

# Museums and the Mobile Web

Lotte Meijer

<http://www.lottemeijer.com>

Including a conversation with

Nancy Proctor

<http://americanart.si.edu/>

Lotte Meijer develops strategies and products to engage visitors with museums, both onsite and online. She combines her interests in art, education, information and new media in developing museum multimedia products, such as onsite kiosks and multimedia tours as well as online education strategies. In 2007/08 she worked at MoMA's Digital Media department, where she was responsible for MoMA WiFi, and worked on various application for the education and curatorial departments. Recently she managed the redesign of Smarthistory.org – a multimedia arthistory webbook –, and presented an iPhone tour past the stories hidden at MoMA as a participant in the [stifo@sandberg](mailto:stifo@sandberg) masterclass.

Nancy Proctor published her first online exhibition in 1995, intending to revolutionise the contemporary art market. Undeterred by 14k modems, she and Titus Bicknell then co-founded TheGalleryChannel.com in 1998, with the aim of publishing virtual tours of obscure exhibitions alongside comprehensive global museum and gallery listings. Both Nancy and TheGalleryChannel were acquired by Antenna Audio, where she searched for the answer to mobile interpretation as head of New Product Development for nearly 8 years. She now works cross-platform again as Head of New Media at the Smithsonian American Art Museum, Washington, where she hopes to figure out what the question is.

Last year laptop sales outstripped those of desktop PCs for the first time. This shift is thought not just to have happened because of the laptop's greater mobility and more attractive appearance, but also because of the recent growth in the adoption of wireless broadband Internet. The trend towards smaller computers can also be found in the increasing popularity of smartphones. Smartphones have been around for a couple of years, but since the launch of the iPhone in June and the iPod-Touch in September 2007, their popularity has soared, and many other accessible WiFi-friendly devices have come on the market. Soon the sales of portable mobile web devices might surpass that of laptops. With more visitors utilising them, museums will have an interesting new technology to work with.

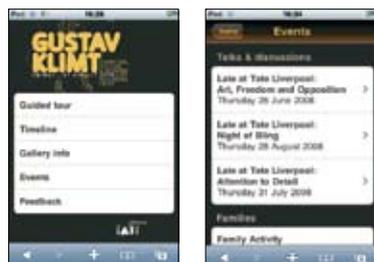
In 2007-2008 I spent a year working at the Museum of Modern Art in New York, (MoMA), where I developed MoMA WiFi. Back in the Netherlands I led a smartphone workshop with Virtueel Platform for the DEN conference 2008 (entitled 'Naar buiten') together with Nancy Proctor, Head of New Media at the Smithsonian American Art Museum in Washington DC, and former manager of product development at Antenna Audio, and Titus Bicknell, former

head of Mobile Technologies at Antenna Audio. This article contains two parts: the first is a short introduction to the ways and places museums can reach mobile web users. The second offers an insight in to the practical aspects of developing a smartphone project, in the form of an interview between myself and Nancy Proctor about the lessons I learned developing MoMA WiFi and Nancy's experience in developing handheld tours.

During this article the word smartphone will be used to refer to WiFi enabled handheld devices with browser functionalities. Smartphones in this case do not need to be phones. The term iPhone is used to refer to both the Apple iPhone and iPodTouch.

The surge of the mobile web offers many ways in which museums can reach their visitors:

The first museum projects to use the mobile web have all been interpretive applications: audio- or multimedia tours for museum visitors. The San Jose Museum of Art handed out iPodTouches in the galleries, with a web-based video tour of their special exhibitions. The Museum of Modern Art launched MoMA Audio on MoMA WiFi, with three ways to browse all of its audio tours, and Tate Liverpool created an iPhone video guide for their Gustav Klimt exhibition, and information about the museum, a timeline of the life of Gustav Klimt, and a calendar of related events.

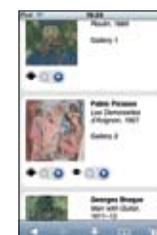
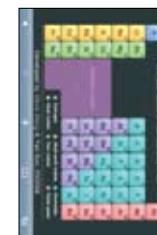


iPhone video guide for *Gustav Klimt* exhibition, Tate Liverpool, UK

Another possible way in which museums can use the mobile web is with location-specific content. No web-based tours have been created yet, but a good inspiration is the Mobile Bristol project, in which PDAs like the iPaq Pocket PC were used to create a digital layer over the physical city:

‘The Mobile Bristol Centre was a programme investigating how mobile devices and pervasive information technology can be used to enhance the ways in which residents and visitors experience and interact with their physical environment and with each other in urban and public spaces.

