

Managing New Product Development

MGMT – 6560

Final Report

“Creating Business Opportunities and Understanding the Product Development Process through the Home Automation Product Category”

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Associate Professor S. Sanderson

RPI
Lally School of Management and Technology

Group 5 Members:

Brian Welch
Bryan Foster
Nizar Diab
Kunal Mittal
Doug Walker
Javier Sanchez

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1 Introduction

The process of managing product families is becoming increasingly complex due to, among other things, changes in information technology, the increasing global competition, and changing customer needs and wants. This process involves continually collecting and synthesizing information, forecasting changes in competition and market conditions, revising market strategies, and adapting decisions such as price and communications to rapidly changing market conditions.

The process of managing products involves key steps or elements such as:

1. Creating and recognizing business opportunities
2. Identifying customer needs
3. Understanding the target pricing and financials
4. Advertising and channel management
5. Managing product families

This document describes Milestones 1 and 2 that Team 5 has completed within the product development process. Upon project completion, Team 5 will have successfully developed and commercialized a new product. The goal of Milestones 1 and 2 were to understand approaches for evaluating market potential and learn how to choose high potential sectors.

The following is the list of the most important activities that Team 5 completed in order to achieve the goals:

- Brainstormed potential new to the world and incremental innovations. This brainstorming led to the development of industries or product categories that could lead to the creation of a new product.
- Evaluated the industries, which led to the identification of the most promising sector for product category.
- Researched the competition using the Internet.
- Studied wants and needs associated with our product category.
- Established 10 key buyer opportunities.

The following sections of this document describe in detail each of the activities that led to the selection of the product category where Team 5 believes there is a high potential of a new product.

2 Creating and Recognizing Business Opportunities

2.1 Brainstorming of Industries

As a team, we brainstormed and developed a list of potential attractive products / product categories. This list is as follows.

Product	Industry
An early requirement gathering software that would revolutionize the requirement gathering	IT Industry
Digital shower temperature / Pressure Controller	Home Automation
3D Printer dedicated to certain fields	IT Industry
Children Bike As you Hike pole	Outdoor Industry
Handyman tool Vacuum with Sander / Saw attachments	Carpentry Automation
Refrigerated plastic pockets for bottles (server in wineries or bars)	Home Automation
Home Control System for electronics	Home Automation
Automatic Window control system	Home Automation
Centralized Doctor Reservation / HMO friendly Web site	IT Industry
Electronic Hot tub water composition maintenance system	Home Automation
Wireless hand-held medical device	Health Care

2.2 Industry Summaries

After completing the brainstorming, we decided to evaluate the potential for three of those industries or product categories in greater detail. In this step, we investigate new opportunities and the state of the market in order to choose the most promising sector for our product development project. This process was aided by the use of the e-Screen evaluation tool, which gave us a quantitative comparison of the industries.

2.2.1 Home Automation Industry

Home automation is defined as a process or system (using different methods or equipment) that provides the ability to enhance one's lifestyle, and make a home more comfortable, safe and efficient. Home automation can link lighting, entertainment, security, telecommunications, appliances, heating and air conditioning into one centrally controlled system. Automation allows you to make your house an active partner in managing your busy life. Your automated home is no longer a passive structure. Instead, it becomes a tool in helping you make the most of your time, enhancing your safety and security, even saving you money on your energy bills! How does it work? A central microprocessor (computer) receives signals from controlling devices, and then forwards those signals to the appliances and systems in the house you want controlled. The central processor serves as a traffic cop by initiating and/or routing

communication signals throughout the house. As the user, you can interface with the system via keypads, touch screens, panic buttons, TV screens, computers, telephones, handheld remotes or other devices.

Opportunity:

With the busy lives that most families lead today, any time savings are of great benefit. Add in the cost savings possible from home-automated systems, the rate of new home construction, and the opportunity in home automation becomes great.

Cost Savings:

The savings made possible from a home automation system primarily include efficiency savings. These savings would come from ideas such as turning off your hot water heater during the day, using solar power, automatically shutting off lights, etc.

Customers:

Customers would primarily be families who are building a new home. Other potential customers include business/shop owners, elderly and the caretakers of the elderly, and anyone who would be interested in remotely being able to monitor and control their house.

User Benefits:

Benefits include saving time and money, increased convenience, and security/”peace of mind.”

Product Life:

The life of the product would be approximately 10 years. With the advancement of technology, upgrades in the system would be required to provide extended life span.

Market Size:

The potential market size has not been realized and competition is growing. With the rate of new home construction, the size of the market is large. Shipments for 1999 totaled 6.65 million units, up 6% over what had been the previous record year in 1998. 2000-2004 is anticipated to remain steady at 6%.

Growth Rate:

The rate of growth potential for this market is very large. Technology and manufacturers of the products that make up the system are only recently making the market affordable for mid-income families. Growth rate, as stated above, is anticipated to remain steady at 6%/year.

Market Capacity:

This market is under capacity. People may not be aware of the affordability or availability of such a product.

Overall Potential: High

2.2.2 Outdoor (Hike/Bike) Industry

Nationwide, participation in outdoor recreation is extremely popular and fairly uniform. Outdoor recreational opportunities are available to the broadest spectrum of citizens, regardless of where they live. Results show that 94.5 percent of Americans participated in at least one form of outdoor recreation in 1994. That percentage translates into 189 million participants nationwide. Walking is the single most popular activity, with about 134 million participants.

Hiking in the United States grew 94% to nearly 50 million participants between 1983 and 1995. Over 57 million Americans participate in bicycling, representing an estimated \$5 billion industry. Hiking footwear and outerwear were the major growth areas among retailers. Hiking footwear accounted for approximately \$374 million in sales in 1996, while outerwear generated \$552 million. Specialty stores captured 33%, or \$1.4 billion, of the dollar volume, while large retailers, mostly chain stores, accounted for 67% of the market, or \$2.9 billion.

For many Americans, the interest in outdoor recreation is typically established during their childhood through memorable experiences in the great outdoors with family and friends. In fact, two-thirds of Americans report beginning their favorite activity as children with their parents.

One concept that has a high potential to exposing children to mountain biking while allowing parents to hike or walk in the outdoors is the Bicycle Pole. The Bicycle Pole is an adjustable pole that can easily be attached and removed to the back of the small children's bicycle that would allow parents to hike while their children ride the bicycle. The Bicycle Pole allows parents to provide safety and to help their children climb or descent steep hills with their bicycle. It also allows parents to go on longer outings by providing means of helping when the children get tired.

This concept will expose children to the outdoors and wildlife, which has shown that early participation in outdoor recreation activities provides the children with experiences and knowledge that form the foundation of future participation.

Market and Margin Related Issues:

Need/Want Problem:

Small children can't go for long hiking outings without getting tired. They are also too heavy for a parent to carry them.

Customers:

Parents, who would like to take their children for long hiking outings.

Payback to Users:

Expose children the outdoors and wildlife. Early participation in outdoor recreation activities provides the children with experiences and knowledge that form the foundation of future participation.

Value Added or Created:

Allow parents to walk/hike while children ride their bicycle. It helps them when the children get tired and it also provides safety.

Market Size:

The human-powered outdoor recreation industry contributes an estimated \$40 billion annually to the U.S. economy.

Market Growth Rate:

Since 1982, the population of the nation has increased and the proportion of people participating in at least one activity has risen from 89 to 94.5 percent. As a result, numbers of participants have increased for almost all outdoor activities.

Gross Margin:

The mass merchandisers selling inexpensive bikes currently dominate 65% of new bike sales market. That means products must be inexpensive, potentially causing the margins to be low.

Overall Potential: (Medium)**Margins and Markets**

The bicycle industry is one of the most established industries all over the world. Small companies manufacture most bicycle components and bicycle spare parts. The bicycle industry is not very high tech. Strong marketing primarily drives sales. The technical innovations are few and are made on a thin margin of expense on the product line. R&D in the bicycle industry is mostly low tech and under funded. The mass merchandisers selling inexpensive bikes currently dominate 65% of new bike sales market.

2.2.3 Health Care Industry**Concept:**

Hospitals (as well as medical office buildings) significantly lag the rest of the industry in terms of automation and paperless operations. The amount of paperwork that must accompany a patient, from the time they are admitted until the time of they are release, is staggering. Hospitals can significantly reduce the risks and increase the accuracy of care by ensuring that the right patient

information is where it is needed and when it is needed. The only way to do this is make certain that information is centralized and quickly accessible, rather than distributed throughout the hospital on various pieces of paper.

A wireless hand-held device can significantly reduce the amount of time required to determine what medications a patient has had or should be taking. This would be used by medical staff and doctors. It will quickly reveal what allergies the patient might have, thus reducing the risks of malpractice suits. Also, doctors and nurses can quickly add critical notes that will be seen by everyone at the same time. This device can quickly and accurately associate a patient to his/her electronic records on file, by simply scanning a barcode label on the patient's wrist. This way, the records are tied to the patient at all times, and not located on the bed.

The WMID ties to a central database that can be accessed from any floor of the building. All devices are linked via a wireless network, but each device has its own "deviceID." Security measures are put in place to prevent sabotage and illegal users from accessing patient information. This is very critical, since doctors will be able to use the WMID to order and change patient medications.

Opportunity:

WMID is an idea whose time has come. It is an opportunity for hospitals to utilize existing technologies to automate their operations and to significantly improve the quality of patient care. Healthcare is one of the fastest growing industries. Hospitals are being built or expanded to accommodate the growth. At the same time, there is a significant shortage of nurses. WMID helps hospitals become more efficient, thus lessening the impact of the personnel shortages.

Cost Savings:

Cost savings can be measured in a number of ways; many are difficult to quantify in terms of actual dollars. Medications administered to the wrong patient can result in a malpractice suit that could total millions of dollars. The cost savings associated with hiring fewer paper handlers could amount to a dozen people per hospital. There will be cost savings associated with faster patient processing (throughput). Most importantly, patient care will improve; happier patients are more likely to pay their bills on time and are less likely to sue.

Customers:

Primary customers will consist of all hospitals and major clinics.

User Benefits:

Benefits will come in many forms. Primarily, hospital will become better and more efficient service providers. The number of deaths caused by nurse/doctor error can be significantly reduced. Patient satisfaction will be increased

Product Life:

The life of the product will depend on technology advancements. Changes in communications standards, software, and supporting infrastructure pose a threat of obsolescence.

Market Structure:

Competition will come from niche players as well as IT service providers. Much of the infrastructure hardware currently exists. The primary differentiators will be in the unit itself and the software.

Market Size:

Market size is very large. Every hospital and large clinic is a potential customer. And, with the shortage of nurses, the market size will continue to expand as these jobs get filled. Though no specific figures are available, it is anticipated that once security issues with wireless technology have been addressed, growth within the industry will be double digits.

Growth Rate:

Market growth is very high. Older hospitals have to catch up, while new and expanding hospitals and clinics will need new installations or upgrades. Even once new installation growth has somewhat leveled off, strong demand will continue in the form of retrofits and upgrades.

Market Capacity:

Market is significantly under capacity. Hospitals have been reluctant to do much automation in this area. Education is a primary key—this will help reduce the resistance from doctors and nurses who can become strong advocates for this technology, or who can become a barrier to market growth.

Market Share:

This is likely to be a multi-billion dollar industry, once demand takes off. A 20% market share within four years should be reasonable.

Cost Structure:

Initial cost would be very high, as this is basically a wireless information system. Revenue will come in the form of increased efficiencies in the operations, reduction of non-key staff, and reduction of malpractice claims. There are several issues related to the infrastructure to put in place for electronic medical record keeping. The wireless output is only the tip of the iceberg.

Overall Potential: (High)

2.3 Comparative Analysis of the three industries

Industry and Market Criteria	Range	Idea 2 Home Automation	Idea 2 Outdoor	Idea 3 Health Care
Market: Need	5: Market Driven; Identified; Recurring revenue niche 0: Unfocused; one time revenue	4	3	3
Market: Customers	5: Reachable; purchase orders 0: Loyal to others; Unreachable	5	4	4
Market: User's Benefit	5: Less than one year payback 0: Three years Plus Payback	4	4	3
Market: Value added	5: High; Advance Payments 0: Low; Minimal Impact on market	5	4	4
Market: Product Life	5: Durable 0: Perishable	4	5	4
Market Structure	5: Imperfect; fragmented competition; emerging Industry 0: Highly concentrated, mature or declining industry	4	2	2
Market Size	5: \$50+million to \$1 billion sales 0: Unknown; less than \$20 million sales	4	5	5
Growth Rate	5: Growth at 30 to 50% or more 0: Contracting or less than 5%	4	4	5
Market Capacity	5: At or near full capacity 0: Under Capacity	3	3	1
Market Share Attainable (Year 5)	5: 20% or more; leader 0: Less than 5%	3	3	2
Cost Structure	5: Low cost provider; cost advantages 0: Declining Cost	3	4	1
TOTAL (MAX=55)		42	41	34

3 Home Automation Industry

3.1 Summary of Home Automation Product Offering

In this section, a summary of various analyses conducted is combined to provide an overall product analysis. The individual features of a home automation product are analyzed individually in sections 3.2 through 3.5. As in sections 3.2 through 3.5, this section examines the competition, lifestyle trends, wants and needs, and buyer opportunities of a home automation product.

3.1.1 Competition in the Home Automation Industry

Although the competition is higher in the individual features that make up a home automation system, when combined into a single product offering, the size of the competition is drastically reduced. The major competitors existing today include:

- <http://domotica.jgcomponentes.com/Ingles/Home.html>
- <http://www.homeauto.com/WhatWeCanDo/whatwecando.htm>
- <http://www.thebutlerdidit.com.au/prod05.htm>
- <http://www.connecthome.com/whatauto.html>
- <http://www.intelligenthometechnologies.com/>
- <http://www.log-one.com/Home%20Automation.htm>

From studying the competition and examining differentiation options, the market for a home automation product is ripe. The competition will continue to grow as the price of technical components continues to decrease and the standards used begin to solidify. There are many organizations working toward standardization of various technologies and protocols that offer a certain level of automation, as this will be commonplace in the near future.

3.1.2 Life Style Trends of the Home Automation Industry

Although there are many factors that determine the life style trends of someone interested in a home automation product, several major factors stand out. The technically literate population will tend to be more interested in this type of product. They may become excited at the prospect of having such a system. The people who tend to try to “keep up with the Jones” will also become excited about this product. Some may be intimidated with the technology and how to operate it, but training and features that are easy to use will curb the “fear” of using a home automation system.

With the increased pressures for free time to spend with family or in other activities in peoples busy lives, a major trend is to automate schedules and tasks as much as possible. An example of this is Portable Digital Assistants (PDAs). People will use technology to enable them to become more efficient and organized. If the home automation could provide benefits to this end, people will be interested in purchasing a home automation system.

Saving money is of interest to everyone. If a home automation system could demonstrate a cost savings to the homeowner and the break-even point is acceptable with the cost and term of purchasing/building a new home, people would be interested in such a system.

People are spending more time at home and want to be comfortable in their home. With the added benefits a home automation system provides, the match of the system to the “stay at homers” is a good one. The stress reduction, ease of mind, security, time and cost savings, efficiency and fact that this is cutting edge technology, make the system marketable.

