The International
JOURNAL

of KNOWLEDGE, CULTURE
& CHANGE MANAGEMENT
in ORGANISATIONS,

Mobile Wireless Technology Enhanced
Workforce

Louis Sanzogni
Arthur Poropat

VOLUME 5, NUMBER 2

INTERNATIONAL JOURNAL OF KNOWLEDGE, CULTURE AND CHANGE MANAGEMENT
<http://www.Management-Journal.com>

First published in 2005/2006 in Melbourne, Australia by Common Ground Publishing Pty Ltd
www.CommonGroundPublishing.com.

© 2005/2006 (this paper), the author(s)
© 2005/2006 (selection and editorial matter) Common Ground

All rights reserved. Apart from fair use for the purposes of study, research, criticism or review as permitted under the Copyright Act (Australia), no part of this work may be reproduced without written permission from the publisher. For permissions and other inquiries, please contact <cg-support@commongroundpublishing.com>.

ISSN: 1447-9524 (print), 1447-9575 (online)
Publisher Site: <http://www.Management-Journal.com>

The INTERNATIONAL JOURNAL OF KNOWLEDGE, CULTURE AND CHANGE MANAGEMENT is a peer refereed journal. Full papers submitted for publication are refereed by Associate Editors through anonymous referee processes.

Typeset in Common Ground Markup Language using CGCreator multichannel typesetting system
<http://www.CommonGroundSoftware.com>.

Mobile Wireless Technology Enhanced Workforce

A Case Study

Louis Sanzogni, Griffith University, Australia

Arthur Poropat, Griffith University, Australia

Abstract: We propose a model and procedure for the implementation and transition phase to a Mobile Wireless Technology (MWT) enabled work environment. The study is based on the practical experiences of executives solicited through a series of interviews and questionnaires. The corporations represented consisted of a hospital, a university, a small SME, and a large media group. Four basic components appear to permeate the mobilisation concept when coupled with MWT. Namely, the ability to enable flexible working environments, work on demand, further integration of work and non-work activity at any given time, and multiple methods for achieving the working function. Based on empirical evidence a seven stage model for the implementation of the "mobilised" worker is then proposed. The implementation steps require a notable/knowledgeable awareness of MWT, followed by an analysis of opportunities for application eventually leading on to the evaluation of the most promising opportunities. Next is an analysis of and validation of models for workforce mobilisation and a business plan. Finally the development of the supporting infrastructure is followed by the roll-out, promotion and propagation. Two of the corporations already have some MWT infrastructure. The multimedia corporation has mobilised the photographers and sports reporters leading to immediate notable benefits in work turn-around and office space reduction. The university is investing in MWT primarily for the students, with a large number of wireless zones placed at strategic locations. Our research has shown that there is cautious optimism for the proposed model as well as the implementation procedures, although some the latter was only discussed at the hypothetical level. We note that there has been an overall positive reaction to MWT implementations, both from the user point of view and the management team. This positive attitude has encouraged the corporations to look further a field for other areas of implementation.

Keywords: Telecommuting, WiFi, Wi-Max, Mobile Wireless Technology

Background

In the past few decades organisations within industrialised countries have undertaken a wide range of changes in order to adapt to and profit from new technologies. Among the more substantial of these changes have been the introduction of new forms of employment, including variations on employment contracts (e.g., portfolio workers, who are contracted to multiple employers at the same time) as well as distance workers and telecommuters (Hunt, 2001). Workplaces have seen the introduction of new time arrangements for work, as well as changes to career paths and payment systems, which have mostly been introduced in order to achieve more flexibility and efficiency for organisations (Ramsay, Scholarios, & Harley, 2000; Roan, Bramble, & Lafferty, 2001). In parallel with these changes has been the growth of research and theory on topics such as organisational learning (Argyris, 1999) and knowledge management (Malhotra, 2000). Taken together, these changes indicate a desire to create organisational structures which effectively profit from technological change in order to more effectively utilise the knowledge and capabilities of workers.

This endeavour to create more effective organisations which both utilise and drive technological development is not new. For hundreds, if not thousands of years, people have sought ways of applying technologies to effectively manage social and economic challenges. For example, prior to the Industrial Revolution, most individuals worked close to where they lived, which allowed the mixing/integration of work and home activity, with people switching between these as circumstances dictated (Shamir & Salomon, 1985). When the farmer could not work during harvest, partners and family brought in the crop; when the farmer faced family issues, decisions to take breaks from work activity were relatively straightforward to handle. Their ability to be productive and self-manage work against private activity was a characteristic of successful pre-industrial socio-economic arrangements (Kieser, 1998).

The advent of industrialisation and the creation of 'manufactories', as early, integrated houses for manufacturing were known, was prompted by the desire of entrepreneurs to gain production efficiencies through control of employee time (Sokoloff & Dollar, 1997). Prior to industrialisation, entrepreneurs used a system of 'putting-out', whereby they

handed products over to workers to undertake their tasks in the workers' own houses. This meant that, if the workers were distracted by other demands on their time, such as having to bring the harvest in, attending social gatherings, or just being distracted, the entrepreneur simply had to wait. In contrast, manufactories had the advantage that entrepreneurs could control the start and finish times for workers, as well as monitor their work practices (Sokoloff & Dollar, 1997). We are still living with this radical shift in economic and social relationships, with most organisations still assuming that the best way of managing workers is by shepherding them into corporate factories, offices or other buildings, within clearly-defined times and with clearly defined work routines (Shamir and Salomon, 1985).

