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Abstract: The concept of telecommuting is trans-national and is recognized by all advanced economies as a boon to their population's wealth and life styles. In general, increasingly private and public organizations are adopting telecommuting as a business strategy for reasons such as global competition, 24 hour's customer service, technology improvement, workers desire for increased flexibility and the need to reduce overhead. However, the growth of telecommuting community is slow. This paper analyzes the reasons and recommends the possible ways to promote telecommuting in organizations.

**How to Change Corporate Management Style to
Promote Telecommuting**

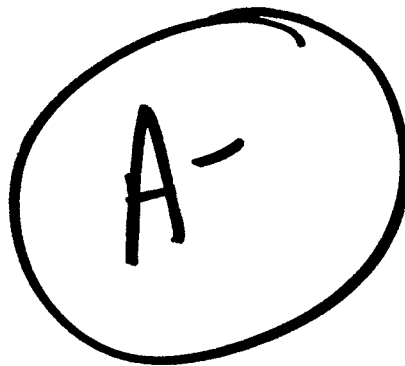
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How to Change Corporate Management Style to Promote Telecommuting



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I INTRODUCTION

The concept of telecommuting is trans-national and is recognized by all advanced economies as a boon to their populations' wealth and life styles. Singapore, with its determined policy to outstrip the USA on per capita income, possibly has the most complete telecommuting network, closely followed by Japan, also publicly embracing telecommuting. In the USA, President Bush promoted telecommuting, and the Clinton administration, announcing the information superhighway, endorses it. Telecommuting offers a way to contain consumption of fuel with important implications for the oil industry and for the balance of payments of most economies. The strong corporations such as AT&T, Pacific Bell, IBM, GTE and many others are big promoters of the telecommuting concept. In 1995, AT&T decided to hold a companywide telecommuting day and was so enthusiastic with its results that they wanted to share its joy with all America. Joining with several departments of the U.S. government and the Association for Commuter Transportation, they organized a week long program called "Telecommuting America" during the week of October 23-27, 1995 [1].

"Telecommuting America" is the first nationwide public awareness, information and education program focussing on the benefits of telecommuting and non-traditional work environments such as virtual office, work-at-home and more. The vice president Al Gore declared, "It will provide an excellent opportunity for American businesses and workers to learn about and experience the benefits of the communications revolution." [1]

Telecommuting means working whenever and from wherever the work is needed. It opens the work horizons by creating office without walls, an office that, in fact can extend to an airplane passenger seat, satellite work center or home dining room located anywhere in the world. Telecommuting can also take place in "flextime" giving both workers and employers an opportunity to operate during the hours that are best for them [8]

Telecommuting is an encompassing concept that has emerged as an umbrella term referring to the wide range of alternative officing arrangements. The term is often used to symbolize the substitution of computing and telecommunications technology for the traditional automobile or bus commute. It's a marriage of contemporary work style with innovative technologies [1]. Telecommuting is the partial or total substitution of telecommunications technology for the trip to and from the primary workplace along with the associated changes in policy, organization, management and work structure. Simply put, it's moving the work to the workers, instead of workers to work! [2]

The method of telecommuting dates back to 1877 [3]. The first telecommuter on record was a Boston bank president, who arranged to have a phone line strung from his office to his home in Somerville, MA. No one called it a "telecommuting" but a smart business! In 1963 a programmer on ARPANET Project in Santa Monica, CA, reluctantly resigned from the project. His wife was expecting a difficult pregnancy and was confined to bed. He needed to stay home to care for her. Art Rosenberg, a member of the project team, suggested installing an extra phone line to the programmer's house and letting him program from there using a teletype

machine. The grateful father-to-be responded by putting in marathon 18 hour workdays from home [3].

The term telecommuting was invented in 1974 by Jack Nilles, a rocket scientist working on NASA satellite communication projects. While stalled one morning in gridlock traffic on Santa Monica Freeway, he spotted an electronic signboard "MAINTAIN YOUR SPEED". Nilles was going zero miles an hour! This convinced him of definite potential of telecommuting. Later he paved the road of telecommuting in the state of California [3] [4].

Today about 10% of American Workforce (more than nine million) telecommutes [3] [4]. Forecasters predict that the number will grow to 20 million by the turn of the century [5]. A recent study commissioned by Bell Atlantic estimates that two million American businesses support some kind of telecommuting program [3]. The federal government plans to have at least 3% of its workforce telecommute by the end of next year [3].

In general, increasingly private and public organizations are adopting telecommuting as a business strategy for reasons such as global competition, 24 hour's customer service, technology improvement, workers desire for increased flexibility and the need to reduce overhead. The study estimates that employee who works home two days a week saves the company on average \$12,000 per year [6].

Despite the advantages and benefits mentioned previously, the growth of telecommuting community is slow. The primary reasons include concerns from employer and employee, social and personal ramifications. These are exactly the motivation behind this research. Successful telecommuting is not brought about by electronics and economics alone. Managers need to be alert to the human issues involved and to measure the results of increasing number of telecommuters. Later in this paper, the reader is made conversant with the benefits and issues in telecommuting from employee as well as employer point of view. Each issue is carefully assessed and an attempt is made to present the resolution. The targeted audience for this research is employee, employer or anyone that wants to be part of telecommuting community. Finally the paper attempts to make some recommendations to the telecommuters as well as employers to make the practice of telecommuting a growing success.

II TELECOMMUTING: WHY or WHY NOT?

2.1 Benefits of Telecommuting

There are many tangible benefits of the telecommuting such as:

- Increases worker productivity by as much as 15 to 20 percent
- Cuts business cost \$2 for every dollar invested in technologies.
- Cuts corporate real estate cost by 25% to 90%.

- Increases free time for many workers, leading to improved family life, an increase in social, religious, and volunteer activity, and improved neighborhood quality.
- Saves cost of parking for employees and reduces the amount of physical space a company needs for parking spaces.
- Limits the strain on overtaxed transportation systems and reduces air pollution.

For managers and workers alike, the most successful telecommuting programs are those in which the company's available resources are being properly utilized. Telecommuting offers employees flexibility and usually results in increased productivity, but there are some problematic issues with telecommuting programs. Both managers and employees should know ahead of time the advantages and disadvantages of the program so that they can plan accordingly.

There are many potential benefits of flexibility that locational independence provides. For an employer, those benefits may include the ability to recruit the best workers anywhere without requiring them to move to a central location, the ability to assemble and disassemble teams on an as needed basis, the ability to offer improved customer service through coverage over longer hours and a greater geographical area, and savings in overhead cost through more efficient use of space [7]. Ability to retain valued employees and customers when company changes its location. Also, it helps to meet clean air regulations by allowing worker to telecommute. Telecommuting provides fast recovery from disaster damages like an earthquake, hurricanes, floods, etc., as the corporate infrastructure divided in different areas. Telecommuting creates greater mutual understanding of goals and objectives between the employer and employee.