3.1.3 Wants and Needs of the Home Automation Industry

The basic wants and needs that would be fulfilled by a home automation system are:

- Cost Savings
- Time Savings
- Convenience
- Keeping up with Technology
- Keeping up with the Jones’
- Comfort
- Remote access/control
- Security
- Energy conservation/savings
- Quick access to services

3.1.4 Buyer Opportunities in the Home Automation Industry

The key buyer opportunities are with people who are building mid to upper priced homes and who desire or need the efficiencies, convenience, and/or psychological advantages of a home automation system. Other opportunities include businesses and use with the elderly.

The following is a list of buyer opportunities.

- Consolidated bill payment
- Voice control for home systems
- Automated shopping, storage and preparation
- Environmentally friendly homes
- Automated and remote controlled climate control
- Central control of home features
- Water control
- Central family monitoring and scheduling
- Remote monitoring of home
- Remote security features

3.1.5 Creative New Product Ideas for the Home Automation Industry

Expanding on the new product ideas outlines in the sections below, the home automation product discussed and evaluated herein may be expanded in numerous directions. Listed here are some new product ideas with their core benefit proposition (CBP) and the wants and needs they fulfill

New Product: Automated and consolidated bill paying of all related services provided within a home-automated system

CBP: Provide the convenience and time savings of having a central method for paying bills

Wants and Needs Fulfilled: Time savings, Convenience, Keeping up with Technology, Quick access to services

New Product: Voice command /control and activation of central control system

CBP: Provide the convenience of centrally controlling home features

Wants and Needs Fulfilled: Time savings, Convenience, Keeping up with Technology, Keeping up with the Jones'

New Product: Intelligent, automated food acquisition, storage, and preparation

CBP: Provide a convenience and time saving method for food acquisition, storage and preparation

Wants and Needs Fulfilled: Time savings, Convenience, Keeping up with Technology, Keeping up with the Jones', Quick access to services

New Product: Automated recycling and garbage collection

CBP: Provide a convenience and effective method for properly recycling

Wants and Needs Fulfilled: Time savings, Convenience, Keeping up with Technology, Keeping up with the Jones', Quick access to services, Energy conservation/savings

New Product: Energy efficiency control for change in environmental conditions

CBP: Provide an effective method for controlling the comfort and environmental conditions of the home

Wants and Needs Fulfilled: Cost Savings, Convenience, Keeping up with Technology, Keeping up with the Jones', Comfort, Remote access/control, Energy conservation/savings

New Product: Central control of all features via the Internet

CBP: Provide a convenient method for access and control of all features in a home automation system

Wants and Needs Fulfilled: Cost Savings, Time savings, Convenience, Keeping up with Technology, Keeping up with the Jones', Comfort, Remote access/control, Energy conservation/savings, Quick access to services

New Product: Water control (temperature, condition, pressure) for all water system in the home

CBP: Provide a method for all water systems in the home to be configured to specific standards of temperature, condition, and pressure

Wants and Needs Fulfilled: Cost Savings, Convenience, Keeping up with Technology, Keeping up with the Jones', Comfort, Energy conservation/savings

New Product: Internet based access to full family activities and schedules (knowing where everyone is, what their schedules are, etc.)

CBP: Provide a method for family communication, coordination, and scheduling

Wants and Needs Fulfilled: Time Savings, Convenience, Keeping up with Technology, Keeping up with the Jones', Remote access/control, Security

New Product: Remote monitoring of all home systems (maintenance instead of repair)

CBP: Provide a method for automating the maintenance of home systems

Wants and Needs Fulfilled: Cost Savings, Time Savings, Convenience, Keeping up with Technology, Keeping up with the Jones', Remote access/control, Security, Energy conservation/savings, Quick access to services

New Product: Security systems via remote access (remote monitoring, and notification of any security breach)

CBP: Provide a method for monitoring the home from anywhere

Wants and Needs Fulfilled: Convenience, Keeping up with Technology, Keeping up with the Jones', Remote access/control, Security, Quick access to services

3.2 Competition

In this section we compared the competition in this industry in more detail. We divided the discussion of the competition based on specific features of the industry.

3.2.1 Central Control

The Central Control Unit (CCU) is the "Brains" behind the system. It holds all programming information in its memory and translates button presses from Control Stations throughout the home into the appropriate changes in lighting, appliances, and other devices. The CCU can be programmed/re-programmed locally as well as remotely at will, with capabilities ranging from basic lighting to elaborate pre-programming combining multiple light zones, audio/video, motor controls, heating, ventilation and air conditioning.

The competitors include:

- http://home.swipnet.se/hometeck/cen_ctrl.htm
- [Leviton Mfg. Co.](#)
- [LiteTouch](#)

3.2.2 HVAC

Heating, Ventilating and Air Conditioning (HVAC) are a modern day way of life. Most of us have either grown up in, or known someone who has grown up in, or recently visited

a house or building with no air conditioning or forced air heating. Most likely you left that location thinking it was a little uncomfortable and behind the times.

According to a builder magazine report in Standard and Poors "Industry Survey's" dated January 8, 1998, the 11.4 million homes built in the 70's have now reached the age at which they need significant repairs. Plus these homes are out of sync with the tastes of the 90's and need updating. Few have master suites, which have become standard in upper-bracket homes and common in even middle bracket. And few have "Great Rooms" which have replaced family rooms as the center of home activity - the remodel boom is igniting.

Also, Standard and Poors point out that one of the most important factors propelling the remodel trend is the aging baby boom generation. In 2000, this age group consisted of up to 44% of all households, up from 38% in 1990. This group - regardless of its average income level - has historically spent more than any other on home remodeling. Furthermore, as consumers enter their prime income-earning years, they are more likely to replace old furniture, fixtures, and household systems such as heating and air conditioning systems with newer modern versions. Many consumers are also spending more time at home with family and friends - a trend called "Cocooning" - and they want their houses to be as comfortable, attractive, and functional as possible.

An observation of any newscast in any town in the United States concerning baby boomers demonstrates that these baby boomers don't want themselves or their children to suffer from almost any negative feature of life. This probably includes suffering from moldy smells, or catching colds or possible bacterial infection of any kind from the air or anything else that comes out of their heating or air conditioning systems. Add to this 44% of all households, the other 56% of all households, and the market for cleaning and care of heating and air conditioning systems becomes staggering. To service these household needs there exists an army of HVAC experts.

This army of experts is tracked by HVAC industry membership groups such as the National Association of P-H-C Contractors with 2,400 members, Air Conditioning Contractors of America with 4,000 members, Sheet Metal & A/C Contractors National Association with 2,000 members, Mechanical Contractors Association of America with 1,700 members, Associated Builders & Contractors with 3,000 members, and the American Society of Heating, Refrigeration, and Air Conditioning Engineers with 50,000 members.

According to information readily available from these HVAC industry groups, shipments of Air Conditioners and Heat Pumps by leading carriers/indirect-competitors such as Carrier, Bryant, Day & Night, Payne, Rheem, Ruud, Weather King, Trane, York, Luxaire, Fraser-Johnston, Coleman Evcon, Heil, Nordyne and Lennox shipped 4,522,837 unitary air conditioners and 4,825,000 room air conditioners in 1996 to the 40 to 45,000 firms and contractors that sell and install the units.

Direct competitors include: RCS, HAI, OnQ Technologies, ESC, GE SMART Connected Home, Home Director, and MyCasa Network Inc. to name a few. (Source: http://www.bbjenviron.com/corporate_HVAC_overview.asp).

3.2.3 Security and Lighting

There are many competitors in the automation of home lighting and security. Individually each product has many competitors composed of either the manufacturers of lights and security systems or small integrating companies that are able to take existing components and integrate them into one system.

Here are a few examples of such competitors:

- <http://domotica.igcomponentes.com/Ingles/Home.html>
- <http://www.homeauto.com/WhatWeCanDo/whatwecando.htm>
- <http://www.thebutlerdidit.com.au/prod05.htm>
- <http://www.connecthome.com/whatauto.html>
- <http://www.intelligenthometechnologies.com/>
- <http://www.log-one.com/Home%20Automation.htm>

3.2.4 Shower System Control

The shower system control is not a new concept to the market. There are several companies that currently manufacture these systems and sell their products. There are also several US patents that cover the same concept (US 6,250,558; US D454,176). The products that are available on the market vary in price and models. For example, the Mira Elite 2 shower system is a fully integrated shower system with memory modules and a powerful 9KW of pressure. On the other hand, the Hotpoint Aquarius ES30 has an 8.5KW of pressure with a temperature control.

It is interesting to note that the research done on the competition did not yield any result of any manufacturer of electric shower system control in the USA. The majority of the competitors are located in the United Kingdom. There are a few competitors in the Asian market as well.

Some of the competitors here are –

- | | |
|---|---------|
| ▪ Hotpoint ES60 Ultima Electric Shower | £177.00 |
| ▪ Hotpoint Aquarius ES30 Electric Shower | £115.07 |
| ▪ Nimbus ElectraTherm with dual spray handset | |
| ▪ Triton T70 Electric Shower 8kw | £122.00 |
| ▪ The Mira Elite 2 | £236.00 |
| ▪ New Team 8.5kW Electric Shower | £159.99 |
| ▪ Redring Expression 550 8.5 | £185.00 |
| ▪ Zillanium WH8118E | |
| ▪ PHX43 Electric Shower 8.7KW | £222.29 |

3.2.5 Smart Appliances

Major competitors in this area are household names. They include General Electric, Whirlpool, Maytag, KitchenAid, and Bosch. Of course, there are smaller competitors who are not considered as a major threat to market share. Many of the larger appliance manufacturers have already integrated some degree of “smartness” into their product lines. Although none of the competitors in this space are exactly where they would like to be, many have been successful at introducing certain appliances that are able sense their level of power consumption and conserve energy. Many appliances are also being introduced as “internet ready.” Homeowners that buy these products are hoping that they will be able to take advantage of the next wave of technology without having to reinvest in newer appliances. Many manufacturers are using these selling features as differentiators, even though most of the services are not available today.

Competition in this area is not impacted so much by the technology (or the lack thereof), but from the absence of uniform standards. Many manufacturers such as GE, Whirlpool, and others do not have a standard language for which the appliances can use to communicate. Without such a standard, homeowners with a GE stove and a Whirlpool dishwasher would be out of luck. As a result, there appears to be a lot of collaboration and joint ventures taking place in the industry. SUN Microsystems, for example, has teamed with GE to form GE Smart. This venture seeks to combine SUN’s software and systems know-how with GE’s experience in the appliance area.

Other competitive impediments stem from the lack of existing infrastructure in most homes. At the end of 1999, approximately 650,000 homes had some form of networking infrastructure; this expected to reach 1,000,000 by 2003. Pre-wiring new homes with the appropriate network infrastructure will help to drive future demand, as customers become more savvy and warm up to the idea.

3.2.6 Audio, Video, Entertainment, and Communication

The competition in this area takes on many forms. All the audio and video available from any source (external or internal) will be available in any area of the home. The central control system enables any source to be accessible from any end system. The internet, email, cable TV, telephone, video, games, etc. would all be controlled via the central control system. The central control system is available from any wireless device that can connect to the internet – therefore, making your home accessible from anywhere. Listing the competition in this area would require compilation of almost all manufacturers of Audio, Video, entertainment, and communication systems. Most systems would be controllable via a central control system.

Audio

Audio includes any phone, TV, video, intercom, music, etc. within the home. There are numerous suppliers of “smart” home theater systems. Numerous companies can provide audio receivers, speaker system, etc. for home systems.

Video

With broadband connections to the internet, DVD technologies, the availability of satellite video, and high-tech TV's, video access from outside the home is readily available from many service providers. Many video systems include a menu-based capability that enables access to the central control system. Depending on whether the video is projection, flat screen, digital, or basic TV, control is made simple via a central control system. Most all Home Automation packages include video and audio system that enables the basic and advanced forms of communication and entertainment. TV's that enable pausing, rewinding, and digital storage of TV shows would be easily integrated into a home automation system.

Entertainment

Apart from the home theater systems available today, internet gaming, DVD, and other forms of entertainment are made available via the central control system. Any entertainment application would be made accessible and be able to be controlled via the central control system of an automated home. Also, various forms of entertainment would be readily accessible (e.g. Karaoke).

Communications

With the internet and wireless communication devices (PDA's, Cell Phones, etc.), control communication with the home automation system is consolidated so that one can access all communication systems via the central control function of the automated home. With the video systems available, video telecommunications are easy to enable through the central control system.

Some of the available systems today are more advanced than others. The range of complexity and capability is large and very scalable depending on the requirements of the customer.

3.3 *Life Style Trends*

3.3.1 Central Control

The Central Control presents various lifestyle changes that a homeowner needs to get adjusted too. Starting from the position of these control units in the house to the various modes of operation that these units present, is a challenge. Most of these units today, are tedious to use, and rarely have enough buttons on them. This is actually a misnomer. There are tons of buttons, but to do some sort of programming, one needs to remember a combination of button presses, which are not intuitive. The install technician needs to spend quite some time to explain the basic features of the control panel, and leave it to the homeowner to go through a manual to learn the more complicated features.

3.3.2 HVAC

Life Style trends within the HVAC industry are dependent upon geographical location, customer preference, and financial capability. However several key trends are apparent. Specifically, the HVAC module has had a strong 'welcome' to those who live on the bleeding edge of technology. These customers need to have the latest and greatest technologies at any cost. In addition, there are those who simply have to have it. This life style trend simply prefers to be the 'first on the block' or the family who tries to 'keep up with the Jones'. New housing markets are experiencing more and more request for HVAC automation as it becomes the new standard. Similarly, contractors have noted the increased demand by new homeowners and well as existing homeowners who simply wish to upgrade.

3.3.3 Security and Lighting

An impact in the life styles from the lightning perspective is that people will no longer have to spend time opening and closing windows and shades or turning on and off lights. Usually this is a simple task however it is a repetitive task as well as a time consuming one if there are a lot of windows in the house. This automation will also help from the energy conservation perspective, which is one of the trends that have been publicized extensively by the media recently.

An impact in the life styles from the security perspective is that people will be able to monitor their homes remotely. People will be more inclined to use existing home security systems if they can be monitored remotely. People would be able to receive packages that require signatures by remotely communicating with the delivery person, acknowledging that the package can be left at the home, and provide an electronic signature.

3.3.4 Shower System Control

The current life styles of the modern homeowner indicate that people are interested in luxury and efficiency. The bathroom and specifically the shower area are a major part of everyday life. According to a study done by Moen, in Cleveland OH, the average homeowner spends about 10 minutes using the shower. The shower is used for more than just cleaning the body. The shower is also used more than once a day, everyday. The study also pointed out that people typically have only one free hand when taking a shower.

"Demand for showering products is soaring for two reasons. One, consumers are looking for more therapy, more relaxation, a more versatile water experience; and, two, many consumers are interested in investing in something that they use everyday – or even two or three times a day"

Trends Talk (Spring 2002) by Kohler.

Companies are noticing the life style changes that are affecting the industry. More and more people are investing in the home interior and in the things that they use often. More companies are producing the pressure-regulated showerheads as well as new concepts and design in temperature control. Several companies have also started to produce electronic shower controls to satisfy customer trends and the new lifestyle of luxury and efficiency.

