6.1. Executive summary

Conventional video recording equipment used today have three main problems:

- Set-up Time
- Operational Difficulties
- Power and Storage Limitations

Contemporary cameras such as the GoPro Hero3 and Google Glass partially solve some of the three issues, but their deficiency in at least one of these categories results in a poor experience or recording for some users.

One problem seen across the board in cameras today is the limitation on recording time placed on these devices by their power sources. CVR attempts to solve this issue by introducing a reliable 24-hour recording patch that does away with many power hungry processing features and gets its footage straight from the electromagnetic field produced by the brain. CVR patches are single-use 24-hour patches that capture an entire day of footage from the users’ perspective.

6.2. Industry-wide problem

Set-up Time

Digital cameras today have an associated delay with the time it takes to remove the camera from its case, power it on, position it, and focus the lens. While the user is performing these preliminary steps, they may miss critical opportunities to record events.

Operational Difficulties

Standard video cameras require the user to preview the recording frame on a small LCD screen to ensure the desired content is being recorded. This leads to many videographers only seeing the world through a small, pixelated window as they adjust the camera angle and location.

Power and Storage Limitations

Cameras that record and process high-definition video tend to put a heavy drain on power sources resulting in extremely short average battery life. This short battery life forces users to either carry extra batteries or periodically recharge the device at a wall outlet.

6.3. Existing solutions and drawbacks

GoPro

One option for personal video recording is the GoPro brand of cameras. These cameras are made for mobility and durability and can be strapped to the user via a harness or mounted on a handheld pole, a helmet, or other hard surface. The GoPro provides a fixed viewpoint if hard-mounted, or can be attached to a pole for easy redirection and maneuverability. The GoPro is known for its high-quality video recording shot from uniques perspectives. If mounted on a
camera or chest harness, the GoPro camera can provide viewers with a visual experience from the perspective of the user. One of the major drawbacks of the GoPro camera it’s mounting requirement. If the camera is mounted to an object, such as a skateboard or vehicle, the user must make sure all the action they want to record happens within the fixed viewing frame of the camera. If the user mounts the camera on a pole, they must consciously decide where to point the camera and hold it steady or risk the quality of the recorded images. The helmet mount allows the user to turn their head towards whatever they want recorded, but limits the usability to environments where you would wear a helmet. The most limiting factor of the latest GoPro Hero3 White Edition is its average recording battery life of 2.5 hours, up to 3.5 with the optional Battery BacPac2.

Google Glass

Another recording option is Google Glass: a pair of eyeglass frame with integrated computing, camera, and wireless technology. Glass can be controlled by voice commands or manual input by the user and can take pictures, search the web, record or stream video, and perform many other tasks similar to a smartphone. The main benefit of Glass over a smartphone is the handsfree capability. Glass is housed in wearable eyeglass frames, so aiming the camera is as simple as turning your head. Glass can also be voice-controlled, which eliminates the user having to look at a device or grope blindly to find a record button. Some of Glass’ main strengths, its mobility, versatility, and multipurpose features, are also its weaknesses when competing with other recording devices. Glass is a small, wearable device meant to sit comfortably on your ears and nose. This wearable frame also includes the power source. For Glass to include more battery life, it would have to increase the size of its battery, making it burdensome and increase the likelihood that it would cause discomfort or damage to the user. The current battery life for Google Glass Explorer undergoing average use, such as web searching, taking pictures, and recording short videos (10 seconds by default), is a maximum of 5 hours, with one user reporting a battery life of 45 minutes while continuously recording.

6.4. New, improved solution
Cranial Visual Recorder (CVR)

The Patch
CVR is housed in a small adhesive patch located somewhere on the users head, wherever the accompanying CVR software has tested as the optimal location for reception, which varies by user. The patch itself attaches in a fashion similar to an adhesive bandage, stays on reliably in nearly all conditions amenable for sustaining human life, and is impervious to weather such as wind and rain.

Setup and Operation
Setup time in the field is eliminated completely by CVR; the only setup tasks required to use a CVR patch are pairing it with the software and placing it on the user’s head before they start their day. When the user sees what they want to record, they can focus on the object or
event, knowing that the better view they get, the better the recording will be as well. Focusing on objects occluded by textured obstacles, such as a chain-link fence or sheer fabric, is often difficult for traditional cameras that don’t automatically know what to focus on. CVR takes advantage of the years the user has spent using their eyes, whatever they are focusing on gets recorded.