According to Link resources, telecommuting could increase employee productivity by approximately 20 percent [12]. Productivity increases as telecommuters experience less distraction at home, suffer less stress, are able to work flexible hours, and as a result of these desirable working conditions, they stay highly motivated [8].

Passage of the clean air act by the U.S. Congress in 1992 has spurred companies to find alternatives to commuting for their employees. For this reason one of the largest beneficiaries of telecommuting is the environment. With fewer commuters on the road, traffic congestion is reduced. If we all worked at home only once a week, we'd cut traffic by 20%. Energy is conserved, demand on transportation infrastructures is reduced, and air pollution is cut significantly [8].

The cost to start telecommuting a project is low. For example, when JC Penney got lots of order from company's catalog book, they decided to implement the telecommuting project by providing two phone lines (one for incoming calls and other for outgoing) as well as a PC and some other equipment to other employees. Penney found that start-up costs were less than half that of an equivalent office installation [8].

Telecommuting is also useful in minimizing the impacts of other uncountable events such as inclement weather, highway construction, or special events. In the Snow belt, during “Snow days”, local school’s closure could keep the students at home, forcing many parents to stay at home, rather than go to work, in order to supervise children usually at school. And even employees without children can find it difficult to even get to the office. These interruptions play havoc with deadlines and deliverables. Organizations with telecommuting programs in place, are much less affected by the such unpredictable events [8].

Telecommuting has been embraced in hundreds of organizations in a wide range of industries. The benefits of telecommuting, such as improved employee efficiency, schedule flexibility, overhead reductions, improved employee retention and attraction, are desirable outcomes for any management process. Telecommuting is a valuable management strategy for improving the effectiveness of any organization [8].

For a worker, the benefits of locational independence may include a more desirable life style such as a greater choice in residential location, type of job, and allocation of time between work and personal interests [7]. By staying at home, employees could put more working hours if needed. By taking initiative and innovativeness, he is able to concentrate on quality of work. Telecommuting reduces chances of sick calls, and interpersonal conflicts. The employees are able to be a role model to their children because of closer involvement with family. Telecommuting helps to reduce the cost of commuting by saving on gas & other related expenses.

For society, benefits may include greater economic efficiency, opportunities for economic development in underdeveloped areas, expanded employment opportunities for individuals with limited mobility, and more efficient use of the transportation infrastructure [7].

2.2 Disadvantages of Telecommuting:

For an employer, disadvantages may include the direct costs of investing in the requisite technology, the intangible costs of learning new tools and developing new style of management suited to telecommute work, less opportunity for certain kinds of serendipitous productivity, such as, clearing up of a misunderstanding during a chance meeting at the coffee pot or lobby talks etc., and some loss of telecommuting workers’ identification with an organization [7]. Other disadvantages to the employer are: an increase in the operating cost, erosion of corporate/company culture, and loss of team synergies.

Psychologically manager may feel that he is losing control, as he is unable to measure the productivity rate of work by employee. Manager needs to adapt to control/manage telecommuters. Some technological problems may decrease the productivity level of the company, like, if a central network goes down then telecommuters cannot access to the information needed to perform their work. There are concerns about privacy of corporate/company documents getting hampered.

For an employee, disadvantages may include loss of privacy, loss of identity in the company, the blurring of boundaries between work and personal activities, fewer chances to interact socially with colleagues, and the increasing domination of work over other aspects of life if the employee is expected to be constantly on call for their employer. Employees may bear a part of the costs of a new distributed work style if, for example the employer allows telecommuting only by those who are willing to provide their own computers. Loss of job security and fringe benefits can result from any shift toward a greater use of temporary and contract workers and the flattening of organizational hierarchies. Increased social isolation may be another negative outcome for some telecommuters [7].

For society, a negative consequence of greater flexibility, the ability to enjoy a telecommuted work style may be inequitably distributed, and the socioeconomic gap between the information “haves” and “have not” may continue to widen. The off-shore relocation of some location-independent work, increase automation of jobs, and associated organizational restructuring may contribute to increased domestic unemployment. Finally, greater flexibility for employee in choosing where to live may further exacerbate urban sprawl and result in too-rapid growth in rural areas [7]. The positive aspects of telecommuting have been studied and documented [1]. An example of this is as mentioned below.

- There are about 22,500 AT&T employee who telecommute regularly.
- 76% felt that they accomplish more when they work at home.
- 32% said they spend the non-driving time with their families
- 29% said they use the non-driving time to do even more work.
- A typical telecommuter avoids generating 43 pounds of pollution, saves two gallons of gasoline and 41 miles of travel a day by working at home.

III MINIMIZING THE DISADVANTAGES

In previous section, we discussed the issues and concerns related to the practice of telecommuting from the view point of employer as well as employee. Some employees are not suitable for telecommuting and should not telecommute. However for those who could telecommute and want to do so, their concerns must be addressed by the management. It was observed that all the employee's concerns could be broadly divided in three major classes.

1. Risk of Isolation and Effects of it on employee's professional career.
2. Effects on relations between manager and employee.
3. Fear from employee if he could balance the professional work life and personal life.

On the other hand, the concerns from employer were varied and multifaceted. We divided them in following classes.

1. Loss of Control and Effects of it on management.
2. Cost of Implementing (direct and indirect).
3. Security concerns related to the employee and information.
4. Unavailability of tools to manage telecommuters.
5. Effects of telecommuting on the team synergy and on a project.
6. Concern if the employee could self manage and be productive.

All the above-mentioned concerns are valid and can be justified however it can be easily seen that many of them are interrelated. For example, loss of control from management reflects as “isolation” in employee’s mind. Some employees who give importance to personal congeniality and relations with their manager get concerned about the effect of telecommuting on it. This finally results in to “isolation” and losing team synergy and team spirit. This seriously could hamper his visibility in the organization.

In the following section, we will take a closer look at these concerns and examine their impact on employee and employer. In doing so, we will address the issue without compromising management goals. We will begin by addressing the employee issues.

3.1 Employee Issues

3.1.1 *Risk of Isolation and effects of it on the professional career*

This is by far the most stated concern from the telecommuters all around the world [3][4][5][6]. By not working at office, it is very likely that the management simply forgets about telecommuter when some opportunity for growth arises. It is likely that the telecommuter is taken granted for and becomes partially or completely invisible. He or she may not be able to take part in social events such as project milestone celebration, group get-together and other important events that keep him/her informed and provides an excellent opportunity to increase his visibility outside the regular realm of social interaction. It is often said, “It is perhaps more important who you know than what you know as you move up in your professional career ladder”. The other side of this problem is that employee’s peers may not be immediately accessible and vice versa. The peers also are likely to take the situation as granted and rather than consulting him/her, consult who is readily available and take some decisions. This situation makes the telecommuter employee feel less important and of less status. Which directly affects his/her morale and telecommuter starts feeling alienated from the whole

company culture. All the factors mentioned above eventually lead to the feeling of “job insecurity” in the mind of telecommuter.