The old concept of installing a tub in the bathroom is fading. The shower typically occupies less space than the tub, and consumes less water and heat than a tub. New advancement in shower technology allows the person to have more pressure and a massage for a cleaner and more relaxing shower than the typical tub. In addition, the aging baby boomers could get into a shower easier than getting into a tub (www.qualifiedremodelers.com).

3.3.5 Smart Appliances

Today, there are a significant number of households where both parents are working outside of the home. Add to this that fact the most kids (after being in school all day) are involved in some form of after school sports or activity (soccer, T-Ball, or both). Most parents, speaking from experience, lack the needed time to shuttle kids to practice and do all the needed chores at home. This ever-growing quest for more time will drive significant lifestyle trends in the area better time management and help satisfy the need for the ubiquitous parents. Most families are looking for ways to multi task home, work, and family. In the future, smart appliances will greatly facilitate this demand.

Parents and homeowners will be able to stay in touch with all of the important things, at any given time. Smart appliances will become integrated into our lives. Things that were once done (or not done at all) by multiple people will be done by one person, and, more efficiently. At the touch of a button, communication between the homeowner and the appliance (or perhaps from one appliance to another) will signal the start of tasks that will take only seconds, but once took minutes or hours to perform.

3.3.6 Audio, Video, Entertainment, and Communication

Lifestyle trends in the area of Audio, Video, Entertainment, and Communications include people who are away from home often (i.e. business travelers) as well as the people who like to stay at home and rent movies. Lifestyle Trends include people who desire convenience, access to numerous entertainment options, and desire ease of central communications. The convenience factor in this area is of great importance. For example, if you do not want to rent movies at your local video store, requiring that you leave home to go to the store, look at selections on a shelf, and find that they don't have what you are looking for, a connected home would enable you to perform all these activities from the comfort of your home (with the added benefit of always having what you want). People who live in remote areas may find this very convenient and reassuring.

3.4 Wants and Needs

3.4.1 Central Control

Home automation technologies provide control capabilities via voice commands; voice activated help, and interactive menus, as these capabilities are absent from many of today's households. The homeowners need and demand an intuitive control environment for the control units. Furthermore, having a remote control version (such as a TV remote) might also be useful. The ultimate controlling power is the homeowner who could control the unit from virtually anywhere in the house. Some common needs seem to be the ability to control the system

- Via a cordless telephone or cell phone they have in their hands
- The TV they are watching or
- The computer they are working on.

3.4.2 HVAC

HVAC wants and needs are similar to other products within the Home Automation sector. Specifically, customers require the HVAC central system to provide the capability to control multiple functions. For example, customers have requested that the system not only control the temperature of the surrounding area but also the humidity levels. In addition, customers require the ability to monitor, change, and access the HVAC system from any location in the world. Examples of access points include the internet, PDA, cell phone, and Blackberry's to name a few. Similarly, customers require the Return On Investment (ROI) to be quick and with efficient gains. In other words, the system must be cost effective. Finally, customers require 24x7 support services. Specifically, this translates into a toll free number with a live voice on the other end.

3.4.3 Security and Lighting

The biggest need in the lightning area is energy conservation. Users would to automatically open and close windows and shades as well as turn on and off lights to conserve energy.

One of the biggest needs in the security area is the remote monitoring of the home. Users would like to turn on and off the alarm systems while they are away from home as well as being able to receive packages and provide electronic signatures without being present.

3.4.4 Shower System Control

In today's lifestyle, where the average homeowner has very little luxury time, and efficiency is the driver of most needs, new products are being developed with luxury and

efficiency in mind. After the September 11th incident, more and more people are looking to spend more time at home than outside their home. This leads to an increase need in improving the interior of the home and increase home productivity. The average homeowner uses the shower for 10 minutes a day everyday per person. This equates to approximately 60 hours a year per person (Study was done by Moen). The time spent in the shower has decreased tremendously from the days of the bathtub and heating water. This shows the need for efficiency even in the daily task of taking a shower.

With an electronic shower control system, the time to prepare the shower could be reduced even further and provide a more relaxing shower. Features such as, remembering the owner's personal shower preference and music while you shower could provide such efficiency and luxury for the owner.

3.4.5 Smart Appliances

As smart appliances are gradually introduced, and as they become smarter and smarter, the consumer doesn't want to be burdened or work any harder as a result of the newer technology. Smart appliance must be user friendly. If the consumer feels intimidated by any additional complexity, they won't buy many of these appliances. The appliance must be relatively simple to use.

Cost is another important factor. The consumer is not willing to pay much more for a smart appliance than they would for the standard, everyday appliance. This is one of the challenges of the manufacturers—sells enough volume such that the cost to manufacturer a smart appliance is approximately the cost of a standard appliance.

Consumers expect to see the same, or even better reliability out of their fancier appliances. Consumers are often concerned that fancy buttons and electronics are more apt to break down. Smart appliances must give consumers piece of mind. Most consumers want the appliance to communicate when a part is going bad, before it actually occurs. Consumers want to communicate with the appliance at any time and anywhere. And, they want to be able to integrate this into their everyday life, using the tools and systems that are already at hand—phone, PC, etc.

Consumers want appliances that blend in well and facilitate their lifestyle. Parents are now busier than they have ever been. With fewer hours left in the day, consumers want appliances that will help them make better use of their time and help them make decisions that are non-critical, but necessary—what's for dinner and how long will it take?

3.4.6 Audio, Video, Entertainment, and Communication

The basic wants and needs fulfilled are convenience, security, accessibility and entertainment. People, who want access to vast selection of entertainment mediums

and sources would find this system desirable. If they have a need to stay in communication, via multiple sources, the communications feature would fulfill this want and need. People who like cutting edge technology or are stimulated by technology and the convenience it brings would be interested in such a system.

3.5 Market Analysis

3.5.1 Central Control

3.5.1.1 Buyer Opportunities

- The ability to control your home from a single touch panel conveniently located in your house.
- The ability to have complete control on each and every aspect of your automated home.
- The ability to remotely control your home.

3.5.1.2 Creative New Product Idea(s)

- Voice activated control panels
- Interactive menus that can be viewed on the TV, cell phone, regular land phone or internet
- TV remote type, portable control unit

3.5.1.3 Core Benefit Proposition(s) (CBP)

- Offer a flexible and intuitive control environment for the home automation system
- Reduce the learning curve for the new system

3.5.1.4 Wants and Needs fulfilled by CBP(s)

- No more manuals to read
- Can control your system from anywhere in the house
- When out of your house, can monitor and control your system via a phone or the internet

3.5.2 HVAC

3.5.2.1 Buyer Opportunities

- Buyer opportunities are only limited by the imagination of the individual. With an overall increase in the demand within the housing market, new and existing, potential is unlimited. Specific buyer opportunities include those persons going on frequent vacations or often away from home such as retirees or persons who travel. Additional opportunities include persons who own multiple homes yet require central HVAC control of both. Buyer opportunities include those who have kids/pets/other who are home alone

(day or night). Finally, there are opportunities for individuals who require efficiency and consistent HVAC output. The above-mentioned buyer opportunities are not meant to be a conclusive list but merely examples of future and current prospects.

3.5.2.2 Creative New Product Idea(s)

- HVAC systems that have direct links to the manufacturer. This allows for the manufacturer to monitor HVAC systems and proactively determine potential problems before they occur.
- HVAC systems that are able to determine the outside ambient temperature and based upon predetermined settings adjust the inside environment.

3.5.2.3 Core Benefit Proposition(s) (CBP)

The core benefits of the HVAC automated system are as follows:

- Offers a steady state temperature environment
- Offers accessibility thorough portable electronic devices (Blackberry, etc)
- Provides a cost effective and environmental friendly system

3.5.2.4 Wants and Needs fulfilled by CBP(s)

The needs fulfilled by the CBP are:

- Customers require that the temperature of their environment remain constant. The HVAC module allows for individual temperature preferences as well as customization with unlimited zone capabilities. For example, the living room could remain at a comfortable 72°C while the master bedroom remains 76° C.
- Similarly, customers require accessibility to adjust their home/work/other location without having to physically be on-site. The automated HVAC module allows for the accessibility and monitoring of HVAC environments from any location. For example, the Internet to include wireless devices such as Blackberry's and PDA's allow one to change temperatures remotely.
- Finally, the HVAC module allows for the consistent utilization and efficiency of the physical HVAC system. The HVAC provides a constant temperature that maximizes the use of electricity and thus decreases electrical bills. In addition, the HVAC module allows for preprogramming based upon personal preferences. For example, families could program the HVAC module to maintain a steady 72o C from 6:00 p.m. – 8:00 a.m. and 80o C from 8:00 a.m. – 6:00 p.m. This has the effect of once again cost savings.

3.5.3 Security and Lighting

3.5.3.1 Buyer Opportunities

- System to open and close windows and shades from anywhere in the house.

- Video and audio systems to monitor home and receive packages.

3.5.3.2 Creative New Product Idea(s)

- System that can be programmed to open and close windows based on time or weather conditions.
- Security system that can be monitored via the web. System will include two-way audio and video capabilities.

3.5.3.3 Core Benefit Proposition(s) (CBP)

- For homeowners who would like to conserve energy by opening and closing windows or shades to maintain proper home temperature.
- For homeowners who would like to secure their homes by having remote visual and audio access to the surroundings of the house.
- For homeowners who would like to receive packages that require signature without being present.

3.5.3.4 Wants and Needs fulfilled by CBP(s)

- Remote controlled windows and shades to conserve energy.
- Remote controlled security system.

3.5.4 Shower System Control

3.5.4.1 Buyer Opportunities

The shower system control offers the buyers a luxury in an everyday function. The system also offers the efficiency that the working homeowner needs. The increasing features that would be placed in a shower that has not improved its technology for a while could enhance the shower experience of homeowners everywhere.

3.5.4.2 Creative New Product Idea(s)

- *Basic Shower Kit:* Kit includes a digital temperature / pressure shower setting for fast and convenient shower set up and a comfortable controlled shower.
- *Family Smart Shower:* This kit has the basic shower kit with 5 memory buttons to remember individual shower preference. This kit would be perfect for the average family of five people or less. Another model would be to increase the number of memory buttons to 8.
- *College Shower Kit:* Kit includes the basic shower module with a CD player and a digital clock. This kit would come in different colors and a cool, hype design.
- *Voice Activated Shower Kit:* Unit includes the basic shower kit that could be activated through voice recognition. This kit would be useful for sight-disabled people and for elderly people.
- *Therapy Shower Kit:* A shower kit with multiple showerheads lined on the side and back with a controlled temperature / pressure setting. The shower

could be set to sequentially change the pressure setting at different shower heads to give the body the massage feeling as the water pressure increases in a wave like fashion from top to bottom.

3.5.4.3 Core Benefit Proposition(s) (CBP)

The core benefits of this system are as follows:

- Offers a fast setup time for the temperature and pressure of the shower.
- Offers a luxurious technological shower area.
- Offers a steady state temperature and pressure setting.

3.5.4.4 Wants and Needs fulfilled by CBP(s)

The needs fulfilled by the CBP are:

- Reduces the time to set up a shower. This reduction is evident during the setup when the owner is turning the temperature knob to a certain position to check the temperature by hand and to make sure the water temperature is right. The reduction also affects the pressure setting when checking that the pressure is strong enough.
- Ensures that the temperature and pressure remains constant during the course of the shower. Sensors for both temperature and pressure will monitor both inputs and the unit will automatically adjust to maintain the correct setting.
- The sleek design and the cool features will offer a luxury to an area that is not as advanced as the rest of the areas in an average house. Features such as memory buttons, integrated CD player, integrated digital clock, voice activation, etc...

3.5.5 Smart Appliances

3.5.5.1 Buyer Opportunities

- Smart appliances can be beneficial to almost everyone. Those that will find them most attractive are those with busy lifestyle. People who don't spent a lot of time at home and are often on the go can take comfort in knowing they can communicate with the appliances in their home, if the need arises. Homes where there are kids and two working parents can benefit significantly.
- Elderly or retired persons can benefit as well. Here, the benefits come in the form of safety and convenience. Elderly persons often do not have the energy or mobility to move about the home. Smart appliances can eliminate this need by offering remote capabilities.
- People who are looking for cost savings in the form of more efficiently operating appliances can greatly benefit from smart appliances—appliances that know when to conserve energy, know when to request service, or appliances that can be turned on or off with the touch of a PC or a telephone key.

3.5.5.2 Creative New Product Idea(s)

- Cooking automation is something that most busy homeowners can benefit from. Most homeowners spend a significant amount of time in the kitchen preparing meals. Cooking efficiency can be greatly enhanced if the PC could communicate with the cooking range (stove). Recipes could be sent from grandma's house to the stove. In fact, these recipes could be retrieved and displayed right on the stove screen. Grandma's old recipes would be just a second away.
- Most stove's have five to six different cooking locations and just one timer. The timer beeps but doesn't offer any help in terms of cooking efficiency. What would be much better is if the stove was equipped with a display screen and a separate controller for each item cooking. The display screen would provide important information such as temperature and remaining cooking time for each dish. It would automatically turn off the cooker (not just beep), or adjust the temperature to simmer at a specified time. This information could also be displayed on the computer or TV screen.

3.5.5.3 Core Benefit Proposition(s) (CBP)

- The benefit for homeowners is primarily better use of what little time that is available these days. The need to stay in touch with our "castle," even though we are spending fewer and fewer hours there on a given day. If a homeowner is able to cook and prepare meals in parallel, rather than spending more time cooking everything in a serial fashion, this provides more time to do more important things, like taking the kids to the soccer game.

3.5.5.4 Wants and Needs fulfilled by CBP(s)

- Time management and cost saving will be greatly enhanced. The need to know how things are going (what requires our attention) without physically being there is fulfilled. The need to be two places at one time (physically and virtually) is also fulfilled. Homeowners want the appliances they use everyday to do more than just provide heat or cool air—they need them to intelligently manage themselves, require less attention of the homeowner, and help increase the quality of life by freeing them to do the more important things in life.

3.5.6 Audio, Video, Entertainment, and Communication

3.5.6.1 Buyer opportunities

- The greatest opportunity for buyers is when building a new home. The convenience vs. cost of wiring a home for this system is a large opportunity when construction includes the infrastructure for this system.

3.5.6.2 Creative New Product

- A new product idea would be for all of the services for telecommunications, internet, entertainment (including audio and video), to be consolidated into one single interface to the customer. The single interface would provide all available options and configurations for the customer to configure as needed. This service would fulfill a convenience want or need of the customer.

3.5.6.3 Core Benefit Proposition

- The CBP would be for all services related to audio, video, entertainment, and communication to be provided to the customer under one configurable interface.

3.5.6.4 Wants and Needs

- The wants and needs of this service is that the customer is provided extended convenience and greater selection in media and configuration for/of the service.

4 Creating Business Opportunity

Team 5 effectively created business opportunities through the understanding of the Product Development process. This was accomplished by brainstorming industries that allowed an e-screen analysis to be completed. As a result of the e-screen analysis, the Home Automation industry was selected for further assessment. The team then focused on better understanding of the Home Automation industry through research.

