his own project team is predominantly determined by the specific requirements, risk areas, and issues of the project and capabilities of the project team members and changes when the project progresses through the various milestones (refer to Chapter 4 for more details).

The organisation in the funding parties (such as in government and governmental executional organisations) and in other shareholder/business partners are designed according to their own drivers that are party-specific and not related to the project. The matrix organisation in the major delivery contractor's teams (only in DEFINE and EXECUTE phase) is partly driven by considerations outside the control of the project manager and imposes an even bigger challenge. This often results in similar accountabilities and responsibilities assigned at different hierarchical levels and complicates the job of the project manager (and her team).

3.2.3 The usual stakeholders
Whilst her project team members directly report to her (fulltime or part-time), in bigger companies, other groups of the 'greater' project team (ref. previous paragraph) also have a functional as well as other organisational responsibilities towards 'matrix' leaders who may not have a direct ownership or interest in project delivery. The project manager needs to negotiate priorities and possible compromises though on functional requirements. For the project manager this is only one of the many relationships with stakeholders she needs to maintain.

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4 Major investment companies demand independent assurance project reviews requiring major project team effort.

The other stakeholders with whom she may maintain relationships are:
- functional/discipline heads.
- project funding parties within (or outside) the project manager's company/organisation who fund the project and who 'own' the strategy under which the project is conceived and to which the project contributes; these are the parties who set the decision criteria to approve the final investment criteria and who are liable when the project requires more funds than expected.
- non-operating business partners who have similar but often not the same interests as the internal investment partners.
- end user of the project deliverables who will operate, maintain the facilities and who will eventually be responsible for generating income from the facilities.
- potential contractors who tender to execute work on the project.
- contractors who have been awarded a contract for work on this project.
- regulators and permit approvers.
- external stakeholders who are affected by the project although they do not have any formal influence on the project.

The next chapter explains what role these relationships demand the project manager to assume in the course of the project development and implementation phase.

3.3 | The roles of the project manager and enablers to exhibit the right behaviour

To execute the activities as described above in the various phases of the project, the project manager will have to take on various roles of which the nature varies with each stakeholder. These roles also vary with topics she is dealing with or with the phase of the project or phase of the relationship. These relationships can be compared to a play where the project manager acts in different parts. Below a selection of the roles the project manager may assume, i.e. of the 'parts she could or may have to play':

As **team leader** she will be taking different roles as the:
- director directing the activities of her team;
- 'the boss' holding staff accountable for their deliverables and targets;
- recipient of the praise and flag on behalf of the team;
- provider of praise, glory and stick where deserved and appropriate;
- loyal team member protecting staff where appropriate;
- assessor when it comes to assessing performance;
- coach to help her staff when stuck, in need of information, to serve as the sounding board etc..; friend or colleague if personal problems emerge requiring dedicated approach;
- promoter of proactive creative thinking in the early phases and challenger of over-ambitious ideas;
- defender of original scope against out-of-scope creative proposals in the implementation phases for 'improvement' but a willing listener to creative improvements.

As an effective **team player** in the team of colleague project managers as:
► colleague assisting colleagues with information and support where that matters for the team objectives;
► competitor in securing scarce funds, resources for her projects;
► competitor for subsequent project or broadening assignment;
► primus inter pares for leading team or companywide improvements.

In the relationship with **her direct supervisor** as employee:
► serving the company by delivering on her agreed targets;
► being an effective team player;
► displaying the company values;
► safeguarding the company's interests and reputation.

As 'matrix' **colleague of functional/discipline heads**:
► negotiating for priorities for functional staff;
► negotiating for decisions on deviations from functional or discipline standards.

In the relationship with the **decision-making lines/funding approving parties** as:
► trusted advisor in safeguarding the company's interest;
► service provider/partner in delivering the commitments of the next project phase;
► professional specialist to assess and mitigate the project risks;
► 'marketeer' of the project content performance to justify approval of funds.

In the relationship with the **end user** of the project deliverables:
► as a good listener ('to understand what end users mean rather than what they are saying');
► involving the end users, in order to ensure their commitment to the project;
► translating the end users' requirements into cost-effective and user-friendly solutions.

