



E-Commerce, Web 2.0 and Entrepreneurship: Opportunities in the U-Space

Leyland Pitt

Simon Fraser University

Richard Watson

University of Georgia

Pierre R. Berthon

Bentley College

Gabriele Piccoli

University of Sassari

Anne Engstrom

Lulea University of Technology

Abstract: Web 2.0 is not so much about new technologies as it is about new ways of using the internet and its associated technologies. In this article, we briefly describe the technological situation frequently referred to as Web 2.0, and distinguish it from its preceding phase, or “Web 1.0”. Then, using the distinguishing characteristics of Web 2.0, we outline a framework that we call the “U-space” that can assist in identifying and classifying the opportunities and issues that will present themselves to entrepreneurs in the Web 2.0 environment. In conjunction with this, we outline four short cases that illustrate this framework. We conclude by identifying some questions Web 2.0 entrepreneurs and those who teach entrepreneurship should answer in the utilization of the framework in the Web 2.0 milieu.

Keywords: Web 2.0, U-Space, entrepreneurship.

1. The Age of Information Addiction

Information is addictive. Web pioneers such as Amazon.com recognized this when they observed customers not just purchasing books, but gorging themselves on all the information about books and music the early website had to offer. Customers consumed book reviews by experts and amateurs, identified other books by the same author, and in a state of information-induced nostalgia, revisited the books they had enjoyed in earlier years. While the only information

available in conventional bookstores resided in analog form on bookshelves, or on a salesperson-controlled database, and where the only books available were those in stock, Amazon.com provided information on just about every book ever written. Whereas the only music on hand in conventional music stores was the content on the shelves, shoppers at Amazon.com got their information fix on most of the music ever recorded, along with information on artists and those of similar genre, reviews and samples of songs. Nowadays of course, social network sites such as Facebook cater to our addiction for information about those close to us: We crave information on even the most trivial details of our friends' and families' lives, and spend countless hours looking at their photographs, and seeing "what they're doing now" (Grossman, 2007; Hernandez, 2008).

The recognition and fulfillment of human addiction have long been a driving force behind entrepreneurship. Physical cravings for substances ranging from hard drugs, tobacco, and alcohol to caffeine and fast food have driven the creation of vast global ventures, as entrepreneurs identified opportunities and crafted innovative and proactive strategies to satisfy these (cf. Fadahunsi and Rosa, 2002). Mental cravings, such as an addiction to information, have proven to be no different, as early Internet (often referred to as "Web 1.0") entrepreneurs such as Amazon.com have demonstrated. Now Web 2.0 will put entrepreneurial initiatives to satisfy the human craving for information into overdrive – indeed, it is already happening. The technology is there, the market is there, and certainly, many of the ideas are there. All that may be lacking is a framework for Web 2.0 entrepreneurs to employ in their conceptualizing of business ventures, for practitioners to apply in their management of strategy and tactics, and for entrepreneurship scholars to utilize in their framing of research problems and endeavors (cf. Sarasvathy, 2004) to shed light on these issues. The purpose of this paper is to provide such a framework.

We proceed as follows: First, we briefly describe the technological situation frequently referred to as Web 2.0, and distinguish it from its preceding phase, or "Web 1.0". Second, using the distinguishing characteristics of Web 2.0, we outline a framework that we call the "U-space" that can assist in identifying and classifying the opportunities and issues that will present themselves to entrepreneurs in the Web 2.0 environment. In conjunction with this, we outline four short cases that illustrate this framework. We conclude by identifying some questions Web 2.0 entrepreneurs and those who teach entrepreneurship should answer in the utilization of the framework in the Web 2.0 milieu.

2. Web 2.0: What's New?

With the advent of browsing software such as Mosaic in the early 1990s, users were able to access and interact with sites on the multimedia platform that came to be known as the "World Wide Web". Organizations of all kinds, firms large

and small, and many individuals built websites for users to retrieve, and visitors mostly used these sites to find information, and indeed, to conduct online purchases of many kinds. The great majority of early websites were what came to be termed “brochure ware” – in simple terms, the corporate brochure was placed on a server, and users could page through it by clicking on various links. While no one thought to call it this, at this stage in its evolution the platform could well have been named, “Web 1.0”.