Research results focused on the following areas:

- Competition
- Life Style trends
- Wants and needs
- Buyer Opportunities and Creative new products

Opportunities, based upon the above areas, were discovered within the selected industry with a focus on the following new product ideas:

- Central Control
- HVAC
- Security and lighting
- Shower system control
- Smart appliances
- Audio, video, entertainment, and communication

Initially the team felt comfortable with the Home Automation Industry as it was assumed this was a relatively un-penetrated market. However, after extensive research it was discovered that the Home Automation industry is in fact an evolving industry with many competitors who provide similar if not the same products. In addition, there are many competitors who provide individual components as compared to the complete home automation system. The Home Automation industry is in fact a highly competitive industry. In conclusion, Team 5 will continue the Product Development process within the Home Automation industry understanding that new innovative or incremental change products are not likely to be discovered.

The process of managing product families is becoming increasingly complex due to, among other things, changes in information technology, increasing global competition, and changing customer needs and wants. This process involves continually collecting and synthesizing information, forecasting changes in competition and market conditions, revising market strategies, and adapting decisions such as price and communications to rapidly changing market conditions.

The process of managing products involves key steps or elements such as:

1. Creating and recognizing business opportunities
2. Identifying customer needs
3. Understanding the target pricing and financials
4. Advertising and channel management
5. Managing product families

Team 5 has been following this process in order to identify a product that could be marketed. The first two steps in the process led us to the conclusion that the Home Automation industry had the highest business opportunity. Within the Home Automation industry, we identified 10 new product ideas. Initially the team felt comfortable with the Home Automation Industry as it was assumed this was a relatively un-penetrated market. However, after extensive research it was discovered that the Home Automation industry is in fact an evolving industry with many competitors who provide similar if not identical products. Nevertheless, we decided to continue the product development process within the Home Automation industry with the understanding that discovering innovative or incremental products was going to be a challenge.

This document summarizes the next 2 steps that we followed in the process of identifying a marketable product. The goal of the third step in the process was to learn techniques for analyzing market potential, forecast sales and identify techniques to validate the target consumer base through market surveys. The goal of the fourth step was to understand pricing and financial analysis as well as techniques for launching a product to include an effective advertising strategy.

In order to achieve our goals, following activities were completed:

- Developed a survey to help select a product within the Home Automation industry.
- Conducted patent searches to ensure the concept wasn't already on the market.
- Estimated market potential and established pricing strategy.
- Established a corporate image and created an integrated marketing communication plan.
- Developed a channel distribution and advertising strategy.

While completing these activities, we discovered an incremental product that had strong market potential. The following sections of this document describe in detail each of the activities that provided the basis for the product selection as well as its pricing and marketing strategies. As a result of the analysis, we is in an ideal position to complete the final step in the product development process.

5 Identifying the product

In order to correctly choose a winning concept from the 10 product ideas selected in the first steps of the process, the team performed a market survey. 29 different people where questioned about the industry and about the different product ideas. The survey results are shown in appendix B.

5.1 Survey Results Summary

The 29 survey questions were totaled and grouped in one results file that was then analyzed by the group. The survey was made up of three distinct sections each addressing different needs for the market analysis. Section one of the survey addressed the demographics of the market required to identify the target customers. Section two addressed the industry in which the products were to compete. Section two gave the group the opportunity to analyze the Home Automation industry as a whole in comparison to demographics. Section three addressed the ten different product ideas within the Home Automation industry. Section three was made up of eight different questions with answer evaluated on a scale ranging from "strongly disagree" to "strongly agree". The questions from one to seven were phrased such that a "strongly agree" statement was in favor of the product while a "strongly disagree" was a negative to the product. Question 8 was phrased such that a "strongly disagree" was in favor of our product while a "strongly agree" was a negative to the product.

The survey results for the winning concept were determined as the sum of all the results of questions one through seven minus the results from question eight. Figure 1 displays the result from the survey.

In order for customers to easily identify with the product ideas, the team brainstormed and selected product names for each of the products. From the results of the survey,

the product called “Climatech” had the highest number of “strongly agree” results as well as the highest number of “agree” and “mildly agree”.

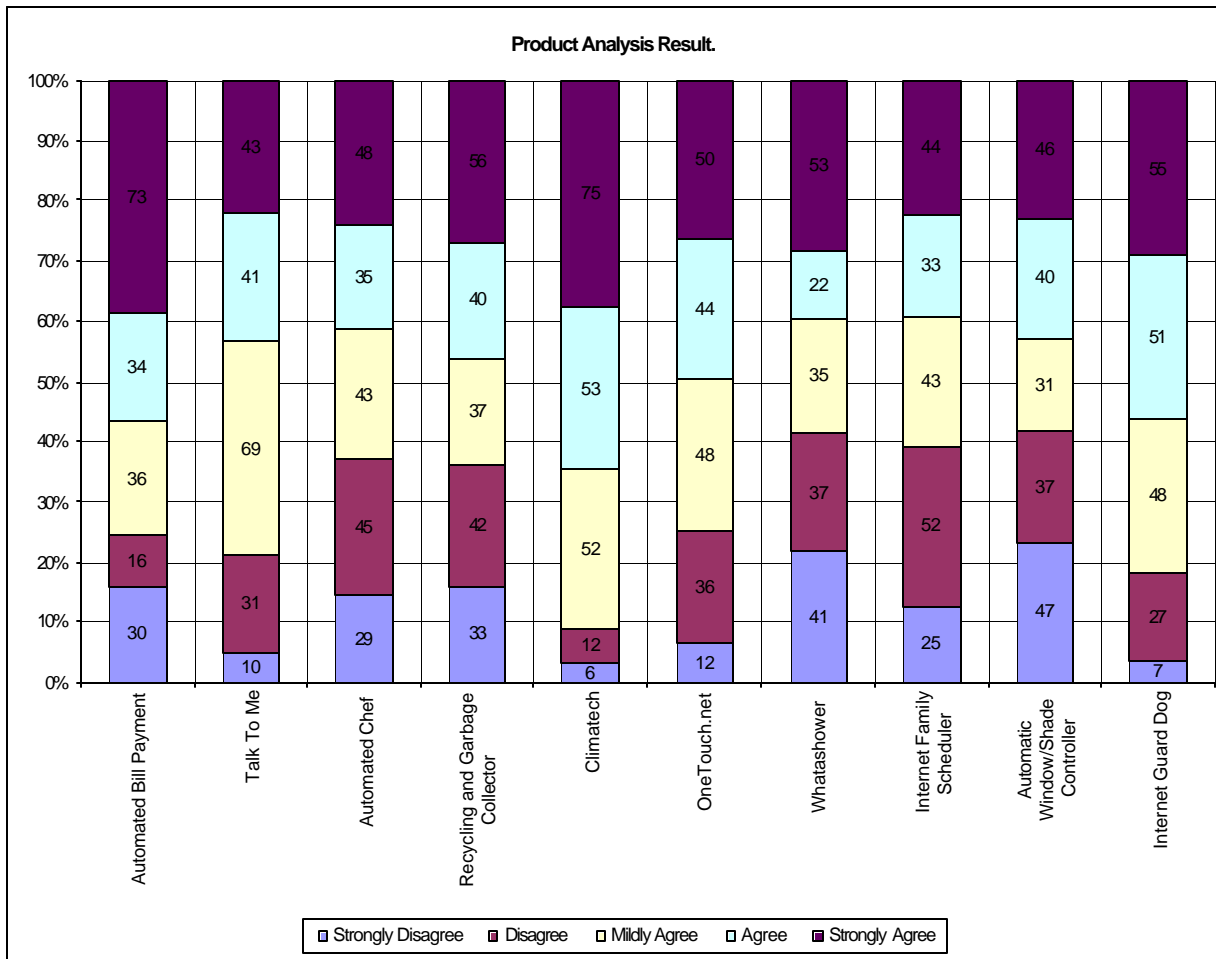


Figure 1 The results of the survey

5.2 Identifying the Market

The product called “Climatech” was defined in the survey as:

“Climatech remotely controls your home environment while helping to minimize cost. Imagine maintaining a constant 72° while you’re home and having piece of mind that Climatech will automatically adjust temperatures when you’re not home. Not only do you remain comfortable while at home, you also save money when your not.”

Once the product was chosen, the survey was analyzed for a second time with the selected product in mind. The survey was re-evaluated for each demographic option so as to determine the targeted audience and the correct market for the product. Figure 2 identifies the distribution of the answers based on a weighted system for the “Climatech” product. 90% of the people surveyed said that the product will save them time and

money and enhances the quality of their life. Only 5% of the people surveyed cared about a brand name for the product. Thus, our lack of brand name identity should not have a negative impact on market entry or our growth within the industry.

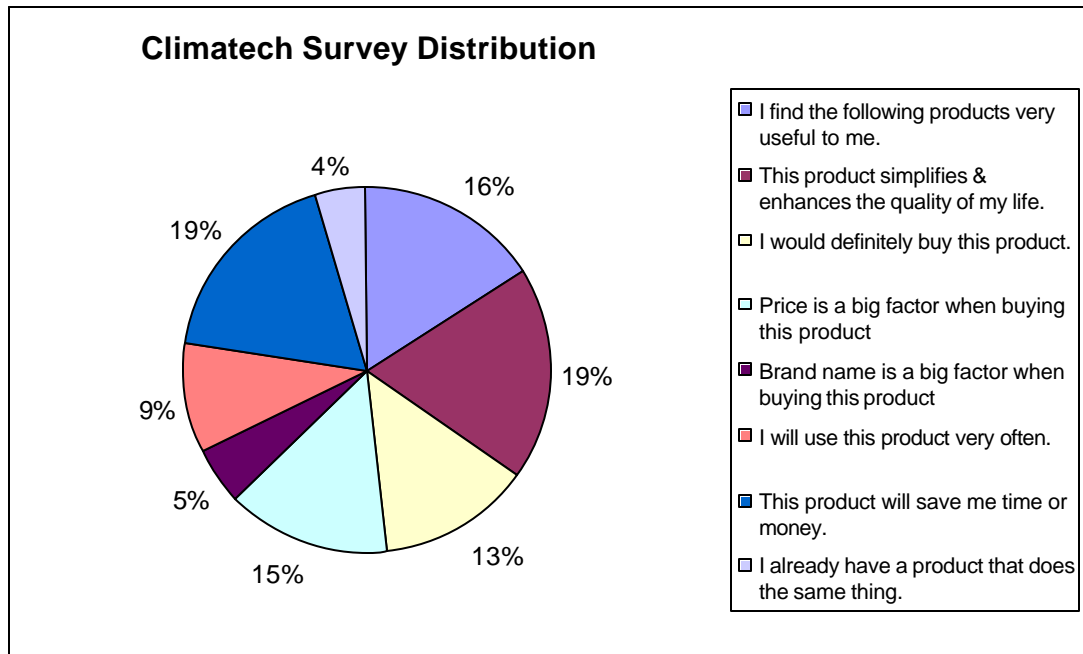


Figure 2 Distribution

The market analysis of the survey helped to determine the target audience for the “Climatech” product. Table 1 shows the different market analysis results based on demographics. The demographic analysis of the survey indicates that the majority of the people who favor the “Climatech” product have an annual household income of over \$100,000, with the second highest group earning between \$50,000 and \$74,999. The survey also demonstrates that more males prefer the product than do females. The most prevalent family size was between three and four family members. There was no distinction between people who rented or owned their homes.

Since females influence 67% of all buying decisions, we investigated how to market the product to them. The results of the demographic analysis will assist the team with the market research and with the advertising campaigns.

5.3 Patent Search

The patent search revealed patents that were similar yet different enough to allow for an incremental change in the Climatech system. See Appendix A for full patent disclosure. Similar patent characteristics included:

- The use of a mini-flash card to activate/deactivate HVAC units
- Sensors to determine thermostat states between rooms and HVAC units
- Adaptive environmental controls that adapts to the continually changing thermal characteristics of the building in which they operate

- An electronic HVAC monitoring computer
- An HVAC system that is assigned a network identification for subsequent use within a communication network upon receipt of a formatted signal containing the network identification
- Low-cost, low-power, narrow-band AM SAW-stabilized transmitters 21, 27, 39, 86 and receivers 18, 28, 47, 89 that transmits temperature information from each room of the house to a master control 24
- A control unit that monitors the presence of persons in the room, determines the season, sets back the temperature in an empty room by a variable amount which the HVAC can restore in a given time, and restores the temperature to the previous user request when the user returns but to a standard temperature if the user has newly checked in
- An apparatus that provides for controlling, during unoccupied periods the operation of an HVAC system and perimeter heating system providing hot air and hot fluid, respectively, to a temperature controlled living space having occupied and unoccupied periods
- An automated energy saving system dispenses HVAC energy from a common energy source to a set of utility zones, typically rooms in a house or commercial building which are dispersed at different locations remote from the energy source, typically a roof top unit

Based upon the Patent search and all available information, the Climatech will compete primarily on incremental change. Specifically, the Climatech will be differentiated through the effective use of technology such as the Internet. Proposed incremental changes include:

- Program, setup temperature, start/stop cooling/heating via the Internet
- Temperature status via Internet
- Integration with other home systems such as security.
 - For example, once the house security system is activated, an electronic communication is sent to the HVAC to adjust the temperature thus saving energy and money due to the absence of the family.

6 Product Development Economics

Climatech controls your home environment via the phone or the Internet. The system allows you to monitor and control the temperature of your home while you're away.

Because of high competition with phone-based systems, focus will be placed on the Internet version of the product. The incremental advantage includes software that will interface with phone-based systems to give the consumer the phone and Internet control as well as monitoring capabilities.

6.1 Product Pricing

According to the survey, consumers felt that pricing was one of the most important factors behind their decision. As a result, the product price must remain low.

For this product, we could have two pricing strategies. We could price it using a one-time fee of \$49.99 or a monthly service fee of \$4.99. Since this product will significantly reduce the energy consumption, the consumer has a high potential to recover the cost of the product fairly quickly.

We believe the service fee strategy is the most attractive one since it will provide a more continuous revenue stream and recover the yearly maintenance and support costs. However, we run the risk of not generating sufficient revenue due to service cancellations. This could be mitigated by having a cancellation fee for any contracts terminated within a certain period of time.

6.2 Financial Analysis

6.2.1 Climatech Costs

Since this is a software-based product, the cost of creating and launching this product can be broken down as follows:

- Product Development Cost
- Marketing and Support Cost

6.2.1.1 Product Development Cost

Assuming that it will take 24 man-months of engineering time to develop this product, the product development costs are estimated as follows:

24 man-months = 2 years of engineering at \$150,000/year of engineering time

Total development cost = \$300,000

We could employ resources to develop the product in 12 months.

6.2.1.2 Marketing and Support Cost

For either pricing strategy, we assume that this product will be sold via the Internet among other channels and that there would be a need for on-going maintenance and support of the software. Including the marketing and advertisement cost, the total marketing and support cost could be estimated as follows:

Marketing and Support Cost	Amount
Internet setup and website development	5,000
Yearly website fee	1,500
On-going support (1/3 engineering	50,000

time)	
Advertising and marketing	5,000
Total	61,500

6.2.2 Climatech Sales

To compute the ROI we will assume that the software is based on a single transaction and the product will start selling in the second year. Projecting sales of 300 units per month, this product could generate about \$180,000 per year using the one-time pricing fee. Because we are selling exclusively over the Internet, we anticipate yearly marketing costs to be \$61,500 as described above.