In the relationship with **tenderers** as company representative of the client as:
► negotiator for the best deal;
► information provider to maximise alignment between partners;
► partner to find solutions for optimal and realistic risk sharing.

In the relationship with **contractors** as company representative as:
► partner to make it all happen within the contract conditions;
► 'boss' to hold the contractor accountable for their target commitments;
► provider of praise, glory and stick where deserved and appropriate;
► firm but fair negotiator on deviations from the contract consistent with the spirit of the contract.

In the relationship with **external stakeholder** as company representative as:
► qualified partner for negotiations or information sessions;
► empathetic provider of information desired by the stakeholders;
► empathetic and patient recipient of flag and praise where appropriate;
► empathetic challenger of unreasonable positions or statement of facts;
► patient negotiator for the desired end result.

In the relationship with non-operator **business partners** as company representative as:
▶ trusted advisor in safeguarding the partners' interest fully aligned with her company's interest;
▶ service provider/partner in delivering the promised commitments of the next project phase;
▶ professional specialist to assess and mitigate the project risks;
▶ 'marketeer' of the project content and performance to justify approval of funds.

In the relationship with **regulators and permit approvers** as company representative as:
▶ partner/ambassador who is equally committed to safeguard the intentions of the regulations as the regulator;
▶ provider of reliable information who fully understands the intention of the regulations;
▶ 'marketeer' of the company intentions to fully comply with the regulations and/or permit.

3.4 | Enabling personal skills and attributes of the project manager

The project manager's major challenge in assuming all these roles is to find the right behaviour and 'tone' – fit-for-purpose for the moment and the stakeholder – but also to be consistent in jargon, level of information and story line.

For that purpose the project manager will need to rely on a number of personal skills, attributes and competences in a number of different areas (see Paragraph 3.5) to enable her to **intuitively choose** the right behaviour and tone. This also allows her to make **conscious choices** for a specific behaviour for a specific purpose; e.g. showing emotions or being confrontational can be useful under specific circumstances.

These personal skills and attributes are:
▶ Effective communication to articulate her case to different levels of audiences (shareholders, CEOs and junior technical assistants) using different methodologies (long short presentations, mails, private discussions, speeches or teleconferences/VC) on topics that in many cases are not her specialism.
▶ Business acumen to make the right commercial judgement in negotiations with external parties.
▶ Imagination to role model creativity when needed, balanced with a critical mind when challenges are needed.
▶ Wide knowledge of the relevant functions and disciplines and their interfaces with other discipline and functions.
▶ Ability to see the bigger picture and almost intuitively sense when detailed attention is appropriate ('helicopter view').
▶ Ability to analyse data and see the 'wood from the trees' and patterns for conclusions.
▶ Ability to develop and maintain sustainable relationship with others.
▶ Empathy, genuine interest in people and their drivers.
▶ Diplomacy for challenging and enthusiasm for praise.
▶ Passion for professionalism, the cause of the project and company's interest.
▶ Controlling emotions but also able to use them as effective tools when appropriate.
▶ Ability to be contained when she must and confrontational where needed.
▶ Ability to manage ambiguity and use it as a tool where appropriate.
▶ Preparedness to lead, back up, be the first where appropriate.

3.5 | Competences[5] of the project manager

Considering all the activities as described in the previous paragraph, the project manager can easily be considered a 'Jack-of-all-trades' and frankly: she must be one. However, she cannot be a specialist in all disciplines and hence her most important competence is the ability to delegate and lead the **integration** of the many views from different angles on the project into one consistent and effective approach. She should therefore be able to understand the significance and proactively apply the decision points in all contributing disciplines she is co-ordinating. That means she needs to have knowledge and experience in these disciplines and find a balance between width and depth in one or many disciplines and subject matters affecting her project.

3.5.1 Competences in the development phases

During the **development phases** of an opportunity the activities are explorative in nature in order to appreciate the issues, uncertainties and risks in many areas and to identify solutions. This to avoid that they turn into technical, political or economic showstoppers. It demands an open, unbiased, creative and imaginative mind-set to value opinions but yet to manage them towards conclusions. The project manager should be able to create an atmosphere where multifunctional views are heard and valued, where open and honest discussions can take place, and creativity and imagination is encouraged to achieve outside-the-box thinking. There are many tools that can be used for this purpose such as framing, study work, risk identification and modelling, etc. The project manager therefore needs to be able to either manage these herself (for small projects) or see that this is being professionally facilitated on her behalf.

