



The Opportunity Foundation of America Presents

The EagleEyes Project

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Descriptive Information regarding The Opportunity Foundation of America

EagleEyes Explanation

EagleEyes is an eye controlled technology that uses electrodes to measure the Electro-Oculographic Potential (EOG) also known as the Corneal-Retinal Potential. Five electrodes are used, one above and below the eye to measure the vertical signal, one on each temple to measure the horizontal signal and one on the forehead as a ground reference signal. The electrodes are connected to a console amplifier unit that converts the signal into meaningful data and is connected through a USB cable to a computer. EagleEyes software on the computer then converts the signal into mouse movement on the screen as a mouse replacement. Basically the user can control the mouse with their eyes. EagleEyes is capable of single click functions by focusing on a section of the screen for a short time. EagleEyes is not currently capable of performing double click or click to drag functions but can be used with any website, software or app that only requires a single mouse click.

EagleEyes currently serves the severely physically disabled demographic. These are individuals who have little to no purposeful body movement and have at best a “yes-no” method of communication. EagleEyes allows these individuals, often for the first time, to act independently and develop “cause and effect” relationships that lead to communication, education and recreation.

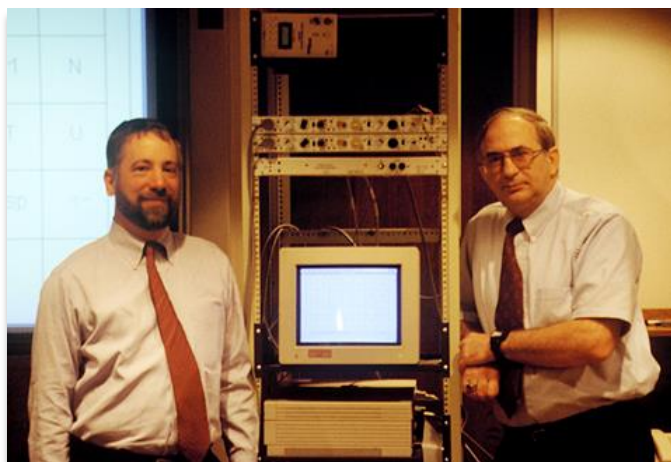


EagleEyes: A Brief History-written by Professor Gips

EagleEyes was developed in 1992 by Professors Jim Gips, Pete Olivieri, and Joe Tecce of Boston College just for fun. They thought it would be cool to control a computer just through electrodes placed on the head. They also presented a paper ("Direct Control of the Computer through Electrodes Placed Around the Eyes") at a computer conference in Orlando and developed a video (<http://youtu.be/ynAdfNlgiQM>) illustrating the work. EagleEyes was a classic case of, develop a technology out at the edge and then maybe there is a problem it might help solve.

The work was written up by the Orlando Sentinel during the conference and later became a finalist for the Discover magazine 1994 Technology of the Year Award. Discover magazine is owned by Disney. Prior to the Award Ceremony at Epcot, Disney filmed a piece on each of the finalist technologies and then combined them into a TV show.

Kathy Nash, mother of Michael Nash, a child with severe disabilities from Cerebral Palsy, was flipping through the channels one evening in her home in suburban Boston when she happened to see the brief piece on EagleEyes. She knew immediately this was the technology for Michael. Even though Michael had no voluntary movement except for his eyes and had been diagnosed as "having the intelligence of a six-month old," Kathy knew he was in there and had been reading to him and teaching him words, colors, and numbers. The next morning she called Jim Gips at Boston College and asked to bring Michael in to try the system. The equipment was in a lab. Jim had no experience with children with disabilities and was reluctant. After repeated calls from Kathy, he agreed. Here is Jim and Pete in 1994 with their early rack-mounted EagleEyes waiting for Kathy and Michael's arrival.