The ROI for Climatech turns positive in less than 4 years based on the chart below. This figure is very pessimistic, as we definitely hope sales would increase from 300 units a month upwards. Furthermore, we would introduce new channels of marketing after the second year.

	Expenses	Sales
Year 1	311,500 (Excludes Support Cost)	0
Year 2	61,500	180,000
Year 3	61,500	180,000
Year 4	61,500	180,000
US \$	496,000	540,000

7 Advertising and Channel Management

7.1 Corporate Image

The firm's image in the marketplace is focused on portraying the company as knowledgeable of and involved in the industry, technologically competent and experienced, and committed to providing quality products and services. The company's image will be communicated via its communications and marketing plan and mission statement. The product will be marketed as a modern, cool product that is family oriented with a specific focus on 30-45 year old middle class persons. This will enable the target audience to be reached.

Being knowledgeable and involved in the industry requires that the firm demonstrate that it has a comprehensive understanding of all aspects of the product and related services. Being involved includes becoming active members in all related trade organizations, being certified in relevant areas, and participating in all trade shows.

To be technologically competent and experienced in the field requires keeping up-to-date in all related technologies and ensuring that R&D is core strength of the company. The company must also demonstrate its commitment to product and service quality. This requires certification of ISO standards and continually providing audits and surveys to ensure the proper level of quality is being provided and that the mission is carried out

at all levels. Consistently monitoring our advertising and marketing success will provide risk reduction and formulate focused target channels.

7.2 Integrated Marketing Communications Plan

The objective of the marketing and communications plan is to convey the mission and offerings of the company by establishing communication channels that provide timely information to the target segments. The communications mix will include strategies for advertising including general advertising, public relations, sales promotions, and direct marketing (see Integrated Communications Strategy table below).

7.3 Integrated Communications Strategy

Objective	To encourage the target to identify with the benefits of installing a Climatech system		
Purpose	To encourage the target to install Climatech to provide a level of comfort, convenience and cost savings that cannot be achieved via the standard climate control systems available today.		
Target	Home owners	Primary - cost conscious and conveyances seeking homeowners. Phone control system product providers.	Secondary - Home builders, HVAC sales associations, Government projects (i.e. Energy Star)
Promise	Primary - When using a Climatech system, I am saving money and the environment by more efficiently utilizing energy, and, at the same time, I am providing a level of convenience in monitoring and controlling the environmental condition of my home.		Secondary - Providing the consumer an advanced level of product/service as well as advanced level of convenience in controlling their homes environment.
Support	Cost of energy will continue to increase and installing an efficient system will save money within 3 months. The level of convenience provided by the system enables greater level of control of the home environment		
Personality	Technically knowledgeable; Professional; Focused on quality and service		

The product marketing channels that are to be established include direct mail, newspaper ads, industry publications, radio, the company’s web site, trade shows, email, Internet advertising and others. The marketing and communication plan includes development of an overall marketing plan that conveys the company’s mission and aligns to the business plan. Further marketing channels include plumbers, general contractors, HVAC experts, and tradeshow to name a few.

7.4 Motivation

The target customers, 30-45/middle class, will learn about Climatech via numerous communication sources. Each of the sources of marketing communications to be

utilized is listed in the table below. General advertising will provide communication of the product by outlining the products use and its benefits. Print ads, brochures, and Internet advertising will provide infusion of company logo and image to the public. This will stimulate brand identification.

Public relations media will include aligning the business with industry players to establish penetration of product and brand identity within the industry. Partnering with government will provide a political affiliation that provides support for product within the industry. Providing and seeking to gain support of environmental organizations by communicating the product benefit information (e.g. reduced energy consumption, etc.) to them, enables penetration into a target market. Lastly, a partnership with key players in the phone based control system is critical.

Sales promotions are communicated via direct and Internet mailing of special offers and coupons. Partnering with other organizations will provide other avenues for promoting sales. Establishing agreements with lending intuitions (i.e. FHA, Sally Mae, etc.) and associated product providers (security system providers, HVAC dealers, etc.), for special discounts if the product were purchased, would promote sales of Climatech.

Direct marketing of Climatech would include direct mail, brochures, newspaper inserts, Internet advertising, and videocassettes. Lastly, a marketing representative, demonstrating a working system at trade shows and home shows, provides an excellent method to directly market the product.

7.5 Marketing Media and Channels

Media	Channel
General Advertising	<ul style="list-style-type: none"> • Print magazine ads • Internet and email Advertising • Radio • Printed Brochures
Public Relations	<ul style="list-style-type: none"> • Establish alliances with industry players to promote and market Climatech. • Partner with Government organizations that promote energy conservation • Provide research data to environmental organizations to seek their support
Sales Promotions	<ul style="list-style-type: none"> • Direct Mail coupons • Partner with phone based system providers and home improvement funding providers for special rates • Internet emailing for discounts • Associated product partnerships and pricing agreements
Direct Marketing	<ul style="list-style-type: none"> • Direct Mail

	<ul style="list-style-type: none"> • Brochures • Inserts • Internet emailing • Video Cassette showcasing product and benefits • Trade and “Home Shows” where builders showcase their designs and other products
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The channels above will be implemented and monitored for effectiveness. Monitoring at regular intervals will enable the marketing strategy to be focused and tuned to reach the maximum number of target customers.

7.6 Decision

Climatech will help homeowners control their environment while helping to minimize cost. Climatech will automatically adjust temperatures when the homeowner is not at home. With the cost of gas and electricity on the rise, consumers are always looking for ways to control their environment while offsetting the costs of heating or cooling the home. Climatech will help to satisfy these needs.

Relative to substitute products, the Climatech will be offered as a competitively priced product with unique and differentiated features. Customers will realize the benefits, and with the cost saving, Climatech will quickly pay for itself.

Although our survey results show that men, more so than women, have a stronger inclination to purchase Climatech, we are cognizant of some very important statistics relative to the decision-making of women. First, women account for 50% of sales and influence 85% of all vehicle purchases. And they are expected to account for at least 60% of purchases by 2005. Also, contrary to popular belief that home repairs are a man's world, women purchase 61% of major home improvement products, which shouldn't be too surprising given that single women make up the second largest group of homebuyers after couples.

Based on a subsequent sample survey of our significant others, we feel strongly that women will be a strong purchaser or will greatly influence the purchasing decision of Climatech. Our findings also show that working women and women with busy lifestyles are just as likely to purchase Climatech as are men. Thus, we have concluded that household where there is at least a parent present throughout the day (in most cases this is the women) will be our smallest market in terms of potential sales. We feel these important facts had an impact on our survey results.

7.7 Purchase

Initially, the Internet will be the primary channel used to distribute the Climatech product. Secondary distribution channels include HVAC retailers, general contractors, and tradeshow. Based on the nature of the product, we feel that the Internet will offer us a low-cost solution with very simple distribution channel. Based on the initial acceptance

and success of Climatech, we will quickly move into additional channels. The additional channels will consist of select retailers such as Best Buy.

7.8 Cost of Advertising

Advertising will primarily be done through radio, consumer magazines, the yellow pages, and direct mail. Radio will help to increase our brand awareness. We will use direct mail to reach a key segment of the population and to communicate information about the advantages of our product. We will also use rebates to stimulate initial sales and to increase awareness.

The costs for advertising will be estimated based on the percent-of-sales method. Because of the need to aggressively increase product awareness prior to and during the launch of Climatech, we estimate the budget for year one to be 2% of the first year forecasted sales. We will estimate the budget for subsequent years to be 1.25% of sales. Of course, this will ultimately be based on the success of our product launch.

8 Product Launch Strategy

After creating a customer survey, we were able to identify Climatic as the product of choice. The survey revealed target markets and customer preferences for the product. By following the product development process, we were able to learn and understand how to develop a pricing strategy and financial analysis as well as advertising and channel management. Key steps included the identification and development of the following.

- Product Development Economics
 - Product pricing
 - Financial results
 - Sales

- Advertising and Channel management
 - Corporate image
 - Integrated Marketing Communication plan
 - Motivation
 - Marketing Media and Channels
 - Decision
 - Purchase
 - Cost of Advertising

Efforts also included a review of all patents that could or may relate to the Climatech product. It was discovered that though there are similar products, Climatech is in fact differentiated by its proprietary interface. With this knowledge in hand, we will start identifying future replacements and new models for the Climatech product family. We will prototype the product to validate and refine the design. Finally, we will investigate the legal and environmental aspects that could prevent us from successfully marketing

the product. At the conclusion of these steps, we expect to have a basis for a go/no go decision.

The process of managing product families is becoming increasingly complex due to, among other things, changes in information technology, the increasing global competition, and changing customer needs and wants. This process involves continually collecting and synthesizing information, forecasting changes in competition and market conditions, revising market strategies, and adapting decisions such as price and communications to rapidly changing market conditions.

The process of managing products involves key steps or elements such as:

6. Creating and recognizing business opportunities
7. Identifying customer needs
8. Understanding the target pricing and financials
9. Advertising and channel management
10. Managing product families

This document describes the last milestones that Team 5 completed as part of understanding the product development process. The goals of these milestones were to learn how to manage product families, to learn techniques for validating and refining the product design to ensure customer needs are met, to understand the potential legal and environmental problems that could hamper our product idea, and to make a final assessment of whether or not the product should be launched.

The following is the list of the most important activities that we completed in order to achieve the goals:

- Analyze the manufacturing feasibility.
- Develop a manufacturing and support plan.
- Develop a technology roadmap as well as a risk analysis.
- Create a prototype to ensure product would address user needs.
- Analyze legal and environmental issues.

The following sections of this document describe in detail each of the activities that led to the final decision of whether or not the product should be launched.

9 Product Lifecycle

9.1 Portfolio Management

Climatech is in a *variety-intensive* product life cycle. As with many software-type products offerings, we will evolve and enhance our original product offering in response to customer needs and competitive reactions. In this stage of the life cycle, we recognize that customers are feature sensitive and potentially loyal, so we will use this to our advantage. We will work closely with our customers as we plan the evolution of the product portfolio.

9.2 Product Evolution

Initially, our product portfolio will consist only of the Climatech product. Given that Climatech is in a *variety-intensive* product life cycle, we anticipate the need to frequently offer enhancements to our product to support the diverse needs of the customers. Updates and new features will be added to the original Climatech offering at least once a year. Thus, the portfolio will consist of a basic offering with a number of features that the customer may activate immediately or at a later date. New releases will add to and eventually replace the original software offering.

The frequency of change will be driven by a number of factors. Much like Microsoft and other software providers do, we will evolve our original offering to stimulate sales from existing customers as well as grow our market share with new customers.

We expect a strong competitive reaction to our new product offering within the first year. We feel this will only lead to incremental changes in our portfolio within the second year. This is when we expect to see the first addition to our product portfolio. By the third year, we expect see more aggressive attacks from competitors, and more threats to our revenue. In response, we will continue to look for opportunities for better channel management.

Our customers will help us to anticipate shifts in demands, and help us to stay one step ahead of the competition.

9.3 Design Concepts

For the new product introduction, the use virtual design will be somewhat limited. We see most of the benefits and cost savings from virtual design being realized on subsequent offerings or from the next release of our product. As we broaden our portfolio, we will make use (re-use) of several core modules of the Climatech. Since Climatech will primarily be a software product offering, the opportunities to use virtual design concepts on new releases of Climatech, or future products will be great.

Typical of variety-intensive products, we expect to have on-going development activities while we are in the mist of introducing the Climatech product. This will facilitate organizational learning as well as software re-use (modular and virtual design).

9.4 Manufacturing and Environment Plan

For the manufacturing point of view, this software product is very feasible. In order to create the product, it will require resources to develop and test it as well as resources to deploy it and support it.

The manufacturing process for software is very simple. It requires burning CDs and silk-screening the label. However, since the product requires Internet access to work, the software will only be available via Internet downloads. This process is currently successful in a number of other products already in the market and it makes the software upgrades and patch releases very efficient and effective.

The manufacturing process does not require any investment in machinery or equipment other than computer hardware; therefore there is no need for an environmental plan.

9.5 Service and Support Plan

Strictly speaking, a service plan is not required for this product since it is software based only. The software does, however, require a support plan. The software will be supported via e-mail and phone by a 1/3 Full Time Employee (FTE) initially. This person will be responsible for answering questions, helping customers with problems, and deploying software releases.

9.6 Technology Roadmap

A technology roadmap is a way to represent the expected availability and future use of various technologies relevant to Climatech. A well-planned technology roadmap will be very important to the long-term success of Climatech and other products within the portfolio. As previously stated, we anticipate an aggressive competitive response to our product launch. We must, therefore, be in a position to launch future derivative products that take advantage of upcoming technologies as well as core components of Climatech. We will use our technology road map to project the life cycles of climate control and management.

As illustrated in our technology roadmap (see Figure 1 below), we expect Climatech and future products to benefit significantly from developments in wireless and sensor technologies. As the costs of home wiring decreases the Climatech product will be expanded to penetrate new markets. These additional technologies will enable the extension of the Climatech product portfolio. New technologies and product refinements will also allow the target markets to expand into small business and schools.

Functional Elements

Technologies

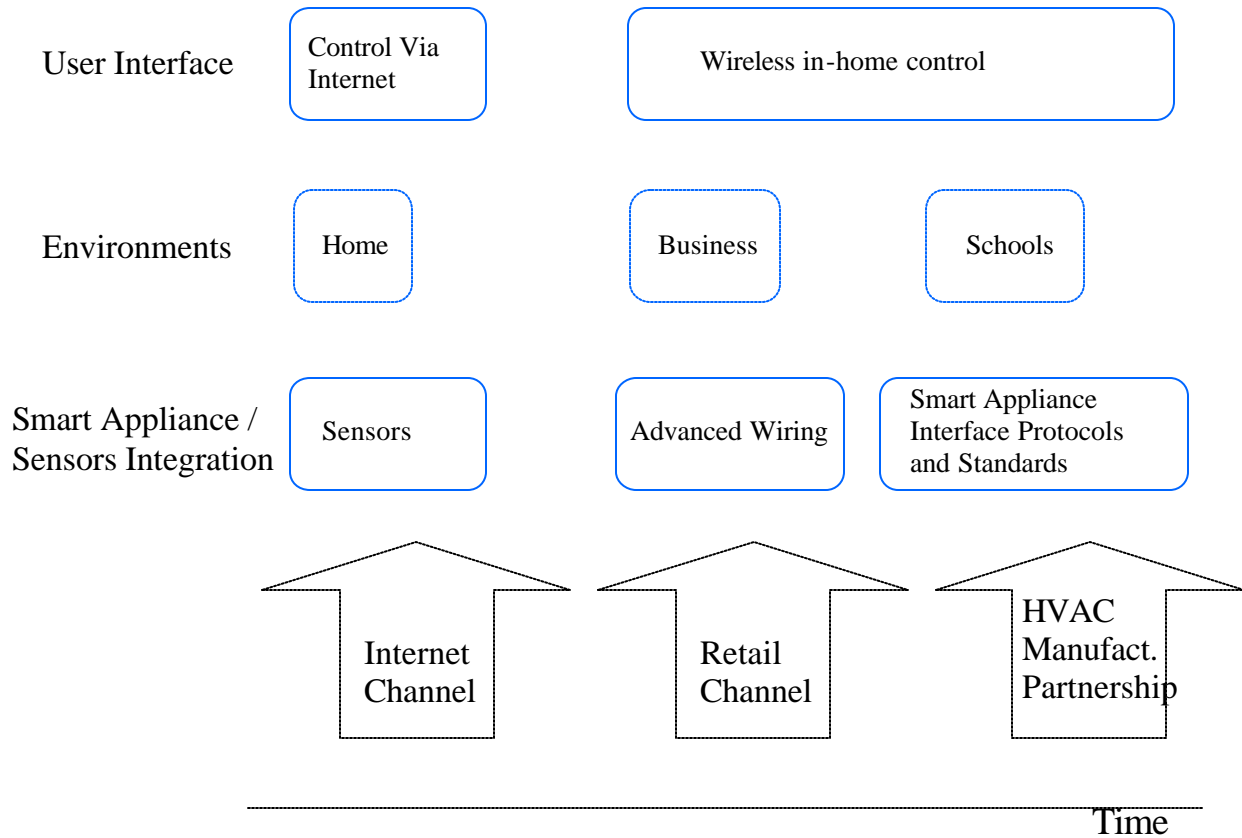


Figure 1 – Climatech Technology Roadmap

9.7 Risk Analysis

There are risks associated with launching the Climatech product. With the analysis conducted to this point, there are known risks in successfully marketing the Climatech product. This section examines some of the major risks of product launch.

