Towards the 24-Hour Knowledge Factory:

Offshore-Onsite Team Dynamics

Amar Gupta
Tom Brown Endowed Professor of Management and Technology
University of Arizona, Tucson (USA)
gupta@eller.arizona.edu

Elisa Mattarelli
Department of Engineering Science and Methods
University of Modena and Reggio Emilia (Italy)
elisa.mattarelli@unimore.it

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Introduction

Globalization and the spread of advanced information and communication technologies have encouraged a transition to distributed, virtual work practices. By reducing the costs of communication, these technologies now make it possible for more people than ever before to collaborate and compete in real time on different kinds of work from anywhere in the world – using computers, email, networks, teleconferencing, and dynamic new software applications. Thus, according to Thomas Friedman in his book, The World is Flat, “The global competitive playing field has being leveled” (Friedman, 2005, p.8).

Connected to the flattening of the world is the increase in the diffusion of offshoring of knowledge intensive work towards emerging countries, such as India, China, and Romania. Although offshoring is becoming a part of our everyday social lexicon, we find little empirical evidence in the academic literature on the implications of offshoring for organizations and knowledge workers, or on the disruptive forces that offshoring brings to local, day-to-day work practices. Certainly, the literature on geographically dispersed or globally distributed teams (GDTs) shows the many organizational challenges of distributed collaboration, exploring issues like compatibility with existing hierarchical structures, awareness of other team member’s activities, increased coordination costs, trust between distant members, status differentials, and leadership (e.g., Mohrman, 1998, Paul and McDaniel, 2004, Metiu, 2006, Weisband, in press). Moreover, previous studies explain how distance limits some of the important benefits that come from collocation, such as spontaneous conversation, collaborative social environments, mutual learning and influence (e.g. Hinds and Kiesler, 2002; Cummings, 2004). Some of this research was conducted in situations involving offshoring, but much of it reflects distributed work that
remained onshore and does not distinguish between different types of globally distributed work arrangements (Saunders and Ahuja, 2006). Many of the conclusions and insights from these studies, therefore, may apply to the case of offshoring, but more work is needed to better define the specific upsetting effects of offshoring on knowledge workers and organizations.

Starting from the observation that new types of distributed work arrangements across organizational and national borders are emerging, we decided to investigate a particular type of globally distributed team: the 24 hours knowledge factory, where individuals work “around the clock” or “following the sun”. Our qualitative evidence, collected through interviews with IT professionals in India, focuses on how individuals hand off work and share knowledge across time and space, and explores one of the many challenges that GDT members face: the construction of status differentials across apparently homogeneous team members.

The challenge of Knowledge Sharing in GDTs

A geographically dispersed or globally distributed team (GDT) is a group of individuals: (i) identified by one or more organizations; (ii) interdependent and guided by a common purpose; (iii) characterized by the use of technology-supported communication substantially more than face to face communication; and (iv) whose members are based in different countries (Lipnack and Stamps, 1997). Maznevski and Chudoba (2000) add to this definition by observing that GDTs are also global in their tasks and are responsible
“for making and/or implementing decisions important to the organization’s global strategy” (p. 473).

Effective knowledge sharing in GDTs is crucial to a good performance of the team. Through knowledge sharing, for instance, distributed members achieve coordination (Herbsleb and Moitra, 2001), build trust (Storck, 2000), share a common team culture (Zakaria, Amelinckx, and Wilemon, 2004), and build a shared context (Hinds and Mortensen, 2005).

Successful globally distributed teams put into place formal and informal mechanisms to share information and knowledge effectively across distance and time (Cramton, 2001; Sarker and Sahay, 2002; Im, Yates, and Orlokowski, 2005). GDT team members use a wide array of communication tools (e.g. groupware applications, chat, e-mail, discussion lists and application sharing capabilities) that support the sharing of knowledge across remote sites, but evidence from recent research suggests that the challenges involved in sharing knowledge across globally distributed teams are still widespread, and that breakdowns in sharing knowledge do occur (Kotlarsky and Oshri, 2005). Indeed, technical solutions are important, but are not sufficient.

