

# A QUALITATIVE STUDY OF THE OCCUPATIONAL SUBCULTURE OF INFORMATION SYSTEMS EMPLOYEES IN ORGANIZATIONS

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## ABSTRACT

Information Technology (IT) facilitates the effective functioning of most organizations. Individuals who support IT are an important facet to an organization. In the present study, we interviewed these individuals as well as other employees to identify their responsibilities, intra-group and inter-group communication. We used Trice's occupational subculture framework to look at the intrinsic differences among subcultures and its members. The results of our study suggest that conflicts arise from differences within members of subcultures. Observed situations of adaptation between occupational subcultures represent an example for remedy to rectify this conflict crisis.

## Categories and Subject Descriptors

K.7.3 The Computing Profession: Organizations

## General Terms

Human Factors.

## Keywords

Information Systems Employees, Occupational Subcultures, IT Professionals, IT Workforce, Cultural Conflict in Organizations, Collaboration.

## 1. INTRODUCTION

Information Technology (IT) is critical for the functioning of most organizations. Likewise, the individuals who support these

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technologies have become a critically important group of employees. We call these employees Information Systems Employees (ISEs) and this group includes a number of job titles, such as technical support specialists, help-desk technicians, technical customer service representatives, and the universally familiar systems administrator. These employees facilitate the use of IT in organizations and have responsibility for the quality of the information available both to decision makers and those who conduct the frontline operations (Prior, Rogerson and Fairweather, 2002). ISEs provide technical assistance, support, and advice to customers and end-users; their responsibilities cross departmental boundaries.

While ISEs are an integral part of an organization, they are also a piece of the larger mosaic. According to Trice and Beyer (1993, p.174) "organizational subcultures consist of distinctive clusters of ideologies, cultural forms, and other practices that identifiable groups of people in an organization exhibit". Subcultures differ from the organizational culture in which they are embedded; they may intensify the aspects of the predominant organizational culture or diverge from it altogether (Trice, 1993). Differences among subcultures can lead to discord, which in turn may be detrimental to overall operations. Such discord is often evident between end-users of IT and ISEs. We believe that this conflict is created in part because the ISE subculture has different norms, language, and practices from other groups in the organization.

In the present research, we sought to understand the characteristics of the ISE occupational subculture. We approach organizations as composed of discrete subcultures that are held together, more or less strongly, by an overall organizational mission. The present study uses occupational subculture as a way of revealing conflicts overlooked by rational theories of organizations and management (Trice & Beyer, 1993, p.xiii). To explore the ISE occupational subculture, we conducted interviews with a variety of ISEs, information system end-users and managers. In these conversations, we explored their work, intra-group communications, and inter-group communications. We

intend to identify the nature of the ISE occupational subculture, and the extent to which the subcultural conflict may have contributed to dysfunction within the organization. For this study, our focus is on ISEs who work in organizations and not across organizations. Our study does not include outsourced professionals.

## 2. LITERATURE REVIEW

The importance of studying IS employees as a separate occupational group has been articulated by many researchers, such as Orlikowski and Baroudi (1989) and Myers (1991). Further studies supported this relevance on topics ranging from retention strategies of human resources in the IT department (Agarwal and Ferrat, 2000; Igbaria, Greenhaus and Parasuraman, 1991) to the influence behavior of IT executives over other employees in organizations (Enns and Huff, 2001). Other approaches to studying ISEs have been to focus on ethical attitudes and the high level of ethical awareness amongst them (Prior et al., 2002) and the communication problems between ISEs and other employees.

### 2.1 Conflict and Collaboration in Organizations

Prior research indicates that there is apparent conflict between ISEs and other employees across the organizations. Those studies reveal the magnitude of communication problems that occurred among important stakeholders in organization (Hornik, Chen, Klein and Jiang, 2003, Wynekoop and Walz, 1998), which comprise of ISEs, managers and users. They show several instances of conflict that occurred between ISEs and other employees in an organization. The main conflicts occurred due to the lack of communication skills that encompassed written, oral communication and interpersonal skills. ISEs need to be able to write clearly but this was often found to be lacking. In addition, it has been noted that they need to communicate well, understand organizational business goals, and achieve ongoing collaboration, (Marion and Marion, 1998). Other written skills like the ability to write email replies, training manual, system requirements, and system proposals are also becoming important (Crowston and Kammerer, 1998; Jacobs, 1998).

