

# The Cybernomadic Framework

Institute for the Future  
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# The Cybernomadic Landscape: A New Business Challenge



The association of territory, with landscape and its objects, identifies an indigene, a native of the place, one whose life begins and focuses at this spot. The individual and the world fuse at this spot or marker, and it acts as a sort of magnet that attracts (and repels) the individual and distinguishes him or her from others whose focus or center lies elsewhere.

—Peter Wilson, *The Domestication of the Human Species*

The material and the digital worlds have traditionally struggled against each other, each working to overcome the constraints or mimic the affordances of the other. Now, pervasive technologies are bringing about a partnership between the material and digital, and the relationships among humans, machines, and environments are becoming more tightly interconnected and interdependent. A cybernomadic landscape is emerging, and with it emerges a critical question for society: Who are the indigenous people of this new landscape and how will they shape our social life and institutions?

As we learn to interact in this new embedded sensory world, our social forms will change in fundamental ways. We will also develop a profoundly different sense of self, augmented by our digitally enhanced tools and environments. Our reliance on familiar organizational structures of all kinds—the permanent reference points that capture and direct our attention in our current landscape—will diminish, and more personalized, context-based social architectures will create new frames of reference for daily life.

The cybernomadic experience will present new opportunities for markets, organizations, and people—opportunities that are beyond the current capabilities of business organizations. Indeed, the reinvention of place, space, social formation, and human identity in the cybernomadic future will force business to rethink traditional assumptions: their role and presence in markets, perspectives on consumer segments, methods of innovating products and services, management of work processes, and relationships to employees.

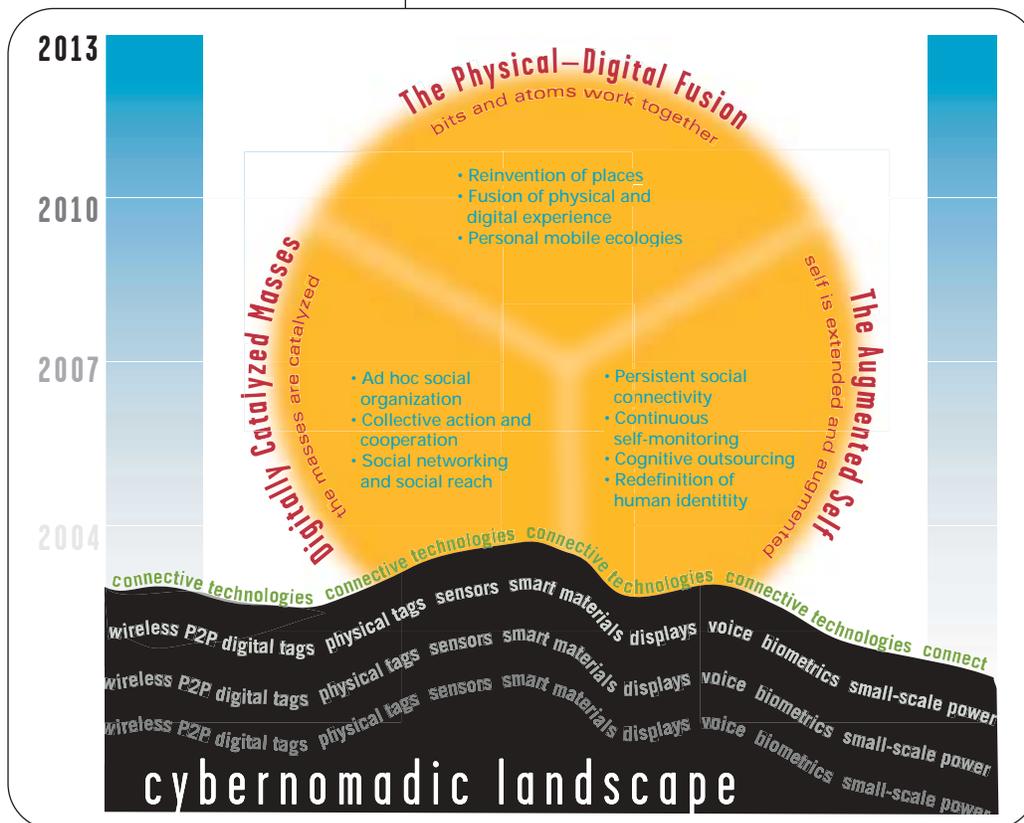


## THE CYBERNOMADIC LANDSCAPE: A NEW BUSINESS CHALLENGE

The cybernomadic landscape—the distributed and interconnected physical, digital, and human network of places, spaces, relationships, and reputations—will be defined by three primary forces (see Figure 1).

- **The physical-digital fusion.** The most important consequence of the rise of pervasive computing is this: the Internet and desktop computers struggled against the physicality (hard copy, for example), “placeness,” (geographical context), and sociability (social context) of information. Pervasive computing and mobile communication technologies will be able to work with, and even exploit, those qualities. (Think geo-URLs, mobile blogging, and SMS-based social networks.) Successful businesses will take advantage of the physicality, placeness, and sociability of information.

Figure 1  
A Framework for  
Understanding the  
Cybernomadic Landscape



Source: Institute for the Future



- **The augmented self.** New human–machine relationships will reshape every aspect of the business landscape, from how we reach customers to how we think of ourselves as workers. They will create new desires and pains in the marketplace and the workplace. Businesses that understand and explore the new human–machine partnership—the increasingly intimate relationship between humans and objects and devices that are aware and communicate—will not only solve the practical problems that arise but also excel in branding the new experience.
- **Digitally catalyzed masses.** New cooperative models will emerge from the augmented social reach enabled by pervasive computing and mobile communications. These new ad hoc social models will challenge traditional notions of teams and team processes. They will provide alternative models for organizing knowledge workers, allocating resources, creating new market frameworks, providing rapid response to consumer issues, and stretching the innovative edges of the organization.

#### KEY BUSINESS QUESTIONS

- ▶ How will social and physical infrastructures of the cybernomadic experience help companies reach their customers, define new market segments, and create new organizational forms?
- ▶ How will the cybernomadic landscape stimulate new innovation processes, strategic roles, and organizational flexibility and a new basis for business strategy?
- ▶ How will the business workspace become dispersed and interconnected across the physical and digital cybernomadic landscape and create more efficient work processes, stronger alliances and loyalties, and more engaged workers?