Engineers and other professionals often innovate through personal and group contact, sharing ideas and building on each other’s suggestions (Hargadon and Bechky, 2006). These interactions can occur via formal meetings in conference rooms, but also in informal ones “in the corridor”. One option for supporting interpersonal relationships between the team members is to have them meet in person at various times throughout the duration of a project (Kiesler and Cummings, 2002). Yet, it is not clear what is the optimal balance between face to face and distant collaboration in different stages of a development project.
Another related challenge is the dispersion of knowledge regarding individuals, subgroups, projects and technologies. With GDTs being created, the opportunity to informally interacting with a colleague in the same geography will not exist as much. Dilemmas that are normally solved with casual lunchtime conversation, or hallway meetings, will need to be dealt with using communication technologies such as instant messaging, video and audio conferencing and electronic mail (Seshasai, Malter, and Gupta, 2006).

In particular, physical distance between team members hampers the resolution of dilemmas and conflicts between distant team members because of the exacerbation of subgroup dynamics (Cramton and Hinds, 2005). Since GDTs are typically composed by two or more co-localized subgroups in different geographies, there is a natural tendency for tensions and subgroup “ethnocentrism” is likely to emerge (Cramton and Hinds, 2005). For instance, in Metiu (2006)’s ethnography of a globally distributed team composed by Indian and US software engineers developing a new IT product, status differentials between Americans and Indians inhibited the proper functioning of the team, and, in particular, made knowledge and information sharing about tasks across time and space a cumbersome process.

Another evident, but under investigated, challenge that GDTs face when sharing knowledge at distance is given by time differences across sites (Espinosa and Carmel, 2003). Time differences, in fact, hamper continuous communication and awareness of team members (Weisband, 2002), thus causing delays because of coordination breakdowns, rework, difficulties in closing open issues (Espinosa and Carmel, 2003). Spanning multiple time zones can affect the rhythms of a team’s work and creates unexpected faultlines (Lau and Murningham, 1998), more so if teams are separated by
additional boundaries (e.g. language, age, national culture, function). Espinosa and Carmel (2003) and Sarker and Sahay (2004)’s empirical work shows some of the strategies used by team members to specifically address time mismatch: the development of asynchronous common practices, the definition of a time plan for synchronous interaction, time education about how to work effectively under time-separated conditions and time pressure.

The 24 hours knowledge factory as an emergent model of GDT

Notwithstanding the increasing and “maturing” (Saunders and Ahuja, 2006, p. 663) research on knowledge sharing in globally distributed teams, extant work tends to treat all distributed teams alike or, in other words, as a single type (Bell and Kozlowski, 2002). In practice GDTs may differ significantly from one another and thus, they may face different challenges when trying to cope with knowledge coordination. Most of the literature on distributed work focuses on temporary teams that are created to solve a particular problem or to perform a specific task, while less is known about ongoing virtual teams, organized around well defined, interdependent functions (Saunders and Ahuja, 2006).

The aim of this paper is to study a particular type of ongoing GDT, where knowledge sharing has a unique and distinctive connotation: the 24-Hour-Knowledge Factory (Gupta, 2006).
The term “24-Hour Knowledge Factory” connotes a globally distributed work environment in which members of the GDT work on a project “around the clock” or “following the sun” (see also Espinosa and Carmel, 2003; Treinen and Miller-Frost, 2006); each member of the team works the normal workday hours that pertain to his or her time zone. At the end of such a workday, (s)he “hands off” the work to fellow team members located in a different time zone. This sequential interdependence creates the shift-style workforce that was originally conceived in the manufacturing sector (e.g. Taylor, 1912). An example of the 24-hour factory paradigm involves ongoing virtual teams working together to accomplish a given set of deliverables, such as a software project that needs rapid development, and transcending conventional spatial and temporal boundaries.

In a "24-hour development environment" that encompasses many development centers located around the world, the GDT is envisaged to concentrate on the same problem and to perform the same function (whether it be development of code or testing of subsystem) on a successive basis, with each collaborating center retaining ownership of the endeavor for 8-12 hour periods in every 24-hour cycle. Many industries, including the software industry, are characterized by a development cycle that relies heavily on sequential performance of specific functions, such as development, testing, and verification. In a traditional software development environment where all parties are located in the same geographic area, a code developer typically waits until a fully functional portion of the product is available before passing it on to an engineer to test it. However with the potential for receiving testing feedback overnight, the developer now has the unprecedented opportunity to build portions of the product on a daily basis (Treinen and Miller-Frost, 2006).
Coordination and knowledge sharing across time and space during hand offs are particularly critical in the 24 hours knowledge factory model. This is probably why this approach is not yet widespread (Espinosa and Carmel, 2003; Treinen and Miller-Frost, 2006). The authors are not aware of any case of successful application of a three locations 24 hours knowledge factory model on a regular basis with strict 8-hour of work at each location. Most of the existing applications of the model are in fact based on 2 shifts. Nevertheless, the potential importance of a full application of the model calls for more studies about the challenges that the 24 hours factory model poses and how to overcome them. These considerations pave the way for our research question: “How do individuals share knowledge during hand offs and what are the factors that affect the hand off process in GDTs adopting the 24 hours knowledge factory model?”.