Users and system analysts have different realms of meanings. For instance, they have different skills in diplomacy, directing, assertiveness, verbal and nonverbal communication Alvarez (2002). Hornik et al (2003) also found evidence that ISEs did not understand the relationship between ISE skills with other organizational success.

The interpersonal conflicts that occur in Information System (IS) Development could be addressed by reviewing historical events that occurred among IS workers and other subcultures Barki and Hartwick (2001). Some of the events include hostility and jealousy, poor communication and conflicts related to technical rules, norms, and regulations (Franz & Robey, 1986).

We believe that understanding the characteristics of the occupational subculture of the ISEs may help in solving the ongoing conflict between ISEs and other subcultures within organizations.

### 2.2 Trice's Work on Occupational Subcultures

Cultures arise among groups of individuals who share similar ideologies and forms of expressing those ideologies in speech and behavior (Trice, 1993). These ideologies reflect the espoused beliefs and values of a particular group that add significance and meaning to the group and its activities. While some aspects of cultures are latent, other aspects are explicit in the observable actions of culture members. Cultures are usually dynamic: Individuals often add new behaviors and ideologies to those that the group already possesses. Some cultures may accept such changes easily while others react with varying levels of resistance.

While it is often assumed that an organization is homogenous in nature, it may contain numerous subgroups that manifest variations of cultural forms and ideologies (Trice, 1993). As groups of individuals from a particular occupation work towards the organization's common goal, their distinct ideologies accentuate the behavior that works best within the context of their occupation. Over time, each subculture within an organization may manifest its own beliefs and practices that distinguish it from other groups in the organization.

Because the nature of each subculture is often based on the specific occupational roles of its members, there are subcultural boundaries that define insiders and outsiders. Crossing subcultural boundaries can facilitate better communication amongst organizational members, but disparities in ideologies and practices among different organizational subcultures may cause friction as these subcultures interact to accomplish organizational missions.

The group-grid analysis developed by Douglas (1978, 1982) is useful for examining subcultural relationships. The group dimension pertains to the cohesiveness between the members as they interact with one another (Trice, 1993). This dimension provides an understanding of how groups establish boundaries between insiders and outsiders. In contrast to the group dimension, the grid dimension consists of tangible structures established by the subculture (e.g., work rules, required certifications, etc.). It is through these structures that members interact with one another. The grid dimension defines occupational roles based on the formalized rules set by the occupation. Occupations with strong grid dimensions have membership and behavioral rules that are rigid and formal.

Within the group and grid dimensions, Trice has defined a number of "signs" that indicate the character of an occupational subgroup. Members of an occupational subculture tend to group themselves with similar others: This generates a strong sense of ethnocentrism among group members and feelings of superiority relative to other groups (Trice, 1993). The use of esoteric knowledge binds the members of the group together. Extreme and unusual demands on an occupation have the same effect. Additionally, complaints about members of other subcultures serve to differentiate "us from them." In Trice's work, "symbols" captures the idea that subcultures will adopt objects, words, acts, emblems, or personal qualities that stand for and signify important ideas about the subculture's characteristics and norms.

Moving beyond characteristics that set a particular subculture apart from others, we were also concerned with the quality of communication and interaction across subcultural boundaries. Trice posited that differences in the values and norms of interacting subcultural groups can lead to dysfunction between these groups and this dysfunction in turn limits the effectiveness of the overall organization. Bahn (1995) studied system designer-user interaction from Trice's occupational subculture perspective recognizing the existence of this "occupational subculture" on the basis of shared task cognition rather than on the basis of social cohesion and ethnocentricity.

In the interview data presented below, we analyze the group and grid dimensions, ethnocentrism, and symbols. We also examine the interviews for signs of dysfunction across subcultural groups. Using these analyses, we hope to uncover whether Trice's framework would provide insights into the ISE occupations that might prove useful in future research and practice.

### 3. METHOD

To enhance our understanding of subtle social relationships and events, we chose to conduct our data collection in the form of semi-structured interviews (Gubrium, 2002; Kvale, 1996). The interviews lasted 30 – 50 minutes each. The interviewing team underwent training that included mock interviews that were videotaped, viewed in a group, and critiqued by the authors. The study occurred in eight not-for-profit, small-to-medium sized organizations, including a private university, a suburban hospital, a counseling center, a manufacturing company, and a social service agency. The data was collected over a period of approximately one and a half years from September 2001-February 2003.

