

# Interaction with Mobile Devices and Work-Life Balance

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**Abstract.** This article will present the progress of my PhD course, now on its second year. The aim of the PhD is to understand the relationship between mobile technologies (enabling mobile working) and the Work-Life Balance (WLB). Through ethnographic research, the purpose is to identify the people's activities implemented to customize devices (particularly the smartphones) based on their WLB vision and environment interaction; but also identify methods which could allow to understand the *mobility* aspect of new flexible work forms. The aim of the PhD is to provide input for user-oriented technologies design based on the collected data that take into account the boundaries management in relation with individual and contextual factors, and identify a set of guidelines for management for implementing WLB policies.

**Keywords:** Mobile technologies · Work-Life Balance · Pervasive computing · Self-reporting · Mobile diary · Ethnography.

## 1 Introduction

The socio-economic context in recent years is changing rapidly and continuously. For this reason, it is not enough anymore taking into account predictable models to achieve individual and organizational well-being, but it's also necessary understanding how these changes are regulated and, as occurred with the web revolution, be open to new communication and collaboration ways, and transferring them in the business systems. As highlighted by Burns and Stalker [8], there is no better organization than another, but just the appropriate one to different environmental conditions. So in instability periods, such as the one that we are facing nowadays, the organismic companies are the ones better suited to adapt because they can support the innovation and adaptation processes which are necessary in these changing contexts. So these companies are open to adopt new way of working that, for example, do not necessarily imply the on-the-job presence, aiming to replace *presence* with *results*, using the constant evolution of ICT (Information and Communication Technologies).

It looks like it is going to be developed a trend that wants to reintroduce, or introduce in reality, the man as the driver of his life and of the life of the Companies. Through the observation of the daily practices where he is involved, that therefore stimulates, motivates and causes him great interest, new processes have been found,

tools and ways of working that are changing, and it is going to change irreversibly the work concept in the years to come.

## 2 Mobile Work and Work-Life Balance

My work focus is on the relationship between new flexible working models and Work-Life Balance (WLB). In particular, my interest is to highlight a peculiarity of these new working arrangements due to their "mobility" characteristic. This is a teleworking and remote working evolution which, according to the continuous technologies and services progress (smartphones, tablets, laptops, cloud, Wi-Fi, internet subscriptions, etc.), become today "*mobile work*" (also called smart working). Based on collaboration and network principles, the mobile work includes flexible organizations of time and space, supported by ICT tools. In this way, workspace and job environment changes, an example is the increase of the so-called "co-working", a working environment where people share tools, services, incentives and conventions for long or short periods. It is a working way that we can define *fluid*, because it is easy to organize everywhere and the boundaries between life and work become less clear. In the past specific characteristics related to environment, activities, used tools, people relationships, could be characterizing to immediately identify systems activities and community practices related to one or another sphere.

With mobile work, it is the activity itself that generates contexts, understood as activity systems that combine subject, object and tools into a single whole [17], [34]. In this perspective, assuming that every action depends on the social and material circumstances in which it takes place, technologies are also to be considered an accomplishment situated, contingent and interpretative [51]. The instruments of mediation does not in fact create new practices "*What groups and working communities do with the technologies they have available is the result (more or less happy) of the interaction between potential offered by technology, the system of social practices already existing before technology and interpretation as possible mediating role that the community of users will give to the instrument. The use of every instrument, especially the technological ones, is determined not only by the physical and technical characteristics, but mainly by the courses of action that the instrument itself is able to sustain, compatibly with the preexisting practices, included working practices. This also explains the diversity of using the same technology in different business contexts*" (our translation) [41], p.15. With this in mind, we asked ourselves what are the actions that people put in place when using mobile devices during the day and which impact these actions have in relation to their WLB. Some scholars [53], [57] in deepening the relationship between WLB and mobile devices have shown a negative impact due to the pervasiveness of these technologies on the individual well-being and to mitigate this impact the roles of management and business organizational culture becomes extremely important.