Numerous technological improvements accelerated the takeoff of the platform, including improved browsing software, better languages for building websites, faster modems, faster connection speeds, a wider availability of broadband, and ever more powerful computers and devices able to surf the Internet. As the platform became more widely used, however, the more profound changes that occurred were not in the domain of technology, but in the ways in which both software developers and end-users utilized the web itself. The origin of the term “Web 2.0” is credited to the O’Reilly Media Web 2.0 Conference of 2004 (see <http://www.paulgraham.com/web20.html>;) with O’Reilly himself defining it as, “as business embracing the web as a platform and using its strengths, for example global audiences” (<http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>). There has been much debate of definitions of Web 2.0 (see http://en.wikipedia.org/wiki/Web_2.0), and some commentators have even questioned whether the terms is meaningful at all, most notably Tim Berners-Lee, regarded by many as the founder of the World Wide Web. He says, “I think Web 2.0 is, of course, a piece of jargon, nobody even knows what it means.” (<http://www.ibm.com/developerworks/podcast/dwi/cm-int082206txt.html>).

It might indeed be more useful to view Web 2.0 as a series of application progressions, than as something new in and of itself. Rather than try to define it, it may be more insightful to try to understand what has changed and what has become possible, as humans have exploited the platform enabled by technology to assuage their unquenchable thirst for information. O’Reilly (2005) lists a series of comparisons between what, for want of better categorizations he terms “Web 1.0” and “Web 2.0”. Contrasting Web 2.0 against Web 1.0 is the same as comparing page views to cost per click, DoubleClick to Google AdSense, Britannica Online to Wikipedia, content management systems to wikis, personal websites to blogging, and publishing to participation. Web 2.0 is the internet’s “now” to Web 1.0 as the internet’s “then” – it is much more to do with what people are doing with the technology than the technology itself.

Rather than merely retrieve information, users now create and consume it, and hence add value to the websites that permit them to do so. These websites usually provide a richer context to users, by means of user-friendly interfaces that encourage and facilitate participation. Tapscott and Williams (2007) contend that the economy of “the new web” depends on mass collaboration, with economic democracy as an outcome. The notion of individuals simultaneously creating

value for themselves and others through profound network effects has not gone unnoticed by entrepreneurs. Many of the most noteworthy and successful startups of the past five years have gone on to build substantial equity for their owners. They have capitalized on the potential of Internet technologies to permit social networks to collaborate in the creation of value. These include the video hosting site YouTube (see Berthon, Pitt and Campbell, 2008), social networking sites such as Facebook and MySpace, online poker sites such as partypoker.com, and online betting exchanges such as Betfair (see Davies et al., 2005).

The Web 2.0 phenomenon has also attracted the attention of scholars in management and the social sciences, who have begun to research it from a number of different perspectives. Marketing researchers have already begun to note the profound commercial implications of consumer conversations, over and above the emotional and practical benefits that consumers themselves gain from these (Riegner, 2007). Web 2.0 is giving consumers far greater control over their media habits and hence, their roles in the marketplace. Organizational scientists are studying the formation of groups online, and how they work, paying particular attention to how organizational members communicate and collaborate using wikis and blogs (Lai and Turban, 2008). Noting that organizing no longer needs to take place around hierarchy and the collection, storage, and distribution of information as was the case with "command and control" bureaucracies in the past, Zammuto et al (2007) argue that the adoption of innovations in information technology (IT) and organizational practices since the 1990s now make it possible to organize around what can be done with information. Web 2.0 is an advancement of these developments, and at some time will be followed by Web 3.0 (which we will not speculate on at this point). These researchers conjecture that five developments in particular will result from the organizational impact of Web 2.0, namely, visualizing entire work processes, real-time/flexible product and service innovation, virtual collaboration, mass collaboration, and simulation/synthetic reality.

Social networking, in particular, has been the focus of a number of recent studies. Social networking websites such as MySpace and Facebook are among the most prominent of the Web 2.0 phenomena, and scholars have been quick to investigate these from a number of perspectives. Some have considered social networking from a sociological perspective – for example, adopting the theoretical frameworks of sociologists such as Dunbar and Goffman. Tufekci (2008) has investigated the social network activity of students on sites such as MySpace and Facebook under two rubrics: (1) social grooming; and (2) presentation of the self. She makes an interesting and potentially powerful conceptual distinction between what she terms “the expressive Internet”, or the Internet of social interactions (Web 2.0), and “the instrumental Internet”, or the Internet of airline tickets and weather forecasts (Web 1.0). Her research identifies two clusters that influence the adoption of social networking sites: attitudes towards social grooming and privacy concerns, and finds that non-users display

an attitude towards social grooming (gossip, small-talk and generalized, non-functional people-curiosity) that ranges from incredulous to hostile. While non-users do not report a smaller number of close friends compared with users, they do keep in touch with fewer people. Users of social networking sites are also heavier users of the expressive Internet, while there is no difference in use of the instrumental Internet.

