As Authentic as Grolsch®

Wish rostering as a flexible work schedule in order to improve work-life balance at Grolsch

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Preface

During my study years I have learned my qualities, but also my pitfalls. I have become a people manager more and more during my life and my preferences changed more towards a study in which I could contact and connect with people.
Therefore the change towards my master track Human Resource Management of Business Administration was a good one, as it included several specific courses where several parts of HRM were discussed, but also the direct contact with companies on the topic of HRM was realized. During one project at a company the subject of self-rostering (flexible work schedules) originated and this subject had my interest right away, to astonishment of some of my fellow students.

The subject self-rostering made my choice for my first supervisor an easy one, as it is a specialism of Dr. Ir. Jan de Leede.
After fencing off some parts of the subject I was lucky that Royal Grolsch N.V. was looking for a continuation of the subject flexible work schedules at the Internal Transport and Warehouses department. In 2008 a colleague of mine had finished her thesis about the feasibility of flexible work schedules at that department and my assignment was to verify if it was possible to start a pilot on flexible work schedules.
This gave me the chance to study the subject in a practical situation instead of doing theoretical research only. It was a great opportunity to be on the work floor.

Several persons helped me during my research. At Royal Grolsch N.V. the critical, but supporting attitude of Ms. Alexandra van der Linden and Mr. Erik Bakker helped me very much. Next to them some forklift drivers came with ideas and solutions towards problems, what I appreciated very much. Especially the interviews held with the forklift drivers on the work floor were challenging and open. The openness of some forklift drivers about work was unique and special to me.
Next to those people I like to thank my supervisors Dr. Ir. Jan de Leede and Prof. Dr. Jan Kees Looise with their strict, but correct feedback and their support during this research.

Management summary

Due to an ageing workforce, a growing desire of employees to balance work-life arises. At the same time, for companies a better match in capacity planning is needed.
Flexible work schedules might be a solution to both challenges. In 2008 Grolsch had a feasibility study to explore the possibilities of introducing flexible work schedules within the IT&M department of the company. It indicated a number of possibilities to introduce such a schedule, which should be investigated by starting up a pilot first.

Therefore the main question for this research is:

"What is a suitable design of a flexible work schedule at the IT&M department of Royal Grolsch and what are the effects of the implementation of such a design?"

The first part of this research will focus on the required conditions for an organization to introduce such a flexible work schedule. The focus lies on individual scheduling as a means to adjust to both employer and employee needs.

Methodology
Most of the data collection during the research was done by literature review and interviews (primary data) with forklift drivers, team leaders and management. Also a questionnaire was developed for both forklift drivers and team leaders to evaluate the pilot in the end.

Results
From the findings of both literature and interviews with the different stakeholders different scenarios were elaborated to come to the best suitable design for Grolsch.
The process characteristics (drivers, process dependency & working schedules) and organizational conditions (size of group, diversity, culture & time and budget) of Grolsch were taken into account in these different scenarios and the final scenarios were compared by the different stakeholders. The scenarios had different criteria (insight management, workload team leaders and forklift drivers, amount of change, participation, social and economic flexibility & support of current practices/processes) on which they were scored.

After comparison the wish rostering-design was chosen by the stakeholders. The main reason for this was that forklift drivers and team leaders did not prefer a lot of change. Besides that it was an important wish of the management that every employee should participate in the pilot. In this wish-rostering design Grolsch was able to test the possibilities of flexible scheduling within restrictions that suit all stakeholders. Grolsch introduced the new flexible schedule in a pilot, with a length of 9 months.

In the wish rostering-design forklift drivers had to submit their preferences a month in advance according to some boundaries. They were allowed to make a maximum of two changes during one week. The forklift drivers are not guaranteed that they will get the desirable shift, but team leaders will strive for that shift. Next to that there will be no discount on the team surcharge. Finally, a point system was created to give everyone equal chances for corresponding wishes.

Effective use of wish rostering
The results of the first months of the pilot show that just a few employees prefer changes in their basic schedule. The changes that occurred could be realized within the roster by moving employees to the desired shifts and to fill in the basic schedule of that employee with a temporary worker.

Analysis of the capacity fulfillment showed that every day is different. Sometimes employees could stop working a few hours earlier and sometimes they had to work exactly their shift times. It seems hard to move shifts and spare a forklift driver that way. Furthermore it seems hard to move shifts during the day. The production works in same shifts as the IT&M department most of the time. Mostly the work that has to be done at the IT&M-department is a reaction to the chain before them, the production-department. It frequently happens that some IT&M workers can stop working before the end of the shift, but this cannot be predicted in advance. At last there were no recurring phenomenon's that went wrong every week (or day).

Since the pilot is still running at this time, it is not evaluated to date. The outcomes of the pilot will be evaluated at the end of the pilot, using a format developed within the project. Therefore tools for evaluating absence, efficiency and the satisfaction of stakeholders were developed. Most of the answers towards these aspects can be found by distributing a survey among workers and team leaders; in addition, data on absence can be collected by inspecting the planning schedule.

Conclusions

Participation of everyone in the pilot was taken care of, but fewer workers than expected really submitted other preferences than their basic schedule. Grolsch however was able to test the possibilities of flexible scheduling within restrictions that suit all stakeholders.
This experience the stakeholders get by implementation of the wish rostering-system can create more support among forklift drivers (tested negatively in the study of Van Aard, 2008) and also the applicability for both forklift drivers and team leaders can be improved by participating in the pilot.
At this moment the most suitable design for Grolsch is a wish rostering-system in which forklift drivers of the IT&M-department can submit their preferences beforehand. Team leaders take into account these wishes in order to improve the work-life balance of the forklift drivers.
Because the wish-rostering system does not require much extra work for the IT&M-department and the work-life balance improves for some forklift drivers it is recommended that Grolsch should implement wish rostering definitive.
Further points of attention could be: an investigation towards the technical planning to improve efficiency from an organization-perspective, better communication with buyers to come to a more efficient planning and improved internal communication. Next to that Grolsch could introduce flexible work schedules at other departments as conditions and/or characteristics needs solutions that cannot be found within their regular way of scheduling.

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Chapter 1 – Introduction

Human resource management is recognized as an important element within organizations. Work-life balance, the balance between an individual's work and his or her personal life, becomes an increasingly important aspect for employees the last years. Next to this, organizations want to optimize their labor capacity and still motivate their workforce. One way to improve those aspects is to implement various types of flexible work schedules (FWS) within an organization and give employees possibilities to have a more individual schedule.

1.1 Grolsch

Royal Grolsch N.V. (from now on called 'Grolsch') is a beer brewery located in Enschede. The organization was originated in 1615 and has about 868 employees. Apart from its focus on the Netherlands, the company's home market, Grolsch is internationally active in about 70 countries. Since February 12th 2008 Grolsch is an independent subsidiary of SABMiller plc.

One of the departments within Grolsch is the Internal Transport and Warehouses department (in Dutch "Intern Transport & Magazijnen", *IT&M*). This department provides the distribution of beer from and to the customers. The department is responsible for the flow of filled beer bottles to the warehouse, delivering empty bottles to the production department and loading the trucks. The Internal Transport and Warehouses department has 40 employees. Around 25 of those persons are the main focus of the research: 21 forklift drivers and 4 team leaders. In april 2010 the Central Warehouse was integrated within the IT&M department. As a result of this integration the total focus lays on 25 forklift drivers and 5 team leaders.

1.2 Background

Over the last few decades the drive for flexibility in the area of human resource utilization and employee demands regarding work-life balance has increased. The restructuring of working time has become one of the main points to support this drive. Research has shown that many employees want more autonomy with regard to working hours arrangements in order to improve their work-life balance (Bielenski et al., 2002).
Grolsch foresees a number of challenges related to its human resource management, which include:

- An ageing workforce.
- Competitive forces fueling a need to constantly improve efficiencies and cost-effectiveness.

Towards the ageing workforce, especially in the Supply Chain department, Grolsch agreed with their work council to start projects concerning life cycle policies. After confirmation, a research was conducted at Grolsch, which consisted of two parts. The first part regarded the use of HR-practices and the allocation of financial resources in relation to different age groups. This analysis was conducted in order to create awareness about the problem. The second part consisted of focused interviews. The results of the interviews showed that the employees would like to work more flexible. It inspired Grolsch to give their employees more influence on their working time. Another cause for more flexibility is that Grolsch wants to keep their employees motivated up to their retirement.
Because of the competitive forces, Grolsch wants to make their productivity more efficient to be competitive in the industry. Grolsch foresees possibilities in their way of scheduling of employees to reach this.
With these intensions and results Grolsch intended to explore if it is possible for employees to work more flexible. Grolsch assigned a student of the University of Twente, Van Aard, to carry out a research about the feasibility of flexible work schedules (FWS) at the IT&M department of Grolsch. She finished her master thesis about that subject end 2008. These

flexible work schedules in combination with more individual provision of their working times are intended for the forklift drivers at the IT&M department. In her thesis she concluded that FWS could be implemented and that employees can choose their own preferable working hours within a framework set by the employer. The feasibility of FWS at the IT&M department was not strongly confirmed, especially because the fact that the willingness to work with FWS by the employees (forklift drivers) was negatively tested. In order to improve these negative feelings Van Aard suggested the start of a pilot in which the employees can find out the positive inversions for their own work life-balance. She designed an action plan in which she examined how this pilot should be integrated within the IT&M department, in order to improve the level of flexibility, productivity and efficiency. Van Aard (2008) stated that by giving employees more influence in their working times, flexibility is realized for both the employee and the employer as well as a feeling of responsibility is created. In appendix 1 Van Aard management summary is added.

1.3 Assignment

Grolsch has the intention to start with a pilot at the IT&M department to introduce flexible work schedules in combination with more individual provision of working times. As society is changing towards a more dynamic and complex environment, Grolsch wants to react and get experience in the possibility of using flexible work schedules and individual selection of hours. Therefore, the first approach for Grolsch is not intended as an answer to the 'problem', but aims to get more experience in such way of scheduling.
Therefore it is possible that the pilot could result in that flexible work scheduling is not the right solution at the IT&M department of Grolsch, but still be very useful as they expand their knowledge about this subject.
For example, in production Grolsch does foresee problems in the future to fill in the workforce in that department and such a new way of scheduling could be an answer to fill in that workforce in the future. At this moment the research will be held at the IT&M department, as this department has a flexible attitude already. Next to that only 35 employees are at work at this department, so it can be overseen in a pilot like this.

These insights mentioned above are the reason why the author of this report is asked to support a pilot to examine the outcomes and to take away some negative feelings of the forklift drivers.
The assignment can be summarized as follows:
"Support Grolsch in introducing a pilot on the IT&M department on flexible work schedules"

To support Grolsch in introducing this pilot it is important that all parties involved will work with more flexible work schedules. The willingness of the forklift drivers to work with these schedules was tested negative by Van Aard. On the other side the team leaders see possibilities with a new way of scheduling. These team leaders are the link between the forklift drivers and the initiators/support of the pilot and consequently are very important in implementing a new system. The cooperation between forklift drivers and team leaders arrive at the best suitable implementation is an important factor.
Furthermore it is not sure that one of the proposed scenarios of flexible work schedules is the most suitable implementation for the IT&M department. Such schedule would have to match with the new conditions. During the last year eight older forklift drivers retired, what could have effect on the earlier statements. This and new insights could have changed the restrictions.

Those two insights form the following addition to the assignment:
"Design a possible flexible work schedule in which forklift drivers have faith that a flexible work schedule can work in their benefit"

1.4 Research Questions

For this research the following main research question will be formulated, in which the description of the assignment is leading. This question is as follows:
"What is a suitable design of a flexible work schedule at the IT&M department of Royal Grolsch and what are the effects of the implementation of such a design?"

In the literature a lot is written about flexible work scheduling and individual scheduling but little about those concepts within the process industry. Therefore I will also investigate what is known about flexible work scheduling and more individual selection of working hours, how those subjects can apply within the process industry and what framework can be made to match life cycle policies and flexible work scheduling at Grolsch.
Therefore the pilot (the implementation of a suitable design) at Grolsch will be the practical perspective of this broader research.

In order to answer this main research question and the mentioned requirements the following sub questions are formulated:

1. *Under what conditions are flexible work schedules effective?*
2. *How do flexible work schedules fit within the characteristics of the organization?*

There is different literature about flexible work schedules. This literature is a guideline in my research about these schedules, but will be critically examined how it fits Grolsch. My focus will lie on individual scheduling, as Grolsch tries to find a solution what fits all employees individually.

3. *Which scenarios of flexible work schedules could be implemented at the IT&M department of Grolsch and how should this schedule be implemented? Is one of the scenarios a good answer for the IT&M department?*

In the thesis of Van Aard two scenarios were discussed with the workgroup of the fork lift drivers. Together with them, Van Aard picked the best suitable scenario. In the last year the workforce has changed a lot, so these scenarios should be evaluated again, to investigate if one of these is still the best suitable scenario. There could be new insights what kind of schedule will work. Probably a new scenario will come up that suits Grolsch better at this moment.

4. *How do you manage a pilot within the IT&M department and how can the effects of such a pilot be evaluated?*

With the implementation plan designed by Van Aard (2008) and the well described and usable scenarios we plan to start with a pilot at the IT&M department to test how flexible work schedules works within Grolsch. During this process the cooperation between management, team leaders, forklift drivers and support is very important to let the pilot succeed.
The pilot will take more time than I will be present at Grolsch. Therefore I will develop clear guidelines for management, team leaders and forklift drivers how to manage and evaluate the pilot.

1.5 Research Model

To visualize the exact goal of this research, the following global research model has been modified. It shows the connection between processes in the main research question. This global picture can be matched with the restrictions of Grolsch and then lead to a specific model for Grolsch.

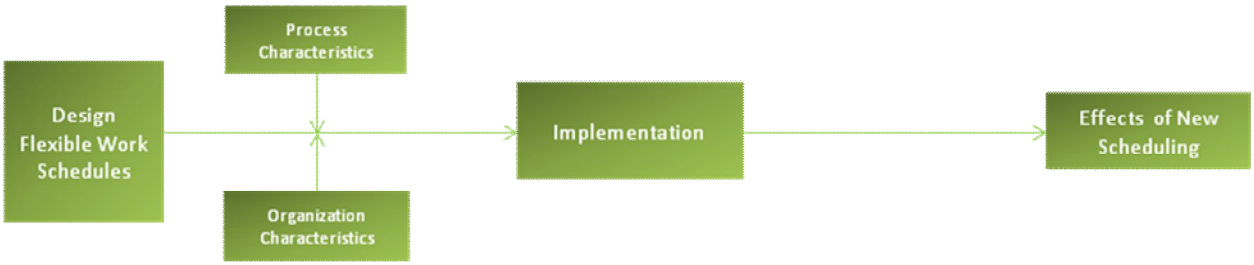

Figure 1 Research mode (preliminary)

1.6 Relevance of the research

1.6.1 Social relevance

Ageing society

As mentioned before, the society is ageing. At this moment the people born because of the baby boom after the 2nd world war are approaching the age at which many of today's workers are leaving the labor force (Remery, Henkens, Schippers & Ekamper, 2003).
At this moment employees are offered early retirement in organizations as Grolsch as those people approach their retirement age and have more difficulty in working under the same circumstances as before. In the last few years more organizations start to concern about the prospects of losing this large source of labor. Next to that the age composition which is shifting towards the elderly has also influence on the economic growth and the distribution of welfare in the Netherlands in the future (Broer, 2001). Broer foresees an estimated welfare loss of for future generations of approximately 4% of lifetime wealth.
With the ageing society the improvement of health care causes people to live longer so this increases the shift towards an elderly population.

Individualization

From the 1990s onwards, decentralization and individualization seem to have been the dominant trends in the restructuring of modern employment relations in the Netherlands. The wish for more flexibility is not anymore an employer-driven change only, but with the growing individualization and emancipation also the wish of employees (De Leede, Looise & Van Riemsdijk, 2004; Manpower Witboek, 2006)
Employees are of different ages and from different generations and therefore have different needs. The wish for more flexibility by employees is therefore influenced by the actual life phase an employee belongs in.
This individualization of the employment relationship is a result of the life cycle policy. According to CNV (2006) the definition of life cycle policy is an HR policy which concentrates on the durable and optimal availability of all employees within an organization and takes into account their actual life phase and the mentioned specific needs and wishes of them.

Flexible work schedules (FWS)

Life cycle policy can help organizations to handle these social and demographic developments. In line with the ageing workforce at Grolsch, especially in the Supply Chain department, Grolsch agreed with their work council to start projects concerning life cycle policies. This has two different reasons; first to attract new employees to the company and retain these employees and second to keep the older employees motivated and optimally employable.
To handle the growing problems of attraction and maintain their workforce and the trend of individualization flexible work scheduling can be the solution.

1.6.2 Scientific relevance

Most of the research focus in the flexible work scheduling area has been in the health care industry and in cases involving flexible work arrangements (although these can be seen as

also having relevance within the context of FWS). At hospitals, FWS of nurses is a common contemporary phenomenon.
In manufacturing industry the subject 'flexible work scheduling' is relatively new, so research in that part adds to the subject of FWS.
Although the health care industry is totally different from the manufacturing industry, some aspects can be used in making assumptions about the effect of implementing a FWS system at Grolsch. In the health care industry, FWS has mostly been implemented to reduce turnover costs and to increase options for professional growth. In addition, from research experiences in the public utility industry, flexible work scheduling has been shown to reduce absenteeism. Further from experiences in the pharmaceutical industry, FWS also increases productivity. These aspects will be discussed in more detail in the following chapter.
In the literature so far most research is about the results of FWS, but as mentioned in the assignment-description this research starts with a design and implementation of such a system. Next to knowledge about the new industry (manufacturing) this research can also add on the part of design and implementation of a FWS system.

1.7 Structure report

This report contains different parts. The first part is this introduction, after which the theoretical background of flexible work scheduling will be discussed in the Theoretical Framework. In the 3rd chapter, Methodology, the research approach and research design will be explained as well as the research that has been carried out in order to arrive at answer of the research questions. In chapter 4 first the different aspects to come to a final design will be discussed, after which the chosen design will be elaborated. After that different tools for evaluation will be proposed in chapter 5 and chapter 6 consists of conclusions and recommendations.
In the last part of this report the sources are summarized in the References and some background information is included in the Appendixes.

Chapter 2 – Theoretical Framework

In this chapter the theoretical background of important notions/theories will be discussed. Firstly, an overview of what flexible work schedules are and their relation with more individual schedules will be given. Secondly, the characteristics that influence the implementation will be explained. In the last sections guidelines for implementation and the effects of such new schedules will be discussed.

The first two subquestions will be answered:

1. *Under what conditions are flexible work schedules effective?*
2. *How do flexible work schedules fit within the characteristics of the organization?*

2.1 Forms of flexible working times

Employees become more and more concerned about their work-life balance and therefore flexible work schedules give employees the possibility to gear their private matters to their work times. Those dynamic and diverse wishes of employees give the employer the possibility to fill in the workforce as optimal as possible (NCSI, 2008).
It is therefore important that in the process in which employees can pronounce their wishes for flexible schedules employees should have a proactive role. Point of view is the different life cycles of employees. The needs of employees changes by social developments and also because of diverse life phases of the employees.

Furthermore, research shows that flexible work schedules have positive effects on employee productivity, job satisfaction, satisfaction with work schedule, and employee absenteeism, where the effect size of absenteeism is significantly larger than that for productivity (CNV, 2006, Baltes et al., 1999).
For example, Ryan(2008) stated that the UK government recently introduced a plan to extend flexible working rights to all British parents of children aged 16 and below which would bring the number of parents eligible to ask their employers for flexible working hours to 10.5 million. In fact, an independent review of the country's flexible working legislation found that approximately 14 million full and part-time employees had flexible jobs (BERR, 2008). The UK is not an isolated case. Among the working time related trends identified by the OECD within member countries was a substantial rise in flexible working arrangements.
In The Netherlands there is also a trend towards more flexible jobs (De Leede & van Dalen, 2009). Employees have a need for flexibility in combination with working less hours. Employers are permanently looking to be more productive and therefore prefer their workforce to work when there is work available. Also there is a social trend towards more individualization and own responsibilities. The step towards more control about working hours is a result of that (Huiskamp et al., 2002).