Alongside industrialization came large-scale worker displacement, and increasing levels of urbanisation, as workers moved from the countryside into cities, out from their homes to village or city centres where factories and businesses were located. This wholesale relocation enabled managers and entrepreneurs to control workers' mobility by limiting activity to a specified place, at a specified time, and for a specified type of work to be conducted in a specified manner. These relocations further allowed entrepreneurs to exploit economies of scale by massing labour to specialize on different parts of the production processes, in particular the organisational technology now known as assembly-line work. This provided management with the ability to manage resources in an observable and controllable environment against performance measures that were tied to production goals.

Interestingly, it was the advent of large masses of labour in factories that made new technologies, such as steam and water-driven mills and spinning or weaving machines attractive to entrepreneurs – without sufficient economies of scale, afforded by the development of the factory system, large investments in machinery were quite unreasonable (Sokoloff & Dollar, 1997). Thus, rather than being the result of new technologies, industrialisation prompted the adoption and development of technologies. However, once adopted these technologies acted as a stimulus to further organisational innovations, which in turn prompted new technologies, and so on in a still-continuing interaction.

It is tempting to think of such developments as inevitable: with the steady advance of industrialisation and capitalism, older forms of organisation are bound to disappear (Williamson, 1980). However, the continuing interaction of organisations and technologies with societies and economies can produce a range of surprises. For example, even the apparently moribund organisational form known as putting-out is enjoying something a renaissance, as

new economic and technological opportunities emerge (Lazerson, 1995).

Telecommuting and Workforce Mobilisation

Thus, it is not surprising that organisations have adopted new forms as new technologies, especially information and communication technologies (ICT), have emerged. When emergent technologies have presented new ideas and the promise of new opportunities, organisations have sought ways of utilising these while building on historical gains. One recent example of this has been the progressive renegotiation of work/home arrangements, especially under the banner of telecommuting. Teleworking or telecommuting is a negotiated agreement between the organisation and the employee with the purpose of allowing work to be carried out at an alternative place “(usually home) during some or all of the scheduled work hours.” (Heikes, 2001). This has advantages for many workers, who value the increased flexibility in their workday provided by telecommuting, combined with reduction in costs associated with physically commuting to work. Although this would appear to be a reversal of historical efficiency gains made through industrialisation, telecommuting has, for many organisations, enabled them to maintain similar levels of control over output while providing substantial reductions in costs, especially through reduction in various overheads associated with provision of office space (Heikes, 2001).

However, telecommuting is not simply an organisational innovation; many enabling ICTs were required to allow organizations to move the work around, rather than having to move the worker, in other words, to move the work to the worker, rather than moving the worker to the work (Hill et al, 2003). These technologies include the development of distributed architectures, the introduction of the Personal Computer, and more recently the rapid development of the Internet. These ICTs have aided the incremental movement to an environment where organizations' acquire added capability to move work back to the worker, in a manner which is roughly the reverse of that which occurred through the process of industrialisation. In the purest sense this doesn't necessarily mean “driving” the workers back to their homes: it allows the work to be performed by an individual in the office, at the individual's home or at the individual's present location. Nor has this shift been across-the-board. So far, the rise of telecommuting appears to be limited to a “member's only club” of people who deal in information (e.g., call centre operators, knowledge workers). However, it is clear that there has been a significant rise in telecommuting, which represents a significant shift in the nature of organisations and their use of technologies.

Telecommuting provides greater mobility and hence flexibility for workers, but worker mobility is not an all-or-nothing arrangement. For example, the extent to which people telecommute can vary substantially, with some workers being only part-time telecommuters, spending varying proportions of time at work or home (Tan-Solano, 2001; Peters et al, 2003). Likewise, even workers who do not telecommute may be far from stationary, and many find themselves moving from office to office, building to building, meeting to meeting throughout the day. Individuals have the capability to work when they are eating, travelling ordering fast food at the drive-through, waiting in line at the bank or undertaking recreational activities (just think of those people who take cell-phone calls in the cinema!). In effect, telecommuting is just one small part of the larger phenomenon of workforce mobilisation.

Workforce mobilisation refers to the range of changes to organisations and technologies that contribute to workers being both encouraged and enabled to move from one location to another, in accordance with circumstances. While studies done under the banner of telecommuting are acceptable and helpful in terms of fixed working places such as home, satellite office and work centres they neglect people that are on the move in more complex and unpredictable ways. In the paper Ramioul (2003) recognised this broader development when she stated that mobile work no longer means telework; instead, work has started to take on what Ramioul terms “multilocational” characteristics, and she consequently coined the term, the “multilocal” employee. Yet, whereas Ramioul focused primarily on the change to organisational structures, it is important to recognise that these changes also have technological catalysts and consequences. Workers are not just becoming less static, their mobility is increasingly enhanced by ICTs, leading to the rise of mobile, electronically-enhanced workers.

