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 "Habitele: wearable digital identities".
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1. RESUME DE LA PROPOSITION DE PROJET / ABSTRACT

The project aims to test a new conceptual framework that can account for the technological revolution in mobile communications. The change of scale (2/3 of human beings gaining access to mobile communications within the span of 15 years) forms the basis of a new collective climate, and of a new kind of common world. Connection is important because it creates the awareness of "being connected", and changes the state of mind: we inhabit a new personal data ecosystem, which we call "Habitele". **Habitele is used to label the various distant connections with various social worlds that we are able to handle by carrying devices (phone, credit cards, IDs, keys and access cards) and traces that keep us in touch with these worlds.** Henceforth, the mobile phone is rapidly merging all these affiliations, traces and access into one device, which is carried close to the body. IDs in the cloud and permanent bodily access are what make the mobile phone a universal terminal (and not the PC): our digital identities become wearable, as a new envelope. This general framework will be assessed through a carefully designed empirical investigation. Six hypotheses will be tested: 1/ is Habitele a personal process of globalization? 2/ Is Habitele a process of switching between social worlds, 3/ is Habitele a new attention regime based on alert and watch? 4/ Is Habitele a new understanding of privacy as shared? 5/ is Habitele creating a new kind of envelope as do "habit", "habitat" and "habitacle" (in French)? 6/ Is Habitele generating an asymmetry of perception between companies and users with regard to the importance of privacy? These hypotheses are already well documented from a theoretical standpoint, but require an empirical test with an international fieldwork (9 countries, including France), in-depth interviews (500), 45 case studies of typical use, data collection of personal behaviour (through extraction from the device), and mapping of connected social worlds. The international comparison is an important ambition of the project and it will involve France, UK, USA, Canada, Brazil, Tunisia, Nigeria, India, Korea. On the telcos and providers' end, we will design a sociological experiment to test the propagation of (fake) personal data in violation of contractual limitations. The project seeks to innovate in the field of social sciences by building on a strong relationship with computer scientists, a large international survey, a combination of qualitative and quantitative data collection, and a strong theoretical stance. It may help the social sciences, computer sciences, businesses and administrative bodies to reconsider their understanding of mobile phones and to create input for different trends in innovation.

2. CONTEXTE, POSITIONNEMENT ET OBJECTIFS DE LA PROPOSITION / CONTEXT, POSITION AND OBJECTIVES OF THE PROPOSAL

The project tests a theoretical framework labelled "Habitele" by Dominique Boullier. This neologism seeks to account for the anthropological transformation we are experiencing, as two thirds of human beings have become equipped with a mobile phone (5.2 billion

subscriptions, i.e. approximately 4.5 billion individual users, as of December 2010). The "connected being" status changes our mood, due to an alert state of mind; our everyday interactions in everyday life, based on awareness more than presence; and our coordination skills, because of traceability. But it also offers the opportunity of switching between social worlds we are affiliated to, whether it be socio-demographic features or peculiar tastes that connect us to an ephemeral community. These affiliations will be the core of the research project, since they create a new web of relationships, some of them supposedly private and others deliberately public, while these boundaries become increasingly blurred and challenging of the rules of privacy. These affiliations may rely not only on mobile phones per se but also on other physical and virtual service access methods such as credit cards, keys, dedicated applications, and credentials of various kinds, each of which is a common feature in mobile phones, but none of which has yet fully converged with the others in the phone. It is this global environment of digital identities that constitutes the Habitele. Coining a new concept was required in order to avoid being trapped either in the innovation frenzy or in the repetition of post-modernist and individualist tropes. This work began in (Boullier, 1999) and has been only tested with a small field study in 2003 (ACI Ville) with the cooperation of F Audren for historical and law insights. But the publications were too scarce (Boullier, 2002, 2004, 2011) because of the lack of empirical validation.

The concept is connected to the anthropological tradition of analysis of "habit" (in French; "outfit" in English) and habitat (and "habitacle", in French, or "compartment" in English; this is often neglected in social sciences), and to Sloterdijk's philosophy of globes and foams; however, in contrast to the former, this project aims at providing **an empirical ground** to these frameworks.

The social phenomenon of mobile phone use is well documented in terms of the diffusion of innovation, and of behaviours, etc., but since it is not connected to a relevant conceptual framework, there is no deep understanding of this important transformation of our times. This is why the empirical fieldwork will encompass other IDs and credentials not (yet) necessarily linked to the mobile phone, and will compare cultural differences, since this globalisation process must be documented in various countries beyond the raw data obtained from telecom operators or equipment providers, for instance. The Habitele concept seems rather akin to the "Personal Data Ecosystem" that is becoming a major theme in Identity Management, from the ICT as well as from the business and innovation perspectives. But Habitele does not cover the exact same fields and was coined ten years ago in order to account for our ability to create a whole new envelope, which is related to the idea of an ecosystem, but with important differences: Habitele is much more distributed; also, it is not limited to the digital world. Here the project will focus specifically on digital identities and will borrow some preliminary insights now shared among the emerging Personal Data Ecosystem community.

With such a design, the project should be considered as a fundamental research project, since the theoretical aspect is the impetus for the research. But we assume and deeply believe that this new understanding of issues surrounding the emergence of connected beings, will

provide innovators of all kinds with a fruitful reflexive tool that will help them design new devices, new services and new business models.

2.1. CONTEXTE ET ENJEUX ECONOMIQUES ET SOCIETAUX / SCIENTIFIC, ECONOMIC AND SOCIAL BACKGROUND

The range of societal challenges this project might consider is very wide since the technologies we will address are "ubiquitous" and pervasive, as are all digital networks, but here in a much more personal way. We will try to distinguish between two areas of concerns that are in fact connected, and will be so in our research program, but that are not often considered as such in the literature: mobile communication and personal data. First we must mention the 6 hypotheses on which the project relies, since it may help understand which concepts and results from the state of the art will be useful:

1/ Is Habitele a personal globalization process?
2/ Is Habitele a process of switching between social worlds?
3/ Is Habitele a specific and shared regime of attention based on alert and watch?
4/ Is Habitele a new understanding of privacy as shared?
5/ Is Habitele creating a new kind of envelope as do "habit" or "habitat"?
6/ Is Habitele notion of privacy symmetric between users and telcos?

1/ Mobile communication research

With regard to mobile phones (and all this kind of media), the trend was until now to focus on empirical descriptions of their social uses and of their diffusion in various settings (in a rather linear model as developed by Rogers in 1963) or, on the contrary, to generalize the phenomena to a philosophical and critical level, where the emphasis is placed on social diagnoses such as the disappearance of traditional reference points in the "immediate society" (Josephe). These kinds of approaches can easily be duplicated for almost every communication technology. We do not want to discount the need for empirical description or for critical approaches. But one needs to recognize the dearth of demonstration and of careful argumentation based on empirical data.

Field observations and the collection of diffusion data focus on measuring usage and understanding its rationale in various social settings and groups. One of the classical questions concerns the digital divide issue, and many works try to demonstrate the social differentiation according to individual revenue and country. Castells et al. conducted an extensive overview of this issue and were somewhat puzzled by their finding that the widespread diffusion of the technology rendered nugatory any classical digital divide type of analysis: "'the influences of socioeconomic inequalities decrease, or even evaporate, when penetration gets close to saturation in a given society" (Castells et al. p. 56). The saturation stage is far from reached in many countries, and social differentiation may still be prevalent in the choice of device, the mode of subscription (prepaid or contract), the extension of reach, the applications used, or… the number of terminals used, since in developed countries equipment is proliferating. However, there is no simple translation of social classification according to mobile phones use. The pace of the diffusion is a tremendous validation of E.

Rogers' S-Curve of diffusion, and is often monitored in each country by the local agency in charge of regulating the telecoms sector. Even the age gap, which suggests that elderly people may lack the confidence to use this kind of tool, is not as important as it is for computers since phone use was widespread and so did not create any access barrier. But the tremendous hype among youngsters about the uses of these technologies must be considered (Boyd). The most interesting works are the anthropological ones (e.g. about Jamaica, Horst and Miller, 2006), because they try to account for the social meaning of mobile phones uses through in-depth observations, where the various features of every culture play a role in shaping use. Many field studies give insights about the pervasive status of the mobile phone and its ability to play a role in a wide range of settings: enterprises cooperation in Nigeria (Jagun and al.), fishermen cooperation in India (Sreekumar), money transfer for migrants from Africa (Bounie), political disconnection against companies and governments in Nigeria (Obodore), use of public spaces in Brazil (Sousa and al.). These references will help design our case studies portfolio in each country.