At this stage her team almost certainly will consist of staff who are creative, buzzing with ideas and can relate these ideas to implementation constraints to remain practicable. On one hand the project manager should promote the creative thinking processes, ensure that the right specialist staff are involved; on the other hand she should channel their buzzing creativity into the focus to eventually deliver a firm, realistic conceptual proposal to move forward to the next phase of maturation.

3.5.2 Competences in the implementation phases

During the first part of the implementation phase however the focus is primarily on firming up the concept and delivering the agreed scope. This demands a delivery, milestone focus and commitment to stick to the scope, whilst complying with a multitude of quality and governance related procedures that are perceived by many as bureaucratic. In this phase any creative drive to change or 'improve' the concept and the ways of execution could be fatal for the end result.

At this stage her team will consist of experienced implementation specialists and managers who do provide that delivery focus but often have not been involved in the concept generating process and the dilemmas that eventually resulted in the selection of the final concepts. Their professional experience and lack of natural ownership of the concept will generate new conceptual ideas for changes to the concept. This often also applies to external stakeholders who do not necessarily appreciate the danger of changing the concept after it was supposed to be frozen.

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5 For the purpose of this chapter competency is defined as a combination of knowledge, skills, behaviour and proven performance to perform a job.

A major challenge for the project manager in this phase is therefore to channel creativity and imagination towards best implementation practices and solving executional issues and avoid conceptual changes rather than allowing new conceptual ideas, i.e. control the 'drive for change'. Arguably managing this change is seen by many as one of the most important competences in the implementation phase. In the event changes are indeed likely to improve the overall result, she needs to manage this in such a manner that all considerations that have led to the initial concept are reviewed and affected stakeholders are heard to ensure appropriate control over changes, i.e. manage the change process.

3.5.3 Other major competences

Another important competence is the ability to manage the decision-making processes in the company or government institutes (the Governance Processes) that are the sponsors of the project. This is an important process to obtain project funding based on the strategic objectives of the project which needs to be aligned with the (capital allocation or political) strategy of the company or government decision-makers. In this context the project manager needs to be fully conversant with economic decision criteria and be able to challenge other long-term strategic drivers that often are not sufficiently articulated.

In the oil/gas/energy and general facilities infrastructural industry, it is not uncommon that up to 90 % of the work scope of major investment projects is executed by contractors, consultants and suppliers who are specialists in their own field. The management of the relevant parts of the Supply Chain processes is therefore considered an integral part of the palette of competences of a project manager even for small projects.

Although in many cases the project manager will rely on teams to execute the supply chain activities, she will generally have to lead the development of the contract strategy that will form the basis for the scope of work for each contract, tender/negotiation tactics and contractor selection. In addition she will be accountable for the final selection as also she will be accountable for the final result and will lead the management of all contracts post award.

During all phases the project manager will be responsible for cost, schedule and will be required to report on progress against promises (budget, deliverables and agreed milestones). She therefore needs to lead the process that results in cost estimates that can be used to set budgets, completion dates, and intermediate milestones. These form the basis for subsequently controlling cost and schedule and to report on progress: i.e. managing the project control processes. In addition, the nature of the many activities in this industry may have a significant impact on the health of staff and other stakeholders, safety of facilities and surrounding premises and the environment. The project manager should therefore be fully committed to HSE objectives, processes and procedures and role modelling proactively application of the overall principle that 'safe business is good business'.

Last but not least the project team and many contributing networks and teams need to be moulded into effective teams, towards high performance using creativity and an effective business approach. The project manager needs to display that leadership to build and motivate her team. (See also Chapter 4 for more details how to build a project team). This leadership is required to drive performance by holding staff accountable for their personal responsibilities and targets.

3.5.4 Overview of competences

Many competence schemes are developed to enable a structured assessment process. They are based on a detailed description of the competences as described above and broken down in many sub-competences. This almost suggests the existence of an algorithm for overall competence assuming that all have an equal (or even weighted) value.