**Methodology**

To highlight the concept of the 24-hour-knowledge factory and to address the underlined research question, we decided to conduct a qualitative study and built a grounded theory. The use of a qualitative methodology is coherent with the absence of empirical evidence about the topic, the scarce amount of field studies on virtual teams, as compared to laboratory experiments (Martins, Gilson, Maynard, 2004), and the exploratory nature of our research question (Yin, 2003, Eisenhardt, 1989).
**Cases selection**

We studied 8 GDTs, belonging to 3 major Indian IT offshore outsourcing companies. We selected these cases through initial interviews of one of the authors with managers of the 3 organizations, in order to identify GDTs actually taking advantage of time differences and using the 24 hours knowledge factory model. The selected GDTs engage in long term IT development and maintenance projects with US based clients operating in the retail, banking and automotive industry. All teams adopt the “onsite-offshore model”, where some members are onsite with the client in the US, while some members are offshore in India, with a regular members’ rotation policy between onsite and offshore.

In development projects, during the requirement gathering phase, members based in the US interact with the client onsite during their daytime and at the end of their working day they send (“hand off”) the specifications to their offshore counterparts. During their daytime, offshore members acquire the requirements, start the development process and send back their work to their onsite counterparts. When the requirement gathering phase is mature, onsite and offshore members start parallel code developing, with day to day interactions to update and adjust work allocation. The final testing phase calls for sequential and reciprocal interactions to accelerate the final delivery.

Development projects are conducted in parallel with the maintenance of the existing IT infrastructure of the client organization. GDT members monitor the IT systems and take care of bugs, failures, and issues raised by users. The work is organized in two or three shifts (one shift in the US and one or two shifts in India), to guarantee a continuous availability of the IT system.

The work processes of the IT professionals are knowledge intensive and highly codified. The three organizations we studied, in fact, adopt CMM (level 3 to 5) certification for
software development and define work protocols, templates, collaborative technologies, etc., to formalize and document each step of the process. New team members receive one to three months induction training about the client industry, the specific characteristics of the client organization, and US business and national culture.

**Data collection and analysis**

We conducted 35 in-depth semi-structured interviews with 9 project managers and 26 developers, engineers, and module leaders in Bangalore and Chennai (India) in May 2007. At that time, the average professional and organizational tenure of our interviewees was 5 years (s.d. = 2.6) and 7.3 years (s.d = 3.5) respectively. During interviews, we asked our informants about their work (to describe their tasks and activities, the interactions they had with distant and local team members), the general difficulties they faced when working at distance, how they shared information and knowledge (in particular during “hand offs”), and how they used collaborative technologies. Each interview was audio recorded and lasted, on average, about 1.5 hours. Interviews were transcribed into word files, and then coded.

To enrich our understanding of the context, we asked our interviewees to provide us with documents about their work and their organization (such as templates, white papers, and case studies) and we consulted public information (such as websites, reports, organizational charts, and news).

In analyzing our qualitative data, we followed the framework depicted by Strauss and Corbin (1998), Miles and Huberman (1994), and Locke (2001), to build a grounded theory. We adopted an iterative approach of comparison and contrast of the data. We continuously went back and forth between our field notes and the theoretical model that
we were building to find support for our theorizing, and to detect any inconsistencies between new intuitions and our data.

