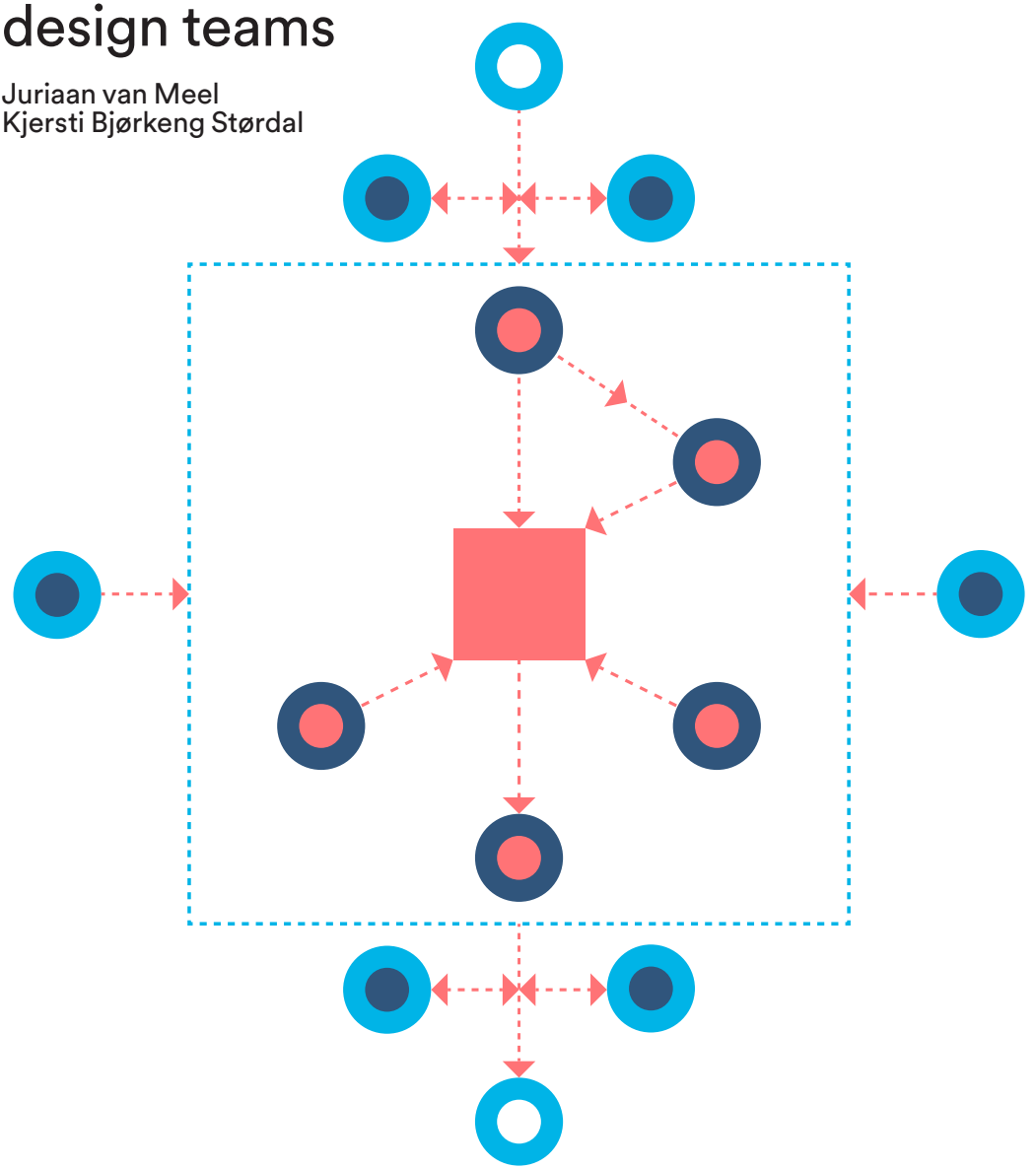
Briefing for Buildings

A practical guide for clients and their design teams

Juriaan van Meel
Kjersti Bjørkeng Størdal



This page is intentionally left blank”

Briefing for Buildings

A practical guide for clients and their design teams

Juriaan van Meel
Kjersti Bjørkeng Størdal

This free ebook is presented to you by:
BriefBuilder
Gottlieb Paludan Architects

This page is intentionally left blank”

Contents

This page is intentionally left blank”

Introduction

The celebrated architect Mies van der Rohe once said: “An architect of ability should be able to tell a client what he wants. Most of the time a client never knows what he wants.” Not many clients will agree with these patronizing words—nor, for that matter, will many architects.

Yet, there is some truth in Mies’s statement in the sense that clients often have difficulty expressing what they want. Especially at the start of a project, clients may only have a hazy or limited notion of their needs and ambitions. They may ‘sort of’ know what they want—’more space’, for example, or a ‘high quality’ building. Such vagueness is understandable, especially with first-time clients, but it is not good enough to guide major construction projects. If a client is not clear about his or her needs, the design team cannot be expected to deliver a fitting solution. As software engineers like to say: ‘garbage in, garbage out’. Or, more positively: it takes good input to create good output.

The purpose of this book is to help construction clients in identifying and expressing their needs and ambitions in a productive way. Therein we take the view that clients should focus on what the building should ‘do’ or ‘deliver’ to them, rather than specifying the design itself, which is the responsibility of the design team. Questions to be addressed are: What are the objectives for the project? Why is a new building or a renovation needed? What problem does it need to solve? What is the intended use of the building? And what are the client’s needs concerning specific quality issues such as architectural expression, security, flexibility and sustainability?

Briefing (referred to as architectural programming in the US) is the process of answering these questions. It is the process of uncovering, eliciting and capturing the client’s needs and ambitions, and communicating these to the design team. The prime purpose is to provide the design team with the information, instructions and inspiration they need to design a successful building. An additional aim is to make clients more competent in their role as clients. Writing a brief pushes them to gather their thoughts and think more clearly and coherently about what they want from the project. It is a process that can make clients more articulate and better aware of their needs, which in turn will give them greater grip on the project.

The concrete outcome of a briefing process is a brief (referred to as an architectural program in the US). A brief is a document, or series of documents, that records the client’s ambitions and requirements in a systematic way. It often plays an important formal role in the project. If disputes arise over the quality of the design, the client can point to the brief and the quality standards that have been agreed. In its turn, the design team can fall back on the brief if the client is delaying and frustrating the design

process by throwing up new ideas and demands after the brief has been agreed.

First and foremost, however, the brief is a means of communication in the interaction between the client and the design team. Clients and design teams tend to think in different ways, have different vocabularies and may have different interests. The brief can be seen as a 'boundary object' that connects these two worlds, with the aim of creating a shared understanding of the project.

There is no success formula for briefing. Different projects will call for different approaches. Sometimes, the briefing process will follow a straightforward trajectory, involving a single decision maker with a dominant and clear vision. Other times, the briefing process will be complex, involving a lot of stakeholders, negotiations and consultation rounds. In some projects, the brief can be just a few pages of text; in others there will be a need for a voluminous report or even an expansive database.

This book aims to explain to clients and their design teams what briefing is and how it can be done. It does not pretend to present a sure-fire recipe, but it does provide all the ingredients for making briefing processes work.

The book is structured as follows: The first chapter (Process) explains the process of briefing in general. The second chapter (Sequence) discusses three sequential types of briefs: strategic, functional and technical. The following chapter (Success Factors) presents ten success factors that are relevant for any project. The chapter Topics discusses key briefing themes such as flexibility, efficiency, functionality and sustainability. Techniques gives an overview of briefing techniques, such as surveys and user interviews. Organization discusses the organization of the briefing process in terms of decision-making and activities. Briefing and BIM is dedicated to a fairly new phenomenon: the use of BIM (building information modelling) in briefing. The final chapter (Examples) presents a variety of briefing examples from practice.

A few words about the terminology used. We use the term 'client' for the party that initiates the project, hires the design team and is responsible for providing the project with a good brief. The client may be the organization that will use the building, but it can also be a real estate developer or housing corporation. Our main focus, however, is on the first type, the 'user-clients', such as hospitals, schools and office organizations, that have a direct interest in the design and usability of the building.

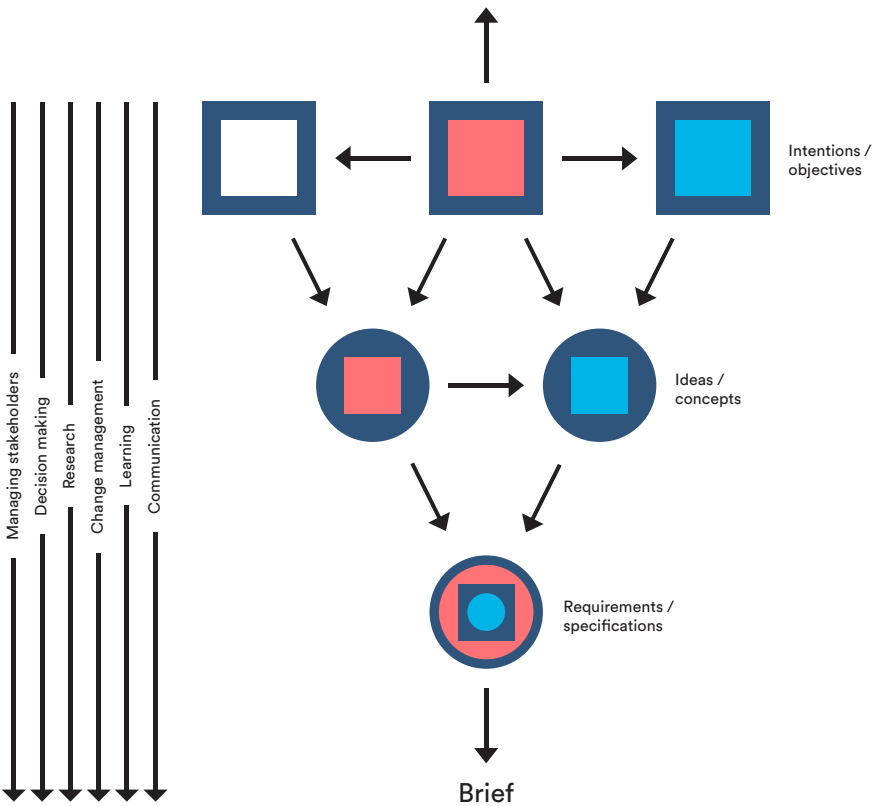
We use the word 'design team' for the combination of disciplines and actors that is responsible for the design of the building. Architects tend to take the lead in this, but there are many other relevant actors, such as interior designers, construction engineers, landscape architects, mechanical engineers and electro-technical engineers. All these play an important role in the design process and need input from the client to be able to play their part.

The term ‘user’ is used in this book to refer to the people who will actually use the building once it is completed. Depending on the type of building, these are office workers, teachers, students, doctors and nurses, and support staff such as cleaners, receptionists, caterers, facility managers and maintenance staff. All these types of users have wishes and demands concerning the building that need to be taken into account in the briefing process.

In practice, users do not often play a formal role in the briefing process, yet it could be argued that they are a project’s most important stakeholders. After all, they are the ones who will be using the building once it is completed, and it is their well-being that will be affected by the building’s design. The ultimate goal of briefing should therefore be to create a building that is loved and liked by its users. Hopefully, this book can contribute to achieving this goal.

This page is intentionally left blank”

Process



Briefing as a process
A design brief is not merely a matter of words on a page. A good brief is usually the product of an intensive and iterative process of research, negotiation, learning, change, decision-making and communication.

Process

Briefing may appear like a simple exercise involving sitting down with the client and making a note of what he or she wants from the project. And it can indeed be that simple in small projects, or even in large projects with professional clients who know exactly they want. But most projects are not like that.

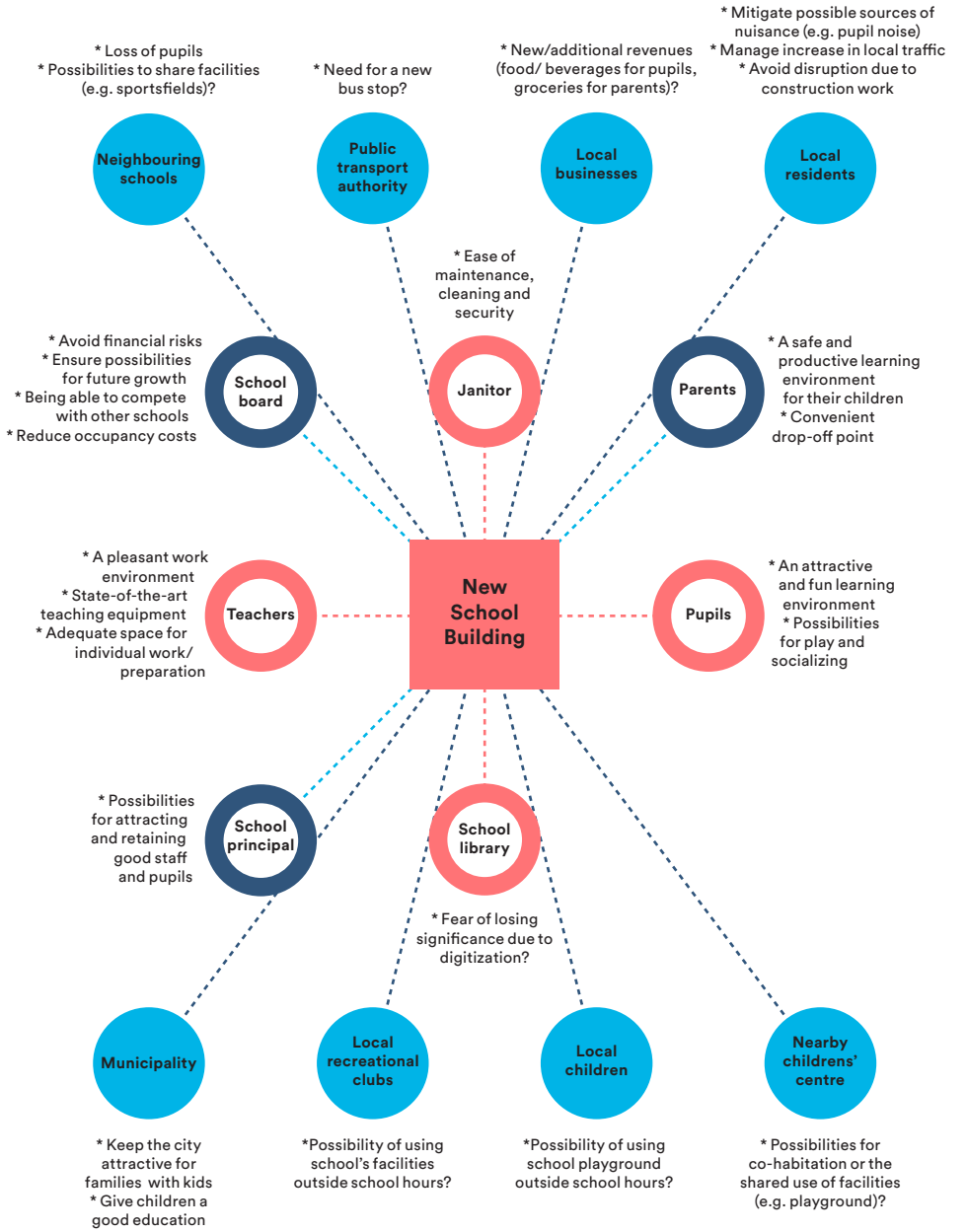
In most projects, clients start out with vague ideas and a limited understanding of the challenges that lie ahead. Before being able to formulate a clear brief, they need time to familiarize themselves with the project's possibilities and limitations and their role in it. They will also need time to develop their ideas for the project by looking at other projects, thinking about future developments, examining their own organization, talking to experts, and 'chewing over' their ideas prior to formalizing them.

Furthermore, time will be needed to engage with the project's stakeholders. The larger projects often involve a diversity of stakeholders—top decision makers, project sponsors, various kinds of end users, special interest groups. All these groups will want to have a say about the project, and they will not necessarily agree with one other. Time will be needed for dialogue, getting to know the stakeholders' concerns, managing their expectations, and creating a shared vision for the project.

All this makes the briefing process more than just a matter of producing a list of requirements. It is a gradual and iterative development process, with a strong social component, that needs explicit management. Putting time and effort into this process will be worthwhile, because it will result in a more settled and 'mature' brief, which reduces the risk of miscommunication and unwelcome surprises during the design process.

In this chapter, we further elucidate the nature of the briefing process by viewing it successively as:

- a stakeholder process
- a decision-making process
- a learning process
- a research process
- a change process
- a communication process



direct internal stakeholders

indirect internal stakeholders

external stakeholders

Stakeholder map

This diagram is an example of a stakeholder map for a school project. It distinguishes between direct internal stakeholders, who are the building's users (e.g. pupils and teachers), indirect internal stakeholders (e.g. school board, parents) and external stakeholders (e.g. neighbours and municipality). For each of these stakeholders it shows their primary concerns and/or needs.

A stakeholder process

Most projects are 'multiplayer' processes in which a variety of stakeholders are involved. These can be both internal stakeholders, such as a board of directors, the real estate department and various end users, and external stakeholders, such as special interest groups, local communities and the general public.

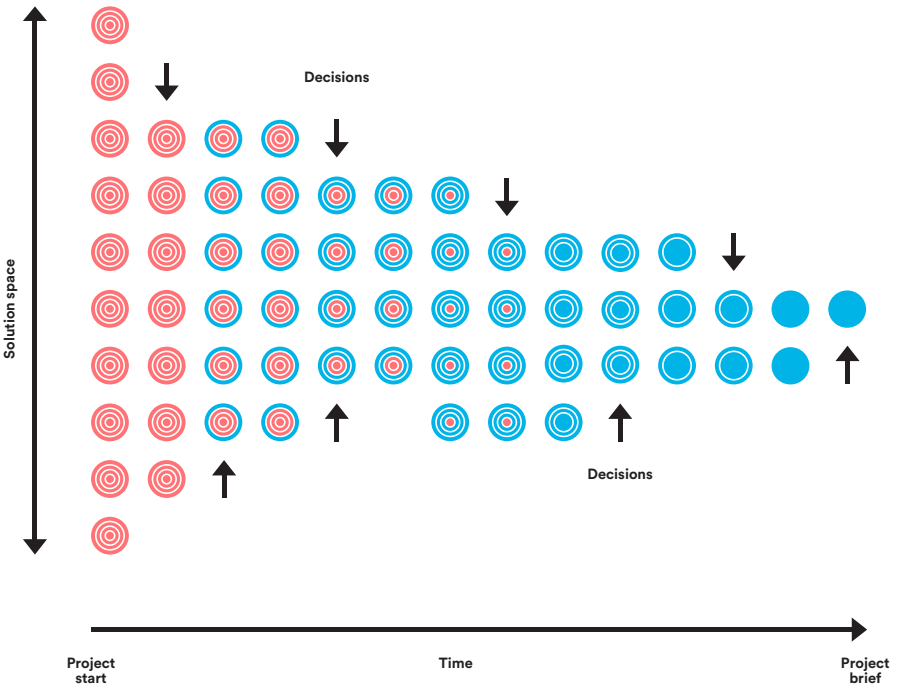
Since stakeholders have, by definition, a stake in the project, their needs should be explicitly addressed in the briefing process. This starts by mapping all the relevant stakeholders and identifying which ones are most influential (usually decision makers and budget holders) and which ones are the most important in the sense that they are affected by the project (usually the building's users). The next step is to enter into a dialogue with these stakeholders (or their representatives), to get to know their interests, manage their expectations, build up a relationship and give them the opportunity to express their ideas and concerns.

The benefit of stakeholder involvement is that it can help to create a more comprehensive brief. For instance, when redesigning a children's ward in a hospital, it will be worthwhile to talk to the ward's head—the formal stakeholder—but it will also be useful to engage with the other stakeholders, such as nursing staff, the patients, the parents and the cleaning and maintenance staff. All these parties will have relevant input for the brief, helping to make sure that no relevant requirements are missed. An additional benefit of the involvement of these stakeholders is that they will feel part of the project, which is likely to increase their acceptance of and commitment to it.

The difficulty of stakeholder involvement lies in the potential for conflicting demands. The ward's head may have entirely different ideas than the staff or the patients. Unfortunately, there is no magic solution for dealing with such situations. The art of briefing is to synthesize and balance different interests and to look for 'win-win' solutions that satisfy multiple stakeholders. But it is rarely possible to please all stakeholders, at least not to the same extent. This makes stakeholder engagement all the more important, because it prevents insular thinking and gives the project's leadership the opportunity to fine-tune and explain their decisions.

Recommendations

- Draw up a stakeholder map showing the project's stakeholders and their main interests and concerns (see example opposite page).
- Prioritize stakeholders. Pay most attention to those stakeholders who have a large stake in the project (e.g. users) and/or have the power to block or advance the project (e.g. the CFO).
- Conduct interviews with the most important and most influential stakeholders to get to know their needs and build up a relation with them.
- Encourage and allow stakeholders to participate throughout the process, but define clear boundaries within which this participation will take place.
- Approach all stakeholders with fairness. Seriously consider their needs and demands, before taking any definite decisions.



Briefing as a decision-making process
At the start, a project's 'solution space' is large. Anything is still possible. Few things have been decided. But during the briefing process, the client will start to take decisions about the building (concerning its location, its size, its spaces, its fit-out, etc.), and with each decision, the solution spaces gets smaller. This is a delicate process in the sense that too many decisions will limit the design team's ability to come up with good design solutions. Too few decisions, however, will leave the design team without direction.

A decision-making process

During the briefing process, clients are required to make a myriad of decisions that will shape the project. At the start of the project, almost anything is possible, but with each decision the project becomes more concrete and delineated.

The nature and complexity of decisions change over the course of the project. In the beginning, decisions will concern the project's overall scope and objectives. For example, on what kind of educational concept should the design of a new school be based? A traditional classroom concept, or a more flexible concept in which pupils make use of a variety of learning settings? And what level of ambition is there for the building's architectural quality? Should it be an expressive masterpiece or will a modest building suffice?

As the project progresses, briefing decisions will become of a more practical nature. Staying with the example of a school project: what kind of sports facilities should there be? What kinds of specialty classrooms are needed? How much bicycle storage is required?

Decisions of an even more operational nature will concern the fit-out aspects of spaces, such as the number of power sockets or storage cabinets in a room. Some of these decisions may seem to verge on the trivial, but the design team needs decisions on all sorts of small, practical issues so as to know what to design.

As explained in the previous section, there are likely to be various stakeholders involved in a project and they will all want to influence the decision-making process. To avoid endless debates, it is advisable to create a clear decision-making structure that sets out who will be consulted, on what matters and in what phase, and who will have the final say on decisions (usually this is a project board or steering committee. See also Organization, page 121).

Furthermore, the decision-making process can be improved by underpinning it with data. If a school board must decide about the future capacity of their building, for example, it will be useful to have detailed information about the school's growth rate, demographic developments in the local area and the financial consequences of building a larger school. Gathering such data will help people make better, more objective decisions— although internal politics and subjectivity can never be entirely eliminated.

Recommendations

- Draw up a plan for the formal decision-making process, defining what needs to be decided, at what stage, and how decisions will be taken.
- Make sure that decision makers are familiar with all the options and all the pros and cons of the decisions they are required to take.
- Consult stakeholders before taking decisions to achieve buy-in and commitment for decisions.
- Make sure that decisions are made by the people who have the authority and knowledge to do so.
- Take sufficient time for decision-making. Sluggish decision-making slows down the project, but rapid decision-making can prevent an adequate exploration of alternatives.

A learning process

To be able to make good briefing decisions, clients need a certain level of knowledge. They do not have to be experts in construction and design, but they need to have a basic understanding of topics such as architectural quality, costs and usability. It also helps if they know about practical matters such as the difference between gross and net square metres and the difference between investment costs and construction costs. Furthermore, they should know about their role as construction clients and what is expected from them by the design team.

First-time clients in particular are likely to lack this kind of knowledge. Of course, they can—and should—get help from all sorts of external experts, but ultimately it is still the client who is responsible for the project and any problems that may emerge after completion. It is therefore important that clients do not remain at arm's-length but immerse themselves in the project, get to know about its limitations and potential, evolving into competent and articulate clients who know what they want.

Clients can educate themselves by reading handbooks and general guides such as this one. Valuable lessons can also be learnt by studying other projects and talking to people have been through similar processes, learning from their mistakes and successes. Most of the learning, however, will take place 'on the job', in the interaction with project's other stakeholders such as the users, client advisers, designers and cost consultants. Each meeting and conversation will make the clients smarter and will help to refine their ideas.

The difficulty with client learning is that it must occur in the context of an ongoing project, which puts time pressure on the learning process. The briefing stage of a project, however, is still a reasonably safe context for learning because the project is not yet in full swing. Clients can still change their mind without causing major difficulties for the other project actors, notably the design team. It is obvious, however, that if clients fail to climb the learning curve in this period, they will probably learn things the 'hard way', which is through schedule overruns, rework or design defects at later stages.

Recommendations

- Reserve sufficient time for learning in the briefing process. Take the time to read relevant guidelines and to visit other projects.
- Bring in external experts who can help 'educate' the client organization on specific matters such as costs and sustainability.
- Engage in a dialogue with all the project's stakeholders and learn about their ideas, prior experiences and needs.
- Do not aim to produce a single brief, but rather a series of briefs that become more detailed and definite as the project progresses.
- Do not regard the brief as an incontestable document. Treat it as a set of ideas and notions that can be challenged, improved and refined along the way.

A research process

Identifying needs often requires research. In large projects like hospitals, clients are sometimes not fully aware of their organization's needs, because of its vastness, the complexity of its processes and the changes they are undergoing. In some cases, clients are building for niche populations (e.g. the elderly, children) who have non-standard needs, with which neither the client nor the design team is familiar.

In such cases, research will help to form a clearer picture of users and their needs, answering basic questions like: Who are the building's users and what are their characteristics? What are their daily activities? What kind of artefacts or equipment do they use? And what are their cultural norms and values concerning the use of space?

The research methods that can be used for answering such questions are mostly borrowed from the social sciences. This is not so strange because social sciences, such as anthropology and sociology, are geared to gaining insight into human behaviour. Briefing research has a similar goal, although it is targeted at very specific groups of people and has a much more practical objective.

Interviews are the most frequently used research method because they are a fairly easy way of obtaining a first-hand impression of a building's users. Other possible methods are surveys, different kinds of observational studies and social network analysis (see Techniques, page 93, for a complete overview). Ideally, multiple methods should be applied concurrently, because that makes it possible to combine and compare different kinds of data—a technique that scientists refer to as 'triangulation'—which improves the validity of the research outcomes.

It should be said, however, that most projects lack time and resources for a wide-ranging research process. Even in large projects, there is usually only time for interviews, a survey and, if one is lucky, occupancy measurements. More research would obviously benefit the validity and credibility of the brief, but the goal of briefing research is not to find the 'truth'—there is no such thing in briefing anyway. The goal is to provide an informed perspective on the building's users and to validate assumptions about their needs concerning the building.

Recommendations

- Combine research methods. Looking at the same topic from different perspectives will add to the validity of the research outcomes.
- Hire external experts for specialized research activities (e.g. statistical analysis of survey data).
- Consult relevant literature: there is likely to be research available from similar projects that can be used as a basis, benchmark or inspiration for client-specific research.
- Do not overload the project with research data. Select, analyse and visualize research data before they are communicated to decision makers and the design team.
- Even when there is little time for research, maintain an enquiring attitude: look at and listen to what users say and do. Do not jump to conclusions or make presumptions.

A change process

By their very nature, building projects represent change: a change in spatial layout, light, furniture, colours, facilities, and, consequently, a change in user experience. These changes offer clients a rare opportunity to rethink and transform their organizations. Changes in design can be used as a catalyst or enabler for the implementation of, say, a new corporate identity, a new way of working or a new organizational culture.

Deciding on the direction and nature of change is one the most important parts of the briefing process. Clients should look critically at their organization and its desired future state. How do they want to operate? What kind of culture do they want to have? What kind of structure? And how can building design contribute to achieving this future state?

In some projects, these questions will prompt serious soul searching. When building a new library, for example, one cannot escape the fundamental question of what a library should be in this digital era. Still a place for physical books, or should it be a digital media centre or perhaps a 'community hub'?

When thinking about such changes, it is important to consider that buildings alone cannot achieve organizational change. It is easy enough to write in the brief that a new library should become a community hub, but this will require not just physical change, but also changes in the library's services, competencies, policies and systems.

In the case of radical change, it is essential to pay a lot of attention to the role of end users. Users sometimes dread the envisioned changes because they are emotionally attached to their existing spaces and routines. This is a major factor requiring consideration, because user resistance and conflict can derail even the best-laid plans.

In such a case, it is important to make the briefing process part of a larger organizational change process. The challenge of such a process is to engage the building's users and to make the envisioned transformation 'theirs' rather than something that is imposed on them. Amongst other things, this will require leadership and commitment from management, coaching and training, and extensive communication about the reasons for the envisioned changes.

Recommendations

- Use the project as a strategic opportunity to examine current operations and identify areas for improvement.
- Check whether there are any existing change programmes that run parallel to the project. Different change programmes may well be able to reinforce one other.
- Make sure that changes are explained and communicated to the building's future users. What is the background and the objective of the envisioned changes? How will they affect the everyday life of users? What is in it for them?
- Dedicate as much or more attention to organizational change as to the physical change.
- Ensure that the leadership of the organization plays an active role in advocating and 'pushing' the desired organizational changes.

A communication process

Much of the time in a briefing process is spent on communication—probably even more time than on actual writing of the brief. Especially in large organizations, many hours are spent discussing, explaining, selling and negotiating the contents of the brief, to make sure that all stakeholders understand and agree with the direction in which the project is heading and have the right kind of expectations.

There may be lots of different stakeholders to communicate with, but generally speaking, the most important 'audiences' in the briefing process are: the project's decision makers, the building's users and, obviously, the design team. Each of these requires a different communication approach.

The first group, the decision makers, are usually not interested in the details of the brief, but they will want to discuss the project's objectives, the required investment and the associated risks. They will prefer 'one pagers' over thick reports, and they will need regular updates on progress and budget.

The building's users will mostly be interested in how the project is going to affect their daily life in the building. Will they for example still have desk? A place to store their stuff? A parking space? Common tools for communicating with users are newsletters and project websites. In the case of fundamental change, however, more interactive ways of communication will be needed, for example 'town hall meetings' where users not only receive information, but can also express their concerns.

Last, but not least, there is the design team, who can be seen as the ultimate target group of the brief because it must inform them about what they have to design. Just handing over a set of briefing documents is not enough for this. There should be dialogue between the client and the design team to make sure that both sides have the same understanding of the ambitions and requirements for the project (see also page 70).

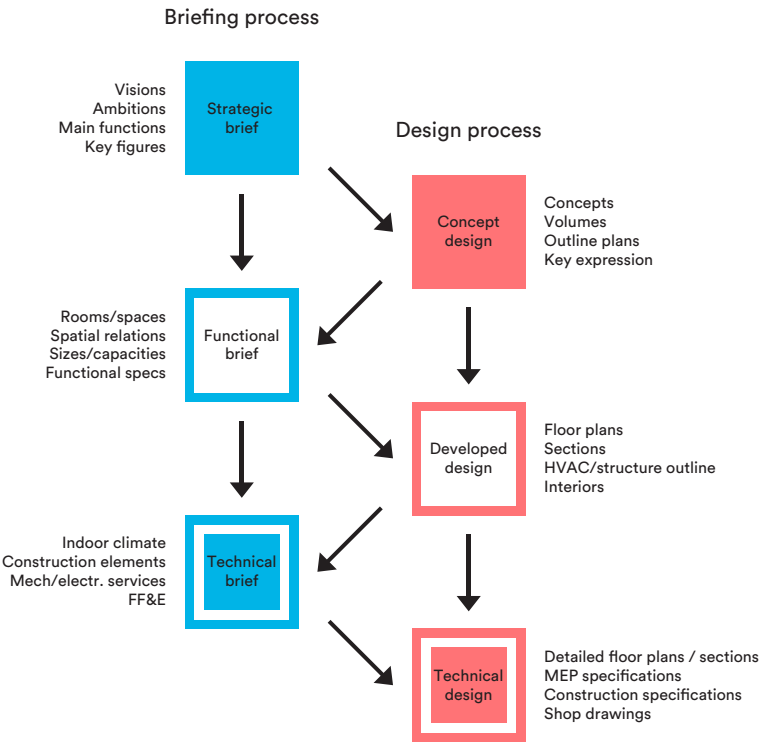
All this talking takes time, but good communication is essential for a project's success. Good communication can sway the users' opinion of the envisioned changes, persuade decision makers to fund the project, and help to make sure that the design team designs the right building.

Recommendations

- Draw up a communication plan that outlines the main communication activities, explaining what, how, when and with whom communication is required.
- If available, collaborate with the organization's communication department, or other communication professionals.
- Communicate frequently and openly about the project with end users, via social media, town hall meetings and other means of communication.
- Put effort into written material, illustrations and tables to ensure they are understandable and mean the same for the different parties involved.
- Talk and write in plain language. Avoid management speak or technical jargon.
- Do not communicate with the design team solely on paper. Enter into an active dialogue to create a shared understanding of what needs to be delivered.

This page is intentionally left blank”

Sequence



Briefing and design
The proposed briefing sequence corresponds deliberately to the phasing of the design process, which usually also consists of three parts (concept design, design development and technical design). The benefit of aligning the two processes is that it gives clients the opportunity to adjust and refine their ideas when looking at the design team's design proposals. For their part, the design team has an opportunity to discuss and shape the contents of the brief before these are formalized and incorporated into the design.

Sequence

As explained in the previous chapter, briefing is often an explorative process. Except perhaps for small projects, clients are seldom able to produce a full brief all at once. Accordingly, this chapter discusses the brief not as a single document, but as a sequence of segments that become more detailed and definite as the project progresses. These segments are:

(1) The strategic brief: The strategic brief is a concise brief that is written at the very beginning of the project. It gives a bulleted description of the client's key ambitions and an initial estimate of the project's scope. The contents can be quite abstract, but they should contain sufficient detail to enable the design team to develop a concept design.

(2) The functional brief: The functional brief supplements the strategic brief with a detailed overview of the requested functions and spaces that need to be realized in the project. It is very much about room quantities and square metres, and it fixes the spatial contours of the project. It serves as the primary input for the design team's design development.

(3) The technical brief: The technical brief is an elaboration of the functional brief. Functional needs are translated into performance requirements concerning technical matters such as indoor climate, mechanical/electrical services, fittings and fixtures. The information is of a specialist nature and gives direction to the technical design of the building.

This sequence corresponds deliberately to the phasing of the design process (see figure opposite page). The idea is that each briefing segment feeds into a different part of the design process, thereby ensuring that the design team gets the right information at the right moment. Furthermore, the alignment allows for interplay between the design process and the briefing processes. The brief provides input for the design process, and vice versa.

It is important to point out, however, that the proposed sequence is not intended to be followed rigidly. For example, professional clients often prefer to combine all segments into a single project brief because they want to keep the design process free of too many iterations. The same applies to Design & Build projects, where the brief functions as a delivery contract, which means that it should be as complete as possible before the start of the design process.

Nevertheless, even these kinds of projects will benefit from a structured briefing process that explicitly addresses the client's strategic objectives and functional needs before rushing into any technical details.

The strategic brief

The strategic brief is the document that sets out the general course for the project and outlines the client's main ambitions and key requirements. The document is strategic in the sense that it takes a long-term view of the client's interests and explicitly considers how the building might contribute to the client's core processes.

The strategic brief is usually written early on in the project, just after the client has formally decided to pursue the project. This can make the development of the strategic brief somewhat challenging. Much is still unknown and undecided at that stage and the stakeholders may still have diverging aspirations for the project. From that perspective, the strategic brief can be seen as an initial attempt to align the various expectations concerning the project.

For the design team, the strategic brief serves as input for their schematic or conceptual design. A conceptual design is not very detailed or definite in its nature, but it should give a clear idea of the building's volume, its spatial organization and the underlying technological concepts. To develop such a design, the design team needs, at the very least, a reasonably accurate estimate of the size of the project and a description of the main functions that need to be realized in the building. They will also need an understanding of the client's ambitions on topics such as architectural expression, flexibility and sustainability.