At the same time, other researchers underline how mobile technologies can support WLB [15], [26]. The purpose of this PhD is to study what people experience using mobile devices in their work and in life, observing the natural actions that they per-

form interacting with these technologies. The goal is to identify a repertoire of activities representative of the actions of remodeling and customization of these technologies according to their WLB, in particular when work and life interact. The aim is to identify input for design of user-oriented technologies [12] based on the collected data that take into account the boundaries management in relation with individual and contextual factors, and a set of guidelines for management to implementing WLB policies.

### 3 The Origins and Evolution of the Construct of Work-Family Balance

The literature on the topic of WLB is very wide. Scholars have addressed the issue taking into account its different facets: class conflict and enrichment, choice of words, directionality, attention to gender diversity. Early studies on the relationship between the roles in the spheres of work and family date back to the '60s [35]. One of the first theories we find the *segmentation theory*, the *compensation theory* and *spillover theory*. The **segmentation theory** considered the work and the family as independent spheres, which are not influenced in any way [5], [7], [33], [42]. The **compensation theory** believed that people dissatisfied by a certain role compensated it by investing more in another role [14], [16], [49]. Finally the **spillover theory** believed that the experience in a field were poured out also into the other and this step could be positive or negative [7], [45], [49].

However, to better understand the literature on the interrelationship between work and family is necessary to emphasize the importance that has had the **Role Theory**. The research that has been based on the Role Theory followed two divergent lines, "role conflict" and "role facilitation", one emphasizes that participation in multiple roles is in conflict, the other one emphasizes that it leads benefits [19], [21], [29,30]. The first studies concerning the role of conflict belongs to Goode [18] who developed the *role strain theory*: this theory showed how participation in social roles was more challenging because the multiple request of time and psychological energy became in conflict or even overwhelming, and this could cause severe discomfort. This theory evolved in the idea that the *inter-role* conflict was caused by stress factors due to the role [29,30]. They believed that the requests derived from a field of life were incompatible with those from other areas, and that this would cause the conflict between roles (role conflict as the "*simultaneous occurrence of two (or more) sets of role pressures that compliance with such one would make opinions more difficult the compliance with the other*"[29], p.19. Based on these studies, Greenhaus and Beutell [17] elaborated the definition of **Work-Family conflict (WFC)** "*a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible in some respect*" (p.77). According to this theory the participation in a role (work or family) is very difficult because of the participation in another role (family or job). From an examination of the literature came to suggest that there are three main forms of work-family conflict, identifying the *size* or *types* of conflict (Time-based conflict, Strain-based conflict, Behavior-based conflict).

In recent years another line of study has been interested in the *role accumulation*, the impact that, playing several roles in the meantime, has on individuals. Despite the studies that believed that cover multiple roles with different requirements would lead inevitably to perceive conflict and stress, the role accumulation studies argued on the contrary that would produce greater prosperity [36], [38], [48]. Sieber [48] believed that would not cause the adverse effects provided by the role strain theory. This happens because the benefits associated with the accumulation of role usually outweigh the stress-related. As pointed out by Greenhaus and Powell [23], the interest of researchers has moved toward the research also of a **positive relationships** between work and family, and toward the development of some constructs such *enrichment* [23], [31], [46], *positive spillover* [24], [28], [55], *enhancement* [47], [54] and *facilitation* [18], [56]. The theory of the **Work-Family Enrichment** (WFE) has been developed by Greenhaus et al. [23] that have defined it as "*the extent to which experiences in one role improve the quality of life in the other role*" (p.73). These scholars argue that the experience in a role improves the quality of life (in terms of performance and positive feelings) into the role through the transfer of resources or positive feelings between them.