We developed the interview protocol in accord with research questions identified in prior work on technology-driven organizational change (e.g., Stanton & Weiss, 2000). In keeping with common practice in qualitative research (Charmaz, 2000; Janesick, 1998), we evolved the questioning to match our growing understanding of the relevant phenomena, although the core of the interview protocol consistently covered areas such as general work experience and responsibilities, workflow using the IT system, concerns about the potential effects of a new system on social relationships and the quality of work life.

With a total pool of N=121 interviews, our results included 32 interviews with IT support specialists, 82 interviews with regular employees and 7 interviews with upper-level managers. Some of the job titles included in the ISE sample were systems administrator, computer consultant, telecommunications coordinator, and system or support analyst. There were 13 women and 19 men in this sample group (N=32). The users in our sample (N=82) were employed in a wide range of departments and were comprised of 65 women and 17 men. The upper-level manager interviews comprised 3 women and 4 men (N=7), ranging in age from about 35 to 65. After transcribing, we removed identifying information before inserting the interviews into the Atlas T.I. program for qualitative data analysis. The data from ISE and manager interviews comprised of 307 pages of text (approximately 150,000 words), while the data set from the user interviews was about twice that size.

## 4. RESULTS

To give a well-rounded view of ISEs and their subcultures, we first present the perspectives of ISEs and explore the extent to which the categories derived from Trice's theory fit with the notion of these respondents as an occupational subculture (see Table 1). Next, we describe the perspectives of general users and the upper-level managers.

**Table 1. Incidence of Codes in ISE interviews**

Code Name	Frequency
Dysfunction	55
Ethnocentrism	41
Grid	12
Group	11
Symbols	21

Viewing the research from a qualitative standpoint (e.g. Denzin and Lincoln, 2000, Denzin, 2000), we combined top-down and bottom-up approach to this analysis. In developing our coding scheme, we began by choosing main areas from Trice's (1993) theory. The codes and the frequency of occurrence appear in Table 1. To accompany the codes, we developed detailed coder instructions including examples of when to apply and when not to apply a particular code. Crosschecking of this material by the authors and other members of the team uncovered few substantive coding errors.

### 4.1 ISE Perspectives

*ISE Group Dimension:* For coding purposes, the group dimension was partitioned into several subcategories suggested by Trice (1993): esoteric knowledge, extreme work conditions, and complaints about other groups. Esoteric knowledge refers to the restricted expertise that members of a group have. The expertise is unique and accessible only to a few people that share "a special learning experience [and have the ability] to grasp [that knowledge]" (Trice 1993: 26). The following quote from a (network administrator) is typical because it expresses the sense that ISE's feel that they run the system single-handedly:

*"For the last 12 years, I have kept the system going."*

Consistent with Trice's claim about occupational subcultures, ISE respondents explained that there are extreme and unusual demands pertaining to the profession:

*"There is always so much work... so if I wanted to spend 24 hours a day here, I could."*

Complaints about end-users were predominant throughout the transcripts. Respondents explained that their jobs would be easier if end-users would "at least try" to understand how things work. These verbatim statements clearly point to the presence of conflict and miscommunication between ISEs and end-users:

*"I have always said that I would have a great job if it wasn't for the users."*

*"Most users just want to get their jobs done. That is a big disconnect. That's a big challenge for IT professionals."*

Technical problems are often blamed on end-users misuse of programs. It is evident that ISEs would appreciate if end-users would take more initiative and attempt to solve minor problems on their own:

*"... I don't want to baby-sit because people are always calling for help. But I would like to teach them how to do it."*

**ISE Grid Dimension:** The grid dimension of the occupational subculture of ISE helped us to understand the responsibilities within organizations as described by the respondents from the formal and informal perspectives. "The grid dimension assesses the ordering of occupational life in terms of roles and positions within the occupation, that is, in terms of social structure" (Trice, 1993).