Developing a strategic brief is a process of exploration, envisioning and decision-making. It usually involves lots of meetings with stakeholders to discuss their ideas and expectations concerning the project. Top decision makers, however, tend to play the most dominant role because they must approve and finance the project. What do they want to achieve with the project? What do they regard as the project's objectives? What are their ambitions concerning architectural quality, sustainability and efficiency? And, are they willing to provide a budget that matches these ambitions?

In parallel with discussions on a strategic level, it will be necessary to get a grip on the project's basic facts and figures. What is the expected number of users? Roughly how much space will be needed? What are the main functions that need to be realized? Answering these questions will require an analysis of the current accommodation situation and an insight into future needs. Useful analysis tools are occupancy measurements, scenario analysis and benchmarks with other projects (see Techniques, page 93).

In terms of format, the strategic brief should be concise, free of jargon and easy to read because it is targeted at all stakeholders, not just the experts.

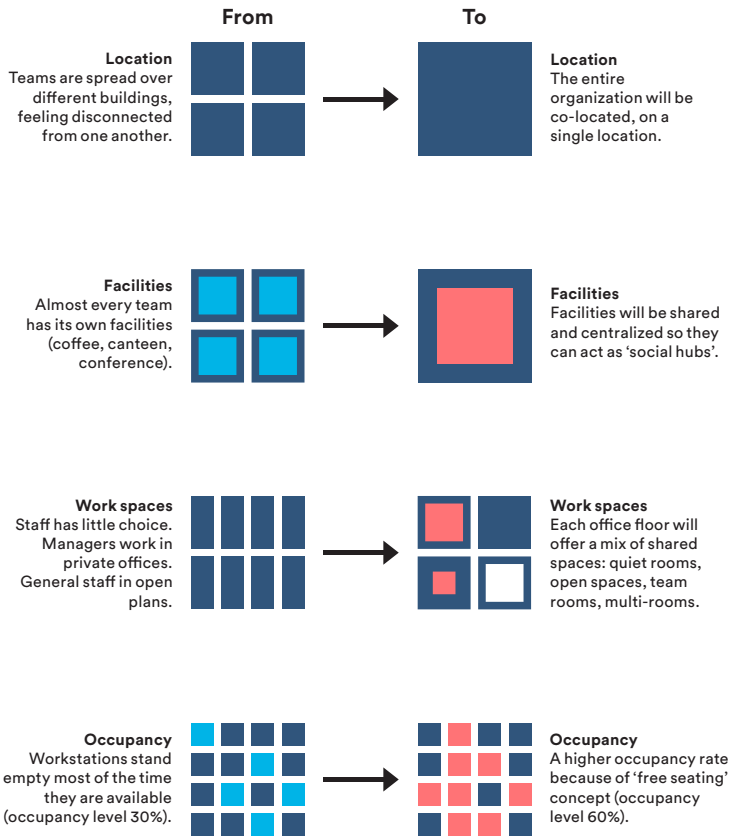
Topics to be addressed in the strategic brief are:
- Background
- Objectives
- Ambitions
- Concept
- Scope
- Site
- Open issues

Background
A background description should explain what has prompted the project. Who is the client and why is there a need to build or renovate? What accommodation problem needs to be solved? In many cases, the project will be a response to a practical problem, such as a lack of space in combination with expected growth, the termination of a lease contract, or quality problems (e.g. a worn-out interior, indoor climate problems). Such factors may coincide with organizational changes, such as organizational growth, a merger with another organization, or a need to reduce costs. It is important to describe these factors adequately because they give the design team an insight into the motivations behind the project. For the client, the background description is important because it forms the justification of the project, which can be useful for internal communication and decision-making.

Objectives
Closely related to the reasons behind the project, are the client's objectives. The central question here is what needs to be accomplished with the project, apart from merely solving the organization's practical accommodation problem. The answer to this question should focus not on the building itself, but on the benefits or value the building should deliver for the client. For example, when building a new research facility, the objective may be to facilitate new types of research and increase collaboration between different research disciplines. Similarly, a new school may want to use a project to facilitate new learning methods and increase the pupils' performance. Often, the building project alone will not be able to achieve such objectives, which will also require organizational change, but clear objectives are essential because they give purpose to the project and they can serve as a basis for more detailed briefing decisions at later stages.

Ambitions
The strategic brief should also give the design team an understanding of what the client aims to achieve on specific quality aspects such as sustainability, architectural expression, flexibility, accessibility, and security (see Topics, page 75). The challenge here is to be specific and not to take refuge in the usual clichés. Take a topic like sustainability: almost every brief will highlight the importance of sustainability, but what precisely does the client mean by this? How far does such an ambition reach? Should the building become the most sustainable building of its kind, or should it merely comply with mainstream practice? The same goes for a topic like flexibility. Every client wants a flexible building, but what kind and degree of flexibility? Are we merely talking about a building with movable partitions or about a fully demountable building that can be resized and relocated? The strategic brief should try to provide concrete answers to such deceptively simple questions.

Concept
Most clients will already have some sort of vision or concept in their mind when they start the project. The strategic brief should explain this vision or concept, without getting into too much detail. Preferably, this concept or vision should be closely related to the project's objectives and the users' activities in the building. For an office project, for example, it will be useful to have a conceptual description of the desired work environment. How open should it be? What kind of facilities



From–To diagram
To communicate the client's conceptual ideas for the new building, it can be a good idea to produce a 'from–to' diagram that explains how the new situation should differ from the existing one. Above is an example from an office project that moves from a traditional office with fixed seating, to an 'activity-based office' in which employees can work from a variety of spaces.

and atmosphere should it offer? Are work spaces shared or not? For a school project, the conceptual description may explain whether the school is seeking a solution with traditional classrooms or a newer concept with lots of openness and a diversity of learning spaces. These are design issues, but they are also closely related to the culture and activities of an organization, and the client should therefore have a vision for them.

Scope

As well as fairly abstract objectives, concepts and ambitions, the strategic brief should provide the design team with practical information about the size and scope of the project. It should, at the very least, give an indication of the total space requirement and an overview of the project's main functions and/or the required number of 'functional units' (e.g. the number of workstations, classrooms, patient rooms, seats). Ideally, this scope indication is linked to a budget or initial cost estimate. Such figures cannot be other than 'ballpark' estimates because there is no design yet, but it will prove beneficial to spend time doing a thorough cost calculation exercise to ensure that the project's size and ambitions are in line with the available budget.

Site

If the building's site is known, the strategic brief should give a general overview of the site's conditions and constraints. In most cases, the chosen location will come with regulatory guidelines concerning the footprint and height of the building and the number of parking spaces that can be realized. There may also be aesthetic guidelines, ecological issues or archaeological finds that impose certain restrictions on the project. The strategic brief should explain these constraints and outline any relevant external guidelines, such as municipal plans for the area. Furthermore, the strategic brief should explain the client's general ideas on how the building should relate to its surroundings in terms of expression, logistics and public facilities (see page 83).

Open issues

Because the strategic brief is written at a very early stage of a project, it is likely that not all relevant information will be available or definite. That does not need to be a problem as long as the brief clearly highlights what is missing or in need of further research or approval. For example, it may not yet be clear whether an office building should be designed to accommodate 400 or 600 employees because of uncertainty about the company's growth perspectives. It is preferable that the client take decisions on such matters before the brief is communicated to the design team, but if that is not possible, it should at least be clear that this is an issue that requires further analysis and decision-making before moving on to the next design phase.

SUMMARY

Strategic brief
- Alternative names: ambition document, outline brief, concept brief, strategic programme

Phasing
- Pre-design phase: the document should be ready and approved before the design team starts on the concept design

Target group
- All stakeholders; special focus on decision makers and the design team

Purpose
- To clarify client objectives and the project's ambitions to all stakeholders
- To streamline expectations within the client organization
- To provide input for the concept design
- To provide input for early budget estimates
- To establish criteria for the evaluation of concept designs
- To act as a compass for more detailed briefing decisions at later stages

Input
- Scenario studies: explore the future use of the building
- Objectives workshops: discover and fine-tune the ambitions of key decision makers
- Feasibility studies: test ambitions against the available budget
- Literature study: identify useful guidelines and standards
- Project visits: find inspiration and learn lessons from other projects
- Interviews: discuss the project with key stakeholders

Contents
- Background: why this project?
- Objectives: what is the project supposed to achieve?
- Ambitions: what are the client's ambitions on specific topics such as sustainability?
- Vision/concept: what is the general idea concerning the spatial setup?
- Scope: what is the approximate size of the project?
- Site: where will the building be located and what are the site's constraints?
- Open issues: are there critical issues that need further analysis or decision-making?
- Next steps: perspective on entire project and next briefing stages

Format
- A concise and compact document (max. 10-30 pages)
- Easy to read for all stakeholders, free of jargon
- Aggregated data, rather than an excess of information
- 'Narratives' to bring the project to life (small stories, interviews).
- Visual presentation of data where possible (diagrams, infographics)
- Avoidance of meaningless clichés ("the building should be of a high quality")

The functional brief

As the name implies, the functional brief describes the client's functional requirements. The emphasis is on spatial requirements. The two questions the functional brief needs to answer are: What activities must the building accommodate? And how do these translate into spaces or rooms and associated requirements concerning capacity, size and functionality?

For the design team, the answers to these questions are crucial input for the design development. They need the information to be able to transform their conceptual ideas into more specific schemes with detailed floor plans and sections. They need a comprehensive overview of all the required spaces, their quantities and sizes, and an understanding of the desired 'user experience' in these spaces. In addition, the design team will need an insight into how spaces should be clustered or zoned in relation to the logistics, security and the desired communication patterns in the building.

The most rudimentary and most intensely consulted part of the functional brief is the overall 'space list'. This is usually a spreadsheet or table that outlines all the spaces that need to be realized in the building. The room list is essential because it fixes the total size and scope of the project. All the parties involved—the users, the project team, cost calculators and the design team—tend to use the list as their main point of reference in discussions about what needs to be delivered. It is thus important that the underlying assumptions are correct and that there are no omissions or ambiguities that might cause unwanted surprises later in the process.

Producing a good functional brief requires a thorough analysis of the client's activities and space usage. This starts with a detailed examination of the existing situation, looking at the user's current activities and the way the current building is used (i.e. by examining occupancy data). The next step is to try to determine how activities will or should change in the future and how this will affect the need for space. Simultaneously, it will be a good idea to recheck the financial feasibility of the brief now that the project's size and scope are much more concrete than in the earlier phase.

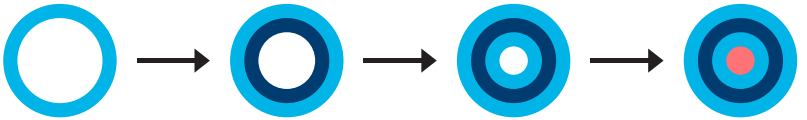
A functional brief will usually address the following topics:
- Organization/users
- Activities
- Primary spaces
- Support spaces
- Facility management spaces
- Adjacencies
- Zoning
- Space list
- Capacities and sizes

Organization/users

The functional brief should start with a description of the organization that is to be accommodated in the building, insofar as this has not already been covered in the strategic brief. Relevant information might be the projected number of users, expected future changes in this number, and basic user characteristics such as function, background and age group—where relevant to the design. In addition, there should be information about the structure of the user organization. For a school project, it will for example be crucial to know how many classes there are, of what size and for which age groups. For an office organization, it will useful to have a description of the size and responsibilities of the different departments to be accommodated in the building. Alongside these factual aspects, it will be useful to describe 'softer' organizational aspects such as the identity and culture of the user organization.

Activities

A crucial part of the organizational description, is an explanation of the activities or business processes to be facilitated by the building. For a hospital, it can be a description of the kind of medical treatments that are being offered. For a school, it will be a description of the educational programme plus any extracurricular activities. For an office, it may be the business processes that take place in the different departments (e.g. sales, marketing, research or policy making). The description of these activities does not have to be very detailed (details are likely to change over time), but it should give the design team a clear understanding of the functional purpose of the building. The challenge will be to look beyond current activity patterns and envision how things will be once the building is completed and in use.



Getting there	Getting inside	Touring the museum	Leaving
Activities			
- Parking car - Exiting subway - Getting off the bus - Walking to the entrance - Waiting for friends/ family	- Entering the building - Buying ticket - Waiting for friends/ family - Visiting the toilets - Storing coats/bags	- Viewing the exhibition - Reading explanations - Taking in specific pieces - Visiting the toilets - Taking a (coffee) break	- Shopping/browsing - Visiting the café - Visiting the toilets - Collecting coats/bags - Waiting for friends/ family - Leaving the building
Relevant spaces			
- Parking area - Bicycle parking - Bus stop - Public space - Facade	- General entrance - Expedited entrance for members / people with online tickets - Waiting area - Ticket booths - Cloak room - Toilets	- Exhibition spaces - Rest areas with a view - Coffee point - Toilets	- Café - Shop - Toilets - Cloakroom - Exit
Desired experience			
- Joyful anticipation ("Look, there it is!")	- Feeling welcome and at ease	- Surprise and enjoyment	- Tired but inspired - Wanting to get more involved
Undesirable experience			
- Parking confusion - Difficulty in finding museum - Difficulty in finding entrance	- Long waiting time - Disorientation	- Too crowded - Too much noise - Disorientation - Tired/low blood sugar	- Discontent ("Was that it?") - Difficulty in finding exit - No place to rest and recharge
Design issues			
- Wayfinding - Possibilities for placing ads/previews on the outside of the building	- Wayfinding - Explainers or mobile exhibits beside ticket line - Convenient locker system - Meeting point - Seating possibilities for people who are waiting	- Wayfinding - Clear routing - Acoustics - Explainers - Seating	- Routing past café and shop - Exit signage - Announcement of new exhibitions - Membership desk

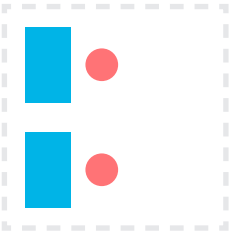
User journey

To describe the desired functionality of the building, it can be a good idea to include a 'user journey' in the functional brief. A user journey is a step-by-step description of how a typical user might move through the new or redesigned building and use different kinds of spaces. This example is a simplified user journey map for a museum.

Primary spaces

The users' activities will translate into a need for a variety of spaces. Most important are the 'primary' or 'core' spaces, which are the spaces that are directly related to the users' most important activities. For an office building these will be workspaces; for a school, teaching spaces, for a lab, research spaces. These spaces are critical to the user organization and they tend to make up the bulk of the project. The client's vision for these spaces will probably have been described in the strategic brief, but the functional brief should add detail and specificity in relation to sizes, functionalities and quantities. For an office project, for example, the functional brief should explain what kind of mix of workplaces should be provided (e.g. open-plan offices, quiet rooms, project spaces, et cetera).

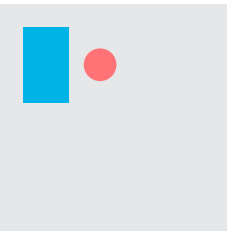
Primary spaces example
This example shows basic layout diagrams and brief descriptions of different kinds of workspaces for an office project.



Open plan office

Workstations in an open area, suitable for general office work and collaborations

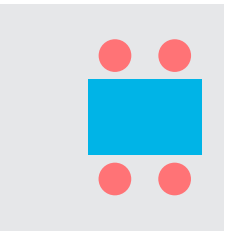
1 desk / 1.4 employees
Min. 6 sq.m. / desk



Focus room

Enclosed room suitable for focus or long phone calls. Shared use.

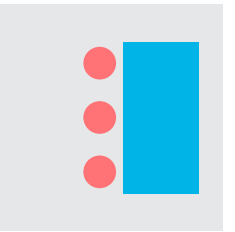
1 room / 12 workplaces
Approx. 8 sq.m. / room



Small meeting room

Enclosed room suitable for small meetings with 2-4 persons. Non-bookable.

1 room / 12 workplaces
Approx. 8 sq.m. / room



Video room

Enclosed room suitable for small meetings using video connections with 1-3 persons.

1 room / 24 workplaces
Approx. 8 sq.m. / room

Support spaces

In addition to the primary spaces discussed above, a building will need to provide spaces for ancillary functions such as copy/print areas, kitchenettes, cloakrooms and so on. Most support spaces are very utilitarian in nature and usually entail practical requirements. A distinction can be made between central and distributed support spaces. Central support spaces are intended for the building's entire user population and should usually be centrally located in the building. Good examples are a company restaurant or a conference facility. Non-central support spaces house functions that are 'on the floors', and distributed throughout the building to shorten walking distances for the building users. A good example are the kitchenettes in an office building, which should be no more than a short walk away from any workplace in the building.

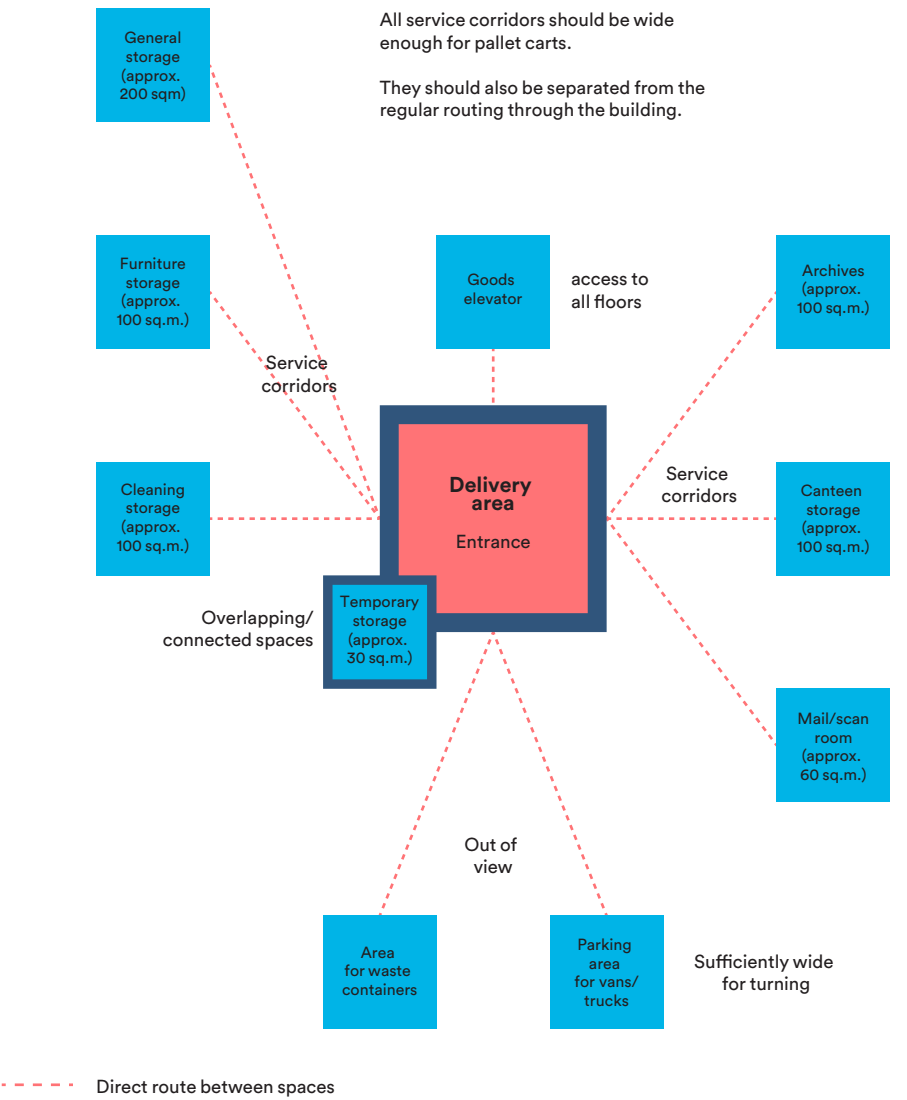
Different kinds of support spaces
The table below gives examples of both central and local support spaces that are commonly found in office buildings (based in part on definitions used by IPD Occupiers).

Central support spaces	
Reception area	An area where both employees and guests are welcomed by reception staff. Usually the main entrance to the building
Waiting area	An area where guests can be seated until their host arrives, generally adjacent to or in the reception area
Restaurant	A facility where people can order and consume hot/cold meals and beverages. Often designed to function as a work/meeting place as well
Cafeteria	A facility where people can order and consume light meals and beverages. Often designed to function as a work/meeting place as well
Fitness area	A facility where people can undertake physical exercise
Crèche	A facility where employees' young children are cared for during the working day
Prayer / meditation room	A quiet room where people of differing religious beliefs, or none at all, are able to spend time in contemplation or prayer
Lactation room	A private, secure room where nursing mothers can breastfeed or express their breast milk for later usage
Library / reading room	A library-like setting, away from the main office areas, where employees can work without being disturbed by phone calls or colleagues
Conference centre	A central cluster of meeting facilities (e.g. auditoria, conference suites, seminar rooms), often adjacent to main entrance to allow easy access for guests

Local support spaces	
Pantry area	A kitchen-like space where people can get themselves a drink and/or a snack
Storage space	A space or cabinet for the storage of commonly used office supplies
Print and copy area	A space with print and copy facilities
Locker area	A space with storage facilities where employees can store their personal belongings in individual lockers
Cloakroom	A space or cupboard where employees and visitors can hang their coats

Facility management spaces

A special subcategory of the ancillary functions relates to 'back-of-house' functions that support the building's operation and facility management (FM). Think of storage spaces, kitchen areas, delivery entrances, security rooms and cleaning cabinets. These functions are generally less visible and more sober in character than the previously mentioned space types, but no less important. A building cannot be expected to function efficiently if there is no dedicated area to collect waste or store furniture, for example. It is thus important that the functional brief pays explicit attention to the required FM spaces. Relevant questions concern the extent to which 'front-of-house' and 'back-of-house' functions should be separated and the degree to which FM spaces require attention in terms of climate, security or technology (e.g. in case of archives or server rooms).



Adjacency diagrams
Adjacency requirements can be communicated using 'bubble diagrams' in which 'bubbles' represent spaces (varying in diameter to indicate relative size) and the lines between them the desired adjacencies (varying in type or thickness to indicate importance). This diagram is an example of an adjacency diagram for the facility management spaces in an office building.

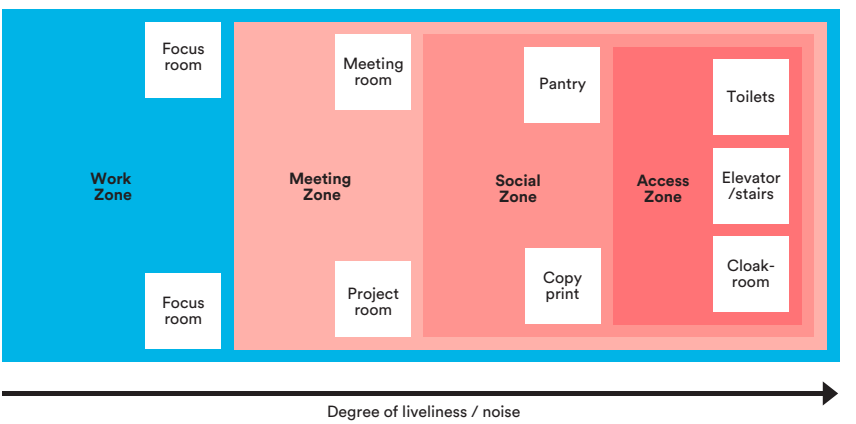
Adjacencies

As well as a description of the spaces themselves, it will be useful to say something about the desired adjacencies of spaces. How should they be positioned in relation to one another? Which spaces should be close to each other and which not? The desired adjacencies are usually determined by the logistical 'flows' in the building, such as the flow of staff, visitors, suppliers, VIPs, goods, waste and equipment. For all these movements, it is vital that distances are short and routings logical. Common-sense examples of adjacency requirements are that the restaurant should be close to the delivery entrance or that the building's conference centre should be close to the visitor entrance. Specific departments or groups of users may also need to be located in close proximity to each other to facilitate or encourage collaboration (see also page 109).

Zoning

Another way to visualize spatial relations is to use zoning diagrams. Zoning is about how spaces should be clustered or separated from each other, and/or how spaces should be positioned in specific areas of the building. A good example is security zoning. Many briefs ask for spaces to be clustered according to their security level or the kind of users (see also page 85). In courthouses, for example, it will be necessary to have a strict separation between areas accessible to the public, to prisoners, and to members of the judiciary.

Zoning can also relate to the liveliness or noisiness of the users' activities. A kindergarten brief, for example, might ask for a 'quiet zone', where children can play with puzzles and games and read books, and an 'active zone' for playing with large toys, making music and movement. The same zoning principle is often mentioned in the briefs for office projects, where there is a similar desire to separate 'noisy' activities (chatting near the coffee machine) from 'quiet' activities that require concentration (individual computer work). See example below.



From vibrant to quiet

For office projects, it is common to suggest a zoning plan that distinguishes between a vibrant social zone, where people can drink coffee and chat, and a quiet work zone that is meant for individual desk work that requires concentration. In between, there may be a meeting zone with enclosed meeting rooms that act as a buffer.

Space list

The space list is a compilation of all the spaces mentioned in the brief. The list is usually set up as a 'decomposition' that starts with the building's main functions, which are then 'decomposed'—broken down—into smaller sub-functions and individual rooms until subdivision is no longer possible or desirable. For example, if a client needs a conference centre, this general demand can be broken down into specific subparts, specifying different types of meeting facilities (e.g. various kinds of large, small, formal and informal meeting rooms) and ancillary functions (e.g. cloakrooms, break areas, furniture storage). The objective of such a breakdown is to create a comprehensive overview of the client's spatial needs and to ensure that no essential rooms are forgotten. It is important to note, however, that the room list does not necessarily have to specify every single room that needs to be created in the building. Toilets, for example, usually do not need to be defined in detail because the design team can be expected to know the relevant standards for such spaces.

Capacities and sizes

The space list gives concrete figures for the requested quantities and sizes of spaces. This can be done in different ways. For a meeting room, for example, size can be expressed in functional terms by referring to the number of meeting seats (e.g. the room should be large enough to accommodate 10 seats), but it is also possible to define size in terms of concrete square metres (e.g. the room should be at least 25 sq.m.). The latter is strictly speaking unnecessary—the design team can make that translation—but most clients do both because the use of square metre requirements allows them to keep track of the overall size of the project.

Space list for a school

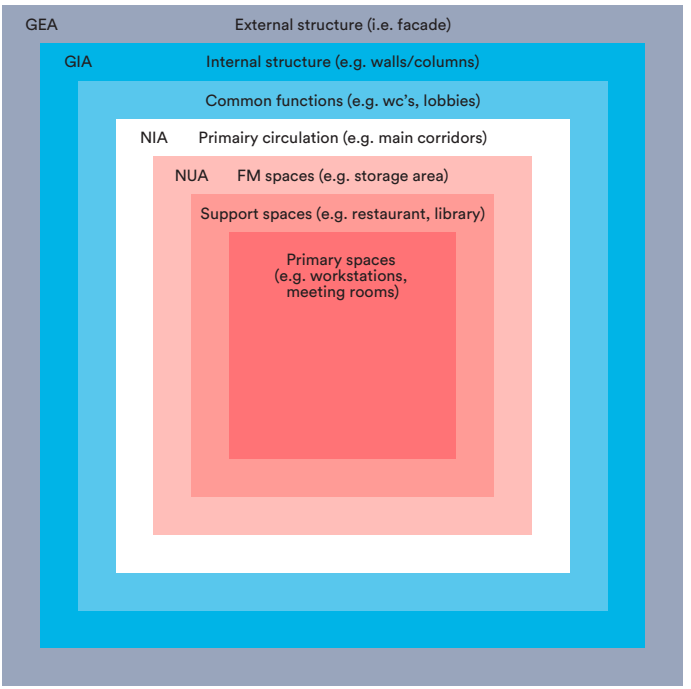
This table is an example of a space list for a school catering to three different age groups. All the sizes mentioned have the status of indications rather than fixed requirements.

Space	Quantity	Size (NUA)	Subtotal	Remark
General				
Entrance hall	1	100	100	
Theatre/play floor	1	100	100	
Storage	1	15	15	
Toilet adults/handicapped	tbd	tbd	tbd	according to norm
Shower/changing facility	1	6	6	
Staff areas				
Principal's office	1	18	18	
Assistant principal's office	1	12	12	
Administration office	1	12	12	
Staff room (incl. pantry)	1	65	65	
Meeting room	1	40	40	
Counselling room	1	12	12	
FM spaces				
Janitor's office	1	16	16	
Storage room	1	40	40	
Copy/print room	1	6	6	
Cleaning cabinet	tbd	4	tbd	1 per floor
Year 1-2				
Classrooms	8	60	480	
Learning plaza	2	80	160	
Toilets pupils/staff	tbd	tbd	tbd	according to norm
Storage	2	6	12	
Conference room	1	10	10	
Year 3-5				
Classrooms	8	60	480	
Learning plaza	2	80	160	
Toilets pupils/staff	tbd	tbd	tbd	according to norm
Storage	2	6	12	
Conference room	1	10	10	
Year 6-8				
Classrooms	12	60	720	
Learning plaza	2	80	160	
Toilets pupils/staff	tbd	tbd	tbd	according to norm
Storage	2	6	12	
Conference room	1	10	10	
Specialized teaching				
Teaching room - cooking	1	70	70	
Teaching room - music	1	70	70	
Teaching room - arts	2	70	140	
Outdoor areas				
Bicycle storage staff	1	tbd	tbd	capacity for 30 bicycles
Bicycle storage pupils	1	tbd	tbd	capacity for 100 bicycles
Outdoor play area	1	tbd	tbd	to be determined
Total usable floor area				
Area required (excl. toilets, circulation, outdoor areas)			2948	sq.m.

Different kinds of square metres/feet

When using square metres, it is important to be clear about what they represent. In briefing, it is best to work with so called 'usable square metres'. These concern the amount of space that will be directly available for users' activities, and exclude 'non-usable' areas such as the space required for partitions or columns. However, there are different ways of defining and measuring space and the exact definitions vary per country and per sector. Frequently used space categories are:

- Gross external area (GEA): the total floor area of a building, measured to the external face of the external walls on each floor level. Also known as Gross floor area (GFA).
- Gross internal area (GIA): the area of a building measured to the internal face of the perimeter and atrium walls.
- Net internal area (NIA): the usable area within a building measured to the internal face of the perimeter walls on each floor level, excluding common facilities such as circulation areas, lobbies and bathrooms. Also known as NFA (net floor area) or NLA (net lettable area).
- Net usable area (NUA): the areas in the building that are directly targeted at the users' activities. It is the same as NIA but excludes primary circulation (circulation linked to major routings in the buildings and fire escapes). As said, this figure is the most useful for briefing purposes and it can be further subdivided into primary spaces, support spaces and FM spaces.



SUMMARY

Functional brief
- Alternative names: room-function programme (RFP), project brief, room programme

Phasing
- Should be ready and approved before the design team starts on the design development

Target group
- Project team and design team, especially those members who are responsible for the architectural design

Purpose
- Provide the design team with sufficient information to produce a 'developed design' with fully developed floor plans
- Capture and communicate space allocation within the client organization
- Serve as a test basis for quality control of the developed design

Input
- Occupancy studies: get a detailed, quantitative insight into the current use of spaces
- Walk-throughs: get a first-hand understanding of users' current activities
- Interviews/workshops with departments to determine their specific needs
- Interviews/workshops with the facility management department to determine the need for operational spaces (storage spaces, cleaning spaces, etc.)
- Project visits and benchmarks: learn from the experience of comparable projects
- Literature research: find relevant guidelines and standards for the use of space for different functions/activities

Contents
- Users/organization: description of user organization (e.g. number of users)
- Activities: explanation of activities that need to be accommodated (e.g. office work)
- Primary spaces: spaces to accommodate the client's core activities (e.g. office space)
- Support spaces: facilities/amenities to support the building's usage (e.g. pantries)
- Facility management spaces: practical, 'back-of-house' spaces (e.g. storage space)
- Adjacencies: descriptions/diagrams that show the desired logistics between spaces
- Zoning: diagrams that show the desired clustering or separation of spaces
- Space list: a systematic overview/breakdown of all the required functions/spaces
- Capacities/sizes: indications of required area per function/space

Format
- Texts to explain space standards and general principles for space allocation
- Visual representations (bubble diagrams, zoning diagrams, user journey maps) to explain functional needs
- Spreadsheets or a database for listing the building's spaces and their sizes/capacities

This page is intentionally left blank”

The technical brief

The technical brief is the most detailed and technical part of the brief. The contents can cover such diverse topics as floor finishes, temperature levels, uninterruptible power supply, reverberation times and power sockets. The breadth and detail of the technical brief make it a rather specialist read of particular importance to those who are responsible for the building's technical design: electrical engineers (who will want to know about the users' need for power and data connection), construction engineers (who need to know about any special floor loads), mechanical engineers (who want to know whether there are any out-of-the-ordinary ventilation needs), and suppliers (who will want to know about the client's requirements concerning fit-out elements such as furniture).

It is sometimes suggested that clients should stay away from such operational matters and focus on their strategic and functional demands, leaving the technical matters to the design team. Design teams, however, cannot be expected to have an in-depth knowledge of all the nuances of the client's practical needs. Moreover, it is important to stress that mundane details can have a critical impact on the usability of a building. For example, offices need easy-to-reach power sockets, hospitals need floors that are easy to clean, and kindergartens need 'finger-safe' doors. This is all fairly obvious, but all too often projects fail to deliver on such common-sense matters. Having a technical brief can help to avoid this.

It is important to note, however, that the technical brief should not become a design or engineering specification of the building. Its focus should be firmly on the user side of things, and not on the design solutions that are (often literally) behind it. For example, while it makes sense for a client to explain the need for power outlets in a room (e.g. in relation to the equipment that will be used in that room), the specification of the outlets themselves, and everything associated with them (the cables, switches, et cetera), should be left to the engineers who can be expected to have more expertise on these matters than the client.

Input for the technical brief can come from end users and specialists like the client's facility management and ICT departments. External expertise can be useful as well, especially for complex topics like sustainability, indoor climate or security. In addition, there are existing guidelines and standards to refer to.

Because the technical brief covers a wide array of topics, it is important to structure the contents in a way that is familiar to the design team. A commonly used way of structuring is the following:

- indoor climate
- construction elements
- mechanical services
- electrical services
- fittings, furniture and equipment
- relevant norms and standards

Indoor climate

The term indoor climate covers a wide range of comfort issues: thermal comfort, visual comfort, acoustic comfort, plus the air quality in the building. In some projects, odour, vibrations and electrostatics are covered under the topic of indoor climate as well.

These are all aspects that require attention in the brief because they can have a large impact on the well-being and performance of users and, for some reason, they are quality aspects that are difficult to get right. Even new buildings often suffer from indoor climate problems such as poor acoustics, draughts or a lack of fresh air. The technical brief plays a vital role in avoiding such shortcomings by defining clear performance requirements in relation to user activities. The activity of 'teaching', for example, should come with requirements for speech clarity and sound transmission. Likewise, the activity of 'computer work' should come with requirements for adequate lighting levels and the avoidance of glare on computer screens. Requirements may also relate to the equipment or artefacts that are located in a room. Laboratory equipment may, for example, require a vibration-free environment, and artworks in museums may require a specific level of humidity.

Different quality levels

Different kinds of spaces come with different indoor climate specifications. This chart contains some common examples, based on Norwegian standards.