Imagine a digital landscape overlaying the physical world. As we walk around this landscape, we can tap into the



digital sounds, sights and interactions that are positioned in the landscape and activated by our presence and actions.

The digital landscape is formed from a dynamic and overlapping set of mediascapes which are context-sensitive combinations of digital media and interactions created and deployed by various authors.’  
(<http://www.mobilebristol.com/>)

The University of Nottingham has created a series of apps specifically for students in the lab. The Biocourseware project ([www.biocourseware.com](http://www.biocourseware.com)) contains of a series of small applications including reference materials, such as a Periodic Table, Bio and Chemistry Dictionary, or History of Genetics, but also tools like a Cal Concentration app, to quickly calculate concentrations during chemistry experiments.

Apart from interpretive devices, in the galleries or on location, museums can also target the people that access the museum website with their smartphone. The numbers are not very large yet: In a presentation at the Tate Handheld conference, the Getty Museum indicated that at the moment only 0.36% of their website visitors use smartphones, but those smartphone users might also be turned away by smartphone unfriendly websites. One can target smartphone users by keeping in mind that mobile web users have much smaller screens and are on the road, thus they tend to read less and look for more direct information (visit information and calendars and addresses) than home Internet users. Tate Liverpool addressed this challenge with a useful calendar, and another good example of smartphone targeted design is the New York Times iPhone App.

Even a summary look at the most popular Apple Web Apps (<http://www.apple.com/webapps/>) show that online visitors can be informed or entertained beyond the basic museum website. The WebApp top 20 counts twelve popular games, but also ‘This Day in History’ – an app that displays significant historical events that took place on the current day. Museums could make games tied to their collections, such as Launchball, an entertaining physics game from the Science Museum in London. Or they can share their collection through an application such as the popular Rijksmuseum widget, which shows a new object from their collection each day, a concept that can be easily translated to the mobile web.

Images iPhone: (Top) iPhone application including periodic table, Biocourseware project, University of Nottingham, UK

(Centre) MoMA audio iPhone application, Museum of Modern Art, New York

(Bottom) New York Times iPhone application, <http://mobile.nytimes.com>

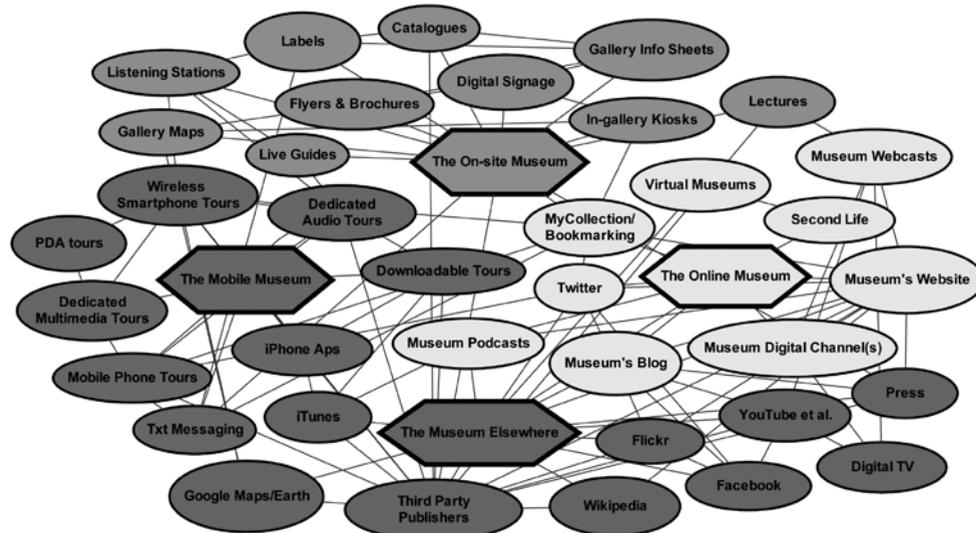
During the DEN Conference Smartphone workshop the participants set out in three groups to see how and where they could reach their audiences.