At the start, through open coding, we disclosed statements and concepts regarding GDT team members’ point of view as well as recurrent behaviors. Drawing on similar statements, we identified some categories (such as “desire of being close to the client”, “perception of distance between onsite and offshore team members”, “blame game between onsite and offshore”). Subsequently, we grouped convergent categories at a higher level of abstraction (for example, the abovementioned categories were grouped into the label “perception of status differentials”). That is to say, we moved from open to axial coding (Locke, 2001; Strauss and Corbin, 1998) and we looked for aggregate theoretical dimensions in order to organize the emergent findings in a coherent framework. Overall, we identified the following aggregate theoretical categories: knowledge and information sharing during hand-offs, perception of status differentials, and perception of client closeness. Finally, following Strauss and Corbin’s (1998) instructions we connected the above-mentioned theoretical categories to a grounded theory.

We came to recognize that, even through all teams effectively manage hand-offs between onsite and offshore, some individuals perceive these processes as cumbersome, while others do not. With a grounded theory, we try to explain why. In the next sections we portray the themes emerged on the filed, we show our grounded theory, and we discuss theoretical and practical implications.
Evidence from the field

1) The practice of handing off work across time and space

Our evidence shows that members of GDTs, not surprisingly, recognize the criticality of the hand off process between onsite and offshore. The management of knowledge and information transfer, in particular, is achieved not only through the formal procedures that the organization proposes, but also through a recurrent set of shared and emergent practices, such as un-prescribed uses of collaborative technologies, time management practices, and the explicit consideration of offshore local contexts peculiarities.

IT organizations offer their members a wide array of collaborative technologies and suggest best practices on how to effectively use them. Notwithstanding the importance of these guidelines, our interviewees often told us that they “felt that technologies are not enough and cannot fully replace face to face interaction” (T23). So, strategies were created to work around technology limitations. For example, T1 told us that a word document with a meeting summary was not enough to share the knowledge produced during a brainstorming session onsite (between clients and onsite team members, during nighttime for offshore). So, pictures of the discussion board used during the meeting were taken to share the flow of thought with offshore counterparts.

T3: “Yeah, so then we understand the final picture. So instead of going through a set of sequencet that happened in the two-hour session, we have to go through, okay, first discussion was this. Within next 15 minutes people decided no, this is not the way you have to do it this way because in requirements time it is very, the things are not very clear. So, they will take different directions and they will take a second direction or a third direction, everything will be started fresh [...] It helps in understanding and reduces the amount of work to be done, in the sense of understanding the text and then, so it also, because this is translated we are not in the meeting. So we need to make sure we are in the same page, the understanding is also clear, there’s no communication gap. The person who understands will write and then we comprehend that written documentation in a different way maybe.”

The effective management of time difference is also perceived as a crucial element for effective knowledge sharing. In particular, GDT team members explained to us how they
decided to deal with the little time overlap between onsite and offshore and under which conditions they accepted to “stretch” their working hours to enable more synchronous communication. In the following field note, T1 underlines that during morning sessions held with onsite members you need to be well prepared to get the most out of the interaction.

T1: “So, that is not a challenge, but we have to always realign to that, that’s the first priority because we have to meet and that’ll look, the timeframe left for our meetings, our discussions are limited so we have to make sure we are prepared, the time we get at the most is, maximum one or two hours so we have to make sure that we have enough preparation to get the best out of that one-hour.”

The project manager T9, in charge of a maintenance project where GDT members are asked to extend their working hours during hand offs (both onsite and offshore), highlights why it is difficult to attract individuals willing to do that, since it affects work and family balance.

T9: “There are odd hours to work and generally my difficulty is to attract people to my team. People generally try to avoid production support teams because it could be stressful and particularly so for women because the odd traveling hours or odd hours would mean it’ll disturb their family life.”

Also local peculiarities of the Indian context affect GDT team members during hand offs. Example of such issues are given by T22 and T14, who describe how home-work transportation and low connectivity for offshore members need to be taken into account when managing hand offs.

T22: “There is always the question of transportation, which comes here. So, though ideally we would like these people to be overlapping, for example 8-hours shift, you know. There are certain constraints in terms of transportation. We can’t arrange for, say cabs because these people have to be picked up in cabs if they want to come at say 11 o’clock in the night, 10 pm in the night, so, we have to arrange for cabs. So, that way we arrange the shift in such a way that one of the main inputs that we give is the cab availability, and they have, IMS department has a batch of cabs which start which reaches here by 10:00 or 11:00”

T14: “It’s mainly because, see for example, if, like today I come to the office, I first find out if the link is down and I’m not able to start my work on time and only after two or three hour the link is up. So I mean they should understand that, you know, it’s, the link will be down some times and understand that everyday the link cannot be 100% up. So those kind of things they should understand and they cannot, on that day they cannot expect like 100% work from us”
The GDTs we studied are deemed successful by their managers; however, handoff processes are perceived in different ways by team members. When asked if, in their opinion, knowledge and information sharing during handoffs presented difficulties, 15 of our interviewees (43%) commented that, using T1's own words, “since it was part of regular work”, they did not perceive it as “problematic”. 20 (57%) individuals responded that they perceived it as a cumbersome process, and described it with words such as “constraints” (3 times), “complex” (7 times), “challenge” (15 times).

