SITUATIONAL RELEVANCE
Understanding how mobile technology tools are evaluated through use

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ABSTRACT

Fiori undertook a six-month contextual study of the needs and practices of highly mobile professionals and the IT professionals who support them. Through this study, we have come to an understanding of the terms by which people evaluate the relative merits and desirability of a tool for purposes of mobile productivity.

In this paper, we introduce the concept of situational relevance, by which we mean the effectiveness and usefulness of a tool in relation to its desired or intended context of use. A situation, we propose, is comprised of three elements: some period of available time, a set of environmental conditions, and a task or activity involving the tool. A tool's value for mobile productivity increases in relation to the number of situations to which it is understood to be relevant.

Citing examples from the research, we will show how situational relevance influences adoption and use of mobile technology devices. Through an understanding of this model in action, we will demonstrate the benefit of situational relevance as an evaluative tool in the development of mobile devices, and suggest ways to apply it as a generative planning tool as well.

THE CONTEXT OF MOBILE TECHNOLOGY EVALUATIONS

Charles is a real estate agent in the suburbs of Chicago. He finds himself working in five or six of locations during the course of his day. He starts the work day at his home. He then spends a few hours in his office before leaving to go look at properties with clients. It is not uncommon for Charles to spend several hours of the day (broken up by appointments) working from his car. While visiting a property, he will take a few minutes whenever possible to catch up on phone calls and messages, review faxes that come to his BlackBerry Pearl, or quickly respond to emails. When there is enough time available between appointments, he finds a café to work from.

Charles takes his notebook computer with him during the course of the day, but leaves it in the car unless he is at the office, at home, or at a café. "It's not worth lugging it around," he says. His BlackBerry, on the other hand, is almost always on his belt. While he does not like the keyboard and feels it is not very good at surfing the web, it has important benefits. "The BlackBerry allows me to get enough information so that I know what is going on. If there is an emergency, it is good enough until I can get access to my notebook. I think my customers value the fact that I can respond to their emails quickly."

Like many busy mobile professionals, Charles thrives on professional achievement and is driven to reach ever higher levels. This requires spending quite a bit of his working time away from his desk and he finds himself constantly juggling his time, his activities, and the changing circumstances. His high degree of mobility is vital to his success and effectiveness, but it also complicates the need to balance his personal and
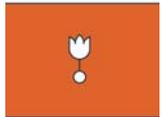
professional obligations. While he relies on mobile technology to help him juggle all these factors, it does not always serve him in the best way possible.

The terms by which mobile professionals evaluate the merits of a mobile technology are rooted in their primary objectives—getting things done whenever they can and wherever the demands of their lifestyle puts them. As mobile professionals describe it, getting things done encompasses the entirety of their professional and personal obligations, from meeting with clients to communicating with loved ones. They are driven to make the most out of each and every available moment, to maximize their professional success and personal effectiveness.

For mobile professionals, some part of getting things done, if not the majority of it, necessarily takes place away from their home, office or primary workspace, even while in motion while moving from place to place. The conundrum mobile professionals confront is that, while vital to what they do, mobility comes with a set of penalties. Penalties are paid both in terms of the time taken up by travel, disruption in communications and access to information, and constraining environments that make little accommodation to their needs. Mobile professionals adopt a number of strategies to mitigate these penalties, the adoption and use of mobile technology being one of the more significant.

However, while using mobile technology helps them make the most of their time away from a fully supported workspace, it also comes with its own set of penalties. The need to carry multiple devices and peripherals, the wait for start up or shut down, the bother of charging batteries, and the need to learn new interfaces are all examples of the penalties associated with using mobile technology. In addition, not every device is optimized for every type of situation they confront in terms of time, task and environment. Thus the stakes are high for mobile professionals when it comes to choosing to adopt a mobile device.

SITUATIONAL RELEVANCE

The success of a specific mobile technology device is a function of what we call its situational relevance, by which we mean the effectiveness and usefulness of a tool in relation to its desired or intended context of use. A situation is comprised of the three factors: some period of available time, a set of environmental conditions, and a task or activity involving a mobile technology device. Relevance is a function of how a device supports a user interaction, or series of interactions, in a manner that is appropriate to the specific factors comprising the situation. In other words, how useful is the device given the constraints of time, task and environment? It is important to note that though situations are made up of the confluence of three factors, each individual factor affects the relevance of a device in a particular way. Let us look at each of the three conditions in detail.