Now let's look at this issue from a different angle. The purpose of telecommuting should be primarily to *reduce* the time you work from office and not to *eliminate*. The NY firm Link Resources has been tracing the growth of telecommuting and seen that telecommuters telecommute 1-3 days a week [12]. The growth of telecommuting is not “growth of the man-hours at home” per person but it is the growth of percentage of workforce telecommuting on mutual exclusive basis. There should be some criteria on who should telecommute, how much and when? Toward the end of this paper, we will describe a mathematical model that helps managers to see the potential of telecommuting in an employee. By limiting the number of telecommuting days, the employee can resolve the issue of “invisibility”. In fact, telecommuter should realize that telecommuting is an exclusive privilege and not a right. By allowing to telecommute, the employer is showing trust and faith in the employee and giving a chance to demonstrate it. Case studies from corporations such as AT&T and Pacific Bell indicates average 20% increase in productivity in employees who telecommute. It would be hard for an employer to oversee this fact and make the telecommuter obsolete [10]. The telecommuter should also keep in mind that by telecommuting he is helping his company to keep expenses down, keep the air clean and keep the community happy and healthy. As far as the opportunities for future growth and promotions are concerned, a Texas-based telecommuter consultant Joanne Pratt discovered, in a survey of over 17000 telecommuters, that teleworkers receive a higher proportion of promotions than their stay-at-work counterparts [11].

3.1.2 *Effect on Relations between employee and manager*

This was the second highly concerned issue in the minds of telecommuters and in reality, it is related to the issue we described before. This issue is significantly connected to human psychology. Man is a social animal and it is one of the most powerful quality that separates him from animals. In day to day life we give lot of weightage to the personal relations with our supervisor. In the hierarchical chain of authority, it is our responsibility to keep the manager informed. The healthy relation with the manager helps in staying visible when any growth opportunity arises. By telecommuting and working at home, the telecommuter misses the opportunity to have social lunch or coffee with peers and more importantly with his manager. By working at home, it is likely that the manager fails to see the personal dimension of telecommuter. This may put the telecommuter at great disadvantage.

To avoid this, telecommuting should not be done full time. This means it should be limited to 1-3 days per week. It is important to note that by allowing employee to telecommute, his/her manager is placing him/her in very exclusive employee category of whom can be trusted and who can be self sufficient for a major portion of the work. By limiting the telecommuting days, employee can still remain visible. In fact, it is very likely that telecommuter would be seen as role model by management as he helps keep expenses per employee less and increases profit per employee. It demonstrates that the telecommuter is very capable of managing himself/herself and does not need to be *managed*. This property could easily lead telecommuter to performing some more managing functions thus allowing him/her to move up in the

management ladder. The study shows that they are more likely to get promoted than their peers at work [3][4]. This is probably one of the most rewarding event in the professional life of telecommuter.

3. 1. 3 Fear from employee if he could balance his work life and personal life (Family Stress)

This is another concern in telecommuter's mind and it gives insight to his manager. This is where the telecommuter needs to prove the responsibility and trusts his manager has shown in him, and it leaves him wondering if he could be able to pass this test. In fact, it could lead to significant stress on telecommuter and his family. Atlanta's teleworker Dan Mendez reports that his wife resents leaving for work now that he is able to stay at home. Sherri Merl, writing in NY times (Oct22, 1995) jokingly told her husband's boss that along with a laptop, fax and phone line, his company should also provide marriage counseling for dual-career telecommuting couples [3]. Children can get confused too! It may be difficult to explain to them why telecommuter is at home but is working! The proximity of telecommuters office to the family, children could surpass the distractions encountered in the office.

All these issues, can be resolved by following certain rules and making family members follow them. Surprisingly, this is the issue where an eager telecommuter starts doubting his/her capabilities which are really a function of manager! This is just the beginning of the transformation. Because the manager has allowed the telecommuter to telecommute, he/she feels the pressure of trust and faith his/her manager has shown in him/her, which forces' him/her to see the whole situation from manager's point of view and starts managing himself/herself.

The proposal of telecommuting usually comes from the employee first. It is employee's responsibility to convince his/her manager that it could be done and it could be done effectively! "Hewlett-Packard (HP) puts the responsibility in employees to prove how they can do their job by telecommuting and how their objectives could be met", said the Human Resource staff from HP [9]. In 1995, HP implemented telecommuting and virtual office programs for its sales department. Employees could decide whether they wished to stay in the office, telecommute a few days a week or move out of office completely. Dick Knutdsen, HP's manager of sales force productivity explains, "We surveyed our sales force and found that the office was not a good place to get work done." He reports that sales have gone up, productivity increased, and more time is spent with the customer [3]. Today, many folks from manufacturing are successfully telecommuting!

We hope that the discussion above has helped prospective telecommuter and their manager alleviate their fears and concerns. It also gives a manager an opportunity to look at the telecommuting practice from the employee's side. It can be concluded that the potential resistance need not come from the management alone but it could come from employee itself. However, the majority of concerns about telecommuting practice come from managers of telecommuters.

For a successful telecommuting program, it is very important that both the concerns from employee and employer are addressed. Now that we have attempted to address the concerns from the employee, next we will attempt to address concerns from the management.

3.2 Concerns of Employer or Manager:

3. 2. 1 Loss of Control and Its effects on Management

This was by far most stated concern from managers when they were told about option of telecommuting for their employees [3][4][5][6]. “How can I manage the employee if I can’t see him?” is the question in everybody’s mind. The ability of accessing the work of employee that telecommutes is seriously hampered in this situation. In many situations, the need for smooth and efficient information flow warrants the presence of a person in office. It is easy to make some decision after talking to the employee face to face at the lunch break or similar event. How can a manager *monitor* the telecommuter for quality of work, the time spent on work and other work related activities? How his role as a *leader* be played if the entity to be led is not present? What management tools are available to manage telecommuters? If the person who telecommutes also acts as leader for project, this may seriously affect the project management and eventually lead to loss in team spirit and synergy.

All the concerns mentioned above are valid and justifiable. However when you analyze from the other point of view, many of them automatically get addressed. As far as loss of authority is concerned, it needs to be redefined. Successful telecommuting demands that telecommuters and managers move away from the traditional management paradigm, which stresses a hierarchical chain of command, and move towards more collective, interdependent balance of power. In telecommuting environment, manager’s role should shift *from controlling to facilitating*. The telecommuting is a great tool to show the manager’s trust and faith in employees work. For knowledgeable and middle management people, you know if they are working from the quality and quantity of deliverables, thus monitoring telecommuters is really not necessary. Also technology has provided us with video-conferencing, high speed ISDN lines and many other tools, by use of which, information flow can be made very smooth and efficient. Finally, as mentioned before, not everybody should be telecommute and preferably not all the time. These are the decisions the manager and telecommuter make at the beginning.