Why do team members have different perceptions about the knowledge sharing process across locations during handoffs? In the following two paragraphs we identify, using our field evidence, one potential explanation.

2) Perception of status differentials between offshore and onsite GDT members

GDT members identified two types of knowledge that they need to acquire and transfer in their individual and collaborative work. First, they need technical knowledge about software, technologies, procedures, etc. This type of knowledge is largely acquired through education, initial training within the IT organization, and induction programs within each project. The second type of knowledge, often referred to by our interviewees as “application knowledge”, is about the client industry, technologies, organizational processes, and culture. Team members share the understanding that the latter type of knowledge is critical and more difficult to acquire, even if specific induction programs are put into place. For example, T5 underlines how, before starting interacting with the client (a large US retail corporation), he did not have any idea of how the retail domain worked, since in India he could not have any first hand (even personal) experience about that type of industry.
T5: “There are many learnings working with the client, especially the domain itself like I told you; this is a retail domain, retail pharmacy domain. I was not having any idea about what the pharmacy domain itself is because in India you just go to a pharmacist, to the medicine shop and you just take some medicine. I mean its just off-the-counter most of the time, but in US, it’s entirely different and that’s one of the major learnings for me in this project. So the way the pharmacy workflow is...”

Being “close” to the client is thus perceived as an advantage for team members and onsite members are considered to be privileged, as T20 underlines in the following excerpt:

T20: “People generally who are at client-site, they have the opportunity to know more of domain and such things as compared to people at offshore, because you’re interacting with the user, they are sitting right next to each other, working same time zone.”

Offshore members interact directly with the client only in few occasions, for example during by-weekly or monthly update conference call meetings. Only onsite members have day to day access to the client. Moreover, being at the client site gives visibility to individuals within the GDTs and with clients, as T9 underlines as follows.

T9: “They [onsite members] actually look for interaction with particularly the client managers. That visibility is the thing that people long for.”

At the same time, offshore members tend to perceive themselves as distant from their onsite colleagues and often feel that the onsite colleagues display a “superiority complex”. T13 exemplifies the concept in the following excerpt:

T13: “The thing is they [onsite colleagues] feel, I don’t know, their attitude changes the moment you land at onsite. You know, you feel that, okay, I’m one step, you know, ahead of, I’m far more superior than my counterpart at offshore [...] Frankly speaking I see them [the offshore members] as a different team. [...] There’s always a clash between onsite and offshore, you know. Onsite, generally, you know, offshore, we feel that we’ve been, you know, made to do all junk work, you know, things which, as in finally the credit all goes to onsite because the clients actually interact with them and the clients appreciate them, you know, face to face. [...] Onsite appreciates us for any good work. I’m not saying no, but then there is some sort of, you know, feeling as in when you’re at offshore you’re fine but the moment you go to onsite, you know, something suddenly, you know, I don’t know you feel a little more superior than your offshore counterpart”
This perception of being two separate locally based teams (instead of one globally distributed team) accentuates “blame games” between offshore and onsite. In T17’s words:

T17: “I’ve seen people facing problem, it’s a basic human nature, a problem occurs there and the onsite coordinator will say no, the offshore person did this and the offshore person would put the blame on onsite person.”

The adversarial climate between onsite and offshore makes hand off processes longer and more complicated, and hampers knowledge and information sharing. An example is given by T13 in the following excerpt, where she describes how onsite team members, pressed by clients, transfer a large amount of work onsite and pretend to have it done “EOD”, by the end of the day, without considering the actual availability of resources at offshore.