Others scholars have considered the overall evaluation of the experience. They talk about **Work-Family Balance (WFB)** that, unlike the constructs of *Work-Family Conflict* and *Work-Family Enrichment*, cannot be considered a mechanism of conjunction between Work and Family because it does not specify how the conditions and experiences in a role are connected with a causal relationship to the conditions or experiences in the other role. The WFB reflects individual orientation through different roles, which is an inter-role phenomenon [1], [22]. For Greenhaus and Allen [20] the WFC is a mechanism that explains how a role affects another, while the WFB reflects an overall assessment of a person's role in the Work and Family. For this reason it is not appropriate to compare balance with a low conflict, or a low conflict with a high facilitation. These scholars consider the WFB a psychological construct, and use the expression of *life role priority* to illustrate the role that individual differences in producing the WFB. Therefore exists people that are family-focused and career-focused which, respectively, put the family or a career in the middle of their lives, perceiving a strong sense of identity from the priority role; finally, the career-and-family-focused that would put the same emphasis in both roles, perceives their sense of themselves from their experiences in both roles. Gryzwacz and Carlson [25], starting from the *role balance theory* [37], defined as the WFB "*accomplishment of role related expectations that are negotiated and shared between an individual and his or her role-related partners in the work and family domains*" (p.458). So they believe that people do not look for more or less equity in their working and family lives [22] but they look for *dense* and meaningful experiences in work and family. The WFB is shaped by both the individual and contextual factors, which is the reason why the vision of the construct is not purely psychological but social. Furthermore they underline how their definition focuses on the realization of the expectations related to the role that are socially negotiated and shared. This concept is coherent with a consolidated point of view that individuals play actively the roles [4], [29] and is also in harmony with the vision that work and family are the abbreviated labels of myriads of

daily continuous and spontaneous interactions that individuals have with other people. Highlights interactional aspects of daily work and family life is essential to accurately characterize the WFB [25].

## 4 From WLB to Boundary Management

From this overview of the literature, in reference to mobile workers and more generally to the mobile life, it seems more appropriate to use the expression *Work-Life Balance (WLB)* because it is more comprehensive than *Work-Family Balance*. In the literature, the terms family and life are often used interchangeably, but from my point of view, we can talk about people wellbeing if we consider all aspects of their life, in a unique blend for each, and not only the dichotomy family-work.

Considering the relationship that exist between mobile work (which includes the organization of flexible spaces and times) and WLB, it was natural to reflect on the boundaries transitions, focusing on the “middle earth” formed when the work and life spheres overlap. The literature on the ways in which individuals create and maintain boundaries is represented mainly by the Boundary Theory and the Border Theory [3], [11], [27], [40]. Both theories have taken shape from the Role theory: the boundaries theory focuses on the ways in which people create, maintain or adapt the boundaries in order to simplify and categorize the world around them [3]. The border theory concerns the boundaries that divide the time, places and people associated with the job roles related to the family [11]. Both perspectives have considered an individual and an organizational perspectives.

In this study I want to put the attention on the social construction of boundaries and on the continuous modulation of person’s needs who will try to build and manage these boundaries interacting with the environment. Often the transition from one sphere to another takes place in a unscheduled way (for example manifesting itself through an interruption), and people will react according to the type of interruption and the perception of having control (or not) over it. So this research focused on the aspects related to the management of the two spheres on the one hand taking into account the constructs of flexibility and permeability [27], and integration and segmentation [40]; on the other, considering the Allen, Cho and Meier [2] literature review on the Work-Family Boundary Dynamics, on matters related concerning the *role blurring* (when is difficult to separate working role than the family), the *interruptions* (the intrusion of a role in the other and the way it happens), the *psychological detachment* (the state in which people mentally detach from work and do not think the activities related to it when they are away from it) and work and family *transitions* (literally transitions that occur from one sphere to another). Finally, *tactics* that people would use to create their ideal level and style of work-home integration or segmentation [32], [50].

In light of this overview, I will focus on :

- How people manage the intersection between the two spheres
- The use of mobile technologies
- Tactics put in place to manage multiple activities systems
- Use of time (planned and unplanned), and free time

- The control dimension
- Perception of conflict or enrichment from the boundaries transitions.

## 5 Research Questions

Starting from the study of literature on this topic, and in reference to the relationship between mobile working, mobile devices and WLB, my position is to consider that the WLB has some inherent characteristics and related to the individual [20] but in the meantime is continuously constructed and negotiated [25] within sharing systems practices groups. So everyone will test own WLB that cannot be the same as anyone else. This balance becomes a set of individual factors in harmony with contextual factors. In summary, do not exist an universal "formula" to reach own WLB, like so is possible that one person tests at different times of his life more or less WLB in relation to the involved factors.