	Open-plan (office)	Classrooms (school)	Patient room (hospital)
Thermal comfort			
Operative temperature winter (°C)	Min 19°C	Min 19°C	Min 22°C
Operative temperature summer (°C)	Max 26°C	Max 26°C	Min 24°C
Radiative temp. asymmetry cool ceiling (°C)	12-14°C	12-14°C	12-14°C
Radiative temp. asymmetry warm ceiling (°C)	3-5°C	3-5°C	3-5°C
Radiative temp. asymmetry cool wall (°C)	8-10°C	8-10°C	8-10°C
Radiative temp. asymmetry warm wall (°C)	21-23°C	21-23°C	21-23°C
Draught (m/s)	Max 0.15 m/s	Max 0.15 m/s	Max 0.15 m/s
Air velocity frequency (Hz)	Min 2 Hz	Min 2 Hz	Min 2 Hz
Temperature floor (°C)	19-29°C	19-29°C	19-29°C
Vertical air temperature difference (°C)	Max 3°C	Max 3°C	Max 3°C
Relative humidity (RH)	20-40%	20-40%	20-40%
Visual comfort			
Maintained illuminance, lux	500-750 lux	Min 300 lux (500 lux for evening classes)	Min 300 lux (+ dimming)
Colour rendering, Ra	Min 80 Ra	Min 80 Ra	Min 80 Ra
Light colour temperature, K	3000K	3000 - 5500K (dynamic)	2700 – 3000K
Daylight factor (%)	Min 2.5%	Min 4%	Min 5%
Glare rating (UGR)	Max 19	Max 19	Max 19
Uniformity (U0)	Min 0.6	Min 0.6	Min 0.6
Acoustic comfort			
Background noise: equivalent sound pressure level (LA eq)	< 35 dB	< 30 dB	< 30 dB
Peak noise: maximum sound pressure level (LAF max)	< 40 dB	< 35 dB	< 35 dB
Reverberation rime (Tr)	0.5 - 0.6 sec.	< 0.6 sec. (125-5000 Hz)	< 0.5 sec
Privacy: Spatial decay ISO 3382-3 (D2,s / Lp,As4m)	≥6 / < 49 dB	not relevant	not relevant
Speech Clarity (C50; 125 - 4000 Hz)	not relevant	> 6	> 8
Sound insulation (R'w)	not relevant	> 48 dB	> 48 dB
Air quality			
CO_2 level (ppm)	Max 1.000 ppm	Max 1.000 ppm	Max 1.000 ppm
Ventilation rate average (m^3/hr/per)	Min 26 m^3	Min 26 m^3	Min 26 m^3
Radon concentration indoor air (Bq/m^3)	Max 200	Max 200	Max 200

Construction elements

Construction elements are the building's structural parts (e.g. columns, floor plates, foundations) and interior elements (e.g. doors, partitions, ceilings and floor finishes). The technical brief mostly focuses on requirements for interior elements because these tend to have a direct relation to the usability of a room or space. For a museum, for example, is makes sense to formulate requirements concerning floor finishes to ensure that the floor can withstand heavy foot traffic and the loads of heavy artworks. Likewise, there may be requirements for the flexibility of walls, allowing different exhibition layouts without major costs or disruption to the museum's operation. An example of a requirement concerning an external construction element is the requirement that the building's facade should be 'graffiti proof' or that the facade should not be climbable for security reasons.

Requirements for floor finishes

This example shows the requirements for the floor finishes in an office project. Although these are very detailed, they are still performance-based and do not specify a particular solution (e.g. textile, rubber, vinyl).

Standard floor finish	
Description	Floor finish to be used for all spaces that are intensively used by staff and visitors, unless stated otherwise
Property	**Value**
Anti-static	Electrical resistance <2KV (cf. EN1815)
Cleanability	Common stains (e.g. from coffee spills) should be easily removable, without special cleaning tools/ materials
Sustainability	Materials should be recyclable and free of toxics (halogen, formaldehyde or PVC)
Resilience	40% (cf. DIN 18032)
Slip-resistance	R9 (cf. DIN51130)

Mechanical services

Mechanical services relate to the plumbing, piping and systems that deliver heating, cooling, water, air and gases in a building. As explained earlier, the technical brief should refrain from specifying these systems in detail, but it can be useful to formulate general system requirements regarding operational issues such as ease of maintenance, reliability or warranties. It may also be relevant to specify which mechanical services should be available at room level. Do some rooms have specific ventilation needs? Should a room have dedicated outlets for gases or liquids? In hospital buildings, for example, patient rooms need to be equipped with specific outlets for the provision of oxygen, medical air and purified water. For other building types, requirements will be simpler, but still of practical importance. A school art classroom, for example, may require hot and cold water outlets, an extra-large sink and a clay sink trap.

Electrical services

Electrical services concern the building's systems for lighting, power supply, security, data and communications. As with the mechanical services, requirements can be formulated on the level of the system as a whole, and on the level of particular rooms. On a systems level, there may be requirements concerning the reliability or flexibility of systems. It is quite common, for example, to ask for an additional 25%

capacity in the building's power system to allow for the possible intensification of the building's use. On a room level, electro-technical requirements may concern the provision of power outlets (e.g. asking for a minimum of four power sockets for every workstation, within easy reach for users) and the availability of data connections (e.g. asking for wireless access points in combination with data sockets for workstations). It can also be relevant to indicate which rooms need a guaranteed uninterrupted power supply or emergency power systems (e.g. server rooms, operation rooms, crisis rooms).

Fittings, furniture and equipment (FF&E)

The abbreviation FF&E stands for fittings, furniture and equipment, which are all elements that that can be fairly easily moved around or disconnected from the building. Think here of furniture, bathroom fittings, wayfinding signage and catering equipment. Requirements for these items usually concern details that only need to be addressed at a late stage in the design process and at the moment of purchasing. Nevertheless, they can be of crucial importance. Take the simple example of the height of the coat hook in a kindergarten: if hooks are placed too high, children cannot hang their own clothing, which will result in extra work for staff. In a hospital, a good example of a critical FF&E element concerns alcohol-gel dispensers, which should be provided throughout the building. It is a detail that has little impact on the overall design of the building, but is of great relevance to the hospital's efforts regarding infection control.

Norms and standards

For many of the topics mentioned above, there are regulations and standards available. Some of these, such as health and safety legislation and local building codes, are mandatory. These do not need to be incorporated into the brief because the design team can be expected to be familiar with them and it be will their responsibility to make sure that the building is compliant. Just referring to these standards ("the building design must comply with ….") is usually sufficient.

There are also optional, non-statutory guidelines and it is up to the client to decide whether they apply to the project or not. There are many guidelines available on the topic of accessibility, for example. The client should decide which guidelines they want to follow and whether the entire guideline should be applied to the project or only parts of it. In the latter case, it is best to incorporate these requirements explicitly into the brief.

Room data sheets

To maintain an overview of the many detailed requirements that may apply at room level, the technical brief is often accompanied by 'room data sheets'. These are spreadsheet-like overviews that show all the relevant requirements for every individual type of room. The requirements may concern both functional and spatial issues (as defined in the functional brief) and the requirements from the technical brief (indoor climate, finishes, fixtures and fittings, and mechanical and electrical services). Furthermore, room sheets are likely to include a numbering system for the different rooms (e.g. patient room 12.01.01) that allow the design team and the client to identify and integrate the requested rooms into the design team's design models (see also page 137 in Briefing and BIM).

Example of a room data sheet

Room data sheets are a useful means for providing an overview of all the requirements that may apply at room level. This is an example of a room data sheet for a classroom.

Room data – classroom			
Description	Traditional classroom where the teacher leads discussions in front of the class. Should also be suitable for group work and individualized teaching.		
Users			
30 pupils; 1 teacher			
Spatial requirements			
Min. usable floor area	60 (sq.m.)	Min. height	3200 (mm)
Spatial relations			
In proximity to:	toilets (pupils); coat area (pupils)		
Visual connection with:	Corridor		
Indoor climate			
Acoustic comfort		Thermal comfort	
Reverberation time	Max. 0.6 (sec)	Temp. heating season	20-24 (oC)
Sound level unoccupied	Max. 30 (dBA)	Draught rate	<20%
Signal-to-noise ratio	Min. 15 (dBA)		
Air quality		Visual comfort	
CO_2 concentration	Max. 950 ppm	Daylight factor	5%
Ventilation	Min. 8.5 dm³/s/person	Light level work surface	500 (lux)
Openable windows	Yes	Light transmission glass	70%
		Max. contrast ratio	3:1 – 5:1
		Outside view	Yes
		Possibility to darken room	Yes
Building elements			
Name		Quantity	Note
Floor finish: standard		-	
Ceiling finish: standard		-	
Wall finish: standard		-	
Electrical services			
Name		Quantity	Note
Data connection (UTP)		4	1 nearby smart board
Power connection (4 sockets)		4	
Wi-Fi access point		1	located in ceiling
Speaker (sound system)		1	
Mechanical services			
Name		Quantity	Note
Cold water tap		1	
Fixtures / fittings / furniture			
Name		Quantity	Note
Smart board		1	
Pin board		1	
Storage unit		1	
Handbasin		1	

SUMMARY

Technical brief
- Alternative names: detail brief, operational brief, technical programme

Phasing
- Should be ready and approved before the design team starts on the building's technical design

Target group
- Project team, FM/real estate department and the design team (especially the electrical/ mechanical/ construction engineers)

Purpose
- To provide the design team with sufficient information to develop a technical design
- To serve as a test basis for quality control of the technical design
- To provide input for the tendering/purchase of inventory and equipment

Input
- External experts: for complex issues, such as indoor climate or security
- Facility management department: for issues concerning maintenance and operation
- Expert users: for special functions, such as IT-rooms, archives, laboratories
- External standards/guidelines/building codes

Contents
- Indoor climate: requirements for thermal/visual/acoustic comfort and air quality
- Construction elements: requirements concerning finishes, partitions, ceilings, et cetera
- Mechanical services: requirements at system level (e.g. ease of maintenance) and room level (e.g. outlets for gases and liquids)
- Electrical services: requirements at system level (e.g. degree of integration) and room level (e.g. provision of power/data)
- Fittings, furniture and equipment (FF&E): requirements concerning 'loose' components such as furniture and bathroom fixtures

Format
- General texts for requirements at system level
- Room data sheets for requirements at room level, often captured in a database to keep requirements manageable (see Briefing and BIM, page 133)
- List of relevant guidelines, standards and building codes

This page is intentionally left blank”

Success factors

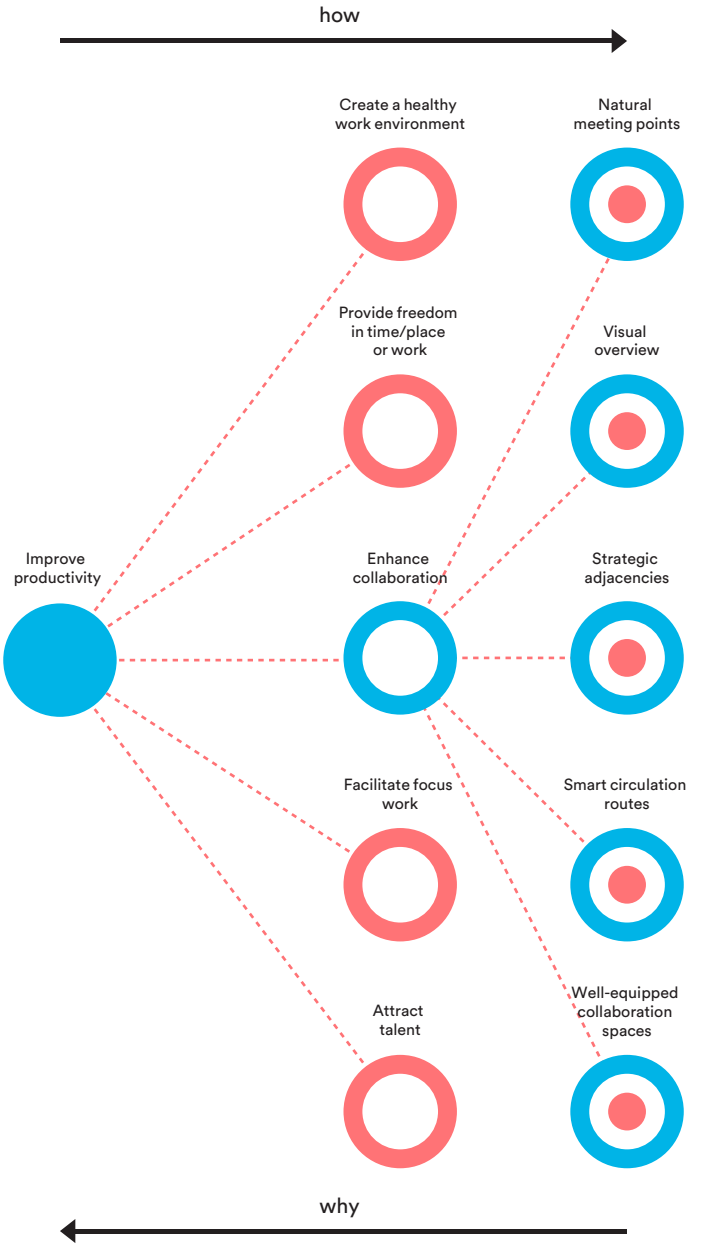
This page is intentionally left blank”

Success factors

As mentioned previously, different kinds of projects call for different kinds of briefing processes. A complex hospital project, for instance, will require a more elaborate approach than a small school renovation. This makes it difficult to develop generic 'how-to' guidelines. There are, however, a number of general success factors that are relevant to almost any project. Nevertheless, it should be said beforehand that most of these are fairly obvious—perhaps even 'no brainers'. But that does not make them any less relevant because practice often falls short on the most basic of recommendations. It happens all too often that users feel left out of the process and not listened to. Design teams complain about overly detailed briefs that ignore their competences and curtail their design freedom. Project managers are frustrated over constant changes that mess up their budget and planning. And brief writers feel that their work is ignored by the design team.

To counter these and other practice-related briefing problems, this chapter presents ten general recommendations:

- Formulate clear project objectives
- Distinguish between needs and wishes
- Think about the future
- Involve users
- Communicate with clarity
- Think about performance
- Link the brief to a budget
- Test design proposals against the brief
- Discuss the brief with the design team
- Manage changes to the brief



Objective tree
To make project objectives more concrete, it can be useful to make an 'objective tree'. Such a tree is a breakdown of general objectives into more specific sub-objectives and solution directions. The tree can be built up in a workshop with decision makers (see page 107) by asking simple questions like: What do you mean with that? Are there any sub-objectives? And how can these objectives be realized? Reading the tree from left to right should answer 'how' questions, from right to left the 'why' questions.

Formulate clear project objectives

One of the first and foremost things that need to be done in any briefing process is to identify the client's objectives. What does the client want to achieve with the project from a strategic perspective? For example, hospitals may want to reduce treatment times, schools may want to use the project to attract more students, hotels will aim to increase their occupancy rates and office organizations may look for increased staff performance.

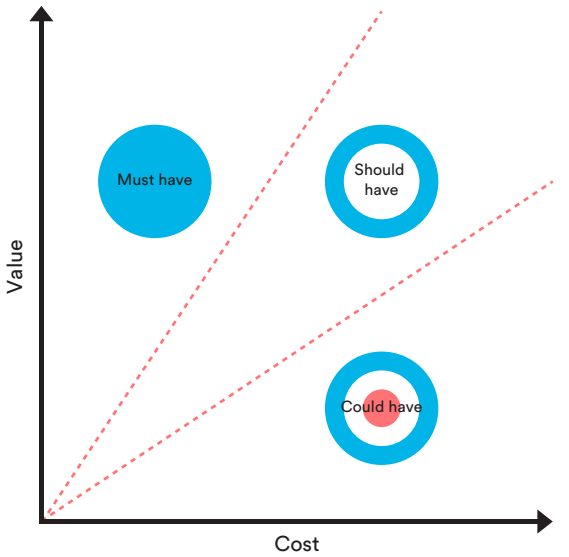
The difficulty with client objectives is that they tend to be very broad—too broad to give real input to the design process. Clients should therefore be challenged to go beyond vague statements and to concretize their ideas. For example, what does "increasing staff performance" mean in relation to an office project? Does that mean a very lively building where employees perform better because of the constant exchange of ideas? Or, conversely, a very quiet building where people are productive because there are few distractions? Or perhaps a very healthy building, with fitness rooms and ergonomic furniture, in the hope that such a building helps to reduce health-related absenteeism?

Next to concretizing objectives, it will be useful to prioritize them. Clients often have multiple objectives which may be competing with one another. The basic question is then: Which objectives are more important than others? Is cost efficiency for example at the top of the client's priority list, or is it user satisfaction? And where does sustainability lie on the list? Clients may argue that all their objectives are equally important, but sooner or later in the course of the project trade-offs will have to be made, and at that point it will be helpful to know what is most important to the client.

Traditional management wisdom says that project objectives should be measurable to make them actionable. But that is not always possible. Objectives related to the costs of the project or its carbon footprint are fairly easy to quantify, but objectives related to user experience or architectural quality are not. That does not make such objectives any less important. As the saying goes: "Not everything that counts can be counted; and not everything that can be counted, counts". There should thus be room for both 'soft' and 'hard' objectives in the brief.

Recommendations

- Do not overload the project with objectives, otherwise there is no focus.
- Prioritize objectives when the client has multiple, competing aims—for example, by drawing up a top five.
- Try to avoid vague management-speak and clichés when formulating project objectives.
- Try to link the project objectives to the client's general business objectives.
- Where possible, link objectives to measurable KPIs (key performance indicators) so they can be tested and evaluated.
- Make sure that the project's decision makers (i.e. steering committee) 'own' the formulated. objectives and are willing to stand up for them when the project comes under pressure.



Must-have
- The value of these features is higher than their costs
- The building does not function without these qualities
- The building is illegal, unsafe or unpractical without it
- The project cannot deliver the desired value without it

Should-have
- Costs and benefits are in balance
- Features are important, but not vital
- Features are painful to leave out, but the building can still function
- Features may require a 'trade-off' with other qualities
- Features may require extra design effort to realize

Could-have
- Features are wanted or desirable, but not essential
- Features do not impact the building's usability if left out
- Features can be realized if there is extra room in budget

Must, should or could?
Theoretically, stakeholder needs can be assessed by looking at the added value of meeting them and the associated costs. Both are difficult to quantify, but they can be used to make a distinction between 'must-haves' (more value than costs), 'should-haves' (value and costs are in balance) and 'could-haves' (more costs than value).

Distinguish between needs and wishes

Briefing is all about defining the needs of the project's stakeholders. The challenge with this is that not all needs are of equal importance. Some needs are 'real' needs and others are 'mere' wishes. This distinction is important because almost any project is constrained by resource limitations, which means that there is not enough budget to grant all the demands of all of the stakeholders.

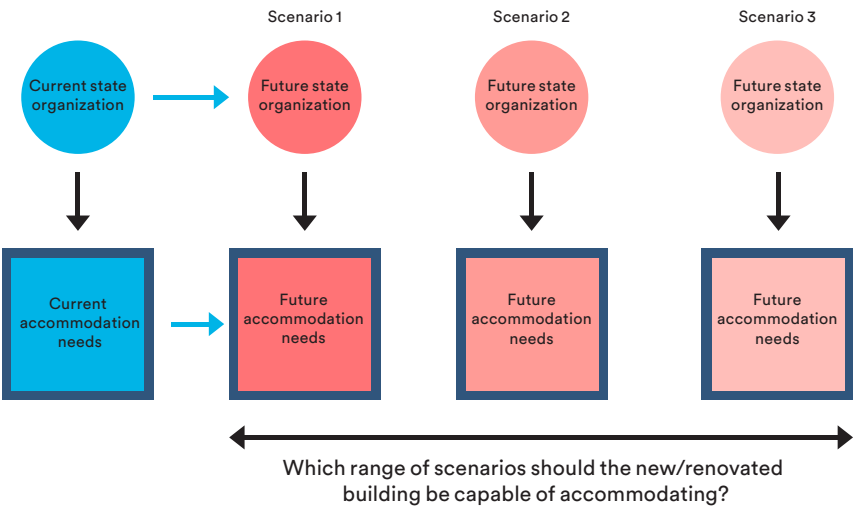
Theoretically, it is easy to distinguish between needs and wishes: needs concern essential qualities that the building cannot do without, and wishes are features that would be nice to have, but the building would still be usable without them. In practice, it is not always easy to make this distinction. Different stakeholders will have different perceptions about what counts as essential and what not. For example, is it essential to have an espresso bar in an office building, instead of the usual vending machines? Employees may think so, but the project's budget holder might beg to differ. Likewise, a manager may feel that he or she really needs a private office, while the rest of the staff may see this demand merely as a status-driven wish.

Distinguishing between needs and wishes is thus often a matter for debate. The best way to guide that discussion is to keep it open and active. Preferably, stakeholders are invited to contribute ideas. Also, it will often help to take the discussion to a higher level of abstraction. What is the need behind the wish? How does a need or wish relate to the project's objectives or people's work processes?

In addition, it will be useful to look into the costs and benefits. In the case of the aforementioned espresso bar, for example, it would be useful to make a comparative overview of the different options available, outlining their costs and potential benefits in terms, say, of employee satisfaction and staff interaction. Such data will not provide definitive answers, but they will make the slippery discussion about needs versus wishes a bit easier to handle.

Recommendations

- Make sure there is a decision maker (e.g. steering committee) that can decide whether a particular request should be seen as a need or a wish.
- Challenge people's must-have requirements. Why are they so important? What kind of value do they create?
- Try to link requirements to the project's objectives or the user's core activities. If that is not possible, they are probably not must-haves.
- Determine how tight the budget is: is there any wriggle room to grant wishes? Are there any 'quick wins' that do not cost much, but make a lot of users happy?
- Investigate the trade-offs of a requested feature. Does using extra space for one function mean that there is less space for another one?
- Make a business case for demands that give rise to a lot of debate, looking at both costs and benefits.
- Be open and honest about the project's targets in terms of user quality. Wish lists are often born out of a fear of losing quality (getting less space, less privacy, et cetera).



Future needs
Buildings are long-term assets and they should be able to meet both the current and future needs of their users. The problem with future needs is that they are hard to predict. Exploring different scenarios can help with this. Ideally, the new accommodation solution is able to respond to a certain range of future scenarios, and not just one.

Think about the future

Compared with the speed of organizational and technological change, construction projects are slow processes. Many clients struggle continuously to reconcile the slow speed of planning and constructing buildings with the high speed of organizational change.

This slowness creates challenges for the briefing process because the brief has to anticipate the future use of the building and, by definition, predictions about the future are uncertain. It can even be argued that change is the only real certainty: new technologies will emerge; work styles will change; organizations will grow or shrink; new users will replace existing users; and new users will come with new demands.

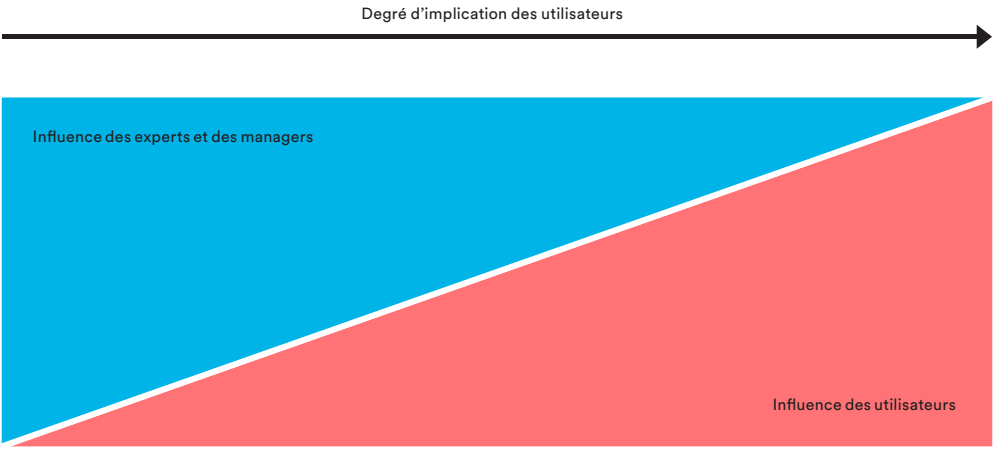
How to deal with all this change and uncertainty? The most strategic way is to ask for a flexible building—a building that can easily accommodate changing needs and circumstances—relying on the power of adaptability rather than prediction. Common flexibility requirements concern the ability to change floor plans and move functions around in the building without major construction work. Flexibility requirements may also concern the provision of 'overflow space' to accommodate future growth, and/or spaces that can easily be sublet to others in case of shrinkage (see also page 79).

But asking for a flexible building will not absolve the client from thinking about the future. The design team will need input about the desired future size of the building, the functions that need to be accommodated and so on. To get a picture of future needs, it will be useful to conduct some scenario studies (see page 113) that explore plausible future developments and their impact on the need for space. Growth scenarios will be of particular importance in avoiding producing a building that is already too small or too large by the time it is completed.

A very practical recommendation is to keep the brief as open as possible for as long as possible, refraining from formulating detailed requirements until it is really necessary.

Recommendations

- Make decision makers aware that they are building for the future, not for today. Push them to think beyond their current needs.
- Do not allow the brief to become too specific on issues that are liable to change during the course of the project (e.g. organizational structure, fit-out requirements).
- Use scenario studies and/or future workshops to get a better understanding of potential future developments and their impact on spatial requirements (see page 113).
- Look at how different kinds of building flexibility can help to accommodate future changes (see page 78).



Inform
Users are informed about the project's direction. Decisions are taken by experts and managers.

Consult
Users are asked to provide feedback (e.g. on draft versions of the brief and tentative decisions). Experts and managers use this feedback to make decisions.

Involve
Users are actively involved in focus/work groups where they can express ideas and concepts. Final decisions/approval must come from experts/ management.

Co-create
Users are on an equal footing with experts and management. All parties work together on idea development. Decisions are based on dialogue and consensus.

Different levels of user involvement
There are different degrees of user involvement. One extreme is to have no user involvement whatsoever, leaving everything to the experts and decision makers. The other extreme is to make users 'co-creators' of the brief. In most projects, user involvement will be somewhere in between these extremes: users are informed and consulted about various topics, but the actual decision-making stays with the project's leadership.

Involve users

In the introduction of the book, we argued that users are the most important stakeholders of a building project. This is because they are the ones who will be using the building, the ones whose daily lives will be affected by its design long after the architects and contractors have departed the scene. It therefore makes sense to involve users in the briefing process— not just on ethical grounds, but also from a practical perspective, because user input can help to create better, more usable buildings.

Generally speaking, a distinction can be made between 'passive' and 'active' approaches to user involvement. In passive approaches, users are primarily used as a source of information. They are asked about their activities or ideas in interviews or surveys, but they don't have any real involvement in the project. In contrast, active approaches give users a very direct opportunity to contribute to the brief via workshops, meetings and focus groups (see page 125).

Active user involvement can be especially productive in briefing processes. It gives users the opportunity to air ideas and concerns that would normally be overlooked by the briefing team. Active engagement can also lead to a higher level of user acceptance of the project because it is also 'their' project.

There is no denying, however, that user involvement can be quite a challenging and time-consuming process. It is likely to introduce diverging views into the project and it may raise expectations that cannot be met. Furthermore, user involvement may put a brake on the development of new ideas if users prove to be strongly attached to the current situation.

However, these disadvantages can be largely overcome by good facilitation and clear communication. The most important recommendation, however, is to take user involvement seriously. If the outcomes of involvement are ignored, it will result in a loss of trust and enthusiasm on the part of the users. So, if user involvement is just a symbolic gesture, embraced only because books like this say that it is important, it is better not to do it at all.

Recommendations

- Ensure that the project's decision makers are willing to take the outcomes of user involvement seriously.
- Think about who to involve. Look at people's knowledge, their role in the organization and their ability to contribute to the brief.
- Maintain user involvement to the end: users who have been involved in the briefing process can also play a productive role in the assessment of design proposals.
- Educate and facilitate users: user involvement is more productive when users are not entirely 'blank', but have a basic understanding of the topic under discussion.
- Focus user involvement on usability issues and functional needs, not on the design itself.
- Be upfront about what will be done with the users' input. Explain which ideas will be used, which ones will be placed on a 'wish list', and which ones will be discarded—and why this is the case.

Criterion	Explanation
Clear	The brief should provide a clear understanding of what the client wants from the project. There should be no need for second-guessing (What do they mean by a 'healing environment'?) or reading between the lines.
Consistent	Requirements should not be in conflict with one another and there should be consistency in the use of terminology and units of measurement (e.g. not using 'usable floor area' on one page and 'net floor area' on another).
Concise	The design team should not be overloaded with information. There is no need to include all the briefing data in the brief (e.g. all the occupancy measurements, interview reports, etc.). Presenting aggregated data and conclusions should be sufficient.
Complete	The brief should provide all the information that design teams need for their design process, on all relevant topics, to avoid any surprises later in the process. That does not mean, however, that every detail needs to be covered.
Concrete	Requirements should be concrete and precisely worded, leaving no room for misinterpretation. Broad statements like "the building should be of high quality" or "spaces should be functional" should be avoided.
Credible	The contents of the brief should be credible in the sense that they should be realistic and feasible. Requirements and ambitions should match the project's budget and the brief should have been formally approved by the project's leadership.
Compelling	At its best, a design brief provides not only information and instructions, but also inspiration. Well written texts, good graphics and challenging ideas will help to generate enthusiasm for the project and to kick-start the design process.

Communication checklist

To be an effective means of communication, a design brief should follow the so-called seven C's of good communication.

Communicate with clarity

A brief is essentially a means of communication between the client and the design team. As such, the client should give careful consideration to how the brief's contents are presented, worded and visualized. That sounds obvious enough, but in practice briefing documents are often badly written reports—full of jargon, clichés and unintelligible technical texts—and the risk is that such reports do not get the client's message across to the design team.

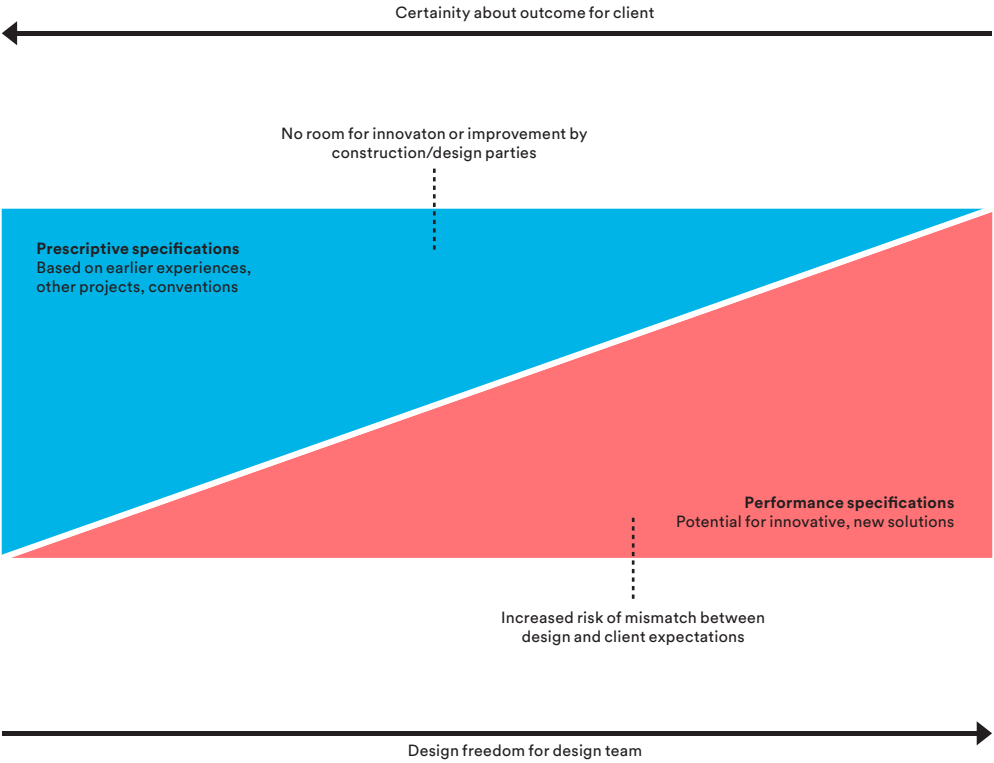
A major part of the brief's contents is factual and calls for a very clear and concise presentation. It concerns information about the project's size and budget and, later in the process, all sorts of technical requirements such as temperature levels and room sizes. This kind of quantitative information is best presented in a systematic way in neatly organized tables and diagrams, combined with bullet lists that sum up the essentials.

But not all briefing information lends itself to being presented in spreadsheets and bullet lists. The strategic brief in particular tends to contain information of a rather 'soft' nature, like the client's strategic vision, architectural aspirations or the desired 'user experience' in the building. In this case it can be productive to use 'narrative' techniques—short descriptions of the daily lives of users, anecdotes and quotes from interviews, or short stories about the future use of the building. The power of such formats is that they can give the reader a rich and in-depth understanding of the users' and client's expectations and ideas.

Last but not least, the brief's communication value can be improved by the use of visualizations. Diagrams and infographics can be great means of communicating factual data, especially to architects because they often tend to be visual thinkers rather than text readers. Furthermore, it is possible to use sketches and reference images to explain subjective expectations concerning the building design. Using such formats is not just a matter of making the brief 'look nice', but rather of making the brief an effective means of communication.

Recommendations

- Use plain language, avoid the use of jargon and clichés. Avoid voluminous, dense documents, which discourage reading.
- Reserve time for editing and layout of briefing documents. For large projects, it can be worthwhile bringing in a communications expert.
- Use tables, bullet lists and spreadsheets to communicate factual information.
- Use narrative techniques such as stories and interviews to convey qualitative information.
- Use infographics to visualize the brief's central ideas and concepts.
- Provide a glossary of technical terms and organization-specific acronyms.
- Don't forget to add an executive summary to the brief that sums up the essential facts and ideas.



Balancing prescriptive specifications and performance specifications
In *Managing the Brief for Better Design*, the authors Blyth and Worthington explain that clients should strike a balance between prescriptive and performance-based specifications in their brief. Requirements should be open enough to enable alternative solutions to be generated, but not so general as to allow anything to pass.

Think about performance

When developing a brief, it is tempting to refer to explicit design solutions—for example, saying that the entrance hall should have a chic travertine floor, or that the building should be equipped with a powerful air conditioning system. Such specifications are called 'prescriptive specifications': they prescribe specific solutions in terms of systems, materials, dimensions or products. It is a natural thing to do, but such specifications interfere with the design process and they limit the design team's ability to come up with alternative, perhaps better solutions.

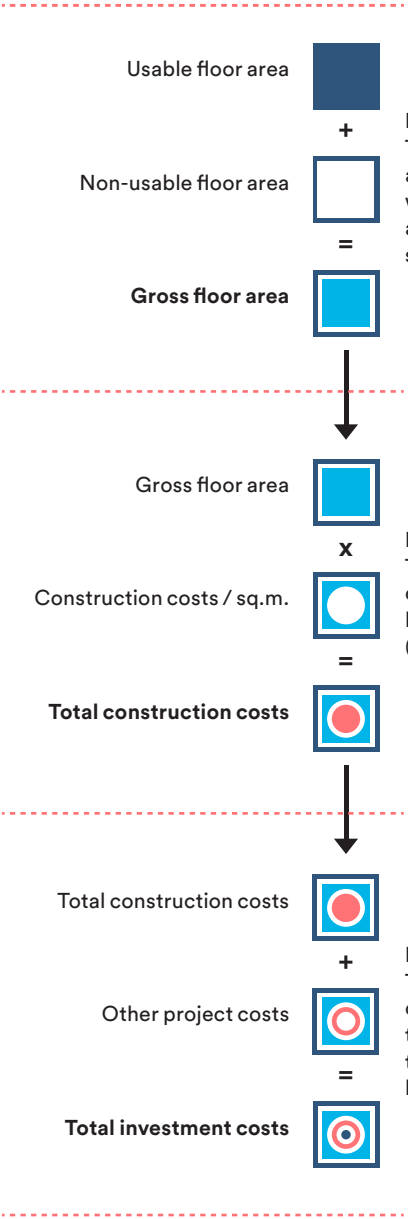
So, ideally the brief should not focus on the design itself, but on the desired outcomes, using so-called 'performance specifications' or 'output specifications'. To use the earlier example of the air conditioning system again: performance specifications do not say anything about the air conditioning system itself, but only about the desired 'thermal comfort' in terms of temperature levels. The good thing about such performance specifications is that they focus on user needs while leaving the design team with the freedom to come up with an effective solution, which may not necessarily be air conditioning.

The disadvantage of performance specifications is that they can be complex and abstract, giving the client little certainty or control over the building's design. When clients have no direct involvement in the design process (as in Design & Build projects), they may feel insecure about what they will get. In such cases, the use of reference solutions may help. This allows the client to spell out the design solutions they have in mind, while giving the design team the freedom to propose other solutions of 'equal quality'.

Some clients have good reason to be very precise about the design solutions they want. Retail chains for example tend have very specific design briefs because they want all their outlets to look exactly the same. Also, professional clients may have very prescriptive specifications that are based on their wide experience with other projects. In general, however, the aim of briefing should be to explain what the design should 'do' for the client, and not dictate the design itself.