Other scholars have considered social networking from a business perspective, giving particular attention to the entrepreneurial opportunities to be gleaned from the phenomenon. For example, Enders et al. (2008), using Anderson's (2008) concept of "The Long Tail" adopt a comparative case approach in contrasting two major German social networking sites – StayFriends and XING – in order to investigate how social networking sites create value for their users and how the owners can capture this. In doing so, they develop novel insights into how these enterprises create value, particularly by generating revenues through advertising, subscriptions, and transactions models. They also identify as the key value drivers in these business models the number of users, their willingness to pay, and their trust in peers and the platforms.

3. Enter the U-Space

Noting the increased prevalence of networks of all kinds in everyday life, and the effects these were having on society and business in particular, Watson et al. (2002; Watson, Berthon et al., 2004) coined the idiom "U-commerce", and suggested that it is a more appropriate and encompassing term than E-commerce to capture the phenomena enabled and created by ubiquitous networks. The parallels between E-commerce vs. U-commerce, and Web 1.0 vs. Web 2.0 are striking. From a broad perspective, these authors argued that "E-commerce", merely conceived of as trade that takes place over the Internet, purely had an incremental impact on marketing particular, and business in general. Indeed, if E-commerce is just about a buyer visiting a seller's web site and making a transaction there, then it really is not that revolutionary, and the Internet is really just another distribution channel. However, if we expand the concept of E-commerce to take in whether the consumer can do something "useful" as opposed, to simply purchasing, its impact on consumers' lives and business is much deeper. Electronic networks are satisfying human addiction to information by allowing them to become and stay informed, to perform services (e.g., banking, redeeming air-miles, and trading stocks), to interact with private and public institutions, and to entertain themselves. A convergence of devices such as computers, televisions, cellular phones, cameras and personal digital assistants and ultimately just about every feasible device and product, will affect most aspects of life. "When consumers are using every conceivable form of computer- or network-driven technology, then we have real u-commerce", according to

Watson, Berthon et al. (2004, p.40). Indeed, many of the technologies that these authors speculated on just five years ago, have materialized and are now parts of our everyday lives.

Watson et al. (2002) outline a multi-faceted U-commerce, where the u stands for ubiquitous, unique, unison, and universal, and define it as “the use of ubiquitous networks to support personalized and uninterrupted communications and transactions between a firm and its various stakeholders to provide a level of value over, above, and beyond traditional commerce” (p. 336).

A number of scholars in the management literature in general, and in the marketing and information systems literatures in particular, have subsequently adopted the “U-commerce” term, and have extended and explored it in their research and writing. Some have focused on a further refinement of the constructs (e.g. Junglas and Watson, 2006) while outlining research agendas and avenues for future investigation, as well as the challenges that face business leaders and entrepreneurs (Galanxhi and Nah, 2006; Leong, 2005). Others have given attention to the innovation and business opportunities inherent in the U-commerce phenomenon. For example, Wu and Hisa (2008) use an E-commerce innovation model to investigate the differences in technological knowledge, business model, and dynamic capability aspects used in Internet-enabled commerce (I-commerce) versus mobile commerce (M-commerce) versus ubiquitous commerce (U-commerce). Their findings point to innovation from I-commerce to M-commerce as radical, and result in far-reaching changes in business models. However, from M-commerce to U-commerce, the changes are disruptive and occur in the dimensions of both technological and business models. In earlier work, Hisa (2004) used a hypercube model to explore the technical, organizational and commercial challenges posed by E-commerce innovating applications. It was found that while M-commerce differs substantially from Web-based commerce in some technological components, both share common business models. From M-commerce to U-commerce, it was found that while innovation is modular to customers, and architectural to complementors, it was radical to E-commerce companies and providers.