This drive for exhaustiveness often results in a highly bureaucratic assessment system that adds more value to assessment system service providers than to the competence development of staff. It is therefore recommended to keep it simple and to allow a more holistic approach at major competence level (one of the 8 competences) and use the competence components as checklist to identify what could be important in gap analysis. A pragmatic breakdown is therefore provided in Table 3.1.

Table 3.1: List of competences and subcompetences for a project manager

Competences	Subcompetences
Managing Investment Governance (decision making process in a company or governmental institutes)	Applying company strategy to opportunity assessment Benefit Analysis for business case Economics and funding Managing the assurance process
Manage the 'early' development phases	Manage framing sessions, define Scope of Work Manage multi-disciplinary front-end engineering activities (facilities, subsurface, wells, ops) Define and optimise project concepts Manage risk identification and scope definition
Manage and define the execute phase	Manage FEED and detailed design activities Controlling Change Manage Logistics Manage Quality Manage construction/installation activities Manage OR&A and commissioning Manage project handover
Project Integration	Applying discipline drivers Technical and commercial integration Stakeholder management and communicaton Managing support functions (HR, IS, Fin, HR)
Supply Chain	Contract and tender strategy development Tender process management Contractor & supplier selection Contract management, post award
Project Controls Management	Estimating and scheduling Uncertainty and risk assessment Contingency assesment and management Progress and cost reporting Manage MoC process
HSE competences	HSE leadership and commitment HSE risk controls HSE monitoring and improvement
Leadership in project environment	Building and managing teams Motivating skills Driving performance

The list of competences focuses on management and leadership skills in a predominantly technical environment. Larger, more complex projects hence tend to require a smaller technical component in a PM's job than smaller projects. Starting a career as project manager without a technically oriented basic education is therefore highly unlikely.

3.6 | Typical career development of a project manager

The ultimate goal for an ideal career path for a project manager would be to seek exposure in all competence areas of a project manager (see Paragraph 3.7). Staying with one project would provide full-life cycle exposure of development and implementation but there are very few opportunities to do so. Even if they are available it would only give exposure in one type of project in a single operating environment.

This leads to the career development 'strategy' that aims for a path that should provide:

▶ exposure to gain experience in the main competence components;
▶ exposure to different type of projects;
▶ exposure to different operating environments (e.g. in other countries, different parts of the world);
▶ exposure to customer or contractor environment;
▶ gradual increase in project complexity and monetary value.

An effective 'tool' to indeed obtain these exposures, is to change a job and/or employer and many people with a focussed career development do so.

Another important 'tool' that can be applied in career development is the opportunity of a broadening assignment outside the project management arena that provides distinct exposure in one of the main competence areas. E.g. an assignment in Supply Chain can be a very useful exposure to understand the tender and contractor market and processes in detail. Similarly an assignment in business development would provide a project manager a unique insight into the governance process and decision-making criteria as well as their sensitivities. Other broadening assignments could be considered in Asset Management, Engineering Management, Business development (economics, Acquisitions and Divestments, marketing, deal making), Finance (cost control, audit) and HR (staff planning).

