

# SportScore

## A Collaborative Evaluation Process

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# Contents

## I introduction I

- 1 background
- 2 methodology
- 4 design constraints
- 5 system overview
- 7 system elements

## I system I

- |              |                    |                     |
|--------------|--------------------|---------------------|
| 8 eyeVote    | 23 sportScore Show | 38 scoreBrain       |
| 10 miniVox   | 26 eduScore        | 41 scoreBase        |
| 14 deplhiVox | 29 sportScore.com  | 43 swiss dataBank   |
| 17 seeScore  | 32 eyeVolunteer    | 45 voteCall         |
| 20 scoreBuzz | 35 systeMentor     | 48 score SportScore |

## I conclusion I

- 50 conclusion

## I appendix I

- |                       |                       |                    |
|-----------------------|-----------------------|--------------------|
| defining statements   | sample working forms: |                    |
| function structure    | activity analysis     | system element     |
| design factors        | solution elements     | relationship forms |
| information structure | means/ends            | system elements    |
|                       | synthesis             |                    |

## I Background I

The value of an Olympic gold medal has become questionable of late, given the scandals that have ravaged the Olympic games within judged sports events. For example, events at the Salt Lake City 2002 Games were obscured by the judging scandal involving the Russian and Canadian skating pairs. While the Canadians executed their routine flawlessly, the Russians failed to perform a double axel. The judges however, awarded the gold medal to the Russians, much to the outrage of audiences worldwide. When judging improprieties came to light, the International Olympics Committee quickly awarded the Canadians a second gold medal.

Critics have long complained that sports based upon subjective judging, such as diving, gymnastics, boxing, and figure skating, should be excluded from the Olympics. According to Wall Street Journal writer John Feinstein, “Olympic sports should be those in which a person or a team wins by going the fastest, jumping the highest or farthest, or scoring the most points. No judges. Scoreboards don’t lie and they can’t be bought off.”<sup>1</sup>

While sports such as soccer and basketball have huge followings outside of the Olympics, the most popular sports by far in the Winter and Summer Olympics are figure skating and women’s gymnastics, respectively. Perhaps what makes these sports so compelling is their very nature of being subjectively judged.

It’s true that scoreboards don’t lie, but what’s so delightful about expert judges is the many ways in which they can be wrong.<sup>2</sup> If judges pick the dark horse, the public can accuse them of not recognizing the basic superiority that was so obvious to everyone else. Meanwhile, if judges choose the most popular athlete, the public again sneers at them, this time for succumbing to the public pressure. Either way, judges’ decisions spawn endless hours of water cooler debates.

Judging scandals are hardly new. Even before a scandal erupts, spectators are already mentally scoring athletes and evaluating the judges’ scores. For the Winter 2002 Olympics in Salt Lake City, MSNBC allowed audiences at home to judge athletes through an online judging system, named

“You Be the Judge.” During the pairs figure skating competition, a global public outcry ensued when judges awarded gold medals to the Russian pair of Yelena Berezhnaya and Anton Sikharulidze instead of the Canadian pair of Jamie Sale and David Pelletier. In response, thousands of people logged on to “You Be the Judge” program to judge a pre-recorded videoclip, and an overwhelming 95% placed the Canadian pair in first place.



*Sig-Chi 2004 Logo*

Given all that, what happens if the collective opinions and debates surrounding official judges’ scores can be formalized? The SportScore project stems from a Special Interest Group in Computer-Human Interaction (Sig-Chi) competition to develop a system for spectators to score Olympic athletes’ performances. The Sig-Chi competition presupposes that the

<sup>1</sup> Jim Stroud. “Interactive TV: The future or failure?” Satellite News. Potomac: May 13, 2002. Vol. 25, Iss. 19; pg. 1

<sup>2</sup> Laura Miller, New York Times Magazine; Feb 24, 2002; Research Library Core, pg. 9

## I Positions I

International Olympics Committee (IOC) has commissioned a pilot program to capture live spectator scoring at the Athens 2004 Olympic Games. While these spectator scores would not initially affect the awarding of medals, the system could eventually be extended to do so.

### Spectator Education

According to competition guidelines, the system's objective is to increase spectator engagement. Nonetheless, engaging spectators needs to be balanced by Olympic integrity. The SportScore system addresses these dual standards through an agenda of spectator education. Embedding education into the heart of the system allows it to mentally engage the users, increase the quality of their judging, and contribute to the sport itself by heightening users' appreciation for it.

Education in the SportScore system begins before the Olympic Torch is even lit. It continues through an education process that is delicately woven into the scoring system during the event, and continues on after the medals are awarded. Spectators will

never explicitly realize that they are being educated, but after participating in the system, all users will go away with a better understanding of the Olympic sport they have watched.

### Inclusive Judging

Despite education efforts on the system's part, spectators will arrive with varying degrees of expertise and understanding of the sport, not to mention considerable differences in general education, age, and cultural understanding. Yet the SportScore system was designed on the assertion that every ticketholder in the stadium should be given a chance to actively participate in the SportScore system. In fact, the system is purposely designed to be consistent with the official Olympic judging standards in terms of scoring scales, methodologies, and criteria. For example, instead of asking spectators to only judge the artistic value of a performance, the system empowers spectators to judge athletes upon the same criteria as official Olympic judges. Spectators, however, are not expected to approach this task in the same manner.

Currently, Olympic judging is a complex activity performed by trained, experienced individuals, and involving volumes of manuals, systems of deductions, as well as arcane symbols. That spectators lack all of this information does not preclude them from making a well informed group decision. The power of the system lies not in any one spectator's judging abilities, but in the collective information of the stadium. Similarly, in economics, the whole acts as one market not because any one of its members survey the entire field, but because their limited individual fields of vision sufficiently overlap so that through many intermediaries the relevant information is communicated to all.<sup>3</sup> Instead of being a restrictive factor, the large scale of events, ranging from 5,000 to 12,000 spectators at the Athens games, should support the fairness of a spectator scoring system.

Furthermore, technical knowledge of the sport is not in itself the definitive measure of judging ability. The United States Figure Skating Association requires its judges to have skating knowledge, but a "proper

<sup>3</sup> Frederich A. Hayek, *Individualism and Economic Order*, University of Chicago Press, 1948

## I Continued: Positions I

temperament” ranks highest in importance. According to the official USFSA web site, “This attribute is made up of many things and is quite the most important requirement. It would mean the judge is objective in their judging; that they are not influenced by persons or personalities, either on or off the ice...Many sharp barbs are thrown a judge’s way. Another essential under this same heading would be the ability of the judge, after they have done their best to mark fairly, not to brood over the results. Judging cannot be an exact science.”<sup>4</sup> Lack of information alone does not negate the validity of spectators’ scores.

### Delphi Enhancement

To facilitate spectator scoring without resorting to the tedious complexities of deductions and judging symbols, an adapted version of the Delphi Technique forms a key element of the SportScore system. After each performance, spectators are allowed to score for a period of time without any additional information. During and immediately after a performance, a panel of experts (past judges,

athletes, coaches etc.) would be watching the video feed for elements that strongly affect their judging decision. After the first scoring period ends, these experts share their annotations of the performances with the Olympic audience. Based on this new information, spectators will be allowed to change their original score during the second scoring period.

### Nationalistic Bias

While the collective vote of thousands of spectators can hold considerable legitimacy, the international nature of the Olympic games accentuates the nationalistic bias involved in judging. Historically, the host nation always won the most gold medals<sup>5</sup>. Before the Soviet Union and the Berlin Wall fell, general consensus held that the Soviet bloc judges scored their athletes higher, while Western judges did the same in reverse.<sup>6</sup>

In order to manage this bias, the SportScore system was designed on the onset to temper spectator scores with demographic data. With each athlete’s score, audiences would always be aware of the national

background of the scorers. Most of this information is already available through the Olympic databases, collected at the point-of-ticket-sale, online or through national ticketing agencies. This information will be leveraged to better understand what spectators’ scores represent.

### Connection

Despite the challenge of nationalistic bias, the international makeup of the spectators is perhaps the most unique and powerful aspect of the Olympic games. Hence, the system is designed to align with and actively advance the Olympic Movement’s goal of establishing a peaceful society concerned with the preservation of human dignity<sup>7</sup>. SportScore is embedded with this philosophy of connection, utilizing specific solutions to encourage conversation, debate, and peer education, thereby allowing people to connect before, during, and after the event. By fostering “water cooler discussions”, the spectators will be able to experience the SportScore system not just individually, but on a larger, more communal scale.

<sup>4</sup> US Figure Skating Website, “Everything You’ve Ever Wanted to Know about Becoming a Figure Skating Judge But Were Afraid to Ask” <http://www.usfsa.org/about/officials/TJKitFinal.pdf> (accessed Dec 1 2003)

<sup>5</sup> David Wallechinsky, *The Complete Book of Summer Olympics*, New York: Overlook Press, 2000

<sup>6</sup> John Feinstein, “Axel of Evil: Olympic Mischief Calls for a Drastic Response” *Wall Street Journal*, February 22 2002, pg A20

<sup>7</sup> International Olympic Committee Website “Olympic Charter” [http://www.olympic.org/uk/organisation/missions/truce/foundation\\_uk.asp](http://www.olympic.org/uk/organisation/missions/truce/foundation_uk.asp) (accessed September 8 2003)

## I Continued: Positions I

### **Lifecycle Extension**

While the initial phase of the SportScore system is a pilot program for the Athens 2004 Olympic Games, the system was designed to easily extend beyond the stadium setting. To the extent that the SportScore system is expected both to increase audience engagement and to address the issue of judging validity of judged sporting events, it could be phased into more sporting events besides the Olympics, such as boxing. Therefore, capabilities to record and evaluate system performance are embedded SportScore, and can be used later on to improve future versions of SportScore.

system is intentionally concept-driven instead of technology-driven, meaning that it can be easily modified to leverage advancing technologies during system evolution.

### **Immediate Constraints**

Despite the possibility of an extended system, the immediate needs of Athens 2004 take precedence over long-range plans. Thus the system is designed around two major constraints set forth by Sig-Chi: cost and technology. The cost for the system should not exceed a million dollars, and the technology used should be available today or within the next year. Lastly, the SportScore

## I Overview I

The heart of the SportScore system revolves around how spectators can input scoring data during a sporting event. This main scoring activity is sustained by system element arenas of introduction, support, technology and logistics, and lifecycle. System introduction and lifecycle occur before and after the Olympics, while support and technology provide the foundation upon which these three phases can occur.

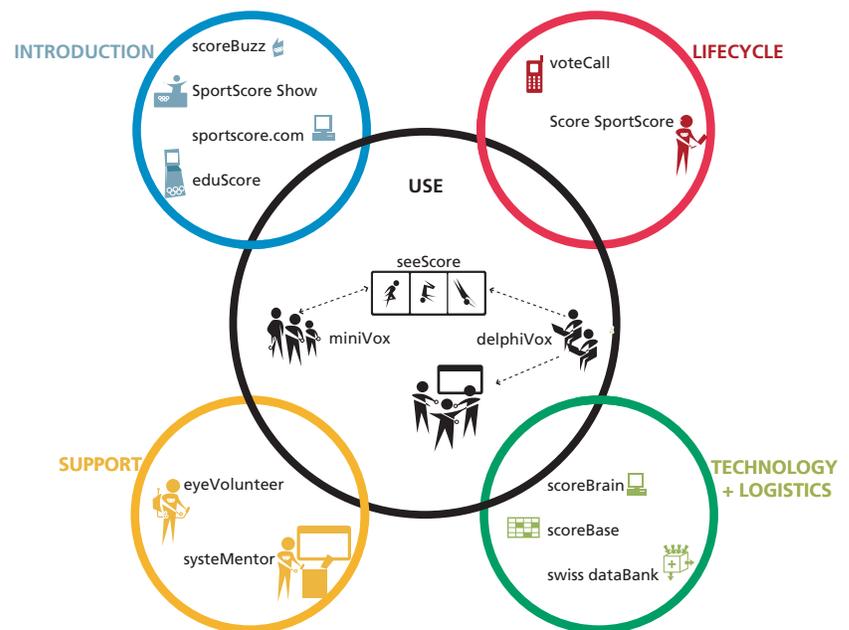
### Use

When athletes are performing, spectators will be able to watch the performance on large, public display screens to enhance their ability to see the performance. Once the athlete's performance is over, spectators will be prompted to score the performance on personal, miniature, wireless input devices. The initial scoring period will be followed by the display of the cumulative results of the spectator scoring. Following this, spectators will view selected video clips or still images of the performance, chosen by a panel of experts. These images and clips could be annotated to provide clarity about how a score

should be correlated with the athletic performance. Since most spectators will have little to no prior experience judging an Olympic performance, the annotations would identify aspects of the athletic performance that the usual spectator may overlook. While there may be several of these "SportScore experts", only annotations from the

highest and the lowest scoring experts will be shared with the spectators. After seeing this information, spectators will be invited to revise their scores. At the end of this second, final scoring period, the spectator score will be displayed for comparison with the official judges' score.