## At the Edge: A New Sensory Transformation

Many significant cultural transformations in human society have been associated with sensory transformations. The indigenous cybernomads of the emerging physical–digital landscape will reflect the cultural influence of a major sensory shift.

New ways of perceiving the world through our senses are related to new ways of thinking about the world and our fit in it. Early hominids walking upright rather than on all four limbs transformed their tactile experience of the world around them. Grasping with the hand shifted from being a part of locomotion and transportation to being a part of sensing and manipulating the physical world. Tactile sensation became a new medium to explore and make sense of the physical environment.

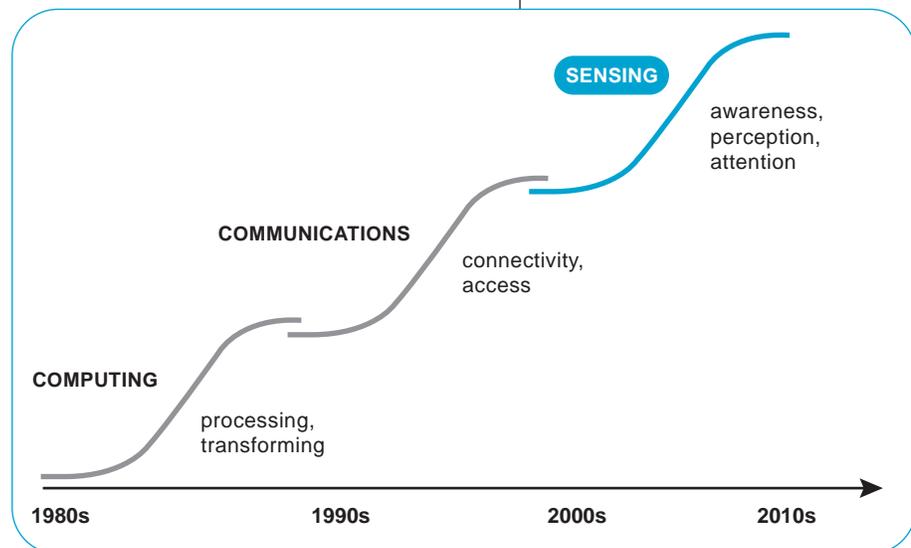
As our nomadic forbears began to establish permanent dwellings, they changed their perceptions of the landscape, enclosing it with structures that defined their daily lives. This shift encouraged the newly sedentary humans to define themselves and ordered their world by *boundaries*. They engaged in great feats of architecture—think of the Great Wall. They constructed elaborate social classes and political structures, such as feudalism. They developed a fierce sense of belonging called patriotism.



We are at the edge of a new sensory transformation (see Figure 2). The last 30 years have seen a profound transition in our ability to perceive and interact with the physical world. First computing changed the speed and complexity with which we could process information. Then communications broadened our access in both time and space and connected us globally. In the next decade, sensing devices will have the most profound effect yet, as they bring information, awareness, and responsiveness to the objects, places, and people around us. In short, they will transform our awareness and attention.

This shift will constitute a sensory transformation on an historic scale, comparable perhaps to the shift from tree-dwelling apes to tool-using hominids or the settlement of nomadic hunter-gatherers into domesticated societies. It will change the species—extending the human sense of self well beyond the human biological body. It will change society—unfolding new social forms with humans and machines as intimate partners and collaborators.

Figure 2  
The Next Sensory Transformation



Source: Institute for the Future



## The Cybernomadic Shift from Boundaries to Focal Points

Cybernomadism is that human experience that occurs within the complex set of automated, distributed physical and digital relationships afforded by sensor-based, mobile computing and communication technologies. It represents a shift in human perception to include an abstract, global landscape that melds cyberspace and geographic space. The result is a new kind of nomadism that will transform the basis of our human perception of the world from a concern with boundaries to a concern with *focal points*—with the question of “What do I pay attention to?” Or, as anthropologist Peter Wilson suggests, “What new markers fuse me to the world at this particular place in this particular moment and distinguish me from others?”

To understand the evolution of the focal point is thus to anticipate the economic practices, the social interactions, and the patterns of mobility of the future. It is also to understand how humans will redefine their basic identity (or multiple identities) and capacity for social organization and cohesiveness.

The shift in sensory perception over the next decades will loosen the grip of many traditional boundaries on human lives. Instead of seeing cyberspace as distinct from the material world, cybernomads will begin to perceive the two as fused. Instead of peering at it through a screen, they will find it embedded in the objects of daily life and perhaps even in their bodies. This shift will be reflected in everything from books people write to the way companies interact with consumers. Already we can see an orientation to focal points creeping into our structures for thinking, our methods for organizing commerce, our metaphors for building infrastructures and work processes, and our strategies for relating to the environment (see Table 1).





Table 1  
Key Shifts in  
Cybernomadic Culture

	From Boundaries	To Focal Points
<b>Important Books</b>	<ul style="list-style-type: none"> <li>• <i>Net Gain: Expanding Markets Through Virtual Communities</i>, Hagel and Armstrong</li> <li>• <i>Virtual Community</i>, Howard Rheingold</li> </ul>	<ul style="list-style-type: none"> <li>• <i>When Things Start to Think</i>, Neil Gerschenfeld</li> <li>• <i>Smart Mobs: The Next Social Revolution</i>, Howard Rheingold</li> </ul>
<b>Infrastructure Metaphors</b>	The “net”	<ul style="list-style-type: none"> <li>• The “whuffie”</li> <li>• Social capital and reputation systems</li> </ul>
<b>Business Practices</b>	Hoteling	<ul style="list-style-type: none"> <li>• Hot spots, like cybercafés and open Wi-Fi connections</li> </ul>
<b>Commerce</b>	Clicks and mortar	<ul style="list-style-type: none"> <li>• Location-based services, experiences, and emergent markets such as eBay auctions</li> </ul>
<b>Interfaces</b>	Desktops and windows	<ul style="list-style-type: none"> <li>• Wearables and extensions, such as augmented reality glasses</li> </ul>
<b>Marketing</b>	Market segmentation	<ul style="list-style-type: none"> <li>• Market lenses, such as information flows, social context, and experience</li> </ul>

Source: Institute for the Future



## Dimensions of Cybernomadic Life

How will the characteristics of cybernomadic life shape business and society over the next few decades? We need to learn from those who already live in a world framed by focal points to see how it might translate into our future cybernomadic life. Through his examination of traditional nomads and hunter-gathers, Peter Wilson provides a vision of the cybernomadic landscape and how individuals develop meaningful relationships to it, and each other, using focal points as points of orientation.