Issues of privacy are also of concern in the U-commerce arena, and these have been the subject of recent research. Key issues are identified by Galanxhi and Nah (2006) who have constructed a conceptual framework for privacy in the U-commerce era based on Lessig’s (1999) macro-level perspective and Adams’ (1999) micro-level perspective. Using this framework, privacy issues related to U-commerce are discussed and future research directions are presented. Sheng, Nah and Siau (2008) argue that privacy is a major concern to customers and an obstacle to the adoption of U-commerce and studied how personalization and context can impact customers’ privacy concerns as well as intention to adopt U-commerce applications. Not surprisingly, their results indicate that the effects of personalization on customers’ privacy concerns and adoption intention are situation dependent. More specialized areas of focus have included the

application of U-commerce in tourism (Watson, Akselsen et al., 2004b), and retail (Keegan, O'Hare and O'Grady, 2008).

4. The Disruptive Power of U-commerce

Addiction is disruptive. It causes people to change their behavior, often in violent and socially undesirable ways. Society typically reacts by outlawing certain practices (e.g., the use of some narcotics) and ostracizing addicts (e.g., in most developed economies smokers are excluded from buildings when indulging their habit). Information is a "soft" addiction, but it still has socially undesirable behaviors (e.g., the use of Blackberries in meetings and social occasions and reading the newspaper at the breakfast table). At the immigration booths at many international arrivals sections at airports nowadays, the use of cell phones is prohibited.

Information addiction is the root cause of the disruptive nature of U-commerce, which provides information fixes in ways that earlier versions of commerce could not provide. Understanding this addiction is fundamental to recognizing entrepreneurial opportunities and creating value for information consumers. We now introduce the U-space to describe the broad types of services that can be provided. First, we introduce the four foundational u-elements of U-commerce – ubiquity, universal, unique, and unison – and then describe, and illustrate them with caselets. We draw on the work of Junglas and Watson (2006) for the definitions of these terms

4.1. Ubiquity

Ubiquity means "access to information unconstrained by time and space" (Junglas and Watson, 2006). People desire access to information wherever they might be, and networks such as GSM and WiFi feed this addiction, which is typically delivered by a cell phone or laptop. Furthermore, networked devices and infrastructures are becoming "everywhere". They are being embedded in consumer durable devices, such as an oven. Cars can connect to networks (e.g., GPS, satellite radio and soon WiFi). Those highly addicted to information were the early buyers of smart phones because they give ubiquitous access to information.

Ubiquity Caselet: General Motors OnStar (see http://www.onstar.com/us_english/jsp/index.jsp)

OnStar is the in-vehicle safety and security system created by General Motors and installed in its vehicles to help protect and assist owners on the road. OnStar's innovative three-button system offers 24-hour access to expertly trained, caring advisors; a connection to emergency assistance, and access to hands-free calling. The service makes use of a satellite network that is able to identify a vehicle and its whereabouts as long as there is a clear line of sight. The vehicle is identified by a processor, which is in constant contact with the OnStar center, so that if the owner or the vehicle needs assistance at any time this can be rendered. This can be owner directed – for example the owner can talk to an assistant, or automatically directed by the processor in the vehicle – for example, if the airbags engage at any time, the OnStar center will be alerted, and can in turn contact both the driver of the vehicle or the emergency authorities. Other features of the system include maintenance monitoring of the vehicle by means of a central computer, with a status report emailed to the owner each month, detailing vehicle statistics such as oil life, brake life, and a suggested date for the next service. Television ads for the new Buick feature Tiger Woods losing his car in a large car park, and calling OnStar on his cell phone for assistance. The OnStar assistance helps him to find his car by causing the lights to flash and the alarm to go off.

4.2. Uniqueness

Uniqueness is “knowing precisely the characteristics and location of a person or entity” (Junglas and Watson, 2006). Knowing the characteristics and location of a customer means that information can easily be customized to the current context and particular needs of that person. Consumers can customize news services so that they get their unique news profile (e.g., University of Georgia football and Canadian business news) delivered to their current connected device in the appropriate format. Addicts want exact fixes.

