Searching for data

A method to evaluate the effects of working in an innovative office

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Delft University Press
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Paul Vos
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Preface

In February 1996 the Dutch Government Buildings Agency and Delft University of Technology, department of Real Estate & Project Management entered into a long-term co-operation to do research on workplace innovation. This research co-operation is aimed at analysing the impact of new workplace environments on the 'performance' of organisations accommodated in these concepts. Besides creating an optimal relation between workplaces and organisations the Dutch Government Buildings Agency started workplace experiments to gain insight in the effects of technical, economical, social and organisational developments on the workplace. Developments such as internet, cordless phones, flexibilisation of work processes, job sharing, globalisation and cost savings have a large impact on the accommodations required and thus on the performance of the Public Administration as such. Beside these developments, "learning by doing" was also an important reason to start with the 'pilot projects'.

Since the start of our co-operation, both Delft University of Technology and the Dutch Government Buildings Agency gained a lot of insight on the effects of workplace innovation. The jointly developed evaluation method, a tool to measure the 'performance' of organisations and its employees in new working environments, has been successfully applied to several workplace innovation experiments. In this booklet we will describe the lessons we learned from our experiences with the evaluation method and above all: we challenge you, helping us to develop better questionnaires and instruments to evaluate the effects of workplace innovation. Both the Dutch Government Buildings Agency and Delft University of Technology are convinced of the fact that only through a good debate with colleagues we can make advances in this relative new research field. Therefore in this report, which basically needs to be interpreted as a discussion paper, we present our evaluation method and give a state of art of the research that recently have been conducted on this discipline. This report is primarily meant to get feedback to our work from colleagues (universities, research and public administration). We would be very pleased to receive your comments.

We would like to thank the ABN AMRO bank, Adrian Leaman and Claartje Rakestraw for their constructive contributions to this document.

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About the department

The department of Real Estate and Project Management is part of the faculty of Architecture at Delft University of Technology. It investigates the technical, economic, organisational and informational aspects of the development, design, construction and management of buildings. The department is particularly concerned with the end-user of real estate.

The main research themes of the department are: processes (e.g. design and construction processes); forms of project management (e.g. Build Operate Transfer); the real estate market (offices and retail); real estate financing; and real estate management, which partly covers office innovation. On this last particular topic the department is currently conducting major research projects in co-operation with the ABN AMRO Bank and the Dutch Government Buildings Agency. Furthermore, the department has launched a pilot project to investigate new ways of working and learning at Delft University of Technology.

The educational program, with about 100 students enrolling each year, consists of eight courses of eight weeks each. In these courses the transfer of practical knowledge and the training of skills in real-life projects are emphasised, mostly through management games and role-plays. The educational program is completed with a graduation project of about eight months in which the students study real-life problems at companies or public organisations. After their graduation, they usually make their careers in very diverse professional fields, ranging from real estate economics to construction management.
1. Introduction

Developments within the Dutch government

In recent years the Dutch government has experienced fundamental changes. Those include:

- emphasis shifting from operational activities to policy and management activities;
- focus on core business;
- a small high-quality apparatus with a ‘business-like’ management philosophy with cost-cutting implications;
- internal to external communication, underpinned by advanced information technology;
- more flexible way of working. In response, governmental organisations are becoming “flatter” in structure with a perceived shift from individual task-based work to project and team working. At the same time, employees have more responsibility and they are more independence. For example, part-time and freelance work is increasing and working hours are becoming more flexible.

Need for flexible buildings

These developments have caused a change in the demand for government office buildings. In response, the Dutch Government Buildings Agency must match its stock of office buildings to this changing demand in an economic and social, responsible way. To do so, the Dutch Government Buildings Agency follows a strategy that tries to optimise the fit between building supply and the social, organisational and business process changes. Nowadays this strategy, in literature on real estate mostly called “office innovation”, is often used in the accommodation practice as a solution to deal with the constantly changing business environment. Obviously, this trend creates a growing demand for flexible buildings.

Office innovation as a solution

Office innovation is needed to better adapt the workplace to changing activities. This visually leads to changes in workplace layouts. Key-questions are:

1. What is workplace innovation trying to achieve?
   For example, do people really need to spend more of their time working in project-teams in order to be more productive?

2. What effects do changes have on the occupants’ effectiveness of work?
   For example, do people perceive that their productivity has improved?

3. Are there side effects?
   For example, do working patterns or habits change?
**Pilot projects**

In order to explore these issues the Dutch Government Buildings Agency has initiated three pilot projects:

1. Dynamic Office, Haarlem;
2. Hotel Office, The Hague;

With the exception of the Satellite Office, each of these projects is being evaluated by the methods covered in this discussion paper. The results of the studies will be published in 1999, when the experiments are finished.

**Reading manual**

In chapter two of this paper, the emphasis lies on the context in which office innovation takes place. Today’s business context is no longer comparable to yesterday’s. Social, organisational, economical, and technological developments are changing the way organisations are operating. The electronic highway, video conferencing, mobile phones and portable computers have drastically changed our ways of working. Flexible working hours and lengthening of business hours are some of the developments that have placed our work in a totally different perspective. The variety of term illustrates the novelty of the workplace solutions. For most people, however, it makes the subject more complicated than is necessary. Therefore a framework of workplace concepts will be presented.

Despite the many success stories we hear about office innovation we still do not know precisely what the impact of office innovation is on the organisation. In the past many attempts have been made to measure the influence of the working environment on the productivity of an organisation. In chapter three we take a closer look at the research method the Dutch Government Buildings Agency and Delft University of Technology jointly developed to evaluate office innovation projects.

Since the start of the co-operation the Dutch Government Buildings Agency and our group -department of Real Estate & Project Management- gained a lot of insight on the effects of workplace innovation. In chapter four we describe some lessons we have learned from our own research experiences.

The paper ends with some concluding observations of the authors. The basis of the evaluation method, the questionnaire, is enclosed in Appendix A.

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1 At the same time other experiments were carried out within the offices of the Tax Department, Ministry of Economic Affairs and Ministry of Housing, Spatial Planning and Environmental Issues. Although, these experiments were not given the status of pilot project, they were monitored intensively.
2. What is office innovation?

Until recently, managers paid little attention to the workplace and its influence on the performance and productivity of the employees working in offices. For example, Peters and Waterman make no notion of office design and layout in the landmark management text. Managers tended to neglect the importance of the workplace as an essential determinant of success of their core business. They measured the quality of the office building by the prestige of its location and its exterior. Employees’ interests tended to status issues such as office size or favourite seats near windows.

Nowadays, innovative concepts are getting much more attention. The flood of publications in journals such as Business Week, the Economist, the Financial Times and Fortune proves this. New technologies and ideas about management have led to a shift in thinking about office concepts. Characteristic developments are:

- fewer single-cellular offices, replaced by group and open plan areas;
- more efficient use of space, leading to higher levels of utilisation;
- more complex buildings, serving a wider range of needs;
- greater reliance on information technology infrastructure;
- more emphasis on the health, comfort, and productivity of concepts.

