

国外高等院校土建学科基础教材（中英文对照）

# 工程项目规划

## PROJECT PLANNING

[德] 哈特穆特·克莱因 编著

赵鹏 译

BASICS

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## 序言

建筑师，以及其他规划设计人士的工作，是一个综合性的职业，是一个受多方面影响和关联的统一多样性的职业。这样的工作内容以及那些建筑师与之交往和交流中的人，从创造性的设计阶段到建筑工地的管理阶段，从创建一个工作规划团队到缜密地阐明建筑各项合同，均存在着调整变化和逐步完善。这一系列工作使建筑师这一职业是如此的令人激动和多姿多彩。

对于一个学生或新手来说，尽管日后的工作经历可以提供一个了解规划实践和工地现场的机会，但通常他们对于一个建筑师正规的工作日状况仍缺乏足够的理解。本书可以满足处于这一知识层面的学生和新手们的需求，并且以易于理解的介绍和说明方式阐述了建筑师的工作任务。本书的目的之一是探索一个项目从调查基础期和第一个灵感迸发到最终完工并移交给业主的全部过程。所有的规划和施工阶段都在行文有所展现，同时，也为每个工作步骤提供了最重要的背景因素。这意味着在表现力和精准细节方面，设计质量是可以转化为建筑质量的。另外，建筑师也能够调整一些规划参数，例如会议成本估算和时间期限。

当然，本书并不能代替职业经验，能够提供的只是最初的、一般性的概论，得出这个概论是总结了一个工程项目进行过程中诸多意外涌现的事件。然而，本书又确实可以提供实际有效的资料，建立核心工作和连接环节的概念，以便帮助学生和新手们在日后的职业生涯中形成一个良好的理解力，帮助他们在未来的办公室和工程项目中找到自己的位置。

编者：贝尔特·比勒费尔德



## FOREWORD

The work of architects and other planners is a complex professional field, subject to a whole variety of influences and approaches. These, and the people with whom the architect interacts and communicates, change and develop, from the creative design stage to supervising work on the building site, from setting up a working planning team to carefully formulating building contracts. This range of work makes the architect's profession an exciting and very varied one.

A student or novice in the profession will usually have little insight into an architect's normal working day, though work experience can provide an introduction to planning practices or building sites. *Basics Project Planning* meets students and novices at this level of knowledge and explains architects' project work, structured with readily comprehensible introductions and explanations. One of the book's primary aims is to explore the overall approach to a project from investigating basics and the first idea to completion and handing over to the client. All the planning and working phases are presented in context and with the most important background elements for the individual working steps. This means that designed quality can be translated into built quality in terms of expression and precise detail, and the architect can control parameters such as meeting cost estimates and deadlines.

Of course *Basics Project Planning* is no substitute for professional experience, and can provide only a first, general survey, given the number of matters that crop up while a project is being planned. But it does provide practical information and structures the key jobs and connections so that students and novices can build up a good understanding of their later field of work, and find their way into given office and project structures.

Bert Bielefeld  
Editor



## INTRODUCTION

A project starts with the intention to translate a three-dimensional idea, a need for space or a property investment, into built reality. This "project" suggests both the desire for a convincing and high-quality concept and also the intention to stay with the concept until it is realized and completed. Project planning aims to bring an intention once expressed to its conclusion, and to turn the idea into built reality.

Client/  
architect

Every project has to be initiated by a client; this applies to building, too. The client commissions someone – an architect – to draw up a design for preparing, planning, supervising, and executing a building project. The core task for the classical architect is project planning from investigating basics via the design to planning the work, tendering, site management, and building completion. For both client and architect, building costs, keeping to deadlines, and the quality of the completed work are highly relevant.

Idea and  
realization

The first impetus for planning a project can come to an architect in a variety of ways. In many cases a building client or investor will go directly to an architect he or she knows, and explain ideas and requirements for a project in a more or less concrete form. Building projects are often awarded via competitions or specialist reports, with several architects' designs competing to be chosen by the client on the basis of a previously formulated tender.

But the reverse is also conceivable: the architect approaches potential clients and puts him-/herself forward for a possible commission within an acquisition process. This involves careful research in order to find suitable clients needing buildings, or likely to need them in the near future.

Planning steps/  
decision levels

In order to progress from the project idea to the completion and use of the real building, the project has to be planned and worked out step by step, in increasingly complex detail. The original abstract idea is gradually fully formulated, concretized and implemented in phases.