The hunter/gatherer landscape is open; people may spread their connections endlessly across it, just as they may move more freely. Without boundaries and without the concept of the permanent boundary, people are not conceptually locked into their relationships, or surroundings. Nomads focus on the landscape and its features: sites, tracks, water holes, lairs, sanctuaries, birthplaces, landmarks. Such a focus becomes clear or fuzzy according to distance and interest. Nomads focus on one another in the same way, keeping those in clearest focus who live in intimate proximity and for whom, at the time, they have intense feelings. Others who are spatially or emotionally farther distant are less in focus but can easily be brought closer, for no boundaries, geographical or conceptual, hinder physical or emotional movement.

. . .

Boundaries, then, do not enter into the matter. Hunter/gatherers revolve around a focus, sometimes physically, always spiritually and socially. The region around the center point fades in its attractive power, in a manner of speaking, or it may “overlap” with the “radius” of another center of attraction. Since these foci and zones are unbounded they can hardly exclude others. But people moving in and out come within and move out of a “zone of influence” or of another’s belonging, and it is in this respect that “permission” is asked (and granted) to enter. This is a way of life that emphasizes openness, and I suggest that any notion of closure such as might be imposed by the concept of boundary is foreign. On the other hand, any tendency for formlessness or anarchy is counteracted by emphasizing focus, attraction, identification with, and belonging to.

—Peter Wilson, *The Domestication of Human Society*

Cybernomads will redefine the key dimensions of human life through new behaviors and new focal points. Many of the behaviors will mirror traditional nomadic lifestyles—with similarities to pastoralists, hunter-gatherers, traders, and craftsfolk. However, reinterpreted for a global physical-digital world, the new lifestyles will have a distinctly 21st-century flavor, with focal points that range from maps of geo-URLs to intellectual property battles.



Table 2 summarizes these defining dimensions of cybernomadic culture. The following pages then delve deeper into each of the dimensions, exploring their roots in historical nomadic patterns, contemporary practices, key focal points that business can leverage, and insights into how organizations can best adapt to these changes and create new value in them.

Table 2  
Cybernomadic Behaviors  
and Focal Points

	Key Behaviors	Key Focal Points
<b>Economic Practices</b>	Cybernomads capitalize on gaps across the physical and digital global economy.	<ul style="list-style-type: none"> <li>• Interactions driven by knowledge workers (creatives, designers, innovators), service workers, students, online gamers</li> </ul>
<b>Mobility Patterns</b>	Cybernomads build a systematic and patterned form of mobility to leverage scarce resources.	<ul style="list-style-type: none"> <li>• Sources of convenience (bits of free time, login user names/online identities that cross platforms and applications)</li> <li>• Access points to resources (technical, social, physical)</li> <li>• Specific moments in cycles (economic, organizational, personal, and environmental)</li> </ul>
<b>Landscape</b>	Cybernomads traverse multiple layers of the physical–digital landscape to overcome marginality in either.	<ul style="list-style-type: none"> <li>• Alternate realities</li> <li>• Landscape maps of routes and resources</li> <li>• Navigational tools</li> </ul>
<b>Social Interaction</b>	Cybernomads grow their individual agency and effectiveness through cooperative and collective behavior.	<ul style="list-style-type: none"> <li>• Elements of social capital—reputation, trust, reciprocity, and evidence of consistency</li> <li>• Group solutions to complex problems</li> <li>• The “Extended Self”</li> </ul>
<b>Social Organization</b>	Cybernomads use social and digital proximity to create organizations that are tribal, local, and neighbor-oriented, yet also scalable.	<ul style="list-style-type: none"> <li>• Degrees of intimacy</li> <li>• Definitions of social proximity</li> <li>• Key nodes for social and economic transaction</li> </ul>
<b>Relationship to Non-Nomads</b>	Cybernomads enter into symbiotic and interdependent relationships with non-nomads.	<ul style="list-style-type: none"> <li>• Intellectual property rights</li> <li>• Peer-to-peer computing</li> <li>• Cyborg identity</li> </ul>

Source: Institute for the Future



## 1. ECONOMIC PRACTICES

### Nomadic Roots

Traditional nomads provide a rich legacy of distinct economic models and strategies for linking into local economies and interacting with non-nomads. Ranging from hunter-gatherers and nomadic pastoralists to traders and craft workers, each of these nomadic groups has shown how to specialize and work the gaps and edges in local markets, thus carving out a niche that allows them to sustain themselves.

### Cybernomadic Practices: Niches Bridge the Physical and Digital Economies

Leading-edge cybernomads include knowledge workers (particularly creatives, designers, and innovators), service workers, students, and gamers. As did their nomadic ancestors, they work the edges and gaps of the global economy producing, gathering, trading, and creating value for others who do not travel to the outer reaches of their organization, discipline, or social group. They need to move, physically and intellectually, and work at the margins. Changing environments frequently (physical to digital, one social group to another, one intellectual domain to another) allows them a broader perspective from which to create and produce value. They cultivate ideas across physical and digital settings—a sort of knowledge husbandry—and they often exchange these ideas or perform special services with the expertise and niche perspective that they gain from working at the margins. While somewhat unsettling and risky, these outliers could not produce their successful outcomes through conventional processes.

For example, think of bloggers as cybernomadic idea traders who traverse the vast blogosphere with RSS feeds and aggregators and report interesting and exotic news to the rest of us provincial Web visitors who don't have the time, skill, or energy to venture out to the edges of the Web. Or consider virtual-world game players who develop real-world brands in virtual economies to provide the trust and comfort these brands are known for in a new market context. And real-world service providers, such as online auction services (like eBay drop-off services or AuctionBytes newsletter) provide services in the real world that help with economic activity in cyberspace.

## Key Focal Points

Look for hot spots of interaction among knowledge workers, service workers, students, and gamers that bridge physical and digital economies. Digital spaces, such as auctions, blogs, and virtual retailers provide a forum for emergent trade, production and value creation that cybernomads will leverage. Identify interactions, people, objects, brands, physical settings, and digital spaces that create value by bridging the physical and digital worlds.