2.1 Motives for office innovation

A growing number of organisations recognise the importance of a good match between the working environment and the dynamic market they operate in. Organisations have been growing in size, means of communication have changed and products and services become more complex and advanced. Video conferencing, mobile phones, laptop computers and e-mail are just a few examples of the innovative technology that has changed our way of working drastically. In short: organisations are increasingly sensitive to social, technological, organisational and economic developments.

Social developments

Developments such as globalisation, job sharing, 36-hour working week (now statutory in the Netherlands), flexibilisation of work and the ongoing ageing of the working population lead to a lower occupancy rate of workspaces. To use space in a more efficient way, workspaces need to be used by more than one employee.

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1 Workplace = building or area where work is carried out
2 Workspace = the desk
Technological developments
New technologies make it possible to transfer a great amount of data very quickly. Distance is suggested to be a less important factor. Due to the use of cordless services place and time no longer restrict work.

Organisational developments
Organisations change more rapidly - especially their rates of removal (the frequency with which employees change workspaces) often as high as 30% per year. Organisational structures are more flexible and 'flat and employees work more in teams (although this may be more myth then reality in some organisations). As a consequence organisations are finding it increasingly necessary to adapt their working environment to the changed business context.

Economic developments
Organisations are increasingly aware of corporate real estate's importance as a cost factor, second only to human resources. This is why many organisations are looking for a better, more efficient way to manage the use of space. Nowadays, the office environment is considered by many organisations as a tool to realise cost reductions.

2.2 A framework of workplace concepts
As a consequence of these developments, work (and how it is organised) has changed radically. Traditional workplaces seem to be no longer sufficient to support new ways of working. Organisations must be attentive to signals and impulses from the dynamic and unpredictable environment they operate in. This is why today's manager is forced to play the role of a change manager. They need not only to be aware of the many changes in and outside the organisation, but they must also know how to deal with uncertainties. These are the main reasons why office innovation gets so much attention in these days.
A side effect of all the attention given to workplace innovation is that it has lead to a cascade of definitions and descriptions of the new workplace. Organisations market their ideas and concepts by creating their own terminology. "Read carpet club", "den office", "landing sites", "hot desks", "telecottage", "neighbourhood office", "activity setting" and "non territorial office". For designers, consultants, facility managers, end-users and researchers the multifority of concepts and definitions often leads to confusion. It frustrates the debate about workplaces. To discuss and compare office concepts, new experiments and research projects, a common language is indispensable. This was the reason for the department of Real Estate & Project Management (Delft University of Technology) to develop a framework of workplace concepts in which the different office concepts can be described and explained. The framework was developed with support of the Dutch Government Buildings, ABN AMRO bank, KPN Real Estate and G&P/Starke Diekstra Agency (nowadays: Arcadis). By this framework it is possible to communicate about office concepts, i.e. innovative concepts, in a similar way.

When setting up a framework for office concepts, the first question is: what is an office actually? From our own experiences we know that office work includes activities such as making phones calls, writing, typing, copying, filing, talking, listening, thinking, transcribing, mailing, printing and of course chatting, waiting, and drinking coffee. The basic characteristic of the greater part of these activities is that they are concerned with the processing of information. For this reason office is defined here as a workplace where people process information.

As simple as the definition of the term “office” seems, so difficult is the description of different types of offices. The difficulty lies in the intangible character of office work. With the advent of smaller, cheaper and user-friendlier information technology, office work is losing its physical characteristics. Theoretically, in this era the whole world can serve as an office. Nevertheless, we can distinguish three basic characteristics that can be used to define and explain the different workplace dimensions (Vos, Van Meel & Dijcks, 1997):

- **Place**
- **Space**
- **Use**

**Place**

Place is probably the most important. In this context the place of the workplace does not mean its geographical location (e.g. London, Frankfurt or Milan), but the location of the workplace in relation to other workplaces. Are employees working together within a single office building (central office), or are they scattered over a diversity of locations, such as a satellite office, a business centre, at a clients’ office (guest office), at home (home office) or elsewhere (instant office).
Most innovative concepts are the different types of telework offices. The most significant aspect of these concepts is that employees work at a distance from the central office and their colleagues. Telework offices can be either located in an office building or in a place that is not primarily intended for work. The last group is called an “instant office”.

Employees simply create their own workplace by sitting down on a bank in the park or in a train reading a report or writing an article. When employees are teleworking, they are not physically present at the central office, but connected to it rather on a wide-area network (or the Internet). The networking arrangement usually has a client (the teleworker) at the central server computer, located in the department or head office. The connections are made by modems to “traditional” telephone lines or modems to cellular phones or ISDN lines. Increasingly, the Internet is used as the networking backbone, in which case the server computer can be located anywhere in the world!

**Space**

Space, only applies to those workplaces that are located in office buildings. It concerns the spatial features of workplaces in office buildings: is a workplace physically disconnected from other workplaces or is it located in the same space as the others?

Three types of office space can be distinguished. Enclosed spaces for up to 3 workspaces (cellular office$^4$), 4 - 12 workspaces (group office) and 13 or more workspaces (open plan office). A special concept is the combi office that consists of both cellular and open spaces. The closed spaces are meant for concentration work, the open spaces with common facilities such as filing cabinets and fax machines for group work. Employees can link their activities to a special workplace. One time you choose a small cellular office to write a report or read a difficult policy document and the other time you prefer the open space to meet people and drink coffee with your colleagues. The combi concept seems to match very well with the modern work processes, which are becoming more and more complex.

$^4$ Usually for 2 persons
Use

Use is not a physical characteristic. It concerns the way in which workplaces are being used in office buildings. Do employees have their own workplace (personal office), do they share one with colleagues (shared office) or do they use any place they want to (non-territorial office)?

Sharing of workplaces is the most innovative use. Employees no longer have a workspace of their own. By losing them, they also have to give up their filing cabinets and at the end of the day they have to tidy the workspace (clean desking) for future users. Sharing workspaces is a solution to intensivate the use of workplaces. Almost 70% of the workspaces in office buildings are unused during business hours (Veldhoen & Piepers, 1995).

2.3 Modern workplace strategies: an interdisciplinary process

When we talk about workplace innovation we also refer to new ways of briefing, designing and implementing concepts. With the changing working environment, the workplace has conquered a different position in many organisations. More and more it is considered as “the fifth resource” (Joroff, et al, 1993).5

5 The other four are people, capital, information and technology
Acknowledging the importance of a good workplace, the working environment is not only a matter for facilities managers and space managers, but also for experts in the field of organisation management, information technology and finance. Because of its complexity, workplace innovation projects require an interdisciplinary approach. The figure (4) below illustrates the integration of the involved disciplines.

Real estate
When we talk about workplace we often refer to the office in which the new workplace design (i.e. a certain space concept) is being introduced or is already implemented. Physical space sets the limiting conditions for the workplace design. The building depth and positioning of the air conditioning etc. may preclude certain floor plans. For example, the floorplans of the “Dynamic Office Haarlem” in the Netherlands were designed especially for a layout in which there is a large centrally located shared communication area, with small offices surrounding it. Building depth is 25 metres instead of the “normal” 15 metres. In this workplace concept, employees can choose the workplace that suits a specific activity.