Our study has clearly shown that managers see advantages in moving to a MWT enhanced worker because it moves the work with the worker thus creating a sense of dynamic, real-time change both in task evolution and worker’s engaged interaction. The implications of such a paradigm shift are not lost on managers who appear to be willing to move to a workforce that self-manages at the individual level. However, this can imply changes in the worker’s attitude and employer’s expectations drawing more on self-efficacy awareness and goal oriented rather than task oriented activities.

Technological Catalysts and Consequences of Workforce Mobilisation

A range of ICTs have contributed to the increasing mobilisation of workers. The advent of the telegraph and telephone in the 19th Century enabled workers and managers to stay in touch in unprecedented ways, but even these required access to physical hardware, such as a phone-booth. More recent developments such as cellular mobile phones and text messaging mean that workers can converse with each other with few restrictions on their mobility. Likewise, although the Internet led to substantially enhanced access to organisational resources, the more recent advent of wireless access protocols (Bluetooth, WiFi, WiMax), wireless enabled devices (Centrino notebooks, PDAs, tablet PCs, and intelligent cell phones) and their built-in capability (application functionality) are enabling technologies allowing comparatively unlimited access to organisational information and computing resource (Katz, 1997). This Mobile Wireless Technology (MWT) is the technological enabler of workforce mobilisation. A MWT-enabled workforce becomes a very attractive resource as they are accessible and can be “turned on” whenever and virtually wherever they are required. The restrictive world of the old telecommuter, the stay-at-home worker with internet access, is thus a relatively minor innovation compared with the newer concept of the mobilised worker.

MWT commuting also removes an issue with meetings. Previously, workers were tied to the home computer connected into the organizational network for attending videoconferences, or hooked into meetings by a regular telephone. For many managers, this was unsatisfactory, and they would call telecommuters into the office to have a particular meeting. Nowadays, the same videoconference can be conducted on the road, at the client’s office or in a hotel coffee lounge. In other words wireless presents different ways to make participation easier for everyone involved with a scheduled meeting, no matter the time or what a participant is doing at that point in time. With the appropriate infrastructure [web cameras, videophones], some of the meetings lost components like visual interaction [understanding facial cues of each participant] are now available. Thus arguments for physical attendance at some kinds of office meetings are no longer quite as compelling.

One of the consequences of these new MWTs is that a broader range of occupations are now able to be mobilised — mobilisation is not limited to knowledge workers and call centre operators, as telecommuting largely was. Individuals can assume more roles, functions, and processes. For instance, salespeople can now prepare pricing and proposal details, examine stock availability and place client

orders, while they are at the client's site, without having to rely upon fixed sales support staff. Now all the functionality can be handled in the one transaction, thereby improving the performance and turnaround for clients, reducing the time it takes to satisfy an order and improving client satisfaction as a result of this better service.

This increased mobility has social consequences, many of which have been anticipated by the experience of telecommuters. In particular, the loss of a need to do work in a specified workplace results in blurring the distinction between home and work. A range of strategies have been adopted to manage this problem, as described by Tietze (2002). These include providing proper training and mobile resource management to minimize the impact on the home/personal life. Some people attempt to integrate the home life and their work lives where they may have the PC and communications in the family area. They may dress casually and place familiar artefacts in the work area to diminish disruption to the home environment, so that telecommuters can interact with family members as they work. Other telecommuters attempt to separate the telecommuting environment and the family environment, for instance, by using a separate room, dressing formally in business attire when conducting work and instituting "no interruption" policies with partners and children during telecommute time. They may even adopt a more professional demeanour in discussion with family members whilst on 'work' time (Tietze, 2002).

Each approach faces some level of conflict with the demands for family time from family members. Employees and their families who adopt appropriate coping strategies (Tietze, 2002) will find that they have a greater propensity to make the new "Mobile" resource environment a success. Appropriate coping strategies leverage family support which in turn improves mobilised worker satisfaction. Thus family support rather than family conflict is one of the successful ingredients exhibited by productive mobile workers.

But mobilised workers face additional challenges to those faced by telecommuters. While the technology allows us to work in different ways, individuals must understand that their behaviour has an impact on others around them as well as the organizations they work for. New forms of social etiquette are likely to arise, just as new forms of family etiquette have been observed among telecommuters. For instance, organisations are likely to consider it inappropriate behaviour to be handling a sales call in a movie house while everyone is watching their favourite movie. Similarly, it could be considered a breach of confidence or trust, to review details of a client on a tablet PC in a crowded subway train. So, while the technology itself allows us to be truly mobile and to

work in virtual environments, "mobile" culture must be able to integrate/evolve with society, business, organization, and family cultures. The MWTs do not in themselves provide a complete solution suited to organization and worker needs — social and organisational adjustments are likely to be required as well.

