Communication management in virtual projects

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Abstract: In nowadays market, highlighted by global products, companies are pushed to sell vehicles that comply with legal and customer requirements in different countries, and, not unusually, different continents. In order to achieve such challenge, and pressed to reduce project and production costs, companies are spreading design centers around the world, based on regional expertise and lower labor costs. These excellence centers must work together to benefit from synergies and local skills. Such works are defined as Virtual Projects (VP), when members barely don´t face each other. This means that teams will work, frequently with people they have never met and who live on different clock time. As a consequence, communication is done basically computer based, and must be even clearer and more direct than with the people who work on the next desk. The Communication and Information Technology Revolution occurred in the last 20 years allowed teams allocated in different countries and continents to work in parallel and benefit from local advantages. Although the technological advances, people are usually not prepared to work in such way, as well as project are not adequately structured to be developed in virtual environment. Problems of communication are observed in virtual teams, mainly based on cultural differences and lack of communication management. The present articles objects to present how Brazil-based engineering is working with virtual teams, difficulties faced and communication is being managed.

Keywords: communication management, virtual projects.

1. Introduction

As Planet Earth becomes globalized, and local barriers are falling, car makers are facing challenges not experienced before. In order to comply with regional regulations and costumers requirements, and in the same time reducing costs, car makers are developing vehicles to be sold in several countries, and usually continents, being produced globally. In order to achieve such challenge, companies are using skills from different geographical locations in a same project. These distribution and scope leads to Global Projects, staffed by Global Virtual Teams (GVT), defined as a group of people, geographically dispersed, culturally diverse, communicating mainly through technology-based media and collaborating to complete a task. Maznevski and Chodoka (2000), Shachaf (2005), Andres (2002), DeSanctis and Monge (1999). This comprehends e-mailing, audio and video-conferencing, intranet and so on. A great importance has been given to the tools of communication themselves, although they are just means to achieve a target: project success. And along with dissemination of internet, most of the tools are available even for small companies, with a low cost of usage. Most of workers from tactical and strategical levels can use the softwares without problems or special training. The greater road block for GVT, though, is how to manage all tools and media in order to achieve product success.

As Brazil is starting to belong to global projects, not only as participant, but even as leader, especially in small vehicles, it urges to understand how Brazilians managers in the car industry are facing such projects. Although a great discrepancy is known between Occidental and Oriental cultures, even between Europe, North America and South America must be marked. Only after understanding the way people communicate, and impression from tools, an effective communication management can be implemented. And this will support propositions to better communicate and work as teams.

2. Communication in virtual team

Communication in product development process (PDP) can be classified according Paasivaara (2005) in the following categories: i) communication in projects developed by a company in one physical location; ii) communication in projects developed by a company in multiple physical location: the focus; and, iii) communication in projects developed by multiple companies around the world:

Global projects differ from local one not only on scope, but how the management shall be done. Global projects means engineering team is spread globally and products are manufactured in many countries to be sold in an even

larger number of markets. Usually team members don´t know each other, but by phone or computer messages. Even though, participants must trust team members and collaborate cohesively. Distinctly, in local projects, members work near each other, face-to-face contact is usual, frequent meeting are held and cultural and linguistics diversity can be neglect. Although this structure of teams can lead projects to be manufactured and sold around the world, scope is usually regional. Participants know the market and usually met prior to program start.

Using global teams, organizations face different challenges from traditional co-located ones. One of them is the management of different cultures (Americans are individualists and task oriented, Japanese rely on collectivism and tend not to say "no"; Northern European are strict on meeting time, etc Shachaf (2008), Lee (2002). Another point is communication. While Americans are still sleeping, Brazilians arrive to work, European are having lunch, Indian are leaving work, Chinese are having dinner. This asynchronism creates barriers among members located in different time zones. Supported by these challenges, relationships and information exchange are affected in GVT Lee and Sankey (2008). Many researchers have being dedicated to the study of GVT, mainly covering intercultural aspects.