Uniqueness Caselet: Facebook (www.facebook.com)

The social networking website Facebook allows users to join networks organized by city, workplace, school, and region to connect and interact with others. People can also add friends and send them messages, and update their personal profile to notify friends about themselves. The website's name refers to the paper facebook depicting members of a campus community that some US colleges and preparatory schools give to incoming students, faculty, and staff as a way to get to know other people on campus. Essentially, the website recognizes the

uniqueness of each individual, making it easy for the individual to demonstrate and personalize their uniqueness, and also for the individual's friends and associates to find, and then communicate with them, because they are indeed unique. The website currently has more than 100 million active users worldwide.

4.3. Unison

Unison is about “information consistency” (Junglas and Watson, 2006). People want a single point of truth not a dozen databases with conflicting information. Consumers want complete agreement between their phonebook, calendar, to do list, and other such files across their range of electronic tools (i.e., cell phone, computer, and PDA). Organizations want a single integrated database so they have only one view of the customer. Work groups prefer collaborative systems, such as Google Docs, to standalone systems, such as MS Word, because they can work on a single version of a document or spreadsheet. Addiction often generates a sense of urgency, and addicts don't want conflicting information or multiple sources to interfere with their habit.

Unison Caselet: RIM Blackberry

Research-in-Motion's Blackberry was the first personal digital device to incorporate a cellular phone, email, and personal time management system with calendar and to-do lists that integrated with the user's desktop computer and laptop (or indeed any other devices on the user's network). Email messages received or sent on one device were received or sent on all, address book changes were all simultaneously recorded, and changes to diaries and to-do lists were immediately updated on all devices. While these capabilities have since been imitated by rival products such as Apple's iPhone, RIM was the first company to truly satisfy the information addict's thirst for unison.

4.4. Universality

The goal of universality is “to overcome the friction of information systems' incompatibilities” (Junglas and Watson, 2006). People want a single device that has a high level of integrated functionality (e.g., iPhone) that can serve as a phone, browser, PDA, music player, camera, GPS, and so forth. For example, an iPhone customer can use the map function (GPS) to find a pizza restaurant (browser) and then click on the displayed phone number (phone) to place an order (U-commerce). These were once separate incompatible information systems, performed on different devices. The same drive for universality has resulted in the

metric system, credit cards, and euro. The success of the iPhone can be partially attributed to its ability to serve the information addict's desire for universality.

Universality Caselet: Octopus Card

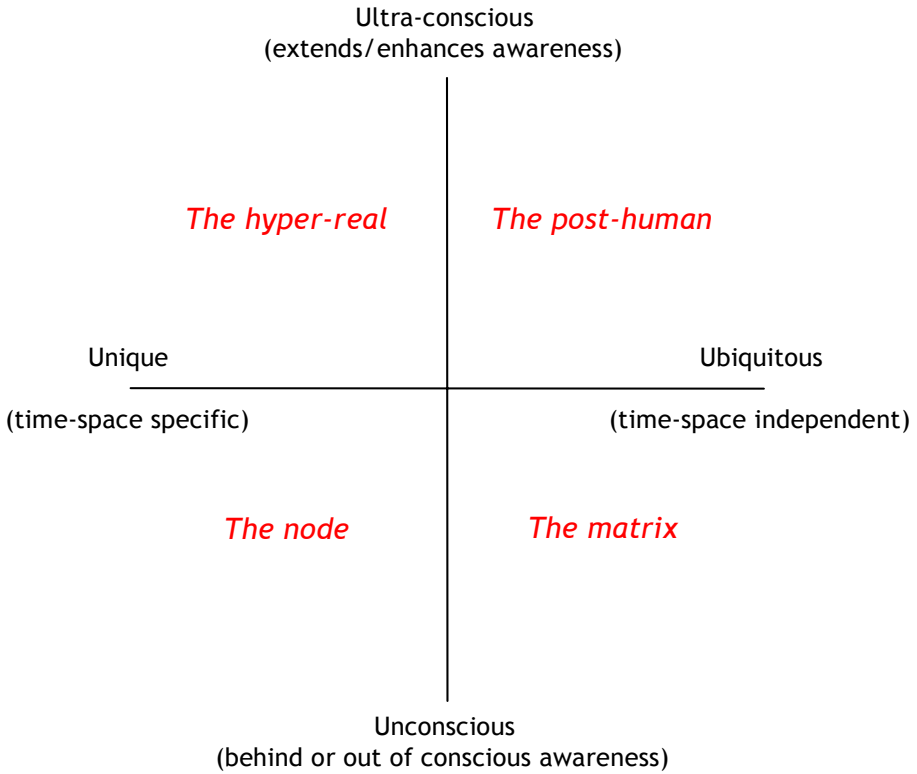
The Octopus card is a rechargeable contactless stored value smart card used to transfer electronic payments in online or offline systems in Hong Kong. It was originally launched in September 1997 to collect fares for the city's mass transit system. However, astute entrepreneurs were quick to realize that a device that stored value that could be easily transferred could be used to pay for goods and services in a host of other transactions. Today the Octopus card system has since grown into a widely used disbursement mechanism for virtually all public transport in Hong Kong, as well as for payment at convenience stores, supermarkets, fast-food restaurants, on-street parking meters, car parks, and other point-of-sale applications such as service stations and vending machines. (see <http://www.octopuscards.com/consumer/products/en/index.jsp>).