**Power and Storage**

The reason most cameras drain their power source so quickly is the demand placed on the battery for image and environment processing. CVR utilizes the work already done by your brain for image and environment processing, so there’s no need for the power hungry LCD preview screen, facial recognition processing, user interface, or mechanical focusing mechanisms used by traditional cameras. The lower drain on power in addition to the focus on making the patch non-rechargeable allows the power source of the patch to run for 24 hours. Since CVR obtains the image after the user has decided where to look and what to focus on. All the CVR patch has to do is receive these signals from your brain and store up to 24-hours of uninterrupted footage.

**Drawbacks**

- **Eyesight** - Since CVR receives images from the user’s brain, the recording will be as clear as the user’s eyesight. However, CVR will revolutionize eye exams, allowing optometrists to see from the patient’s perspective and prescribe perfectly tailored corrective lenses, eliminating this drawback.
- **Length of Video** - 24 Hours of video may seem like a lot to sort through and may intimidate users who aren’t familiar with video editing processes. However, since the video will be from the user’s perspective, they can quickly isolate timeframes that contain the images they want to keep.

6.5. Case study

Bobby Jones is a student who attends a local university. Sometimes his classes can get a bit complicated and he has trouble keeping up with the teacher and his notes. He decides that if he could simply record the lecture, then he could review it later. After contemplating the idea, he becomes concerned about bringing in his camera; it would be awkward on his tiny desk and would get in his way. He sees a CVR commercial on the television and decides that he will give those a try. He goes to the store and buys a box of patches. He goes home and goes to the CVR website and downloads the CVR software.

The next morning, he opens the box and pulls out a CVR patch and the included usb cable. He runs the software and unwraps a patch. He connects it up to his computer. The CVR software displays that it senses a patch has been connected. He then hits the green Pair button. After waiting a few seconds, the software tells him that the CVR patch has been activated. Before disconnecting the patch from the USB cable, he places the patch on his forehead and clicks the Test CVR button on the top left of the software interface. The software displays his own vision;
the frames being recorded on the CVR. The image is a little bit blurry. After moving it around his head, he finds that the backside of his neck gives the clearest recording. He unplugs the CVR patch and removes the clear tape from the back of the patch and sticks it on the back of his neck. He goes to class like normal and tries his best to keep up. After his classes, he decides to leave it on. That night, his friends invite him to a crazy party and he has a good time.

At the end of the day, he goes home and runs the CVR software and removes the patch from the back of his neck. He hooks it up with the USB cable. The software displays that it senses a CVR patch and that it is downloading the video. After a minute, the viewing screen fills with the first frame recorded from the CVR. He sees the timing bar down at the bottom of the screen displays 0:0:0 all the way to 13:21:04, showing that the patch has been active for more than 13 hours. He uses the Recording Playback Controls to move through the video. He finds that there is actually more than just his classes that he wants to save. He uses the green and red bars on the Timeline to section off clips that he wants to save. He encompasses the recording of his classes and clicks the grey Export button. The video is then rendered to his desktop. He decides to leave the clip of the party alone. He clicks the red button labeled Wipe and waits a few seconds as the software displays the wait animation. He then tells him that the patch has been rendered useless. He closes the software and throws it into the trash.

6.6 Conclusions and call to action

Cranial Visual Recording is a company that makes recording patches called CVRs. They are the size of a penny and are attached to a person’s head via an adhesive side. These devices record twenty-four hours of visual information from the wearer and allow them to export this video onto a device of their choosing. These patches were aimed at relieving users from the annoyances and issues generated by current day recording devices. Simply purchase, open, Sync with a device, and you're ready to record.

6.7 About the company

CVR Inc. is comprised of:
- Greg Klupar
- Ryan Houlding
- Jimmy Williamson.

We feel that the progress of video recording technologies today have been left behind in favor of lower quality multitasking devices. We as a company are committed to providing high quality, reliable, cutting edge technology to our clients without sacrificing usability, mobility, or convenience.

Sources:
1 GoPro Hero3 Camera Battery-Life:
http://gopro.com/support/articles/hero3-battery-life

2 Google Glass Product Page:
http://www.google.com/glass

3 Google Glass Continuous Recording Battery Life Expectancy: