Managing Mobile Technology: The Shift from Mobility to Connectivity

Smartphone usage by executives is evolving from an emphasis on mobility and toward connectivity, and supporting connectivity requires appropriate technology capabilities, effective organizational policies and workplace norms. We propose a framework of four connectivity states, which provides insights into how employees can manage their own connectivity and leads to recommendations for CIOs on managing mobile technologies.1,2

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Mobile Connectivity is Changing How Work is Performed

Almost every manager now carries at least one mobile device, which means there are increased organizational expectations for connectivity to work anywhere, anytime. For many, it is hard to imagine life without the convenience and efficiencies of mobile technology. However, mobile technologies also change the traditional spatial and temporal boundaries between work and non-work, resulting in more permeable boundaries in which work is completed during personal time and non-work is conducted on-line during working hours.

The demand for an increasingly networked and connected workforce also has the disadvantage of managers experiencing the stress of always being connected to the workplace and being unable to “escape.” Added to this demand are the addictive properties associated with the allure of simply being connected.3 Some have argued that technology has become

1 Dorothy Leidner, ShanLing Pan and Juliana Sutanto are the accepting senior editors for this article.
2 An earlier version of this article was presented at the 2011 SIM Academic Workshop Enterprises and People on the Move: Managing Mobility for Business Value, Shanghai, December 4, 2011. The authors acknowledge the valuable comments of the senior editors and reviewers that led to the revision of this article.
3 Besseyre des Horts, C., Dery, K. and MacCormick, J. “Paradoxical consequences of the use of BlackBerrys: an application of the job demand-control-support model,” New Ways of Organising Work, Kelliber, C. and Richardson, J. (eds.), Routledge, 2012. This chapter, co-written by the authors of this article, discusses the effects of mobile connectivity. Although it is entirely different from this article, it uses some of the data from phase one of this study but compares two global banks (one based in the U.S. and one based in Paris) to examine the impact of BlackBerry usage on employee stress. Some of these findings inform this article.
an expression of human desire to expand power and control over our circumstances\(^4\) and to mold the world around us to suit our individual and collective needs. Thus, it is not so much the mobile capabilities of technology that are changing the way we work, but the capacity for ubiquitous and constant connectivity.\(^5\)

From an organizational perspective, mobile technologies such as smartphones, tablets and laptops enable users to engage with customers, suppliers and colleagues at any time and from anywhere. Mobile technologies thus appear to offer "organizational nirvana" where executives can manage their work to make better use of downtime and increase their availability, with the promise of increased value and productivity for the firm. For IT leaders, the challenges are not only to respond to the exponential growth in mobile technology capabilities, but also user demands for organizational support to enable them to "use technology on a more continual, fluid, natural, dynamic and often invisible basis."\(^6\)

To understand how mobile connectivity is affecting the way work is performed, and the growing IT management challenges, we examined the use of mobile technology at a large, global investment bank subsidiary in the Asia Pacific region, which we refer to as ‘Urbis.' We interviewed financial analysts and executives in the organization’s research division, which was chosen because of its high-intensity, demanding workload and global responsibilities. In this highly competitive environment the experiences of early adopters of mobile technology were both extreme and diverse, thus presenting an opportunity to examine individual behaviors and organizational responses that could be found in other organizational settings. Our first set of interviews was conducted in 2006 when mobile technology was becoming embedded into everyday working practices. To see how mobile technologies, practices and attitudes had shifted over time, we conducted a second set of interviews in 2012, when mobile technology was entrenched into this division’s business practices. (For more details of our research methods, see the Appendix.)

We first present our findings on how individual user perspectives changed between 2006 and 2012. We then discuss the organization-level actions taken over the same time period and the institutional norms that affected mobile technology usage. Next, we present a framework of four states of mobile connectivity that captures both our individual-level and organization-level findings about the need not only for mobile technology capabilities, but also organizational support that enables an individual's capacity for connectivity. Based on the lessons learned from the Urbis case about achieving what we refer to as "optimal connectivity," we conclude by providing recommendations for CIOs on the management of mobile connectivity to support work practices relevant for their own organizations.

**Mobile Technology at Urbis, 2006-2012**

In 2006, the Urbis participants in our study were early adopters of the BlackBerry (provided by the company), where the initial focus was on the mobility needs of the most senior executives. Although the devices were at first seen by some as a kind of "status symbol," the growing demands of analysts and managers to be equipped with mobile technology soon resulted in an exponential increase in BlackBerry distribution. In 2011, the CIO described the organizational position in this way:

"We are committed to the continuous development of new services and creating convenient access to more business applications."

By 2012, Urbis saw the BlackBerry as much more than a mobile email device, and had recognized the need to manage connectivity more effectively in an increasingly virtual and mobile world. The organization needed to stay technologically at the "cutting edge" to compete in an industry where the images of innovation and success are important.