5. The Integration of the Four Drives

Ubiquitous networks are the foundation for supporting uniqueness in a variety of forms (e.g., recording the date, time, location, exposure, etc of a digital photo) that were infeasible in an Internet-only, Web 1.0 world. Ubiquity is also essential for enabling unison so that people and data are in consort (e.g., Google calendars that are accessible by all group members from a variety of information appliances). People can now stay in-sync in new ways. Finally, the drives for ubiquity, uniqueness, and unison reinforce the need for universality. We want one information appliance (currently called a smart phone) to support our thirst for ubiquity, uniqueness, and unison.

U-space, the framework for U-commerce, has two dimensions: time-space specificity and mode of awareness (Watson et al., 2002). Time-space specificity ranges from the unique (time-space specific, localized) to ubiquitous (time-space unspecific, everywhere). Technology can be unique (i.e., localized in time and space) or ubiquitous (i.e., dispersed in time and space and everywhere). The awareness spectrum covers the unconscious (behind or out of consciousness) to ultra-conscious (extension or enhancement of awareness). Information products and services can operate in two modes. First, they can extend awareness, that is, make a person ultra-conscious. Second, they can take tasks that require attention and perform them automatically, making them unconscious processes. As a result, U-space delineates four types of commerce: the hyper-real, the post-human, the matrix and the node (see 1). Each quadrant is now discussed.

Figure 1: U-space



5.1. The Hyper-Real (Ultra-Conscious, Unique)

Hyper-real addicts seek to extend their normal life by spending part of their time in unique contexts. They are the folks who spend hours playing games, flying around Second Life, or browsing FaceBook. This is the electronic experience economy (Pine and Gilmore 1999), and these consumers seek unique virtual and social worlds in which they are highly sensitized of what is happening in their particular worlds. Entrepreneurial opportunities that exist in this realm will revolve especially around using technology to allow customers to escape the mundane, and be someone else for a time.

5.2. The Post-Human (Ultra-Conscious, Ubiquitous)

The post-human is addicted to permanent enhancement of communication and computing facilities. They want to extend their normal conscious experience

across time and space. For them, the network needs to be always on, no matter where they are. They are fixated on permanent enhancement of their human facilities. Currently, the focus is on information storage and processing enhancement and in the future it will be advanced prosthetics and genetic enrichment. This is the sphere of enhancement marketing and also embraces body changes (e.g., rhinoplasty). Entrepreneurial prospects in this domain will be those that enable individuals to overcome physical and mental disadvantages and shortcomings.

5.3. The Matrix (Unconscious, Ubiquitous)

Matrix addicts want technology to remove and take over tasks outside or behind awareness and ubiquitously. They want to be in contact wherever they might be. They don't want to stop to pay road tolls, they prefer smart cards to cash, and their cars have navigation systems. They are in the realm of permission marketing because they are willing to permit technology to take over lower level tasks. Entrepreneurial opportunities in this sphere will capitalize on human unwillingness to deal with the dull and repetitive, and activities that require them to give attention to things they don't really wish to give attention to. A simple example is the use of cell phones to pay for parking: No one likes paying for parking, especially when this used to mean scrambling for change, or inserting a credit card into a machine that usually didn't work. Now the system allows a user to set up a payment facility for a particular vehicle, make a call, enter the location number and have the payment automatically deducted. No one seems to mind paying a service charge for this, and most people appreciate the text message that the parking time is about to expire as well as the facility to extend and pay for more time.

