



new markets not only have to make sound predictions about technological innovations, but also about the way households will frame the use of these new technologies.

On the other hand, the accuracy of these predictions depends on a method that takes these complex relations and interdependencies into account. It is, hence, not the lack of data that makes forecasts difficult and often a risky basis for designing business strategies. In fact, surveys and interviews made by the IFTF provide thousands of clues about future household activities, relationships, and spending patterns. But in order to make sense out of these data a framework is required. What is needed is a method to analyze systematically these data and clues and put them into the proper context. The IFTF provides such a framework in form of a compass that helps to navigate through a landscape still unknown to us.

### Mapping the Household Horizon: the Framework

The *Technological Compass for Understanding Daily Life* is a means that addresses three aspects:

- It first depicts the ways how we adjust and “re-contextualize” technologies to our daily needs and demands (technology adoption).
- Second, it provides insights into the way how households interact and change on a daily basis (in-depth view of the household).
- Finally, it describes the way how new connective technologies will shape activities and routines in a household (connective technology landscape).

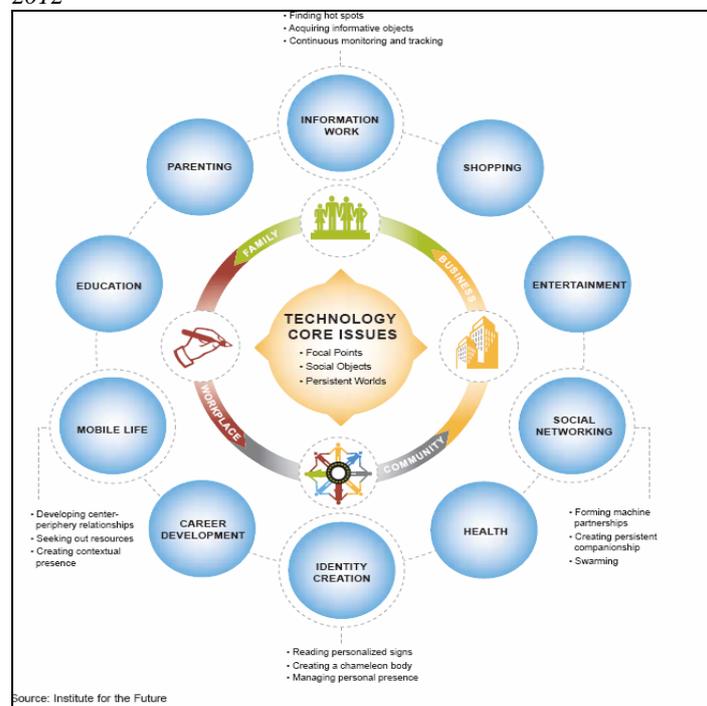
The framework developed by the IFTF is a four-layered tool that links:

- Technological core issues,
- key players in household interaction,
- domains in household activities, and
- daily practices.

Changes in the technological core issues (inner circle) will affect how key players (family, workplace, community, and business) will act in different domains of household activities

(social networking, entertainment, mobile life etc.), which in turn will trigger new daily routines (e.g. swarming, finding hot spots, seeking out resources). Graphically (figure 1) the layers can be transformed into a compass.

Figure 1  
A Technological Compass for Understanding Daily Life in 2012



In summary: The report tries to make predictions about the relationship between technologies and the evolution of specific daily life practices and behavioural patterns of households. Theoretically, the compass can be extended and it can be used in order to examine different technological developments in greater detail or to understand better the specific meanings of practices in various cultures, regions and countries.

## The Household of the Future: the Forecast

Overall it can be assumed that the changes we are about to observe will lead to a new household paradigm that will radically alter the concept of domesticated societies as we know them. According to a path-breaking study by Peter J. Wilson domesticated societies emerged when hunters / gatherers started to live in stable settlements and created boundaries between the public and the private spheres. This notion of boundaries determined the behaviour and shaped the

life of individuals and communities. New technologies, notably new sensor technologies, will transform or even do away with these boundaries. They will lead to new daily routines and practices and thus recreate the way how we will deal with the distinction between private and public spheres. Three dimensions are important in this respect:

- First, privacy will less be linked to (physical) boundaries or places. The **public sphere will become privatized** and individualized, so to speak, because focal points and information hot spots will convey personal messages and create an environment that changes according to personal

needs and desires. Both the private and the public sphere will experience a proliferation.

- Second, until now we access the virtual space through our computers. What we see on the screens is a reflection of the objects we want to interact with. However, new technologies will enable us to interact directly with these physical objects and surroundings. In consequence, we will observe a shift from accessing the virtual space towards **interaction with social objects**. The physical environment will be transformed into social objects that adapt and correspond to our demands.
- Finally, so far interactions are successive and episodic; interactions are a series of discrete events. The episodic nature of interaction will disappear and be replaced by continuity and permanence. We will move towards a world of “**always-on-awareness**”.

In an exemplary way the report explores corresponding changes in household patterns and behaviour, makes forecasts about business opportunities, and provides hints for developing company strategies in four areas: information work, social networking, mobile life and identity creation.

### **Information Work**

Living in an “information age”, as we do, requires specific skills. Filtering and screening the information (over-)flow already is a major task in everyday life. According to the report, this task will have been reshaped and received a new quality by the year 2012. Three major changes are identified in the report: First, we will move away from filtering information that is sent to us. Instead information will be embedded in the environment, i.e. in physical objects. Hence, we will have to find these objects in order to receive the information that is for our personal use. Second, we will increasingly interact with social objects whose information is based on contexts and individual needs. E.g. clothes, GPS etc. will carry information that will adapt to the environment (e.g. cosmetics adjust to your skin needs or the day light). Finally, until now scheduling and planning events is based on episodic coordination of our activities. We continuously update and coordinate our plans and make permanent rearrangements. The householders of the future will be able to connect various information flows and thus coordinate their activities on a permanent basis. Hence, they will live in a persistent world.