Below, we summarize how the interviewees’ perspectives and organizational actions evolved over the period of our study. Although we

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recognize that this was a period of significant change in smartphone capabilities, and of significant economic pressures for Urbis and many other companies in the financial services industry, we believe that our analysis holds many insights for managing mobile technologies in general.\footnote{More specifically, we recognize that the shifts in individual and organizational perspectives were also influenced by: (i) advances in mobile technology from devices that delivered asynchronous communication to more socially integrated and synchronous technologies—including the rapid rise of social networking sites; and (ii) significant changes in the financial services industry due to the global financial crisis as well as increased security requirements to appropriately respond to the demands for greater transparency and regulatory controls.}

**Shifts in Individual Employee Perspectives on Mobile Device Usage**

From our 2006 interviews, significant evidence emerged at the individual level that the anticipated benefits of smartphone technology were associated with the opportunities to take advantage of mobility to engage in more flexible work practices. By the second round of interviews in 2012, however, the following four distinct, yet inter-related, shifts had occurred (see Table 1).

**Shift from Mobility to Connectivity.** Most individuals interviewed in 2006 had owned their smartphones for less than a year and many anticipated, or were already experiencing, significant advantages from increased mobility. A typical response was:

> “It allows me to go out, to have meetings with vendors, other stakeholders ... So I can actually get out of the office and see them and still be contactable or do my personal stuff and be called or emailed.” Department head

In addition to mobile technology making it easier to get out of the office, the executives felt that there were now opportunities to spend more time at home while still being connected to work. However, the 2012 interviews revealed a shift in focus away from mobility to connectivity. Interviewees reported their work hours had extended typically from 7am until 8-9pm or later. Most also remained connected to work in the evenings and on weekends via their BlackBerrys. There were a variety of possible reasons for the extended hours now being worked, ranging from the impact of the global financial crisis and the resultant lay-offs, to increased security firewalls (making it complex to access the Urbis server from home) to the need for more face-to-face contact with colleagues and management. Whatever the reason, the value of mobile technology had distinctly shifted away from the ability to be more mobile toward the need for more connectivity with colleagues and customers, and greater accessibility to time-critical data.

**Access to Data, People and Conversations.** Between the first and second round of interviews, the data and knowledge requirements of executives and managers had increased significantly. In 2012, interviewees stressed the need for instant access to information, driven by the increased availability of information to clients, the highly competitive nature of turbulent markets and increased organizational pressure to perform in a leaner work environment. Mobile technology that connected executives to a wide range of information sources 24x7 had become a critical tool rather than a “nice to have.” In the words of one senior analyst:

> “I never want to arrive in the office and find out something about my market sector that I wasn’t already [aware of].”

However, Urbis had blocked the company-provided BlackBerrys from accessing many services and applications, so executives were using their own mobile devices (e.g., iPhones) to access market reports, social media and other data sources on the way to work, at home—essentially any time they were away from their desks. Not only was access to multiple sources of information crucial, but executives also needed greater mobile access to a broader range of information. As one senior analyst noted:

> “I don’t believe that we are making better decisions as a result of this increase in the speed of availability of information ... we still need time to sit back from it and look at the overall landscape, and that is getting increasingly hard to get.”

In the absence of adequate organizational and social support to regulate the flow of information enabled by the always-available connectivity, existing work models were simply accelerated
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as executives tried to meet market demands for faster responses.  

**Managing Work Boundaries.** Most interviewees in 2012, without prompting, discussed their desire to be able to better manage their own work/personal boundaries, as the requirement to be constantly connected had significantly increased since 2006. In 2006, interviewees described the technology itself as the cause of increased work intensity, so “switching off” equated to separation from the device. However, by 2012, the device itself was so

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8 See Zuboff, S. In the *Age of the Smart Machine*, Heinemann Professional, 1988. This book discusses the challenge for organizations to use new technologies to form new ways of working instead of simply doing more of the same, only faster.
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much a part of organizational practice that it was behaviors and perceived expectations of others that framed the difficulties of managing levels of connectivity with work. The sentiment about firm boundaries expressed by an associate analyst in 2011 was typical:

“In finance, work seems to be more than life... there doesn’t seem to be much balance... I come from a different industry so I can preserve my boundaries more... Because I am an associate I can get away with it but my bosses are expected to be connected all the time. I choose to disconnect because my partner is only home once a fortnight... if that changed I might feel differently. Even though I do it, I feel guilty because no one else in my team does it... It creates anxiety for me when I disconnect.”

Taking annual leave depended largely on the activities of clients and market activities, and most interviewees only took leave over the Christmas/New Year break. In the 2012 interviews, those who had tried to invoke their “right to a break from work” expressed guilt or frustration at having to connect in some way while on leave, or regretted that their leave had been compromised by expectations that mobile technology made it possible to stay connected.