Much more academic work has been devoted to sociability issues, as seems obvious for a communication device. Every social area has been investigated using the traditional frameworks of each subfield. For instance, family sociologists analyse mobile phone use in the family using the concepts of family sociology (Martin, de Singly, Soyoung and al.): conflict and cooperation in couples and between parents and children find another means for display. The specific role and power of the device is rather undermined and when it is not, the device is seen as pushing families towards the general model of individualization, or "living together apart", as de Singly put it. Sociability among peers in youth groups or in immigrants networks are also analyzed through the lenses of the concepts of friendship (Green and Singleton, 2009) or of the modes of management of multiple territorial references (Diminescu). Work places are also under scrutiny and we did some early work in this area (Boullier, 1996): the device seems to be conducive to coordination processes; the main concern appears to be about the blurred boundaries between private and professional assignments, raising the issue of autonomy and control, from a traditional hierarchical analysis of the relationships in workplaces. This approach takes little account of the pluralism of social worlds that we will look for in our Habitele theory. C. Licoppe and his fellow scholars take a much less conventional approach in their field studies on multi-activity: this is a much more ethnographic or cognitive approach but it yields important insights on mobile phone users, who can stay involved in many social worlds at the same time or shift from one to another in a second. These micro-coordination processes are quite well documented now (Ling and Haddon, 2001). However, the main area of interest in the field of social uses of mobile communication devices was, at first (end of the '90s), about behaviours in public places (as Goffman would have said, and his work is still the reference on these issues). The research was spurred by public concern about breaking sociability rules when having private conversations among strangers, but it did not lead to any real conceptual innovation. What is witnessed is much more a process of collective adjustment – a socialization process that may take a long time but that ends up creating new, albeit socially differentiated conventions that are more and more widely shared. This field of

research will be of some interest when discussing the envelope dimension of Habitele: to what extent is the widening and the permanence of the connection contained in a personal sphere?

Another trend in the sociology of uses, which we contributed to in many papers, is to take account of the diversity of uses according to type or style. One of the pioneers in this, F. Jaureguiberry, tried to contrast the addictive style with other more utilitarian or more hedonistic styles. The idea of addiction does not seem to be very relevant, although the dependency is well documented now. What is more interesting is that ethnographic works about uses have demonstrated a shift in connection behaviour, whereby the conversational mode is replaced, for some people, with the "connected mode" (Licoppe): the phone is used as a phatic tool, to maintain the relationship and to create a sense of permanent ties with some elected acquaintances. This is a feature that helped us design the attention regime of alert (or awareness, or watch) where the fact of being connected is much more important than what is said (this is obviously a new version of Mc Luhanian's "the message is the medium" rule). Some styles take a larger view of social change, as does Kenichi Fujimoto's third-stage paradigm of cultural forms in Japan (military, business, socializing). D. Cardon proposes a very stimulating model of personal expression on these networks where one can govern some kind of visibility of self. Tisseron builds on this trend of research by using the lacanian style term of "extimity". But these approaches are geared towards sweeping social diagnoses, which we will address later on.

Changes in space occupation and uses are the major features of the investigation of uses in the social sciences. The term "mobile" phone seems to naturally induce this kind of reasoning, as did the first professional uses of these devices before the explosion of the mobile industry. The convergence of these uses with the tremendous expansion of human flows (immigration, globalization, work, tourism, etc.) connects the use of mobile phones to a new cultural paradigm of nomadism. The hype around geolocalization applications may confirm this trend, but the pattern is a very different here, because everyday use may include and benefit from geolocalization services. More importantly, this emphasis on the "mobile" aspect of the phone does not consider the most important time of use which is… at home. This is the case either because it serves as a personal phone in households where the land line used to be, and still is, the family phone, or because it serves as the only access to phone services, as is the case for a large population of the world. Thus Ureta (2004) speaks of "the immobile mobility" in low-income Chilean families: the mobile phone is the family terminal and the mother is the one who may carry it with her when it is taken out of the home. Besides, the "mobile" definition does not account for a large number of terms in other languages that emphasize other features: "portable" in French, and "keitai" in Japanese, refer to the handheld features of the device; this is much less studied in academic fields. The process of coupling with the body seems to be mentioned only by Interface specialists, in ergonomics and Computer Human Interaction. But the theoretical part of these approaches remains disconnected from a more general framework and from social sciences. Major works in cognitive anthropology (based on Hutchins' distributed cognition approach) may be relevant when it comes to understanding the specific place and the tangibility of the devices:

ANT (Callon, Latour) used to emphasize the role of objects with an inter-objectivity approach (Latour, 1992), which will be very helpful in relying on technical features and traces when we discuss the behaviours of users. The Habitele is a distributed system that starts with the individual's body, hand, and cognitive skills "in the head", and then extends to the setting, people and rules involved in a specific situation, and the network access, IDs and relationships "in the cloud". One cannot separate all these entities when trying to account for the extension of affiliations and the shift between them that mobile connectivity makes possible.

We note that the research has mostly focused on mobile phones, while other terminals are much less studied (credit cards, access cards and keys, etc.). However some features of the phones embed some other tools in and were considered of interest for social sciences, such as video on mobile phones for Rice and al. Game consoles are just beginning to get connected on mobile platforms but other devices such as credit cards, keys and access cards are almost not studied at all outside of business reports of sales and uses. However, access control is a major feature of the devices we carry, as they are embedded with personal data. Rifkin was right in considering that we have entered an "age of access", where the traditional mode of surveillance as well as the limited diversity of social spheres are no more. Cities rely on a sophisticated set of technologies that help sort out publics and maintain control over crowds (Boullier, 2010).

Social diagnosis and philosophical challenges

The public debate is largely shaped by publications that attract attention by adopting guru or critical postures, and some of these come from the academic field as well. These approaches may help us uncover philosophical roots and political stakes, provided that we are able to back these insights with empirical evidence, and that we do not fall into the techno-bashing versus techno-hype debate that is typical of the public discussion on this topic. Some philosophers include the mobile phone in their reflexion as does, for instance, M. Ferraris. His work is a very stimulating one where Derrida is the reference: the mobile phone becomes an inscription device – a writing machine that may fit in a phenomenology of traces. This issue lies at the core of traceability and privacy issues. Unfortunately, Ferraris merges his observations into a more general discussion about technologies and misses the particularity of the mobile phone as a cultural phenomenon in of itself. Many other, less publicized works adopt a critical stance towards this invading technology (Benasayag). The diagnosis is biased because it lacks empirical evidence, and makes the following assumption: mobile phones enhance the individualistic trend of post-modern societies and create more loneliness than they do ties. However, their insistence on the loss of traditional bonds or on disaffiliation (Castel) is an interesting starting point, since the way mobile users handle their affiliations is very challenging for social theory in general: as social circles (Simmel) proliferate, the sense of permanence that used to make identities obvious and natural can no longer be taken for granted. The ability to shift from one social world (Strauss) to another is a key feature of Habitele (the switching capacity), and the sense of a core is maintained through rapid and extended circulation between affiliations. This can be considered as another example of the

uncertainty that Beck used to describe the second modernity. Numbers, codes, and passwords are now the resources that coordinate these various circles. Control over these personal data becomes an ontological question as well as a political one. Critics are eager to condemn any trend towards control and to point to the risk of alienation. But personal data are of concern for many other stakeholders such as governments and business. We will now turn to this specific issue.

2/ Personal data

In January 2011, the World Economic Forum issued a report entitled "Personal Data: The Emergence of a New Asset Class". This report expresses the need for a general framework that would help governments, businesses and consumers to cooperate in order to find a shared understanding of the critical role played by personal data, for political and legal matters, for privacy and ethical reasons as well as for business and innovations opportunities. The report often refers to the previous statements found in Davis, Marc, Ron Martinez and Chris Kalaboukis "Rethinking Personal Information – Workshop Pre-read" (Invention Arts and World Economic Forum, June 2010). The list of personal data that should be considered as assets is provided. It is useful in drawing the boundaries of the *augmented Habitele* we mentioned.

This approach is significant: both governments and businesses share a growing conviction that personal data represent a highly complex legal problem but also a tremendous opportunity for business. The Habitele project opportunely comes at a time when major decisions are yet to be taken with regard to security architecture and personal data; these decisions will determine how we share a common world. There are many political choices to be made in the way of code design, since "code is law", as Lessig puts it. And there are no *a priori* solutions that might win over all the stakeholders; many specific solutions have yet to be invented and carefully drafted on the basis of a new understanding of the issue at stake. This is why the contribution of a new theoretical framework, validated through collected data, would be helpful.

For those reasons, all data elements belonging to one person's Habitele and partly mentioned above should be understood as *personally identifiable information* (PII). Note that the legislation regarding PII varies from country to country. Often, the concrete respective legislation is limited to more restricted PII definitions, (e.g. definitions based on catalogue approaches, that is using lists of data types to be understood as PII, the rest being non-PII). However, it is today a proven fact that combinations of non-PII data can lead to PII data (as a simple well-known example, combinations of gender, zip code and birth date are sufficient to identify large parts of the population in some countries). Besides, statistical approaches such as data mining on large data sets tend to enlarge the room for possible combinations. With current technological advances, any dataset extracted from one person's PII or activities within the latter could potentially be used to uniquely identify this person. Actually, it is rather difficult today to guarantee that any part of such a dataset is not PII (see e.g. Narayanan, A. and Shmatikov, V., 2008, 2010)

From personal data to privacy issues

The privacy issues appear to be crucial to understanding the new way of identifying oneself in the digital age. This cloudy identity generates what is called in the IT business community the *Personal Data Ecosystem*. As a matter of fact, this proliferation seems to be accepted and it runs uncontrolled by the very users that are providing huge amounts of data to various organizations, both well-known and invisible. The only moment where levels of concern rise, is in crisis times, for instance when Sony admitted to the hacking of the PlayStation Network, in April 2011, and the theft of data from at least 10 million credit cards. This is the same old story for security issues, as we observed in previous works on this topic (Boullier, Jollivet, Audren): one is not ready to take warnings seriously until one experiences a quasi-disaster, The right to oblivion, a rather French way of framing the issue, is not a real request from clients, as long as they do not face harassment by letting others use all the traces they left on the Internet or on the phone network.