Owing to the large technical content of many infrastructural projects, most project managers will start their career as discipline project engineers after a degree in one of the technical engineering disciplines that are traditionally contributing to a project team. A successful start in a project management career requires a full understanding of the interfaces between the technical disciplines. A project manager's career therefore tends to be preceded by a period of being responsible for one of the technical disciplines in a project: e.g. project engineer process or structural. Being confronted with consequences in her own discipline the project manager will build up invaluable integration experience that adds to her technical credibility for a long period to come. A typical career development is shown in Figure 3.1.
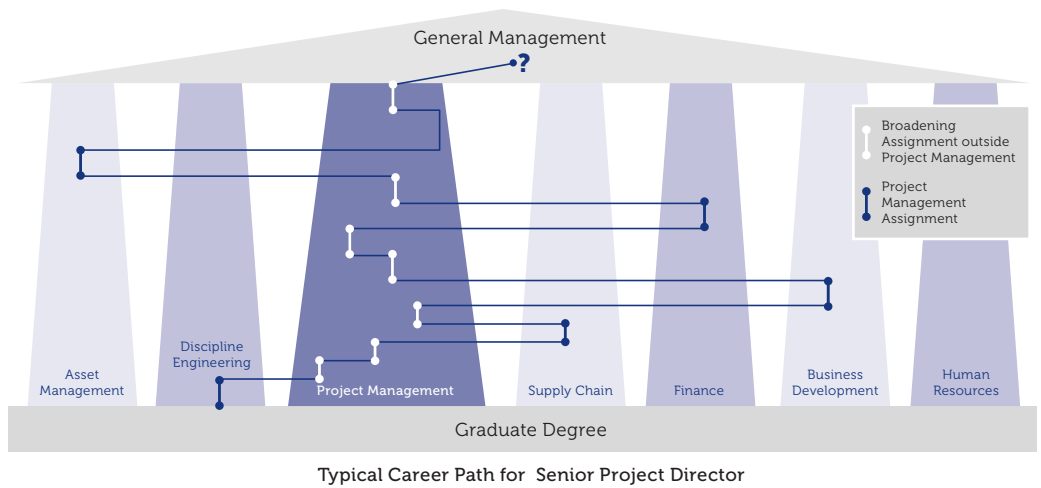
Typical Career Path for Senior Project Director

Figure 3.1: Typical career path for a senior project director

Beyond this first period, successful project managers typically attract assignments in more complex projects that provide them with more exposure and hence they can build up more experience and subsequently attract more challenging assignments. Some very generic recommendations are given below:

1. In the early phase of a career: proactively seek the learnings from the exposure particularly beyond the formal content of the job; only consider job/employer change if no continuous learning is obtained.
2. Understand your ambition, check it with independent parties (e.g. a mentor outside your immediate organisation) and be prepared to adjust downwards as well as upwards depending on opportunities, market circumstances and valued feedback on your potential.
3. First 10 - 15 years of career: develop options and keep them open. Before the last 15 years: drop options; zoom in to your ambition which may have to be adjusted. Do not job-hop too often.
4. Do seek broadening assignments during early and middle part of career but do return. Capitalising on this experience in a more senior project management role will become progressively more difficult if away for longer than some 4 years.

Why are there so few female project managers despite increasing number of female discipline engineers?
No evidence exists to suggest that female engineers are less suitable to develop into project managers than their male colleagues. Arguably their widely celebrated supremacy over men w.r.t handling the 'softer' issues would even suggest a higher suitability. The macho reputation of the construction world may well scare off female engineers but that may well be a question of time before that is solved. Those who did pursue a project manager's career are subject to the same chance of success and failure as anyone else. For that there is no recipe and hence suitability is entirely up to each individual's ability to handle all the roles of a project manager.

Duration of projects can vary widely depending on what is defined as project (the full lifecycle from inception of ideas or as implementation only as is the case in contractor's organisation). Even then it can vary from a couple of months for small projects or to 10 years or longer major infrastructural works depending on technological, funding and regulatory approvals. The traditional project phases in these long projects are therefore often not executed consecutively (e.g. owing to permit approval delays). Even if they were, they are often managed by different individuals whose experience is fit for purpose for that specific phase with its different challenges. Even in shorter duration projects, owners tend to nominate a person with specific experience for the Implementation phases than the person who managed the development phases.

From a career development perspective it is therefore also recommended not to focus on remaining with one project until its very end but by consciously making that decision at each phase or major part thereof.

3.7 | Developing the competences of a project manager

3.7.1 Historic background

Project management existed for many years in the industry and many business-oriented academic degree courses provide optional project management subjects. The concept of **project manager as a profession** however has taken longer to be accepted. It first emerged in the aerospace and defence industries heavily encouraged by the NASA space programmes in the 1960s in the US. Nevertheless it took a major disaster (Space Shuttle Challenger) before the first Project Academy was established in NASA[6] to educate future project managers in multidisciplinary integration, perceived as one of the root causes of the failure.

Only during the last decade, major energy companies started to recognise the need for a dedicated competence development programme for project managers. A surprising statistic considering that project managers directly or indirectly carry the day-to-day responsibility and supervision for about 80 % of the capital expenditure of major investments.