2.1.1 Flexibility from different perspectives

The last few decades, the drive for flexibility in the area of human resource utilization and employee demands regarding work-life balance has increased. The restructuring of working time has become one of the main points to support this drive. The social-economic relations have changed in The Netherlands over the years. Welfare has grown on a broader level and employees become more emancipated. Therefore both employees and employers have a drive to become more flexible, but with different tendencies for this flexibility. Where employees have become more emancipated, they prefer more spare time and better possibilities to combine labor with their other responsibilities (household, study, kids, association, etc.). Employers in the contrary are part of a globalization of the economy, where products and services should be delivered on time against affordable and competitive

prices. To meet these restrictions employers should allocate the work force as efficient as possible and react flexible to fluctuations of supply of labor (Veldman, 2005).
Desired flexibility with respect to staffing levels, with respect to the deployment of labor, and with respects to the abilities of the labor force is called organization flexibility (Osterman, 1987).
In more recent literature Veldman (2005) writes that the need for flexibility is a two-sided perspective and therefore is split up in *social flexibility*, what is flexibility from an individual employee perspective and in *economical flexibility*, what is flexibility from an organizational perspective.

2.1.2 - Flexible Work - Overview

The term flexible work is used to describe work that does not follow a typical “9 to 5” structured work schedule format. In reality, this encompasses a wide range of practices which include: flexitime working, compressed hours, annualized hours, shift swapping and self-rostering. Those practices are all re-structured full-time options where the degree of adoptability in practice is different (Khamkanya and Sloan, 2009; Thorntwaite and Sheldon, 2004). Flexitime working seems the easiest schedule to adopt, where as shift swapping and self-rostering are stated as being quite difficult to adopt.
There are also reduced work schedules, and in contrast to the first typically affects employee income, benefits, and promotion prospects, but are not take along within the framework of this research.
Khamkanya and Sloan (2009) make a distinction between several forms of flexible work;

Flexitime working
- Employees choose the start and end times within management set limits.
- Requires working a standard number of hours during a five-day week, within a given time period.
- Usually features core hours when all employees must be present.
- Eliminates punctuality problems, reduces overtime hours.

Compressed hours
- Enables employees to work fewer than 5 days a week.
- Examples of typical schedules include: four 9-hour days (in the Netherlands) and three 12-hour days.

Annualized hours
- Employees are paid for total hours worked over an entire year.
- Work hours vary based on business needs. Employees work longer hours when demand is high and shorter hours when demand is low but are paid the same amount each month.
- Can be combined with a “term-time working” scheme

Shift Swapping
- Allows employees to rearrange shifts among themselves to suit their needs.

Self-rostering/Individual Scheduling
- The required staff levels and skill mix are defined by the employer.
- Employees select the most appropriate schedule for their own needs within the constraints of the business needs

In the following figure those forms of flexible work are compared to the level of social and economical flexibility.

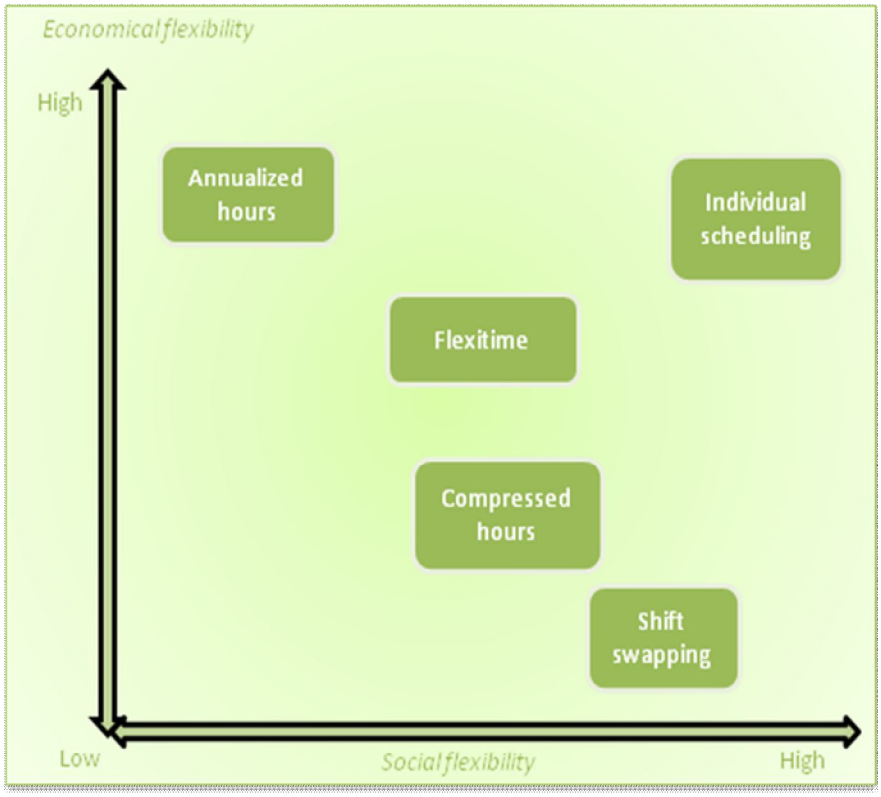

Figure 2.1 level of social/economic flexibility of forms of flexible work

As you can see, individual scheduling is a form in which both social flexibilitiy and economical flexibility are high and therefore is a promising concept which will be elaborated deeper in the following section.

2.2 Individual scheduling

Individual scheduling is a form in which individual control is very important. Employees have more control over their own schedule themselves. In the literature there are different ways of describing that control of scheduling by employees. First individual scheduling and the advantages or disadvantages of that system will be described. After that different definitions of individual scheduling will be described, as the concept self-rostering is used in theory mostly and the similarities and differences with this concept will be further explained.

2.2.1 Types of individual scheduling

According to Nederlands Centrum voor Sociale Innovatie (NCSI, 2009) individual scheduling is a system of working hours in which employees have influence on their own working hours where you have different kinds of designs. When there is no individual control there are just shifts scheduled and you have to work on the declared times in advance.

NCSI (2009) has made a classification of types of individual scheduling where they draw a distinction between control by the design of the basic-schedule and control after the determination of the basic-schedule.
The following types have been classified:

A) Possibilities of influence by design of basic-schedule: (De Leede, 2009)

- Wish roster; shifts and roster are fixed, planner takes into account the wishes of the employees. (as much as possible)
- Shift picking; shifts are fixed, employees subscribe for these shifts.
- Matching; system seeks for fit between shifts and wishes, management decides on misfits.

- Full self-rostering; employees arrange shifts (content and time) within their teams.

B) Possibilities of influence after determination of basic-schedule:
- Exchange; tasks are fixed (content and time), roster also, employees just exchange shifts by mutual agreement.
- Switch; exchange shift without changing with other employees.

These possibilities differ in how fixed rosters are, but mainly focus on the differences in amount of autonomy and collectivity. Depending on the characteristics of an organization, a type of individual scheduling can be suitable or not according to these amounts of autonomy and collectivity. This also applies to Grolsch. Those two determinations of what kind of influence an organization prefers will be elaborated in the following section.

It is furthermore very important that the right procedure is followed when an organization is implementing one of these forms of individual scheduling. This procedure consists of four steps; first, the company has to decide what the degree of occupation needs to be for a certain period. The second step consists of creating the ideal schedule. After taking in account the wishes of the employees the fit and/or misfit with the ideal schedule has to be decided. The fourth and last step of implementing and creating the best fit is adapting the schedule in such a way that the wishes of the employee coincide with the demands of the employer.

2.2.2 Visualization of different types

Autonomy
As discussed above, the types differ on the amount of autonomy an employee has. When you have to work according to the basic-schedule and have no influence at all before and after the schedule is determined you have no autonomy at all.
By wish rosters, the degree of autonomy is higher, but still the planner decides what shifts the employee should work. With self-rostering the degree of autonomy is very high: Employees decide with each other what to do and when he wants to work and the employer will adjust the needs of the employees to the work that is available. The other forms, ‘shiftpicking’ and ‘matching’- have a lower degree of autonomy than full self-rostering, but a higher degree than shifts, because the employees can decide part of their schedule but not completely.
This employee influence is one part of the four HR-policy areas of the Harvard model of Beer, Spector, Lawrence, Mills and Walton (1984).

Individual vs. collective
The types described in the last paragraph have different levels of individualization. If you have to work according to the basic-schedule with no possibilities to change an employee has a collective roster without individual preferences. The possibility to express your wishes makes the schedule more individual already, but still is collective in the way that the planner makes the roster for the whole team.

The combination of autonomy and grade of individualization is visualized in figure 2.2 below. Only the different types of how much control you have as employee by the design of the basis-schedule are visualized. The possibilities of control after determination of the basis-schedule, exchange and switch, can be applied to all forms of control by design and are therefore not included.

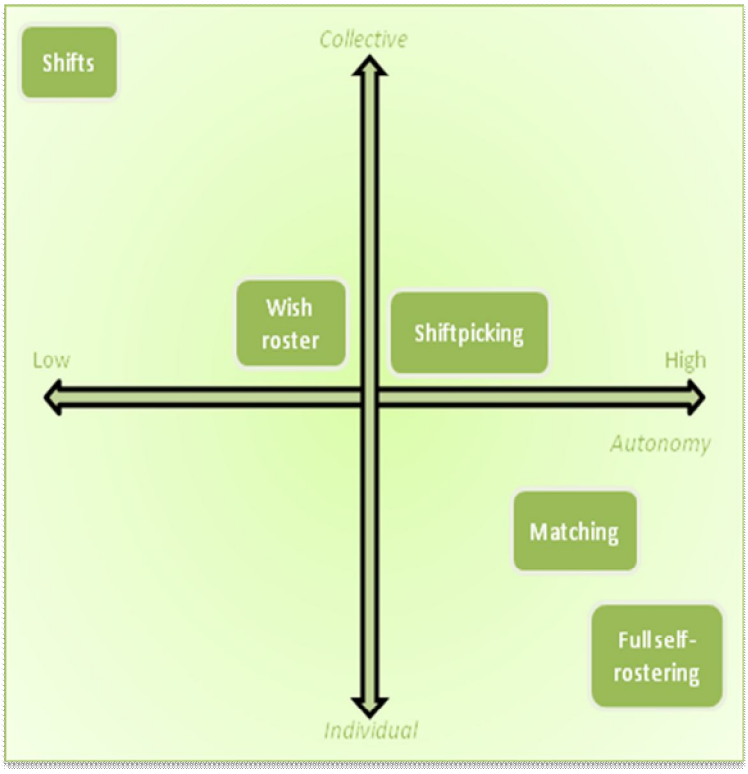

Figure 2.2 Autonomy and collectivity of different types

2.2.3 Different definitions of individual scheduling

As mentioned there are different concepts of literature about self-rostering. The concept self-rostering is described in Thorntwaite & Sheldon (2003), Wortley & Grierson-Hill (2003) and Khamkanya & Sloan (2009), but an also commonly used description is self-scheduling. This is for example used by Hung (1992) and Teahan (1998). Other concepts are 'flexible rostering', used by Silvestro & Silvestro (2000), 'worktime control' which is used by Ala-Mursula et al (2002) and the concept 'flexible scheduling', used by Drouin & Potter (2005).

I will briefly comment on those descriptions, in line with the masterthesis of Van Aard (2008), who already gave a detailed description.

Author(s)	Definition Self-rostering	Main typifications
Hung (1992)	"*Self-scheduling* means employees, usually as a group, develop their own schedules." (p. 6)	- Employees choose their own work hours - Developing of schedule can be done in a group
Teahan (1998)	"*Self-scheduling* may be described as a system wherein a group of staff [members] or a self-scheduling committee, when presented with the staffing needs for a particular unit or area by a manger, make their own schedule." (p. 361)	Group makes their own work schedules (based on staffing needs)
Silvestro & Silvestro (2000)	"*Flexible rostering* is where each rostering period is planned individually (typically 4-6 weeks at a time). Shifts are allocated on the basis of manning requirements which reflect anticipated demand patterns, as well as myriad other rostering parameters, including staff's preferences for off-duty." (p.527)	- Planning your schedule individual - Demand of employer and staff preference are taken into account
Ala-Mursula, Vahtera, Kivikmäki, Kevin, Pentii (2002)	"*Worktime control* was measured (…) on how much respondents were able to influence starting and ending times of a workday, the opportunities to take breaks and to deal with private matters during the workday, the scope for influencing the scheduling of shifts, the scheduling of paid days off and vacations, and the opportunities to take unpaid leave."	- Influence on working hours

Thornthwaite & Sheldon (2004)	"Employee *self-rostering systems* enable individual employees to tailor working hours to maximize their compatibility with domestic responsibilities. Such rosters would, for instance, allow employees to choose to work mornings, afternoons or school hours only, or some combination of different hours each day." (p.239)	- Work-life balance - Influence on working hours
Drouin & Potter (2005)	"*Self-scheduling* (a form of flexible scheduling in which nurses can determine their own work hours)" (p. 72E)	Influence on working hours
Nederlands Centrum voor Sociale Innovatie NCSI (2009)	"Bij zelf roosteren ontwerpen werknemers het eigen rooster langs hun voorkeuren, eiesen en wensen aan de arbeidstijden en het combineren van werk en privé." (p. 1)	- Work-life balance - Employees design their own roster based on preferences.
Lubbers (2008)	"Bij zelfroosteren bepaalt eerst het management hoeveel personeel op welke dagen en uren nodig is (bezettingseisen). Daarnaast maken werknemers hun wensen kenbaar door aan te geven welke uren zij willen werken (persoonlijk werkrooster)." (p. 15)	- Demand of employer is taken into account - Employees make known their wishes - Computer gives the perfect work schedule for both employee and employer

The typifications show that there are differences within the terms used by the authors. Where in some articles the content is most focussed about the influence of employees on their own working hours, others stated that the employers first determine the occupation of the workplaces during the week. Also there are differences within the articles about making a schedule on individual basis or making such a schedule as a group.

The goal of the concept is in the end the same; creating flexibility for both employers and employees, as you could see in figure 2.1 at the end of section 2.1.2.

2.2.4 – Advantages/Disadvantages

According to Bielenski et al. (2002) many employees want more autonomy with regard to working hours arrangements in order to improve their work-life balance. Systems in which employees are able to maximize the fit between their working times and domestic responsibilities, gives this autonomy. As mentioned there are different instruments that can be implemented but what are advantages of influence on your own schedule, more than improving work-life balance? And are there advantages for an employer?

Advantages of individual scheduling

Regarding what has been said already, there are a number of advantages regarding the implementation of an individual scheduling system (NCSI, 2009; Lobel, 1999). Advantages for employees are spread out first:

- Employees receive greater control (autonomy) over the scheduling and organization of work. With that greater flexibility can be realized to meet commitments outside of work.
- Motivates employees, as they have influence on their own schedule. They are given more responsibility.

With individual preferences and the arising out of that of differences amongst employees, for an employer the following advantages can occur (NCSI, 2009):

- Decreases of absenteeism, as employees have influence on their schedule beforehand and feel more responsible for their schedule (Knauth & Hornberger, 2003).
- Diversity among employees offers more possibilities for employers to optimize their labor. This gives the opportunity to produce more efficiently.
- Better image of employer in public. It can be a distinctive working condition for new employees in the future, who can have a need for flexibility in their schedule.

- Easier to adapt to changes in the demand of manpower. Every planning period an employer can determine the needed demand of manpower and easier adapt to that with the current workforce.

The advantages spread out by NCSI are in a similar way identified by others. Scandura & Lankau (1997) stated that flexible work hours can result in increased attachment to the organization and satisfaction among employees for several reasons.
They foresee that individuals may see organizations who offer flexible work hours as organizations who concern for work and family ('this organization cares about people', p 380). Another advantage they foresee is the increased control individuals get over their lives. Individuals can work times more suited to their personal needs or biological clocks. The last important advantage Scandura & Lanka (1997) foresee is the perception individuals have about their employer and the increase of positive feelings towards his employer, which can have an impact on the organizational commitment and job satisfaction.

Every organization considering implementing such a system would find it beneficial to run the system for an initial trial period. After ending this period, feedback and comments on the effectiveness of the system can be given. The same goes for the problems that have been experienced by the employees regarding the system. Using this feedback effectively should lead towards improvements of the system.

Possible risks
There are different problems that can occur when introducing individual scheduling to a company. According to NCSI (2009) it is important to expect the following possibilities:

1. Resistance from employees

If employees realize a bigger part of their wishes they need less assurance of collective labor agreements. As collective labor agreements mostly are perceived as protective, modification or even elimination of these agreements will face resistance.
Another aspect can derived from the uncertainty if employers will remain ready to pay surcharges for non-regular working hours. A feeling of "I have to work longer for the same amount of salary" could arise. The payment of surcharges is for the forklift drivers an important issue concerning the possible introduction of individual scheduling. Therefore it is really important that when a system will be introduced that it maximizes the benefits for employees and minimize the possible downfalls.

2. Resistance from middle management

It is important that management of a department where individual scheduling will be introduced, knows about the intention of the company to do so. If so management of such department can commit themselves to such introduction.
Another possible risk is that more control of employees about their work hours can result in the feeling of team leaders as being limited in their control. Also more diversity of schedules can lead to less overview. According to Schwartz (1994) the level of resistance from middle management determines the use and effectiveness of flexible work arrangements (a broader form of individual scheduling).

3. Adaption to more freedom

Individual schedules give the possibility to improve work-life balance, but also brings new autonomy to employees. This autonomy can be hard for some. It is therefore important for an employee to know what he wants.
Another difficulty that can occur is that the required autonomy of employees can lead to egoism. It is important that there are rules to prevent that the most assertive employees have the most optimal work-schedules.

4. New role for unions and work councils

As employees get more influence on their individual schedules, unions should delegate more to corporate level. The role of the representative advisory body also changes. Works councils cannot judge all individual schedules and therefore the role of the work councils is more on the process issues.

It is therefore important that both the unions as the work councils perform well in their new roles that are created by the change to individual scheduling.

In line with NCSI there are some disadvantages Scandura & Lankau (1997) identified in their study. In line with this research the most important risks they identified are:

- Increased costs
- Problems with scheduling and work coordination
- Changes in the organizational culture

2.3 Process characteristics

In order to implement a new system within an organization, different characteristics and conditions should be kept in mind. Regarding the process some typical manufacturing characteristics will be described after which the work schedules in such industry will be investigated. After that drivers for an organization to change will be worked out.

2.3.1 Process dependency

According to Kalagnanam et al. (1998) typically operations planning in the process industry begin with an order. When an organization receives an order she looks whether she could satisfy the order using leftover stock from the surplus inventory and if not, designing production units for manufacture the remaining orders.
The next figure shows a conceptual flow of operations planning in the process industry more specific.

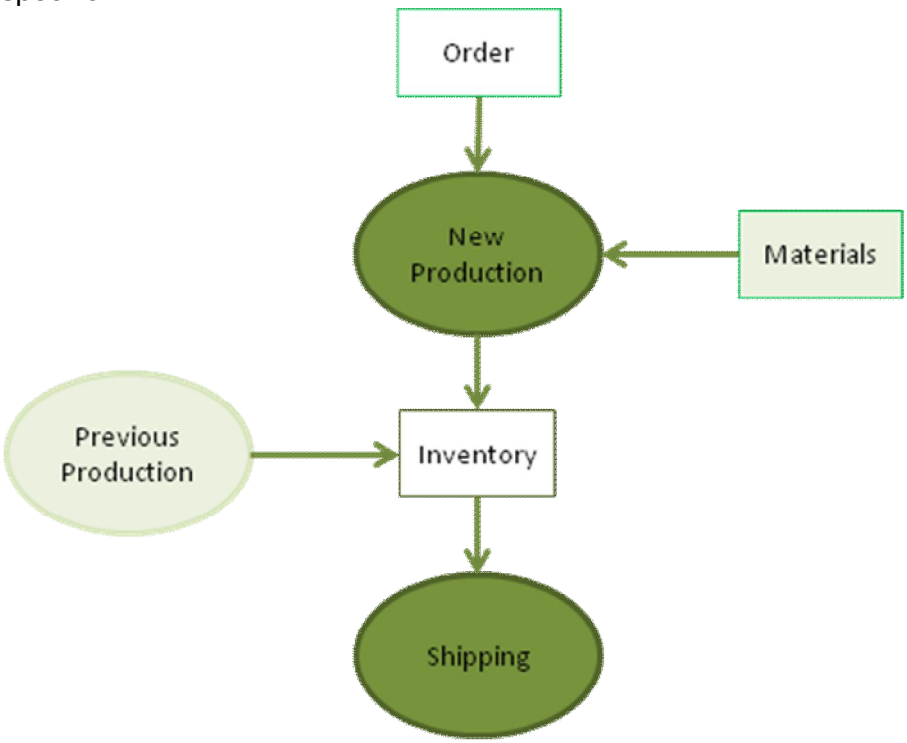

Figure 2.3 Operations planning using Kalagnanam et al. (1998)

The exact planning and flow of operations differs between organizations, but the figure above gives a good indication which steps can be taken in process planning.
The problem of operations planning lies in the process dependency of the different chains. The latest chains have to wait until work is done in earlier chains. If work in an earlier chain cannot be done because of certain circumstances than the next chain(s) have to wait.