*Group A* developed a project for the Army Museum in Delft. The Army museum shows an overview of the military history from prehistory until today, housing a wide collection of military objects and art. The project would connect visitors in the museum with military personnel on duty (in Iraq for instance) using smartphones, sharing their experiences and answering questions from museum visitors.

*Group B's* project: 'My Archive, My Story, My Life' uses community tools such as Flickr and Hyves to build a social history. A physical exhibit would connect to a virtual one in which people can use smartphones with GPS capability that would overlay historical views of current locations.

*Group C* developed a concept for the future National Historical Museum. They suggested creating a country-wide locative virtual museum, using existing 2.0 tools such as del.icio.us and Flickr, that could possibly evolve to become a physical museum or just remain a virtual one.

Map of the Distributed Museum



## Lessons learned from MoMA WiFi

NANCY PROCTOR

What is MoMA WiFi and how did it come about?

LOTTE MEIJER

MoMA WiFi consists of two parts: an open WiFi network at the Museum of Modern Art in New York, and a website targeted towards smartphone users, through which they can listen to the audio tours.

When I was working at the Digital Media department at the MoMA, Creative Director Allegra Burnette said that they'd been trying to figure out how to make it possible for people to listen to the audio tours on their own devices. They already had free audio tours handed out by Acoustiguide at the museum, as well as podcasts, but the problem with the podcasts is that you have to download them at home before you come to the museum and almost nobody does that. The first idea was to integrate a USB socket into the kiosks so that you could download them there. But once I started researching all the different kinds of MP3-players on the market, I noticed the softwares were too different and had too many particularities – such as the iPod wiping off all your content if you connect to another computer – and that was not a good solution.

This was in November 2007, when the iPod touch and the iPhone had just launched and were really popular, and it began to make a lot of sense to develop for the mobile web and develop something for future technology users, instead of offline/usb-based devices, which are on their way out. We were lucky because when MoMA expanded in 2004 they had wired the entire museum with WiFi, but the network was not open to the public yet. Now it was a question of convincing the rest of IT upper management to open up the WiFi and to build the website.

NP

Was it hard to get them to open up the wireless network?

LM

It was easier than we thought it was going to be. The biggest fear within the organisation was that the visitors were going use the sculpture garden like Starbucks and sit there all day

with their laptop. The timing was in our favour: in 2008 it made sense for a public institution to offer WiFi. Once the WiFi was open, the garden was not flooded with museum visitors surfing the web, but we did limit both the download and the upload rate on the WiFi to discourage misuse.

NP

How did you deal with the rights issue?

LM

MoMA has an agreement with Acoustiguide that they have the rights to use the audio tours on multiple platforms, which also allows the podcast downloads for instance. So the rights were not an issue for us. I know other museums talked at the Tate Handheld conference about not having the rights, and how that is a big issue for them.

NP

At one point about fifteen percent of Tate's multimedia tour budget was spent on buying the rights to the images. It's harder in a museum of modern and contemporary art obviously, but even if you're dealing with historical art, there are rights on the script, there are rights from the voices, the narrators, music, etc.

LM

A good solution for museums is to create or manage the creation of the multimedia tour content themselves. You still have to buy the rights to the images, but it saves you the copyright on the scripts, you can set up your own agreements with the voices and it gives you more space to try things out, too.

NP

What are your thoughts on WiFi projects in Europe?

LM

What I noticed when I visited Washington DC is that there's WiFi in all of the Smithsonian museums. I think we are a couple of years behind in Europe when it comes to both WiFi coverage and also the pick-up rate of smartphones, in part because technology is launched later and is more expensive in Europe. One of the problems for European museums is that they are housed in historical buildings, with thicker walls, which makes it more difficult to get a seamless WiFi coverage. But that might be resolved soon, since the wireless web is becoming increasingly important. We might

not want a web-only tour everywhere right now, but it is worth thinking about this new platform. If you're looking at reaching visitors on their own devices, developing for mobile web platforms has many advantages. First of all the web is a cheap platform to develop for, webcoding is easier and cheaper than working in C. And a website is device-independent as opposed to iPhone apps or most multimedia tour software. Another advantage is that you can build one site, and have one base of content and then tweak the look or the type of content that you show for different devices, by using smart scripts and CSS files. Titus Bicknell actually explained in our workshop at the DEN conference how it's hard to deal with the rate of new devices, he described how the content that was created for the iPaq 3600 was technically unusable by the iPaq 3950, so assets had to be changed and software had to be rewritten, either because of screen sizes, or different functionalities on the new device. You can bypass a lot of these problems by working with a more open platform.