Information technology
Thanks to progress in information technology, work might become increasingly indifferent to time and place. Mobile phones, fax modems and Internet makes it (technically) possible to contact anyone anywhere anytime. New technologies have given us the opportunity to do our work in different ways. Nobody can oversee the impact of information technology on the workplace environment yet, but we might speak of a true revolution (compare it to the introduction of the telephone or television).

Organisation
Changes in an organisation go hand in hand with changes of the workplace and vice versa. Thus, changes in the workplace concept usually require changes in organisational strategy. One of these changes is the shift in supervision and management of the employees. For example, employees that telecommute (i.e. who work outside the central office) can not be directly supervised. It only works in a climate of trust. This means an employee’s performance has to be measured by output, not by presence at the central office. Modern managers must have faith in the intellectual capacity of their employees. “Today, management is coaching intellect”.

Fig 4. The integrated workplace (= W)
The hierarchical structure and the culture of an organisation also greatly influence the way in which it is accommodated. An office is a visible indication of an organisation’s culture (Van Meel, 1996). For the employee, the workplace means a lot more than just a small part of the building. They can feel emotionally attached to it. The need for privacy, control and status are the most common examples one can find on this subject. But also for top management, the office is more than a cost factor. In the office, the corporate identity can be showed to the outside world by choosing a clear architectonic style for all corporate offices.

**Finance**

Corporate real estate is one of the largest cost factors for most businesses, second only to personnel-related costs. Therefore financial factors play an important role in both selecting and designing workplaces. Due to increasing competition, organisations find it necessary to cut operational costs, and since real estate costs are such an important budget item, they are often one of the first considered for cost reduction. Thus, cost reduction is often the main reason for introducing office innovation, especially in countries like the USA, UK and Japan, where real estate costs are high. In the Netherlands, where the real estate costs are lower, cost reduction is not necessarily the most important incentive to implement office innovation. Research by Arthur Andersen (1995) among a number of European companies, showed that most organisations still consider their real estate not as an enabler of more effective work processes, but simply as a cost factor.

When corporate real estate or facility managers are discussing about the costs of office innovation they often refer to the initial costs of projects. They refer to cost savings by reducing the number of square meters or workspaces. There is little or no knowledge about the impact on the running costs, and certainly not about the consequences for the business. What is really important for the business is how the workplace change may increase the performance of the organisation. In chapter four we will discuss this question more deeply.

2.4 **Implementing office innovation: a difficult assignment**

Over the years, organisation consultants, government managers and researchers have gained experience with the implementation of workplace innovation by doing several pilot projects with alternative workplace concepts. These pilot projects showed that the implementation of workplace innovation is not easy. Poor communication can be blamed for failure and sometimes bad management is the cause. In any case, we agree that the implementation of alternative workplaces is complex. It is a cultural change for both employees and management. Very often management focuses too much on the space and corporate image components, with too little attention for aspects such as finance, information technology and human resources.

In other words: the previously mentioned integrated approach is not always employed. Communication between the various parts of the organisation is often a bottleneck, because each field has its own language, background and way of thinking. These things cannot be set aside easily.
2.5 Summary

Workplace innovation is a response to changing business needs in an increasingly unstable technological and market environment. Workplace solutions usually take the form of layout changes which often result in dispersed, open and shared approaches, although there are many possible manifestations. Whether these new approaches actually produce the benefits that we claimed for them is still an open question because not many have been measured in a systematic way.

References

Arthur Andersen, Wasted Assets, Arthur Andersen, 1995;
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3. How to evaluate office innovation?

3.1 The need for evaluation

Changing the working environment is a complex process. Especially when an organisation decides to move from a previous traditional to an innovative office concept. The implementation of office innovation, is not just a change of the office environment and furniture, but also a change in the work process, the organisational culture, the way of communicating internally and externally, and the way of managing.

Because several aspects change at the same time and influence each other, it is often difficult to determine the exact relationships between causes and effects of changes. In spite of these difficulties, it is essentially for an organisation to check whether or not the preliminary objectives are met. When this question is answered, management can, if necessary, further adapt and improve the new office concept. A common objective of implementing workplace innovations is to increase the performance of the work process of the organisation and its employers. The method developed assesses the (improvement of) the performance of the work process.

The research method developed in this paper is an example of "ex-post evaluation", in which the effects of a new situation (e.g. changing the working environment) are evaluated after a given period of time. At that time it is possible to measure the effects of the innovative working environment on the work process by comparing the old working situation by the new one.

3.2 Research design

An adequate way to do an evaluation study is to use an experimental design. Actually, in this context it is better to speak of a "quasi experimental design", for in a working environment it is not possible to control variables like in a laboratory. For that reason, you always have to keep in mind that all kind of external influences (i.e. reorganisation, personal circumstances, etc.) might colour the evaluation results. Unfortunately it is not possible to exclude those external influences: the research takes place in the daily life context of an organisation, not in a protected environment.

In a quasi-experimental design both changes in time and situation are measured. By changes in time we mean measuring the workplace situation several times in the course of an extended period of time.
We call the measurement of the workplace situation conducted before moving into an innovative office the "reference measurement" (T 0). The reference measurement should be conducted 3 or 4 months before the relocation to the innovative working environment takes place. The users are not affected by the new situation and can therefore better judge their present working environment.

The measurement conducted after moving into the new workplace we call the "effect measurement" (T 1, T 2, etc.). We recommend having several effect measurements, because some of the effects will only become apparent in course of time. Effects also can change during the time of working in the new office concept. If all effect measurements have similar results, we can conclude that the outcome of the evaluation study is reliable. The effect measurements should be conducted 5 or 6 months (T 1) and about one year (T 2) after the move has taken place. The moments that the effect measurements take place, strongly depend on the context of the project: was it a smooth process or is there a lot of resistance, are there many "teething troubles", are the users already used to the new concept, etc.? When the situation seems to be "normal", the time is right to do the first effect measurement.

The changes we find in time, might, however, been caused by changes in situation. Such situational changes could be a reorganisation, a stock crash or the introduction of a new financial structure. In order to track down those changes in situation we must study a similar organisation with the only exception that this organisation is not undergoing a change in the working environment. Such a "control group" is necessary as a check on the results of the evaluation. This way, the chance is minimised that changes are wrongly attributed to the new working environment. For if the same changes occur in the organisation which did not undergo a change in the working environment, the implemented innovative workplace concepts can not be the cause of these changes. To make a valid comparison between two organisations, it is important that the control group is very similar to the experimental group.

![Fig 6. Quasi experimental design](image)

The quasi-experimental design represents an ideal evaluation process. In practice, however, it will not always be possible to do all the required measurements or to find a control group that is sufficiently similar to the experimental group. It is also a labour-intensive research method, needed to be carried out by an experienced researcher. Therefore, it is also an expensive method. Of course, it is possible to do an evaluation without the use of a control group or a reference measurement or a second effect measurement. However, in that case, the results of the evaluation study should be interpreted with extra caution.
3.3 What needs to be measured?