In summary, MWTs have led to the development of a new organisational form, the mobilised workforce. Although comparable with earlier workforce innovations, such as telecommuters, the mobilised workforce represents a more substantial change in organisational relationships. Consequently, organisational models based on telecommuting are insufficient for describing the nature of the mobilised workforce, and provide inadequate guidance for exploiting the advantages provided by MWTs. In order to obtain a clear vision of what the mobilised workforce is evolving into, a series of case-studies with senior corporate executives were conducted. These case-studies provided a map of current and potential practices in the infant domain of MWT enabled workforce mobilisation. As little peer-reviewed literature exists with respect to MWT influence on business models and the change management practices for their introduction, the knowledge gained from this research is expected to be of importance in terms of future trends. Therefore inferences have been developed on the analysis of case studies in a 'real' world setting and hypothetical thought experiments where 'what if' scenarios are played out with stakeholders. By doing so, new models of the development of MWT enabled workforces can be developed.

Method

In this section is presented a summary of the procedures used in the initial phase of an investigation into the introduction of MWT and subsequent implications for a mobilised workforce in four corporations. This research was conducted in order to measure the effect that this introduction would have in terms of developing a refined workforce mobilisation framework and a preliminary change management practice for the adoption of MWT.

Quantitative methods *per se* are inadequate to explain or capture many of the complex social issues and structures that surround organisations (Lee and Liebenau, 1997), especially in a setting that lacks a substantial quantity of instances of similar observations. In the present case, the novelty of MWT means that there has been relatively little opportunity to develop and apply models for quantitative analysis, and few good examples on which to base quantitative research. Therefore a methodology of qualitative research was deemed to be the most appropriate to meet the objectives set out by the research question. Qualitative research has three distinct underlying

philosophical methodologies, namely positivist, critical, and interpretative (Orlikowski and Baroudi, 1991). A positivist approach relies on the existence of already established relationship and also expects the researcher and the investigation to remain independent. A critical approach focuses on the 'oppositions, conflicts, and contradictions in contemporary society and seeks to be emancipatory'. The mandate of critical research is seen as being one of social critique (Myers, 1997). An interpretative approach aims at gaining a deeper understanding of a situation via the interactions of the participants and the significance that they place on the interactions. In our case interpretative research was deemed to be the most adequate. This stems from the belief that wireless technology functionality can be interpreted through its subjective perception and therefore influenced by humans.

Case study research occurs in a real, contemporary world setting where the subject of the research is believed to reside, and firmer definition between the observable fact and context is required. This method is well suited to this research since we are dealing with complex organisational issues (Mayer, 2002). By definition, case study research occurs when and where the knowledge of the participant and the context of the situation combine to increase ones understanding of a 'real' world issue (Cavaye, 1996; Benbasat, Goldstein and Mead, 1987).

Participants

Four organisations participated in this study, one each from the higher education, health care, information technology and media sectors of the economy. Informants were sought from each organisation who could comment knowledgeably on the organisation's adoption of MWT and/or upon the effect of MWTs on organisational practices. Approximately 33% of informants were Chief Information Officers or equivalent and an additional 20% were senior managers from other areas of the organisation. Overall, 93% of the informants were managers, 79% were male, 43% had graduate degrees, and an additional 43% had post-graduate qualifications.

Data Collection

Due to the fact that this inquiry was designed to identify common themes associated with workforce mobilisation, the data collection was designed to be flexible and to respond to issues that arose. Consequently, the data collection consisted mainly of soliciting information semi-structured interviews combined with group discussions. Informants were first involved in a group seminar in which the purpose of the research was described. This was followed by semi-structured interviews with each of

the informants. In particular, informants were asked about their opinions, perceived opportunities, barriers to adoption, and effect on work/personal/social life in their domain of expertise. A further group discussion was then conducted in order to clarify emerging themes among informants (see Sarantakos, 1993, pp.249-250), followed by a second round of semi-structured interviews. This allowed informants to provide an individual, critical appraisal of the themes which had been identified.

Results and Discussion

Each of the participating organisations were in the early stages of MWT implementation, and none had yet formalised MWT use in terms of firm policies at the corporate level. It is interesting to note that the study showed an educated awareness of the technology and some degree of formal planned approach to its introduction. The education organisation had a clear plan for the distribution of access points for the benefit of the students, some already in pilot stages. The media organisation had already implemented the technology for the processing of photographs and sport events.

Based up on the data gathered four broad components seem to dominate the overall MWT enabled mobility concept in terms of functionality. These are:

Anywhere : Enabling more flexible working environments. Use of MWT has reduced the need for unnecessary movements to and from the office and enabling more on-demand task completion.

Anyone : Enabling work on demand (i.e., the ability to produce products/services as and when required). In a MWT enabled zone, for example, organizations can scale up work across multiple workers based on fluctuating demands and supply. Individuals can come from a much larger spread of the population: across gender, age disability as well as across physical barriers.

Anytime : Enabling integration of work and non-work activity across any given time frame. This means that employees can schedule and mix work and non-work tasks over any given day.

Anyway : Enabling multiple methods for achieving business functions. The supply of different mobile devices and options available for wireless technology provides a high level of flexibility. For example, a sales presentation can be made using wireless enabled PDAs, computers or in vivo demonstrations. Engineers are able to keep associated blueprints and diagrams on an intelligent cellular phone, or download the latest fixes through a wireless notebook.

A further area of functionality was reported by some informants, whereby the use of MWTs had introduced a new level of employment flexibility.

