Energy Conservation Using Telepointer

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Abstract. Although energy utilization will continue to grow as we expand our industry and improve our standard of living, efficient use of energy will always be of prime importance. Energy conservation refers to efforts made to reduce energy consumption. Energy conservation can be achieved through increased efficient energy use, in conjunction with decreased energy consumption and/or reduced consumption from conventional energy sources. Telecommuting using Telepointer is an easy way to help conserve resources, lessen your dependence on fossil fuels and eliminate unnecessary emissions into the environment. Telepointers are an important type of embodiment in real-time distributed groupware. Telepointers can increase the presence of remote participants and can provide considerable awareness information about people's locations and activities.Technology needs to be able to change behavioral patterns, it can do this by allowing energy users, business and residential, to see graphically the impact their energy use can have in their workplace or homes. Advanced real-time energy metering is able to help people save energy by their actions.

Keywords: Telepointer; Telepresence; Telecommuting; Telecommunication.

1. Introduction

Telecommuting or telework is a work arrangement in which employees enjoy flexibility in working location and hours.In other words, the daily commute to a central place of work is replaced by telecommunication links. Many work from home, while others, occasionally also referred to as nomad workers or web commuters utilize mobile telecommunications technology to work from coffee shops or other locations.Telepointer is a wearable hands-free.head-free device that allows the wearer to experience a visual collaborative telepresence, with text, graphics and a shared cursor, displayed directly on real world objects .It is completely portable and can be used almost anywhere since it does not rely on the infrastructure. It is operated through a Reality User Interfaces (RUI) that allows direct interaction with the real world,establishing a kind of that is completely free of metaphors.While using the Telepointer, tracking the reference object and preserving the relative position in the face of dynamic content and view changes in real-time collaborative document editing systems.

2. Related work

Earth friendly businesses are always looking for ways to cut back on their usage of non-renewable resources. One way they can do this is by allowing their employees to work from home. Telecommuting benefits the environment in a number of ways, from preserving the environment to conserving energy. The first two areas where energy is conserved by telecommuting are associated with the transportation needs of the employee working from home. When transportation is not needed, fewer vehicles and less energy for the expansion of roadways, vehicle maintenance and repairs are needed. The second area of energy conservation that can be attained by telecommuting is in the area of electricity. Office buildings take more to heat, cool and light than the typical home. Working from home also makes effective use of an existing building instead of requiring a new facility be built. Telecommuting benefits the environment as well. Land use can be reduced because the need for highway expansion and new parking lots will not be as great. Eventually

parking lots could become neighborhood gardens or parks, and highways could be downsized. Telecommuting benefits the air quality as well because pollution will decrease as fewer cars are driven. Besides allowing employees to telecommute, there are other ways to create an earth friendly business, such as taking advantage of green technology including solar and wind power, recycling and using recycled products, encouraging employees who must commute to work to ride a bicycle or walk and by asking that all office equipment be turned off when not in use.

2.1 Advantages of Telecommuting:

- Less office space and resource requirement

- More productive and efficient telecommuter workforce [reduce wasted travel time]

