# MEDIA REPERTOIRES – MAKING SENSE OF THE DYNAMICS OF USAGE PRACTICES

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## Abstract

*The concept of communication media repertoires introduced by Watson-Manheim and Bélanger (2007) has extended the existing literature by adding a technology-in-practice perspective to the examination of communication media choice in an organizational setting. While Watson-Manheim and Bélanger (2007) have focused on describing the existing media repertoires (set of available media and existing usage practices for specific purposes) and actual media usage decisions at two different companies at one point in time, this paper seeks to investigate dynamic transformations of communication media repertoires resulting from the introduction of a new platform technology over time. This paper is based on an in-depth case study on the roll-out of a Real Time Collaboration system to a financial service company. It reports on the resulting transformation of existing and the emergence of new usage practices for the purpose of coordinating team availability, thereby pointing out that (initial) usage practices of a new communication technology can only be understood against the background of already established practices and their history.*

*Keywords: Communication media repertoire, Real Time Collaboration, Lotus® Sametime®, RTC adoption, RTC use, Practice perspective, Technology in use, Coordination of availability.*

# 1 INTRODUCTION

In today's organizations, employees are faced with a multitude of communication media. As a result, several theories about how and when different communication media are used have been proposed in the literature. One dominant strand of media choice theories, such as media richness theory (e.g. Daft & Lengel 1986), media synchronicity theory (Dennis & Valacich 1999) or social presence theory (Short, Williams & Christie 1976), assumes that technologies have relatively stable characteristics and that an individual's choice of a communication medium in a specific situation is always a rational choice. Other theories, like social influence theories, have criticized these assumptions and instead focused on external influences on media choice, i.e. the social context and the existing norms and rules (e.g. Fulk, Schmitz & Steinfield 1990). While most of these theories have studied media choice without considering actual work practices of the users, Watson-Manheim and Bélanger (2007) follow a technology-in-practice perspective to examine communication media choice by introducing their concept of communication media repertoire. According to them, a communication media repertoire of a special community comprises the collection of available communication media and established practices to use these media for specific purposes. While Watson-Manheim and Bélanger follow a practice perspective to investigate and compare media choice in two different companies at one point in time, we will use their concept of communication media repertoire and their proposed framework for investigating communication media repertoire to study the actual introduction process of a new communication technology and thus the dynamic changes to existing communication practices and communication media repertoires.

Our analysis is based on a case study on the roll-out of the Real Time Collaboration (RTC) technology IBM Lotus® Sametime® in a financial service company. According to Riemer and Frößler (2007), one feature of RTC systems is the provision of presence information. As presence or status information enable someone to see if other people are available for communication (Riemer & Frößler 2007), we had expected that employees in the financial service company would develop a usage practice of coordinating availability by using presence information. However, shortly after the roll-out of Sametime® we were able to observe quite unexpected usage practices: employees were using the text message feature of the system for coordinating their availability. To be able to explain this unexpected observation, we have used the concept of communication media repertoires and the proposed framework to investigate the emergence and dynamic changes of the usage practice to coordinate availability on the team level.

The aims of our paper are twofold. First, we present a rich case study of the roll-out of an RTC technology in order to enable a better understanding of the emergence and transformation of usage practices (here: the practice of coordinating availability), especially in case of the introduction of a new communication technology like RTC. Thereby we are stressing the role of the history of a usage practice as we have found that (initial) usage practices of a new communication technology can only fully be understood in the history of already established practices. Second, we aim at contributing to the theoretical discussion on the concept of communication media repertoire and the proposed framework by applying it to the investigation of the emergence and transformation of usage practices over time. By doing this we do not aim at statistical generalizability. Rather, we aim at contributing to a broader understanding of the emergence and transformation of usage practices within a communication media repertoire by presenting a case study with a different focus compared to the initial case study presented by Watson-Manheim and Bélanger (2007).

We begin by introducing the concepts of RTC and communication media repertoire (section 2), before we present our research design (section 3) and the case company (section 4). Section 5 elaborates on the evolution of the usage practice for coordinating availability on the team level. We discuss our findings based on the framework of Watson-Manheim and Bélanger (2007) in section 6, followed by a short conclusion in section 7.

# 2 THEORETICAL BACKGROUND

In the following, we will introduce the concept of RTC and describe the concept of communication media repertoire developed by Watson-Manheim and Bélanger (2007). Before describing the research design in the subsequent section, we will present our research questions at the end of this section.