Therefore the work that has to be done in a later chain is harder to predict, which makes it harder to make a correct planning of the workforce.

Within such production planning there are different elements to take into account. An important element is the cost of warehousing, as an organization wants to minimize these costs without the risk of selling 'no' to customers.
Another element that is quite common within the process industry is the collectivity of the workforce. Employees mostly work in shifts and decisions are mostly taken for all of them. They cannot change schedules individually.

This process dependency should be investigated at each organization. The search towards more accessible work relations can perhaps tackle this problem.

2.3.2 Work schedules

As said, the scheduling of the workforce in the process industry differs much from the typical '9 to 5'-job. In the process industry there are continuous and batch production systems (Kallrath, 2002). In a continuous production system there is production without interruption and products are made in a similar manner. In a batch production system you can use the same production line for different production items.
In the process industry continuous production can be done continuously: this means that an organization works 24 hours, 7 days a week in which the production never stops. Employees mostly are spitted in 5 different groups as showed in the table below.

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Shift 1	Early	Early	Late	Late	Night	Night	Free	Free	Free	Free
Shift 2	Late	Late	Night	Night	Free	Free	Free	Free	Early	Early
Shift 3	Night	Night	Free	Free	Free	Free	Early	Early	Late	Late
Shift 4	Free	Free	Free	Free	Early	Early	Late	Late	Night	Night
Shift 5	Free	Free	Early	Early	Late	Late	Night	Night	Free	Free

Table 2.1 Example of different shifts in continuous production

This is an example of how work can be done in a continuous production. There are different workplaces that have to fill in the same time and therefore more employees have to work the same shifts.
There are other possibilities to schedule the workforce, but the idea is that always one of the shifts is present.

Another way of work is to work in three-shiftworks, in which the production is held during the weekdays and the workforce works three different shifts in three weeks. The first week work is done in the morning (e.g. 06:00-14:00 or 07:00-15:00), the next week in the afternoon (e.g. 14:00-22:00 or 15:00-23:00) and the week after that work is done at night (e.g. 22:00-06:00 or 23:00-07:00). This completion of shiftwork will repeat after the cycle of three weeks.
The way an organization works, depends on the different products to be made, the time an organization needs to fulfill the demand and the way the production line is.

2.3.3 Drivers of change

St. John et al. (2001) stated that there are key trends that drive changes within manufacturing-organizations. They describe several theories from economics, sociology and psychology and use these theories to come to global trends in the drivers of change. These trends could be leading in finding reasons for change.
St. John et al. (2001) summarized the drivers of change within manufacturing as follows:
(1) Ubiquitous availability and distribution of information
(2) Accelerating pace of change in technology
(3) Rapidly expanding technology access

(4) Globalization of markets and business competition
(5) Global wage and job skills shifts
(6) Environmental responsibility and resource limitations
(7) Increasing customer expectations

These trends are responsible for the integrating activities both within and beyond organizational boundaries that have become a major challenge and will continue to be for the foreseeable future.
For every organization different drivers are the reason for change, were most should connect with one or more of the list above. To find a solution to a problem it is important to know how this desire for change is created.

Additional drivers towards flexible scheduling
A driver that is not mentioned in the list of St. John, but is in the introduction of this thesis, is the *ageing workforce*. The Netherlands is facing an ageing problem in the coming years. As work has to be done it is important to find solutions to this problem and a new way of scheduling can be such solution.
Another driver could be the *commitment* of employees. Introducing a new way of scheduling to give employees more options in their combination of work and private life can improve the relation between management and employees. As an organization takes into account the private life of an employee it can enlarge work satisfaction of an employee and next to that the willingness to help an organization in circumstances of difficult planning.

2.4 Organization characteristics

In this section the influence of organizational conditions will be investigated. What is important for an organization if they want to schedule individually and what conditions they should have.
To organize individual scheduling effectively, the following characteristics play an important role in the chance of a success for an employer (NCSI, 2009):

- *Good industrial relations;* It is really important that both employer and employees are enthusiastic about the idea of experimenting with individual scheduling and finally introducing it. As one of the parties does not support the project, the chance of success is small.
    - Support of the union; If the union does not support individual scheduling it is hard to introduce it in the end.
- *Open culture;* The present organization culture has impact on the success of individual scheduling. The following factors influence the chance of success:
    - Adulthood; Employees should put forward their preferences. Organizations with an independent culture and mutual respect among colleagues it is much easier to implement individual scheduling.
    - Fellowship(collegiality); Employees are more used and willing to schedule individually if they cooperate already in making the current schedule.
- *Size of group and diversity;* The minimum of the group to implement individual scheduling depends on the following factors:
    - Different functions or tasks within group; When a department has tasks that are be put into effect only by one employee at a time it is hard to schedule individually for that task.
    - Wide availability of employees; The preceding changes as employees can work on different places. The wider the availability, how more an employee can choose and how easier it is to work with individual scheduling.
    - Diversity within the group; In a group with much variety about private matters and differences within their phase of life, it is much easier to make individual schedules and more employees can reckon with their preferences.

- *Type of work;* Generally the kind of work is no restriction for the success of individual scheduling. Within particular types of work it is more frequently used, but most of the time that is because of culture and labor relations, than to the content of work. The extent of time- and place bounds of work can have an impact on how easy it is to implement individual scheduling. If all places have to be filled in the same time as always, individual scheduling will be hard.
- *Analyses supply of labor and time schedule of planning;* If no good statement of what supply of labor is needed is available, it is hard to schedule individually. If there is variability in demand of work individual scheduling is possible if the employer has external employees available or as fixed employees can fill in this variability themselves. The time schedule of planning besides that can also influence the applicability of individual scheduling. The more unpredictable the demand of work is, how shorter the period is in which employees can indicate their personal wishes. This is also the case when scheduling collectively. Individual scheduling can give better possibilities to combine work and private life with shorter time schedules.
- *Allowance of inconvenient hours;* Many collective agreements are rigid and traditionally very collective. When employees schedule individually the collective approach of working hours regulation is not possible anymore. When collective agreements have an eye for individual wishes it increases the chance of success of individual scheduling. As the introduction of individual scheduling mostly brings an unknown outcome it is best to create an experimentation space within the collective agreement so an employer can oversee the consequences after the experimentation.
- *Time and budget;* Implementing individual scheduling overnight is not possible. Preparation is really important, in which all concerned parties should be involved. Formulating the rules and constraints for everyone and stating the goals of the project is part of that. With that, a hidden agenda (for example saving in costs by the employer) is destructive in successful implementing individual scheduling. This costs time and the concerned parties have (and want) to make time to be prepared well.
  Next to the time problem, employers should take into account that it costs money at first. This can be investments costs to integrate the new wishes into the software and hardware, but also costs of external parties to accompany the introduction of individual scheduling.

2.5 Implementation

To implement a design with the characteristics described in the last section it is still very hard to introduce a system that combines both flexible working schedules (FWS) and individual scheduling well. Therefore Van Aard (2008) suggested starting a pilot first to test how achievable such new system will be.
First the conditions that are important to implement a new system will be described after which some action plans of how to implement such a system will be addressed.

2.5.1 Conditions

In literature (Hoffart & Willdermood, 1997; Wortley & Grierson-Hill, 2003) some conditions are described that are important in implementing a form of flexible scheduling.
A main condition for implementing such a form of is the support of management. Management should understand the concept and inform the employees well about the possible new system. They are determinative in showing employees the possibilities of the new system.

Next to the support of management it is also important to convince employees that the way of scheduling is not a tool for the management to increase productivity, but for the greater part an instrument for employees to control work-life balance. Employees should get instructions how they could use the new system and what if offers them. With this instruction employees become aware of the philosophy of flexible scheduling.

Next to this awareness it can also increase the support of employees for the new system (Silvestro & Silvestro, 2000).

2.5.2 Action plans

It is very important that the right procedure is followed when an organization is implementing one of the forms of individual scheduling. This procedure consists of four steps; first, the company has to decide what the degree of occupation needs to be for a certain period. The second step consists of creating the ideal schedule. After taking in account the wishes of the employees the fit and/or misfit with the ideal schedule has to be decided. The fourth and last step of implementing and creating the best fit is adapting the schedule in such a way that the wishes of the employee coincide with the demands of the employer.

To implement such a system where employees have individual schedules, it is wise to first test whether such system works. This can be done by starting a pilot in which employees can get used to the changes and an employer can investigate whether individual scheduling brings the expected changes to the company.
The brochure of NCSI (2009) describes which steps an employer has to follow to successful implement individual scheduling. This contains 5 steps:

1) Analyze supply of labor
   Crucial is a good overview of the demand of work as the wishes of employees should be connected to that. The demand of work can be described in a minimum and maximum capacity ratio. Furthermore an analysis of possibilities to create new working hours can create matching of demand and wishes.
2) Inventory wishes of individual employees
   How exactly wishes are brought forward determine the work an employer has to make the schedule. The more privileges an employee can submit, the more complex the establishment of the schedule. Important is that wishes are in line with the Working Hours Act. Furthermore employees should get experience in making known of their wishes.
3) First run of matching demand and wishes
   Compare the demand of work of step 1 with the wishes of step 2. If employees have good overview of the demand of work when they submit their wishes, the balance is not far away (step 4). If the wishes does not fit the demand of work at all or there are big differences between both it probably is better to reconsider the first steps, as the idea of individual scheduling is that you have influence on your schedule.
4) Second run of matching demand and wishes
   Remove the mismatches of step 3. Rules about the distribution are of importance, to provide a fair work-distribution.
5) Definitive schedule
   Everyone gets his own schedule.

During a seminar of AWVN & VAPRO[1] in October 2009, a similar action plan to flexible scheduling was described:

1) Orientation
2) Designating policies
3) Fix the terms
4) Process
5) Implementation

This action plan focused on the broader picture how to come to the implementation phase. It is therefore useful as checklist to see if the preparations are filled in well and if everything is done well before you start with the implementation of flexible scheduling. For a deeper overview what a phase exactly contains see appendix 2.

[1] Algemene werkgeversvereniging (AWVN) & Vakopleiding voor de Procesindustrie (VAPRO)

2.6 Effects of new scheduling

As mentioned in the last section it is wise to start with a pilot first to investigate the effects of the new way of scheduling. The evaluation of this pilot aims at the objectives set beforehand. The following questions should be raised in order to find out how the pilot is received within the organization (NCSI, 2009):

- Did the technique worked out well?
  Not only was the use of software or way of scheduling reviewed, but also the used taxonomy and the agreed rules. Important in analyzing the technique is the experience of the manufacturer of the schedules.
- What is the experience of the employees?
  Let a third party (within the framework of objectivity) investigate how employees experienced the pilot. Important is the difference between the situation before and after the pilot.
- What is the experience of the employer?
  What were the expectations of the employer of the new way of scheduling and can it comply with those expectations beforehand. If an employer wants to distribute the way of scheduling within the company it is important to attend to possible changes in circumstances.

In the following section there will be described what kinds of instruments can be used to answer these different questions.
The goal of flexible work scheduling is that it is effective for both employer and employee. The employer wants to increase his efficiency and the employee should increase his work-life balance if possible.

2.6.1 Efficiency

Organizations constantly try to improve their efficiency. During a current process efficiency can be measured, but also during the implementation of a new scheduling system the efficiency stays very important. If the efficiency can be boosted by such a new system, both employee and employer can have an advantage.

There are several ways to measure efficiency. Generally measured are (Pilat, 1996):

- Productivity
  Relationship between input and output, where most of the time the output per worker is measured.
- Non-productive resources (idle-time)
  Are all employees is constantly in business? Are employees often left with nothing to do? Too many idle resources are a common sign of inefficient production
- Unit costs
  Divides total costs by the number of units produced. A falling rate would indicate that efficiency is improving
- Quality
  Is the output good and well-received, or do customers return defective goods/products or complain about the goods/products? These quality issues can indicate the level of efficiency.

2.6.2 Work-life balance

For an employee a different way of scheduling can change his work-life-balance. By perceiving flexibility, an individual (and his or her family) has a lot to gain (Hill et al., 2001). Benefits of perceived flexibility can be:

- Less stress
- Enable scheduling working hours on schedule of children or social obligations.
- More responsibility
- Better rested, healthier

2.7 Descriptive model

In the previous sections the different elements of my research model are described. In order to continue with my research, the possibilities of individual scheduling should be analyzed. Subsequently, both a new schedule of the process and organization characteristics should be taken into account after which the pilot can be started up. Eventually, the effects of the pilot can be measured so therefore different ways of collecting data will be used. In the descriptive model below these different steps are visualized.

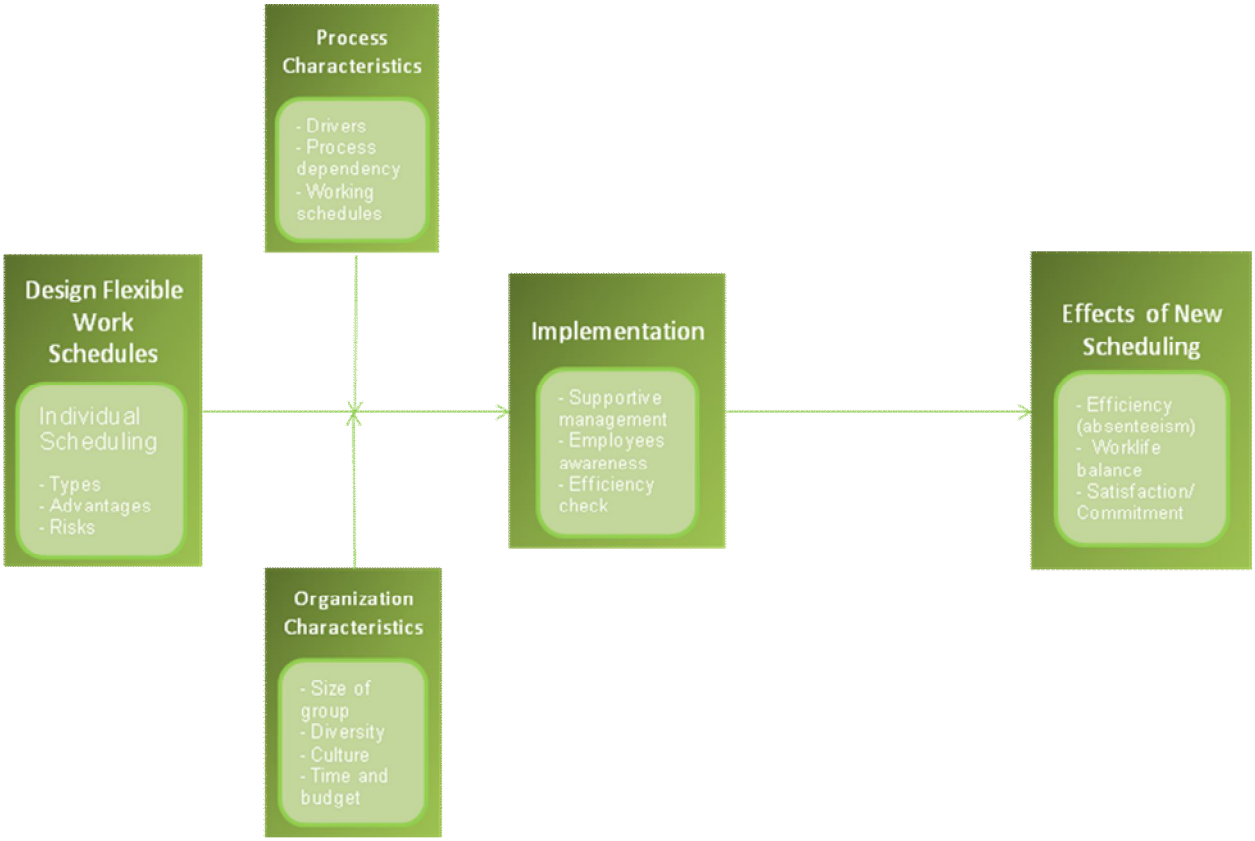

Figure 2.4 (Descriptive model)

Chapter 3 – Methodology

In this chapter will be described how exactly the research questions will be answered. First is explained what kind of research design is used and what the reliability is of the different designs. After that follows a description of which research methods were used to collect the data and how this data was analyzed.

3.1 Research approach

The different elements defined in the research goals are an indication that the focus of the research that will take place at Grolsch is a practice-driven research. In that context five types of researches are possible, namely: problem analysis (gap analysis), diagnostic research, design oriented research, change oriented research and evaluation research. (Looise & Ongena, 2009)
The main goal of the thesis of Van Aard (2008) was to design a system for self-rostering and therefore her research was a design oriented research. The goal of this study is ambiguous. The goal is to introduce a pilot on the IT&M department of Grolsch on flexible work schedules. To make this happen there had to be created a good design first of what kind of schedule should be introduced before it can be implemented. So the designs of Van Aard were reviewed critically after which a choice for a final design was made which was implemented within a pilot. Therefore this research was a design oriented research with an accent on the implementation-part (change oriented). As the goal of a change oriented research is that the change must be clear, the research focused on best way(s) of implementation and in what best way the change of effects can be monitored (Looise & Ongena, 2009).
The research consisted of the following components: *a literature study*, to find out what theories say about the best ways of implementation giving the circumstances, which is already described in chapter 2. Furthermore *interviews with stakeholders involved* were carried out, to get a clear picture of the goal of the change for all parties. Next, *an analysis of the current scheduling system*, to find out the possible impacts a change can have. Finally *an evaluation-tool* was proposed, to monitor the change of effects in the best way, so Grolsch knows what the results of the pilot at the IT&M department are. These components answered the research questions in the following way:

The *literature study* gave an answer to the first two sub questions:

1. *Under what conditions are flexible work schedules effective?*
2. *How do flexible work schedules fit within the characteristics of the organization?*

The *interviews with stakeholders involved* and the *look at the current system* gave an answer to the third sub question:

3. *Which scenarios of flexible work schedules could be implemented at the IT&M department of Grolsch and how should those be integrated? Is one of the scenarios a good answer for the IT&M department?*

These *interviews* also gave an answer to the first part of the fourth sub question, but also the *evaluation-tool* gave an answer to this question:

4. *How do you manage a pilot within the IT&M department and how can such a pilot be evaluated?*

3.2 Data collection

In order to receive information regarding the scenario which would fit best within the IT&M department data was collected at this department.

In this research different techniques in collecting data were used because the different parts needed different approaches. These techniques were: observation, semi-structured interviews, in-depth interviews and questionnaires as described by Saunders et al. (2003).

3.2.1 Observation

In order to find out whether the planning of schedules can be made more efficient, observation can be an important collection tool.
As observer you can have different roles according to Saunders et al (2003), namely: complete participant, complete observer, observer as participant, and participant as observer. Gill and Johnson (1997) developed a fourfold categorization of those different roles, as shown in figure 3.1 below.

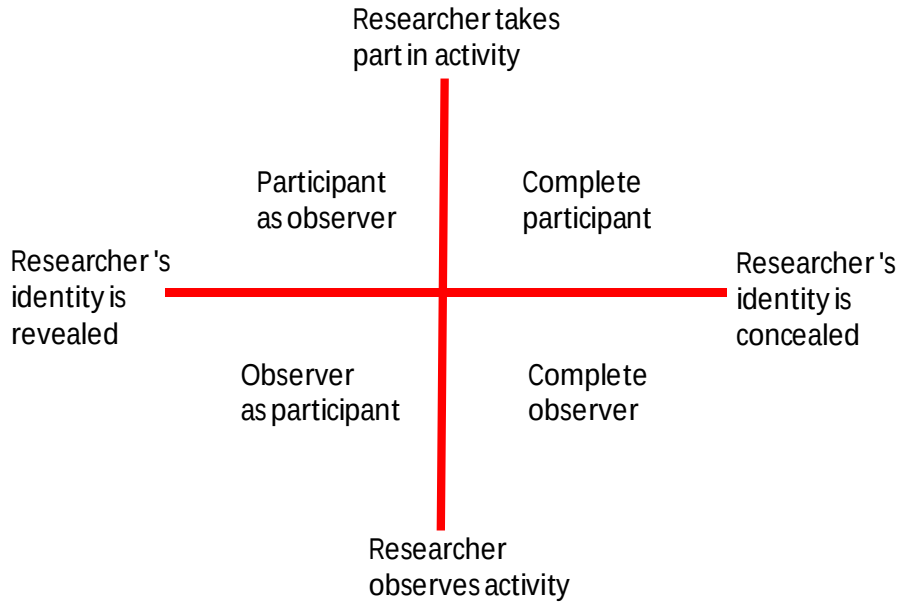

Figure 3.1 (Gill and Johnson, 1997)

The main purpose of the research at Grolsch was to start a pilot within the IT&M-department. The processes and investigation of how work is done can be very time-consuming job. The work itself is very specific and training is needed beforehand to become forklift driver. It was therefore hard and not realistic to take part in the forklift-activities in this research, as the research took only five months. So the role *taking part in the activities as researcher* therefore was limited, especially in the first few months. As the research work was spread out within the department IT&M from the beginning, the identity of the researcher was revealed from the first minute on. Therefore the forklift drivers knew that they were part of a research (experiment).
Main questions of interest were those about planning and scheduling, so in the first few months a role as *Observer as participant* was chosen by the researcher as it was needed to find out more about the setting at the IT&M department. In this period it was investigated how the schedule is made in the current system, if there are already possibilities to change shifts in the current system and how efficient the current planning is. This was investigated not only to understand what will change when the new scheduling system will be implemented, but also to investigate if the new system is more flexible, more efficient.
After the first few months the goal was to start with a pilot at the IT&M department. At the start of this pilot it was facilitated by the researcher. Therefore the role of the researcher converted more towards the *Participant as observer from* that point on, as the researcher became more of a facilitator of the pilot and helped the forklift drivers and team leaders in coping with the pilot.