Despite the observed careless users behaviour, previous surveys concluded that principals consider their privacy a "highly important issue" (see Alessandro Acquisti and Ralph Gross, 2006). This conclusion is also supported by the recent shift in major actors' policies (e.g. Facebook now has extensive privacy settings, which per se suggests that there is a strong user demand for more fine-grained privacy control).

While principals are therefore known to care about their privacy – in spite of known misconceptions and unawareness problems– little is known about the treatment of private data by the corresponding counterparts. This is not surprising, because a novel methodology is necessary to be able to make sound conclusions about the *remote* data treatment. Indeed, remote platforms usually are opaque (in the sense that their exact internal workings are unknown), and the respective authorities have no interest in disclosing their activities, especially if these involve privacy breaches or non-respect of earlier commitments. Our research project will try to bring these data treatments to light.

2.2. OBJECTIFS ET CARACTERE AMBITIEUX/NOVATEUR DU PROJET / OBJECTIVES, ORIGINALITY AND NOVELTY OF THE PROJECT

The Habitele project aims to create a new theoretical reference for a multidisciplinary issue by combining the anthropology of technology, usage analysis, innovation theories, media studies (in the Mc Luhanian sense), identity theory, and second modernization theory in the vein of Ulrich Beck's work.

Habitele follows in the line of studies in anthropology, philosophy and psychology that try to understand the process of appropriating a space, environment, or any ecosystem, in order to make the world "one's own world". Habitat, which is not only an ecological term but may encompass "lodging" and "settlement" as long as they are appropriated, was the main concept to be addressed; consequently, work in this area appears to be relevant to our own research. From Heidegger to Radkowski or Berque, thinking about habitat helps us understand the very process of relating humans to their environment, and to technology, since these shelters are tangible entities that also encapsulate many intangible features, which are very significant for the humans who inhabit them, and come to feel comfortable

and "at home" inside them. Both the human and non-human sides are affected by the experience of inhabiting. Settling down and lodging do not fully convey the process of habitat, which leaves a deep and lasting mark on each of the parties to the relationship. The etymology itself (*habere*) is meaningful, since the habituation process, which requires time and constant interaction, is at the core of all these processes of appropriation. *Habere* was a key word for Tarde, who called for a wider use of "ayants" i.e. "havings" instead of "beings" when characterizing humans. The problem is that this meaning of *having* in this meaning is neither equivalent to *having wings* for the bird, nor to *owning a house* for the landlord. **We are defined by our attributes, which are social relationships of various kinds that are neither natural nor legal ones, but that may become natural or legal over time.** This point will be critical when we examine privacy issues, which are closely related to this extension of a person, as defined by the personal data that are exchanged.

Drawing on this etymology, linguist and anthropologist J. Gagnepain coined three terms – "habit", "habitat", "habitacle" (in French) – and connected them to a unique conceptual framework. He designed a very structural and formal theory of the person, which will not be the conceptual framework used in this research, but we borrowed this etymological connection from him to coin the neologism of Habitele.

The "habit"/outfit was not so well explored, although it has the same relationship to clothes as that between habitat and lodging. Clothes protect the one who wears them, but also do much more than that. Shelter is a basic feature of all these envelopes, but the "habit" is much more famous and socially relevant for the social distinction (Bourdieu) that people seek when choosing to wear specific clothes: people display a face (Goffman), and a mask (Strauss) while expressing their tastes, which can either follow fashion trends or neglect them. The lack of analysis of the "habitacle"/compartment is much more surprising, since the car is probably the technology that most affects the most our everyday environment, our cities, as well as our climates.

Habitele is used to label the various distant connections with various social worlds that we are able to handle by carrying devices and traces that keep us in touch with them. These devices and traces are usually assembled in bags and wallets, and they need to remain closely connected to the body, ready to be retrieved in case of emergency. These bags, wallets and their contents are considered to be the "extended" version of Habitele. This project, however, will focus on **the "restricted" version of Habitele, and include only devices and traces that encapsulate an explicitly personal form of ID**. (Handkerchiefs or books do not carry our IDs as do credit cards, access cards, legal IDs and phones for instance). These devices and traces give us a sense of personal security, since we carry all the affiliations that constitute our identities. At the same time, they affect our behaviour by obliging us to carry bags and wallets, and to depend on them for any kind of connection to our social affiliations. One can easily pretend to be a member of a club, but one cannot prove it without a membership card, or a VIP phone number in a directory to call for help. All access technologies and IDs are also access keys to social worlds (Rifkin); they are operational devices as well as legal evidence of these affiliations, which may become unusable without these tangible proofs. This phenomenon of multiple-ID portability is a rather old

phenomenon. It depends on the expansion of a society and on the complexity of inner affiliations. Yet, the roles played by these tangible devices and traces were somewhat neglected in historical or anthropological research and, when studied, not considered as a single set of assembled traces of affiliations, or as a specific envelope, even while bags and wallets were displaying their everyday importance. JC Kaufmann finally got interested in the topic and wrote a book about it recently which is not considering the assemblage we are looking after. The major change occurred with the emergence of portable communication devices, such as the mobile phone, which is supposed to be kept at hand at all times and in any situation, allowing alien worlds to suddenly appear in the midst of other social worlds, where the body is present. The mobile phone and its development into a smart phone greatly expanded the sphere of social worlds that one carries. For example, social network accounts and profiles, IDs and credentials that web users disseminate while shopping on line or chatting or subscribing to news sites – all must be considered as **the "augmented" version of Habitele**. In addition to the mobile phone, the comparative investigation will include the uses of credit cards, IDs and keys (or access control devices such as cards). The study will also encompass virtual entities that may be present on modern smartphones in the form of applications with the corresponding service credentials, dedicated digital wallets (keyrings, keychains, etc.), and even all kinds of personal digital notes and notepads.

This change should be considered a technological revolution if only because of this recalibration in our ability to commute from one social world to another without taking up the time required to move from one place to another. This change in scale is exactly what Mc Luhan was referring to when he coined his expression "'the medium is the message", with regard to TV and electricity. In this newly connected world, the revolution may not be what people talk about (although a large part of the literature is devoted to study these exchanges)t, but the very fact of being (potentially) connected with so many people from such different social worlds, and all at the same time. The very fact that two thirds of human beings own a mobile phone (and, increasingly, even several ones) demonstrates the real value of this change: the mobile phone is the device of, and the impetus for personal globalization. This means that, as individuals, people share the same equipment and can use it to connect to each other (provided they can afford it!).

This assertion does not mean that mobile phones could erase any social differences. This project has an international scope so that we can examine what features of the supposedly shared technology are really shared, and which ones are completely idiosyncratic along the lines of various classical social distinctions, and other less traditional that will have to be discovered. Comparison will be the principal methodology used in this project; it will be applied to six hypotheses. The first hypothesis will address the issue of globalization (or lack thereof).

Innovation aspects

The project will address the question of mobile phone use in a way that is rather novel in several respects:

- it adopts a new understanding of what is relevant in mobile phone use, by embedding it in the theoretical framework of Habitele, which has been carefully designed over the past ten years, but needs to be tested,
- it emphasizes the international comparison by using the same methodology across several countries,
- it combines qualitative surveys with a precise collection of quantitative indicators, that are closely related to the theoretical demonstration, as opposed to the trivial ones found in marketing surveys,
- it seeks methodological innovation in the discussion of privacy issues, through an experimental sociology that takes advantage of the resources of digital traceability,
- it enhances the cooperation between social sciences and computer sciences in the spirit of social science leadership.

The results of the project will consist of:
- a new set of methods to track the activity of mobile phone users and to collect personal data on the web, adding a new field to the quali-quantitative methods that are growing out of web sciences,
- The validation or invalidation of the Habitele framework, based on strong empirical evidence, and the discussion of other relevant models,
- A new perspective for understanding the behaviour of users that may inspire device and service designers and foster innovation,
- An international perspective of social and cultural differences in usage profiles, based on local data analysis, including in countries that are rarely investigated, and ensuring comparability.