## 2.1 Real Time Collaboration

According to Riemer and Frößler (2007), RTC systems consist of communication technologies and various collaborative applications and comprise the following building blocks (cf. Table 1).

| Building Blocks | RTC system | Lotus® Sametime® |
|---|---|---|
| Unified Communication | Integration of various information and communication channels, like IP telephony and instant messaging. | Users can communicate by using various communication channels, e.g. chat, VoIP and video telephony. |
| Presence information | Status information can give information about the availability of the user and his/her media and communication devices. | Presence information is available for all users who are signed-in on the system. |
| eCollaboration portfolio | RTC systems can comprise features of groupware applications, e.g. team calendars, document folders, or application sharing. | Sametime® includes multiple collaboration features, such as group chat, application sharing or document sharing. |
| Contextualization | RTC systems can be integrated within the context of the user, e.g. with organizational processes and business applications. | There are multiple options to integrate Sametime® into organizational processes. |

*Table 1. Building Blocks of RTC systems in general and Lotus® Sametime® in particular*

One important building block or feature of RTC systems is the provision of presence information or presence awareness capabilities (Cameron & Webster 2005) which allow "employees to know which colleagues are currently present and available for communicating" (p. 92). The definition by Cameron and Webster (2005) already illustrates the complementary aspects of the practice for coordinating availability (signaling and monitoring): one has to signal or display one's own availability so that others are able to monitor this availability (e.g. Schmidt 2002; Riemer, Klein & Frößler 2007).

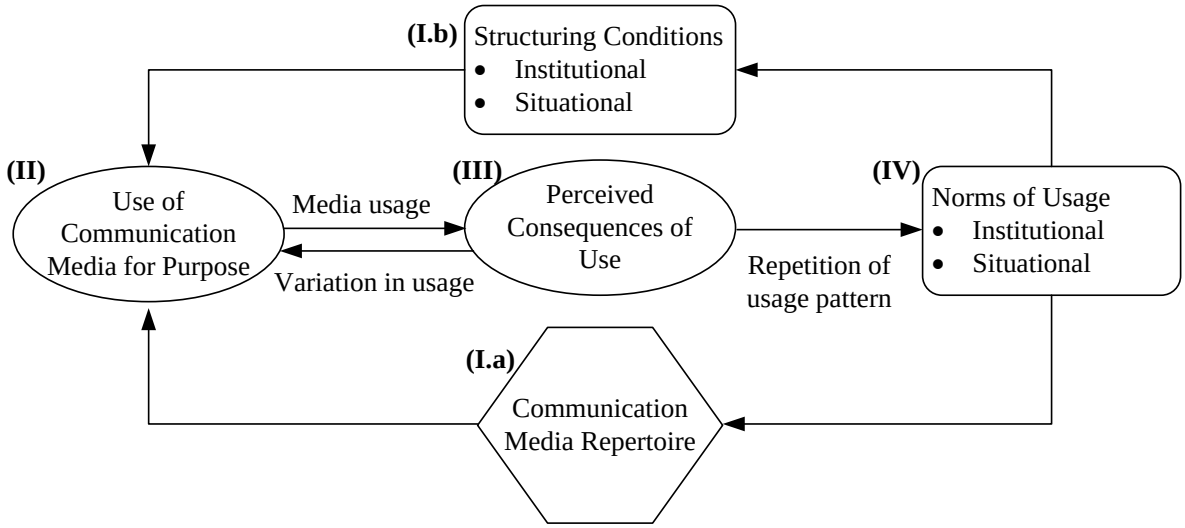
Although it is possible to describe the specific features of RTC systems, such as text chat or presence information, the technology itself presents itself as a flexible platform, which supports diverse modes of use (e.g. Riemer, Frößler & Klein 2007), e.g. in case of coordinating availability. Due to their openness, such platforms are subject to experimentation, interpretation and appropriation processes by their users. Therefore we are looking at RTC in this paper as a platform technology or infrastructure, which provides a rich set of affordances (e.g. Gibson 1979; Norman 1988). This view differs from the usual understanding of technology as an application with a predefined purpose and a clearly defined task environment. As a network technology, the benefit of RTC is further depending on group adoption (Sanderson 1992), since effective interaction via RTC on the group level requires adoption by all group members.

## 2.2 Communication Media Repertoire

By introducing the concept of communication media repertoire, Watson-Manheim and Bélanger (2007) aim at adding a new perspective to the understanding of media usage in organizations. Their concept is based on the notion of repertoires from Orlikowski and Yates (1994) who define a community's genre repertoire as a set of communication genre (e.g. business letter, report) "that are routinely enacted by members of the community" (p. 542). Watson-Manheim and Bélanger (2007) define a *communication media repertoire* as "the collection of communication channels and identifiable routines of use for specific communication purposes within a defined community" (p. 268). While previous research on media choice mainly focused on the question of why a communication medium is chosen for use without including the ongoing work practices of use (e.g.

Daft & Lengel 1986; Dennis & Valacich 1999), Watson-Manheim and Bélanger (2007) investigate when and how a multiplicity of communication media is used in the performance of work activities. Thereby, Watson-Manheim and Bélanger draw on a technology-in-practice perspective, meaning that rules which regulate the use of a specific technology are developed through the recurrent use of this technology (Orlikowski 2000).