3.2.2 Interviews

The purpose of the research determines what type of interview is best. As the goal of the research is to implement a more flexible scheduling system within Grolsch, it was very important to examine what the different stakeholders want with the implemented form and how they foresee possible changes with that. Therefore the management, team leaders, forklift drivers and also the workgroup were interviewed in *different ways* to come to their interpretations about what kind of implementation is in their insights the best solution. These different ways of interviews were: structured interviews (questionnaires), semi-structured interviews and unstructured interviews (In depth-interviews), as described by Saunders et al. (2003). The exact questions asked to all stakeholders can be found in appendix 3.

Management

The management initiated the project about flexible scheduling. Therefore it was important to investigate what exactly the goal of the project is for Grolsch. Those intentions were gauged by repeated conversations with the IT&M-department manager and the initiator of the HRM-department. In these interviews there was no predetermined list of questions. These interviews were unstructured or in-depth interviews.

Forklift drivers

The forklift drivers are the employees who participated in the pilot and therefore their approval for starting a pilot was very important. In order to start a pilot in which those employees had the influence they wished to have it was investigated which form of flexible work schedules they prefer. Individual interviews were initiated with all forklift drivers who had a fixed contract at Grolsch. In these semi-structured interviews first the possible wishes were explored. In the earlier research it was already explored that a part of the forklift drivers had no different wishes than their fixed schedule. Therefore all forklift drivers were asked in which format they wanted to participate in flexible work scheduling. These interviews had more structure than the interviews with the management. The outline of the interviews consisted of a list of themes and questions of what to ask, but what exactly was asked differed from forklift driver to forklift driver. Also the openness between forklift drivers varied and therefore determined the flow of the interviews.

Team leaders

By introducing a pilot it seems important that the team leaders know how to work with the new system, as they are the planners of the schedules. With a new system, new responsibilities will arise and therefore it was important to take along the insights of the team leaders about the intentions of the flexible scheduling in the future and to seek out how a new system will work for the team leaders. Those conservations (interviews) were even more unstructured and informal than with the management. Questions that came up were asked to and answered by team leaders the moment they came up. It did not seem necessary to wait for an appointment between the researcher and the team leaders to ask these questions.

Work group

All described groups above had different insights how a new system could work. In order to create a system which all parties supported and had faith in, a work group was created. This workgroup came together once or twice to present the progress of the research and to discuss if the insights of all groups are combined in the right manner. Those discussions led to a new system in which forklift drivers can provide their wishes, team leaders can handle the planning and management can see that the new system focus on work-life balance and can offer more efficiency. These meetings helped in collecting additional data, next to the interviews with the separated groups.

3.2.3 Questionnaire

In order to be able to give good answers to the research questions, different data was collected to answer those questions. The research was bipartite. The first goal was to create a framework in which forklift drivers could indicate their preferably working hours the best and next to that there was an investigation towards the schedule to see if it is possible to make the schedule more efficient.

During the first few months of the pilot the researcher evaluated with the stakeholders how the new system worked. In the beginning the focus of this evaluation was to improve the implementation and tackle problems when they occurred, but later on the pilot should be evaluated well. Therefore it is important to investigate how stakeholders look at the new situation and whether or not flexible work schedules should be implemented definitely at the IT&M department. In order to investigate this, a questionnaire is made for the forklift drivers and team leaders.
The pilot started during this research project, but ends when this research is already finished. As Grolsch needs a way to evaluate the outcomes of the pilot, a questionnaire at the end of the project can be very useful. As the group of forklift drivers consist of 23, it is possible to let the questionnaire be administered by an interviewer, for example by a student to have an external, unprejudiced party involved.
Because the questionnaire is only made by the researcher and not analyzed by him, it is important that the way of analyzing of this questionnaire is transparent for a third party. Therefore questions in the questionnaire are closed in general and in such a way that the answers of the interviewee leave no space for different interpretation.

3.2.4 Overview

The different ways of data collection that were used in this research are summarized in the table 3.1 below. This table makes clear which data was collected and which stakeholders were part of the data collection.

	Forklift drivers	Team leaders	Management
Observation	X	X	
Interviews			
Semi-structured	X		
Unstructured		X	X
Questionnaire	X	X	

Table 3.1 Data collection of stakeholders

3.3 Data analysis

All collected data was analyzed in order to make the best design for the forklift drivers and to facilitate the pilot the best as possible. Therefore the results of interviews and questionnaires were structured and next to that the work group discussed the outcomes.

3.3.1 Results interviews

Full records of the interviews were compiled as soon as possible after they had taken place, as suggested by Robson (2002). Otherwise there was a chance that the exact nature of explanations provided could be lost or data could be mixed up from different interviews in the end. By creating these full records of the interview soon after its occurrence, bias was controlled and reliable data for analysis was produced.

After all interviews were recorded the output was categorized and the data was reorganized according to them. In this way one can search for answers on key themes and consisting and different outcomes on those themes (Saunders et al., 2003).

This output finally determined which design suited best at Grolsch and is worked out in chapter 4 ‘Design’.

3.3.2 Results Questionnaire

As mentioned in 3.2.3 the research ended before the questionnaire was collected. Therefore it was necessary to create a questionnaire that can analyze the pilot afterwards and what the consequences of the new system are. Since (most) questions are closed questions, the interpretation of the answers should make clear there will be no different outcomes for any analyst.

3.3.3 Work group

In 2008 a workgroup was compiled in order to discuss the project. This project group continued to exist in order to discuss the different scenarios which came up in answering research question 3. Furthermore the members of this project group had the final say about the scenario before the pilot started.
The project group consisted of two managers, six forklift drivers and a team leader. Next to this the researcher was part of the project group as well, as an external party.

Chapter 4 – Design of a new form of work schedule

In chapter 2 an overview of forms of individual scheduling is given. Next to the forms of individual scheduling which were distinguished by NCSI (2009) an overview of other flexible forms was given. We have seen that an organization can decide to implement an individual scheduling system for several reasons.
In the case of Grolsch it is first important to briefly address the particular characteristics of its workforce at the IT&M-department and their operations to form the right picture of these characteristics. To form this picture different ways of data collection will be used, as explained in chapter 3.
With the information and insights gather in chapters 2 and 3, chapter 4 will describe the IT&M department and propose a design of a new form of work schedule and therefore answer the third sub-question:

Which scenarios of flexible work schedules could be implemented at the IT&M department of Grolsch and how should this schedule be implemented? Is one of the scenarios a good answer for the IT&M department?

4.1 Process characteristics

4.1.1 Process dependency

The following figure gives an overview of the operations planning of the IT&M department. The operations in green take place at the IT&M department.

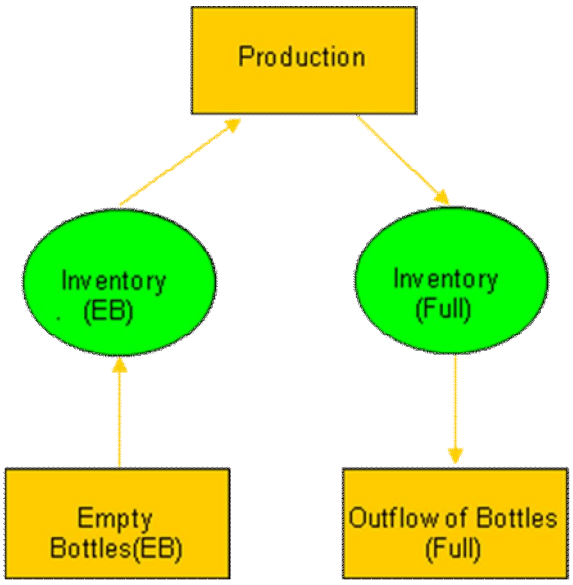

Figure 4.1 Overview of IT&M department operations

Those characteristics of the process industry and the specific characteristics of Grolsch (IT&M department) have influence on the possibilities of introducing new ways of scheduling.

Incoming orders and estimations of future orders as consuming have influence on the work of the IT&M department. They have to offer empty bottles to production to be bottled but also store the production of beer into the warehouse. These orders are mostly influenced by the season of the year.

4.1.2 Working schedules

The forklift drivers have a schedule that is fixed for a year. There are three different types of forklift drivers at this moment.

	Day	**2 Shift**	**3 Shift**
Shift-time	D: 08:00-16:30	O: 06:00-14:00 (early) M: 14:00-22:00 (late)	O: 06:00-14:00 M: 14:00-22:00 N: 22:00-06:00 (night)
Cycle	Every week the same shift	First week O, second week M, third week O, fourth week M, etc.	First week O, second week M, third week N, fourth week O, etc.
Fixed employees (amount)	4	12	5

Half of the 2-shift workers have the O-shift in the even weeks, half of them in the odd weeks. In that case both the early-shifts as the late shifts are divided equally every week with six 2 shifts-workers and mostly two 3 shift-workers. The additional work spaces that are left after scheduling the fixed workforce are filled with temporary workers.

The forklift drivers of Grolsch are relatively interchangeable on the different work spots, due to the fact that most of these spots are not that complex and therefore skills can easily be acquired.
The company currently utilizes a roster schedule set a year in advance, which means that employees know precisely over a twelve month period when they will be working and when they will have time off. This is somewhat convenient for Grolsch, because it reduces the effort in scheduling, but at the same time it does not support growing demands among employees for adjusting their schedule in order to (re)gain a(nother) work-life balance. In essence employees currently have difficulty modifying their short term work schedule, which as mentioned is already set a year in advance, to suit changing needs related to their private lives.

4.1.3 Drivers of change

In section 2.3.3 I briefly stated the key trends that driving change within manufacturing mentioned by St. John et al (2001):
(1) Ubiquitous availability and distribution of information
(2) Accelerating pace of change in technology
(3) Rapidly expanding technology access
(4) Globalization of markets and business competition
(5) Global wage and job skills shifts
(6) Environmental responsibility and resource limitations
(7) Increasing customer expectations

For Grolsch (2), (4) and (5) are drivers to improve the *efficiency*. In order to maintain competitive it must constantly improve it cost effectiveness.(4) A new way of scheduling may possibly improve the evaluation/diagnostic capabilities of the company with regard to its workforce through regular analysis of measured data related to employee preferences, productivity and performance (i.e. popular work patterns, defining individual optimal work conditions).
A more flexible way of scheduling also provides the company to accommodate changes in existing production lines due to the introduction of more efficient manufacturing processes or higher levels of automation.(2) The introduction of more flexible schedules and the resulting work schedule flexibility would give the organization the possibility to respond more quickly to internal and external threats and opportunities. As described in 2.2.1 two forms of flexibility can be achieved. Social flexibility can be achieved as forklift drivers can adjust work to their private life. Furthermore Grolsch wants to realize more economic flexibility by adjusting the capacity were possible even more to the demand from the market.(5) Flexible scheduling can

probably help in this structure and human resources are used more efficiently with more flexible schedules. Due to the fact that employees will be given the opportunity to have influence on their own shifts, they can pick working times that match better with their circadian rhythm, which can lead to increased productivity and decreased mistakes on the job. Another gain in productivity will be achieved from reduced absenteeism since employees who are allowed to pick their shifts will have enough flexibility outside of their work hours to do personal things that need to be done (Hensinger et al, 1993).

The increasing customer expectations (7) can also be a drive for Grolsch to get a better *corporate image*. The implementation of a more individual scheduling system promotes both internally and externally a positive image of an innovative firm implementing progressive state-of-the-art techniques in its workforce management. This also helps attracting new employees in the future at a time when individualized work arrangements are becoming commonplace. Grolsch competes with other high quality brands and places high values in its public image, which is seen as a crucial strategic element.
Despite the global trend towards producing in low wages countries (5) Grolsch maintains his brewery in the Netherlands and focuses on producing high quality products while paying its employees “good money for hard work”. Flexible work schedules would enable the company to highlight its progressive workforce practices as yet another differentiating element from its competitors.

There are some drivers for Grolsch that does not fit the list St. John et al completely, but are important drivers for Grolsch at the moment.
At first the *ageing workforce,* in which Grolsch faces a challenge in the coming years, which affects the work of both current employees and the ability of the company to recruit new employees. Based on the assumption that ageing employees may face growing difficulties handling full time positions and work performance, individual scheduling could be used to facilitate the pressure of work and give these employees more freedom to match their current jobs with their specific needs. Furthermore, it would help the organization better cope with cases of disease or disability of such workers, through the ability to quickly adjust the work schedule roster. Individual scheduling enables the company to adapt its production schedule to the demands and requirements of an aging and retiring workforce and therefore prolong the work lifetime of its employees (i.e. part-time shifts).
Finally, a driver could be the *commitment* of the employees. By an individual scheduling system the frequency and quality of interactions between management and the workforce could improve. Furthermore, the introduction of the roster could be used to consult workforce representatives before, during and after the implementation and would therefore increase their legitimacy.

4.2 Organizational characteristics

In section 2.4 there are a lot of characteristics that determine if individual scheduling can be effective within Grolsch. All these characteristics of NCSI will be examined individually below.

Good industrial relations

As written before it is really important that both employer and employees are enthusiastic about the idea of experimenting with individual scheduling. As the employer came with the assignment at first and in conversations with management it became clear that Grolsch is supporting a pilot about flexible scheduling.

Wishes management

During the appointments with management it became clear that they see the IT&M department as a flexible department. Their opinion is that forklift drivers within the department are compliant when work asks them too. They foresee a problem in the fact that change is something that calls for resistance and therefore it is important that all employees

understand that a pilot is only a test and not something that would be implemented in the end for sure.

The forklift drivers and team leaders were interviewed to introduce the subject to them, to ask them their insights and to ask them what they thought to be the best solution when implementing such a system.

Willingness forklift drivers
In the interviews with the forklift drivers four main questions were asked. These questions were:

1. What is your ideal work week as you can choose without consequences?
2. Do you mind filling in your preferences a month beforehand?
3. What kind of changes would you probably have during a month?
4. What would you change if flexible work schedules would be implemented?

In most interviews the first question to the forklift drivers was about their ideal working week. Most of the forklift drivers gave the same answer, as most forklift drivers stated that they prefer their current schedule. Out of the 23 forklift drivers only 6 had another ideal roster, but still do not want to change that much on their ideal roster. See figure 4.2 below.

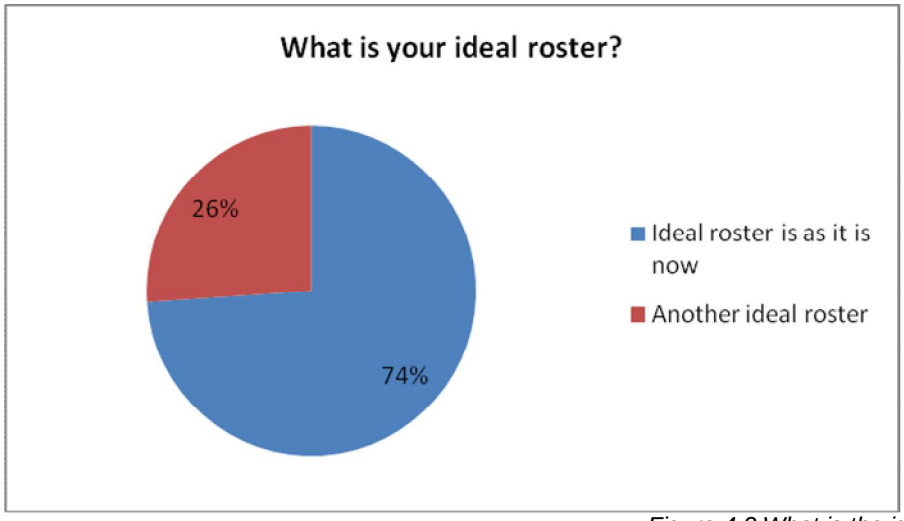

Figure 4.2 What is the ideal roster for a forklift driver?

The answer about the ideal roster indicated that most of the forklift drivers like their current schedule. Therefore in the second question it was investigated how the forklift drivers think about submitting preferences before the definitive schedule is made. The definitive schedule is known only a week in advance, but for example forklift drivers can indicate a month beforehand if they like their basic roster or would like some adjustments to that roster. Most forklift drivers stated that they would not mind to indicate their preferences, on condition that it would not be time-consuming.
In figure 4.3 the exact figures are shown.

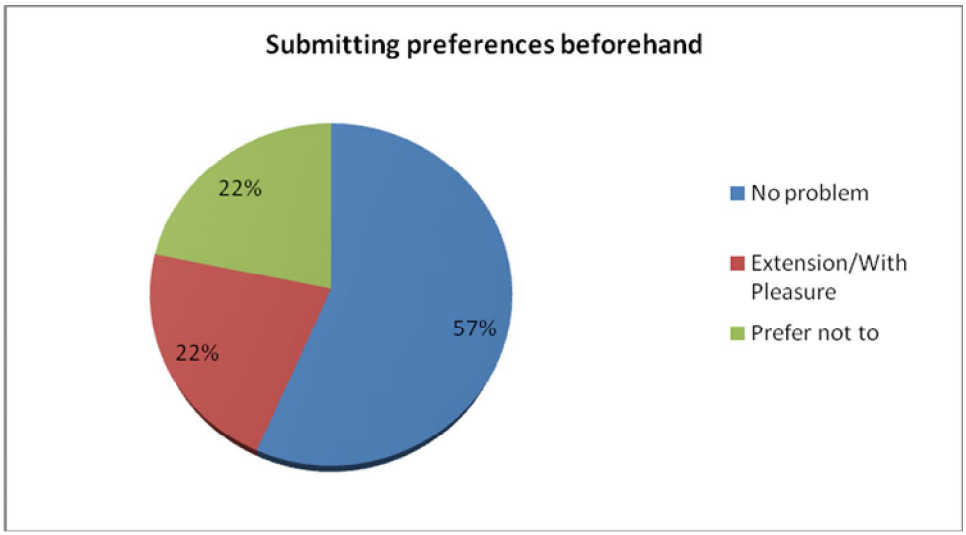

Figure 4.3Would a forklift driver submit his preferences a month beforehand?

Most important is the willingness of forklift drivers to change their schedule. If none of the forklift drivers would change anything at all there is no reason to change anything. Therefore in the last question the forklift drivers were asked if they foresee any change in their basic schedule if they are offered to manage their schedule. More than 60% stated that they would stick to their basic roster, but the other 40% would change something or think they would in the future. In figure 4.4 the exact amount of changes forklift drivers foresee has been given.

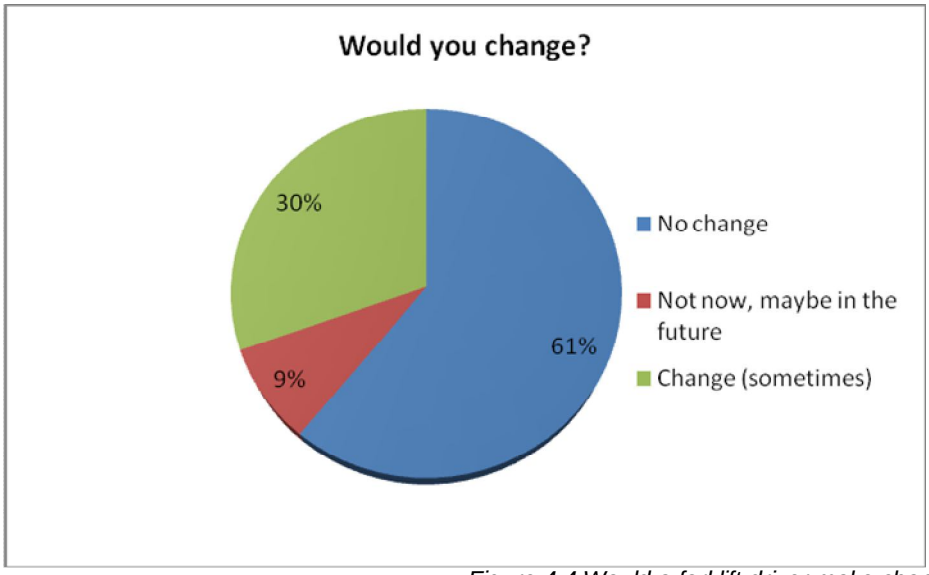

Figure 4.4 Would a forklift driver make changes in his basic schedule?