Overview of the SportScore System Elements



## I Continued Overview I

### Technology and Logistics

To support the scoring and information display of thousands of spectators, the system's design includes an electronic package of applications, permanent and local data storage space. The permanent storage space acts as a databank for profile storage prior to the event, a server space for the system's educational and public relations website, Sportscore.com, as well as storage for historical data and spectator feedback that form the evaluative component of the system. Meanwhile at the local event level, applications are used to authenticate and process scores and to create visual informational displays based upon dynamic information. The local storage space supports the applications and links to the permanent storage space.

### Introduction

In order to demystify the SportScore system and to bring spectators up to speed immediately, the system includes an introduction component, designed to attract and engage spectators and the general public. As

previously mentioned, sportscore.com serves as an information hub for the system outside of the sports venue. In addition, a public relations campaign ensures the system is introduced, publicized, and consistently presented. The system can be presented through a demonstrative roadshow, either at the Olympics Village or at other relevant venues such as trade shows, conventions, or during athletic meets. Finally, an educational program allows people to practice scoring using taped footage and a virtual scoring input device.

### Support

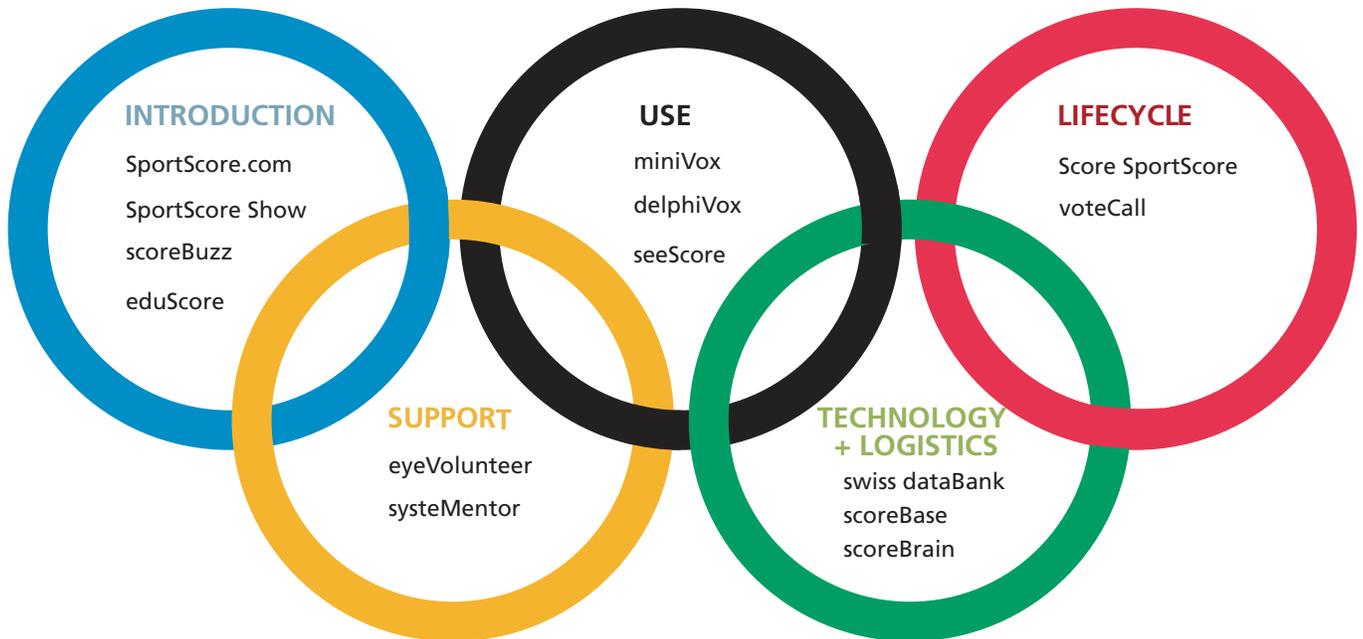
To ensure the system's operations and maintenance are adequately supported, a volunteer program and smart software applications are designed to manage the system. The SportScore system uses the software application to guide technicians and volunteers in setting up, disassembling, maintaining, resetting and reconfiguring the system, especially in between events. Meanwhile, a volunteer program uses an international volunteer taskforce to provide live support to spectators

during the event, as well as install, configure and test the system.

### Lifecycle

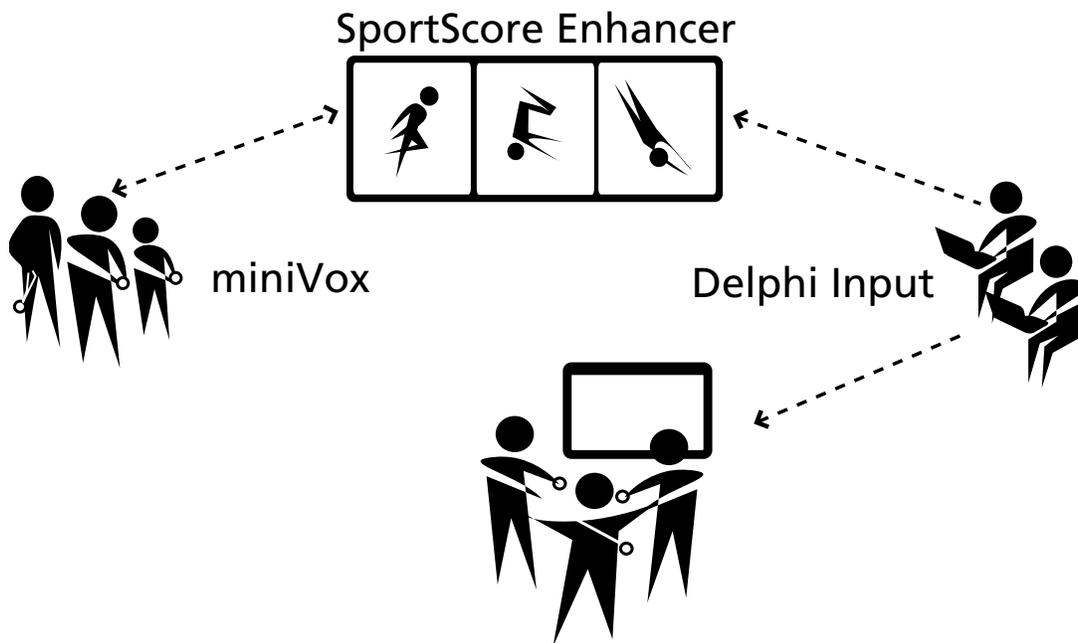
A program for evolving the SportScore system has been built into the system from the onset. Several types of feedback opportunities are embedded during system usage, such as at the SportScore website, at educational kiosks, at the Olympic Village, etc. Permanent electronic storage space is utilized to track data such as patterns of usage to improve the next version of the system. In addition, the system was designed for an evolution towards replacing the miniature, wireless scoring input with the use of spectators' own mobile phones and with other relevant technology.

# SportScore Components



*an integrated system that optimizes group scoring through enhanced technology and methodology*

# eyeVote



## | Features |

- + Allows simultaneous scoring from all spectators in a venue
- + Provides flexible, scalable system for different venue needs
- + Encourages learning and participation from spectators
- + Improves accuracy of spectator-scoring
- + Secures authenticity of spectator-scores

## | Properties |

- + Simultaneous score input from spectators
- + Small wireless score input devices
- + Panel of experts
- + Unique score-identification technology

## I Discussion I

Spectators' main priority at a sports event is to watch the display of athleticism, not to be distracted by a voting system. SportScore's scoring input system must provide a way to enhance the audience engagement and in no way detract from it. Actively evaluating a performance should allow spectators to learn more about the sport and enjoy themselves, rather than to worry about how to use the input device. In other words, SportScore should enhance rather than detract from a spectator's Olympic experience.

Any score input device must be convenient to use, easy to learn, and as non-disruptive from the performance as possible. Since the audience has varying levels of expertise around judging athletic events, a panel of SportScore experts will annotate replays of the athletic performance and thus "teach" the audience about which aspects of the performance to look for each time they score. This delphiVox system is demonstrated to the spectators through seeScore, a visual communications system.

The eyeVote system allows spectators the flexibility of judging from their seats with the miniVox scoring input device. Designed with the objective of unobtrusiveness in mind, the miniVox unit utilizes radio-frequency technology to create a seamless score input experience for Olympic spectators.

As an extension to the system, VoteCall units replace the miniVox and can be implemented in about 5-10 years. VoteCall is a system that utilizes spectators' pre-existing mobile phones as score input devices, thereby giving spectators the advantage of familiarity with the input device's physical interface prior to attending the Olympic Games.

### | Design Factors |

*Interface is too complicated*

*User cannot use system*

*User cannot manage pace of scoring*

*User desires anonymity*

*User is distracted*

*User is unaware that unit is broken*

*User does not know how to seek help*

*Repair disrupts event experience*

*a wireless score input device that allows spectators to securely input votes anywhere in a sports venue*

# miniVox



## | Features |

- + Allows individual spectators to enter their score from anywhere in the venue
- + Encourages participation in the SportScore system
- + Indicates current scoring time frame and highest possible score
- + Facilitates quick, repetitive scoring
- + Generates social interaction during the Games

## | Properties |

- + Recyclable plastic unit
- + LCD screen
- + Wireless RF transceiver
- + Rotary thumbdial
- + Indicator light
- + Optional accessories

## | Discussion |

MiniVox is the main score input device of the SportScore system. It is a wireless score input device designed to allow spectators to participate in the SportScore system with minimal distraction from the Olympic experience.

MiniVox is a means of transferring spectator scores into the main system, through a small input device. Measuring approximately 1.5 square inches, the miniVox is manufactured using affordable components: a Wireless USB LS transceiver, a low-cost LCD screen, and a R-2-R manufactured flexible battery.

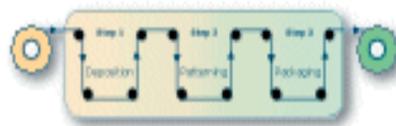
The miniVox does not rely on a specific technology, but could be manufactured using wireless radio frequency (RF) technology with extremely affordable components, such as the transceivers made by Chipcon and Wireless USB LS that cost approximately \$2 for a transceiver. It could also operate using Bluetooth technology.

Using emerging technologies such as

e-Ink to produce printed ink circuit buttons on the miniVox will further lessen the cost per unit, so that each unit can be manufactured for less than \$5 each, much like the disposable calculators currently given away as promotions at stores and banks.

The miniVox's transceiver can receive general "messages" from the local site processors in each venue, so that as each athlete begins to perform, spectators will receive his or her name, country of origin, and in the case of diving, and the level of difficulty of the upcoming performance.

This can help spectators decide how to vote for a certain performance. Also, transceivers on the miniVox can receive information about scoring timeframes, so spectators can easily see how much time they have left to score.



*Diagram of R-2-R Technology*

## | Design Factors |

*Interface is too complicated for comprehension*

*User cannot manage the pace of scoring*

*User is distracted*

*Scoring system distracts from spectator experience*

*User is unaware that unit is broken*

*Repair disrupts event experience*

## I Continued Discussion I

The miniVox can be attached to accessory watch straps, or hooked onto lanyards or key chain rings for the user's convenience. Additionally, when spectators receive their miniVoxs, the units will be packaged in VoxPax, which are "clamshell" style packages that contain diagrammatic instructions for usage in various official languages.

After spectators arrive at the Olympic Games, they will hand their tickets to

an eyeVolunteer. The eyeVolunteer then scans their ticket, then scans a miniVox before handing them the miniVox. This miniVox is now tied to the spectators' profile through his ticket number. When the spectator has multiple tickets, all of these unique ticket numbers will be linked to the same miniVox unit, precluding the need for more than one miniVox during a spectators' stay at the Olympics.