Recommendations

- When formulating requirements, focus on function, not on form.
- Formulate test methods for performance specifications. How can the requested performance be measured?
- Take the design team's expertise into account. A highly knowledgeable design team will need a less specific brief than an inexperienced one.
- Do not be dogmatic in the use of performance specifications. Referring to a solution can be helpful for the design team to understand what is expected from them.
- When using performance specifications in integrated contracts (e.g. Design and Build contracts), connect these to a procedure for the testing and acceptance of design proposals.



Estimating the project's total size
To estimate a project's total size, the (usable) areas in the brief need to be supplemented with an estimate of the non-usable areas (i.e. areas for construction elements, technical services and circulation).

Estimating construction costs
To get an idea of the total construction costs, the project's gross floor area can be multiplied by an average unit cost (construction costs per square metre).

Estimating total costs
The costs of a project are not limited to construction costs alone. To arrive at the total costs, expenditure for fees, insurance, taxation, permits and relocation also have to be included.

Basic calculation steps
The first step in making a cost estimate is to define the size of the project. For this, the 'usable' areas, as specified in the brief, need to be supplemented with 'non-usable' areas (areas needed for circulation, walls, shafts, HVAC). Together these make up the 'gross floor area', which is the area that actually needs to be constructed. This figure can then be multiplied by a unit cost for the construction of the building. The trick here is to use a cost figure that is truly relevant to the building (looking at things like size, shape, location, quality level). This gives the total construction costs, to which additional project costs (i.e. design fees, taxes, insurance costs, relocation costs) have to be added to arrive at the total required investment.

Link the brief to a budget

To be credible, a brief needs to be linked to a budget. This should be common practice, but financial figures are often missing in the brief. And if they are there, they are not always useful because clients tend to be overly optimistic about the financial implications of their projects. It is what psychologists call 'optimism bias' or 'planning fallacy'. As architects are wont to complain: clients ask for a Mercedes while they can only afford a Honda.

This problem can be avoided by making careful and realistic costs estimates at different stages of the briefing process. At the start of the briefing process, such estimates cannot be other than 'rough order of magnitude' (ROM) estimates with a high degree of uncertainty. As the brief becomes more detailed, estimates become more accurate, although there may still be a 10 to 50% uncertainty range, depending on the building type and the information available. To avoid the aforementioned 'optimism bias', it is recommended that the budget be set at the higher end of the range and that the project's financial risks be carefully scrutinized.

The credibility of early cost calculations can be improved by looking closely at the underlying assumptions. Most calculations will be based on general industry figures, such as cost averages for office buildings. The skill of making good cost calculations is to know how to use these data, because they are strongly influenced by location (e.g. inner city versus suburban), building shape (e.g. low-rise versus high-rise) and the design quality (e.g. average versus high-end finishes). If comparative data are scarce, it will be beneficial to develop a reference design on which to base calculations.

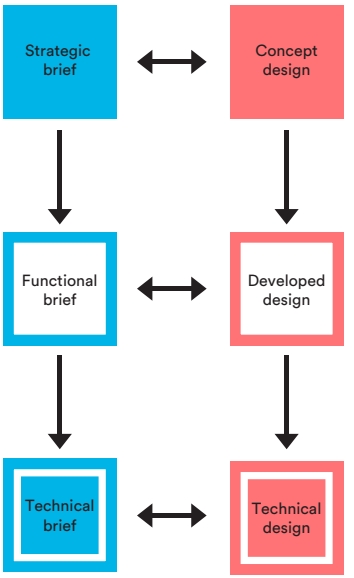
Careful examination of these issues is worthwhile because the early phases of the project offer the best opportunities for a client to influence the project's costs. Significant changes (e.g. in size, location or quality level) can still be made without major implications. Once the design process starts, costs become increasingly 'locked in' and difficult to change.

Last but not least, cost estimates should look not only at construction costs, but also at the occupancy costs (i.e. the costs for energy, water, cleaning and maintenance). It may seem premature to consider these costs at such an early stage, but over the lifespan of a building its occupancy costs tend to be greater than the initial investment costs.

Recommendations

- When proceeding from a cost estimate to a budget, be aware of the degree of uncertainty of the cost estimate (e.g. a variance of plus/minus 10% - 50% is common).
- Define the project's major 'cost drivers' and give these extra attention in the brief (project size obviously, but perhaps also specific requirements concerning indoor climate or flexibility).
- Be clear about what the budget includes and what not (e.g. does it include furniture? professional fees? costs for temporary accommodation?).
- Do not focus solely on construction costs, but also consider costs related to a building's facility management (catering, cleaning, maintenance, security).
- Consider making a reference design that can be used for an accurate estimate of quantities.

Validation
Is it the right design?



Verification
Is it designed right?

Validation and verification
Design proposals have to be tested against the brief during the design process. In the early design phases, the focus will be on the overall validation of the design: is the proposed building indeed a solution to the client's accommodation problem? In the design phases that follow, the focus will shift towards the verification of more detailed, technical specifications.

Test design proposals against the brief

During the design process, the brief should act at as an evaluation framework or touchstone for the assessment of design proposals. To what extent do design proposals meet the needs and ambitions as formulated and agreed in the brief? For the client, the purpose of such testing is quality assurance, making certain that requirements are not overlooked, misinterpreted or ignored in the design process. For the design team, systematic testing provides an opportunity to identify design errors or gaps at an early stage when issues can still be easily resolved without costly rework or redesign.

Theoretically, there are two kinds of quality testing: validation and verification. Validation addresses the issue of whether the client is getting the right design—a design that delivers the intended value and meets the client's strategic objectives. Verification is more practical and concerns the question of whether the building is designed right, or in other words, whether the design is error-free and in accordance with all the client's specifications.

Validation tends to take place in the early stages of the design process when design proposals are still of a conceptual nature. Verification tends to take place in the later stages of the project and looks at whether requirements on topics such as acoustics, energy usage or daylight penetration have been met in the technical design.

To manage the validation and verification processes, it is recommended that the brief be supplemented with a test plan (see also page 138). Such a plan outlines which quality tests are relevant for the different types of requirements and which test methods have to be used. It also stipulates at what stages the testing should take place and which party is responsible for it.

On a cautionary note, it is important that quality testing should not turn into an administrative burden for a project. It is not necessary to test every single requirement at every single design stage. The level of detail should be appropriate to the design stage reached, and the focus should be on testing those quality aspects that are critical for the usability of the building and difficult to change at later project stages.

Recommendations

- When writing the brief, think ahead about how design proposals can be assessed against the formulated requirements. Relevant test methods include simulations, calculations, design reviews, inspections, evaluations of prototypes and document reviews.
- Supplement the brief with a test plan that explains when, how and by whom design proposals will be tested.
- Where possible, refer to standard test methods. For indoor climate, for example, there are lots of standardized test methods available.
- Assign tests to specific parties. Verification tends to be the responsibility of the design team, whereas validation will require the active involvement of the client.
- In complex projects, it can be a good idea to bring in an external, independent party for quality testing (a practice that is usually referred to as 'commissioning').

Discuss the brief with the design team

The brief is written from the client's perspective, but it is the design team that has to work with it as input for their design. It is thus essential that the design team fully understands what is written in the brief. To enhance this understanding, the brief should not just be handed over—thrown over the wall, as it were—but should be discussed with the design team. Do they interpret the requirements in the same way as the client? Are there ambitions or demands that need to be clarified? Are there parts of the brief that they consider awkward or unfeasible? Is there information missing?

There is also a responsibility for the design team here. When receiving a vague or ill-defined brief, the design team should not go into complain mode, but get proactive and start asking questions, pushing the client to clarify their ideas. Clients can benefit from this. Architects and engineers tend to have a wealth of experience from other projects and they look at projects with different eyes. They may very well see possibilities or issues that have been missed or overlooked in the briefing process and that are worthwhile incorporating into the brief.

Dialogue between the client and the design team will be of particular importance in politically sensitive projects. In such projects, the briefing process tends to result in briefing documents with heavily negotiated content. Sensitivities and dilemmas will have been ironed out during rounds of reviews and approvals. In such cases, additional dialogue will be needed to help the design team to read between the lines and to uncover implicit ambitions and constraints.

The celebrated architect Frank Gehry once suggested that architects should challenge the entire brief: "You can't just build a building based on what the clients say, because their vision is based on what's normal. How do you get out of the normal? You've got to question everything." Questioning everything will be neither very productive, nor necessary if the client has written a good brief. Gehry is right, however, in the sense that a client's requirements should not be seen as absolute. They are assumptions and ideas that can only benefit from critical feedback from the design team.

Recommendations

- Reserve time in the project's planning for dialogue about the brief with the design team.
- Explicitly ask the design team whether there are things in the brief that need to be clarified, added, changed or improved.
- If the design team is on board during the briefing process, make sure to involve them in the development of the brief.
- If the brief is a closed, formal contract document, the contents should be tested and discussed with design experts before the document is formalized.
- Make sure to have a clear procedure for communicating changes to the brief to the design team.

Manage changes to the brief

Ideally, the brief is a fixed and 'frozen' document because, as any project manager knows, changes to the brief usually mean delays and rework. In practice, this ideal is hard to achieve. In almost any project, briefing is an iterative, change-ridden process. It could hardly be otherwise given that briefing typically takes place in the early phases of a project when much is still unknown and uncertain.

As pointed out earlier, novice clients in particular may have difficulties with predicting what they want from the project at an early stage. Having little prior experience, they are likely to develop and adjust many of their ideas once they see the first design proposals ("This is not really what I had in mind" or "This is a great idea"). It should be said, however, that even professional clients have a habit of making changes to the brief—for example, backtracking on earlier ambition levels when budgets have to be tightened.

A thorough briefing process will help to avoid having to make many such changes, but change cannot be ruled out completely. As the project progresses, new insights will emerge, circumstances will change and errors will surface. And it does not make sense to ignore such developments in the brief. An overly rigid approach would render the briefing and design process hostage to decisions that were made at a time when the project was still in its infancy, which may lead to suboptimal solutions. So, the recommendation is to manage change rather than to prevent or ignore it.

A good way to manage change is to take a phased approach to briefing (see Sequence, page 24). The brief is then developed step-by-step, in parallel to the design process, providing briefing information on an 'as needed' basis. This provides the client with the opportunity to make changes to those parts of the brief that have yet to be incorporated into the design. As the project progresses, the window of opportunity for making changes should get smaller as the practical and financial implications of changes grow.

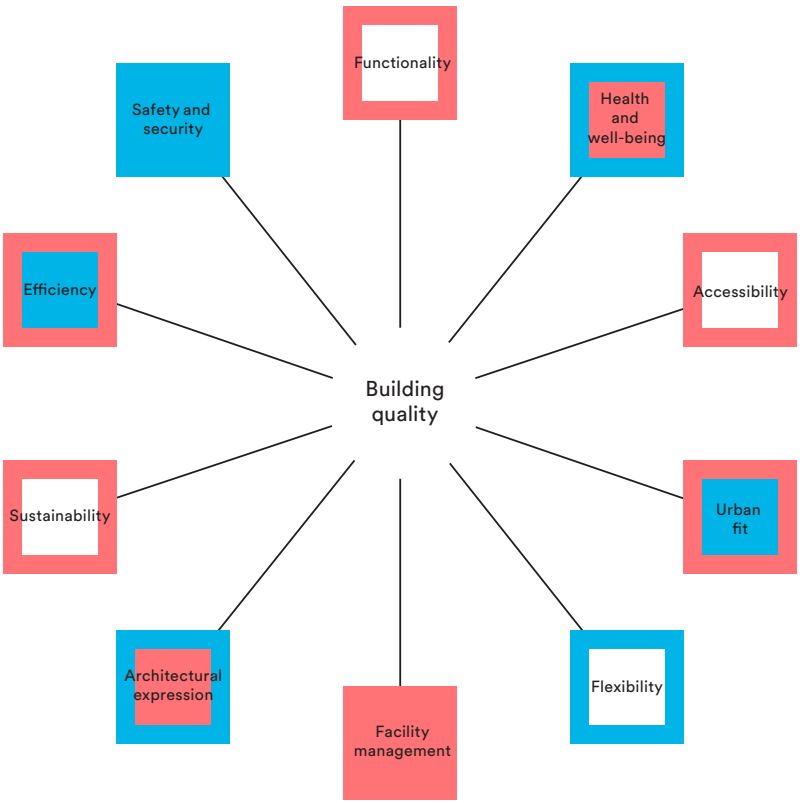
Furthermore, it is advisable to have a formal change procedure. The first step in such a procedure is an assessment of the reasons for a change and its implications for the project's quality, planning and budget. Next, the proposed change should be presented to the project's leadership for formal approval. Once approved, the changes can be implemented in the brief and formally communicated to the design team.

Recommendations

- Establish a formal procedure for making changes to the brief.
- Make an impact analysis before changes are approved, looking at quality benefits and the implications for the project's budget and planning.
- Communicate the change procedure to all stakeholders.
- Use change notifications to explain the nature, background and impact of changes to the design team.
- Appoint a single 'gatekeeper' who is formally responsible for making changes to the brief once it has been approved.
- Structure the brief in such a way that it is possible 'track and trace' changes.

This page is intentionally left blank”

Topics



Quality dimensions
A building's quality is hard to define as it comes from the interplay of a wide diversity of factors. For the sake of convenience, however, this chapter breaks the concept of quality down into ten specific briefing topics.

Topics

A brief describes the quality the client seeks from the building. As we explained in the earlier chapters, this is essential because without such a description, the design team can only second-guess what the client is after. Furthermore, quality descriptions will provide a basis for the assessment of design proposals at later stages.

But what is quality? Every client has an intuitive notion of what quality is, but putting that notion into words, with some level of precision, at an early stage of the project, is difficult. A complicating factor is that quality can concern many things. It can concern everyday functional aspects, such as the availability of a sufficient number of power sockets in a room, but also more strategic aspects such as the building's flexibility, and fairly elusive aspects such as its architectural expression and the way the building makes us feel.

To make the concept of quality manageable, we break it down into a list of ten topics. This list is not intended to be exhaustive, but it can be used as a framework or checklist when developing the brief. The ten topics are:

- Functionality
- Efficiency
- Flexibility
- Sustainability
- Architectural expression
- Urban fit
- Safety and security
- Accessibility
- Facility management
- Health and well-being

When looking at this list, it is important to realize that most of the topics are interrelated or even overlapping. Flexibility, for example, is closely related to sustainability because flexibility will increase the lifespan of a building, which makes it more durable and thus more sustainable. Conversely, there may be tensions of conflicts between the different quality aspects. For example, a client may be asking for a highly secure building, while at the same time wanting it to be open and welcoming. Such tensions exist in almost any project. The brief should not try to hide such issues, but mark them explicitly as dilemmas that call for special design attention and creativity.

Functionality

Functionality is a very broad concept, which can be defined as the degree to which a building supports the activities of its occupants. Simply put, office buildings should support office work, school buildings should support learning, and so on.

The formulation of functional requirements starts with understanding user activities. What will people do in the building? What are the characteristics and nature of their activities? How many people are involved? Do activities involve the use of particular equipment? How are activities interrelated? These kinds of questions can be answered by analysis, observation and simply talking to people (see Techniques, page 94 for an overview of possible methods). The next step is to translate the insights gained into functional requirements concerning size and the quality of spaces.

It is important to note, however, that an activity analysis does not automatically translate into functional requirements. For example, an activity like 'computer work' comes with several obvious space-related requirements (enough space for a desk and a chair), comfort (enough light, not too noisy), and facilities (a reliable internet connection and coffee), but when one goes beyond such basic factors, the notion of functionality becomes more slippery and subject to rather intangible factors such as personal preferences and cultural norms and values. Is, for example, an open-plan office a functional solution or not? Different people tend to have very different opinions about this, which can make it challenge to establish what the right requirements are.

For that reason, the formulation of functional requirements should not only involve a factual analysis of user activities, but also a dialogue with users about their perception of functionality. What is their notion of functionality? Where does that notion come from? How does it relate to their activities, the technologies they use, or the purpose of their organization?

In this dialogue, it is important to focus on the 'need behind the need' and not to jump straight into discussing concrete design solutions. This can be done by asking probing questions (e.g. why do you feel you need a private office?) aimed at eliciting the problems they want to have solved (e.g. too many distractions) before discussing any notion of a solution.

Strategic brief
- Describe the general activities that have to be accommodated in the building.
- Identify distinctive or critical activities that will call for extra design attention.

Functional brief
- Draw up a concise description of how rooms and spaces will be used in daily practice (what activities, when, by whom, equipment required), insofar as this kind of information is not obvious.
- Identify functional concerns (e.g. acoustics, security, privacy) which require extra attention and elaboration in the technical brief.
- Look at the spatial relations between different functions and activities: which of them need to be close to each other, which need to be separated?

Technical brief
- Translate functional considerations into concrete specifications at room level, looking at finishes, fixtures, furniture, indoor climate and equipment.

Efficiency

Buildings are expensive resources. For many clients they are their second-most expensive resource, with only their staffing costs being higher. This is why efficiency is an important topic in almost any brief.

There are different kinds of efficiency that can be addressed in relation to building design (energy efficiency, maintenance efficiency, etc.) but in the briefing process, space efficiency will the most important as it is directly related to the overall size, and thus the budget of the project.

Space efficiency is essentially about asking for no more space than is needed. The first obvious thing to look at is the size of the requested spaces. How much space is needed for the functions that have to be realized in the building? For example, should the size of an office workstation be 6 or 8 square metres? Or: should a single-bed hospital room be 11 or 12 square metres? Such questions may seem to focus on details, but if a project consists of hundreds of workstations or hundreds of patient rooms, the answers will have a large impact on the total space requirements. It therefore makes good sense to look critically at the space needs of such functions, for example by conducting prototypical design studies of different concepts.

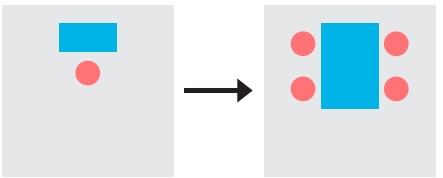
The second way to achieve space efficiency is to look at the utilization of spaces. In office projects in particular this is a hot issue. It has become received wisdom that desks tend to stand empty for a large part of the time they are available. New concepts such as 'free seating' and 'activity-based working' help to improve the utilization rate of workplaces and can have quite a dramatic impact on the overall need for space, reducing it by up to 20 or 30 per cent.

Efficiency, however, should always be balanced against quality. In an Excel sheet, it is all too easy to improve efficiency by tweaking the quantities and sizes of spaces. The end result, however, may be spaces that are too cramped or too crowded to work in, thereby having a negative impact on people's well-being and performance. Efficiency should thus never be considered in isolation, but always in relation to the usability and functionality of the building.

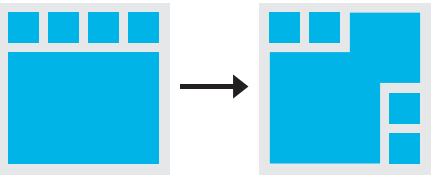
Strategic brief
- Develop a space budget for the entire building, based on the number of 'functional units' (e.g. workplaces or beds) or users (e.g. office workers or patients).
- Consider the possibilities for intensifying the use of space (e.g. 'free seating' for office areas).

Functional brief
- Take a critical look at the spatial needs of different functions: are there possibilities for the shared use of spaces, the intensification of use, or the multifunctional use of spaces?
- Conduct prototypical design studies to establish whether the assumptions made about the size of spaces are valid.

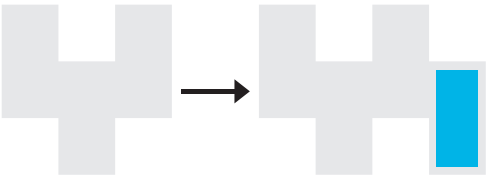
Technical brief
- Look into other kinds of efficiency such as energy efficiency and the operational efficiency of the building's technical services.



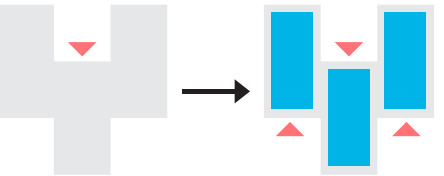
Functional flexibility:
The ability of spaces to facilitate different functions. For example office rooms that can easily be repurposed as meeting rooms by changing the furniture.



Spatial flexibility:
The ability to change floor plans, without major costs or business disruptions. Think of gridded office floors with movable wiring and ducting in which functions can easily be moved around.



Flexibility to expand:
The ability to expand the size of the building, for example by adding a new wing or extra floors on top of the building.



Flexibility to subdivide:
The ability to subdivide the building into units for different users, for example to sublet excess space to other organizations.

Different kinds of flexibility
Clients can ask for different kinds of flexibility, ranging from functional flexibility and spatial flexibility to the flexibility to expand or shrink the building.

Flexibility

In line with the popular adage that 'change is the only constant', nearly every client will ask for a flexible building. In general, flexibility means that the building should be able to accommodate changes in use without costing the earth, with minimal disruption to the client's business processes. That, however, is too broad a requirement to be of any use in a brief. A brief should therefore explain what *kind* and what *degree* of flexibility is required.

Most clients will seek operational, short-term flexibility. This means that they want to be able to move people around in their building, on a frequent basis, without too much effort. This kind of flexibility is associated with common technical solutions such as movable partitions, large column-free floors and easily adjustable building systems.

Flexibility can also mean that the client is seeking multifunctional spaces. Think of a company restaurant that can double as a work/meeting space outside lunch hours, or a school sports hall that can be used for exams and school plays. Such multifunctionality should be explicitly defined in the brief because it entails practical implications for aspects like acoustics and technical services.

Some clients seek flexibility of a greater magnitude. Anticipating changes in the size of their organization, they may ask for a building that can easily be subdivided and sublet to external parties. When expecting growth, they may ask for an oversized building and/or possibilities to expand the building. In the latter case, the question is then how much expansion should be catered for. Would adding one extra floor be sufficient, or should the building be able to double in size? In extreme cases, clients may even ask for buildings that can be demounted and assembled at another location.

When thinking about flexibility, it is important to realize that flexibility often comes with a cost. Adding extra capacity to an HVAC-system, for example, will call for additional investment. Therefore, flexibility should also be seen in relation to the certainty and frequency of change. While it may well be that 'change is the only constant', some organizations are more volatile than others, and flexibility requirements may thus differ from organization to organization.

Strategic brief
- Try to identify plausible future organization changes (e.g. growth, shrinkage). See also page 113.
- Look at the organization's 'churn rate' (the percentage of the total number occupants that has been moved in a year) to get an idea of its volatility.

Functional brief
- Identify the potential for multifunctional spaces.
- Align room sizes and qualities, allowing the functions of rooms to be changed by changing the furniture only.

Technical brief
- Ask for a certain degree of overcapacity (e.g. 20%) in the building's infrastructure (in shafts and elevators, and in systems for lighting, power, data, ventilation, cooling).
- Ask for switch systems and building management systems that make it easy to change the distribution of data, power, light and air to individual spaces.
- Require that small changes can be made without the involvement of outside contractors.

Topic	Requirements
Energy	- Use of energy-efficient building systems (i.e. lighting systems with occupancy and lux-sensors) - Use of renewable energy sources (i.e. solar and wind energy) - Use of a compact building volume and efficient use of glazing for reduced energy loss - Optimized building orientation towards south (northern hemisphere) to capture longer periods of daylight - Consideration of placement of glazed areas, to reduce solar gains in summer, increase in winter - Use of a building construction with a high 'thermal value' that helps to passively cool and heat, reducing the need for technical installations
Water	- Use of water-saving toilets and taps - Provide leak detection - Use systems that allow water re-use and recycling - Use water in outdoor areas (close to building), to improve the microclimatic comfort during summer - Managing on-site rainwater through preservation of areas of ecological value and/or the use of absorbing surfaces like grass and plants
Materials	- Use of materials with low embodied energy (materials that do not overly pollute during manufacture) - Use of waste materials or material with a high percentage of recycled content in construction. - Avoid the use of fragile materials that require frequent maintenance - Use of materials with hygroscopic value (materials that regulate and improve indoor comfort) - Use of certified materials. Ask for EPDs (environmental product declarations) to understand where products come from
Waste	- Create environmental stations throughout the building to sort recyclables and dispose of waste - Require waste management during construction to limit the impact on the environment. - Provide facilities for composting organic waste

Sustainability requirements
This is a general checklist of sustainability topics. More specific requirements can be based on rating systems like BREEAM or LEED.

Sustainability

Sustainability should be an important topic in any design brief. As we all know, buildings use a lot of resources—energy, water and materials—and they generate a lot of waste, during construction, use and demolition. Clients are in an excellent position to reduce the environmental impact of buildings because they are the starting point of a project. By demanding a 'green' building, they can push the entire supply chain (the design team, the contractor, suppliers) into more sustainable practices.

The design brief should explain how far a client's ambitions on sustainability reach. Relevant questions to be answered are: Is the client aiming for a 'super green' building that will set a new standard, or merely seeking compliance with existing sustainability standards? Should the building be merely energy efficient, should it aim to be energy neutral, or should it even produce energy? Is the client open to trying entirely new, innovative sustainability solutions, or should all solutions be proven technologies?

It is preferable that clients use measurable and actionable requirements to substantiate their sustainability ambitions. There are several well-established measurement systems that can help with this. A much-used system is BREEAM (Building Research Establishment Environmental Assessment Method), which clients can use to define the desired sustainability level as 'Good', 'Very Good', 'Excellent' or 'Outstanding'. Within the system, these ambitions are connected to concrete requirements on a wide range of issues, including energy and water consumption, health and well-being, pollution, transport, materials, waste and ecology.

The disadvantage of systems like BREEAM is that they require quite a bit of administration on the part of the design team. Furthermore, it has been noted that BREEAM can trigger 'box ticking' behaviour by the design team: adopting particular solutions just to get the right rating. This is obviously not the intention.

Furthermore, it is important to stress that sustainability is not only about certified wood and water-saving toilets, but also about architectural quality, flexibility and usability. There is no point in building a green building, bristling with laudable features, if it does not support the activities of its users.

Strategic brief
- Formulate general ambitions for sustainability.
- Define measurable targets, e.g. based on BREEAM (www.breeam.com) or LEED (www.usgbc.org/leed).
- When using multi-interpretable terms such as 'CO2-neutral' or 'cradle-to-cradle', provide clear definitions.

Functional brief
- Seek concepts or smart solutions that help to reduce the need for space (i.e. the shared or combined use of spaces and functions).

Technical brief
- Formulate concrete requirements concerning the use of energy, materials, water consumption.

Architectural expression

A building's architectural expression is a fairly elusive quality that is determined by a myriad of factors such as composition, colour, light, materials and shapes. It is a topic that is sometimes seen as the exclusive territory of architects, but clients will certainly want to have a say on it. This is because architectural design can trigger particular associations. Tall buildings may be associated with power and prestige, while buildings with bright colours may be seen as playful. Straight lines and regularity may evoke an impression of efficiency and neatness.

Clients can use the brief to explain what kind of expression they are looking for. This should not be done in terms of design specifications ("the building should have a brick façade"), but in terms of the effect that the design should have. How should the building 'feel'? What kind of 'vibe' should it have? What kind of associations should it trigger? What message should it convey to the outside world?

The answers to these questions will differ per client. A bank may want its offices to communicate reliability and security; a tax office may seek to convey an impression of modesty and efficiency; a tech company may wish for a building that signals innovation and 'coolness'. That may sound simple enough, but a lot of clients have trouble expressing their needs and preferences in a clear way. All too often, design briefs feature cliché-filled texts, stating that the building should be 'aesthetically pleasing' or 'of high architectural quality'.

To get a better grip on clients' ideas about architectural expression, it will be useful to look at a client's corporate identity. Large clients will almost certainly have a formal branding strategy that explains how they want to be perceived by the outside world. Furthermore, it can be useful to have a discussion with the project's decision makers. What kind of buildings do they like or dislike? For what reasons? What kind adjectives do they see as appropriate for the project?

It will be the (challenging) task of the brief writer to translate the outcomes of such discussions into a clear text for the brief. The trick is to keep it simple: a few powerful adjectives will be more telling that a long waffly text about architectural quality.

Strategic brief
- Explain the client's desired corporate or 'brand' identity.
- Describe the desired expression of the building in a few well-chosen adjectives.
- Do not allow the personal aesthetic preferences of the top decision makers to dominate the brief.
- Consider the use of reference images, although such references should not be used in a too literal way ("I want something like that").

Functional brief
- Indicate areas or spaces that need special attention in terms of architectural expression (e.g. entrance) and describe what kind of atmosphere is wanted there.

Technical brief
- Add design guidelines if the client has strict standards for its 'brand visuals'. Some clients (e.g. in retail) are likely to have very concrete requirements concerning materials, finishes, colours and dimensions.

Urban fit

Briefing is usually focused on the interior of the building because that is where most user activities take place. It is obvious, however, that a building also has an urban context to which it has to relate. Especially when the project concerns the construction of a new building, it will be important to look at the project's 'urban fit'.

A very basic question is whether the client is aiming for a building that is highly visible and stands out from its context ('iconic'), or a more of 'fabric building' that blends modestly with its context. Another strategic consideration is the extent to which the project should contribute to its surroundings in terms of the provision of public spaces or services. Office buildings, for example, tend to be closed and introverted entities with little to offer their surroundings, but clients may also choose to build permeable buildings with public functions such as a coffee shop, an exhibition area or parking spaces that can be used by the local community outside office hours.

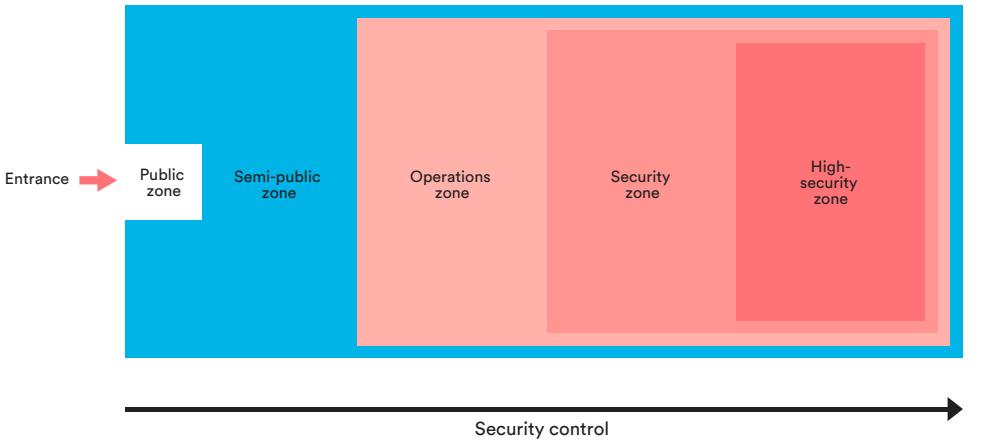
A very practical consideration in relation to a building's surroundings is logistics. Buildings attract different kinds of logistical flows—pedestrians, cyclists, cars, delivery vans, garbage trucks. The brief should explain which of these flows are relevant and what the associated requirements are. What are the ways in which employees, visitors and goods arrive at and leave the building, and what is the consequent need for access, drop-off areas, loading areas and parking space? This last issue tends to be most difficult. Most projects need parking spaces for staff and visitors, but these are space-consuming and their numbers are likely to be governed by local zoning regulations.

Other relevant requirements may concern the provision of outdoor spaces such as playgrounds, sporting facilities and landscaped areas. Requirements for these spaces may concern security (e.g. lighting levels in evenings and perimeter protection), sustainability (e.g. use of local vegetation) and the placement of outdoor furnishings (e.g. benches, flagpoles, signage). In the case of high-rise buildings, requirements should also address the microclimate around the building (e.g. avoiding undesirable shadow effects or wind gusts at street level).

Strategic brief
- Make a site assessment, looking at the plot, the neighbouring buildings, public spaces and infrastructure.
- Determine whether the project should incorporate public areas or public functions.
- Investigate local zoning constraints in terms of restrictions on height and volume, protected sightlines and car parking.

Functional brief
- Indicate which outdoor functions need to be realized on site (e.g. parking areas, bicycle paths, areas for waste disposal, kiss & ride drop-off points, smoking areas, etcetera).

Technical brief
- Consider requirements for outdoor inventory (seating, flagpoles and signage).
- Formulate requirements for the safety and security of outdoor spaces (e.g. lighting levels and visual overview, need to establish a secure perimeter around the site).
- Set requirements for the maintenance and sustainability of possible landscaping (e.g. use of local vegetation, water storage, creation of habitats for local animal species).



Security zoning
The security zoning of a building often consists of five zones:

1. Public zone: accessible to general public (e.g. entrance and lobby)
2. Semi-public zone: accessible to visitors with access cards (e.g. conference area)
3. Operation zone: accessible to employees (e.g. office floors)
4. Security zone: accessible to specific employees/contractors (e.g. server room)
5. High-security zone: same as (4), but with stricter identity verification (e.g. crisis room)

Ideally the different zones are 'embedded' in one another, thereby increasing the protection with each new zone and delaying the time between a break-in and the breaching of a critical area.

Safety and security

The essential objective of safety and security requirements is to protect the building's assets (people, goods, information and equipment) and the building itself from harmful events—ranging from high-impact events such terrorism and natural disasters to more mundane incidents such as theft and vandalism.

The starting point for the formulation of security requirements should be a risk assessment that identifies possible harmful events. The focus should be on events that have a high chance of occurrence and/or a high impact on the client's organization. The nature of these events will differ from project to project. In a museum theft will figure largely, in an airport bombings and in a school vandalism.

The next step is to look at how such events can be avoided and thwarted, and how their impact can be mitigated. Generally, there are three types of measures to be considered: spatial measures (i.e. security zoning inside the building), technical measures (i.e. the use of security systems) and organizational measures (i.e. the use of security staff).

The brief should explain the client's general view on these measures. Is the client aiming for high-tech solutions (e.g. biometric access systems) or will low-tech solutions suffice (e.g. a staffed reception desk)? Should security measures be 'hidden' to maintain a sense of publicness, or should they be visible to act as a visual deterrent? Should the entire building have the same security level, or are there specific spaces that call for extra protection?

In answering this last question, most briefs feature a description of the 'security zoning' for the building. The entrance area, for example, may be designated a public zone (accessible for all); office areas may labelled operation zones (accessible to staff only); the building's server room may be categorized as restricted zone (accessible to specific members of staff). In addition, the brief may outline technical requirements concerning the building's security systems (access systems, alarm systems) and construction elements (façades, openings, the roof). As we have said before, the trick is to keep such requirements performance-oriented. Rather than asking for a specific kind of surveillance system, the client should detail what such a system should be able to do (e.g. recognize people's faces and car registration plates).

Strategic brief
- Make a risk analysis of the project (events/likelihood of occurrence/impact).
- Identify building users or assets that require specific security measures.
- Consider relation between security and other desired qualities such as accessibility.

Functional brief
- Identify security zones and the associated levels of access and security (e.g. public/semi-public/private).
- Look at the location of functions within the building, such as their adjacency to the street (e.g. in relation to bombings and break-in).

Technical brief
- Formulate requirements for security systems (detection/surveillance/alarm/ access).
- Formulate requirements for building components (perimeter/façade/interior separations between zones).

User type	Requirements
Users with mobility difficulties	- Entrances and circulation areas must be wide enough to allow people in wheelchairs to pass through - Equipment (intercoms, control panels, door knobs) ought to be placed within the reach of someone in a wheelchair - Floor surfaces should allow easy manoeuvring of a wheelchair - Floors are preferably solid and even, free of edges or thresholds. Where necessary, ramps should be provided. Long ascents should feature landings at intervals
Users with eyesight difficulties	- Glazed walls and changes in floor level should be adequately marked to prevent falls or collisions - Colours and contrast can be used as an aid to improve orientation. - Tactile markers (e.g. handrailings, floor markings) can help wayfinding in the building - Signage and control panels should be well-lit, of sufficient size and contrast, and include braille text - Provide additional and adjustable illumination as needed (e.g. on desks). - Acoustic signals can help people to orient themselves in elevators or at other important locations such as at entrance doors
Users with hearing difficulties	- Background noise (e.g. from HVAC installations) should be reduced as much as possible as it makes it hard to distinguish individual sounds - The degree of echo (i.e. coming from hard surfaces) should be limited Echoes reduce speech clarity and clutter the sound landscape, even for people with good hearing - In rooms with speaker systems, Telecoil devices are helpful to wearers of hearing aids
Users with respiratory difficulties	- Rooms/areas should be easy to clean. Surfaces where dust can collect should be avoided - Materials should not give off gases or particles that affect health - Indoor air must be replenished with enough fresh air to dilute the airborne contaminants given off by materials and by people and their activities - Avoid planting allergenic plants and trees around access ways, entrances and windows that are frequently opened

Accessibility requirements
Different kinds of impairments come with different needs concerning the building's design. The generic overview above is based on the standards of the Norwegian National Office of Building Technology and Administration

Accessibility

The topic of accessibility (also referred to as 'inclusive design' or 'universal design') is about making buildings accessible and usable for everyone: not only the average human being—if such a thing exists—but also the old, the young, the disabled, the large, the small and other kinds of 'outliers'. Accessibility is of particular importance in buildings with a public function—libraries, hospitals, town halls—but it can very well be argued that, from a moral point of view, accessibility is relevant to all buildings.