The forklift drivers had different opinions when answering the last question about introducing a form of flexible work schedules. The forklift drivers show different issues what they think is important. Some would like to have more influence on their ATV-days, others were scared to lose team surcharge. An important remark was that it is important that there is consultation when shifts would change due changing demand.

An important remark throughout the interviews was to see that most forklift drivers seem to feel a sort of cultural bond among them in which forklift drivers want to help each other. They see themselves as a group who work as a team together and help each other when another forklift driver needs them. For the complete answers to the different questions see appendix 4.

Wishes team leaders
In the conversations with team leaders it became clear that they were positive about working with a form of flexible work schedules. They think it would be hard to let the forklift drivers decide the 'best' work schedule themselves and see their role as planners as an important one. A pilot can help to test the workability of a new schedule. Part of the team leaders are willing to delegate the role of planner to the group op forklift drivers, but that insight originates because the problems they have sometimes to make the planning.
They foresee the most problems in analyzing the supply of labor and planning, because they are so dependent of others parts in the chain and therefore can not schedule a month beforehand.

Role of union
It is common that unions aim to establish strong collective agreements; hence they do not like individual agreements. Therefore it is very wise that the team leaders – as one of them is part of the union - are an active participant in examining the possibilities of a more individual schedule. Furthermore Grolsch has the intention to test first by starting a pilot and therefore direct support of the union is not needed.

Open culture
The chance of success is influenced by *adulthood and fellowship.*
The age of the forklift drivers of Grolsch is mostly above forty and the youngest is twenty seven. All these forklift drivers can forward their preferences. At this moment, forklift drivers have the possibility to change shifts together, so they have somewhat influence in the final schedule. Furthermore there are a lot of unwritten agreements (informal) in which the team leaders and the forklift drivers make better schedules already.

Size of group and diversity
To start with flexible work schedules within Grolsch the size of the group and the diversity of the group are important. As the pilot-group consists of forklift drivers only and they are homogeneous based on skills they are interchangeable. There are nine workplaces at Grolsch and most of the forklift drivers are able to work at seven or more workplaces. Workplaces are interchangeable, so it is possible to schedule employees according to preferences and requirement. Furthermore workplaces can be put together sometimes.
The only problem in this characteristic can lay in the *diversity* of the group. There are only men working as forklift drivers, as Van Aard already stated in her thesis. More than 60 % is aged over 50. However, within the group there are different compositions of the households the forklift drivers are in. During the interviews it became clear that the forklift drivers have different preferences also within their private lives.

Type of work
Within the brewery-industry flexible scheduling is not a used type of work scheduling. In the distribution-part of the brewery there are possibilities to change shifts together already, so the culture is open for some changes.
As the work places are different during the seasons and are divided over fixed contract forklift drivers and temporary workers it is possible to change scheduling more towards the needs of fixed workers. It would be possible to schedule more individually regarding this characteristic.

Analysis supply of labor and time schedule of planning
The problem lays in the analyses of labor and planning. The IT&M department is the last one in the chain and dependable of production. To make a schedule the team leaders are dependent of the production, but also the demand of customers is leading in the schedule. One week before the schedule team leaders can make an estimation about the amount of forklift drivers needed on all workplaces, but in the afternoon the day before they know for sure how much orders there are and what production does. As said before it is harder to

take wishes into account on such short notice, so the unpredictable of the demand of work is a problem to tackle in order to make individual scheduling possible. But, individual scheduling can give better possibilities to combine work and private life with shorter time schedules.

Allowance of inconvenient hours

Many collective agreements are rigid. When employees schedule individually the collective approach of working hours regulation is not possible anymore. Employees are already in discussion with Grolsch and the union about the clock hours matrix, so therefore some see this change as a design for implementing such matrix. However, the goal is to let employees and the union understand that the reason to chance lies in giving the employee better work-life balance. It is therefore important that such collective agreements have an eye for individual wishes it increases the chance of success of individual scheduling. This is possible within the restrictions, but important is that individual scheduling is in line with the Working Hours Act.
The rules of the Working Hours Acct that have to be taken into consideration in this matters are (Van Aard, 2008):

- Between two working days there should be rest period of at least 11 hours (an exception can be made in one week - once in 7x24 hours: the rest period can be shorten to 8 hours);
- After a night shift there should be a rest period of at least 14 hours (an exception can be made in one week - once in 7x24 hours: the rest period can be shorten to 8 hours);
- After three or more night shifts there should be a rest period of at least 46 hours;
- An employee is not allowed to work more than 60 hour a week;
- An employee is not allowed to work more than 13 hours per 24 hours and 12 hours per shift;
- In 16 weeks an employee should maximally work for 40 hours averagely when he or she has had 16 or more night shifts in that period;
- In 16 weeks an employee is not allowed to work more than 36 night shifts;
- In case of consignation, an employee should maximally work 48 hours a week averagely over 16 weeks;
- Consignation 11 hours before and 14 hours after a night shift is not allowed.

Time and budget

Preparation is really important, in which all concerned parties should be involved. Grolsch therefore wants to start a pilot in which the forklift drivers can see what changes for them and how they think about those changes. Before the pilot I had interviews with the forklift drivers in which I formulated possible rules and constraints for everyone and stating the goals of the project.
Next to this issue Grolsch foresees that the pilot can cost them some money, but according to management the main motive to start with a new scheduling system is to offer employees more possibilities with their work and social life. If it costs money in the first place (during the pilot) Grolsch is willing to pay. The idea is that by scheduling more individual Grolsch can win by making a better fit with the schedules and the workload and be more effective in the end.

A *review* of the drivers, interviews held by the researcher and these organizational conditions motivates Grolsch to start a pilot to test whether it's possible to implement a more flexible schedule in the future, which offers advantages on both an individual and company level. The next part of this chapter will examine how the different options of flexible work are applicable and what is the 'best-fit' type of individual scheduling for Grolsch. This consists of selecting the appropriate type(s) of flexible scheduling for Grolsch's current environment and objectives. Therefore, all types will be reviewed within the context of their suitability for

Grolsch. At the conclusion of this chapter the most appropriate type of flexible scheduling for Grolsch will be determined.

There are several criteria that can be used in order to select the 'best-fit' type(s) of flexible scheduling for Grolsch. These include consideration of the changes that each type of flexible work schedules implies to the current situation and the existing practices at Grolsch with regard to setting up rosters. This can be divided into three components. First, what are the employee expectations regarding each new system. Second, the managerial burden associated with both the implementation and operation of each type of system. Finally, to what extent have management control over each system.

4.3 Types of flexible scheduling

Before selecting the best-fit of a flexible schedule based on the mentioned criteria it is required to exclude some types of flexible scheduling. Because of some restrictions within Grolsch, those types of scheduling could not be implemented.

As mentioned in the topic of working conditions Grolsch has fixed work days of eight hours for their permanent workforce. By legal regulation (the working hours act, 4.1.4) there are not that many possibilities at this moment to change the length of working hours constantly. Therefore some of the described flexible work schedules in section 2.1.2 are difficult to match with this restriction.
The workforce of Grolsch can work 9 hours by planning, but in case of shorter scheduled working hours the workforce get paid the normal hours of work (8 hours), so flexible work schedules where you change the length of work of the permanent workforce according to demand is difficult. If Grolsch sees this as the best solution it could be discussed with the union, but at this moment it is not an option.
At this moment sometimes at some workplaces forklift drivers work more flexible. Now and then there is a peak on charging containers during one day in the week and that this container charging is low on some other day. A forklift driver is asked to work more than 8 hours the day with the peak and can work shorter on some of the other days during the week. This occurs not frequently and therefore is not noted as overwork and is divided over the week. These individual agreements are a solution for Grolsch to work more effectively and offer individual employees more functional working time.

A problem that can occur at the IT&M department of Grolsch is that there is a peak moment during the afternoon, because orders can come in until 12:00 and should be performed during the same day. As some of the forklift drivers already work in dayshifts and because of that work during that peek, next to the 2 shift-workers a form as *Compressed work schedules* is not suitable for Grolsch. The peak moment during the afternoon already is filled in with extra man power and the other hours of the day are not that busy most of the time.
The other option of vary working needs during the year, *Annualized hours,* could be a good option to vary in the employee-pool during the year and gives Grolsch more flexibility-options during the year. But as mentioned above the problem lays within the current legal regulation. It can be a solution for sure, but therefore a discussion with the union is necessary.

Furthermore *Flexi-place/home working* is not an option as the forklift drivers have work what can only be performed physical at the company.
Flextime, also called flexitime in the literature, where employees choose their own starting times is not possible for Grolsch, because there are decided starting times of shifts, set by the team leaders in which the employees cannot vary on their own preferences.

Of the last two, *Swift Swapping* is already done by the forklift drivers. When a shift does not suites the schedule of the employee he is allowed to swap his shift with a colleague and pass on this change to the team leaders. The last one, *Self-rostering/Individual Scheduling* could

be an option for Grolsch. This concept will be elaborated in the coming sections of this chapter.

4.3.1 Individual Scheduling options

In this section the number of options of individual schedules will be reviewed, to investigate the different options. Probably one of these options can be a practical solution for Grolsch to test with a pilot.

Possibilities of influence after determination of basic-schedule
These forms, described in 2.2.1, are more or less already possible at Grolsch. It will be explained below.

Exchange Shifts
Characteristics: tasks are fixed (content and time), roster also, employees just exchange shifts by mutual agreement

The final schedule for the forklift drivers is presented one week in advance. A forklift driver can predict his schedule earlier as they work in shifts and it is known for one year what kind of shifts a forklift driver is working. As sometimes a shift does not fit for forklift drivers they can exchange them with another forklift driver. This concept is already in some way in practice at Grolsch. For the forklift drivers this system works, but they are not given certainty that a shift can be exchanged. These exchanges take place on an informal level.
At this moment it is for the management of Grolsch unclear what exchanges are made by their employees so they have not a good idea how much forklift drivers want to change.
The responsibility over the system is in the current situation mostly thrown on the employee side as they have to make exchanges. The team leaders approve these intended changes if the workplaces can be accomplished by the forklift drivers.

This system provides a limited form of flexibility, since it focuses on the employee side. Employees have to make contact with their colleagues and try to swap shifts. If it is not possible they just have to work as scheduled. On the company side there is no influence on these changes. If there are changes made within the schedule by Grolsch there is no idea who wants to work different hours. There is no managerial control within this type of system, since the employees exchange the shifts amongst themselves.

Switch
Characteristics: exchange shift without changing with other employees.

This concept is not possible at Grolsch. The supply of labor is given a week in advance and team leaders make a schedule according to these figures. As a forklift driver wants to work another duty than he has been scheduled for, than the problem will arise that the work offered from production cannot be filled within the desired time.

Possibilities of influence by design of basic-schedule
The second form of control is before the final schedule has been made. In 2.2.1 different forms were described. These forms will be discussed below.

Wish Rostering
Characteristics: Both shifts and roster are fixed. The planner takes into account the wishes of the employees. These wishes are taken into account as much as possible.

The final schedule is presented one week in advance, so it could be an option for forklift drivers to extend their preferences before this final schedule. Forklift drivers stated during the

interviews that most of them have no problem to extend these preferences if it does not cost much time.
The team leaders stated that implementing such schedule should be possible, with the restriction that is should not cost much time for those team leaders to take into account the wishes.

Managing these wishes in a proper way could provide the right expectations amongst employees, since they know that they can have influence. For Grolsch it is of course important that the shifts should be filled in and therefore it is important to provide employees the expectations from the system, but make them aware also that probably not all their wishes can be fulfilled. Within this type of system, employees do not feel the need to contact team leaders and/of management about their shifts and roster, because they know what they can expect from the system.
This system would not provide high administrative burden on management, because there is no danger of misfits within shifts or rosters.

This type of system maintains a good and flexible balance between the employee side and the company side. Implementing such system will give employees a chance to express their preferences, whilst the management and team leaders control all variables due to the fixed character of both the roster and shifts.
Therefore, in the 'wish rostering' variant, the actual creation of the roster takes employees wishes into consideration, but in effect still allows the company to retain full control over the process.

Shift Picking
Characteristics: Shifts are fixed, the roster is not. Employees subscribe for the available shifts and in that way, they fill in the roster.

The system can create higher expectations amongst employees since it implies the ability to select a desired shift from available options. The give-and-take element of this system makes the system transparent and understandable for the employees. Therefore it is very important that employees understand this, for the market characteristics of the system cannot always get the desirable shifts. It is impossible to provide all employees with the shifts they subscribed to.

It is very important for the management to create the right criteria which can be used to award the shifts they subscribed to, towards the employees. You can think of criteria that take in consideration factors such as seniority, union agreements and request fulfillment. For example, if an employee got his or her requested shifts for one month, it should be expected that for the next month the chances of getting a preferred selection of shifts might decrease, since other employees will have a higher priority for getting desired shifts. This can be achieved through a point system, in which employees have a certain amount of points which can be used to get a priority on some desired shifts.

The crucial element within this system is that the company clearly defines the rules and criteria. This will reduce possible frictions among employees and also prevent possible motivational problems. Once all of these arrangements are set, it will be up to the automated IT system to take care of misfits which will reduce the burden on managerial, administrative and planning staff.

Matching
Characteristics: Both shifts and rosters are not fixed. The system seeks for a fit between the shifts and wishes, and it is up to the management to decide on misfits.

Most work at the IT&M department is at the end of the value chain within Grolsch. Most work that has to be done is based on production earlier in the value chain. Production has to be transported into inventory and therefore the production decides for a greater part what kind of shifts should be filled in. Those - most of the time - fixed shifts within the IT&M department of Grolsch are a key component of the existing rostering process, as the roles within shifts are much interconnected. Giving employees possibilities to decide their own shift times would require substantial changes on the current manufacturing process.

First of all employees would provide their wishes beforehand, but most of these employees would not change much of their basis schedule as the forklift drivers like to have their normal shifts.
Next to that the 'matching' variant would give team leaders an increase in the managerial burden, as they have to meet the required shifts and have to control all wishes of employees. These misfits might bring an extra amount of workload.
In theory, this system also could encourage the expectations of employees that such system always seeks the best fit between the existing wishes and the actual roster. However the first constraint for team leaders will be the actual work that is available and should be done. Therefore it is hard to really seek this fit.

Full Self-Rostering
Characteristics: Employees arrange their shifts (content and time) within their teams. It is up to the employees to create an appropriate roster, which takes care of misfits.

In this type, forklift drivers are responsible for their own roster. They have to communicate with each other to create an appropriate roster and take care of misfits.
This type of system is only applicable within Grolsch when almost all positions in a team are interchangeable regarding time and work-characteristics. The content of shifts could be filled in by nearly all employees within a team during the whole day. Within the IT&M-department this could be possible as most forklift drivers have most competencies to work all different work places.
Most of the team leaders would like to see the employees make their own roster, as it saves time for them, but they also stated that it would be very hard for the employees theirselves to make a roster.

Full self-rostering would reduce managerial control, since it is up to the employees to arrange the content and time of their shifts, and in addition to decide on misfits. The system focus on the employee side of flexibility, but also takes a lot of effort from the employees. Most forklift drivers stated during the interviews that they like to get the possibility to give preferences, but they do not like losing much extra time filling in wishes or making a roster. Also some of them are scared that that some people who make a lot of noise get their desired shifts and someone who is more discreet ends up with empty hands and have to work less preferred shifts.

4.3.2 Best option for Grolsch

According to the workgroup the new system should focus on fixed shifts. Within this system it is important that people can ventilate their preferences and everyone could participate, but would not be committed to change shifts if they do not want to. According to the different types of individual scheduling *matching* and *self-rostering* are very difficult to implement regarding the current practices and processes applied by Grolsch. The IT&M department is last in the value chain and therefore implementing systems that include unfixed working times is at this moment not possible. It might be in the future, but then the information for planners (team leaders) about the exact amount of work that is available should be clear and the moment they can make this schedule as they know the workplaces should be put forward some weeks. At this moment the amount of work can change during the day and therefore

there is a more or less fixed amount of forklift drivers needed. The high interchangeability of tasks is a pro in these systems as most forklift drivers can work at most workplaces.
Switching, as explained above, will cause the same problems, because fixed amount of forklift drivers in different shifts are needed and if forklift drivers have the possibility to switch the shift to another shift-time this fixed amount will be released.
Exchanging shifts is the form that is already in practice, as forklift drivers informal change schedules sometimes. This system focuses however highly on the employee side, and management does not know what is arranged by their employees. Grolsch could change nothing, but as said by the management they like to see what kind of arrangements are made. Therefore the management want to formalize this process as it is at this moment. Another weak point is that forklift drivers have no certainty whether they can change their shift and then have to work as scheduled.

Both *shift-picking* and *wish rostering* seem to be appropriate for Grolsch since they are based on fixed shifts and it is up to team leaders and management to decide on possible misfits. When comparing these two systems, wish rostering is the closest to the firm's existing practices. Shifts and rosters remain fixed but wishes of the employees are still taken into account as much as possible. With shift-picking it is necessarily to require a new IT-system or an excellent planner to make the best fit between available shifts and the subscriptions (wishes) of the employees, which is needed to implement shift-picking effectively. This would be much more time consuming in case of the excellent planner and much more expensive in case of the IT-system.
Expectations of wish rostering among the workforce can be achieved more easily and can be more clearly communicated since it does not require that employees understand all criteria and arrangements that are needed to implement shift-picking. Employees understand that their wishes are taken into account. Therefore it is easier to equip employees with a wish rostering system than with a shift picking system.
Of course with wish rostering the influence on an individual roster is little in comparison with shift picking. Next to that the forklift drivers stated in their interviews they do not want to change much and foresee that some people who make a lot of noise get their desired shifts and someone who is more discreet ends up with empty hands. This can be tackled by good regulations, but the employees stated that they foresee problems at that part.

So in the end Grolsch can achieve a best-fit between company characteristics and the characteristics of a flexible scheduling system by implementing wish rostering, which will increase the flexibility and responsiveness of the rostering process for both employee and organizational needs.

4.4 Possible scenarios

Now different aspects of control by making a design of the schedule have been set out it is time to create a design. In this section different scenarios will be worked out. The goal is to propose a design that suits the analysis of the last section. In order to choose the design that best fits the needs of all stakeholders, first the two scenarios of Van Aard(2008) will be presented, as outlined in her thesis. After that a new scenario is elaborated, which could be a practical solution also. This scenario focus more on the smaller amount of change, as most forklift drivers stated that aspect as very important for them.

4.4.1 Scenarios by Van Aard

Scenario 1: variable work week realized by a 'blocks schedule'
The first scenario Van Aard sketches the different shifts in different blocks. The forklift drivers keep their yearly working times schedule, so they keep their regular shift, but have different starting times. The forklift drivers can indicate their favorite blocks over a period of three months (the roster period) for the shifts in which they are classified. In the end the team leaders will make an indication of the occupation need per block for the rostering period, based on the working demand. In this scenario it is important that every forklift driver has an equal chance to receive his preferable block. Therefore, the group of forklift drivers will be divided in 'indication groups'. Every rostering period, another group has the opportunity to indicate their preferable blocks first, second, third, etc. Based on the indications a provisionally work schedule will be made.

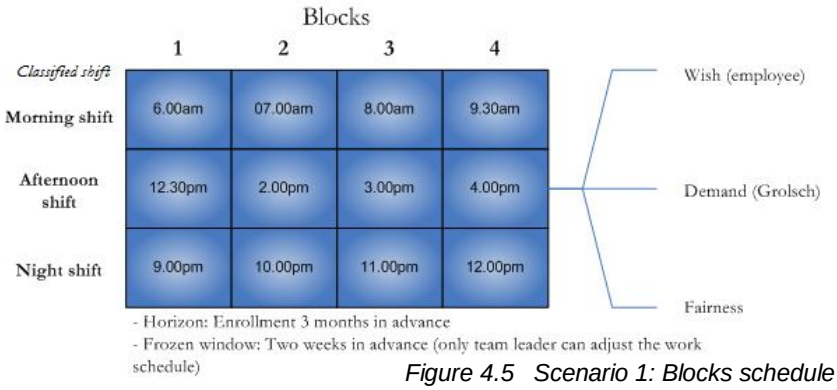

Figure 4.5 Scenario 1: Blocks schedule

Scenario 2: Flexible working times and work places
The second scenario (figure 4.6) is based on aspects of the previous scenario, but is supplemented with wishes and ideas of forklift drivers and team leaders.