In the past project management was considered a specialised version of general management with very specific application in project management environment in different industries. Academia hence left it to the industry/companies to design their own bespoke development programmes similarly to bespoke general leadership programmes for their high potential staff who were expected to develop to future leaders.

Whilst most companies started with a traditional training approach to individual project management topics such as planning and cost estimating, from the late 1990s onwards more comprehensive issues as governance and risk management were added. In addition the benefits of blended learning (e-learning, on-the-job-exercises and classroom teaching) were instrumental to designing a more comprehensive approach to many aspects of project management.

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6   The Project Management Institute was established in 1969 after a period whereby project management started to be recognised in the space industry. The first official project academy was also a NASA initiative Academy of Programme/Project & Engineering leadership which was founded in 1988 in order to tackle a number of the root causes of the Challenger disaster.

In the late 2000s more industries characterised by major infrastructural investments developed a wider ('academy') approach (such as in BP, XM, Shell, GSK, Bombardier, AMEC) aiming to provide a world-class, competence programme to develop a skill pool of project managers capable of delivering high performance in their companies' investment programme.

3.7.2 A comprehensive competence development programme for project managers

This paragraph describes an approach that contains elements of all these large companies' competence development programmes. It is inspired on a number of staff development:

▸ The spiralling effect from knowledge feeding skills resulting in experience that allows more knowledge to be gained that results in more skills etc.

▸ This process can be enhanced by exposing people to new environments (e.g. different countries, cultures, business environments (e.g. highly regulated, government owned), operating environment (urban, remote, desert, arctic, on- and offshore) or broadening horizons (e.g. from project management to business economics or business development or asset owner).

▸ The pace of competence development depends on a person's seniority potential, i.e. the highest level of seniority a person theoretically is able to reach given unconstraint opportunities.

▸ Many people are more comfortable with providing knowledge and experience to others than prepared to ask for the same thereby implicitly admitting the omission of that knowledge.

On this basis a programme can be designed consisting of the following components (Figure 3.2):
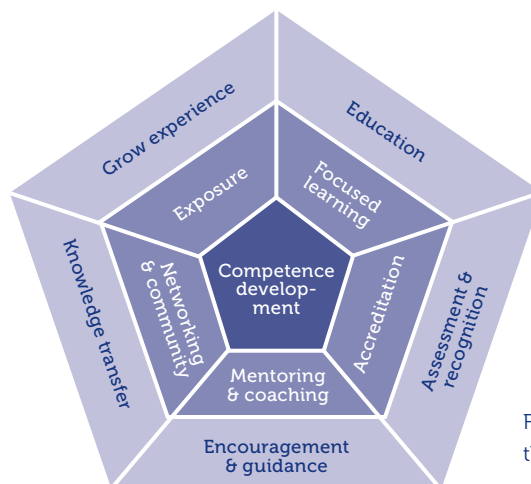

Figure 3.2: Pentagon model of the Shell Project Academy

3.7.2.1 Grow experience by exposure

The objective of this component is twofold:

a. maximising the benefit of on-the-job training.

b. increasing awareness on what type of next jobs/exposures a person should be seeking considering the career goals she has set herself (Ref. Career paragraph above).

This can be achieved by career advisors recruited from the senior project managers' network who are in regular contact with the project manager and who act as a mentor (see Paragraph 3.7.2.3).

Particularly in the beginning of a career many staff are unaware of many opportunities outside their current job scope for development (attending conferences, exhibitions, books, membership of a special task force, professional memberships, attending high level meetings, site visits etc.). Depending on the size of the company generic career advice can be generated through tools as a career navigator building on examples of successful careers of role models.

3.7.2.2 Increase knowledge by networking and community building

The underlying thought in this component is that learning and development can be accelerated significantly by:
- ▸ tapping in the wealth of information on best practices and lessons learnt that is available to anyone who is prepared to ask the right questions to the right colleagues.
- ▸ creating a performance-driven culture where consultation and sharing is the norm rather than an exception.

