

Microsoft
Research

Based on Microsoft
SenseCam Technology

MEMORIES FOR LIFE INTRODUCING VICON REVUE

VICONREVUE



BASED ON MICROSOFT[®] SENSECAM[™] TECHNOLOGY



“Vicon Revue[™], based on Microsoft SenseCam technology, is a wearable camera that has the potential to revolutionize how memory disorders are treated. Preliminary studies of this unique device have demonstrated that autobiographical memory is significantly enhanced in people with severe memory impairment. Although there is clearly a lot we still need to learn about how the use of Vicon Revue can best help patients with memory conditions, it will undoubtedly become an invaluable tool in this regard.”

Adrian M. Owen,
Neuroscientist

IN 2003 MICROSOFT INVENTED A NEW TYPE OF DEVICE - A WEARABLE DIGITAL CAMERA CALLED SENSECAM.

SenseCam has a wide angle lens, which enables it to take digital photographs of whatever the wearer is looking at whilst it's being worn.

The camera has a number of sensors that trigger it to take a photo automatically. It does this two or three times every minute, creating a visual record of an event or entire day without any intervention or conscious attention from the wearer. User friendly software means that you can easily create a visual log of your day, simply by plugging the device into your computer.

Originally conceived as a 'black box' incident recorder, it quickly became apparent that SenseCam is a powerful aid for memory. Reviewing photos captured by SenseCam frequently elicits powerful recall – watching the photos can make you feel just as you did when you experienced the event (Hodges et al., 2006).

Over the past six years, Microsoft has collaborated with a number of clinicians and university researchers around the world to explore and understand more about how SenseCam can help memory.

Although this research is by no means conclusive, the results have been so encouraging that Microsoft has licensed the technology for manufacture as the 'Vicon Revue'. This will make more cameras available to researchers and clinicians who wish to carry out research with the device.

Vicon Revue is also available to individuals with memory impairment.

EVIDENCE THAT SENSECAM TECHNOLOGY SUPPORTS RECALL



A number of preliminary studies indicate that SenseCam technology is a powerful aid for autobiographical recall. For example, clinicians at Addenbrooke's Hospital in Cambridge, UK carried out a study with a woman who experienced severe memory impairment following an infection that caused damage to parts of her brain (Berry et al., 2007).

When the woman looked through her own photos, captured using SenseCam technology, her memory for the events was very much improved. When she saw the photos, she even described events, happenings, thoughts and feelings that had not been captured in the photos themselves. She was also able to remember the events many months later, without the need to keep reviewing the photos.

Furthermore, MRI brain scans of the same woman showed activation in the areas of the brain associated with normal autobiographical memory when she had been using the SenseCam technology to review an event. It seems that the use of SenseCam increases neural activity (Berry et al., 2009).

‘FURTHER RESEARCH HAS FOUND THAT A VARIETY OF MEMORY IMPAIRED PATIENTS, INCLUDING THOSE WITH ALZHEIMER’S DISEASE, MAY BENEFIT FROM USING THE DEVICE.’

Although these results are encouraging, more research is being carried out into the use of SenseCam technology as a memory aid.

At present, more than 40 laboratories worldwide are using SenseCam technology to study its effects on normal memory and on people with memory impairment.

To find out more about the research that is taking place, visit the following website:

<http://research.microsoft.com/sensecam> 

HOW TO USE VICON REVUE



To turn the camera on and off, press the small round on/off button on the top of the unit. You must press the power button for several seconds before the camera will respond. A rising tone indicates that the camera is switching on and a falling tone indicates that the camera is switching off.

When the camera is ready to begin taking pictures the green power light comes on. The yellow light blinks whenever the camera is taking photos or when there is other internal activity. The green on/off light is on continuously.

To manually take a photo, press the manual shutter button, the lower of the two side buttons. Note that the camera takes several seconds to save the photograph, during which time further presses of the manual shutter will have no effect.

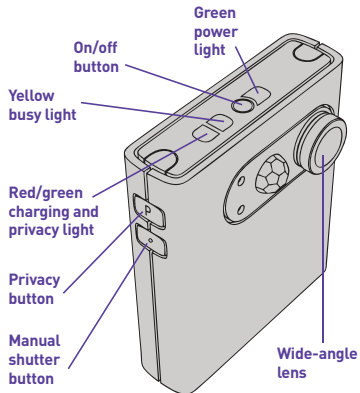
To temporarily stop taking photos for a period of about four minutes, press the 'privacy' button, the top of the two side buttons labelled 'P'. After you press this button, a red light comes on and the operation of the camera is suspended. A beep will sound 15 seconds before the camera starts taking photos again, which happens automatically. To extend the pause for another four minutes, press the privacy button again.

CHARGING THE BATTERY



To charge the battery, connect the camera to your computer or mains charger. When the camera is plugged in, a flashing green light indicates that the battery is charging. A solid green light indicates that the camera is fully charged. However, if the battery is completely flat when you plug it in, no lights will appear during charging until the camera is turned on again.

It takes about two hours to recharge the battery (three hours if the battery is flat). It is not possible to overcharge the battery and it is safe to leave it plugged in overnight. A fully charged battery gives at least 12 hours of operation.



During use, the green light is usually lit continuously. If you try to turn the camera on when the battery is very low, the camera may make a low pitched grumbling sound. If this happens, recharge the camera by plugging it into your computer or mains charger.