Criteria of success

The success of the project does not rely on the validation per se of the Habitele theoretical framework. It may turn out that it cannot be validated, or that it creates more confusion in the understanding of the personal data ecosphere issue, or that it is completely or partially invalidated. The design of a precise research protocol aims to create the conditions for a full test of this model and, at the same time, to provide empirical results that may help rethink the traditional issues in the field of personal data. This is why the protocol is designed to specifically test each hypothesis (and not only for a general validation). The challenge is to be able to both collect new kinds of data (and to invent these indicators), and to connect them to the theoretical proposal, while bearing in mind some general methodological issues in quali-quantitative approaches.

Success will rely on our ability to create tools, methods and indicators to challenge the hypothesis, because these developments may set the stage for a new trend in the study of ICT that is much more theoretically ambitious and empirically grounded. These tools, indicators, and applications will remain in the public domain, and will be developed in Open Source platforms.
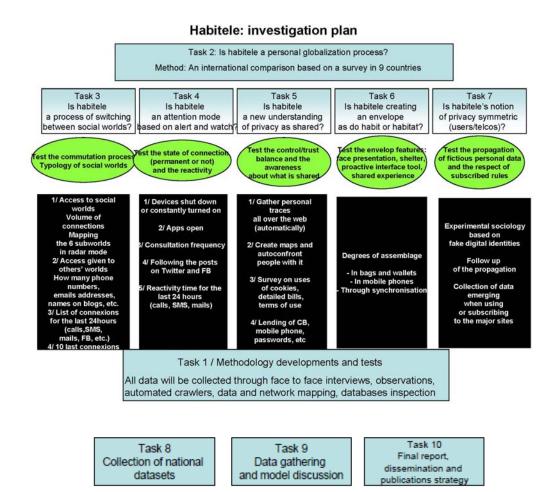
Our success will also be measured by the interest that might arise in various legal bodies in charge of personal data and privacy issues, and of the regulation the digital world.

2.3. PROGRAMME SCIENTIFIQUE ET STRUCTURATION DU PROJET / SCIENTIFIC PROGRAMME, PROJECT STRUCTURE

The task breakdown is based on the investigation plan designed to discuss the six hypotheses that are displayed in the chart below. They will be fully explained in the task description. Apart from these hypotheses, one task is a prerequisite: the development and testing of the methodology. Since the indicators we want to collect are not ones that are usually collected, we need to test the feasibility of doing so on various mobile platforms. The interview guide will need to be assessed by each country in order to check for any discrepancies with local conditions and uses. This is why it will take 6 months to build the final set of methods and indicators.

Habitele: investigation plan

Task 2: Is habitele a personal globalization process?

Method: An international comparison based on a survey in 9 countries

Task 3 Is habitele a process of switching between social worlds?	Task 4 Is habitele an attention mode based on alert and watch?	Task 5 Is habitele a new understanding of privacy as shared?	Task 6 Is habitele creating an envelope as do habit or habitat?	Task 7 Is habitele's notion of privacy symmetric (users/telcos)?
Test the commutation process Typology of social worlds	Test the state of connection (permanent or not) and the reactivity	Test the control/trust balance and the awareness about what is shared	Test the envelop features: face presentation, shelter, proactive interface tool, shared experience	Test the propagation of fictious personal data and the respect of subscribed rules
1/ Access to social worlds Volume of connections Mapping the 6 subworlds in radar mode 2/ Access given to others' worlds How many phone numbers, emails addresses, names on blogs, etc. 3/ List of connexions for the last 24hours (calls,SMS, mails, FB, etc.) 4/ 10 last connexions	1/ Devices shut down or constantly turned on 2/ Apps open 3/ Consultation frequency 4/ Following the posts on Twitter and FB 5/ Reactivity time for the last 24 hours (calls, SMS, mails)	1/ Gather personal traces all over the web (automatically) 2/ Create maps and autoconfront people with it 3/ Survey on uses of cookies, detailed bills, terms of use 4/ Lending of CB, mobile phone, passwords, etc	Degrees of assemblage - In bags and wallets - In mobile phones - Through synchronisation	Experimental sociology based on fake digital identities Follow up of the propagation Collection of data emerging when using or subscribing to the major sites

Task 1 / Methodology developments and tests

All data will be collected through face to face interviews, observations, automated crawlers, data and network mapping, databases inspection

Task 8 Collection of national datasets	Task 9 Data gathering and model discussion	Task 10 Final report, dissemination and publications strategy

Note 1: Previous works (Boullier, Audren) in history and law have already been conducted and will be helpful in the validation process.
Note 2: The scientific backgrounds of each of these hypotheses are different and will be explained in the task description part.

Cooperation between academic fields
The project requires collaboration between two major academic fields: sociology and computer science. Sociology will serve as the umbrella over the many other social science fields involved, mainly anthropology and law. Sciences Po médialab is the source of inspiration and the method development. It has helped us gain extensive expertise in working with computer science, since all the quali-quantitative methods of web analysis were developed in close relationship with computer scientists, some of which are key members of the médialab. The original approach of this partnership lies in the fact that the questions and the investigation plans are designed in line with social sciences requirements. The leader of the project (Dominique Boullier) used to cooperate with computer scientists from the reverse approach; the user labs he created for instance (Lutin and Loustic) contributed to the validation of technical choices made by computer scientists. In this project, the ICT lab will bring its own expertise and research agenda to bear on the theoretical challenge designed by social scientists.

2.4. MANAGEMENT DU PROJET / PROJECT MANAGEMENT

Sciences Po CEE médialab will be in charge of task coordination. The leader of the project has extensive experience managing large multi-partner teams (RIAM, RNRT, FUI programs).
A steering committee will meet every month in order to check the work progress and to make technical and methodological decisions that will be especially critical in the first 6 months of the project. A written report will be issued for each meeting.
The international partners will be kept informed of all these discussions and will be part of the process of testing and tailoring of the method, especially during the first 6 months of task 1. The following labs gave their signed agreement for participating to the project: CRESC, Open University, UK; LabCMO, UQAM, Canada; Urban Innovation Analysis, Chicago, USA; PPGTU, PUC Parana, Brazil; CDSA, Pune, India; Social Sciences Research Institute, Yonsei University, Korea; IFRA, University of Ibadan, Nigeria; IRMC, IFRE, Tunisia.
Due to the international cooperation on a worldwide scale, we need distance tools to save travel costs. A private web site will be available for all partners to store documents, protocols, manuals of various kinds, and to host discussions on an online forum.
The project's communications will be coordinated by the leader and will include a public website dedicated to attracting users ready to share their personal elements of Habitele, as well as their behaviour regarding privacy issues.

2.5. DESCRIPTION DES TRAVAUX PAR TACHE / DESCRIPTION BY TASK

2.5.1 TÂCHE 1 / TASK 1 METHODOLOGY DESIGN

Partners	Sciences Po (leader)	Telecom Paris Tech	
Duration : 6 months	Start: T0		End : T0 + 6
Goals: Design of methodological tools and validation/ test of indicators			
Contributors	All		

This approach is clearly inspired by the concern for grounding the argumentation on strong empirical evidence, quali-quantitative ones, as is customary for the *médialab*.. This means that face-to-face interviews will be key to gathering a general understanding of users' behaviours. We place the emphasis on checking the script against the indicators extracted from the traces left by various kinds of uses. Qualitative analysis must be submitted to quantitative evidence wherever possible, as Tarde encouraged us to do more than one century ago. This is why the partnership with an ICT lab is relevant too, apart from their expertise in the specific field of identity management and the research challenges in their own discipline. We have entered a phase, where so many traces of social life are available on networks, that social sciences should invent indicators that may account for the new entities we observe - namely the "connected being", in order to become equipped sciences, while maintaining their status as an interpretative science. This project is not oriented towards collecting pieces of advice and opinions about mobile communications, but rather towards collecting practices, through narratives and through the extensive collection of digital traces. This is why the choice and the invention of these indicators will depend on the theoretical framework we are able to propose.

The general task will consist of checking the feasibility and usefulness of interpreting each indicator and in designing others if needed.

The international participants conducting field work will contribute to the general task because we need to check the comparability of the data we shall collect and the feasibility in the specific conditions of each country.

ICT engineers from both involved labs will build the technical chain for the collection, validation, storage, computation and analysis of the data. The project will use several visualisation techniques, adapted to its needs, because we need to combine, on the same screen, access to scripts from face-to-face interviews and access to the database built from the quantitative indicators.

Subtasks
1. Sample and criteria
There will be 50 interviews (repeated twice with the same sample, i.e. 100 reports) in 8 countries (UK, USA, Canada, Brazil, Tunisia, Nigeria, India, Korea), and 100 in France. The

sampling will be controlled to obtain enough social diversity that will be carefully planned and monitored. Unfortunately, there is no way to obtain any representative sampling for this kind of project due to budgetary constraints. Consequently, we decided to insist on a large international comparison between various cultures instead of focusing on 2 or 3 specific countries, because we need to carefully check the assumed globalization process in portable ICT uses. We will assess which criteria in use profile should be the most relevant for selecting the panel (type of equipment, long term use, etc.)

2. Designing the guidelines for in-depth interviews in 9 countries
The main method will rely on in-depth interviews using an out-of-the bag protocol we tested 7 years ago. We ask user to comment on various items contained in purses, wallets, etc. These items are limited to the restricted and augmented Habitele, i.e. personal IDs and credentials where names are available as well as all online profiles and other digital IDs. This task also includes the guidelines for the transcription of interviews.