It goes without saying that these technology driven developments will trigger behavioural changes. Individuals will have to learn how to manage and author their information flows; they will have to learn how to identify and use information hot spots that are embedded in their physical surroundings; and they will have to learn how to deposit information at focal points. Accordingly businesses should strive to readjust their strategies. They have to explore new ways in order to offer goods and services to consumers by finding possible information landscapes and by ways of linking information with objects.

### **Social Networking**

Like information work social networking will also be altered through the emergence of focal points, social objects, and persistent worlds. I&C technologies already have affected the structure of social networking. Due to cell phones, e-mails etc. our social networks have become geographically expanded as well as socially and culturally more diverse. Sensors, wireless communication and mobile computing will add new dimensions to social networking. The report predicts that we will, first, move toward swarming, i.e. a practice by which a social network is created and maintained for a specific purpose (e.g. congregating a consumer group to profit from a discount). Second, the existence of social objects will lead to partnerships with machines. As we will be able to interact with machines we can offload work to them and let them make decisions for clearly defined tasks. Third, so far social networking is based on episodic contacts and intercourse. However, persistent worlds are based on continuity and permanence. Messages that go on for an indeterminate period of time can create a sense of presence, of “being” at a place, that one has left already. This sense of presence may be created and sustained by sounds, images or even scents that will be part of communication.

Behaviourally the members of a household have to learn how to manage this new type of social networking. They also have to determine the degrees as to which they want to have machines make decisions - e.g. under which circumstances the vacuum cleaner turn itself on or off. At the same time they have to make sure that the possibility of continuous presence will not lead to social overexposure. Privacy and intimacy have to remain possible and guaranteed.

### **Mobile Life**

Mobility already has become an integral part of our daily routines and practices. Many do personal or professional work while they commute. According to the report, the move toward technologies that highlight focal points, social objects and persistence will redefine the nature of mobility once more. Focal points will add flexibility to boundaries. As we will be able to transport focal points we will transform boundaries into center-periphery relationships. Relationships and activities will, hence, not be determined by in/out distinctions but by the relative position to the center and the periphery. In addition, we will stop carrying resources with us - like computers, cell phones etc., but rather look for them out in the surroundings. In consequence, the upcoming type of mobility will – in a way – resemble traditional nomadic practices of carefully scrutinizing the environments for signs of resources, opportunities, and threats. Finally, until now mobility is understood as a transition zone that connects places. In the future mobility will be transformed into a contextual presence. Persistent worlds will allow us to maintain presence even while we are on the go. Again these shifts demand new consumer skills and desires.

## Creation of Identity

Technologies can affect the creation of identity in two ways: On the one hand, technologies very often are to symbolize a specific status or attitude. A certain technology might be used to set you apart from others. On the other hand, technologies are means for expression; they are media that enable us to represent our selves.

As far as identity creation is concerned we rely on context switching, i.e. we switch our identity as soon as we enter a new social context. We switch from one role to another (e.g. from business man to friend to family member etc.). The report forecasts that social networks will become far more complex and differentiated. Under those circumstances,

switching social networks and our identities might create stress. Yet, focal points conveying messages adapted to the environment can reduce the stress provoked by switching contexts because the context reacts to your needs and desires. Furthermore, you might use social objects as conveyer of your identity. This kind of “digital tattooing”, as it is called in the report, allows you to put aspects of your identity into the physical world or to create a “chameleon body” - like cosmetics that adjust to temperature or light. Finally, the idea of being part of a persistent world will allow you to remain present in a surrounding even if you are physically gone. For example, you might implant your voice into your children’s most favourite bedtime book, and each time your child opens the book it hears your voice.

## Towards a New Nomadic Daily Life?

Overall, householders will have to reorient their lives around new focal points, they will develop relationships with social objects, and they will have to live up to the task of managing presence in a persistent world. Hence, a new household paradigm will emerge that may move towards a new nomadic life.

In principle, the framework can easily be applied to various domains. The layers of the framework can be adjusted or, if need be, extended in order to accommodate varying expectations and environments. Different core issues can, thus, be placed in the centre or new domains or regional and cultural differences can be added.

Originally the report was neither addressed to policy-makers nor was it intended to be used for public policy-making. Its main purpose was to forecast demands and needs of household and consumers in order to enable businesses to explore new markets and develop innovative products. It is this goal that can perfectly well be pursued with the framework. Businesses can adjust the framework to their needs and market profiles. Notably the combination of technological developments, household domains, and behavioural changes will enable companies to adjust their market strategies. Yet, due to its flexibility it could well be imagined to use the compass for policy-making, too. Policies that deal with the household of the future can be based on respective forecasts and thus better address upcoming changes.

## Sources and References

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**About the EFMN:** Policy Professionals dealing with RTD, Innovation and Economic Development increasingly recognize a need to base decisions on broadly based participative processes of deliberation and consultation with stakeholders. One of the most important tools they apply is FORESIGHT. The EFMN or European Foresight Monitoring Network supports policy professionals by monitoring and analyzing Foresight activities in the European Union, its neighbours and the world. The EFMN helps those involved in policy development to stay up to date on current practice in Foresight. It helps them to tap into a network of know-how and experience on issues related to the day to day design, management and execution of Foresight and Foresight related processes.