- Increased energy conservation

- More motivated and content work at home employees

- Broader telework force recruiting base

- Increased worker retention

- Remote office interoperability

- Less impact from weather conditions

- Reduced telecommuter sick leave

- Easier peak business workforce management

- Decreased environmental impact

Telecommuting technologies are largely transparent to the user, so the ultimate gauge of each telecommuter's satisfaction is the user experience. Plan for a single, integrated VPN and Dialer graphical user interface (GUI) that makes establishing a secure connection seamless. Maintain the same front end whether the telecommuter is using dial-up, broadband, the office LAN, etc. Be sure the front end is smart enough to present the same look and feel irrespective of access method. It should also include all the firewall, digital certificate, virus protection and other embedded software in the background so the telecommuter does not have to manually launch or configure each individually.The most difficult task of any telecommuting initiative is the implementation and deployment of the solution to the workforce. Typically, one of the most difficult processes is selecting and ordering the appropriate access connection for each telecommuter and managing the installation. After insuring that the telecommuter candidate is approved for the program, the next step involves assessing which technologies are available in the user's geography, which of those can actually reach the telecommuters home and what bandwidth options are available. Most companies will probably select DSL or cable modem service because of the attractive speed/price offer. However, the actual ordering and installation of the service can be time consuming.Typically, finding the right access method involves searching each phone company, cable company, or other telecommunications provider in each telecommuter's coverage area to determine availability of service. It becomes quickly apparent that there is not a single source broadband provider that can reach all of the telecommuter locations. The task of matching service providers to telecommuter area and then managing the ordering and installation process can quickly become an unwieldy multi-vendor challenge.Once the telecommuters have been prequalified for the appropriate type/speed of access, then the next challenge is to coordinate the installation with the telecommuter's schedule and track its progress (i.e. install dates, circuit install dates, hardware configuration and setup, inside wiring). Some VPN service providers have developed web-based implementation tools to greatly ease the process of finding and "pre-qualifying" broadband access and managing installation and

activation.Managing the uniqueness of home electrical and wiring conditions can impact a successful install. Care must be taken not to damage carpet, wallpaper and furniture while appropriately positioning routers or other hardware.A tremendous amount of energy is required to produce transportation equipment such as automobiles, buses, trains and jet aircraft. If telecommuting is promoted, there will be less use of this equipment and less energy will be required for production, maintenance and repair of this equipment. Fuel resources needed to operate this equipment will be reduced, as well The building and repair of highways and maintenance requires a large consumption of energy, not only in the operation of the highway construction and repair equipment, but also in the manufacture and transportation of the required materials. An increase in the percentage of people telecommuting to work will decrease the need for expanded highways and associated road maintenance. The first two areas related to getting to work. Once a person arrives at work in a central office location, he or she represents another energy consumer, often times magnified many times over what would be required at home. The office building has heating, cooling and lighting needs, and the materials to build it and maintain it require energy in their production and transportation. Working from home requires only modest incremental demands on energy for heating, cooling and lighting needs, and makes effective use of existing building space and facilities.