Although the challenges of leading a virtual team, collaborative work from culturally diverse teams benefits from the experience of this diversity. Researches have shown that intercultural teams generate more and better ideas, as well as achieve higher performance in decision-making aspects than homogeneous one Shachaf (2005). These benefits may be offset by difficulties in communication, also shown virtual teams take longer to understand some problems and act over it.

In general, when analyzing by the performance point of view, literature is confused to rank traditional or virtual teams. Some studies showed higher performance by GVT, others by co-located teams and even similar performance Maznevski and Chodoka (2000). It may be observed that the performance depends rather on members' initiative and coaching than on projects itself Jarvenpaa and Leidner (1999).

Much of project performance can be addressed to team feeling and trust Jarvenpaa and Leidner (1999). In GVT, where people don´t see what members are doing, action´s tracking becomes hard to be followed, and dependency on each participant´s initiative and collaboration is essential. Aspects of leadership and coaching moves to a frontier not well understood, and where rules are still unclear.

Distributing members around the globe have the benefit work can run literally 24 hours a day. Job can run 8 or 12 hours a day per team in distinct time-zones, reducing drastically lead time. This synchronism highlights the potential higher performance of virtual teams, and the necessity of communication and trust among members. Paradoxically, unclear messages or absence of team feeling can delay simple, but vital, information exchange by days. A long timing project, where many of these miscommunications occur frequently, can have a huge impact on launch phase, financial return and even success.

Although virtual teams exists since the 1960´s, the technology revolution occurred in the 1980´s produced a large impact on dissemination. This revolution eliminated boundaries which separate groups, and allowed organizations to utilize skills from dispersed people Andres (2002), Jarvenpaa and Leidner (1999). High costs and long lead times to transport information don´t exist anymore. E-mailing, webinars, team rooms and Skype® make communication easy and reduce costs drastically. Thus, performance on information exchange through technology-based media depends upon team-feeling, rather than media itself (ANDRES, 2002).

Although the belief face-to-face meetings are essential for team building, literature points different views DeSanctis and Monge (1999), Jarvenpaa and Leidner (1999), (BREU; HEMINGWAY, 2004).

3. Communication media

Since ancient times, information and communication are a factor for victory. Today, victory means success and profit. Thus, no organization can plan to implement GVT without an effective communication management. This means, prior to team structuring, infra-structure and tools for data exchange must be set and validated. The construction of information systems requires softwares and hardwares, available for every member wherever he or she is located. A low network connection or incompatibles softwares can sink any tentative of remote work Lee and Sankey (2008).

The advent of the internet in the 1990´s removed many barriers for communication and allowed organizations to use GVT in large scale Jarvenpaa and Leidner (1999). Today a member anywhere in the world can contact anyone anywhere anytime, and exchange data as voice, texts, pictures or computer files, simply having a computer connected to internet. One of the few limitations is the technological infra-structure, meaning software and hardware, although the majority of the important locations around the world are already connected. For this intent, cables and antennas from last century are being replaced by wireless networks and cell phone-based links. The level of technology required by a team will rely on project complexity, and not on the diversity or geographical distribution Maznevski and Chodoka (2000).

Tools for virtual communication are known by the majority of workers, and professional media are migrating to private use as well. Even media not used by certain

organizations are publically offered, and are almost plug-and-play. The most important media are:

- E-mail: used for written messages exchange.
- Chats: team members can real time exchange written messages and video. Most popular are Windows Live Messenger® and Skype®.
- Team Room: place for virtual static file sharing. Documents as minutes, drawings, presentations can be storage for team access. Besides project documents, team room may serve also for social communication and non project related information sharing. Team rooms are a specific place in Intranet, where only team members have access, and may contain even personal blogs.
- Webinars: on-line real time data sharing. Combination of audio and/or video and flip charts of virtual teams; support virtual meeting. Most popular are MS NetMeeting® and Cisco Webex®.

A traditional medium which was benefited by technology revolution is the telephone. Introduction of Phone IP technology and SkypeOut® enhanced conversation and audio conferencing, in addition to reduced related costs.

And as people grow in a computer environment, use of computer becomes part of life habits. Thus, although mid-age professionals still experience troubles to use technology media, youth are prone to use freely. This means people used to chatting will rely less upon face-to-face meetings.