In most countries, accessibility requirements are incorporated into building codes and other kinds of legislation. The brief can simply refer to these standards, but it is important to check how far these requirements reach. Traditionally, accessibility legislation focuses on the needs of wheelchair users and contains requirements concerning door widths and the availability of ramps and special toilets. These issues are obviously important, but the array of people with special needs is wider than that. Accessibility will also require extra attention in relation to users with eyesight problems (e.g. needing brighter lighting levels), hearing problems (e.g. requiring special audio equipment in meeting rooms), and respiratory difficulties (e.g. calling for extra ventilation and specific air filters). And in recent years, the concept of accessibility has expanded even further, looking at needs in relation to people's gender, religion and culture. Think of provision of features like gender-neutral toilets, breastfeeding rooms, or spaces for prayer.

The brief is the right place to address these issues. The brief should detail what kinds of users should be taken into account in the design and whether these have any special needs. The brief should also explain what standards and guidelines apply and whether there are any additional requirements.

Such early attention to accessibility increases the chance that it will be successfully incorporated into the design. It will push the design team into thinking about it from the very start of the project, thereby helping to avoid conflicts between accessibility requirements and architectural considerations at later stages.

Strategic brief
- Identify the different kinds of user groups that will use the building.
- Express the importance of accessibility for the project. Is the focus on compliance or is accessibility a central value in the project?

Functional brief
- Identify accessibility guidelines or standards to which the brief can refer.
- List those areas in the building that call for extra attention in terms of accessibility (e.g. entrance, reception, circulation areas).
- Describe any special requirements concerning the size of spaces (e.g. taking into account the dimensions of wheelchairs or scootmobiles).

Technical brief
- Insofar as not covered by regulations/guidelines, formulate detailed technical requirements, for example concerning indoor climate, signage and wayfinding and dimensions.

FM Service	Requirements
Maintenance	- Select systems and components that are robust, durable and reliable—proven technologies rather than untested innovations - Make sure that building systems can easily be reached for maintenance, including easy access to light fixtures, HVAC filters, patch panels, et cetera - Provide sufficient space for storing maintenance equipment, materials and spare parts
Cleaning	- Provide sufficient space for storing cleaning materials, cleaning cabinets and staff changing rooms - Keep surfaces and finishes free from open joints, crevices or corners where dirt can accumulate - Use materials that can be cleaned with sustainable, non-toxic detergents. - Consider use of sensors that indicate need for cleaning (e.g. in toilets)
Security	- Limit the number of entrances and openable façade elements (ground level) - Install systems for surveillance, access control, detection, fire safety and emergency communication - Position rooms and functions according to client's desired security zoning. - Provide an adequate security room (large buildings)
Catering	- Ensure a short distance between delivery entrance and kitchen/kitchen storage - Provide appropriate temperature conditions for the processing and storage of food and beverage products - Provide sufficient storage space for catering supplies, for restaurant, pantries and vending machines, where applicable
Waste management	- Provide adequate space for waste storage/recycling, inside and outside the building. Make sure storage is out of sight - Provide adequate waste disposal facilities for end users (e.g. in pantries)
Relocation	- Make sure that corridors, doors and elevators allow for the internal movement of furniture and equipment - Provide space for the temporary storage of furniture - Create an adequate delivery entrance and loading docks where necessary
Mail handling/ Repro services	- Provide adequate space for mail room and a print/scanning room - Provide proper ventilation in rooms with printers/scanners
Building management	- Link the building's systems to an integrated building management system - Provide a plan for commissioning, training and handover - Provide a smart metering system for the use of utilities per floor/unit - Provide for full (BIM) documentation of the project and a handbook for its management

FM requirements
Each facility management activity comes with its own requirements.

Facility management

Facilit y management (FM) concerns the management of the services that support the use of a building. Amongst other things, it is about maintenance, cleaning, internal relocation, catering and security.

Clearly, the FM discipline has a great stake in a project because once the contractors and designers are done with their work, the facility managers inherit the building. This means that any inefficiencies or design mistakes will become their problem, and these can be numerous. Think of building systems that seemed cost-efficient in terms of investment, but prove to be expensive in terms of maintenance; floor finishes that looked great in the artist's impressions, but soil quickly in everyday practice; or partition systems that prove to be less easy to move than the supplier's product documentation suggested.

To avoid such problems, the topic of facility management should be addressed early on in the briefing process. The strategic brief should stress the general importance of maintenance and operation, and emphasize that operational costs are just as important as investment costs.

The functional brief should clearly explain how much space is needed for FM functions such as storage (e.g. storing furniture, office supplies and catering supplies), cleaning (e.g. cleaning cabinets on each floor) and the facility management staff (e.g. changing rooms). In addition, there should be requirements concerning the building's logistics, for example making sure that the distance between the delivery entrance and storage spaces is short and that corridors and elevators are large enough to transport goods and equipment through the building.

Technical FM requirements will relate to the building's components and systems. Topics of interest are warranties, the availability of spare parts, the provision of manuals for the systems installed and the general ease of maintenance.

A fairly new topic concerns the use of 'smart' building systems, such as climate control systems that can learn about user behaviour and modify their operation accordingly. The client's brief should spell out the extent of the client's ambitions on this topic. Do they want a 'super smart' building filled with sensors and intelligent systems, or will a more of a traditional low-tech building suffice?

Strategic brief
- State the importance of facility management (FM) and challenge the design team to come up with smart FM solutions.
- Indicate the FM activities that have to be taken into account in the design (i.e. cleaning, maintenance, security, reception, catering, internal moves, mail room).
- If reliable data are available, indicate a target for the operational cost of the building.

Functional brief
- Define the needed FM spaces (i.e. storage rooms, delivery entrance).
- Define spatial relations between the different functions (e.g. proximity of delivery entrance and storage rooms).

Technical brief
- Define practical requirements for the buildings components and services from the perspective of FM services (i.e. cleaning, catering, security).

Aspect	Requirements
Visual comfort	- Provide abundant daylight/natural light - Offer outside views - Provide appropriate light levels and the ability to control these - Avoid glare, irritating reflections and flickering light
Thermal comfort	- Ensure comfortable temperature levels - Ensure that humidity levels are neither too high (leading to the proliferation of moulds) or too low (risk of dry eyes) - Avoid draughts
Acoustic comfort	- Avoid noise - Provide possibilities for acoustic privacy (e.g. 'quiet areas') - Separate noise-creating functions (e.g. coffee points) from functions where people have to concentrate (e.g. work or learning spaces)
Air quality	- Provide sufficient fresh air - Avoid exposure to air pollutants/allergens - Control CO_2 levels in rooms - Use non-toxic materials
Ergonomics	- Ensure that all furnishings and furniture are ergonomically designed
Aesthetics	- Steer clear of a clinical and sterile design style - Use natural materials where possible - Avoid overly 'loud', attention-seeking design in areas where users spend a lot of time
Mobility	- Provide cycling facilities (indoor storage/changing rooms) - Provide sports, play and leisure facilities (indoor/outdoor) - Create vertical/horizontal circulation spaces that promote movement (e.g. focus on stairs instead of elevators)
Nature	- Provide views of sky and, where feasible, nature - Use indoor planting - Provide outdoor green areas (can be conventional park, but also green roofs, vegetable garden or pocket parks)
Services	- Consider the provision of on-site health services (e.g. physiotherapist, ergonomist) - Create a restaurant that promotes healthy food and beverages (e.g. by making these easier to grab, very visible location)

Health and well-being requirements
This is an overview of requirements relating to the health and well-being of building users. Please note: the requirements are very general and should be made more specific in the functional or technical brief of a project.

Health and well-being

Buildings can have a large impact on people's health and well-being. Every building user know this, and there is decades' worth of scientific evidence to prove it. Yet many buildings, even new ones, are associated with health problems—both physical problems, such as dry eyes and sore throats, and psychological problems, such as fatigue and stress.

The best known, and most researched, health factor in relation to building design is indoor climate. Indoor climate is an umbrella term for a range of comfort aspects: thermal comfort, visual comfort, acoustic comfort and air quality. Each of these quality aspects is a frequent source of complaints in buildings. Think of noisy open-plan offices, stuffy meeting rooms that lack fresh air, or classrooms that get way too hot during summer. The client's brief plays an important role in avoiding such problems by stipulating stringent indoor climate requirements (see page 45 for examples). By relating those requirements to quality tests that need to be carried out during the design process, the brief enables verification of the set comfort levels.

Another topic that relates to health and well-being is movement. The relevant term here is 'active design': design that promotes physical activity, for example by providing inviting staircases, attractive circulation routes, and the deliberate distribution of functions over different floor levels. Physical activity may be further encouraged by the provision of sports facilities inside and outside the building. Bicycle usage can be promoted by providing safe and secure bicycle storage and changing rooms. The brief should explain to what extent such measures should be applied in the project.

The same goes for the topic of 'biophilia', which is a fairly new concept in relation to health and well-being. Literally, biophilia means 'love of life or living systems'. The central idea is that people have a deeply rooted wish to be connected to nature and that we should move away from artificial environments (with air conditioning, artificial lighting and a sterile 'look and feel') towards more natural 'habitats' (with abundant indoor and outdoor planting, ponds, natural light and outside views of nature elements). The assumption is that such environments lead to higher levels of user satisfaction and can even help to reduce people's stress levels.

Strategic brief
- Explain the importance of user health and well-being as a major design factor.
- Consider the relevance of concepts like 'active buildings' or 'biophilic design'.

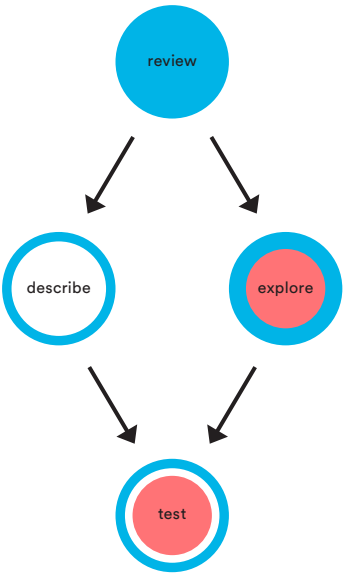
Functional brief
- Investigate employee demand for sports and leisure facilities.
- Consider the need/possibilities for 'green' areas (roof garden, landscaping, et cetera).
- Think about bicycle storage/changing rooms.

Technical brief
- Formulate detailed indoor requirements for room types and individual rooms, and develop a test plan to ensure that these requirements will actually be met in the design.
- Formulate ergonomic requirements for furniture, equipment and fit-out elements or refer to relevant standards.

This page is intentionally left blank”

Techniques

What knowledge is already available?
- Document analysis
- Literature review
- Benchmarking



What are the client's/users' current activities and ways of using space?
-Interviews
-Surveys
-Observational studies
-Occupancy measurements
-Walk-throughs
-Social network analysis

What are possible new ideas and future scenarios?
- Project visits
- Objectives workshop
- Future workshops
- Scenario studies
- Persona method
- Charrettes

How will ideas work out in practice?
- Design studies
- Pilot projects

Different techniques
Different briefing techniques can provide answers to different kind of questions.

Techniques

This chapter presents a range of techniques that can be used to collect data, insights and ideas as input for the brief. Roughly speaking, the techniques can be divided into four groups.

The first group concerns techniques that review existing material and literature: organizational documents, research publications, general design guidelines and benchmark studies. This type of desk research will usually take place at the beginning of the project. The purpose is to get acquainted with the client organization and the building type in general.

The second group concerns descriptive techniques that help to describe the client's current use of space and the users' activities. These can be observational studies, occupancy measurements, walk-throughs, social network analyses and surveys. All these techniques provide valuable field data about the specifics of the client organization. But, as said, these techniques are descriptive: they are very much about describing the existing situation ('as is') rather than the future situation ('to be'), which is just as essential in briefing.

Therefore, a crucial third group concerns explorative techniques aimed at identifying future demands and new ideas. It entails various kinds of workshops with users, decision makers and experts. Project visits and scenario studies can also be seen as explorative techniques as they provide insights about alternative solutions and possible futures.

The fourth group of techniques concerns assessment methods. During its course, a briefing process is likely to produce all sorts of visions and ideas, which may look very promising, but need to be tested and validated in terms of feasibility and relevance. This can be done on paper by making prototypical designs, or in real life by conducting pilot projects.

Technically, it is possible to apply all these techniques in a briefing process, but not every project has the resources or the need for a full-blown briefing process. In small projects, a few interviews may be sufficient, in large projects there may a need for a more extensive briefing process with scenario analysis and future studies. The right mix of techniques for a particular project will depend on the size and time-frame of the project and the predictability of the client's accommodation requirements.

Document analysis

A good start for a briefing process is to gather and review existing material about the client organization. Analysing such 'secondary' data will provide an initial understanding of the organization, which can then be deepened in the steps that follow.

A lot can be learnt by looking at public information that is available on websites and in brochures and annual reports. Such material gives an insight into how the organization presents itself to the outside world and while this is not necessarily in line with reality, it can still reveal a lot about the organization's aspirations. Job advertisements are a good example. The recruitment site of a company may state: "We want our employees to be happy and healthy both inside and outside of work". Such a quote will be a good starting point for a discussion with the client about their ambitions on matters such as sports facilities, indoor climate, ergonomics and well-being in general.

As well as public statements, it will be useful to look at internal memos and reports that discuss organizational aspects such as headcount, organizational structure, branding and planned change processes. Sometimes such documents are confidential, but they will be useful for positioning the building project in a wider organizational context. If, for example, an organization is planning to 'rebrand' itself, it will be useful to know this because the building may play a supporting role in such a change process.

If available, one should also look at the organization's formal real estate strategy and space standards. Such documents can provide very concrete input for the briefing process, although they should mostly be regarded as a reference.

In general, it is important to be critical of the status and accuracy of the data that can be found in organizational documents. Headcount data, for example, are notoriously inaccurate because they are often outdated or exclude particular types of users (e.g. external contractors). Document analysis should therefore always be combined with follow-up interviews for validation of the data gathered.

Recommendations

- Make a list of documents/data that the client should deliver (e.g. headcount, growth projections, an organizational chart).
- Beware of possible discrepancies between how things are presented in documents and how they are in everyday practice (e.g. in relation to strategy or culture).
- Conduct follow-up interviews to clarify and validate data that seem unclear or unrealistic.
- Use the document analysis to get acquainted with the client's vocabulary (department names, trade-specific terminology).
- When citing from documents, make a proper reference to the source, noting the author, title and date of publication.

Literature review

A literature review is a review of research publications about a particular briefing topic. The purpose is to provide clients with knowledge and ideas that can help them to make better informed—or even 'evidence-based'—briefing decisions. For example, when a hospital is considering creating individual patient rooms instead of wards, it will be interesting for them to look at the available research on this topic. Are there any credible research publications that discuss this topic, and what do these say about things like costs, infection control, staff satisfaction and patient well-being?

Conducting a literature review can be extremely valuable, but it can be quite time-consuming. Research publications do not make easy reading as they are written by and for academics, and they seldom provide any clear-cut answers. Furthermore, it is important to know that not all research publications are of equal quality. Clients should focus on well-researched publications rather than those that fit their bias. They should look critically at the empirical basis for the conclusions presented (e.g. are they based on the evaluation of a single project or a whole range of projects?).

Next to the scientific literature, it will be interesting to look at practice-oriented publications such as design handbooks and briefing guidelines. For common building types, there are many such publications readily available on the Internet. Good examples are CABE's guide to Creating excellent primary schools, or the Whole Building Design Guide (an online resource that covers multiple building types).

A literature review may further include architectural magazines and design websites like Archdaily or Dezeen. These do not present research-based knowledge, but they tend to feature attractive projects that are new and 'cutting-edge' and as such can act as great sources of visual inspiration—a quality usually lacking in research publications.

Recommendations

- When looking at research papers, try to find 'meta-analyses' that are based on large numbers of studies rather than just a single case study.
- Be critical of success stories in trade journals or design magazines. These can be inspirational, but a critical eye is needed to separate hype from reality.
- Take an old-fashioned trip to the library of the nearest architecture school to find book shelves full of books dedicated to specific building types.
- For the technical brief, look at the many available technical standards (e.g. concerning indoor climate or the dimensions of common rooms).
- When using material from publications, make a proper reference to the source, noting the author, title and date of publication.

		Oslo (proposal)	Helsinki	Gøteborg
Public Areas				
Lobby, foyers, halls	sq.m.	4,800	5,650	4,370
Production Areas				
Main stage + stage areas	sq.m.	2,250	2,180	1,880
Additional stages	sq.m.	550	600	300
Rehearsal rooms	sq.m.	2,700	2,320	2,590
Dressing rooms artists	sq.m.	1,700	1,560	1,060
Dressing rooms staff	sq.m.	300	440	345
Staff room	sq.m.	900	1,260	1,030
Management/administration	sq.m.	1,300	1,500	715
Workshops	sq.m.	2,800	2,500	3,060
Storage	sq.m.	4,000	6,250	2,440
Other areas	sq.m.	700	300	1,800
Technical areas	sq.m.	300		
Ballet school	sq.m.	600	620	
Net area	sq.m.	22,900	25,180	19,590
Gross area	sq.m.	35,500	40,300	30,326

Example: an opera benchmark
Benchmarking is frequently used for common building types, such as office buildings, but it can be just as useful for special building types, such as opera buildings—although the data will be less easy to find. This example is a benchmark that was used in the briefing process for the new opera house in Oslo. The basic question was whether 35,500 sq.m. was a reasonable size for such a project.

Benchmarking

Benchmarking is a technique for comparing projects in a systematic way, usually looking at quantitative metrics such as costs, energy performance or space usage. The prime purpose of such comparisons is to find out what other clients are doing, getting a sense of what is 'normal', and then using that information to set targets for one's own project.

For the purpose of briefing, spatial data are usually the most interesting. This may concern the allocation of space per user (e.g. floor area per student, per office worker, per patient) or the allocation of space for specific functions (e.g. the amount of conference space per workplace, or the amount of outdoor space per pupil). Such data can be used as input for early calculations of the size of a project, or as a baseline to test one's own standards for space usage, getting a feel for whether these are generous or tight.

Benchmarking data, however, should be treated with care. Overly hasty comparisons may ignore the specifics and particularities of a project and lead to the wrong outcomes. It is thus important to look at the building behind the data. What kind of buildings have been included in the benchmark? A benchmark of inner-city office buildings, for example, will produce different results from one that compares suburban office buildings.

And how many buildings have been included in the benchmark? Just a few or large numbers, which make the data more trustworthy? Last but not least, one should look closely at what kind of data is being benchmarked. What 'unit of measurement' has been used? Do figures relate to 'gross floor area' or 'usable floor area' or 'rentable area' and how have these been defined? Small differences in definitions can result in large differences in the data.

Recommendations

- Look carefully at how the benchmark dimensions have been defined. What is included in the figures and what not?
- Check out where the data come from: are they based on actual measurements or on a questionnaire? The latter tends to provide less accurate, less reliable data.
- Do not just 'copy and paste' data from benchmarks. Benchmark data can only be a starting point for a more thorough client-specific analysis.
- Have a discussion about where the client would like to be in a benchmark: 'best in class' or within the normal range?
- Consider doing the benchmarking yourself: seek out comparable projects, analyse their data, and combine the benchmarking with a project visit.

Interviews

Interviews are an excellent means to get 'up close and personal' with building users, learning first-hand about their interests, expectations and needs concerning the building.

Interviews can take place with different kinds of stakeholders. For the strategic brief, it will be useful to conduct interviews with the key decision makers and the sponsors of the project (the CEO, project manager, and/or head of the facility management department). What are their visions and dreams concerning the project? What do they think should be achieved with it? How ambitious are they? Should it be a 'normal' building or something exceptional?

For the functional brief, the scope of the interviews should be broader, involving a wide range of users (depending on the type of building these can be office workers, teachers, medical staff, visitors, patients, et cetera). The purpose of these interviews is to gain a comprehensive understanding of the activities of users, their way of thinking and their practical needs. For the technical brief, it will be useful to conduct interviews with key technical personnel, for example people from the IT department, laboratory experts, or people from the facility management department.

Briefing interviews can usually be 'semi-structured', which means that they resemble a normal conversation. To steer the conversation, it will be useful to have a list of topics or questions. After the interview, the same list can be used for categorization of answers. What have the different interviewees said about specific topics? Are their ideas converging or diverging? Is there a coherent image or idea emerging from the interviews, or is additional research needed?

A point to consider is that interviewees may use the interview as a means to push through wish lists or highly personal opinions concerning the project. This cannot be entirely avoided, but follow-up questions can help here (e.g. "What makes you say that?" or "Is that a widely held opinion in the organization or a personal one?"). Furthermore, it can be useful to rephrase what people say ("Do you mean that …") to make things clearer, although the interviewer should be careful not to steer the conversation.

Recommendations

- Inform the interviewees beforehand about the topics to be discussed and about the use of the outcomes (e.g. anonymized or not).
- Consider further involvement of the interviewees in the later stages of the project (e.g. in focus groups or work groups).
- Write a short report of each interview. Full transcripts are even better, but this can be very time-consuming (although transcription software can help with this).
- Analyse whether interview outcomes are converging or diverging.
- Look for telling quotes and anecdotes that can be used as narratives in the brief.
- Consider group interviews. These are time efficient and discussions between the interviewees may provide interesting additional insights.

Surveys

A survey is a powerful technique for gathering data from large groups of people. In relation to buildings, surveys are typically used for satisfaction measurements, asking people about their satisfaction on a wide range of aspects such as acoustics, temperature levels, the availability of meeting rooms and so on. Such questions are useful in the sense that they can highlight user concerns and areas for improvement. If, for example, a survey shows that 70% of the users are dissatisfied with the acoustics, it is obvious that this should be a major point of attention in the brief.

Surveys can also be used to ask people about their daily activities, and thereby their functional needs. Typical questions are "What are your five most important activities?" or "How much time do you spend on the following activities?". The answers to these questions will give the project team an indication of what people do, which can be used to develop the functional brief. A simple example: if people indicate that they do a lot project work, there is likely to be a need for project spaces—although it would be wise to verify that need in a number of interviews.

When looking at survey outcomes, it is important to understand that surveys measure people's perception of things, which is not necessarily the same as reality. Office workers may, for example, indicate in a survey that they spend most of their time on desk work, while occupancy measurements show that their desks stand empty for much of the time they are available.

Another limitation is that surveys provide little insight into the story behind the data. A survey may show that 70% of the users are dissatisfied with the acoustics, but it does not yet explain why this is the case. Additional research will be necessary to establish whether it is a technical issue (e.g. a lack of sound absorption), a design issue (e.g. a high density of workplaces) or a behavioural issue (e.g. people making loud phone calls).

In practical terms, it should be noted that setting up a good survey requires a decent grasp of statistics. It can therefore be a good idea to use an existing survey method. This saves time and it comes with the additional benefit of being able to benchmark with other projects, which will help to make sense of the data from one's own project.

Recommendations

- Communicate clearly to the survey respondents when and why the survey is to be conducted and emphasize that all data will be treated confidentially.
- Improve the response rate of the survey by announcing it widely, sending out reminders or rewarding respondents in some small way.
- Limit the number of questions. Completing the survey should take no longer than 5 to 10 minutes.
- Critically review all survey questions beforehand. What is the purpose of the question and how can the answer be used in the briefing process?
- Combine the survey with interviews and an analysis of the building's design to be better able to interpret the outcomes.
- Consider adding open questions to the survey to give people the possibility to come up with ideas and comments.

Project visits

Briefing processes tend to be very much about the 'internal affairs' of the client. When looking for new ideas and inspiration, however, it may actually be best to look outside the organization and visit other projects.

The advantage of project visits is that they give clients and users a very tangible impression of the available architectural possibilities. It can help them to widen their frame of reference and it allows them to clarify their preferences ("This is great" or "This would never work for us"). For experts, project visits can be useful because they provide an excellent opportunity to look and learn from colleagues and competitors.

The obvious choice is to visit projects that are similar to the project at hand. For instance, when building a town hall, it will be interesting to visit other town halls because such projects will have had to deal with similar challenges (e.g. in relation to security or accessibility). It can be just as interesting, however, to visit projects that are very different because these may offer a new perspective on things. For a hospital project, for example, it might prove interesting to look at hotel projects (in relation to hospitality), airports (in relation to logistics) and laboratories (in relation to hygiene).

When visiting a reference project, it is important to look beyond the building's appearance and get a true understanding of how the building works in practice. This can be achieved by talking to the building's users and facility managers: What do they regard as the building's good and bad points? What would they have done differently in hindsight? Which mistakes should have been avoided? And what features have proven to be very successful?

Furthermore, it will useful to gather factual information about the project visited. Floor plans and cost overviews will help to get a more detailed understanding of the project and can be used as input for benchmarking (see page 101). Formal evaluations of the project will be highly useful as well, giving a factual view of how users experience the building's usability. All this information can be an enormous help in preparing a design brief, as it allows project teams to learn from both the mistakes and good ideas of others.

Recommendations

- Look at comparable projects, but also consider projects that are very different.
- Make sure to have access to the right people: not just the architects (who are likely to have a bias about their own work), but also the building's facility manager and users.
- Prepare the visit. Formulate specific questions and make a list of the particular spaces or features that should be looked at.
- Gather and analyse material about the project: descriptions, floor plans, cost figures, evaluations.
- Document the visit in order to communicate the lessons learnt to the rest of the project team/client organization.

Observational studies

Observational studies examine the behaviour of building users in real-life settings. The purpose is to understand the reality of what people do as opposed to what they say they do in interviews and surveys.

Observational studies can be done in different ways. The classic approach is to place an observer in a space who then registers the use of this space, making notes of how many people are there, what they are doing, and what kind of tools or artefacts they use. When working on a library project, it could be interesting to observe how reading rooms are being used. Are people actually reading books there, or are they mostly working on their computers? Is the room studiously quiet, or are people chatting? Are people moving around or staying put? Such observations can reveal a lot about the use and the purpose of a reading room, which may be different from what the name suggests.

An alternative observation method is 'shadowing'. With this method, a building user is followed around by an observer. The focus of shadowing is not so much on how people use a particular space, but on getting an understanding of people's activities and space usage over time. When preparing the brief for a hospital project, it will be useful to tag along with a nurse for a full day to get to know his or her work processes and the related spatial needs.

Next to these traditional observation methods, there are high-tech observational methods that make use of cameras, infrared-sensors, sound-sensors and GPS tracking. These tools do more or less the same as human observers, but they are less time consuming and they provide more accurate, real-time data.

Not many projects will have sufficient resources for extensive observational studies. It is always useful, however, to spend at least a couple of hours in the client's building to take in the sounds, the people, the activities and the artefacts. Such an informal way of observing will not produce detailed data about use patterns, but it will give a 'feel' for the everyday use of the current building, which is a good starting point for a briefing process.

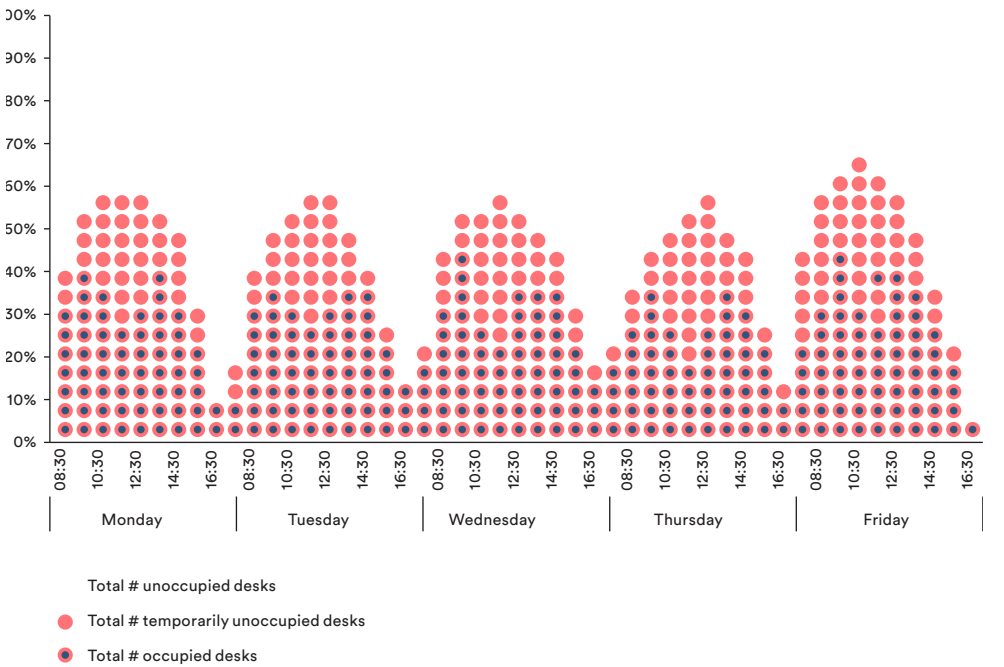
Recommendations

- Think beforehand about the purpose and set-up of the observational study. What is the subject of the observation and what kind of insights should the observational study produce?
- Communicate the purpose of the observational studies to the building's users beforehand.
- When using cameras or GPS-data in observational studies, make sure that there are no privacy issues. Where necessary, ask for people's permission.
- Mix observations with short interviews to get a better understanding of what and why people behave the way they do.
- Make sure the observations take place during a representative period (e.g. not during holidays).

Auditorium A
Capacity: 100 seats

	08:00-08:45	09:00-09:45	10:00-10:45	11:00-11:45	12:00-12:45	13:00-13:45	14:00-14:45	15:00-15:45	16:00-16:45	17:00-17:45
Mon	35	53	53	45	0	54	54	49	0	0
Tues	50	50	43	43	0	46	46	31	0	5
Wed	50	30	20	20	0	0	23	28	28	0
Thurs	54	43	33	31	0	0	48	46	52	0
Fri	0	42	42	42	20	0	32	34	0	0

Example: university auditorium
This example shows the outcomes of an occupancy study of a 100-seat university auditorium, measured over a one-week period. The data show a peak occupancy of 54% on Thursday morning (54 persons/100 seats) and that the room is used 70% of the time that it is available (34 hours in use/ 50 hours' availability). These figures indicate that there is need for an auditorium, but that it could be reduced in size.



Example: office workplaces
This diagram shows the average use of workplaces in an office at five moments per day. The diagram shows that peak occupancies are seldom higher than 40%. This figure rises to 65% when workplaces that are 'temporarily unoccupied' (empty chair, but the computer is turned on) are included. These figures suggest that a 'free seating' concept is possible within this organization.

Occupancy measurements

Occupancy measurement is a special kind of observational research (see previous page) that is targeted at measuring the quantitative usage of spaces. Typically, occupancy measurements record how long spaces are being used, and by how many people.

Occupancy measurements can be very useful as input for the briefing process. In an office building, for example, measurements may show that meeting rooms are only used 50% of the time they are available and that these rooms are frequently used by fewer people than the rooms can accommodate. Such data suggest that the organization could do with fewer and smaller meeting rooms, which is obviously relevant input for the brief.

There are different ways of conducting occupancy measurements. The most basic way is to have a number of 'observers' (often cheap labour such as students or interns) making rounds in the building, or parts of it, noting whether spaces are used or not. For office buildings, such counting is usually done four times a day. In an educational building, measurements may take place every hour, depending on teaching schedules.

Occupancy measurements can also be done by digital sensors that can be placed in the ceiling, underneath desks or even in chairs. Such systems tend to be quite expensive, but they deliver continuous and fine-grained data.

When analysing occupancy data, it is important to distinguish between different kinds of metrics. There is 'average occupancy' (occupancy levels averaged over a period of time), 'peak occupancy' (the highest occupancy level measured) and 'modal occupancy' (the most frequently measured level of occupancy).

When looking at average occupancy only, one can get the impression that it is possible to radically cut back on space consumption, which can be somewhat misleading. For example, if the required number of meeting rooms is based on their average occupancy, this may very well lead to disgruntled employees on Monday mornings when everyone wants to have their meetings. Conversely, calculating with peak occupancies may result in large numbers of spaces that mostly stand empty. Consequently, it is usually the 'modal occupancy'—the situation that is most common—that is the safest to use for capacity calculations.

Recommendations

- Communicate clearly when and why the occupancy measurements will take place.
- Make clear that the measurements will not be used to collect any data about individuals.
- Look carefully at the measurement period (e.g. avoid holidays).
- Be aware that occupancy measurements show current usage, based on existing behaviours and technologies. Future use patterns may be different.
- Combine occupancy measurements with interviews in order to be able to interpret the outcomes (Why are certain spaces intensively used or underutilized?).
- Examine to what extent occupancy peaks can be reduced by spreading activities more evenly in time (e.g. scheduling the use of lecture halls over a larger period of time).

Walk-throughs

As the name implies, a 'walk-through' is basically a walk through a building. The idea is that the briefing team or brief writer tours the existing building together with a group of users to see how it functions and to get a 'feel' for the organization. During the tour, the users are asked to point out which spaces they regard as functioning well and which ones not. They are also asked about which building features they consider important, or unimportant, and how they perceive the quality of specific attributes such as furniture, indoor climate or the layout of a room.

For the briefing team, walk-throughs are a productive way of getting to know a lot in a short period of time. Much more than surveys or occupancy studies, walk-throughs provide a very visual, tactile and direct impression of the existing situation. Insights come from a combination of listening and looking. What is the atmosphere in the building? Are spaces crowded or empty, noisy or quiet, messy or organized? And how do users perceive the quality of these spaces? What do they like and dislike? What would they like to have changed, and why?

Ideally, several walk-throughs are done, with different types of users. In a school, for example, it will be interesting to do separate walk-throughs with the pupils and the teaching staff, and then look at differences and similarities in their stories and their perception of quality.

Usually, the tour and its 'stopping points' will be predefined by the facilitators of the walk-through, but it can also be interesting to ask the building users involved to develop the routing. In any case, there should be a possibility for 'detours' to look at spaces or features that the participants did not think of beforehand (e.g. very practical spaces such as storage spaces, toilets, etc.). After the walk-through, there should be a closing session in which the information collected is discussed and summarized. This session can also be used for an initial discussion about how the observations can be translated into requirements for the new situation.

Recommendations

- Be aware that the outcomes of a walk-through are very much dependent on the people participating
- Prepare the walk-through carefully. Make sure that the routing and stopping points cover all relevant spaces. Prepare a list of discussion topics for each stop.
- Start each walk-through with an introduction of the method and an explanation of its purpose.
- Consider turning the tour into a 'photo safari', in which users are asked to make photos as visual documentation of the positive and negative aspects of the building.
- Do several tours with different kinds of users to get a more comprehensive understanding of the building and its users.

Objectives workshops

One of the most important purposes of briefing is to define clear objectives for the project, but that is easier said than done. At the start of a project, objectives may still be fuzzy and diverging. An 'objectives workshop' with the project's key decision makers or stakeholders can help to bring clarity to this. The purpose of the workshop is to uncover and elicit the participants' ideas about what should be achieved with the project, and to translate these ideas into a clear set of project objectives.