## Insights

Cybernomadic economic practices will drive the virtual economy (sometimes called the symbolic economy), in which real value and wealth are created and fungible assets are traded. Already we see legal battles for “property” created in cyberspace and exchange rates for goods that cross physical and digital economic boundaries. What are the forms of currency that will cross these boundaries? How will exchange be evaluated and accounted for? What role can your company play within the virtual economy and by crossing the boundaries between the physical and digital economies? What new kinds of workers—or skills and habits—will you need to encourage?





## 2. MOBILITY PATTERNS

### Nomadic Roots

Movement is a defining attribute of nomadic people. It is a critical, adaptive feature that supports the economic underpinnings of nomads. Mobility patterns are shaped by various environmental factors such as weather, seasons, and natural resources such as rainfall and pasture, and external constraints such as commercial and trading cycles of non-nomads, broader consumer needs, economic cycles, and government policies. The shared mental maps of the nomadic landscape help organize and plan mobility strategies. Routes are passed down through stories, songs, lineage, and inheritance.

### Cybernomadic Practices: Resources Guide Attention and Shape Mobility

While nomads are resourceful and flexible in their movement, they are not aimless wanderers without a sense of direction. Their mobility is driven by a logic of resourcefulness. Cybernomads scan the resources of the environment and match them to the kinds of experiences they want to have. They plan travel routes based on available resources, sources of convenience, and specific activities. Specific routes take shape as a result of the kinds of settings they have access to, and the institutions and people they encounter. Access to resources (such as Wi-Fi connectivity, power outlets, digital devices, physical and digital markers that let cybernomads communicate who they are, trust and reputation systems that validate transactions and information, social networks or affinity groups) shape what cybernomads do and how they move around. Careful development and sharing of mobility routes and documentation of resource availability are key cybernomadic practices that build layers of knowledge. In fact, cybernomads create and share taxonomies of mobility patterns that respond to various constraints.







### 3. LANDSCAPE

#### Nomadic Roots

The nomadic landscape has historically been marginal; non-nomads have difficulty surviving in it let alone gaining value from it. Nomads, however, strategically use their mobility patterns and skills for searching out focal points to leverage scarce resources, overcome marginality, and create value. Where does marginality come from in the cybernomadic landscape? It comes from shortages and constraints on time, social connectivity, inspiration, and attention.

#### Cybernomadic Practices: Bridging Multiple and Simultaneous Layers of Context

Physical, digital, and even social mobility help cybernomads leverage time, social connectivity, inspiration, and attention. Cybernomads are opportunistic in their use of these resources; they maximize even the smallest opportunity to support their goals. One way that cybernomads do this effectively is to work several communication and media channels simultaneously. Cybernomads supplement open physical presence with open Web or blog access, e-mail, voice over IP, or instant message channels. Such simultaneous channel use, often called multi-tasking, can be *complementary* and enhance a *single* experience. Or it can be more fragmentary and support a practice of *multi-contexting*.

Cybernomads use multi-contexting to manage *multiple, simultaneous* experiences, each of which is embedded in distinct social relationships, roles, and identities. As cybernomads switch from context to context (say from blog reading to an IM conversation to listening to a meeting), they adopt a distinct identity for each that is likely responsible for a distinct role within a distinct social network.

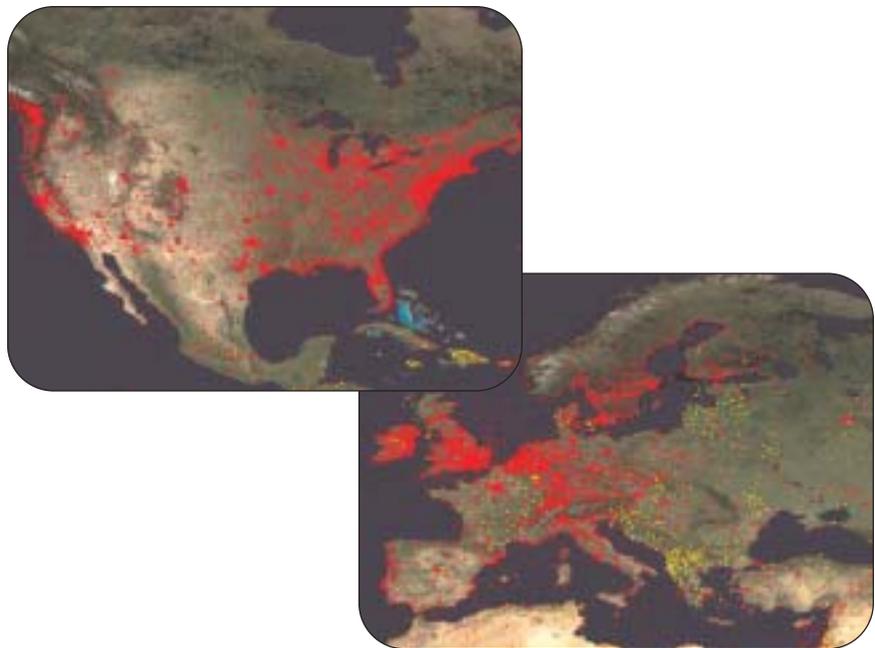
Cybernomads don't just do lots of things at one time; they act out many personas at one time. Context switching is a cybernomadic skill that many young students are learning in their formative teenage years. (An IFTF survey shows youth who multi-task are productive in their homework and are not more likely to be distracted.) Cybernomadic context switching thus helps to create (and is enabled by) a landscape in which physical, geographic places are layered with digital strata of activities, social relationships, information, identity, roles, and time. Flexible switching among identity, social context, and activity allows cybernomads to maximize resources in a distributed, and marginal, landscape.

### Key Focal Points

Focal points that integrate layers of place and space are critical orientation markers for cybernomads. Geo-URLs that link place, time, and information provide cybernomads with a multi-layered context that helps orient them and address needs. Particular niches of time (such as the time in a taxi on the way to the airport or the time waiting for an appointment) or specific devices (like a cell phone, PDA, or personal interface) and places (such as a public kiosk, a café hot spot, or a car) trigger such layering that helps create coherence for cybernomads who are on the move.

### Insights

Key needs for cybernomads are tools, resources, and support services that help them orient themselves, navigate, and map out the multi-layered cybernomadic landscape. Enterprising companies can provide navigational focal points at each layer. For example, how might your company provide mapping services that help orient individuals (be they consumers, customers, or employees) as they interact with community resources, products, services, or business processes? How can your company generate and weave itself through multiple narratives that will emerge around places and objects embedded with digital information? Critical to answering these questions will be a real understanding of how people create their mental maps of spaces—and then the development of new products and services to help people in that process.