4. Communication management

When migrating from co-located to virtual teams, tendency is to use the same communication methods, which may not be most effective way. When no linguistic or time-zone barriers are in place, phone calls can be a perfect medium to solve problem in a short time. Even though, when these barriers exist another medium may the required Shachaf (2008), Vinaja (2003). In the event a medium is to be chosen, recipient, and not sender, should elect it Maznevski and Chodoka (2000).

Members shall realize media are only tools to achieve a task: communicate. More important than the medium or the record for backup is the information exchanged. In addition, as virtual teams cannot rely on prior experience for trust building, communication falls as a major factor for it. Responsive and ethic communication aids in trust building and team feeling Kirkman et al. (2002), Jarvenpaa and Leidner (1999). Simple actions as greetings in receiver´s language or advanced absence communication play an important role on team identification. In such way, individual communication skill is an important factor in team communication Matveev and Nelson (2004). Empathy and experience improve member´s performance in data exchange.

5. Method

The purpose of this article was to understand tools and views from the managerial perspective in the virtual project communication management. From this point of view, further researches can deep analyze lower hierarchical level communication.

The research is based on a semi-structured interview with a group of managers leading global projects in different phases of development. They are physically based in Brazil, while engineering team is spread around the Americas and Europe, working on products to be sold basically in the Americas and Asia. Majority of interviewees are Brazilians, while the remaining are all Latin Americans, Spanish native speakers. A resumed table with interviewees' characteristics is show in the end of this article. Must be noted all interviewees have international experience within the company and English skill is not an issue for communication; although different accent is observed, even among the same citizenship.

A semi-structured interview was held to obtain a qualitative overview of Project Managers about communication among virtual team members, and to allow deep discussion about specific unknown aspects. A high hierarchic level was chosen to find concerns may impact in project performance. It was not aimed to discover specific issues encountered by working level members, although this aspect shall be studied in a future article.

The specific objectives of the interviews were:

- Discover the main media used to communicate among virtual team members.
- Verify how language impact in communication among virtual team members.
- Verify how cultural differences impact on communication among virtual team members.
- Verify how geographical dispersion and time zone difference impact in communication among virtual team members.
- How communication impact in project performance.
- How communication impact in team member´s satisfaction.
- Identify the best practices in virtual projects communication management.

The following questionnaire guide were used in the interviews.

1. How often do you use the following media? E-mail? Team Room? Webinars? Chats?
2. Is there a medium you think has highest information exchange performance? Why?
3. Is there a medium you think has lowest information exchange performance? Why?

4. Is there a medium which increase language differences in the very moment of communication? Why?
5. Is there a medium which mitigates language differences in the very moment of communication? Why?
6. Is there a medium which emphasizes cultural differences? Why?
7. Is there a medium which mitigates cultural differences? Why?
8. Does geographical dispersion impact the medium choice? Why?
9. Does time zone impact the medium choice? Why?
10. Is there a country or region you think communication is easier? Why?
11. Is there a country or region you think communication is harder? Why?
12. How communication impact in project performance? Why?
13. How communication impact in team members' satisfaction?
14. Have you ever identified best practices in virtual teams' communication management not applicable to co-located teams? How was these practices cascaded to the team?
15. Which are the opportunities to improve communication in virtual teams?

Interviews were recorded with consent of the interviewees, and transcripted by the author, in order to have better understanding and answers could be better compared. Interviews were held in Portuguese, except the one who does not speak Portuguese. His interview was held in English to avoid misinterpretations from both sides.

In the Table 1 is presented the interviewees characteristics.

6. Empirical research outcomes

Project members interviewed use different media and have different opinion about specific topics. They agreed communication is key for project performance, as well as time zone dispersion impacts deeply on communication. On the other side, techniques for specific communication and handling of information have personal approach.