The risk is analyzed from cost, schedule, technical, and market classifications. Each risk item is ranked as high, medium, and low risks. Mitigation options for each risk are then identified and discussed (although the mitigation may impose other risks itself). From these options, mitigation plans can be established and monitored for proper execution. Table 1 below outlines and analyzes some of the major risk areas.

Without performing a formal risk analysis, there are certain high-level steps that can reduce risk. Some standard steps to mitigate risks include:

- Developing and monitoring Pro-forma financial statements
- Become and remain experts in the field
- Keep track of and utilize lessons learned

- Establish market/brand recognition
- Watch technology and competition and remain agile
- Continually investigate and research the competitive and environmental (market size, attractiveness, politics, etc) aspect of the product and its technical, and market strategy
- Establish and monitor a SWOT (strengths , weaknesses, opportunities, and threats) analysis to fully understand the competition and where the product stands

Table 1. Climatech Risk Analysis

Risk	Classifications	Ranking	Mitigation
Not a new idea	Technical Market	High	<ul style="list-style-type: none"> • Ensure the proper target is identified and reached
Numerous patents exist	Cost Technical Market	High	<ul style="list-style-type: none"> • Research existing patents further to determine if any are being used or if there are opportunities to establish new patents
Competition creates barriers to entry	Cost Schedule Technical Market	High	<ul style="list-style-type: none"> • Identify, market and elaborate product discriminators
Research & Development costs required to remain competitive	Cost Schedule Technical Market	High	<ul style="list-style-type: none"> • Forecast the technical innovations and standards being set in the industry and utilize them within the product set to discriminate product over competition • Formalize financials to ensure R&D is apart of the plan.
Time to market (first mover)	Cost Schedule	High	<ul style="list-style-type: none"> • Identify, market and elaborate product discriminators • Launch as soon as possible – get involved in the industry now!
Relying on others products/technologies (Horizontal Integration)	Cost Technical	High	<ul style="list-style-type: none"> • Ensure coverage from a legal and liability standpoint by structuring agreements, partnerships, etc. • Ensure the rights to all intellectual property remains with the company
Standards are still being established in the industry	Technical Market	Low	Watch for dominant designs that are established and have the technology that drives standards – structure strategy accordingly
Remaining liquid	Cost	High	<ul style="list-style-type: none"> • Establish financial goals and watch accounting closely
New Entrants	Schedule Technical Market	High	<ul style="list-style-type: none"> • Enter the market now • Ensure product discriminators are marketed • Establish Patents • Establish Partnerships that raise barriers to entry
Large, established companies already have similar if not identical products	Technical Market	High	<ul style="list-style-type: none"> • Listen to and understand customers evolving wants and needs and adapt strategies accordingly

Once Launched, Climatech must be expanded to enter new markets and utilize new technologies to succeed and remain competitive. This, however, provides a greater level of risk and must be anticipated. As Climatech expands into new markets and utilizes new technologies, the risk increases; Table 2 demonstrates this concept. Risk can be mitigated along various paths within the matrix. For example, continuing to use existing technologies but expanding into new markets would reduce technical risk. Expanding the technology used while staying in the same market is another method to mitigate risk.

Simultaneously entering new markets and utilizing new technologies (which have their own inherent risks) may be very risky. The market/customers must continually be examined and the company must remain agile in their response to external and internal strengths, weaknesses, opportunities and threats.

Table 2. Market/Technology Risk Matrix

		Market		
		Existing	Expanded	New
Technology	Existing	Base Climatech Product		
	Expanded			
	New			

10 Climatech Prototype

The prototype aids in design selection and demonstrates core functionality of the Climatech web page. In the early stages, the prototype is used as a marketing tool to show the concepts of how the site will work and what the customer’s interaction will be like.

Please refer to figure 2 for a general layout of the Climatech web Page. The web page prototype illustrates the general layout of the page and the basic functionality. Figure 2 provides a visual representation of how the page is constructed.

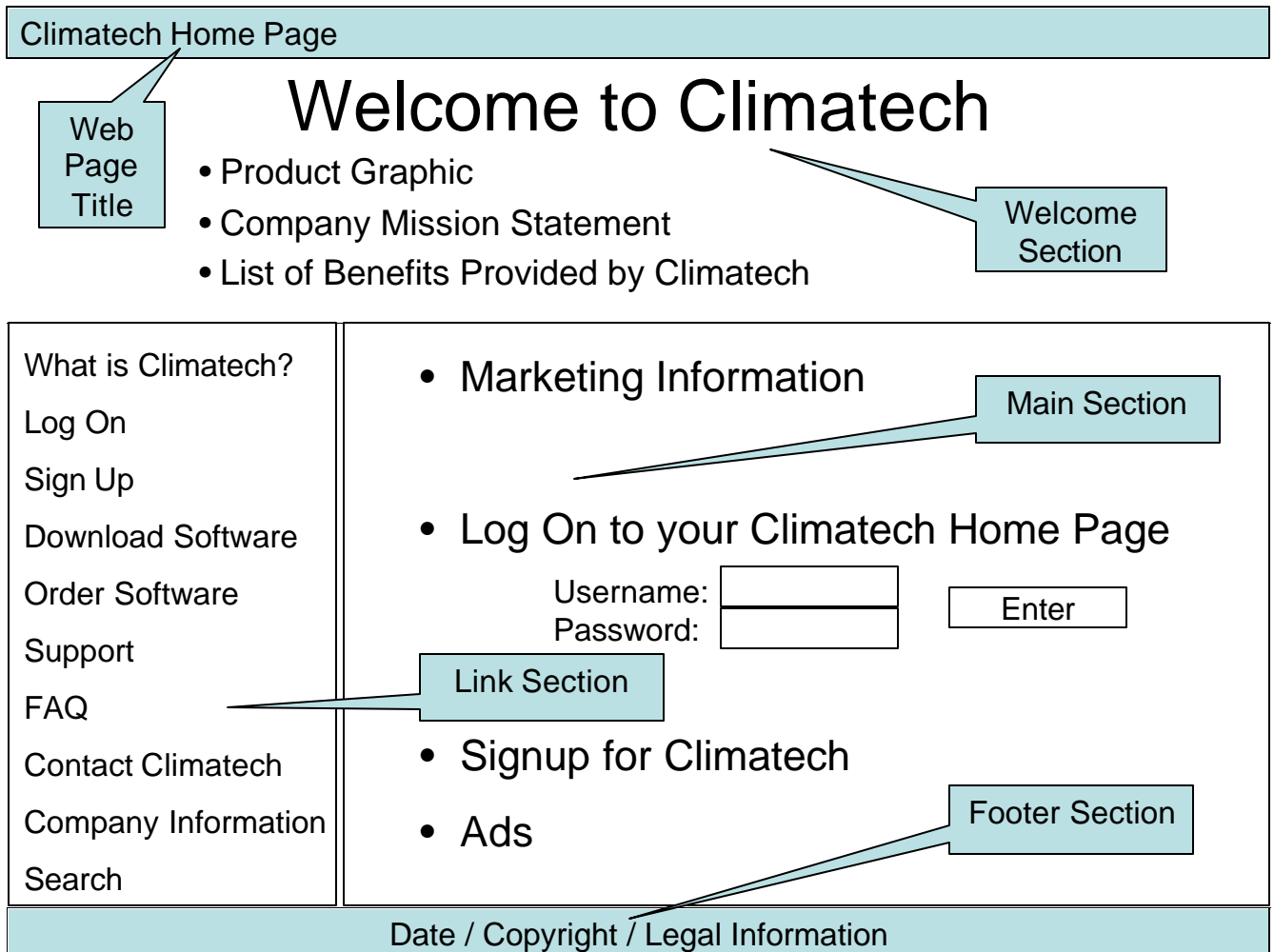


Figure 2 – Climatech Home Page Prototype

The Climatech web site requires an identifiable URL. Ideally, Climatech.com (or similar) would be the URL. A domain name registration is required for the Climatech Product. Standard methods of “helping” web search applications find the site will be used before product/site launch.

Users will access the main page by entering the URL using an Internet browser on a PC. The main page provides access to enter their Climatech home page, Sign up for the service, download the software, order the software, contact the company, obtain other general marketing and product information, etc. The marketing on this home page may be another avenue for revenue generation.

From the main page, the user may link to areas of interest. Each of the linkable sections is discussed below. Each section provides a different service for the customer. The “home” and “signup” links provide the user access to the application.

10.1 Description of Climatech Web Page Sections

10.1.1 Climatech Home Page

The user enters the Climatic web site by entering the Climatech URL (www.Climatech.com) into their web browser. The main page provides linkable sections to other pages where the user may interact with numerous functions related to Climatech. Please reference the web page prototype in Appendix C while examining the following sections.

The Climatech Home page has 5 main sections: a web page title, a welcome section, a main section, a link section, and a footer section. Each of these sections provide for direct navigation to all other areas within the Climatech domain. The web page title simply displays the title (Climatech Home Page) of the main Climatech web page and the titles of all web pages in the Climatech domain.

10.1.2 Welcome Section

The Welcome section provides a marketing graphic of the Climatech product, the company's mission statement, and a list of benefits provided by the product. The marketing graphic will be used to brand the product and provide a symbolic visual that will be used consistently on all marketing, advertising, and product media. The company's mission statement is stated in the welcome section to provide the customer with a snapshot of the company, products and services. The lists of benefits provide a general overview of how the products will satisfy the wants and needs of the customers. These benefits should capture the attention of the target market and summarize the reasons why the customer would want to purchase this product.

10.1.3 Main Section

The Main section provides more marketing information. This marketing information may take on many forms. Examples of information in this area are; customer quotations on why they use and enjoy the product, examples of cost and time savings, promotional information, product updates, late breaking news about Climatech, etc.

This section provides the main entry point for the user to access their personal Climatech home page. After entering their username and password and clicking the Enter button, they are linked to another page specifically setup for them to use the Climatech product. The user is able to customize their personal web page. The page also provides the user with all functions of the application (setting temperatures and times, viewing the current environmental status of their home, etc.). The information is provided to them in an easy, intuitive fashion. Graphics and other enhanced web features are designed specifically to enable the user to easily navigate the web site and use all features of the product.

The main section also provides a link for new customers to buy the product and signup for the service. This area provides detailed information on how to sign up, pricing, setup instructions, contact information, etc. New customers will use the "Sign up for

Climatech” link to traverse to this information. The signup page provides for secure credit card purchasing of Climatech. This service for purchasing Climatech will be subcontracted to another company that specializes in on-line purchasing.

Lastly, the main section will provide advertising space for related products and services. These advertisements may also provide revenue generation by charging fees for others to advertise on the Climatech Web site.

10.1.4 Link Section

The link section provides a method for the user to quickly traverse to other relevant information. All links are described below.

- What is Climatech? – This link traverses to a new page where a full description of the Climatech product resides. Users may use this information prior to purchasing the product.
- Log On – This link traverses to the log on page. This page is simply a separate page with a log on screen. This log on screen has fields for username and password and an enter button. Once the user enters the username and password account information and clicks the Enter button, they are taken to their own Climatech web site where they have access to customize and use all features of the product.
- Sign Up – This link traverses to a new page where a new customer may sign up to use the product. This page provides secure credit card transaction capabilities provided by a third party.
- Download Software – This link traverses to a new page where the user may download all available Climatech software. The download page provides information on the software being downloaded, directions to download and install the software, and hardware configuration requirements.
- Order Software – This link traverses to a new page where the user may contact Climatech and purchase the software via phone or mail. The software will be provided on a CD-ROM once purchased. A user and installation manual as well as marketing material will accompany the software.
- Support – This link traverses to a new page where the user may obtain support from Climatech on their application. The terms and agreement of the support services are detailed on this page. The user may perform a search to find information they are looking for, or contact Climatech directly via phone or email. Also included are the user manual information provided with the product. Many user questions can be resolved via the user manual.
- FAQ – This link traverses to a new page that contains a general knowledge base of compiled information on the Climatech product. Users will be able to not only learn about what Climatech is and how to use it, but also how it will benefit them. Also provided are answers to questions frequently asked by customers and how to remedy general issues with the products use.
- Contact Climatech – This link traverses to a new page where all Climatech contact information is available.

- Company Information – This link traverses to a new page where background information on the company is provided. The mission statement and other company information (location, etc.) are provided here.
- Search – This link traverses to a new page where the user may search the Climatech domain or the Internet. This page will serve as a “site map” to help users find the information they are looking for.

10.1.5 Footer Section

The footer section provides the current date and time, copyright information, and legal information on privacy, credit card security, etc.

10.1.6 HTML Prototype

A physical, HTML prototype has been created and is included with this report. The HTML is contained in a zip file named Climatech.zip. Please extract the zip file to a temporary location and open the main.html file. Although the HTML prototype does not exactly match the prototype discussed previously, it the next logical step in the prototype phase and will be expanded into a fully functional web page.

11 Legal and Environmental Considerations

The Climatech product carries little to no risk with consideration to environmental or legal recourse. Climatech is environmental ‘friendly’ as it helps to conserve energy and natural resources. In essence, the product will be a proprietary interface owned and operated by Team 5. The interface will be integrated with the Internet thus allowing consumers to carefully monitor their domestic environment. Once again, this is a conservation measure as opposed to an added consumer cost. However, there are potential legal considerations that must be noted in order to avoid future legal action. As discussed in the patent section, there are numerous patents that are similar in nature yet different enough to allow Climatech to be recognized as an incremental change. Further legal considerations that we must be cognizant of include the need to ensure that the legal issues associated with each component of the Climatech application will enable us to meet their goal of successfully marketing and selling the bundled product. As such, we must review our contract and licensing agreements with any vendors or subcontractors. We will also need to obtain copyrights and trademarks for the Climatech product. To sell the product internationally, we will need to understand the legalities of conducting business in the international realm and structure the product end-user license agreement accordingly.