The project takes shape, is put on paper, the first sketches are drawn up. The number of people involved increases, sketches become scale plans, plans become the basis for applications. After permissions have been issued by the authorities, tenders have to be invited from building firms and tradespeople, and commissions awarded to contractors. The start of building is the first step towards actually realizing the project. The aim of

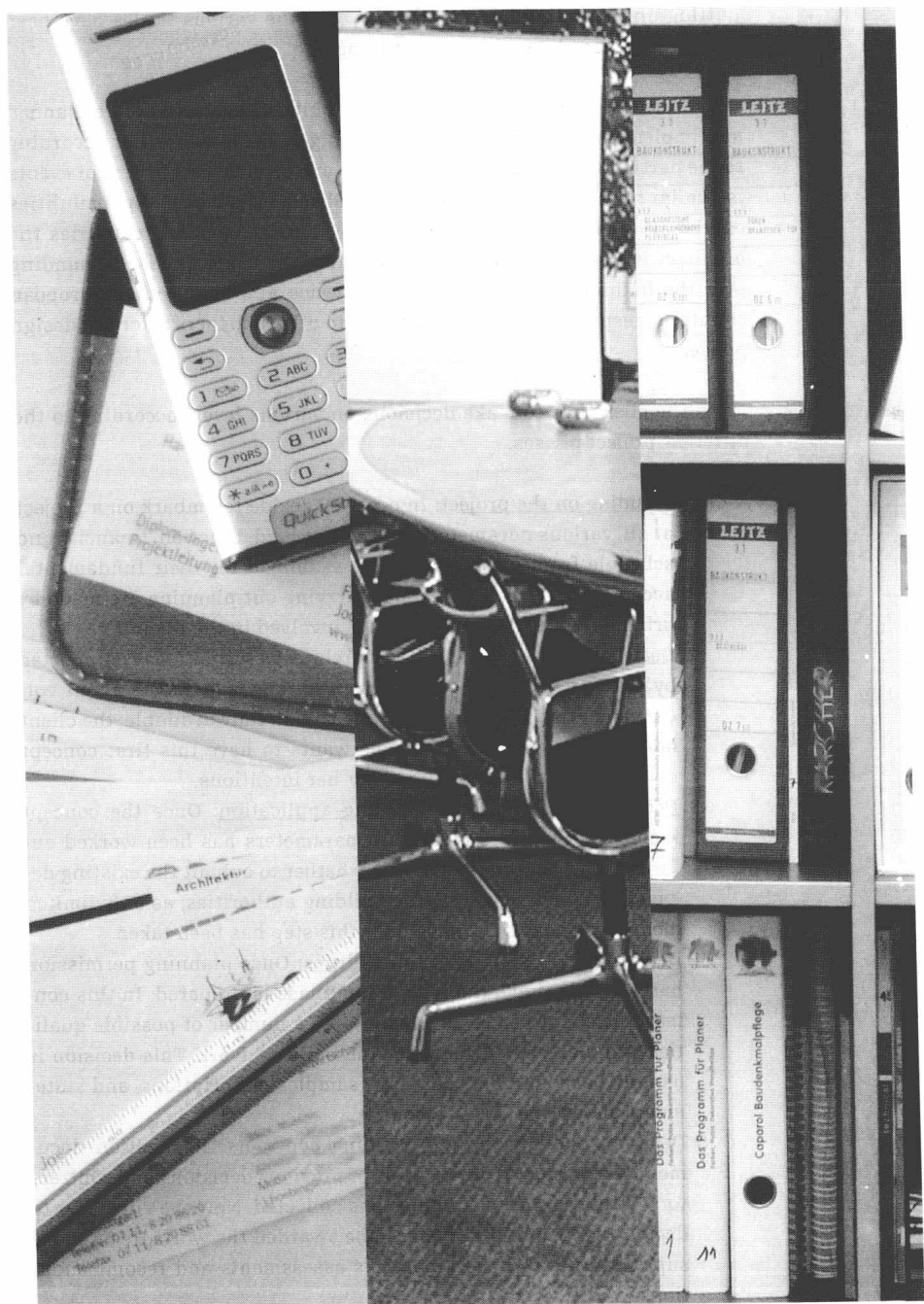
putting up a building becomes reality once the various trades have been successfully coordinated on the building site.

Various steps have to be taken if a building project is to be planned and implemented sensibly and with foresight. These will differ according to the particular project and its structure and size. But the course of events is similar in each case, and can be generalized, even when responsibilities can be allotted in various ways. Thus in German-speaking countries the architect is the responsible key figure from the design phase to handing over the building, whereas in North America and many other European countries, responsibility is handed over to other partners after the design phase.