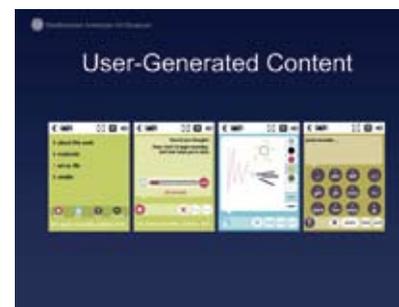
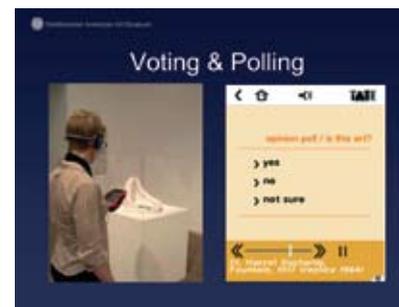
If you are very keen on making an app, though, instead of something web-based, there is a wonderful tool called PhoneGap that is (as their own website describes it) 'a development tool that allows web developers to take advantage of the core features in the iPhone, Android, and Blackberry SDK'.

NP

With the MoMA WiFi project were you concerned about producing a product that really only people with iPhones could access?

LM

I can answer that in two ways. The first is that we were not disadvantaging any visitors without iPhones because the museum already hands out their audio tours for free on location. And secondly, whilst MoMA WiFi looks like it's made for the iPhone, it is actually accessible with multiple devices. We chose not to use the Apple script that makes you slide from menu to menu because that doesn't work on other 'phones'. But at the time of launch the iPhone and iPodTouch were the only ones that made browsing really easy, and allowed you to listen to MP3s. The Blackberry doesn't allow you to listen to embedded MP3s, which means they can't use MoMA WiFi. Currently there



Tate Handheld tours

are already more devices out there that have the functionalities that Apple put in their browsers. A third answer to that question would be that we weren't concerned with the low number of visitors that would be able to use it because we felt we were trying things for the future, and the costs for the development were minimal. It is really just a website that was built in house.

NP

One of the very first lessons I learned when we were trying to do the first multimedia tours with Antenna is how unstable and unreliable it can be to have content delivered wirelessly to a device in the museum. You talked about thick walls in a historic building but even at MoMA when I was trying MoMA WiFi I fell off the network at one point. What is your response to that and do you have any strategies in developing a web based mobile programme that mitigates against the inherent instability of wireless delivery and sures it up to guarantee a more stable users experience?

LM

The only solution that I have, and something we did with MoMA WiFi is to make it as easy as possible for people to reconnect, and to use language and designs that show you when you are disconnected, and tell you how to get back on. If you don't want the dangers of WiFi instability, you'd have to make something downloadable, like an App, but then we get all the issues of platform specificity and filling up users devices again.

NP

But how about other issues, let's say I've got a perfectly good connection to the network: What should designers of mobile solutions that are using web based systems expect the users to encounter in terms of latency or other kinds of usability issues in browsing through web-based audio and video content which is bit heavier?

LM

File size is an issue. During development we found that the pages with many MP3s were loading very slowly, so we lowered the bitrate of the MP3s, which made a big difference. Now we have a system where the podcasts are in a high bitrate, and the WiFi ones are low. Having a good asset management system saves a lot of time there. Another thing to bear in mind with a WiFi application is that it is

invisible in the museum, without a desk or physical devices. It is easy to miss. We noticed that we had to make more effort promoting the service, on the screens in the lobby, and with flyers, to inform visitors that they could use it.

NP

Perhaps this is something that museums need to think about in terms of the future hosting of web based mobile solutions: that the more people who come to the museum with WiFi enabled devices and the more people who try to use it, frankly the more bandwidth the museum is going to have to put at the disposal of the mobile tour. It also underscores the fact that mobile web today can be compared to the fixed web 10 years ago in terms of what you can do. If designers of mobile web tours and information systems think of it in those terms that might help them design within the inherent limitations of the technology. And hopefully also help the marketing people to set expectations at the right level. One of the challenges that we faced with early multimedia tours was that people had never taken one before. They expected these devices to do everything, way beyond the capabilities of the technology. We soon learned to try to the lower expectations dramatically so that people weren't disappointed.