The first research question is how mobile work, and in particular emerging technologies that make it possible, can influence Work-Life Balance. Compared to the mobile work characteristic features that can be summarized in *environment*, *activity*, *tools* and *people* with whom individuals interact, the focus is the ways through technological artifacts be able to manage multiple systems of activity, through the description of how people are involved in the two systems (life and work), and which are the actions that put in place (or not) in the interaction with the technologies to achieve or maintain their work-life balance. Additionally, considering the pervasiveness characteristics of these technologies and the possibility that sometimes life sphere and work sphere will permeate, to investigate how these are experienced, as facilitating or disturbing the conduct of activities in which individuals are involved. Finally encourage the increase of awareness, during de-briefing times and in-depth interviews, about their WLB.

The second research questions is what are the most appropriate research methods to explore this work practice (mobile working). Qualitative research has several tools and methods and in the case of mobile work they have to be carefully selected in order to understand which are the most suitable and which give the opportunity to obtain dense descriptions and to grasp the characteristics of movement and fluidity from one life sphere to another.

## 6 An Overview of the PhD Course: Activities, Methodology and Methods

The PhD course is on its second year. First year was dedicated to a thorough literature search on WLB. I have explored issues related to the interface work-life more meaningful and related issues of the *conflict*, *enrichment* and *balance* (WFC, WFE, WFB, WLB), studies on the influence of *gender diversity*, and *directionality* (considering not only the Work and Family in general, but also the direction in the WFC (Conflict), WFE (Enrichment), WIF (Interference with)); finally I have explored reconciliation policies and gender equality in the different EU countries.

Among the different studies on this topic, I wanted to investigate the relationship between the new and increasingly popular forms of flexible work, made possible mostly by the development of ICT, and the WLB.

At the beginning of the 2nd year of the PhD, with the aim to better understand these new forms of work, it was decided to carry out the exploratory interviews with privileged witnesses, deepening the themes of the work remotely and in mobility, participating in projects that allows better motherhood management (home-office), work in a co-working family-friendly, work in companies very attentive to welfare issues. What emerged from these interviews was on one side the interest of people towards flexible forms of work that provide a reconciliation of working and non-working times; on the other side the increasingly widespread use of mobile technologies that somehow make the boundaries between life sphere and work sphere less clear. In this way I was able to identify more specific points of interest that could become the central elements of the PhD. Before starting the field research phase, it was considered appropriate to investigate the literature on ethnographic methodologies and most used ethnography techniques with the intent to understand what are the methods and tools for collecting the experience of a mobile worker in relation to a typical day. From this analysis, some methods and ethnographic tools seemed more suitable and appropriate to capture the various facets of the issue, which, as already pointed out seems to be a "fluid" phenomenon, characterized by extreme mobility within the different spheres of life. The intent is to highlight not only the importance of the point of view of the researcher, but the great role that covered the participant's point of view, the first person perspective [44]. To this end, it has built a methodological framework that based on Activity Theory [17], [34] allow a description of contexts, considered as activity systems that combine subject, object and tools into a single whole in different situations. Following this theory and considering in particular the intersection between the spheres, I have divided the day activities considering the primary activities in which the person is involved and the context in which they are performed, the tools used, the object of activity and the actions that puts in place. At the same time it has been considered the role of secondary activities.

From this overview, the most appropriate tools seems to be **self-observation diary**, **interview** and **shadowing observation**.

### 6.1 Self-observation Diary (Mobile Diary)

In order to understand how the interaction with technological artifacts could affect the individuals daily life and the time management, the instrument of the diary seemed to be the most appropriate. However, among the different types, I have considered that it should not only have a characteristic of mobility but also the ease of use and speed of understanding. The choice is therefore relapsed on the participant's mobile device, the smartphone, which nowadays is already used by people as a sort of life diary, because through its intrinsic characteristics (memory containing photos, videos, text messages, chat, email, applications, ability to make calls and video calls, emoticons) is indeed a container but also a continuous interactions and experiences vehicle system. The construction of the tool also took account of the diaries literature

[6], [9, 10], [13] [41], [44]. In particular, some of the guidelines given within a study by Carter et al. [9] on the construction of a diary through the use of technological tools. The first element is that through this instrument we can understand the observer point of view minimizing the effect of the researcher's presence on the participant. The second is that we can record the event in which the participant is involved as it happens. This registration is done using different media (i.e. photos, audio notes, etc.) that produce material that will be used in the interview (elicitation studies). This material represents the person's point of view and his interpretation of reality [10] and facilitate the return to the memory during the interview.