Each evaluation study on the impact of office innovation needs a specific approach, which is linked up to the goals of the project. In other words, research needs to be custom-made. All projects have different goals and a specific context. For that reason, the proposed method in this discussion paper is certainly not a standard that can be used with any project. Evaluation instruments always need to be linked with the goals of the project. Some examples of project goals are:

- increasing the workers' productivity;
- space c.q. cost-reduction;
- reduction of absenteeism (higher job-satisfaction);
- saving the environment (by teleworking or the use of less square metres);
- improvement of co-operation, communication (both internal and external) and interaction (within the department).

However, the context and goals of each project differ from another, the problem keeps the same. Does it work better in an innovative office? What is the impact of the changing working environment on the performance of the organisation and its employees? That question always needs to be paramounted. So, the research question is:

"What are the effects of innovative working environment for the performance of the work processes of organisations and their employees?"

By investigating this question, we try to demonstrate the relation between the office environment and the performance of its users. But first, we have to clarify what we want measure and how.

3.3.1 Innovative working environment

By the 'innovative working environment' we understand: the working environment in which employees of an organisation work after a new workplace concept has been introduced. With this definition we mean the working environment in its broadest sense, i.e. not only the workplace lay-out, but also the secondary facilities, like furniture, cleaning service, restaurant, office management, repro and IT equipment.

3.3.2 Performance of work processes

With the work process as a basis, 'performance' can be divided into four categories:

- Productivity
- Quality
- Flexibility
- Innovation

In order to increase the performance of organisations, all four categories need to be considered evenly balanced. However, nowadays it seems to be the case that too much one-sided attention is paid to the efficiency of organisations (specially cost cutting operations).
Side effect of this is that financial measures typically used in real estate transactions often only constitute a partial set of performance indicators. Many corporate real estate professionals, however, have come to realise that efficiency measures do not fully capture the ways in which the workplace itself can influence the performance of the organisation and its employees. In other words, we have to focus on identifying the other indicators (and how to map them) that corporate real estate managers need to keep in mind when assessing the value of implementing some form of office innovation in order to enhance the organisation’s performance. At times, the focus should shift from only measuring static (quantified) elements of the organisation’s performance to trying to understand the dynamic interaction of other performance indicators, such as effectiveness of work processes, the flexibility of the organisation, and its potential for innovation and creativity. This is inherently more difficult, less precise and possibly more valuable.

Ultimately, for performance assessment to be valuable and not simply to be a device for slowing or blocking innovation, it must be tied to consensus about what the organisation is trying to accomplish. The organisation must be committed to looking at all the indicators - objective and subjective, quantitative and qualitative, short and long term. These measures must assess behaviours, events, activities and other outcomes that are perceived to help the organisation achieve its fundamental business objectives; they must be integral to the organisation’s mission and strategic goals. Looking at our daily business context, which is very dynamic and unpredictable, productivity, quality, flexibility and innovation seems to be the key-indicators for organisations’ performance. Under here the indicators are discussed in detail and an attempt is being made to describe how we make them measurable.

**Productivity**

Productivity contains two elements: “effectiveness” and “efficiency”. Since both terms are still quite abstract, we looked for other more refined indicators that express effectiveness and efficiency of work processes. These terms, which we call performance indicators, are activity pattern, production/output, filing, internal and external communication, availability and findibility and concentration. In the following sections we will clarify these indicators.

With ‘activity pattern’ we refer to the types of activities an employee does to fulfil his tasks. Although we are mainly concerned with the effectiveness of his work process, it must be stated that the line between the different performance indicators is very thin. The ‘production or output’ refers to the quality, quantity and the general impression of how the work is done. ‘Filing’ refers to the way the filing system is organised and the employee’s satisfaction about it. In the categories ‘internal communication’ and ‘external communication’ we measure the possibilities the working environment offers for communication and meeting with colleagues and external relations. ‘Communication’ is a lubricant in today’s organisations, so it is a very important issue in this research method. Finally, by ‘concentration’ we mean the opposite of ‘communication’. It indicates the possibility the working environment offers to work without being disturbed or distracted by people or other sounds and things.
Quality

The second category, 'quality', can be divided into 'user satisfaction about services and facilities' and 'user satisfaction about the use of these facilities and services'. The offered facilities and the way these facilities are used can influence the work process. Especially when facilities are in a bad condition (so called "dissatisfiers") they might have a counterproductive influence on the work processes of employees. For a user, it is always easier to complain about their working environment than to make compliments on it! Just think about the copier machine or the telephone that does not work; it can destroy a complete pilot project. The time it takes to solve a problem (response time) is important as well. A third performance indicator is how the employee thinks about the 'quality of his own work' and how the working environment influences it.

Flexibility

'Flexibility' the third category, means the capacity of the working environment to adapt to changes in the work process. In other words, to what extent can the workplace facilitate the work process of the organisation in it? Asking employees about their 'perception of their working environment' and 'how they function in it' measure this.

Innovation

The fourth category refers to how the users have experienced the implementation of an innovative workplace concept. How is the work process organised in the new working environment and how has this new working environment changed the way they are doing their work? In a reference measurement, the users are asked whether and to what extent they think the implementation of workplace innovation will influence their work processes.

On the next page the performance indicators are organised in a scheme. As written before: it is not necessary to use all the indicators to build an adequate evaluation instrument. The selection of the indicators fully depends on the specific context and goals of the office innovation project that needs to be evaluated. Actually, the performance scheme is like a toolbox: for each project you choose the right indicators to develop the evaluation instrument. And sometimes it is even necessary to use indicators, which are not available in the toolbox; than you have to improvise and develop a new instrument (add an extra performance indicator).

3.4 The questionnaire

The last step is to transform the performance indicators into measurable items (see: figure 7 on the next page), which form the basis for the questions in the survey. In addition to this questionnaire, employees (all function groups, not only the management) of the new working environment can be interviewed. The questionnaire is integrally enclosed in Appendix A.
<table>
<thead>
<tr>
<th>Performance</th>
<th>Evaluation indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td></td>
</tr>
<tr>
<td>efficiency</td>
<td>• filing</td>
</tr>
<tr>
<td></td>
<td>• communication (internal and external)</td>
</tr>
<tr>
<td></td>
<td>• availability/findability</td>
</tr>
<tr>
<td></td>
<td>• concentration</td>
</tr>
<tr>
<td>effectiveness</td>
<td>• production/output</td>
</tr>
<tr>
<td></td>
<td>• activity pattern</td>
</tr>
<tr>
<td>Quality</td>
<td></td>
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<td></td>
<td>• service &amp; facilities</td>
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<td></td>
<td>• furniture</td>
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<td></td>
<td>• output</td>
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<td></td>
<td>• employee satisfaction</td>
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<td>• auditory privacy</td>
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<td>• visual privacy</td>
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<tr>
<td></td>
<td>• conversation privacy</td>
</tr>
<tr>
<td></td>
<td>• possibility to influence the climate</td>
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<td></td>
<td>• workplace view</td>
</tr>
<tr>
<td></td>
<td>• convenience</td>
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<td></td>
<td>• image</td>
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<tr>
<td></td>
<td>• general functionality</td>
</tr>
<tr>
<td></td>
<td>• general working environment</td>
</tr>
<tr>
<td>Flexibility</td>
<td>• possibilities to change the working environment</td>
</tr>
<tr>
<td></td>
<td>• possibilities to change the workspace</td>
</tr>
<tr>
<td></td>
<td>• adapt to circumstances</td>
</tr>
<tr>
<td>Innovation</td>
<td>• expectation</td>
</tr>
<tr>
<td></td>
<td>• how changes are experienced</td>
</tr>
</tbody>
</table>

Fig 7. The questionnaire indicators
4. What have we learned?