## 4. SOCIAL INTERACTION

### Nomadic Roots

Forms of egalitarianism are common among nomads. This does not mean, however, that individuals don't act in their own self-interest. Interactions tend to be cooperative and collective—and any abuse of power or resources is balanced by the option of leaving the group, banishing a member, or starting a new tribe. In fact, many nomadic groups have sophisticated mechanisms and moral systems that help to regulate common-pool resources. Often these same systems help to balance out individual wealth creation and power over time.

### Cybernomadic Practices: P2P Flows and Creation of Power

Cybernomads practice cooperative and collective behaviors to augment their individual capabilities. What distinguishes them is their ability to use physical and digital spaces to activate their social networks and leverage the collective resource base to solve complex problems or catalyze collective action. Rather than following hierarchical chains of command, cybernomadic interactions tend to follow peer-to-peer (P2P) social connections that are based on trust and consistency.

For cybernomads, collective and cooperative action is a way for individuals to extend their personal selves. Cooperative behavior increases an individual's agency by contributing to the collective agency. Blogging, digital world building games, and social software are all ways of enabling collective agency. Sometimes this translates into new forms of political action, such as the Web-based Howard Dean presidential campaign using Meetup.com, the SMS-driven civilian demonstrations that tipped recent presidential elections in Korea and the Philippines, and the cell phone and Web-based global protest movement that seriously disrupted the World Trade Organization meeting in Seattle in November 1999. Political actions such as this are creating a new form of power that the conventional political scene must reckon with.

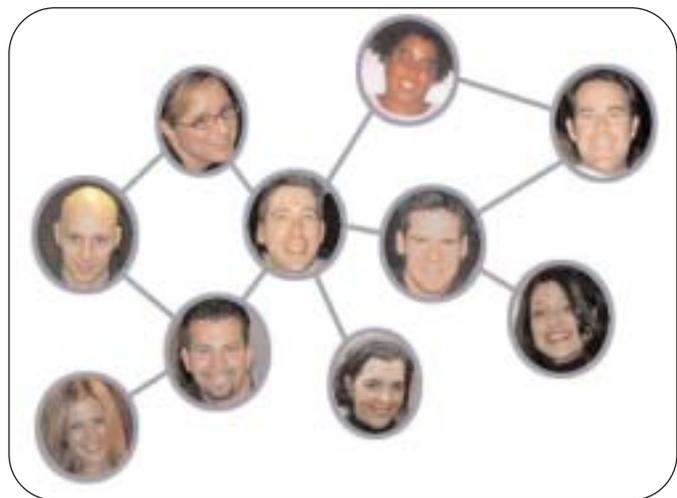
Cybernomads also demonstrate the capability to engage in complex problem solving through their cooperative practices and social networks. The ad hoc gaming collective, the Cloudmakers—a group of over 7,000 individuals across the world—collectively solved an alternate reality game mystery called *The Beast*. *The Beast* involved hundreds of clues, thousands of images and documents, dozens of subplots, and interaction in digital space (on Web sites, e-mail) and in the real world in postal mail, faxes, phone calls, and face-to-face events. In fact, the solution to *The Beast* could only be solved by collective intelligence. Imagine this type of complex problem solving among innovation groups, strategy planners, and new product and service development teams.

## Key Focal Points

Trusted peers, visible social network nodes (in the digital or physical world), and key events or time periods for interactions (such as an election, purchase, or strategic decision) are all examples of focal points directing attention related to social organization. Other focal points of social organization include open standards that encourage emergent development structures and processes; open source communities and organizations that attract cooperative social and knowledge processes; buddy lists for text, audio, and video communications media; and physical–digital meeting places (like those facilitated by Meetup.com) that attract formation of like-minded, affinity groups.

## Insights

Cybernomadic collective practices suggest a new form of corporate leadership, employee accountability, and responsibility of both leadership and staff. The peer-to-peer nature of augmented collective intelligence moves power and agency to individuals, but also increases individual responsibilities to the larger group. Mechanisms for developing group moral codes and expectations, as well as group-defined sanctions, are critical for collective practices to thrive. Part of the new charge of leadership is to create an environment in which internal regulating mechanisms emerge and direct cooperative behaviors to the most productive ends. In fact, a deeper understanding of cooperative principles and dynamics may create a new framework for organizational strategies, in which value creation and responsiveness outperform traditional competitive models of strategy. Identify places in your company where collective practices may emerge (or already exist). Nurture and learn from these examples so that you can apply them more broadly and develop more rapid response behaviors among corporate staff.





## 5. SOCIAL ORGANIZATION

### Nomadic Roots

Social organization among nomads tends to be tribal, local, and more friendship based than kinship based. And this makes sense. Since such groups are always in a process of moving and finding new locations that suit their immediate needs, the most important people are the ones who are immediately present. Although social organization is tribal and local, it does scale up. There is a range of intensity in social organization from very loose, leaderless lineages, to supra-tribal formations led by powerful individuals, to the tightly and centrally controlled imperial confederacies (think of the Mongolian Empire).

### Cybernomadic Practices: Flexible Management of Social Proximity

Cybernomadic social organization tends to be vibrant and dynamic at a local level that spans geographic and digital spaces. For cybernomads, immediate presence includes physical, social, and digital proximity. Social proximity is a key criterion that determines intensity and “closeness” of groups. And, digital proximity (distance measuring only one click away, for example) creates and sustains social proximity. Cybernomadic “banding together” reflects great flexibility and diversity among the kinds of tribes, neighborhoods, and clans individuals can associate with on a regular basis.

Choices regarding where to meet up, how to interact, and how often enable a flexible and nuanced form of socializing. With increasing presence of IM, cell phones, chat, and blogging, individual cybernomads can “roam” and never leave their tribe. Indeed, cybernomads are rarely far from any one of their social networks; co-presence, albeit digital, means that cybernomads are never really alone. The result is that social and emotional proximity define the boundaries of cybernomadic tribes. Groups grow or shrink depending on the strength of ties and key connective nodes.

Various types of social software enable local tribes to inhabit physical and digital worlds in personal, professional, and organizational contexts: Friendster, Ryze, LinkedIn, and Meetup are just a few from this growing category of software. (See <http://socialsoftware.weblogsinc.com> for a more complete list and discussion.)