When establishing a contract with a vendor that will license Climatech for use in a bundled offering, special consideration must be given to specific areas of the written contract. First, the contract must be a written contract with all standard contract clauses. The license of the Climatech product will typically outline the legal use of the software. This includes such things as rights to use the user manual and

documentation, distribution schemes, terms and scope of license (number of users, copyright clauses and indemnity for infringement, backup media rights, rights to combine with other product, modification and/or integration rights, etc. It will also contain warranty and disclaimers, export regulations, a termination clause and an outline of the End User License Agreement (EULA). The EULA will contain specifics on distribution, duplication, support, and modification made to the installed system, Government systems and general use. Jurisdiction is also outlined in the in the contract. The Jurisdiction clause will outline the statement of governing law, choice of law, forum selection clause and the like.

Many of the same contract issues must also be considered in establishing a legal agreement with a subcontractor. With the subcontractor contract, however, the corporation has the ability to construct the contract to their needs. Agreements, disclosures, and partnerships can also be arranged.

One of the main advantages with subcontractor contracts is the capability to obtain transference of good title. If the contract is structured as a “work made for hire”, it is the same as if the contracting organization is the authors of the work. As such, the organization obtains good title to the works and therefore has the legal right to control and dispose of the work.

Some concerns are that the subcontractor, in development of the work, must ensure that they have the right to sell, transfer and/or modify the work. After all, they are developing a software application under contract and they must abide by that contract as well as legally transfer rights to the contractor. Examples of this include issues such as copyright infringement or lack of due diligence on the subcontractors part. If the subcontractor develops a work using Climatech products that have specific clauses on distribution or sale of the derived work, then the contracting organization may be liable. Subcontractor contracts should explicitly state that they are not liable for the diligence of the subcontractor and take appropriate steps to ensure that the work being subcontracted has no legal bindings that would preclude the organization for obtaining the exclusive rights of ownership of the subcontracted works. This does not remove liability from the contractor, but it may reduce it.

Other considerations include integration and distribution rights, payment schedules, reviews and acceptance clauses. Of course, the same legal contractual elements must be in place as with any contract (i.e. Mutual Assent, Consideration, Capacity, Legality, Form, Writing or Memorandum, Signatures, Conditions, Performance, Discharge and Break clauses).

Agreements that may be beneficial (and sometimes detrimental) are non-disclosure agreements, teaming agreements and memorandums of understanding. Non-disclosure agreements are legal agreements between two or more parties relating to a specific or restricted job or task in which proprietary information needs to be communicated. The agreement states that no disclosure of the information conveyed

for reasons of the job or task are to be made. Teaming agreements are arrangements for two or more entities to engage in mutual beneficial activities. Memorandum of understanding's state an understanding between two or more entities in relation to business activities.

In summary, Climatech is a product containing a proprietary interface(s) that possesses no legal, environmental, or other concern. As such, we will proceed as indicated noting that all legal issues must be carefully resolved or understood.

12 Summary

As mentioned in previous reports, we initially felt comfortable with the Home Automation Industry as it was assumed this was a relatively un-penetrated market. However, after extensive research we discovered that the Home Automation industry is in fact an evolving industry with many competitors who provide similar if not identical products. In addition, there are many competitors who provide individual components as compared to the complete home automation system. The Home Automation industry is in fact a highly competitive industry.

Given this information as well as our own analysis of the product offerings and requirements, we feel that we should not launch this product at this time. Climatech, by itself, may not be a viable product. A more comprehensive product offering in the home automation industry may be required. For example, adding heat and motion sensors to better enhance the control of the home HVAC system. Further analysis and refinement of the product and its offering as well as defining the product discriminators is required prior to launching a product within the Home Automation industry.

13 APPENDIX A: Patent Search

US6330806: System and method for controlling an HVAC system using a flash mini-card

Country: US United States of America
Inventor: Beaverson, Gregory K.; York, PA Smith, Bart A.; York, PA
Assignee: York International Corporation, York, PA other patents from YORK INTERNATIONAL CORP. (approx. 77) News, Profiles, Stocks and More about this company
Published / Filed: Dec. 18, 2001 / March 3, 2000
Application Number: US2000000513456
IPC Code: F25D 17/02;
ECLA Code: F24F11/00R5;
U.S. Class: Current: 062/201; 062/077; 062/185; 062/298; 236/051;
Original: 062/201; 062/185; 062/298; 062/077; 236/051;
Field of Search: 062/201,185,298,230,125,126,127,129,130,77 236/51,94
165/11.1 700/17,83
Priority Number: March 3, 2000 US2000000513456

Abstract: A heating, ventilation, and air-conditioning (HVAC) control system and method for controlling a device, a subsystem, and/or a process using a flash mini-card. Preferably, the present invention is directed to an HVAC control system and method for controlling a chiller and the devices and subsystems associated with the chiller using a flash mini-card. More preferably, the present invention obviates the need for the HVAC control system and method to use at least one of the following: a hard disk, a disk controller, a card reader, or a card controller. The method includes, for example, applying power to the HVAC control system, wherein the step of applying power initiates a boot-up of a processor associated with the HVAC control system; reading a default memory location, wherein the contents of the default memory location direct the processor to a Basic Input/Output System (BIOS) connected to the processor through a bus; configuring the processor associated with the HVAC control system by executing a set of BIOS instructions within the BIOS, wherein after the step of configuring, the processor reads a set of boot instructions that directs the processor to the flash mini-card containing a set of instructions; and performing at least one of the set of instructions contained within the flash mini-card to control the HVAC system using the HVAC control system.

US6402043: Method for controlling HVAC units

Country: US United States of America
Inventor: Cockerill, John F.; Scarsdale, NY 10583
Assignee: None

Published / Filed: June 11, 2002 / Oct. 18, 2001
Application Number: US2001000981562
IPC Code: G05D 15/00; F23N 5/20;
ECLA Code: G05D23/19E;
U.S. Class: 236/078.D; 165/011.1; 700/030; 700/278;
Field of Search: 236/46 R,91 F,49.3,78 D 237/8 R 700/30,278 165/11.1

Priority Number: Oct. 18, 2001 US2001000981562

Abstract: The method for adjusting the temperature set point of a HVAC unit and activating and deactivating the HVAC unit utilizes one sensor to periodically determine the thermostat activity in a controlled environment and a second sensor to measure the temperature of a transfer medium output from said HVAC system. A microprocessor receives, stores and processes information from the two sensors and is connected to and controls the HVAC unit. The first sensor records thermostat activity for the controlled environment at set intervals over a defined time period and they are stored in the microprocessor. An actual HVAC demand model for said controlled environment is created by the microprocessor, based on said recorded thermostat activity. The actual HVAC demand model is compared to an ideal HVAC demand model and a temperature change factor is calculated. Then, the optimum temperature set point for said HVAC unit is determined, based on said temperature change factor. The microprocessor adjusts the actual temperature set point of the HVAC unit to the optimum temperature set point. In addition, the microprocessor continuously monitors the temperature of the transfer medium of said HVAC unit. This temperature is compared to the temperature set point for the HVAC unit. The microprocessor generates a signal to the HVAC unit for activating it when the temperature of the transfer medium deviates from the temperature set point by more than the temperature set point range differential. The HVAC unit is turned off by the microprocessor when the temperature of the transfer medium returns to the temperature set point.

US4897798: Adaptive environment control system

Country: US United States of America
Inventor: Cler, Lawrence J.; Broomfield, CO
Assignee: American Telephone and Telegraph Company, New York, NY AT&T Information Systems Inc., Morristown, NJ other patents from AT&T CORP. (approx. 14,445) News, Profiles, Stocks and

Published / Filed: Jan. 30, 1990 / Dec. 8, 1986
Application Number: US1986000939372
IPC Code: G06F 15/20; F23N 5/20;
U.S. Class: Current: 700/276; 165/239; 236/046.R; 237/002.A; 374/011; 374/198; Original: 364/505; 364/550; 364/557; 364/148; 374/011; 374/198; 236/046.R; 237/002.A; 165/014; 165/022;

Field of Search: 364/505,506,512,550,551,148,557 374/11,182,189,197,198
165/13,14,22,26,48 R 236/46 R,46 A 237/2 R,2 A
Priority Number: Dec. 8, 1986 US1986000939372

Abstract: This adaptive environment control system provides an HVAC control system that adapts to the continually changing thermal characteristics of the building in which it operates. The adaptive environment control system periodically estimates the thermal characteristics of the building and uses these estimates to control the operation of the HVAC system. The adaptive environment control system also periodically measures the performance characteristics of the HVAC system to obtain data with which to update these thermal characteristic estimates. These thermal characteristic estimates enable the adaptive environment control system to determine both the length of time it takes the building to heat up and cool down when the HVAC system idles, as well as the amount of time it takes the HVAC system to heat or cool the building. These measurements and estimates are taken on a dynamic basis so that the adaptive environment control system responds to any changes in the environment, either within or without the building, including degradation of the operation of the HVAC system. The adaptive environment control system can calculate, through the estimates and measurements, the thermal performance of both the building and the HVAC system, so that the HVAC system is operational sufficiently early to maintain the building interior temperature within a predetermined range of the set-point threshold level of the thermostat.

US6385510: HVAC remote monitoring system

Country: US United States of America
Inventor: Hoog, Klaus D.; Durham, NC 27701-1702 Knobloch, Jr.,
Nims P.; Metairie, LA 70001
Assignee: None
Published / Filed: May 7, 2002 / Dec. 2, 1998
Application Number: US1998000203728
IPC Code: G01M 1/38;
U.S. Class: 00/276; 700/204; 700/300; 379/102.05;
Field of Search: 00/276,278,108 379/102.05
Priority Number: Dec. 2, 1998 US1998000203728
Dec. 3, 1997 US1997000067793

Abstract: An electronic HVAC monitoring computer continuously monitors the general condition and efficiency of an HVAC system and notifies a central station computer via modem link or other signal transmission means, when the general condition or efficiency of the HVAC system falls below certain industry standard values by a pre-set amount.

US5818347: Identification of HVAC systems in a communication network

Country: US United States of America
Inventor: Dolan, Robert P.; Syracuse, NY Phillips, Thomas R.; Cicero, NY DeWolf, Thomas L.; Liverpool, NY Hill, Mark A.; Lafayette, NY
Assignee: Carrier Corporation, Syracuse, NY other patents from CARRIER CORPORATION (approx. 1,758) News, Profiles, Stocks and More about this company
Published / Filed: Oct. 6, 1998 / Dec. 26, 1995
Application Number: US1995000578348
IPC Code: H04Q 5/22; G06F 12/00; G05B 13/02; A01K 41/00;
ECLA Code: F24F11/00R5; G05B19/042; H04L29/12A;
U.S. Class: Current: 340/825.52; 236/002; 700/044; 711/200; Original: 340/825.52; 395/410; 364/164; 236/002;
Field of Search: 340/825.52,825.21,825.07 395/200.1,200.11,200.16,829 364/164 236/2,37,91 165/201,287
Priority Number: Dec. 26, 1995 US1995000578348

Abstract: An HVAC system is assigned a network identification for subsequent use within a communication network upon receipt of a formatted signal containing the network identification. The HVAC system stores the network identification in nonvolatile memory. The HVAC system also preferably stores a verification image of the communicated network identification so that any reading back of the network identification can be validated through comparison with the stored verification image.

US5711480: Low-cost wireless HVAC systems

Country: US United States of America
Inventor: Zepke, Bruce E.; Glastonbury, CT Lucia, Merrill R.; Chaplin, CT Winston, Jr., Charles R.; Glastonbury, CT Hasselmark, Earl D.; Barkhamsted, CT Park, Taeyoung; Shelton, CT
Assignee: Carrier Corporation, Farmington, CT other patents from CARRIER CORPORATION (approx. 1,758) News, Profiles, Stocks and More about this company
Published / Filed: Jan. 27, 1998 / Oct. 15, 1996
Application Number: US1996000731633
IPC Code: G05D 23/00; H04Q 7/00;
ECLA Code: G05D23/19B4;
U.S. Class: Current: 236/051; 318/016; Original: 236/051; 318/016; 340/325.72;
Field of Search: 340/325.72 318/016 236/051
Priority Number: Oct. 15, 1996 US1996000731633

Abstract: Communication between the various elements of HVAC systems is effected by means of low-cost, low-power, narrow-band AM SAW-stabilized transmitters 21, 27, 39, 86 and receivers 18, 28, 47, 89. A residential embodiment (FIG. 1) transmits temperature information from each room of the house to a master control 24, which is used to control the HVAC demand and to control the damper in the corresponding room. In a first commercial building embodiment (FIGS. 2 and 3), thermostat/transceiver 61-66 assemblies transmit not only demand and control information from the corresponding thermostat 78 (with switches), but relay information transmitted from other thermostat/transceiver assemblies, whereby messages are retransmitted from one floor to the next to overcome the high attenuation of commercial building construction in reaching rooftop HVAC systems 71-76. In a second commercial building embodiment (FIG. 4), messages are transmitted from a thermostat/transceiver assembly 92 in each floor to a relaying transceiver assembly 96 in a stairwell, the transmissions to rooftop units 93, 97 being made with little attenuation through the stairwell and the roof. Message protocols with or without acknowledgement may be used. Relative humidity and CO₂ level may be controlled as well as temperature.

US5475364: Room occupancy fire alarm indicator means and method

Country: US United States of America
Inventor: Kenet, Ran; Thornhill, Canada
Assignee: Electronic Environmental Controls Inc., Toronto, Canada
other patents from ELECTRONIC ENVIRONMENTAL CONTROLS INC. (approx. 3) News, Profiles, Stocks and More about this company
Published / Filed: Dec. 12, 1995 / April 28, 1994
Application Number: US1994000235628
IPC Code: G08B 13/19; G08B 21/00;
ECLA Code: F24F11/00; G08B13/19; G08B19/00B;
U.S. Class: Current: 340/522; 340/525; 340/567; 340/587; 340/691.1;
Original: 340/522; 340/525; 340/567; 340/587; 340/691;
Field of Search: 340/521,522,540,567,628,691,573,525,587,589,584
Priority Number: May 3, 1988 CA1988000565830

Abstract: Rooms in a building each have a heating, ventilating and air conditioning system (HVAC), a room control unit having a temperature controller, and various sensors. The control unit monitors the presence of persons in the room, determines the season, sets back the temperature in an empty room by a variable amount which the HVAC can restore in a given time, and restores the temperature to the previous user request when the user returns but to a standard temperature if the user has newly checked in. An outside hallway panel briefly displays, when interrogated by a maid, a person's presence. By monitoring maid requests, door status and maid activity, the unit

indicates on a room map whether the room is being cleaned, clean, or ready to rent. By establishing the heat loss/gain (l/g) factor of a room with the HVAC off and comparing it with the time to heat or cool the room, HVAC failures are determined. By comparing a room's l/g factor with those of its neighbors, room environment failures are determined. A fire alarm is displayed immediately if more than one unit or more than one sensor reports fire; otherwise a fire alarm display is delayed briefly to reduce false alarms. Fire spreading is displayed on a screen room map showing in red rooms over a certain temperature. For fire, the hallway panels indicate those rooms where a person is present.