This is affected by the implementation of a number of knowledge sharing initiatives of which moderated social networks actively using data bases are the most obvious ones.
The effectiveness of these are then aimed to be further enhanced by creating a sense of community among the pool of project practitioners in a company or network. Many companies therefore create professional community events such as Project Management conferences that are held regularly with an agenda that promotes this knowledge sharing and builds a sense of community among different layers of seniority in the community.

3.7.2.3 Encourage and guide by mentoring and coaching [7]

Whilst any employer would acknowledge the value of effective mentoring and coaching, the two are often combined. Nevertheless, the emphasis on staff development advice by a mentor can best be achieved from an independent colleague whereas coaching in the job is one of the prime tasks of any team leader or someone close in the working environment. In an effective scheme, the employer is proactively encouraging staff to seek a mentor and broker a relationship with an independent colleague if they are not successful in finding one themselves (the preferred route). In any event it is recommendable for project managers to seek consulting relationships with senior colleagues who are specialist in specific disciplines or functions contributing to their projects.

3.7.2.4 Recognition by assessment and accreditation

This component is driven by the view that:
a. Assessment of staff's competence gaps assists in identification of development areas.
b. Recognition of performance and competence growth at distinct levels (certification):
   – is motivational for further performance and development.
   – can be used by employers as selection criterion for more senior positions.
   – provide employers the evidence to third parties (partners or clients) that their staff is equipped with a minimum competence level.

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7   For the purpose of this chapter 'mentoring' is defined as assisting a person with advise about personal development in a company beyond the confines of a person's job whereas 'coaching' is defined as assisting a person in the execution of her job.

Whilst the IPMA accreditation system with four levels of competence of project management [8] is arguably the most comprehensive programme of accreditation, it is not yet well distributed over the industry. Yet, most bespoke project management competence programmes also recognise four levels.

Certification institutes will argue that the independence of assessors, an important prerequisite, can only be achieved by external staff. Well-matured project management communities managing complex projects will argue that only representatives from the same industry (i.e. competitors) can make that assessment but would resist doing so in view of the commercial impact. This is particularly the case for a reliable assessment of performance effectiveness. Companies managing major projects will therefore not use external certification for selection purposes but design and use their internal assessment process.

3.7.2.5 Formal education by focussed learning events
Deliberately last but not the least of the programme components is the formal education whereby important knowledge is transferred through traditional class room education blended with distant learning and on-the-job exercises. 'Deliberately last' to counter a natural tendency to stop any perceived competence gap with formal training. Classroom education is the most costly option to fill a gap in a person's competence profile. Other development opportunities as described above under 'experience growth' should therefore be considered first and may prove to be more efficient and hence more cost-effective.

The objective of formal education is to:
▸ accelerate the upwards spiral of gaining knowledge, skills and experience;
▸ achieve consistency of approach and compliance with company or industry standards;
▸ update staff on developments in best practices and lessons learnt;
▸ promote a knowledge sharing culture;

A **comprehensive portfolio** of formal education events is likely to focus on major topics such as:
▸ Governance and Assurance in project management (the stage gate process as well as risk management and decision-making processes)).
▸ Fundamentals of project management in Development phases.
▸ Fundamentals of project management in Implementation phases.
▸ Project controls (covering cost estimating, scheduling, progress monitoring and reporting).
▸ Risk management and its translation into contingency management.
▸ Managing Health, Safety, and Environmental issues in projects.
▸ Stakeholder management.
▸ Effective contracting in projects (supply chain management).

More **specific topics** could be added which often are the result of repeated findings of project assurance reviews (themes). These may well depend on the very specific issues and circumstances of projects in a company.

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8   Ref the levels as defined by IPMA: levels A (most senior), B, C and D (entry level)

In addition, **'tool box' courses** can be considered targeting **project services staff:**
- ► Project progress assessment.
- ► Planning techniques and estimating tools.
- ► Benchmarking in project planning and estimating.
- ► Management of change.
- ► Monte Carlo simulation in cost estimating and scheduling.

One of the biggest challenges for designing an internally suitable project management education portfolio is driven by the lack of standardisation of approach in the industry. Particularly the processes, jargon and standards surrounding the governance processes affecting cost/budget, schedules, accountabilities and the level of authority to staff can vary widely per company and hence require a bespoke approach in education.