In their paper, Watson-Manheim and Bélanger present a comparison of the usage of multiple media within and between two companies. Based on their findings and with regard to future research, they present a framework for investigating the use of multiple media in organizations through the examination of communication media repertoires (see Figure 1). They suggest that "communication media repertoires are constituted and reconstituted through media usage in the performance of ongoing, routine work activities" (Watson-Manheim & Bélanger 2007, p. 283). Furthermore, Watson-Manheim and Bélanger propose that usage practices (routine use of a communication media for a specific purpose) are directly influenced by the existing repertoire, structuring conditions and perceived consequences of use and indirectly influenced by usage norms in the group.




(Adapted from Watson-Manheim & Bélanger 2007, p. 283)

*Figure 1. Framework for investigating communication media repertoire*

According to the authors the existing repertoire of usage practices (I.a), which are perceived as appropriate to accomplish a specific purpose, provides a frame for the actual usage decisions (II). However, the influence of the repertoire is not deterministic. In fact, changes in the actual usage practices may be made based on the understanding of a specific situation at the time of the usage decision. There are two types of structuring conditions (I.b) which may have an influence on actual usage practices (II): institutional and situational conditions. While institutional conditions (e.g. the physical or social structure of a group) constrain or facilitate the set of possibilities of media usage and thus influence the development of usage norms, situational conditions (e.g. task characteristics or urgency) might influence media usage at a particular point in time. As individuals use communication media to accomplish a purpose, they observe specific consequences of their usage decision (III). Following Orlikowski (2000), Watson-Manheim and Bélanger (2007) claim that individuals will replicate or vary their usage based on their interpretation of the perceived consequences. Through a repeated use of communication media by the members of a group, they will develop expectations on an appropriate usage and thus, norms of usage (IV) will become routinized. These usage norms can indirectly influence the usage decision in two ways: 1) they are part of the communication media repertoire and 2) the might have an influence on the understanding of structuring conditions.

Watson-Manheim and Bélanger have studied the use of multiple media within two companies at one point in time. Based on their findings, they have developed the framework depicted in Figure 1 as a possible starting point for further examination on the use of multiple communication media. Furthermore, they propose that their framework could also be used to investigate *dynamic changes* in the communication media repertoire over time, e.g. in case of the introduction of a new communication media which they interpret as a change in the institutional condition. They propose that it could be valuable to examine "how the new medium is integrated into the usage routines of the community, and how it creates changes in the understanding of usage of other communication media in the repertoire" (Watson-Manheim & Bélanger 2007, p. 286).

We will use the proposed framework as a methodological frame for our analyses on the roll-out and adoption of Sametime® on the team level and on the changes in the usage practice to communicate and coordinate availability before and after the roll-out of Sametime®. Thereby we will be able to illustrate the usability of the proposed framework as well as to enhance the theoretical contribution of the concept of communication media repertoire by applying it to another case study in a new organizational context and with a different focus than the initial research of Watson-Manheim and Bélanger (2007). Our study addresses the following *research questions*:

1. How do users integrate RTC into the existing communication media repertoire?
2. How and why does the existing communication media repertoire change over time?

# 3 RESEARCH DESIGN

In this section we will introduce our research background and methodology and present our approach of collecting and analyzing data.

## 3.1 Research background and methodology

The research presented in this paper is part of a larger study on the roll-out, adoption and use of the RTC technology IBM Lotus® Sametime® at a large financial service company. The aim of this larger study is 1) to investigate processes of adoption and use on the individual and group level and 2) to investigate aspects of the organizational design and management of the roll-out of Sametime®. To address this aim and to be able to investigate and understand the individual's interpretations of the underlying technology and the roll-out process, we have chosen to conduct an *in-depth case study* (e.g. Walsham 1995) as research methodology. The selection of this specific case has been motivated by the opportunity and the interesting nature of the case. Based on a long tradition of research cooperation with the case company, we welcomed the opportunity to attend and analyze the organizational roll-out of Sametime® from the managerial design to the actual adoption in an employee-oriented company with a very strong organizational culture.

## 3.2 Data collection and analysis

We have conducted interviews at different levels of the company, e.g. management and employees (multi-layer analysis), and at different points in time of the roll-out and adoption process (comparative-static analysis). In *February 2010*, we conducted extensive interviews with the managers responsible for the roll-out of Sametime®. To gain a deeper understanding of the roll-out process, we subsequently interviewed representatives of the workers' council, the HR department, the IT compliance and data protection office, and the line management. In *June and July 2010*, subsequent to the roll-out of Sametime® in the head office of MUFIN (starting in March 2010), we conducted semi-structured interviews with 13 employees (belonging to ten different teams) of one operating department concerning their initial adoption of Sametime® (see Table 2). Key questions of these interviews were general communicational behavior, and actual use and perception of the implementation process of Sametime®. After a first analysis of the interviews, we presented preliminary results to the responsible IT managers in *August 2010* in order to discuss possible implications for future stages in the roll-out of Sametime®.