Despite of all the attention office innovation gets in the media, little is known about its effects on the functioning of organisations and individual employees. Do people actually work better in an innovative office? Are work processes really supported best in innovative offices? Are traditional offices just not good anymore?

Only recently the first empirical data accumulated with the method described in this booklet became available. The first section of this chapter describes some results of the studies of the Dutch Government Buildings Agency and the Delft University of Technology. But other projects are summarised as well. Some of them, for example the studies of the ABN AMRO bank, are based on the method presented in this book.

Unquestionably, of more importance than the results of the evaluation studies are the lessons we have learned from them. Are the results useful for future projects? After all, the main reason of evaluating office innovation projects is to learn from our mistakes so we can do better in the future. A list of critical factors will be presented.

4.1 Evaluation results

Beside cost reduction, the enhancement of work processes is an important motive for top management to initiate office innovation. Consultants constantly launch office concepts that are supposed to match better with the working processes of administrative organisations. In order to find out which office concept matches best with the organisation, they start with analysing the activity pattern (communication and autonomy in relation to concentration and privacy) of the workers. For example, the "combi office", with its variety of enclosed and open spaces, is known as the ‘ultimate solution’ for organisations that need space for both concentration and communication.

However, the big question still is: “Does it work better in an innovative office?” To be sure, many so-called “post occupancy evaluation studies” have been conducted in recent years, but most of these studies are limited to effects of office innovation on satisfaction or the health of employees (see e.g. Donkers, 1995; Bergs, 1996). As far as studies have gone into the matter of measuring the impact of office innovation on the functioning of organisation, it is mostly contended to self-estimated rates of productivity. For example a study of Becker et al. (1993) showed that after the evaluation of 12 telework centres in Japan and the US, 81% of the employees experienced an ‘increased’ productivity. Less distraction and commuter traffic were given as the main reasons for the increase of productivity.

But, performance and satisfaction does not necessarily go together. This showed a study on a telework project at the ABN AMRO bank in the Netherlands (Van Steenbergen, 1997). Although most of the employees experienced an increased satisfaction with their new working situation, they rated themselves a stable productivity. A possible explanation for the stable productivity of the workers is that it might take some time to transform a higher satisfaction into an increased productivity. The other is that the hypotheses “higher satisfaction through office innovation creates higher productivity” might be false.
So far three pilot projects of the Dutch Government Buildings Agency have been evaluated with the method described in this report: the Hotel Office in The Hague (see framework), and two pilot projects with shared workplaces; one at the Department of Economic Affairs and one at a regional organisation of the Tax Department (Beunder & Bakker, 1997). All these studies showed an increased contact with team members in the new working environment. In innovative offices it seems to be easier to communicate with the members of a project team. The loss of a personal workplace also stimulates the level of contact between members from different teams or departments. In an alternative office environment employees communicate more on a face-to-face and ad-hoc basis. On the other hand, employees experience more problems with filing their documents and organising their work. Because in innovative offices (e.g. "non territorial office") employees do not longer have their own desk and filing cabinet, they have to organise their work very accurately (knowing exactly what kind of activities to do and the stuff they need for it). For some of the workers this seems to be a major chance. Besides, most users of innovative offices (with exception of the Hotel Office) experience more problems with the possibility to concentrate. Paying attention to the increased communication in innovative working environments, this is not really a surprise.

The studies of Beunder & Bakker (1997) also showed the effects of employees working at a distance of the central office (a telework project of the Tax Department). The employees who work a limited time of the week at home or at a telework centre are more productive (self-rated) than those who do not telework. Teleworkers can concentrate more easily on doing one specific activity (e.g. writing an article at home). The employees who work at the central office are more distracted by informal talks with colleagues (mostly not about work but the last night football match), telephone calls, visitors and several other things. The studies also indicated that employees at the central office have more work to do on the days that colleagues work at home or at a telework centre. They have to answer more phone calls; more questions and they have to clear more emergency cases. This drawback of teleworking has also been pinpointed in other studies (e.g. Becker, 1993).
It is also striking that teleworkers experience a lower involvement with the “current business affairs” at the central office. Van Steenbergen’s study (1997) showed that employees of the ABN AMRO bank experienced a decreased contact with their colleagues and a lower involvement with the organisation. Positive aspect of teleworking, according to the same group of employees, is that both teleworkers and the colleagues at the central office find it easier to get each other on the phone. Teleworkers hardly have any breaks during the working day.

**Project X**

One project we are currently evaluating is a classic example of the mismatch between an expected - future- situation and the real situation. The building in case was designed to support new ways of working. Most employees in the organisation were used to work in a cellular setting. Cellular offices was a good workplace solution because most of the employees did a lot of concentrated work, they spent most of the working hours in the office, and the organisation was structured in a very hierarchical way. At the time the organisation has to take the design decision top management decided to implement some new ways of working and leadership. Working hours would become more flexible, employees would no longer be “controlled” by presence but by output, and most importantly the new working pattern required more communication among employees. The design matches these new requirements.

The first effect measurement, conducted within six months after the relocation in the new building, showed that the organisations were still operating in the traditional way. The working pattern and the leadership style were not changed at all. As a consequence, the new design has a poor impact on the performance of the organisations.

Unfortunately, “project X” is a common and widely heard story. The real estate solution does not match with the organisational demands, because the work process has not changed, in the case of “project X”, in the way it was expected when the brief was written. In order to improve the worker’s performance and to balance the relation between the organisations and the building, the organisations which jointly initiated “project X”, started an “aftercare” project. Goal of this project is to specify the problems the users experience with working in the new office concept and to learn lessons from the first effect measurement. The example of “project X” also highlights the importance of designing by scenarios. Most architects are still designing in a linear, Cartesian way. By looking for solutions that meet the requirements in different scenarios the organisation will be less confronted with surprises.

The Delft University of Technology is currently evaluating several other innovative projects of the Dutch Government Buildings Agency and the ABN AMRO Bank. The results of these studies will be published in 1999.

**4.2 Critical aspects**

By evaluating projects we are gaining more and more insight in the effects of office innovation. Post-occupancy evaluations give such insight in the effects of office innovation. What determines the success or failure of workplace projects is, however, often difficult to depict. The results of the evaluation studies are important to start up discussions with architects, consultants, facilities managers and other actors involved.

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*For the evaluation study of Project X has not completed yet, the results are confidential.*
The problems raised in “project X” may be due to several “failures”:

- a “wrong” brief e.g. a non accurate description of the activity pattern);
- mistakes by the architect;
- management of the process (especially after the concept is implemented).

To identify so-called “critical aspects” the Delft University of Technology organises regularly workshops -in co-operation with her partners The Dutch Government Buildings Agency, ABN AMRO bank and the International Development and Research Council- to discuss outcomes of the evaluation studies. In the last two years three workshops were organised. We end this section by listing the “critical aspects” that came out of the discussions. They are ordered by random.