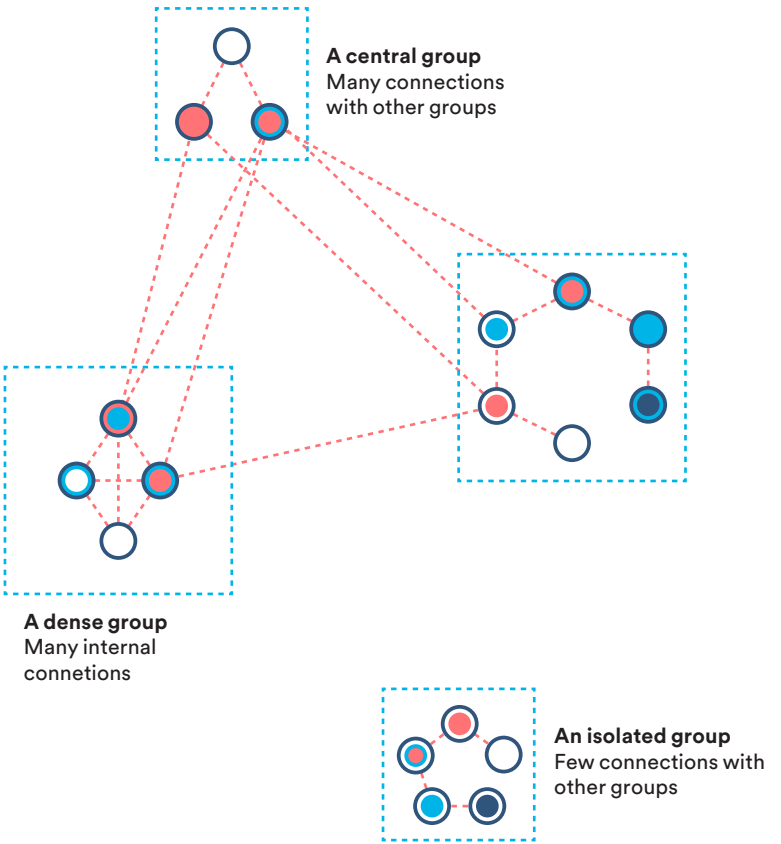
An objectives workshop usually has three parts. The first part is a presentation about the project and its potential to deliver value to the client organization. This presentation is important because its aim is to trigger initial ideas and to speed up the thought processes of the participants, who usually haven't had much time to think about the project beforehand.

The next step is for the workshop's participants to work together in groups and formulate possible project objectives. To structure this process, participants can be asked to link these objectives to the organization's general mission or strategy. Groups may also be asked to make an 'objectives tree' (see page 54), in which general objectives are broken down into smaller, more concrete objectives and possible solutions that help to achieve these objectives.

When the groups are ready, they present their results to the other participants and discuss which objectives should be kept, developed further or discarded. The workshop's facilitator plays an important role here in trying to achieve commonality, clarity and consistency. If there are too many objectives, the facilitator should open up a discussion about prioritization. If objectives are too vague, the facilitator should try to rephrase and concretize these. If there is no consensus, the facilitator should seek compromise or come up with alternative ideas. The latter is better than the first because compromises can easily result in meaningless formulations that are of little use to the design process.

Recommendations

- Use organizational statements (e.g. concerning strategy, mission, corporate values) as the starting point for the formulation of project objectives.
- Make sure there are at least three hours available for the workshop: people need time to 'warm up' and discussions should not have to be cut short because of time constraints.
- Keep the groups small so that all participants are actively involved in the discussion.
- Try not to let the objectives become too vague or too consensus-driven.
- Make sure that all the key decision makers participate. The workshop will be counterproductive if the outcomes are pushed aside at a later stage by decision makers who did not participate.
- Use the workshop outcomes to draft a formal text about the project objectives which can be sent back to all the participants for feedback and approval.



Social network diagram
Social network analysis can be used as input for adjacency requirements. Groups that have strong ‘intergroup ties’, or groups that would benefit from such ties, should preferably be located close each other. Interaction patterns may also influence the demand for social spaces such as coffee lounges. Members of very ‘dense’ groups (groups with lots of internal ties) are more likely to need and use such spaces than ‘loose’ groups (groups with few internal ties).

Social network analysis

Social network analysis is a method for mapping and analysing the social interactions in an organization. Such an analysis can be based on data from surveys and observations, but nowadays the method is mostly associated with the analysis of 'big data' emanating from email traffic, social media, smart phones and sensors. These data are captured in spider web-like network diagrams that consist of 'nodes' (people or groups) and 'ties' (the connections between those persons or groups) that show who is in touch with whom.

In relation to briefing, the method is interesting because many clients want their building to promote interaction and collaboration. Office clients, for example, often want their building to enhance the collaboration between the departments in their organization ('breaking down the silos' in management parlance).

Social network analysis can help with the formulation of such ambitions by providing accurate data about communication patterns. Is it true that there is little contact between departments? Which departments have a high level of 'centrality', talking to everybody, and which ones are 'peripheral', mostly talking among themselves? Where are there 'holes' in the network that need to be filled?

Clients can use these observations as input for their brief. They can investigate how the building's design can be used to enhance specific types of interaction, looking at things like adjacencies between departments, the distances between people, circulation routes, and the positioning of natural meeting spots such as coffee machines. Just calling for two departments to be located on the same floor can already make a huge impact on their interaction.

One word of caution, however: social network analysis is a fairly complex exercise. It involves large amounts of data and while some of the outcomes may be fairly obvious, substantive mathematical and methodological skills are required in interpreting the data. Another difficulty is that data tend to be privacy sensitive. Users have to be asked for their consent before data are gathered and analysed.

Recommendations

- Make sure that the data (e.g. from email/social media/GPS trackers) are anonymized before they are analysed. Where necessary, ask users for their consent.
- Do not get lost in the (typically) immense quantity of data. Focus on general patterns and the interaction between groups rather than individuals.
- Bring in external expertise or use dedicated software (e.g. NodeXL) for the analysis and visualization of data.
- Define beforehand what the purpose of the analysis is and how it relates to the design of the building.
- Be aware that the analysis provides a snapshot of the current situation only. Patterns may change due to changes in staffing and the adoption of new technologies and working practices.

Future workshops

The 'Future Workshop' method was originally developed in the 1970s as a tool for social action and citizen empowerment. These days, the method is being used in all kinds of change processes, including briefing processes for buildings. The method's strength is that it actively engages the participants in the identification of problems and pushes them to think innovatively about possible solutions.

A classic future workshop consists of three phases: a critique phase, a utopia phase and a solution phase.

The critique phase is the start of the workshop. The workshop's participants are asked to make a critical examination of the existing accommodation situation. What are the current building's good and bad points? What problems need to be solved? What features are missing or suboptimal? What qualities should be retained?

In the subsequent 'utopia' phase, the participants are asked to think about the future situation and their ideal accommodation solution. This phase should be without constraints—the participants are allowed, or even encouraged, to develop utopian, weird, visionary, exaggerated ideas. What kind of building do they dream of? What would they build if there were no practical or financial limits whatsoever? The objective of this phase is to stimulate creative thinking and to uncover people's wishes and ideals.

In the third and last phase, the workshop participants have to come back down to earth and look at the extent to which their ideas will be able to solve the problems that have been identified in the first phase. The participants pick and choose the most relevant and promising ideas and discuss how ideas can be transformed and translated into practical solutions, which can then serve as input for the brief.

To turn this kind of workshop into a success, the facilitators need to strike a balance between 'blue sky' brainstorming—which may produce lots of wild and unexpected ideas—and a more mundane kind of realism aimed at ensuring that the ideas produced are feasible within the constraints of the project.

Recommendations

- Take enough time: a future workshop can be done in a day, but it is a good idea to spread it out over several days. That gives participants more time to develop their thoughts and it provides the opportunity to alternate the sessions with project visits and lectures from experts.
- Get a proper workshop space: not an ordinary conference room, but a room that is flexible (allowing for group work) and inspirational in its design.
- Select the workshop participants carefully: include both 'traditionalists' and 'innovators' to make sure that all voices are represented.
- Be aware that future workshops can produce unexpected results and that the participants will strongly identify with these ideas. The project's leadership should be willing to take these results into serious consideration.
- Make sure the workshop takes place in the very early stages of the project when there is still room to accommodate unexpected ideas.

Persona method

The persona method is a narrative technique that can be used for the exploration and description of the future use of a building. The method makes use of fictional characters to represent different kinds of building users. Each character ('persona') is developed and described in terms of their characteristics—such as age, function, interests and activities. For a school project, for example, personas may include a teacher, a pupil and a parent. In a hospital, it can be about nurses, patients, visitors and medical staff. The study then explores how each of these personas might think and act in the future and how that would translate into their needs with regard to the building.

The persona method can be of particular use in projects where the building's actual users are not yet known—think of a speculative office project or a large hospital project that will only be finished after many years. The personas act as substitutes for the real users. But the method is also useful in participative processes with real-life users because hypothetical personas help to make discussion more generic and less tied to specific people.

A common format for a persona story is to start with a description of the persona in terms of age, gender, function and their main activities or interests. The next step is often to describe 'a day in the life of …'. This is a chronological account of the persona's activities on an average day, at some point in the future. These stories answer questions like: What is the first thing they do when they enter the building? What are their preferred spots in the building? Which spaces do they use and what do they do there? Who do they meet? What technologies and artefacts do they use?

Persona stories are fictional, but they should be rooted in reality. Demographic data and user research (e.g. interview outcomes) should be used to develop personas that are both relevant, realistic and recognizable. In the brief itself, the personas can be used for communicative purposes, giving the design team an impression of the building's future users.

Recommendations

- Make sure that the people working on the persona method have good writing skills. If not well-written, persona descriptions can easily become somewhat silly.
- Keep persona stories short, but rich in detail to make them credible.
- Gather data (from interviews, workshops, scenario studies, desk research) as input for the stories, making sure that they are grounded in reality.
- Consider asking users to develop their own stories, which can then be used to build up more generic stories.
- Link personas to scenario studies (see page 113) as a means to illustrate and explain possible future ways of using the building.

	Low growth headcount = 1900	**Medium growth** headcount = 2500	**High growth** headcount = 3200
Traditional office 23 sq.m. per employee	43,700 sq.m.	57,500 sq.m.	**73,600 sq.m.**
Free seating 14 sq.m. per employee	26,600 sq.m.	**35,000 sq.m.**	44,800 sq.m.
Mobile working 8 sq.m. per employee	**15,200 sq.m.**	20,000 sq.m.	25,600 sq.m.

Total space requirements in three different scenarios.

How much space do we need?
This is an example of a very practical scenario study concerning the spatial needs of an office organization. The organization in question is growing fast and the HR department has devised three growth scenarios (low/medium/high). Furthermore, the organization is considering what kind of workplace concept is suitable for them. Should they stick to their traditional concept, or go for desk sharing or even a more radical form of mobile working? As the matrix shows, the combination of these two variables has a dramatic impact on the need for space.

Scenario studies

The input for the brief usually comes from the current building's users. It is obvious, however, that needs and users change over time, and a good brief should anticipate such changes, otherwise the building will be outdated by the time it is completed. Scenario studies can help to avoid this. They are a means to explore and understand possible future developments and their impact on spatial requirements.

Scenarios can be based on changes in contextual factors, such as economics, climate, politics or technologies, and on client-specific variables such as organizational growth, user demographics and expected changes in the activities of the building's users. The relevant factors will depend on the type of project. For a university building, for example, it will be useful to investigate how the rise of online courses may affect the need for auditoria. For an office project, it will be relevant to look at the emergence of 'new ways of working', such as working from home, and its impact on the need for desk space at the office.

A very practical variable to consider in all scenarios is the number of users of the building and the use of space per user (see example on opposite page). Will the number of users remain constant, grow or shrink in the future? And how much space per user will be needed? Together, the answers to these questions determine the total space requirements and it is important to test how different combinations play out.

The main challenge with scenario studies is the fact the scenarios are inherently speculative. Even the most plausible, best-researched scenarios will rarely play out as envisaged. There may be unexpected developments and projected changes may fail to materialize. But that does not diminish the usefulness of scenario studies. Thinking about the future is instrumental in the exploration of new accommodation solutions and it pushes clients and users to think beyond the status quo.

Recommendations

- Scenarios should be plausible, but not too cautious. Adding provocative or extreme scenarios can help to sharpen people's thinking and their awareness of future change.
- Look at existing scenario studies before developing one's own. There are plenty of scenario studies available on the Internet.
- When making a scenario, differentiate between fairly certain developments (e.g. demographics) and less predictable developments (e.g. social change).
- Do not look only forwards, but also backwards. This helps one gain an understanding of how quickly or slowly things change over time.
- Differentiate between structural trends (long-term, wide-range) and passing fads or fashions (short-term, narrow-range). The first tend to be most relevant.

Charrettes

A charrette is a type of workshop in which large numbers of people are involved in the generation of ideas for a project. The method's name is believed to originate in teaching practices at French beaux arts schools in the 19th century where architecture students had to place their models on a cart ('charrette' in French) for examination. The story is that the students would frantically continue working on their models even after they had been placed on the cart.

Today's charrette workshops share this frenetic atmosphere with the 19th century original, but they are much more about group work than individual work. Charrettes are workshops in which large numbers of people work together, sitting in groups at small tables, brainstorming, putting ideas and keywords on paper, making and discussing small sketches. The participants are not just architects, but all kinds of stakeholders: the building's users, top decision makers, facility managers, special interest groups, city officials, neighbours. The central idea is to give everybody an opportunity to provide input to the project. The more, the merrier, so to speak.

Just like a future workshop (see page 110), a charrette is usually divided into three phases. In the first phase, the participants are given an introduction to the project and the purpose of the workshop. The second phase is all about brainstorming. Usually the participants are divided into subgroups that are asked to generate ideas about specific topics. In the third and last phase, all the generated ideas are gathered, presented and discussed with the entire group. Ideally, this results in a shared vision for the project—or, if that is not possible, at least in an understanding of the different expectations and interests that people have.

It is important to note that in a briefing process, the goal of the charrette is not to produce design ideas—no matter how tempting that may be. The aim is to formulate goals, needs and a general vision for the project. The workshop's facilitators play a large role in maintaining this focus. Facilitators also play an important role in managing the expectations of the participants. Charrettes can deliver a great many number of ideas, but it is unlikely that they can all be incorporated into the project. The facilitators therefore play an important role in channelling the group's thinking and the selection of viable ideas.

Recommendations

- Think about what each of the sub-groups should discuss. Are all groups asked to think about the same question (e.g. how to create a productive office?) or should they each focus on a different topic (e.g. sustainability, efficiency, health).
- Be clear about the limits and purpose of the charrette before it takes place.
- Start the workshop with an engaging presentation to generate enthusiasm and to infuse the group with new ideas and alternative lines of thinking.
- Involve the project's top decision makers. They can participate in the brainstorming process, but they can also be used as an audience or review board to which the final proposals are presented.
- Make sure the workshop takes place in the very early stages of the project when there is still room to accommodate unexpected ideas.

Pilot projects

A pilot project is a small-scale project in which new ideas or concepts are tested in real life before they are implemented on a larger scale. It is a fairly expensive and time-consuming method as it involves the building of a full-scale prototype. In large projects, however, the effort may very well be worthwhile. If, for example, a hospital aims to develop a new kind of patient room, it will be smart to do a 'proof of concept' by means of a prototype or mock-up before building dozens of them in a new building or renovation project.

Pilot projects are also useful in large construction programmes that consist of multiple sub-projects. Think of a bank that wants to redesign all of its retail offices. Before doing a full 'roll-out' of the concept, it makes sense to test the ideas and solutions in one or two locations, looking at whether the intended benefits (e.g. expressing a new brand identity or facilitating new kinds of activities) are indeed achieved. The lessons learnt can then be fed into the standard brief and design guidelines for the projects that follow.

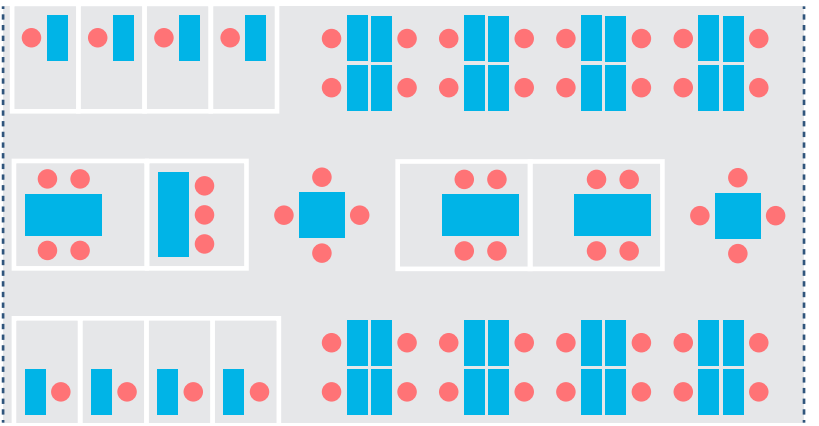
For pilot projects to be useful, they should be well researched and documented. There should be a clear notion of the ideas that need to be tested and the criteria that should be used (e.g. user satisfaction, costs, customer perception). The evaluation of the pilot project may include interviews with users, observational studies and surveys. These activities should take place both before and after the completion of the pilot set-up to be able to assess the impact of the changes.

When interpreting the outcomes of the pilot project, it is important to be aware of the risk of bias. Pilot projects are typically intended to test out new ideas. The people behind those ideas tend to very enthusiastic about them. Negative pilot outcomes may be downplayed and positive ones overstated, or vice versa. To best way to avoid such bias is to create a solid research set-up that produces trustworthy data.

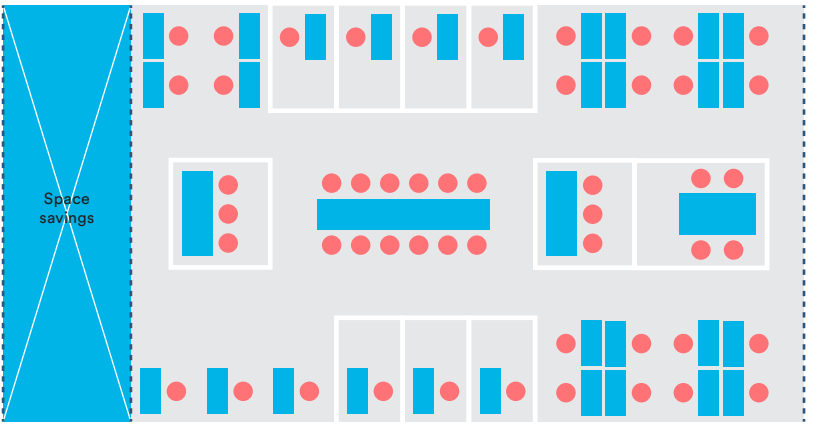
Recommendations

- Be aware that the outcomes of a pilot project are not always 'scalable'. Outcomes may change as the scale of the project increases or as other types of users become involved.
- Carefully select the participants in the pilot project. It is easiest to do pilot projects with enthusiastic volunteers but this may make the outcomes less reliable.
- Set up a proper evaluation of the pilot project, take measurements both before and after implementation.
- Treat the pilot project as a real project, with a sufficiently large budget to realize a realistic and attractive solution. If such a budget is not available, consider the use of full-scale mock-ups (e.g. made of cardboard) as a proxy for the envisioned solutions.
- Discuss with the pilot project's users how the concepts and solutions applied might be improved.

Traditional office (40 workplaces / 40 employees)



Activity-based office (30 workplaces / 40 employees)



Example: office concepts
In this example, diagrammatic floor plans are used to explain the difference between a traditional office set-up and an 'activity-based office'. The floor plans are conceptual: they do not show details or dimensions, but they do illustrate how the different concepts affect the need for space and the availability of different kinds of work settings.

Design studies

One of the key difficulties of briefing is that it is a very 'textual', and thus rather abstract, exercise. Needs and ambitions are captured in words and numbers, which can be interpreted in many different ways. This openness is advantageous and deliberate because it gives the design team the freedom to come up with inventive solutions. But it can also lead to misunderstandings on the part of the client and users. Think of responses like: "We thought it would be more like …" or "This is not really what we had in mind."

Design studies can help to reduce the chance of such misunderstandings. Diagrammatic floor plans, sketches and reference images can be used to guide discussions about quality with users, explaining how particular requirements may work out in practice. In a school project, for example, there may be a discussion about the size of classrooms: should these be 50 or 60 square metres in size? Such discussions are very abstract if there is only an Excel sheet to look at, especially for laymen. In such a case, it will be extremely helpful to develop a set of floor plans that visualize the difference between the various options.

It is important to note, however, that during the briefing phases, design studies should remain basic and conceptual. They should facilitate discussions about capacity, density and usability, and stay away from detailed design issues such as furniture, colours or materials, because otherwise the briefing process starts to interfere too much with the design process.

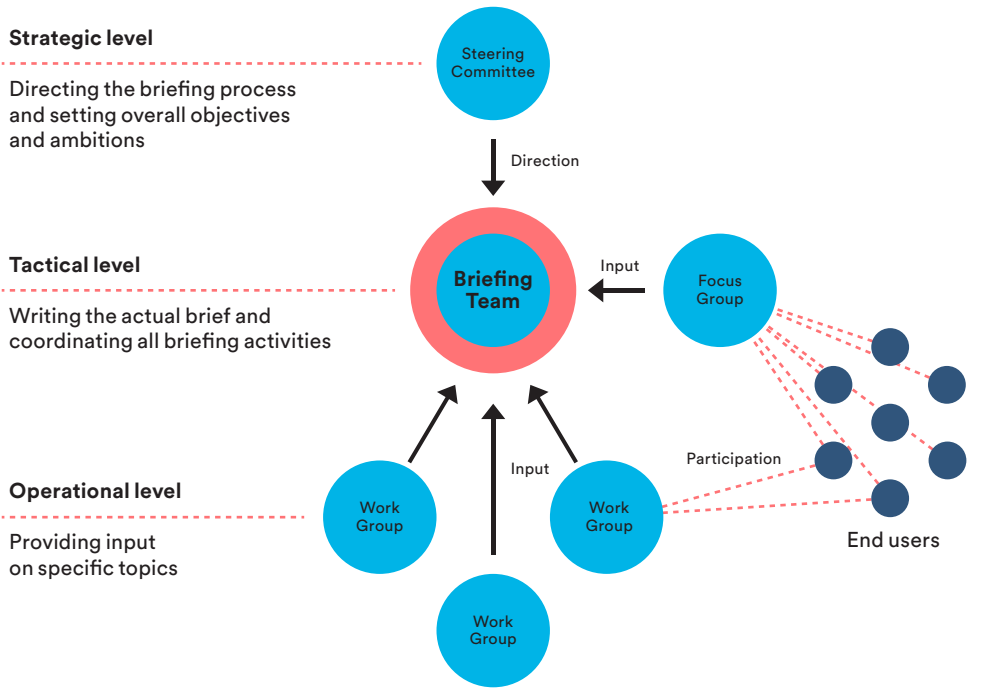
Design studies can also be used as a 'reality check' of the contents of the brief before it is finalized. The purpose then is to test the feasibility of the assumptions about sizes and capacities, in particular in relation to budget. For example: if a brief calls for a large number of parking spaces on a tight location, it will be useful to do an early design study to check whether the desired number of parking spaces can indeed be created on site, or whether an underground parking garage is called for, which would have significant budgetary implications. Conducting such a test will help to avoid unwelcome surprises during the formal design process and it will help fine-tune the brief and the project's budget.

Recommendations

- Use prototypical designs to explain the pros and cons of different concepts (e.g. open-plan offices, cellular offices and activity-based offices) to decisions makers and users.
- Keep design prototypes sketchy and diagrammatic. Details and materialization should be avoided.
- Generate feedback about design prototypes through focus groups and workshops.
- Consider involving users in the development of design prototypes.
- Focus on functional properties ("works like …") and not on the actual design ("looks like …").
- If the design team is already on board, make them responsible for developing the prototypes.

This page is intentionally left blank”

Organization



Project structure
A typical project structure includes a steering committee, a briefing team and several work groups. End users may be involved in the project via participation in focus groups or work groups.

Organization

In earlier chapters, we have talked about 'the' client as if we were referring to a distinct person or actor. This may be the case in small projects, but in larger projects the client is more usually an assemblage of parties, such as a project team, a steering committee, a purchase department, a real estate department, work groups and external advisers. All these groups play a role, or want to play a role, in the project and it is not always easy to align their actions and interests.

To keep the briefing process efficient, the roles and responsibilities of the different parties should be clearly defined. Who is responsible for the actual writing of the brief? Who is consulted and asked to provide input and ideas? Who reviews and signs off the formal briefing documents? And, most importantly, who decides what to do in the case of conflicting demands or demands that do not (or no longer) fit the budget?

By setting up an organizational structure for this, the briefing process becomes like a project in itself, with the brief as its main deliverable. It makes the process somewhat more formal, but it can help to avoid frustrations, resource conflicts and power play among the various stakeholders.

Typically, the organizational structure of a briefing project has three levels: a steering committee (strategic level), a briefing team (tactical level) and work groups (operational level). The steering committee will have formal responsibility for the entire project, from the briefing and design, to construction and completion. It is their task to appoint a briefing team, who in turn will be responsible for the writing of the brief and the coordination of briefing activities (e.g. surveys, occupancy studies). Work groups can be used to support the briefing team by providing input on specific topics (e.g. IT, security, catering, sustainability).

End users are in most projects only indirectly represented in the project structure. Their involvement usually takes the form of interviews, workshops and surveys. A more formal representation in the project organization can take place via focus groups. In that case, a selection of users is asked to provide input and feedback concerning the brief and often also the design. In northern European countries, such as the Netherlands and Norway, users may also have a formal representation in the project via the involvement of the works council or trade unions.

External client advisers are usually brought in to give advice on specific topics or to manage the briefing process if such expertise or capacity is lacking within the client organization.

The roles and responsibilities of these actors will be discussed in more detail on the following pages.

Steering committee

The steering committee (or 'project board') has the formal responsibility for the entire project. Part of this responsibility is to ensure that the project is underpinned by a clear and feasible brief. It has to appoint and set up a competent briefing team, allocate sufficient resources to it, and monitor its progress.

In relation to the brief's contents, the steering committee plays an important role in the development of the strategic brief (see page 26). As the project's key decision maker, it must define the general course of the project: What are the main objectives? How does the project fit into the wider organizational strategy? How far should the project's ambitions reach on such matters as architecture, sustainability and new ways of working? And what is the available budget?

The groundwork for answering these questions is usually done by the briefing team, but the steering committee must indicate the overall direction and approve the developed vision. Especially if the project is intended to facilitate major organizational changes (e.g. a new way of working), the steering committee has a crucial role to play as champion of the envisioned changes.

Obvious candidates for membership of the steering committee are the managers of the disciplines involved, such as the heads of facility management, real estate, finance, ICT and human resources. It will be very useful if some of these members have previous experience with construction projects. If such experience is not available, it will be wise to bring in external expertise. Furthermore, it is important that members have the skills and power to deal with organizational politics and take decisions about conflicting stakeholder demands, which are almost certain to arise.

The frequency of steering committee meetings can be limited. At the beginning of the project there should be a start-up session in which the committee agrees on the general objectives and vision for the project. After that, meetings will take place around the project's milestones when they are required to review and sign off formal briefing documents. Exceptionally, the committee will meet to discuss conflicts or major scope changes.

Responsibilities
- Setting project objectives.
- Approving/reviewing formal briefing documents.
- Resolving issues/problems/conflicts.
- Monitoring overall progress, quality and budget.

Members
- One or two top managers/key decision makers.
- Managers of the disciplines involved (HR, IT, facility management, real estate, finance).
- External adviser(s) with construction expertise.

Recommendations
- Make sure that members have sufficient 'clout' to push and sell necessary changes within the organization.
- Decisions should not be based on personal preferences. The steering committee should represent the interests of the organization as a whole.
- Committee members should represent a wide diversity of interests, and not just a few (e.g. not only finance).

Briefing team

The briefing team is the task force that executes the briefing process and does the actual writing of the brief. Its members are responsible for all briefing activities, such as user interviews, occupancy measurements, workshops and scenario analyses. In large projects, part of this work may be delegated to work groups or external consultants, but the briefing team still has the responsibility to coordinate those activities. Furthermore, the briefing team should act like an editor-in-chief, reviewing and analysing all the material produced and turning it into a coherent and clear brief.

To be able to develop a good brief, the briefing team needs to be made up of two kinds of people: people who know about buildings and people who know about the client's organization. The first group can be external advisers, the second group should be 'insiders' who know their way around the organization and have an in-depth understanding of the organization's activities, power relations, culture and interests.

One of the most important skills of the briefing team should be the ability to listen. The team should not push for its own ideas and preferences, but listen closely to what different stakeholders are saying and try to elicit and understand their needs.

Furthermore, the team will need diplomatic skills. During the briefing process, they will have to work with a multitude of stakeholders who all have their own ideas and preferences concerning the project. The team will need to be able to balance competing demands, tone down unrealistic expectations, develop productive compromises, and, where necessary, reject requests that do not fit into the project's objectives or budget.

As to the team's size, a small briefing team—say, two to four persons—will usually be sufficient, even on very large projects. Working with a small team avoids lengthy discussions and makes it easier to create a coherent brief, with a single message and a single tone of voice.

Responsibilities
- Writing the brief.
- Coordinating all briefing activities, including the activities of the work groups and external consultants.
- Communication with the steering committee, work groups and end users.
- Evaluation of design proposals in relation to the brief.
- Preparing formal briefing documents for the steering committee.
- Managing and administering a requirements database, if available (see Briefing and BIM, page 129).

Members
- Both insiders and external experts on the building type in question.
- People with excellent writing and communication skills.

Recommendations
- Ensure that the briefing team has strong communication skills. They should be able to communicate both 'up' (steering committee) and 'down' (workgroups and users).
- Mix technical knowledge with diplomatic skills.
- Include a professional 'briefer' in the team if there is no prior experience with construction projects.

Work groups

Work groups can be set up to support the briefing team with the development of requirements for specific subject areas. The nature of these subject areas may differ per project and per project phase. For an office building, relevant topics may be facility management, ICT and the workplace concept. For a hospital project, it may be specialized rooms like surgeries, laboratories and intensive care. Some work groups will be needed right from the start of the project (e.g. on broad topics like workplace strategies), whereas others have to be set up on an 'on demand' basis as the project evolves (e.g. on specific topics like furniture).

Members of the thematic work groups should preferably be subject-matter experts, who may be internal or external experts. Ideally they will be a combination of both, because in-house experts will know all about the day-to-day operation of the client organization, while outside experts can bring in new ideas and insights from other projects. End users may also be involved in work groups that concern general topics.

To be successful, it is important that the groups' tasks and goals are clearly defined, otherwise work groups may start to drift. It is also important to let the groups know that they are part of a larger whole, because work groups have a tendency to regard their own topic as the most important one, thereby losing sight of the 'bigger picture' and going too much into details.

It is the task of the briefing team to integrate and coordinate the efforts of the different work groups. To make the coordination easier, it can be a good idea to have members of the briefing team chair the different work groups. If that is not possible, the briefing team should periodically review the work groups' output to make sure that the results are 'in sync' with the rest of the briefing activities.

Responsibilities
- Delivering input on specific subject areas (e.g. ICT, FM, sustainability) to the briefing team.
- Evaluation of design proposals in relation to the work groups' subject area.

Members
- Internal and external experts on the theme/topic at hand.
- Optionally, a member of the briefing team as chair of the work group.

Recommendations
- Make sure that work groups understand how their input fits into the larger whole.
- Define clear goals for each work group.
- Periodically evaluate progress and content.
- Do not allow groups to start formulating design solutions. The emphasis should be on functional requirements.
- Combine internal experts ('inside knowledge') with external experts (knowledge from other projects/ general trends).
- Involve the work groups during the design stages for the assessment of design proposals on their particular topics.

Focus groups

Focus groups are a means of giving the building's users a formal voice and position in the project. Focus groups can be asked to provide input for the brief and to review the contents of briefing documents from a user perspective.

In contrast to the work groups, focus groups are made up of laypersons. This means that it is important that the groups' sessions are facilitated by a skilled moderator. Furthermore, it will useful to give the members of a focus group a 'crash course' on briefing before they start. This might include project visits, background reading and presentations from experts to increase their knowledge, thus, helping them to come up with better input and feedback to the brief.

To avoid misunderstandings, it will be important to emphasize at the start of the project that the focus group will not have any formal decision-making powers. They have an advisory role and/or act like a 'test panel'. They can respond to the brief and come up with suggestions and ideas, but it is up to the steering committee to decide what to do with this input. That makes it sound as if focus groups have a very limited role, but in reality they can wield quite a lot of 'soft power'. Focus groups are in a good position to appeal and lobby for certain features and they can push the project team to substantiate the decisions they make—something from which the project can only benefit.

Usually, the members of a focus group are selected from a cross section of the organization, based on the idea that focus groups should represent the 'average' user. An alternative approach, however, is to aim for so called 'lead users'. Lead users are users who are a step ahead of the others, for example in terms of the use of new technologies or new work practices. It is an interesting group because it is more likely to come up with new ideas and it can be argued that it represents the future users of the building. Combining both kinds of users is obviously also possible.

A group size of 10 to 15 persons will usually be sufficient for a focus group. Such a group is large enough to incorporate different voices and small enough for the informal exchange of ideas.

Responsibilities
- Providing input for the brief from a user perspective.
- Reviewing and commenting on briefing documents and design proposals.

Members
- A cross section of different kinds of users and/or a group of lead users.

Recommendations
- Consider setting up multiple focus groups in large projects, representing different kinds of users.
- Limit the amount of time people must spend participating in the focus group. Their involvement usually comes on top of their normal workload.
- Include not only enthusiasts, but also sceptics—although all participants should have a constructive attitude.
- Provide proper facilitation and training of the focus group.
- Make sure that the group is not dominated by a few 'loud' voices. Every participant should be able to voice their ideas.

Client advisers

Briefing is by no means rocket science, but it does require certain skills and expertise. If those are not available in-house, it will be useful to bring in an external client adviser or briefing consultant. Such a party can be viewed as an extra pair of hands and they can be used for specific activities such as surveys or occupancy studies. In complex projects, they can also be given responsibility for the entire briefing process and the actual writing of the brief.

Perhaps the most valuable contribution a client adviser can make stems from their experience serving other clients facing similar challenges. This should enable them to work faster and to apply lessons learnt from other projects. The flip side of having a lot of experience is that a client adviser may come with a 'know-all' attitude, which is not productive in a briefing process. The whole idea of briefing is to formulate the specific needs of a client—not to sell them an off-the-shelf solution. A good client adviser is therefore not only a knowledgeable expert, but also a careful listener and sharp observer. External advisers should be willing to engage with clients and users to really get to understand their expectations and aspirations before putting something on paper.

As well as having a good understanding of client organizations, external consultants should also understand the 'other side' of the table: the architects, engineers, contractors and suppliers who are going to have to work with the brief. They should know what these parties want from a brief and how they will respond to its contents. This is important because clients and design teams tend to speak different languages, and it is the task of the client adviser to make sure that things do not get lost in translation.

Responsibilities
- Managing the briefing process (where in-house capacity/expertise is lacking).
- Conducting specific briefing activities such as surveys or interviews.
- Writing the entire brief or parts of it.
- Communication with stakeholders.

Members
- People with a background in either architecture or management consulting, preferably a mix of both.
- People with specific expertise of the building type in question (e.g. a workplace expert, learning space expert, et cetera).

Recommendations
- Make sure that the adviser has a wide experience with the building type concerned. If such experience is lacking, it needs to be compensated by excellent analytical skills.
- Select a consultant who knows how to write a coherent and engaging text. It is an obvious but rare skill.
- In the case of a large project, set up a proper selection procedure for hiring the adviser: invite multiple firms and compare costs and expertise.
- Look for an adviser who 'clicks' with the project's manager and the project sponsor as these three will need to work closely together.

This page is intentionally left blank”

This page is intentionally left blank”

Briefing and BIM

This page is intentionally left blank”

Briefing and BIM

In large projects, briefing documents tend to be voluminous reports, bursting with texts and tables, containing a multitude of requirements on a wide variety of topics, ranging from room sizes and sustainability to indoor climate and security. With such a vast amount of information it is all too easy—for both client and design team—to lose sight of the big picture. This introduces the risk of requirements being overlooked or ignored, or not properly updated and verified during the design process.

A good way of dealing with this information problem is to capture requirements in a computer model or database in which all requirements have their own designated place. Using such tools, clients and their design teams no longer have to 'plough' through paper—instead they can click, browse and search in a digital model, which should make it easier to find, manage and analyse information.