#### Decision levels

The client has to make decisions on various levels according to the different project phases.

1. Deciding on the project: In order to decide to embark on a project at all, various parameters (e.g. plot of land, function, financial and schedule framework) have to be examined for their fundamental acceptability. Decisions about carrying out planning are made by bringing in the necessary parties involved in the planning.
2. Deciding on the concept: If the architect's initial ideas (supported by parameters like functional connections, statements about volume and area, and rough costings) are already available, the client must decide whether he or she wants to have this first concept developed further to match his or her intentions.
3. Deciding to submit the building application: Once the concept including the above-mentioned parameters has been worked out further, the client has to decide whether to submit the existing design for permission from the building authorities, as only limited modifications can be made once this step has been taken.
4. Deciding on implementation qualities: Once planning permission has been obtained, the realization phase is prepared. In this context, the client has to decide between a number of possible qualities and material surfaces for the building work. This decision is usually based on material tests, samples, descriptions, and statements about cost development.
5. Deciding about awarding building contracts: Realization documents are prepared on the basis of previous decisions and contractors' implementation submissions collected. Now the client has to decide which contractor should be awarded the work. He or she is supported here by the architect's assessments and recommendations.



# PROJECT PARTICIPANTS

The two most important parties to the project are undoubtedly the commissioning client and the planning architect. But there are a number of other "parties to the project" who have to be included in the planning process according to the size and ambition of the planned building. > Fig. 1

## THE CLIENT

The client is the person or entity on whose authority a building is planned or erected. Legally the client can be a natural person or a juridical person under civil or public law.

Client/user

Client and user may well be the same person, depending on the project at hand. In this case the architect has to seek agreement or clarification of the building project from only one person. But in public building projects in particular, and sometimes with private developers as well, the architect often has two persons as opposite numbers whose aims may well not be identical. There can also be further decision levels, such as external financial

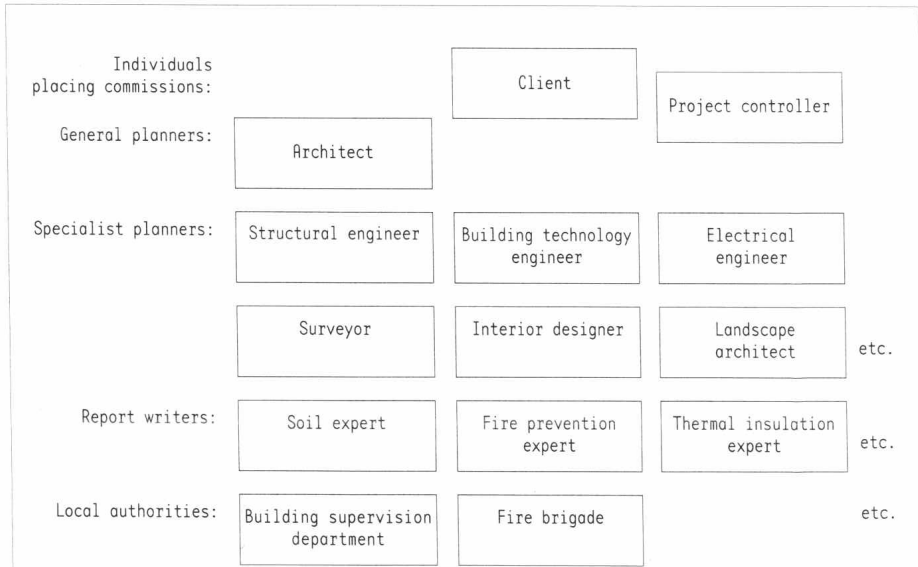
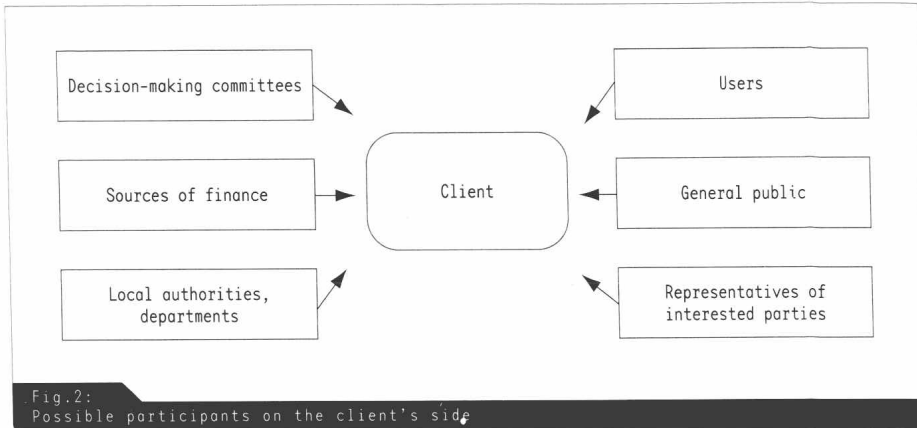