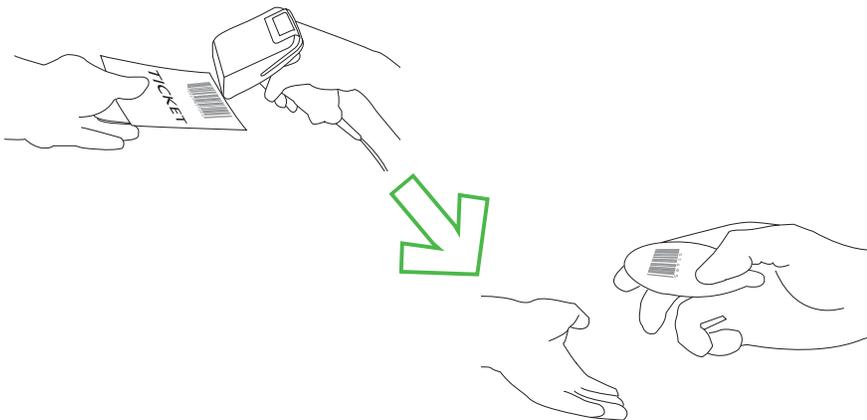
If the spectators' miniVox is defective

or breaks during the Olympic Games, he simply hands it over to an eyeVolunteer, who re-links his profile to a new miniVox. After the Olympics, spectators can choose to keep their units or return them through a recycling initiative called the reVox program.

When the spectator wants to place a vote during the event, he simply enters a score in his miniVox. Base stations interspersed throughout the venues constantly accept the scores from the miniVoxs, and transmit this raw data to a local processor at the venue, which filters out any scores sent from miniVoxs that are not tied to a ticket number for the event. This score authentication system ensures that each unit's vote is only counted once, by assigning one score to each ticket number during a scoring period.

An option of the SportScore system is the "Modes of Participation" miniVox, which will be more expensive than the basic model, but can offer the user an enhanced experience. For example, when the user wants to

### *Distribution system for MiniVox*



## I Continued Discussion I

begin participating in the SportScore process, they can choose from several modes of participation by toggling buttons on their miniVox unit. These optional modes include “practice scoring”, during which their votes would not count, “actual scoring”, during which their scores would be counted, and “keep data” mode, during which they can use their unit as a reminder device to get TiVO replay clips of their favorite moments of the event.

To vote, the user inputs his score by checking the SportScore display screen. The unit will receive a message from the central processor indicating the maximum possible starting scores for each athlete in the diving competition based on attempted level of difficulty.

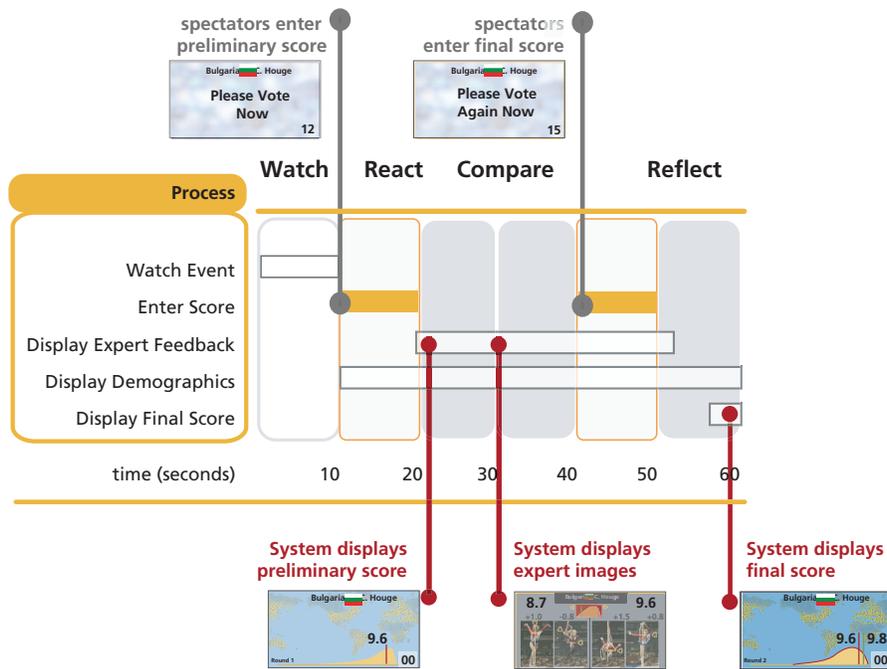
After watching the athlete’s performance, the spectator adjusts the jogdial button on the miniVox to arrive at the score he wants to input, then clicks it to send the score. An indicator light embedded in the unit’s body will indicate that his data has

been sent.

At the end of the scoring period, all of the miniVox units receive a general message from the main processor indicating that the current scoring period has ended. MiniVox can indicate this by glowing a different color from the “score received” color. Spectators will then know to look at the seeScore display system to see the final score.

*an iterative group scoring methodology that leverages the both group and expert knowledge to enhance collective decision-making*

# delphiVox



## | Features |

- + Enables individual spectators to make a more informed group decision
- + Supports deliberation over a scoring cycle
- + Teaches system participants about sport over time
- + Provides transparency about scoring process

## | Properties |

- + A procedure that supports enhanced group voting
- + A collection of integrated communication and display devices
- + 3D diagramming software
- + Live expert commentator capture software

## I Discussion I

In order to enable a large number of relatively untrained spectators to make informed, accurate scoring decisions, the delphiVox combines the methodology of the Delphi Technique with an integrated visual communications system within each sports venue.

The Delphi Technique, a concept originally utilized to gain consensus in group votes, has been adapted for the SportScore system. In delphiVox, there are three layers of influence; an invited panel of “experts” who annotate stills of the performances as a group education tool, the main body of voters whose scores may influence each other, and background information about the voters within the stadium, which provides more transparency around the scoring system.

DelphiVox employs several methods, such as participative scoring, visual feedback, and the ability of scorers to revise their original scores. The result is a more informed group vote from Olympic spectators, who are not expected to know much about how to score when they first arrive at

the Games. DelphiVox is a real-time method to build group consensus using theoretical methods as well as appropriate technologies that support these tasks.

In order to ensure that all spectators are empowered to vote, and to foster international good will, participation in SportScore will be inclusive, though optional. Even ticketholders who are too young to vote rationally or who cannot see clearly will be able to participate. That delphiVox allows the group to vote twice, so that the audience has a chance to vote again based upon additional information, will migrate the general direction of the vote towards a more informed decision.

In order to further enhance this informed decision, each event will have an invited “expert panel” of six SportScore experts, who will annotate replays of the athletic performance in order to illustrate elements of the performance that are examined by the official judges. These experts can be ex-Olympic athletes, national judges, or others well-suited to point out er-

## | Design Factors |

*User has no incentive to learn*

*User cannot access educational materials*

*Practice materials are insufficient*

*Interface is too complicated for comprehension*

*User cannot use system*

*User cannot manage the pace of scoring*

*Spectator cannot view performance accurately*

*Scoring system distracts from experience*

*Users do not take scoring task seriously*

*Feedback loop detracts from experience*

## I Continued Discussion I

rors or highlights. By circling mistakes and otherwise visually marking up selected frames of a performance, these experts can relay their expert opinions to the mass audience using universal symbols and pictograms.

In order to ensure fairness, these experts will also submit their scores for the athletic performance. The top and bottom scores will identify which judge's annotations will appear on the central display space for the audience to see.

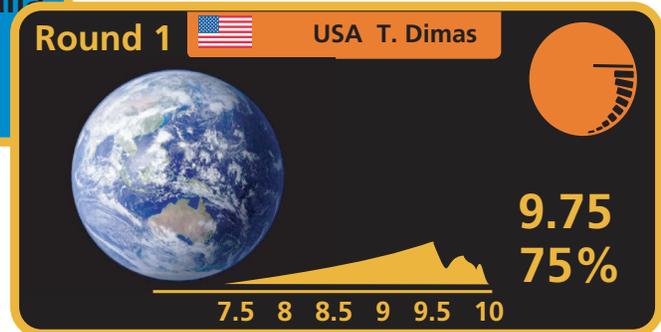
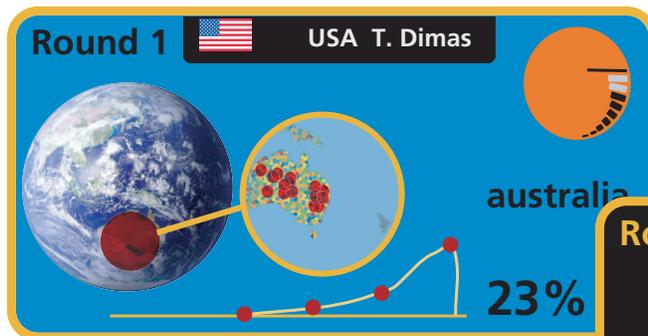
After an athlete performs, ScoreBrain will send out a general message to all valid miniVoxs in the stadium, so that the miniVoxs glow to indicate scoring has begun. In the next several seconds, all spectators will be able to input their desired scores. During this time, the percentage of audience who are scoring, the demographics of the participants, and the time left to score will be displayed on the central display space (described in seeScore). After another several seconds, the first scoring period ends, as indicated by the miniVox glowing in a different glowing color,

and the preliminary audience score is displayed. The expert annotations are then displayed on the central visual space for a short period of time, and spectators will be invited to revise their scores based upon these two new pieces of information. Although some spectators may choose not to revise their original scores, others will take advantage of their newly gained knowledge to replace their first scores with a more informed one. Again, the display space will show the percentage of voters and their demographics during the second voting process to enable maximum transparency.

After the scoring period ends, the miniVox will again glow a different color to indicate that spectator-scores will no longer be accepted. The final spectator-score will be calculated prior to the display of judges' finals scores, so that the two can be displayed side-by-side on the central scoreboard.

*an integrated visual communications system that optimizes spectators' mass-scoring experience*

# seeScore



## | Features |

- + Provides an extra layer of transparency around voting process
- + Levels differences in visual perspectives among audience members
- + Allows spectators to access expert opinions and annotations
- + Provides easy way to compare spectator scores and judges' scores

## | Properties |

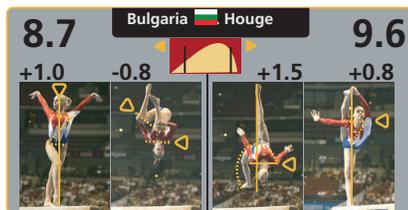
- + Large visual displays within venues
- + Software that allows for real-time feedback to display screens
- + Annotation software for expert commentators
- + Three-dimensional diagram generating software

## I Discussion I

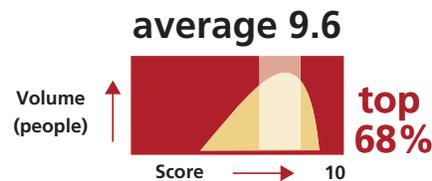
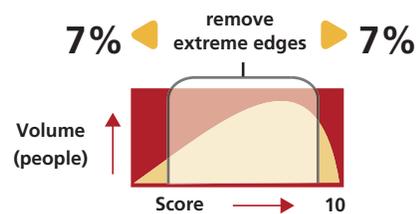
The visual compliment to the DelphiVox, seeScore is an integrated communications system that dynamically relates information to Olympic spectators via various visual devices. As the SportScore system will be changing venues along with the Olympic Games, seeScore can be adapted to available resources and be modified with advancing technologies.

A 3D diagram of the voting process is a main component of seeScore. As

### Sample seeScore Screens



spectators are inputting their scores during each cycle of the scoring process, a dynamically updated three-dimensional diagram will indicate the percentage of spectators who are voting through a topographic map of various seating areas in the stadium. Demographic data linked to those who voted is also displayed, so that audience members can see who is voting within the stadium and will feel compelled to participate in the system.



### | Design Factors |

*Large and diverse audience must be reached*

*Language barrier prevents comprehension*

*No means to differentiate system usage for different sports*

*Nobody knows how to install system*

*User cannot manage the pace of scoring*

*User is distracted*

*Spectator cannot view performance accurately*

*Feedback loop detracts from event*

*Live capture of votes is difficult to communicate*

*Non-transparency of capture system leads to invalidity*

## I Continued Discussion I

During the second phase of the scoring process, expert annotations will be displayed on the central display space. Along with these annotations, an application that helps spectators decide how to score a performance can also be displayed. When a diver veers off alignment, for example, an expert can choose to use a geometric overlay to indicate how many degrees a diver veered off mark, or a gymnastics expert can show stick-figure overlays to illustrate how proficient or off-the-mark the athletes' performance is.