3. Data collection protocol
User agreements will be required and a written ethical guarantee will be given by the interviewers about the research consortium's anonymous use of the data and commitment to non disclosure.
Different methodologies will be combined to obtain an accurate estimation of the above-mentioned Habitele-related indicators identified in part 2.3.
The face-to-face interviews constitute an interesting source of information but may provide limited insight on certain parameters. Some metrics are tedious to measure. For instance, the measure of communication activity through the time separating two sent e-mails, for instance, can be computed by hand but may be more efficiently measured automatically through a network protocol analyser (wireshark, tcpdump or equivalent) running on the terminal, and either examining log and data files, or logging itself the network traffic. In both cases, the acquired data will be made anonymous and parsed by a tool to be developed. In doing so, we intend to develop such tools to measure different parameters for the main mobile devices and desktop systems (e.g. MS Windows, Mac OS X, Android, BlackBerry OS and Apple iOS).
However, the data set that we may obtain through this automatic means may be limited by the containment that the terminal's operating system enforces between applications. A given application may not have access to another application's data, especially on popular mobile platforms such as Apple iOS, known for its limited communication capabilities between applications. Running processes lists and characteristics are not available to all processes and inter-process communication is not always possible. In this case, exploring the terminal's file system with an external tool (e.g. iPhone Explorer) may help us gather a few more statistics, provided that log files are readable and parseable. Quantitative values such as the number of contacts, the number of identities (e.g. pseudonyms on websites) or the interval between reception of a message and the corresponding reply, are easier to obtain this way but can be determined by hand, when interviewing the person. Other measurements such as the

connections logs (dates and times), or the duration of the on and off periods, the number of open applications, etc. have to be obtained this way. Otherwise they could be partially inaccurate. However, capturing the network traffic may not be possible on most mobile platforms and may be realized, in the case of a local network connection, through the use of an external device.

Complementary results can also be obtained, on some types of applications, by a fully automated procedure, by crawling on the Web (e.g. Facebook, twitter, etc.). This enables the inspection of a user's activity from the outside,(e.g. the timeline of the contributions on exchange platforms such as Facebook or Twitter). It also provides insight into how well the network knows the user and to assess its privacy and the the Habitele frontier's permeability. The set of data we may obtain through this means is, however, limited because measured from outside Habitele; it will be treated with caution to in order to validate the hypothesis. It may be granted a limited confidence regarding some aspects when compared to other measurement techniques, but it can be acquired in a large enough volume automatically to allow data mining techniques that would help to more finely characterize this outside vision of Habitele (what is the core data required to identify a person, are there some classes of users, etc.).

Measuring the metrics that allow the validation of the Habitele hypothesis can be a difficult task in some cases, and some effort must be dedicated to the study of the easiest and most reliable way to acquire meaningful data. A full study of the mobile operating systems' capabilities, their APIs and their operating systems' openness shall be conducted prior to the interviews and measurements campaign. This study will also allow us to select and configure the terminal operating system properly for the "fake Habitele" experiences.

4. Case studies protocol
The field researchers will have to collect 5 case studies on local specific uses, which might help explore the diversity of uses in a more classical anthropological style. These studies will not be in-depth monographs but should be sufficiently documented to become reliable data for the argumentation. Rules of selection and protocol to be applied will be designed in this task.

5. Tests of the protocols
The various parts of the method, including the more technical and quantitative ones, must be tested before the beginning of the field work. A test will be done in each country with 2 interviews, following a complete protocol.

6. Database design
The results from the extraction of phone data will be aggregated in a database that must be designed before the field work so that the feasibility and the need for some specific calculation constraints can be assessed and reinjected in the protocol.

7. Choice of a CAQDAS

The interviews will be analyzed with the help of a CAQDAS that we have not yet selected. It is the condition for a systematic and rigorous use of a part of the data collected, about practices for instance, during the interviews. However, another kind of analysis, much more targeted at understanding the underlying patterns of the behaviour, in an interpretative mode, will still play an important role.

8. Online community building

The research will try to benefit from the Web 2.0 trend, in which users are eager to contribute to any kind of socially useful activity. While we will not rely on a real crowdsourcing approach, we shall use the hype for some activities related to our survey in order to collect new data. For instance, the Flickr group "what's in your bag" now has (as of May 2011) 20,991 members and 13,570 photos with tags and comments about each piece of content in their bags. Many other blogs (in French as well) attracted photos and comments on the same topic.

In the first 6 months of this methodological task, we shall check the interest and the feasibility of a website that publicly shares the progress of the research project and attracts people who previously published on related matters, in order to make them express their experience about the topics of Habitele and personal data ecosphere. A domain name has already be created and maintained for many years, and a blog has already been opened for internal use at thit time (http://Habitele.blogspot.com/).

General remark on risks and feasibility

The project requires an important effort in collecting empirical data. The baseline will be the qualitative interviews which can provide us with relevant indicators. This constitutes the safe and well known mode of investigation. However, we plan to obtain digital data directly from the devices or from the network so that we can compute them. Of course, we are aware of the complexity of the challenge since mobile platforms are heterogeneous, not always open to access and the data we are looking for may escape our will to capture them in many ways. We are ready to downsize the project depending on the feasibility: by testing only some types of terminals, by combining declarative behaviour and extracted data in a different way. But the goal of the project is to innovate in the methods and indicators, and this explains why we do not extend the sampling to hundreds of users. We prefer to build a strong statement from controlled data than to adopt an extensive data collection approach.

Acceptability of this kind of personal data exploration by the panellists has been partly tested and confirmed in previous works. Provided that we offer a very clear ethical statement and procedure, including full data "anonymisation" , the users really enjoy talking about their relationships with their bags, their personal devices, their phones uses. The extension to an automated retrieval of data needs to be confirmed but the limits of our scientific approach will be clearly stated.

2.5.2. TÂCHE 2 / TASK 2

1ST HYPOTHESIS: HABITELE IS A PERSONAL GLOBALIZATION PROCESS

Partners	Sciences Po (leader)	
Duration: 6 months	Start: T6	End : T0 + 12
Goals: Test of the hypothesis: Habitele is a personal globalization process		
Contributors All, including international partners		

Is the massive diffusion of the mobile phone bringing about a significant change in participation in global everyday culture? The mobile phone would be the best medium for globalization to become a personalized. This hypothesis is devoted to the discovery of what kind of alignment between cultural features (small or large ones) will fit in technical and service features, as well as economic ones for instance, so that they end up designing patterns of use. These patterns will not pertain as such to a specific culture, as long as we cannot demonstrate their absence elsewhere. This is important in an actor network theory of innovation: the success of the diffusion of this device/ service relies so much on its ability to adapt itself to various environments, that it prevents us from taking for granted the similarity of the devices/services. The translation process is the necessary condition for the innovation to propagate; even Rogers, in his late paper on reinvention, partly conceded this point. This is why we will not limit our investigation to mobile phones as such, since the differences between smartphones and older phones may be relevant, as well as the encapsulation of various devices, resources, contents in the mobile phone: we will not adopt a fixed definition of the mobile phone, since we choose to study the Habitele and not the mobile phone as such.

The challenge is to not take for granted the usual categories of cultures or any other social classifications that form the starting point of the investigation, but will also result in a performative mode that is well known in social sciences. For instance, we shall neither use the frameworks of culturalist approaches nor the ones of interculturalists such as Hofstede. The research programme will include a large survey in nine countries including France so that we do not get trapped in local features that would be overextended worldwide. 50 face to face interviews will be conducted in each country and 100 in France. The figures are higher in France because we have the opportunity to improve the method and the sapling as well in a much easier way than in other countries. Anyway, we clearly dropped any statistical representativeness pretentions. These interviews will be long (one hour and a half will be required each time) so that we ensure the social diversity (and not the representativeness) of the people selected. In foreign countries, field researchers will be asked to collect 5 case studies of peculiar uses of mobile phones for specific goals that could not be duplicated as such in other countries (for instance, microbanking systems in India, medical use of mobile phones in Africa, etc.). This anthropological approach will help us consider the large diversity of uses of the "same" technology and will assess the value of the personal-tool-of-globalization hypothesis.

Rationale behind the country selection
a/ People and labs we know and we can trust
b/ People and labs interested in the issues explored by the project
c/ Countries from all continents (except Oceania)
d/ Two countries from each continent for comparison in broader cultural areas
e/ Specific interests: Korea (leading in ICT uses including social networks and online games); Tunisia (recent political social movements using internet and mobile connections), Canada (home of RIM, the leading company in the mobile industry).