A vital additional advantage of such a way of working lies in the possibility of linking client requirements to the design team's BIM models. BIM (Building Information Modelling) has been a hot topic in the construction industry for years, but for too long there has been a one-sided focus on advanced 3D models for architects and engineers, with scant attention being paid to the role of the client. In recent years, however, there has been a growing awareness that client requirements are the starting point for all design activities and that these should be integrated into the project's BIM models. In other words: BIM begins with modelling the brief.

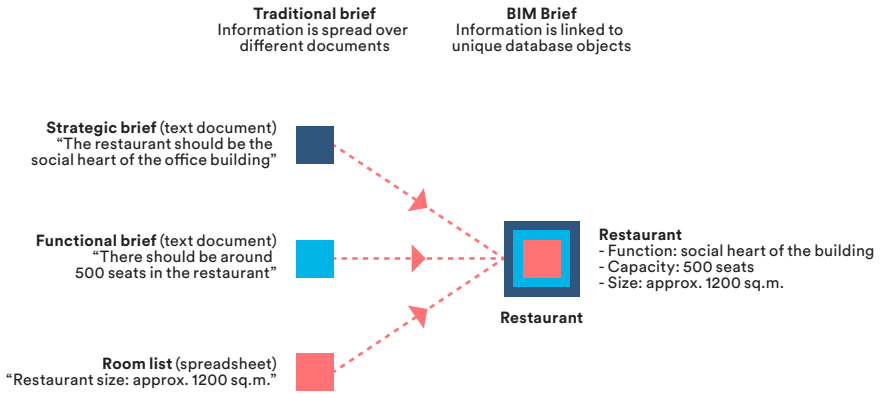
There are several digital briefing tools available on the market, such as BriefBuilder (sponsor of this publication). These tools differ in scope and functionality, but they all aim to structure large sets of requirements and make the briefing process more efficient. Not surprisingly, many of these tools were first developed for hospital projects, where the sheer quantity of requirements can be overwhelming, but their usage is rapidly spreading to other types of projects as well.

The exact workings of these tools are quite complicated, but this chapter explains some of the basics. The topics to be discussed are:

- Collating information
- Texts versus models
- Spaces and other objects
- Decomposition
- Standard spaces
- Design verification
- Test plans

Collating information

As explained in the earlier chapters, a traditional brief usually consists of several documents or at least several parts. Additional briefing information may be captured in appendices, emails and meeting notes. The core idea behind using a briefing database is to bring all this fragmented information together. This should make it easier to find information and to ensure the consistency of requirements. There is value in this because traditional briefs tend to be riddled with inconsistencies, caused by the simple fact that it is difficult to keep track of the many pages. It is quite possible, for example, that the main briefing document for a restaurant calls for 500 seats, while the attached room list mentions 450 seats. These are not particularly shocking inconsistencies, but especially in projects where the brief functions as a delivery contract (as in Design & Build projects), such inconsistencies can be highly inconvenient. Databases can help to avoid inconsistencies because all information about a particular room or space comes together in a single database object (in this case the object 'the restaurant'), which has dedicated fields for specific requirements (such as the number of seats, the desired floor area, etc.).

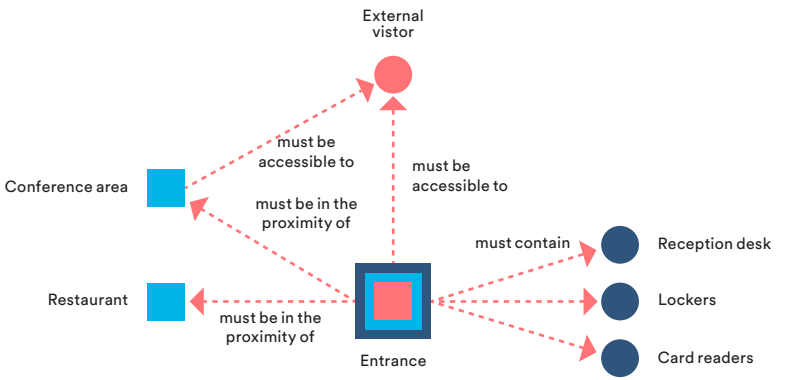


From multiple documents to a single database
Information that is usually spread over different parts or pages of the brief come together in one database object that contains all the relevant information.

Texts versus models

In a digital brief, information is captured in an entirely different format than in a traditional brief. In a 'paper' brief, requirements are formulated in words and sentences. In contrast, a 'BIM brief' captures information in objects (e.g. rooms), with particular properties (e.g. size or capacity), and relations to other objects in the database. A simple example can illustrate the difference: in a traditional brief there may be a sentence like "The restaurant should be located close to the entrance". In a digital model, the same information is captured by making two room objects (restaurant and entrance) and a relation between these (a proximity relation)—see figure below.

The main benefit of this way of capturing information is that the computer 'knows' what is being asked for, whereas traditional text can only be understood by humans. This makes it possible to conduct (automated) checks for missing or conflicting information and to exchange information with other applications (i.e. design and calculation applications). Furthermore, it pushes clients to be very explicit about their requirements, which adds to the clarity of the brief.

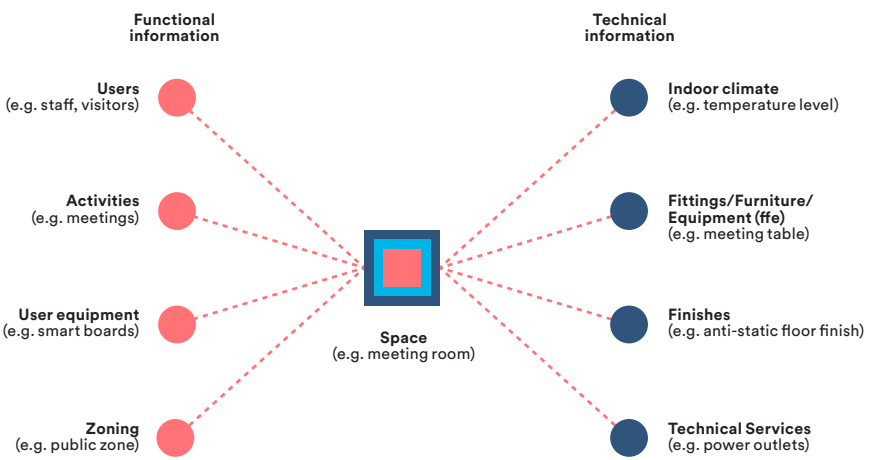


A network of requirements
This diagram is an example of how client requirements can be captured in a network of objects and relations. The objects can be rooms, activities, fit-out elements and other pieces of information. The relations between the objects can also be of different kinds: proximity relations, accessibility relations, location relations, and many more.

Spaces and other objects

A digital brief can consist of many different kinds of information objects—ranging from very abstract objects, such as client ambitions, to very concrete objects such as furniture and fittings. However, the most important information objects are 'spaces' (in BIM models often referred to as rooms). Spaces are the most practical interpretation of the client's functional needs and they 'carry' the kind of information that the design team is interested in, such as requirements concerning the space's size, fit-out elements and indoor climate.

Depending on the stage of the briefing process, spaces can be related to different kinds of information. At the beginning of the process, spaces may be linked to the users and user activities that have to be accommodated by the space in question. At later stages, the spaces can be linked to more technical objects, indicating for example what kinds of fit-out components or technical services should be available in the spaces. In that sense, space objects can be seen as an interface or node between functional and technical information, with the latter being based on the first.



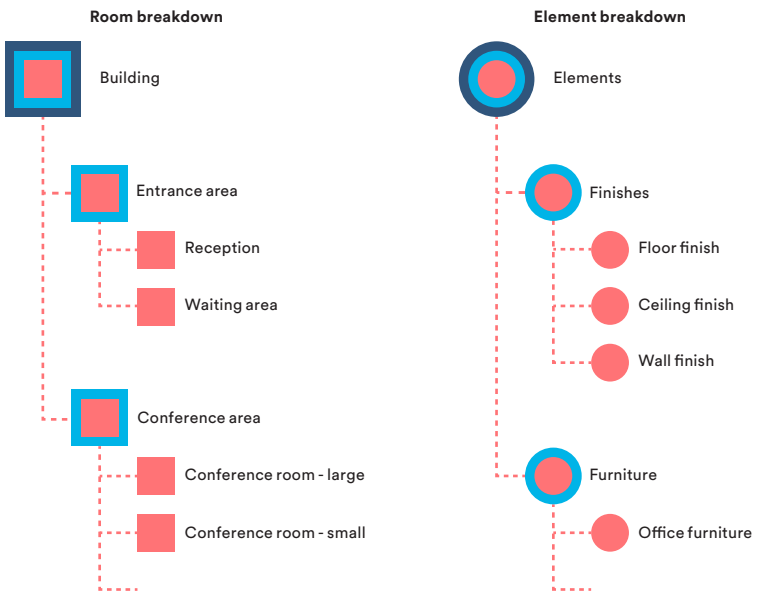
Functional and technical information
A room or space (in this case a meeting room) can be seen as a 'node' that connects functional and technical information. Functional information will relate primarily to the activities that have to be facilitated (e.g. meetings). Technical information concerns the translation of that functional information into concrete requirements (e.g. sufficient data and power connections).

Decomposition

In a BIM database, objects are usually organized in 'decompositions' in which top objects are broken down into smaller, more specific objects. The purpose is to decompose a project into manageable components and to provide an understanding of how different project parts hang together. In a briefing model, the most important decomposition will be that of the requested spaces. The top element will usually be 'building' or 'site' which is then broken down into areas or building parts, which are in turn broken down into individual rooms or spaces. See page 38 for a more detailed explanation about this.

For technical elements, there are predefined breakdown structures available. Good examples are Uniclass (UK) and Omniclass (US). Both are classification systems in which technical elements are numbered and categorized according to a specific structure that is familiar to the construction industry so parties can quickly find the information they need. In Uniclass, for example, a movable partition system is listed under "Ss_25_12_65 Panel partition systems", which is in turn listed under "Ss_25 Wall and barrier systems".

As well as such technical decompositions, the brief can contain breakdowns of more abstract objects, such as user activities to express functional requirements. The activity 'office work' can for example be broken down in sub-activities like 'making phone calls' and 'concentrated computer work', which can be linked to different spaces in the model to explain the functional purpose of these spaces.

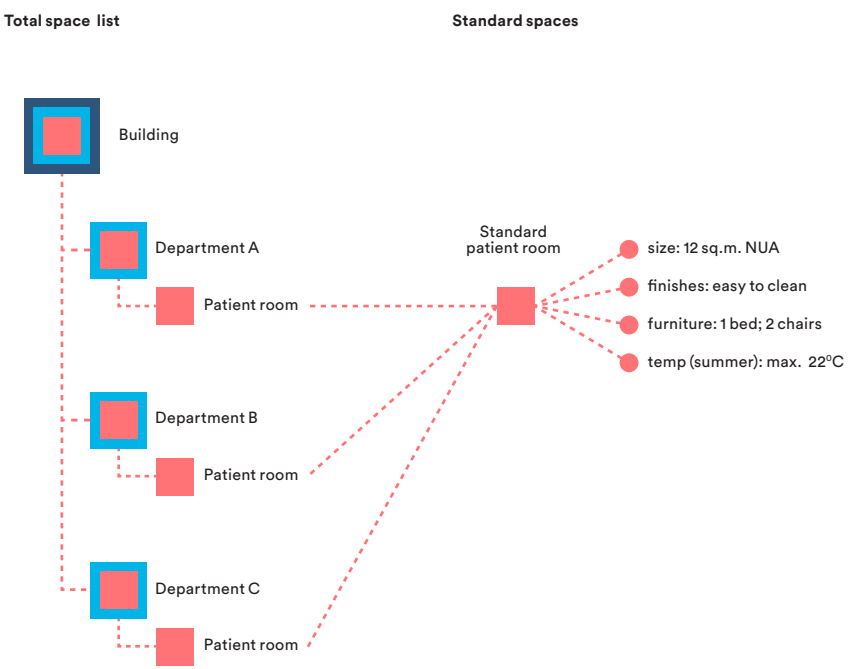


Decompositions
This diagram shows a decomposition of spaces (left) and of building elements (right). The number of levels of the spatial breakdown will usually increase as the project progresses. For the purpose of briefing, however, decompositions do not have to go very deep. For example: a room object 'toilet' does not need to be broken down into 'wash area' and 'cubicles' if the client does not have any specific requirements for those parts.

Standard spaces

In large and complex projects, the briefing model can be used to predefine a set of standard spaces which can serve as the building blocks for the total space list. Think of patient rooms in hospitals, classrooms in schools or workspaces in office buildings. Such spaces will occur in large numbers in a project and will, more or less, have the same requirements in terms of size, indoor climate, fixtures and fittings.

A predefined set of standard spaces can then be copied or cloned when defining the spatial needs per department or business unit of the user organization. These unique spaces will then have the same requirements as the standard space from which they are derived. In addition, any later changes will automatically apply to all the derived spaces. So, if a standard patient room has a requirement that it should be at least 12 square metres, this requirement will automatically apply to all the patient rooms that are based on this standard.



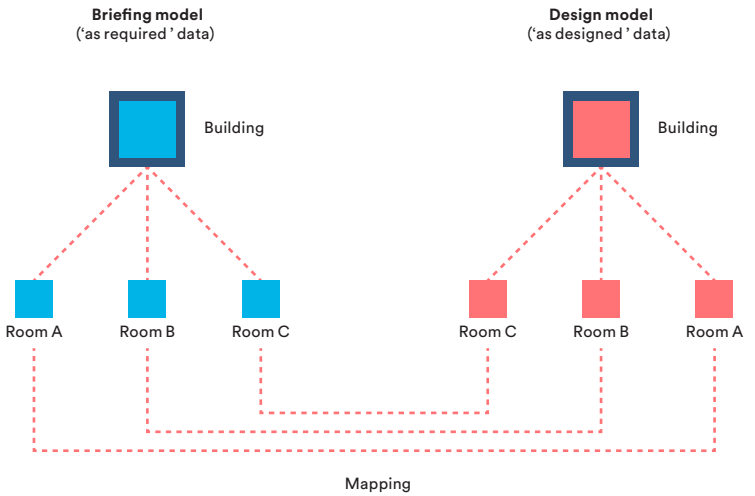
Standard rooms and clones
The diagram above shows how a standard patient room is used at multiple places in the total room list. Software routines will ensure that all these rooms have the same requirements.

Design verification

The aim of using a briefing model is not only to capture client requirements in a systematic way, but also to be able to link these requirements to the design team's design model. By doing so, it becomes possible to systematically check design proposals against client requirements, which reduces the chance of design errors.

To be able to do a 'clash control' between brief and design, the spaces from the brief ('as required' spaces) have to be mapped with the spaces in the design model ('as designed' spaces). Once spaces are mapped, it becomes possible to make all sorts of comparisons. An obvious example is the comparison between the sizes and numbers of spaces. Likewise, the availability of technical elements in rooms can easily be compared. In a hospital project it will, for example, be useful to check whether specific rooms have the appropriate gas outlets.

It should be said, however, that not all requirements can be checked that easily. Indoor climate requirements, for example, are difficult because such requirements relate to a multitude of design features (finishes, HVAC systems, wall thickness, etc.), which makes direct verification difficult. In such cases, quality control has to take place in a dedicated simulation or calculation model.



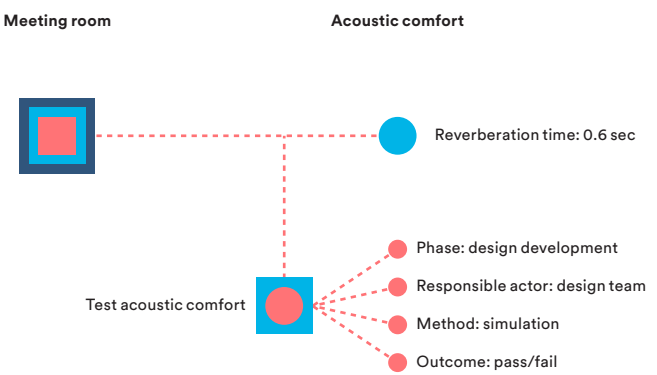
Mappings between the brief and the design
To link a requirements model (the brief) to a design model, it will be necessary to make a mapping between the objects of both models, for example indicating that design object A corresponds with briefing object B. Once such a mapping has been made, the two models can be cross-checked.

Test plans

To keep track of the quality tests that need to be performed in a project, briefing models can be extended with a test or verification model. Requirements are then linked to one or more tests. Specific information, such as the type of test (e.g. a visual inspection, simulation or document review), when it should take place (e.g. during the concept design or developed design), who is responsible (e.g. the design team or an external expert) and the test's outcome (e.g. pass or fail) can be entered for each test.

For the client, the development of a test plan is a way to ensure that requirements are not ignored or overlooked in the design process, pushing the design team to deliver 'proof' that requirements are being met. For the design team, systematic testing can be seen as a form of 'clash control' between their design proposals and the client's requirements, tracing possible problems before moving on to the next design phase.

Theoretically, all requirements can be related to such tests. However, the test plan should not result in an overload of additional work in the project. A test plan should focus on those design aspects that have a large impact on the budget and that are difficult to correct further down the line.



Tests and requirements
The example above shows a simple example of how a requirement can be linked to a test object that indicates what kind of test it is and when it should take place.

This page is intentionally left blank”

This page is intentionally left blank”

Examples

This page is intentionally left blank”

Examples

This chapter presents a series of short summaries of design briefs for real-life projects covering a diversity of building types:

- Office: Entra head office Oslo (NO)
- Detention facility: (anonymized)
- Library: Library of Birmingham (UK)
- School: IKC Zeeburgereiland (NL)
- Hospital: Aalborg university hospital (DK)
- Sport facility: Swimming pool/sports hall Papendrecht (NL)
- Laboratory: Panum Institute Copenhagen (DK)
- Train station: Alkmaar station (NL)

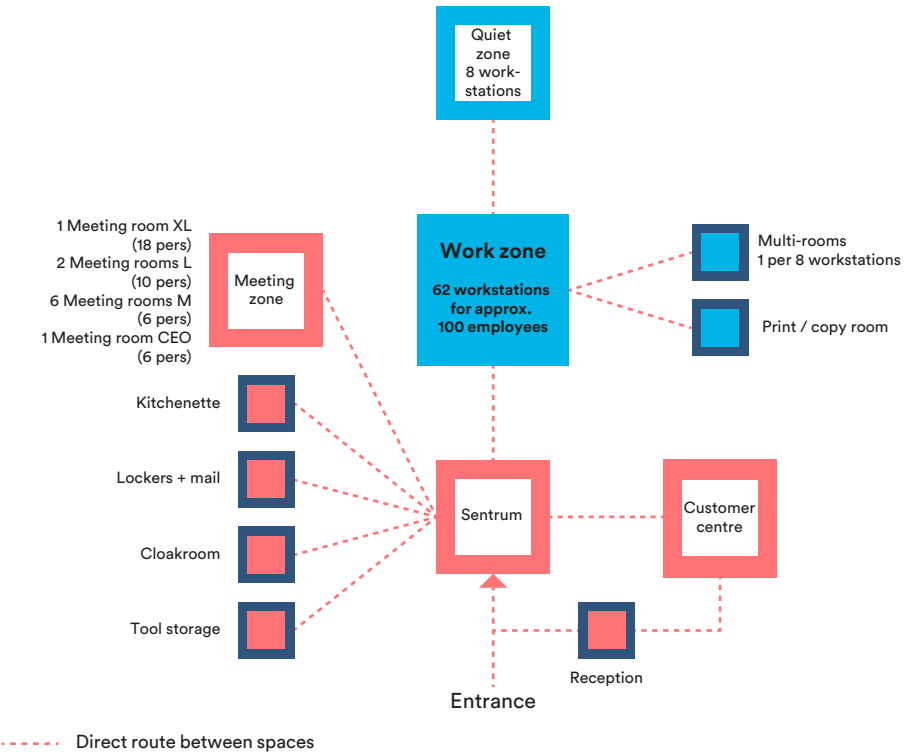
At first sight, the briefs for these projects seem to have a lot in common with one other as they all make use of the same kind of wording, stating that the new accommodation solution should be 'efficient', 'flexible', 'functional', 'sustainable' and so on. This suggests that all the clients involved have similar ambitions, but although this is true to a certain extent, a closer look reveals numerous differences.

The most obvious differences can be seen in the room lists and functional briefs. For example, the brief for the school asks for classrooms and playgrounds, whereas the brief for the hospital project asks for patient rooms and surgery rooms. The names of these rooms alone tell us a lot about the different types of activity they are expected to accommodate.

More detailed differences emerge in the technical requirements, which tend to focus on those building components that are critical for the building's operation. For example, the brief for the prison facility is very specific about the locks on the cell doors—a detail of strategic importance for this type of building. The brief for the train station pays a lot of attention to requirements for elevators, escalators and stairs—elements that are essential for the facilitation of passenger flows, and thereby the station's functioning.

The topic of flexibility is addressed in a very similar way in all projects, but here, too, there are differences. The brief for the laboratory building asks for 'dance floors' that allow lab equipment to be easily moved around. The brief for the school project asks for the capability to expand the number of classrooms from 10 to 16 during the summer vacation.

As these small but critical differences demonstrate, different types of buildings entail different requirements, which is what makes briefing relevant in the first place.



Adjacency diagram Entra office floor
This diagram (a modification of the original diagram) shows the desired zoning of the office floor, with separate, but interlinked zones for working, meeting and socializing. An interesting detail is the customer centre. According to the brief, it had to be placed and designed in such a way that all visitors could see it when they enter the office, giving them a view of the customer centre's large computer screens showing data about Entra's properties and thereby communicating what Entra does in a very concrete way.

Office: Entra head office Oslo

General

Entra is a Norwegian real estate company. The company used to be state-owned but has recently been privatized and is now operating in the commercial real estate market. One of Entra's main properties is the 26-floor landmark 'Postgirobygget' in the centre of Oslo. It is Norway's tallest office building and home to Entra's head office. Entra used to be located on the building's highly desirable top floors. As part of the privatization process and in order to save money, Entra decided to move to the ninth floor, and lease the top space to clients. The project's motto was "Moving down, will raise us up!".

Strategic objectives

Entra wanted to revamp its own office in a radical way to underline its ambition to be a leading and innovative provider of office space. Many of their customers are considering adopting 'activity-based working', and Entra's management felt that the company should be front runners in this development. The brief for the project therefore explicitly mentioned that Entra wanted to create a showcase office space that could be used for learning and communication with customers.

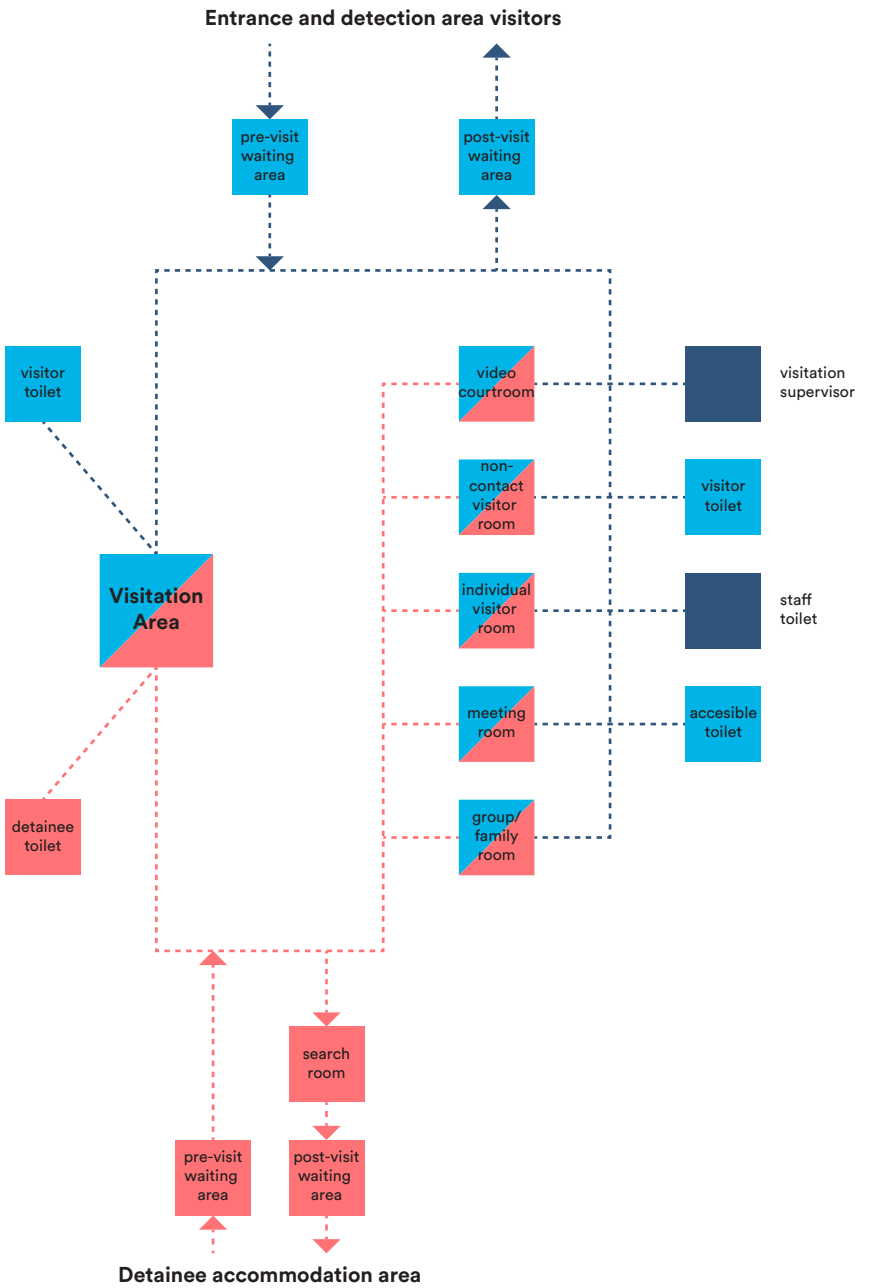
An additional objective was that the project should enhance collaboration within Entra. In the existing situation, the Entra organization was spread over two floors, which was not particularly conducive to internal interaction. Furthermore, most of the staff were working in open-plan offices with few breakout options. The new office concept, in which employees would be able choose freely between different kinds of shared work settings, was designed to help improve staff satisfaction and interaction (which it in fact did, according to a recent post-occupancy evaluation among staff).

Functional requirements

The functional brief (called a 'zoning program' in this project) asked for the creation of shared work areas, a quiet zone, different kinds of meeting rooms and 'multi-rooms'. It also explicitly asked for a large shared space, referred to as 'Sentrum', which was to become the primary meeting spot in the office. The brief stated: "The 'Sentrum' should become the central place in the office, the social heart tying together the organization and the different parts of the office. It should be a natural meeting point, as well as the place where Entra's visitors enter the office." On a practical note, the brief acknowledged that this area could (and should) at times be noisy, because there would be people chatting over coffee and small events like presentations. The brief therefore noted that the area had to be acoustically separated from the work areas, "so people can chat without having the feeling that they are disturbing their colleagues." Furthermore, the brief explicitly mentioned the provision of great coffee as a critical detail for making the space a success.

Technical requirements

Because of the limited scope of the project—a fit-out of one office floor, with only a few possibilities to make changes to the building's structure or HVAC system—there was no need for a formal technical brief. It was obvious from the start, however, that the technical topics of acoustics and lighting would be crucial for the success of the project because of the openness of the space and the limited daylight penetration (due to the depth of the floor). These issues were addressed by bringing in specialized consultants early on in the design process.



Adjacency diagram visitor areas
This relation diagram (a modification of the original diagram) explains some of the logistics in the visitors' area in the detention centre. Amongst other things, the diagram makes it clear that the routings of visitors and detainees should be strictly separated from one another.

Detention centre (-)

General

This project concerns a prison facility with room for over 1000 detainees. The building was commissioned to replace a number of older facilities, which were deemed outdated and inefficient. The project was tendered as a public-private partnership (or PPP) project, which means that the tender includes not only the design and construction of the building, but also its maintenance and parts of its operation. The brief acted as a contract document in the tender procedure and it was thus crucial that the brief be complete and unambiguous in its requirements.

Strategic objectives

The project's strategic brief (which was used in the first phase of the tender) mentioned several objectives. Chief of these was the desire to create a detention facility that would be safe and secure for both inmates and staff. Another crucial objective concerned efficiency of operation. The brief explicitly stated that the new building should reduce the need for correctional personnel, stating that "where possible, electronic means should be used to allow for efficient staffing". Concerning the building's architecture, the strategic brief stated that the building's architectural expression should be one of soberness and efficiency. The terms 'calmness' and 'simplicity' were used to describe the desired internal atmosphere.

Functional requirements

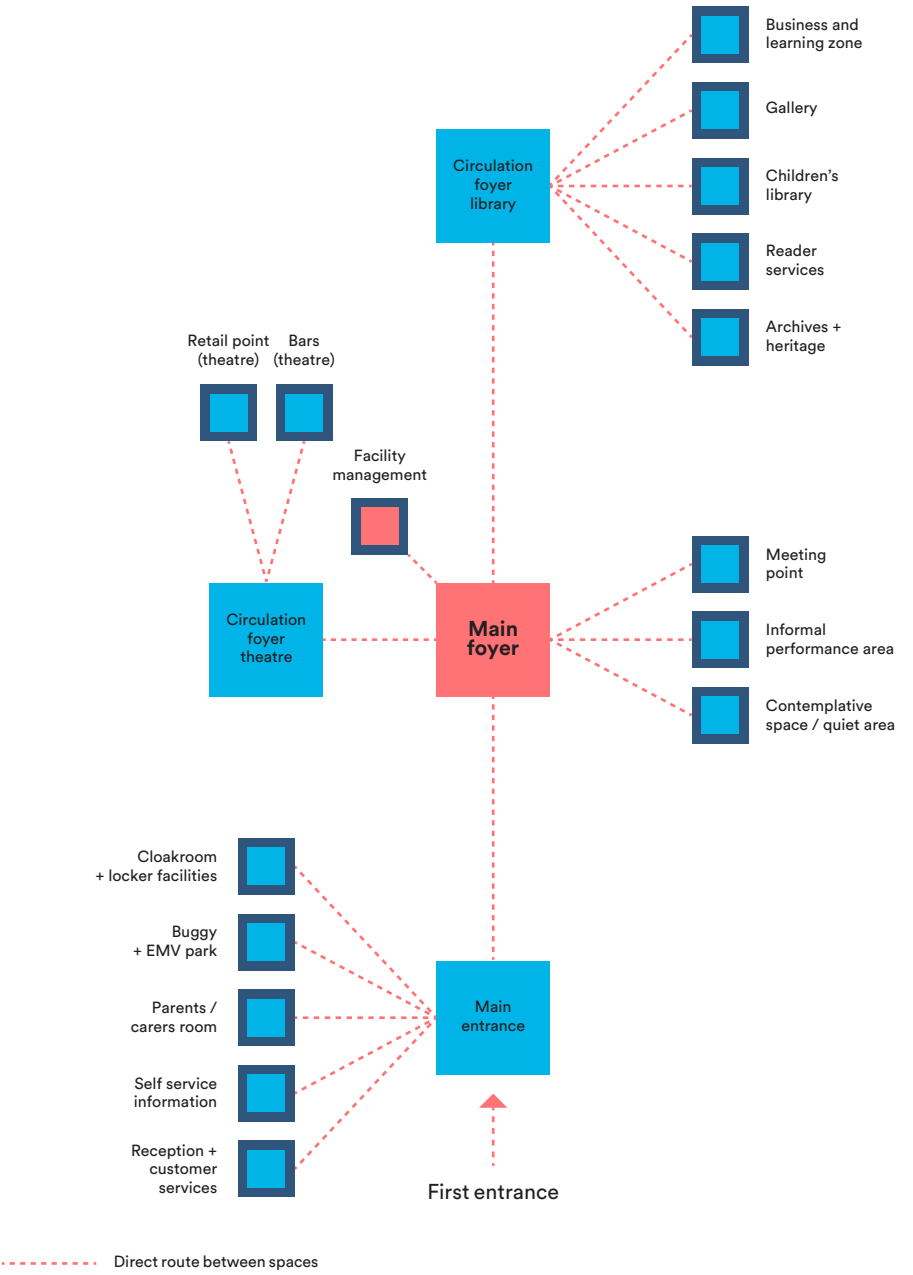
The functional part of the brief described the project's main spatial needs, differentiating between accommodation areas (with cells, kitchens and activity areas), isolation areas (isolation cells with separate outdoor areas), an activity centre (with sports facilities, workplaces and a library), a services area (dentist, treatment rooms), staff areas (offices, guard posts) and outdoor areas. For each area and room type, the brief gave an indication of size and a description of the activities to be facilitated. For the cells, for example, it stated that these should be able to accommodate two detainees, measure at least 12 square metres, and allow detainees to sleep, relax, read and write, and eat in their cell.

The brief contained several relation diagrams visualizing how the different areas should be organized logistically. For the visitor area, for example, the positioning of spaces has to ensure that there are no uncontrolled interactions between visitors and detainees, or between arriving and departing visitors (see diagram opposite page).

Technical requirements

Compared with a traditional brief, the level of technical detail was fairly limited. The client's intention was to give the market parties and their design teams the freedom to come up with new, smart design solutions. Even so, the brief was quite explicit about the design of crucial elements such as the cells, specifying that walls should made of reinforced concrete, doors of steel, and that the doors should have a specific kind of lock. Furthermore, the brief stipulated detailed requirements for the indoor climate of all the main spaces to ensure both staff and detainee health and well-being.

(-) This project description has been anonymized for reasons of confidentiality.



Adjacency diagram entrance area
This relation diagram (a modification of the original diagram) shows the many functions that had to be linked to the library's entrance and foyer. Similar diagrams were made for all major space clusters in the building.

Library: Library of Birmingham (UK)

General

For the new Library of Birmingham project, two briefs were written. The first was a strategic brief that served as input for an international design competition. This brief discussed the spatial outlines of the project and the client's main ambitions. The second brief was written after the competition, not by the client but by the winning architectural firm (the Dutch firm Mecanoo). This was much more detailed. It specified all the spaces and their interrelations and listed the technical requirements. Input for this second brief came from interviews and workshops with library staff and other stakeholders such as the staff of the theatre that was also to be housed in the building.

Strategic objectives

The strategic brief for the project was a very ambitious one. It stated that the project should become nothing less than "the best public library in the world". The central idea was that building should not just be a place for books, but a "community hub" where people from all over the city would gather for events, performances, education and exhibitions. The brief stated that the new library should become 'THE' place to be in Birmingham. In line with this ambition, the brief stressed that the building should be welcoming and reach out to "audiences who may have previously thought that libraries or theatres were 'not for them'".