| | | |
|---|---|---|
| Total in operating department | | 182 |
| Total selected for interviews | | 13 |
| Gender | Females | 6 |
| | Males | 7 |
| Job type | Team leader | 1 |
| | Deputy team leader | 4 |
| | Case worker | 8 |
| Sametime® user type | User | 12 |
| | Non-user | 1 |

*Table 2. Demographics of study respondents*

We have tape-recorded the interviews with the users and non-users of Sametime® and transcribed them. In contrast, the interviews with the management have not been tape-recorded in order to facilitate a candid and open minded discussion about the roll-out process of Sametime®. Walsham (2006) recommends that "interviews should be supplemented by other forms of filed data in an interpretive study" (p. 323). Thus, we have drawn on publicly available information describing the company and the technology focused in our research. Furthermore, we had access to some of the employee training materials, i.e. chat etiquette and functionality and user guide which are placed at the employee's disposal on the intranet.

Please note that, while we have undertaken a rich case study, we will only briefly introduce the case and subsequently focus on the relevant parts for presenting our observation concerning the changes of the communication media repertoire.

# 4 THE CASE COMPANY MUFIN

Having presented our research design, we will now introduce our case company by focusing on the company and team background and on the Sametime® roll-out process.

## 4.1 Company background

MUFIN, as a financial services company, is operating in a tightly regulated, yet highly competitive market. Its services can be characterized as information products and services. The *head office* comprises a set of departments, i.e. the IT department and several operating departments. The latter are subdivided into several divisions, which consist of approximately 15 small teams. These teams function as the back office providing day-to-day support for the decentralized *sales organizations*, which are spread over the entire country.

MUFIN is positioned as a service and customer-oriented organization. Furthermore, it has a strong and explicit organizational culture and a long tradition as an employee-focused company. MUFIN is regarded as a family friendly employer and has supported telework (i.e. home office work) for many years. Although there are at times certain structural frictions and conflicts between the head (back) office and the sales agents in the field, the management of MUFIN emphasizes and pursues the vision of an integrated services unit. Corresponding to the organizational culture, MUFIN's management practices a participatory style and recognizes its responsibility towards the workforce. Management does not only regularly involve the workers' council in decision-making, but tries to achieve consensus with the council prior to organizational changes. The workers' council is thus regarded an influential and important stakeholder in any innovation and change process.

### 4.2 Team background

Teams at the head office at MUFIN normally consist of 8 to 12 team members. The *daily work* of these team members mainly consists of processing standard files for the sales organizations and communicating with sales agents, customers and colleagues inside or outside their teams (cf. Table 3).

| Communication with … | Communication pattern |
|---|---|
| Sales agents | In the context of file processing, there is a lot of communication taking place between the employees and the sales agents. |
| Customers | There are some teams where team members directly communicate with the customers. However, the main communication partners for the customer are the sales agents. |
| Team members | To be able to coordinate team availability, employees inform their team members whenever they leave their workplace (one-to-many communication). In addition, there is also direct one-to-one communication, e.g. to discuss complex and non-standard files. |
| Members from other teams | There is also some interdepartmental communication with members of other teams, divisions or operating departments, e.g. to discuss specific problems or to coordinate lunch. |

*Table 3. General communication behavior*

Employees can draw on a variety of *communication media*. Beside face-to-face communication, the telephone is often used because of its direct and personal character. In addition, E-Mail is frequently used as it facilitates the documentation and archiving of communication episodes. For sending E-Mails, employees can draw on two technologies: 1) The E-Mail function of Lotus® Notes and 2) the E-Mail function of the MUFIN Application System (MAS). Furthermore, some employees communicate by using the messenger feature of the Information Management System (IMS), which will be replaced by the MAS in the future. Finally, some communication is still done via fax or letter.

The *physical structure of the workplace* within the different teams at the head office of MUFIN consists of small offices with two work places. As telework is a very important part of the work layout at MUFIN, in most of the investigated teams many team members practice alternating telework. They alternate between a workday at home (home office) and a regular office day. Two team members with complementary rhythms normally share a desk and thus only meet at common team meetings.

### 4.3 The Sametime® roll-out process

In 2009, after a successful pilot test in the IT department, MUFIN decided to roll-out Sametime® across the company. The purpose and intended effects were to *increase the visibility* of individuals for their team and peer group and to *provide chat* as an additional medium for the communication with 1) other team members, 2) other employees within the head office, 3) sales agents and 4) customers. However, given the relationship between management and workforce, the roll-out of RTC was posing numerous challenges, which needed to be addressed at an early stage. The intended effects of increasing the visibility and to providing chat coincided with extended opportunities for monitoring and surveillance (Sewell 1998), which are in contrast to the company's culture. Thus the management in agreement with the workers' council has decided on a step-wise approach. Starting in March 2010, Sametime® has been rolled-out to the employees of the head office for a pilot phase. During this first phase, Sametime® was provided to everybody; however its use was voluntary and management committed itself not to use Sametime® for monitoring or surveillance.