RANGE OF ACTIVITIES

Mobile professionals use mobile technology to execute on a wide range of tasks during the course of their day. The activities mobile professionals do most often can be categorized according to the type of effort involved. "Glance," for example, describes a way of taking in information to stay informed and quickly judge whether or not responsive action is called for. This can be something as simple as noting email subject lines or checking a meeting notification. On the opposite end of the spectrum, "production" is the category of detailed, focused work. Any type of lengthy content creation is included in this category, such as creating spreadsheets, presentations, or even detailed email responses.

Common activities amongst mobile professionals

Glance

An opportunity to review time sensitive information and make a decision as to whether a responsive action is required

- Checking incoming email
- Reviewing meeting alert
- Being aware in case of emergency situations

Quick take

A short activity, often a response to some incoming communication which requires immediate response

- Short phone call
- Forwarding an email
- Looking up contact information

Review/reply

A more formal or complicated response to or review of task

- Composing or reading longer and more detailed email
- Review of complicated data
- Follow-up phone calls to voice mail requests

Catch-up

Interruptible activities that can be put off during the course of a day, and so tend to pile up

- "Cleaning out" email in box
- Web-based research
- Completing expense reports
- Planning and budgeting tasks

Production

Required to complete a project or deliverable, generally requires focus and minimal disruptions

- Writing proposals, reports, etc.
- Drawing/ designing
- Collaboration with team

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PERIODS OF TIME

Mobile professionals struggle to match the wide range of activities they do with available periods of time, and vice versa. They perceive their time in terms of what activities can be successfully completed. For example, mobile professionals perceive a "moment" as easily available throughout the day. On the other hand, they rarely perceive "extended" periods being available without conscious effort on their part. Longer periods of time are so difficult to come by that they often occur only during non-office hours.

Evaluating mobile technology in terms of time, mobile professionals evaluate the likelihood of effectively completing the task at hand with a given device. If a device can support the efficient execution of the task within a given period of time, it is more relevant to the situation. However, if a device requires time to initiate an activity (laptop startup time, for example), shorter periods of time may go underutilized. Similarly, if the device slows down an activity (thumb-typing versus touch-typing, for example), it effectively eliminates options to maximize the use of longer periods of time.

Commonly described periods of time

Moment

Short bursts of opportunity which can happen whenever it is appropriate to interrupt something else

- Requires just a few seconds

Minute or two

Enough time to allow for moderate focus

- Can be made available in an emergency

In-between

Usually around a half-hour; too short to allow for focused, extended activity, but too long to leave unutilized

- Waiting in airport
- In car as passenger

Medium

Roughly an hour, which is enough to allow some level of concentration

Extended

Usually two hours or more, allows for long periods of dedicated focus

- Available only on occasion
- Often only during non-business hours

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ENVIRONMENTAL CONDITIONS

Environmental conditions directly impact the likelihood that a mobile professional is able to engage in a desired activity for any given period of time. Mobile professionals normally have access to everything they might need to be effective in a "primary workspace," usually an office. However, they need to be effective in a number of environments in which there are progressively fewer accommodations made to their activities and progressively more barriers.

Environmental accommodations can be as simple as tables and chairs or as complicated as access to a secure server. Environmental barriers are things like constrained space or ambient noise. A "secondary workspace" might have elements to accommodate use like network access, power outlets, and a desk and chair; however, it may also lack easy access to IT support and access to internal corporate servers. At the extreme end of the spectrum, mobile professionals are doing activities "on the move," wherein people may use their own bodies to make accommodations for the environment (like keeping a Bluetooth headset on in anticipation of phone calls).

Mobile devices are evaluated on their ability to maintain effectiveness in variable environmental conditions. Their capabilities are measured both when accommodating a specific environmental situation (can this work if I have to stand during use?) as well as across situations (will it continue to be useful if I have an opportunity to put it down on a table?)