## Key Focal Points

Social network nodes are key focal points that reflect the nature and dynamic of social organization for cybernomads. Social nodes include a person, a place, a type of interaction, or types of relationship (kin based, work based, activity or interest based). Other focal points may include digital language or dialects used by social groups (things like BTW, IMHO, smiley face emoticons, and personal logos or avatars) represented in graphical form. These examples of language and dialect represent shared culture and forms of expression and identity among groups.



## Insights

Rethink notions of proximity within the company. There may be several ways to map out who is close to whom depending on various contexts. Administrators for example, are very close to each other in face-to-face settings but perhaps are closer to their supervisors in digital space. How do social, digital, and physical proximity compare among various groups within the company—executive leadership compared to staff level and business unit managers, for example? Understanding the maps and measures of social proximity can provide a window into the map of social capital—the webs of reciprocity that bind the individual to the social, as defined by Rich Ling (who studies the adoption and cultural consequences of mobile telephony for Telenor's R&D department). Getting a handle on how and where social capital grows in your organization will help identify new ways to create value. As Internet pioneer and worldwide expert in networking David Reed proposes, open source group-forming networks, which are built on trust and reciprocity, grow exponentially and allow for explosive subgroup formation. He suggests that the effect of group-forming networks, relative to cooperative efforts, is that outcomes are not predefined. This means that group-forming social networks are a rich source of alternative solutions, backup plans, and options, providing a range of choice and action.



## 6. RELATIONSHIPS WITH NON-NOMADS

### Nomadic Roots

Many nomads and their sedentary neighbors co-exist through trade relationships, political alliances, and symbiotic market niches. It is a misconception to think that nomads are isolated from mainstream populations and institutions. However, cybernomads, like their nomadic ancestors, can be perceived as beyond human. Indeed, their intimate relationship with technology and extended physical and cognitive capacities evoke “the cyborg”—a blend of man and machine that challenges the very notion of the human self.

### Cybernomadic Practices: Symbiotic Relationships

Cybernomads are also developing interdependent, symbiotic relationships with sedentary folk in the market and political world. Cybernomads engage with sedentary groups to develop common-pool resources. Projects that rely on distributed computation, such as the SETI@home project (to process radio signals in a search for extraterrestrial life) or Stanford University’s folding@home (to study the process of how proteins fold, aggregate or mis-aggregate, and form diseases), are examples of large, formal institutions that leverage the cooperative benefits of individual’s who participate in distributed computing arrangements. Participants download an application onto their PC that runs during idle times and uses unused processing power.

Cybernomads and formal, sedentary institutions may clash over rights to intellectual property and output created in such common-pool resource arrangements. The music industry is engaged in a battle for ownership over the rights to music that is freely shared through digital music downloading and trading software (such as Kazaa) and online game vendors have entered into legal battles over the ownership of user generated content in online game worlds (such as the user created characters created in *EverQuest*). Digital-rights management is a zone where cybernomad and sedentary interests seem antagonistic, yet a cooperative framework (rather than a competitive ownership model) would perhaps reveal a wider range of options in which both sedentary folks and cybernomads could gain value.

Cybernomads also reflect a symbiotic relationship between the self (the human body) and technology. Building off of Andy Clark’s thesis in his book, *Natural Born Cyborgs* (in which he traces the intensification of the human–technology relationship over the course of history to show that we all are really cyborgs in the making), cybernomads are further down the path of intimately integrating digital devices and pervasive technologies into their being.

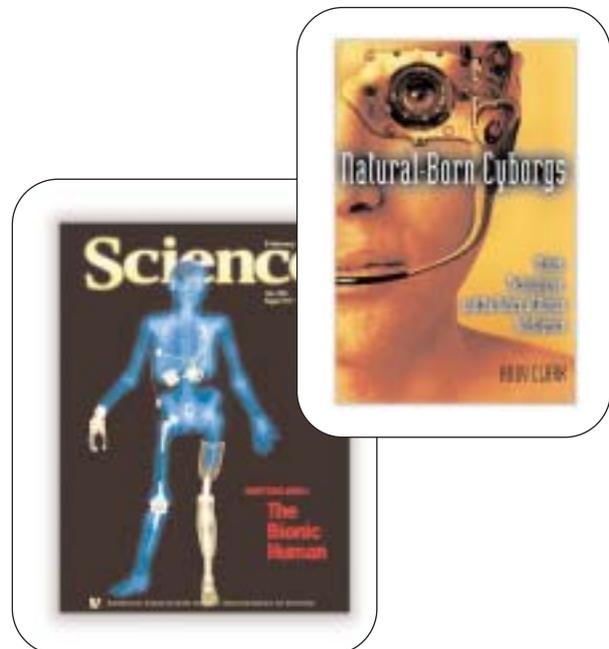
## Key Focal Points

Brokers, translators, and guides who act as bridges across layers of communication, physical and digital worlds, and even online worlds will facilitate transactions. These focal points also offer the opportunity for abuse and exploitation. Cultural norms and social and legal institutions that attempt to shape behaviors are likely to evolve. Some of these cyber-mediaries include second-tier pirates (those who gift digital music, video, or other files that are acquired via peer-to-peer activities). Other focal points that reflect relationships with non-nomads include signals to cybernomads that ordinary space is also layered with digital information or provides digital access. This is as simple as a T-Mobile sign in the window of Starbucks or the café chalkboard that states “free Wi-Fi.” Such signals focus cybernomad attention such that conventional landscapes may also include an alternate reality that is only meaningful to cybernomads.

## Insights

Every organization will have to support a mixed society of cybernomads, tourists, and townsfolk. Key to successfully leveraging the diversity that cybernomadism can offer is to identify and develop strategies that maximize relationships of sedentary members of the organization with nomadic members. How can such relationships within and beyond the organization be facilitated? Identify various forms of “trade relationships” that could unlock unrealized potential and value in the organization. This will be important for R&D groups, innovation teams, and organizational process designers to understand. How will performance measures and rewards need to change?

Architecture may be a good place to start facilitating sedentary–nomad mixing in the organization. How can physical places support cybernomad gatherings, trading, and goods storing, and accommodate digital layering of social networks and information.





## Conclusions and Business Implications

The cybernomadic landscape is already reflected in the new behaviors and social forms taking hold from mobile communications and computing. Teens migrate through their daily routines without being separated from their remote friends and peers; public places like parks, cafés, stores, and lobbies take on multiple and simultaneous roles in individuals' portfolios of distributed work and personal places; and groups of bloggers, traders, innovators, designers, and others move between the vast reaches of digital environments and the physical world to create new sources of value for non-nomads.