T13: “I’m the offshore lead here, so the thing is I tend to fight a lot with onsite people, you know, I try to push back work. I know, I generally tend to fight a lot and not many people at onsite like me, because I, you know, usually fight with them and tell them “no, no this is not possible, this cannot be done by end of day today. Please note that everything is not end of day today task.” You know, they’ll just write a mail saying that, “Can you please complete this by EOD, end of day today, and then send me a status mail.” I was like, “Boss, everything cannot be end of day today. You know, please try to understand that.” Everything cannot be done today, we can prioritize work, we have to first prioritize work”

3) The perception of client closeness with offshore members

When offshore members perceive to have the opportunity of gaining first hand knowledge about the client or, in other words, of directly interacting with the client without passing through their onsite counterparts, the effect of status differentials perception on knowledge transfer is softened. 14 of the 15 people that described knowledge transfer during hand off processes as smooth, also perceived to be close to the client. The perception of being close to the client emerged in different ways: through the possibility of informal interactions between client and offshore members; through visits
of the client offshore; through the establishment of prizes and rewards by the client organization to offshore members; and through the client’s display of genuine interest about Indian cultural traditions.

Some clients establish direct connections with offshore team members and sometimes even participate in GDT day to day work (for example they take on them some parts of code development). T6 feels to have established an “open atmosphere” with his GDT client.

T6: “Very open atmosphere, we feel free to, I mean anytime we can ask them [the client], send a mail or call them or schedule a meeting with them. If there are lots of questions, we need to have discussions and in that case we probably organize a meeting so that so they can schedule their work.”

Some clients periodically visit offshore team members to get to know the IT organization and its context, to share best practices, and to monitor work in progress. In T14’s GDT, for instance, the client comes to India once every three months.

T14: “They[the client] make sure that they will visit at least once in three months offshore. So, they’ll come to offshore once in three or four months and they’ll be here for one month and we’ll be interacting with them and they’ll tell their best practices that they follow and all those things”.

Team members often mentioned that they perceived the definition of prizes, rewards and open recognitions as a sign of interest towards offshore. In the following field notes T8 describes the “star of the month” award, given by her client to offshore best performer team members:

T8: “There are awards and say, for example, we have a star of the month award being given at this center [offshore team members] on a month-on-month basis. So, a key performer in this center will be identified every month. Not just one key performer, but key performers from different accounts and different support services will be identified and they will be awarded. So that’s one way of recognizing and the other way is always, you know, performance, performance appraisals and another way to recognize is, you know, certifying using different methods. Say we have awards within our relationship, which is basically initiated from the client side. It’s an award that the client gives for best performers.”

Finally, our interviewees appreciated when the client displayed an interest not only towards their technical work and performance, but also towards their cultural background.
For instance, a few clients organize cross-cultural workshops onsite and offshore. Several large Indian IT organizations train their members in accent neutralization, soft skills, and awareness of cultural differences. The fact that the other way around may apply (the client showing genuine interest in Indian culture) makes team members feel the relationship with the client as based on partnership, as T4 explains in the following field note.

T4: “When we started outsourcing [...] the American companies [...] were just saying that, "Hey, this is your work, please do and give it back to me." That's it. Today, from that view, you know, things have moved towards more partnership where the American companies and mine are partnering and doing things together a lot. And, you know, when it comes to that partnering, you know, principles or philosophy, their understanding of our culture helps, definitely helps. But there are still lot of companies who treat us as pure-play offshore vendors and they would just give us a bit piece of work and, you know, expect us to do and give them back, you know, they don't really care too much about, you know, the cultural sensitivity from that perspective, there are lot of such companies that we work with.”

Discussion: a preliminary grounded theory

This qualitative study investigated 8 globally distributed teams using the 24 hours knowledge factory model, in Indian organizations offshoring knowledge intensive work to Western clients. Our results show that the process of knowledge sharing during handoffs across locations is considered critical by managers and team members. In particular, the teams we investigated adopted formal and informal practices to deal with: limitation of collaborative technologies; time differences; and local offshore context peculiarities. To explain why some individuals perceived knowledge sharing as cumbersome, while others did not, we developed a grounded theory (see figure 1). Using Strauss and Corbin’s (1998) terminology, our evidence suggests that the perception of difficulties in knowledge sharing during handoffs (core category) is due to the perception of status
differentials between offshore and onsite team members (causal condition). The negative effect of status differentials perceptions is mitigated when offshore team members perceive to be close to the client (intervening condition). The perception of being close does not depend exclusively on physical proximity, but is formed through: the establishment of informal technology mediated interaction, the periodical visits offshore, the establishment of prizes and rewards to offshore members; and the client’s display of genuine interest about offshore national traditions.