E-mailing was pointed as the primary medium for communication in virtual team´s environment. Due to differences in language, geographical dispersion and time zones, and due to need to inform several people about the same topic, the use of e-mail is a constant for all interviewees. In counter act, the correct use of e-mail is still not understood by many workers. The common practice of CC or *reply to all* is prejudicial for the corporation, as already noted by Lee and Sankey (2008). Besides, the warning tool of MS Outlook usually does not help in notes management. Due to the large amount of e-mails received daily, it may take out concentration on tasks. Ranking of importance is done by sender (usually superior ranked) and if some flag or *Urgent* or *HOT* is written on the subject. It can be observed that getting higher in then organizational hierarchy, the use of e-mailing turns more selective, not being used *for information only*; it´s an important information or requires action or response.

A key factor for e-mailing is also the lack of English knowledge. Even considering English as the official language, either for virtual or co-located teams, or even for corporate practices, people tend to write rather than speak. Interviewees pointed the benefit to read and analyze what was written before communicate, making the message clearer for the receiver. The negative side, seen in working level communication, is the transformation of e-mailing in a chat, using short messages and copying several people on it. It was cited the occurrence of receiving over 10 messages about the same subject in a single day, where each message was very short, looking like *ping-pong*. This implies the need to read from the very beginning, taking time sometimes just to realize the person should not be involved on it. The intention to "inform" adds low value, impacting on waste of time of team members. As interviewees said to receive over 100 e-mails daily, the need for reading unnecessary messages impacts directly on the work load, leaving less time for important tasks.

The second most used and appreciated tool is webinar, a combination of audio and virtual documents sharing, which attendance is a daily routine. Due to the dispersion of team

Table 1. Interviewees characteristics.

	A	B	C	D	E
Age	>50	30-40	>50	40-50	30-40
Time in Company	25-30	10-15	25-30	25-30	10-15
Citizenship	Mexican	Brazilian	Brazilian	Brazilian	Argentinean
International Experience	Mexico, USA, Europe, Asia, Brazil	Brazil, USA	Brazil, USA, Europe	Brazil, USA	Argentina, Brazil
Idioms	Spanish, English	Portuguese, English	Portuguese, English	Portuguese, English	Spanish, English, Portuguese

around the world, it´s a good tool to keep team informed as well as reduce cost and time expended with business trips. The use of audio, supported by written material improve the quality of information exchange, in the same time allows better understanding of low skilled English speakers. Besides, it reduces need to print material. Use of videoconferencing was appointed by younger interviewees as good tool to associate faces to members, as well as keep people concentrate on the meeting, since they are being observed. "In the past videoconferencing was abandoned due to problems in infra-structure and network velocity", noted by B, while E cited the use webcams could be nice to match name to a face.

Chats and teams rooms were cited as good tool, but still not fully used. The first is cited as a slow rate information exchanger, and "is better used for quick message or in parallel with webinar, when a topic can be solved without interruption of the meeting", said C. Team room is seen as good information share tool, encountering support on Shachaf (2008), but not as communication media. The time spent to find information may overwhelm the advantages, observed A. An advantage cited is the share of official dynamic documents or presentations prior to meeting, to allow people study the material. Besides, a single point reduces the need for space allocated in servers of personal computers.

Although written media is desired to allow time to think about what´s being informed, the best way of communication cited, considering time to solve and objectiveness of communication is the combination of audio and written, either in webinar or private calls. This combination increases information exchange rate, as all as reduce misunderstandings due to support of written and pointed data. Contradictory, the split of these media implies in the lowest performance on communication. Audio only reduces the ability to correct understand if parties are not fluent and used to the accent. E-mailing only, on the other side makes communication longer, and the difference in cultures may impact in the acceptance of information. Small nuances from culture may be amplified in written media, since accent, voice tone or parallel support is absent. "For example, the expression *I don´t care* often used by us sound pretty aggressive to Americans. I learned this working with them" stated D. In addiction, the volume of e-mails sent and received daily increases as the status and importance of the person get higher in the organization, making not possible to read and take attention on every single note received. Thus, the common practice of copying superiors in the organization is shown as a bad practice in general terms, not adding the right value to the work.