After a pilot phase, it was decided to give the diary during 3 days. The intent is to ask participants to tell three typical days of their mobile life (2 midweek days and 1 in the weekend), through the different interactions with technologies (phone, smartphone, PC, tablet) in particular paying attention to the smartphone. I have identified four distinguishing characteristics that can allow me to follow the flow of people's day and in particular the interaction with their own smartphone: the *activity*, the *environment* in which it takes place, the *tool* used to carry out the activity and the *people* with whom he creates a relationship (even virtually). In order to describe even with photos and videos the work done through the smartphone, it was decided to ask individuals to take photos of the screen (screenshot) to be able to film all interactions through a perspective the nearest possible to the user. I will require people to send informations in real time using a popular smartphones' application (i.e. Whatsapp).



Fig. 1. Screen-shots from a smartphone in a trial day (from left to right: picture 1, 2, 3)

**Picture 1.** On the train there is paper notes and smartphone in charge.

**Picture 2.** Participant explains the activities in which he is involved to the researcher.

**Picture 3.** Screenshot of an email conversation in which the participant communicates an appointment delay in real time.

Adding an emoticon on any activity described will be useful to better understand the state of mind associated with that activity and will be a good starting point to explore during the in-depth interview. Finally I will ask to the participants to indicate whether they consider that activity belonging to the Work sphere or Life sphere: this



data will allow me to understand, particularly in combination with the emotional state described, where the experiences are collocated through interaction with their smartphones, trying to contribute to an active reflection on the day spent. The activity will start giving participants a kit with instructions and some activities' examples. This kind of diary allows supervision by the researcher who can follow the diary's activity, requiring explanations or soliciting writing when should pass too much time. Immediately following will be fixed the day of interview (after 2-3 days).

## 6.2 Interview

During interview [39], [43], it will be possible to deepen the material previously collected during mobile diary and require further clarification, allowing even a review of thoughts already expressed. For example, through the use of self-produced photos it will be possible to better examine and clarify some aspect of the mobile work day described in the diary [10]. All the materials will be summarized in three *mobile worker journeys*, that represent people's experience during the mobile diary days, and will be shown during the interview, on paper and computer. This visual tool is the result of the revision of the data emerging from the diary, divided according to environment, activities, tools, people, emotions within the two spheres Work and Life.

In this occasion it will be possible to make more accurate questions concerning some issues highlighted by the activities' descriptions and the role that had the used tools, as well as what actions have been implemented, if any customization has been done according to the activities to be completed (i.e. Every time you interrupt a primary activity, why it happens? It was a personal choice? Which are the feelings? When this interaction is lived as facilitating and when is lived as an obstacle to the activity? What actions have been carried out? And considering the whole day, which is the balance of the day? What is the general impression of this experience?).

## 6.3 Shadowing

The shadowing observation technique is particularly appropriate especially for its characteristic of mobility and the opportunity that offer to observe the phenomenon in which you are interested in its natural context. It also gives the chance to the observer to ask to clarify the actions that are carried out and explore some aspects that are particularly interesting, being now clear that the observer's presence is always felt and can not in any way be silent "like a fly on wall" [13], p. 54.

## 7 Next Steps

The last two phases will be based on field research and finally on data analysis. The context chosen is a consulting company with several branches located in Italy (Rome, Florence, Milan) suitable environment for the type of work that characterizes its activity (mobile work), and for the necessity, emerged during the first contacts with the employees of that company, to understand how to improve their WLB in

relation to the characteristics of the mobile work and the pervasiveness of technological devices used.

## Supervisor

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