3. 2. 2 Costs of Telecommuting (Direct and Indirect)

The other concern many managers have is related to economics of telecommuting. There are direct and indirect costs when implementing a telecommuting program. The direct costs include cost for ISDN line, telecommuting equipment and infrastructure for the telecommuting. These costs depend on the level of telecommuting expected in the organization and can vary from few hundred dollars to few thousand dollars. The indirect costs include added expenses for telecommuting support staff, training costs for employees and managers. In many times, the direct costs are one time only and sometimes negligible if the organization already has a strong telecommunications infrastructure. Although these costs could be high for a starter, cost completely gets superseded by the “value” and “benefits” added by telecommuter

[5]. Many of these could not be calculated on the dollar basis so we will mention them on subjective basis.

1. Increase in Quantity and Quality of deliverables.
2. Increase in employee motivation and hours worked.
3. Probability of Retention of good employees increases which reduces the recruitment costs.
4. Time lost by commute problems reduces.
5. In case of full time telecommuting, significant reduction in the central office space per person cost goes down.
6. Sick buildings syndrome possibility is reduced which helps reduce sick time lost.

Many case studies undertaken in last 5 years support all the above benefits. In order to see, how these benefits turn into dollars, lets take an example of a large US Insurance company with 1500 people in Information Technology (IT) department [5]. The company launched a telecommuting pilot program for 40 of its IT workers. The motivation for telecommuting was not to primarily to do with time wasted commuting or the need to attract people to commute long distances. In this case, the average time to drive to work was only 30 minutes. The motivation was not even to reduce the direct costs of office space, often the most visible financial benefit to employers. The main motivation for the company was to find a more efficient way of tackling a high tech, team task, without disrupting the flow of work and without alienating any key personnel. In this pilot program, 40 people worked at home 3 days a week and saved round-trip commute time of 11000 hours a year, normally spent fretting through traffic. The computer programmers (12 out of 40) produced a greater quantity and quality of computer programs. Using standard calculations, they avoided office politics and gossip to the tune of 2500 productive hours a year! On a professional Average Contribution To Gross Revenue (ACTGR) rate of \$60 an hour, the total of 13500 hours a year is worth \$810000 to the department's budget. Recovering only a part of that benefit, leaving the telecommuters and their families personally benefit from the rest of the released time, explains the success of this quietly formulated, a low-key pilot project [5].

3.2.3 *Security concerns related to the employee and information*

It is estimated that about 70% of the total American workforce will be handling and generating information by year 2000. In today's world information is power and must be kept protected [3]. Security aspect of telecommuting practice is one of the biggest worries for corporations. When the work force is dispersed and out of sight, maintaining the secure information channel with them is a big challenge. In the context of information technology processing, a security definition is the process of protecting the confidentiality, integrity and availability of information. The importance of security in all its aspects - physical, process, procedures, personnel and system should not be underestimated. The computing threats, hacking, transmissions of confidential information over unsecured transmission lines are just few to mention.

As a general principle there should be no more risk to security from telecommuting than there is from working from office [5]. However there are certain types of threats (theft of equipment, computer viruses) that are more likely because of the more flexible environment, but compensatory security mechanisms can be employed to counter these threats. In general, following are the threats encountered in telecommuting (and even in office working)

1. Theft of data, equipment.
2. Unauthorized access, loss of data integrity.
3. Physical and environmental safety.
4. Identification and authentication.
5. Security management.

All these issues could be addressed by formulating a security policy and adhering to it. Every employee of the organization has a responsibility for the security of the systems he/she uses and the information which he/she generates, processes and transmits. Also the security measures need to be decided by the type of information the telecommuter is handling. For example, if a system contains information of a National Security nature, that system is unlikely to be a candidate for teleworking access.

3. 2. 4 *Management tools for teleworking*

“How can we supervise telecommuter if we can’t see them?” “Are there any managements tools available for such new concept of telecommuters?”, The answer to this question is Yes.

The advances of technology have provided us with many tools for managing telecommuters. The high speed ISDN lines enable telecommuter to work as well as allows manager to have a video conference with him/her, in case “face to face” communication is required. There are many software tools that would allow the managers to monitor their employees and facilitate the communication between them. For example, softwares such as NetManage® and NetMeeting® provide a common whiteboard over networks and allow people at different locations to have a meeting or discussions. The electronic mail (E-mail) is increasingly becoming a communication tool between employee and manager. The manager could know what an employee is doing by perusing the status report he sends weekly. Similarly he can keep an employee informed about organizational announcements through tools such as E-mail. On average, telecommuting is done from 1 to 3 days per week [3][12]. This way, an employee still is able to keep in touch with the people and maintain his/her visibility.

It is also advised that a training program for managers must be in place before telecommuting practice is adopted. Periodically the training should be updated in order to enable managers cope up with fast changing environment.

3. 2. 5 *Effects of telecommuting on Team synergy and Project Management*

This is a valid concern from the point of view of managers and if not addressed, could result in disaster. Telecommuting increases the risk of isolation for an employee and may negatively affect the team synergy. Having a *telecommuting* project team leader, whose guidance is needed frequently to his subordinates is not a good example. When deciding if and how much an employee should telecommute, these factors must be taken into consideration. This problem can be significantly reduced by limiting the number of telecommuting days and managing the telecommuting employees on *mutually exclusive* basis. Not all employees are suitable for telecommuting and its manager's responsibility to explain this fact to the concerned employee and provide him/her with the other kind of support he needs.

In section 4, we will describe some of the criteria for deciding on telecommuters eligibility to telecommute. If telecommuting privilege is given carefully and selectively, the chances are very high that it will work!

3. 2. 6 *Concerns if employee could self manage and be productive*

As a manager of telecommuter, the manager is in unique position in management hierarchy. Before making the decision on if and how the telecommuting could be started/implemented, it is important to identify the need of such. This generally comes from the employee itself. When employee requests an option of telecommuting, it is very likely that he/she had thought it through. In order to address the above concern, the manager could ask employee to explain how successfully telecommuting could be done and company objectives and that of employee's could be met. The decision taken on the basis of rationale from employee is most likely to lead to start of telecommuting program. Hewlett Packard adopted this approach 3 years back and made it employee's responsibility to justify the telecommuting option. Today many personnel from manufacturing regularly telecommute few days a week [9][3].