Michael took right to EagleEyes. Word slowly spread and Jim started receiving more calls from families of children with disabilities. Luckily Boston College has the Campus School, a day school right on campus for forty schoolchildren aged 3 to 21 with multiple disabilities. Jim spoke with Phil DiMattia, the Director of the Campus School, and Don Ricciatio, the Principal of the Campus School, and they decided to set up a special EagleEyes room in the Campus School to provide EagleEyes training and do facilitate assessments.

Michael began using EagleEyes a couple of times a week at the Campus School and acquired an EagleEyes system for his home. The Superintendent of Schools in Michael's hometown of Marshfield saw Michael using EagleEyes at the Campus School, realized he had normal intelligence, and suggested Michael enroll in the regular public school system, still using EagleEyes for his school work. Michael received a diploma at the Marshfield High School graduation ceremony in 2003 to a standing ovation from those in the audience.



“The joy on Michael’s face and Kathy’s face when Michael first used EagleEyes was just astonishing, as was the effect it had on Michael, his family, and eventually his community. Michael is a person, an intelligent person, and for the first time he had a chance to show that. That was profoundly moving to me. I knew there must be many more children and young adults who are locked in through physical disabilities but mentally intact. What a double burden – to not be able to move or speak and also to be treated as a non-person. My life became transformed. I knew I had to do what I could to help as

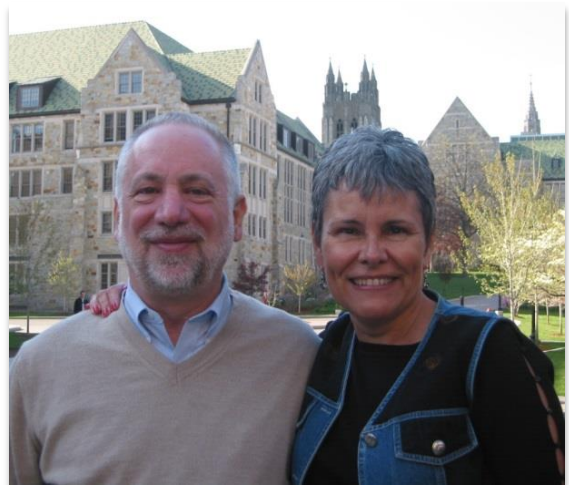
many of these people and their families as possible.” – Jim Gips

Jim began to explore ways to allow more people with disabilities to benefit from EagleEyes. In 2000, Professor William Ames, a faculty member in the Boston College Computer Science Department and a former engineer at Hewlett-Packard, kindly volunteered to start working on the design of a miniaturized EagleEyes system that would run off standard 9 volt batteries and be connected to the computer through the USB port.

Through a string of unlikely circumstances, Jim met Debbie Inkley, Founder and Executive Director of The Opportunity Foundation of America (OFOA). In 2005, Boston College and OFOA arrived at a formal license agreement for OFOA to manufacture, distribute and provide training for the new miniaturized EagleEyes technology.

OFOA and EagleEyes

The Opportunity Foundation of America (OFOA) was chosen by Boston College because of our commitment as a 501(c)3 non-profit organization to distribute the EagleEyes systems to those in need. For the last seven years, the organization has consisted of two part time employees and a dozen or so rotating volunteers. In early 2012, a full time Executive Director was put in place in order to provide more consistency in the organization. In late 2013, a full time Director of Operations was hired to accommodate the growth and redesign of the EagleEyes system. OFOA has distributed over 200 systems across the USA and Canada including individual’s homes, schools, universities, and organizations.



OFOA also continues to develop new support and systems to facilitate the use of EagleEyes and improve the experience for the disabled community. Our website is dedicated as the home base for our users to find help, support, information and to connect with other users. (www.OFOA.net) OFOA is supported by generous donations from individuals, corporations, foundations and grants.

EagleEyes is a unique device in the disabled community and works for most severely disabled individuals. It is not limited by their ability to focus or understand and adapts to the user. EagleEyes is a learned skill, which allows each individual to adapt in their own way. For example, an individual with some head movement can use that movement to augment their EagleEyes use. Most other devices on the market require recalibration whenever significant head movements are encountered. Because of EagleEyes simple recalibration by a facilitator, the user can continue to use EagleEyes uninterrupted and can even change the position of their head.