Our data showed relatively few instances of the grid dimension (12). However, the same interviews revealed a large representation of verbatim about the group dimension. Within the references to "grid," we found four important themes, described here. Many of the constraints and formal rules that are present in the work lives of ISE's are governed by rules or regulations from outside the organization rather than within. For example, ISE's described frustration because their jobs rely heavily on decisions by state legislatures, highly formalized budgets, union rules, or limits inherent in the technologies themselves. A hospital IT director explains:

*"There are a lot of obstacles to progress that come to us by virtue of the organizational culture here. [The union] is very rigid. I have to be careful because if we rub them to wrong way, they might say that their people do not have to use PC's because it's not in their contract. That would be the worst thing. So I tread carefully."*

ISE's are in a position to design or supervise the grid dimension. Here, ISE respondents' comments varied depending on the type of organization. In a social service agency, a program analyst described the flexibility and freedom present in her job and work life. She described an ease of communication between herself and her coworkers and her ability to foster flexible decision-making processes:

*"We can communicate and be flexible. We ask each other 'Can you live with this?' Most of the time, people say yes. If you say no, everything stops right there and it comes up for discussion again, and [they] get to say [their] point of view."*

In other organizations, ISE's found that efforts to set up formal rules was hindered by coworkers' attitudes towards these kinds of structures. ISE's who are responsible for writing unpopular policies or getting blanket IT policies accepted by more than one department find it very challenging. In this example, an ISE from the university explains that faculty were "hogging space on their servers," so they were formally asked to clean out their mailboxes. This quote is evidence of lack of empathy between

subcultures in both directions, towards users' selfish use of space, and ISE's dissatisfaction at users' reaction to their felt need to establish rules of conduct:

*"They [Users] actually rebel. You know, [they say] you can't tell us what to do. How dare you? It becomes fairly emotional, to my surprise."*

ISE's often have trouble complying with formal rules. One example of this was from a systems analyst who explained that he has many work passwords on his PDA. He was able to rationalize his behavior in relation to compliance with formal rules because of his special knowledge about the subject of security:

*"Everybody's human. So, it's easy to say, 'You shouldn't do that,' and you do it anyway...I have got the luxury of knowing how to be behind the firewall of some of my stuff, so I can do some of the stuff that typical users wouldn't be doing from their desks."*

In occupations at the strong end of the grid dimension, individual behavior is tightly constrained by formal rules. In general, we found that this is not the case for ISEs because they follow tasks and activities that are not formalized rules of their function. Accustomed to adapting to rapid technological changes that affect their jobs and their organizations, ISEs accept that quality as a necessary element of their jobs.

*"The one thing being in IT, is it's forever changing-forever changing. If you think you've learned something, forget it because they've changed it the next month and you're going to learn it all over again. So if you don't like learning new things and you don't like change, this isn't the job for you. That's guaranteed."*

**ISE Symbols:** The symbols that we found for ISEs included typical settings, unique vocabulary, and stories. We observed in our study that most ISEs work in environments that have computers all around their desks/chairs, hubs and switches with blinking lights, strongly air-conditioned offices, unused and spare hardware (diskettes, drivers, old monitors, etc), and in some cases hundreds of software boxes. ISEs talked fluently about the tools and procedures of their trade and often stated that most users will not understand or comprehend the terminology.

*"I think some people use buzzwords and jargon just to impress others. We try to stay away from that especially when we are dealing with users. It does make our work harder, to approach someone and using three letter acronyms that they don't understand or don't care about..."*

**ISE Ethnocentrism:** Following Trice's (1993) schema, ethnocentrism was divided into four subcategories: reference group, superiority, control and complaints about end-users. Feelings of superiority are increased by the fact that ISEs use a great deal of technical vocabulary and think they have to come "down" to the level of the end-users to make themselves understood. One of the ISEs explained that they do not expect end-users to learn their jargon:

*"Oh, I always try to bring it down to them. There is a time to use technical terms and there is a time not to."*

ISEs feel that decision makers in the organization are not aware of all their needs and requirements, and they should be given a more substantive role in the IT related decision-making process.

*"Managers think they do (know how to get things done), and they think they can estimate how long it will take, but really they have no idea."*

Finally, ISEs want to retain control because they believe that end-users are often responsible for the systems' failures.