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Status may be defined as a perception of comparative social esteem that is context specific and consensually defined (Chen, Blount, and Sachez-Burks, 2004). Status differentials naturally occur in social groups when some individuals gain higher social standing than others (Blau, 1986). The sources of status may be categorized into three types: performance competence (a person gains status because demonstrates to gain superior individual results), organizational power (a person gains status because of his organizational position, his power or his authority), and behavioral dominance (a person has an innate human impulse for dominance over others). In our study status differentials between onsite and offshore emerge for a combination of the first two factors: being close to the client means gaining faster access to application knowledge and, at the same time, gives organizational visibility. It has to be noticed that, in this study, the emergence of status differentials perceptions is not due to: organizational position, expertise, or different opportunities to travel abroad. Offshore and offsite members, in fact, hold similar positions (there is a one to one correspondence between onsite and offshore
positions), have similar technical expertise and background, and rotate between onsite and offshore (83% of our interviewees had already worked onsite for the same client). Research on status differentials in co-localized work groups suggests that perceptions are slow to change because those who have status often determine the course of the group activities (Sidanius and Pratto, 1999). We believe that other antecedents of status differentials need to be added in the case of globally distributed teams. Since team members rotate across locations, the members in the higher status are not fixed over time and are not going to continuously promote the superiority of one subgroup versus another (e.g. onsite vs offshore). We call for more research to understand the origin of status differential perceptions when membership in subgroups is fluid.

The status differentials that we observed differ from what Metiu (2006) describes in her work about a global software development team engaged in the development of a new software product called Shield. During Shield development, status differentials emerged between Indians and Americans, where Indians belonged to an IT provider organization, while Americans belonged to the client organization. Metiu’s work focuses on closure strategies that enforce status differentials. Our work, on the other hand, explores status differentials between team members belonging to the same organization and the same ethnicity and apparently “homogeneous” for competences and organizational position. Moreover, differently from Metiu’s, we highlight the effects of status differential perceptions on knowledge sharing across time and distance. Our evidence suggests that the perception of status differentials across team members hampers knowledge transfer, and thus makes the globally distributed team work synchronization more difficult. For instance, when the knowledge transfer process is difficult, individuals do not get enough information to go on with their work and experience a disruption of their own agenda,
while team leaders need to re-allocate resources not to discontinue the work of the GDT. The literature on time in groups (see Mannix and Neale, 2004 for a broad review) shows that synchronization of work in teams is a central element of success. Chen, Blount, and Sanchez-Burks (2004) developed the thesis that, in co-localized groups, status differentials may inhibit group synchronization when the higher status subgroup sets a temporal agenda that does not suit the temporal agenda of the entire team. Our field evidence empirically supports Chen and Sanchez-Burks (2004)’s thesis and suggests that it should be applied also to distributed teams.

Our grounded theory suggests that the perception of closeness with the client mitigates the negative effect of status differentials and that the perception of “being close” is constructed in different ways and is not only associated to physical proximity. Only few studies about knowledge work have explicitly examined the dynamics and multi-dimensional aspects of how people perceive proximity in distributed work contexts (Metiu, O’Leary, and Wilson, 2007). For example, Wilson, O’Leary, Metiu, and Jett (in press) have proposed that perceptions of proximity (not only its objective dimensions such as physical distance expressed in meters or miles) explain some outputs of dispersed teams. Perceived proximity is a dyadic and asymmetric construct that defines one person’s perception of the distance to a teammate or another entity. Metiu, O’Lerly, and Wilson (2007) found that perceptions of proximity within teams were not dependent on actual physical proximity, and that perceptions of proximity were associated with project success and willingness to work together again. Our results are coherent with the framework of Metiu, O’Learly, and Wilson (2007), but different in the sense that the target of the perception of closeness is not internal members (such as offshore team members), but an external entity. Our evidence seems to support the idea that, if team
members do not perceive to be close to one another, but share the perception of closeness with a third party, which is essential for their success, they may overcome a potential internal conflictual climate.