LM

One of the advantages of developing for people's own devices is that they know how to deal with and troubleshoot them themselves. They probably know how to reconnect to a wireless signal for instance.

NP

When we first started hearing museums talk about people using their own device they thought they would save money on hardware and staff. I warned museums against thinking that this was the case because maybe instead of distribution staff you're going to have to provide IT professionals to help people troubleshoot their own PDA. I'm interested to hear from you that that hasn't actually become an issue – as you say people are used to troubleshooting their own devices.

LM

At the moment most smartphone owners are tech savvy. Perhaps as more 'regular' people use them that might become an issue again. But these tech savvy users have higher expectations.

We were also dealing with the expectation of everything being live and up-to-date. One complaint we had was that the tour showed a painting that was no longer on view. Although the technology makes it easy to be up to date our WiFi database was not yet linked to the collection management system.

NP

That is going to be a massive challenge for almost every museum: having a centralised content management solution for all of these platforms.

As far as content is concerned, Kelvin Smith from the Metropolitan Museum of Art is currently researching this and his basic argument is that in many ways we put out this advanced technology but we quickly simplify it. Our first multimedia tour at Tate in 2002 was location based, had wireless streaming of content and book marking and we added text messaging. All that has been stripped out now. The multimedia tour has become something much closer to the traditional museum audio tour, but with images and some level of interaction. It does not really push the boundaries of what that networked devices should be capable of. And he's asking: maybe we have gone too far in the direction of simplifying. That actually the great potential with these devices is to reach out to audiences who would take a traditional audio tour. We need to be thinking about how people are using these devices in their everyday lives and respond to those expectations and habits and the social networks and activities that come with them. Perhaps we should pump up the complexity instead of starting to simplify.

LM

Visitors could bookmark to their own del.icio.us, and you could 'share' content to your own facebook or twitter etc. When it comes to increasing complexity and adding features, one of the great advantages I see in developing for the mobile web is that we can quickly put something together, test it with visitors, change and adapt it - and move towards more of an agile development model, which unfortunately seems to be an underused development model at museums. We can, for instance, try eliciting more visitor feedback or input, in either text, video or photos taken by visitors. There are so many things to try.



Dan Porter, 2008  
(<http://www.giantthumb.com>)

In September 2008 Tate Modern organised a conference where a group of international experts from museums came together to share ideas, thoughts and practical advice on the use of handheld interpretation in their galleries and beyond. The issues were laid out into mindmaps by Dan Porter. After the conference, the organisers and attendees filled a very useful wiki (<http://tate.handheldconference.pbwiki.com>) with speakers' presentations, the mindmaps and discussions. An article about the conference can be found on the Virtueel Platform website: <http://www.virtueelplatform.nl/page/12134/nl>.

# MULTI-PLATFORM

- MULTICAST
- MULTI PLATFORM
- MULTIMEDIA
- EVERYTHING IN A WEB-BASED APPLICATION! INCLUDING A VOICE RECORDER!



HOW IMPORTANT IS IPOD TOUCH

GOING FORWARD?

- AVOID CONTENT AND FEATURE THAT ARE PLATFORM SPECIFIC
- IPHONE COMPATIBLE BUT X-PLATFORM
- IT CAN BE EASY TO USE SAME CONTENT ACROSS DIFFERENT PLATFORMS (MOBILE AND KIOSKS)

# MAKING CONTENT AVAILABLE THROUGH DIFFERENT CHANNELS

ITUNES

YOUTUBE

- WHERE TO DISTRIBUTE YOUR CONTENT
- FREE DISTRIBUTION OF DEVICES
- IMAGE RIGHTS PROBLEM?

# IN-HOUSE PRODUCTION



- REUSABLE PLATFORM
- VALUE FOR MONEY

AS THE MUSEUM CHANGES - WHAT IS A TOUR?

- WHAT IS GIVING ADDED VALUE?



# NEXT GENERATION HANDHELDS

# LOCATION AWARENESS

AUDIENCE EXPECTATION



# PERSONALISATION

PRE-VISIT LINK TO WEB....