3. 3 Discussion

This section attempted at documenting major issues from view point of of employee and the employer or manager. It was seen that about 30% of total issues could be attributed to the employee while majority, 70% of them were raised from managers. Although managers were more concerned about practice of telecommuting in their organization, the rationales behind those concerns was highly correlated with the employee's issues.

It was shown that the issues stated could be addressed effectively by appropriate training and education. Today's corporations and their managers, after examining this section, should be more confident about the practice of telecommuting. There may be some pitfalls to this practice. However, by proper planning and taking certain precautions, both the employer and employee could harness the potential offered by telecommuting.

It is important to note that the selection procedure of telecommuter is a vital factor on which success of such programs depends. Not everyone should telecommute and as a starting point, telecommuting should be limited to 1-3 days a week. There are certain characteristics a

potential telecommuter needs to possess. Also the type of work, experience of work and communication needs decide who should be telecommute. The next section is dedicated to aid the telemanagers in this selection process.

IV RECOMMENDATIONS TO MANAGERS

In the previous section we attempted to address the issues involved in the practice of telecommuting. It was stressed that the success of telecommuting program depends upon proper selection of telecommuter and managing him/her properly. Determining which of your employees will make good telecommuter requires consideration of the individuals work responsibilities, habits and if applicable whether his home situation is conducive to telecommuting. We list the following business related criteria for selection of telecommuters.

Business-related criteria for selecting telecommuter:

4.1.1. Supervision and Feedback

As mentioned in the previous section, working at a remote location decreases the amount of supervision and feedback immediately available to the employee. The employee must be able to do some portion of work alone without any supervision and feedback. As he will be working away from the office during telecommute time, he must be able to make correct decisions. Also, he must be empowered for taking certain decisions on his own. It should be also made sure that peers don't require his supervision. As the employee starts telecommuting, he faces the risk of isolation and there could be impact of his absence in the office on other team members who need his guidance from time to time. For example, we recommend the project leader to limit his telecommute days to one or two.

4.1.2. Social Interaction

Isolation is the big adjustment telecommuter has to make. We mentioned in previous section that this adjustment could be minimized by restricting the telecommute days at the beginning. The telecommuter needs to have ability to compensate for such isolation in other ways such as phone calls, E-mails etc. The telecommuter should be confident enough that he can catch up with his peers and stay informed when working at office. Also telecommuter should be a person who can be easily approached by means such as E-mail/ phones etc. by his peers. If a person needs social interaction on a frequent basis in order to work productively, he probably is not suitable for telecommuting.

4.1.3. Organizational and Time Management Skills

The employee must have ability to manage his time efficiently and stay organized. It is easy for a person to stay focussed when working at office but when he starts telecommuting, the task becomes difficult. The more organized the employee is, the more productive he will be as telecommuter.

4.1.4. Personal Characteristics

As a ground rule, the employee must be self motivated if he wants to be successful telecommuter. He must be able to develop regular routines, set the goals and meet them. Successful telecommuters are people who can reward themselves for being productive.

4.1.5. Job Performance

It is recommended that before allowing an employee to telecommute, his past 2-year performance evaluation be examined. If the employee is new to the organization or group, it is probably too soon for him to start telecommuting. This is true irrespective of how many years of experience he has in his work. As a guideline it is recommended that the employee has following prerequisites

1. Experience more than two years in the type of job he is performing. For example, a new college hire may not be suitable for telecommuting because of the lack of domain knowledge.
2. Employees existence in the group for at least one year and preferably two or more years.
3. If the person has successfully worked as a team on at least one project in the same group, he could be a successful telecommuter. This fact helps the employee gain credibility and respect. Also peers recognize him for the work he did in the previous project and they are very likely to attach him to some specific portion of the project or technology. The telecommuter will thus have enough power and authority on his subject which would force his peers to consult him irrespective of whether he/she is working at home or office.

4.1.6. Tenure

The tenure is very important consideration for selection of telecommuter. Employees who have been on the job a long time are naturally more familiar with their tasks as well as their co-workers. If co-workers are unfamiliar with the telecommuter, they are less likely to call when they need assistance or input. The telecommuter may also be less likely to contact people that he doesn't know. It is highly recommended that the telecommuter be a full time employee and not the part time employee or contractor.

4.1.7. Type of the Output /Deliverable and Measuring it

It must be understood that close supervision is not necessary good supervision. In order to manage a telecommuter from distance, there must be objective standards of measurement to assess progress, give performance feedback, and set timetables. "Telecommuting requires that the performance measurements and yearly plans are done seriously and an ongoing monthly review is carried out", said Sandhi Bhide, SQA manager at Tektronix Inc. Before the employee is allowed to telecommute, manager must make sure that the goals are set and a progress plan is in place which would help in measuring employees performance.

Along with the business criteria for selection of telecommuters, there are certain home related criteria that must be taken into account.

4.1.8. Work Space

Telecommuters must be comfortable, able to concentrate and able to mentally separate themselves from the work space at quitting time. In addition, the work space should be such that the family members respect it as a work place and do not disturb the telecommuter. If the high amount of concentration is required on the job, the home situation must support it. If this factor is not considered, the telecommuting could result in reduced productivity. For example, if an employee has a spouse at home who attends to the children, there may be increased expectation to take care of children because telecommuter is at home.

In addition to the selecting the appropriate employee for telecommuting, it is important that certain rules, framework and policy are in place before implementation. Telecommuting requires that both managers and employee move toward a more collective and interdependent balance of power by modifying their roles. Both manager and employee needs to be trained on how to manage each other, since it is a big paradigm change. Many of the managers warned that this change must be carefully implemented as it can change the culture of the organization and thereby affecting morale and productivity. In order to smoothen this transition, in such situations, we make following recommendations:

The organization should establish a telecommuting implementation team to share the responsibilities and support the telecommuting program. This team should include:

- Legal Counsel: To review and customize the agreement
- The Human Resource Dept.: To develop the policy and training manual for employees and managers
- Union (if applicable): To clarify the responsibilities to both the parties involved.

Treat the telecommuting program as any other company project. Establish a program manager and track the progress of the program. Review the policies, address the issues and revise the implementation to adapt to them.

Develop a training program for managers and employees who want to telecommute. Make sure that employees undergo this training before starting telecommuting. The training program should train managers to get away from the traditional management paradigm and to manage employee from the distance. The training for employee should emphasize on what is expected and how to achieve it.

Implement telecommuting on a mutual exclusive basis if it is inter-organization. However if telecommuters belong to the same group working on the same project, encourage them to select common telecommuting days.

If the framework for telecommuting program exists and telecommuters are carefully selected, the program has high probability of success. If some other issues surface while program is in an implementation phase, they must be addressed and adjustments must be made as necessary.