EagleEyes is not only a device that can allow education and communication, but more importantly it allows for recreation, play and an awareness of self and true intellect. We cannot stress the importance of allowing these individuals the chance to actually recreate, independent of anyone else. We all enjoy leisure time and allowing the disabled population the same privilege is one of the greatest accomplishments of EagleEyes. Even if an individual already has a communication device, EagleEyes is one of the few devices available that anyone, with eye control, can easily recreate using a computer.

Volunteers



OFOA has a successful volunteer program working with disabled youth in several Utah schools. The volunteers will tell you that they are the ones that change the most from their interactions. Recently OFOA coordinated Olympus High School's Community of Caring class with Hartvigsen School for the disabled. There were 12 teenagers that were paired up with EagleEyes users and another 20 teenagers who helped in the school's literacy program. The effects and changes in both sets of youth were amazing. At the final farewell at the end of the year, the high school volunteers shared how this experience had changed

them while giving the disabled youth peers their own age.

OFOA is continuing to develop our volunteer model for schools and organizations to get community members more involved with individuals with disabilities and raise awareness. EagleEyes changes lives!. It changes the lives of the user who has never been able to do anything independently. It changes the lives of the families who can now interact and play with their child or sibling. It changes the community as we start to recognize that physical and intellectual disabilities are two very separate challenges. *It changes lives as it validates the intellect of this once ignored population of individuals with severe disabilities.*

OFOA also uses volunteers for fundraiser planning, research and development, and other short term projects. These volunteers most often provide their professional skills to help out within their area of expertise.

Manufacturing and Cost

Sanmina-SCI has been our close partner for the last eight years and has manufactured the EagleEyes consoles in their Salt Lake facility. Recently INOVAR, Inc., located in Logan, Utah, has become our new manufacturer of the console. Blake Kirby, President of INOVAR, Inc., is a member of our Board of Directors and offered his companies' services. Recent developments have allowed us to eliminate the need for 9v batteries and power the console from the USB on the computer. INOVAR collaborated with us on this critical change that eliminated the cost of batteries for users. The cost of the EagleEyes console is about \$600 with parts and labor. (Photo: Debbie Inkley at Sanmina-SCI)



The electrode cables are manufactured by BioMed Electrodes located in California. Biomed became our new manufacturer after seeing the EagleEyes segment on the "Turning Point" documentary on BYU TV. One of the owners of Biomed called and offered us a discount as a way for him to be a part of something that helps so many people. The cost of the electrode wires is \$150 with parts and labor.

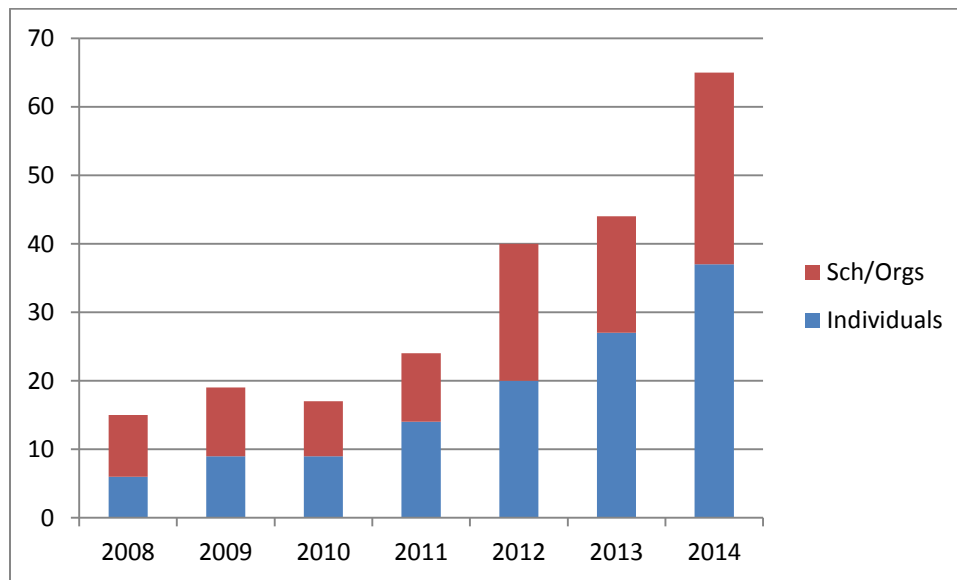
Each system is delivered with a detailed User's Manual on how to use the system, electrode paste, alcohol swabs, cloth tape to attach the electrodes, a USB cable, a flash drive with the EagleEyes software and about 40 activities to use with EagleEyes and a carrying bag to transport and store the system.