3. Implementation

Some of the disadvantages of telecommuting like Liability and workers' compensation are overcome by integrating it with telepointer.Telepointer is a hands-free completely self contained wearable visual augmented reality without headwear and without any infrastructure reliance.A new implementation of telepointers (HPT) that is designed to provide smooth, timely, and accurate telepointers in real-world groupware: on busy networks, on cable and dialup connections, and on wireless channels. HPT maintains performance at usable levels with a combination of techniques from multimedia and distributed systems research, including UDP transport, message compression, motion prediction, adaptive rate control, and adaptive forward error correction. Although these techniques have been seen before, they have never been combined and tailored to the specific requirements of telepointers. Tests of the new implementation show that HPT provides good performance in a number of network situations where other implementations do not work at all - we can provide usable telepointers even over a lossy 28K modem connection. HPT sets a new standard for telepointers, and allows designers to greatly improve the support that groupware provides for real-time interaction over distance.Using a Reality Mediator to do only augmented reality (which is a special case of mediated reality) is overskil.Therefore,if al that is augmented reality .the telepointer is propostted as a Direct User Interface.The wearable portion of the apparatus.denoted WEAR Station in fig 1.contains a camera denoted WEAR CAM, which send pictures perhaps thousands of miles away,to the other portion of the apparatus,denoted BASE STATION,where the motion picture is stabilized by Video Orbits and then shown by a projector, denoted PROJ., at the BASE STATION .Rays of light denoted PROJ. light reach a beamsplitter, denoted B.B.S. and emerge as lights denoted BASE LIGHT.The projected image thus appear upon a wall or other projection surface denoted as SCREEN. A person at the BASE STATION can point to projected images of any of the SUBJECT MATTER ,by simply pointing a laser pointer at the screen where images of the SUBJECT MATTER appear,a camera at the base station ,denoted as BASE CAM provides an image of the screen to the base station by way of beamsplitter B.B.S. The BASE CAM is usually equipped with a filter, denoted FILT.,which is a narrowband bandpass filter having a passband to pass light from the laser pointer being used.Thus,the BASE CAM will capture an image primarily of the laser dot on the SCREEN,and especially since a laser pointer is typically quite bright compared to a projector,the image captured by BASE CAM can be very useful to make,by an appropriate exposure setting of the BASE CAM,to be black everywhere except for a small point of light from which it can be determined where the laser pointer is pointing.The BASE CAM transmits a signal back to the WEAR COMP which controls a device called an ARAMEC , after destabilizing the coordinates.SUBJECT MATTER within the field of illumination of the ARAMEC,so that the output of ARAMEC is visible to the person wearing the WEAR STATION. A beamsplitter, denoted W.B.S., of the WEAR STATION ,diverts some light from subject matter to the wearable camera, WEAR CAM, while allowing SUBJECT MATTER to also be illuminated by the ARAMEC.
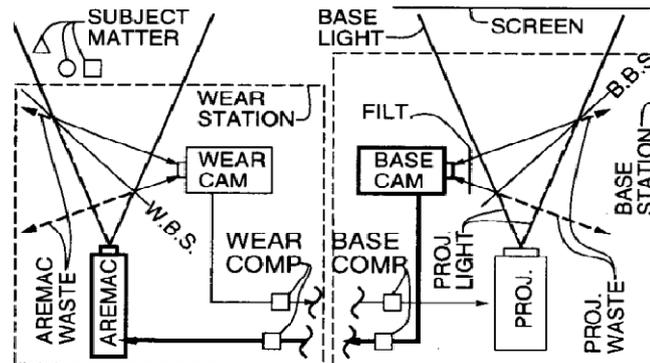
Figure 1.

3.1 Implementation of Telepointer in Extended Telecommuting for Energy Conservation:

Thus, Telepointer responds to a human by co-coordinating with them. Its prediction should be routinely used to increase the immediacy and naturalness of remote interaction, and suggest that prediction can also improve interpretation in certain situations. Technology issues such as security, access, asset management, reliability and support are vital. "Softer considerations such as insuring employee fairness, maintaining workplace culture, corporate legal protection and trust must also be considered.Extended telecommuting programs require thorough communication,corporate support, technology standardization, well-defined processes, ongoing training and robust implementation tools. A telecommuting program that is well planned, implemented and managed is an effective work option.So,the collage of telepointer and telecommuting to work instead of using more conventional methods, there is a great potential to save energy.This way of accessing the technology may help in removing the limitations of traditional telecommuters.Further, the three major areas where energy can be conserved are:

- Vehicle-related materials and resources;

- Highway-related materials and resources; and

- Office-related materials and resources.

4. Conclusions & Future Aspects:

This paper has presented a brief overview of conserving energy by the use of extended telecomputing through the telepointer.we have presented a set of constructs aiming to define precisely the main related concepts. Next, Telcommuting is a very new emerging technology. From this project, it is known that invention of Telepointer is a the actual necessity to physically change location in order to accomplish such tasks has recently been challenged on the basis of concerns for energy conservation, the impact on our environment, a refocusing on family values, and other issues .But there are a lot of things need to be considered before implementing such as what kind of network structures available, what kind of service can be provided by network service provider, what is the most suitable network for interconnection among the involved sites, etc. Inspite of this, Telepointer is becoming popular as the emerging of multimedia technology. Its advantages that could overcome the problem in current telecomputing in saving energy source."Information technology will continue to accelerate indefinitely." If we accept such a premise we can start trying to find ways to take advantage of that general trend for the betterment of everyone.

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