In many of the interviews we conducted during the project, managers insisted that telecommuting should not be full time and must be restricted to two to three days at maximum. They were uncertain about the amount of time that employee can be allowed to telecommute, mainly because of the job responsibilities and type of communications equipment available. Based on the interview inputs, we propose a following mathematical model for deciding how much one should be allowed to telecommute. The model should not be used as a recipe for determining the telecommuting duration per week but it should be used as a guideline while considering the whole situation on more subjective basis.

Procedure for determining the number of days per week employee should telecommute

1. Ask the employee the percentage of job duties that can be done remotely (JT)
2. Determine the number of days employee attends project or group meetings (MD)
3. Determine what percentage of employees time is involved in guiding his peers or subordinates (GT)
4. Determine the load factor used in your organization in percentage (LF) (Typical is 80%)

Needs more exp!

$$T1 = 5 - MD - \left(5 \cdot \frac{LF}{100} \cdot \frac{GT}{100} \right)$$

$$T2 = 5 \cdot \frac{JT}{100} \cdot \frac{LF}{100}$$

$$T_{LIMIT} = \min\{T1, T2\}$$

Needs precision!

5. The telecommuting days should be limited to T_{LIMIT} for the employee. If T_{LIMIT} is zero or negative, employee may not be a good candidate for telecommuting.

V CONCLUSION

Telecommuting is an upcoming trend in the American work force. Although there are many advantages associated with the practice of telecommuting, its growth is significantly limited by the issues involved. These issues emerge from both sides; telecommuters and their managers. During our study, we observed approximate 70% of issues arising from management while merely 30% were contributed by telecommuters. The primary concern reported was loss of control from managers while telecommuters were primarily afraid of isolation. Interestingly, more than 50% of the managers we interviewed, were not sure if telecommuting improves employee's productivity. The primary reason behind this uncertainty could be attributed to the fact that Portland metropolitan area does not have significant amount of telecommuters and

many of the managers did not have first hand experience with telecommuters. The research conducted in this paper strongly suggests the improved productivity as a benefit of telecommuting.

This paper was an attempt to clarify many issues that management (and telecommuters) may have in their minds. We attempted to address the issues that emerged during interviews. We stress that the practice of telecommuting is not suitable for every employee and it should not be adopted full time as a starting point. The selection procedure of telecommuters is crucial in the success of such program in the organization. We stated some of the prerequisites that the telecommuter needs to possess for successful telecommuting. We proposed a mathematical tool for deciding on how much an employee should be telecommute, based on his job responsibilities. The authors strongly recommend considering this tool as a guideline only and not as a recipe to successful telecommuting.

The researcher interviewed limited number of managers, due to limited amount of time and depended on the statistical data obtained from various journals and articles. During this research, researcher primarily focussed on the high-tech industry. As a future research, we recommend that the further work could be focused on other types of industries, and industries specific issues could be addressed. It might be useful to implement the pilot program based on the suggestions in this paper and drawback could be overcome based on the results of the pilot program.

Finally, the authors sincerely hope that this work helps to alleviate the concerns about the practice of telecommuting in the minds of telecommuters and their managers and promote this practice that ensures clean, green and productive environment for our todays and future workforce.

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APPENDIX I

SURVEY QUESTIONNAIRE FOR EMGT520 PROJECT ON TELECOMMUTING (How to Modify Corporate Management Styles to promote Telecommuting)

Sr. No.	Statement	Strongly Disagree	Disagree	Undecid ed	Agree	Strongly Agree
		<i>Please</i>	<i>circle</i>	<i>your</i>	<i>choice</i>	
1.	Telecommuting improves employees' productivity.	1	2	3	4	5
2.	Telecommuting helps telecommuters to balance professional and family life.	1	2	3	4	5
3.	Employee should be trained for telecommuting before it is implemented.	1	2	3	4	5
4.	Managers need to be trained in order to manage telecommuting employee before such program is implemented.	1	2	3	4	5
5.	The telecommuter should telecommute only few days a week and not all days.	1	2	3	4	5
6.	Telecommuting puts companies confidentiality at greater risk than work at office.	1	2	3	4	5
7.	There are not enough management tools available to manage telecommuter.	1	2	3	4	5
8.	Not every employee is suitable candidate for telecommuting because of the job responsibility.		2	3	4	5

Please comment on any other aspect of telecommuting:

THANK YOU FOR YOUR HELP

How to Change Corporate Management Styles to Promote Telecommuting

December 8, 1997

EMGT520

Nikhil Deshpande

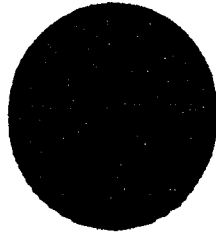
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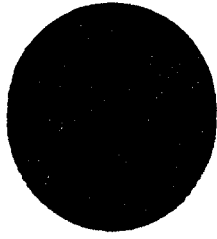
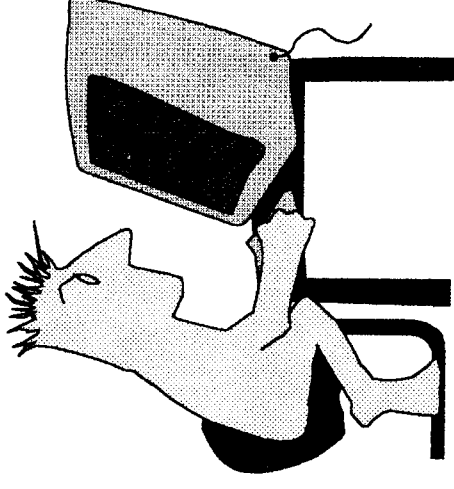
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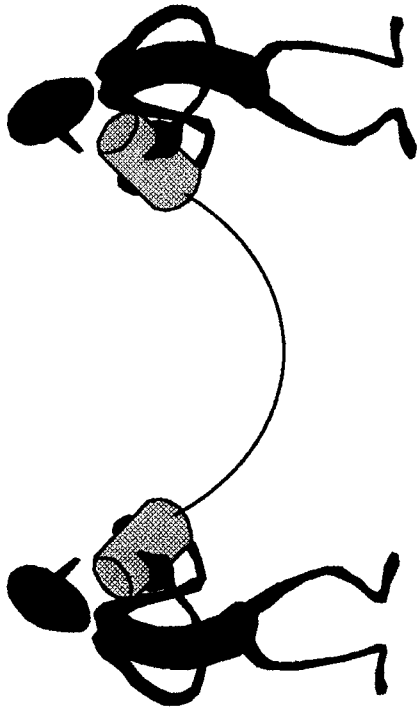
Outline of Presentation

- **Introduction & History**
- **Telecommuting: Concerns and Benefits**
- **Dealing With Concerns**
 - **Employee**
 - **Manager**
- **Recommendations**
- **Concluding Remarks**