Subtasks
1. 50 interviews in 8 countries and 100 in France, using the same protocol (including sampling and recruiting)
2. Second interview phase with the same users, auto-confronting them to the personal data that have been collected and mapped
3. Transcriptions and analysis of each script using CAQDAS
4. Case studies collection (9 x 5= 45)

2.5.2 TÂCHE 3 / TASK 3

HYPOTHESIS 2. HABITELE IS A PROCESS OF SWITCHING BETWEEN SOCIAL WORLDS

Partners	**Sciences Po (leader)**	Telecom Paris Tech	
Duration : 6 months	Start : T6		End : T0 + 12
Goals: **Test of the hypothesis : Habitele is a process of commutation between social worlds**			
Contributors	All, including international partners		

The change of scale we described previously concerns not only the number of people owning a mobile phone or a connection but also the diversity of the social worlds that come to be connected in this way. These social worlds existed long before and the term became famous with the works of Anselm Strauss, but traces can be found in the writings of Simmel and of the Chicago School: social categorization was embedded in a global experience that included many tacit aspects and created the feeling of belonging to, and being inside of some containers. But the diversity of social worlds could be experienced only by moving from one place to another. The mobile phone is now the device that is able to assemble our various affiliations and let us experience the sense of belonging to these worlds almost at the same moment, or at least without having to move. What is to be demonstrated is the assembling power of the Habitele, through this very specific feature that allows us to shift between social worlds, i.e. to commute. In order to check this connectivity to different social worlds allowed by the devices we carry with us, we must consider not only the mobile phone but the augmented Habitele as well. We aim to draw individual maps of the connected social

worlds, using, for instance, a radar presentation to display the types and amounts of entities related to these social worlds. We cannot handle the huge variety of devices/objects/documents that connect us to our affiliations without proposing some categorization, which will have to be validated. We have already defined 6 categories that seem to account for almost all the occurrences of social worlds connected via devices in our bags and wallets (but are only guidelines that must be discussed):

- "Clientele": commercial relationships that are available through credit cards, customer loyalty cards, transportation cards, (change will not be considered here since personal ID is not attached to it), accounts on commercial web sites and all the traces, names and phone numbers related to this sphere, etc.
- "Parentele": family and friend relationships, extended ones, which are traceable via phone directories, preferences, social network contacts.

Note that *parentèle* and *clientèle* both exist in French and use the same suffix *–tèle*, meaning *web* (from Latin "tela" and not "at a distance" as is often mistaken), which is significant. We had to coin three other neologisms to account for other groups of social worlds:

- "Ergotele": all relationships and connections to the world of professional activity, including IDs, access badges and keys, directories, specific tools including personal on line identification, etc.
- "Legatele": our affiliations to legal entities, which provide us with IDs, such as our identity card or passport, medical record and health cards, driver's license, titles of ownerships of any kind, etc.
- "Mediatele": our subscriptions to media that constitute publics, through internet streaming or through dedicated apps on the mobile phones, the RSS feeds that constitute our personal media ecosystem.

All these traces that we bring with us in our everyday activity should be considered as holds on social worlds, which means that we are engaged in action towards every specific social world, and, at the same time, as affiliations or memberships. This means that other entities gain some hold on us, in a way that we may be considered as "owned" (as clients, citizens, members, staff, etc.) by others. These social worlds do not necessarily inter-connect, and this is one of the crucial values of the superficial relationships in urban life, as Simmel used to put it,, because it allows for all the masked behaviours and multiple identities (this is not due to the digital revolution, but is amplified by it – to use Elisabeth Eisenstein's very accurate concept for the print revolution).

The protocol designed to test this hypothesis will focus on three features: the number of social worlds, their variety, the shifting behaviour between these social worlds.

Some conceptual distinctions must be provided here in order to avoid misunderstandings:

- 1/ The project will not develop a network analysis as such, since we will hardly have the opportunity to collect reciprocal data to draw the complete networks. This approach will be empirically limited to ego-centered connections.
- 2/ The "small world" theory (Milgram) will not apply in this case, since we try to demonstrate the variety of social worlds and the shifting process between them, and not the degrees of connectivity in the connecting graphs.

- 3/ The social capital framework is not relevant in this case either, since it would emphasize the strategic vision of egos. Habitele is as much about being held by (being a member of) social worlds, as it is about managing resources. However, some concepts such as bridging capital and bonding capital (Putnam) will help us understand the switching modes that are observed.
- 4/ Due to budget limitations, we will not be able to complete longitudinal studies for individuals over a significant period of time. This means that the status of the maps of social worlds will be a "one shot" picture and that no evolution will be traced down from it. This is of course a strong limitation but could become the basis for a future work as long as the general framework of Habitele is validated.

Apart from these limitations and conceptual choices, the project will gather specific data to put the switching process and the typology of social worlds to the test.

Substasks and indicators collected

1/ Access to social worlds:
- number of entities cited in the interview or extracted from the observation of personal data sets collected on the mobile phone
- diversity of social worlds
- mapping of these results in a radar mode, so that the availability of social worlds at hand can be displayed in a synthetic way, and easily interpreted and commented upon by interviewees.

2/ Access given to social worlds (and entities):
- Number of personal phone numbers, mail addresses, pseudonyms, names on blogs, etc.
- Mapping of these data (with the same radar representation)

3/ Switching practices
- 24h hour data collection on phone, SMS, mail, FB, etc. usage in order to check how frequently connections to specific social worlds are made and how fast the shift from one to another occurs. The period of time to be selected will be carefully chosen and may include working days or week ends, since the behaviour and the connected social worlds might be rather contrasted.

These indicators will be combined with the analysis of the scripts obtained during the face-to-face interviews.

2.5.3 TÂCHE 4 / TASK 4

HYPOTHESIS 3 A SPECIFIC AND SHARED REGIME OF ATTENTION: ALERT (WATCH)

Partners	**Sciences Po (leader)**	Telecom Paris Tech	
Duration : 6 months	Start : T6		End : T0 + 12
Goals: Test of the hypothesis: Habitele is a specific and shared regime of attention (alert or watch)			
Contributors	All, including international partners		

The only fact of being connected at such a large scale does not account for the change in the climate of common life on a broad scale. The permanent connection is one major feature in this change of scale emphasized by Mc Luhan, and it constitutes one of the main justifications of Habitele: the collective mood is affected by this availability of contacts (this is the right term, notwithstanding the contents or the values of these contacts). By carrying this device or, in better terms, by wearing this web of connections, we get access to people on a permanent basis, and we may grant access to them, reversely. The very experience of everyday life and especially of presence is changed. Sharing an event, news, emotions, or a situation does not mean the same thing anymore. Not only has it changed through the mass media (with mass audiences) but also in a much more personal and customized way where the specific social worlds we mentioned in the previous section, are experienced by individuals as permanently available. This opportunity changes the balance between regimes of attention that are designing our so-called information society. The scarcity of attention was well documented with Simon, Davenport, Goldhaber who described the economy of attention as the new paradigm, much more accurate than the information one, because the scarcity of this very specific good – attention – will be the trigger for generating values. We considered (Boullier, 2009) that two modes of attention (drawn from traditional psychology - Ribot, James- as well as from more recent works in cognitive sciences) are competing for attention: one is loyalty (which means long term attention and care, routine affiliation to brands as well as to media channels or to friends: duration is its main quality) and the other one is the alert regime (which is short-term attention, where intensity is crucial , as can be observed through advertising strategies, the cult of events, the buzz effects, and the sudden change of mood in financial markets). Due to the scarcity of attention, any human being is facing contradictory solicitations to get rid of his previous loyal affiliations to pay attention to some buzz that may alert him. The balance between the devices that play a role in the maintenance of these attention flows is radically shifting when individuals in such a large number stay connected to the permanent flow of news, from the media but also and mainly from their personal relationships: their relatives who send them text messages every minute, who post on Facebook every hour, who try to reach them to tell them…that they feel connected to them, and so on. We are not only the "target" of these news harassments, but we may look for it and adopt a behaviour based on a permanent watch, checking text

messages, emails, FB posts, or phone calls, every minute, even when attending a meeting. The multi-activity that is right now studied by scholars like C. Licoppe is a very relevant feature of our cognitive engagement in the world because it allows us to stay aware of what is occurring in all the social worlds to which we are affiliated. Awareness is not a cognitive skill that is only required of air traffic controllers,. Rather, it becomes a shared mode of behaviour, a way of staying tuned to the collective climate, as private as it might be in the end.

This pressure for staying alert and aware may become overwhelming and contribute to what is called "cognitive overflow syndrome" as colleagues from The University of Compiègne coined it. This phenomenon adds arguments for avoiding the aggregation of connections to social worlds: innovations appear in the field of monitoring tools for connectivity, of dashboards that help regulate the various influences exerted from different spheres, of customization of personal environment that will reduce the sifting for every bit of information to a routine inspection of its personal data ecosystem. This pressure can be felt so strongly that it may lead to claims for disconnection.

The alert state of mind enhances the expectations, and the habits shared by two people about how one should return calls or text messages, thus creating conventions, local ones or more widely shared ones that we shall investigate. Stories on these issues in the couple, the family, or job settings will be collected and assessed along with the quantitative indicators we will gather.

The validation of this hypothesis will rely on a much more trivial behaviour, based on the acceptance of a permanently connected state of the devices and on the reactivity to solicitations as well as the frequency of checking procedures. The goal here is to collect enough data to be able to draw some patterns and then to try to understand their emergence.