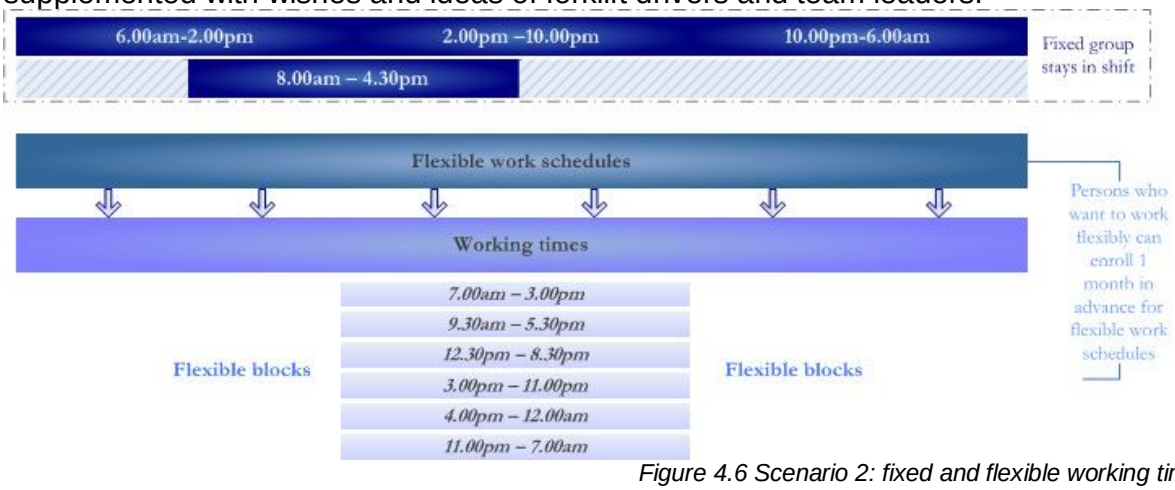

Figure 4.6 Scenario 2: fixed and flexible working times

The aspect is similar to the blocks structure of the first scenario and is supplemented with the idea that not all forklift drivers want to work with flexible work schedules. Forklift drivers that do not want to work with flexible work schedules can stay in the shift they are classified in. These forklift drivers are called the 'fixed group'. The forklift drivers that do want to work with flexible work schedules have the possibility to choose. Which blocks they can choose from depends on the working demand and capacity need which is determined by the team leader.
The flexible blocks determine the working times of the forklift driver.

4.4.2 New scenario

Scenario 3: Two wishes per week-roster

In determining the type of flexible scheduling system which provides the best-fit between the characteristics of the system and the characteristics of Grolsch, a mix of criteria has been used. For example, it is important that the characteristics of the system that is implemented also support the current practices and processes already applied within Grolsch. Furthermore, it is very important that the system provides employees fair and understandable expectations about the application of the system while not serving as an administrative burden for team leaders. On the other hand, it is important that the team leaders and management stay in control of the system, in order to support and implement the flexibility and changing needs of the company. The system needs to provide a best-fit between the flexibility aspirations of both employees and the company.

Therefore 'a less complicated' scenario is developed in which a form of wish rostering is incorporated, leading to a small change for both employees and team leaders/management. This change is not huge, because both shifts and roster stay fixed.
In this scenario the employee can view his basic schedule for the next 4 weeks (2 shift worker) and knows his basic schedule for those weeks.

Basisrooster	*week 14*	*week 15*	*week 16*	*week 17*
	05-04 tot 09-04	12-04 tot 16-04	19-04 tot 23-04	26-04 tot 30-04
maandag	V 06:00-14:00	M 14:00-22:00	V 06:00-14:00	M 14:00-22:00
dinsdag	V 06:00-14:00	ATV	V 06:00-14:00	M 14:00-22:00
woensdag	V 06:00-14:00	M 14:00-22:00	V 06:00-14:00	M 14:00-22:00
donderdag	V 06:00-14:00	M 14:00-22:00	V 06:00-14:00	M 14:00-22:00
vrijdag	V 06:00-14:00	M 14:00-22:00	V 06:00-14:00	M 14:00-22:00

Figure 4.7Example of basic schedule for a 2 shift-worker.

In this example the forklift driver normally works the early shifts in week 14 and 16 and the afternoon shifts in week 15 and 17. On Tuesday 13 april (week 15) he has a day off as result of reducing work hours (ATV).
Before team leaders make the definitive schedule the forklift drivers can indicate preferences up to two a week. These preferences include other working hours then scheduled in their basic schedule.

One week before the week starts the team leaders make the definitive roster. They determine if the employee can work the preferred hours. Before changing the basic schedule of an employee towards his preferences, the employees who did not change their basic schedule will be assigned to the roster. Then those employees with a preference that change his basic schedule will be assigned.
After that moment the fixed employees are assigned and the last workplaces that are left will be outsourced to temporary workers from outside Grolsch. This matches current practice and within this concept those workers make it possible that the forklift drivers with a fixed contract at Grolsch have the possibility to work the desired (other) hours.

4.5 Choosing the best-fit

To start with a pilot one of the above scenarios should be chosen to be implemented. Therefore several criteria are put together, to get a better picture about the pros en cons of the different scenarios.

Criteria	*Scenario 1*	*Scenario 2*	*Scenario 3*
Insight Management	+	+	+
Workload team leaders	+-	+-	+
Workload forklift drivers	-	+-	+
Amount of change	+	++	-
Everyone takes part in pilot	++	--	++

Social flexibility	-	+	+-
Economic flexibility	+	-	+-
Support current practices/processes	-	--	+

++ = *very good; + = good; +- = okay; - = weak; -- = very weak*

In conversations with management, team leaders and the workgroup (described in 3.3.1) the different criteria were discussed.
The team leaders were very clear about shift times. They stated that with the current data gathering it is really difficult to integrate variable shift-times next to the morning, afternoon and day shift. The chains before the IT&M department decide more or less the way of working and as the IT&M department should react primary to the production part, the same scheduling is used mostly. In addition, most forklift drivers do not have the wish to change their roster, so it is better to change not that much.
In the meeting with the workgroup all scenarios were worked out and clarified after which the participants could gave their opinion about what would be the best solution for the IT&M department. The forklift drivers stated that they like the variation in which the flexible work schedules do not cost much time in combination with the actual change.
The management was clear that it was important to formalize the current situation more and give their employees better possibilities to work flexible.
After this meeting all participants stated that scenario 3 would fit best at this moment. Especially the amount of change should not be that high and still people get the possibility to let their wishes taken into account beforehand.
People are inclined to choose something that is close to them. Therefore the choice for this scenario in which the amount of change is not that high can be seen as a limitation as is can be the nature of people to act that way. But all parties involved had the same idea about what scenario should be implemented, so the amount of change could be a limitation, but is not a reason to choose another scenario.

Reactions
During the work meeting some forklift drivers stated that there would not change that much for them as they probably would not change anything and if they do, they can do it right now already. The forklift drivers had the opinion that it's more or less the same as it was before, with the exception that it is now formalized.
The management reacted to that comment stating that it is exactly what is important for the management, to become aware of the need for flexibility. Also they made clear that really starting up such a pilot can stimulate employees to think more about their preferences instead of just working the schedule that is written for them.

Chapter 5 Implementation and evaluation

In this chapter the proposed scenario for flexible work schedules will worked out completely after which that scenario will be put into practice at Grolsch until the end of the year (9 months total). The pilot starts during this research, so the first results will be measured and some outcomes of these results will be observed and examined.
It is of course important that Grolsch can measure how the pilot is received by their employees and therefore a survey will be created to do so. In the last part of this chapter this survey will be described together with some other possible measurements.

In this chapter, the mentioned parts will answer the last sub question:
How do you manage a pilot within the IT&M department and how can the effects of such a pilot be evaluated?

5.1 Implementation of scenario 3

Within the new scenario it is important to take the different comments of forklift drivers, management and team leaders into account. This way, the new system is sure to meet with all relevant demands and wishes.

At first a distinction between the forklift drivers who work in a 3 shift-work and those who work in a 2 shift-work and in day duty is made. Day-workers work the same shifts every day, every week, were 2 shift-workers change shifts every week. 3 shift-workers have another repeating schedule as they work 3 different shifts every three weeks. Therefore forklift drivers who work in nights shifts also (3 shift work) can submit their preferences (wishes) six weeks in advance, because they have a cycle of three weeks.
The 2 shift-workers and day-workers would have the possibility to submit their preferences every four weeks, in advance of the final schedule.
It is important to know for forklift drivers what their basic schedule would look like before submitting any preferences, so as shown in figure 4.3, they see their basic schedule first, to make clear to the forklift drivers what shift they should work normally and whether they have special days during those weeks. Special days would be reducing work hours or official holidays. Then they will be given the possibility to submit adjustments to this schedule.
Figure 4.3 described how their basic schedule would be. In the form below forklift drivers can indicate different adjustment by filling in the weeks they like to change.

week 14			Ocht		Dag		Late Dag		12:00-20:00		Middag
			Ocht		Dag		Late Dag		12:00-20:00		Middag
week 15			Ocht		Dag		Late Dag		12:00-20:00		Middag
			Ocht		Dag		Late Dag		12:00-20:00		Middag
week 16			Ocht		Dag		Late Dag		12:00-20:00		Middag
			Ocht		Dag		Late Dag		12:00-20:00		Middag
week 17			Ocht		Dag		Late Dag		12:00-20:00		Middag
			Ocht		Dag		Late Dag		12:00-20:00		Middag

Figure 5.1 Form to indicate changes

The figure below shows the form of a 2-shift worker, who works in the even weeks in the morning and in the odd weeks in the afternoon. This to make clear what exactly such adjustment could be.

week 14	Woensdag		Ocht	X	Dag	X	Late Dag		12:00-20:00		Middag
			Ocht		Dag		Late Dag		12:00-20:00		Middag
week 15			Ocht		Dag		Late Dag		12:00-20:00		Middag
XXXXXX			Ocht		Dag		Late Dag		12:00-20:00		Middag
week 16			Ocht		Dag		Late Dag		12:00-20:00		Middag
XXXXXX			Ocht		Dag		Late Dag		12:00-20:00		Middag
week 17	Maandag		Ocht		Dag	X	Late Dag	X	12:00-20:00		Middag
	Vrijdag		Ocht		Dag	X	Late Dag		12:00-20:00		Middag

Figure 5.2 Possible changes

This particular forklift driver prefers not to work from 06:00-14:00 on wednesday in week 14 and on that same day he prefers to work from 08:00-16:30(Day) or 09:30-18:00(Late day). In week 15 and 16 he has no other wishes than just work his basic schedule.
In the last week of this form, week 17, he prefers to work on Monday in the day shift (08:00-16:30) or late day shift (09:30-18:00) instead of the afternoon shift (14:00-22:00) and on Friday he only wants a change to a day shift if possible.

This form offers forklift drivers the possibility to ventilate their wishes a month in advance. As mentioned before the final schedule is only made one week in advance, so giving preferences a month before is early enough. This also gives forklift drivers the possibility to see their upcoming schedule, see what they need in their social life and whether that matches with their schedule.

In consultation with management, team leaders and the workgroup(described in 3.3.3) we decided to set some boundary conditions that will count during this pilot period. These boundary conditions will be explained afterwards.
The boundaries are:

1. Maximum of 2 changes during 1 week
2. Forklift drivers are not guarenteed that they will get the desirable shift, but team leaders will strive for that shift
3. There is no discount on the team surcharge, also if an forklift driver works less inconvient hours
4. A point system is created to give everyone equal chances for corresponding wishes

Maximum of 2 changes during 1 week
The Working Hours Act has to be taken in consideration. This act, described in 4.1.4, stated that between two working days there should be a rest period of at least 11 hours. Therefore, changing towards complete new schedules can unbalance this rest period and that would not fit a forklift driver.
Next to that, it is important that forklift drivers stay in touch with shiftwork. They have their cycle and are used to this cycle. By changing too much in this cycle the danger is that forklift drivers lose their regularity.

Forklift drivers are not guarenteed that they will get the desirable shift, but team leaders will strive for that shift
This one speaks for itself. The planners (team leaders) cannot create work that is not there. They have to keep their planning to the forecasted demand and production and therefore there is not always another shift available. It is important that forklift drivers understand that their preferences are not always guarenteed and therefore when there are not enough shifts to divide, they should take a day off.

There is no discount on the team surcharge, also in case a forklift driver works less inconvient hours
The pilot was constructed to give forklift drivers the opportunity to work preferred hours It is a test to see if these forklift drivers needs more flexibility and how that can be realized. To stimulate and not discourage forklift drivers this condition will stay during the pilot so forklift drivers, can find out what they want.

A point system is created to give everyone equal chances for corresponding wishes
It could occur that different forklift drivers have the same wish on the same day. If in such occasion only one forklift driver his wish can be fulfilled it is fair to give a credit to the one who is disappointed. In that case the next time such occasion will take place the forklift driver with a credit will be favoured by getting his preferred change.

3-shift work
Next to these boundaries for all forklift drivers there is also a hard boundary for the 3-shift workers only. As the Working Hours Act has different rules concerning night shifts it is really hard to change working hours during a whole week with night shifts. Therefore in consultation with the 3-shift workers and the management it was decided that in the weeks they work in the night they cannot change any of their schedules.

Appendix 5 shows how this is applicated in the form of the 3-shift workers and how it is provided to these forklift drivers. Also the complete form for 2-shift workers is given, which is almost the same as it is for a day worker, with the exception that only times they have to work differ.

Process
With this new form the forklift drivers were given their basic schedule two weeks before the cycle starts. Then the forklift drivers had a week to submit their preferences by turning in the form to the team leaders. The team leaders make a planning every week for the next week. This schedule is released on Thursday, 4 days before the schedule takes effect, so it is on short notice that forklift drivers know how their actual schedule would be.
The following timeline probably will give a better explanation about the exact process.

Figure 5.3 timeline

- week 1: The basic schedule for the whole year is known for both team leaders and forklift drivers
- week 10: Forklift drivers have to hand in their preferences for week 12 until week 15
- week 11: Team leaders make a planning for week 12 with the preferences of the forklift drivers
- week 12: Team leaders make a planning for week 13 with the preferences of the forklift drivers
- week 13: Team leaders make a planning for week 14 with the preferences of the forklift drivers
- week 14: Team leaders make a planning for week 15 with the preferences of the forklift drivers

This process (week 10 until week 14) is repeated every 4 weeks for the 2-shift workers and day workers. The 3-shift workers have as mentioned a repeating process of six weeks.

5.1.1 Guidance stakeholders

In order to let the pilot succeed a meeting with all forklift drivers and team leaders was arranged. In this meeting different aspects were discussed.

Forklift drivers
The different boundaries were explained to the forklift drivers so it was clear what was possible (and what not). Next to that the schedule the forklift drivers have to fill in beforehand needed some explanation. Filling in the names of days (see figure 5.2) instead exact dates was one thing that was explained as a forklift driver pointed out having problems finding the exact date.

Team leaders
The team leaders have to guide the pilot until the end of 2010. The first few months the team leaders have not that much work, because the attendance of me as facilitator. After this first few months, they have to hand out the schedules to the forklift drivers and notice the changes that forklift drivers have. Therefore the basic schedule with free days was made before, so the team leaders had no extra work in providing these schedules.
Another thing thas was taken care of beforehand was a document for the last boundary. A simple document was created on the hard disk of the team leaders in which the points for the point system were registered.

5.2 First results

This research took place during the first months of the pilot, so there was the possibility to look how the pilot developed.
Answers to how forklift drivers used the possibility to change their schedule and also the control of fulfillment of the capacity afterwards could be given in this section.

5.2.1 Actual wishes

Before the pilot started at least eight forklift drivers stated that they would change something in their normal schedule. In the first two months it became clear that only three forklift drivers did so far, out of the 21 who are taking part in the pilot.
These three forklift drivers had different preferences, as one of the forklift drivers had problems with working the early shifts (06:00-14:00) and preferred some day-shifts (08:00-16:30) instead of an early shift. Another had a social life activity every Wednesday and therefore would work earlier during Wednesday when he had to work in the afternoon (14:00-22:00). In the weeks he worked in the morning he preferred to work in a day shift on Thursday for the same social activity.
The last forklift driver who had a wish was to start earlier on Friday, when his basic schedule was from 14:00-22:00.
There were 16 wishes in two months in total. 11 out of 16 wishes were realized in the final schedule. Out of the other five wishes there was still a realization of three wishes in the actual schedule, by giving the forklift driver some hours off earlier or the wish was realized by transferring the wish to an earlier day (in case of the day-shift instead of morning-shifts) during the week. In these two months there was a positive fulfillment of wishes of 88%, which is quite good.
Two forklift drivers came up with the same wish for one day during these two months and only one of the wishes was rewarded as there was no room for two changes. Therefore the forklift driver who had to work according to his basic schedule was awarded with a credit, so he is in favor the next time this occurs.

Commentary
The problems that occur by taking into account the wishes of the forklift drivers is the change towards day shifts is sometimes harsh. Especially when the demand for work is not that high and there are not many flexible workers needed, the dayshifts are all fulfilled by fixed workers. Therefore at that time in that situation it is not possible to give a forklift driver a day shift as all day workers have to be scheduled. Only in case of reduction of working hours or free days in these periods it is possible to approve these preferences.
Next to that the hardest day to change shifts is on Friday. On Friday there is limited demand of work as some production-lines work from Monday to Thursday and also the cargo of transport containers is mostly on Monday to Thursday. Therefore wishes of forklift drivers to change their shift on Friday are very hard to realize.

5.2.2 Fulfillment capacity

For two months the demand for capacity and the actual request during the day on all workplace were analyzed. First of all the actual planning was taken into account and afterwards the team leaders were asked how busy it was on the different workplaces. Figure 5.4 shows an example of a scheduled day of Wednesday 24 March.

Werkplekken:			
CM3	V M N	*Uitzendkrachten:*	
Opz. Pro	V M	V	CM3
Lossen	V M	M	CM3
Afh. Pro	V M	N	CM3
Klaar/laden	VV MM DL	D	BML
Laden 40ft	D		
Laden 20ft	D tot 14:30	DL=09:30-18:00	
Orderpicken	D M	D=08:00-16:30	
BML	D	V=06:00-14:00	
WOS	D	M=14:00-22:00	
Diverse		N=22:00-06:00	

Figure 5.4 Actual planning of 24 March 2010

On this day there were 6 morning shifts, 7 afternoon shifts, 4 ½ day shifts and 1 night shift. During this day four flexible workers were present, who all worked different shifts (V, M, N and D).
The day after the team leaders stated the following:

- There was less production, so the forklift driver with the DL-shift was given a reduction of working hours.
- The forklift driver of Laden 20ft. worked most of the time at the WOS
- In consultation with a forklift driver of Opz. Prod. he was free two hours early (20:00)

This outcome could appear since the actual planning could be better. However during the months the capacity fulfillment was checked it appears that it differs from day to day what exactly the actual demand is.
Figure 5.5 shows an example of a day in which afterwards no changes would be made by team leaders.

Werkplekken:			
CM3	V M N	*Uitzendkrachten:*	
Opz. Pro	V M	M	CM3
Lossen	V M	N	CM3

Afh. Pro	V D MM	N	V	Afh. Pro
Klaar/laden	VV MM	DL	Dl	Klaar/l
Laden 40ft	D			
Laden 20ft	D		DL=09:30-18:00	
Orderpicken	D M		D=08:00-16:30	
BML	D		V=06:00-14:00	
WOS	D		M=14:00-22:00	
Diverse			N=22:00-06:00	

Figure 5.5 Actual planning of 15 March 2010

On this day the exact amount of people was needed and no changes were made during the day by team leaders.

First conclusions capacity
Therefore the following conclusions can be taken from this check:

1. The planning is pretty tight already
2. It is hard to move shifts during the day. Production works in same shifts as the IT&M department most of the time. Mostly the work that has to be done is a reaction to what production brings.
4. Stop working before the end of the shift happens frequently, but it cannot be predicted in advance. The demand of clients can fluctuate from day to day and can also change during the same day. Therefore it is hard to promise a forklift driver that he can quit his shift earlier, since that depends on the demand.
5. No recurring phenomenon's that went wrong every week (or day). Some week's forklift drivers can stop working earlier whole week, some weeks they cannot stop working the whole week. There is nothing sure beforehand.