Fig.1:  
Project participants



providers or supervisory committees on the client's side who can influence the planning and building process. The subsequent users depend on the project. They may be the teachers in a school, firefighters in a fire station, or doctors and nurses in a hospital. The client will generally involve them in planning at an early stage, but sometimes they can define requirements lying outside the client's scope. It is important to do justice to both sets of ideas and requirements if the planning is to be a success. > Fig. 2

### THE ARCHITECT

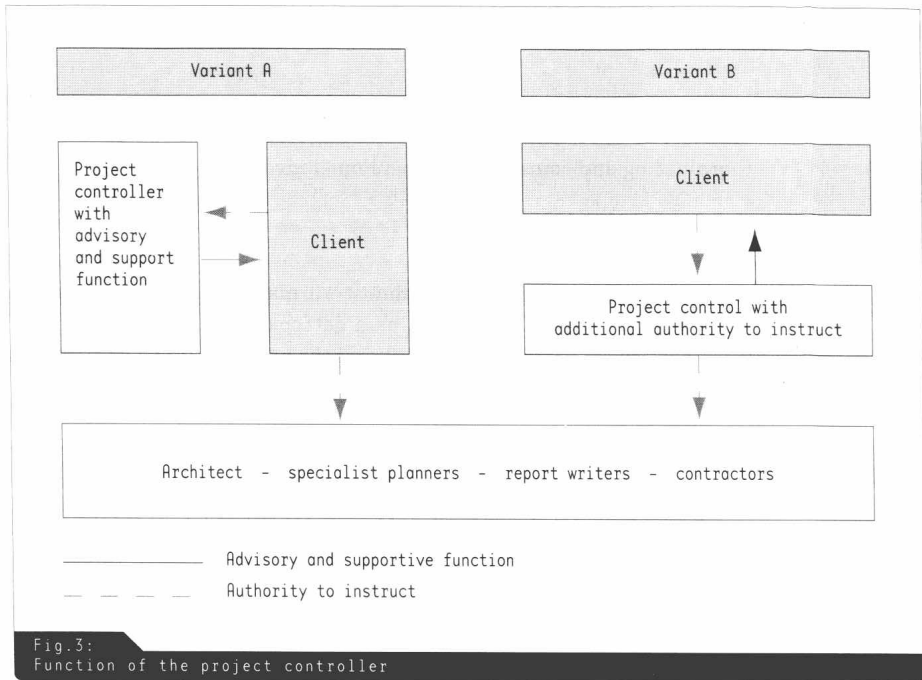
In the construction field it is usually the architect or an expert planning company working in the building trade who will provide the required planning services.

Contacts/  
representatives/  
agents

The architect is the appropriate contact for all building questions. He or she advises the client on all matters appertaining to implementation, and works as his or her agent and representative with everyone involved in the building process: the authorities, other specialist planners or the firms and tradespeople carrying out the work.

Analysis, idea  
and solution

The architect examines the client's wishes critically in terms of their feasibility, gives advice and supplies ideas about the financial viability of the project, a realistic schedule estimate and possible design variants, thus working out possible approaches to solutions step by step with the client. Part of the architect's work is to develop convincing ideas and convey them successfully. A high level of successful teamwork is required when a large number of people are working on a project. Architects require a high



degree of social competence and people skills to lead and guide all those involved. The various requirements within the individual planning phases are described in the planning process chapter.

### THE PROJECT CONTROLLER

The number of people involved in a project as experts also increases with the size of the project. If the project size and time involved are so great as to exceed a client's capacities and expertise, it makes sense to involve a project controller.

The project controller takes over the technical, financial and legal client functions that can be delegated. In other words, he or she is also a client's advisor but does not usually have the authority to represent the client legally. > Fig. 3

The project controller's work does not usually relate to the architect's direct planning services (i.e. preliminary planning, design planning, etc.), but to management of the overall project, starting with financial analysis,

providing resources and handling the contract, including facility management.

Support for the architect

For large projects in particular, the project controller can offer the architect valuable support in terms of project management, as well as in coordinating and controlling the personnel involved.