Rather than the traditional organization employing many workers, some MWT enabled workers were able to work for many organizations. They live not only on one organization's computing resources, but rather on the computing resources within their own area of influence. Individuals leveraging wireless technology became virtual resources or organizational nomads traversing organization extranet/intranets to accomplish work assignments. Individuals attended multiple projects or work opportunities from a variety of sources in a virtual environment, apparently only limited by the capability of their technology and the number of hours in day. In this scenario individuals were able to bid for organization work assignments, and organizations were bidding on individuals as resources. This view encouraged change to how organizations treat and perceive individuals and how they can scale up capacity. Such changes are consistent with the growth of casual labour markets. Wireless technology and wireless enabled devices appear to act as a catalyst which accelerates this process of commoditisation of labour and work.

The developing capabilities of MWT has meant, in these organisations, that not only have organisations closed the gap between the organisation and the individual down to the "last mile" access to the home, but they have gone as far as the "last inch" access to the individual. This has meant that MWTs are blurring the distinction between work and private life, and not just home life, as did telecommuting. Individuals appear to be becoming an integrated whole, whereby they act as their own manager that lives and allocate time/activity to partner, family, personal, and work activity, as and when required, or demanded. This is not limited to work activity; individuals could be providing information to a relative on when their plane is due in town, so that they

can synchronize the pick up. It could be having the ability to organize financial instruments over a teleconference at three o'clock in the morning, or holidays for that matter. No matter where the individual is, no matter what that they are doing, MWTs mean they will have the capability, means, convenience and the wherewithal to achieve that particular activity. MWTs present these opportunities and challenges for individuals and organizations today.

Although, as argued in the introduction to this paper, the whole idea of work being integrated with an individual's broader life activities is not a new phenomenon, recognizing the opportunities presented by this new situation means recognising the qualitative difference between the level of access available to a MWT-enhanced worker that was not available to a pre-industrial individual. The level of integration of different aspects of life for these two is comparable, but the level of integration of one individual with others, regardless of their physical location, is clearly not. It will be interesting to see what demands these new workers place on technologies in turn.

Extending the Model: The Development of Mobilised Workers

Among the participating organisations, there were varying levels of commitment and progress in achieving a mobilised workforce. Some organisations had set up formal MWT steering committees, while others were providing incentives for workers to adopt MWT as an employee development program. Despite this, there was sufficient common experience to suggest an overall model of the process by which these organisations had moved towards workforce mobilisation. Table 1 presents a tentative outline of the steps by which these organisations have been moving towards gaining the benefits of MWT.

Table 1: Steps along the Path to Workforce Mobilisation.

1.	Awareness of Mobile Wireless Technology
2.	Analysis of opportunities
3.	Evaluation of opportunities
4.	Validation of models for workforce mobilisation
5.	Business planning for workforce mobilisation
6.	Developing supporting infrastructure
7.	Roll-out, promotion and propagation

The first step along the path of developing MWT workplaces appeared to have been relatively haphazard from organisation to organisation. Members of the organisation began purchasing MWT enhanced products, or management became aware of MWT in various other ways, but there was no clear shared understanding of the value to the organ-

isation or individuals, or what organisations and individuals can or should do to manage MWTs effectively.

Evidence gathered during the study showed an awareness that building a successful MWT model or profile requires customisation to the target organization. This means performing an assessment study

customizing MWTs to unique organizational characteristics such as the nature of the business and the organisation's culture. Such an assessment would include a discussion on how work processes would change and how performance would be measured in the transformation to MWT environments. Some of the attributes the organisations focused on in their planning were:

- Role: for instance a variety of roles such as law enforcement, nursing, education, journalism, knowledge workers, calls centres, etc. lend themselves to the MWT Profile;
- Function: (e.g. statistical collection, remote monitoring, real estate, etc.), or
- Process: where they are assessed as having a significant mobile access component which can be exploited, (e.g. some forms of clerical processing ...)

This second step involves analysis MWTs involved an inquiry into whether or not the roles, functions and processes of the organisation can be performed outside the office. Adaptability of roles, functions and processes to technology and mobilisation, and the logistic of the change in terms of operation was an integral part of this analysis. It is at this point where "Organizational Visionaries" emerged, who started to visualize and shape prototypes for MWT implementation.

The third step involved the investigation of why organisations would want a particular role, function or process to be conducted inside or outside the office, and what it is that the organization or the individual stand to gain by doing so (the benefits, the compelling business reasons for each stakeholder, e.g. Organization's Strategic Advantage, Employees' Career Benefit, and Clients' Customer Satisfaction). If there are tangible and/or intangible benefits such as reduced office space, reduced telecommute time, increase productivity and increased cost savings (Peters et al, 2003) these form the model outcomes and justify that particular aspect of the organisation as a candidate for being mobilised. At this third step "Organization/MWT architects" can design mobilisation models from the prototypes in the second stage, around each candidate. These models will describe the socio-technical framework of the MWT though the technical granulation need only occur during the IT assessment in step 6.