The sensing technology paradigm currently unfolding on the horizon will further shape the evolution of this new physical–digital fused landscape. Current deployment of RFID chips in manufacturing plants support aware, responsive supply chains; aware peer-to-peer network infrastructures will soon act as cooperative social groups to self repair and increase transmission efficiencies; and distributed peer-to-peer computing projects (like Stanford University's protein-folding project) are really models for all kinds of new cooperative markets that will identify and allocate resources in new ways.

These are just a few indicators of how the cybernomadic landscape will unfold. No one can predict exactly how the landscape will evolve, but we can say for certain that it will unleash a new set of dynamics related to individual identity and presence, social interactions and group formation, forms of market creation and participation, and other collective human efforts. These are all core drivers of how businesses coordinate and operate in changing environments.

There are four domains in which the cybernomadic shift will play out for business. Each presents threats and opportunities that will determine the success of business in the future.

### Leverage a New Spatial Landscape

The cybernomadic shift is redefining the playing field for business. Business will be conducted across multiple physical and digital locations, each with its own strata of physical and digital data and information, social networks and reputation systems, and technological infrastructures. For each location, the relationship among layers will need to be finely tuned to the needs of customers and consumers, and the requirements and qualities of distinct products and services.

All sorts of business transactions will take place over this distributed and layered market space (indeed they already are). Business leaders and staff must shift how they perceive their business space and work envi-



ronment. They must be able to envision all these layers at once—a sort of multiple and simultaneous vision—to fully understand the dynamics of their business interactions and where they can create value.

For example, consumer in-store experiences will still be defined by activities and stimuli within the walls of the retail space, but these will be deepened by layers of digital information. Shoppers could browse store shelves accompanied by digital access to expert or peer advice, referrals and reviews, databases of quantitative information, and many other kinds of evaluative and reputation-oriented information. Physical and digital maps that link brand and store geographies to the physical retail space will provide consumers with alternative routes for various kinds of shopping experiences. Expectations of these spaces will change. The retail site may become the location for non-shopping experiences that neither retailers nor distributors nor manufacturers anticipate, but ultimately impact people’s experience. Businesses will have to learn to understand the new culture and context this creates for the shopping experience. Business-to-business customer portals, layered with digital access to communities of practice, standards information, technological support, problem-solving collectives, and simulation environments could be linked to physical sites within plants or even to specific equipment or points on production lines.

Businesses can begin to leverage the new spatial landscape now by:

- **Mapping out the complete digital and physical business environment** to identify the broader reach of the company. What are the **maps and taxonomies of places and spaces** that you can provide to users to help them move across layers? Develop processes for employees, customers, and consumers to develop and share their own maps of your business environment.
- **Help create consistencies and coherence** as cybernomads navigate physical and digital spaces. Help orient consumers in retail environments, customers in business environments, employees in the extended physical and digital workspace. What are the necessary translations or introductions (anything from passwords to reputation markers) that consumers, employees, or customers will need to move across physical and digital layers?
- **Create nodes or focal points** that serve as portals to valuable layers—information, social networks and social context, or technological resources. These nodes or focal points can be physical or digital (e.g., a kiosk in a store, logo on a store or office window, an icon on a display screen, a person accessible in physical or digital space,



## CONCLUSIONS AND BUSINESS IMPLICATIONS

or a URL or phone number). The number and kinds of portals will proliferate beyond these early ones.

- **Learn how business processes leverage and extend** across multiple layers in the physical and digital environment. What data, information, reputation, and expertise from multiple layers is required through a business process?
- **Learn to provide bridges** across these layers—what are the services and supports that will help users navigate, select, and evaluate these layers of resources on the go?
- **Transitioning from a role defined primarily by supporting desktop computers** with client-server models and central databases to one in which their primary service model is location-based services for members of the organization will be a key task for corporate IT.

### Leverage a New Social Platform

A critical aspect of the cybernomadic shift is the growth of opportunities for emergent, peer-to-peer, social networks to form. Although cybernomads live across a vast layered landscape, they maintain trusted social and emotional connections, keeping them accessible to catalyze action. This is evident in recent elections in both Korea and the Philippines, the early growth of the Howard Dean presidential campaign in the United States, the growth of various open source movements from software development to problem-solving communities to open source money (a version of local economy trading schemes), and the development of common-pool resources such as the Wikipedia (an online, ad hoc, emergent encyclopedia). The cybernomadic social platform relies on social and emotional proximity for cohesion, egalitarianism rather than hierarchical authority models, and internally defined rules and mechanisms that guide behavior.

Business needs to pay attention to this model of social group formation because it fuels a new model for knowledge creation and sharing, corporate profits and incentives, collective problem solving and rapid response, and employee engagement, profits, incentives, and accountability. As cybernomads extend their intellectual and social selves through their networks, their individual agency (their capacity to take action and contribute) increases through the group's collective agency.

While social networking has traditionally been a key to success in business organizations, it has been implicit and largely hidden from



view. What's different now is that this behavior is becoming explicit and revealed, and directly supported throughout the population. So people who were not good at it before, or didn't pay attention to it before, or weren't deliberate in their choice of network partners, are now beginning to develop it as a personal skill set. One impact of this is likely to be the disadvantaging of those without the current technical tools or social skills to do this successfully in the new environment. "Old-boys" networking practices, for example, may not be successful or provide the competitive edge they traditionally have.

Businesses need to identify the ways that social capital, group-forming networks, and cooperative practices can spread throughout the company. Specifically companies should:

- **Identify barriers** (e.g., technological, social, organizational) that would prevent groups from forming. Set conditions so that it is not extra work to participate in emergent groups, but a part of doing day-to-day work. Reward behaviors that build social networks.
- **Allow and nurture internal group mechanisms** (around trust, status, reputation, and reciprocity) to emerge to regulate group behaviors rather than impose organizational rules. Respect the internal culture of communities of practice.
- **Support internal or external groups of bloggers**, design communities, affiliate professionals, particularly for innovation groups, and find ways to create two-way links between them and the company.
- **Explore how global production networks** can take on a more open source, ad hoc quality that increases their resilience and the range of alternatives for organizing production. Businesses must learn the new rules and processes for participating in open source projects of all kinds and adjust employee performance evaluations to reinforce these rules and processes.
- **Allow for and develop different networking rules** that are sensitive and appropriate for different kinds of contexts (e.g., blogs versus open source development). One set of network practices and skills may not fit all situations. That said, it is still important to take note of core rules or principles that cut across most networks and can be leveraged for marketing, product design, and business relationships.