Mobile Technology Used. An observable difference in the 2012 interviews was that most interviewees placed two mobile devices on the desk in front of them. In 2006, there were a few executives with two devices but by 2011 every interviewee had at least two smartphones (the Urbis-issued BlackBerry and a personal iPhone or similar) and typically an iPad or tablet and/or a laptop. With the exception of senior management, the standard issue BlackBerry was still an email-only device with some connectivity to other applications and services, but these were heavily restricted with security firewalls. The interviewees were therefore using their own mobile devices for voice calls, texting, accessing social media and a variety of other work and non-work related applications. Even though 24x7 connectivity was a distinct requirement of the job, because of Urbis’s security requirements this array of mobile technologies was largely personally funded by employees. They were using their own devices to help them manage the semi-permeable boundaries between work and non-work activities and to regulate their “connective flow” by being able to shift between work and non-work spaces. (The term “connective flow” is described later when we introduce our framework.) Some resented the need to juggle multiple devices, and wanted access to the more integrated mobile technology capabilities available on the market to help them better meet the needs of their jobs and personal lives:

“When I get in the taxi to go home I typically will have the BlackBerry on silent and I switch to the iPhone. In that way I can keep my eye on email but I am more actively engaged with Facebook, SMS and other social media to contact friends.” Associate analyst

Organizational Actions to Manage Mobile Device Usage

Although our interviews were primarily designed to capture individual usage of mobile devices, we also identified organizational actions that were integral to the outcomes. Table 2 summarizes the organizational responses from the first and second sets of interviews under the same four headings used above. Many of these actions (or inactions) were due to security issues.

Shift from Mobility to Availability. Just as personal expectations shifted from a focus on mobility to connectivity between 2006 and 2012, the corporate requirements also moved from the anticipated benefits of mobility to increased expectations of availability—including requirements to work extended hours to communicate effectively across time zones. Urbis’s work processes have fundamentally remained stable with very little, if any, redefinition to take advantage of the increased mobility and flexibility afforded by mobile technologies. However, while increased connectivity has not changed the stated work policies, expectations have shifted:

“They feel like you can’t get away from it; they could turn it off, but they won’t. And I think it’s (the BlackBerry) making it more difficult to push back on a work/life balance front, because the pressure from the organization is ‘look you’ve got a
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Table 2: Shifting Organizational Expectations on Mobile Device Usage

<table>
<thead>
<tr>
<th>Expectations and Emphasis</th>
<th>2006: Organizational Actions</th>
<th>2012: Organizational Actions</th>
</tr>
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<tbody>
<tr>
<td>Shift from Mobility to Availability</td>
<td>Focus on mobility of time &amp; place:  - Ability to access email outside of the office, particularly while traveling, regarded as the main value of BlackBerrys.  - Only senior management issued with integrated devices and all others email only.  - Training for effective time management.</td>
<td>Focus on availability and security:  - BlackBerry still the only company-issued device.  - Shift in focus from mobility to availability of employees.  - Security issues critical.  - Email focus, with restricted access to other functionality based on seniority or by request.  - All email and SMS activity monitored.</td>
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<tr>
<td>Access to Data, People and Conversations</td>
<td>Technology determined functionality:  - Email functionality, with some access to role-specific workflow systems.  - Smartphones viewed as an extension of mobile phones.</td>
<td>Security determined functionality:  - Increased availability of capabilities, but requirements to secure corporate data making it difficult to provide mobile access.  - Email the dominant capability on the BlackBerry, with highly restricted access to extended applications.</td>
</tr>
<tr>
<td>Managing Work Boundaries</td>
<td>Organizational-level management:  - Work/life balance policies in place.  - Time management training offered.  - Flexible work practices supported, but general acceptance that contacting an executive at home was for extraordinary requirements.  - All employees required to be contactable.</td>
<td>Self management:  - Organizational policies still in place but collective practices supporting an always-available culture.  - Ability to self-manage boundaries regarded as one of the qualities of an effective executive.</td>
</tr>
<tr>
<td>Mobile Technology Used</td>
<td>Corporate determined devices:  - BlackBerrys issued to senior management and others (by request and with job-based justification such as travel requirements).  - Restricted access to capabilities based on cost management.  - Urbis laptops issued for remote work.</td>
<td>Individual technology toolkit:  - BlackBerry issued as a general tool-of-trade to employees whose job requires them to be connected.  - Laptops available on request, but with heavily restricted capabilities and monitored usage based on security requirements.</td>
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BlackBerry, you work in a global business, so you really need to [be contactable]; you’ve got no excuse.”” Department head

Access to Data, People and Conversations. Urbis’s data security concerns were already high in 2006, but had soared to new heights by 2012. The need for security had been heightened by an environment where executives were increasingly mobile and carried sensitive data in small handheld devices easily left behind in restaurants, cabs, on planes and anywhere else where they could be easily picked. In 2006, the focus for the IT department was to ensure that data stored on mobile devices was secure and adequately protected and that firewalls were in place. At that time, remote access to files was generally described as “clunky, time consuming and difficult” and generally not available through mobile devices other than laptops.
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By 2012, several security breaches had made Urbis even more concerned about data security, and the severe consequences of these breaches were well known to employees because a recent breach of email protocol had resulted in managerial-level dismissals. As most Urbis-issued BlackBerrys were still restricted to email access; there was no voice or web functionality, and access to applications was made available only on the basis of a needs assessment. All emails and text messages were logged and monitored by Urbis’s IT department, thus restricting and restraining use for anything other than readily identifiable business communications. Access to social media was not permitted on Urbis-issued BlackBerrys.