Having team members spread around the world, in different countries and time zones impact in the essence of communication. The ideal face-to-face contact cited by participants is something virtual team usually don´t have access. Rare face-to-face meetings are usually limited to high ranked members, and for special purposes. The working level team faces a virtual environment, where partners don´t have face. Voice and personal writing style are the only characteristics recognized by colleagues. In this manner, trust and team feeling must be built in a not traditional way. "I don´t mean that seeing the face I´d be more or less sympathic to someone. But it would an option. It would be nice to have", said E. Humans, as social beings, desire to see who they are contacting. The highest limiter for project management cited is the time zone difference rather than geographical dispersion itself. A south-north dispersion is seen more limited by the language and not the distance *per se*. In fact, east-west dispersion, it means, time zone, is the greater barrier for virtual teams´ communication. The small time windows, or even the absence, for synchronic communication is pointed as challenge to be faced by virtual teams by all interviewees. In this scenario, Europe was cited as the best center for project coordination, since they can audio meet the entire world during their regular working hours; Asia early in the morning, South America in the middle of the day and North America in the afternoon. Noted also the good English knowledge from non-native speakers. "As Europe is relatively small, with different languages, people are used to use English as a common communication medium". This may be an implicit factor for good communication with European teams. On the other side, Asia was cited as a region where most difficulties on communication were found. Factors marked were difficulties to understand English accent, lack of time overlap between working hours and cultural difference. These points encounter basis on Lee (2002) and Hinds and Mortensen (2005).

Aside from the communication itself, it was unanimous that information exchange is a key element for project success. As stated by Hab and Wagner (2004), technical knowledge is not a barrier for vehicular projects anymore; the greatest challenge lies on communication among team members. Supporting this statement, all managers cited the communication as primary factor for project performance. The skill and ability to send precise information in the right time to the team provides professional and personal benefits to team members. The accomplishment with project targets as well as personal satisfaction is directly linked to a good transmission and receive of information. Though flow of communication must run top-down, bottom-up as well transversally through the organization. In this last form, a personal defect raised is the maintenance of information by a member. Pro-active data sharing among team member is a quality and necessity for project teams.

When discussing about best practices applicable solely to virtual teams or the improvement possibilities, no consensus was achieved. Personal experience forged different practices over each person.

An interesting practice, correlated to webinars is the issue of meeting minute along the meeting, shared in the screen. In this manner, low skilled English speakers can ready and better understand, or even discuss the outcomes and assignments. This practice can be based on Shachaf (2005), Shachaf (2008), and as discussed over webinars, allow time to people read and reflect about what´s being discussed and assigned. Although this practice can be applied for co-located teams and presential meetings, greater advantage is obtained when webinar and language barriers are in place.

Flexibility and connectivity were pointed as characteristics to be improved for virtual teams. Use of mobile computer and phones, linked to internal organization network shall be improved to achieve objectives. "You don´t need to be physically in the company to work", cited A. Home office and flexible schedule was pointed as good practices to be implemented. As project management teams increase the number of people, you can have different working hours to be connected to the entire team whenever someone is working.

Finally, as a wrap up from the outcomes of the prior topics, a huge field for improvement on communication was remarked. Opportunities are found from personal to corporate perspectives. From the stronger use of virtual tools to the improvement on English fluency, different aspects of communication and management were raised. In the meanwhile, training shall be provided to prepare minds for virtual work. "Some people still do not realize that responding and e-mail at 8 am rather than 16:30 can easily generate a two delay when virtual team in place, what is not applicable to co-located teams", said E. With this purpose, Warkentin and Beranek (1999) suggest some guidelines to improve virtual communication.

7. Conclusion

Actually , with dissemination of knowledge and access to information, significantly through internet, technological challenges for ordinary products are being diminished. On the other hand, as design teams enlarge due product complexity, communication becomes the challenge for global projects. Global Virtual Teams are reality, and cannot be neglect or lead the same way as local teams. A new mind set is required for GVT members and leaders, especially for the program management team, which acts as facilitator among diverse organizational departments.

It must be observed this work was done in a specifically company in the point of view of a team based in Brazil; these means aspects that may not expanded to any virtual team. Cultural characteristics from the team were considered homogeneous. Further research must be performed to formulate theories that can be applied for different peoples. Outcomes from this kind of research are best practices and guidelines for communication among difference cultures in global virtual teams.

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