## 5 COORDINATING AVAILABILITY ON THE TEAM LEVEL

Having introduced MUFIN and the roll-out process of Sametime®, we will now discuss the practice of coordinating availability on the team level. Therefore, we will focus on the need for coordinating team availability and on the appropriate practices before and after the introduction of Sametime®.

## 5.1 Need for coordinating availability

Besides E-Mail, telephone is the dominant communication medium at MUFIN. Some interviewees referred to an organizational norm: telephone should be used as often as possible because it enables a personal contact which is an important part of MUFIN's organizational culture. Every team member has its own telephone number. In addition, every team has a team number. If someone calls this team number, the call is forwarded to all team members who are logged on at that moment. Team members normally have to answer both - their own and team calls. In case of extreme pressure, team members can exceptionally log off from the team number for a limited time. Furthermore, if a team member is not able to answer his own telephone (e.g. in case of a meeting), he can forward his incoming calls to the team number. As the employees in the head office function as a back office for the sales organizations, coordinating telephone availability has always been an important aspect of the team coordination. All interviewees stated that it is important to know the availability of their colleagues in order to provide the right information when a sales agent calls for their colleagues. Furthermore, being informed about the absence of other colleagues is essential when deciding on one's own availability, as it is crucial that there are always enough team members to answer the telephone. Telephone response rates have been monitored for a long time by the management of MUFIN. In the late nineties, the management decided to optimize telephone response rates on the team level by adding the rate as a performance measure used in the calculation of the annual team bonus. Thus, there has been a great sensitivity to assure telephone availability on the team level.

## 5.2 Coordinating availability before the roll-out of Sametime®

Initially, team members used the *messenger feature* of the IMS to send text messages to their team whenever they left their work place. The messenger feature was introduced in the late 1980ies. Since then employees have sent short messages (with a limited number of characters) to individuals by addressing the ID number of this person. Because this ID number normally contained the number of the corresponding team (e.g. 45), it was possible to send a message to an entire team by addressing it to the team ID followed by a wildcard (e.g. 45*). However, this practice has been rendered obsolete by some changes in the team structures. As some employees changed their team membership but maintained their ID number, it was no longer possible to write team messages by simply addressing the team number plus wildcard. Instead, employees had to address every single team member to be able to reach the whole team.

In the 1990ies, the introduction of *E-Mail* allowed reproducing the practice of coordinating availability, as it was possible to send an E-Mail to a whole group. Since then, instead of the IMS messenger feature E-Mail has been used to inform team members about work place absence. However, employees have perceived some downsides in using E-Mail for this specific purpose, e.g.[1]

> "If someone is not there at a specific day, he does not need to receive an E-Mail saying 'I am back in half an hour'. Actually, such messages can go straight in the bin."

> "Sometime, when our server is overstretched, E-Mails arrive with a delay of two hours."

## 5.3 Coordinating availability after the roll-out of Sametime®

When we started our interviews in June 2010 after the first four months of Sametime® use, first practices on how to use Sametime® for the coordination of availability had emerged within the different teams. In the following, we will describe these practices by differentiating between the two complementary aspects of coordinating availability: signaling and monitoring (see section 2.1). Furthermore, we will distinguish between the chat and the presence information feature of Sametime®. While the employees had been familiar with text messaging and the practice to signal availability via text (see section 5.2), the presence information feature itself was new to them.

[1] All quotes have been translated into English.

### *5.3.1 Signaling availability*

As the employees had perceived some downsides of using E-Mail for signaling availability (see section 5.2), most of them welcomed Sametime® as a possible alternative which was similar to the before used IMS messenger. Following from this, there were some teams where the team members had changed from using E-Mail to using Sametime® for signaling availability via *text messages*. This only happened in teams where everybody was using Sametime®. However, due to the commitment of voluntary use, there were other teams, where Sametime® was not used by all team members. As it was not possible to reach and to inform all team members via Sametime®, the new tool could not be used for the specific purpose of signaling availability although some team members wished for that. Thus, within these teams, the shift from E-Mail to Sametime® to signal availability did not take place.

Prior to the introduction of Sametime®, availability has only been signaled by writing text messages. After the introduction, employees started to also signal there availability by using the *presence feature* of Sametime®, e.g. they actively changed their presence status from "available" to "away" or "being in a meeting" when they left their workplace or when they were in a meeting. Furthermore, some employees added additional text to their status information, e.g. "I am working in my home office today". However, although they have begun to use the status information to signal their own availability, they also stuck to their existing practice of writing text messages.