The last component of seeScore is the SportScore Art Exhibition, which

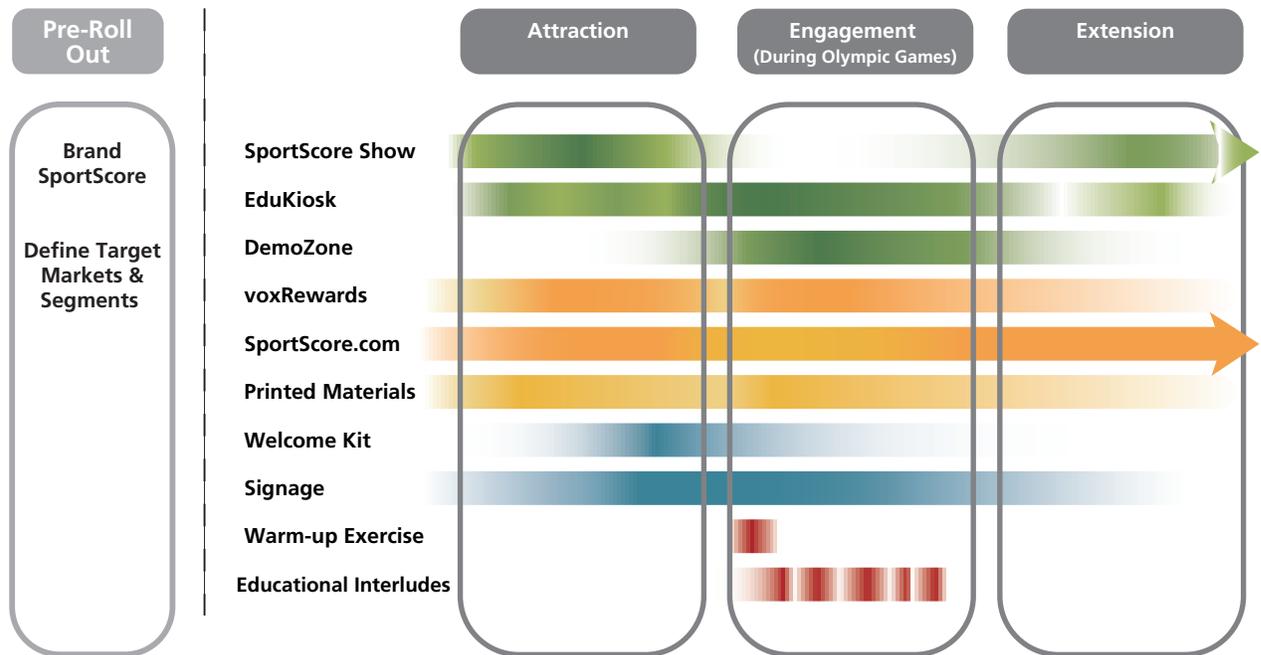
extends the SportScore system beyond the venues into the general Olympic space, and potentially, into the world arena. Extending the information from the jumbotron and dynamic diagrams into an interpreted physical form adds a cultural and aesthetic aspect to the SportScore process. One example is an outdoor fountain that dynamically updates itself to match the bell curve of the spectator-scores as the Games progress.

### *SportScore results as public art*



*a public relations and buzz-generation system that introduces and educates public about the sportScore system*

# scoreBuzz



## | Features |

- + Generates buzz and interest in the sportScore system
- + Promotes potential-users' interest in participating in the sportScore system
- + Targets sports enthusiasts and sports communities
- + Educates public about various components of system and how to use it

## | Properties |

- + Television news segments and general interest articles about the SportScore system
- + Advertisements linked to Olympic Sponsors' promotions before the 2004 Games
- + Advertising campaigns in sports and travel industries
- + Brochures sent to Olympic ticketholders

## I Discussion I

Before anyone can engage with the SportScore system, practice using it or care about it in any way, they have to know that it exists. Therefore, careful branding and introduction of the system will be important. ScoreBuzz is a phased approach to generate interest in the system, explain the potential implications of such a system, and educate the general public.

During the pre-release phase, the focus will be on branding, co-branding, determining target segments for specific advertising campaigns, and painting an overall image of the system to an international audience. Specific attention will be paid to the sports community, as they may have special concerns about the ramifications of the system.

### | Design Factors |

*Large and diverse audience must be reached*

*Huge volume of questions to be handled*

*Implications of system not clearly articulated*

*Language barrier prevents comprehension*

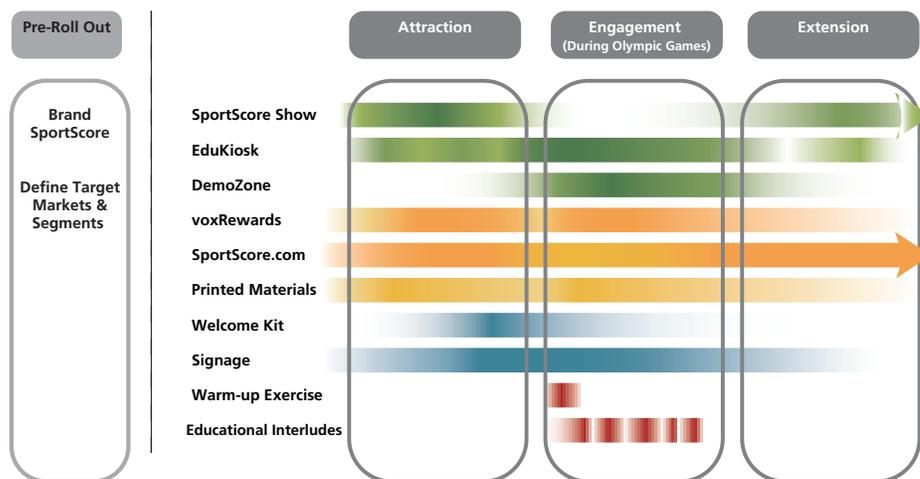
*User has no incentive to learn*

*User cannot access educational materials*

*No means to differentiate system usage for different sports*

*User requires support prior to event*

*Experience Map of the scoreBuzz system*



## I Continued Discussion I

In the roll-out phase, the system will be introduced in more detail to athletes, judges, national federations, and any other groups that may be directly affected by the implementation of the system. As the International Olympic Committee (IOC) currently distributes a pre-Games guide to all participating judges and athletes, SportScore could be a subsection of this online guide, or become a separate mailer that is sent to this group of individuals.

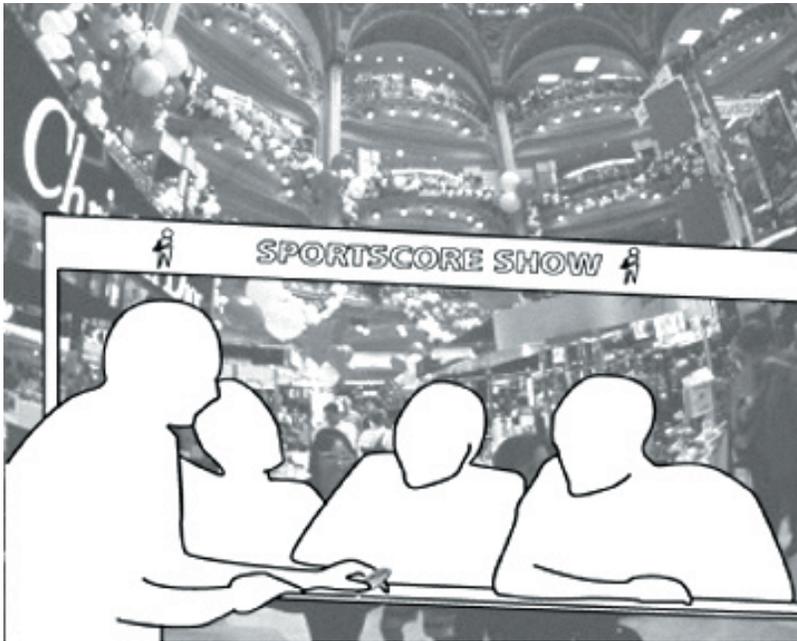
In order to reach the general public, scoreBuzz will take advantage of Olympics and sponsor-related press coverage in order to keep promotional costs low. As the public hears about the SportScore system through radio, television news, magazine articles, and newspaper articles, they can access more detailed information through Sportscore.com and the SportScore show.

During the Athens 2004 Games, score-Buzz generates the Pre-Game Warm-Up, a set of exercises to quickly teach spectators about how to use system

elements such as the miniVox and how to interpret the various visual displays. Additionally, scoreBuzz staff will be available throughout the Games to help individuals understand any components of the SportScore system.

*public demonstrations before and during the olympics  
that provides hands-on learning for potential users*

# sportScore show



## | Features |

- + Brings components of the system to potential users and public
- + Allows potential users to become acquainted with system elements before attending Games
- + Generates interest in the SportScore system
- + Answers questions about the SportScore system from the general public
- + Puts a “face” upon the SportScore system

## | Properties |

- + Travelling roadshow of SportScore representatives and components
- + Interactive media games that allow potential users to use system
- + Designated zone at Olympic Village where questions are answered
- + Trained representatives who can demonstrate system usage and answer questions about the system

## I Discussion I

Another component of the SportScore system that introduces it to the general public, the SportScore Show brings the system to members of the public who may want to see it demonstrated first hand. A trained group of SportScore representatives will tour with miniVoxs, as well as eduKiosks and various other promotional and educational materials, to cities with a large population of ticketholders.

Through live demonstrations of how to use the miniVox, as well as detailed explanation of the Delphi Input system and how to understand visual displays, the SportScore Show provides a more intimate method for potential users to understand system usage. SportScore Show representatives can also address issues that were not satisfactorily answered in promotional literature or in the appropriate

### | Design Factors |

*Large and diverse audience must be reached*

*Huge volume of questions to be handled*

*Implications of system not clearly articulated*

*Language barrier prevents comprehension*

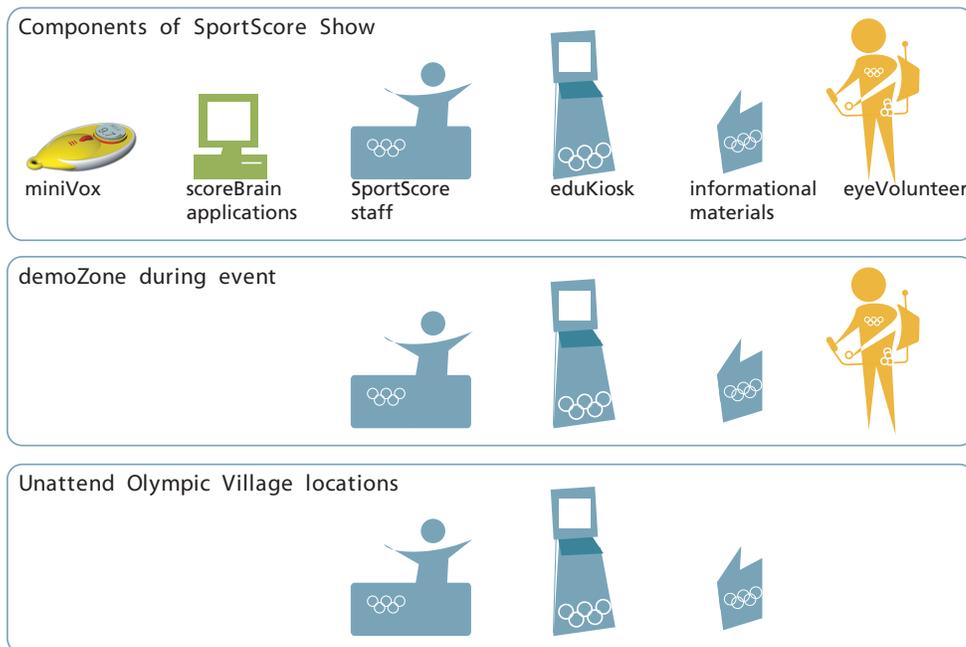
*User has no incentive to learn*

*User cannot access educational materials*

*No means to differentiate system usage for different sports*

*User requires support prior to event*

### Elements of the SportScore Show



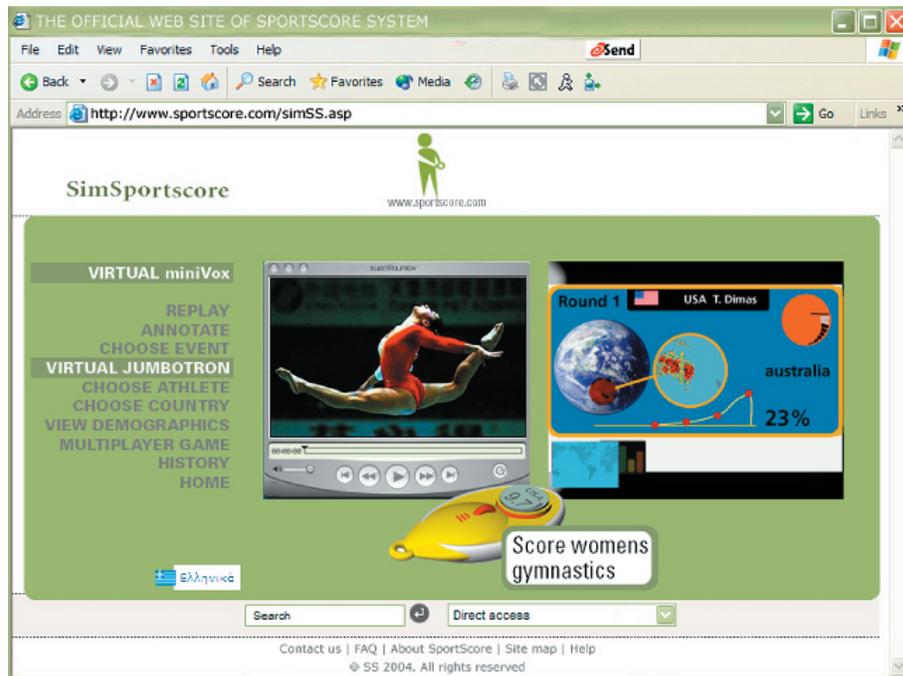
## I Continued Discussion I

sportscore.com sections. The purpose of the SportScore Show is two-fold: to promote interest in and acceptance of the SportScore system, as well as to teach users about how to use it.