5.4. The Node (Unconscious, Unique)

In the node quadrant, entrepreneurs can build value by creating systems that offer services outside or behind awareness in specific time-space locations. Smart cards containing personal electronic information, for example, can be used to automate personal consumption of service staples. You can just swipe your card at your local coffee shop and your favorite blend and style will be ordered at the same time as the charge is deducted and your frequent buyer points updated. The node is about mass customization marketing. Entrepreneurial opportunities in this realm will focus on the customer lock-in that comes from making service so unique to the customer that they will be reluctant to leave because they will have to set the same system up again to enjoy the benefits.

6. Discarding Web 2.0 for U-commerce

Many advances in information technology have spawned entrepreneurial opportunities, and IT has been a great source of wealth creation for half a century. As a result, many people are enthusiastic and attracted when a new technology emerges, such as Web 2.0. The problem is that Web 2.0 is a fuzzy term for the new milieu resulting from the evolving nature of public networks, new technologies for the creation of websites, and new understandings of what consumers value. The very term Web 2.0 suggests an Internet and browser heritage. We suggest a more appropriate term is U-commerce, because it recognizes that ubiquitous networks are the foundation of electronic interactions, and that a computer-based Internet is just one point of entry to a world of electronic exchanges. For example, more people have cell phones than personal computers, devices talk to each other using Bluetooth, and GPS is now embedded in top-of-the-range cell phones and cameras. Networks are everywhere and they are moving towards connecting everything.

We maintain that many humans are addicted to information and that this affliction seems to be a particular problem for the affluent. That is, those most addicted are most able to pay. The drivers of this addiction are ubiquity, uniqueness, unison, and universality and they work in various combinations to create the U-space, a framework for recognizing opportunities. U-commerce gives entrepreneurs a basic platform for identifying and evaluating new products and services. We suggest that aspiring as well as active U-space entrepreneurs will find answering the questions in the checklist in Exhibit 1 below a useful and insightful exercise:

Exhibit 1: The U-Space Checklist for Entrepreneurs

- Where will consumers want to use this offering?
- What networking technologies does this offering need to support it?
- How can information enhance the offering and how should this information vary with time, location, and context?
- Should this offering share information with other offerings?
- Will the customer gain value by sharing information with other individual customers or groups of customers?
- How compatible is this offering with existing information services?
- Can this offering package multiple information services (e.g., should it include a camera, GPS, WiFi, Bluetooth) to reduce an information system's friction, and can consumers easily use all these services (i.e., the human interface problem)

As well as providing some fundamental questions to address, the four drivers enable us to identify four distinct offering classes, as described above: hyper-real, post-human, node, and matrix. We recommend that entrepreneurs first collect

examples of products and services in their target sector as a means of precisely and deeply understanding consumer value creation for that quadrant. Then, launch into creating new value sets. Domain knowledge is required to recognize new opportunities, and the U-space is a lens for focusing where to build this expertise.

Entrepreneurship is not just something that small, start-up firms do: Indeed, it is a form of organizational behavior that large and small institutions, for-profit and not-for-profit institutions should all attempt to instill as a way of pursuing opportunities, maintaining a state of excitement, and striving to grow. As Gompers and Sahlman (2002) point out, entrepreneurship “focuses on a way of thinking, managing a career, business, or anything else” (p.1). Hopefully, the u-commerce framework will provide a stimulus for entrepreneurial thinking at all levels.

In conclusion, we suggest that entrepreneurs will gain greater insights to creating customer value by discarding the vagueness of Web 2.0 to focus on the greater precision of U-commerce, and its foundation on the four drives.

References:

- Adams, A. (1999), "Users' Perception of Privacy in Multimedia Communication", *Proceedings of CHI' 99*, Pittsburgh, PA
- Anderson, C. (2008), *The Long Tail: Why the Future of Business is Selling Less of More*, New York, NY: Hyperion
- Berthon, P.R., Pitt, L.F., and Campbell, C. (2008), "Ad Lib: When Customers Create the Ad", *California Management Review*, 50, 4: 6-30
- Davies, M., Pitt, L.F., Shapiro, D., and Watson, R.T. (2005), "Betfair.Com: Five Technology Forces Revolutionize Worldwide Wagering", *European Management Journal*, 23, 5: 533-541
- Fadahunsi, A., and Rosa, P. (2002), "Entrepreneurship and Illegality: Insights from the Nigerian cross-border Trade", *Journal of Business Venturing*, 17, 5: 397-430
- Galanxhi, H., and Nah, F. (2004), "U-commerce: Emerging Trends and Research Issues", *Industrial Management & Data Systems*, 104, 9: 744-755
- Galanxhi, H., and Nah, F. (2006), "Privacy Issues in the Era of Ubiquitous Commerce", *Electronic Markets*, 16, 3: 222-232
- Gompers, P.A. and Sahlman, W. (2002), *Entrepreneurial Finance: A Casebook*, New York, NY: John Wiley & Sons
- Grossman, Lev (2007), "Time's Person of the Year: You", *Time Magazine*, Dec 13, 2006: 23.
- Hernandez, Michael (2008), "How do you know your love is real? Check Facebook". *CNN* <http://www.cnn.com/2008/LIVING/personal/04/04/facebook.love/index.html> (accessed Jun 21, 2008).
- Junglas, I. A., and Watson, R. T. (2006), "The U-Constructs: Four Information Drives", *Communications of AIS*, 17, 26: 2-43
- Keegan, S., O'Hare, G.M.P., and O'Grady, M. (2008), "Easishop: Ambient Intelligence Assists Everyday Shopping", *Information Sciences*, 178, 3: 588-611
- Lai, L.S.L., and Turban, E. (2008), "Groups Formation and Operations in the Web 2.0 Environment and Social Networks", *Group Decision & Negotiation*, 17, 5: 387-402
- Leong, L. (2005), U-commerce: "Introducing the New Challenges for E-business", *International Journal of Services Technology & Management*, 6, 1: 1-2
- Lessig, L. (1999), *Code and Other Laws of Cyberspace*, New York, NY: Basic Books
- O'Reilly, T. (2005), "What is Web 2.0? Design Patterns and Business Models for the Next Generation of Software" (downloaded from <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>, on September 24th, 2008).
- Pine, B. J. and Gilmore, J.H. (1999), *The Experience Economy: Work is Theatre & Every Business a Stage*, Boston, MA: Harvard Business School Press
- Riegner, C. (2007), "Word of Mouth on the Web: The Impact of Web 2.0 on Consumer Purchase Decisions", *Journal of Advertising Research*, 47, 4: 436-447
- Sarasvathy, S. D. (2004), "The Questions We Ask and The Questions We Care About: Reformulating Some Problems in Entrepreneurship Research", *Journal of Business Venturing*, 19, 5: 707-717
- Sheng, H., Nah, F., and Siau, K. (2008), "An Experimental Study on Ubiquitous commerce Adoption: Impact of Personalization and Privacy Concerns", *Journal of the Association for Information Systems*, 9, 6: 344-376
- Tapscott, D., and Williams, A.D. (2007), *Wikinomics: How Mass Collaboration Changes Everything*, New York, NY: Penguin
- Tufekci, Z. (2008), "Grooming, Gossip, Facebook and Myspace", *Information, Communication & Society*, 11, 4: 544-564
- Junglas, I. A., Watson, R. T. (2006), "The U-Constructs: Four Information Drives", *Communications of AIS*, 17: 569-592.
- Watson, R.T., Akselsen, S., Monod, E., and Pitt, L.F. (2004), "The Open Tourism Consortium: Laying the Foundations for the Future of Tourism", *European Management Journal*, 22, 3: 315-326

- Watson, R. T., Berthon, P.R., Pitt, L.F., and Zinkhan, G (2004), "Marketing in the Age of the Network: From Marketplace to U-space", *Business Horizons*, 47, 6 (November/December): 33-40
- Watson, R. T., Pitt, L.F., Berthon, P.R., and Zinkhan, G.M. (2002), "U-commerce: Extending the Universe of Marketing", *Journal of the Academy of Marketing Science*, Fall: 329-343
- Wu, J-H, and Hisa, T-L. (2008), "Developing E-Business Dynamic Capabilities: An Analysis of E-Commerce Innovation from I-, M-, to U-commerce", *Journal of Organizational Computing & Electronic Commerce*, 18, 2: 95-111
- Zammuto, R. F., Griffith, T. L., Majchrzak, A., Dougherty, D.J., and Faraj, S. (2007), "Information Technology and the Changing Fabric of Organization", *Organization Science*, 18, 5: 749-762