Total production cost of the EagleEyes system is **\$800**. Similar commercial eye controlled technology retails for \$10,000-20,000 with training. As a non-profit, OFOA does not sell the systems but does ask for a donation to simply cover the cost of the systems and our trainer. These donations are used to then produce more EagleEyes systems. Each system is delivered by one of our trainers who provide six to eight hours of hands on training to assure the success of the user. After training we provide free unlimited support to all of our users. If an individual is unable to provide a donation, we offer assistance with fundraisers and other methods of assistance including donor funds to make up the difference. We have found that individuals that are willing to contribute towards an EagleEyes system are more vested in using the technology, committed to learning how to use it and continuing to use it. We do not want to simply place systems to have them sit on a shelf. Our goal is that all systems are used at least once a week to help a disabled individual achieve some level of freedom through communication, education, and recreation. The foundation also dedicates 15-20% of the yearly distribution of EagleEyes systems as gifts to those organizations and individuals that are unable to provide a donation but have users that would do well with EagleEyes.

Distribution

OFOA signed a formal license agreement with Boston College in 2005. By 2008, the design and manufacturing of a miniaturized version of EagleEyes was completed and distribution was started by two part time employees and many volunteers. In 2012, a part time trainer was brought on to meet the increased demand for EagleEyes systems across the country. With the increase in demand it became necessary to bring Debbie Inkley on full

time as the Executive Director in early 2012. In the graph below you can see the stability that one full time position made, bringing our distribution to an average of 5 systems per month. A full time Director of Operations has been hired to advance the distribution of systems and coordinate the foundations efforts during this next growth phase. With the extra support, OFOA plans to increase distribution to 7-10 systems per month in 2014. Because EagleEyes is not sold for a profit, increased distribution only serves one purpose, to help more severely disabled individuals through broader distribution, awareness, and availability.



Training

Four to six hours of training is required with each new system to assure the success of the user. We have developed an in depth manual that not only covers system operation and troubleshooting, but also guidance on how to use the system with different activities. OFOA has created training videos and other material available on our website along with a brand new activities library to help users find new activities. (www.OFOA.net) Many hours are dedicated to improving current user's experience and to keep them active. We also offer quarterly webinars with Q&A sessions that started in Q1 of 2014, which are recorded and posted to the website. Recurring training for volunteers working at local schools and organizations is provided annually also.

Camera Mouse

After Boston College developed EagleEyes, Prof. Gips adapted the EagleEyes Software to use a web camera to track head movement for those individuals that have controlled and deliberate head movement. This new software was named Camera Mouse and is offered for free by Boston College and has had over 2 million downloads from www.CameraMouse.org. The Opportunity Foundation of America also actively promotes Camera Mouse. When we assess a new individual we try both Camera Mouse and EagleEyes to see which one fits their needs the best. It has been our experience that Camera mouse is able to help two to three times more individuals than EagleEyes, because there are less severely disabled individuals, and therefore helps to triple our outreach to assist more individuals with special needs. Camera Mouse simply tracks the movement of the user's head which is translated into the movement of the mouse on the screen. It is simple to use and free to anyone who wants to use it. OFOA actively promotes and educates individuals about Camera Mouse and EagleEyes.

Progression Guide

Through the collaboration of industry experts we are compiling a progression syllabus for users. We have watched a trend where many facilitators (the volunteers who help the user use EagleEyes) become bored and are hesitant to try new things with EagleEyes. By providing a guide to walk them through the types of activities and the order to do them in, we will enable them to help the user progress to a communicative or educational stage. We do not want to simply distribute this amazing technology, but rather want it to be implemented in the lives of these individuals. We are constantly developing new training and educational resources for our users to continue to progress with EagleEyes. In Early 2014 a software engineer by the name of Guy Barker contacted the foundation and offered his services to create software to be used, free of charge, with EagleEyes and Camera Mouse. The first piece of software is a board maker where icons can be added with pictures and text for the user to select. When selected the text is spoken. This software can be used to make games, educational testing, communication boards and other interactive designs. The software is called Hebi Speaks and is available for a free download on Herbi.org.



Marketing / Awareness

It is estimated that there are 50-60,000 severely disabled individuals throughout the USA. Each state handles this demographic differently with private and public programs. Many times it is left solely up to the parents of these individuals to find help and resources for their children. Our marketing efforts are focused on the individual as well as organizations that serve this population.

In 2011, BYU TV created the “Turning Point” documentary highlighting EagleEyes.

(<http://www.byutv.org/watch/fb314488-ef02-4ba9-89e7-1252de9b55d7/turning-point-eagles-eyes>) This program has continued to air and has been the source of many system placements. OFOA also recently produced “Changing Lives”, our own documentary about three families whose lives have been changed by EagleEyes. (<http://vimeo.com/61847681>) This documentary has aired on Comcast “On Demand” in the intermountain west.

We have recently started using press releases each time we place a new system. With more systems being distributed outside of Utah, we have been quite successful in receiving press with stories on television, newspapers, and websites including several articles in journals. When our trainer travels to other states, we add an additional day to each trip to make contact and visit with other nearby organizations that are involved with the severely disabled population. Thus we are able to provide more personal outreach outside of Utah while minimizing travel expenses.



Google offers services to non-profit organizations. We currently have a free Ad-words campaign running with Google that has resulted in a substantial increase in traffic to our website. The Free-Ad campaign has provided data that we can now use to refine our website, tell our story better, and help those in need find EagleEyes.

Throughout Utah we have built relationships with many special needs schools. We also work with several state organizations that have resulted in over 20 systems being placed in classrooms in Utah. We also work with several organizations, both public and private, in other states. Another new demographic that has opened up to OFOA is adult day programs. We find many people in these programs have limited opportunity or access to assistive technology. We also attend special needs and assistive technology conferences across the country to create awareness and new contacts. Generally we connect with large organizations, schools and school districts at these conferences which provides a broader exposure to more individuals in need.

Fundraising events have been a good source of local attention. Olympus High School and Cottonwood High School both organized fundraisers for EagleEyes of their own volition. The money they raised was significant and the awareness to the community they provided was invaluable. The foundation also holds two annual fundraisers in the spring and fall to bring more awareness and to share the progress of EagleEyes.

The internet is, of course, the source of all information these days. While we strive to have our website rank well with Search Engine Optimization, we would like to be found more often where people are talking about this type of technology. Through a focused effort we have begun positing on blogs, forums and other information sites where teachers, parents and clinicians are searching and talking about the need and availability of assistive technology. Our goal is for EagleEyes to be where people are already looking.

Webinars are used to provide recurrent training and to provide ongoing support. We believe that our current users are the most important part of our organization because their success will equate to more referrals to those in need. We are focusing on sending our EagleEyes users relevant and new information monthly as well as follow up emails and phone calls to lend support, answer any questions and provide recurring training through webinars and personal contact.

Learn More

You can learn more at www.ofoa.net.

If you would like to get involved to help our cause and unlock the world to these individuals, please contact us to arrange your contribution or donation. We are a 501(c)3 public nonprofit charity and are Gold Star Certified on Guide Star through our commitment to fiscal responsibility and transparency.