During the Games in Athens 2004, the SportScore Show will become a dedicated Demonstration Zone at the Olympic Village, where ticketholders can practice using the system in a non-event setting, and receive support from dedicated staff should they have any questions. This "demoZone" will thus serve as a main support station, and will be staffed by both SportScore employees as well as trained eyeVolunteers.

*a suite of applications that allow users to learn how to use the system prior to attending the olympics*

# eduScore



## | Features |

- + Generates buzz about the SportScore system
- + Allows spectator-judges to practice using the system
- + Provides incentives to ensure spectator-judges are familiar with system prior to Games
- + Fosters interaction between spectators through use of VoxRewards

## | Properties |

- + Software games that simulate judging conditions for potential users
- + Software applications that teach the public about “ideal forms” of diving and gymnastics
- + Printed instructions about how to use the SportScore system
- + Incentive system for spectator-judges to practice using system

## I Discussion I

Part of the introductory phase, EduScore is, essentially, a suite of software applications and hardware components that help to teach the general public, and potential spectator-voters, about the usage of the system. The software applications can be installed on various platforms, such as sportscore.com, existing arcade machines, or eduKiosks, so that EduScore can be accessed in different parts of the world with varying technology access and that the diverse public can learn about the system.

There are three major parts of EduScore: SS WarmUp, eduKiosk, and VoxRewards. SS WarmUp is a package that provides general instructions about the usage of the system, as well as brief overviews of what to look for in the diving and the gymnastics performances. When ticketholders buy their tickets to the Olympics, their language preferences and country of residence are noted and loaded into their profiles in scoreBase.

WarmUp packages are tailored to each ticketholder, depending upon the events they are going to attend at the Olympics. These packages include general event information, a brief overview about the mini-Vox, and brief introductions to the diving and gymnastics events. The WarmUp could be supported by advertising and feature “highlights” about certain athletes, much like the PlayBills currently distributed at theaters. As the official languages of the Athens 2004 Olympics are English, French, and Greek, the WarmUp packages will be offered in these languages as well. WarmUp packs will be available for spectators to pick up at the game venues, and at the SportScore booth in the Olympic Village.

Most of the educational and practice games available through EduScore will be made available at the eduKiosk. The eduKiosk is a kiosk with interchangeable panels and signage that form “education areas” where spectators can prac-

### | Design Factors |

*Large and diverse audience must be reached*

*Huge volume of questions to be answered*

*Language barrier prevents comprehension*

*Large variance in sports difficult to explain*

*User has no incentive to learn*

*Difficult to replicate factors of real events during practice*

*User requires support prior to event*

*Practice materials are insufficient*

## I Continued Discussion I

tice scoring with miniVox units or specialized arcade-style controls.

Some of these educational games will emphasize the experiential aspect of judging, and simulate the time pressure and environment of voting in a large stadium-spectators will be immersed in the loud noises and visual distractions of an Olympic event. This SimScore game will be made available at eduKiosks, which can be installed both at the Olympic Village and at other, non-Olympic locations as a public relations device. Versions of it can also be downloaded from the Sportscore.com website, so that users can practice at home, or play it with their friends over a network.

Videogame SportScore, a similar practicing game, will have a “real-time” component so that players can judge a pre-recorded athletic event with other players from around the world. This teaches players about the delphi-Vox, how to react to it, what the visual displays mean, and how to

best take advantage of their scoring timeframes. If these players are participating in these games during the SportScore Show, they can play with the actual miniVox, and become accustomed to how the miniVox feels in their hands, what the control and menu buttons do, etc. They can also practice at certain tailored eduKiosks.

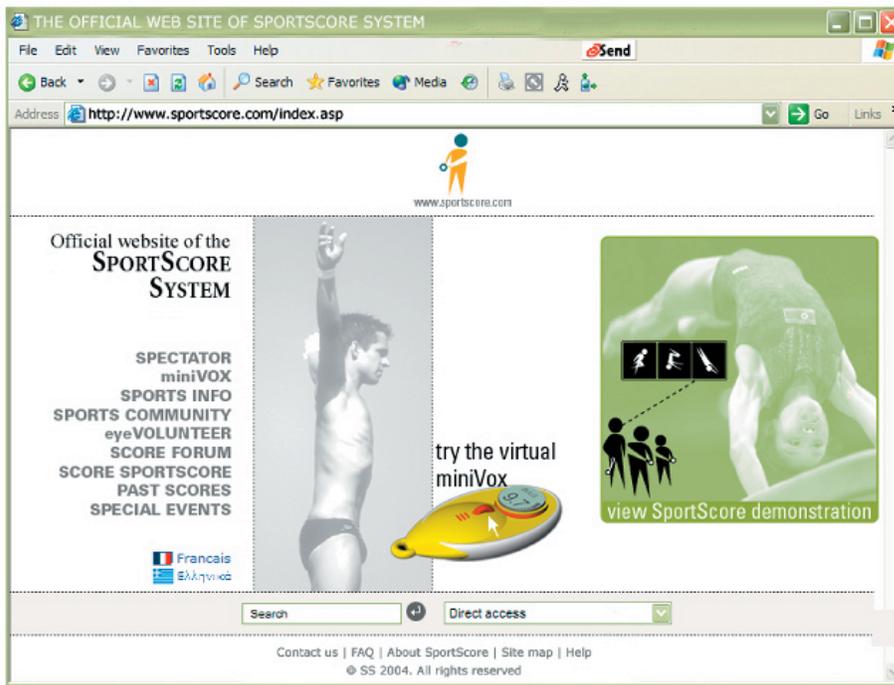
In order to ensure that a maximum number of prospective spectator-judges will practice using the system and therefore arrive at the Olympics prepared to use the SportScore system as possible, the VoxRewards system will provide incentives to each ticketholder for practicing.

Currently, a large number of people trade collectible Olympic pins at each Olympics, and even buy and sell them on Ebay.com and other auctions. Olympic events bring forth special pins for each event, competing nation, etc, and spectators often become acquainted to each other through

the trading of these pins. Although they have little intrinsic value, the pins gain value through each spectator’s experiences. VoxRewards extends this concept as the prizes will be collectible items such as medals, special miniVox accessory straps, and lanyards.

*a website that extends the reach of the sportScore system, offering information, games, links, and profile access*

# sportscore.com



## | Features |

- + Conveys information and educational materials about the system
- + Answers questions about the SportScore system
- + Allows non-Olympic attendees to participate in system
- + Distributes educational materials to a wide audience
- + Brings together international sports enthusiast community
- + Creates excitement and anticipation for the system

## | Properties |

- + Source of basic information about the system and sports
- + Distribution point for educational practice materials
- + International meeting point for interested parties
- + Collection point for user information
- + Publicity for SportScore system through captivating content and promotions

## I Discussion I

Sportscore.com is central to the introduction phase of the SportScore system in the sense that it serves as the primary conduit through which the diverse Olympic spectator audience will first learn about or interact with the system. Given the reality that many of the spectators will be traveling from a host of countries, Sportscore.com will serve as the primary method by which educational games and information can be distributed, and spectator-questions can be answered. Since the IOC seems to have wholeheartedly embraced the Internet as a means of reaching the public and the sports community at large (90% of the Salt Lake City Olympic tickets were sold through the internet), sportscore.com will be a consistent extension of the Olympic website.

Although sportscore.com will be the primary means of communication to the general public, it will not be the only one. Other introductory tools include the SportScore Show and scoreBuzz.

A key element of sportscore.com is a multimedia overview of how the SportScore system work, which serves to clarify how the system works, as well as answer any questions potential users may have about the different components of the system. The overview will focus on how the spectator receives his unit, how to create a profile, how the profile is linked to the unit he receives, what happens when he enters the stadium, how to enter a score, and how to understand the results of the scoring as it is displayed on the main stadium scoreboards and visual displays. This demonstration will also feature usage highlights, such as how buttons on the miniVox are configured, as well as in-depth information about the DelphiVox.

Sportscore.com will also serve as a distribution point for the many educational games that teach spectators how to use the system and how to better understand the fine points of diving and gymnastics performances. Potential spectators can download a virtual eyeVote scoring

### | Design Factors |

*Large and diverse audience must be reached*

*Huge volume of questions to be answered*

*Implications of system not clearly anticipated*

*Large variance in sports rules difficult to explain*

*User cannot access educational materials*

*Difficult to replicate factors of real events during practice*

*User requires support prior to event*

## I Continued Discussion I

unit from the website, then download past footage of prior Olympics events to practice scoring on. Watching these sports performances in real-time will help spectators understand how to use the eyeVote scoring device within the stringent time constraints of Olympics sporting events.

Another educational game is SimScore, a multi-player game that allows multiple visitors from all over the world to simultaneously practice together. This simulation is more true-to-life than if a player was playing alone, because it allows him to learn how the Delphi Input system would impact the overall spectator-score. Not only would this real-time interaction allow spectators to understand the significance of voting within a large group, it would allow interested parties to meet other individuals from around the world, connecting them through their mutual interest in the sportScore system or in the Olympics.

In addition to providing educational games that teach potential spectator-judges about how to use the system,

sportscore.com will also provide guidelines about how to recognize “what constitutes a good dive” or “what makes a good vault.” These guidelines will take the form of Flash animations, video footage with audio commentary and annotations, or simple frame-by-frame line drawings.

A “Frequently Asked Questions” page will answer any information needs not covered in the general sections of the website. This FAQ page also links to an online forum, where visitors can discuss any aspects of the system with other members of the public. The forum will be moderated by designated SportScore staff members, and can feature special events such as “meet the Athlete,” when Olympic athletes can answer questions of the public.

In addition to providing important information and educational materials, sportscore.com will also actively collect feedback from users about how the system can be improved. Writing in comments and answering standardized surveys are two ways

by which past spectators, athletes, and judges can provide feedback about the SportScore system.

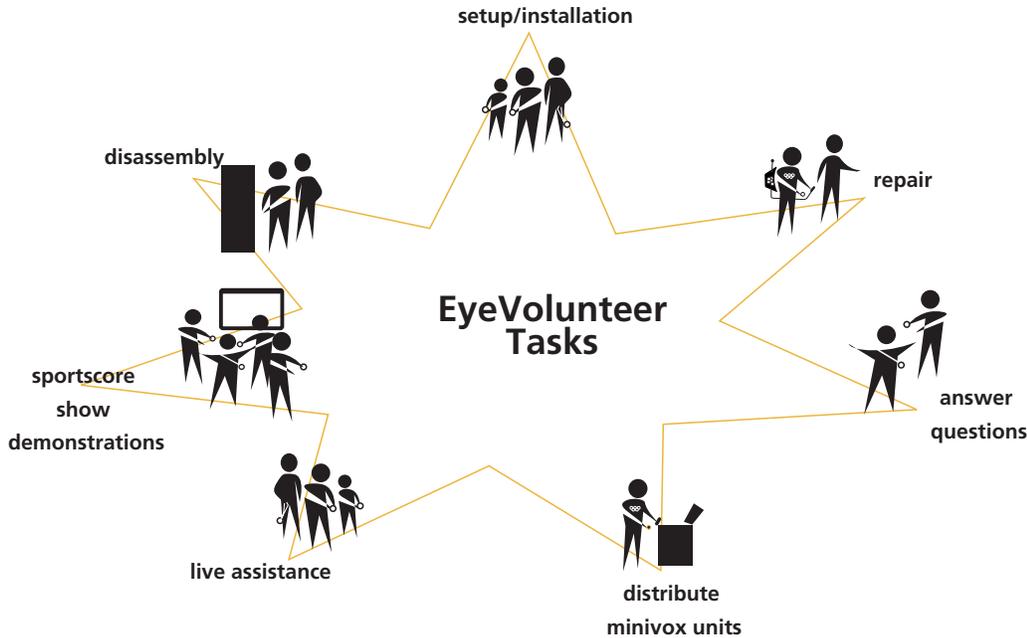
If the public would like to interact more with the SportScore system, they will be able to apply to help the operations for the system through EyeVolunteer Recruit. Successful applicants can become eyeVolunteers at the Olympics, and help set up, answer questions, and disassemble the system in Athens.