### *5.3.2 Monitoring availability*

Prior to the introduction of Sametime®, knowledge about someone's availability was always depending on the active signaling of that person via *text messages*. After the introduction of the *presence information* feature of Sametime®, employees could monitor the availability of their team colleagues at any time under the assumption that their team colleagues are connected to Sametime®. Although the presence information feature has been perceived by some employees as a possible instrument for surveillance and control, a lot of the interviewees emphasized the advantages of using Sametime® for monitoring availability of other team members. They mainly mentioned two benefits:

1. They were able to draw on more detailed information on the availability of their colleagues, when someone called for them. One interviewee stated:

   "If a sales agent calls and asks to speak to a specific person, we can directly see if this person is at his or her desk or in a meeting or out of the office."

2. They were able to better coordinate the team's availability and thereby manage telephone response rate, e.g.

   "I always have a look at my buddy list to see who is online, when I arrive in the morning. Starting 8 a.m., we have to answer the telephone. If I arrive at 8.15 a.m. and no one is online, I know that I am the only one and that I have to connect to our team number."

   "We use the presence information of our team members to coordinate availability. It is not ok to leave the work place for lunch or a cigarette break, if already half of the team is absent."

As a consequence of the roll-out of Sametime®, the employees have developed the new practice of actively monitoring the availability of other team member.

# 6 DISCUSSION

While Watson-Manheim and Bélanger focused on the investigation of actual usage practices at one point in time, we will use their framework (see section 2.2) to investigate the adoption of Sametime® and the evolution of the practice for coordinating availability on the team level. Our case illustrates that the framework is useful to investigate dynamic changes in the communication media repertoire and the existing practices over time. Furthermore, our case reveals that the evolution of usage practices of a new technology can only be understood against the backdrop of the history of existing practices.

### 6.1 Emergence of the usage practice for coordinating availability

The emergence of the practice for coordinating availability on the team level can be explained by the structuring conditions, the perceived consequences of media use and the existing media repertoire (cf. Figure 2). In our case the physical structure of the workplace, the task structure and the relationship between head office and sales agents (see section 4.1) form institutional structuring conditions (I.b) to the use of communication media in general. As teams have experienced a need for coordinating availability on the team level (new structuring conditions), which has been intensified by management's monitoring of the telephone response rate (I.b), team members have developed a practice for coordinating their availability. They have started to use the IMS messenger feature for sending group messages to their team members (II). The IMS has been part of the set of available communication media and thus part of the existing communication media repertoire (I.a) at that time. As team members have perceived positive consequences (III) of using the IMS messenger for sending group messages and thus the coordination of availability, this usage pattern has been repeated many times and became routinized. Resulting from this, the existing communication media repertoire has been enlarged by a new communication and usage practice. Furthermore, the resulting norm (IV) has influenced the structuring conditions as it has clarified how to deal with the experienced need for coordinating availability.

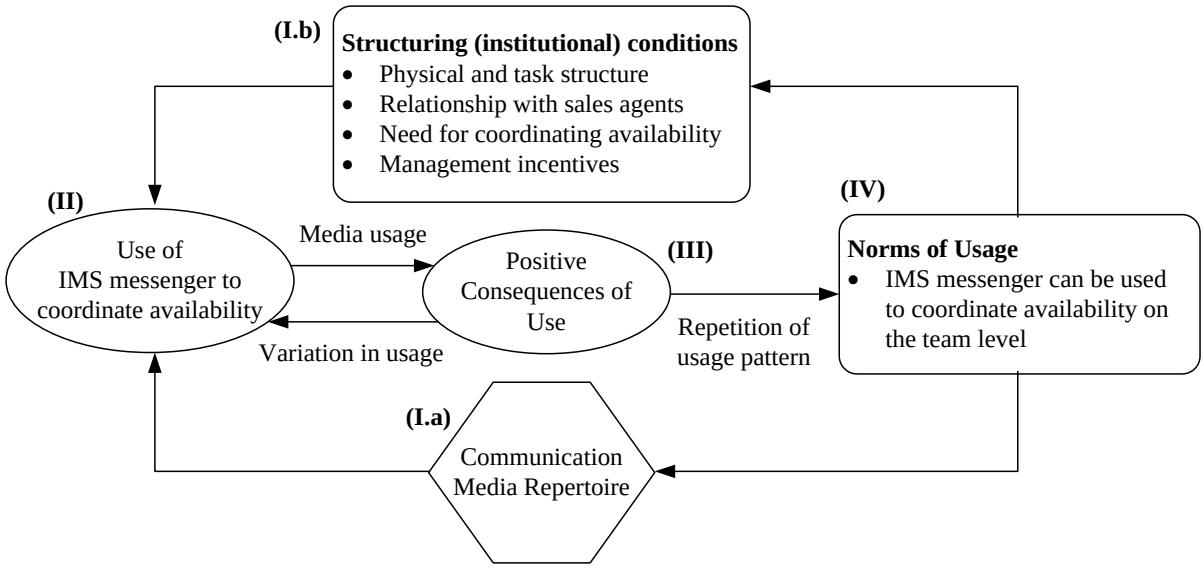



*Figure 2. Emergence of the practice for coordinating availability (based on Figure 1)*