Managing Work Boundaries. Despite Urbis having organizational work/life balance policies giving the right to annual leave and non-work personal time, the demands of the workplace, particularly in an economic downturn, meant that the work/non-work boundary was considered to be highly permeable. By 2012, high-performance requirements and harsh consequences for those who didn’t meet them (there were regular rounds of lay-offs) meant that executives largely expected to be constantly connected:

“I took a break this year to attend a wedding overseas and that was not a good idea because everyone else was working. I won’t do that again. I will take my breaks when my clients break.” Senior analyst

Our second round of interviews showed that Urbis regarded the ability to self-manage boundaries as one of the qualities expected in a successful executive:

“I think the organization … says that you work so hard that it is OK to take a break. It comes down to how good a business manager you are … how you manage your work load.” Senior analyst

The impacts of not taking a break were evident in accounts of the personal consequences of working long periods without a break. One senior analyst recounted how he had used an extended break from work while recovering from a major illness to develop skills to manage email databases, calendars and technology boundaries through multiple devices. These skills subsequently enhanced his ability to take a break from work and re-engage his mind more effectively. As the department head noted:

“It is interesting that they say they choose whether or not to be connected. Yet when London calls them at 3am with a legal issue and they have their phones switched off, they then complain that their report wasn’t released. I say ‘well what do you expect … you need to be available.’”

While senior management acknowledged the value of taking care of employees and recognizing their value to the organization, the nature of the business and its fast-paced, always-available culture means that instant responses are the expected norm. Executives were therefore required to self-manage their connectivity in an environment where the requirements of the workplace were paramount.

Mobile Technology Used. In 2006, decisions about the distribution of BlackBerrys and the functionality they were allowed to access were largely based on cost considerations and level of seniority. By 2012, however, the corporate focus on smartphones had largely shifted from cost to security issues, and instead of being seen as a “perk” for senior executives, BlackBerrys were now seen as a general business tool. BlackBerrys were now widely distributed to most employees, but only with email capability, and all activities conducted on them were monitored and recorded. To provide the capabilities to meet all their professional and personal requirements, executives purchased their own mobile devices, which they used in addition to the corporate BlackBerrys.

By 2012, many executives were using multiple personal devices to avoid security screening of personal messages and to access applications and publically available data that their BlackBerrys were blocked from accessing. Interviewees considered personal funding and support for additional mobile devices to be part of both the job and personal lifestyles.

Changes in Institutional Norms That Enable or Impede Mobile Device Usage

In Table 2, we summarized the organizational actions that were taken between 2006 and 2012.
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Table 3: Changing Institutional Norms for Work and Mobile Device Usage

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<tr>
<th>Institutional Norm</th>
<th>2006</th>
<th>2012</th>
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| Mobile Devices Liberating and Intensifying Work | Liberating work practices:  
• New spatial and temporal considerations as pre-existing norms for time spent in the office were liberated by mobile connectivity.  
• Use of mobile technology to use downtime more productively. | Embedded work norms:  
• Increased consciousness of the acceptability of engaging with work during downtime.  
• Liberating behavior from the spatial requirements of the office reduced to necessary work-related breaks rather than recreational breaks. |
| High Expectations of Engagement with Work   | Acceptance of long hours:  
• Behavioral norms consistent with the high centrality of work.  
• Long hours, few breaks and weekend work established norms.  
• Expected to be available when required. | Expectations of connectivity:  
• In addition to long office hours, general expectations of 24x7 connectivity and availability, and connectivity during annual leave. |
| High Penalties for a Lack of Performance    | Individual metrics:  
• Performance measured on a rigorous 360° feedback system.  
• Regular staff dismissals and redundancies for those who failed to meet performance metrics. | Contingency metrics:  
• Increased and regular redundancies following the global financial crisis.  
• Performance and behavioral metrics firmly entrenched as determinants of success, further enhanced by overall Urbis performance criteria and cost cuts. |

at Urbis, a period during which the demand for mobile technologies increased dramatically. During both our first and second round of interviews, interviewees also discussed the norms of behavior that heavily influenced their own interactions with mobile devices (some of these were touched on in the above discussion). Table 3 summarizes the changes in three institutional norms between 2006 and 2012. These norms either enabled or inhibited the ability of Urbis executives and managers to use their mobile devices to support their work processes or meet their personal needs.

In 2006, there was significant evidence of new institutional norms being created for the opportunities enabled by mobile technology for greater mobility and flexible work practices. By 2012, the smartphone was embedded into work practices to the extent that it was no longer central to practice norms and part of the consciousness of the interviewees; connectivity was now “just part of life”:

“I don’t have an end to my working day. I am always connected ... I look at it (the BlackBerry) at weekends but I don’t engage unless I have to ... I do value my personal time and try to get home to see my kids each night. It (the BlackBerry) is on my periphery rather than central to my life like it used to be.” Head of operations

Mobile Devices Liberating and Intensifying Work. Consistent with a high-performance work environment, the norms of work patterns at Urbis reflected the high centrality of work, long working hours, few breaks and a willingness to work whenever required. These norms are usual in the financial services sector, but were strengthened at Urbis by the use of smartphones. In particular, employees reported increased capacity to remain engaged with work during downtimes such as business travel, commuting to and from work, meetings, lunches and other activities that involved “dead time.” In 2012, interviewees discussed the establishment
of norms such as the use of smartphones in meetings and the recognition that some of these norms had detrimental impacts on executive focus and organizational efficiencies. However, while there was a general awareness of the detrimental impacts, interviewees admitted to placing their BlackBerrys on the table at restaurants, constantly referring to them in meetings and, in general, never having them far from their hands. Thus, the technology had become integrated into everyday work practices.