Common environmental conditions

On the move
Conditions as a result of active movement that result in divided attention.

- Walking
- Driving

Stop over
Transitory conditions with unpredictable access to networks, power, etc

- Airport lounge
- Short break during a meeting

Impromptu workspace
Provides limited accommodations such as tables or chairs, but still lacking in consistent access to networks and power

- Airplane seat
- Riding in a car
- Coffee shop
- Client office

Alternative workspace
Adequate accommodations for extended activity, with limited ability to store permanent resources

- Hotel room

Primary workspace
Dedicated workspace with access to everything necessary to comfortably accomplish most activities

- Office
- Home office

Situational Relevance

INTERDEPENDENCE OF CONDITIONS

Taken together, the conditions of activity, time and environment make up a situation. While we have described the above situational conditions as distinct, the way mobile professionals experience their lives makes it difficult to talk about one condition without the others. Furthermore, the conditions that comprise a situation are interdependent and often exist simultaneously. For example, Charles monitors incoming emails on his BlackBerry while he reviews and edits sales contracts on his laptop. Thus "glance" activities can occur while doing other things; similarly, "moments" exist within other gaps of time.

EVALUATIONS OF RELEVANCE IN USE

Given the nature of the mobile professional lifestyle, it is no wonder they confront a great number and variety of situations in the course of their daily lives. The desire to make maximum use of each and every situation makes them frequent and demanding consumers of mobile technology products. They are keenly attuned to the performance of their mobile tools in a number of situations and are highly critical of the relative merits of any given product. Let us look at an example of how evaluations of relevance are made in real life.

As noted previously, relevance is a function of supporting an interaction in a manner that is appropriate to the specific factors comprising the situation. In other words, how well does the device help me get things done when and where I need it most? How well does it help me respond and adapt to a constantly changing set of conditions as I move from situation to situation? How does it help me maximize

my effectiveness in all situations while mitigating the penalties associated with using mobile devices?

In terms of situational relevance, the BlackBerry is able to provide Charles with an effective tool while he moves across the spectrum of environments, for shorter periods of time, while he glances at email or sends quick replies to customers. However, it becomes less relevant for activities that require more than a minute or two. Charles finds his laptop relevant for activities that require long periods of focused effort, like editing contracts, or when he has time to do work in his home office. However, it fails to maintain the same kind of relevance as he walks through properties or while driving from one location to the next.

For Charles, as for most mobile professionals, the notebook or laptop serves as his primary computer. Looking at it from the perspective of situational relevance, however, we can see that the laptop is especially well-suited only to a limited number of activities, environments and periods of time. Using it in other situations for which it is not optimized results in penalties to the person using it in terms of limiting mobility (difficult to carry), impeded usability in certain physically constrained environments (lack of horizontal surface), and lost periods of time (waiting for start-up/shutdown). Penalties are so onerous that many mobile professionals, like Charles, leave the laptop behind every chance they get.

Much of the life of a mobile professional is spent spanning the situational extremes, editing a PowerPoint file while traveling for sales presentations, for example. Ultra-Mobile PCs are beginning to demonstrate a great deal of relevance in these frequently encountered, dynamic situations. To maintain relevance in these highly mobile, yet

demanding situations, UMPCs must support a moderate amount of text entry. In usability testing we found that people perform text entry 18% more efficiently with FlipStart than with an OQO and 28% more efficiently than with the Sony UX, thus demonstrating greater relevance in a more possible situations.

GATHERING REQUIREMENTS FOR SITUATIONAL RELEVANCE

Observation and analysis of the experiences of mobile professionals with mobile technology provides us with an evaluation of how their current tools perform in key situations. After identifying the conditions which impact their ability to get work done while mobile, we can diagnose the situation in terms of requirements for a relevant mobile device. The next step in a process of generating product development criteria is to understand the situational requirements for effective productivity with a given set of conditions. For example, what would it require for Charles to do production work for an extended period in an impromptu workspace, like his neighborhood café?

At a high-level, the requirements for a device that would fully support Charles in this given situation might look like the following (see box, right). Once this exercise has been completed for all targeted situations, development teams can more effectively assess what will be required from all a device from a design, engineering and interaction perspective.