## CONCLUSIONS AND BUSINESS IMPLICATIONS

### Leverage a New Framework for Value Exchange

Two new sources of value creation are emerging in the cybernomadic business landscape: first, the value of social capital generated out of group-forming networks; and second, new sources of value created in virtual economies that exist parallel to, and, perhaps soon, integrated with the real economy.

The new social platform allows for new kinds of collective practices and knowledge generating activities, as mentioned earlier, but today's companies do not explicitly measure or account for the latent value in their own social networks. In the cybernomadic business landscape this is an important source of capital and value that should not be underestimated or excluded from the company balance sheet. Indicators such as the number of social nodes inside and outside the company, the social reach of a company's network (defined by range of intellectual and professional partners or industry segments), and the degree of social proximity of various executive leaders, managers and staff all are important factors adding up to an organization's ability to act efficiently, cooperatively, and rapidly. There is a growing literature on the value of group-forming networks as a new dynamic for generating social capital and providing new economic alternatives for market formation (see text box).

In addition to social capital, virtual capital is raising many issues about value creation for business. Trading and selling in online spaces is beginning to overlap with economic activity in the real economy. An early intersection of the virtual and real economy first took place when players of *EverQuest* bought and sold game-related goods and services

using real currency through eBay. Players can buy game-world currency, tools, clothing, and skills that improve their quality of life and performance in the game.

Following this trend, corporate branded goods and services are being traded within game-world economies (such as *There* and *The Sims Online*) and out-of-game businesses are emerging to provide brokerage and trading assistance (such as the Gaming Open Market). There are even examples of offshore sweatshop labor, in the real world, to create goods and services to sell for a profit in the game world. While a small share of the population plays online games, these examples indicate the porousness of the borders between virtual and real economies.

For academic analyses on the value of group-forming networking, see David Reed, "That Sneaky Exponential—Beyond Metcalfe's Law to the Power of Community Building" <http://www.reed.com/Papers/GFN/reedslaw.html>, and Walter Powell, "Neither Market Nor Hierarchy: Network Forms of Organization," [http://www.stanford.edu/~woodyp/powell\\_neither.pdf](http://www.stanford.edu/~woodyp/powell_neither.pdf). For a science fiction future vision see Cory Doctorow, *Down and Out in the Magic Kingdom*, <http://craphound.com/down/>.



There are several ways to leverage the new sources of value creation in the cybernomadic world.

- **Support group-forming networks** by appropriately selecting and using the emerging social software tools, such as Ryze and LinkedIn.
- **Leverage the deep value of group-forming networks** by measuring and tracking them and characterizing the kind of value they may bring to your organization. Use network-tracking tools to translate what appears to be a soft asset into a quantifiable one.
- **Develop and use tools that help you visualize group-forming networks** in your company. This may help you identify how they start, under what conditions, and where they have their biggest impacts.
- **Identify products, services, and business processes** that have points of integration with the virtual economy. How can value be created in virtual economies? What impact would that have on real-world value creation?
- **Extend and leverage your brand into the virtual economy.** Open-source communities (such as the many game players in *There* who welcome the comfort and identification of corporate brands) may be able to extend your brand in ways that were not considered before.

### Leverage a Host of New Roles

The cybernomadic business landscape is a global one, with developing economies playing a greater role in manufacturing processes and even professional service delivery. Indeed, many spots in the global economic and social landscape that appeared to be marginal will take on new significance in the cybernomadic global economy. Business organizations need to sort out how cybernomadic practices and structures create a new framework to assess and strategically define the role your company plays within the global economy. This new framework will also recast the role and dynamic of employees within your organization.

As sensing technologies become more widespread, expect devices and objects to become an important part of social networks. Consider intelligent agent-based systems as social swarms of computing power and problem solving that will reshape the role of humans in business processes, and likewise the role of regional economies. Already intelligent agents and bots interact with each other on the behalf of people.



## CONCLUSIONS AND BUSINESS IMPLICATIONS (cont.)

Self-organizing supply chains perform activities, once directed by humans, on behalf of supply-chain managers. As objects and devices develop greater individual agency, they will take on a new relationship as our machine partners in cooperative work processes. As noted economist W. Brian Arthur suggests (in “Fragmented Capitalism” in the Institute for the Future’s *2004 Ten-Year Forecast: Perspectives*), humans will increasingly become supervisors in a conversation among machines. This will have profound implications for corporate positioning in the global economy, corporate core competencies and strategies, and employee job descriptions and skills.

A second key point is that the global mobility will mean a redistribution of business functions worldwide (and perhaps even some completely new job categories). As a result, the job market, like the market for products and services, will increasingly become a worldwide job market. Displacements of jobs and workers will be extensive, among white-collar as well as blue-collar workers.

- **Understand who will be displaced** and by whom or what; composition of the workforce is likely to change; who will be available to fill these roles and what new processes will need to be put into place to attract them.
- **Enter into new kinds of relationships** with workers based on more ad hoc assignments and participation, which may result from agent-driven decisions about scheduling and supply; look at the leading edge of agent-driven processes to understand new kinds of demands and rewards that will be appropriate for employee contracts of the future.
- **Watch for signs** that your company is facing marginality in the future. If innovation is a scarcity, how can your organization use its physical and digital mobility to overcome this scarcity?
- **Identify how new relationships with employees** are created by device-driven, self-organizing, or automated business processes. What new demands do these relationships place upon employees?
- **Identify how opportunities for new relationships with business partners** are provided by device-driven, self-organizing processes. What is the shape of those relationships and what shared infrastructure do they need to develop these relationships?



- **Consumer-driven organizations will need to identify** how various “focal points” of consumer contact shift as intelligent systems direct a lot of communication, logistics, and service. How can companies leverage those focal points?
- **Build capacity** to identify global skill and resource gaps within your organization. Who are your current cybernomads and group-forming networks, and how are they integrated with the rest of the business? Where do offshore workers stand?
- **Perform periodic assessments** of the corporate business model and organization’s culture in order to map out where you realistically can play in the cybernomadic landscape. Identify the factors that will contribute to success in the cybernomadic economy. How will success be affected by external factors like industry, regulation, nature of production, kinds of services, and consumer expectations?