Standardisation to one approved portfolio of formal education events preferably from as low a number of providers as possible is therefore the best strategy for education management.

Since these are scarce in the industry, major investment companies are designing their own bespoke course portfolios, clearly emphasising the need for consistency and compliance discipline rather than basic skills.

3.7.2.6 Closing notes on competence development

The above programme is obviously designed for a large company with international operations in a variety of environments. Their project management community is dispersed around the world and so large that many of the above components such as assessment, mentoring, lecturing during network and education events can be done by senior members of that community. This in its own right enhances the sense of community. Smaller companies do not have that luxury and will design a fit-for-purpose programme for instance by teaming up with other companies and/or industry associations.

3.8 | What makes a good project manager?

Considering the description of the variety of tasks and activities, roles, attributes, personal skills and competences and the fact that project managers – as human beings – do have limitations such as preferences, quirks, baggage and other human limitations, one can state that it is **impossible** to be a perfect project manager at all times.

One of the biggest pitfalls of the project manager in many of these roles where she has to demonstrate leadership is a tendency to think that the success or failure of (parts of) the project is attributed to her only. This can easily lead to either prima-donna, 'bossy' behaviour or, at the other end of the extreme, a nervous breakdown.

It is clear that without the many competences representing a wide spectrum of knowledge, skills and proven performance and effectiveness, she will not be able to do her job successfully but it is probably even more obvious that without being effective in the many roles (of Paragraph 3.3) in the relationships with direct stakeholders she would not even have a chance. In this switching of roles it is easy to take seemingly contradicting positions. A good project manager will find a

fit-for-purpose, balanced approach without repudiating and compromising her own beliefs, values and professional integrity.

Arguably the most important of all is the ability to rise above the role of a boss driving results and lead her team and stakeholders towards success.

3.9 | Why would one pursue a career in project management?

The desire to pursue a career in project management mainly is a question of taste, personal interest and drives. Below an attempt for some general pointers:

The job is clearly not suitable for those expecting a 9 - 5 daily work pattern or someone who thrives in a well-established and predictable work environment. In project management there is no such thing as a quasi-static work environment since the environment varies with project progress.

Project managers deal with a variety of topics, without the need but with many opportunities to dive deep. In the course of her career the project also continuously expands her professional and social exposure to many different areas and environments and is almost forced into a life-time learning and development process. Those interested in that 'never-a-dull-moment' environment are likely to find a project management job very rewarding.

Most satisfying of all however are the personal contacts and relationships with an amazing variety of people with diverse backgrounds, seniority, education and interests among which are colleagues, owners, contractors, and many other direct or indirect stakeholders. This even starts at a relative low level of seniority and continuously expands. Together with these parties the project manager has overcome many technical, economic, organisational, financial, personal and emotional challenges to deliver a tangible and lasting result for society; a very satisfactory reward, often combined with an attractive remuneration and further development opportunities towards general management.

3.10 | The Wind Farm

No doubt the project manager job in the case of the wind farm project will predominantly follow the activities in the various phases as described in this chapter. An illustration of the integration challenge in the project manager's job is the consequences of the specific work streams in this project such as:

► The special government coordination scheme aimed at obtaining operating licenses as well as land permits will include a very specific schedule with technical details required in an early stage that would normally only be assessed after freezing technical concepts requiring significant funding earlier than is justified on the basis of remaining risks (e.g. not receiving permission and energy subsidies).

► Owing to the size of the project alternative solutions to limit the footprint (number of cables, substations, cable-shore crossings etc.) might be suggested or imposed by stakeholders (investors, permit authorities, local stakeholders). This requires significant early investment in studies, tests and other activities before progress can be made.

► Whilst the government coordination scheme aims at obtaining the higher government approvals, there will still be a large number of local authority, stakeholder (such as individual land owners) approvals/permits etc. to be obtained. Depending on the specific interests of the stakeholders these may impose a significant risk for implementation progress after sanction. Based on these risks a choice will have to be made as to which to tackle early and which to leave for later on.

The challenge for the project manager will be to identify the high risk issues for early tackling, to align the various work stream schedules and to integrate these with the overarching government approval process. A challenge therein will be to provide a reliable estimate of cost and schedule up to the next phase in the approval processes.