High level requirements for production/extended/ impromptu situation

What is required to be effective in terms of *production* in this situation?
o   Access to Operating System which is robust enough for the preferred word processing software
o   Word processing software
o   Input devices optimized for operating system and word processing software
o   Keyboard large enough for touch-typing
o   Screen large enough to visualize complicated or extensive data
o   Email client to ensure successful delivery of document to others
o   Robust enough processing power

What is required to be effective for an extended period of time in this situation?
o   Screen which does not produce fatigue
o   High-enough resolution and brightness
o   Keyboard which is comfortable for longer periods of time and allows for maximum input efficiency
o   Power source for device
o   Can maintain two or more hours of power with minimal disruption

What is required to be effective in an impromptu workspace?
o   Optimized for travel to and from impromptu workspace
    ▪   Compact enough to fit in luggage
    ▪   Light enough to carry
    ▪   Durable to withstand the rigor of travel
o   Optimized for use in impromptu workspace
    ▪   Extra long power cord to reach unpredictably located power outlet
    ▪   Communications capability
        -   Able to access LAN or WWAN
        -   Access to VPN for company

IMPLICATIONS FOR DEVELOPERS OF MOBILE SOLUTIONS

Situational requirements can be used to align every stakeholder in the product development process around the specific goals of designing an effective tool for mobility. By definition, the lifestyles of mobile professionals increase the number of situations they confront in the course of their daily lives. Developing a tool that is highly relevant can only be done if we begin to first understand how mobile professionals engage in the multiplicity of situations they encounter, and examine the conditions within situations that impact what they need and want from mobile technology. Once we are able to identify the detailed situations mobile professionals encounter through the lens of their own perspective, we can then identify and predict meaningful product requirements.

Situational relevance is important in that it helps development teams look at customers from a more holistic perspective. With technology, the temptation is always to offer more because it is always possible to cram in more features. Asking questions not only about what people want to do, but the circumstances of time, place, and required activities can help product developers to design from the perspective of what people actually do rather than what technology can do. By going through this process, developers avoid the risk of offering too much or too little. The success of mobile technology does not depend on having the most features, but in being most relevant.

METHODOLOGY

Fiori, commissioned by Vulcan, Inc. for the FlipStart product team, undertook contextual study of the lives of highly mobile professionals to understand their mobile computing experiences within the larger context of their busy lives. To that end, the research team spent hundreds of hours observing, interviewing, and shadowing mobile professionals—as well as the IT professionals who support them—at work, at home, and in transition. Researchers documented and analyzed attitudes, behaviors, and interactions with tools, resulting in a description of how mobile professionals understand, use and evaluate their mobile technology.

Combining methodologies from multiple fields within the social sciences, the research spanned six months and included fifty mobile professionals and eighteen of their IT professionals. Following a rigorous screening process, researchers met with each participant for several half day-long sessions, in which they were quickly brought up to speed on each mobile professional's range of typical days and activities. Following these interviews, the study deployed twenty UMPCs (fifteen FlipStarts and five OQOs). This deployment lasted a month, allowing time for the mobile professionals to not only incorporate the devices into their lives but also normalize their use, with the support of their IT infrastructure. Researchers again met with participants to follow the path of the adoption and normalization process.

The researchers interviewed the participants again at the end of the deployment period to understand responses and progress comparatively with their initial interviews. The study then entered into the deprivation stage. Researchers collected the devices and waited another two weeks before connecting with the

participants again. These final interviews focused on their adjustments to once again living without the devices, and garnered insight into their specific situational relevance.

ABOUT FIORI

Fiori, a consulting firm based in Portland, OR remains at the forefront of product design and development. Since 1994 Fiori has worked closely with many of the world's most prominent companies, informing and refining high-profile product lines with companies that include Intel, Hewlett Packard, Yakima Racks, and Microsoft. The research team was led by Jessica Coffey now a Partner with True Research, LLC.

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FIORI
2505 SE 11th Avenue
Suite 246
PORTLAND, OREGON 97202

503) 248.4764

www.fioriinc.com