*"By limiting the choices for them, and helping them to have some basic computer capabilities, they will be in a better shape."*

**Cross-Subcultural Dysfunction:** Dysfunction was divided into several sub-categories: communication, stereotypes, discrepancies, and resistance (Trice, 1993). When an individual from one subculture attempts to communicate with an outsider, differences may arise in how each individual approaches and accepts the message. Consider what these ISEs said about communicating with non-technical staff members:

*"Well if they're non-technical, it's always a problem. Just trying to normalize everything into a normal conversation. With a couple of programmers, it might take 2 minutes, but 30 minutes with someone who's non-technical. So I guess just being in front of a group that's non-technical is kind of difficult."*

Dysfunction is also caused by stereotypes. An individual can have a biased opinion about the behavior and action of another member who belongs to a different subculture. While stereotypes can be harmless on the surface, often these preconceptions can be detrimental to the communication between subcultures.

*"There is a huge sort of, pardon the term, "Amish" kind of sensitivity to technology here. They are afraid of it. They don't trust it. They don't embrace it for what it can deliver."*

Discrepancies describe how an individual's responsibilities are conducted in a manner that is different from the way others within the organization or outsiders perceive their responsibilities. Discrepancies on the importance of a particular task or issue can create conflicts between subcultures as indicated by the following quote:

*"I can think of a lot of things that IT professionals consider to be very important but users just don't even think about. The more you know about technology, the more you have a whole set of issues."*

Resistance also describes some of the dysfunction that exists in subculture. This resistance to change is a common problem when one subculture influences the decisions and actions of another. Here is one such instance shared by an ISE:

*"From an IT standpoint, when you are making a transition from a legacy system to a new system, you are going to get a lot of resistance from people who have built their careers on knowing everything about the old system. That's their power in the organization. They are the person everybody goes to be able to get*

*things done on this obscure information system they have been working on for years, and you are taking away their status in the organization"*

## 4.2 The User Perspective

Our data showed that users' perceptions of IT are closely related to their interactions with ISEs in the organization. Respondents from the users group explained that computers are basically difficult to understand, have "magical" properties, and are vulnerable to breakage. They attribute this either to the technology itself or to their own lack of skills, abilities, or experience. IT problem solving went smoothly only when the ISEs involved had positive qualities of "good teachers", responded quickly to problems, wrote down directions, and explained how the computer works:

*"She gets right to it and explains it to me."*

*"She writes everything down. I really need that."*

*"He's great. He doesn't talk over everyone's head, you know?"*

Negative qualities associated with ISEs included explaining too quickly or using inaccessible jargon, responding slowly to problems, and not explaining what happened:

*"What I want is a system that is truly user-friendly. That I don't need to call someone on the phone to ask a question then I have to watch them come in and go zoom, zoom, zoom, zip, zip, zip with a mouse and they've totally lost me so I've never learned anything."*

Another respondent, an administrative secretary of a hospital laboratory, explained the feeling of being ignored by the ISEs in her hospital:

*"They don't always take you serious. So then you have to physically walk over and say "Come help, now!" (laughs) like "Please! You guys aren't listening!" So that's very frustrating, because when it (the system) goes down and down and down, and you know you keep doing everything to bring it up again and it keeps going, and you physically have to walk over and say "what is really going on?" that's troublesome."*

In many cases, employees reenacted stereotypes of ISEs in their descriptions, especially those related to their lack of communication skills. Respondents often assumed that users expect IT staff to speak using technical jargon that they will not understand. On the other hand, many respondents recognized the unconventional role and the importance of the job and the value of the IT personnel's skills. The following excerpt from a user was fairly typical:

*"I count on her (the IT staff) in a lot of ways, not just the computer. It's almost all on her shoulders, so to speak... It must be difficult for her, having us on her case all the time."*

Some users expressed an outward sense of indifference towards IT itself but at the same time, an appreciation for ISEs rapid

service in solving problems and allowing a return to their job responsibilities:

*"If my computer isn't working, just fix it, I don't care what the problem was, unless it's something I did wrong then let me know I did it wrong... I am sure some people want to know every stinking thing about it but I don't. (laughs). If I wanted that much information, I would be in his department."*

### 4.3 Manager's Perspectives

Another important perspective for understanding ISEs roles and conflicts in the workplace are the people who direct and supervise their activities. Managers explained that they do not always have technological backgrounds and find themselves "behind" their IT staff. At the same time, they must react to the demands of work and are constrained by the high cost and the rapid change of IT. Administrators, like the one quoted below, recognize that they do not always know the technical jargon:

*"I am always amused when I say, 'Geez. I don't know what those letters stand for.' Two other people in the room who are supposed to be experts say, 'Neither do I.' ... (Laughs). They wouldn't say it because they are afraid to admit it."*

While lack of knowledge can be considered a liability, some respondents in our study thought that being non-technical might be an advantage, especially under circumstances where specialized training could result in "tunnel vision":

*"I think it is dangerous to have a technology expertise...If you are a Novell person, you see all solutions in terms of Novell solutions. And if you are a UNIX person, you see it as a UNIX. If you are an IT person, you tend to think about things that way... There are some advantages to not coming out of any of that."*

At the same time the respondents expressed that they must rely on and trust ISEs. Managers rely on ISEs to contribute to the institution's mission by handling the details of IT maintenance, security, and support. They also rely on ISEs to help serve their staff so they can be the most efficient and productive, while at the same time protecting the organization from outside threats.

### 4.4 Collaboration

As seen in the results above, there is apparent dysfunction between members of subcultures as they communicate with one another. An important issue that surfaces concurrently to the notion of dysfunction is adaptation in which members of subcultures learn to accommodate and coexist with one another. When there is a specific task at hand, subcultures need to adjust to each other's way of doing things and work together towards that task, with minimum conflict.

Adaptation can refer to the positive advancement or changes that one experiences as he communicates with another organizational member. While some of the responses are very specific to the process by which an individual adapts to her work based responsibilities, for coding purposes, we have focused the notion of adaptation to relate to the interaction between subcultures. Although adaptation could include a broad spectrum of situations

when an individual gets accustomed to a particular procedure or purpose, we recognized instances where there is adaptation between two or more subcultures.

We divided this code into two subcategories: Accommodation and Assimilation. Accommodation refers to the situations when members from subcultures learn to become accustomed to working together. When one accommodates, there is a level of cooperation and acceptance that occurs so that an individual can become acclimatized to doing something that may differ from his customary way of doing something. From our data, an example of accommodation is when two distinct subcultures, the workers (general employees) and the training committee (often the ISE's), make the necessary adaptations to ensure that the worker will have the right skills and be able to accomplish the assigned tasks. It indicates collaboration as well as cooperation between the two parties if one party is facing difficulty in a particular arena. Assimilation, the process of integrating ideologies and behaviors of a more dominant subculture into one's own practices, was also found readily in our data. When one becomes assimilated with a particular way of doing something, he inculcates the new practice and learns to adapt accordingly. One can adapt to another subculture's forms and practices through education and training.

*"You can force people to choose good passwords but some of it has to be done with education. Some people just legitimately do not understand what's going on. Some of those people are motivated to do the right thing if they are educated."*

Since subcultures are varying in their behaviors and ideologies, there are bound to be clashes between members about how a particular issue should be dealt with effectively. Organizations need to address the dysfunction that exists between subcultures and attempt to find effective ways to correct these problems. Adaptation is the key to this growing crisis and organizations need to invest more resources and time in this process for effective subculture interaction.

## 5. DISCUSSION

Our study explored whether ISEs form a distinct occupational subculture and whether conflict existed between this subculture and other parts of the organization. Results from our coded interviews suggest that ISEs have many characteristics indicative of the existence of a distinct occupational subculture. Results also suggest that there are dysfunctions that accompany interaction between organizational subcultures.

These examples suggest that the dysfunction in communication between these groups can have substantial negative effects on organizational functioning.

Next steps in this line of research could include the development and testing of some structured measures of subcultural conflict, followed by an attempt to link the reported level of subcultural conflict to individual, group, and organization level outcomes. Through an occupational subculture lens, we would attempt to identify remedies and solutions that could potentially prevent these conflicts from occurring. The present research, though limited to a small number of organizations, provides a preliminary indication that ISEs do comprise a unique subculture and that conflicts between that subculture and the larger organization may impact the effectiveness of IT.

This study suggests that organizations need to find ways to bridge the gaps between the subcultures so as to facilitate more effective communication as well as collaboration. Our data showed that within ISEs subculture is an appreciation for collaboration, and good HR strategies should promote this collaboration and capitalize on this quality.

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