US4215408: Temperature control of unoccupied living spaces

Country: US United States of America
Inventor: Games, John E.; Granby, CT Bitterli, William W.; Simsbury, CT
Assignee: United Technologies Corporation, Hartford, CT other patents from UNITED TECHNOLOGIES CORPORATION (approx. 5,259) News, Profiles, Stocks and More about this company

Published / Filed: July 29, 1980 / Dec. 12, 1977
Application Number: US1977000860026
IPC Code: G06F 15/20; F24F 3/00;
U.S. Class: Current: 700/278; 165/211; 165/212; 165/250; 165/260; 236/046.R; Original: 364/505; 165/022; 165/026; 236/046.R;

Field of Search: 364/505 236/46 R 165/12-14,16,22,26
Priority Number: Dec. 12, 1977 US1977000860026

Abstract: Apparatus is provided for controlling, during unoccupied periods, the operation of an HVAC system and perimeter heating system providing hot air and hot fluid, respectively, to a temperature controlled living space having occupied and unoccupied periods, the apparatus including an electronic processing means in combination with dedicated sensing apparatus, the apparatus providing controlled actuation of the HVAC and perimeter heating system in dependence on the temperature difference between an actual space temperature signal and unoccupied space heat and cool reference temperature signals, the apparatus further providing an optimum start-up procedure including simultaneous actuation of the HVAC and perimeter heating system to accelerate the heating of the space, the HVAC discharge temperature being modulated during the start-up procedure in dependence on the temperature difference between the actual space temperature and an occupied space heat reference temperature signal, the perimeter heating system discharge temperature being preset to a start-up reference discharge temperature having a value greater than that maximum perimeter heating system discharge temperature permitted in normal operation.

US6349883: Energy-saving occupancy-controlled heating ventilating and air-conditioning systems for timing and cycling energy within different rooms of buildings having central power units

Country: US United States of America
Inventor: Simmons, Michael Lee; Sarasota, FL Gibino, Dominick J.;
Manassas, VA
Assignee: Energy Rest, Inc., Manassas, VA other patents from
ENERGY REST, INC. (approx. 2) News, Profiles, Stocks
and More about this company
Published / Filed: Feb. 26, 2002 / Jan. 21, 2000
Application Number: US2000000488702
IPC Code: F24F 3/00; G05D 23/00;
ECLA Code: F24F11/00R5;
U.S. Class: Current: 236/046.R; 165/209; 236/051; Original: 236/046.R;
236/051; 165/209;
Field of Search: 236/51,41,46 R,49.3 165/217,208,209
Priority Number: Jan. 21, 2000 US2000000488702
Feb. 9, 1999 US1999000246723

Abstract: An automated energy saving system dispenses HVAC energy from a common energy source to a set of utility zones, typically rooms in a house or commercial building which are dispersed at different locations remote from the energy source, typically a roof top unit. Each utility zone selects locally established operating conditions as operating parameters serviced at a control center, typically located at the energy source site, to distribute available HVAC energy to the independent utility zones of the set in an energy saving mode of operation. The remote utility zones communicate with the common controller by wiring or wireless communication links. At the energy source energy is distributed by off-on control of individual energy conduits to the individual utility sites. The control parameters at the local utility zones define energy-off periods by way of predetermined interactively set temperature ranges in one preferred automated delivery mode for delivering both heating and cooling energy from the HVAC energy source. Timing cycles for energy delivery during reduced energy delivery periods are also interactively defined at local utility sites for initiating automatic control functions at the central control site. Typically energy is supplied intermittently during uninhabited periods at local utility zones in response to either passive temperature range settings or dynamic occupancy detectors to conserve energy in an energy savings mode of operation.

14 APPENDIX B: SURVEY RESULTS

Home Automation Survey

This survey is for educational purpose to report on buyer opportunities in the Home Automation industry. The survey is prepared for the "Managing New Product Development" class at Renselear. The industry selected is based on the e-screen evaluations of three different industries and the decision made by Group 5.

The survey has three sections, the general information section, the industry section, and the buyer opportunities section. Please take the time to answer all of the questions to the best of your ability.

Section 1: General Information

The following questions allow us to group the data for further analysis by gender, age, education level, and household income. Your answers will be kept anonymous, and results to these questions will only be shared in aggregate statistical form. Please put an X on the line that represents your answer.

1. Are you a Male or Female? Male 22 Female 5
2. Please indicate your age? Less than 21 years old 2
21 to 29 years old 10
30 to 49 years old 14
50 to 64 years old 1
65 or older
3. What is the size of the family living in your house hold?
(Including your self) 1 to 2 people 7
3 to 4 people 16
5 or more people 4
4. What was the maximum level of education you achieved? High school 6
Trade School 1
College 11
Graduate School 10
Professional School
5. What is your total household income? Under \$25,000 1
\$25,000 to \$49,999 4
\$50,000 to \$74,999 5
\$75,000 to \$100,000 5
Over \$100,000 11
6. Do you own or rent your home? Own 22 Rent 5
7. Do you own a Computer? Yes 27 No
8. Do you have access to the internet? Yes 27 No

Section 2: Home Automation Survey

Home automation is defined as a process or system that can link lighting, entertainment, security, telecommunications, heating and air conditioning into one centrally controlled system. Home automation provides the ability to enhance one's lifestyle, and make a home more comfortable, safe and efficient. Automation allows you to make your house an active partner in managing your busy life.

The following questions allow us to collect data about the industry and your knowledge and involvement in home automation industry.

1. Are you familiar with the concept of Home Automation? Yes 21 No 6
2. Do you feel that home automation products are beneficial? Yes 20
No 1
I don't know 6
3. Do you feel that home automation products could save you money? Yes 16
No 2
I don't know 9
4. Do you own any product(s) that are related to Home Automation? Yes 8 No 19
5. In the last three years, how much did you spend on general home improvement? less than \$1000 4
\$1000 to \$2999 6
\$3000 to \$5999 8
\$6000 to \$10,000 5
more than \$10,000 3
6. In the last three years, how much did you spend on home improvement that is related to home automation? (i.e. security, control, central air, home networking, etc...) less than \$1000 19
\$1000 to \$2999 6
\$3000 to \$5999 2
\$6000 to \$10,000 1
more than \$10,000
7. In the near future, how much do you estimate that you would spend on home automation products? less than \$1000 15
\$1000 to \$2999 10
\$3000 to \$5999 1
\$6000 to \$10,000 1
more than \$10,000
8. Do you own or would be interested in buying any of the following items: (Check all that apply)
 - A home security system 17
 - A central heating / cooling system 15
 - A computer local area network (wireless or wired) 14
 - A mobile or wireless device 19
 - An audio/video/game entertainment system 18
 - Smart appliances 15
 - Central or automated lighting system 12
 - An electronic shower system 3

Section 3: Product Survey

The following questions allow us to collect data about the specific product ideas. The product ideas are briefly described in this section.

Automated Bill Payment

The product will automatically pay your bills based on the due date or a time frame that the user chooses. The product will also alert the user as to when a bill was expected and when a manual bill needs to be paid. The product will also feature a utility usage comparison and forecast tool based on the utility bills and the actual usage for the month.

Talk To Me

This product will allow most home utilities and smart electronics to be controlled with the users voice from anywhere within the home. Examples of the usage of this product include turn the lights on or off, shutting off the oven while watching a movie, change the channels of the TV without searching for the remote.

Automated Chef

This product helps you keep track of what you have in your refrigerator, cabinets, and food storage. This product also features a place where you can keep all your recipes as well as downloading new recipes from the internet. The user can find out what the need to buy at any time. The user can also know if they have all the ingredients to make a recipe.

Recycling and Garbage Collector

This product will quickly and easily sort out your recycling items from the trash and separate the two. The users can now do their part in saving the environment without a lot of effort.

Climatech

Climatech controls your home environment while helping to minimize cost. Imagine maintaining a constant 72° while your home and having piece of mind that Climatech will automatically adjust temperatures when your not home. Not only do you remain comfortable while at home, you also save money when your not.

OneTouch.net

OneTouch.net provides the ability to control all your home automated services from a computer or wireless device such as Blackberry's or PDA. In addition to providing centralized control, OneTouch.net notifies you when the desired setting or request has been completed. Relax knowing you have control even when your not a home.

Whatashower

Whatashower was designed for those individuals who are looking for the perfect shower. The Whatashower carefully controls temperature and pressure while allowing for the storage of up to 10 personal preferences. Imagine starting your perfect shower while working on the computer or utilizing wireless devices such as a Blackberry's or PDAs. Whatashower, always the perfect shower.

Internet Family Scheduler

This product will provide Internet/remote access to all family members. This product would allow anyone in the family to know where everyone is, their schedules, and will help them coordinate activities. This product provides a convenient way for family members to stay in touch.

Automatic Window/Shade Controller

This product will automatically close or open the window of the users house based on a schedule that the user creates. The product will also shut the shades or opens them based on a separate time or based on light sensitivity.

Internet Guard Dog

This product will provide Internet/remote access to the home security system. This product would allow users to monitor the home by providing remote visual and audio access to the home surroundings. Users of This product would be able to communicate with home visitors or receive packages without being present.

Please rate the following questions regarding the products described above from 1 to 5.

1 = strongly disagree and 5 = strongly agree.

1.		1	2	3	4	5
	<i>Automated Bill Payment</i>	4	3	5	4	15
	<i>Talk To Me</i>	4	6	13	5	6
	<i>Automated Chef</i>	6	9	7	8	6
	<i>Recycling and Garbage Collector</i>	4	9	6	5	11
	<i>Climatech</i>	1	1	8	10	11
	<i>OneTouch.net</i>	2	9	7	8	9
	<i>Whatashower</i>	7	10	8	2	7
	<i>Internet Family Scheduler</i>	5	11	5	9	5
	<i>Automatic Window/Shade Controller</i>	10	7	3	8	7
	<i>Internet Guard Dog</i>	1	5	9	9	7

2.	This product simplifies & enhances the quality of my life.	1	2	3	4	5
	<i>Automated Bill Payment</i>	3	4	4	8	12
	<i>Talk To Me</i>	1	4	14	7	8
	<i>Automated Chef</i>	8	6	4	6	10
	<i>Recycling and Garbage Collector</i>	7	6	8	6	8
	<i>Climatech</i>		3	8	8	14
	<i>OneTouch.net</i>	2	5	9	7	8
	<i>Whatashower</i>	7	7	8	2	8
	<i>Internet Family Scheduler</i>	4	8	9	6	7
	<i>Automatic Window/Shade Controller</i>	8	7	4	7	9
	<i>Internet Guard Dog</i>	1	5	7	8	10

3.	I would definitely buy this product.	1	2	3	4	5
	<i>Automated Bill Payment</i>	7	2	1	8	14
	<i>Talk To Me</i>	3	3	12	8	9
	<i>Automated Chef</i>	7	9	8	4	8
	<i>Recycling and Garbage Collector</i>	9	5	8	6	9
	<i>Climatech</i>	1	2	11	10	9
	<i>OneTouch.net</i>	4	4	8	8	8
	<i>Whatashower</i>	12	6	5	1	9
	<i>Internet Family Scheduler</i>	9	9	5	2	7
	<i>Automatic Window/Shade Controller</i>	11	4	8	3	6
	<i>Internet Guard Dog</i>	3	8	6	8	7

4.	Price is a big factor when buying this product	1	2	3	4	5
	<i>Automated Bill Payment</i>	5	1	8	7	13
	<i>Talk To Me</i>	2	6	10	7	8
	<i>Automated Chef</i>	7	2	5	6	10
	<i>Recycling and Garbage Collector</i>	8	4	2	6	13
	<i>Climatech</i>	3	2	8	10	12
	<i>OneTouch.net</i>	3	6	5	9	11
	<i>Whatashower</i>	9	1	3	4	15
	<i>Internet Family Scheduler</i>	3	5	9	6	12
	<i>Automatic Window/Shade Controller</i>	9	4	4	4	14
	<i>Internet Guard Dog</i>	2	2	8	10	13

Please rate the following questions regarding the products described above from 1 to 5.
1 = strongly disagree and 5 = strongly agree.

5.	Brand name is a big factor when buying this product	1	2	3	4	5
	<i>Automated Bill Payment</i>	6	7	9	3	5
	<i>Talk To Me</i>	4	6	5	7	5
	<i>Automated Chef</i>	4	7	8	4	4
	<i>Recycling and Garbage Collector</i>	6	10	6	3	3
	<i>Climatech</i>	5	4	8	5	9
	<i>OneTouch.net</i>	4	6	7	5	5
	<i>Whatashower</i>	7	8	4	6	2
	<i>Internet Family Scheduler</i>	3	7	9	4	3
	<i>Automatic Window/Shade Controller</i>	7	9	4	6	3
	<i>Internet Guard Dog</i>	4	1	8	6	7

6.	I will use this product very often.	1	2	3	4	5
	<i>Automated Bill Payment</i>	6	1	3	5	15
	<i>Talk To Me</i>	7	6	9	3	7
	<i>Automated Chef</i>	8	7	5	4	7
	<i>Recycling and Garbage Collector</i>	8	3	5	9	6
	<i>Climatech</i>	6	1	8	6	12
	<i>OneTouch.net</i>	8	4	7	3	9
	<i>Whatashower</i>	5	3	5	6	8
	<i>Internet Family Scheduler</i>	7	6	10	4	5
	<i>Automatic Window/Shade Controller</i>	9	3	5	6	6
	<i>Internet Guard Dog</i>	6	8	2	8	12

7.	This product will save me time or money.	1	2	3	4	5
	<i>Automated Bill Payment</i>	5	1	8	6	13
	<i>Talk To Me</i>	4	6	10	4	6
	<i>Automated Chef</i>	6	6	7	4	9
	<i>Recycling and Garbage Collector</i>	7	6	5	5	12
	<i>Climatech</i>	1	2	7	9	14
	<i>OneTouch.net</i>	2	9	10	4	5
	<i>Whatashower</i>	11	3	3	3	9
	<i>Internet Family Scheduler</i>	8	7	2	4	9
	<i>Automatic Window/Shade Controller</i>	9	4	4	7	8
	<i>Internet Guard Dog</i>	2	5	9	8	5
8.	I already have a product that does the same thing.	1	2	3	4	5
	<i>Automated Bill Payment</i>	6	3	2	7	14
	<i>Talk To Me</i>	15	6	4		6
	<i>Automated Chef</i>	17	1	1	1	6
	<i>Recycling and Garbage Collector</i>	16	1	3		6
	<i>Climatech</i>	11	3	6	5	6
	<i>OneTouch.net</i>	13	7	5		5
	<i>Whatashower</i>	17	1	1	2	5
	<i>Internet Family Scheduler</i>	14	1	6	2	4
	<i>Automatic Window/Shade Controller</i>	16	1	1	1	7
	<i>Internet Guard Dog</i>	12	7	1	6	6