High Expectations of Engagement with Work. In 2006, interviewees referred to the need to check their BlackBerrys on annual leave and described very conflicting feelings of, on the one hand, resenting the intrusion, but on the other being able to relax as they “kept an eye on work” (senior analyst). The head of research publications went to extremes to avoid staying connected by choosing holiday destinations to geographically remote regions to justify disconnected annual leave.

By 2012, expectations about availability had shifted considerably. Interviewees sch global investment bank subsidiary in the Asia Pacific region eduled annual leave around customer business cycles and considered taking breaks at other times very problematic. Very little organizational support was available to cover their roles during absences and the norm at Urbis was that employees would be always contactable and regularly checking emails:

“This is a high-performance job with a lot of competitive people so there is an expectation that you will be connected. I don't think my colleagues in New York would appreciate me telling them that I was unavailable ... You could do it but then don't be surprised if you get a poor performance review.” Head of operations

While senior executives intellectually acknowledged the need for employees to take annual leave, institutional norms for performance measures, together with personal engagement with the work environment, meant that totally disconnecting was extremely difficult, and a level of connectivity, even while on leave, was now increasingly expected.

Implicit Always-on Expectations Can Affect Performance Reviews. As in many organizations, performance reviews at Urbis determined bonuses and continued employment; reviews were used to motivate employees as well as to weed out poor performers. Although this is the norm in the financial services industry, and organizational statements supported the need to disconnect from work, the institutional expectations promoted an always-on culture that managers often framed around “availability” and integrally linked to performance. By 2012, further weight was being given to performance reviews, with interviewees reporting that bonuses and job security were determined both by the organization’s financial performance and by more subjective assessments that reflected institutional behavioral norms related to always-available connectivity.

The three institutional norms discussed above embedded the requirement for constant connectivity into the practice of Urbis executives. Thus, by 2012, the technology had become an integral part of the always-available culture rather than being the driver creating it, as it was in 2006. Corporate policies and statements recognized the needs and rights of employees to disconnect from work and recharge; Urbis considered regular breaks to be desirable and necessary for the sustainable management and to avoid burnout in a highly competitive and pressured business environment. However, despite the rhetoric and policies, the responsibility for managing work time was considered to lie with the individual employee.

Framework for Understanding Connectivity and the Implications for Managing Mobile Technology

To understand more about connectivity, we have developed a framework of four states of connectivity, each of which has different implications for the management of mobile technology.

In the early days of smartphones at Urbis, the business regarded mobility (i.e., the physical repositioning of work in temporal and spatial contexts) as the most significant contribution of this technology. However, evidence from our study suggests that what truly adds value is the connectivity afforded by these devices.
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This connectivity enables work practices to be redesigned in a way that allows individuals to connect with people, information and activities anytime, anywhere.

The functionality and features embedded in the design of mobile devices provides users with a wide variety of opportunities to connect—and disconnect—with work and non-work activities. This means that smartphone users have to decide for themselves where to draw the boundary between work and non-work use. In an environment such as that at Urbis, executives will construct their own idiosyncratic boundaries, with their use and non-use patterns of smartphones depending on their own work/non-work values and expectations, especially their perception of the centrality of work in their lives. The organizational challenge therefore lies in how to help employees enact their connectivity choices to enhance rather than inhibit both their work lives and non-work lives.

While executives refer to the need to disconnect, in practice they adopt an approach described by one of our interviewees as “adjusting the tap.” We refer to this as managing the flow of connectivity, or “connective flow,” a term coined by Kolb, Collins and Lind. Drawing in part on their work, we argue that connectivity enabled by mobile communications is not about mobility in and of itself, but rather the capacity for ubiquitous and constant connectivity. Thus, we describe connectivity as having the right kind and amount of robust and reliable technical and social communication for the task or purpose at hand.

According to Kolb, Collins and Lind, there are three states of connectivity: hypo-connectivity, hyper-connectivity and requisite connectivity. Our framework, shown in Figure 1, includes these three states and an additional fourth state, which we call “optimal connectivity.” The four states are determined by the level of technology capabilities provided to control connectivity (the y-axis) and the level or organizational actions (in the form of policies, norms and expectations) to enable connectivity (the x-axis).