Subtasks and indicators:

1/ Time, duration and frequency of turning off/turning on the mobile devices, at least according to the explicit expressions from users , but also tentatively by extracting some logs from the device itself.

2/ Time, duration and frequency of opening apps on smartphones

3/ Consultation and frequency of phone calls, messages, text messages, emails, posts, etc. on various applications

4/ Delay before returning calls and text messages, checked during the last 24 hours

5/ Delay before reacting to posts on Twitter and Facebook (for smartphones)

Each of these indicators has to be tested during the first methodological task. However, a first assessment leads us to believe that this kind of data collection should be feasible, provided some limitations and software adaptations.

2.5.4 TÂCHE 5 / TASK 5

HYPOTHESIS 4 SHARING THE PRIVACY

Partners	Sciences Po (leader)	Telecom Paris Tech	
Duration: 6 months	Start: T6		End : T0 + 12
Goals: Test of the hypothesis: Habitele is part of a new mode of privacy: "sharing"			
Contributors	All, including international partners		

The natural observation of behaviours on digital networks reveals how much identities have begun to proliferate, in the form of addresses, accounts, numbers, personal codes, PINs and passwords. Connected beings disseminate themselves under various masks and roles on the Internet. This is what we call the *augmented Habitele*.

The Habitele approach will try to get rid of any vision of privacy issues based on personal data "property". Except for the contents produced by anyone, which have to do with intellectual property rights, personal data are the results of a shared activity, and often based on a contract where conditions of use are supposedly described and agreed upon by the parties. The asymmetry of knowledge and the lack of any means of deep control has to be considered, but it does not change the status of these data as generated through some kind of exchange, of disclosure: official IDs with the state, accounts and numbers with the phone company or the ISP, medical records with the medical staff, loyalty points on a consumer card with the store, etc. The issue of privacy arises in three situations:

1/ personal data that are not mentioned in the contract are used without notice by the provider

2/ data explicitly provided and agreed upon are used by providers for non contractual goals (sold to third parties for instance)

3/ access to the data are not secured enough and allow non contractual authorities or individuals to use them without any notice.

The problem comes from the absence of visibility in the data lifecycle. This means that the user gives a free hand to authorities that are managing these data. Between the careless trust that we mentioned before when observing the behaviour of ordinary users on the Internet and the security requirements of States or of businesses, the gap may be very wide but it might be the same for every individual. The tension between trust and control should become the general goal of our investigation through interviews and data collection, provided that we acknowledge mixed feelings and behaviour depending on situations, contracts, domains, attributes of people, etc.

But in order to make this happen, we need to verify whether users of mobile phones are aware of the data that are made available about them on the networks. Knowledge comes first and then attitude towards control or trust.

In order to make these data visible (and to check whether users are aware of their existence) we shall develop a tool that tracks all personal data on the web, whether it is volunteered or observed.

Subtasks

1/ Data collection. In this project, the collection of data will be used to display the scope and lifecycle of Habitele. We need a strong participation of users who must accept to provide us with some personal IDs of various kinds as basic starting points for the crawlers. The methodological issues have been addressed in task 1.

2/ Mapping of personal data over the web. We will map these new extensions of the 'self' to obtain a synthetic view of the personal digital domain, or of the "personal data ecosphere".

3/ Auto-confronting users with their own maps. This map will be presented to the users who are interviewed in an auto-confrontation method, which is quite famous in ergonomic and cognitive sciences. This will provoke statements and discussion about the evidence given, about the awareness of the user, about the choices made to disclose some of these data and to control and refuse to disclose others.

4/ Extensive interviews. These comments on the personal traces and on the dataset of identity circulation will be obtained in face-to-face interviews. Other questions will be added such as the tolerance or not towards cookies, detailed phone bills, reading terms of service, etc. and about their agreement for lending mobile phone, credit card, and other personal data containers to other people (yes/no, to which people, for what reason).

2.5.5 TÂCHE 6 / TASK 6

HYPOTHESIS 5: HABITELE IS CREATING A NEW ENVELOPE

Partners	Sciences Po (leader)	Telecom Paris Tech	
Duration: 6 months	Start: T6		End : T0 + 12
Goals: Test of the hypothesis: Habitele is creating a new envelope?			
Contributors	All, including international partners		

Finally, the question of Habitele as a container should be addressed. As we saw during the description of the indicators, we need to make our argument by using a large array of data, from various devices. This diversity is supposed to be aggregated either in the mobile phone right now, or in a forseeable future. But when we add in the augmented Habitele, made of the personal data ecosphere, are we still able to sustain the connection between all these types of data, of behaviours, devices, contexts of use, etc.? Habit and habitat were anthropologically famous because they display their envelope status, since the individual body appears to be inside the devices. In the case of Habitele, the objects that act as terminals for Habitele seem to be external ones and it seems rather difficult to consider our bag and the IDs inside it as an envelope for the connected being. But the hypothesis is precisely that one:

the connected beings are not holding the devices and mastering them as mere tools; they become coupled to them as much as one gets coupled to clothes that suit one well. Furthermore, the tremendous extension of data generated by the use of these portable digital devices creates something like a cloud of data. It is a personal cloud (or foam in Sloterdijk's terms), but also a shared one that connects the beings that are living in it. "The modern is the one who believes he never was inside" said Sloterdijk, and this is why Habitele tries to demonstrate the new kind of envelope we are experiencing. It is a very intangible one, like the personal data cloud that displays through the dissemination of data in various applications and services. This envelope has four functions, some of which are common to "habit", "habitat" or "habitacle":

- **A face function:** the envelope means that some features will be immediately perceived and others not (cf. Goffman)
- **A shelter function:** the term is quite obvious for "habit", "habitat", and "habitacle". It reveals the dimension of protection against the potentially damaging action of the environment. Habitele is a rather strange kind of shelter, a shelter for hesitation (Tarde), where the various influences can be assessed or balanced in a secured space that lets these influences enter.
- **A tool:** the "habitacle"/compartment is the most famous and diffused tool that allows drivers to interact with a complete technical system and with other drivers. The Internet and the mobile networks depend on tools that have been designed by only a few companies and spread all over the world: this is why the envelope looks so similar.
- **A shared experience:** by organizing these personal boundaries, an envelope acts as a "container" (Anzieu) but offers the secured place to share some experience, which is the "content". What is called "user experience" in usability studies becomes a shared experience here.

To put this hypothesis at a test, we shall rely on interviews and design specific metrics to compare the degrees of immunity or of encapsulation of the functions of Habitele, including the four functions (face, shelter, tool and shared experience). We need indicators of the quality of assembling in bags and wallets, in the phone and in the social circles that are at stake: synchronisation of various devices, for instance, is a good indicator (which one is the assembling place?). The task 1 will be in charge of creating these indicators.
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2.5.6 TÂCHE 7 / TASK 7

HYPOTHESIS 6: ASYMMETRY OF PRIVACY CRITICALITY PERCEPTION

Partners	Telecom Paris Tech (leader)	Sciences Po	
Duration : 6 months	Start: T6		End : T0 + 12

Goals: Test of the hypothesis: Asymmetry of privacy criticality perception

As we have discussed in the previous sections, the credentials, IDs, cookies, tokens, options and preferences, usage traces – in short, all personal data that are involved in forming one person's Habitele – can be seen as part of the contractual, service, social or work relationships of all kinds. As has been discussed before, such data is therefore just as much "owned" by the person, as it, in turn, "owns" the person. Ultimately, this is what defines who the person is, respectively from the contractual, service, social, professional and other view points.

This insight results in the need for a careful treatment of any data extracted from the Habitele or produced as part of the related processes (app usage, service involvement, traces, cookies, etc). Such a careful treatment is what should be covered by the privacy discussion and the resulting privacy requirements. In the hypothesis of this task, we raise the question of whether perceptions are symmetric with regard to the importance of the privacy in terms of the data belonging to a person's Habitele. In other words, we would like to know if a reasonable, adequate and respectful treatment of such potentially private data is applied on both ends of Habitele relationships.

As explained above, the Habitele datasets usually result from Habitele-related activities and, as such, involve at least two parties: on the one hand, the involved person per se (named hereafter _principal_ as commonly used in privacy and security research), and the contractual, professional, service, social or family counter-parts on the other hand.

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In this task we will develop a novel methodology, which may be labelled "experimental sociology", and apply it in dedicated experiments.

Because of fundamental time, effort and real commitment constraints, we limit our methodology to the study of the contractual relationships (i.e. "Clientele" or "Mediatele") and, more precisely, the handling of private data by major actors proposing typical Habitele-related services on mobile devices. Indeed, several sound reasons exist to concentrate on few big players:

- While it would be interesting to see how a principal A's private data is handled by some principal B involved in a social relationship with principal A (e.g. friendship or followership), such a study would de facto require extending our project to network aspects (friend of a friend, etc.). As we explained above, this project does not address network aspects.
- It is difficult to reason about non-contractual privacy requirements (e.g. what is a privacy commitment of a remote relative with whom a principal occasionally talks?) In contrast, the service relationships of the "Clientele", even free-of-charge services,

usually rely on contracts. Due to the legislation, the latter attracts users with suggestive claims, or for the self-protection of service providers often contain explicit commitments to privacy protection. Concretely, this allows us to focus on very specific claims like "Your personal data will never be forwarded to any third party", etc.