- Alignment with the work processes and the user needs
- Communication
- Clear mission
- Integrated approach
- Presence of a “champion”
- User involvement
- Time and energy
- Good equipment (i.e. ICT)
- People are not rational
- Do not copy success-stories

Fig 8. Critical aspects of office innovation

Alignment with the work process and the user needs
Workplace innovation must not become an objective in itself. It is an instrument to support change. The users can formulate their demands and wishes for the new workplace best, since they are the ones that carry out the organisation’s core activities.

Communication
As stressed many times in this publication, good communication is extremely important. Conditions for good communication are generally, “Communication must be interactive” and “visual, not just verbal”, are advises often heard. Experiments and pilot projects are successful instruments to help people to become habituated with alternative workplace strategies.

Clear mission
Management should have a clear mission and should make this mission clear to all employees. “Attainability for the client” and “intensifying of communication” are mission statements which are easier to sell than “cost reduction”. The Dutch insurance company “Interpolis NV” proved the importance of a clear mission. The board of directors wanted the new office to carry out a more client focused approach. And, as we all have been able to read in Dutch newspapers and magazines it turned out to be a success. The objectives of office innovation should be formulated in such a way that the project performance is measurable and therefore, possible to evaluate.
**Integrated approach**

All participants of the group discussions considered the implementation process to be extremely complex. The implementation will only be successful, if an integrated approach is used. The working environment is no longer the concern of the facility manager alone, but also of finance, IT and Human Resources. The Swedish researcher Granath (1996) is stressing the importance of "collective design". All the actors, including the users, which are affected by the change to an innovative office concept have to take part in the design process and are regarded as "experts".

**"Champion"**

Employees will not ask for an alternative workplace, as long as they do not clearly know what the effects are of being accommodated in an alternative office. People find it hard to image whether they need or want something that does not exist yet (Dougherty, 1996). This implies that the manager has to be able to convince the employees. The manager has to set an example. A good example that proves the importance of having a so-called "champion" is the project of Arthur Andersen in Chicago. The chief executive officer of this company traded his private office for a workplace in an open-plan office among personnel. Having a champion is not only important in the initial phase of a project, but also in the period after implementation.

**User involvement**

To create a design that fits optimally with the requirements of the organisation the user has to be involved heavily in the design process. The problem is that there is no such thing as one user or one best way to involve them. The term user may refer to top management, business heads, employees or the formal representatives of the employees. Their power and how they influence the design process strongly depends on the countries’ culture. In the Anglo-Saxon tradition top management primarily takes design decisions. In the early phases of the design process only top management is involved. The main reason why employees are involved is to avoid resistance. In the North-European tradition all levels of the organisation are involved and the employees have a much stronger impact on the workplace. For instance, in the approach the Dutch Government Buildings Agency is using for implementing office innovation the project always starts with a pilot that will be evaluated. The "GO-NO GO decision" to implement the concept for the total organisation depends on the evaluation results.

**Time and energy**

The implementation of workplace innovation has not to be hurried up. Implementing a new concept is a cultural change that requires a lot of time and energy of both the management and the employees. Before starting a project everybody needs to be aware of that.

**Good equipment**

Office innovation is often supported by information technology, such as laptops, portable phones and other advanced systems to let people work at a distance of their colleagues. As flashy these tools might look, most important is that they work properly! For the response time (the time it takes to solve a problem) might influence the users' opinion on the new concept, it is advisable to install a help-desk.
People are not rational

Basically, workplace concepts are developed from a rational point of view. However, people often act irrationally. Only a minority of the workers is aware of how they work and what kind of accommodation and facilities they need for it.

Do not copy success-stories

Simply copying a concept that proved to work in another organisation is not the key to success. Each organisation is unique. It has its own context, mission, staff, culture and history.

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5. Concluding observations

Change was once slow, but today organisations need to change rapidly, if they want to cope with the dynamic environment. Organisations try to keep up in any possible way and must cope in times of change or drown. Even in these turbulent times, in which only uncertainty seems to be certain, managers act as if everything can be controlled. Actually, this provides employees with a false sense of security. Managers are, therefore, continuously looking for instruments that help the organisation become more flexible. Also, the corporate real estate and the workplace need to be more flexible. Just like the work process itself, the workplace is subject to permanent change.

Thanks to the acknowledgement of the importance of the working environment, the management of many organisations 'preach' an interdisciplinary approach. This has changed the position of the workplace in the organisation to one in which all parts of the organisation have an interest: human resources, information technology, facilities management and finance. From a holistic perspective this implies that people, from various disciplines, are working on the development of the best workplace strategy.

However, office innovation and the research into its effects are still in its infancy. "Does it really work better in an innovative office?" To answer this key question a lot of research is needed. For work processes nowadays are very complex and diffuse (meetings and headwork), it is very hard to transform "performance indicators" into measurable items. How to rate the productivity of a knowledge worker? What is effective work? What is the output of an office worker? These aspects are hard to grasp. Besides these work process related aspects, other intangible aspects need to be explored. For example, how to measure the effects of office innovation on environmental issues, like commuting and durability? What is the impact of cultural aspects on the success of office innovation projects? Does the implementation of alternative workplaces influence the corporate image of an organisation?

The last years, more and more research is done into the effects of the different types of alternative workplace strategies and our knowledge and insights are still growing. In order to extend this progress, it is crucial to proceed with evaluation studies. By evaluating office innovation projects, initiated by the Dutch Government Buildings Agency, Delft University of Technology intends to contribute to the development of this new research field. We hope that this booklet shows how important evaluation studies are for increasing the body of knowledge about workplace innovation.

More and more organisations are becoming convinced of the necessity to evaluate. We publish our method so organisations that are implementing new concepts are able to evaluate them. Obviously, the interest of the evaluation results lies largely in comparing them with other pilots. Therefore, the Dutch Government Buildings Agency and the ABN AMRO bank decided to share their knowledge and exchange their results. Another reason to publish was to start a debate about how to evaluate office innovation projects so the most interesting lessons can be generated. We would be pleased if both targets could be attained.
Appendix

Workplace questionnaire
"Does it work better in an innovative office?"

Your new working environment and working methods

-EFFECT MEASUREMENT-

Instruction

- This questionnaire consists of two parts, A and B. Part A contains closed questions. Part B contains open questions. Both parts are meant to form an image of your new working environment and working methods, i.e. AFTER MOVING INTO AN INNOVATIVE OFFICE CONCEPT. This image will be compared with the reference measurement.

- In this questionnaire by "working environment" we mean the space that a person needs to do his or her work, including the required office furniture and facilities. By "working methods" we mean the way in which an employee organises and does his or her work.

- This questionnaire is meant for all employees, also temporary workers, of the organisation.

- Filing in this questionnaire will require about 30 minutes of your time.

- Some of the questions are provided with a short instruction (in bold text). For the processing of this questionnaire it is very important to follow these instructions carefully.

- Do not think too long about the questions asked, neither in part A nor in part B. There is no such thing as the "right" or "wrong" answer.

- All information you give us in this questionnaire will remain strictly confidential.