If acceptance is justified, the next step determines if the MWT model improves the product or service being produced. For instance, for each aspect that can be mobilised, there is the question of whether mobilising will improve the quality of work substantially or whether the anticipated benefits will be realized. Another way to look at this is to see if mobilised workers are able to interface and integrate

effectively when they are physically isolated from traditional social environments. This may also require an assessment of the process of moving to MWT environments, including demonstrating an achievable resource architecture, with scalable capacity, leveraging existing capital, and being able to integrate heterogeneous environments. At times, this may require additional capital expenditure, or in some case only marginal increases where MWT programs are used as phased replacements of obsolete technology, or for existing capital expenditure programs allocated to future capacity growth. This is the fourth step in workforce mobilisation, where MWT change agents are in a position to validate or prove the model.

At this point organisations appear to have gone through a sufficient learning curve to understand what areas can reasonably be mobilised using MWT. In other words, organisations undertake either a formal or informal cost-benefit analysis for mobilising their workers in order to identify which areas will provide the greatest return or the greatest chance of success. The answers to these questions in part will help drive the fifth step, which is to shape and define the organization's business case proposal and to identify an organization specific roll-out strategy, which can be moulded to and be flexible across the organization. Just as telecommuting suits some workers and some functions, it also is inappropriate for other workers and functions. Likewise, a particular area may be singled out for MWT, but not all workers may want to mobilise. Some may be drawn to its immediate advantages but may not have desired some of the related consequences — such as the necessity for greater self-management — while others may question the program seeing the "act" of being mobilised as being largely detrimental. The business case for MWT implementation needs to consider these concerns because, in some of the cases studied, they have proven to be capable of preventing the achievement of expected gains.

In contrast to business planning, which considered the likely gains and costs of mobilising the workforce, the sixth step organisations undertook was a consideration of whether their systems, culture, and/or political climate were conducive to the idea of workforce mobilisation. For instance, some call centre operations are ideal candidates for the MWT model as they are dealing with specific knowledge, and use technology to access customer details. In this scenario the MWT model can appeal to the organization where the same technology can be used to monitor and improve the call centre operator model. Human Resources Management (HRM) need to get around these issues, and build appropriate HRM infrastructures that adopt and integrate MWT models. Our study found that while corporations were aware of mobilisation issues, no evidence of

formal policies to handle the impending shift existed. These infrastructures covered what mobilisation policies, procedures, job descriptions, and performance measures, for managers as well as employees. Informants in this study described mobilisation support programs, such as full purchase of mobile devices and wireless access, and the education and training required. Hence this step, of developing the support infrastructure needed for effective workforce mobilisation, appeared to be highly valued in the organisations which had undertaken it.

An associated infrastructure issue has to do with the social environment within which MWTs are implemented. Informants in this study indicated the need for support infrastructures to handle such things as employee work/private life issues, including consultative resources for families as well as staff, training on technical issues and procedures for resolving service-level problems. Some training programs were provided to assist a new form of integration and separation (Tietze, 2002) of work and non-work activity. Integration programs for example demonstrate to employees how they could minimize abuse by showing how they can accomplish their work and non-work activity in the MWT environment. The overriding objective is minimize disruption to employee productivity, and allow employees to maximize their non-work activity in the MWT environment.

The seventh or final step in workforce mobilisation is the roll-out of the program, where promotion of the program, propagation, and success of the mobilised workers and the mobilised culture within the organization, needs to occur. The organisations in this study found that choosing a big bang approach to workforce mobilisation, designed to provide workers with better levels of service than legacy infrastructures, appeared to accelerate adoption and popularity. Branding the "Mobile Way" for example, can be achieved by modelling pilot projects which "prove" the concept across high-profile users. Nonetheless, some caution was expressed about this approach. Making MWTs too popular could result in unnecessary expenditure, simply because MWTs seemed desirable, without a supporting business case. Consequently, several of the informants in this study warned that propagation should only occur through a controlled program whereby selection was determined by business case. These business cases can help managers to select the right people, the right function, the right place, and the right time (Tan-Solano et al, 2001).

It should be noted, that the steps described here, and outlined in Table 1, are not mutually exclusive stages along the path towards workforce mobilisation. Indeed, it is easy to envisage organisations that might take these steps in different order, take several

steps at the same time, or omit some steps altogether. However, these steps reflect the process adopted by the study organisations in their development of mobile workers.

Further Considerations

Informants in this study noted a range of further considerations that they felt should be taken into account when attempting to mobilise a workforce. Perhaps most obvious is that each area of the organisation which is to undergo workforce mobilisation needs to have some motivation for adopting the new way. For many, the flexibility offered by MWTs is sufficient in itself, but others may need some additional incentive, such as reward and recognition, for changing to MWT models and culture.

Many informants also emphasised the importance of gauging and garnering management support for the transition. Management support appears to determine at what rate organizational transformation will occur. One of the challenges in obtaining management support is that, while managers may understand the idea of telecommuting, they have been living in a world of managing employees within their office. This allows manager to develop perceptions from social environments about performance and productivity of individual workers, groups and departments. The ability to monitor performance starts to shift, in part, away from the manager to the individual in a mobilised culture. For many managers, it is a major change in approach to start focussing on results rather worker activities. Employees have to make a similar mental leap, from being managed face-to-face in an office environment, along with its social support structures, to fully or partly isolated environments. In a mobilised workforce, communications become limited to available technology. This transformation assumes greater burden for self-management of work than in an office environment. In offices workers are given cues from the immediate supervisor or manager. However, even the stay-at-work-worker, who has not been moved to the mobilised approach, may still have to adjust to the new culture. While they may be in the office, they have also been isolated from their mobilised peers or even their managers. How they deal with this and interact with their mobilised colleagues needs to form part of the training program that is driving the shift to a new cultural identity.