Ticketholding users can also access their personal profiles on sportscore.com. After registering and logging in, they can update their profiles, and earn VoxRewards points for participating in educational programs and games. By logging into the sportscore.com website, ticketholders can see at a glance how many points they have, and what their profiles are.

Sportscore.com will reside on the Swiss Data Bank server space in order to ensure its security and centrality of access.

*volunteers that help carry out the operational aspects of the sportScore system*

# eyeVolunteer



## | Features |

- + Gives an invisible scoring process a human face
- + Provides a first-level defense against unforeseen operational problems
- + Facilitates operational aspect of the sportScore system
- + Lowers overall cost of the SportScore system

## | Properties |

- + Volunteer recruit, training, and management programs
- + Equipment to distribute, assist, and repair miniVox units
- + Communications equipment to assist eyeVolunteers in the venues
- + Various "eyeVolunteerKits" to assist the volunteers in their duties

## I Discussion I

eyeVolunteers, recruited from the general public prior to the 2004 Olympic Games, are a specially-trained group of unpaid workers who will help facilitate operational aspects of the SportScore system, such as assembly and disassembly of system hardware, user support, and feedback collection.

eyeVolunteers will be recruited through the introductory phase of the SportScore system, mainly through application forms on sportscore.com. Additional recruiting may occur at the SportScore show and at other related public relations events.

Although eyeVolunteers will not be paid monetarily for their work, they could be paid in VoxRewards points, or through some other kind of recognition process. This minimizes costs while providing an additional incentive for people to sign up. Providing inexpensive yet outstanding uniforms for eyeVolunteers will also add to their feeling of honor as they help ensure that the SportScore system runs without a glitch.

The EyeSetUp team will be volunteers who are trained to help with the assembly and re-purposing of sportScore hardware. Their main functions will be to perform last minute signage checks and final inventories, refill brochures at kiosks and the sportScore booth, perform general equipment checks and tests, and to make sure that all the visual displays and communications channels work. Along with technicians, they will use the SystemMentor to help them perform these tasks. After the Olympics have finished, these same teams will help the systemMentor to map the re-purposing process, before going through the disassembly and repackaging processes. EyeSetUp volunteers will also help collect miniVox units as part of the ReVox program.

The AskMe! Team is another subset of eyeVolunteers. After a period of training, these volunteers will “float” around the Olympic Village and event venues, answering any SportScore-related questions or fixing any issues that may arise. As they will be wearing easily identifiable SportScore

## | Design Factors |

*Large and diverse audience must be reached*

*Language barrier prevents comprehension*

*User requires support prior to event*

*Practice materials are insufficient*

*Short timeframe for installation between events at venue*

*Language barrier precludes technician-user communication*

*Repair disrupts event experience*

*Inadequate support staff*

## I Continued Discussion I

clothing, spectators will be able to quickly understand who to go for help.

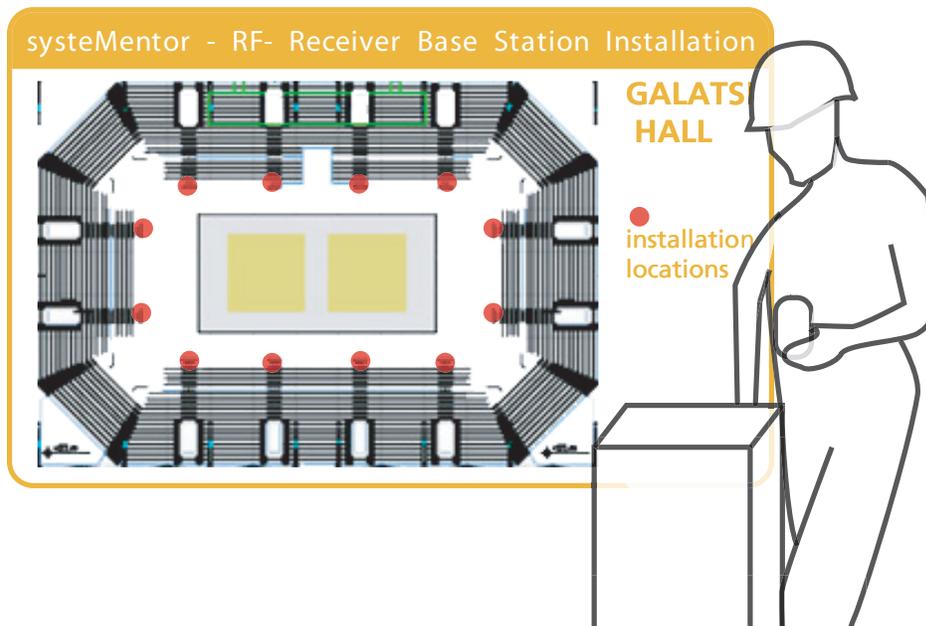
One of the main goals of the Olympics is to bring together people of various nations; the spectator audience is likely to have come from a variety of different nations, and language may likely be a factor in volunteer-spectator interaction. The official languages of the Athens 2004 Olympics will be English, French, and Greek, and although many more nations than that will be represented in the spectators, those languages should be the main communication languages of the eyeVolunteers. Providing them with an offsite panel of language translators, who are available through each eyeVolunteer's personal communication device, means that issues arising from language difficulties will be minimized.

As these two volunteer teams serve very different functions, they should be provided with tailored "eyeVolunteer Kits" that help them with their tasks. The EyeSetUp team will have

kits that allow them to access various applications of the SystemMentor along with system technicians. The AskMe! team will receive the AskMe! Log & Rules book, which serves as a quick reference guide when helping spectators. It will cover common problems, quick fixes, and troubleshooting guidelines. AskMe! teams will also receive a pictographic pamphlet that uses pictograms to identify and communicate common problems associated with sportScore equipment and procedures, so that volunteers can address spectator issues even before having to call in the language panel on their communications devices.

*software applications that aid eyevolunteers  
and technicians in system operations*

# systemMentor



## | Features |

- + Helps technicians accomplish operational tasks
- + Keeps track of day-to-day operations of SporScore system
- + Automatically checks and flags any errors for daily maintenance
- + Alerts technicians of any perceived problems in the system
- + Estimates cost of reconfiguration, and calculates adaptation needs
- + Finds usage patterns and instructs technicians about assembly

## | Properties |

- + Software tools that can be downloaded onto PDAs or notebooks
- + Conveniently placed terminals around Olympic venues
- + RFID technology for easy inventory and installation
- + Back Office tools to manage evolution and adaptation process
- + “Smart system” technology

## I Discussion I

As the SportScore system will move to different venues along with the Olympics, it should be easily installed and disassembled. Taking advantage of current technologies such as RFID, GPS, and handheld devices can facilitate this process.

SystemMentor is a suite of applications that helps system technicians install, uninstall, fix, and manage various aspects of the software and hardware of the SportScore system. SystemMentor is completely software based, so that it can be easily modified and updated as technologies advance. Additionally, the software based system means that system technicians can easily access the tools they need through conveniently placed terminals throughout the Olympic Village, or download the tools they need and take it along with them to install components or fix system problems. SystemMentor's ModuleCode feature means that every application is discretely

coded, so that any upgrades can be done in a modular, easy manner, and would not require a complete overhaul of the system. This allows the SportScore system it to adapt to new technologies over time.

InstalliMentor is a feature of the SystemMentor that helps technicians and the eyeSetUp Team install the various hardware and software components of the SportScore system. Before the system components are shipped to Athens, all of the components will be tagged with RFID, allowing for easy and continuous inventory control throughout the packaging and shipping process. When the components arrive at their designated venues, technicians can easily identify what is in each crate, and see on a map where these components should be moved to. Although the almost completely wireless SportScore system needs little installation, the few hardware pieces can be easily taken to their final destinations when

## | Design Factors |

*Huge volume of questions to be answered*

*Components are rendered unreliable during transport*

*Short timeframe for installation between events at venue*

*Components are difficult to transport or install*

*Nobody knows how to install system*

*System cannot be connected*

*System fails functionality test*

*Repair disrupts event experience*

*Technicians cannot solve problem*

*Problem areas hard to identify*

*Maintenance procedures break down*

## I Continued Discussion I

technicians download a 'venue map' from the InstalliMentor onto their GPS enabled PDAs and follow the InstalliMentor's easy-to-understand instructions about how and where to deliver the components. Other features of the system include scheduling, check-off charts, etc.

Another feature of the SystemMentor is the TechniMentor, which helps technicians and the eyeVolunteer staff manage the everyday operations of the SportScore system. A "smart system" application that dynamically captures usage data from the Swiss Data Bank, and identifies breakage patterns in it to flag certain areas of the system that technicians should check during their daily maintenance rounds. As with the InstalliMentor, technicians can download "flags," instructions, and other important problem management and daily maintenance assistance onto their PDAs as they perform their checks.

When technicians are performing tasks within stadiums, SystemMentor instructions can be displayed on jumbotrons or other indoor visual displays, so that the technicians and eyeVolunteers do not need to carry the instructions on PDAs with them.

After the Olympics end, the Disassembly Inspector facilitates the disassembly and re-purposing process. Prior to physically disassembling the SportScore system, technicians can look at the Disassembly Inspector, which uses the "smart system" to identify broken components that should not be repacked. After comparing usage patterns and maintenance logs against the parameters (such as which elements should remain in which venues), the Disassembly Inspector gives technicians instructions about how to un-install software and hardware from each venue.

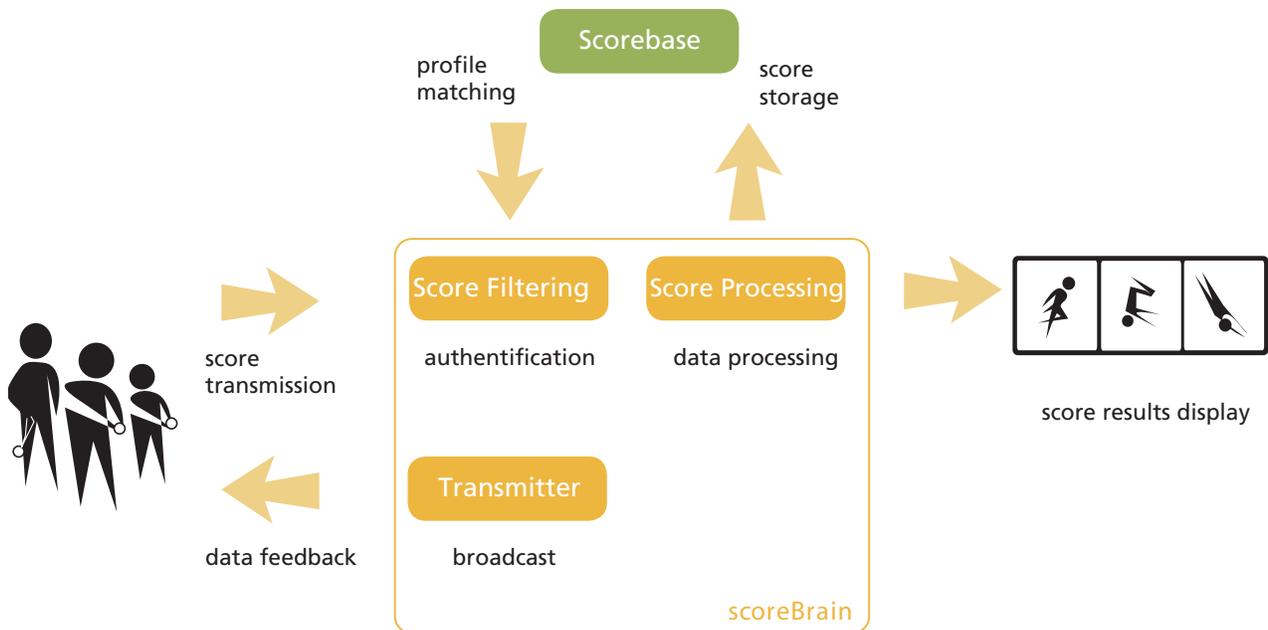
Because the SportScore system may become re-purposed to

other uses in other venues, the Streamliner helps manage the process of transferring the various components of the system to the new location. Since miniVox units are designed to be disposable, they can be collected and re-programmed or recycled at the end of the Olympics, but a lot of spectators may choose to keep their units. Other components, such as Local Venue Processors, eduKiosks, and Kiosks, will be checked for functionality, and accordingly marked for shipment to the next location by the Streamliner, which also matches current components with the needs of the next purpose.