### 6.2 Transformation of the usage practice for coordinating availability

In our case, we were able to observe different changes which led to a transformation of the usage practice for coordinating availability (cf. Table 4). The *first change of the practice* for coordinating availability resulted from two changes of the structuring conditions: 1) changes in the team structures and 2) introduction of the new communication medium E-Mail. When the team structure changed, team members perceived negative consequences when accomplishing the existing usage practice for coordinating team availability via the IMS messenger feature as it was no longer possible to reach the whole team. As a result, they had to vary media usage. The introduction of E-Mail presented an extension of the set of available communication media. Resulting from this and based on the existing usage practice for coordinating availability, team members started to use E-Mail to send group messages and for coordinating availability. As they were able to reach all team members (positive perceived consequence), this usage pattern became routinized and the actual norm was changed from using the IMS messenger feature to using E-Mail for the purpose of coordinating availability. Concerning the communication media repertoire, we have observed two effects of the introduction of E-Mail: 1) the extension of the set of available media and 2) the adaptation and reproduction of the existing routines from the IMS messenger feature to E-Mail.

The *second observable change of the existing practice* under investigation resulted from the introduction of Sametime®, which acted - similar to the introduction of E-Mail - as a change of the structuring conditions and an extension of the available media (extension of the communication media repertoire). However, in contrast to E-Mail, management has decided to roll-out Sametime® for voluntary use. Because of this, the adoption rate of Sametime® differed across the ten observed teams: while some teams had reached a group adoption rate of 100%, other teams had not reached full group adoption. However, full group adoption would have been a requirement for using Sametime® for group communication (see section 2.1). Thus we state that the organizational design principle of voluntary use and full group adoption can act as institutional structuring condition. As some team members had experienced certain negative effects when using E-Mail for coordinating availability (see section 5.2), they have welcomed the extension of the available communication media and started to use Sametime® for coordinating availability. However, due to the different adoption rates within the teams, team members have perceived opposed consequences of using Sametime®. In teams with an adoption rate below 100%, Sametime® users were not able to reach all other team members via Sametime® (negative perceived consequence). Because of this, they reverted to the established practice of using E-Mail for coordinating availability. In contrast, those teams with a full group adoption perceived positive consequences when Sametime® for coordinating team availability. Members of these teams perceived Sametime® to enable a more immediate and fast communication than E-Mail. As team members repeated the new pattern of using of Sametime® for coordinating availability, the existing norm was reproduced by exchanging E-Mail through Sametime®.

Interestingly, there was one team with full group adoption, where the team members have developed a common norm to use Sametime® as well as E-Mail for coordinating their team availability. Team members in this team have perceived Sametime® to be appropriate when informing others about aspects of availability which were only relevant for one day, e.g. "I am off for half of an hour". Besides, they have perceived E-Mail to be more valuable, when they wanted to inform their team members about a longer absence from the workplace, e.g. when they went on holiday, because E-Mails can be documented and archived. Thus, this common norm became part of the structuring conditions and acted as a situational structuring condition for actual usage decisions in the context of coordinating availability. This observation is in alignment with Watson-Manheim and Bélanger (2007) who state that employees are often using combinations of communication media where "one medium may be dominant but accompanied by complementary use of other media" (p. 286).

While the second change of the usage practice – which only happened in teams with a full group adoption – mainly consisted of a reproduction of the existing usage and thus resembled the first change, the *third change of usage practice* differed from the previous. Within the teams with a full group adoption, team members experienced positive consequences when using the presence information feature of Sametime® for signaling and monitoring availability. As they repeatedly used this new feature, they developed an additional norm to use the presence information feature to signal their availability. Furthermore, they developed a new norm saying that the presence information feature can be used to actively monitor the availability of other team members. Thus, they have developed additional and new usage practices which led to an extension of the existing media repertoire and – as interviewees stated – to a new form of visibility and connectedness.

| **Structuring conditions** | **Usage practice for the purpose of coordinating availability** |
|---|---|
| - Physical and task structure<br>- Relationship with sales agents<br>- Need to coordinate availability<br>- Management incentives | Emergence of the practice to use the IMS messenger feature for coordinating availability (via text). |
| - Introduction of E-Mail<br>- Changes in the team structure | First changes: Reproduction of the existing practice by replacing the IMS messenger feature with E-Mail. |
| - Introduction of Sametime®<br>- Voluntary use of Sametime®<br>- Group adoption of Sametime® | Second changes: Reproduction of the practice by replacing E-Mail with Sametime® or extension of the practice by using E-Mail and Sametime®.<br>Third changes: Emergence of new practices to signal and monitor availability by using presence information. |