The level of adoption and continued success of Organization MWTs appears to, at least initially, depend on how it is positioned and sold to organization stakeholders. Programs promoting the new culture as a viable working alternative have addressed a range of benefits, including employee flexibility, productivity or the quality of work. These appear to generate organizational momentum and stimulate

flow through effects such as being incorporated into departmental plans/budgets, integrated into business operations and exercised by employees and managers when they explore new ways of working, and start to reap satisfaction from mobilisation.

Formalising the mobilised culture was seen as important to several informants within this study. A major recommendation for achieving this was the provision of education and training programs for all stakeholders. Employees need to understand the changes to the way they do work, the different levels of interaction required, between them and their peers, their managers and their clients, the changes that will occur in their private life, how MWTs may impact upon their relationships with their spouse and other family members, and the ways they can manage MWTs and the new challenges it presents to family life. Employees also need to be given ideas on possible models work behaviour. These can be adopted on a basis which is most appropriate to that employee and which minimizes personal and role conflict for both organizations and families.

Another aspect of formalising the mobilised culture is the official aspects of the work contract. It appears that Human Resource job specifications, as well as reward and recognition programs have to be adjusted along with the metrics and measures for mobilised performance and career measurement. This has to be achieved while allowing equitable and comparable assessment for employee careers across mobilised and non-mobilised staff.

A final consideration raised in interviews, is that the shift to a mobilised culture should be perceived as a seamless and transparent move for clients and suppliers. Organizations can move forward more effectively by gauging the impact and product/service improvements linked to a mobilised culture. For instance, call centres should see an improvement in the quality of and turnaround of each call, as call Central operators can pay attention to and service caller needs, without everyday work distractions and interruptions invading their time.

Conclusions

Mobilisation of workers appears to be spreading, as organisations and workers pay more attention to the apparent ease-of-use of the technology and its bene-

fits. This perception extends beyond the technology itself into the roles, functions and processes required from the organization, management, employees, and clients. It is likely that management acceptance will also accelerate once reports start appearing showing clear benefits to managers themselves.

On the other hand, mobilisation of the workforce may break down where instances of abuse occur by employees or managers. Managers may be tempted, for instance, to off-load more work onto individual mobilised workers, thereby extending their workday without compensating changes to benefits. Alternatively, the mobilised worker may not give the same level of effort or hours of effort on a daily basis. Approaches for handling these challenges will need to be developed as workforce mobilisation becomes more popular. Mobilised culture will mature and become part of the mainstream as organizations demonstrate consistent positive reinforcement; when workforce mobilisation is perceived by all as part of the organisational lifestyle and mobilised workers are seen as complementary employment resource for managers, and when employees start to mobilisation as an alternative channel which is attractive to career growth.

However, the consequences of workforce mobilisation extend far beyond the organisation to the families of mobilised workers, and from thence into the broader society. The role of family's as part of the culture is likely to be re-considered, and family roles renegotiated, in response to a mobilised world. It may be that assimilation of personal relations will come with some level of negotiation and contract not only within families, but possibly with managers, and members of the broader community.

In the final analysis the ability of workforce mobilisation to permeate wide varieties of individual activity across work and private life means organizations and individuals now have the ability to design or incubate mobilised cultures. These are cultures where role, function and process are intrinsically joined to each other through wireless technologies enabling new opportunities to create value. This shift may, in the end, be less widespread and profound than the social shifts arising from industrialisation, but it is likely that the consequences of MWTs and workforce mobilisation will be just as complex for those undertaking these changes.

References

- Argyris, C. (1999). *On organizational learning*. Malden, Mass.: Blackwell Business.
- Benbasat, I., Goldstein, D.K. and Mead, M. (1987). The case research strategy in studies of information systems. *MIS Quarterly*, September, pp. 369-386.
- Cavaye, A. (1996). Case study research: a multi-faceted research approach for IS. *Information Systems Journal*, 6, pp 227-242.
- Heikes, P. C. (2001). Managing the Virtual Worker/Telecommuter. *Proceedings of the 48 th Annual STC Conference*. Chicago 2001.