The SportScore system was designed to be an adaptable, mostly software system independent of hardware constraints. Re-purposing is thus made easy by the lack of long-term hardware ownership - any SS system needs not met by venues can be rented or easily mounted and then removed.

*local venue processors that crunch and relay data between spectator scoring units and displays*

# scoreBrain



## | Features |

- + Enables wireless broadcasts throughout the venue
- + Verifies authenticity of incoming scores
- + Processes spectator-scores for display
- + Dynamically generates seeScore diagrams and images
- + Relates score information to Score Base during scoring process

## | Properties |

- + Two-way radio frequency communication
- + Transceiver with software radio
- + Radio frequency multiplexer
- + Score processing software
- + Three dimensional imaging software
- + Information feed from the Olympics system

## I Discussion I

Central to the scoring process, ScoreBrain is an application and processor that coordinates various behind-the-scenes elements during the usage part of the SportScore system. ScoreBrain authenticates spectator-scores by linking to scoreBase, where ticketholder profiles are kept. Additionally, ScoreBrain also updates usage patterns on a daily basis to the Swiss Data Bank, which then sends the information to SystemMentor to facilitate system operations.

One of ScoreBrain's main functions is as a two-way communications tool. Using radio-frequency operating on the LSM bandwidths of 900 MHz or 2.4 GHz, ScoreBrain communicates to miniVoxs using transceivers. Prior to an athletic performance, ScoreBrain broadcasts a general message to the audience updating their miniVoxs with performance information such as the athlete's name and nationality, as well as a range of acceptable scores based upon the elements of

### | Design Factors |

*Authentication of large number votes is not timely*

*Live capture of votes is difficult to communicate*

*Data capture system is incompatible with platform*

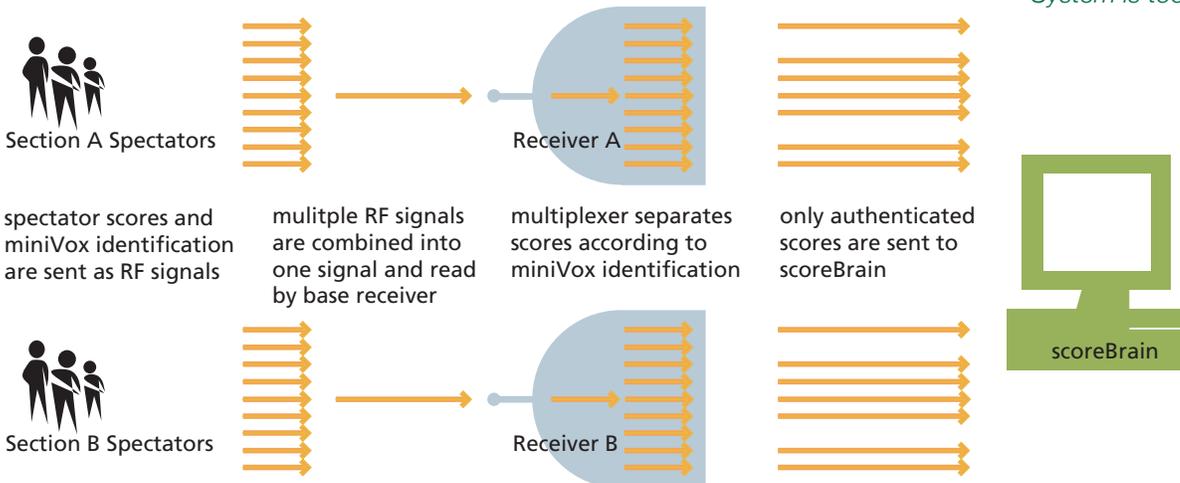
*Data processed under volume and time constraints*

*Lack of security leads to invalid scores*

*Data is lost*

*System is too rigid for change*

Diagram of Radio-Frequency Data Flow in Scoring Process



## I Continued Discussion I

the athletes' performance. This is especially important in the diving events, when the level of attempted difficulty affects the highest score an athlete can achieve in any performance. Multiple base stations and multiplexers within a venue enable this two-way communication.

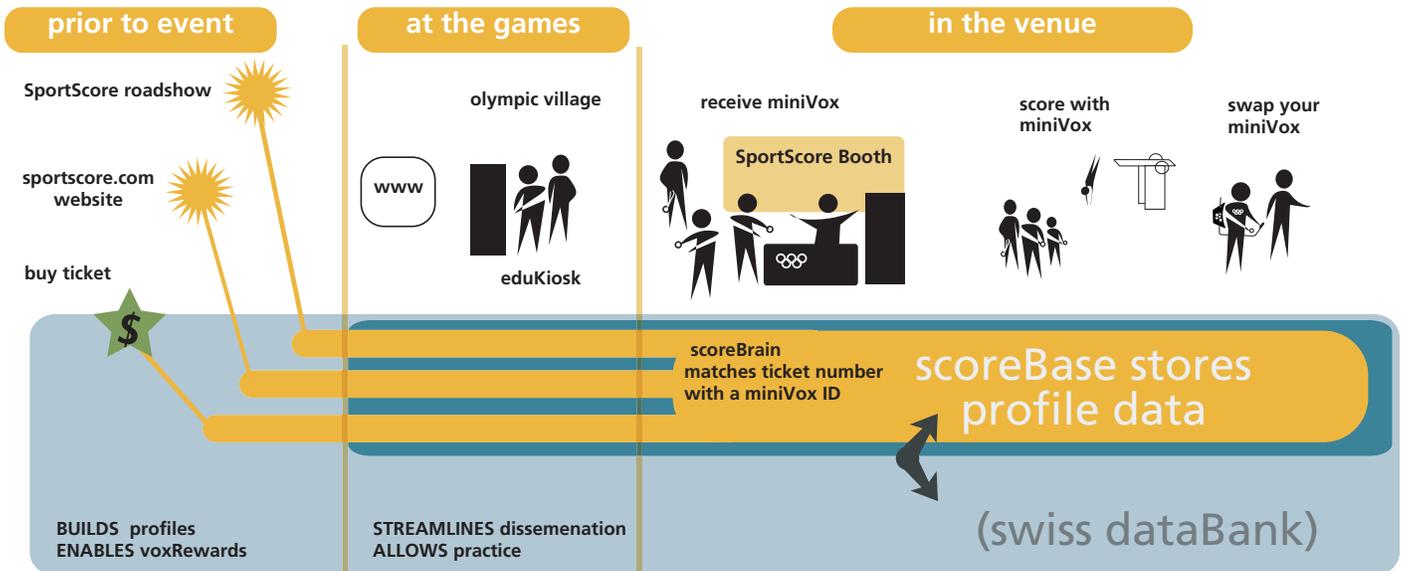
As spectators enter scores, base stations receive them through radio frequency technology, rejecting scores from invalid miniVox units. The valid scores are passed onto ScoreBrain, which "crunches" the raw data and send out visual representations of it to seeScore and DelphiVox. At this point, ScoreBrain also interacts with scoreBase in order to link user profiles with their scores for the DelphiVox. Although spectators are allowed to vote in two separate scoring periods, ScoreBrain ensures that each ticket holder only inputs one vote, replacing existing scores with the new score as the spectator enters it.

After each event, ScoreBrain transfers event information to the Swiss Data Bank so that SystemMentor can analyze

the data and pass information onto technicians and eyeVolunteers to aid system operations.

*database where spectator profile are stored and accessed*

# scoreBase



## | Features |

- + Leverages Olympic database for user profile collection
- + Maintains record of spectator-scores for system evolution
- + Enables authentication of scores during usage
- + Dynamically updates of scores throughout sports events
- + Ensures security of information and allows closer analysis after events end

## | Properties |

- + Unique ticket holder profiles
- + Profile updating system through various platforms
- + Sorting and multiple access capabilities
- + Link to backup storage capabilities in Swiss Data Bank
- + Correlation process between unique user profiles and miniVox identification codes
- + Link to scoreBrain for dynamic updates of spectator-scores

## I Discussion I

ScoreBase is a database repository in which ticketholder profiles are kept before, during, and after the Olympics. scoreBase is dynamically linked to ScoreBrain, so that as scores are inputted during the Olympic events, ScoreBrain can refer to each user's profile and input demographic data on seeScore for users to understand.

When users initially buy their event tickets, scoreBase collects user information such as their country of residence, their names and addresses, their seat location within venues, and their language preferences. scoreBase can leverage existing Olympic.com ticket buyer databases to access this information, reducing the burden of collection from the users. If the Olympic tickets are sold through local ticket brokers, the same information can be easily obtained at the point-of-sale.

Additionally, spectators will be encouraged to submit optional, richer information about themselves through sortscore.com and through representatives at the SportScore

show. These interactions will also be directly linked to their unique ticket numbers.

When spectators arrive at the Games, they can obtain their miniVox units from dedicated eyeVolunteers, who will scan their ticket numbers, then scan a miniVox before handing it to the spectator. If a spectator has multiple event tickets, those numbers can also be linked to the miniVox at this point. Thus each miniVox will be valid for the event that is being scored, but not for events whose ticket numbers are not linked to it. During the voting process, this will enable scoreBase and ScoreBrain to easily identify and authenticate the valid votes from the invalid ones.

Since scoreBase will be tying user-scores to the profiles, this repository of information can be published post-Games to address interesting patterns in scoring, such as consistent differences in how different stadium sections judge, or in a change in judging capabilities over the course of an event.

### | Design Factors |

*Authentication of large number votes is not timely*

*Live capture of votes is difficult to communicate*

*Data capture system is incompatible with platform*

*Data processed under volume and time constraints*

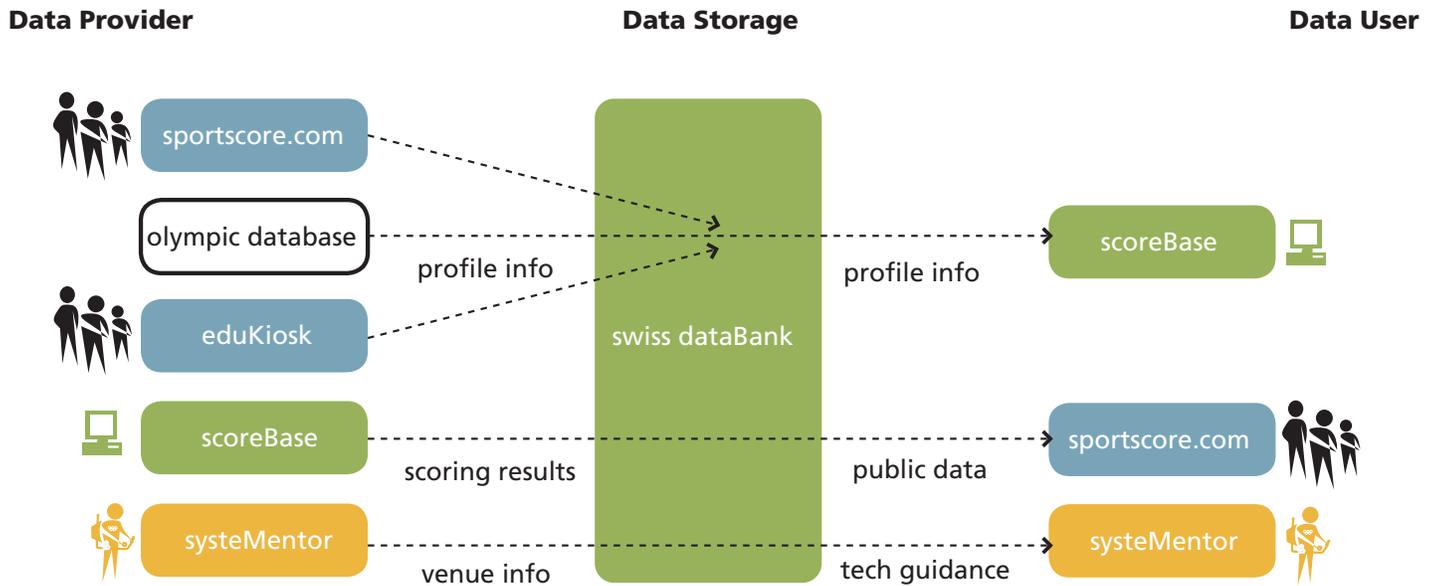
*Lack of security leads to invalid scores*

*Data is lost*

*System is too rigid for change*

repository for long-term sportScore system storage  
and server space for sportScore.com

# swiss dataBank



## | Features |

- + Provides long-term storage of SportScore data
- + Ensures validity of SportScore system by providing a historical capture of information
- + Provides data back-up for scoreBase
- + Provides server space for sportScore.com
- + Provides data for analysis for Score SportScore

## | Properties |

- + Modular storage clusters with expandable capacity in Switzerland, the headquarters of the IOC
- + Software that organizes stored data
- + Software applications that link Swiss dataBank to ScoreBrain during the Games

## I Discussion I

The Swiss Data Bank is a long-term repository which keeps a record of profiles and events during its lifecycle. In addition to providing this, the Swiss Data Bank also serves as a server space to house sportscore.com. Software applications that manage an information flow between ScoreBrain and itself ensure that the Data Bank is continually updated during the Games.