The technological imperatives of requisite connectivity are built around avoiding both hypo-connectivity (having too little connectivity) and hyper-connectivity (insufficient organizational tools to enable the technological communication capabilities to be controlled). Both hypo- and hyper-connectivity will prevent workers from

Figure 1: Framework for Understanding How Workers Can Manage Their Mobile Connectivity

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<thead>
<tr>
<th>Technology Capabilities to Control Connectivity</th>
<th>Organizational Actions to Enable Connectivity</th>
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<tbody>
<tr>
<td>Hypo-connectivity</td>
<td>Optimal Connectivity</td>
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- **Hypo-connectivity**: Insufficient technological capabilities to control levels of connectivity and low levels of organizational support resulting in levels of connectivity that are too low for individual requirements.
- **Hyper-connectivity**: Sufficient technological capabilities to potentially exert controls over connectivity but insufficient organizational tools to enable these to be enacted. Thus, workers experience the negative effects of too much connectivity.
- **Requisite Connectivity**: Low technological capabilities to control connectivity but organizational instruments in place to enable a level of connectivity that is sufficient for the job but does not necessarily deliver the individual controls to manage connectivity to meet personal and professional requirements.
- **Optimal Connectivity**: Connective flow achieved through a dynamic process to meet individual and professional requirements.


performing effectively. Requisite connectivity is when the appropriate level of technological and social connectivity is available to enable workers to control their connective flow and perform more effectively.

Optimal connectivity extends the notion of requisite connectivity to suggest that executives must be empowered to make choices so they can regulate their connective flow to meet their personal and professional needs. Achieving optimal connectivity depends both on providing the individual with the technology capabilities to control connectivity and on the organizational practices that enable the individual to enact those capabilities. A further complication is that an individual’s optimal connectivity will change as circumstances, communication volumes and relevance change, in some cases, minute-by-minute.12

As indicated by Figure 1, high levels of technology capabilities to control connectivity (i.e., appropriate levels of mobile technology to access people, data and knowledge to do the job) but low levels of organizational ability to manage connectivity, will likely cause executives to experience the stress and negative responses associated with hyper-connectivity. Conversely, restricted access to technology capabilities is problematic because workers are likely to experience the frustration of not having the connectivity required to perform activities that enhance their personal and professional lives. These employees are experiencing hypo-connectivity. The low levels of both technology capabilities to control connectivity and organizational support are insufficient to meet an individual’s connectivity requirements.

Increasing the level of organizational support, but not the technology capabilities, means a worker has sufficient connectivity for the job but does not necessarily have the individual controls to manage connectivity to meet his or her personal and professional requirements (requisite connectivity).

To enable individuals to manage their levels of connectivity (i.e., their connective flow) means moving to the optimal connectivity state. With optimal connectivity, individuals can manage their connectivity consistent with requirements to perform at work, and maintain individually determined needs for non-work activities. To shift from the requisite connectivity state to optimal connectivity requires a high level of technology capabilities in addition to a high level of organizational actions. It also requires employees to have the necessary skill levels to deploy the technology capabilities, and be cognizant of the existing organizational norms and expectations to enable those capabilities.

From our research, it would seem that individuals at Urbis are responsible for managing their own mobile connectivity. The role of the organization has been confined to providing the minimal mobile technology capabilities and managing the security issues associated with data mobility and intellectual property. Thus, Urbis employees can at best achieve the requisite connectivity state. Given that mobile technology has a range of possible applications and uses, and that the way technology is used has implications for how employees engage with work, management at Urbis needs to take additional actions if its employees are to achieve the optimal connectivity state.

Recommendations for CIOs

The Urbis case study demonstrates that effective management of mobile devices requires a shift in focus from managing mobility to enabling connectivity. We provide six guidelines for CIOs on how to achieve this.

1. Recognize that an Individualized Approach to Connectivity is Needed

Smartphones and other mobile technology devices offer the potential for more control over workflows and the ability to engage and manage work in more mobile and flexible ways. While CIOs are well placed to develop the technology capabilities, evidence from the Urbis case suggests that they also need to take a more individualized approach to mobile connectivity, recognizing that each employee will have personal responses to the management of work and non-work to meet personal and organizational requirements.

2. Provide Individualized Training on Getting More Functionality from Mobile Technology

Urbis provides little training on the use of mobile technology, yet it is clear that those with increased skills are able to generate capabilities from the technology itself that have proved useful in being able to control the demands of the workplace. Initially, Urbis provided training on time management, particularly for email. These sessions were typically poorly attended, and even one-on-one sessions were not effective because busy executives always found something better to do with their time. We recommend that training should be delivered in a more individualized and relevant context and directed by the IT department rather than by HR, with a focus on getting more functionality from the technology at an individualized level. Helpdesks, on-line training, super-users, and knowledge sharing through communities of practice are some of the ways in which the CIO can build capabilities within the organization to develop mobile technology expertise and open the path to achieving the optimal connectivity state.

Managers who develop the skills to use mobile technology more effectively will likely find opportunities to reframe work processes, contribute to new organizational behavioral norms and enhance their ability to manage their connective flow.

3. Keep Mobile Technology Policies Flexible Enough to Enable Users to Build Their Own Technology Toolkits

More flexible mobile technology policies are needed to enable users to build their individualized mobile technology toolkits, instead of the more defined and standardized approaches that have typically characterized corporate IT policies. This has obvious implications for the ways in which managers can construct their mobile technology toolkits, how the devices are funded and policies concerned with ownership of data and responsibilities for support.

4. Shift Mobile Technology Usage Decisions to Enabling Connectivity

We caution CIOs against taking the company-wide approaches recently implemented by some organizations, such as imposing email blackouts, cutting off access to corporate systems in the evening and banning weekend work. Although these centralized, standardized approaches force employees to disconnect, they threaten to restrict the very controls that are necessary to enable an individual to achieve the optimal connectivity state where they are managing their own connective flow.