For these two reasons, we will not study the asymmetry of perceptions on privacy in the Ergotele, Parentele, Legatele. In contrast, in this task, we propose a means and an empirical data collection to verify the respect of concrete, contractual and advertised privacy commitments in the CLIENTELE part of the Habitele.

Proposed Methodology and Indicators

The methodology to be developed in this task is aimed at gathering empirical evidence on privacy respect in the treatment of data by the corresponding counterparts of CLIENTELE relationships.

The idea behind this methodology is to compare privacy commitments in the contracts of several typical CLIENTELE major players on the one hand, with the external evidence of privacy breaches on the other hand.

Concretely, the idea is to create synthetic accounts for fake, new, unique identities and to develop a reasonable activity within these accounts correctly reflecting the claimed identity. Herein, we will limit ourselves to accounts in services offered by a selection of major actors in the CLIENTELE part.

Such major actors are defined by their important market share and by the corresponding popularity among users. Therefore, for major actors it is safe to assume that the surveyed principals have a direct CLIENTELE relationship with the former. This fact will help to limit the time and effort in selecting the principals to be surveyed (e.g. to sample a typical usage). On the other hand, the major actor position guarantees good availability, both in terms of devices, software and access methods, as in terms of geographical availability, (i.e. in different countries, languages, etc., as in terms of technical availability, that is service reliability). Finally, since major actors are big companies, we can expect quality and security processes within these companies to be very high. Therefore, if evidence is gathered implying violation of the privacy commitment, this evidence will be a *good* indicator for an expected behaviour as opposed to consequences of occasional attacks.

We will fill these fake identities and accounts "with life" so that they look like real identities. At the same time, we will follow best practices to avoid any unintended diffusion and to limit the knowledge of these unique and fresh (i.e. previously non existing, without collisions) identities to only some prudently chosen CLIENTELE partners. Typically, we will choose privacy options within the corresponding services to guarantee the protection of personal data from all possible external access. We will also protect the used local platforms to not communicate or leak this data in other ways. This will be achieved through state-of-the-art protection technologies and a careful configuration of parameters, with good separation of data per tested service. The existing security expertise of TélécomParisTech will be helpful here. We will maintain some activity within the created fake identities for a

specific duration. The exact activity and durations will be defined by project partners within Task 1; it will be refined during the project based on insights and evidence gathered in the interviews.

From the account creation forward, we will gather some data in order to evaluate a number of indicators dedicated to verifying the real diffusion of these unique, fresh and previously never used identities. The gathered data will start with *passive methods,* so as not to leak any data in the first phase. Passive gathering methods will involve *unsolicited* reception and analysis of received mail, spam and push notifications of all kinds to the addresses, IDs, apps, blogs, walls, etc. freshly defined within our synthetic test accounts. In subsequent phases, *active scanning* methods will be used, including broad Internet searches to draw a picture of the real diffusion of the identities.

The analysis of the gathered data will reveal some characteristics of the diffusion (e.g. speed, kind) of our test identities within the digital world. Such characteristics, when opposed to the claimed privacy commitments of the corresponding service providers, will permit to draw conclusions on the criticality of principal's declared privacy requirements by the service providers – who naturally build the counterpart of a principal's Habitele.

2.5.7 TÂCHE 8 / TASK 8

COLLECTION OF NATIONAL DATASETS, INTERVIEWS AND CASE STUDIES

Partners	Sciences Po (leader)		
Duration : 2 months	Start: T13		End : T0 + 15
Goals: *Collection of national datasets, interviews and case studies*			
Contributors	All, including international partners		

In each country, we will collect three types of data:
- Scripts from face-to-face interviews (50x2 in each foreign country and 100 in France)
- Quantitative data from traces retrieved on the devices and on the web
- Case studies on specific practices
- Nationwide data about numbers of subscriptions and prepaid sales, diffusion of terminals, ARPU for each telco, market shares, legal specificities about privacy, etc.

These data will be used for the discussion of each hypothesis and for the general validation of the Habitele framework. However, a local aggregation can be relevant in order to account for the specificity of each country's environment in technical, commercial, legal and cultural terms. These national reports will provide the basis for publication of monographies or papers on specific issues that might appear.

2.5.8 TÃCHE 9 / TASK 9

AGGREGATION OF RESULTS AND FINAL DISCUSSION OF THE GENERAL MODEL

Partners	Sciences Po (leader)	Telecom Paris Tech	
Duration : 6 months	Start: T13		End : T0 + 19
Goals: Aggregation of the results and final discussion of the general model of Habitele			
Contributors	All, including international partners		

This task will include a general meeting in Paris over two days, to which all the participants in field work will be invited.

The need for a specific effort on visualisation will be tested in this task, in order to allow participants to share the global vision of such an amount of data. It will prepare the developments required for the final report.

2.5.9 TÃCHE 10 / TASK 10

DISSEMINATION, FINAL REPORT AND PLANNING OF SCIENTIFIC PUBLICATIONS

Partners	Sciences Po (leader)	Telecom Paris Tech	
Duration : 17 months	Start: T7		End : T0 + 24
Contributors	All, including international partners		

We shall consider the choice between a general publication, papers on specific issues and on national case studies, papers on methodology from a computer science perspective and from a social science one. These five types of scientific publications will be the main targets of this task and will be oriented towards international journals. Our results will be interesting for the telecommunications industry, credit cards networks, as well as legal bodies in charge of privacy issues, for example. We are ready to dedicate enough time to disseminate the results to all of these entities. The dissemination will start with the publication of a web site (tested in task1 as mentioned in this part) which explains the project and its evolution, while attracting audience interested in these matters of personal use of communication devices.

2.6. CALENDRIER DES TACHES, LIVRABLES ET JALONS / TASKS SCHEDULE, DELIVERABLES AND MILESTONES

Task	Date delivrable	Leader	Description tasks & delivrables
Task 1	T0-T6	Sciences Po	Design of methodological tools and validation/ test of indicators
	T6	SP	Report and guidelines on Sample and criteria
	T4	SP	Guide for the in-depth interviews in 9 countries
	T4	Telecom Paris Tech	Data collection protocol
	T6	SP	Case studies protocol
	T5	SP	Report on the test of the protocols
	T6	SP	Database design

	T4	SP	Choice of a CAQDAS
	T6	SP	Plan for an on-line community building
Task 2	T6-T14	Sciences Po	**Test of hypothesis 1 : Habitele is a personal globalization process**
	T8	SP	Reports on interviews (8x50+ 100) in 9 countries
	T10	SP	Reports on the second phase of 8x50 + 100 interviews
	T12	SP	Transcriptions
	T14		Report on analysis with CAQDAS
	T14	SP	Reports on cases studies
Task 3	T6-T14	Sciences Po	**Test of the hypothesis 2 : Habitele is a process of commutation between social worlds**
	T 10	SP	Collection of data from specific indicators designed in task 1
	T12	SP	Mapping of variety and volume of connection to social worlds
	T14	SP	Summary preparing the general discussion and combining quantitative data and verbatims from interviews
Task 4	T6-T14	Sciences Po	Hypothesis 3 A specific and shared regime of attention: alert (watch)
	T 10	SP	Collection of data from specific indicators designed in task 1
	T14	SP	Summary preparing the general discussion and combining quantitative data and verbatims from interviews
Task 5	T6-T14	Sciences Po	**Test of the hypothesis 4 : Habitele is part of a new mode of privacy: "sharing"**
	T8		Report on the collection of personal data with automated protocols
	T10		Mapping of personal data
	T12		Autoconfrontation during the second phase of interviews
	T14	SP	Summary preparing the general discussion and combining quantitative data and verbatims from interviews
Task 6	T6-T14	Sciences Po	**Test of hypothesis 5 : Is Habitele creating a new kind of envelope**
	T 10	SP	Collection of data from specific indicators designed in task 1
	T14	SP	Summary preparing the general discussion and combining quantitative data and verbatims from interviews
Task 7	T6-T18	Telecom Paris Tech	**Test of hypothesis 6 :** Asymmetry of privacy criticality perception
	T 10	Telecom ParisTech	Conception and creation of realistic bait identities.
	T18	Telecom ParisTech	Report on the privacy leaks and analysis of the statistical data gathered through the baits.
Task 8	T14-T16	Sciences Po	**Reports on the collection of national datasets, interviews and case studies (for each country)**
Task 9	T14-T21	Sciences Po	**Aggregation of results and final discussion of the general model**
	T18	SP	Two days seminar in Paris with all participants
	T21	SP	Overview of the results and final report plan
Task 10	T7-T24	Sciences Po	**Dissemination, final report and planning of scientific publications**
	T7	SP	Web sites (public and private)
	T24	SP	Final report