The main function of the Swiss Data Bank is to store user profiles. Before the games, these profiles are downloaded onto each venue processor by means of scoreLink, which is a software application system that updates data between the Bank and ScoreBrain. The Swiss Data Bank also absorbs additional information about each unique user as the games progress.

The Swiss Data Bank also captures system usage during the Games in “snapshots,” which can later provide information to the SystemMentor when its

“smart system” application looks through the snapshots to reveal potential errors or breakdowns in the system. In addition to providing essential information for maintenance tools, these “snapshots” can be combined with user feedback from Score SportScore and be used in analysis of the system optimization as part of the evolution process.

During the Olympics, all of the data from the scoreBrain are packaged and relayed to the Swiss Data Bank through scoreLink. A feature of the Swiss Data Bank, scoreLink is a software application that identifies important, valid data, finds its rightful place within the Swiss Data Bank, and sends it there. scoreLink thus serves as a connection application between the Swiss Data Bank and local Olympic venue processors.

### | Design Factors |

*Huge volume of questions to be answered*

*Ticketholder profile is wrong or missing*

*No single foolproof way to collect user profile data*

*Venue's infrastructure does not support system*

*User desires anonymity*

*Authentication of large number of votes is not timely*

*Data is lost*

*an extension for the system, voters can input scores from their mobile phone rather than miniVox units*

# voteCall



## | Features |

- + Eliminates the necessity of purchasing special equipment for the SportScore system
- + Uses mobile internet access as a means of inputting scores
- + Allows users of different mobile phone models to input scores into the system
- + Allows spectators to use their existing cell phones
- + Precludes need for scoring device education prior to Games

## | Properties |

- + A range of current mobile phones on the market
- + Specification of phone model compatibility
- + Mobile internet access
- + Specialized software to navigate scoring from soft keys on various phones
- + Allocated communication services from existing service providers

## I Discussion I

As the Athens 2004 Games are only a year away, advanced features on mobile phones have not reached enough penetration for personal mobile phones to be a viable alternative to manufacturing specialized score input devices for the sportScore system. However, as mobile Internet access is becoming increasingly available on most cellular phones, in the future, the spectators will likely be able to use their phones as input devices, eliminating the extra cost and inconvenience of buying a separate score-input device specifically for the sportScore system. Using their cellular phones to vote also eliminates much of the pre-education that needs to occur for the miniVox, since users will already be familiar with the controls of their phones. VoteCall is therefore an extension to the sportScore system, and projected to be implemented in the 2008 Olympic Games.

Although all mobile phones have slight variations in their interface designs, most tend to have soft keys that could be used for scoring with

the voteCall software. By ensuring compatibility with the top four phone manufacturers (Nokia, Samsung, Motorola, Sony-Ericsson), a potentially wide range of phone models would be capable of supporting the VoteCall software.

Nonetheless, in recognizing interface differences between cellular phones, the VoteCall software will use the screen interface along with generic selection buttons for score input. For example, all mobile phones allow users to scroll up or down a list by using its up and down keys. Most phone menus have options that can be selected by depressing the buttons directly under the display screen where those options appear, and VoteCall will take advantage of that interface functionality to input scores.

Either prior to attendance, or at selected kiosks at the games, spectators can download the VoteCall software in the way they can download games or ring tones onto their phones. While doing this, they will be prompted to enter their ticket

### | Design Factors |

*Interface is too complicated for comprehension*

*User cannot manage the pace of scoring*

*User is distracted*

*Users do not take scoring task seriously*

*User is unaware that unit is broken*

*Repair disrupts event experience*

## I Continued Discussion I

number. This unique ticket number will then be linked to their personal profiles through the ScorID system.

Menu choices offered by the VoteCall system will include a tutorial mode and a Delphi mode, so that spectators who want to text message their reasons can do so to a central display board, thereby contributing to the Delphi Input system. Although these extensions will enhance spectator experience at the Olympics, it is the core scoring interface that VoteCall will be notable for.

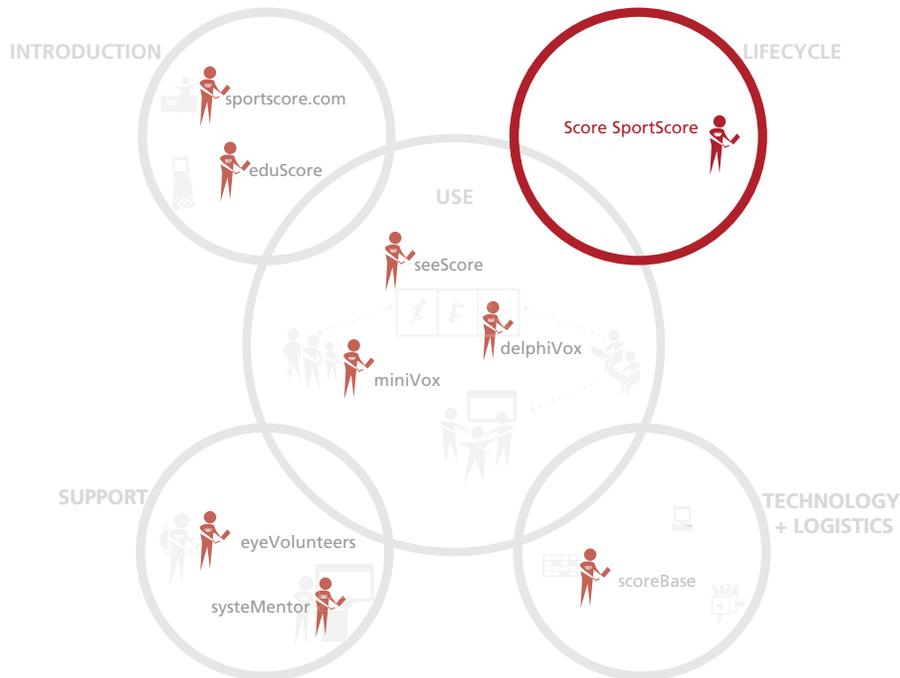
During the scoring process, a list of possible scores for each performance will be 'beamed' to each cell phone loaded with the VoteCall software prior to an athlete's performance. For example, the score list would read 10.0, 9.9, 9.8, 9.7, and so on, for gymnastics, while it would read 65, 64, 63, 62, 61, etc. for diving. To select the score they desire, the user would simply scroll up or down on the list until they highlight the desired score, then press "send" or "call" to submit this score.

As users become acquainted to repeatedly choosing scores and sending them throughout a performance, it should become so easily that they can do it without even looking at the phone. Starting from the score they gave a previous athlete, they can easily score the next one by thinking about whether they want to scroll up (if the second athlete performed better) or scroll down (if they think the second athlete performed worse). As most cell phones have memory capacity, VoteCall would allow users to store a history of all of their scores on their phones, so that they can easily reference it even after the Games have ended.

VoteCall depends upon reliable service providers to work well. In order to ensure that there is enough bandwidth to accommodate thousands of simultaneous mobile phone internet users, partnerships should be sought with local service providers to ensure sufficient capacity. Alternatively, international satellite space could also be rented from a commercial satellite.

*a system that collects user feedback for system evolution*

# score SportScore



## | Features |

- + Monitors public opinion before system debuts at Olympic Games
- + Allows for last-minute changes to systems to ensure smooth system operations
- + Allows design team to monitor user feedback during events
- + Gives design team understanding of features, functions, and overall design changes to SportScore 2.0

## | Properties |

- + A set of research tools used to gather user information and feedback
- + A plan to collect and analyze data
- + On-site research and analysis team
- + User-feedback database
- + Dynamic system collects feedback throughout beta-events and games

## I Discussion I

As the Olympics are iterative events that occur once every four years, and as one of the main design criteria for the SportScore system was that it could be expanded to other uses besides scoring Olympic events, a user feedback system is central to the evolution of the SportScore system.

Score SportScore is a qualitative and quantitative research plan that allows users to give feedback on any part of the system, before, during, and after the games. The research will act as a forecasting mechanism in the near term, allowing the design team to anticipate problems with the system and take steps to avoid foreseeable issues. It will also inform the next generation of the SportScore system. All of the collected user feedback data will be kept in an independent research database in the Swiss Data Bank, where it can be used for reference by later design teams.

As Score SportScore will be central to improvements to the SportScore system, it will be accessible on many components of the system, so that

at these key touch points, users can immediately provide feedback about the SportScore system. These touch points include the SportsCommentary and SurveyScore sections of sportscore.com, feedback options on miniVox and eduKiosk units, distributed paper survey forms at the Olympics. Specially trained eyeVolunteers could also help the design team observe users in action at the Games.

In addition to collecting feedback during the running of the Games, Score SportScore can be helpful during beta-testing of the system to determine any if last-minute changes to the system before its initial roll-out at the Athens Games. These last minutes adjustments include re-wording of instructions and messages, defining training programs for eyeVolunteers, and creating contingency plans for any expected difficulties.

Score SportScore is a central tool in ensuring the longevity and adaptability of the SportScore system.

### | Design Factors |

*Implications of system not clearly articulated*

*Practice materials are insufficient*

*Interface is too complicated for comprehension*

*User cannot manage the pace of scoring*

*Display of complex data causes user confusion*

*System is too rigid for change*

*Method of scoring is outdated*

*Sports changes outpace system changes*

## I Conclusion I

Using the Athens 2004 Summer Games as an initial reference point, the SportScore system was designed as a pilot program to facilitate live score input by sports spectators. However, the system should be viewed with a longer lifecycle than the immediate Olympic games. As a procedure to facilitate enhanced group communication and decision-making, SportScore naturally lends itself to a variety of similar applications, such as the figure skating and snowboarding events at Turin 2006, not to mention re-use at future Summer Games, such as the 2008 Games at Beijing.

However SportScore's design aspirations extend far beyond the Olympic stadium. As a means to engage and educate spectators, using the system at Olympic stadium venues seems a bit like preaching to the choir. After all, these are spectators who clamor to pay \$200-per-ticket and purchase tickets a year in advance to attend a sporting event. From this perspective, the real value of SportScore can be seen in its applicability as an extended, at-home scoring system for those who cannot purchase Olympic tickets.

For the rationally ignorant viewers at home and the competitive barhopper,

the SportScore service heighten awareness and understanding of judged sporting events even while they are enjoying other social events. Extension opportunities exist in partnering with networked games at restaurants, bars, and taverns, such as NTN's iTV Network, which features NFL-affiliated games that challenge players across North America to predict the offensive play.

With the rise of interactive television, SportScore is poised for extensions far beyond stadium walls. While interactive television still lacks substantial content<sup>1</sup>, the ability to participate in SportScore could very easily become a main selling point for interactive television subscribers.

But leaving the sports arena altogether, SportScore, as a process, can be applied to a multitude of situations. As the system takes a complex decision process and renders it digestible for a group by leveraging collective knowledge, it is ideal for situations where the "right" answer is subjective rather than objective. For example, SportScore is an ideal candidate for city planning in town hall meetings. Or, the system could be used for political decision-making, or to reach community consensus in any

large group where doing so would normally be impossible.

The implications of such a system are wide and as yet unexplored. If it were applied to the Olympics, SportScore could humanize the overall experience for spectators by de-mystifying the judging process. It could give spectators a real voice in a situation when they are already trying to express themselves but are being virtually ignored by any official procedures. In the process, SportScore allows spectators to become increasingly knowledgeable about the sport and smarter about the voting procedure, thereby creating a stronger, more lucid "people's voice."

This people's voice is one that is strong both because of its combined expertise and its innate diversity. On closer examination, the importance of an Olympic gold medal recedes in importance to the principles of the Olympic movement, which are to promote international fellowship and goodwill. SportScore promotes these ideals by connecting "regular" people from around the world and amplifying their individual, disparate voices into one resounding shout.