5. Manage Individual Connectivity Requirements According to Work Priorities, not just Security Concerns

In reframing the approach to mobile technology usage to focus on connectivity, CIOs need to engage in discussions with other senior executives about organizational productivity and other ways of improving organizational performance by using mobile technologies. Employees need to be empowered to enact the controls and regulate their connective flow. Otherwise, they risk suffering stress and burnout as they try to cope with an always-available culture. We believe that the IT department is best positioned to take a leadership role in the area of mobile technology because of its intimate knowledge of the rapidly changing technology—technology that can enhance employees’ ability to achieve the optimal connectivity state.

Increased requirements for accurate and timely data delivered anytime, anywhere have long dominated thinking about mobile technology, but are often framed within security concerns rather than organizational needs. Technology developments will increasingly ease security concerns. Even so, the IT department needs to prioritize data requirements and then work closely with users to manage the delivery of these capabilities within the corporate security requirements, rather than engage in a more regulatory approach that can result in work-arounds and rogue systems. As seen at Urbis, if security issues take precedence over mobile technology functionality and capabilities, users may turn to personally funded mobile solutions to provide the capabilities that they need to meet their personal and work requirements.

6. Take a Lead Role in Promoting a More Supportive Culture for New
Managing Mobile Technology: The Shift from Mobility to Connectivity

Work Practices that Integrate Mobile Technologies

Organizational norms that enable more control over connectivity are critical to managing heavy work demands in a way that reduces the destructive influence of stress resulting from an always-available culture. We recommend that these norms need to go beyond the capabilities of the technology itself and should encompass some of the broader practices that lead to employees working extended hours. For example, if the CIO knows more about the specific tasks that are taking up executive time after hours (e.g., information gathering, emails, knowledge sharing), he or she might offer alternative technology solutions (e.g., Yammer and other social media). New practices can be co-created by technology experts and business process specialists to assist employees in managing their connectivity to meet both professional and personal needs. Supporting employees to manage their connective flow for personal and organizational value is in the long-term interests of retaining and developing talent, promoting good decision making and maintaining a sustainable workforce.

Concluding Comments

This study shows how early adopters of mobile technology shifted their focus over a five-year period from purchasing mobile devices to enabling mobile connectivity. By learning from their experience, we have gained new insights into managerial behaviors associated with mobile technologies and the organizational responses needed to enable individuals to regulate and manage their own connectivity. We have provided a framework with four states of connectivity that can be used by IT leaders to help understand how connectivity—rather than technology or mobility—should be managed. Organizations will achieve the greatest business benefits from mobile technology through a more individualized approach that enables workers to achieve what we term as the optimal connectivity state.

Appendix: Research Methodology

Our study had two main objectives. First, we wished to identify how smartphone users engaged with mobile technology to manage the connecting and disconnecting processes. Second, we sought to understand more about the “controlling” and “enabling” aspects of connectivity, how these factors helped an individual to manage his or her connective flow and the implications for CIOs. To explore a range of user behaviors and perspectives, we chose a qualitative case study approach. We studied the research department of a single organization (an investment bank based in the Pacific region) and used semi-structured interviews across a range of management roles, asking each interviewee to think about how they used mobile technology to engage with their work. We conducted two sets of interviews: the first was in 2006 soon after the organization had begun to deploy BlackBerrys; the second set was conducted the end of 2011 and beginning of 2012 so we could assess how the use of mobile technology had changed in the intervening period. The table below summarizes the interviewees. [Note: we use the year 2012 to refer to this second set throughout the paper.]

Stage 1 Research: 2006

Interviewees were enthusiastic about sharing their views on their use of a relatively new mobile technology and how it was influencing the way in which they worked. Although interviews were largely unstructured and exploratory, we focused on exploring how mobile connectivity (i.e., the BlackBerry) impacted how executives conducted, structured and approached their work. We were able to extend the interview data through a range of corporate emails that addressed the use of this company-endorsed mobile device, and through associated activities such as email protocols, reports from time-management training sessions aimed at addressing the pressures of increased email activity, follow-up emails and phone calls with participants to clarify comments, and material published by and about the organization to ground our research in an industry context.

The findings of Stage 1 were used to design Stage 2 data collection, which had an increased focus on connectivity.
## Summary of Interviewees