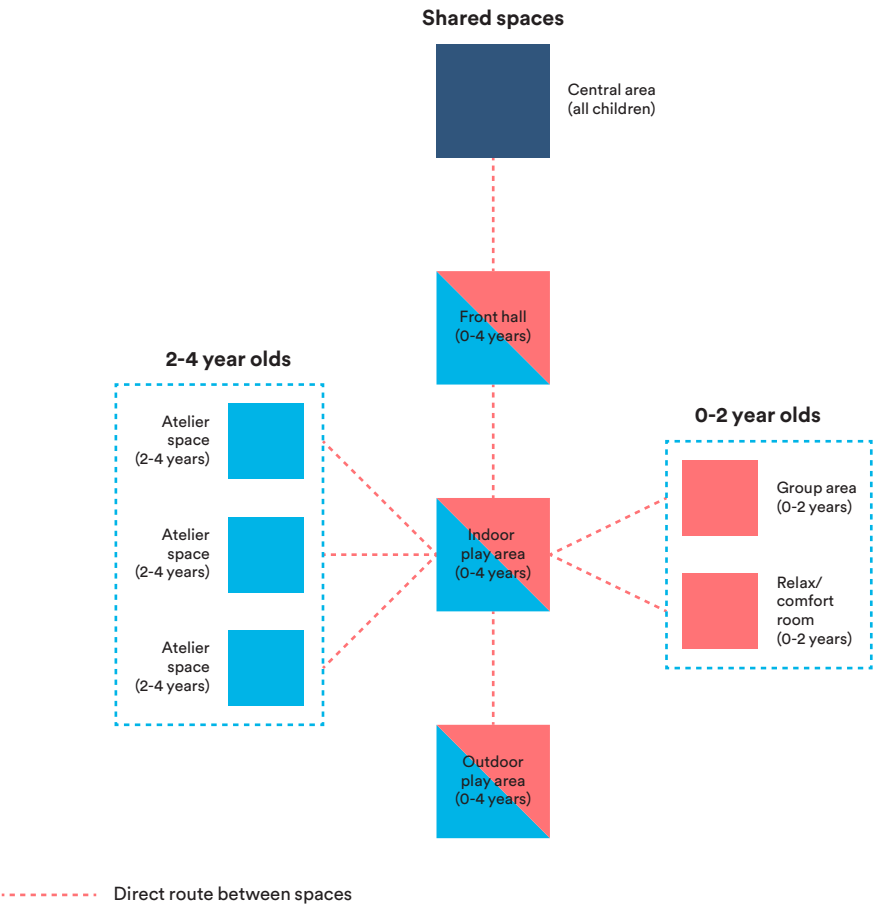
Functional requirements

Given the project's aim to create a welcoming and accessible place, the design brief paid a lot of attention to the building's entrance and foyer. It stressed that the entrance area should be "spacious but not intimidating" and that the challenge was "to design a foyer which attracts new visitors". In terms of user experience, the brief said that the foyer should offer "a genuine 'WOW' factor, enticing people to explore further within", and that it should act as "a platform to 'launch' visitors and users to their chosen destination or to explore areas of interest or discovery". A relation diagram (see opposite page) explained how the entrance area should work in terms of logistics, with designated areas for the storage of buggies and prams, lockers, a reception desk and other visitor-oriented spaces. Similar diagrams and descriptions were made for all other areas in the building.

Technical requirements

The number of technical requirements in the brief was fairly limited. The brief outlined general requirements for essential systems, such as the security system and the RFID system for tracking books. It also contained basic requirements for the acoustics and temperature levels in the requested spaces.

A special point of attention was the climatic conditions for the archive and heritage spaces, where the library's rare and fragile historical collections would be kept. To safeguard these items, the brief stated that the archive and heritage spaces should comply with the relevant British Standards Institute standard (specifically, BS5454 Guide for the storage and exhibition of archival materials) which contain detailed requirements concerning fire safety, security, temperature levels, humidity, light levels/UV control, air quality and dust/particle filtration.



Adjacency diagram kindergarten
This diagram (a modification of the original drawing in the brief) shows the spatial relations for the kindergarten part of the building. It shows that there should be separate areas for the baby group (0-2 years) and the toddlers (2-4 years). The play areas are shared by both age groups.

School: IKC Zeeburgereiland (NL)

General

The 'Integrated Child Centre' (IKC in Dutch) is a combined primary school and preschool on Zeeburgereiland, a major urban expansion area of the city of Amsterdam. At the moment, the island is still largely empty, but the city's plans envision over 5000 new dwellings, to be built in phases, combined with retail functions, public services and infrastructure. The IKC school building was one of the first buildings to be completed on Zeeburgereiland with the purpose of attracting young families to the area. The project was tendered as a 'DBMO' project, which stands for Design, Build, Maintain and Operate. All these activities were combined into single contract with the aim of 'fast-tracking' the project, and pushing the parties involved into thinking actively about the building's maintenance and operation as part of the design process.

Strategic objectives

The project's strategic brief mentioned two main objectives: the provision of "excellent education" and the delivery of "demand-driven accommodation". The first objective is about creating an environment where children feel safe and where their well-being and health is safeguarded by ergonomic design and a healthy indoor climate. The second objective is about flexibility. In urban expansion areas like Zeeburgereiland it is hard to predict the future need for educational facilities because the area's pace of development is strongly dependent on market conditions. To deal with this uncertainty, the municipality wanted a highly flexible building that would be able to respond quickly to changes in the number of pupils, teaching styles and educational concepts. One of the main requirements was that it should be possible to expand the number of classrooms from 10 to 16 during the summer vacation.

Functional requirements

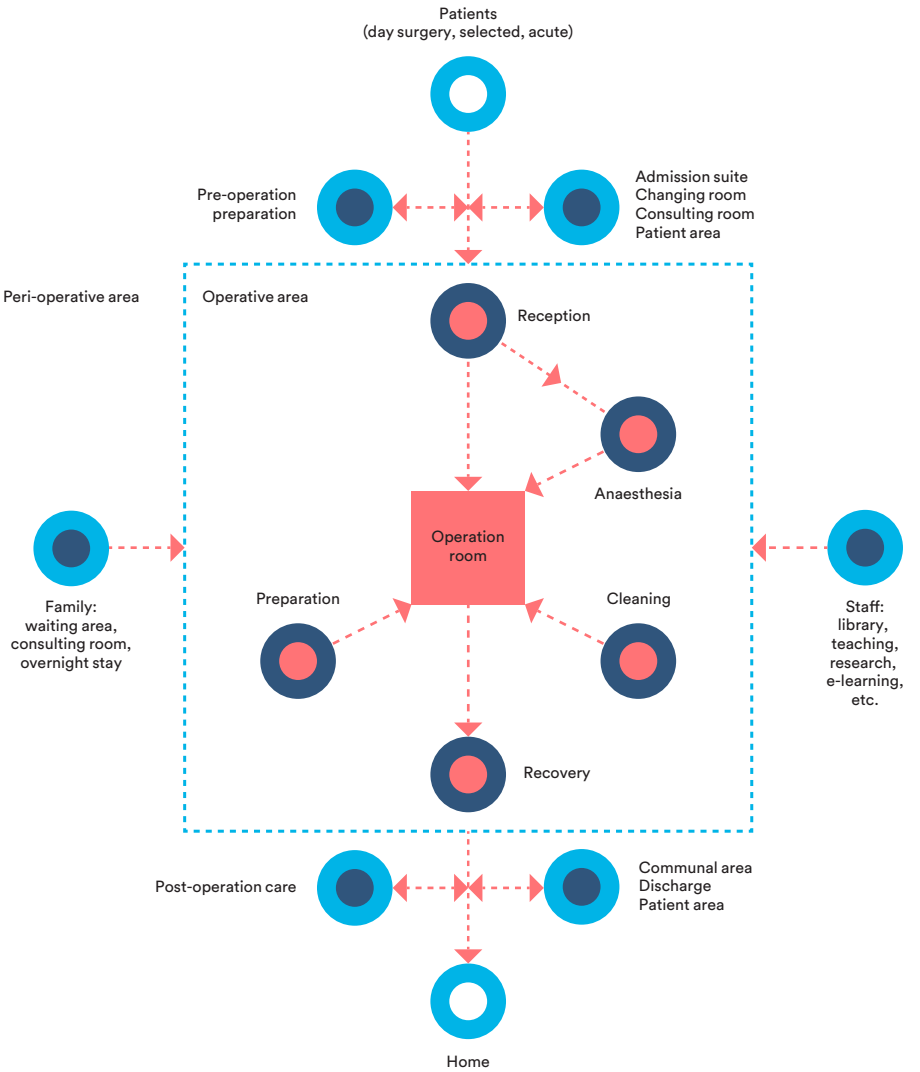
The functional part of the brief explained the building's main spatial needs: space for primary education, space for after-school care, a large gymnastics space and a nursery/kindergarten. In addition, there should be an outdoor playground of at least 1,200 square metres, a large part of which had to be accessible outside school hours for children from the neighbourhood. For the classrooms, the brief mentioned a minimum size of 52 square metres usable floor area, which was deemed sufficient to accommodate groups of up to 30 children. It also asked for a generous floor-to-ceiling classroom height of at least 3.2 metres to ensure that the rooms would have a spacious and airy feel. The brief also stressed the importance of visual overview in classrooms. Square class rooms were mentioned as a preferred solution to allow for different kinds of furniture arrangements.

Technical requirements

The technical part of the brief focused mainly on the quality of the indoor climate, in line with the client's aim to create a healthy learning environment.

It also paid attention to the quality of the interior finishes of the different spaces—albeit in a rather generalized way, using a quality scale of 'standard', 'good' and 'excellent'. For example, the floor finishes for the classrooms were specified as 'excellent' in terms of ease of cleaning and as 'standard' for resistance to chemicals.

Clearly reflecting the young age of the building's users, the technical brief specified that all doors in the building were to be 'finger safe'.



Flow diagram surgery rooms
This diagram (a modification of the original diagram) shows the activities and areas that are related to surgery. It distinguishes between activities that are directly related to the operating room and the 'perioperative' activities that take place before and after surgery.

Hospital: New University Hospital Aalborg (DK)

General

The new university hospital in Aalborg is part of a major health care reform in Denmark in which small local hospitals are being merged into 'super hospitals' capable of providing both basic and highly specialized treatment for extensive regions. The new Aalborg University Hospital is one such super hospital and its over 134,500 square metres will accommodate a wide range of health care functions. The project was tendered as a total engineering project, which means that all the building's design and engineering activities were combined in one delivery package (which was awarded to the Indigo consortium). Part of these activities entailed the elaboration of the original design competition brief into a detailed project brief.

Strategic objectives

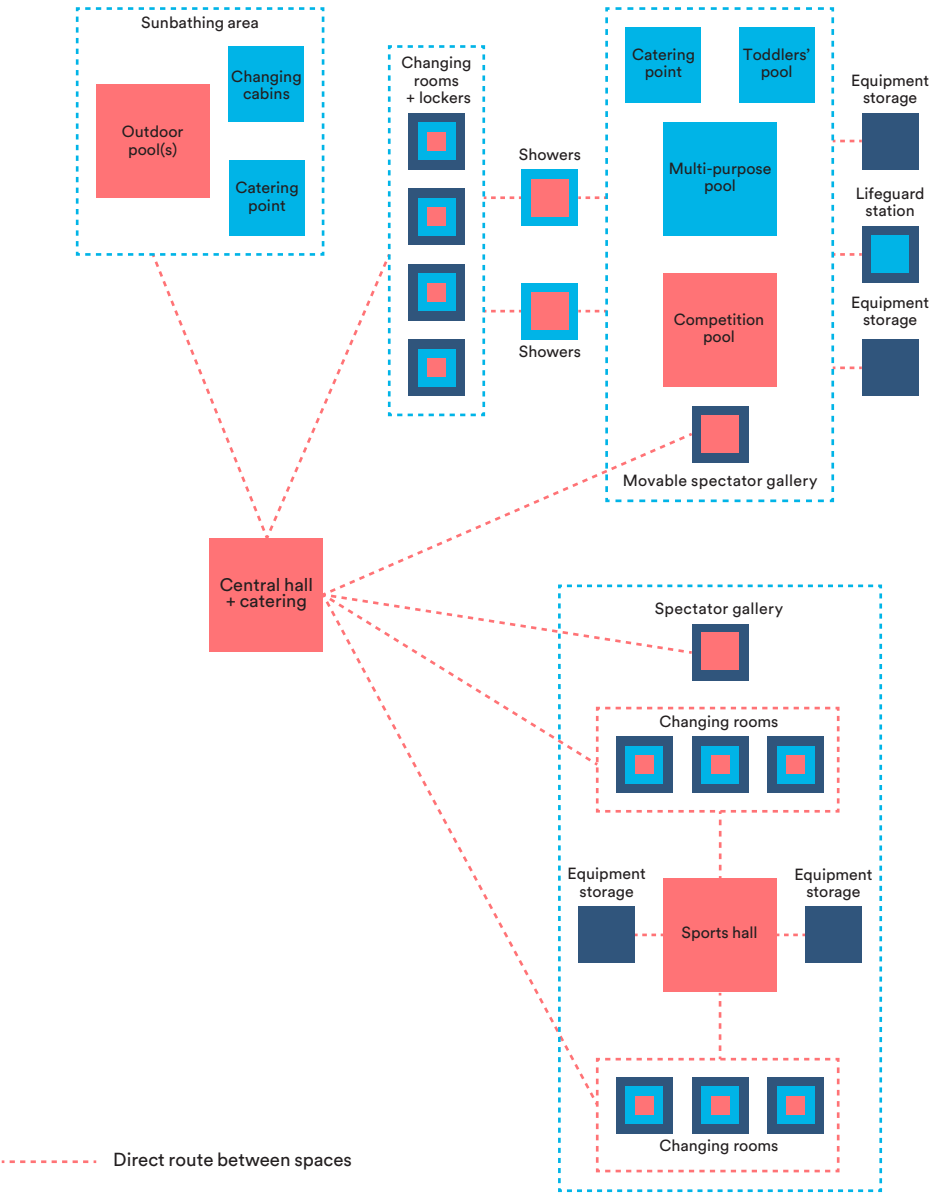
The competition brief for the project was quite practical and neutral, stating that the new hospital should be well-performing, functional and efficient. The brief described the estimated spatial needs per department and the main activities to be accommodated. The competition brief also contained some very specific technical requirements on things like rainwater drainage and the provision of an uninterrupted power supply to several specific functions. In more general terms, the brief stressed the importance of flexibility. Knowing that there would be years between the start of the project and its completion, the brief explicitly asked for a 'robust' building that would be able to accommodate change without disruption to the hospital's core activities.

Functional requirements

The formulation of the functional requirements started with the definition of around seventy standard room types that would be present in high numbers throughout the building, such as patient rooms, waiting areas, staff offices, laboratories, emergency rooms, operating theatres, as well as basic functions such as toilets and linen rooms. These standard rooms acted as the main 'carrier' of functional requirements and they were used as building blocks for the definition of the spatial needs per department. In addition to specifications regarding size and capacity, the functional brief provided short descriptions of how departments worked, illustrated by flow diagrams to explain the sequence of activities (see example opposite page).

Technical requirements

The technical requirements for the project were numerous. Most were formulated in relation to the particular medical equipment present in the various rooms. For the patient rooms, for example, the brief stated that there should be electrical and emergency power outlets for haemodialysis units and physiological monitors, low-voltage connections for bedside monitors and alarm monitoring, and gas outlets for the provision of medical gases such as oxygen and medical air. The requirements for surgery rooms and intensive care units were even more complex. To be able to manage all these requirements, the design team set up a database in which they detailed all the hospital's rooms and their technical requirements.



Adjacency diagram sports and swimming facilities
This adjacency diagram (a modification of the original diagram) gives an almost complete overview of all the spaces to be realized in the building. It is clear from the diagram that only the central hall and main catering are shared.

Sports facility: swimming pool/sports hall Papendrecht (NL)

General

The new sports facility in Papendrecht—a small town in the Netherlands—accommodates a swimming pool and large sports hall where different kinds of sports activity (e.g. basketball, indoor soccer, gymnastics) can take place. The brief for the project was written by specialists from the Dutch consultancy firm Synarchis and was over eighty pages long. The extensive nature of the brief had to do with the fact that a swimming pool is a fairly complex facility that entails a lot of requirements concerning hygiene and safety. It was also related to the decision to tender it as a 'Design and Build' project. The brief acts as a delivery contract between the client and a contractor.

Strategic objectives

The project's brief did not expend many words on strategic goals for the project, other than to state that the new building would replace three outdated facilities, and that the new building should be safe, efficient and well-functioning. The most important requirement was that the project should be realized within the given budget, which had been set before the project was tendered. In terms of architectural quality, the brief stated that the new facility should enhance the urban quality of the area and lend the surrounding streets greater allure ("instead of backs, there should be beautiful facades facing the street").

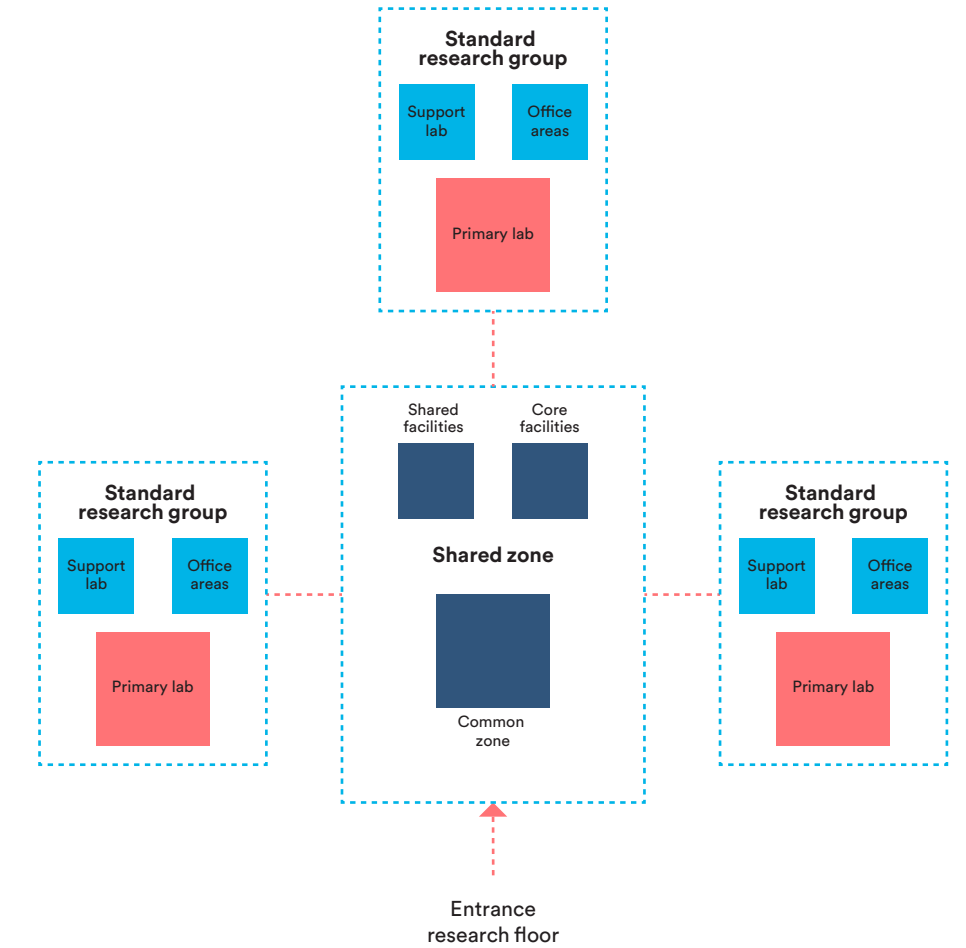
Functional requirements

The functional part of the brief gave a detailed description of all the spaces that needed to be realized in the building. The building's entrance and main catering facility were to be shared, but otherwise the swimming pool and the sports hall needed to have their own set of rooms, including changing rooms, storage facilities and spectator galleries.

The requirements in the brief were closely related to the kind of sports that the building would accommodate. For the main swimming pool, for example, the brief mentioned that the ceiling grid should run parallel to the pool because backstroke swimmers use the ceiling grid for coordination. Another sports-specific requirement was the swimming pool's floor, which had to be completely level and smooth to cater for underwater hockey competitions.

Technical requirements

In the technical part of the brief, most of the attention was given to the swimming pools. Perhaps not surprisingly, there were six pages of text dedicated to the topic of water, listing requirements concerning water supply, water treatment, water circulation, water drainage, water temperatures and the use of various water filters—sand filters, urea filters, hair filters. In addition to such fairly detailed technical requirements, the brief referred to a host of external standards set by the Dutch sports association and Dutch swimming association, both of which have extensive guidelines concerning the design of sports facilities.



Adjacency diagram standard research floor
This diagram (a modification of the original diagram) shows the preferred layout of a standard research floor. The idea is that each research floor is occupied by three research groups, of 15 persons each, who share a number of common amenities, such as a pantry and meeting facilities—with the functional purpose of promoting interaction between the groups.

Laboratory: Panum Building Copenhagen (DK)

General

The Panum Building in Copenhagen is a large research and education facility of the University of Copenhagen. The building, which occupies a prominent location in the city centre, houses the Faculty of Health and Medical Sciences. A major extension of the building was needed to provide room for new laboratories and teaching facilities. The project also provided an opportunity to create a new canteen, a large bicycle parking area and a new entrance for the entire complex. Two briefs were written for the project: first a competition brief by The Danish University and Property Agency, and then a detailed project brief by the selected design team.

Strategic objectives

The competition brief for the project stated that its objective was to create a new setting for "world-class international health science knowledge production". Reflecting the increased importance of external funding, the brief stated that the new research facilities should help the university to attract more grants and more partnerships with external companies. On top of that, the brief emphasized that the new facilities should help the university to attract first-rate researchers from the "international research elite".

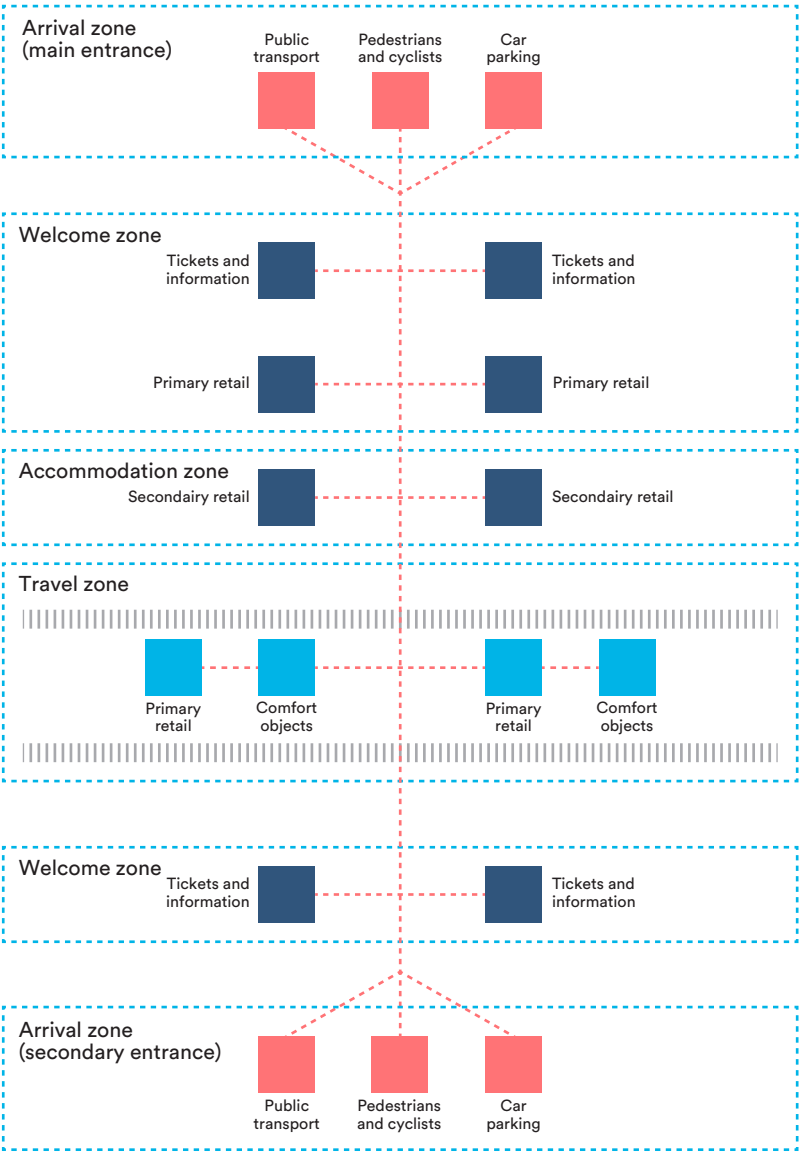
In terms of architectural quality, the university explicitly noted that it was looking for a high-rise structure with "a slender and elegant composition" and "convincing sculptural qualities". The building was to become "nothing less than a landmark for world-class health research, which will form part of Copenhagen's urban landscape and skyline".

Functional requirements

The functional requirements for the project put a lot of emphasis on the interaction between researchers in the building. According to the brief, a standard research floor should ideally accommodate three research groups, of 15 people each, who would then share a common zone containing a lunch room, kitchenette, conference rooms and informal meet/work spots. The distance between these shared facilities and the work areas of the researchers had to be short. The brief stated: "Experience shows that if the distance to such functions is too great, they do not support the researcher's social behaviour." Other functional requirements related to the flexibility of lab and office spaces. Floors should be easily adjustable to accommodate the frequent changes in research programmes. The brief used the term 'dance floor' to refer to a concept of flexible floors on which mobile lab furniture and equipment can be freely positioned.

Technical requirements

A lot of the technical requirements in the brief are related to the lab spaces, many of which were required to accommodate specialist research on genetic modification. Amongst other things, such research comes with stringent containment requirements. The brief specified, for example, that there should be a negative 'pressure differential' between the lab and outside rooms and that special air filters should be installed to avoid genetic material escaping the lab spaces via air flows. Other typical technical requirements were that all finishes should be resistant to disinfectants and that any joints should be completely sealed to make sure the rooms were gas-tight.



Adjacency diagram of the passenger areas
The brief distinguished four different zones: an arrival zone (entrance/public space), a welcome zone (ticket sales and information), an accommodation zone (mostly leisure/shopping) and a travel zone (platforms). The diagram above (a modification of the original diagram) shows how the different zones relate to one another and what kind of functions they accommodate. NB The term 'comfort objects' refers to benches and other kinds of seating for travellers.

Train station: central station Alkmaar (NL)

General

The Dutch city of Alkmaar recently got a radical makeover of its main train station. The project was a response to the growing number of train travellers and the wish to upgrade the run-down public areas around the station. The scope of the project encompassed an elevated walkway connecting the station's platforms, two new entrances (one on each side of the station), a new bicycle garage and a redesign of the public areas around the station. The development of the design brief was a joint effort by the project's three main stakeholders: the national railway company (the company that operates the station), Prorail (the company that owns the station and the infrastructure) and the municipality (the public body that is responsible for the public space around the station). For all the requirements in the brief it was made explicit which of these three parties was the 'requirement initiator'.

Strategic objectives

According to the strategic brief (called 'ambition document' in this project), the project's main objective was to improve the 'customer experience' of people using the station. A survey of the station's users had shown that the station scored badly on comfort and safety when compared with other stations. The existing situation was perceived as cluttered, outdated and poorly accessible for disabled people and people with prams and bulky luggage.

Another objective concerned the projected increase in passenger numbers, which were expected to grow from the current average of 21,000 travellers per day to 27,000 travellers by 2020. Against this background, the brief asked for a station with a 'future-proof capacity' that would be able to cope with "the busiest, rush-hour related, peak loads of pedestrian flows in 2020".

Functional requirements

The functional requirements in the brief were related to the station's three main functions: travel, retail and bicycle storage. Most of the functional requirements concerned the routing from the station's entrance to the platforms. The brief provided detailed data about travel movements and the number of users for each of the platforms.

Concerning the commercial functions in the station, the brief stipulated that "as much as possible, travellers should be guided along the fronts of the shops at the station" to maximize retail revenue. However, it also noted that commercial functions should not hinder the station's transfer function. With regard to the new bicycle garage, the brief asked for a storage racks for 1000 bicycles. Of these, 2% had to be big enough to park 'outsized models' such as cargo bicycles—a type of bike that has become very popular in the Netherlands but does not fit into regular bicycle parking racks.

Technical requirements

The technical requirements focused on those aspects that are critical for the flow of people in the station: the escalators and the elevators and the stairs (e.g. stating minimum widths). Furthermore, there were various technical specifications for the retail spaces, such as stipulating that these should have access to several kinds of utilities. Some of these requirements were of surprising detail, such as the statement that each rentable unit should have "one, unit-specific, connection to the central waste water system, made of PVC, 125 mm in diameter, capped at a height of 500 mm."

This page is intentionally left blank”

Bibliography

This page is intentionally left blank”

Bibliography

Barrett, P. & Stanley, C. A. (1999). *Better Construction Briefing.* John Wiley & Sons.

Best, R. & Valence, G. D. (1999). *Building in Value — Pre-design Issues.* Arnold.

Blakstad, S. H. (2001). *A strategic approach to adaptability in office buildings.* Fakultet for arkitektur og billedkunst.

Blyth, A. & Worthington, J. (2010). *Managing the Brief for Better Design.* Routledge.

Bogers, T., van Meel, J. & van der Voordt, T. J. (2008). *Architects about briefing: Recommendations to improve communication between clients and architects.* Facilities, 26(3/4), 109-116.

Danish University and Property Agency and University of Copenhagen (2010). *Competition brief, project competition for the extension of the Panum complex.*

Danish University and Property Agency and University of Copenhagen (2010). *Vejledende rumprogram Projektkonkurrence om udbygning af Panum-komplekset* [Room programme, project competition for the extension of the Panum complex]'.

Designing Buildings Limited (2016), *Designing Buildings Wiki,* http://www.designingbuildings.co.uk/

Finch, E. (2011). Change Management and Relocation: a moving experience. *Anais do 2º. Simpósio Brasileiro de Qualidade do Projeto no Ambiente Construído*.

Fletcher, P. & Satchwell, H. (2015). *Briefing: A Practical Guide to RIBA Plan of Work 2013 Stages 7, 0 and 1.* RIBA Publishing.

Gemeente Amsterdam Stadsdeel Oost (2011). *Ambitiedocument Pilot Zeeburgereiland* [Ambition document Zeeburgereiland Pilot].

Gemeente Amsterdam Stadsdeel Oost (2011). *Outputspecificatie Zeeburgereiland* [Output specification Zeeburgereiland].

Gemeente Papendrecht and Synarchis (year unknown). *Programma van eisen Sportcentrum Papendrecht* [Brief for Papendrech sports centre].

Hansen, G. K., Blakstad, S. H. & Knudsen, W. (2011). USEtool. *Evaluating Usability. Methods Handbook.* NTNU.

Heinz, J. L. & Overgaard, F. (2009). *From program to design: how architects use briefing documents.* Nordes.

Helen Hamlyn Centre for Design (2016), *Designing with People*, http://designingwithpeople.rca.ac.uk/

Hodulak, M., & Schramm, U. (2011). *Nutzerorientierte Bedarfsplanung: Prozessqualität für nachhaltige Gebäude* [User-oriented requirements planning: process quality for sustainable buildings]. Springer-Verlag.

Hyams, D. (2001). *Construction companion to briefing.* RIBA Publications.

Indigo Konsortiet (2013). *Byggeprogram Nyt Aalborg Universitetshospital* [Construction brief, New Aalborg University Hospital].

Jensen, P. A. (2011). Inclusive briefing and user involvement: case study of a media centre in Denmark. *Architectural Engineering and Design Management*, 7(1), 38-49.

Kiviniemi, A. (2006). *Requirements Management Interface to Building Product Models.* PhD Thesis. Stanford University.

Koutamanis, A. (2013). *Computer-Mediated Briefing for Architects.* IGI Global.

Marmot, A. (2006). *Promoting space efficiency in building design.* Space Management Group.

Mecanoo and LoB Design Team (2008). *Library of Birmingham design brief.*

Birmingham City Council and Capita Symonds (2008). *The Library of Birmingham 'A Centre for Knowledge, Learning and Culture'*, Strategic Design Brief.

Morrell, P. & Duffy, F. (2004). *The impact of office design on business performance.* Commission for Architecture & the Built Environment and the British Council for Offices.

National Institute of Building Sciences (2016), *The Whole Building Design Guide*, https://www.wbdg.org/

National Office of Building Technology and Administration and / The Norwegian State Housing Bank (2005). *Building for Everyone, Understanding universal design of buildings and outdoor spaces.* National Office of Building Technology and Administration.

Pena, W. M., & Parshall, S. A. (2012). *Problem seeking: An architectural programming primer.* John Wiley & Sons.

Pickard, Q. (Ed.). (2008). *The Architect's Handbook of Professional Practice.* John Wiley & Sons.

Prins, M., Koolwijk, J., Volker, L. & Wamelink, J. M. F. (2006). Briefing: static or dynamic. In *Proceedings of the Joint CIB, Tensinet, IASS International Conference on Adaptability in Design and Construction*, Netherlands, Eindhoven University of Technology.

Prorail and NS Poort (2011). *Vraagspecificatie voor het Werk Station Alkmaar* [Tender specification for Alkmaar Station project].

Region Nordjylland (2011). *Nyt Universitetssygehus Aalborg Projektkonkurrence. Bind II: konkurrenceprogram* [New University Hospital Aalborg Project Competition. Part II: Competition brief].

Van Ree, H.J. (2008). *IPD Space Code: Measuring the Space Performance of Buildings.* IPD Occupiers

Ryd, N. (2004). The design brief as carrier of client information during the construction process. *Design Studies*, 25(3), 231-249.

Ryd, N. (2014). Facilitating construction briefing–from the client's perspective. *Nordic journal of surveying and real estate research*, 1(1).

Salisbury, F. (2013). *Briefing Your Architect.* Routledge.
Spekking, D. (1996). *Programma van eisen, Instrument voor kwaliteitsbeheersing* [The brief, tool for quality management]. Stichting Bouwresearch.

Taylor, T. & Pineo, H. (2015). *Health and wellbeing in BREEAM.* BRE Global

Van der Voordt, D. J. M. & Wegen, H. B. (2005). *Architecture in Use: An Introduction to the Programming, Design and Evaluation of Buildings.* Routledge.

Wijk, M. (2004). *Bouwstenen: gids bij het maken van een programma van eisen* [Building blocks: guide to developing a brief]. Stichting Bouwresearch.
Worthington, J. (Ed). (2006). *Reinventing the Workplace.* Routledge.

This page is intentionally left blank”

About the authors

Juriaan van Meel is an internationally acclaimed expert on design briefing and workplace design. He has over fifteen years of experience with briefing and has worked on a wide variety of projects across the world for clients such as Nike, Maersk and T-Mobile. He is co-founder of the consultancy firm ICOP, guest lecturer at the Danish Technical University, and one of the original developers of BriefBuilder, the award-winning application for briefing in complex construction projects.

Kjersti Bjørkeng Størdal has a PhD in Organizational Change from NTNU. She is an award winning researcher who has conducted research on the space and place of organizational practices. She has turned her research into practice and is now a manager at Gottlieb Paludan Architects. She is applying her joint expertise on briefing and organizational development in major projects like the new Norwegian Government offices in Oslo, Oslo School of Architecture and Design, and Ocean Space center in Trondheim.

About the sponsors

BriefBuilder
BriefBuilder is a powerful, award-winning tool for requirements management in construction projects. The tool helps clients and their design teams to define and verify the quality they want from a project. Requirements are captured in a very systematic way and integrated seamlessly into the BIM models of the design team. BriefBuilder has proven its value in numerous projects across the world, ranging from schools and office buildings to hospitals and lab facilities.

www.briefbuilder.com

Realdania
Realdania is a Danish association which supports philanthropic projects in the realms of architecture and planning. Realdania's aim is to solve some of society's major problems through agenda-setting initiatives. The mission is to improve the quality of life and benefit the common good by improving the built environment. From this perspective Realdania initiates and promotes ideas and practical solutions in the built environment that have the capacity to drive development and change.

www.realdania.org

Gottlieb Paludan Architects
Gottlieb Paludan Architects provides consulting in Architecture, Landscape & Urban Space, Planning and programming, and Design. These different competencies are applied across the company's markets and projects. This ensures the best mix of disciplines and the right interdisciplinary advice for each individual assignment. Gottlieb Paludan Architects is a leading provider of workplace design and development with a focus on strategic processes, research based analysis and user participation. Gottlieb Paludan Architects is part of AFRY, an international engineering, design and advisory company.

www.gottliebpaludan.com

Credits

Text: Juriaan van Meel and Kjersti Bjørkeng Størdal
Indoor climate and sustainability: Michael Curtis
Acoustic requirements: Colin Campbell, Mai-Britt Beldam, Frans Davidsson (Ecophon)

Book design: Studio Sander Boon
Copy editing: Robyn Dalziel
Sponsored by: Realdania, BriefBuilder and Gottlieb Paludan Architects
Published: by ICOP
Printed: Pantheon Drukkers, Velsen-Noord, The Netherlands

ISBN 978-90-823479-1-3

This page is intentionally left blank”

Every building project should start with the development of a brief. A good brief clearly explains what the client wants from the project. It provides the design team with the information and inspiration they need to design a successful building. Moreover, the brief functions as a framework for quality management during the project.
This book provides all the guidance needed to develop high-performance briefs. In clear language, it succinctly explains the briefing process, different kinds of briefing techniques and the topics that should be addressed in the brief. In addition, the book provides examples, checklists and recommendations that can be directly applied in practice.

ISBN 978-90-823479-1-3

BRIEFBUILDER

Realdania

GOTTLIEB PALUDAN ARCHITECTS