### **SPECIALIST PLANNERS**

The architect will provide almost all planning services for a relatively small building project such as a detached house. But here as well, two other project partners are essential if the process is to be implemented correctly.

Surveyor

A chartered surveyor is generally commissioned to draw up an official site plan that will be required by the building authorities as part of the permission process, or will be needed later for the building survey.

Structural engineer

Then the statically relevant parts of the building – floor slab, walls, ceilings and roof – will be dimensioned by an appropriately qualified structural engineer.

For smaller building projects like a detached house the architect would usually also undertake the planning for electrical installations, heating, sanitation, and designing the outdoor areas; or work it out jointly with the firms and tradespeople commissioned to carry out the work.

When planning larger-scale building projects like public buildings (sports hall, town hall, fire station, etc.), large office complexes or prestigious company buildings, all the services will be provided by specialist engineers.

Building services

The engineer's contribution to providing services includes planning heating technology and sanitation, in other words water supply and sewage disposal. He or she will also take on planning for ventilation, cooling or air conditioning, and gas installations.

Electrical engineer

The electrical engineer does not just plan to supply the building with electricity and light, he or she is also jointly responsible for devising lighting protection, for fire and smoke alarms, and for signing escape routes.

Work that is usually carried out by the architect can be handed over to specialists in some ambitious and prestigious buildings.

Interior  
designer

An interior designer is employed to design particular areas or plan individual fittings.

Landscape  
architect

Garden and landscape architects design and plan the exterior areas in agreement with the architect. Here, the landscape architect's brief can extend from creating ambitious private gardens to planning functional public squares or green spaces, sports grounds, or even noise protection facilities.

Facade planner

In the case of large, complex properties the architect can recommend that the client should employ a facade planner because of the diverse requirements of facades.

Lighting  
designer

Lighting designers or lighting planners can be commissioned to arrange particular and general lighting. They will simulate and plan the technical and creative effect by day and by night.



### EXPERTS

Unlike specialist planners, experts do not provide specific planning. They act in an advisory capacity, prepare reports describing conditions or establishing causes, and suggesting solutions for problems arising. Experts can be brought in to deal with almost any area. The following are the most important fields of activity in building:

Soil experts

A soil expert or geologist may be needed, according to local conditions and subsoil, to provide information on possible foundation construction or existing groundwater, by means of trial digging and test drilling, or from existing maps.



#### \\Tip:

It is worth setting up a meaningful project structure at an early stage. All participants needed in specialist planning roles must be brought in at the right time. Important elements of project organization include setting up an address list containing data for all participants, agreeing on regular discussion dates (jour fixe), drawing up written minutes with information about completing work with deadlines and agreements about data exchange arrangement between parties (DXF, DWG, PDF, etc.).



Building  
historians

If a building that is being refurbished has historical value, consulting a building historian can be beneficial. He or she will compile a history of the building and can offer assessments of structures worth preserving. This will at least establish the restoration horizon, i.e. the period of time within which the refurbishment should be performed.

Traffic  
planners

If the building project impinges on the local traffic situation or requires changes to the existing infrastructure and transport access, a traffic planner can be brought in.

Fire prevention  
experts

It is essential, especially in a building project that makes heavy demands on planning, to consult fire prevention experts. They can provide crucial planning information that conforms with the law and is likely to qualify for the required permissions by drawing up fire protection reports or concepts and checking that they are correctly implemented.

Heat and sound  
insulation  
experts

It makes sense to commission heat and sound insulation experts for many types of building. They will deal with heat, damp and sound insulation requirements for new build, but can also assess faults and damage in existing buildings.

Acousticians

Acoustics are another aspect of building physics assessments. This aspect deals less with insulation for impact, airborne and footfall sound than with calculating the best acoustics for demanding spaces, such as lecture theatres or concert halls. Here, acousticians are essential contacts for architects at the planning stage.

Pollution  
experts

Advice from pollution experts may be needed for existing buildings in particular, i.e. for conversion, refurbishment and redevelopment. They can examine and assess the construction materials already present in buildings. Current findings show that materials that can impair the wellbeing of occupants and users have regularly been used. Particular problems can be caused by effects on health during refurbishment and when removing harmful materials (e.g. asbestos).

Pollution experts' findings and suggestions are particularly important for correct tendering and the safe handling of hazardous materials.

Health and  
safety  
coordinators

EU building regulations insist that health and safety coordinators are employed once a building site exceeds a given size. This service can be performed by the client or the architect if they have the requisite qualifications, or by a separate person. This means that the building project will be monitored in terms of safety at the planning and realization stages,