Thank you in advance for your co-operation.
Part A - closed questions

BACKGROUND INFORMATION

For this research project it is important to have some information about your personal background. For privacy reasons, only the general conclusions of this questionnaire will be published.

1. Sex?
   - male □
   - female □

2. Age?
   - under 21 □
   - 21 - 30 □
   - 31 - 40 □
   - 41 - 50 □
   - over 50 □

3. Which (name) organisation and which department you work with?
   - organisation .........................................................
   - department .........................................................

   Please fill in an estimated number.

4a. How many hours a week are you contracted with your organisation, in terms of f.t.e.?
   - labour contract .......... f.t.e.

4b. How many hours a week are you working at the office, and how many hours outside it?
   - at the office .......... hours
   - outside the office .......... hours

5. How are your working hours scattered over the days of the week?
   - Monday .......... hours
   - Tuesday .......... hours
   - Wednesday .......... hours
   - Thursday .......... hours
   - Friday .......... hours

6. Which of the following categories best describes your position in the organisation?
   - management □
   - administration □
   - policy making □
   - consulting □
   - other, i.e. ...................... □
WORK PROCESS

7. Approximately what percentage of your time do you usually use for the following activities?

- desk work (computer, writing, reading, etc.) .......... % of my time
- formal meetings .......... % of my time
- informal meetings .......... % of my time
- telephoning .......... % of my time
- filing, copying, sending faxes, etc. .......... % of my time
- other activities, i.e. ............................................. .......... % of my time

+ 100 %

8a. Where do you usually do your work?

- at my own workplace .......... % of my time
- at a shared workplace .......... % of my time
- at a "touch-down" workplace .......... % of my time
- in a common space of our department .......... % of my time
- somewhere else in the building .......... % of my time
- at a client's office .......... % of my time
- at home* .......... % of my time
- while travelling (e.g. on the train or bus) .......... % of my time
- other, i.e. .......................................................... .......... % of my time

+ 100 %

8b. What percentage of the time that you work at home, do you usually use for the following activities?

- writing documents (reports, notes, etc.) .......... % of my time
- reading .......... % of my time
- "headwork" .......... % of my time
- preparing a meeting or a presentation .......... % of my time
- telephoning .......... % of my time
- sending and answering e-mails .......... % of my time
- other, i.e. .......................................................... .......... % of my time

+ 100 %
9. Approximately what percentage of your time do you usually work individually or in a team?

- individually .......... % of my time
- in a team .......... % of my time

\[
\text{\% of my time} + \text{\% of my time} = 100 \%
\]

10. Approximately what percentage of your time do you need to be able to concentrate in order to do your work well?

- concentration need .......... % of my time

11. How do you rate the possibility to concentrate in your new working environment?

very negative □ □ □ □ □ very positive

12. How would you rate the level of disturbance in your new working environment in relation to your old situation?

- questions of colleagues □ □ □ □ □
- conversations of colleagues with others □ □ □ □ □
- telephoning of colleagues □ □ □ □ □
- walking around of colleagues □ □ □ □ □

13. Compared to the old situation, are you spending less or more time on the following activities?

- organising of work □ □ □ □ □
- finding of information (e.g. documents) □ □ □ □ □
- filing of documents □ □ □ □ □

14. How are reports, books and notes filled at your department?

- mainly central □
- mainly decentral □
- other, i.e. .......................................................... □

Please mark the one circle that best corresponds to your answer.
15. Please rate your satisfaction about the following aspects of the filing system that is used now in your department:

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Very dissatisfied</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>the way that documents are being filled in your department</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>the amount of filing space your department has</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>the amount of space for personal filing</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>accessibility of manuals and documentation</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>user convenience of the filing system</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>the ease with which files and documents can be traced</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

16. Is it in your new working environment less or more difficult to solve problems than in the old situation?

- less difficult  □
- the same  □
- more difficult  □
- other, i.e. ........................................... □

17. How does your new working environment influence your productivity?

- negatively  □
- positively  □
- I do not know  □
- other, i.e. ........................................... □

Please mark the one circle that best corresponds to your answer.

18. How would you mark your productivity in your new working environment?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>very low</td>
<td>very high</td>
<td></td>
<td></td>
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</tbody>
</table>

32
INTERNAL COMMUNICATION

By internal communication we mean: the exchange of information within your organisation between management and employees, among employees, between different departments, etc.

Please mark the one box that best corresponds to your answer. The offered answers for questions 19, 20 and 21 are defined as follows:

- never
- seldom = less than three times a week
- often = 3 to 5 times a week
- very often = more than 5 times a week

19. How frequently do you usually communicate with the following job categories?

- management
- administration
- policy making
- consulting
- other, i.e. ................................

20. Approximately, how frequently do you use the following means of communication to maintain contact with your colleagues?

- one-to-one conversation
- meeting
- written text
- phone
- e-mail
- fax
- other, i.e. .............................

21. Where do you usually communicate with your colleagues?

- at my own workplace
- at a colleague's workplace
- at a shared workplace
- in an informal sitting area
- in a meeting room
- in the canteen
- other, i.e. .............................
22. How would you describe the space for communication with your colleagues in your new working environment?

- very limited ☐
- limited ☐
- sufficient ☐
- ample ☐

23. How are the following aspects changed in your new working environment in comparison to the old situation?

- contact with your colleagues decreased unchanged increased ☐ ☐ ☐
- contact with your supervisor(-s) decreased unchanged increased ☐ ☐ ☐
- team spirit of your department decreased unchanged increased ☐ ☐ ☐

EXTERNAL COMMUNICATION

By external communication we mean: exchange of information between an organisation and its environment (i.e. among organisations, between an organisation and its clients, etc.)

24. Approximately how frequently do you usually use the following means of communications to maintain contact with external relation?

- one-to-one conversation never seldom often very often ☐ ☐ ☐
- meeting never seldom often very often ☐
- writing text never seldom often very often ☐
- phone never seldom often very often ☐
- e-mail never seldom often very often ☐
- fax never seldom often very often ☐
- other, i.e. ___________________________ never seldom often very often ☐
25. Where do you usually communicate with external relations?

- at my own workplace
- at a colleague's workplace
- at a shared workplace
- in an informal sitting area
- in a meeting room
- in the canteen
- outside the office
- other, i.e. ........................................

26. How would you describe the space for communication with external relations in your new working environment?

- very limited
- limited
- sufficient
- ample

27. Does your new working environment stimulate the contact with external relations?

- yes
- no
- I do not know
- other, i.e. ..........................................

ACCESSABILITY

Please draw a circle around the one number that best corresponds to your answer.