By moving shifts within the schedule no forklift driver can be spared. Most workplaces are time driven and should be fulfilled by a forklift driver from 06:00 to 22:00 and some workplaces require continuous occupation. At workplaces that are scheduled until 22:00 most of the time a forklift driver is needed until 22:00, with sometimes an exception which cannot be predicted more than one day in advance.

5.3 Evaluation

In order to evaluate the effects of the pilot there are different factors that can be evaluated. In the first section some concepts will be listed after which these concepts will be worked out deeper in the next section.

5.3.1 Concepts that can be investigated

There are different aspects that can be investigated by Grolsch in order to evaluate the outcomes of the pilot.
An outcome that can be investigated is the chance in grade of absence. Next to that the efficiency and finally the opinion of stakeholders can be investigated.

Absence
By introducing flexible work schedules the grade of absenteeism could change.
Of course the outcome of this grade does not say directly if the pilot improves or deteriorates this outcome. For example one forklift driver can be sick for half a year and in that way have a big influence on this figure. Therefore in the survey for the team leaders some questions about absenteeism can be asked to get a better view about outcomes on this part.
However this change can be measured and therefore is a manageable tool to investigate.

Efficiency

With the change towards flexible work schedules perhaps the amount of full time employment on the IT&M department could be downgraded by making tighter schedules with the wishes of forklift drivers. If so, the amount of temporary workers that is needed should decrease and could be measured.
Next to that the workload of team leaders should be measured. The time it cost to implement a new schedule every week and the effort it gains.

Satisfaction stakeholders
The different stakeholders could have similar experiences with the pilot. In order to check these experiences on satisfaction, relevance and increase of work-life balance a survey can be developed in order to test these experiences.
Both forklift drivers and team leaders are direct participant in this pilot, but are different stakeholders. Therefore it is best to develop separate surveys for both groups as they could have different insights.

5.3.2 Measurement of concepts

The different concepts explained in the last section can be measured different ways. This section will give tools to measure these different concepts.

Absence
The planning program the team leaders' use when making the final schedule contains the exact amount of workplaces filled in during the years. Data is saved over the years, so it is really easy to see how the grade of absenteeism was the last year and if it changed during the pilot.

Efficiency
The influence of these new schedules on the workforce can be investigated by asking experiences of team leaders in a survey, which will be developed within the survey for team leaders. Next to that the increase amount of workload team leaders have within their work as planner could be investigated within this survey.
Next to that further research can be done towards the fulfillment of the capacity in hand with the amount of workers needed during the day, but that is a part which should have more research in the future. Perhaps the fulfillment of workplaces should differ from how it is.

Satisfaction forklift drivers
The survey, which is developed for forklift drivers, has different aspects. It is important to make clear what variables are important to be verified and therefore a list will be put together. During the earlier interviews also insights about cooperation with each other and functioning are asked, but in this survey this part will be verified also.
The exact design of the survey will separated three parts, in which the *first part* is with questions about how the employee experiences the work at Grolsch.

- Do they like their work
- What is the responsibility
- Autonomy

In the *second part,* questions about the role of the team leaders and how forklift drivers associate with them are asked.

- Do they have enough space
- How is the relation with the team leaders
- Do forklift drivers feel acknowledgement of team leaders

In the *third and last part*, the questions about the actual pilot will be asked. Here the focus will lie on different aspects as:

- Satisfaction
- Relevance/Addition

- Work-life balance
- Future

For the complete survey which is developed for Grolsch see Appendix 6. The complete survey is in Dutch as all forklift drivers are Dutch.

Satisfaction team leaders
For the team leaders also a survey was developed in order to investigate their experiences with the pilot. More or less the same design with the same variables was followed in the first two parts, where in the second part their association with the forklift drivers is investigated.
In the *third part* the following additional variables were tested:

- Workload
- Absenteeism
- Experiences of the pilot

The complete survey as developed for Grolsch is in Appendix 7. The same goes for the survey for forklift drivers.

Chapter 6 Conclusions & Recommendations

6.1 Conclusions

The main question of this research was:
"What is a suitable design of a flexible work schedule at the IT&M department of Royal Grolsch and what are the effects of the implementation of such a design?"

To come to a good answer to this question, it is divided in different parts.
An answer to the first part of the question was given by identifying the characteristics of Grolsch and especially those of the IT&M-department. After identifying these, a suitable design was invented, which was implemented by means of a pilot. Analyzing the effects of this implementation, as answer to the last part of the main question, was taken care of by clear evaluation-tools in which different aspects should be analyzed.

Suitable design
It became clear that the process industry, Grolsch in particularly, has its own way of operations and planning. To make changes in working conditions at the IT&M-department in this process is hard. There are fluctuations all over the year caused by different reasons and especially scheduling is hard because of that, as there is no certainty about the amount of work available in the near future.

However there are some reasons why Grolsch could start with flexible scheduling in order to improve work-life balance.
First of all another way of scheduling could be an answer towards the ageing workforce. Older employees could have problems with working in shifts, but would not change towards day work completely in order to maintain the same salary. They work in fulltime positions and by offering these older employees the possibility to start work later some days they could stay healthier and also maintain their same level of work performance.
Next to this it can offer more efficiency to Grolsch, as a flexible workforce could help in scheduling tighter.

Some more organizational conditions have influence on a suitable design. The present open culture at the IT&M-department helps in introducing a more flexible design. With that, the interchangeability of the forklift drivers helps also.
What could be a problem is the diversity of the forklift drivers. They are all men and over half of the forklift drivers are above fifty. In the interviews with the forklift drivers it became clear that this was no problem, because they have different households and different preferences within their private lives.
An organizational problem could be the kind of work and the analyses of the supply of labor and the planning of this labor. Within the industry this concept is not widely adopted, but the IT&M-department has informal changes of shifts already. The season changes, and the lack of clarity of demand because of that, make it hard to create a definitive schedule long before the actual date. Amount of work can change during the day and therefore it is hard to take wishes of forklift drivers into account.

Next to these characteristics, the interviews with all stakeholders gave a perfect insight about what kind of design should be created. It became clear that the forklift drivers would not like a lot of changes. Also the team leaders stated that changing the idea of shift times is not that easy too, because the IT&M-department is at the end of the value chain and reacts on production. Therefore the final suitable design which was chosen by forklift drivers, management and team leaders was a wish rostering-version in which everyone participated, but in which forklift drivers had the opportunity to change nothing at all. In this way Grolsch could test the possibilities of flexible scheduling within restrictions that suit all stakeholders.

Effects Design
As stated there is a suitable design which could be tested at the IT&M department of Grolsch. This design was implemented through starting a pilot. This pilot gave an indication of how a flexible work schedule would work within the IT&M-department in the first few months.
During the first months of the pilot it became clear that most forklift drivers hold tight to their basic schedule and had no intention to ventilate preferences.
Furthermore the predictability of working demand made it hard to make real changes in workplaces and working times. This seems to be the hardest part in integrating a new scheduling system.

During this pilot forklift drivers, team leaders and management have gotten experiences with the wish rostering design by participating.
The pilot can also create more support among the forklift drivers, as this support was tested negatively in earlier research. By participating they could see their advantages of the new system.
In order to test the effects of the pilot for both team leaders and forklift drivers, two different surveys were developed. These surveys provide an overview to the management how both stakeholders see the feasibility of flexible scheduling, but also how they experience working within Grolsch and the cooperation with each other. Furthermore the effect of the pilot in combination with the grade of absenteeism can provide figures towards management about the effects of flexible scheduling.
The forklift drivers have to answer questions about satisfaction, future use of the wish rostering-system, relevance and their work-life balance, as an effect of the pilot were investigated. Next to that, more generally questions about cooperation with stakeholders, autonomy, pleasure and responsibility were asked.

6.2 Limitations

During this research it became clear that not every forklift driver liked to see changes within their schedule. Most employees like the consistency they have in their working times and have not the intention to change that. However, it became clear that the employees discussed the flexible schedules internally and this could have strengthened the idea of changing nothing at all as a team, so there would not change that much. In that way probably the optimal work-life balance for some of the employees was abstained, because of that. As stated in the interviews with forklift drivers there were more of them who would like some changes within their schedule, but in the end only three of them really submit these preferences in their wish roster.
Next to that there is less literature available about flexible work schedules in manufacturing sectors and therefore the framework that is used was not that specific towards this sector.
Because there was not that much attraction towards flexible scheduling by the forklift drivers it was really hard to test whether much changes simplify or make it harder to schedule employees towards their preferences.

6.3 Recommendations

It is said before, but during the first months of the pilot it became clear that scheduling the forklift drivers is tight already and that it is hard to move shifts during the day. However the pilot has shown during the first months that the implemented way of scheduling did not include a lot of extra work to both team leaders and forklift drivers. Therefore a first recommendation is that Grolsch should **implement wish rostering definitive** within the IT&M-department, as it offers the employees possibilities to improve their work-life balance and it does not cost much time for the team leaders or extra costs for the organization.

Of course there are some aspects that could be better to improve the implementation of such a system. With the current knowledge about the production planning and the demand of customers it is hard to predict the availability of the workforce in advance.
One recommendation towards this problem could be to start an **investigation towards the technical planning** in Grolsch whole production cycle. As the team leaders already stated that sometimes forklift drivers do not have a lot of work it could be possible to change the exact workplaces somehow to spare FTE's. During this research there has been some effort in this area, but as the focus lay on introducing more flexible work schedules it had no real aim. Still this could be an economical benefit for Grolsch and could also give planners more possibilities to probably schedule different shift times.
Another possibility towards more efficient planning could lay within the **communication with buyers** of the products of Grolsch. Seasons have influence on the amount of work available, but so have buyers with their marketing strategies. This influence can be huge and for the exact planning it can cause changes and possible problems.
An internal problem that occurs at Grolsch is the **internal communication** between departments, and also the internal communication within the department itself. As the IT&M-department is a department in end of the line, it has to react towards changes earlier in the chain. The communication about these changes is not always good. For example it occurs that planners should find out themselves that some lines in production stop on Wednesday instead of Friday and therefore it is not necessary to schedule a forklift driver for such a workplace.
Since Grolsch wants more experience with flexible work scheduling, they can use a wish rostering-system in other departments. As departments have different characteristics and conditions the pilot at the IT&M-department is no direct answer for other departments as well. Suppose that this pilot does not bring Grolsch the satisfaction it is looking for, it would not mean that flexible work scheduling is a bad option. Therefore Grolsch **could introduce flexible work scheduling at other departments** too, as conditions and/or characteristics needs solutions that cannot be found within their regular way of scheduling.

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Appendixes

Appendix 1 Management summary Van Aard (2008)

A research has been conducted at the IT&M department of Grolsch about the feasibility of flexible work schedules. The central question of the research is:
"To what extent are flexible work schedules feasible at the IT&M department of Royal Grolsch and, when it is feasible, how can a flexible work schedules system be designed and implemented?"

Besides the feasibility test, possible flexible work schedules systems (scenarios) are designed, one scenario has been chosen and advices are given to implement this flexible work schedule system. To guide the research and the advices several sub-questions have been formulated that are answered in several chapters of the report.

1. What is self-rostering, how can its feasibility be assessed, how can a self-rostering system be designed and implemented and what does the literature say about that?

In the literature several definitions and descriptions of self-rostering were given. Based on this information a new definition of self-rostering has been developed:
"Self-rostering is a system where (1) an employer creates a framework based on the organizational requirements in which (2) employees can indicate their preferences concerning working hours, working days or shifts, that, (3) by means of an authorized scheduling group or individual, (4) and possibly with the support of computer software and/or after a compromising dialogue between employees, (5) results in work schedules where the needs of the employee and the demands of the employer converge."

The feasibility of self-rostering can be tested by means of seven preconditions:
1. All parties involved should be willing to work with self-rostering;
2. The management should have strong leadership;
3. The corporate culture should allow self-rostering;
4. The self-rostering group should have a sufficient size;
5. The self-rostering group should have a homogeneous composition based on working skills and a heterogeneous composition based on the demographic aspects of the workforce;
6. There should be a feeling of collegiality between the employees;
7. It should be possible to predict the working demand sufficiently in advance.

Because literature about self-rostering is rare, interviews with experts in the field of selfrostering were conducted. The experts have given the necessary information to develop guidelines for designing a self-rostering system. The first guideline formulated concerns 'compile a project group'. The project group should consists of a representative of the union, representatives of the group for whom self-rostering is intended, a planner, a representative of the management (the initiators) and a neutral external party. Secondly, SMART goals should be formulated in order to measure the results of self-rostering. Another important aspect in designing a self-rostering system is that it should meet the preconditions set by the employer, the employees and by law and regulations. Thirdly, it is advisable to define possible self-rostering systems in order to compare the different scenarios and choose the best one. And finally, an individual rewarding system should be developed because selfrostering will result in individual rosters.

Regarding the implementation of a self-rostering system, guidelines has been developed as well. Firstly, it is advisable to run a pilot in order to measure the (positive and negative) consequences and assess the goal attainment. With implementing self-rostering 'time' is an important aspect, because people find it difficult to change. Nothing should be rushed. Also supportive management is important to make self-rostering a success. The management should be enthusiastic to motivate the parties involved in the self-rostering process. Finally, to stimulate the parties involved and create support, it to inform them well enough about the self-rostering philosophy.

Based on this information a conceptual model has been developed:

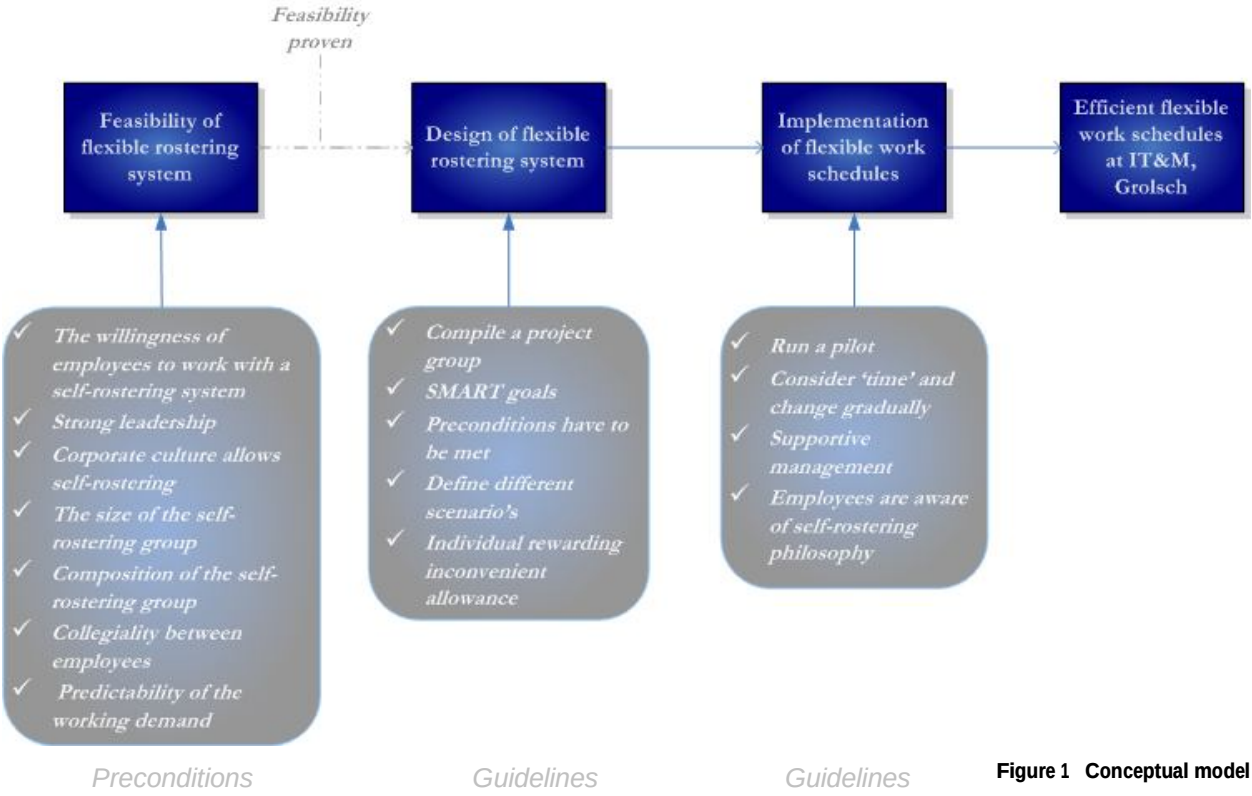

Figure 1 Conceptual model

2. "Are flexible work schedules feasible at the IT&M department taken the preconditions from the Theoretical Framework into consideration?"

The feasibility has been tested based on a feasibility number. The feasibility number has been calculated based on a formula: $F(XA0)=D(R_nW_n)$, in which R stands for the result of the measurement of the precondition, the W stands for the weight of the precondition, the $_n$ for the number of preconditions and F for the feasibility number which makes it possible to give a judgment of the feasibility. Based on the preconditions flexible work schedules are feasible at the IT&M department of Grolsch. However, the feasibility was not tested very strongly (with a feasibility number of 1.00 on a scale from -8.16 to 8.16). This weak tested result is mainly due to the fact that the forklift drivers had a low willingness to work with flexible work schedules and the insufficient predictability of the working demand. Moreover an average-score on 'strong leadership' and 'composition of the self-rostering group' have contributed to a weak confirmation.

5. "What are the different scenarios (possibilities) of flexible work schedules at the IT&M department based on the wishes, goals and framework conditions

set by the employer (Grolsch) and the wishes of the employees (the forklift drivers and the team leaders)?"

The wishes of the forklift drivers, team leaders and management were gauged and were combined in a 'meet-must-may be'-model, which has been taken into consideration during the designing stage of the scenarios. Two scenarios have developed. The first scenario concerned the 'blocks schedule' scenario in which the forklift drivers can choose between different blocks, depending on the shift they are classified in for that week. The second scenario concerned the 'fixed and flexible working times' scenario in which a part of the forklift drivers workforce stays in fixed groups and do not have to schedule flexibly. The other forklift drivers, who cooperate voluntarily, can choose between different flexible blocks. The first scenario realizes economical flexibility more, whereas the second scenario focuses more on social flexibility.

6. Which scenario should be introduced at the IT&M department and how should Grolsch implement this flexible work schedules system?

The project group has chosen the scenario 'Fixed and flexible working times' as the flexible work schedules system that should be introduced at the IT&M department. In this system 21 persons stay in the fixed group. For the 'flexible' group 13 employees are needed. The 'flexible' employees choose their preferable flexible blocks over a period of a month. Every rostering period another group can indicate its personal preferable blocks first. The rules for the choosing process are amongst others determined by means of labor agreements and the Working Hours Act. The concept of 'self-managing' teams could be included in order to meet the wishes of forklift drivers and team leaders to let the forklift drivers chose their preferable work places.

For the implementation of the flexible work schedules system it is advisable to run a pilot. For the pilot at least 10 persons are needed for the 'flexible' group and 3 persons of the 'fixed' group should function as a kind of 'back up group'. Because the working demand of the IT&M department is difficult to predict a pilot period of one year is advisable. In one

year several seasons and situations will occur. Criteria for determining if flexible workschedules should be implemented based on the outcomes of the pilot are formulated based on the overall goals of flexible work schedules that are set by Grolsch.

Conclusion
For assessing the feasibility of flexible work schedules at the IT&M department of Grolsch the concept self-rostering was studied. The practical situation at Grolsch could therefore be compared to the theoretical background. It turned out that even though two preconditions were not fully met it did not lead to any difficulties regarding the feasibility of flexible work schedules at the IT&M department. It can be stated that the preconditions formulated for this research will measure the feasibility of self-rostering, but that the importance of the elements of these preconditions depends on the context of the organization or the department where self-rostering is implemented.

The feasibility of flexible work schedules at the IT&M department was not strongly confirmed. This was due to the fact that the willingness to work with flexible work schedules was negatively tested as well as the predictability of the working demand. The willingness was negatively influenced by the feeling of insecurity of the forklift drivers concerning the intentions and the consequences of the system and the feeling distrust of the team leaders regarding the competency of the forklift drivers to make an effective work schedules. These negative feelings can be improved by means of a pilot. The predictability of the working demand is insufficient due to ad hoc adjustments of other departments. A communication plan should be made in which clear agreements are made about an acceptable adjustment period and how adjustments should be communicated.

The scenario that was designed and chosen – ‘Fixed and flexible working times’ – does not differ that much of the current way of scheduling. The flexible work schedules system is a formalized approach of the flexibility of the current scheduling system, with the advantage that the social flexibility is reinforced. The pilot that has been defined in the research will help to implement the ‘Fixed and flexible working times’ system successfully. It will also help to create support for the system.