Finally, it is worth to notice that our evidence does not depict cultural distance between onsite/offshore members and the client as a challenge for the success of the globally distributed teams. This may be explained by the fact that in the organization we studied, all professionals are well trained to know and address national and organizational cultural differences between themselves and their clients. In other words, team members expected cultural differences with the client to be there, but were ready and prepared to address them. Moreover, when the client openly showed interest about offshore national culture and traditions, cross national learning took place. Cramton and Hinds (2005) suggest that, when team members put into place a cross-national learning and adaptation, they are able to develop team efficacy. Coherently with Ely and Thomas (2001), when groups use diversity as an opportunity for learning and adapting to others’ perspectives, subsequently have a higher sense of self efficacy and a better group functioning. In our study, clients were not formally part of the globally distributed teams, but, in many occasions acted and were perceived as they were.

**Concluding remarks**

This qualitative exploratory research contributes to a better understanding of how GDTs share knowledge and information across time and space. Our work analyzed a particular type of GDT, the 24 hours knowledge factory model, where professionals across multiple
locations work “around the clock” or “following the sun”. Our grounded theory shows that knowledge sharing during hand offs across locations is hampered by the emergence of status differentials across team members with similar expertise, position, organizational affiliation and ethnicity. The negative effect of status differentials is mitigated by the perception of closeness with an external party – the client.

Our work has practical implications for organizations that want to adopt the 24 hours knowledge factory model to achieve a faster (and cheaper) development of products and services. To make a GDT work around a clock, an organization should not only place attention to technical issues (such acquiring sophisticated and rich collaborative technologies), but also to the potentially disrupting team dynamics that may emerge across subgroups. While cultural differences are easy to “identify”, other differences may be more subtle to capture and tackle. Managers should place particular attention to onsite-offshore team dynamics and should support the creation of a proper climate within team members and with relevant third parties (such as the client).

There are, of course, limitations to our study. First, it is made of few case studies within three organizations, so we do not attempt to make a statistical generalization of our results. More work is needed to understand if the categories and relations that we observed can be applied to other globally distributed teams or other organizations. Second, we studied globally distributed teams working for different types of clients (in the retail, automotive, and banking domains), even though performing the same type of work (IT development and maintenance). Client specific characteristics may have affected the evidence we portray. Third, we interviewed professionals only at the offshore location. This made us understand and report mainly the experience of offshore
professionals. We will conduct additional interviews with team members onsite to fill this gap.

Offshoring of professional work is an unstoppable and worldwide phenomenon, that not only brings in economic, strategic, technological and ethical issues, but also profoundly affects the way professional work everyday. We hope that our empirical findings may stimulate more researchers and managers to understand the new dynamics that offshoring brings to professional work practices.
References


Figure 1: The grounded theory

1) Knowledge and information sharing during hand-offs

2) Perception of status differentials between onsite and offshore members

3) Perception of client closeness

Core category

Causal condition

Intervening condition
The 24-HOUR knowledge factory paradigm: the evolving model for offshoring based on strategic, economic, legal, health, technical, and other considerations. A. Gupta. Engineering.


Your colleagues offshore have families, lives, and bills to pay just like you do. Treat them like you would a team member in the next room. Do this, and you will have the foundation for a healthy, effective team. Besides being the right thing to do, it makes for better collaboration and is simply good business. #5: High turnover is a problem. This represents a huge potential for knowledge loss and an overall low level of expertise with your system. Be prepared for it and manage it as best you can. #6: Different life/business experiences mean different assumptions. The 24-hour knowledge factory model can also influence the strategic direction to be taken by developed nations in attempting to maintain jobs for professional service workers who might otherwise be losing their jobs to offshore labor markets.

CONCLUSION Professional services have the opportunity to move towards the 24-hour global knowledge factory where active progress on professionally intensive tasks is accomplished on a round-the-clock basis. This future will be realized through careful consideration of the needs and expectations of the concerned stakeholders at the strategic, technical, economic and organizational dimensions. The term 24-Hour Knowledge Factory connotes a globally distributed work environment in which members of the global team work in a sequential manner on a project around the clock; while each functional unit works during the normal day time hours for that particular region, the team itself works around the clock with the work being handed from one constituent unit to another. This leads to a discussion of the differences and similarities between Offshore BPO and the 24-Hour Knowledge Factory. Section 2 features a detailed review of extant research, followed by an analysis of key elements of 24-Hour Knowledge Factory and what factors impact on efficiency and quality outcomes in 24-Hour Knowledge Factories.