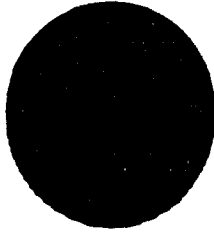


Telecommuting in the Past

- *Commuting* using Telecommunications
- *Commuting* From Distance (*tele*)
- 1870's Smart Business in Boston

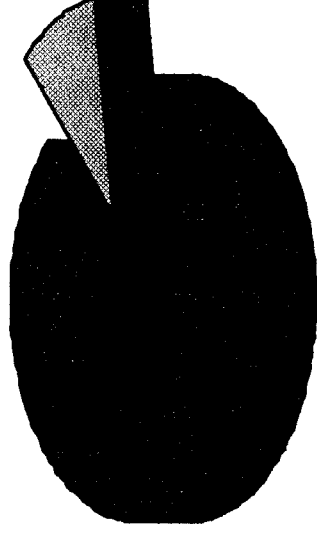


- 1963's ARPANET Project Need
- 1974 NASA Scientist Jack Nilles "*Maintain Your Speed*"



Telecommuting Today: Fact Sheet

- Over 9 Million Americans Telecommute (10 %)
- Projected Growth to 20 Million By 2000
- U.S. Government Participation 3%
- Projects: Telecommuting America
- Supporting Companies: AT&T, Bell Atlantic, Pacific Bell



■ Telecommute

■ Do Not Telecommute

Telecommuting : Concerns and Benefits



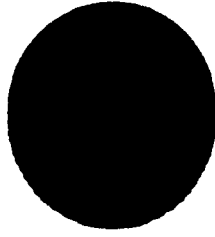
Concerns

- Isolation, Loss of Identity, Job Insecurity
- Fear of Failure
- Loss of Control
- Cost (Direct and Indirect)
- Company Confidentiality at Risk
- Company Culture, Employee Productivity and Team Synergy



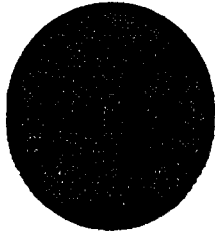
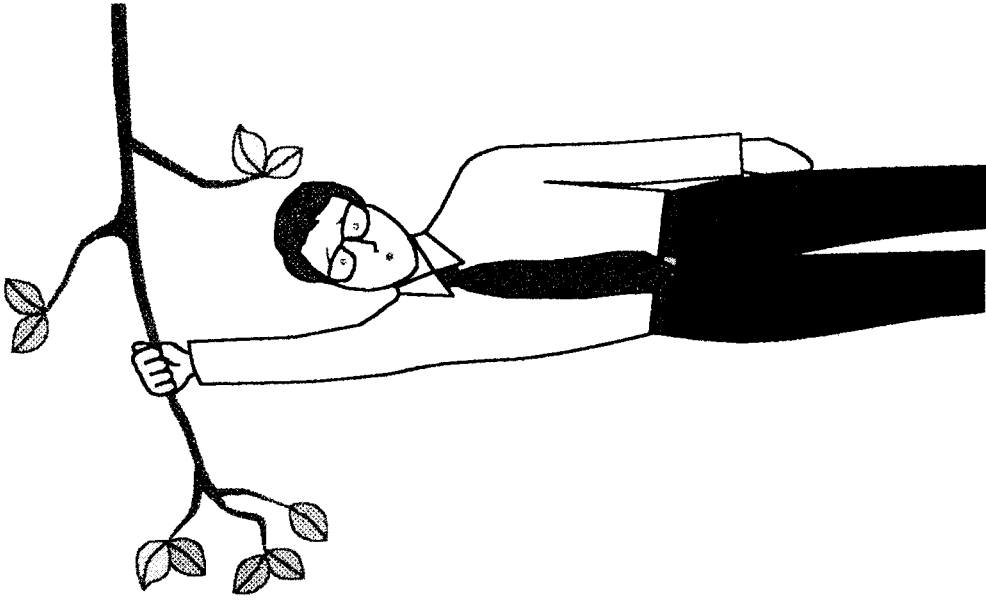
Benefits

- Productivity increase by 20%
 - Sick Reduction, Flexibility, Motivation
- Cuts Corporate real estate by 25% to 90%
- Improved Quality of Family Life for employee
- Helps reduce burden of transportation system
- Helps reduce air pollution
- Increases Coverage (Time and Geographical Area)
- Increases ability to recruit/retrain best
- Helps reduce recruiting costs
- Helps reduce effects of Inclement Weather



Dealing with the Concerns - Employee

- **Risk of Isolation**
 - Loss of Identity, Loss of Status, Job Insecurity
 - Limits on future growth opportunity
- **Solution**
 - Reduce *not* Eliminate
 - Who, When and How Much?
 - Worried about Promotion? See Texas survey
 - After all, “Telecommuting is Managing yourself”



Dealing with Concerns : Employee (Cont'd)

- **Fear of Failure**
 - Pressure of Responsibility and Trust
 - Family Distractions
- **Solution**
 - Formulate the rules and Follow them
 - Example: Hewlett Packard Strategy
 - Finally, It's your choice!



Dealing with Issues: Manager

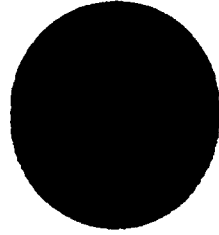


Loss of Control

- Assessment, Feedback, Monitoring
- Efficient Information Flow
- “Leader”? (Where is “to be led”?)

Solution

- Management Paradigm change : Understand it!
- Move from Control to Facilitate
- Set Goals, Verify quality and quantity of deliverables
- Technology (Email, ISDN, Video Conferencing)



Dealing with Issues: Manager (Cont'd)

Cost

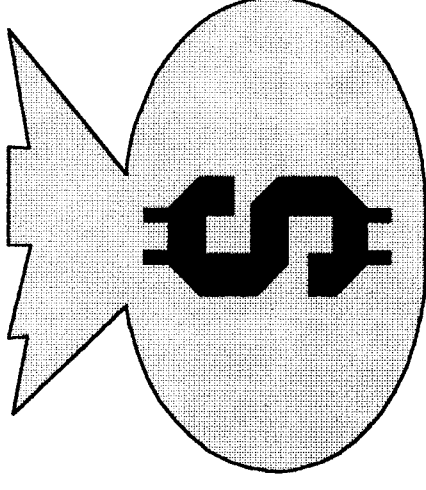
- Direct Costs (Technology, technical support)
- Indirect costs (Training)

Solution

- Benefits of Telecommuting
- Case Study Example: US Insurance Company
 - 1500 employee in IT Department
 - 40 Telecommuters (12 Programmers)
 - Telecommute of 3 days a week
 - Saved 11000 hours/year in Commute time
 - Saved 2500 hours/year in Office politics/gossip

Grand Savings for Department: \$ 810,000

(All the benefits from telecommuting NOT Included)