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<tbody>
<tr>
<td><strong>Department Head</strong></td>
<td>2 x 1 hour interviews; Email and phone discussions; Feedback on paper</td>
<td>1 hour interview; Email and phone discussions; Feedback on paper</td>
<td>Responsible for leading, developing and managing 80 professional staff engaged in the origination and production of IP</td>
<td>On 24x7 but would not expect to use it for work before 7am or after 7pm. Some conference calls scheduled out of hours to deal with global issues.</td>
</tr>
<tr>
<td><strong>Head of Operations</strong></td>
<td>1 hour interview</td>
<td>1 hour interview</td>
<td>Responsible for all activities related to the administration of the department</td>
<td>On 24x7 and available to respond to work calls as required, but infrequently before 7am or after 7pm.</td>
</tr>
<tr>
<td><strong>Head of Research Publications</strong></td>
<td>1 hour interview</td>
<td>1 hour interview</td>
<td>Responsible for quality control and production pipeline of IP</td>
<td>On 24x5 and available to respond to work calls as required. Because of the out-of-hours and global nature of the production work as well as deadlines for print runs and authorities, calls may occur through the evening, particularly at peak periods.</td>
</tr>
<tr>
<td><strong>Senior Analysts</strong></td>
<td>2 x 1 hour interviews; Informal discussions; Emails</td>
<td>2 x 1 hour interviews</td>
<td>Responsible for creation and marketing of IP</td>
<td>Work week and extended work hours. Peak times will occur, particularly around reporting periods.</td>
</tr>
<tr>
<td><strong>Associate Analysts</strong></td>
<td>2 x 1 hour interviews</td>
<td>2 x 1 hour interviews</td>
<td>Responsible for supporting senior analysts in the creation of IP and handling client requests for data and additional analysis</td>
<td>Similar to senior analysts, but slightly less.</td>
</tr>
<tr>
<td><strong>CIO</strong></td>
<td></td>
<td>1 hour interview</td>
<td>Responsible for managing the IT architecture and the rollout and management of all IT hardware and software</td>
<td>Available 24x7, but would not expect out of hours calls unless there was a critical issue that required attention of this c-suite executive.</td>
</tr>
<tr>
<td><strong>Head of Operations</strong></td>
<td>2x1 hour interviews</td>
<td>1 hour interview</td>
<td>Responsible for the interface between technology, technology teams and end users, management control systems, information integrity and security</td>
<td>Available 24x7, but would not expect out of hours calls unless there was a critical issue.</td>
</tr>
<tr>
<td><strong>BlackBerry Consultant</strong></td>
<td>1 hour interview</td>
<td></td>
<td>Provides consulting advice and training to senior management on optimizing the use of mobile technology and time management</td>
<td>As an independent consultant, availability self-determined.</td>
</tr>
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Interview Guide for Stage 2 Research

<table>
<thead>
<tr>
<th>Theme</th>
<th>Issues to explore</th>
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<tbody>
<tr>
<td>Connectivity</td>
<td>How do you connect and disconnect from the workplace? How important is constant connectivity in your job?</td>
</tr>
<tr>
<td>Technology in Use</td>
<td>Describe your technologies used? How are these managed/owned? What capabilities do you have? Need? How are these delivered? If not delivered, then why?</td>
</tr>
<tr>
<td>Expectations</td>
<td>What are the expectations of the organization about your connectivity? What are the requirements of your role for connectivity? How do the stated requirements differ from the actual needs?</td>
</tr>
<tr>
<td>Control/Enable</td>
<td>How do you use your mobile technology to enact greater control over your work? What support do you get from the company to connect or disconnect?</td>
</tr>
</tbody>
</table>

Stage 2 Research: 2012

Without exception, interviewees found it more difficult than in 2006 to discuss their views on the use of mobile technologies that were, by then, integrated into their everyday lives. Data was collected using semi-structured interviews on the topics and issues listed below. These interviews focused on understanding more about how mobile technology users were able to “disconnect” in their mobile, connected world. We also engaged the interviewees in discussions about the support and enabling mechanisms that framed their behaviors.

All Stage 1 and Stage 2 interviews were digitally recorded and coded to maintain the integrity of meaning, taking into account intonation and phrasing. Publicly available material and email conversations were used to clarify and contextualize the data gathered from both rounds of interviews. The combined data from both stages were then analyzed and coded according to themes that were identified by the researchers at both the individual and organizational levels.

This case study is part of a larger study investigating the impact of mobile technology on work in the financial services industry. The selected organization is typical of the investment banking industry in terms of its business profile, with executives who have global responsibilities answerable to directors based in different time zones. Like most financial firms, this organization is also characterized by a high-performance work ethic where it is expected that employees will work long hours and be able to respond immediately to current market and customer needs.

About the Authors

Kristine Dery
Kristine Dery (Kristine.dery@sydney.edu.au) is a senior lecturer at the University of Sydney Business School. Her research and teaching focuses on the link between technology and work, with a particular emphasis on mobile connectivity. Prior to her academic career, she held a range of management positions in Australia, New Zealand and the U.K., and has been involved in various IS projects both as a practitioner and consultant. In addition to her work on mobile connectivity, she has been involved in a range of research projects on the impact of integrated ERP systems on the workplace, with a specific focus on HR information systems.

Judith MacCormick
Judith MacCormick (jmaccormick@heidrick.com) is a partner in the Board and CEO practice with Heidrick and Struggles, a global leadership advisory firm. She is also a visiting fellow at the Australian School of Business, University of New South Wales, where her research and teaching focus is on optimizing outcomes for firms and individuals, particularly at the board and C-suite level. Having studied organizations across multiple industries globally and written widely on the topic of organizational “ambidexterity” (the ability to deal with contradictions, opposites and paradoxes), her interest is on understanding what this topic means in practice for leaders and their organizations.