- Hunt, J. (2001). The future of work. In R. Wiesner & B. Millett (Eds.), *Management and organisational behaviour: Contemporary challenges and future directions*. (pp. 3-10.). Brisbane: John Wiley & Sons.
- Hill, J. E., Ferris, M. and Martinson, V. (2004). Does it matter where you work? A comparison of how three work venues (traditional office, virtual office, and home-office) influenced aspects of work and personal/family life. *Journal of Vocational Behavior* 63(2), 220-241.
- Lazerson, M. (1995). A new phoenix?: Modern putting-out in the Modena knitwear industry. *Administrative Science Quarterly*, 40(1), 34-59.
- Lee, A.S., Liebenau, J. and DeGross, J.I. (eds.) (1997). *Information Systems and Qualitative Research*, Chapman and Hall, London.
- Katz, J. E. (1997). Social and organizational consequences of wireless communications: a selective analysis of residential and business sectors in the United States. *Telematics and Informatics*, 14(3), 233-256.
- Kieser, A. (1998). From freemasons to industrious patriots: Organizing and disciplining in 18th century Germany. *Organization Studies*, 19(1), 47-71.
- Malhotra, Y. (2000). *Knowledge management and virtual organizations*. London: Idea Group Publishing.
- Myers, Michael D. (1997). Qualitative Research in Information Systems *MIS Quarterly*, Vol. 21, No. 2, pp. 241-242.
- Orlikowski, W.J. & Baroudi, J.J. (1991). Studying Information Technology in Organizations: Research Approaches and Assumptions, *Information Systems Research* (2) 1991, pp. 1-28.
- Peters, P. and den Dulk, L. (2003). Cross Cultural Differences in Managers' Support for Home-Based Telework: A Theoretical Elaboration. *International Journal of Cross Cultural Management*, 3: 329-346.
- Ramioul, M., (2003). E-work challenges the e- society STILE. Retrieved June 21 from http://www.sociologie.be/marketdag/papers/sessie01_paper_ramioul.pdf Times New Roman
- Ramsay, H., Scholarios, D., & Harley, B. (2000). Employees and high-performance work systems: Testing inside the black box. *British Journal of Industrial Relations*, 38(4), 501-531.
- Roan, A., Bramble, T., & Lafferty, G. (2001). Australian Workplace Agreements in practice: The 'hard' and 'soft' dimensions. *Journal of Industrial Relations*, 43(4), 387-401.
- Sarantakos, s. (1993). *Social Research*. MacMillan Education Australia Pty Ltd.
- Sokoloff, K. L., & Dollar, D. (1997). Agricultural seasonality and the organization of manufacturing in early industrial economies: The contrast between England and the United States. *Journal of Economic History*, 57(2), 288-321.
- Shamir, B. and Salomon, I. (1985). Work at Home and the Quality of Working Life, *The Academy of Management Review*. 10 (3), 455-464
- Tan-Solano, M. and Brian H. Kleiner, B. H. (2001). Effects of telecommuting on organizational behavior, *Management Research News* 24(3/4).
- Tietze, S. (2002). When Work Comes Home: Coping Strategies of Teleworkers and Their Families. *Journal of Business Ethics*, 41(4), 385-396.
- Williamson, O. (1980). The organization of work: A comparative institutional assessment. *Journal of Economic Behavior and Organization*, 1(5-38).

About the Authors

Dr Louis Sanzogni

Dr Sanzogni research interests lie in the area of Information Access, Knowledge Acquisition (within an ontological/organisational context), and the technology which supports information access and knowledge acquisition.

Mr Arthur Poropat

Arthur's research interests include the links between personality and performance in education and employment, as well as critical perspectives on organisational structure and design.

THE INTERNATIONAL JOURNAL OF KNOWLEDGE, CULTURE AND
CHANGE MANAGEMENT

EDITORS

Mary Kalantzis, RMIT University, Australia.

Bill Cope, Common Ground, Australia.

EDITORIAL ADVISORY BOARD

Chryssi Vitsilakis-Soroniatis, University of the Aegean, Rhodes, Greece.

Eleni Karantzola, University of the Aegean, Rhodes, Greece.

Gerasimos Kouzelis, University of Athens, Greece.

Leslie Johnson, University of Greenwich, UK.

Bruce Cronin, University of Greenwich, UK.

Martyn Laycock, University of Greenwich and managingtransitions.net, UK.

Dave Snowden, Cynefin Centre for Organisational Complexity, UK.

Stavros Ioannides, Pantion University, Athens, Greece.

David Lyon, Queens University, Ontario, Canada.

Krishan Kumar, University of Virginia, USA.

Claudia Schmitz, Cenandu Learning Agency, Germany.

Bill Martin, RMIT University, Melbourne, Australia.

Paul James, RMIT University, Melbourne, Australia.

Robert Brooks, Monash University, Melbourne, Australia.

Margaret Jackson, RMIT University, Melbourne, Australia.

David Hakken, University of Indiana, Bloomington, Indiana, USA.

Zainal Ariffin, Universiti Sains Malaysia, Penang, Malaysia.

David Gurteen, Gurteen Knowledge, UK.

Verna Allee, Verna Allee Associates, California, USA.

Rod Dinnitt, William Bethway and Associates, Melbourne, Australia.

Judith Ellis, Enterprise Knowledge, Melbourne, Australia.

Kirpal Singh, Singapore Management University, Singapore.

ASSOCIATE EDITORS, 2005

Visit: <http://www.Management-Journal.com>

SCOPE AND CONCERNS

Visit: <http://www.Management-Journal.com>

SUBMISSION GUIDELINES

Visit: <http://www.Management-Journal.com>

INQUIRIES

Email: cg-support@commongroundpublishing.com