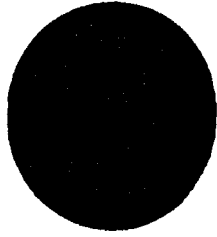
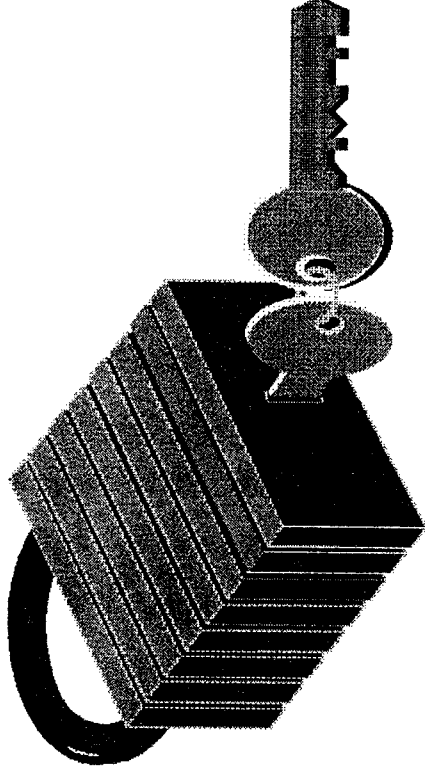
Dealing with Issues: Manager (Cont'd)

Company Confidentiality at Risk

- Secure Communication Channel - A challenge!
- Confidentiality at Risk?
- Risks such as:
 - Data or Equipment thefts
 - Unauthorized Access
 - Physical, Environmental Safety

Solution

- Security Policy Formulation



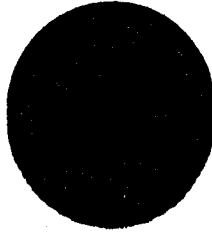
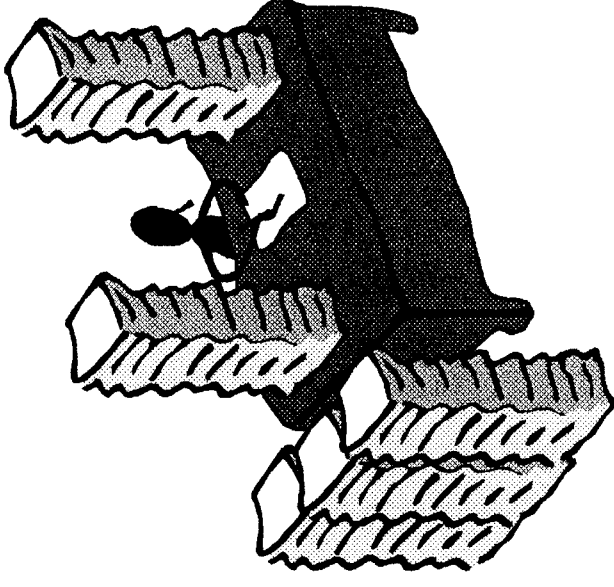
Dealing with Issues: Manager (Cont'd)

Concerns about Employee's Productivity

- Effects on Team synergy
- Feedback or Guidance
- Deciding if employee could be productive

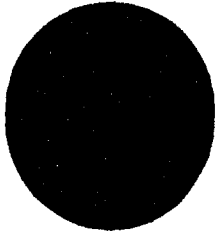
Solution

- Following H-P strategy (Leave the responsibility to employee)
- Employee has already thought about it!
- Interesting comment by one of our interviewee

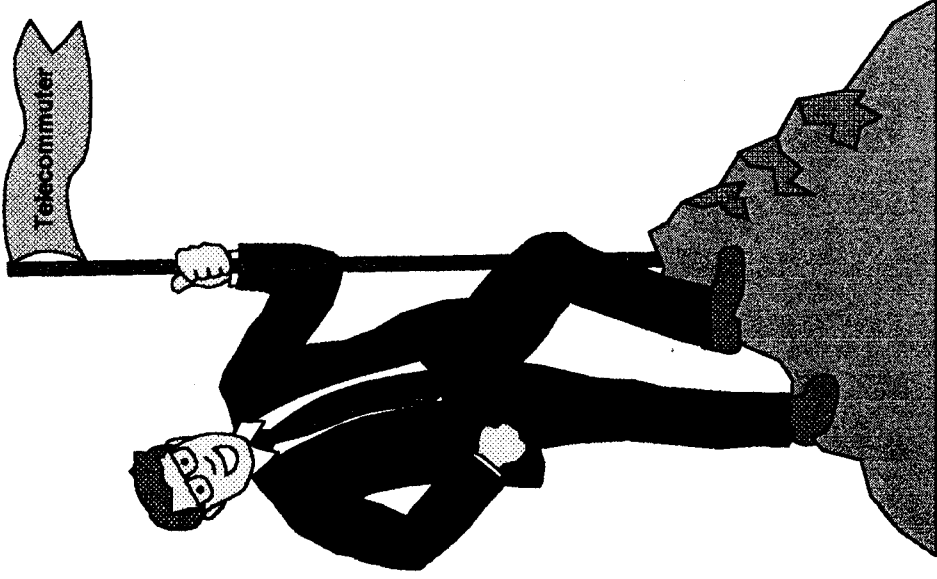


Recommendations

- Carefully *select* the telecommuter
- Decide the *extent* of telecommuting
- Keep it *voluntary*
- Keep ALL options open
- Recognize the *paradigm change!*
- *Training* for Employee and Manager
- Apply *adjustments* or corrections as necessary
- *Formulate* the Implementation Team: Its a Project!
 - Legal Counsel, Human Resources and Union
- ***Implement: Mutually Exclusive or Inclusive***



Selecting a Telecommuter



- Amount of Supervision and Feedback
- Time Management and Personal Management skills
- Examine Performance Evaluation Report
 - > 2 or more years of experience
 - > 2 years in the group or organization
 - preferably worked on at least one successful project in the group
- Setting the objective standards for measuring performance. Progress plan, timetables in place
- Home Environment conducive to work

Decide the *Extent* of Telecommuting

MD: Days in Meeting

GT: Percentage of time spent directing others

JT: Percentage of job duties that can be done remotely

LF: Organizational Load (or Burden) Factor

$$T_1 = 5 - MD - \left(5 \cdot \frac{LF\%}{100} \cdot \frac{GT\%}{100} \right)$$

$$T_2 = 5 \cdot \frac{JT\%}{100} \cdot LF\%$$

$$T_{LIMIT} = \min\{T_1, T_2\}$$

Conclusions

- **Telecommuting is positive if properly implemented**
- **As a starting point: Limit Extent of Telecommuting**
- **Telecommuting is not suitable for every employee**
- **Selection process is vital**
- **Research concentrated on High Tech Industry**