28. How difficult or easy is it to reach your colleagues by phone in the new working environment?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>very difficult</td>
<td>difficult</td>
<td>neutral</td>
<td>easy</td>
<td>very easy</td>
<td></td>
</tr>
</tbody>
</table>

29. How difficult or easy is it to (physically) find your colleagues in the new working environment?

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<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>very difficult</td>
<td>difficult</td>
<td>neutral</td>
<td>easy</td>
<td>very easy</td>
<td></td>
</tr>
</tbody>
</table>
30. In your opinion, how difficult or easy is it for your colleagues to reach you by phone in the new working environment?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>very difficult</td>
<td>difficult</td>
<td>neutral</td>
<td>easy</td>
<td>very easy</td>
</tr>
</tbody>
</table>

31. In your opinion, how difficult or easy is it for your colleagues to find you (physically) in the new working environment?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>very difficult</td>
<td>difficult</td>
<td>neutral</td>
<td>easy</td>
<td>very easy</td>
</tr>
</tbody>
</table>

32. In your opinion, how difficult or easy is it for others to reach you through e-mail in the new working environment?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>very difficult</td>
<td>difficult</td>
<td>neutral</td>
<td>easy</td>
<td>very easy</td>
</tr>
</tbody>
</table>

33. In your opinion, how difficult or easy is it for external relations to reach you by phone in the new working environment?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>very difficult</td>
<td>difficult</td>
<td>neutral</td>
<td>easy</td>
<td>very easy</td>
</tr>
</tbody>
</table>

34. In your opinion, how difficult or easy is it for external relations to find you (physically) in the new working environment?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>very difficult</td>
<td>difficult</td>
<td>neutral</td>
<td>easy</td>
<td>very easy</td>
</tr>
</tbody>
</table>

QUALITY OF YOUR WORKING ENVIRONMENT

37. Which of the following descriptions corresponds best with your workplace?

- personal office
- room for two persons
- group office (i.e. more than two persons)
- open plan office
- combi office (i.e. small rooms around and common spaces)
- non territorial workplace (a group of desks used by more persons)
- other, i.e. ..............................................................

36
38. Do colleagues use your workplace when are absent?

- never  
- occasionally  
- often  
- I do not know  

39. In your opinion, how does the new office layout (location of walls, doors, etc.) fit your daily activities?

- poorly  
- moderately  
- reasonably well  
- very well  

40a. How often do you usually use the common space of your department?

- never*  
- occasionally  
- often (every day)  

*go to 41.

40b. For what reason do you use the common space most?

- as a meeting space  
- as a space for reading  
- as a space for writing  
- for work breaks  
- other, i.e. ...........................................

41a. How often do you usually use the "touch-down" workplaces?

- never*  
- occasionally  
- often (every day)  

*go to 42

41b. For what reason do you use the "touch-down" workplaces most?

- as a meeting space  
- as a space for reading  
- as a space for writing  
- other, i.e. ...........................................

37
42. How do you rate (functionally) your satisfaction about the following spaces in the new working environment?

<table>
<thead>
<tr>
<th>Space</th>
<th>very dissatisfied</th>
<th>very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>rooms for one person</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>rooms for two persons</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>group office (more than 2 persons)</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>meeting rooms of your department</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>meeting rooms somewhere else in the building</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>&quot;touch-down&quot; workplaces</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>common spaces</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>canteen</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

43. How do you rate satisfaction about the following services in the new working environment?

<table>
<thead>
<tr>
<th>Service</th>
<th>n.a</th>
<th>very poor</th>
<th>poor</th>
<th>moderate</th>
<th>high</th>
<th>very high</th>
</tr>
</thead>
<tbody>
<tr>
<td>reception</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>facilities manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>repro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>catering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mail delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

44. How do you rate your satisfaction about the following facilities in the new working environment?

<table>
<thead>
<tr>
<th>Facility</th>
<th>n.a</th>
<th>very poor</th>
<th>poor</th>
<th>moderate</th>
<th>high</th>
<th>very high</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC desk-top</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC lap-top</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fax</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>copying machine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e-mail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
45. How do you rate the satisfaction about the following aspects concerning the
new working methods in the new working environment?

<table>
<thead>
<tr>
<th>aspect</th>
<th>very negative</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>sharing of workplaces</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>making reservations for your workplace</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>ad-hoc using of workplaces</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>functionality (suitability) of the workplaces</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

46. How do you rate the satisfaction about the following resources that you need for
working in the new working environment?

<table>
<thead>
<tr>
<th>resource</th>
<th>very negative</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>adjusting your desk</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>adjusting your chair</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>moving your trolley</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

47a. Do you have a "favourite" workplace in your new working environment?
- □ yes
- □ no

47b. Does it occur that some one else is working at your "favourite" desk?
- □ never
- □ yes, sometimes
- □ yes, regularly
- □ yes, very often

48. Does it occur that all workplaces are occupied?
- □ never
- □ yes, sometimes
- □ yes, regularly
- □ yes, very often

49a. Do you usually clean your desk ("clean-desking") when you have finished your
work?
- □ no
- □ yes, always
- □ sometimes, not always

49b. Do you usually find a "clean" workplace when you start working?
- □ no
- □ yes, always
- □ sometimes, not always
**PERCEPTION OF YOUR WORKING ENVIRONMENT**

Please draw a circle around the one number that corresponds to your answer.

50. Please rate your satisfaction about the following aspects of your working environment?

<table>
<thead>
<tr>
<th>Aspect</th>
<th>very dissatisfied</th>
<th>very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>auditory privacy (not being disturbed by sounds)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>conversation privacy (not being overheard)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>visual privacy (not being seen)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>possibility to influence the office climate (light, sunblinds, ventilation, etc.)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>natural light</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>view from your workplace</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>general office climate</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>size of your workplace</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>convenience</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>image</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>flexibility of your working environment</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>distance to your colleagues</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

51. I would rather not return to my old working environment?

- disagree [ ]
- neutral [ ]
- agree [ ]
- I do not know [ ]

52. What is your general impression of your new working environment?

- negative [ ]
- positive [ ]
- I do not know [ ]
Part B - open questions

1. Which three aspects in your working environment are the most positive for you in order to do your work?

<table>
<thead>
<tr>
<th>a:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>b:</td>
<td></td>
</tr>
<tr>
<td>c:</td>
<td></td>
</tr>
</tbody>
</table>

2. Which three aspects in your working environment are the most negative for you in order to do your work?

<table>
<thead>
<tr>
<th>a:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>b:</td>
<td></td>
</tr>
<tr>
<td>c:</td>
<td></td>
</tr>
</tbody>
</table>

3. Are there any aspects missing in your working environment that could possibly improve your work if they were available? If so, what?

<table>
<thead>
<tr>
<th>a:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>b:</td>
<td></td>
</tr>
<tr>
<td>c:</td>
<td></td>
</tr>
</tbody>
</table>

4. If there are any important matters concerning your working environment or work methods which were not mentioned in this questionnaire, please use the space below for comments. Also, if you have any comments on the questionnaire itself, please let us know.

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Remarks
Remarks
Ideas about work and organisations are changing rapidly. Designers and consultants are continuously looking for new workplace designs that meet the changing business needs. Especially in the last decade many new office concepts have been launched. And organisations all over the world redesign their work processes and the spaces they operate in. Despite the many success stories we hear about the new workplace concepts there is still little insight in the effects of the new designs on the performance of organisations.

This book describes a method that is developed by the Dutch Government Buildings Agency and Delft University of Technology, department of Real Estate & Project Management to evaluate the impact of workplace innovation on organisations. In 1996 both organisations started a long term co-operation to do research on workplace innovation. Since the start of the co-operation a lot of insight has been gained on the effects of workplace innovation. This book demonstrates how the method can be used, summarises the results of projects already evaluated with this method and the lessons we learned from our research experiences.