*Table 4. Structuring conditions and resulting changes to usage practices*

### 6.3 Reflection on the concept of communication media repertoire

As suggested by Watson-Manheim and Bélanger (2007) the concept of communication media repertoire and the proposed framework enabled us to understand and discuss the dynamics of the emergence and transformation of the practice for coordinating availability. The observed dynamics or changes resulted from different changes in the structuring conditions. Watson-Manheim and Bélanger (2007) assume that the introduction of a new communication technology is one possible change in the institutional conditions which can lead to a change in the existing usage practices (see section 2.2). Our case confirms this assumption. We have observed different changes in the usage practice under investigation both due to the introduction of E-Mail and of Sametime®. However, in our case changes to the existing practice for coordinating availability not only happened due to the introduction of a new communication technology. Rather, the observed changes were also dependent on other structuring conditions (cf. Table 4) such as changes in the team structure, design principles of the introduction (e.g. voluntary use) or requirements for an effective use of the new technology (e.g. group adoption). Thus, as one result of our study we are able to extend the set of structuring conditions observed by Watson-Manheim and Bélanger by adding the structuring conditions which had an influence on the development and transformation of usage norms in our case (cf. Table 5).

| **Institutional conditions (Watson-Manheim & Bélanger 2007)** | **Institutional conditions (our case)** |
|---|---|
| - Physical structure of workplace<br>- Interpersonal trust<br>- Organizational incentives to use media | - Physical and task structure<br>- Changes in the team structure<br>- Relationship with sales agents<br>- Need to coordinate availability<br>- Management incentives<br>- Introduction of a new communication technology<br>- Design principle of the introduction: e.g. voluntary use<br>- Requirements for an effective use: e.g. group adoption |

*Table 5. Structuring conditions*

### 6.4 Implications for research and practice

Prior to the roll-out of Sametime® we had expected that employees would develop a practice of coordinating availability by using the presence information feature of Sametime®. However, shortly after the roll-out of Sametime® we were able to observe an unexpected usage practices. Team members were using the text message feature of the system for coordinating their team availability. Using the concept of communication media repertoire and the prosed framework as a frame for analyzing our case and the dynamical changes, we were able to understand the observed usage practice. Our analyses revealed that this unexpected usage practice could only be understood against the backdrop of the existing practices in the teams under investigation and that the adoption of a new communication technology has to be understood as a stepwise and evolutionary process. We believe that this finding might support researchers in investigating the adoption of communication technology and the development of usage practices as well as organizations that plan to introduce new technology. By presenting the results of our case study, we do not aim at statistical generalizability. Rather, we understand our case as one step in the further theoretical development of the concept (e.g. Walsham 1995) of communication media repertoire.

## 7 CONCLUSION

The aim of our paper was to apply the concept of communication media repertoire and the framework presented by Watson-Manheim and Bélanger (2007) to the study of an organizational roll-out of RTC systems. Such systems can be interpreted as open infrastructures which are flexible and open to diverse modes of use. Although it is possible to describe the specific components and features of the technology, i.e. text chat and presence information, actual usage patterns and practices evolve in the context of actual usage and are shaped by the specific team context and organizational culture. Thus

we have used the presented framework to investigate the emergence and transformation of usage practices for the purpose of coordinating availability on the team level.

Our approach enables us to contribute to the existing literature in several ways. First, we were able to show the applicability of the proposed framework for investigating communication media repertoire by applying it to the analysis of the introduction of a new communication technology in a specific organizational context. We found that the framework fits very well to the investigation of dynamic changes of the usage practices on the team level. Furthermore, we support the proposition of Watson-Manheim and Bélanger (2007) to investigate the introduction of a new communication technology as a structuring condition to the actual usage decision. The roll-out of a new technology extends the existing set of communication media and thus the communication media repertoire. As the media repertoire acts as a frame for actual usage decision, this extension can act as a structuring condition for these decisions. However, we were also able to extend the identified set of structuring conditions described by Watson-Manheim and Bélanger by presenting further structuring conditions. Second, we contribute to broaden the understanding of the introduction of RTC and the emergence and change of usage practices that may arise due to the introduction. As a result of our analysis we have found, that the (initial) usage practices of Sametime® were influenced by the history of established practices for coordinating availability and thus could only be understood against the backdrop of the existing practices. Finally, we aim to contribute to the existing literature on the usage of RTC systems for coordinating availability by portraying different forms of signaling and monitoring availability.

In this paper, we have mainly focused on practices for one specific communication purpose, namely the coordination of availability. We are aware that this is not a typical purpose like information gathering or knowledge sharing, which is analyzed in the context of media choice. Rather, such a purpose normally is assumed to fit in a broader context like team coordination. We believe that focusing on this "micro" usage practice allowed us to obtain an extensive understanding of the dynamic change processes. However, we also see some limitations in only focusing on one specific communication purpose. Thus, we propose that in a next step it could be valuable to analyze usage practices for all communication purposes in one specific community or team when investigating the introduction of new technology and the changes of the communication media repertoire.

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