If Microsoft’s SenseCam has pioneered visual life-logging—the act of attaching a camera to your neck and taking a picture every 30 seconds—Martin Källström’s Narrative Clip has brought it to the masses. The tiny wearable started out life as the “Memoto Wearable Camera” on Kickstarter in November 2012, raising over half a million US dollars more than its original funding goal of $50,000. After its launch in early 2014, the company saw over 100 million pictures uploaded in its first eight months of operations alone. With its next version of the clip being released later this year—featuring GPS and accelerometer sensors just as its predecessor, but now with a new eight megapixel camera, an 86° lens, and added Wi-Fi and Bluetooth support, all in a package weighing just 28 grams—we sat down with Narrative’s CEO and founder Martin Källström to talk about his thoughts on the future of wearable cameras.

When did you first get the idea for the Narrative Clip?

Narrative was actually the result of a very deliberate ideation project, where I spent three months generating business ideas. From the start, the idea was to look at the possibility of a wearable camera and what could be achieved with that. Of course, there’s lots of research available on what happens and what the benefits might be, and all that research pointed out that the challenge wasn’t to capture photos but to provide value to the user after capture. For example, to provide software that summarizes your life in a brief but sufficiently detailed way that you can gather value as a user from making an effort to wear the camera in the first place.

I also saw an opportunity in this space because photos are such a huge driver of everything online, from social media to news and more. In addition, photos are immediately consumable—as opposed to video, which always takes time to consume. Also, this was in 2011, and wearable technology was on the rise. But there was no one really occupying that space, applying cutting-edge technology to the intersection of photos and wearable technology. So there clearly was an opportunity to explore what could be achieved in that space.

Initially, however, we dismissed the idea because of the form factor we envisioned for such a camera. We simply assumed that the camera would need to be at least five-by-five centimeters and maybe a couple centimeters thick, and we figured that no consumer would be interested in having that kind of device attached to their clothing. So we looked at other ideas, but then during the project, we came upon a teardown of an SD card, like a memory card for a camera with a Wi-Fi chip [the Eye-Fi product], which was mind-blowing. Looking at the miniaturization achieved in that product made us reconsider the concept of a wearable camera and realize that maybe the actual device wouldn’t need to be large at all; maybe it could be made very, very slim. So that was the concept that grabbed my attention above all others in the ideation.

Part of the reason it grabbed me was emotional, because I lost both my parents to cancer and the photos I have of them, while valuable, only capture moments we realized were beautiful moments, because we were having so much fun together, the weather was nice, or maybe we were giving each other presents or having a family outing, so we took photos. The photo albums I have of my time with them, they were limited in scope, because life is so much more than those beautiful moments. So to me, the idea of a wearable camera, it meant that I could fill in the gaps and capture everyday moments without consciously deciding to capture them in photos.

Of course, it also made sense business-wise because of the positioning...
Was the ideation process focused specifically on wearable technology, or was it just a very general “I’m looking to do some kind of a start-up”? It was actually a very general process. I had specific requirements in mind, but they were still broad, like I wanted to work with a business-to-consumer company because my former company was a business-to-business company and I felt I already learned the lessons of that and also, to a certain extent, grown tired of doing a business with very long sales cycles and so on. I had learned that a subscription business or a subscription-based revenue model can be very profitable if you develop it correctly, so I wanted to incorporate that to some extent. And I wanted the business idea itself to touch social media as well. But those were the three categories that I looked at, and the scope of ideas that came out of that was very wide.

For example, I marched into an idea of creating a data-driven book publishing company, where I would create series of books instead of just one-off editions so that if you were into kite surfing, I could create 12 books of interviews with kite surfers and so on, which you could subscribe to. Much like a magazine, but with books instead. So, yes, it was a very general process.

Interesting. You could have just as easily ended up with a Fitbit or the Amazon Kindle, or a whole wealth of different things. So are people using the Narrative Clip in the way that you thought they would?

Yes. My personal view of how I would use the Clip is, as I described, to capture everyday moments. But then of course, people have adopted it for a wide variety of uses. For example, a lot of people have more specific areas to use this, like sports or travel or specifically with their families and so on. But what we see from the user pattern is that there is a large group of users who don’t use it for only special events but actually use it any day of the week. For example, we don’t see any pattern of usage during weekends. It’s more prominent during weekdays if you look at the user base as a whole.

So it averages out over the entire user base to actually be very much in line with what my expectations were. What has been mind-blowing is the variety and the richness of the content that people publish out of their life logs. When we just look at the “public moments” stream in the app and on the Web, every day people post stuff ranging from Thailand to fishing trips in Alaska to Spring cherry blossoms in Japan to San Francisco streets. So I wasn’t prepared—I didn’t know that it was going to be so rich. I hadn’t envisioned what that would look like. Now, I’m very happy with that result.

So it sounds like you’re saying there are two groups—those who use it like a GoPro to record something cool they’re doing, and then those who want to capture everything because they never know when they’re going to do something cool. Do you think eventually everyone will transition into the capture mode?

I actually can’t say that we are seeing any signs of transition like that. Rather, we’re seeing strong viewpoints from users on how they prefer to use the Clip. The ones who use it as much as possible and for everyday use, they do it out of curiosity or an attitude that it will better their lives or that it’s their rights as a citizen to capture their perspective of what they experience. But the people who buy for a specific purpose, they are set on that purpose.

Of course, for us, as a company, it would be really good to be able to achieve that transition. But we haven’t been able to generate that kind of mindset change in users. People have a specific idea of why they purchase a Narrative Clip and to date, what we see is that people pretty much stick to that idea.

That’s not what we would have expected. We would imagine you get people ping-ponging between the two. One would wear it for a while in this mode of “This will be really useful for everything,” and, of course, one would forget for a while and then go, “Oh, something special, I’ll wear it.” And then think, “Oh, there’s product value...
here. Wouldn’t it be crazy if I wore it all the time?”

Indeed, what you’re describing is a very typical use case. We don’t see users transitioning from an individual use case into an everyday use. But on an individual user base, even for the ones who have decided “I should try to use this as much as possible,” what is typical is what you’ve described—you drift in and out of that habit. And of course that might be due to how far we have progressed in making the service effortless and the device effortless to use. The Clip 2, for example, has amazing image quality and ease of use due to the connectivity and the modular mounts that surpass that of the first version of the Clip by a magnitude, I would say. When we achieve a higher user value, if people perceive that it gives them value, we think they will choose to use it to a larger extent than the average user currently uses the Clip.

Currently, on average, an active user uses the Clip five and a half days per month. Of course, that’s averaged over the users who use it every day and the users who use it maybe once every other month. I don’t have the median for that, unfortunately. And then during such a day, on average, an active user captures 568 photos—at two photos per minute, that would be about two and a half hours of wearing the Clip.

Do you have a sense of the number of people who use it once and then say, “That’s not for me”?

I don’t have a specific percentage, but it is quite high. I feel that people are purchasing the device very much out of curiosity, so we need to work on lowering the threshold to actually find the value in using it. For the Clip 1, because it doesn’t have its own connectivity, when we need to involve a laptop and user experience just to get started with capturing photos, that can be a hassle for some people, which isn’t their fault. So we can do a much better job in communicating what they need to do to get set up and how they should use it to find the most value. That’s something that we are working on.

It’s the same for many other devices like ours. I saw, for example, that the Fitbit—which is a very simple device—had a successful “onboarding” rate of somewhere around 86 percent initially, and then they got it up to 92 percent or something like that. And our device, just to give you an idea of the magnitude, we are below Fitbit in our own onboarding completion because it is a more complex setup. But I’m not in the business just to sell as many as possible. I want to provide as much value as possible. So to me, that’s a failure of our company, when a user purchases a unit and can’t even successfully try it out before giving up.

But I also think that consumer patterns online are such that we have a lot of people buying things on a whim, so we need to take this into account as well. Not everyone will buy the camera because they have a specific idea. Maybe they’re just attracted to a specific image they saw or a recommendation they read, and they haven’t made a very deliberate decision—and they have the money to spend. So that’s something that we are improving: the onboarding completion rate and the retention rate of users. The user experience is a never-ending topic for us.

Have you seen differences in the way that the Clip is used in different countries or cultures?

Not very much. I only have one interesting data point to share, which is that users in Japan use the Clip far more than users in any other country. Japanese people seem to have a different relationship with the Clip, not only using it more often but also better engaging with the resulting photos.

Half of our users are in the US, since that’s where we do all of our marketing, but we can’t make any conclusions as to the interest in the device based on sales figures between different markets. We can only see that specifically for Japan, people tend to use it much more there, even though there are only around, I think, 1,000 or 1,200 users in Japan.

Do you plan on adding any search features to the Clip?

We believe that search is valuable and we actually have a search engine in place. However, it’s only in the back end. It isn’t exposed to users because we haven’t formulated a user search experience that we are satisfied with. It comes down to, basically, tagging of the photos, because right now, what we have are tags of locations, and that’s not perfect. We have location tags on maybe 5 percent of photos, so, for example, a user could search for and find photos from Austin. So that’s maybe where we’ll start, and then we will evaluate other tagging, like semantic tagging.

It is very hard to produce tagging that is intuitive for the users, because it becomes so general. If we apply object recognition and allow the user to search for a car or dog or house or forest, this doesn’t offer deep value. It just satisfies curiosity. You search for dogs, and you maybe see a few dogs, and the value is not much more than seeing a few dogs. When you want to find a specific photo, it’s so rare that we can tag this the way you would search for it so we cannot achieve good results. Even if you remember there was a dog at that location, and you search for “dog,” it is unlikely that we actually tagged the photo with the word “dog,” just because of the randomness of how photos are taken.

But presumably it’s not just about the tagging, because you’re taking periodic photos, without you actually framing the shots. There is a difference between “I’ve seen the photo in the past and I want to get that photo” versus “I remember an event and I want to see if there was a photo of that event.”

That also goes back to this serendipity of just exploring the last few days of photos. It’s rare, at least for myself, that the specific event I was looking for had the best photos from that day. I often discover other photos that are really
great, because I captured just the right look on the face of a friend or a funny occasion. And it’s so much down to chance, that it happens, that you can’t sort of plan for that to happen, and that also affects the searchability of the photos in the end.

For example, we had a rental car recently, and when we returned it, the company said we had scratched it. Three of us were wearing Narrative Clips, and we were convinced that the scratch was on the car when we picked it up. So we reviewed data from the Clips, but none of the photos captured the car. There were photos of the steering wheel and of the trunk as we loaded stuff in, but nothing of the side panel, where you stay back and see the whole car. But as you say, when you mine back through those photos, you see all sorts of things you completely forgot. So I can see the search functionality as being an interesting and difficult challenge related to the user experience.

And if we look at very, very long term, I actually view the Narrative as “very low frame-rate video,” like we have one frame every 30 seconds. Now, we could increase the frame rate up to the point where you can be pretty sure to capture that scratch mark if you just had been looking at that general direction. But then to consume and store all that data would be very tedious. I think there will always be a tradeoff there.

If we look 10 or 20 years ahead, Moore’s law would dictate that we’ll be able to capture 24/7 video if we want to. Still, it will be very hard to consume. If I want to watch myself getting coffee or if I have a sequence of myself getting coffee, I will never look at the full sequence, because it takes two minutes of what will be very boring video. So key frame selection becomes even more important as the frame rate increases.

It’s a tradeoff. You don’t have another lifetime to look back at the video you captured. As the number of photos you take increases, then the summarization has to become more aggressive. And then the search becomes more interesting—it’s possible we never showed you that photo because we “optimized” it out of your past. But how far back do people reach, or what kind of general user patterns do you see?

I think in October, we implemented the calendar function in our app at the top of the smartphone UI. And we saw a large shift in user patterns. People were jumping back to previous points in time to a much larger extent, because just scrolling down further was very tedious. But I actually don’t have any quantified data on that currently, but there is a varied use of patterns. People are not only looking at photos from just the last day or so.

I would love for people in the future—30 to 50 years from now—to know that they can go back in time to explore their relatives’ past lives.

What about yourself… how far back do you usually go?

I have a few specific events that I go back to from time to time. When I went to visit a friend last year, it’s someone I see very rarely and I remember the dates, so I can revisit the photos. And I do it when I want to show other people something. When I communicate with somebody else and tell them about something, I go back further than just a few days. But when I just browse the photos myself, I only look at the last couple of days.

Do you have a sense of what happens to these photos when people die, for example? People are going to have a big bank of their memories. What’s your take on that in terms of what you do with the photos? Can other people access the photos?

When we grow as a user base, what I would like to implement is for users to be able to say that if they don’t access their account in a certain amount of time, then this relative can access the data, or if that relative presents a death certificate, then we can transfer access. But we have yet to explore the legality and related technicalities of that.

I would love for people in the future—30 to 50 years from now—to know that they can go back in time to explore their relatives’ past lives, as well as their ancestors’ lives. That would be the ideal for me, because that’s something that we could achieve. But for now, [our company is] so young. The oldest photos in our database are one and a half years old.

But we never look at the users’ photos. They are private to the users. So they won’t be transferred to the general public or to the properties of our company or anything like that. They will be deleted in the end if no one claims ownership of photos that are no longer accessed by anyone.

As a user, that is reassuring, especially compared to most online services, where I really have no idea what’s happening to my data.

I would also like to have a search function in general, so that, for example, if you opt in for it, anyone can ask for photos like, “Does anyone have a photo from Stockholm on this date?” And then we can do an algorithmic search and ask users, “Would you like to share your photo with this user, who wants the photos for this purpose?” So you could search the entire database of users, across time and space, but you would not get real-time results. Only as users opt in to sharing their photos would you see results pouring in.

And we know that it is possible for the Swedish government to, by court order, say that we need to share photos from the database, but we would tell the user if we received such a court order. That’s not something we can get around; it’s not legally possible.
Have you looked at storing the images in encrypted form, where only the user has the key and you genuinely have no access?

We’ve done some research into that, and it’s technically complex to achieve. At some point, we need to analyze the photos to provide the user experience that makes the photos valuable to you. But if we decrypt the photos, then that’s a point where a government organization, for example, could install a program that spies on specific users.

So storing them in an encrypted form would be trivial, but you’d have to be able to decrypt them to provide the value you think customers want, and as soon as you can do that, then in a sense, you might as well not encrypt them.

We are actually storing them encrypted on disk. So if anyone runs away with the physical disks, they will not be able to access the photos. But we can’t say that they are secure from everything that can go on, because although they’re secure to the furthest extent possible from hacking attempts, we can’t do anything if we receive a court order. If someone orders us to send us all the photos that this user posts, and maybe orders us not to tell the user, then it would be very hard for us not to comply. We could fight the order in court, and we would, but we might not be successful.

If you think 5 to 10 years out, what do you think the mounting is going to look like? Do you think it’s going to get to a point where a large number of people are wearing them, and there’s an accepted best practice regarding how to wear them? Because where you wear them makes such a big difference. What would the ideal mounting for a Narrative Clip look like?

That’s something we’re beginning to explore, but it’s not until we have the Clip 2 out that we—and our users—can explore different mounting options, which we can then do serious research on to determine the best way to wear the wearable camera. What we do know is that we do need is flexibility, because people have so many different use cases. Flexibility is key. There’s no one set way that everyone will be able to use it, unless, perhaps, if wearable glasses, like Google Glass, become as common as headphones. Then, on the glasses would perhaps be the best place for a wearable camera.

But to me, the resistance to that is far too great to overcome, because it’s currently impossible to create a pair of glasses that don’t make you look like a cyborg and that don’t alienate you to other people, which is something that the form factor of the Narrative Clip rarely does in my experience. So there are, as with everything, tradeoffs. I can’t predict where it’s going. And we’ve already seen that usage patterns very quickly change, based on how the people you are with feel about the product.

We’ve already seen that usage patterns very quickly change, based on how the people you are with feel about the product. I behave differently depending on who I’m with. Maybe I’ll put the Clip away completely if I know someone is uncomfortable, or I will just make sure it’s not pointing directly at them if we’re sitting down and having dinner, for example.

It’s interesting, because you don’t seem to have had the same sort of backlash that Google got with its glasses. Is there something specific you attribute that to?

We had a very conscious design process, where we developed a concept with the balance between being subtle enough to not be distracting, but honest enough to be recognizable as a recording device. At first, we had the lens in the middle of the device, which made it look like a third eye of the person. It was very distracting. It wasn’t until we made the camera square—because it was round at first—and moved the lens up to the corner, that it sort of disappeared out of view.

But then we made the beveled edge of the camera shiny so that it picks up light in the vicinity, so people can see that there’s a gleam around the lens, which makes them perceive it as a camera to some extent. And that’s something that we quantified in user testing. With the Clip 2 now, what people perceive as a camera has shifted, so the design of the camera lens on the Clip 2 is a bit different. We want that honest outlook, and I think that makes people more comfortable with the device. It’s not trying to hide or look like something else.

If you think of something like the GoPro, which also hasn’t had as much backlash, it’s clear that the user is recording a specific set of events—going mountain biking or something—so it seems the perceived usage is important. With the Google Glass, it wasn’t always obvious how people were going to use the images or what Google might do with the images. But you have a different model.

It’s something about glasses—if you ask someone to take off their glasses, you’re actually being rude to that person. So when you have glasses on with a camera, you’re sort of putting yourself in a position of power, where it’s rude to ask you to stop taking photos and that, I think, is alienating people to some extent. Another issue is that the Google Glass mode of streaming videos lets you stream to your Google Plus account, which is public by default.

With Narrative Clip, it always takes two decisions for a photo to become public. First, you decide to wear the camera. Then, you look at the photos and you decide to share them. We might implement a streaming function in the future, but I think people feel safe because of that level of security.
There’s definitely a tangible difference between you taking a photo of someone on this Clip, which they could throw away before the photo gets anywhere, versus with glasses. By the time one has noticed you’ve taken a photo, it could already be on the Web. But one final question: did you envision this as a niche technology that would aid something like the GoPro, or as something as pervasive as a cell phone?

That’s an interesting question, because you can speculate in either direction and see the scenario playing out. But if cameras become totally pervasive in the sense that we are always on camera and our entire life is recorded, then I believe that, perhaps, wearable cameras will not be the optimal form factor. Maybe the cameras will be everywhere in our houses and in the streets, and there will be some sort of system for me to gather the photos of the things that I’ve been experiencing instead. The social shift that would need to happen, or that would happen as a result of everyone having wearable cameras, would allow many more devices, and even walls, doors, and chairs, to have cameras.

There was an interesting series of “future technology” videos made by Microsoft, where they showed their vision of how you would interact with technology and with each other through technology. Everybody was interacting with each other through screens on walls and on tablets, but cameras—which were obviously abundant—were invisible. Everybody was on camera all the time, but the cameras were nowhere to be found. The wearable camera must be very valuable to be as abundant as the mobile phone, or it needs to become effortless. But I do believe that wearable cameras will become very pervasive in the future.

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