WHAT'S THE BENCHMARK FOR SUCCESS WITH THESE ADVANCED FEATURES?

BOOKMARK!

POST-VISIT

CONNECT ARTWORK TO ARTWORK

AUTOMATIC TOUR GENERATION

# USER GENERATED CONTENT



WILL USERS GENERATE THEIR OWN TOURS?

HI, I'M DAVE - I LOVE MATISSE!

HOW USEFUL IS USER-GENERATED CONTENT TO OTHER USERS?

HOW DOES USER GENERATED CONTENT CHANGE THE BUSINESS MODEL?

HOW DO WE FILTER USER GENERATED CONTENT?

HOW DO USERS RETRIEVE IT?

GOOD UGC

USERS CAN CONTRIBUTE IN AREAS THEY ARE EXPERTS IN

POST-VISIT

POST-VISIT

POST-VISIT

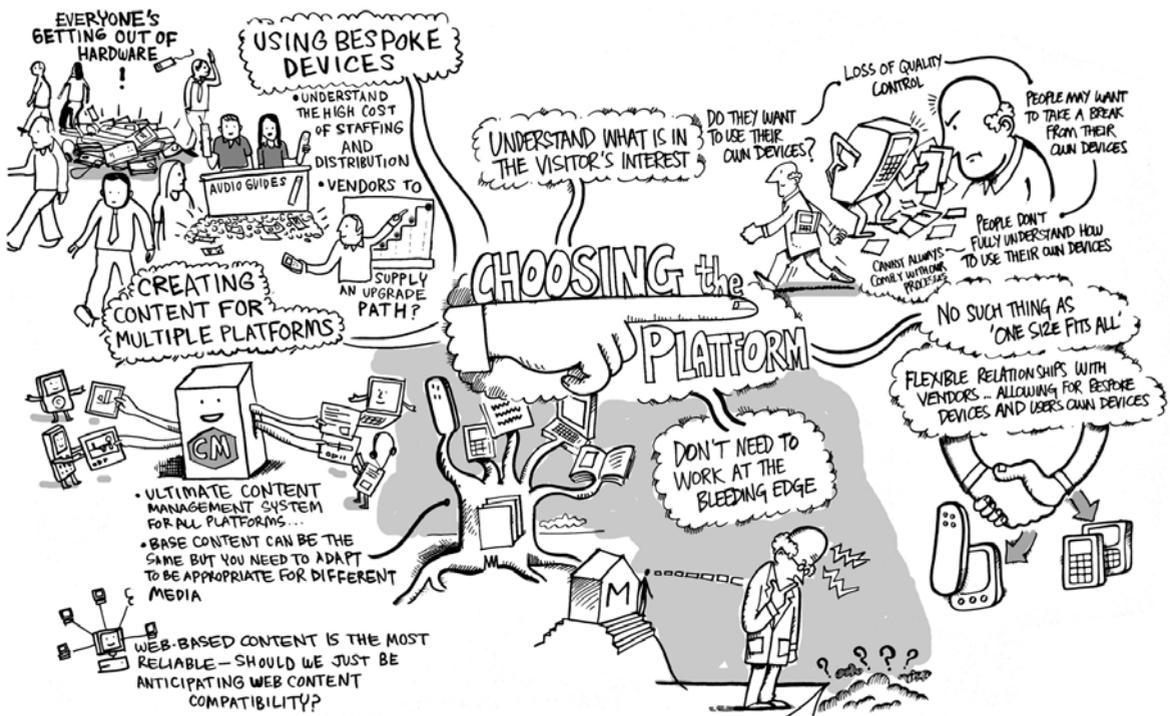
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Dan Porter, 2008  
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### CONTRIBUTIONS BY:

Shelley Bernstein  
Cathy Brickwood  
Sebastian Chan  
Annet Dekker  
Teresa Dillon  
Mike Ellis  
Yolande Harris  
Lotte Meijer  
Martine Neddam  
Angela Plohman  
Esther Polak  
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Cathy Brickwood  
Annet Dekker

COPY EDITING  
Cathy Brickwood

IMAGE EDITING  
Niels Kerssens

TRANSLATION  
Cathy Brickwood  
Puck de Klerk (Dutch summaries)

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