REVIEWING YOUR PHOTOS

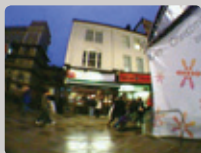
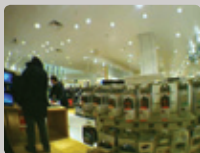


Revue is supplied with software that enables you to view your photos easily. The viewing software runs on Microsoft Windows® (Windows XP® or later), Apple® Mac® OS (10.4 or later) and Linux® (Fedora Core 12, Ubuntu 9.10, openSUSE 11.2).

To view your photos you need to install Adobe Air and Vicon Revue Desktop onto your computer.

1. Connect to the internet. Go to <http://www.adobe.com/products/air/> and click on 'Download Adobe Air'. Select your operating system and version. Click the 'Download Now' button.
2. Insert the supplied DVD into your computer's DVD drive and open the appropriate directory to view the contents of the DVD.
3. Click on Vicon Revue Desktop and follow the on screen prompts to install. For further information on how to install the software please refer to the 'Using Vicon Revue'.pdf document on the DVD supplied. A free pdf reader can be downloaded from www.adobe.com
4. Once installed, connect Revue to your computer using the mini USB cable supplied and open Vicon Revue Desktop. Your photos automatically appear after the transfer process is complete. This takes a few minutes, and depends on how many photographs the camera has taken.

Your photos can be reviewed one by one or as a time lapse video.



GUIDELINES FOR USING VICON REVUE AS A MEMORY AID



There are many ways to use Vicon Revue. However, for people with memory impairment, the following guidelines may be helpful:

➤ **Wear the camera to record significant events.**

Don't record the mundane, because even people with 'normal' memories can forget very routine events. When you have finished recording, upload the photos to your computer and begin reviewing them the day after the event.

➤ **Take your time when reviewing the photos.**

You can look through the photos one at a time or as a time lapse video. However, it's likely that the slower you look through the photos, the better you will remember the event. As you do so, you can delete photos that are blurred, dark, or not clear if they don't seem to trigger any memories.

➤ **Review your photos regularly.**

Do this every few days for two weeks or more. This regular reviewing method is known as 'spaced rehearsal' and is a good way to remember things successfully. After this initial period of regular review is over, you can view the photos as often, or as little as you choose, although it is probably best to look over important events every few weeks.

Other potential uses for Vicon Revue



In addition to its value as a memory aid, many other applications have been suggested. These include:

- Assessing physical and mental health
- Monitoring outcomes of treatment
- Improving general cognitive functioning
- Ethnography
- Monitoring exercise, medication, diet, alcohol intake
- Security, law enforcement and military applications
- Emergency services
- Reflective practice
- Teaching, school projects
- Documentaries, art projects
- Video blogging, sharing experiences

VICON REVUE
MORE INFORMATION

Based on Microsoft SenseCam Technology

LEARN MORE ABOUT VICON REVUE



VICON REVUE
MORE INFORMATION

Although we still have a great deal to learn as to how Vicon Revue can be used to aid memory, a significant amount of research is already underway. Visit the following websites to find out more:

<http://research.microsoft.com/sensecam> 

<http://www.clarity-centre.org/sensecamwiki> 

MORE INFORMATION

To find out more about Vicon Revue visit www.viconrevue.com
or email info@viconrevue.com

REFERENCES



Hodges, S., Williams, L., Berry, E., Izadi, S., Srinivasan, J., Butler, A., Smyth, G., Kapur N and Wood, K. "SenseCam: a Retrospective Memory Aid" In Dourish and A. Friday (Eds.): Ubicomp 2006, LNCS 4206, pp. 177 – 193, 2006.®

Berry, E., Kapur, N., Williams, L., Hodges, S., Watson, P., Smyth, G., Srinivasan, J., Smith, R., Wilson, B. and Wood, K. The use of a wearable camera, SenseCam, as a pictorial diary to improve autobiographical memory in a patient with limbic encephalitis. Special issue of Neuropsychological Rehabilitation 2007, 17 (4/5), 582-681, "Encephalitis: Assessment and Rehabilitation Across the Lifespan.

Berry, E., Hampshire, A, Rowe, J., Hodges, S., Kapur, N., Watson, P., Browne, G., Smyth, G., Wood, K. and Owen, A. The neural basis of effective memory therapy in a patient with limbic encephalitis. Journal of Neurology, Neurosurgery, and Psychiatry with Practical Neurology, October 2009.



VICONREVUE.COM

Vicon acknowledges all trademarks.

Microsoft®, Windows® XP and Sensecam® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Macintosh® is a registered trademark of Apple®, Inc. Linux® is a registered trademark of Linus Torvalds. Adobe is a registered trademark of Adobe Systems Inc.

Vicon Motion Systems Ltd. UK registered no: 1801446.

DENVER

7388 S. REVERE
PARKWAY SUITE 901
CENTENNIAL,
CO 80112, USA
T: +1 303.799.8686
F: +1 303.799.8690

OXFORD

14 MINNS BUSINESS
PARK, WEST WAY,
OXFORD,
OX2 0JB, UK
T: +44 (0) 1865 261800
F: +44 (0) 1865 240527