Flexible work schedules are a process that can only be successful if all parties involved make sacrifices and compromises. Therefore, it is important that all parties cooperate and communicate with each other. If this is realized, flexible work schedules are absolutely feasible at the IT&M department and be successfully in creating an effective working environment.

Appendix 2 Stappenplan AWVN en VAPRO naar Flexibel Roosteren

Oriëntatiefase

- Informatie inwinnen
- Bespreekbaar maken binnen de organisatie
- Huidige knelpunten bij inzet personeel inventariseren
- Good Practices bestuderen
- Nut en noodzaak bepalen

Fase beleidsthema's benoemen

- Arbeidsmarkt, nu en in de toekomst
- Work-life balance (zeggenschap over arbeids- en rusttijden)
- Vitaal blijven
- Levensfasebewust beleid
- Opleiding en competenties
- Anticiperen op de wisselende klantvraag

Fase voorwaarden vaststellen

- Competenties (inzetbaarheidsbewijs)
- Roostervoorwaarden (wet- en regelgeving, bedrijfsmatige en medewerkersbehoeften)
- Voorwaarden veranderproces
- Arbeidsvoorwaarden

Procesfase

- Werkgroep samenstellen (vertegenwoordigers MT, OR, vakorganisatie, lijnmanager, medewerkers), draagvlak creëren, opties ontwikkelen voor oplossingen
- Verder onderzoek of analyse
- Vaststellen diensten en rooster
- Definitieve voorwaarden afspreken

Implementatiefase

- Communicatie met medewerkers
- Beheerste verandering via bijvoorbeeld een pilot
- Inzet (beleids)instrumenten
- Aandacht blijven houden voor de thema's en voorwaarden
- Evaluatie na langere periode (bijvoorbeeld een jaar)

Appendix 3 Questions different stakeholders

The different stakeholders had different questions.
In the semi-structured interviews with the forklift drivers the following questions were the main questions next to additional questions that came during the interview:"

1. Hoe ziet u uw huidige rooster, zou u daar iets aan willen veranderen?
2. Heeft u er problemen mee om een maand van tevoren uw voorkeuren aan te geven?
3. Zou u iets willen wijzigen aan uw huidige rooster?

With team leaders and management there were only conversation interviews as I could ask what I want anytime I want.
Some questions that came up during my research:

Team leaders:
1. Hoe ziet de huidige planning eruit
2. Willen er heftruckchaffeurs naar jullie gevoel iets veranderen?
3. Hoe gebruiken jullie het planningsysteem
4. Is er te controleren wie er wanneer ziek is met het planningsysteem?

Appendix 4 Answers to interviews with forklift drivers

HFC's	***Verandering?***	***Invullen van te voren***	***Wijzigingen?***
1	Ideale rooster is zoals het is nu	Geen probleem mee	Later beginnen in O niet erg
2	Ideale rooster is zoals het is nu	Hoeft niet zo	Nee, zou niets veranderen
3	Ideale rooster is zoals het is nu	Hoeft niet zo	Nee, zou niets veranderen
4	Ideale rooster is zoals het is nu	Geen probleem mee	Niet iets anders
5	2 uur later in O wel prettig, mits in overleg	Geen probleem mee	Woensdagavond niet werken als het kan
6	Liefst zonder middagpauze	Voegt weinig toe, verandert niets	Nee, zelfde werkplek meestal
7	Ideale rooster is zoals het is nu	Goede zaak	Nu niet, misschien in toekomst
8	Ideale rooster is zoals het is nu	Niet erg	Minder werken mag wel
9	Ideale rooster is zoals het is nu	Niet tegen, maar ook niet voor	Goed zo, goed op te plannen
10	Ideale rooster is zoals het is nu	Ideaal, prettig om te kunnen	Op dit moment niet, toekomst?
11	Ideale rooster is zoals het is nu	Liever niet, je weet waar je aan toe bent	Niets, anders langere reistijd
12	Ideale rooster is zoals het is nu	Wel handig	verandert alleen niet veel
13	Ideale rooster is O M O M	Zelf aangeven is prima, geen nadeel	nee, regelmaat is prettig
14	Ideale rooster is O M O M	Gebeurt al informeel, bang voor misbruik	Niet veranderen
15	V V V V ID / M M M M ID M	Erg prettig, duidelijke wensen	Als bij verandering aangegeven,
16	Ideale rooster is D/M/D/M vanwege plek	Geen probleem mee	Weinig verandering.
17	Ideale rooster zou N/M/O zijn	Geen probleem mee	Weinig verandering, tevreden met rooster
18	Ideale rooster is zoals het is nu	Zou wel makkelijk zijn	Nee, rijdt ook vaak met iemand mee
19	D M D M is ideale rooster	Graag, aangeven is prettig	O liever wat later, is zwaar
20	Ideale rooster is zoals het is nu	Geen toevoeging, wordt HFC niet blij van	in O zou ik wel late D willen draaien
21	Ideale rooster is zoals het is nu	Kan wel	Niet nodig, snippert wanneer nodig
22	Ideale rooster is zoals het is nu	Niet vervelend	Nee, als hij niet kan, kan hij echt niet
23	Op zich niet anders, alleen D ipv M of O is wel fijn	Goed, aangeven van uren is prettig	Af een toe een D ipv O of M is lekker

Appendix 5 Form forklift drivers

Example of schedule forklift driver (2-shift)

Basisrooster	*week 18*	*week 19*	*week 20*	*week 21*
	03-05 tot 07-05	10-05 tot 14-05	17-05 tot 21-05	24-05 tot 28-05
maandag	V 06:00-14:00	M 14:00-22:00	V 06:00-14:00	**2e Pinksterdag**
dinsdag	V 06:00-14:00	M 14:00-22:00	V 06:00-14:00	M 14:00-22:00
woensdag	**Rugzak ATV**	M 14:00-22:00	V 06:00-14:00	M 14:00-22:00
donderdag	V 06:00-14:00	**Hemelvaart**	**Rugzak ATV**	M 14:00-22:00
vrijdag	V 06:00-14:00	M 14:00-22:00	V 06:00-14:00	M 14:00-22:00

Wil je iets veranderen aan je basisrooster?

week 18			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
week 19			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
week 20			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
week 21			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	

Verandering:
Schrijf de dag(en) achter de week en daarbij of je liever eerder/later begint, door kruisjes te zetten in de verschillende blokjes, om zo je voorkeur aan te geven. Dit kan een Dagdienst zijn, een late Dagdienst (Ldag), van 12:00-20:00 uur of anders.
Ook mag je bij anders de gewenste eindtijd aangeven waarop je in ieder geval klaar wilt zijn met je werk. Als laatste kan je met kleine of grote kruisjes aangeven welke vervangende dienst je het liefst werkt.
Randvoorwaarden:
1.Per week maximaal 2 veranderingen in je dienstrooster aan te geven. 2. Er wordt gestreefd naar de gewenste dienst, je hebt niet de garantie.
3. Er wordt niet ingehouden op je onregelmatigheidstoeslag, ook al draai je mogelijk iets minder onregelmatige uren 4. Bij overeenkomstige wensen eerlijke afwisseling via puntensysteem.

Example of schedule forklift driver (3 shift)

Basisrooster	*week 22*	*week 23*	*week 24*	*week 25*	*week 26*	*week 27*
	31-05 tot 04-06	07-06 tot 11-06	14-06 tot 18-06	21-06 tot 25-06	28-06 tot 02-07	05-07 tot 09-07
maandag	V 06:00-14:00	N 22:00-06:00	M 14:00-22:00	V 06:00-14:00	N 22:00-06:00	**Snipperdag**
dinsdag	V 06:00-14:00	N 22:00-06:00	M 14:00-22:00	V 06:00-14:00	N 22:00-06:00	**Snipperdag**
woensdag	V 06:00-14:00	N 22:00-06:00	M 14:00-22:00	V 06:00-14:00	N 22:00-06:00	**Snipperdag**
donderdag	V 06:00-14:00	N 22:00-06:00	M 14:00-22:00	V 06:00-14:00	N 22:00-06:00	**Snipperdag**
vrijdag	V 06:00-14:00	**ATV**	M 14:00-22:00	V 06:00-14:00	**ATV**	**Snipperdag**

Wil je iets veranderen aan je basisrooster?

week 22			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
week 23			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
week 24			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
week 25			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
week 26			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
week 27			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	
			Ocht		Dag		Late Dag		12:00-20:00		Middag	Anders:	

Appendix 6 Survey Forklift Drivers

Enquête heftruck chauffeurs

Deze enquête maakt deel uit van de opgestarte pilot in het kader van flexibel roosteren binnen de IT&M-afdeling. De enquête heeft als doel te onderzoeken hoe u deze pilot hebt ervaren. Zie je verbeterpunten, was het een succes of vond je het juist helemaal niets en hoe moet het volgens u nu verder.
Eerst zal ik wat algemene vragen stellen. Daarna wil ik ingaan op uw ervaring als heftruckchauffeur op de afdeling. Vervolgens stel ik enkele vragen over de omgang met de teamleiders, waarna tot slot enkele specifieke vragen over de pilot flexibel roosteren gevraagd zullen worden.

1. Uw naam:
2. Uw leeftijd:
3. Hoe lang werk je al als heftruckchauffeur binnen Grolsch:
4. Werkt u in ploegendienst of in dagdienst:

Deel 1; Functie bij Grolsch
Kunt u bij de volgende vragen aangeven in hoeverre u het ermee eens bent. Let op: Het gaat er om hoe u de functie ervaart.
Bij de beantwoording wordt gebruik gemaakt van een schaal 1-5 waarbij:

1 = helemaal mee oneens
2 = mee eens
3 = neutraal
4 = mee eens
5 = helemaal mee eens

	1	2	3	4	5
Ik heb plezier in het werk dat ik doe.	□	□	□	□	□
Mijn werk daagt mij uit mijn talenten in te zetten.	□	□	□	□	□
Ik weet welke resultaten van mij verwacht worden.	□	□	□	□	□
Ik voel mij gewaardeerd voor het werk dat ik doe.	□	□	□	□	□
Ik heb voldoende ruimte om eigen beslissingen te nemen.	□	□	□	□	□
Ik voel me betrokken bij beslissingen over mijn werk.	□	□	□	□	□
Mijn functie geeft mij voldoende mogelijkheden mijzelf verder te ontwikkelen.	□	□	□	□	□
Ik kan alles doen in mijn privé leven wat ik wil, mijn werk belast me daar niet in.	□	□	□	□	□

Zijn er nog bepaalde meningen over uw functie bij Grolsch die u belangrijk vindt en bij de voorgaande vragen niet genoemd zijn? Zo ja, zou u deze hieronder kunnen noemen en op dezelfde schaal als hierboven willen beoordelen?

	1	2	3	4	5
.....	□	□	□	□	□
.....	□	□	□	□	□
.....	□	□	□	□	□

Deel 2; De rol van de teamleider

Kunt u bij de volgende vragen aangeven in hoeverre u het ermee eens bent. Let op: Het gaat er om hoe u de rol van de teamleider ervaart.
Bij de beantwoording wordt gebruik gemaakt van een schaal 1-5 waarbij:

1 = helemaal mee oneens
2 = mee oneens
3 = neutraal
4 = mee eens
5 = helemaal mee eens

	1	2	3	4	5
1. De teamleider laat mij voldoende ruimte om zelf beslissingen te nemen binnen mijn werkgebied.	□	□	□	□	□
2. De relatie die ik met mijn teamleider heb, wordt gekenmerkt door openheid, eerlijkheid, vertrouwen en wederzijds respect.	□	□	□	□	□
3. De relatie die ik met mijn teamleider heb, wordt gekenmerkt door vertrouwen.	□	□	□	□	□
4. Ik voel mij vrij mijn teamleider om hulp te vragen.	□	□	□	□	□
5. Ik krijg de ruimte om aan te geven dat ik eerder weg wil.	□	□	□	□	□
6. De teamleider stimuleert de samenwerking binnen ons team.	□	□	□	□	□
7. Ik voel mij vrij mijn ideeën te delen met de teamleider.	□	□	□	□	□
8. Ik krijg voldoende erkenning van mijn teamleider voor mijn werk.	□	□	□	□	□

Zijn er nog bepaalde meningen over de rol van uw teamleider bij Grolsch die u belangrijk vindt en bij de voorgaande vragen niet genoemd zijn? Zo ja, zou u deze hieronder kunnen noemen en op dezelfde schaal als hierboven willen beoordelen?

	1	2	3	4	5
.....	□	□	□	□	□
.....	□	□	□	□	□
.....	□	□	□	□	□

Indien u nog overige op- of aanmerkingen heeft over de teamleider(s), zou u deze dan hieronder kunnen opschrijven?

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Deel 3; De ervaringen met de pilot 'flexibel roosteren'.
Kunt u bij de volgende vragen aangeven in hoeverre het op u van toepassing is.

1.Ik heb in mijn rooster veranderingen aangegeven in het afgelopen jaar
- Wekelijks
- Regelmatig
- Soms
- Nooit

Bij nooit ga verder met vraag 5

2.De verandering die ik aangaf is ook in mijn rooster opgenomen.
- Altijd
- Meestal
- Af en toe
- Nooit

3.Ik was achteraf blij met de verandering die ik aangegeven had.
- Altijd
- Meestal
- Af en toe
- Nooit

4. Kunt u bij de volgende vragen aangeven in hoeverre u het ermee eens bent. Let op: Het gaat er om hoe u de de pilot 'flexibel roosteren' heeft ervaren.
Bij de beantwoording wordt gebruik gemaakt van een schaal 1-5 waarbij:

1 = helemaal mee oneens
2 = mee oneens
3 = neutraal
4 = mee eens
5 = helemaal mee eens

	1	2	3	4	5
1. Ik heb een gewenste dienst vaker gekregen doordat ik mijn voorkeur kon aangeven.	□	□	□	□	□
2. De balans tussen mijn werk en mijn privé leven is verbeterd.	□	□	□	□	□
3. Ik ga met meer plezier naar mijn werk.	□	□	□	□	□

5.Ik had meer van het project verwacht?
- Ja, ...
- Nee

6. Ik wil in de toekomst mijn wensen graag blijven aangeven.
- Geen probleem
- Hoeft niet zo nodig
- Om een ander een plezier te doen
- Nee

7.Ik heb geen veranderingen in mijn rooster aangegeven omdat: (meerdere antwoorden mogelijk)

- Ik er geen behoefte aan had om op andere werktijden dan mijn basisrooster te werken
- Ik genoeg heb van veranderingen
- Ik graag in mijn eigen ploeg werk
- Ik verwacht in de toekomst in te moeten leveren op mijn ploegentoeslag
- Anders, ...
- Niet van toepassing

Indien u nog overige op- of aanmerkingen heeft over de pilot ‘flexibel roosteren’, zou u deze dan hieronder kunnen opschrijven?

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Hartelijk bedankt voor uw medewerking!

Appendix 7 Survey Team leaders

Enquête teamleiders

Deze enquête maakt deel uit van de opgestarte pilot in het kader van flexibel roosteren binnen de IT&M-afdeling. De enquête heeft als doel te onderzoeken hoe u als teamleider deze pilot hebt ervaren. Was het toepasbaar, vergde het veel tijd en vond u het een succes. En hoe denkt u dat het nu verder moet?
Eerst zal ik wat algemene vragen stellen. Daarna wil ik ingaan op jouw ervaring als heftruckchauffeur op de afdeling. Vervolgens stel ik enkele vragen over de omgang met de teamleiders, waarna tot slot enkele specifieke vragen over de pilot flexibel roosteren gevraagd zullen worden.

1. Uw naam:
2. Uw leeftijd:
3. Hoe lang werk je al als teamleider binnen Grolsch:
4. Werkt u in ploegendienst of in dagdienst:

Deel 1; Functie bij Grolsch
Kunt u bij de volgende vragen aangeven in hoeverre u het ermee eens bent. Let op: Het gaat er om hoe u de functie ervaart.
Bij de beantwoording wordt gebruik gemaakt van een schaal 1-5 waarbij:

1 = helemaal mee oneens
2 = mee oneens
3 = neutraal
4 = mee eens
5 = helemaal mee eens

	1	2	3	4	5
1. Ik heb plezier in het werk dat ik doe.	□	□	□	□	□
2. Mijn werk daagt mij uit mijn talenten in te zetten.	□	□	□	□	□
3. Ik weet welke resultaten van mij verwacht worden.	□	□	□	□	□
4. Ik voel mij gewaardeerd voor het werk dat ik doe.	□	□	□	□	□
5. Ik heb voldoende ruimte om eigen beslissingen te nemen.	□	□	□	□	□
6. Ik voel me betrokken bij beslissingen over mijn werk.	□	□	□	□	□
7. Mijn functie geeft mij voldoende mogelijkheden mijzelf verder te ontwikkelen.	□	□	□	□	□
8. Ik kan alles doen in mijn privé leven wat ik wil, mijn werk belast me daar niet in.	□	□	□	□	□

Zijn er nog bepaalde meningen over uw functie bij Grolsch die u belangrijk vindt en bij de voorgaande vragen niet genoemd zijn? Zo ja, zou u deze hieronder kunnen noemen en op dezelfde schaal als hierboven willen beoordelen?

	1	2	3	4	5
.....	□	□	□	□	□
.....	□	□	□	□	□
.....	□	□	□	□	□

Deel 2; Uw rol als teamleider

Kunt u bij de volgende vragen aangeven in hoeverre u het ermee eens bent. Let op: Het gaat er om hoe u uw eigen rol ervaart.
Bij de beantwoording wordt gebruik gemaakt van een schaal 1-5 waarbij:

1 = helemaal mee oneens
2 = mee oneens
3 = neutraal
4 = mee eens
5 = helemaal mee eens

	1	2	3	4	5
1. Ik geef de heftruckchauffeurs voldoende ruimte om zelf beslissingen te nemen binnen mijn werkgebied.	□	□	□	□	□
2. De relatie met de heftruckchauffeurs wordt gekenmerkt door openheid.	□	□	□	□	□
3. De relatie met de heftruckchauffeurs wordt gekenmerkt door openheid.	□	□	□	□	□
4. Een heftruckchauffeur kan mij altijd om hulp vragen.	□	□	□	□	□
5. Ik geef heftruckchauffeurs de ruimte als zij aangeven eerder weg te willen.	□	□	□	□	□
6. Heftruckchauffeurs hebben de ruimte om hun ideeën te delen met mij.	□	□	□	□	□

Zijn er nog bepaalde meningen over de rol van u als teamleider bij Grolsch die u belangrijk vindt en bij de voorgaande vragen niet genoemd zijn? Zo ja, zou u deze hieronder kunnen noemen en op dezelfde schaal als hierboven willen beoordelen?

	1	2	3	4	5
.....	□	□	□	□	□
.....	□	□	□	□	□
.....	□	□	□	□	□

Deel 3; De ervaringen met de pilot ‘flexibel roosteren’.

Kunt u bij de volgende vragen aangeven in hoeverre het op u van toepassing is.

1.Ik heb bij het maken van de roosters met veranderingen van doen gehad in het afgelopen jaar

□ Wekelijks
□ Regelmatig
□ Soms
□ Nooit

Bij nooit ga verder met vraag 4

2. Ik kon de gevraagde aanpassing in het rooster verwerken.

□ Altijd
□ Meestal
□ Af en toe
□ Nooit

3. Kunt u bij de volgende vragen aangeven in hoeverre u het ermee eens bent. Let op: Het gaat er om hoe u de de pilot ‘flexibel roosteren’ heeft ervaren.
Bij de beantwoording wordt gebruik gemaakt van een schaal 1-5 waarbij:

1 = helemaal mee oneens
2 = mee oneens
3 = neutraal
4 = mee eens
5 = helemaal mee eens

	1	2	3	4	5
1. Ik heb het niet als storend ervaren om deze aanpassingen in het rooster te verwerken.	□	□	□	□	□
2. Mijn ervaring met de pilot zijn goed te noemen.	□	□	□	□	□
3. Ik kom een heftruck chauffeur graag tegemoet in zijn wensen.	□	□	□	□	□

4.Ik had meer van het project verwacht?
□ Ja, ...
□ Nee

5. Ik wil in de toekomst deze wensen wel blijven verwerken.
□ Geen probleem
□ Hoeft niet zo nodig
□ Om een ander een plezier te doen
□ Nee

Indien u nog overige op- of aanmerkingen heeft over de pilot ‘flexibel roosteren’, zou u deze dan hieronder kunnen opschrijven?

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Hartelijk bedankt voor uw medewerking!